Applications Manager User Guide

User Manual

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Applications Manager User Guide

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Introduction

ManageEngine® Applications Manager is an on-premise application performance monitoring software that monitors heterogeneous business applications and their underlying infrastructure components. The product supports multiple application types such as web applications, application servers, web servers, databases, network services, servers, middleware and messaging components, ERP software, virtual systems, and cloud resources. It provides remote business management to the applications or resources in the network. It is a powerful tool for system and network administrators, helping them monitor any number of applications or services running in the network without much manual effort.

Applications Manager offers out-of-the-box discovery, availability, health, performance and fault management, and reporting of multi-vendor applications.

Alarms are generated to notify the faults in the application and are configured to trigger actions, such as notifying the user through e-mail, SMS, trap, executing a command and invoking a MBean operation. Through alarms, you can identify the root cause of any problem in the network with just a few clicks. Additionally, the flexible architecture of the Applications Manager allows you to manage any application (J2EE or J2SE) that exposes management information via JMX or SNMP through custom applications.

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Key Features

The following are some of the key features of Applications Manager.

Note: Apart from the following applications, you can also monitor your own custom applications via scripts. It will be added as a New Monitor Type.

Feature	Description
Application Server Monitoring	Microsoft .NET, GlassFish, JBoss and Wildfly, Jetty Servers, Oracle Application Servers, Resin Server, SilverStream , Tomcat Servers, VMware vFabric tc Servers, WebLogic Servers, WebSphere Servers, Apache Geronimo and also web-based applications such as Servlets, JSP and EJB of the application servers.
Middleware / Portal Monitoring	Monitors WebLogic Integration, IBM WebSphere MQ, Microsoft Office Sharepoint , Microsoft Message Queue (MSMQ) servers, Microsoft BizTalk, Microsoft Lync Server, Oracle Tuxedo, Azure Service Bus, Apache HBase and Apache Kafka.
SAP Monitoring	Monitors the performance of SAP Servers and SAP CCMS servers.
Oracle EBS Monitoring	Monitors the modules of Oracle E-Business Suite.
APM Insight Monitoring	Comprehensive end-to-end monitoring of Java, Ruby on Rails and .NET web transactions. Provides an indepth view into the performance metrics of all components starting from URLs to SQLs and transaction trace histories.
Virtualization Monitoring	Monitor VMware ESX/ESXi servers, Microsoft Hyper-V servers and their guest virtual machine instances. Support for monitoring Citrix XenServer, XenApp, Docker and virtual infrastructure components such as data center and cluster through vCenter.
Cloud Apps Monitoring	Support for monitoring Amazon EC2 & RDS instances, attached EBS volumes, Amazon S3 and Amazon SNS. Windows Azure monitor enables users to collect diagnostic data for the applications deployed in Windows Azure platform. Monitor Office 365 applications, including Exchange Online, SharePoint Online and Skype for Business.
Database Monitoring	Supports monitoring of MySQL, MariaDB, Oracle, IBM DB2, DB2 for i, Sybase, MS SQL, CouchBase, PostgreSQL and NoSQL database monitoring for Memcached, Cassandra, MongoDB, IBM Informix, Redis servers.
Host Resource Monitoring	Monitors the performance of Windows, Linux, Solaris, HP Unix, Tru64, Mac OS, Unix, IBM AIX, IBM AS400 / iSeries, Novell and FreeBSD servers. Also monitors Event Logs for Windows and Windows Server Clusters.
Java Runtime Monitor	Provides out-of-the-box remote monitoring and management on the Java platform and of applications that run on it.
File System Monitor	Monitors changes in the selected files and directories.
Windows Performance Counters	Monitors windows performance counter values through WMI.
Ping Monitor	Checks for availability of a device, server or network device.
Script Monitoring	Ad-hoc Windows/Linux custom scripts, used in-house can be managed from the same web console.
Services Monitoring	Monitors Services such as FTP, DNS, SFTP, Hadoop, Telnet, RMI adaptor, TCP port, JMX Applications, Ping, SNMP, Active Directory, LDAP, Apache Solr and Ceph Storage.
Mail Servers Monitoring	Monitors Mail servers (including SMTP servers and POP servers) and Microsoft Exchange Server.
WebServices Monitoring	Monitors Apache, IIS,PHP,SSL Certificate,Web Services (SOAP), nginx and other webservers.
End User Experience Monitoring	Provides the ability to measure the experience of your end users. Includes support for Real Browser Monitor, DNS, Ping, LDAP and Mail Server monitors.
HTTP URL Monitoring	Monitors any HTTP or HTTPS -based URL of web pages.
Custom Application Management	Groups data sources from multiple resources and displays them in a common place. The data sources can be JMX MBeans and SNMP agents.
Root Cause Analysis	Provides details on the different severity levels by identifying its reason/cause.
Fault Management	Sends 'Alarms' based on the monitored attributes. These can be escalated through e-mail / SMS /trap/ MBean Operation/ execute a program.
Performance Reports	The performance of the monitored application is depicted in the form of graphs and charts for easy analysis. Its powerful reporting mechanism enables you to analyze the trends over a period. Scheduling of reports is also possible.
Graphical Representation of Attribute Statistics	The attribute details are represented through graphs that provides an easy approach to understand the "attribute vs time" statistics for one hour. Also the icons 7 and 30 provided in the graphs represent details about the statistics for 7 days and 30 days respectively.
Intuitive Web Client	Allows you to perform admin activities through Web browser interface. You can also monitor and view attributes such as the health and availability of the monitors.
Holistic view to Monitor Group	Manages a wide range of business applications and network services. It provides you the flexibility to group the application and its related services to be monitored as a single unit.
Mobile Web/ iPhone App	An optimized view of applications being monitored for all types of smart phones available in the market.
Business Service Management	Helps the Manager to have an integrated high-level view of the Business Infrastructure. Location intelligence is added via World Map Business View.
Scalable Architecture	It's scalable architecture provides you the ability to monitor a variety of Monitors. It uses a blend of both agent-based monitoring and agent-less monitoring depending on the need.
Product Integration	Integration with ManageEngine ServiceDesk Plus and Site24x7.
Website Content Monitoring	Monitor your websites for defacement, modification and malicious insertions and be notified promptly during a hack detection. Manage six basic HTML elements - Text, Script, Image, Anchor, Iframe and Link.

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Monitoring Capabilities

This section lists the different types that Applications Manager can monitor. The types are divided into categories based on the type of system or component.

Note: Apart from the applications mentioned below, you can monitor your own custom applications via scripts. It will be added as a new monitor type.

Application Servers

- Microsoft .NET
- APM Insight for Java, .NET and Ruby on Rails
- GlassFish Servers
- JBoss Servers
- Jetty Servers
- Java Runtime
- Oracle Application Servers
- Resin Application Server
- SilverStream
- Tomcat Servers
- VMware vFabric tc Server
- WebLogic Servers
- WebSphere Servers

Database Servers

- Cassandra Servers
- CouchBase
- IBM DB2 Servers
- IBM Informix Servers
- Memcached Servers
- MongoDB Servers
- MS SQL Servers
- MySQL/MariaDB Servers
- Oracle Servers
- PostgreSQL Servers
- Redis Servers
- Sybase Servers
- Apache HBase
- SAP HANA DB Servers
- IBM DB2 for I

Middleware / Portal

- Microsoft BizTalk
- Microsoft Message Queue (MSMQ)
- Microsoft Office SharePoint
- Oracle Tuxedo

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- VMware vFabric RabbitMQ
- WebLogic Integration Servers
- IBM Websphere Message Broker
- IBM WebSphere MQ
- Microsoft Lync Server
- Azure Service Bus
- Apache Kafka
- Apache ActiveMQ

ERP

- Oracle E-Business Suite
- SAP CCMS Server
- SAP Server
- Siebel Enterprise Server
- Microsoft Dynamics CRM

Virtualization Solutions

- Microsoft Hyper-V Servers
- VMware ESX/ESXi servers
- VMware Horizon View Connection Broker
- Citrix XenApp
- Citrix Xenserver
- Docker

Cloud Apps

- Amazon Elastic Compute Cloud (Amazon EC2)
- Amazon Relational Database Service (Amazon RDS)
- Amazon Simple Storage Service (Amazon S3)
- Amazon Simple Notification Service (Amazon SNS)
- Microsoft Azure
- Windows Azure Cloud Services (Classic)

Services

- Active Directory
- Ceph Storage
- DNS Monitor
- FTP / SFTP Monitor
- Hadoop Monitor
- JMX Applications
- LDAP Monitor
- Ping Monitor
- Service Monitoring
- SNMP
- Telnet

Mail Servers

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- Mail Server
- Microsoft Exchange Server

Web Server / Services

- Real Browser Monitor
- Apache Server
- HTTP(s) URL Monitors and HTTP(s) URL Sequence (Record & Playback)
- IIS Server
- Nginx
- PHP
- SSL Certificate Monitor
- Web Server
- Web Services
- Apache Solr Server
- REST API
- ManageEngine ServiceDesk Plus
- ManageEngine OpManager
- ManageEngine ADManager Plus

Servers

- IBM AIX
- IBM AS400 / iSeries
- Free BSD / OpenBSD
- Linux
- Mac OS
- Novell
- Sun Solaris
- HP Unix / Tru64 Unix
- Windows Cluster
- Windows

Custom Monitors

- Database Query Monitor
- File System Monitor
- JMX / SNMP Dashboard
- Script Monitor
- Windows Performance Counters

EUM Monitors

- DNS Monitor
- LDAP Server
- Mail Server
- Ping Monitor
- Real Browser Monitoring

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What's new in release 13.6?

- Amazon SNS Monitoring - Monitor region and topic-wise metrics like notification status (delivery and failure), SMS deliveries, messages throughput - sent and failed counts, subscription count and more.

Minor Enhancements:

- Updated Amazon Java SDK from Version 1.3.26 to 1.11.171. We now support 15 global regions in AWS.

Issues fixed in 13.3

- Alerts from the Oracle database monitor (and several others) in Applications Manager Plugin for Opmanager was being escalated to the wrong server in OpManager. This issue is resolved.
- MySQL replication status attributes in the threshold configuration page was displaying the associated thresholds in the non-English build. This issue is fixed. | More...

What's new in release 13.5?

- Website Content Monitoring - Monitor your websites for defacement, modification and malicious insertions and be notified promptly during a hack detection. Manage six basic HTML elements - Text, Script, Image, Anchor, Iframe and Link.
- Office 365 Monitoring - Get operational intelligence into Office 365 applications, including Exchange Online, SharePoint Online and Skype for Business. Perform comprehensive performance monitoring for Office 365, minimize downtime and performance degradation as well as take corrective actions before any problems arise.

What's new in release 13.4?

- Apache Geronimo Monitoring **-** Track the performance of your Geronimo application server by monitoring key metrics such as classloading, heap and non-heap memory usage, buffer pool etc. Keep an eye on the datasources, EJB pools and bytes sent/received per minute to diagnose and troubleshoot issues instantly.
- ManageEngine ADManager Plus Monitoring - Get critical information (like CPU and memory usage, thread count and PGSQL / MSSQL database details) essential to track the performance of ADManager Plus.
- IBM DB2 for i Monitoring - Monitor Jobs status and health and optimize your DB2 server's resources by minimizing network traffic, disk I/O and CPU time.

Minor Enhancements:

- Support for Query monitoring for DB2 for I.
- Oracle Monitoring Enhancements:
  - Oracle backup job details tab now displays last performed backup jobs details for each backup type.
  - We now display the Invalid/Unusable Index Count in the database status table and also a table for Invalid/Unusable Indexes.
  - We have added Data File Name column in the in the ‘Blocks Corrupted’ table.
- Automatically save user-selected Domain Name as a default value from the Login page drop-down menu.
- Enhanced Bulk configuration view for the Admin server build showing the Managed Server Names in the Availability and Performance tabs.
- Enterprise Edition - Option to add server down instruction in down mail of the manager server.
- Execute Action option from the Alarm List View
- Enhanced ManageEngine OpManager Monitoring with MSSQL database stats.
- Enhanced PostgreSQL Monitoring with current query execution stats.

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- Enhanced SDP Monitoring with PGSQL & MSSQL database statistics.
- Option to display SubGroups in the Monitor Group Widget.
- Option to view Monitor Group as Status Lights in the Business View.
- REST API added to show the child monitor's alarm in ListAlarms REST API when the RESOURCEID parameter is used.

What's new in release 13.3?

- HAProxy Monitoring - Ensure proper HAProxy performance and operation is by monitoring its key metrics pertaining to Listener, Frontend, Backend and Server.
- Microsoft Dynamics AX Monitoring - Collect information pertaining to the performance of each component of the system architecture, i.e.: Application Object Server (AOS), the SQL Database Server, and their Server Stats.

Minor Enhancements:

- InFlight Count Value For Queue Details in Apache ActiveMQ.
- Bypass proxy option for EUM.
- Enhanced Cassandra Monitoring to collect database, request and keyspace detail metrics.
- Custom Fields support added for Log a Ticket Action.
- Enhanced Event Logs REST API monitoring to include matchcount and matchrules.
- Enhanced MySQL Database monitoring to monitor Database Index details.
- Option to add the same URL monitor to multiple Managed Servers.
- Option to Associate Trap to Monitor Group.
- Enhanced Oracle Monitoring with
  - Improved RCA message for Locks now containing the Session Username and information about which sessions are blocking which.
  - Option to view entire history of database backups along with the count of currently running backup jobs.
  - Option to view and export entire history of database backups along with the count of currently running backup jobs.
  - Oracle Alert log monitoring support.
- Support for Mongo DB 3.x.
- Enhanced Sybase Monitoring with metrics like User Connection Percentage, Remote User Percentage variables and Database Details like Log Used Size, Total Log Size and Log Used Percentage.
- Windows cluster support for Windows Server 2012, 2012 R2 and 2016.

Issues fixed in 13.3

- Disabling Active Directory Services was not working. This issue is fixed.
- In AIX monitoring, the Disk busy time & Avg Queue length was wrong. This issue is fixed. | More...

What's new in release 13.2?

- Apache Spark Monitoring - Get real-time operational visibility into Spark applications,key metrics of Apache Spark clusters (master and worker nodes) and cores.
- Azure Storage Monitoring - Monitor the health and performance of your Azure Storage account for better managing and utilizing Azure hosted storage resources.
- Site24x7 Integration enhanced to support Authtoken based integration.

Minor Enhancements

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- Option to monitor Queue Size Attribute for Apache ActiveMQ.
- Enhanced Downtime Scheduler Dashboard to display Monitors and groups currently under maintenance.
- Option to select URL Payload Type for Post form submission in HTTP URL monitor.

Issues fixed in 13.2

- Adding vCenter monitors failed when vCenter's credential contained special characters (< > ' "). This issue is fixed.
- VMWare events created on one ESX were duplicated on all the ESXs present under the vCenter. This issue is resolved.
- The issue of alarms in APM Plugin escalating to OpManager even when Alarm escalation is disabled is fixed. | More...

What's new in release 13.1?

- Apache ActiveMQ Monitoring - Collect ActiveMQ metrics, correlate your queue and broker performance with your infrastructure, maintain configurations for high availability and scalability, and be alerted automatically of potential issues.
- ManageEngine OpManager Plus Monitoring - Monitor critical information (like CPU and memory usage, thread count and PGSQL database details) essential to track the performance of OpManager.
- Microsoft Azure Virtual Machine Monitoring - Discover Virtual machines under an Azure subscription and monitor the health status and other performance counters.

What's new in release 13.0?

- Apache ZooKeeper Monitoring - Manage your Zookeeper clusters and Znodes, collect all the performance stats be alerted automatically of potential issues pertaining to resource consumption.
- Elasticsearch Monitoring - Monitor your Elasticsearch cluster and node health, track Search and Indexing and query latency performance. Get insight into cluster runtime metrics, individual cluster nodes, real-time threads and configurations.
- ServiceDesk Plus Monitoring - Get critical information (like CPU and memory usage, thread count, mail fetch and database details) essential to track the performance of ServiceDesk Plus.
- Enhanced MSSQL Monitoring - Track the connection stats, SQL session details, SQL session lock details, blocked lock details and more.
- Web User Experience Monitoring BETA - Monitor real-time and trending data about your web application's performance and the level of satisfaction that your end users experience.
- Support for SSL Enabled Postgres Database Monitoring.
- The option to select the Managed Servers for which the Admin server is allowed to trigger e-mail actions.
- Support for Windows 2016 monitoring

What's new in release 12.9?

- Apache Kafka Monitoring - Collect Kafka Resource utilization metrics, monitor Broker, Controller and Replication stats, and be alerted automatically of potential issues pertaining to the Network and Broker Topics.
- REST API Monitoring - Monitor the availability and response time of your REST API endpoints. Get insight into the response time of mobile and web applications that use your API.
- MS SQL Monitoring enhanced to include Backup, Restore and SQL Replication metrics.
- SAP HANA Monitoring: enhanced to monitor disk volume, Volume IO, Backup Configuration and Latest Backup metrics.
- Oracle Database Monitoring enhanced to monitor complete Backup details, User Expiry details, Fast Recovery Area Space usage details and Invalid Object Count.

Issues fixed

- The authentication issue in Apache Solr monitoring is fixed.

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- We have increased the Address Field Length in Create Email Action from 50 to 200.| More...

What's new in release 12.8?

- Apache HBase Monitoring: Monitor the health and performance of Apache HBase with key performance indicators (KPIs) related to HBase Master, Region servers, JVM metrics, memory usage thread details, and exceptions.
- SAP HANA monitoring: Ensure smooth operation of your SAP HANA systems. Track key metrics CPU, memory and disk usage, HANA services, schema details, replication and backup, workload, transactions, jobs, caches, and alerts.
- Monitor Oracle NoSQL: Get deep visibility into the performance of Oracle NoSQL. Monitor important performance counters including memory usage, thread details, admin details, replicated nodes, and storage details.
- Monitor Apache Solr Search Server: Monitor all Solr key metrics and stats related to cores such as query handler, cache, update handler, replications, JVM usage, CPU/memory usage, and thread details.

Issues fixed in 12.8

- Fixed an issue with the “Configure Alarms -> Monitor group -> Search for subgroup” option not working.
- Addressed an issue with the data collection not working properly in MySQL due to null error message when replication is not enabled for the MySQL database.
- Fixed an issue with process monitoring for Linux, a problem that occurred after upgrading to build 12710. | More...

What's new in release 12.7?

- Support for monitoring Oracle Coherence clusters: Get deep performance insights into Oracle Coherence cluster implementations. Track KPIs such as clusters, partition assignment, distributed and replicated services, Extend Connections, Extend Services, and distributed and replicated node memory details.
- OpenStack monitoring: Understand what is happening inside your OpenStack environment. Get details about the health and state of instances, view information about images within your OpenStack deployment, track core OpenStack services such as Nova, Keystone, glance, etc.
- Microsoft SQL Server monitor enhancements - View additional performance reports such as top queries by CPU, top slow running queries, most frequently executed queries, most blocked queries, top components by memory usage, etc.
- Integration with ManageEngine OpManager and ManageEngine OpStor removed

Issues fixed in 12.7

- Issue fixed while creating Email action with special characters in "To Email" address field.
- Cross Site Scripting in New Anomaly Profile page is fixed.
- Thread dump and heap dump actions not working when we choose select Auto JRE Option (Tomcat and Jboss) is fixed. | More...

What's new in release 12.6?

- Azure Service Bus Monitoring: Track the flow of messages between the various applications connected on the Azure Service Bus, both on-premise and cloud. Key components tracked include queues, relays, event hubs, topics, and subscriptions.
- Integration with ServiceNow: If you are using ServiceNow to track incidents, you can automatically convert alarms from Applications Manager to incidents in ServiceNow.

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- Enhancement to the APM Insight .Net agent: Recycling of Application Pools will be done on every restart of agent's Windows service.
- Enhancement to the AS400 monitor: Support for monitoring multiple message queues added.
- Enhancement to the File/Directory monitor: The file/directory monitor now includes an option to provide a condition to clear a content match alert.
- Enhancement to the Real Browser monitor: The Real Browser monitor now detects the components of a web page such as images, style sheets, script files, etc. and shows the page load time for each of these components in a waterfall model.
- Enhancement to the Windows monitor: You can now monitor Windows tasks – both system/application defined and user-created custom tasks. Keep track of a task's current status, last run time, last run result, next run time and the number of times a task has failed since its creation.

Issues fixed in 12.6

- There was an issue with configuring multiple e-mail addresses in email action in build 12500. This has been fixed.
- SQL injection vulnerability in Downtime Scheduler page has been fixed.
- Issue with not receiving notifications when disk is removed from server has been fixed | More...

What's new in release 12.5?

- CouchBase Monitoring: Monitor all attributes of your CouchBase server and keep track of Server Node and Data Bucket stats with Applications Manager.
- Hadoop Monitoring: Monitor Hadoop version 1.x as well as version 2.x and maintain the overall health of your distributed Hadoop cluster, ensure their availability and process tasks faster and accurately.
- Docker Monitoring: Applications Manager helps to actively monitor all aspects of Docker like health, availability, running stats etc., and take informed decisions in case of downtimes.

Issues fixed in 12.5

- In Windows Server, 'Enable Event Log Monitoring' link was missing in Event Log tab when event logs are disabled. This issue has been fixed.
- Error in generating pdf for configuration history report has been fixed.
- Error in adding attributes to a Windows Performance Counters type monitor has been fixed. | More...

What's new in release 12.4?

- Application Discovery and Dependency Mapping - Discover all applications in your IT infrastructure and map them effortlessly to gain a comprehensive insight into the relationships and dependencies of your IT components.
- Easy Upgrade support for Professional Edition - Upgrades to latest versions just a click away. New and improved upgrade techniques to make your experience faster and better. Be notified about upgrades regularly and switch to newer versions accordingly.

Issues fixed in 12.4

- The application pools were not listed due to parsing error in IIS server 7. This issue has been fixed.
- The problem in creating a threshold with multiple conditions has been resolved.
- $ATTRIBUTEVALUE replaceable tag was not getting replaced previously. This issue has been duly addressed. | More...

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What's new in release 12.3?

- Microsoft Dynamics CRM Monitoring - Track the performance of WMI Performance counters, Services, Transactions and Eventlogs for CRM Applications. Delve deeper into the performance of CRM's Authentication, Outlook Sync, e-mail Router, Discovery, Locator, Platform Services, Sandbox counters and Async Services.
- Jetty Server Monitoring - Monitor Java applications running on your Jetty HTTP server and Servlet container, track critical performance indicators of the Jetty Applications server like CPU usage, real-time memory utilization, garbage collection information and be notified of thread pool exhaustion.
- Microsoft Lync Server Monitoring - Measure the performance of your Lync Server, collect metrics pertaining to it's server roles and performance counters in one central location, detect issues, send alerts and thus prevent possible service outages or configuration problems.
- Citrix XenApp Monitoring enhanced to support monitoring of XenApp Version 6.5, performance of critical XenApp Services, Web Interface servers, IMA & ICAdatastores, XenApp Zones, sessions and applications.
- Web Services Monitoring enhanced to support SOAP Response processing using XSL Transformation, dynamic nonce value generation for security and operation execution using the response of another operation as input.
- Hardware Monitoring enhanced to monitor performance pertaining to Temperature, Power, Voltage, Battery, Memory, Disk, Array, Chassis and Processor data of DELL PowerEdge and HP Proliant servers.

Issues Fixed in 12.3

- The issue of Unix processes memory utilization showing raw value and not percentage value is fixed.
- In the *At a Glance* report, the Availability graphs were not being rendered properly. This issue is fixed.
- The display offset in Applications Manager details page when adding SNMP/Network device monitor is fixed. | More...

What's new in release 12.2?

- Citrix XenApp Monitoring - Track the performance of Broker Services, client and server sessions, diagnose issues like server overload using event logs and slowness in an application running on a Citrix XenApp server.
- Microsoft BizTalk Monitoring - Monitor core components and performance counters like messaging engine, orchestration engine, throttling and adapter performance, ensuring the overall health of BizTalk Environment.
- Oracle Tuxedo Monitoring - Monitor system and application data from key Tuxedo components like the bulletin board, queue and communication bridge details, transaction info, ATMI operations and service details.
- IBM Informix Database Monitoring - Collect system and database performance stats of your Informix Database, session details and identify problems at an early stage for proactive troubleshooting and performance tuning.
- Real Browser Monitor enhanced to include Mozilla Firefox browser support. Users can now import Selenium IDE test cases and add them as RBM monitors to automate the testing process.
- SAP Monitor enhanced to monitor metrics pertaining to Remote Function Calls like Scheduler and Data details.
- Support for Windows 10 monitoring.

Issues Fixed in 12.2

- The issue with the working of PollNow Rest API for conf monitors is fixed.
- From build number 12000, for Exchange Server, Report Exchange Messages Delivered/sec and some attributes value calculation was wrong. This issue is resolved.
- The issue of cursor scroll insensitivity for Sybase database query monitor is fixed. | More...

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What's new in release 12.1?

- Ceph Storage Monitoring - Measure the performance of your distributed Ceph storage, status of OSD nodes, Placement Groups and storage availability.
- Resin Application Server Monitoring - Increase reliability of your Resin Application Server with monitoring of all key performance indicators like thread details, connection pool usage, session details and memory resources.
- Enhanced HTTP URL Monitoring to provide split up Response Time details like DNS Time, Connection Time, First Byte Time and Last Byte Time.
- SAP Router string support added for SAP Server and SAP CCMS monitor.
- Applications Manager now provides monitoring support for WildFly Application Server.
- ManageEngine OpManager Network Monitoring Connector has been enhanced to handle network interfaces.
- Storage Devices category added for listing devices from OpStor SAN Monitoring Connector.

Issues Fixed in 12.1

- Increased the character limit for process displayname and processname to 250 characters
- String threshold value's size increased to support lengthy threshold conditions (1000 characters).
- Alert support added for when DBlinks are removed in Oracle DB server. | More...

What's new in release 12.0?

- Oracle EBS Monitoring enhanced to include monitoring of Oracle E-Business Suite 12.0 and 12.2.0 metrics like performance and process details, OPMN components, webcache, applications and cluster stats.
- Exchange Server Monitoring enhanced to support monitoring of Mailbox & Database Statistics and Database Availability Groups.
- Microsoft Office Sharepoint Servers Monitoring enhancements to monitor Sharepoint versions 2007, 2010 and 2013 with added capabilities for Sharepoint server farms and Sharepoint services.
- ServiceDesk Plus integration now lets you maintain a Configuration Management Database (CMDB) that allows you to plot out your IT infrastructure from Applications Manager and track malfunctioning CIs.
- New delegated administration role introduced to assign limited administrative privileges to users in your organization who aren't administrators.
- Support for Single Sign-On mechanism to help users gain access to all their Managed Servers with a single user authentication.
- Agent auto-upgrade capabilities added for APM Insight .Net version 2.0 and Java Version 1.9 to automatically download the new agent zip/msi file for upgrade if a new agent version available. JVM monitoring is also supported in APM Insight for Java.
- Event Logs Rules Configuration, Threshold Creation and User Administration enhanced for the Enterprise Edition - Create Event logs, Thresholds, Add Domains and give permissions to Domain - all from the Admin Server.
- Performance Metric Widget enhanced to support multiple monitors.
- Support added for SAP JCO version 3.0.
- Administrative activities can now be performed from the Admin Server in the Enterprise Edition.
- OPM Connector enhanced to provide a minimalitic UI that lists the Device Summary, Health, Availability and Recent Alarms and a quick snapshot of availability and health for network devices.

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What's new in release 11.9?

- VMware Horizon View Monitoring to manage all VMware Horizon View components, the status of services used and the underlying infrastructure as well.
- SAP Server Monitoring enhanced to support monitoring of background jobs.
- APM Insight .Net monitoring now features a new diagnostics tool to check the health of the agent running in the server. It also collects logs and creates a zip file, for better troubleshooting and support.

What's new in release 11.8?

- Windows Server Cluster Monitoring - Measure the performance of all your Windows Server Cluster components - nodes in a cluster, cluster networks, resource groups and critical cluster events.
- Siebel Server Monitor enhanced to support monitoring of active Siebel sessions and tasks.
- Cassandra Monitor enhanced to support monitoring of Operational Latency and Timeouts, Bloom Filters and Memtable Stats.
- Support for monitoring Exchange server 2013.

What's new in release 11.7?

- WebSphere MQ monitoring enhanced to monitor several new performance, queue, channel and event log attributes.
- Monitoring support for Message Broker execution groups, message flow accounting and resource statistics.
- APM Insight monitoring now includes tracking of background transactions.
- Support for NTLM Version 2 in URL Monitoring.

What's new in release 11.6?

- Applications Manager now has a slick new interface that's easier to use and performs faster than ever.
- Siebel Server Monitoring and Management with capabilities to improve productivity and gain visibility into your entire Siebel environment.
- Oracle Database Monitoring has been extended with proactive monitoring of an Oracle Data Guard environment, RPO statistics and more database details.
- Tomcat monitoring has been enhanced to support monitoring of memory, thread, JSP level requests, JDBC, servlets and more.
- Redesigned UI for the alarms tab with smoother filtering, easier bulk alarm actions and alarm search capability.

What's new in release 11.5?

- Applications Manager Android App - Our native application for android devices provides comprehensive application monitoring on the go.
- Citrix XenServer infrastructure monitoring moved from Beta to GA.
- IBM AS400 / iSeries monitoring enhanced to support pre-defined system library queues - Data Queue, Job Queue and Out Queue monitoring.
- New REST APIs introduced, for configuring mail, proxy and SMS servers, applying license and listing user roles.

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- WebSphere Server monitoring extended to support JMS queues & topics monitoring, JDBC connection pool and web application session details.

What's New in Release 11.4

- Support for monitoring Oracle Database version 12c.
- Oracle Database monitoring extended to monitor ASM Disk Groups, Jobs, PGA & corrupted blocks.
- User Administration module is enhanced to reuse the User Groups defined in Active DirectoryLDAP.

What's New in Release 11.3

- VM-to-storage maps displaying relationships between VMware vSphere Servers and underlying physical data stores to identify problems at storage and application levels.
- Monitoring of additional VMware KPIs including resource pools.
- Enhanced event log monitoring to help you set log rules for specific monitor types.

What's New in Release 11.2

- JBoss Monitoring is extended to support JBoss 7.0
- Credential Manager is introduced to help you create/edit the various credentials like password/ snmp community, port, etc., for all type of monitors globally.
- Support for monitoring the performance and health of the Nginx server.

What's New in Release 11.1

- Support for Redis Monitoring with capabilities to monitor connections, keyspace statistics, persistence statistics and more.
- Support for monitoring the performance and health of your Nginx server.
- IIS Monitoring is enhanced to include IIS Application Pool monitoring.
- All the report types in Applications Manager now supports PDF and CSV format.
- Global Alarm Configuration option is enhanced, to associate thresholds and actions with the attributes of a Monitor Type also.

What's New in Release 11.0

- Support for Cassandra Database Monitoring with capabilities to monitor pending tasks,node status in cluster, operation latency and more.
- Support for MongoDB Monitoring with capabilities to monitor connections, lock statistics, journaling statistics and more.
- The default database bundled with the product is PostgreSQL from Build 11000. However, our existing customers can continue using MySQL or migrate to Microsoft SQL Server.
- JBoss Monitoring is extended to support JBoss 6.0.
- Support for Windows 8 and Windows 2012 monitoring.
- Apache Tomcat bundled with the product is upgraded to version 7.0.21
- JRE bundled with the product is upgraded to version 1.6
- Microsoft Hyper-V monitoring is extended to support Hyper-V 2012 servers.

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What's New in Release 10.8

- The new Cloud Starter Edition that supports all private/public cloud and open source apps.
- Windows Azure monitoring and APM Insight .NET transaction monitoring are moved from Beta to GA.
- Site24x7 Integration to monitor website performance both from within your corporate LAN and from multiple locations outside your data center.
- Enhanced Server Monitoring to include hardware status details.
- Support for Weblogic 12c monitoring.
- Support for Tomcat 7.x monitoring.

What's New in Release 10.7

- Capacity planning reports for detailed capacity analysis of CPU, memory, network, disk utilization and more.
- Enhanced VMware ESX servers monitoring to include hardware and latency performance details.
- APM Insight .NET transaction monitoring BETA for visibility into key performance metrics, user satisfaction assessment, summarized database operations and transaction traces in minutes.
- Cloud monitoring capability is now extended to incorporate Windows Azure monitoring BETA.
- Redesigned UI for the alarms tab with smoother filtering capability.
- Custom field-based filtering has been introduced for reports.
- Enhanced server monitoring to support network-mapped drives and volume mount points.

What's New in Release 10.6

- APM Insight is equipped with Ruby on Rails application monitoring capabilities; providing end-to-end visibility into all tiers of your ruby transactions and insight into key performance metrics.
- New REST APIs introduced, for adding and deleting monitor group/ sub group and to associate monitor to a monitor group.
- Option to configure "Tomcat Manager" URI for monitoring Tomcat server.

What's New in Release 10.5

- Applications Manager iPhone App - Our native application for iOS-based devices provides comprehensive application monitoring on the go. | Download App
- Option to perform bulk import of server monitors using SSH Key-based authentication.
- Option to view the SOAP response in the alarm email for SOAP threshold violation.

Issues Fixed in 10.5

- The issue with the Shared Directory monitor showing Availability Status as down has been fixed.
- The issue with raw data clean up not happening for SQL back end has been fixed. | More...

What's New in Release 10.4

- The J2EE Web Transaction Monitoring feature has been enhanced. Its now called APM Insight (Java) and comes with better troubleshooting capabilities.
- Mobile Web Client - Access Applications Manager from your Mobile Web Browsers.
- AS400 monitoring is enhanced to support specific job, subsystem monitoring.
- SNMP V3 support for monitoring servers, sending and receiving Traps.

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- File Monitoring is enhanced to support content matching for remote windows files/ rolling logs.
- REST API-based integration with ManageEngine ServiceDesk to automate Alarm Management.
- Support for Internet Explorer 9 in Real Browser Monitoring (EUM Add On).
- Rest API Enhancements to list polled data for monitor, search monitor, list monitor groups.

What's New in Release 10.3

- Out-of-the-box support for monitoring the performance and availability of VMware vFabric RabbitMQ messaging systems.
- Web client user authentication using LDAP/AD.
- Web client GUI enhancements.
- Customizing the logo in reports.
- Support for embedding different world map views.
- Support for monitoring SSLv3 enabled websites in URL monitoring.

What's New in Release 10.2

- Support for monitoring Oracle JRockit JVM in Java Runtime Monitor.
- Support for monitoring IBM JVM in Java Runtime Monitor.
- Ability to play sound for critical alarms.
- Performance Metric Widget enhanced to show graphs for additional metrics with scaling option.

What's New in Release 10.1

- Out-of-the-box support for monitoring the availability and performance of **VMware vFabric tc servers** and the Spring Applications deployed on the server.
- We now support monitoring of validity and expiry dates of SSL Certificates.
- Support for Gmail in Mail Server Configuration.
- Ability to add new Event Logs other than the available default ones.
- Support for monitoring SOAP Operations with headers.

What's New in Release 10.0

- End User Experience Monitoring (EUM) add on introduced. The 'Real Browser Monitor' add-on has been rechristened as 'End User Monitoring' add-on with enhancements that help it go beyond real browser monitoring. This now includes LDAP, DNS, Ping and Mail Server RTT. Also, the pricing structure of RBM has been modified from an agent-based model to a flat-fee model.
- Custom fields and labels for monitors and groups. You can view this by clicking on the 'Custom Fields' button inside a monitor or monitor group.
- We now show split up of CPU utilization by CPU cores. There is also support for viewing server configuration parameters.
- Improved web client and ability to customize tabs.
- Support for monitoring Virtual Infrastructure through vCenter server.
- Support for Amazon S3 monitoring.
- Ability to specify roles for Exchange server 2007/2010. This helps view more performance metrics.
- A 64-bit binary for Applications Manager.
- IPV6 support for most monitor types.
- Anomaly Detection is no more an add-on feature. It will be part of the basic product.

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- SSL support for SMTP and POP in mail server monitor.

What's New in Release 9.5

- Ability to automatically provision virtual resources based on threshold breaches. You can create actions to automatically start, stop and restart VMs of both VMware ESX and Hyper-V servers from Applications Manager.
- Ability to automatically provision cloud resources based on threshold breaches. You can create actions to automatically start, stop and restart Amazon EC2 instances from Applications Manager.
- Out-of-the-box support for monitoring the availability and performance of Microsoft Message Queue (MSMQ)
- Option to associate multiple dependent devices across managed servers.
- Enhancements to fault management module including the option to execute email/SMS actions during selected business hours and the option to execute actions for a specific number of times or repeatedly until it gets acknowledged.

What's New in Release 9.4

- Out-of-the-box support for monitoring the availability and performance of Microsoft Hyper-V servers and their guest virtual machines. Applications Manager now supports multiple virtualization vendors such as VMware and Microsoft.
- Introduced server process templates/Windows service templates which are a pre-defined, reusable collection of processes. They provide an easy way to add multiple server processes/templates for monitoring across a group of servers.
- Improved method of managing operations in web services. Includes the ability to specify SOAP Action and Request values corresponding to the operation and also the ability to add custom operations.
- New REST APIs to add different monitor types, delete and list monitors.
- Options to stop, start and reboot Amazon EC2 instances from within Applications Manager.
- Additional performance metrics for MySQL DB servers including information about system variables of the MySQL server.

What's New in Release 9.3

- Out-of-the-box support for monitoring the availability and performance of Amazon EC2 and RDS instances. Applications Manager helps you ensure your business-critical cloud-based applications and services are performing well at all times.
- Introduced new report type for monitor groups known as **Availability and Downtime Trend Report**. This report compares the availability of the monitor group against target availability and also shows the downtime count and total downtime for the monitor group.
- Enhancements to SNMP Trap listener feature including the ability to select trap severity based on threshold profiles.
- Support for monitoring Exchange server 2010.
- Option to monitor WebSphere Application Server through secure SSL mode.
- Support for associating dependent devices across managed servers in the Enterprise edition. This will help you better organize your monitors and reduce redundant checks.

What's New in Release 9.2

- Out-of-the-box support for monitoring the availability and performance of VMware ESX/ESXi host servers and their guest virtual machine instances. Applications Manager provides a single console for monitoring both physical and virtual components of a heterogeneous IT environment.
- Comprehensive monitoring of Memcached servers to help you detect and diagnose problems with your caching systems faster.
- Support for monitoring PostgreSQL database servers.

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- Introduced Web application group which is a new type of Monitor Group. This will be useful for grouping your web infrastructure into logical components such as servers, databases, web servers, etc and better manage the relationship between components.
- An improved **Real Browser Monitor (RBM) dashboard** that provides an overview of the status of your web transactions from multiple locations.
- New REST APIs to create, edit and delete downtime schedulers, get monitor data, and add monitors.
- Option to send events as SNMP Traps to external SNMP Trap listeners.
- Enhancements to Java Runtime Monitor including the ability to know how garbage collection behaves in the JVM. You can also see the impact of the GC on thread dump with history and view historical JVM configuration parameters.
- Support for monitoring Windows 7 server.
- Support for monitoring WebSphere Application Server version 7.
- Issues fixed include ServiceDesk Plus integration issue when customers enable AD authentication in ServiceDesk Plus. | More

What's New in Release 9.1

- New monitor type called Real Browser Monitor (RBM) introduced. RBM opens up a Microsoft Internet Explorer browser and monitors a web application just like how a real user sees it. It supports playback from different geographical locations.
- Get notified of anomalies in a production application by defining anomaly profiles on performance metrics. Support for anomalies based on fixed baseline, moving baseline and custom expressions. There is also an Anomaly Dashboard introduced to facilitate viewing all the performance metrics.
- REST APIs introduced to make integration of Applications Manager with internal portals and other monitoring tools easier.
- At a glance Report that provide a summary of Top 10 monitors based on various performance metrics and uptime. You can view reports by Monitors, Monitor Types and Monitor Groups.
- Alarm Management : Define dependent device for a Monitor Group or individual monitor to suppress false downtime alarms caused by the dependent device being down.Enhanced alarm configuration rules for health and availability of Monitor Group.
- Monitor Group Template Dashboards have been introduced. This will help configure a custom dashboard and reuse it for multiple Monitor Groups (business applications or customers) - based on how you use the product.
- New widgets called "Bookmarks" and "Custom Text and HTML" for Integrating knowledge base articles and other web links added to Custom Dashboards.
- To enhance Web Client security, configurable Account policies has been added to the User Administration Module.

What's New in Release 9

- Microsoft SQL Server database back-end support.
- Support for monitoring Oracle E-Business Suite.
- Ability to create custom dashboards.
- Enhancements in server monitoring.
- Enhancements in WebClient look and feel.
- The MySQL DB Server bundled in the product has been upgraded from version 4.0.13 to version 5.0.52.

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What's New in Release 8.6

- Monitor the performance of AS400 / iSeries.
- Support for monitoring SAP CCMS metrics.
- LDAP, DNS and FTP/SFTP Service Monitors are now supported by Applications Manager.
- Additional metrics such as Hour of day, Day of week, Statistical and Heat chart report tabs in 7,30 History data are added.
- Support for Monitor Group/Sub-Group in downtime scheduler.
- Ability to assign Sub-Group for operator role.

Issues Fixed in 8.6

- Issue in Database Query monitor is fixed. It now retains only new data collected across all rows and columns.
- Memory leak issue in JBoss monitoring is fixed.
- Issue fixed in infinite loop in URL monitors.
- Issue in associating monitors to a monitor group with same name is fixed. | More...

What's New in Release 8.5

- Database Query Monitor is now supported by Applications Manager.
- Applications Manager now supports Active Directory Monitoring.
- A new flash-based graphical view, called Business View, is added to view IT infrastructure.
- Support for database details in MySql monitors that are collected once per day based on configuration is added.

Issues Fixed in 8.5

- Issue in Configure Alarms for Script and Query monitor when scalar attributes are not available is fixed.
- Issue in collecting Performance metrics for Weblogic 9 and 10 datacollection, when WLS server is restarted without restarting Applications Manager, is fixed.
- Issue fixed in Server Monitors when memory load increases leading to Out Of Memory.
- Issue fixed to have multiple network interface on the same host. | More...

What's New in Release 8.4

- ManageEngine Applications Manager integrates now with a comprehensive Network Monitoring Tool, ManageEngine OpManager.
- In WebServices monitoring, added support for generating alarms based on the output of the service.
- Free Edition of Applications Manager will not support DB2, Sybase in addition to Add-ons.
- J2EE Web Transactions, IBM WebSphere MQ Series and MS Office Sharepoint have been modified as Add-ons.

Issues Fixed in 8.4

- Issue in synching of data between the Managed Servers and Admin Servers is fixed.
- Issue in showing the status in Icons View and Table view is fixed
- Fixed issue in enabling and disabling SSL in AMServer.properties is fixed Cleanup entries are added for the Script Table data
- Fixed issue in Archiving for Tomcat Session and Oracle Users. | More...

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What's New in Release 8.3

- IBM WebSphere MQ, SilverStream, Microsoft Office Sharepoint Server, GlassFish Server Monitor Support added
- Windows Vista monitoring support added
- Oracle 10.1.3 monitoring support added
- Support for Custom attribute reports added
- Poll Now - option added for monitors
- Restricted access of Monitor Groups for Managers.

Issues Fixed in 8.3

- Fixed issue in Google Map display when the monitor group display name contains single quotes.
- While creating the Monitor Group (MG), the owners select box is shown empty when the latest MySQL Driver is used.
- In MySQL monitoring, when the **'last error'** attribute is having sepcial characters the polling will stop for that monitor.
- The performance issue in deleting the NA rows in script monitor is fixed.| More...

What's New in Release 8.2

- Availability and Health Reports - Critical Snapshot, History reports added
- Availability Trend Report, Outage Comparison Report added
- Ability to configure Business hours for reports added
- Support for bulk import of monitor configurations
- Support for sending SMS alarms via Modem
- Network Interface monitoring in WMI mode added

What's New in Release 8.1

- Sybase Support added
- Outage Comparison Reports, Availability Trend Reports, Availability and Health Snapshot Reports added
- Support for adding custom monitor types
- MySQL monitoring enhancements added
- Network Interface monitoring added

What's New in Release 8

- SAP Server Monitoring support added
- Enhancements in Availability and Performance Dashboards
- DB2 Monitoring Enhanced
- Improvement in scalability of reports
- WebClient Enhancements

What's New in Release 7.4

- Ping Monitor support added

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- Support for Secondary Mail Server configuration
- Support for creating a Monitor Group within a Monitor Group (Monitor Sub-Group)
- Support for Monitor Group creation in Admin Server (Enterprise-Edition Setup)
- Ability to treat Monitor Group as a Services Group or as an Application Cluster has been added.

What's New in Release 7.3

- Localized webclient to support German, Spanish and French languages
- Support for monitoring Windows Performance Counters in Windows 2000
- Availability and Health realtime snapshot report for Monitor Groups added
- Support for JSON Feeds for integrating Applications Manager data in corporate intranet
- $DATE tag enhancements in actions.
- Alarm Escalation added

What's New in Release 7.2

- WebLogic Integration Server Monitoring
- Support for Java Runtime Monitor
- File System Monitoring
- Failover support for Enterprise Edition
- IIS Enhancements
- WebSphere Enhancements
- Script Monitoring Enhancements - Table support added
- WebClient Enhancements

What's New in Release 7.1

- Web Services (SOAP) Monitoring
- Windows Performance Counters Monitoring
- Support for monitoring Mac OS
- JBoss 4.0.4 Support
- WebLogic 9.2 Support
- Ability to specify the attribute type for JMX and SNMP Monitors
- Windows Authentication Support for MS SQL Server monitoring
- New Plasma View of monitors added
- Ability to compare reports is added
- Customizable UI for home tab and Plasma View
- Bulk update of Poll intervals added
- More $Tags support in executing actions ($OID, $DATE, $URL)
- SSH Key based authentication for Remote Script Monitoring and Execute Program Action
- Ability to set auto refresh time interval added.
- New *Simple* web client layout added. Option to choose between Classic and Simple layouts.

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- New Maroon color theme added for personalizing the webclient
- While creating new monitors, troubleshooting is made easy via *Diagnose* Link

What's New in Release 7

- Remote sessions opened in Server monitoring, issue fixed
- Script Monitoring issues fixed
- Issue in invoking MBean Operation in JMX 1.2 fixed
- Enterprise Edition - Support for large scale monitoring with a distributed setup
- Support for Windows Services monitoring
- Support for Remote Script monitoring
- Server Monitoring Enhancements (HP-UX, IBM AIX, Linux, Solaris)
- Webclient and Server Performance Enhancements
- Webclient HTTPS support
- Improved Fault Management capabilities
- Support for Authenticated JMX Agents
- Improved multi-lingual support
- Other bug fixes and minor enhancements

What's New in Release 6.6

- Support for Oracle Application Server Monitoring
- Support for Tru64 Unix Monitoring
- Support for Windows Event Log monitoring
- Support for LAMP Edition and Database Edition of ManageEngine Applications Manager
- Option to schedule daily, weekly, monthly performance and availability reports
- Option to copy and paste the configuration of one monitor to create new monitors
- Bulk update of usernames and passwords of monitors
- Ability to Manage / Unmanage a monitor
- Option to configure the number of polls for performance data collection
- Bulk alarm configuration for attributes
- More configuration support for Google Maps Business Views

What's New in Release 6.0.5

- Integration of Google Maps Business View
- Support for Weblogic 9.1
- Support for JBoss 4.0.3
- Multilingual support for Simplified Chinese and Japanese languages
- PDF report generation for attributes is provided
- Enhanced Web Client

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What's New in Release 6.0.4

- Support for monitoring Microsoft .NET
- Support for monitoring WebLogic 9.
- Support for monitoring Web Transactions.
- Support for monitoring Oracle RAC.
- Integration of ManageEngine ServiceDesk Plus to track the alarms generated as trouble tickets.
- NTLM support is provided in URL monitoring.
- Reporting enhancements like Downtime History report of individual monitors and Summary Report are provided.
- Various usability enhancements like configuring prerequisites for monitoring are provided at the initial stage itself.
- Option to configure database retention parameters.

What's New in Release 6.0.3

- Support for Monitoring Microsoft Exchange Server.
- Support for Monitoring of FreeBSD Operating Systems.
- Support for Monitoring JBoss 4.0.2.
- Support for Telnet Monitoring is provided.
- Integration of AdventNet's QEngine - a platform independent Test Automation tool used for Web Functionality, Web Performance, Java Application Functionality, Java API, SOAP, Regression, and Java Application Performance testing.
- Standalone Enhanced URL Recorder is provided.
- SSL support for Apache, IIS and PHP.
- Consoles for Manager provided to maintain SLAs.
- Option to associate multiple users to single Monitor Group is provided.
- Alarm Enhancements like Pick/Unpick alarms, Annotation of alarms have been provided.
- Polls to retry can be configured individually for any attribute of a Monitor.
- Multiple varbind support in alarm messages is provided.
- Option to export reports to CSV and PDF formats.

What's New in Release 6.0.2

- Support for Monitoring IBM AIX servers.
- Support for Monitoring HP Unix Servers.
- Support for Script Monitoring is provided.
- Support for PHP Monitoring is provided.
- WebSphere 6.0 Monitoring support is provided.
- WebSphere Monitoring in Network Deployment mode is supported.
- Maintenance Task Scheduler Provided.
- SNMP Trap Listener provided.
- JMX Notification Listener Provided.
- Introduction of new role - "User", in addition to the existing Operator & Administrator roles.
- Replaceable Tags enhancement provided in actions.
- Support for String data type for defining threshold values.
- Option to be execute an action (like email) repeatedly, till a monitor returns to normalcy.
- Alarm Template feature for bulk alarm configuration.
- Support for JBoss SSL .

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- Custom Time Period reports provided.
- Option to delete known downtime reports provided.

What's New in Release 6.0.1

- Support for Monitoring Apache WebServers.
- Support for Monitoring IIS WebServers.
- Support for IBM DB2 Database Server Monitoring.
- JMX MBean Operation Support.
- Support for Monitoring JBoss 4.x.
- Support for Tomcat SSL.

What's New in Release 6

- Support for Monitoring WebSphere Application Server 5.x
- Support for Monitoring JBoss Application Server 3.2.x
- Support for Monitoring Tomcat Application Server
- Support for Monitoring WebLogic 8.1 Application Server
- Support for Monitoring MS SQL Database
- Support for Monitoring Oracle 10g Database
- Support for Monitoring MySQL Database
- Support for Monitoring Mail servers (SMTP, POP)
- Support for Monitoring Web servers
- Support for Monitoring Network Services like ftp, telnet, tcp port, etc
- Support for Monitoring Websites (URL, URL sequence, URL content monitors)
- SNMP based custom application monitoring
- JMX based custom application monitoring for MX4J / JDK 1.5, WebLogic JMX, JBossMX, WebSphere JMX
- Intuitive Web client support
- Unified view of monitors using Monitor Group

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Hardware and Software Requirements

This section lists the system requirements for installing and working with Applications Manager.

- Hardware Requirements
- Real Browser Monitor System requirements
- Software Requirements
- Supported Database Backends
- Supported Browsers

Hardware Requirements:

The performance of Applications Manager depends considerably on the CPU and memory of the system. The following table describes the recommended configuration of the system running the product.

Up to 250 monitors (with medium load on the monitored servers)

Operating Platform	Processor Speed	Memory*	Hard Disk Space Required
Windows / Linux	2.4 GHz and above	4 GB RAM	60 GB

250 - 1000 monitors - Enterprise Edition Setup (One Admin & 2-3 Managed Servers)

Per Managed Server/Admin Server

Operating Platform	Processor Speed	Memory*	Hard Disk Space Required
Windows / Linux	Dual Core, 2.4 GHz and above	8 GB RAM	80 GB

1000 monitors and above - Enterprise Edition Setup (One Admin & 4 Managed Servers and above)

Per Managed Server/Admin Server

Operating Platform	Processor Speed	Memory*	Hard Disk Space Required
Windows / Linux	Quad Core, 2.4 GHz and above	16 GB RAM - Managed Server	100 GB or higher based on monitors

*The above mentioned memory does not include memory used by OS which should account for another 4 GB

*If number of Managed Servers are high, 16 GB RAM for the Admin Server is recommended.

Note: It is recommended to read the Best Practices Guide before going into production.

Real Browser Monitor System requirement (for the machine where RBM Agent is to be deployed):

RBM Firefox Agents have to be installed on a dedicated Windows / Mac machine - 8 GB RAM, 40 GB HD. RBM Internet Explorer agent (depcreated) have to be installed on a dedicated Windows machine - 4 GB RAM, 40 GB HD with Internet Explorer 6, 7 or 8 (32 bit). However, Applications Manager can be installed on Windows or Linux. This works with the Professional Edition and Enterprise Edition (with Managed Server). Know more about Real Browser Monitor.

Software Requirements:

- Supported Operating Systems
  - Windows 7, Windows 8, Windows 10, Windows Server 2008, 2012, 2012 R2, 2016 both 32 and 64 bit.
  - Enterprise Linux 2.1 and above, Debian, Suse, Ubuntu, Mandriva, CentOS, Oracle Enterprise Linux, RHEL 6 and above, Fedora Core both 32 and 64 bit.
- Supported Monitor Resolution
  - Applications Manager is optimized for 1024 x 768 resolution and above.

Note:

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*Do take a look at the **Windows Vs Linux Downloads** page. Compare the capabilities of Windows and linux variations before proceeding to download the product.*

Supported Database Backends

Applications Manager supports PostgreSQL and MS SQL database backends for storing all the configuration information and data collected.

- PostgreSQL comes bundled with your download of Applications Manager from Build 11000. We support **PostgreSQL Versions upto 9.3.5** for backend.
- The supported MS SQL database versions that you may use are: **MS SQL Servers 2005 / 2008 / 2012 / 2016 / 2017 (SQL Standard / Enterprise Edition)**

SQL Server Collation : Any case-insensitive collation. For Chinese Installation use Chinese_PRC_CI_AS

Note: Support for existing customers with MySQL database has been depcreated from March 31, 2017. Refer this post for details.

Supported Browsers

- Internet Explorer 10, 11 and Edge
- Mozilla Firefox
- Google Chrome

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Differences between Windows and Linux versions of Applications Manager

Although most of the Applications Manager features are supported on both the Windows and Linux versions, there are certain features which are only available in the Windows version.

Features supported only in the Windows Version

The Microsoft applications/servers listed below can be monitored only using the Windows version of Applications Manager. This is because the data collection happens through WMI (Windows Management Instrumentation):

- Exchange Server
- Active Directory
- Microsoft .Net
- Hyper-V
- MSMQ
- SharePoint
- IIS Server
- Windows Performance Counters(any parameter related to Win32_PerfFormattedData)
- Microsoft BizTalk
- Microsoft Dynamics CRM
- Microsoft Lync
- Windows Cluster
- Microsoft Dynamics AX

Apart from these monitors, other features that are supported only in the Windows version are:

Event log rules: Any event can be monitored and notified when it occurs. This is useful when any application generates a failure event in the Windows Event log viewer. This is helpful in a way that the event log comes before the application actually crashes. This serves as a proactive mode of monitoring your applications and services.

NTLM authenticated URLs and Recording HTTP(s) Sequence/Real Browser Monitor(RBM): You can record the HTTP(s) sequence through Recorder.exe tool which works only from a Windows OS. However, you will be able to save the sequence to Applications Manager on a Linux OS.

NOTE

In the Linux Version of Applications Manager, Windows Server Monitoring is possible only in the **SNMP mode**.

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Installation and Setup

You can install Applications Manager with ease, by going through the following sections:

- Installing and Uninstalling
- Licensing
- Using Update Manager
- Starting and Shutting Down
- Troubleshooting

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Installation Guide

Contents:

- Editions of Applications Manager
- How to install Applications Manager in Windows (.exe) & Demo
- How to install Applications Manager in Linux (.bin)
- Troubleshooting your Installation process
- Uninstalling Applications Manager

Editions of Applications Manager

Meet your specific monitoring and business objectives by choosing the right edition of ManageEngine Applications Manager. Applications Manager is available in these editions:

- **Free Edition**
- **Professional Edition (Trial/Registered)**
- **Enterprise Edition (Trial/Registered)**

Free Edition

The Free Edition allows you **Five** monitors (excluding the Monitors added by default). The Free Edition never expires and you get most of the functionality of Professional Edition. Compare the Free and the Professional Edition.

Professional / Enterprise

You can avail 30 days of evaluation with no restrictions on the number of monitors. The Professional Edition allows you to monitor up to 250 monitors. The Enterprise Edition allows you to monitor more number of servers and applications in a distributed setup. You can configure independent Applications Manager installations to monitor resources and then collectively view the data of all the independent Applications Manager installations ("Managed Server") from a single central installation ("Admin Server"). After your 30-day free trial ends, your installation will automatically convert to the free edition unless you apply a commercial license.

This is the registered version of the product. ManageEngine provides the Registered user file after you purchase the product. To get the registered user file, e-mail to sales@manageengine.com.

To know the comprehensive differences between Free, Professional and Enterprise Edition features, visit our website - Feature Comparision.

Note
You can upgrade the Professional Edition / Enterprise Edition , Trial and Free Edition to Professional / Enterprise Edition. This is applicable, if you have purchased ManageEngine Applications Manager and hold the registered license key. To upgrade your license, refer Licensing Applications Manager.

Installing Applications Manager in Windows (.exe)

Download and execute the **ManageEngine_ApplicationsManager.exe** file. The **Installation Wizard** is displayed and will guide you through the setup process.

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1. Click **Next** at the Welcome Screen to proceed.
2. Read the **license agreement** and click **Yes** if you accept the terms.
3. Select the **language** in which you wish to install Applications Manager.
4. The next screen prompts you to select the product edition (Free Edition, Professional Edition, Enterprise Edition):
   - If you select Enterprise Edition, specify if you want to install Applications Manager as an **Admin Server** or a **Managed Server**. If you wish to install Applications Manager as **a Managed Server**, enter the associated admin server Host name and SSL port number. If a proxy server is needed to contact the admin server from the Managed Server machine, enter the Host name, Port number, username and password of the proxy server.
   - If you have choosen to install the Free or Professional Edition, continue to step 7.
5. Provide the **location** where Applications Manager should be installed on your machine. Also, specify the name of the new Applications Manager Folder in the installation location. Click **Next**.
6. Specify the **Webserver port** (9090 by default) and the **SSL Port** (8443, by default).
7. You can enter your details to **Register for Technical Support.** Click **Next.**
8. **If you have chosen to install the Professional Edition** of Applications Manager, you can opt for either the **30 day Trial Edition** or the **Registered version**. If you select **Registered User**, the next screen will prompt you to select the registered license file from your system.
9. Select the **Database back-end support :**

- **PostgreSQL**- PostgreSQL comes bundled with your download of Applications Manager from Build 11000. We support **PostgreSQL Versions upto 9.3.5** for backend.
- **Microsoft SQL Server** (version 2005, 2008, 2012) - If you select Microsoft SQL Server, you need to select if it is based on **SQL Authentication** or **Windows Authentication**. If it is based on SQL Authentication, enter the Host Name, Port Number, Database Name, User Name, Password of the SQL Server. If it is based on Windows Authentication, enter the Host Name, Port Number, Database Name of the SQL Server and the User Name , Password of the machine in which SQL Server is running. Also provide minimum privileges required - The user account should be the DB_Owner of the created Database.

Prerequisites for using SQL AlwaysOn Availability Groups as Database back-end support

Applications Manager supports SQL *Always On availability groups* as database backend. To connect to the SQL Always On, you will need to provide the SQL availability group 's DNS name & listener port (usually 1433) in the place of the database details during installation.

Setup completes the installation of Applications Manager.

Demo

Note
To install Applications Manager as service in a system, you must have administrative privileges in that system. More Information on 'Manually Installing Applications Manager as Service'.

Installing Applications Manager in Linux (.bin)

1. Download the product for Linux.
2. Execute the downloaded file. The Installation Wizard is displayed. Click Next to continue. Read the license agreement and click Next.
3. The next screen prompts for the product edition (Free Edition, Professional Edition, Enterprise Edition). Select the preferred

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edition to install. If **Professional -** is selected, follow the below given steps.

4. Select the **language** in which you wish to install Applications Manager. The options are English, Simplified Chinese, Japanese, Vietnamese, French, German, European Spanish, Korean, Hungarian and Traditional Chinese.
5. Choose whether it is **trial** or **registered**. If registered, the next screen will prompt you to select the registered license file from your system.
6. Specify the **port** at which web server has to be started. By default, it is 9090. This is the port at which you will connect the web client.
7. Select the Database back-end support - PostgreSQL (Bundled with the product. No Setup required) or Microsoft SQL Server (version 2005 and 2008).
8. If you select Microsoft SQL Server, you need to select if it is based on **SQL Authentication** or **Windows Authentication**. If it is based on SQL Authentication, enter the Host Name, Port Number, Database Name, User Name, Password of the SQL Server. If it is based on Windows Authentication, enter the Host Name, Port Number, Database Name of the SQL Server and the User Name , Password of the machine in which SQL Server is running. Also provide minimum privileges required : The user account should be the DB_Owner of the created Database.
9. Provide the **location** where the Applications Manager should be installed in your machine. Click Next.
10. Current Settings is displayed in the next screen. If you need to make changes, click Back, else click Next to continue installation.
11. Click Finish to complete the installation process.
12. If you had selected **Free License**, follow the steps from 4 to 9 .
13. If you had selected **Enterprise Edition**, choose if you want install applications manager as **Admin server** or **Managed server**.
14. If you had selected **Enterprise Edition - Admin Server**, next you have to enter the Admin server host name, Port number and SSL Port number. Then follow the steps from 4 to 9.
15. If you had selected **Enterprise Edition - Managed Server**, enter the associated Admin server Host name and SSL port number. If a proxy server is needed to contact the admin server from the Managed Server machine, click on the proxy server check box. In the next screen, enter the Host name, Port number, User Name and Password of the proxy server. Then follow steps from 4 to 9.
16. You have an option to fill up a **registration form** for Technical Support.
17. Finally, select if you want to view the **ReadMe** file or click **Finish** to launch Applications Manager immediately.

Note
You can install Applications Manager via **Command Line** also. If the file name is ManageEngine_ApplicationsManager_11_linux**.bin**, then type the following command in the command prompt:
./ManageEngine_ApplicationsManager_11_linux.bin -console

Execution of this command would take you through the installation process.

Troubleshooting an Installation process

In case of problems during installation in a Linux system, follow the steps given below to produce the logs files:

- Create a text with the same name as that of the installer and with extension as "**.sp**". i.e, For **<File Name>.bin**, create a text file named **<File Name>.sp**. For example, if the file name is ManageEngine_ApplicationsManager_11_linux**.bin**, create a text file named ManageEngine_ApplicationsManager_11_linux**.sp**
- Open the "**.sp**" text file in an editor, add **is.debug=1** as the content.
- Save the "**.sp**" text file in the same directory where the binary file resides.
- Change to the directory where the binary file is present by executing **cd** command
- Invoke the installer as **./<File Name>.bin -is:javaconsole -is:log log.txt**
- The above command will create the log file named **log.txt**. Mail the log file to appmanager-support@manageengine.com.

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Note
If the execution of the installation command throws an error such as "there may not be enough temporary space available in the temp folder", then execute the file with the argument as
[for Windows] **- <File Name>.exe -is:tempdir $DIRNAME**
[for Linux] **- ./<File Name>.bin -is:tempdir $DIRNAME**
where **$DIRNAME** is the absolute path of any existing directory.

Troubleshoot: For more Installation Troubleshooting, refer Troubleshooting page on our website.

Uninstalling Applications Manager

Windows:

- Shut Down Applications Manager (Make sure that the ManageEngine ApplicationsManager service is stopped if installed as a Windows service)
- Open a command prompt as an administrator [Command Prompt -> right click --> Run as administrator], go to Applications Manager Home directory and execute the following commands:

  shutdownApplicationsManager.bat

  shutdownApplicationsManager.bat -force

- Exit out of the command prompt and close all files, folders opened in the Applications Manager Home directory
- Click Start > Programs > ManageEngine Applications Manager > Uninstall Applications Manager
- Also from Control Panel > Add/Remove Programs.

Linux:

- From the command line, go to Applications Manager Home directory (by default it is /opt/ManageEngine/AppManager) and execute the below commands

  sh shutdownApplicationsManager.sh

  sh shutdownApplicationsManager.sh -force

- Exit out of the command prompt and close all files, folders opened in the Applications Manager Home directory
- Execute the command *./uninstaller.bin* from the AppManager/_uninst directory.

Note
You can uninstall Applications Manager via **Command Line** also. Type the following command in the command prompt:
./uninstaller.bin **-console**
Execution of this command would take you through the uninstallation process.

Here's how you can manually uninstall Applications Manager

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Licensing Applications Manager

When you have purchased the registered license file, you need to apply the license file over the existing version. This section explains the procedure to apply the new license file.

Applying the New License File from the Web Client

A quick way to apply the new license file is from the web client.

1. In the web client, click on the [admin] drop-down list link provided at the top right-hand corner.
2. Click **Product License** link in the menu
3. A Register Applications Manager pop-up is displayed.
4. Click Browse button and locate the file (License.xml) in your local machine.
5. Click Register.

Your existing version is now changed to Professional Edition - Registered.

Note

For **Enterprise Edition**, it is sufficient that you apply the license in Admin Server alone, the managed servers will be taken care automatically. The **Product License** link on top will disappear once you have applied the registered license. If the registered customers, want to upgrade their license further, they can use the ***Product License*** link under Applications Manager Server Settings in the Admin tab.

Applying the New License File using License Manager

The license manager comes handy when your license has already expired and you are not able to access the web client.

- Invoke the updateLicense.bat/.sh file located in the <Applications Manager Home>/bin directory (For Windows use 'Run as Administrator' option). The License Manager UI is displayed.
- Click Browse button and locate the file (License.xml) in your local machine.
- Click Next and then Click Finish.
- Re-start the Applications Manager server.

Note
To invoke License Manager via **Command Line**, use the following command ***<updateLicense.bat/.sh -c>***

Applying a license in a plugin build

Users must apply the OpManager license in the OpManager console to register the Applications Manager plugin (you need not apply the OpManager license file on APM plugin license tool).

Please contact us at appmanager-support@manageengine.com for any technical query.

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Using Update Manager

The Update Manager is a tool which is used for installing the service packs (.ppm file) over Applications Manager. The service pack may contain certain bug fixes and new feature additions. This document explains about how to use the Update manager to install service packs over Applications Manager.

Note: The Update Manager also has some useful validation incorporated. This validation includes compatibility checks. You cannot use update manager to install an incompatible service pack. For example, you cannot install a service pack of another product in Applications Manager or a service pack of one version of Applications Manager in another version.

Installing Service Pack using Update Manager

1. Run **updateManager.bat/sh** file located in the <Applications Manager Home>/bin directory or invoke Start > Programs > ManageEngine **Applications Manager 10 > Update Manager in Windows (For Windows use 'Run as Administrator' option)**. The Update Manager tool is displayed. Click Update.
2. Provide the service pack (.ppm file) by clicking the Browse button. Only compatible service pack file will be opened. Once the file is specified, other buttons such as Readme and Install are enabled.
3. Click the **Readme** button and the Readme file related to the service pack is displayed in a separate window.
4. Click Install. This opens a new panel where the installation process is displayed. On completion, a message "Service Pack installed successfully" is displayed and the service pack is listed in the Installed Patches section

To uninstall the service pack, click the Uninstall button and to know the service pack details, click the Details button in Update Manager.

Installing Service Pack using Update Manager (Command Line Option)

updateManager.bat -c in Windows

sh updateManager.sh -c in Linux

shutdownApplicationsManager -force in Windows

shutdownApplicationsManager.sh -force in Linux

1. Under <Applications Manager Home>/bin, execute the following command.
2. To force quit Applications Manager execute the following command:

Using this command line option, you can install or uninstall a service pack or view its details. Press 'i' to install and specify the absolute path of the service pack file in your machine.

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Starting and Shutting Down Applications Manager

Starting Applications Manager

Once installation is successful, you can start the Applications Manager by following the instructions provided for different operating systems.

To start Applications Manager

In Windows

- Click Start > Programs > ManageEngine Applications Manager XX> Applications Manager Start (or)
- Invoke the batch file startApplicationsManager.bat file located in the <*Applications Manager Home*> directory.

Once the server is initialized, a tray icon is placed in the Windows system tray . After the server is started completely the icon changes to and a message "Server Ready for Monitoring!" is displayed over the icon. Right-click on the Applications Manager tray icon to connect to the web client or stop Applications Manager.

Starting Applications Manager as a Windows Service
In Windows, you can start Applications Manager as a service. With this feature you can start the Applications Manager server automatically when the Windows system starts.
By default, during product installation, you can choose to install it as a service (More on Installation). If you have not enabled it then, use the following option to setup Applications Manager as a service.
1. Go to <Applications Manager Home>/bin directory, execute the file **installservice.bat**. On executing this file, 'ManageEngine Applications Manager' service is added in Windows Services and the startup type is set as 'Automatic', by default. (To ensure if it is installed as service, check for the 'Services' under 'Windows Administrative Tools'). Note: For installing Applications Manager as service, you need to have administrative privileges in that system.
2. Now, when you start Windows system, Applications Manager is automatically started. You can swap between Automatic and Manual modes.
To uninstall this service, go to <Applications Manager Home>/bin directory, execute the file uninstallservice.bat.

In Linux

Execute the **startApplicationsManager.sh** file in the <*Applications Manager Home*> directory. See this blog to get tips on starting Applications Manager when Linux boots.

Starting Applications Manager as a Linux service
You can start Applications Manager as a Linux service. With this feature you can start the Applications Manager server automatically when the system starts. Follow the steps mentioned below to install AppManager as a service on a Linux box:
• Copy the attached AppManageLinuxService file to /etc/init.d directory as the file "AppManager".
• Edit the MDIR variable in this file which should point to the Home folder of AppManager Installation directory.Typically, the default installation folder on a Linux box will be /opt/ME/AppManager_Home. Hence the value for MDIR will be:
MDIR=/opt/ME/AppManager_Home
• Provide executable permissions for this script using: *chmod 755 /etc/init.d/AppManager*
• Use chkconfig command to add "AppManager" as a service: *chkconfig --add AppManager* or use *update-rc.d AppManager defaults*
Note:
Tested for Ubuntu 10.04 & above and AppManager Build No: 11 and above.
Try above steps and revert the changes if you face any problem, contac appmanager-support@manageengine.com for assistance

Troubleshoot: Having trouble starting Applications Manager? Refer to the online Troubleshooting section.

Shutting Down Applications Manager

To shutdown Applications Manager

In Windows

- Click Start > Programs > ManageEngine Applications Manager 10> Applications Manager Shutdown (or)
- In Applications Manager's Admin tab, under Tools, click on Shut Down Applications Manager icon (or)
- Invoke shutdownApplicationsManager.bat file located in the <Applications Manager Home> directory (or)
- Right-click on the Applications Manager tray icon and click Stop Applications Manager (or)
- Click Start > Run> services.msc> opens up Services console > stop ManageEngine Applications Manager
- [If Applications Manager is running as service]

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In Linux

Use shutdownApplicationsManager.sh script located in the <*Applications Manager Home*> directory to shutdown Applications Manager.

You can also use the **Shut Down Applications Manager** tool under Admin tab in Applications Manager.

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Compare our Editions

Meet your specific monitoring and business objectives by choosing the right edition of ManageEngine Applications Manager.

Applications Manager is available in these editions - Free, Professional and Enterprise.

Features	Free	Professional	Enterprise
Out-of-the-box support for 80+ applications	Supports monitoring up to 5 apps or servers. There is no time limit on the free edition - you can use it forever.	Supports integrated performance monitoring for a heterogeneous set of applications. Ideal for small to medium enterprises.	Supports large deployments with its distributed monitoring capability. Ideal for large enterprises.
Server Monitoring	✔	✔	✔
Monitor open source apps & servers	✔	✔	✔
Monitor commercial apps & servers	✔ (For Five Monitors)	✔	✔
Application Server Monitoring	✔	✔	✔
Database Monitoring	MySQL, Oracle, MS SQL, PostgreSQL, Memcached, Cassandra, MongoDB and Redis.	✔	✔
Website / Web Services Monitoring	✔	✔	✔
SLA Management	✔	✔	✔
Exchange Server Monitoring	✔	✔	✔
Virtualization monitoring	VMware Monitoring Only	✔	✔
Cloud monitoring	✔	✔	✔
WebSphere MQ Series monitoring	✘	Add On	Add On
MS Office SharePoint monitoring	✘	Add On	Add On
AS400 monitoring	✘	Add On	Add On
ERP monitor	✘	Add On	Add On
Web transactions monitoring for J2EE and .Net (APM Insight)	✘	Add On	Add On
Web transactions monitoring for Ruby on Rails(APM Insight)	✔	✔	✔
Integration with Site 24x7	✔	✔	✔
End user monitoring (EUM)	✘	Add On	Add On
URL monitoring/multi-step URL sequence monitoring	✘	✔	✔
User administration, network discovery, custom dashboards	✘	✔	✔
ManageEngine OpManager Connector	✘	✔	✔
ManageEngine OpStor Connector	✘	✔	✔
ServiceDesk Plus Integration	✘	✔	✔
Anomaly detection	✘	✔	✔
Admin tools: Downtime scheduler, Trap Listener, Scheduling, enabling, disabling reports.	✘	✔	✔
Updates and patches	✘	✔	✔
Technical support	E-mail Support (30 days)	✔	✔
Failover support	✘	✘	✔
High scalability	✘	✘	✔
Distributed architecture	✘	✘	✔
Supported Operating Systems for Installation	Windows, Linux	Windows, Linux	Windows, Linux
Price	Free	Starts @ $945 for 25 monitors	Starts @ $9,595 for 250 monitors

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Getting Started

When Applications Manager is started in Windows, the default browser as configured in your system is invoked and the login screen is displayed. Login by specifying the authentication details. The default user name and password are "admin" and "admin" respectively. To know more about the different types of user access to the product, refer to the User Administration section of Performing Admin Activities.

In Windows, if you do not want the client to open by default, follow the steps given below to disable it.

1. Edit AMServer.properties file located in the <*Applications Manager Home*>/conf directory.
2. Set the value of am.browser.startup as false (by default, it is true).

After this configuration, when you restart the server the next time, the web client will not be invoked automatically. In Linux, by itself, the client will not open by default..

To login to Web Client, when it is not opened by default

1. Connect to the Applications Manager through any browser with the host name and port number, say *http://localhost:9090*, where 9090 is the default port number.

In Windows,

- Click Program Files > ManageEngine Applications Manager > Applications Manager Web Console.
- Right-click the Applications Manager tray icon and click Start Web Client.
- Then log in to the Applications Manager by filling in the User Authentication details.

Note
You can also use the startWebConsole.bat or sh file available at the <*Applications Manager Home*> *directory* that opens a default browser of the localhost and connect to the Applications Manager at http://localhost:9090. Ensure that the Applications Manager is started before executing this file.

Browse through the following topics which would help you understand Applications Manager better and work with it easily.

- Understanding Applications Manager
- Prerequisites for Applications Manager
- Working with Applications Manager

You can also refer our Best Practices Guide for more help on getting started with Applications Manager.

Note
User management is not supported for the Applications Manager plugin build over OpManager. At present, there are only two types of roles available for plugin users - Administrator and Read-Only User. Operator, Delegated Admin and Manager role is not supported. Applications Manager Plugin users cannot assign monitors to the any specific users in the Apps tab. They can view all the default monitors only.

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Prerequisites for Applications Manager

Discussed below are the prerequisites for managing the various monitors:

- Application Servers

1. GlassFish
2. JBoss
3. Oracle Application Server
4. Tomcat
5. WebLogic
6. WebSphere
7. Java Runtime Monitor
8. Resin Server
9. Jetty Server

- Database Servers

1. MS SQL DB Servers
2. MySQL DB Servers
3. PostgreSQL
4. IBM Informix Server
5. SAP HANA
6. Oracle Database Servers
7. MongoDB Servers

- Cloud Apps

1. Windows Azure Cloud Service (Classic)
2. Microsoft Azure
   - Prerequisites for adding Azure VMs
3. Office 365

- ERP

1. Oracle EBS
2. SAP Server, SAP CCMS
3. Microsoft Dynamics CRM

- Servers

1. Windows

- Services

1. JMX Applications
2. Ceph Monitor
3. Hadoop Monitor
4. Apache Zookeeper

- Mail Servers

1. Exchange Server

- Java / Transactions

1. APM Insight

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- Middleware / Portal

1. IBM WebSphere MQ
2. IBM Websphere Message Broker
3. WebLogic Integration Server
4. Microsoft Office SharePoint Server
5. Microsoft BizTalk Monitoring
6. Azure Service Bus
7. Apache ActiveMQ

- Virtualization

1. VMware Horizon View Connection Broker
2. Docker

- Web Server / Services

1. NTLM Authenticated URLs
2. PHP
3. Apache
4. Nginx
5. Real Browser Monitoring
6. ManageEngine ADManager Plus
7. ManageEngine ServiceDesk Plus
8. ManageEngine OpManager

Application Servers

Glassfish

While monitoring Glassfish application servers, make the following changes in the domain.xml file and then restart it:

- Change the **"accept-all"** property to **"true"** for the **"jmx-connector"** node : *<jmx-connector accept-all="true"*

  The configuration line should look like this :
  <jmx-connector accept-all="true" address="0.0.0.0" auth-realm-name="admin-realm" enabled="true" name="system" port="8686" protocol="rmi_jrmp" security-enabled="false"/>

JBoss

The prerequisites for managing the various versions of JBoss server are:

- JBoss Version 3.x and 4.x
- JBoss Version 5.x
- JBoss Version 6.x
- JBoss Version 7.x and above (EAP version 6 and above)
- JBoss Wildfly (WildFly 8 and above)

JBoss Version 3.x and 4.x

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To monitor JBoss, the **http-invoker.sar** should be deployed in the JBoss Server. The application (http-invoker.sar) is by default deployed in the JBoss server.
If the http port of the JBoss server is changed then the port number in the attribute InvokerURLSuffix should also be modified in JBOSS_HOME/server/default/deploy/http-invoker.sar/META-INF/jboss-service.xml file.

JBoss Version 5x

To monitor JBoss 5.x version and above *jbossagent.sar* should be deployed in JBoss server. To deploy, follow the steps below:

- Copy jbossagent.sar from location ***<Applications Manager home>/working/resources*** and paste under***<JBOSS_HOME>/server/default/deploy***.
- If you are running JBoss in different domain like ***all***, then deployment target folder would be***<JBOSS_HOME>/server/all/deploy***.

JBoss Version 6.x

To monitor JBoss 6.x version and above *jbossagent.sar* should be deployed in JBoss server. To deploy, follow the steps below:
Example:
<bean class="org.jboss.services.binding.ServiceBindingMetadata">
<property name="serviceName">
jboss.remoting:service=JMXConnectorServer,protocol=rmi
</property>
<property name="port">1090</property>
<property name="description">RMI/JRMP socket for connecting to the JMX MBeanServer</property>
</bean>

- Copy jbossagent.sar from location ***<Applications Manager home>/working/resources*** and paste under***<JBOSS_HOME>/server/default/deploy***.
- If you are running JBoss in different domain like ***all***, then deployment target folder would be***<JBOSS_HOME>/server/all/deploy***.
- Provide the rmiRegistryPort which is available in **<JBOSS_HOME>/server/<domainname>/conf/bindingservice.beans/META-INF/bindings-jboss-beans.xml** file. The default port is 1090.

JBoss Version 7.x and above
To add a new monitor for JBoss Version 7.x and above you must provide a management port. The default port is 9990.
To add MBean attributes or operations for JBoss version 7 and above:

- Copy the jboss-client.jar from **<JBoss Home>/bin/client/** and place it under **<Applications Manager Home>/working/classes/jboss/as7** directory.

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JBoss Wildfly

1. Change the Management port binding to use the network accessible interface:
   - In the JBoss config file (i.e. <JBOSS_HOME>standaloneconfigurationstandalone-full.xml) change jboss.bind.address.management:127.0.0.1 to jboss.bind.address.management 0.0.0.0
   - Restart the service
2. Add a JBoss administration user for monitoring:
   - <JBOSS_HOME>/bin/add-user.bat <USERID> <PASSWORD> ManagementRealm -silent

Top

Oracle Application Server

Applications Manager uses the **Dynamic Monitoring Service (DMS)** provided by Oracle Application Server to monitor the same. For this reason, the DMS Servlet has to be made accessible to the system where the Applications Manager is running.
To enable the access, please follow the instructions provided below
[The instructions are referred from the Oracle website : http://docs.oracle.com/cd/B14099_19/core.1012/b14001/monitor.htm]
By default, the *dms0/AggreSpy* URL is redirected and the redirect location is protected, allowing only the localhost (127.0.0.1) to access the AggreSpy Servlet.
To view metrics from a system other than the localhost you need to change the DMS configuration for the system that is running the Oracle Application Server that you want to monitor by modifying the file *$ORACLE_HOME/Apache/Apache/conf/dms.conf* on UNIX, or*%ORACLE_HOME%ApacheApacheconfdms.conf* on Windows systems.
The following example shows a sample default configuration from *dms.conf*. This configuration limits *AggreSpy* to access metrics on the localhost (127.0.0.1). The port shown, 7200, may differ on your installation.
Example: Sample *dms.conf* File for localhost Access for DMS Metrics

```
# proxy to DMS AggreSpy
Redirect /dms0/AggreSpy http://localhost:7200/dmsoc4j/AggreSpy
#DMS VirtualHost for access and logging control
Listen 127.0.0.1:7200
OpmnHostPort http://localhost:7200
<VirtualHost 127.0.0.1:7200>
ServerName 127.0.0.1
```

By changing the *dms.conf* configuration to specify the host that provides, or serves DMS metrics, you can allow users on systems other than the localhost to access the DMS metrics from the location *http://host:port/dms0/AggreSpy*.
Caution: Modifying *dms.conf* has security implications. Only modify this file if you understand the security implications for your site. By exposing metrics to systems other than the localhost, you allow other sites to potentially view critical Oracle Application Server internal status and runtime information.
To view metrics from a system other than the localhost (127.0.0.1), do the following:

- Modify *dms.conf* by changing the entries with the value for localhost "127.0.0.1" shown in Example to the name of the server providing the metrics (obtain the server name from the *ServerName* directive in the *httpd.conf* file, for example *tv.us.oracle.com*).
- Find below a sample updated *dms.conf* that allows access from a system other than the localhost (127.0.0.1).

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Example: Sample *dms.conf* File for Remote Host Access for DMS Metrics

 # proxy to DMS AggreSpy
Redirect /dms0/AggreSpy http://tv.us.oracle.com:7200/dmsoc4j/AggreSpy
#DMS VirtualHost for access and logging control
Listen tv.us.oracle.com:7200
OpmnHostPort http://tv.us.oracle.com:7200
<VirtualHost tv.us.oracle.com:7200>
ServerName tv.us.oracle.com

- Restart, or stop and start the Oracle HTTP Server using Application Server Control Console or using the Oracle Process Manager and Notification Server *opmnctl* command.
  For example,

  %opmnctl restartproc process-type=HTTP_Server
  or
  %opmnctl stopproc process-type=HTTP_Server
  %opmnctl startproc process-type=HTTP_Server

After performing the above steps, please ensure that you are able to access the URL http://<host>:7200/dmsoc4j/AggreSpy from the Applications Manager system.

To check if a user has select privilege:

We suggest you to execute the below query directly in your Oracle machine and check if a connected user has select privilege or not :

*select TABLE_NAME,PRIVILEGE from user_tab_privs_recd where table_name in ('ALL_SCHEDULER_JOB_RUN_DETAILS','**V_$RMAN_BACKUP_JOB_DETAILS**','ALL_SCHEDULER_JOBS','ALL_SCHEDULER_RUNNING_JOBS');*

If there is no row selected or privilege column does not have select value for the above table_name columns, then the user doesn't have privilege to access the table.

To grant Privilege:

Use the following query:

grant select on tablename to username;

Example: *grant select on **V_$RMAN_BACKUP_JOB_DETAILS** to monitoruser;* **Note :** As above, you have to give grant permission on all the tables mentioned in the above query.

Tomcat

Applications Manager agent has to be deployed in Tomcat Servers 3.x and 4.x. More

In case of Tomcat 5.x and 6.x, an application named Manager must be running in it for Applications Manager to monitor the Tomcat server. By default, this application will be running in the server. Moreover, the user role to access the server must also be manager. To add a role as "manager" for any of the users such as tomcat, role1, or both, you need to make changes in tomcat-users.xml file located in the /conf directory.

Here is an example tomcat-users.xml, which has user tomcat with role as manager:

```
<?xml version='1.0' encoding='utf-8'?>
<tomcat-users>
  <role rolename="tomcat"/>
  <role rolename="role1"/>
```

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```
  <role rolename="manager"/>
  <user username="tomcat" password="tomcat" roles="tomcat,manager"/>
  <user username="role1" password="tomcat" roles="role1"/>
  <user username="both" password="tomcat" roles="tomcat,role1"/>
</tomcat-users>
```

WebLogic Server

To monitor WebLogic 6.1:
Follow the steps given below:

1) Provide only Admin user name.
2) Copy **Weblogic.jar** from folder *<Weblogic Home>/weblogic61/server/lib* in Remote WebLogic server version 6. Copy to *<AppManager Home >workingclasseweblogicversion6* folder in the machine where Applications Manager is running

---

To monitor WebLogic 7.x:
You should set
the *weblogic.disableMBeanAuthorization* and *weblogic.management.anonymousAdminLookupEnabled* variables to true for enabling data collection. Follow the steps given below:

- Edit *startWLS.cmdsh* present in the *<WLS_HOME>/server/bin* directory and add the following arguments
  `-Dweblogic.disableMBeanAuthorization=true`
  `-Dweblogic.management.anonymousAdminLookupEnabled=true` Click here for Sample startWLS.cmd/sh
- Restart the WebLogic Server for the changes to take effect
- Copy Weblogic.jar from folder *<Weblogic Home>/weblogic70/server/lib* in Remote WebLogic server version 7. Copy to *<AppManager Home>workingclasseweblogicversion7* folder in the machine where Applications Manager is running

---

To monitor WebLogic 8.x:
You should set
the *weblogic.disableMBeanAuthorization* and *weblogic.management.anonymousAdminLookupEnabled* variables to true for enabling data collection. Follow the steps given below:

- Edit *startWLS.cmdsh* present in the *<WLS_HOME>/server/bin* directory and add the following arguments
  `-Dweblogic.disableMBeanAuthorization=true`
  `-Dweblogic.management.anonymousAdminLookupEnabled=true` Click here for Sample startWLS.cmd/sh
- Restart the WebLogic Server for the changes to take effect
- Copy Weblogic.jar from folder *<Weblogic Home>/weblogic81/server/lib* in Remote WebLogic

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server version 8 Copy to *<AppManager Home>workingclassesweblogicversion8* folder in the machine where Applications Manager is running.

To monitor WebLogic 9.x:

Copy Weblogic.jar from folder *<Weblogic Home>/weblogic92/server/lib* in Remote WebLogic server version 9 . Copy to *<AppManager Home>workingclassesweblogicversion9* folder in the machine where Applications Manager is running.

To monitor WebLogic 10.x , 11g , 12C:

Copy *Weblogic.jar, wlclient.jar, wljmsclient.jar*, *wlthint3client.jar* from folder *<Weblogic Home>/wlserver/server/lib* in Remote WebLogic server. Copy to *<AppManager Home>workingclassesweblogicversion10* folder in machine where Applications Manager is running.

For SSL support over Weblogic:

Weblogic certificate has to be imported to *Appmanager12/working/jre/lib/security/cacerts file.*

This certificate can be imported through Appmanager12/bin/WeblogicCertificate.bat/sh files.

Syntax: WeblogicCertificate.bat [import] [Full path of weblogic server certificate] [alias name]

Example: D:ManageEngineAPMjun26_2_t3sAppManager12bin> WeblogicCertificate.bat import "G:OracleMiddlewareOracle_Homeuser_projectsdomainsMyDomainroot.cer" mykey

Note
• If customer is monitoring all three versions of weblogic (10.x, 11g, 12C), then get the jars from latest version of WebLogic (Version 12c).
• SSL option is enabled in the UI only for version 9 and above.
The ports that need to be opened when the Weblogic Monitor is behind the firewall: Two-way communication between WebLogic listening port (default : 7001) and Applications Manager web server port (default : 9090).

For WebLogic 7.x, 8.x

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```
"%JAVA_HOME%binjava" %JAVA_VM% %MEM_ARGS% %JAVA_OPTIONS% -classpath "%CLASSPATH%" -
Dweblogic.Name=%SERVER_NAME% -Dbea.home="C:WebLogicWL7.0" -Dweblogic.disableMBeanAuthorization=true
-Dweblogic.management.anonymousAdminLookupEnabled=true -Dweblogic.management.username=%WLS_USER% -
Dweblogic.management.password=%WLS_PW% -Dweblogic.management.server=%ADMIN_URL% -
Dweblogic.ProductionModeEnabled=%STARTMODE% -Djava.security.policy="%WL_HOME%serverlibweblogic.policy"
weblogic.Server
goto finish

:runAdmin
@echo on
"%JAVA_HOME%binjava" %JAVA_VM% %MEM_ARGS% %JAVA_OPTIONS% -classpath "%CLASSPATH%" -
Dweblogic.Name=%SERVER_NAME% -Dbea.home="C:WebLogicWL7.0" -Dweblogic.disableMBeanAuthorization=true
-Dweblogic.management.anonymousAdminLookupEnabled=true -Dweblogic.management.username=%WLS_USER% -
Dweblogic.management.password=%WLS_PW% -Dweblogic.ProductionModeEnabled=%STARTMODE% -
Djava.security.policy="%WL_HOME%serverlibweblogic.policy" weblogic.Server
```

WebSphere Application Server

For base deployment:

You have to modify the Performance Monitor Interface (PMI) Specification Level from "None" to "Standard".

Then deploy the *perfServletApp.ear* file, which uses the PMI infrastructure to retrieve the performance information from WebSphere Application Server, in the WebSphere. Restart WebSphere Application Server.

For Network deployment:

You have to modify the PMI Sepcifictaion Level from "None"to "Standard" in all the WebSphere Servers in Network Deployment. Then deploy the*perfServletApp.ear* file, which uses the PMI infrastructure to retrieve the performance information from WebSphere Application Server, in any one of the WebSphere Servers in the Network Deployment. Restart WebSphere Application Server.

> **Note:** Steps to check whether WebSphere monitor has been correctly set

To modify PMI specification level:

- Connect to the Admin console - *http://<Host>:<Port>/admin/*
- On the left-side tree, expand the Servers node.
- Click on Application Servers link. This will display the list of servers running in the node.
- Click on the server for which data collection has to be enabled.
- In the Additional Properties table, click on Performance Monitoring Service.
- Change the Initial specification level to "Standard" and then apply the changes. Also enable (select) Startup.

To deploy perfServletApp.ear:

- Open the **Admin console**
- Go to **Applications** then **Application Types,** then **WebSphere enterprise applications.**
- Click **Install** and select **local system.**
- Browse the perf servlet application then click ok.
- The Default Path is <WAS_INSTALLED_PATH>/<APP_SERVER_NAME>/installableApps/PerfServletApp.ear
- Accept all default options and select Next until finish then click Save.
- After successfully installed this application, restart the node server once in order to work the perf servlet work correctly.

  To check the perf servlet output, open the following url from your browser:

  http://localhost:<PORT>/wasPerfTool/servlet/perfservlet?connector=SOAP&port=8880 <PORT> - 9080 (Default)

Steps to Check whether Websphere monitor has been correctly set

For Base Deployment

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To ensure whether the **PMI** & **perfServletApp** are configured properly in WebSphere, invoke the below URL & check whether the data is returned in XML format.

http://WebSphereHost:Port/wasPerfTool/servlet/perfservlet?connector=SOAP&port=SOAP-PORT

where

WebSphere Host -> Host in which WebSphere Application Server is running

WebSphere Port -> HTTP Transport port of the WebSphere Application server [How to locate HTTP Port]

SOAP Port -> SOAP Port of WebSphere [How to locate SOAP Port]

For Network Deployment

To ensure whether the **PMI** & **perfServletApp** are configured properly in WebSphere, invoke the below URL & check whether the data is returned in XML format.

http://WebSphereHost:Port/wasPerfTool/servlet/perfservlet?connector=SOAP&port=NetworkDeployerSOAP-PORT&HOST=NetworkDeployerHost

WebSphere Host -> The host of the websphere application server in which the perf servlet application is installed

Websphere Port -> HTTP Transport port of the Websphere server in which the perf servlet application is installed [How to locate HTTP Port]

NetworkDeployer SOAP PORT -> The SOAP port of the domain manager (DMGR) [How to locate SOAP Port]

Network Deployer Host -> The host in which the domain manager is running.

Note: Also check whether WebSphere *admin user* is added to the monitor group of the **perfservletApp.**

How to locate SOAP Port?

1. Login to Admin console
2. Expand the *server* link on left side tree. Click on *Application Servers*
3. In *Base mode*, various WebSpheres will be listed down. Click on the WebSphere's name- > Under *Additional Properties***,** click on *End Points* link -> click on *SOAP connector address*. You can get the SOAP port from there.
4. In *Network Deployment mode*, Click DMGR - > Under Additional Properties, click on *End Points* link -> click on *SOAP connector address* - You can get the SOAP port from there.

How to find the HTTP Transport port?

1. Login to Admin console
2. Expand the *Server* link on left side tree, Click on *Application Servers*
3. Various WebSpheres will be listed down. Click on the WebSphere's name- > Under *Additional Properties***,** click on *Web Container* link -> click on *HTTP Transports* link. You can get the HTTP port from there.

Resin Server

JMX MBeans are used to monitor Resin Application server's activity. To enable JMX, open Resin.XML and add the below JVM arguments or start Resin.exe with the below JVM arguments

-Dcom.sun.management.jmxremote.port=1099 -Dcom.sun.management.jmxremote.ssl=false -Dcom.sun.management.jmxremote.authenticate=false

Replace 1099 with the actual port number of the JMX agent

Jetty Server

JMX MBeans are used to monitor Jetty server's performance. To enable JMX,

1) Add the below JVM arguments on Jetty start up:

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-Dcom.sun.management.jmxremote.port=9999 -Dcom.sun.management.jmxremote.ssl=false -Dcom.sun.management.jmxremote.authenticate=false

Replace 9999 with the actual port number of the JMX agent

2)Add the following line in start.ini file **--module=jmx**

Database Servers

Microsoft SQL Database Server

For monitoring a Microsoft SQL database server, the user should be permitted to access the **AMDB, MASTER** and **MSDB** databases. He must log in using the following Database Role Memberships:

Database Role Memberships:

Database: AMDB **DB role:** public, db_owner	**Database:** master **DB role:** public, db_datareader	**Database:** msdb **DB role:** public, db_datareader

In the 'View Server State' permission should be also present. If you would like to monitor SQL Server using SQL named instance, you need to ensure that the 'SQL Browser Service' is running in the system.

To grant **View Server State**, you can use any of the following methods :
1) Execute the following query
GRANT VIEW SERVER STATE TO username;
2) In SQL management studio for user choose Properties -> Securables -> Click **Add** (under securables) -> choose "**All objects of the Types...**" -> choose **Servers** -> choose **Grant** for "**View server state**" permission.

Note: The collation option for Applications Manager's backend MS SQL Database should be case-insensitive.

MySQL Database Server

While monitoring a MySQL database server ensure that you assign a user name that has permission to access the MySQL database from the host where Applications Manager is running. An alternate way is to add a relevant user who has the privileges to do the same.
The user should have privileges to execute SELECT, SHOW DATABASES, REPLICATION commands in the MySQL server.
For enabling these privileges, execute the following commands in the remote MySQL Server:
INSERT INTO user (Host,User) VALUES('<host>','<user>');
 GRANT SELECT,SHOW DATABASES,REPLICATION CLIENT ON *.* TO '<user>'@'<host>';
 FLUSH PRIVILEGES; (Use the host name - Applications Manager machine).

PostgreSQL

The PostgreSQL installers include the database server, pgAdmin and StackBuilder.
The 8.x installers are supported on:

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- Ubuntu 6.06 and above
- Fedora 6 and above
- openSUSE 10 and above
- SLES 9 and above, CentOS/RHEL 4 and above
- Mac OS X 10.4 and above (Intel and PPC)
- Windows XP and above.

The 9.x installers are supported on:

- Ubuntu 8.04 and above
- Fedora 10 and above
- openSUSE 11 and above
- SLES 11 and above
- CentOS/RHEL 5 and above
- Mac OS X 10.5 and above (Intel 32 and 64 bit)
- Windows XP and above.

Applications Manager uses PostgreSQL's subsystem statistics collector to monitor PostgreSQL server activity. By default, the statistics collector is accessible. If you have problems in adding a new PostgreSQL server, follow the steps given below:

1. Open postgresql.conf under <postgres home>/data
2. Check value of configuration parameter **listen address** it has to be "*", if not change it to "*". Click here for more details on configuring postgresql.conf
3. Open pg_hba.conf under /data
4. Add a new line *host all all 0.0.0.0/0 md5* to allow all machines with proper password authentication to access PostgreSQL DB server. Click here for more details on configuring pg_hba.conf

IBM Informix

JDBC Driver:

To monitor IBM Informix DB, make sure that the **ifxjdbc.jar** file is present in the location:**<ProductHome>workingclasses directory.** The jar file can be copied from the IBM Informix installation location, **<IBM Informix Home>jdbclibjar.** Restart Applications Manager after copying the file.

User Privileges:

To add an Informix DB monitor, a user requires Connect database-level privileges and he should be able to access sysmaster database.

SAP HANA

1. Need to copy **ngdbc.jar** into the location /working/classes. ngdbc.jar can be copied from installed SAP HANA Client folder.
   SAP HANA Client can be downloaded from here.
2. If HANA is running on Cloud Platform, in addition to the above ngdbc.jar, SAP Cloud platform SDK is also needed. Copy the "lib" folder and neo.bat/sh file from SDK_HOME/tools to APM_HOME/working/hanacloud/tools/

3. Restart Applications Manager after performing the above steps.

4. Provide the below privileges for SAP HANA DB User.

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- **System privilege CATALOG READ.**
- **Object privilege SELECT on the schema _SYS_STATISTICS.**

5. To grant the above privileges, execute the below statements in SAP HANA SQL console.(Replace USER_NAME with actual HANA DB Username)
   - GRANT MONITORING to < USER_NAME >
   - CALL GRANT_ACTIVATED_ROLE ('sap.hana.admin.roles:Monitoring','< USER_NAME >')

Oracle Database Servers

A user with CONNECT and SELECT_CATALOG_ROLE roles is required for oracle monitoring in Applications Manager. Configure a user with these permissions and use the credentials in Applications Manager

Prerequisites for monitoring Oracle Alert Log metrics:

Login as SYS user and run the following queries:

- Create or replace view v_$appman_alertlog_ext as select * from x$dbgalertext
- Create or replace public synonym v$appman_alertlog_ext for sys.v_$appman_alertlog_ext
- Grant select on v$appman_alertlog_ext to [USERUSEDFORORACLEDBSERVERMONITOR]

Note: Oracle DB Alert log monitoring is supported for version Oracle 11g and above only

Prerequisites for monitoring Oracle Redo Log metrics

Login as SYS user and run the following queries:

Create or replace view v_$appman_redolog_cp_ext as select * from x$kcccp
Create or replace public synonym v$appman_redolog_cp_ext for sys.v_$appman_redolog_cp_ext
Grant select on v$appman_redolog_cp_ext to [USERUSEDFORORACLEDBSERVERMONITOR]

Create or replace view v_$appman_redolog_le_ext as select * from x$kccle
Create or replace public synonym v$appman_redolog_le_ext for sys.v_$appman_redolog_le_ext
Grant select on v$appman_redolog_le_ext to [USERUSEDFORORACLEDBSERVERMONITOR]

MongoDB Servers

Supported Versions: MongoDB 3.2 and older versions. We support mongod services and mopngos services
To create a MongoDB monitor in Applications Manager, a user should have *read privileges* to all the MongoDB databases

CLOUD APPS

Microsoft Azure

Discovery using Azure Organizational Account (Powershell) – Mode 1

1. Installing AzureRM Powershell module on Applications Manager server:

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Open Powershell prompt with Administrator privileges
Run the following commands,

```
# Install the Azure Resource Manager modules from the PowerShell Gallery
Install-Module AzureRM

# Install the Azure Service Management modules from the PowerShell Gallery
Install-Module Azure
```

In case if you get the following error upon executing the above commands, then install the downloader from http://aka.ms/webpi-azps

Install-Module: The term 'Install-Module' is not recognized as the name of a cmdlet, function, script file or operable program

To check if the modules are installed successfully:
Open Powershell prompt with Administrator privileges. Run the following command,

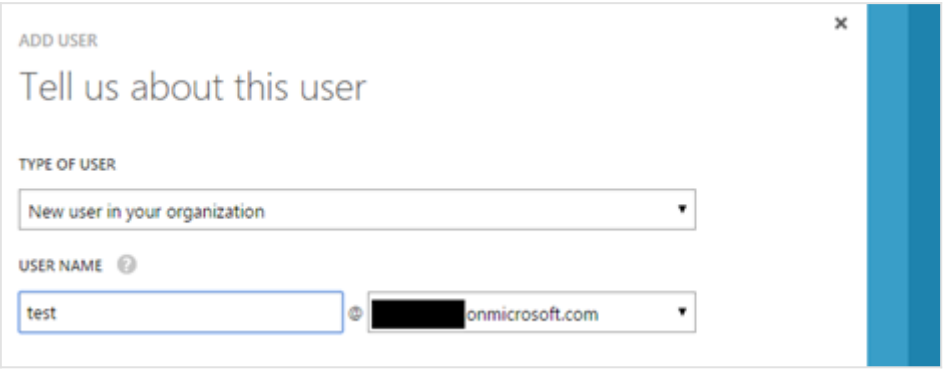
Login-AzureRmAccount

If this opens a pop-up asking for Azure credentials, this means the required modules are installed successfully.

For further troubleshooting regarding installing the module, refer https://docs.microsoft.com/en-us/powershell/azureps-cmdlets-docs/

2. Create a Organizational account using Microsoft azure administrator permissions

- Log in to Azure Portal(https://manage.windowsazure.com) using the credentials of Microsoft account(@outlook.com or @live.com) using which the subscription was created.



- Select Active Directory
- Select the default directory
- Select "Users"
- Select "Add User"
- Make sure to select under "Type of user" : "New user in your organization", Write down the user account name of your user
- Make sure to select "Global admin"
- Note down the Email Id & temporary password of your user (Needed in next step)

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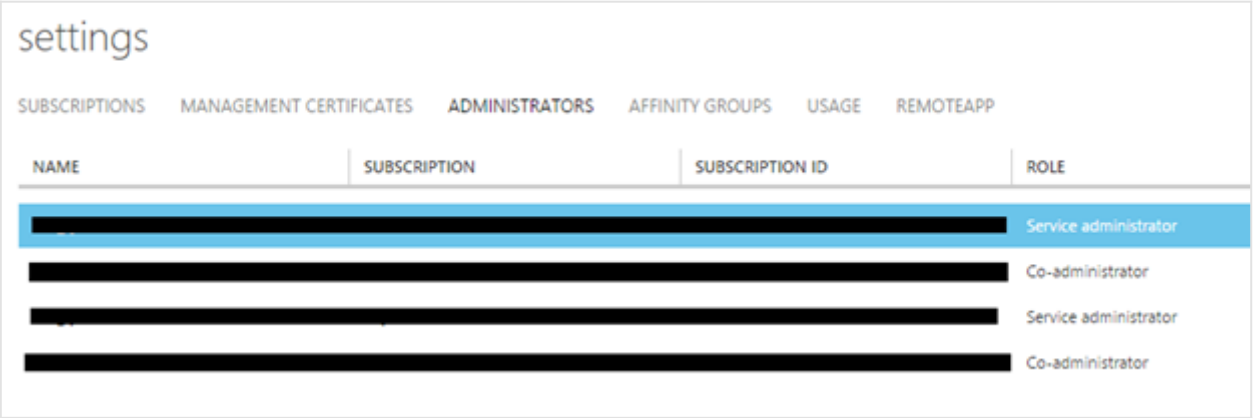
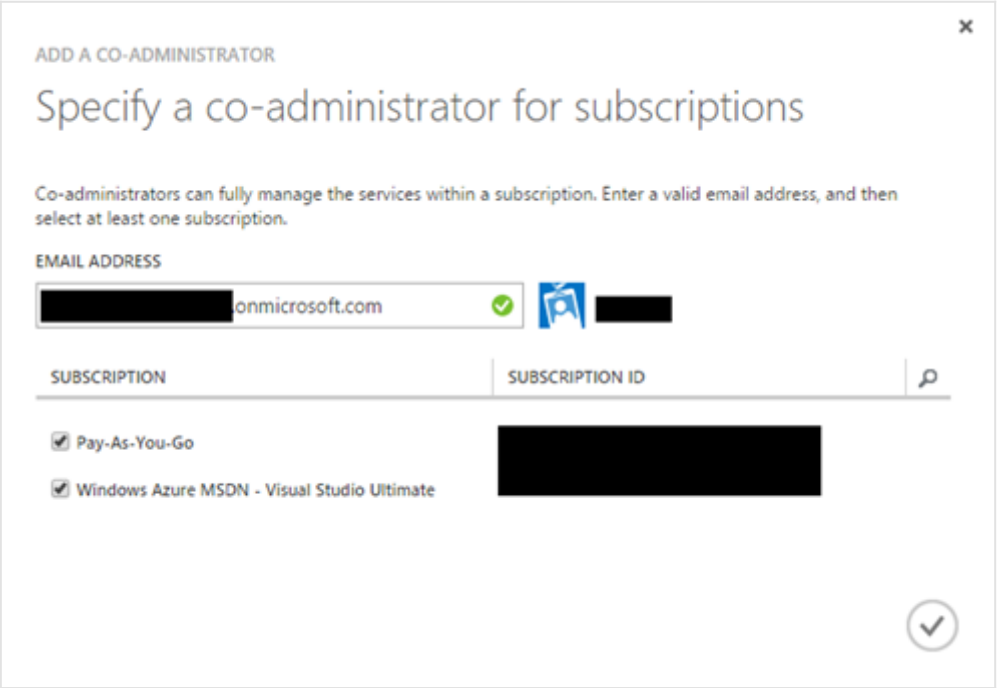
3. Assign the Azure subscription to your organizational account



- Go to “Settings”-Last section of vertical pane
- Select “Administrators” in this overview
- Select “Add” on the menu below and assign the Email address of the newly created organizational account
- Select the subscription that you want to monitor.



- Sign out of the current account.
- Sign in using the newly created Email address and temporary password
- You will be prompted to change the password, when logging in for the first time
- Change and note down the new password

Provide this Email ID to ‘UserEmail’ field and Password to ‘Password’ field in the New monitor page, while using the mode ‘Azure Organizational Account (Powershell)’ of Applications Manager.

Discovery using AD Application & Service Principal – Mode 2

For Microsoft documentation, refer https://docs.microsoft.com/en-us/azure/azure-resource-manager/resource-group-create-service-principal-portal

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1. Create Active Directory Application

- Log in to Azure Portal(https://portal.azure.com) using the credentials of Microsoft account(@outlook.com or @live.com) using which the subscription was created.
- Select 'Azure Active Directory' from the left pane
- Select 'App registrations'
- Select 'Add'
- Provide a name & URL for the application (Sample SignOn URL to use : https://apm-apmtester.msappproxy.net)
- Click **create**.

2. Getting Client ID,Tenant ID & AppKey

- Select 'Azure Active Directory' from the left pane
- Select 'App registrations' → Select your application
- Copy the value given as 'Application ID' . This is your Client ID
- To get AppKey, select 'Keys'
- Give description and duration of the key. When done, give 'Save'
- Store the value of the key that is displayed. This is your AppKey
- Go to 'Azure Active Directory' → Properties
- Copy the value given as 'Directory ID' . This is your Tenant ID

3. Assign a role to the application

- Select 'Subscriptions' from the left pane
- Select 'Access Control('IAM')
- Select 'Add'
- Select the role as 'Owner'
- Search for your application and select it
- Select OK to finish assigning the role

Provide the Client ID, Tenant ID and Appkey in the New monitor page of Applications Manager.

Prerequisites for Enabling Guest OS

Metrics monitored when Guest OS monitoring is enabled

- Disk Utilization
- Disk IO Statistics
- Network Interface

Steps to be done on Applications Manager Server

1. Enabling Powershell Remoting (To collect metrics by remoting into Azure VMs)

Open Powershell prompt with Administrator privileges

Run the following commands,

Set-ExecutionPolicy Unrestricted

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#To configure Windows PowerShell for remoting, type the following command:

Enable-PSRemoting -force

#Configure the TrustedHosts setting so that appmanager can trust the connections from other servers :

Set-Item wsman:localhostclienttrustedhosts *

#To increase the maximum number of concurrent shells that a user can remotely open):

Set-Item WSMan:localhostShellMaxShellsPerUser -value 25 -WarningAction SilentlyContinue

#To set idle timeout value for sessions : Determines how long the session stays open if the remote computer does not receive any communication from the local computer, including the heartbeat signal. When the interval expires, the session closes:

Set-Item WSMan:localhostShellIdleTimeout -value 60000 -WarningAction SilentlyContinue

#Restart the WinRM service for changes to take effect:

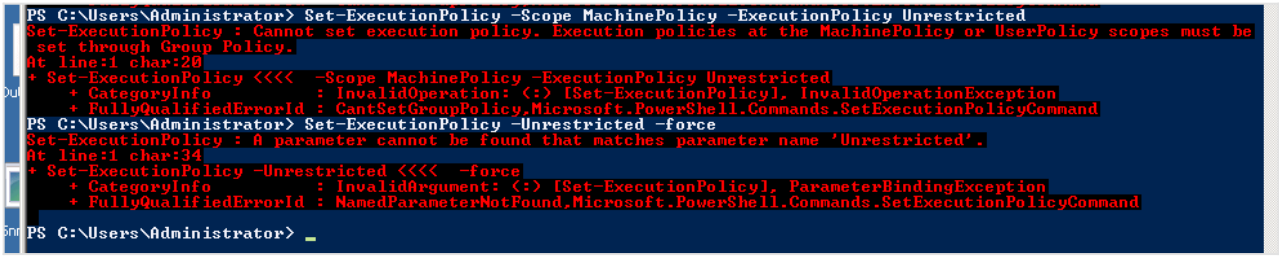
Restart-Service WinRM

2. **Provide outgoing access on all ports for Applications manager server machine**
3. **Run Applications Manager with administrator privilege**
4. **Powershell script execution has to be enabled on Applications manager server**

   Execute the below cmdlet from an administrator powershell window:

   Set-ExecutionPolicy Unrestricted

   If the above cmdlet produces an Error as below, you can configure Powershell Script Execution via Group Policy Editor:



Configure Powershell Script Execution via Group Policy Editor

- Open the Group Policy Editor from Control Panel→ Edit Group Policy (or) run gpedit.msc from Start menu.
- To configure, navigate under Computer Configuration to PoliciesAdministrative TemplatesWindows ComponentsWindows PowerShell.
- You should see a setting called Turn on Script Execution like in the following image:

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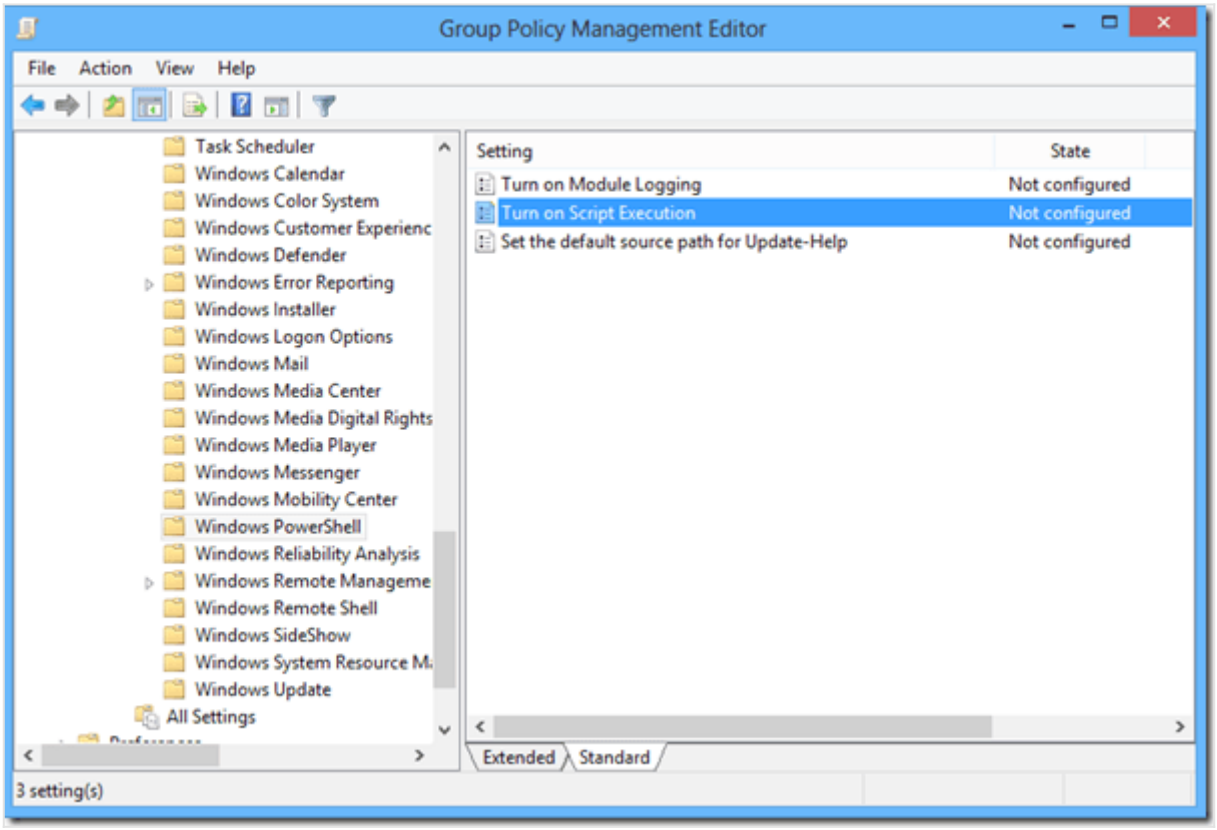

- Double-click the setting. You will want to enable it and select an option from the drop down.

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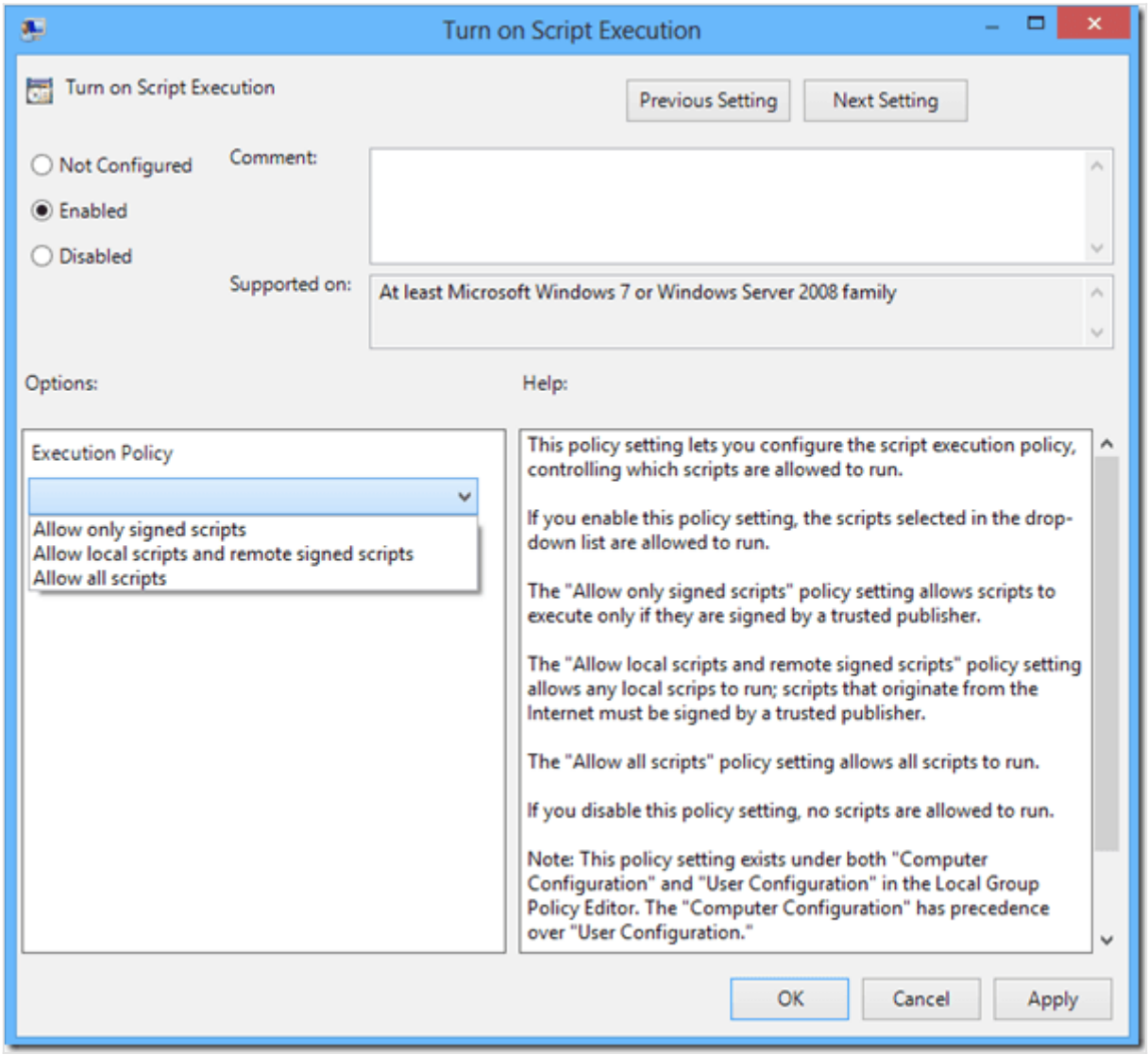

- Set it to “Allow All Scripts”.
- Click Apply and OK.

Prerequisites for adding a Virtual Machine

Microsoft Azure - Enable Diagnostics Extension (Windows & Linux VM)

Steps to Enable Diagnostics Extension for WINDOWS VMs :

- Log in to Azure Portal(https://portal.azure.com) using the credentials of 'Administrator'
- Navigate to your virtual machine
- Click on 'Diagnostics settings' on the vertical pane. Select 'Agent' tab and click on 'Remove' at the bottom, as shown in the below image.

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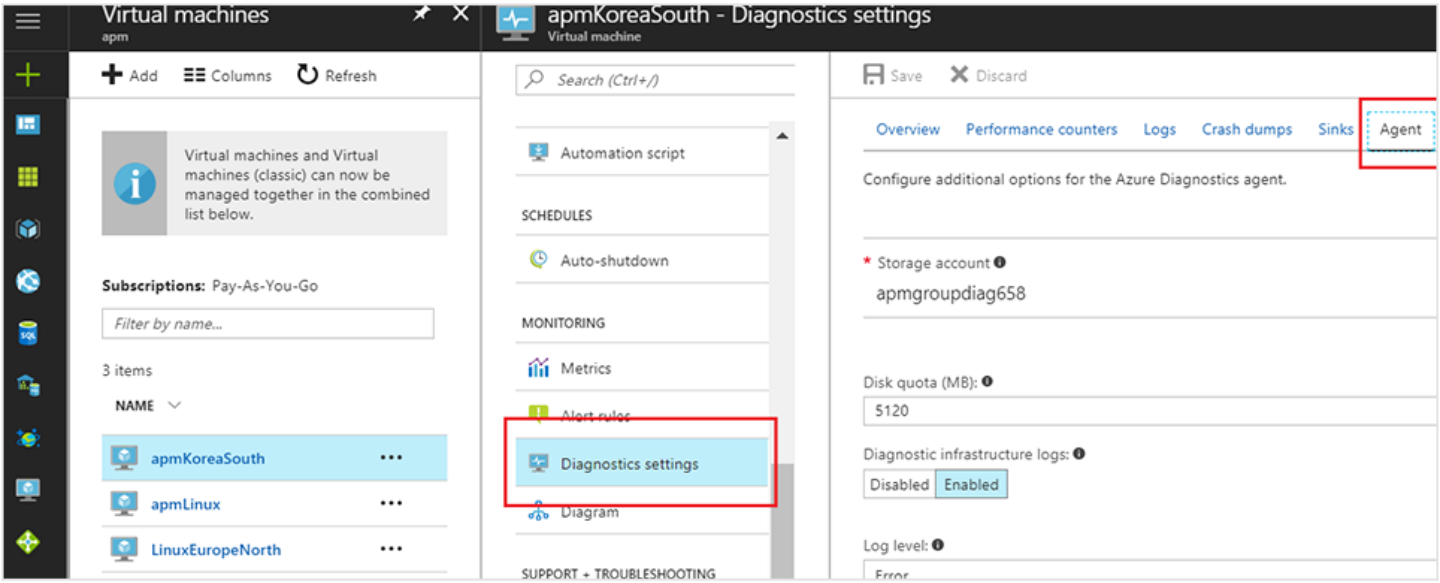
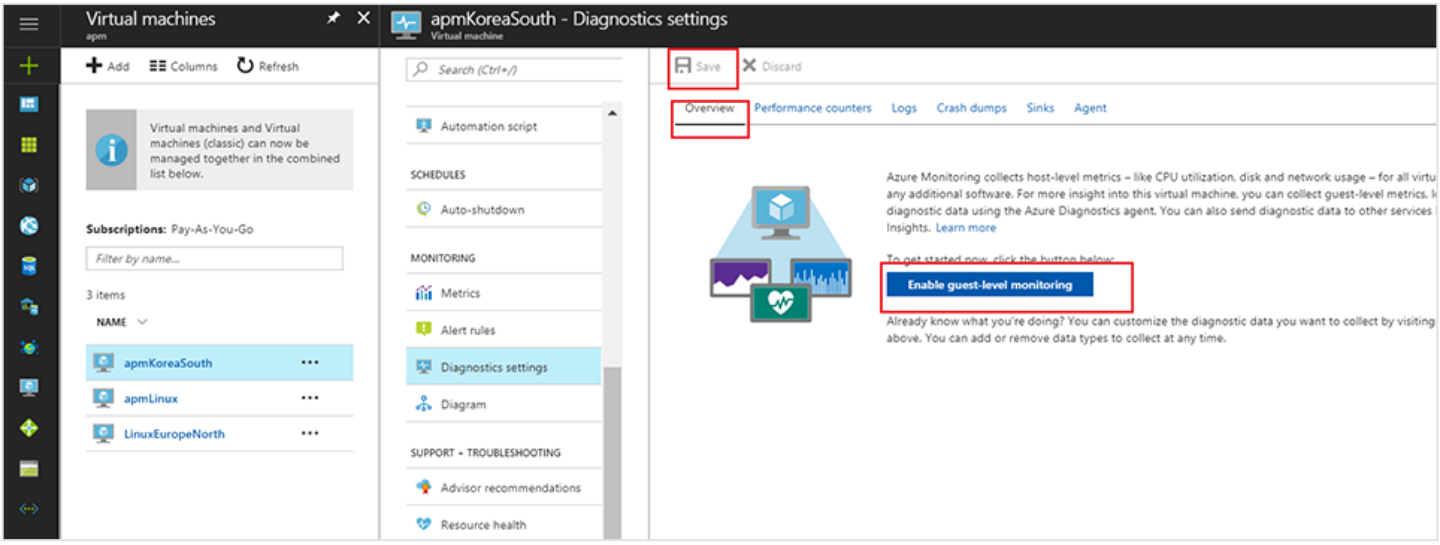


- Under 'Overview' tab, click on 'Enable guest level monitoring' and click Save as shown in the image below.



- Restart the VM

Steps to Enable Diagnostics Extension for LINUX VMs :

- Log in to Azure Portal(https://portal.azure.com) using the credentials of 'Administrator'
- Navigate to your virtual machine
- Click on 'Diagnostics settings' on the vertical pane. Make Status as 'On', Choose a storage account and click 'Save' as shown below.

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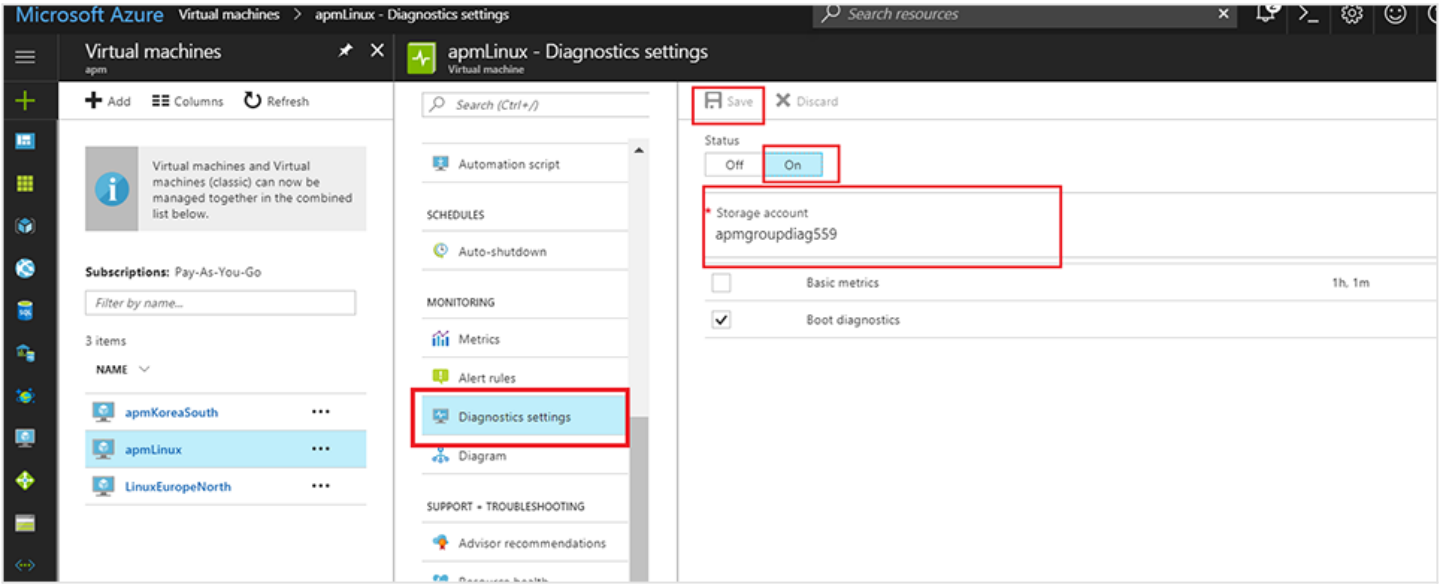

- Restart the VM

GENERAL BEHAVIOUR

- Under the tab 'Disk', below 'Disk spacing' section, the disk size will be shown as 0, if disk size is not configured for the virtual machine in portal.
- To set disk size in portal, refer https://blogs.msdn.microsoft.com/madan/2016/09/28/resize-azure-resource-manager-arm-vm-os-data-disk-using-azure-portal/

NOTE: In case if you change the resource group of any Virtual machine in Azure portal, then provide the updated details (Virtual Machine ResourceID and Resource Group Name) in the Edit monitor page of that Virtual machine in APM for data collection to happen.

Windows Azure Cloud Services (Classic)

- To add Windows Azure in Applications Manager, you must first export file of your Windows Azure Managed Certificates (eg., testcertificate.pfx) and password of the pfx file.
- To monitor Windows Azure in Applications Manager, invoke the batch script **exportCertificateToAppManager.bat** in the **<Applications Manager Home>bin**directory.

Office 365

- The Office 365 work or school account that you use for these procedures needs to be a member of an Office 365 admin role. For more information, see About Office 365 admin roles. The office 365 admin account used for monitoring must be assigned the below roles: *Exchange administrator, SharePoint administrator* or *Skype For Business administrator.*

Limitation: Accounts with multi factor authentication are not yet supported.

- You can use the following 64-bit versions of Windows:
  - Windows 10
  - Windows 8.1 or Windows 8
  - Windows Server 2016
  - Windows Server 2012 R2 or Windows Server 2012
  - Windows Server 2008 R2 SP1*

* You need to install the Microsoft .NET Framework 4.5.*x* and then the Windows Management Framework 4.0. For more

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information, see Installing the .NET Framework and Windows Management Framework 4.0.

You need to use a 64-bit version of Windows because of the requirements for the Skype for Business Online module and one of the Office 365 modules.

- Powershell version 4 or above.
- You need to install the modules that are required for Office 365, SharePoint Online, and Skype for Business Online:
  - Microsoft Online Service Sign-in Assistant for IT Professionals RTW
  - Windows Azure Active Directory Module for Windows PowerShell (64-bit version)
  - SharePoint Online Management Shell
  - Sharepoint Online Client Components SDK
  - Skype for Business Online, Windows PowerShell Module
- Windows PowerShell needs to be configured to run signed scripts for Skype for Business Online, Exchange Online, and the Security & Compliance Center. To do this, run the following command in an elevated Windows PowerShell session (a Windows PowerShell window you open by selecting **Run as administrator**).

```
Set-ExecutionPolicy RemoteSigned
```

ERP

Oracle EBS

Applications Manager uses the Dynamic Monitoring Service (DMS) to monitor performance and availability of Oracle E-Business Suite. You can access performance metrics using servlets from the following URLs for different versions of EBS from Applications Managers:

- **EBS R11** - http://<host>:<port>/dms0/AggreSpy
- **EBS R12.0** - http://<host>:<port>/dms0/Spy
- **EBS R12.2.0** - http://<host>:<port>/dms/Spy

For Oracle E-Business Suite **Version R11i**, the DMS Servlet has to be made accessible to the system where Applications Manager is running. For Versions **R12.0** and **R12.2.0**, the DMS Servlet should be accessible by default. It is recommended that you test to ensure that the Servlet is accessible to the Applications Manager system. [The instructions given below are referred from the Oracle website.]

For Oracle E-Business Suite R11i:

By default, the **dms0/AggreSpy** URL is protected, allowing only the localhost (127.0.0.1) to access the **AggreSpy Servlet**. To view metrics from a system other than the localhost, you need to change the DMS configuration for the system running the Oracle EBS that you want to monitor by modifying the **trusted.conf** file. This can be done as follows:

- Open the **trusted.conf** file under *$ORACLE_HOME/Apache/Apache/conf* on a UNIX system, or*%ORACLE_HOME%ApacheApacheconf* on a Windows system.
- Add the Applications Manager Hostname and IPaddress in the **Allow from** list as shown in the following example:

```
<Location ~ "/(dms0|DMS|Spy|AggreSpy)">
Order deny,allow
Deny from all
```

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Allow from localhost
Allow from <list of TRUSTED IPs>
</Location>

- Now open the **httpd.conf** and **httpd_pls.conf** files and check if the **trusted.conf** file is included. The Files are present under*$ORACLE_HOME/Apache/Apache/conf* on a UNIX system, or *%ORACLE_HOME%ApacheApacheconf* on a Windows system. If the **trusted.conf** file is not included, add the following lines in both the files and save:

  # Include the trusted.conf file
  include $ORACLE_HOME/Apache/Apache/conf/trusted.conf

- Restart Oracle E-Business Suite and ensure that you are able to access the URL **http://<host>:<port>/dms0/AggreSpy** from the Applications Manager system.

For Oracle E-Business Suite R12.0:
Ensure that you are able to access the URL **http://<host>:<port>/dms0/Spy** (Hostname = Hostname with domain name, Port number = OAS listening port) from the Applications Manager system.
For Oracle E-Business Suite R12.2.0:
Ensure that you are able to access the URL **http://<host>:<port>/dms/Spy** (Hostname = Hostname with domain name, Port number = Weblogic Admin Server listening port) from the Applications Manager system. Users must enter the credentials of their Weblogic Admin server in their Oracle E-Business Suite to access the URL.

> **Caution:**
> Modifying trusted.conf has security implications. Modify this file only if you understand the security implications for your site. By exposing metrics to systems other than the localhost, you allow other sites to potentially view critical Oracle EBS Server internal status and runtime information.

SAP Server, SAP CCMS

SAP Server Monitoring and SAP CCMS Monitoring requires SAP JavaConnector (JCo) to be present in Applications Manager's classpath.
For Windows:

- Download and unzip the SAP JavaConnector [SAP JCo 3.0] from here. Depending on the hardware architecture of host machine where Applications Manager is running, make sure you download the respective zip file.
- In the machine, where Applications Manager is running, copy *sapjco3.jar* and *sapjco3.dll* and *sapjco3.pdb* under *AppManager_home/working/lib* directory.
- *Microsoft Visual Studio C/C++ runtime* libraries need to be installed in Applications Manager's host machine. To verify, check for the presence of "Microsoft redistributable runtime DLLs VS2005 SP1" in ControlPanel -> Program and Features. if not, follow the instructions in SAP note 684106 to install the Microsoft Visual Studio 2005 C/C++ runtime libraries in Applications Manager's host machine.
- Restart Applications Manager.

> **Note**
> Do not copy the *sapjco3.dll* neither into the *{windows-dir}system32* nor into the *{windows-dir}SysWOW64* directory. This will break the operability of other JCo versions that are already installed on the same system. Furthermore you would risk that the current installation also would not work anymore, if the *sapjco3.dll* gets replaced in the respective Windows system directory in the future.

For Linux:

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- Download and unzip SAP JavaConnector[SAP JCo 3.0] from here. Depending on the hardware processor of the host machine where Applications Manager is installed. make sure you download the respective zip file.
- In the machine, where Applications Manager is running, copy *sapjco3.jar* and *libsapjco3.so* under *AppManager_home/working/lib* directory.
- Restart Applications Manager.

> **Note**
> The user name provided while adding SAP monitor should have sufficient privileges to access CCMS and Background job metrics. To check this, the user can execute RZ20 transaction in the SAP GUI and see if the CCMS monitor sets can be displayed.

Microsoft Dynamics CRM

To monitor a Microsoft Dynamics CRM application, use Administrator user account which has the permission to excute WMI queries on 'rootCIMV2' namespace of the CRM Server.

Firewall access for monitoring:

Ports required for monitoring via WMI.

- Windows Management Instrumentation (WMI) (default : TCP 445)
- Remote Procedure Call (RPC) (default :TCP 135)
- Target server uses random port above 1024 by default to respond back for remote communication (DCOM) (default : TCP 1025 to 1030)

Servers

Windows

Currently windows hardware performance monitoring is supported in SNMP and WMI monitoring mode:

SNMP Mode of monitoring:

Monitoring Dell hardware status:

- Dell OpenManage Server Administrator and make sure SNMP agent is enabled.
- Installation steps http://www.dell.com/downloads/global/power/ps2q06-20050112-Lou-OE.pdf.

Monitoring HP hardware status:

- HP System Insight Manager (SIM v6.2 or higher is recommended) and make sure SNMP agent is enabled
- Installation steps http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00293378/c00293378.pdf

Determine if SNMP responds for the OID properly. Below are the correct OID'S for each vendor:

- For HP: 1.3.6.1.4.1.232.2.2.2.1.0
- For Dell: 1.3.6.1.4.1.674.10892.1.300.10.1.8.1

WMI mode of monitoring:

The following conditions must be met before you can proceed troubleshooting WMI nodes:

- The node has successfully been added via WMI.
- WMI is working properly on the remote server.
- HP System Insight Manager (SIM v6.2 or higher is recommended) is installed on the remote server and running.
- Dell OpenManage Server Administrator is installed on the remote server and running.

If WMI, Execute the below cmdlet from Powershell prompt with Administrator privileges :

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Set-ExecutionPolicy Unrestricted

This is to allow execution of powershell scripts, which handle proper process termination during Datacollection

For WMI Mode of Monitoring:
In Windows Server 2008 and later versions, and in Windows Vista and later versions, use the following dynamic port range:
Start port: 49152
End port: 65535
If your computer network environment uses only Windows Server 2012, Windows Server 2008 R2, Windows Server 2008, Windows 8, Windows 7, or Windows Vista, you must enable connectivity over the high port range of 49152 through 65535.
Windows 2000, Windows XP, and Windows Server 2003 use the following dynamic port range:
Start port: 1025
End port: 5000
If your computer network environment uses Windows Server 2012, Windows Server 2008 R2, Windows Server 2008, Windows 8, Windows 7, or Windows Vista together with versions of Windows earlier than Windows Server 2008 and Windows Vista, you must enable connectivity over both the following port ranges:
High port range 49152 through 65535
Low port range 1025 through 5000

Services

JMX Applications

To monitor a JMX Applications, the following java runtime options are to be added to your application

- Dcom.sun.management.jmxremote -Dcom.sun.management.jmxremote.port=1099
- Dcom.sun.management.jmxremote.ssl=false -Dcom.sun.management.jmxremote.authenticate=false

Replace 1099 with the actual port number of the agent

Example:

- To enable JMX Applications in JBoss:
  - Edit the run.sh/bat under JBoss home/bin.
    Append the following command to JAVA_OPTS,
    JAVA_OPTS =-Dcom.sun.management.jmxremote -Dcom.sun.management.jmxremote.port=1099 -Dcom.sun.management.jmxremote.ssl=false -Dcom.sun.management.jmxremote.authenticate=false %JAVA_OPTS%
- To enable JMX Applications in JBoss 7 and above:
  - Copy the jboss-client.jar from **<JBoss Home>/bin/client/** and place it under **<Applications Manager Home>/working/classes/jboss/as7** directory.
- To enable JMX Applications in Tomcat:
  - JAVA_OPTS =-Dcom.sun.management.jmxremote -Dcom.sun.management.jmxremote.port=1099 -Dcom.sun.management.jmxremote.ssl=false -Dcom.sun.management.jmxremote.authenticate=false %JAVA_OPTS%
- To enable SSL for JMX applications
  - -Dcom.sun.management.jmxremote.ssl=true
- To enable authentication, use of authentication is recommended. If you do not want to use authentication, you should change the value to false.
  - -Dcom.sun.management.jmxremote.authenticate=true
- If you are using authentication, specify the location of the password file
- -Dcom.sun.management.jmxremote.password.file=c:jmxremote.password
- If you are using authentication, specify the location of the access file
- -Dcom.sun.management.jmxremote.access.file=c:jmxremote.access

Refer Oracle documentation in this regard:

http://docs.oracle.com/javase/1.5.0/docs/guide/management/agent.html#remote

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Note
To know more about monitoring a JMX Application if your application is behind a firewall, check out this blog post. Also please note that the ping/telnet/nslookup should be working for the remote JMX:
telnet hostname port
ping hostname
ping IPAddress
nslookup hostname
nslookup IPAddress

Ceph Storage Monitor

Ceph status command is used to collect performance stats of Ceph Storage Monitor. The user given, should have read privileage to ceph.keyring file. Ensure the ceph.keyring file has appropriate permissions set (e.g., chmod 644) on your client machine.

Hadoop Monitor

1. To monitor Hadoop via REST API:

- No Authentication:
  - URL http://<host>:<port>/jmx should be able to accessed from the Applications Manager machine for both Namenode and Jobtracker/ResourceManager
- Simple Authentication:
  - URL http://<host>:<port>/jmx?user.name=<Hadoop host username> should be able to access from the Applications Manager machine for both Namenode and Jobtracker/ResourceManager

2. To monitor Hadoop via JMX:

- Add the following java runtime options to 'HADOOP_NAMENODE_OPTS'; 'HADOOP_JOBTRACKER_OPTS' in Hadoop-env.sh with unique port.
  - -Dcom.sun.management.jmxremote.authenticate=false -Dcom.sun.management.jmxremote.ssl=false -Dcom.sun.management.jmxremote.port=8004

Apache Zookeeper

Prerequisites for monitoring Apache Zookeeper:

- Remote JMX should be enabled.
- To ensure that please open the ZKServer file under bin folder and check the below following:

  1) JMXPORT =**<PORT NO>**

  2) ZOOMAIN="-Djava.rmi.server.hostname=**<IP address >** -Dcom.sun.management.jmxremote -Dcom.sun.management.jmxremote.port=$JMXPORT -Dcom.sun.management.jmxremote.authenticate=$JMXAUTH -Dcom.sun.management.jmxremote.ssl=$JMXSSL -Dzookeeper.jmx.log4j.disable=$JMXLOG4J org.apache.zookeeper.server.quorum.QuorumPeerMain"

  Note: Replace <PORT NO> with JMXPORT and <IP address > with IP address of the machine.

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Java / Transactions

APM Insight

APM Insight includes a remote monitoring agent which has to be deployed in your application instances. Know more about APM Insight Agent.

Java Runtime Monitor

To monitor a JDK1.5 JVM and above, add the following JVM arguments to your application:

-Dcom.sun.management.jmxremote -Dcom.sun.management.jmxremote.port=1099 -Dcom.sun.management.jmxremote.ssl=false -Dcom.sun.management.jmxremote.authenticate=false

To monitor IBM JDK1.5 JVM and above, add the following JVM arguments to your application:

-Djavax.management.builder.initial= -Dcom.sun.management.jmxremote -Dcom.sun.management.jmxremote.port=1099 -Dcom.sun.management.jmxremote.ssl=false -Dcom.sun.management.jmxremote.authenticate=false

> **Note:** Port number '1099' can be replaced with the actual port number of the JMX agent..

- **To enable Java Runtime Monitor in JBoss:**
  - Edit the *run.sh/bat* under JBoss *home/bin*. Append the following command to JAVA_OPTS
    JAVA_OPTS =-Dcom.sun.management.jmxremote -Dcom.sun.management.jmxremote.port=1099 -Dcom.sun.management.jmxremote.ssl=false -Dcom.sun.management.jmxremote.authenticate=false %JAVA_OPTS%
- **To enable Java Runtime Monitor in JBoss 7 and above:**
  - Copy the jboss-client.jar from **<JBoss Home>/bin/client/** and place it under **<Applications Manager Home>/working/classes/jboss/as7** directory.
- **To enable Java Runtime Monitor in Tomcat do the following.**
  - Edit the ***catalina.sh/bat*** under Tomcat *home/bin*. Append the following command to JAVA_OPTS
    JAVA_OPTS =-Dcom.sun.management.jmxremote -Dcom.sun.management.jmxremote.port=1099 -Dcom.sun.management.jmxremote.ssl=false -Dcom.sun.management.jmxremote.authenticate=false %JAVA_OPTS%
- To enable SSL over JMX, use the following JMX parameters in addition to the above, and restart the server.
  JMX Parameters: -Dcom.sun.management.jmxremote.ssl=true -Djavax.net.ssl.keyStore="E:/APMBuilds/certificates/jmx.keystore" -Djavax.net.ssl.keyStorePassword=password -Djavax.net.ssl.trustStore="E:/APMBuilds/certificates/jmx.truststore" -Djavax.net.ssl.trustStorePassword=password Additionally, import the server certificate to **"<AppManager_Home>workingjrelibsecuritycacerts"** file and restart the server.

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Syntax:keytool -import -alias <certificat_aliasname> -file <target Application server Certificate> -keystore "<AppManager_Home>workingjrelibsecuritycacerts" -storepass changeit -noprompt**Example:** keytool -import -alias jmxcert -file "E:APMBuildscertificatessloverjmx.cer" -keystore "C:Program Files (x86)AppManager12workingjrelibsecuritycacerts" -storepass changeit -noprompt

In the Tomcat Environment:
Make sure the catalina-jmx-remote.jar file is present in the $TOMCAT_HOME/lib location. This jar file can be downloaded for your version of Tomcat from the Apache website from the extras section (sample link: http://archive.apache.org/dist/tomcat/tomcat-7/v7.0.55/bin/extras/catalina-jmx-remote.jar).

Enable JMX in WebLogic

- Open the startWebLogic.bat file in a text editor.
- Find the JAVA_OPTS line and add the following:

```
-Dcom.sun.management.jmxremote
-Dcom.sun.management.jmxremote.port=8888
-Dcom.sun.management.jmxremote.authenticate=false
-Dcom.sun.management.jmxremote.ssl=false
```

- Restart WebLogic.

Mail Servers - Exchange Server

Monitoring of Exchange Server is possible only if Applications Manager is running in a Windows System. Exchange Monitoring supports two **Modes of Monitoring**

- Using **WMI** - if WMI is enabled in the remote machine in which Exchange Server is running and
- Using **Windows PowerShell technology** - To use Powershell for data collection, make sure the proper steps have been followed to enable and use remote commands in Windows PowerShell both in the Applications Manager server and the remote server.

Creating User Accounts, adding users and assigning roles

User Account Used for Monitoring

The User Account used to add the monitor should be a member of **View-Only Organization Management** group. Make sure that the group has the following Roles assigned - Mailbox Search & Monitoring.
For Exchange View-Only Administrators:
This role allows read access only to Exchange organization container and containers with Exchange recipients in AD. They can verify settings, but can not change or add any settings. Only Powershell "Get-<cmdlet>" can be executed.

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Adding Users and Assigning Roles

Adding Users to the View-Only Organization Management group and assigning roles in:

- **Exchange 2010/2013/2016**
  - Open Exchange Mangement Console in the Exchange Server.
  - To check if the user is already under View-Only Organization Management role group: *Get-RoleGroupMember "View-Only Organization Management" | where-object {$_.Name -eq "<Username>"}*
  - If the user is not under the specified role group,execute the below cmdlet to add the user: *Add-RoleGroupMember "View-Only Organization Management" -Member <Username>*
  - Next Add the two roles for View-Only Organization Management role group*New-ManagementRoleAssignment -SecurityGroup "View-Only Organization Management" -Role "Monitoring"*
    New-ManagementRoleAssignment -SecurityGroup "View-Only Organization Management" -Role "Mailbox Search"
- **Exchange 2007:**
  - Open Exchange Management Shell.
  - Execute the following cmdlet: *Add-ExchangeAdministrator –Identity <Username> –Role ViewOnlyAdmin*

Configuring ConnectionURI for Powershell Remoting

The ConnectionURI is used to establish a connection to a remote computer using the URI address of the related HTTP or HTTPS endpoint.These connections are made over TCP port 80 for HTTP and TCP port 443 for HTTPS. By default,the connection URI is of the form*http://<Hostname/IPaddress>/powershell* and uses Kerberos authentication.

- **With Kerberos Authentication:** When the machine running Exchange Server is joined to the same domain as the machine running Applications Manager, either HTTP or HTTPS can be used with Kerberos Authentication.
- **If Kerberos Authentication is not supported** , or the machine is in another domain, the other option is to configure Basic Authentication for powershell virtual directory. To configure basic authentication in **Exchange 2013, 2010 or 2007 using IIS Manager:**
  - Open IIS Manager.
  - In the **Connections** pane, expand **Default Web Site**, and then click **PowerShell**.
  - Click **Authentication** in the results pane and enable **Basic Authentication.**

> **Note**
> If you decide to use Basic Authentication, HTTPS should be used as mode of connection for connectionURI. If the connectionURI should be customized it can be done so by clicking the "Customize ConnectionURI" option in new monitor page. To provide a different port for the connectionUri provide it in the following format: *<https://<hostname>/Powershell:<portnumber> (or) <http://<hostname>/Powershell:<portnumber>*
> For Example : http://win-exchange13/Powershell:4444

Middleware / Portal

IBM WebSphere MQ Monitor

To monitor IBM Websphere MQ Series, the following jar files must be added to the respective locations:

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For IBM Webspher e MQ Series version	Jar files to be added	Location in Websphere MQ	Location in Applications Manager
Version 5.x/6.x	1. com.ibm.mq.jar 2. com.ibm.mq.pcf-6.x.jar 3. connector.jar	Download the supportpac MS0B WebSphere MQ Java classes for PCF, the **com.ibm.mq.pcf-6.1.jar file** for version 6 and older versions. The jar files can be found under **<Websphere MQ Home Directory>Javalib directory.**	Copy the jar files to**<ProductHome> workingjrelibext directory.**
Version 7	1. connector.jar 2. com.ibm.mq.jar 3. com.ibm.mq.pcf.jar 4. com.ibm.mq.jmqi.jar 5. com.ibm.mq.headers.jar 6. com.ibm.mq.commonservices.jar	All the jar files can be found under**<Websphere MQ Home Directory>Javalib directory.**	Copy the jar files to**<ProductHome> workingjrelibext directory.**
Version 8	1. com.ibm.mq.jar 2. com.ibm.mq.pcf.jar 3. com.ibm.mq.jmqi.jar 4. com.ibm.mq.headers.jar and 5. com.ibm.mq.commonservices.jar 6. com.ibm.mq.allclient.jar	All the jar files can be found under**<Websphere MQ Home Directory>Javalib directory.**	Copy the jar files to**<ProductHome> workingjrelibext directory.**

IBM WebSphere Message Broker

To discover Message Broker, the following jars are required:

- **ConfigManagerProxy.jar** located at <Broker Home Directory> classes directory.
- **ibmjsseprovider2.jar** located at <Broker Home Directory>jrelib directory.

Copy the two jar files to <AppManager Installation>workingjrelibext directory.

> **Note**
> Copy these jar files to <JavaHome>jrelibext directory if external JDK is configured for AppManager. Restart Applications Manager and try adding the monitor.

WebLogic Integration Server

Note: WebLogic Integration Server needs some additional configuration and conditions to be followed for monitoring.

- For monitoring **WebLogic Integration Server 8.x**, you should set

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the **weblogic.disableMBeanAuthorization** and**weblogic.management.anonymousAdminLookup** system variable to **true** for enabling data collection.

- Follow the steps given below:
  1. Edit **startWLS.cmdsh** present in the *<WLS_HOME>/server/bin* directory and add the following argument -***Dweblogic.disableMBeanAuthorization***=*true* and -***Dweblogic.management.anonymousAdminLookupEnabled***=*true* (click on the link to view the sample **startWLS.cmdsh file)**
  2. Restart the WebLogic Integration Server for the changes to take effect.
  3. Copy weblogic.jar from folder */weblogic81/server/lib* in Remote WebLogic server version 8 and place it under *<AppManager Home >workingclassesweblogicversion8* folder in the machine where Applications Manager is running.

Microsoft Office SharePoint Server

For SharePoint *Standalone* Server:

WMI Mode:

- WMI access to remote server is required.

PowerShell Mode:

- PowerShell remoting should be enabled. For more information, check enable and use remote commands in Windows PowerShell.

For SharePoint *Farm* Server:

- Enable PowerShell remoting on both, AppManager and Remote Server.

Perform the following steps on the **SharePoint Server(s).**

- In the Server Manager, add the user account used for adding the Sharepoint to the following Groups:
  - Remote Desktop Users
  - WinRMRemoteWMIUsers__
  - WSS_ADMIN_WPG
- Open the Sharepoint Management shell as an administrator and execute the below commands one by one:
  - Enable-PSRemoting -Force
  - Enable-WSManCredSSP –Role Server
  - winrm set winrm/config/winrs '@{MaxShellsPerUser="25"}'
    [This is Optional].
  - winrm set winrm/config/winrs '@{MaxMemoryPerShellMB="600"}'
    [This is Optional].
  - Get-SPShellAdmin
    [This command will return all the users who have the SharePoint_Shell_Access role].
  - Get-SPDatabase | Add-SPShellAdmin DOMAINUserName
    [Replace DomainUsername with the user used to add the SharePoint Server].
  - Get-SPShellAdmin
    [The added user should be listed.]
  - Set-PSSessionConfiguration -Name Microsoft.PowerShell32 –ShowSecurityDescriptorUI**[This command will open up a dialog box. Add the user(s) with Read and Execute permissions then click OK]**.

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- Run the above command again to ensure the permissions were applied correctly.

Perform the following steps on the **Applications Manager Server**.

- Open Windows PowerShell as Administrator.
- Execute the below commands in the Administrator PowerShell:
  - Enable-WSManCredSSP -Role client -DelegateComputer “SharePointServerName”**[Replace SharePointServerName with the FQDN of the SharePoint server].**
  - $cred=get-Credential
  - $s=new-PSsession “SharePointServerName” -authentication credssp -credential $cred**[Replace SharePointServerName with the FQDN of the SharePoint server].**
  - Invoke-Command -Session $s -ScriptBlock {Add-PSSnapin Microsoft.SharePoint.PowerShell;}
  - Invoke-Command -Session $s -ScriptBlock {get-SPContentDatabase}**[This will return all the content databases in your SharePoint farm and ensure you have access].**
  - Invoke-Command -Session $s -ScriptBlock {get-spserviceinstance}**[This will return the SharePoint service instances and ensure you have access].**
  - Enter-PSSession -session $s**[You will now see the servers name in [ ] PS: c:users\documents].**
  - Exit-PSSession

If there are any errors related to permissions issue while executing the above commands, resolve the same.
For any issues related to Add-SPShellAdmin, check the following link :
https://technet.microsoft.com/en-us/library/ff607596.aspx

Microsoft BizTalk Monitoring

To monitor a Microsoft BizTalk Server, the user must have **Administrator** privileges. To use Powershell for data collection, make sure the proper steps have been followed to enable powershell remoting.

Azure Service Bus

To add an Azure Service Bus Namespace in Applications Manager, a **.pfx** file (which contains the cryptographic information of private keys) of the certificate uploaded in Azure Management certificates is required.
In the console, execute the script <APM_HOME>/bin/exportCertificateToAppManager.sh/bat file to export the managed certificate of your account to Applications Manager.
To know more about creating certificates and uploading in Windows Azure portal, Click here.
Example:
<APM_HOME>/bin/exportCertificateToAppManager.bat [testCertificate.pfx] [password]

Apache ActiveMQ

Using JMX to monitor Apache ActiveMQ

Apache ActiveMQ has extensive support for JMX to allow you to monitor and control the behavior of the broker via the JMX MBeans.
You can enable/disable JMX support as follows:

- Run a broker setting the broker property useJmx to true (enabled by default) i.e.

  For xbean configuration:

```
<broker useJmx="true" brokerName="BROKER1">
...
```

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```
</broker>
```

- Run a JMX console

```
$ jconsole
```

- The ActiveMQ broker should appear in the list of local connections, if you are running JConsole on the same host as ActiveMQ.

Virtualization

VMware Horizon View Connection Broker

Prerequisite for adding the Connection Broker monitor in the Applications Manager host:
VMware Horizon View Connection Broker monitor uses Windows PowerShell technology. Follow these steps to enable Windows PowerShell Remoting in the Applications Manager server and the remotely monitored Horizon View server:

- Enable and Use Remote Commands in Windows PowerShell
- Horizon View's Domain Server and its components should be accessible (able to ping) from the Applications Manager server.

Enable and Use Remote Commands in Windows PowerShell in Applications Manager server and remote server:
For using PowerShell in Applications Manager, you need Windows Management Framework (Windows PowerShell 2.0 and WinRM 2.0) on both Applications Manager server and the remote Windows server. For more details refer http://support.microsoft.com/kb/968929. Also ensure that Windows PowerShell is enabled in both servers (Open **Control Panel**. Select **Programs and Features**. In the Tasks list, click **Turn Windows features on or off**. When the Server Manager console opens, check if **Windows PowerShell** is enabled)
You can verify the availability of Windows Remote Management (WinRM) service and configure PowerShell for remoting by following these steps:

- Start Windows PowerShell as an administrator by right-clicking the Windows PowerShell shortcut and selecting Run As Administrator.
- To configure Windows PowerShell for remoting, type the following command:
  Enable-PSRemoting –force
- Configure the TrustedHosts setting on both computers, so that computers will trust each other:**On Remote Monitored Server:**
  Set-Item wsman:localhostclienttrustedhosts <Applications Manager hostname> **On Applications Manager Sever:**
  Set-Item wsman:localhostclienttrustedhosts *
- On both computers, restart the Windows Remote Management (WinRM) so the new settings will take effect:
  Restart-Service WinRM

You can test the configuration and connection from Applications Manager using the **Test-WSMan -ComputerName *<remote server>*** command. This command tests whether the WinRM service is running on the remote computer and if Applications Manager can communicate with the remote server.

Docker

Docker and Docker Container metrics are collected via their REST API, so Docker's REST API should be enabled to

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add a Docker Monitor.

To enable remote API:

1. Open etcdefaultdocker file

2. Add the below option

```
DOCKER OPTS='-H tcp://0.0.0.0:4243-H=unix:///var/run/docker.sock'
```

3. Save the file.

4. Restart Docker.

Web Server / Services

PHP

Place the phpstats.php file in the webserver's document root. The phpstats.php can be found in *<Applications Manager Home>/working/resources*directory.

Apache

Enabling the Server status and the Extended-status will give additional information for the Apache server.

To enable the Server Status, follow the steps given below:

- In Apache's httpd.conf file, locate "Location /server-status" tag.
- Remove the comment in the Location/Server-status tag, to Enable SetHandler server-status.
- Change the attribute "deny from all" to "Allow from all".
- Remove the comment in "LoadModule status_module modules/mod_status.so".
- Save the conf file and restart the Apache Server.

To enable the Extended-status, follow the steps given below:

- Locate "ExtendedStatus" Attribute in httpd.conf file.

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- Remove the comment to enable the status.
- Save the conf file and restart the Apache Server.

Nginx

To Enable the Nginx Server Status, follow the steps given below:

- Configure the location /server_status method in *<NGINX_HOME>/conf/nginx.conf* file, to enable *server_status*.
- The value of stub_status attribute should be "on".
- Change the attribute "deny all" to "Allow all".
- Save the conf file and restart the Nginx Server.

Real Browser Monitoring (RBM)

RBM requires network connectivity between the RBM agent and the Applications Manager server. This network connectivity can be ensured with the help of the VPN or NAT or by assigning an direct IP Address to the Applications Manager server. In the case where an agent is deployed within the local network and another one in a remote site, a dual NIC or any one of the above means would be required to ensure this connectivity.

For any further support please contact appmanager-support@manageengine.com. You can visit Troubleshooting details.

ManageEngine ADManager Plus

Mode of Monitoring: Remote JMX

Prerequisites for monitoring ManageEngine ADManager Plus:

1. Add below entries in wrapper.conf /run.bat:

D:ManageEngine ProductsADManager Plusconfwrapper.conf

or

D:ManageEngine ProductsADManager Plusbinrun.bat

Enable Remote JMX

wrapper.java.additional.16=-Dcom.sun.management.jmxremote

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wrapper.java.additional.17=-Dcom.sun.management.jmxremote.port=1999

wrapper.java.additional.18=-Dcom.sun.management.jmxremote.ssl=false

wrapper.java.additional.19=-Dcom.sun.management.jmxremote.authenticate=false

2. **To monitor PGSQL DB,do the following changes:**

- D:ManageEngine ProductsADManager Plus pgsqldatapostgresql.conf

  Uncomment and update ip address: listen_addresses = '172.22.168.171'

- D:ManageEngine ProductsADManager Plus pgsqldatapg_hba.conf

  # IPv4 local connections:

  #host all all 127.0.0.1/32 trust

  host all all 0.0.0.0/0 trust

- D:ManageEngine ProductsADManager Plusconfdatabase_params.conf

  Update the hostname/ipadress instead of localhost .

For PGSQL/MSSQL database, Statistics will be collected by connecting to the database.

ManageEngine ServiceDesk Plus

Prerequisites:

To monitor PGSQL DB , do the following changes :

- C:ManageEngineServiceDeskpgsqldatapostgresql.conf

  Uncomment and update ip address : listen_addresses = '172.22.168.171'

- C:ManageEngineServiceDeskpgsqldatapg_hba.conf

  # IPv4 local connections:

  #host all all 127.0.0.1/32 trust

  host all all 0.0.0.0/0 trust

- Update the hostname/ipadress instead of localhost in <SDP_HOME>ServiceDeskserverdefaultdeploypostgres-ds.xml file.

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ManageEngine OpManager

Mode of Monitoring: Remote JMX

For PGSQL DB, statistics will be collected by connecting to the database.

Prerequisites for monitoring ManageEngine OpManager:

To monitor ME OpManager, the following java runtime entries must be added in **C:ManageEngineOpManagerconfwrapper.conf**:

Enable Remote JMX

wrapper.java.additional.16=-Dcom.sun.management.jmxremote

wrapper.java.additional.17=-Dcom.sun.management.jmxremote.port=1999

wrapper.java.additional.18=-Dcom.sun.management.jmxremote.ssl=false

wrapper.java.additional.19=-Dcom.sun.management.jmxremote.authenticate=false

(replace 1099 with the actual port number of the agent)

If you face problems when adding a new PgSQL server, follow these steps:

- Open postgresql.conf under <postgres home>/data
- Check the value of the configuration parameter **listen address.** It should be "*". Click here for more details on configuring postgresql.conf
- open pg_hba.conf under <postgres home>/data
- Add a new line host all all *0.0.0.0/0 md5* to allow all the machines with proper password authentication to acces PostgreSQL database server. Click here for more details on configuring pg_hba.conf.
- Open C:ManageEngineOpManagerconfdatabase_params.conf.
- Update the hostname/ipadress instead of localhost .

1. Add below entries in wrapper.conf /run.bat

C:ManageEngineOpManagerconfwrapper.conf .

Or

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C:ManageEngineOpManagerbinrun.bat

Enable Remote JMX

wrapper.java.additional.16=-Dcom.sun.management.jmxremote

wrapper.java.additional.17=-Dcom.sun.management.jmxremote.port=1999

wrapper.java.additional.18=-Dcom.sun.management.jmxremote.ssl=false

wrapper.java.additional.19=-Dcom.sun.management.jmxremote.authenticate=false

2. To monitor PGSQL DB,do the following changes:

- C:ManageEngineOpManagerpgsqldatapostgresql.conf

  Uncomment and update ip address : listen_addresses = '172.22.168.171'

- C:ManageEngineOpManagerpgsqldatapg_hba.conf

  # IPv4 local connections:

  #host all all 127.0.0.1/32 trust

  host all all 0.0.0.0/0 trust

- C:ManageEngineOpManagerconfdatabase_params.conf

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Understanding Applications Manager

Applications Manager is a web-based monitoring tool that manages the performance of applications, servers, databases, systems, services, websites, and JMX/SNMP-based custom applications in a complex IT infrastructure. You can find seven module tabs at the top which are explained as follows:

Intro	Introduction Page of Applications Manager. It gives an overview of the working of Applications Manager.
Home	Has four views: *Summary*, *Business View, Availability and Performance* **Summary**: Has a dashboard that shows the health and availability of all the Monitor Groups in a snapshot . Lists all the Monitor Groups created and their details and graphical representation of the Monitor Group with most critical alarms. Recent 5 alarms can be also be viewed. **Business View:** The business view provides you a graphical snapshot of the entire business infrastructure which is being monitored. This view displays the various Monitors associated to Monitor Groups along with its health and availability. **Availability:** Gives the Availability history of the Monitors/ Monitor Groups in a snapshot. You can get the data for either the last 24 hours or the last 30 days. **Performance:** Gives the Health history and events of Monitor/Monitor Groups in a dashboard. You can get the data for either the last 24 hours or the last 30 days (excluding today). **Custom Dashboards**: Apart from the already available dashboards, you can create your own custom dashboards by using different widgets.
Monitors	Lists all the Monitor Types supported and provides the number of Monitor being discovered in the network. You can also click on the Monitor Types to view information of their Monitors. On clicking the Monitor Types, you can view the *Availability Dashboard*, *Performance Dashboard* and the *List View* that shows the performance attributes of the Monitor in detail.
Alarms	Lists the alarms generated by the Monitor and their attributes, based on predefined thresholds. The view is customizable such that you can view alarms for all or for particular application or Monitor Type, list 10/25/50/75/100/125 entries in a single view, etc.
Reports	Lists the Monitor Groups and the different Monitor Types for which the reports are generated. Reports can be viewed based on attributes listed for the corresponding Monitor Type.
Support	Provides information on getting assistance from the Applications Manager Technical center. It also provides monitoring information on Applications Manager which monitors itself.
Admin	Lists the admin operations such as creating new application, new Monitor, etc. to be performed for monitoring.

The left frame consists of links for easy navigation and the top frame consists of links such as Talk back, Help, Personalize etc. common in all the screens. To know more details on these links and icon representation, refer to the Web Client section. The various tables in the web client can be dragged and arranged as per your requirement

Note: Have a look at Getting Started - How to Demos from Website.

Monitor Views

Under Monitor tab, you can see all the monitors listed down in the **Select View** drop-down menu in the right-hand corner. There are eight different views:

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- Bulk Configuration View
- Category View
- Plasma View
- Monitor Group View
- World Map View
- Icon View
- Table View
- Business View

Bulk Configuration View	Lists all the details of the monitors that are monitored. From this view you can carry out bulk admin operations like updating user name and passwords across monitors. Refer Bulk Configuration for further details.
Category View	Lists the monitors according to the various categories like Applications Servers, Database Servers etc.
Business View	In this view, the Monitors will be arranged in an default order.You can re-arrange the Monitors and click on the floppy disk icon to save the view. You can also zoom in and out of the view, and save the zoom level which is optimal for your viewing. Business View has the following properties.You can edit the view by clicking on **Settings** icon and selecting the **Edit View** from the menu to open a **Customizable Business View** page: **View Properties** • **Update Monitor** - This setting allows you to refresh the status of the Monitors and Monitor Groups automatically by fixing some limited time (in minutes). • **Reload Interval** - This setting is similar to Update Monitor except that it will reload the entire view after the given time. The recommended interval would be 15 minutes. • Check the **Show Label for Monitors** checkbox to show the labels for various monitors. • **Associated Monitor Groups** - This setting allows you to add various Monitor Groups to your view. This is only available for the "**Customizable Business View".** • Under **View Properties**, by selecting **Show only Monitor Groups and Sub Groups** allows you to include the Monitor Groups and Sub Groups in the selected view. • By selecting **Show only Critical Monitors** you can show only critical Sub Groups and Monitors inside the selected view. • By selecting **Show only Monitor Groups Status** you can show the status of top level Monitor Groups (that are selected via Associated Monitor Groups) in the selected view. • You can also select the **View Type** as HTML or Flash. The option is set to HTML by default. You can create multiple views for a Monitor Group. Click on the **Settings** icon in the business view and select **Create New View**. By providing various details like Update Monitor time interval, Reload interval, opting to select Monitor and Monitor Groups and Sub Groups you can create a custom view. In addition, you can also edit its apperance of the view . Go to the **Display Properties** tab and provide the following details: 1. Background color 2. Line Color 3. Label Color 4. Line Thickness 5. Line Transperancy **Publishing the View:** Applications Manager allows you to embed these Business View in intranet/internet portals by selecting the menu option '*Publish The View*' from **Settings** and copy the *iframe* details and pasting it in the webpages.

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World Map View	Applications Manager, integrated with online map services, provides network traffic information at a geographical dimension. By using online map API features, Applications manager provides different levels of abstraction in the network data visualization.Refer to World Map View for further details.
Icon View	Lists all the monitors using icons, shows the host and the monitors assosciated with it symbolically
Table View	Lists the monitors within the host in a tabular format.
Plasma View	The plasma view enables you to have a snapshot of what is happening with the monitors, at one glance. The view can be put up on a plasma screen, and you can have a look even when you are not in front of the monitor. The 'Customize View' option available in the top right hand corner, gives you the option to customize the layout. By checking the option “Play sound alarm for critical events”, you can get notified/ warned of the critical events by sound alarms.
Monitor Group View	Lists all Monitor Groups and the Sub-Groups available. You can associate Monitors, Copy Paste Monitor, configure alarms through this Monitor Group View itself. (as like Bulk Config view). In addition, you can enable or disable actions via this view itself, i.e, even if you have already configured actions like sending EMail, through 'disable action' you can prevent EMail action.

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Working with Applications Manager

The following are the steps involved in monitoring:

1. Create a new Monitor Group: Create a new Monitor Group by grouping one or more Monitors.
2. Create new Monitor: Discover Monitors in the network and start collecting data (performance metrics, availability etc) for the same.
3. Create new Monitor Type: Create new monitor type for monitoring custom applications.
4. Associate Monitor with Monitor Group: Add the discovered monitors to the Monitor Group.
5. Create threshold profile: Create thresholds to identify the status of a specific attribute.
6. Create actions: Specify what action needs to be taken in the event of an alarm.
7. Associate threshold and action with the attributes: Associate the thresholds and action to generate alarms and perform action based on the threshold definition.
8. Configuring dependencies: Dependencies specify the rule based on which the severity of health and availability is determined. For example, Health of a Tomcat Server may depend on the overall response time of the server or on the response time of each of the web applications deployed on the server etc. By configuring dependencies, you can determine the attribute, based on which the severity of health changes.

Note: Have a look at Working with Applications Manager - How to Demos from the website.

Please go through Working with Monitor Group and Configuring Alarms for detailed information on the above.

See Also

Best Practices Guide

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Working with Monitor Groups

Monitor Groups are a logical group of one or more Monitors that provides a holistic view of your business environment.

For example, the health of an online Web application depends on various factors, such as the health of the application server hosting the Web application, the availability of the Web server for accessing the Web applications, the database server for storing or getting the required information, etc. These web applications and services can be grouped together and monitored as a **single Monitor Group**.

	Troubleshoot: For any monitoring-related troubleshooting, refer to the online Troubleshooting section.

The following sections are the steps involved to work with a Monitor Group:

- Creating Monitor Groups
- Creating Web Application Groups
- Creating New Monitor
- Associating Monitors to Monitor Groups
- Deleting Monitor from Monitor Groups
- Editing and Deleting a Monitor Group

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Associating Monitors to Monitor Groups

To associate a Monitor/ Process/ Service / Database to a Monitor Group, follow the steps given below:

1. Click on the Monitor Group (from Home tab).
2. Under Monitor Group Information, click Associate Monitors link. Alternatively, select the Monitor Type by moving the mouse over the **Associate Monitor** of Monitor Group Links in the left frame.
3. A list of discovered **Monitors/ Processes/ Services / Databases** that are available for associating and those that have already been associated with that Monitor Group is displayed. **Note:** The status of Monitor Group would remain unknown, until you associate at least one monitor to it.
4. Select the check box of the corresponding Monitor from Monitors not present in this Monitor Group list and click Add. You can also remove a Monitor which has already been associated with the Monitor Group by selecting the check box of Monitor(s) under Monitors present in this Monitor Group and clicking Remove.

Note:

- In order to add **Processes, Services & Databases** to Monitor Groups, the **'Associate Process, Service and Databases to Monitor Group'** option has to be enabled from **Admin tab> Performance Polling> Servers**, prior to performing the action. On disabling this option, the Processes/ Services associated previously can only be removed manually from the Monitor Group..
- When a Process, Service or Database is down, the RCA for the Monitor Group will display the Process/ Service/Database name along with the Server Display name. The following is a sample RCA for the Monitor Group when the Process w3wp.exe from the server with display name appvm-win7-64 is associated.

Limitations:

- Dashboards and Reports are currently not supported when Processes/ Services/Databases are associated to Monitor Groups.
- By default, Services do not have the Health attribute. It will not be displayed when viewed from Monitor Group or Web App Group.

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Creating Monitor Groups

This section explains how you can create a new Monitor Group. A monitor Group is particularly useful for grouping the resources of a location say the resources available in sales office or for grouping the resources used by a business application.

Applications Manager provides two types of monitor groups - Monitor Group and Web Application Group. The steps to create a Monitor group are explained below. To create a web application group, refer this link.

To create a new Monitor Group, follow the steps given below:

1. Click New Monitor Group.
2. Provide a Name for the Monitor Group. This is mandatory and only alphanumeric characters, dashes (-), underscores (_), periods (.), and spaces ( ) are allowed.
3. Provide any Description, if required.
4. Under Advanced Options, Select the Owner from the list of users created. Refer User Administration topic for more information on the different roles of users.

   Note:

   Operator if associated as an owner will have Read Only Access to that particular Monitor Group alone.

   Admin user is a super user and will be able to see all Monitor Groups.

   Manager if associated will be able to view this Monitor Group in Manager Console. Using this option, Restricted Monitor Groups alone can be shown in Manager Console. [By default, if the Manager is not explicitly associated to a Monitor Group, the Manager will be able to access all the Monitor Groups in the Manager Console]
5. Select the **location** for associating the monitor group to World Map Business View. Else by clicking on 'Add Location', world map opens up. Here you can add and select custom locations.
6. Click Finish to create the Monitor Group and to add Monitors later.

How To Demos: Have a look at our demo on creating Monitor Group in our website.

Creating a Sub-Group within a Monitor Group

By using this option, you can create a Monitor Sub-Group within a Monitor Group (a Monitor Group within a Monitor Group). Sub-Groups help better organization of your resources. With Sub-Groups, you can capture advanced dependencies in your

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infrastructure. You can group clustered databases or servers and create complex groups. For eg., A huge banking application Monitor Group may contain 100 monitors (application servers, systems, databases, URLs, etc.,). All the database monitors can be grouped under a Sub-Group for effective monitoring.

To create a sub group,

- Inside the Monitor Group Details page, click on the **Monitor Group Actions** button in the top right-hand corner.
- Click the New Sub-Group option under **Monitor Group Actions**.
- Give the Sub-Group name and the description.
- Set a group type and the location of the group. (optional)
- Click on **'Create Sub-Group'.**
- Then you can associate the desired monitors to the Sub-Group.

Note: You can create up to six levels of sub-groups in a Monitor Group, by default.

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Creating New Web Application Group

A web application group provides a template for grouping web infrastructure into logical components. So, instead of manually grouping your web infrastructure, you can use the web application group to categorize your infrastructure into servers, databases, web servers, etc.

Once you create a web application group, you can view the health of the sub groups and know how each individual sub group is performing. If there is a problem in the web application group, you can drill down and identify which component is having a problem.The details page shows the health of all the tiers as components giving you a better perspective of the Application's Performance and Availability. You can also configure dependencies and powerful alarm rules for intelligent alert correlation.

To create a new web application group, follow the steps given below:

1. Click New Monitor Group and select **Web Application Group** from the drop-down menu.
2. Provide a Name for the Monitor Group. This is mandatory and only alphanumeric characters, dashes (-), underscores (_), periods (.), and spaces ( ) are allowed.
3. Provide a Description, if required.
4. Select the Owner from the list of users displayed. Refer User Administration topic for more information on the different roles of users.

   Note:
   Operator if associated as an owner will have Read Only Access to that particular Monitor Group alone.
   Admin user is a super user and will be able to see all Monitor Groups.
   Manager if associated will be able to view this Monitor Group in Manager Console. Using this option, Restricted Monitor Groups alone can be shown in Manager Console. [By default, if the Manager is not explicitly associated to a Monitor Group, the Manager will be able to access all the Monitor Groups in the Manager Console]
5. Select **Web Application Group** as the group type.
6. Select the **Application Components** from the options displayed. The components available are End User Transaction (URL) group, Network devices group, Edge Devices group, Web Server Group, Application Server Group, Database Group and Server Group. The components that you select will be automatically added as sub groups within the web application group.
7. Select the **Location** for associating the monitor group to World Map Business View under *Advanced* section. Otherwise, click the 'Add Location' link and select custom locations from the google map that opens up.
8. Click Create Monitor Group button to create the Web Application Group. You can add monitors any time using the *Associate Monitors* option.

Note: You can convert a web application group to a monitor group or vice versa by changing the **Group Type**. Click **Monitor Group Options** link from the web application group page and select the **Edit** option. This will take you to the *Modify Monitor Group* section. You can modify the Group Type values from this screen.

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Creating a Sub-Group within a Web Application Group

If you have selected 'Application Components' while creating the web application group, the sub groups will be automatically created based on the options you have selected. You can also add sub groups later on by following the steps given below.

- Click the **Monitor Group Actions->New Sub-Group** option inside the Web Application Group Details page.
- Provide the *Sub-Group Name*, *Description* and select the *Owner* from the list of users.
- Select the *Group Type* from the dropdown box.
- Select the *Location* for associating the sub group to from the drop-down box. You can also use the 'Add Location' option to specify custom locations from google map.
- Click the *Create Sub-Group* button to create the sub group.
- You can then associate the desired monitors to the Sub-Group.

Note: You can create up to six levels of sub groups for a web application group, by default.

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Deleting Monitor from Monitor Groups

To delete a Monitor from a Monitor Group,

1. Click the Home module tab to display the list of Monitor Groups created.
2. Click the Monitor Group from which the Monitor has to be deleted.
3. Data of all Monitors in that Monitor Group is displayed graphically. Click Remove from Group.

This deletes the Monitor only from the Monitor Group but its monitoring will not stop.

Deleting Monitor from Applications Manager

To delete a Monitor from getting monitored by Applications Manager itself, follow the given steps:

1. Click the Monitor module tab.
2. From Select View combo box, select Monitors View - All. All the Monitor Types are listed.
3. Select the check box of the Monitor and click Delete.

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Editing and Deleting a Monitor Group

To edit a Monitor Group,

1. Click the Home module tab to display the list of Monitor Groups created.
2. Click the Monitor Group to be edited.
3. On the Left-side Monitor Group Links, click Edit. .

By editing the monitor group, you can change the Name, Description, Owners and the Country (location) associated.

To delete a Monitor Group,

1. Click the Home module tab to display the list of Monitor Groups created.
2. Click the Monitor Group to be deleted.
3. On the Left-side Monitor Group Links, click Delete.

Note: In simple layout, the left side links will not be persent. In this case, move to *Monitors* tab, from Select View drop down box, select *Monitor Group* view. Select the Monitor Groups you want to delete, then select the *Delete* action from the dropdown.

Note: However, the Monitor pertaining to the corresponding Monitor Group will not be deleted. You will still be able to view the details of the Monitor that was associated with the Monitor Group. To delete the Monitor, refer to the Deleting Monitor from Applications Manager section

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VMware Virtual Infrastructure Groups

Applications Manager can discover your entire VMware virtual infrastructure through the vCenter server and provide dependency mapping of its components. The 'VMware Virtual Infrastructure Group' allows you to quickly discover all your virtual resources and model them the same way they are configured in the vCenter server. The VMware infrastructure will be automatically categorized into components such as Datacenter, Cluster, ESX/ESXi hosts, VMs, etc. Once you discover the virtual infrastructure, you can easily track the availability, health and performance metrics of its various components.

The VMware virtual infrastructure group is different from monitor groups due to the fact that you have to manually map all the resources to a monitor group. In the VMware virtual infrastructure group, the virtual resources in your network are automatically discovered through the vCenter server and the components mapped accordingly. When combined with the out-of-the-box support for 50+ applications, servers, databases, and transactions spanning physical, virtual and cloud infrastructures along with auto-provisioning of virtual systems, the VMware virtual infrastructure group becomes even more powerful.

Creating a New VMware Virtual Infrastructure Group

Follow the steps given below to create a VMware Virtual Infrastructure group:

1. Click **New Monitor Group** and select **VMware Virtual Infrastructure** from the drop-down menu. The 'Discover Virtual Infrastructure through vCenter' screen will be displayed.
2. Provide a **Display Name** for the monitor group.
3. Specify **vCenter Hostname/IP Address**.
4. Specify the **Port** at which vCenter is running.
5. Enter the authentication credentials of the vCenter server such as **User Name** and **Password**.
6. Specify the **Polling Interval** in minutes.
7. If you are adding a new monitor from an Admin Server, select a Managed Server.
8. Click **Fetch ESX Hosts** button to start the virtual infrastructure discovery.

For more information on the performance metrics provided by the VMware virtual infrastructure group, refer this topic.

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Creating a New Monitor

Once a new Monitor Group is created, the Monitors such as WebLogic Server, JBoss Server, Tomcat Server, WebSphere Server, MySQL DB Server, Oracle DB Server, Mail Server, etc. must be created. This discovers the Monitor from the network and starts collecting data for monitoring.

You have to create a Monitor to discover it from the network and monitor it. This can be done by following any of the options given below:

- All Monitors in a host.
- A specific Monitor in a host.
- All Monitors in a network

Note: If there is a problem while creating new monitors, click on **Diagnose** link to troubleshoot the problem.

All Monitors in a Host

To discover all Monitors running on a host, create them using the All Monitors option. Follow the given steps for discovering the Monitor:

1. Select New Monitor.
2. Choose All Services.
3. Provide the hostname, where all the Monitors running on this host will be discovered. You can also discover monitors in multiple hosts by providing the hostname, separated by commas. (Note: This will start discovering in the default port of the Monitor.)
4. Enter the SubNetMask of the network.
5. Click Add Monitor(s).

Note: Adding any service will also automatically add that server and other applications in the default port in that server.

How To Demos: Have a look at our demo on creating Monitors in our website.

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Viewing Performance Metrics

Applications Manager is used to monitor different types of applications and services of Monitor running in your system/ network. Monitoring is an activity that checks the performance of your monitors by collecting and analyzing the data at regular intervals. These monitoring capabilities are performed by different types of Monitor Types.

This chapter lists the different types of Monitor Types supported by Applications Manager and the parameters monitored by them.

Monitor Types

Applications Manager supports the following Monitor Types:

Application Servers

- Microsoft .NET
- JBoss Servers
- Jetty Servers
- GlassFish Servers
- Oracle Application Servers
- Resin Application Server
- SilverStream
- Tomcat Servers
- VMware vFabric tc Servers
- WebLogic Servers
- WebSphere Servers
- Apache Geronimo

Cloud Apps

- Amazon
- Amazon Elastic Compute Cloud (Amazon EC2)
- Amazon Relational Database Service (Amazon RDS)
- Amazon Simple Notification Service (Amazon SNS)
- Windows Azure
- Open Stack
- Office 365

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Database Servers

- Cassandra Servers
- CouchBase Servers
- IBM DB2 Servers
- IBM Informix Servers
- Memcached Servers
- MongoDB Servers
- MS SQL Servers
- MySQL/MariaDB Servers
- Oracle Servers
- PostgreSQL Servers
- Redis Servers
- Sybase Servers
- Oracle NoSQL
- SAP HANA DB Servers

Middleware / Portal

- Microsoft BizTalk
- Microsoft Message Queue (MSMQ)
- Microsoft Office SharePoint
- Oracle Tuxedo
- VMware vFabric RabbitMQ
- WebLogic Integration Servers
- IBM Websphere Message Broker
- IBM WebSphere MQ
- Microsoft Lync Server
- Azure Service Bus
- Apache Kafka
- Apache ActiveMQ

Servers

- Windows
- Linux
- Solaris
- IBM AIX
- IBM AS400 / iSeries
- HP Unix
- Tru64 Unix
- Free BSD
- Mac OS
- Novell
- Windows Cluster

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Services

- JMX Applications
- Ping Monitor
- Service Monitoring
- SNMP / Network Device
- Telnet
- Hadoop Monitor
- Active Directory
- DNS Monitor
- FTP / SFTP Monitor
- LDAP Monitor
- Ceph Storage
- Apache Zookeeper
- Oracle Coherence Servers

Mail Servers

- Exchange Server
- Mail Server

Web Server / Services

- Apache Server
- IIS Server
- Nginx
- Real Browser Monitor
- PHP
- Web Services
- Web Server
- HTTP(s) URL Monitors and HTTP(s) URL Sequence (Record & Playback)
- Elasticsearch
- ServiceDesk Plus
- ManageEngine OpManager

ERP

- SAP
- SAP CCMS
- Oracle E-Business Suite
- Microsoft Dynamics CRM

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Virtualization

- Microsoft Hyper-V Servers
- VMware ESX/ESXi servers
- VMware Horizon View Connection Broker
- Citrix XenApp
- Citrix Xenserver
- Docker

Custom Monitors

- JMX / SNMP Dashboard
- File System Monitor
- Windows Performance Counters
- Script Monitor
- Database Query Monitor

Web Transactions Monitors

- Java
- Ruby on Rails
- .NET

Other

- Java Runtime Monitor

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Application Servers

Application Servers are designed to develop web services and applications, and in real time, the productivity and performance of such servers get affected due to failure of diagnosing any problem in the services/application running in the server.

Applications Manager enables high performance business process management by detecting and diagnosing problems of application servers and their services faster. The following are the application servers supported:

- Microsoft .NET
- GlassFish Servers
- JBoss Servers
- Jetty Servers
- Resin Servers
- Oracle Application Servers
- SilverStream
- Tomcat Servers
- VMware vFabric tc Server
- WebLogic Servers
- WebSphere Servers

Please browse through the different application servers that provide the server information and their parameters being monitoring.

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Microsoft .NET Monitoring

To create Microsoft .NET Monitor

1. Click on **New Monitor** link.
2. Select **Microsoft .NET Monitor**.
3. Enter the **IP Address** or **hostname** of the host where .NET runs.
4. Enter the SubNetMask of the network.
5. Set the **Polling Interval**.
6. If you are adding a new monitor from an Admin Server, select a Managed Server.
7. Enter the **User Name / Domain Name** and **Password** of the system.
8. Choose the **Monitor Group** from the combo box with which you want to associate .NET Monitor (optional). You can choose multiple groups to associate your monitor.
9. Click **Add Monitor(s)**. This discovers .NET from the network and starts monitoring them.

Monitored Parameters

Microsoft .NET is monitored based on the attributes such as Heap Size, Threads etc. Data collection happens through WMI. The monitoring details of Microsoft .Net are represented graphically and that helps to understand the parameters with ease. You can also configure thresholds to the attributes monitored by the .Net, based on these details.

Availability tab, gives the Availability history for the past 24 hours or 30 days. *Performance* tab gives the Health Status and events for the past 24 hours or 30 days. *List view* enables you to perform bulk admin configurations. Click on the individual monitors listed, to view the following information.

Parameter	Description
Availability	Shows the current status of the.Net - available or not available.
Threads	
Physical Threads	Shows the number of native OS threads created and owned by the CLR to act as underlying threads for .NET thread objects.
Logical Threads	Shows the number of current .NET thread objects in the application.

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Memory	
Heap Size	Shows the current memory allocated(MB)
% Time in GC	Shows the percentage of elapsed time that was spent in performing a garbage collection (GC) since the last GC cycle. This counter is usually an indicator of the work done by the Garbage Collector on behalf of the application to collect and compact memory
Locks	
Queue Length	Refers to the total number of threads currently waiting.
Contentions/Min	Refers to the rate at which threads in the runtime attempt to acquire a managed lock unsuccessfully.
Exceptions	
Exceptions/Min	Refers to the number of exceptions per Minute
Security	
TotalRuntimeChecks/Min	Refers the total number of runtime Code Access Security (CAS) checks performed per minute.
JIT	
% Time In JIT	Refers to the percentage of elapsed time spent in JIT compilation since the last JIT compilation phase.
.NET Applications Details	Clicking on the Names of the .NET applications, you can see their performance based on their parameters.

The various .NET application's parameters that are monitored are:

Parameter	Description
Request Statistics	
Requests/Min	Refers to number of Requests executed per minute
Errors/Min	Refers to rate of errors occured
Requests Timeout/Min	Refers to number of Requests Timeout per minute
Queued Requests	Refers to number of Queued Requests
Transactions	
Transactions/Min	Refers to number of Transactions started per minute
Abandoned Transactions/Min	Refers to number of Transactions aborted per minute
Pending Transactions	Refers to number of Transactions in progress

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Sessions	
Active Sessions	Refers to number of sessions that are active currently
Network Traffic	
Bytes Sent/Min	Refers to the number of Bytes sent per minute
Bytes Received/Min	Refers to the number of Bytes received per minute

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GlassFish Servers

To create GlassFish Application Server Monitor

1. Click on **New Monitor** link.
2. Select **GlassFish**.
3. Give the **Display name**.
4. Enter the **Hostname** of the host where GlassFish runs.
5. Enter the **Port**
6. Enter the **User Name** and **Password** of GlassFish Server.
7. Enter the **JNDI** path.
8. Set the **Polling Interval**.
9. If you are adding a new monitor from an Admin Server, select a Managed Server.
10. Choose the **Monitor Group** from the combo box with which you want to associate GlassFish Monitor (optional). You can choose multiple groups to associate your monitor.
11. Click **Add Monitor(s)**. This discovers GlassFish Servers from the network and starts monitoring them.

Monitored Parameters

GlassFish servers are monitored based on the attributes such as memory, thread, etc. The monitoring details of GlassFish server are represented graphically that helps to understand the parameters with ease. You can also configure thresholds to the attributes monitored by the server based on these details.

Availability tab, gives the Availability history for the past 24 hours or 30 days. *Performance* tab gives the Health Status and events for the past 24 hours or 30 days. *List view* enables you to perform bulk admin configurations. Click on the individual monitors listed, to view the following information.

Parameter	Description
Monitor Information	
Name	The Name of the Server
Availability	Shows the current status of the server - available or not available.

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Last Polled at	Specifies the time when the monitoring of the server was recently done
Next Poll at	Specifies the next polling time for monitoring the server
Response Time	Refers to time required for the Glass Fish server to respond while monitoring
Memory Details	
Used Memory	Refers to JVM heap used in KB
Total Memory	Refers to the JVM total heap size
Thread Details	
Thread Count	Total number of Threads in JVM in which GlassFish is running
Running	Refers to the state of totals thread that are in runnable state in the JVM
Waiting	Refers to the total no. of threads that are waiting for a monitor lock in the JVM
Blocking	Refers to no. of total threads that are blocked waiting for a monitor lock
Deadlocked	Refers to the no. of total threads that are blocked forever in the JVM
Timed Waiting	Refers the total threads that are waiting for another thread to perform an action for up to a specified waiting time
Table WebApp Monitoring	
Name	Name of the Web Application
Session High Count	Maximum number of concurrently active sessions
Session Current Count	List of currently active sessions in the Web Application
Total Sessions Rejected	Total number of rejected sessions

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JBoss Server Monitoring

Supported versions of JBoss Server: 3.2.x, 4.x, 4.0.x, 5, 5.1, 6.0, 7.x, Wildfly_8.x

For Applications Manager to monitor JBoss, it should be able to access the host where JBoss server runs and vice versa. For more information, refer to online Troubleshooting section.

Prerequisite: To monitor JBoss, the **http-invoker.sar** should be deployed in the JBoss Server. Know more in the Prerequisite section. Also, here are the prerqeuisites to monitor Wildfly.

To create a JBoss Server Monitor

1. Click on **New Monitor** link.
2. Select **JBoss**.
3. Enter the **IP Address** or **hostname** of the host where JBoss runs.
4. Choose the **JBoss version**.
5. Enter the **port number** for eg., 8080.
6. Check the **Is Domain** option, if you are using JBoss version 7.x and above.
7. Provide the name of the Host Controller and the JBoss Server Instance name.
8. Choose **SSL option** , if SSL is enabled in JBoss server.
9. Enter the **User Name** and **Password** , if JBoss has authentication information.
10. Set the **Polling Interval**.
11. If you are adding a new monitor from an Admin Server, select a Managed Server.
12. Choose the **Monitor Group** from the combo box with which you want to associate JBoss Server Monitor (optional). You can choose multiple groups to associate your monitor.
13. Click **Add Monitor(s)**. This discovers JBoss server from the network and starts monitoring them.

Troubleshoot: Having trouble in monitoring JBoss server? Refer to the online Troubleshooting section.

Supported Versions: Applications Manager supports monitoring of JBoss Servers of versions 3.2.x, 4.0.x, 4.2.2 GA, 5, 5.1, 6.0 and 7.0. Performance data is collected by deploying an agent automatically from Applications Manager to the JBoss server that needs to be monitored.

JBoss servers are monitored based on the attributes such as JVM heap usage, JDBC pool usage, JMS Queue, the different web applications and EJB deployed in the server. The monitoring details of JBoss server are represented graphically that helps to

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understand the parameters with ease. You can also configure thresholds to the attributes monitored by the server based on these details.

Availability tab, gives the Availability history for the past 24 hours or 30 days. *Performance* tab gives the Health Status and events for the past 24 hours or 30 days. *List view* enables you to perform bulk admin configurations. Click on the individual monitors listed, to view the following information.

Monitor Information

This tab displays the basic information like the name of the server, host name and the port where the server is running. Additional parameters like the JBoss version, host controller name, user name and associated groups are also displayed.

JVM Usage

This metric gives the current amount of free, used and committed memory in the JVM heap in megabytes as well as in percentage.

JDBC Pool Usage

JDBC Connection Pool details are displayed through this metric. The number of connections that are available, active, created, timed out and destroyed are listed. Also available are the metrics pertaining to the prepared statement cache of the database connection in the pools.

JMS Queues

The JMS tab provides an overview of the metrics related to the JMS Queues and Topics. Queues details include metrics like messages in queue, messages added, scheduled, paused along with current delivery percentage. Metrics with respect to topics tracked are message count, messages added, durable and non-durable message count,etc.

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EJB Stats and Servlet Details

The name, type and module of the EJB along with the number of instance created and removed, instances in passivated state, pooled state, ready state are being captured. The servlet details specify the number of times the servlet was invoked and the execution time for the servlet.

Custom attributes

You can view the custom attributes of the JBoss Server here. Click **Add Attributes** to add custom MBean attributes and associate MBean actions. For information on adding Custom Monitors, refer to Custom Monitors topic. Below is the detailed list of parameters monitored and the various versions of the server supported:

Monitored Parameters	JBoss 3.2.x	JBoss 4.0.x, 4.2.2 GA	JBoss 5,5.1	JBoss 6.0	JBoss 7.0
Memory Usage [Used (MB), Free(MB), Commited(MB), Maximum(MB), Used(%), Free(%)] *metrics for non-heap memory is supported in JBoss 6&7 only	✓	✓	✓	✓	✓
Thread Usage [Live Thread count, Daemon Thread count, Peak Thread Count, Total Thread Started]				✓	✓
Class Loading [Class loaded, Class Unloaded, Total Loaded, Object Pending Finalization count]				✓	✓
Deployments [Name, Context, Enabled, Runtime Name, Status, Sub-Deployments, Servlets Count]	✓ [sub-deployment count not available]	✓ [sub-deployment count not available]	✓ [sub-deployment count not available]	✓ [sub-deployment count not available]	✓ [servlets count not available]
Web Applications [Active Sessions, Sessions Created, Expired, Rejected, Duplicated and Session Alive Time]	✓	✓	✓	✓	✓
EJB Statistics [WebModule,Type,Instances Created, Removed, Instances in Passive State, Ready State, Pooled State, Message Count, Method Ready Count]	✓ [instances in passive state, ready state, pooled state, message count, method ready count not available]	✓	✓	✓	✓

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Servlet Details [Invocation Count, Execution Time Total, Execution Time High,Execution Time Low,Execution Time Average]	✓	✓	✓	✓	✓
Persistence Units [Connections, Transactions, Queries, Second Level Cache]					✓
Connection Pool Usage [Connections - Available, Active , Created, Destroyed, Maximum used, Timed out, Active Connections(%), Max Connections Used (%)]	✓	✓	✓	✓	✓
Prepared Statement Cache [Current size, Hit count, Miss count, HitRatio]					✓
Web Metrics [Request Count, Error Count, Processing time(ms), Maximum time(ms), Bytes Sent, Bytes Received , Request Failed(%)]	✓	✓	✓	✓	✓
Transactions [Total Transacations, Commited, Aborted, TimedOut, Nested, Heuristics, Inflight, Applications Rollbacks, Resource Rollbacks, Successful Commits]	✓ [transactions aborted, timedout, nested, heuristics, inflight, applications rollbacks, resource rollbacks not available]	✓ [transactions aborted, timedout, nested, heuristics, inflight, applications rollbacks, resource rollbacks not available]	✓ [transactions aborted, timedout, nested, heuristics, inflight, applications rollbacks, resource rollbacks not available]	✓	✓
JMS-Queues [Name, Message Count, In Delivery, Messages Added, Messages Scheduled, Consumer Count, Is Paused, Delivering Percentage]		✓	✓	✓	✓
JMS-Topics [Name, Message Count, In Delivery, Messages Added, Durable Message Count, Non- Durable Message Count, Subscriptions, Durable Subscribers Count, Non-Durable Subscribers Count,Current Delivering (%), Durable Message(%), Non-Durable Message(%)]	✓	✓	✓	✓	✓
Custom Attributes and Server Configuration Details	✓	✓	✓	✓	✓

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Jetty Server Monitoring

Jetty, the lightweight open-source project hosted by the Eclipse foundation, is a full-fledged HTTP server and Servlet container that can be easily configured to serve static and dynamic content. Unlike most Web Servers, Jetty is often used for machine to machine communications, usually within larger software frameworks.

Applications Manager allows you to monitor your Java applications running on the Jetty HTTP server and Servlet container, track critical performance indicators of Jetty App server like CPU usage and be notified of thread pool exhaustion. Applications Manager also provides an in-depth view of the memory usage - heap and garbage collection information, real-time memory utilization and even object instance information within the JVM and Jetty server.

Create a New Monitor

Supported versions of Jetty Server: Jetty 3.1 and above.

Prerequisites for monitoring Jetty Server: Click to know about the user previleges and other necessary prerequisites to monitor Jetty Server.

To create a Jetty Server Monitor:

1. Click on **New Monitor** link.
2. Select **Jetty Server** under **Application Servers.**
3. Give the **Display name**.
4. Enter the **Hostname** of the server where Jetty Server is running.
5. Enter the JMX **Port**. For default installations of Jetty, the JMX port number is 9999.
6. You can enter your own credential details or select preconfigured credentials from details in Credentials Manager. If you wish to enter your own credentials, specify enter the JMX User Name and Password of Jetty Server. If no authentication is required, then leave the fields blank.
7. Enter the JNDI path. For example:- JNDIPATH for default installations of Jetty is **/jmxrmi**.
8. Set the **Polling interval**.
9. Choose the **Monitor Group** from the combo box with which, you want to associate Jetty Server Monitor (optional). You can choose multiple groups to associate your monitor.
10. Click **Add Monitor(s)**. This discovers your Jetty Server from the network and starts monitoring it.

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Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **Jetty Server** under the **Applications Servers** Table. Displayed is the Jetty Server bulk configuration view distributed under three tabs:

- **Availability** tab, gives the Availability history for the past 24 hours or 30 days.
- **Performance** tab gives the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

Click on the monitor name to see all the server details listed under the following tabs:

- Performance Overview
- Thread
- WebApps
- Configuration

PERFORMANCE OVERVIEW

Parameter	Description
CPU Details	
Available Processors	The number of processors available to the JVM.
CPU Usage Percentage	The percentage of CPU usage of the JVM on the server.
Uptime	The uptime of the Java virtual machine.
Class Loading Details	
Loaded Class Count	The number of classes currently loaded in the JVM.
Unloaded Class Count	The number of classes unloaded since the JVM started execution.
Heap Memory	
PS Survivor Space	The pool containing objects that have survived the garbage collection of the Eden space.
PS Eden Space	The pool from which memory is initially allocated for most objects.
PS Old Gen	This pool contains tenured and virtual (reserved) space and will be holding those objects which survived after garbage collection from young generation space.

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Non Heap Memory	
PS Perm Gen	The Permanent Generation holds all the reflective data of the virtual machine itself, such as class and method objects. With JVMs that use class data sharing, this generation is divided into read-only and read-write areas.
Code Cache	The Code cache is the memory used for compilation and storage of native code.
Heap Memory Details	
Total Memory	The total memory is the memory that is currently allocated to the JVM. It is the combination of used memory currently occupied by objects and free memory available for new objects. It varies over time.
Free Memory (MB)	The total free memory available to the JVM for new objects.
Used Memory (MB)	The space that is currently occupied by Java objects.
Max Allocated Memory (MB)	The currently allocated memory in MB.
Committed Memory (MB)	The currently used memory in MB.
Non Heap Memory Details	
Total Memory	The total memory is the memory that is currently allocated to the JVM. It is the combination of used memory currently occupied by objects and free memory available for new objects. It varies over time.
Free Memory (MB)	The total free memory available to the JVM for new objects.
Used Memory (MB)	The space that is currently occupied by Java objects.
Max Allocated Memory (MB)	The currently allocated memory in MB.
Committed Memory (MB)	The currently used memory in MB.
Garbage Collector Details	
Name	The Garbage Collector Name.
Valid	The Garbage Collector Status.
Collection Time (MS)	Live JVM statistics about garbage collector activity like the time spend collecting objects.
Collection Count	The Live JVM statistics about garbage collector activity like the number of collected objects.

Note:

Java8 Update: When monitoring with JDK 1.8 MetaSpace, Applications Manager monitors and displays new memory space called MetaSpace instead of the former Permanent Generation (Heap and Non-Heap memory). The main difference is that Metaspace re-sizes dynamically i.e., It can expand at runtime. Java Metaspace space: unbounded (default)

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THREAD

Parameter	Description
JVM Threads	
Live Threads	The current live thread count.
Daemon Threads	Total number of Daemon Threads. A daemon thread is one that does not prevent the JVM from exiting when the program finishes but the thread is still running.
Peak Thread Count	The peak live thread count since the Java virtual machine started or peak was reset.
Threads started per sec	The number of threads started per sec.
Thread Pool Details	
Name	The name of the thread pool.
Thread Count	The total number of threads currently in the pool.
Busy Threads	The number of currently busy threads in the thread pool.
Idle Threads	The number of currently idle threads in the thread pool.
Max Threads	The maximum number of threads in the thread pool simultaneously tasked with some work to process.
Thread Utilization	The percentage of threads used by the java process.
Queue size	The size of the job queue
State	The lifecycle state for this instance.
Low on Threads	This value is true if the pools is at maxThreads and there are not idle threads than queued jobs.

WEBAPPS

Parameter	Description
Webapps	
Name	The name of the Session.
Id	The session Id.
Active Sessions	The number of currently active sessions.

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State	The current lifecycle state.

CONFIGURATION

Parameter	Description
Server Info	
VM Name	The Java virtual machine implementation name.
VM Vendor	The Java virtual machine implementation vendor
VM Version	The Java virtual machine Version
Name	The name representing the running Java virtual machine.
Version	The operating system version
OS Name	The operating system name.
Start Time	The start time of the Java virtual machine in milliseconds.
Jetty Version	The Version of Jetty server.

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Resin Application Server Monitoring

To create a Resin Server Monitor:

1. Click on **New Monitor** link.
2. Select **Resin Server** under **Application Servers.**
3. Give the **Display name**.
4. Enter the **Hostname** of the server where Resin Application Server is running.
5. Enter the JMX **Port**. For default installations of Resin, the JMX port number is 9999.
6. You can enter your own credential details or select preconfigured credentials from details in Credentials Manager. If you wish to enter your own credentials, specify enter the JMX User Name and Password of Resin Server. If no authentication is required, then leave the fields blank.
7. Enter the JNDI path. For example:- JNDIPATH for default installations of Resin is **/jmxrmi**.
8. Set the **Polling interval**.
9. Choose the **Monitor Group** from the combo box with which, you want to associate Resin Server Monitor (optional). You can choose multiple groups to associate your monitor.
10. Click **Add Monitor(s)**. This discovers your Resin Server from the network and starts monitoring it.

Resin is a fast and reliable Java EE integrated high-performance application server that features load balancing for increased reliability. Built-in Resin features include clustering for high scalability, distributed caching to reduce reliance on traditional databases and adaptive health monitoring. Applications Manager increases the reliability of your Resin Application Server by monitoring all of the key performance indicators like thread details, connection pool usage, session details and memory resources.

Resin Server - Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **Resin Server** under the **Application Servers** Table. Displayed is the Resin Server bulk configuration view distributed into three tabs:

- **Availability** tab, gives the Availability history for the past 24 hours or 30 days.
- **Performance** tab gives the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

Click on the monitor name to see all the server details listed under the following tabs:

- Performance Overview
- Threads
- Memory
- Web Applications

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- Connection Pools
- Configuration

Performance Overview

Parameter	Description
JVM Statistics	
JVM Memory	The current total amount of memory available for the JVM, in MB.
Free JVM Memory	The current free amount of memory available for the JVM, in MB.
JVM Memory Used	The current used amount of JVM memory, in MB.
State	The current lifecycle state.
Sever Request Throughput	
Request Serviced/Sec	The total number of requests serviced by the server per sec.
Bytes Read/Sec	The total number of bytes that requests serviced by this server have read.
Bytes Written/Sec	The total number of bytes that requests serviced by this server have written.
Transcation Manager	
Commited Transactions/Sec	The total number of committed transactions/Sec.
Failed Commited Transactions/Sec	The total number of failed committed transactions/Sec.
Rollback Transactions/Sec	The total number of rolledback transactions/Sec.
In-Progress Transactions	The count of in-progress transactions.
CPU Details	
Available Processors	Number of processors available to the JVM.
CPU Usage Percentage	The CPU usage of the JVM on the server in Percentage.
Uptime	The uptime of the Java virtual machine.
Class Loading Details	
Loaded Class Count	The Number of classes loaded.
Unloaded Class Count	The Number of classes unloaded.
Garbage Collector Details	
Name	Garbage Collector Name.
Valid	Garbage Collector Status.
Collection Time	Time taken to perform garbage collection in ms.
Collection Count	Total number of collections that have occurred.

Threads

Parameter	Description
Total Threads	Total Thread count.
Total Threads Started	Total number of threads started.
Active Resin Threads	The current number of active resin threads.
Idle Resin Threads	The current number of idle resin threads.
Resin Threads waiting	The current number of wait threads.
Max Resin Threads	The configured maximum number of threads.

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Total Resin Threads	The current number of managed threads.

Memory

Parameter	Description
Heap Memory	The Heap Memory usage in MB.
Non Heap Memory	The Non- Heap Memory usage in MB.
Eden/Survivor/Tenured/CodeCache/PermGen Commited	Current allocated memory in MB.
Eden/Survivor/Tenured/CodeCache/PermGen Free	Current free memory in MB.
Eden/Survivor/Tenured/CodeCache/PermGen Max	Max allocated memory in MB.
Eden/Survivor/Tenured/CodeCache/PermGen Commited	Current used memory in MB.
Eden/Survivor/Tenured/CodeCache/PermGen Free%	The percentage of currently free memory .
Eden/Survivor/Tenured/CodeCache/PermGen Used%	The percentage of currently used memory .

Web Applications

Parameter	Description
Name	Name of the Web Application.
Active Sessions	The current number of active sessions.
Invalidated Sessions	The total number of sessions that have been invalidated.
Session Max	The configured maximum number of sessions in memory.
Session Utilization	Percentage of session's used by the webapp.
Requests/Sec	The number of requests served by the web-app per sec.
Bytes Received/Sec	The total number of bytes received in client requests.
Bytes Sent/Sec	The total number of bytes sent to clients.
500 Errors	The total number of 500 status errors.
State	The current lifecycle state.

Connection Pools

Parameter	Description
Name	The Name of the Connection Pool.
Active Connections	The current number of active connections.
Idle Connections	The current number of idle connections.
Total Connections	The current number of idle and active connections.
Failed Connections	The current number of failed connections.
Max Connections	The configured maximum number of connections.
Pool Utilization	Percentage of connection pool used.

Configuration

Parameter	Description

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VM Name	The Java virtual machine implementation name.
VM Vendor	The Java virtual machine implementation vendor.
VM Version	The Java virtual machine Version.
Name	The name representing the running Java virtual machine.
Boot Classpath	The boot class path that is used by the bootstrap class loader to search for class files.
ClassPath	The Java class path that is used by the system class loader to search for class files.
Library Classpath	The Java library path.
Version	The operating system version.
OS Name	The operating system name.
Start Time	The start time of the Java virtual machine in milliseconds.

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Oracle Application Servers

Supported Versions

Applications Manager supports monitoring of Oracle Application Servers 10g.

Applications Manager uses the **Dynamic Monitoring Service(DMS)** provided by Oracle Application Server to monitor the same. For this reason, the DMS Servlet has to be made accessible to the system where the Applications Manager is running.
Refer Prerequisites Section.

To create a Oracle Application Server Monitor

1. Click on **New Monitor** link.
2. Select **Oracle AS**.
3. Enter the **IP Address** or **hostname** of the host where Oracle Application Server runs.
4. Enter the SubNetMask of the network.
5. Enter the **Port number** for eg., 7200.
6. If you are adding a new monitor from an Admin Server, select a Managed Server.
7. Choose the **Monitor Group** from the combo box with which, you want to associate Oracle Application Server Monitor (optional). You can choose multiple groups to associate your monitor.
8. Click **Add Monitor(s)**. This discovers Oracle Application Server from the network and starts monitoring them.

Monitored Parameters

Oracle Application servers are monitored based on the attributes listed below. The monitoring details of Oracle Application server are represented graphically that helps to understand the parameters with ease. You can also configure thresholds to the attributes monitored by the server based on these details.

Availability tab, gives the Availability history for the past 24 hours or 30 days. *Performance* tab gives the Health Status and events for the past 24 hours or 30 days. *List view* enables you to perform bulk admin configurations. Click on the individual monitors listed, to view the following information.

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Parameter	Description
Monitor Information	
Port	The port at which the Oracle Application server listens.
Last Polled at	Specifies the time when the monitoring of the server was started.
Availability	Shows the current status of the server - available or not available.
Request Throughput	
Throughput	Number of requests processed per unit of time in the server.
Current Active Connection	Shows the current active connections
Average Connection Process Time	Gives the average processing time of the connections
Current Active Request	Shows the number of requests that are active currently
Server Response Time	
Response Time	Refers to the time required for the server to respond while monitoring.
Data Throughput	Refers to how much data is transferred per unit time
Data Processed	Refers to how much data is processed per request
Servlets	Total number of servlets
OPMN Process Memory Stats (Memory statistics of the OPMN processes like dcm-daemon, WebCache, WebCache Admin, HTTP_Server, home)	
Used Memory	Gives the total physical memory used by the process
Status	Gives the availability status of the process
oc4j JVM Statistics	
Active Thread Groups	Shows the number of Active Thread groups in the JVM
Active Threads	Shows the number of Active Threads in the JVM
Heap Usage	Shows current heap memory usage of the process
JDBC Connections	Gives the total number of JDBC Connections

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Transactions	Gives the total number of open, committed and aborted JDBC transactions
Web Applications	
Servlets	Total number of servlets in the web application
Throughput	Number of requests processed per unit of time in the web application
Process Request	Time taken to process the request
Active Request	Current number of active requests for the web application
Active Session	Number of active sessions of the web application
Session time	Total time for which the sessions have been active
JMS Attributes	
Deque Avg	Average time to deque messages
Enque Avg	Average time to enque messages
Pending Message	Total number of message waiting to be processed
Message Dequeued	Total number of messages dequeued
Message Enqueued	Total number of messages enqueued
Message Count	Number of messages in the JMS Destination
EJB Statistics	
EAR Name	Name of the Enterprise Application Resource
Process	Name of the oc4j process to which the EJB belongs to
Type	Gives the type of the EJB
Create Count	Number of EJBs created
Active Count	Number of active EJBs
Passive Count	Number of passive EJBs
Pooled Count	Number of pooled EJBs
Response Summary	Gives the count for the various HTTP responses

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Tomcat Servers

Supported Versions

The supported versions of Tomcat Servers are 3.x, 4.x, 5.x, 6.x, 7.x and above. **For Tomcat Server 3.x and 4.x, agent has to be deployed for monitoring.**

Note: You can check whether the Agent is deployed, by connecting to the following URL in Tomcat Server.

http://<Tomcat-Host>:<Tomcat-Port>/adventnet/DataServlet

To deploy the agent for Tomcat Server 3.x

1. Download the **Tomcat3Agent.Zip** from <*Applications Manager Home*>*/working/classes* directory.
2. Unzip it in the <*Tomcat Home*> directory of the host in which the Tomcat server is running.
3. Restart the Tomcat Server.

To deploy the agent for Tomcat Server 4.x

1. Download the **Tomcat4Agent.Zip** from the <Applications Manager Home>*/working/classes* directory
2. Unzip it in the <*Tomcat Home*> directory of the host in which the Tomcat server is running.
3. Add the following tag in **server.xml** file located in the <*Tomcat Home*>*/conf* directory (below the Engine tag).
   <*Valve className="com.adventnet.appmanager.tomcatagent.ver4.valve.AdventNetHostValve"/*>
   [Click the link to view an example server.xml]
4. Restart the Tomcat Server.

To deploy the agent for Tomcat Server 4.x and Apache server combined

1. Download the **Tomcat4Agent.Zip** from the <Applications Manager Home>*/working/classes* directory
2. Unzip it in the <*Tomcat Home*> directory of the host in which the Tomcat server is running.
3. Add the following tag in **server.xml** file located in the <*Tomcat Home*>*/conf* directory (below the Engine tag).

   <*Valve className="com.adventnet.appmanager.tomcatagent.ver4.valve.AdventNetHostValve"/*>

   [Click the link to view an example server.xml]
4. Restart the Tomcat Server.
5. **Apache:** In *Apache mod_jk.conf* file of Apache Server , add the following entry
   - *JkMount /adventnet/* ajp13*, Where *ajp13* is the worker name .It has be the name given in *worker.properties file*.
6. Restart Apache server

To create a Tomcat Server Monitor

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1. Click on **New Monitor** link.
2. Select **Tomcat Server**.
3. Enter the **IP Address** or **hostname** of the host. [**Note:** Also refer to Configurations based on Tomcat Deployments section]
4. Enter the SubNetMask of the network.
5. Enter the **port number** in which the monitor is running. [Default port number is 8080]
6. Choose **SSL option** , if SSL is enabled in Tomcat server.
7. Enter the polling interval time in minutes.
8. If you are adding a new monitor from an Admin Server, select a Managed Server.
9. Provide the monitor-specific authentication information, such as user name and password.

Note:

Tomcat 3.x and 4.x needs no user name and password. In case of Tomcat 5.x and above, an application named **Manager** must be running in it for Applications Manager to monitor the Tomcat server. By default, this application will be running in the server.If you have customized the **manager** application (Eg., qamanager), then you can use the option "Tomcat Manager Application URI" in the client, for Applications Manager to monitor the Tomcat server. The user role to access the server must be **manager (versions 5.x & 6.x) / manager-gui (version 7.x)**.

To add a role as "manager" (versions 5.x & 6.x) / "manager-gui" (version 7.x) for any of the users such as tomcat, role1, or both, you need make changes in**tomcat-users.xml** file located in the *<TOMCAT-HOME>/conf* directory.

For Tomcat 8:

Remote access to Application Manager is restricted, by default.

Add the IP address of APM in CATALINA_HOME/webapps/host-manager/META-INF/context.xml (under 'allow =')

<Valve className="org.apache.catalina.valves.RemoteAddrValve"
allow="127.d+.d+.d+|::1|0:0:0:0:0:0:0:1" />

Example:

Default configurations in **tomcat-users.xml** in Tomcat Server.

```
<tomcat-users>
<role rolename="tomcat" />
<role rolename="role1" />
<user username="tomcat" password="tomcat" roles="tomcat" />
<user username="role1" password="tomcat" roles="role1" />
<user username="both" password="tomcat" roles="tomcat,role1" />
</tomcat-users>
```

After adding the roles for the "tomcat" user, the modified entries will be as follows:

```
<tomcat-users>
<role rolename="tomcat" />
<role rolename="role1" />
<role rolename="manager" />
<user username="tomcat" password="tomcat" roles="tomcat,manager" />
<user username="role1" password="tomcat" roles="role1" />
<user username="both" password="tomcat" roles="tomcat,role1" />
</tomcat-users>
```

On making the configuration, restart the Tomcat Server.
Now, when adding a new Tomcat (5.x and above) monitor, specify the username/password as tomcat/tomcat when discovering the Tomcat Server.

[Click the link to view an example tomcat-users.xml for versions 5.x / 6.x and tomcat-users.xml for versions 7.x]

Note:

After adding the Manager role in tomcat-users.xml, you should be able to access the manager application - *<Host>:<PORT>/manager/status* (Provide manager user credentials).

If the application is not accessible, add the following entry in server.xml, under 'Engine' context:
<Realm className="org.apache.catalina.realm.MemoryRealm" />

Restart the server and try to access manager application.

9. Choose the **Monitor Group** from the combo box with which you want to associate Tomcat Server Monitor (optional). You can choose multiple groups to associate your monitor.
10. Click **Add Monitor(s)**. This discovers Tomcat server from the network and starts monitoring them.

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Troubleshoot: Having trouble in monitoring Tomcat server? Refer to the online Troubleshooting section.

Note : Steps to configure Tomcat Monitor for JBoss 3.2.5

1. Append the following in the web.xml present in <JBOSS_SERVER_HOME>deployjbossweb-tomcat50.sarROOT.warWEB-INF folder

" *<servlet-mapping>*
<servlet-name>Status Servlet</servlet-name>
<url-pattern>/manager/status</url-pattern>
</servlet-mapping>

<servlet-mapping>
<servlet-name>Status Servlet</servlet-name>
<url-pattern>/manager/</url-pattern>
</servlet-mapping>

<servlet-mapping>
<servlet-name>Status Servlet</servlet-name>
<url-pattern>/manager/status/</url-pattern>
</servlet-mapping> "

2. Restart the JBoss server.

3. Configure a tomcat monitor by clicking New Monitor --> Select Tomcat Server in the combo box.

4. Select the version as 5.x and create the monitor. This will create a monitor for the Tomcat webserver running in JBoss3.2.5.

Configurations based on Tomcat Server Deployment

Monitoring of Tomcat Server depends on its deployment. This section explains the possible deployment scenarios of Tomcat. Your configuration of host name and the port depends on these scenarios.

1. Standalone Tomcat Server

This is a general scenario wherein you have a Tomcat server which has the HTTP (apache) within its deployment. In this case, when configuring a tomcat monitor, specify the host name of the Tomcat server and the port of the HTTP.

2. One Tomcat Server (with HTTP) and one external instance of Apache

There is one Tomcat server with HTTP (apache) instance running in it and another external Apache running outside.

Example: Tomcat server name: *Tomcat A*; HTTP (in Tomcat server) port: *8080*; External Apache server port: *80*

In this case, while configuring for a Tomcat monitor, specify the host name as 'Tomcat A' and specify the port of the HTTP that runs with the Tomcat and not the external Apache, i.e., specify the port as 8080 and not 80.

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3. One Tomcat Server (without HTTP) and one external instance of Apache

There is one Tomcat server without HTTP in it and another external Apache running.

> **Example:** Tomcat server name: *Tomcat A*; HTTP (in Tomcat server) port: *Not available*; External Apache server port: *80*
>
> In this case, while configuring for a Tomcat monitor, specify the host name as 'Tomcat A' and specify the port of the external Apache, i.e., 80.

4. Multiple Tomcat Server (with HTTP instances in each of these servers) and one external instance of Apache

There are multiple Tomcat servers, say 3, with HTTP instances in each of them and another external Apache running.

> **Example:** Tomcat Server names: *Tomcat A*, *Tomcat B*, *Tomcat C*; HTTP (in Tomcat servers) port: *8070*, *8080*, *8090* respectively; External Apache server port: *80*
>
> In this case, you need to create tomcat server monitor individually for Tomcat A, Tomcat B, and Tomcat C and specify their ports as 8070, 8080, and 8090 respectively.

5. Multiple Tomcat Server (without HTTP instances in these servers) and one external instance of Apache

There are multiple Tomcat servers, say 3, without HTTP instances in them and another external Apache running.

> **Example:** Tomcat Server names: *Tomcat A*, *Tomcat B*, *Tomcat C*; HTTP (in Tomcat servers) port: *Not available*; External Apache server port: *80*
>
> You can monitor only one of the instances in this case. Please contact appmanager-support@manageengine.com if you would like to have it added.

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Monitored Parameters

Tomcat Servers are monitored based on the parameters or the attributes listed below. These attributes provide information about the functioning of the Monitors of Tomcat server. You can also configure thresholds to the numerical attributes monitored by the server based on these details.

Availability tab, gives the Availability history for the past 24 hours or 30 days. *Performance* tab gives the Health Status and events for the past 24 hours or 30 days. *List view* enables you to perform bulk admin configurations. Click on the individual monitors listed, to view the following information.

- Overview
- Memory
- Thread
- JDBC
- Web
- Web Applications
- Servlets

Overview

Parameters	Description
Availability	Shows the current status of the server - available or not available.
Response Time	The time taken for the tomcat server to respond while monitoring in milliseconds
Average Processing Time	The average processing time taken to process a request in milliseconds
Requests Per Minute	The average number of requests received by the server in one minute
Average Bytes Per Minute	The average bytes send per minute
Successful Requests	The number of requests served successfully
Errors	The number of error request received
Requests Failed percentage	Percentage of requests failed.
Class Loaded	The number of classes currently loaded in the java virtual machine.
Class Unloaded	The number of classes unloaded since the java virtual machine has started
Total Class Loaded	The total number of classes loaded since the java virtual machine has started execution.
Daemon Threads	The number of live daemon threads
Live Threads	Current number of live threads
Total Threads Started	The total number of threads started since the java virtual machine started.

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Memory

Parameters	Description
Name	The memory pool name
Type	Memory pool type. i.e, (Heap memory , Non-Heap Memory)
Used Memory in MB	Used memory in MB
Free Memory in MB	Free memory in MB
Committed Memory in MB	Committed memory in MB
Maximum Memory in MB	Maximum memory allocated in MB
Used memory in %	Percentage of memory used
Free memory in %	Percentage of memory free
Name	Garbage collector name
Number of collections per Minute	Number of garbage collections occurred per minute
Collection Time per Minute	Collection time in milliseconds.

Thread

Parameters	Description
Connector Name	The thread pool connector name
Busy Threads	Number of threads currently busy
Current Threads	Number of threads currently created
Maximum Threads	The maximum number of active threads can present in this pool
Percentage Used	Percentage of threads used
Percentage Free	Percentage of threads free

JDBC

Parameters	Description
JNDI Name	The JNDI name of the datasource
Context	The web application context name
Active Connections	Number of active connections to the data source
Idle Connections	Number of idle connections to the data source
Active Connections in %	Percentage of active connections (not applicable if maximum active connection is unlimited i.e. configured as -1)
Idle Connections in %	Percentage of idle connections (not applicable if maximum idle connection is unlimited i.e. configured as -1)

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Web

Parameters	Description
Connector Name	Connector name of the global request processor
Request Count	Number of requests served by this global request processor
Error Count	Number of error request received
Processing Time	Time taken by this global request processor to process the requests in milliseconds
Bytes Send Per Second	Average bytes send per second
Bytes Received Per Second	Average bytes received per second
Successful Request (%)	Percentage of successful requests
Failed Request (%)	Percentage of failed requests

Web Applications

Parameters	Description
Context	Web application's context name
Status	Status of the web application such as STARTED, STOPPED
Processing Time (ms)	The processing time taken to process the requests in milliseconds
Successful Requests	Number of successful request served for this web application
Failed Requests	Number of error request for this web application
Average Response Time (ms)	Average response of this web application in milliseconds
Average Request Per Minute	Average requests for this web application per minute
Average Bytes Per Second	Average bytes send per second
No.of Open Sessions	Number of sessions currently open / active
No.of Expired Sessions	Number of sessions expired
No.of Rejected Sessions	Number of sessions rejected

Servlets

Parameters	Description
URL	The name of the servlet
Context	Web application's context name
Processing Time (ms)	The processing time in milliseconds
Successful Requests	Number of successful request
Failed Requests	Number of error request
Average Response Time (ms)	Average response time in milliseconds
Average Requests Per Minute	Average requests served per minute

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SilverStream Servers

To create a SilverStream Server Monitor

1. Click on **New Monitor** link.
2. Select **SilverStream**.
3. Give the **Display name**.
4. Enter the **Hostname** of the host where SilverStream Server runs.
5. Enter the **Port number**.
6. Set the **Polling interval**.
7. If you are adding a new monitor from an Admin Server, select a Managed Server.
8. Choose the **Monitor Group** from the combo box with which, you want to associate SilverStream Server Monitor (optional). You can choose multiple groups to associate your monitor.
9. Click **Add Monitor(s)**. This discovers SilverStream Server from the network and starts monitoring them.

Monitored Parameters

SilverStream servers are monitored based on the attributes such as memory, thread, etc. The monitoring details of SilverStream server are represented graphically that helps to understand the parameters with ease. You can also configure thresholds to the attributes monitored by the server based on these details.

Availability tab, gives the Availability history for the past 24 hours or 30 days. *Performance* tab gives the Health Status and events for the past 24 hours or 30 days. *List view* enables you to perform bulk admin configurations. Click on the individual monitors listed, to view the following information.

Parameter	Description
Monitor Information	
Name	The name of the server
Health	The health of the server
Availability	The availability status of the server

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Last Polled at	The time at which last poll happened
Next Poll at	The time at which next poll has been scheduled
Memory Details	
Free Memory	Available Memory in MB for the JVM
Total Memory	Total Memory used by JVM
GC Count	No. of time Garbage Collection happened
Request Details	
Minimum Response Time	The least time taken to process a request
Average Response Time	Average time taken to process a request
Maximum Response Time	The maximum time taken to process a request
Thread Details	
Free Threads	No. of free threads
Idle Threads	No. of threads that are waiting for a task
Total Threads	Total number of threads available
Load Details	
Requests	No.of requests processed by the server
Current Load	Load on the SilverStream Server
Bytes	No. of bytes transferred by the server
Session Details	
Idle Sessions	No.of sessions in idle state
Total Sessions	Total number of sessions
License Details	

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Used Licenses	Total number of licenses used
Total Licenses	Total number of licenses available

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VMware vFabric TC Server Monitoring

The supported versions of VMware vFabric tc Server are 2.6 to 2.9

To create VMware vFabric tc Server Monitor

1. Click on **New Monitor** link.
2. Select **VMware vFabric tc Server**.
3. Provide the **Display name** of the monitor.
4. Enter the **Host Name** in which the vFabric tc Server is running.
5. Enter the **Port** number in which the JMX Agent is running (6969 by default). The port in which JMX agent is running; is defined in the 'catalina.properties' file.
6. Enter the **User Name** and **Password** of the vFabric tc Server.
7. Specify the **JNDIPath**. For example, JNDIPath for default installations of vFabric tc Server is /jmxrmi.
8. Specify the **Polling Interval** in minutes.
9. If you are adding a new monitor from an Admin Server, select a Managed Server.
10. Choose the **Monitor Group** from the combo box with which you want to associate vFabric tc Server Monitor (optional). You can choose multiple groups to associate your monitor.
11. Click **Add Monitor(s)**. This discovers the vFabric tc Server from the network and starts monitoring it.

Note: To enable JMX in the tc Server, you have to define a JMX port in the file '*catalina.properties*' and then give an entry in a *server.xml*

[Click the link to view an example server.xml file and also a snippet of catalina.properties which shows how to set values for the variables used in the server.xml file].

Applications Manager monitors the VMware vFabric tc Server and the Spring applications deployed on the server to detect any performance problems. This monitoring is carried out by tracking critical components of the vFabric tc Server such as memory, thread, throughput, garbage collector,etc.

Monitored Parameters

The *Availability* tab shows the availability history of the vFabric tc Server for the past 24 hours or 30 days. The *Performance* tab shows some key performance indicators of the vFabric tc Server such as CPU utilization, throughput and garbage collection rate. This tab also shows the health status and events for the past 24 hours or 30 days.

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The *List view* lists all the vFabric tc Servers monitored by Applications Manager along with their overall availability and health status. It enables you to perform bulk admin configurations. Click on the individual monitors listed to view detailed performance metrics.

To view detailed performance metrics of a vFabric tc Server, click on the monitor name listed in the *Availability* or *List View* tabs. The performance metrics have been categorized into 6 different tabs:

- Overview
- Web Applications
- Throughput
- Cache
- Transaction
- Threads
- Configuration Details

Overview

This tab provides a high-level overview of the health and performance of the vFabric tc Server along with information pertaining to the throughput, thread and garbage collection.

Parameters	Description
Memory Details	
Memory Used	The amount of memory used by the JVM
Memory available	The amount of physical memory available.
Used Heap	The percentage of heap memory space used.
Total Memory	Total amount of physical memory available to the operating system.
CPU Usage	
CPU Usage	The CPU utilization of the VM.
Throughput	
Bytes Received Per Second	The average bytes received per second.

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Bytes Sent Per Second	The average bytes sent per second.
Error Count	The number of error request received.
Processing Time	The processing time taken to process the requests in milliseconds.
Request Count	The number of requests served by this global request processor.
Thread Details	
Thread Count	Total number of threads created and also started since the Java virtual machine started.
Threads in Running State	Total number of threads executing in the Java virtual machine in running state.
Threads in Waiting State	Total number of threads in the Java virtual machine in waiting state.
Blocked Threads	A thread that is blocked waiting for a monitor lock is in this state.
Timed Waiting Threads	A thread that is waiting for another thread to perform an action, for up to a specified waiting time is in this state.
Deadlock Threads	Number of threads that are in deadlock waiting to acquire object monitors.
Heap Memory	
Eden Space	The pool from which memory is initially allocated for most objects.
Tenured Gen	The pool containing objects that have existed for some time in the survivor space.
Survivor Space	The pool containing objects that have survived GC of eden space.
Non Heap Memory	
Perm Gen, Perm Gen [shared-rw], Perm Gen [shared-ro]	Holds all the reflective data of the virtual machine itself, such as class and method objects. With JVMs that use class data sharing, this generation is divided into read-only and read-write areas.
Code Cache	Memory used for compilation and storage of native code.
Garbage Collector	
GC Rate	The rate of garbage collection.
Average GC Time (ms)	Time taken to perform garbage collection.

You can use the Custom Fields option in the 'Monitor Information' section to configure additional fields for the monitor.

Note
• Support given for JDK 1.8: When monitoring with JDK 1.8 MetaSpace, Applications Manager monitors and displays new memory space called MetaSpace and Compressed Class Space instead of the former Permanent Generation (Non-Heap).

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Web Applications

This tab provides the details of the various applications running in the vFabric tc Server.

Parameters	Description
Context	The various applications running.
Active Sessions	The number of sessions currently in active state.
Session Creation Rate	The number of sessions created per second.
Average Response Time	The average response time taken for a particular application.

You can also disable, enable or delete a particular application by using the *Actions* option and also compare performance reports of different applications using the*Compare Reports option*.

Throughput

This tab displays information pertaining to the number of requests received and sent per second in the server.

Parameter	Description
Global Request Processor	
Name	The name of the instances.
Bytes Received Per Second	The number of requests received per second in the server.
Bytes Sent Per Second	The number of requests sent per second from the server.
Error Count	The number of requests, not processed.
Processing Time ms	The time taken for a request to be processed in milliseconds.
Request Count	The total count of requests.

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Cache

This tab contains metrics related to cache memory

Parameters	Description
Cache	The applications running in the server.
Access Count	The number of times the application is accessed.
Hits Count	The number of times the application is accessed from the cache.
Cache Hit Ratio %	The ratio of Hits Count to Access Count.

Transactions

This tab shows information pertaining to the database.

Parameters	Description
Transaction Manager- Commits	The commit rate transactions per second and failed commits transactions.
Transaction Manager- Resumes	The resume rate transactions per second and failed resumes transactions.
Transaction Manager- Rollbacks	The rollback rate transactions per second and failed rollbacks transactions.
Transaction Manager- Suspends	The suspend rate transactions per second and failed suspends transactions.

Threads

Parameters	Description
Thread Details	
Total Threads	The total number of threads started since the java virtual machine started.
Busy Threads	The number of threads currently busy.
Executor Details	

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Active Threads	The number of Active Threads in the JVM.
Max Threads	The maximum number of Threads in the JVM.
Pool Size	The number of objects in the pool (entity and stateless).
Requests Queue Size	The number of requests in the Request Queue.

Configuration Details

Parameters	Description
Name	The Java virtual machine implementation name.
Version	The Java virtual machine Version.
JVM Vendor	The Java virtual machine implementation vendor.
Classpath	The Java class path that is used by the system class loader to search for class files.
Library Classpath	The Java library path.
Boot Classpath	The boot class path that is used by the bootstrap class loader to search for class files.
OS Name	The operating system name.
Total Memory (MB)	The amount of memory used by this VM.
Maximum Metaspace (MB)	The maximum Native memory space for the representation of class metadata is called Metaspace**.** MetaSpace use native memory Â to store meta-data and that grows automatically.

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WebLogic Servers

Supported Versions

The following versions of the WebLogic Servers can be monitored by the Applications Manager:

1. WebLogic 6.1
2. WebLogic 7.x
3. WebLogic 8.x
4. WebLogic 9.x
5. WebLogic 10.x (WebLogic 11g)
6. WebLogic 12c

Know the Prerequisites that are required to monitor WebLogic.

Create a WebLogic Server Monitor

1. Click on **New Monitor** link.
2. Select **WebLogic Server**.
3. Enter a **Display Name** for the monitor.
4. Enter the **IP Address/ hostname** of the host.
5. Select the **version** of your Weblogic Server from drop-down menu.
6. From the box, select whether **SSL** is enabled or not.
7. Enter the **port number** in which WebLogic is running.
8. You can enter your own credential details or select preconfigured credentials from details in Credentials Manager. If you wish to enter your own credentials, specify **WebLogic version, username** and **password** details for this monitor.
9. Enter the polling interval time in minutes.
10. If you are adding a new monitor from an Admin Server, select a Managed Server.
11. Provide the monitor-specific authentication information, such as **user name and password**.
12. Choose the **Monitor Group** from the combo box with which you want to associate WebLogic Server Monitor (optional). You can choose multiple groups to associate your monitor.
13. Click **Add Monitor(s)**. This discovers WebLogic server from the network and starts monitoring them.

Note: **The ports that need to be opened when the Weblogic Monitor is behind the firewall:** Two-way communication between WebLogic listening port (default : 7001) and Applications Manager web server port (default : 9090).

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WebLogic Server needs some additional configuration and conditions to be followed for monitoring.

- **To monitor WebLogic 6.1** Follow the steps given below: 1) Provide only Admin user name.
  2) Copy **Weblogic.jar** from folder *<Weblogic Home>/weblogic61/server/lib* in Remote WebLogic server version 6. Copy to *<AppManager Home >workingclasseswebloglcversion6* folder in the machine where Applications Manager is running.
- **To monitor WebLogic 7.x**

  You should set the *weblogic.disableMBeanAuthorization* and *weblogic.management.anonymousAdminLookupEnabled* variables to true for enabling data collection.

  Follow the steps given below:

  1) Edit *startWLS.cmdsh* present in the *<WLS_HOME>/server/bin* directory and add the following arguments
  -Dweblogic.disableMBeanAuthorization=true
  -Dweblogic.management.anonymousAdminLookupEnabled=true Click here for Sample startWLS.cmd/sh
  2) Restart the WebLogic Server for the changes to take effect
  3) Copy Weblogic.jar from folder *<Weblogic Home>/weblogic70/server/lib* in Remote WebLogic server version 7. Copy to *<AppManager Home>workingclasseswebloglcversion7* folder in the machine where Applications Manager is running.
- **To monitor WebLogic 8.x**

  You should set the *weblogic.disableMBeanAuthorization* and *weblogic.management.anonymousAdminLookupEnabled* variables to true for enabling data collection.

  Follow the steps given below:

  1) Edit *startWLS.cmdsh* present in the *<WLS_HOME>/server/bin* directory and add the following arguments
  -Dweblogic.disableMBeanAuthorization=true
  -Dweblogic.management.anonymousAdminLookupEnabled=true Click here for Sample startWLS.cmd/sh
  2) Restart the WebLogic Server for the changes to take effect
  3) Copy Weblogic.jar from folder *<Weblogic Home>/weblogic81/server/lib* in Remote WebLogic server version 8 Copy to *<AppManager Home>workingclasseswebloglcversion8* folder in the machine where Applications Manager is

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running.

- **To monitor WebLogic 9.x**

  Copy Weblogic.jar from folder *<Weblogic Home>/weblogic92/server/lib* in Remote WebLogic server version 9 . Copy to *<AppManager Home>workingclassesweblogicversion9* folder in the machine where Applications Manager is running.

- **To monitor WebLogic 10.x , 11g , 12C**

  Copy *Weblogic.jar, wlclient.jar, wljmsclient.jar, wlthint3client.jar* from folder /wlserver/server/lib in Remote WebLogic server. Copy to workingclassesweblogicversion10 folder in machine where Applications Manager is running.

  If customer is monitoring all three versions of weblogic (10.x, 11g, 12C), then get the jars from latest version of WebLogic(Version 12c).

Troubleshoot: Having trouble in monitoring WebLogic server? Refer to the online Troubleshooting section.

Monitored Parameters

WebLogic servers are monitored based on a few parameters or the attributes. These attributes provide information about the functioning of the Monitors of WebLogic server and you can also receive alarms based on the thresholds configured on the numerical attributes of the server.

Availability tab, gives the Availability history for the past 24 hours or 30 days. *Performance* tab gives the Health Status and events for the past 24 hours or 30 days. *List view* enables you to perform bulk admin configurations. Click on the individual monitors listed, to view the following information.

Click on the monitor name to see all the server details listed:

- JVM
- JDBC
- Thread pool
- Web Applications
- Java Message Service
- SAF

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- Custom Attributes

Parameters	Description
JVM	
Type	Type of memory
Heap Used	Amount of heap used by the weblogic server
Heap Free	Amount of heap currently available
Committed	Amount of heap that is committed for running weblogic server
Maximum	Maximum amount of heap available for weblogic server
Used Percentage	Amount of heap used in percentage
Free Percentage	Amount of heap available in percentage
Server Response Time	
Server Response Time	Server Response Time is the time the server takes to respond to a user request. Here, it is calculated as the time that the Weblogic Server takes to establish a connection with and respond to a request from Applications Manager. You can also track the minumum, maximum, average and current response time of your Weblogic Servers.
JDBC	
Name	Name of the database connection pools that enables caching of database connection in the monitor easier through pools.
Threads waiting for connection	Mentions the number of threads waiting for the connection.
JDBC Active Connections	Mentions the number of active connections made to the monitor.
Total Connections	Specifies the number of database connection pool.
Pool State	Specifies the state of the pool Running/Suspended
JDBC Connection Leak Count	There can be some problems in connections that are checked out from the connection pool but are not returned back to the pool and they are specified using the parameter.
JDBC Active Connection in %	Amount of active connections in %
Thread Pool	
Idle Threads Count	Specifies the threads that are idle or not used.
Total Threads	Refers to the total count of threads assigned in this thread queue.
Pending Request Total Count	Specifies the number of requests that are pending in the queue.
Threads In Use	Specifies the threads that are currently in use.
Web Applications	
Name	Name of the Web Application.
Session Opened Total	Refers to the total number of sessions that were opened since deployment of an Application.
Number of Active Sessions	Specifies the number of sessions that are currently active in the Application.
Maximum Number of Sessions	Refers to the highest number of sessions that were open for an Application.
Number of Servlets	Refers to the total number of servlets of a web application
Java Message Service	
Name	The name of JMS server.
Current	The current number of messages stored on this JMS server.
Pending	The current number of messages pending (unacknowledged or uncommitted) stored on this JMS server.
Received/Min	The number of messages received on this destination since the last reset per minute.

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SAF Details (Conversations & Remote End Points)

Name	Name of SAF Agent in Weblogic.
Conversations Current Count	The current number of conversations.
Conversations Total Count	The total number of conversations since the last reset.
Conversation/Minute	The total number of conversations per minute since the last reset.
Name	Name of SAF Agent in Weblogic.
Current	The current number of remote endpoints to which this SAF agent has been storing and forwarding messages.
Total	The number of remote endpoints to which this SAF agent has been storing and forwarding messages per minute.
Remote End Points Per Minute	The rate at which this SAF agent has been storing and forwarding messages per minute.

Custom Attributes

You can also view the custom attributes of the WebLogic Server in the same page. Click **Add Attributes** to add custom WebLogic attributes. For information on adding Custom Monitors, refer to Custom Monitors topic.

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WebSphere Server Monitoring

Create a New Monitor

The **supported versions of WebSphere Servers** are 5.x, 6.x, 7.x and 8.x

> **Prerequisites for Websphere Monitoring:** For Applications Manager to collect data from WebSphere Application Server, configurations are required at the Performance Monitoring Infrastructure (PMI) specification level. Refer Prerequisites Section for configuration details.

To create a WebSphere Server Monitor

1. Click on **New Monitor** link.
2. Select **WebSphere Server**.
3. Select the **Deployment Mode** as **Base** or **Network Deployment**.
4. For Base Mode, Enter the **Host name/IP Address** of the host in which websphere application server is running.
   For Network Deployment, enter the Host name/IP Address of the websphere application server in which the perf servlet is installed. This will automatically discover all the WebSphere servers in Network Deployment.
5. Enter the SubNetMask of the network.
6. Enter the HTTP Transport Port (9080 by default).
7. Enter the polling interval time in minutes.
8. If you are adding a new monitor from an Admin Server, select a Managed Server.
9. Select the version of the WebSphere to be monitored - 5.x, 6.x, 7.x and 8.x.
10. Enter the **port number of the SOAP Connector** (8880 by default).
11. If you want to monitor WebSphere through SSL mode, select the **SSL is enabled** checkbox.
12. Enter the User Name and Password, if Global Security is enabled.
13. In Network Deployment Mode, Enter the **Network Deployer's Host and SOAP Port (Default : 8879)**.
14. Choose the **Monitor Group** from the combo box with which you want to associate WebSphere Server Monitor (optional).
    You can choose multiple groups to associate your monitor.
15. Click **Add Monitor(s)**. This discovers WebSphere server from the network and starts monitoring them.

Note: Applications Manager has been tested for WebSphere versions of English, German, Japanese and Chinese languages.

In the **Network Deployment mode**, the child monitors which are automatically discovered cannot be deleted from the list view. If a user tries to delete a child monitor, it will get added again in next poll of the Parent monitor. Child monitors will be deleted only if the parent monitor is deleted. If they want to stop data collection(don't want to monitor) for child monitors, they need to mention those child monitors in Exclude list of the parent monitor in edit monitor page. If they mentioned it in exclude list of parent monitor page, then those child monitors will be unmanaged and data collection stops for those monitors.

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Monitored Parameters

The *Availability* tab, gives the Availability history for the past 24 hours or 30 days. *Performance* tab gives the Health Status and events for the past 24 hours or 30 days. List view enables you to perform bulk admin configurations. Click on the individual monitors listed, to view the following information

WebSphere servers are monitored based on the attributes listed under the following tabs:

- Monitor Information
- Overview
- Web
- EJB
- JDBC
- JMS - Queues, Topics
- Thread

The monitoring details of the server are represented graphically that helps to understand the parameters with ease. You can also configure thresholds to the attributes monitored by the server based on these details.

Monitor Details

Parameters	Description
Deployment Mode	The deployment mode of the WebSphere server. You can choose either Base or Network Deployment.If you select: • **Base Mode,** enter the Host Name/IP Address of the host in which the WebSphere application server is running. • **Network Deployment,** enter the Host name/IP Address of the WebSphere Application server in which the perf servlet is installed. This will automatically discover all the WebSphere servers in Network Deployment.
WebSphere Version	Denotes the version of the WebSphere server monitor.
Port	Refers to HTTP Transport port.
Subnet Mask	The subNetMask of the WebSphere server.
Do not resolve DNS name	If you have multiple system IP addresses configured with a single DNS name, select the '**Do not resolve DNS name**' option under**'Advanced'** section.
Network Deployer Host, Network Deployer SOAP Port	If you have chosen the 'Network Deployment' mode, specify the Network Deployer Host and Network Deployer SOAP Port values. The default SOAP port is 8879.

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SSL is enabled	If you want to monitor WebSphere through SSL mode, select the 'SSL is enabled' checkbox.
App Servers to Monitor	If you want to monitor selected app servers running in the WebSphere server, select the 'Advanced Options' checkbox and specify the app servers in the 'App Servers to Monitor' field. If you want to monitor all the app servers in the WebSphere server, leave this field empty.

Overview

Parameters	Description
State	Refers to different states of the Websphere server such as running and down.
HTTP Port	Refers to HTTP Transport port.
Transaction Details	Specifies Global Commit Duration, Committed Transactions, Transactions Rolled Back and Transactions Optimized.
Server Response Time	Specifies Minimum, Maximum, Average and Current Response Time.
Availability	Specifies the status of the WebSphere server - available or not available.
JVM Memory Usage	Specifies the total memory in JVM run time.
CPU Utilization	Specifies the average system CPU utilization taken over the time interval since the last reading.
Free Memory	Specifies the amount of real free memory available on the system.
Average CPU Utilization	Specifies the average percent CPU Usage that is busy after the server is started

Session Details of Web Applications

Parameters	Description
Invalidated Sessions	Specifies the total number of sessions that were invalidated.
Session Creation Rate/Min	The rate per minute at which session objects were created by the server.
Affinity Breaks/Min	The total number of requests received for sessions that were last accessed from other Web applications. This value can indicate failover processing or a corrupt plug-in configuration.
Live Sessions	The number of local sessions that are currently cached in memory
Total Requests/Min	The total number of requests that a web application processed
Error Count/Min	Total number of errors in a servlets or JavaServer Page (JSP).

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Concurrent Requests	The number of requests that are concurrently processed.

EJB Details

Parameters	Description
Name	Mentions the names of the different EJB present in the WebSphere server with JAR and EAR name. Move the mouse pointer over the EJB name to view the JAR and EAR name.
Type	Denotes the different types of the bean such as entity, stateless session, stateful session, and message driven.
Concurrent Lives	Specifies the number of concurrent live beans.
Total Method Calls	Specifies the total number of method calls.
Average Method Response Time	Specifies the average time required to respond to the method calls.
Pool Size	Specifies the number of objects in the pool (entity and stateless).
Activation Time	Specifies the average time in milliseconds that the total bean is activated for that particular Bean container, including the time at the database, if any.
Passivation Time	Specifies the average time in milliseconds that the total bean is passivated for that particular Bean container, including the time at the database, if any.

Current JDBC Connection Pool Details

Parameters	Description
Name	The name of the current JDBC Connection pool.
Pool Type	The type of the connection pool.
Create Count	The total number of connections created.
Pool Size	The size of the connection pool.
Concurrent Waiters	The number of threads that are currently waiting for a connection.
Faults	The total number of faults in the connection pool such as timeouts.

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Average Wait Time	The average waiting time, in milliseconds, until a connection is granted.
Percent Maxed	The average percent of the time that all connections are in use.

JMS Queues

Parameters	Description
Queue Depth	The number of messages available for a queue's consumption
Uncommitted Transactions	The number of messages locked or uncommitted. This means messages that have been added or removed but the transaction has not yet been committed.
Produced Count/Sec	The total number of messages produced per second to this queue.
Consumed Count/Sec	The total number of messages consumed per second from this queue
Number of Producers	The number of currently attached local producers.
Number of Consumers	The number of currently attached local consumers.
Message Wait Time(sec)	Maximum time spent by messages on this queue at consumption in seconds.
Oldest Message Age(sec)	The longest time any message has spent on this queue in seconds.

Jms Topics

Parameters	Description
Durable Subscriptions	The number of subscriptions that can be used to preserve messages published on a topic while the subscriber is not active.
Non-durable Subscriptions	The number of non-durable subscriptions.
Incomplete Publications	The number of publications not yet received by all current subscribers.
Oldest Publication Age	The longest time any publication has spent on this topic space.
Number of Publishers	The number of local publishers to topics in this topic space.
Number of Subscriptions	The number of local subscriptions to topics in this topic space.
Number of Publications	The total number of publications to this topic space.

Thread Pool Details

Parameters	Description
Name	Mentions the name of the thread pool.
Thread Creates	Specifies the total number of threads created.

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Thread Destroys	Specifies the total number of threads destroyed.
Active Threads	Specifies the number of concurrently active threads.
Pool Size	Specifies the average number of threads in pool.
Percent Used	The average percentage of the pool in use.
Free Pool Size	The number of free connections in the pool.
Percent Maxed	Specifies the average percent of the time that all threads are in use.

Note

In **Network Deployment mode**, Network Deployer will be listed in the WebSphere Monitors list. Clicking on it, will give server information and the custom attributes. Further, the individual WebSpheres within the Network Deployment would also be listed. Clicking on those servers would bring up each of those server's details.

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Monitoring Apache Geronimo

- Apache Geronimo - An Overview
- Monitoring Apache Geronimo - What we do
- Adding a new Apache Geronimo Monitor & Demo / Using AddMonitor API
- Monitored Parameters

Apache Geronimo - An Overview

Apache Geronimo is an open source J2EE/Java EE 5 web application server that integrates open source projects to create Java/OSGi server runtimes that meet the needs of enterprise developers and system administrators. Geronimo can host a variety of server applications and boasts a large base of users. It comes equipped with a relational database server and message broker, enabling you to immediately deploy your enterprise applications. With all this potential, monitoring Apache Geronimo can be a daunting task.

Monitoring Apache Geronimo - What we do

Applications Manager aims to help administrators implement performance management of their Apache Geronimo application servers and the business-critical applications running on them. Let’s take a look at what you need to see to optimize your Apache Geronimo servers and the performance metrics that you can gather with Applications Manager:

- **Resource utilization details -** Discover Apache Geronimo servers, monitor memory and CPU utilization and get alerted of changes in resource consumption.
- **JVM and Thread Details** - Track thread usage with metrics like Daemon, Peak and Live Thread Count. Ensure started threads don’t overload the server's memory.
- **Web and Data Source details** - Get an overview of sessions where you can see all session details for each web application – active, expired, duplicate, rejected and more. Collect information on the number of requests, concurrent connections, requests duration etc.
- **EJB and ActiveMQ data -** Automatically collect and visualize ActiveMQ queue data like memory usage, average message size, average enqueue time and broker metrics all in one place. Analyze topic details including memory consumed by each

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topic, average message size, blocked sends, health of each topic etc. and make informed decisions. Correlate subscriber metrics with their respective topic metrics to diagnose issues.

- **Juddi Stats and Cache details - ** Track Failed and Successful API Queries stats of the UDDI Registry. Monitor the cache size of an Apache Geronimo Environment and the number of access count.
- **Fix Performance Problems Faster** - Maintain configurations for high availability and scalability, and be alerted automatically of potential issues with the components of your Apache Geronimo server. Become aware of performance bottlenecks and take quick remedial actions before your end users experience issues.

Adding a new Apache Geronimo monitor

Supported Versions of Apache Geronimo: Version 2.1.3 to 3.0.1

Prerequisites:

To monitor Apache Geronimo Server, add the following java runtime options to the startup file of your application:

-Dcom.sun.management.jmxremote

-Dcom.sun.management.jmxremote.port=1999

-Dcom.sun.management.jmxremote.ssl=false

-Dcom.sun.management.jmxremote.authenticate=false

Replace 1999 with the any free port available.
You can find the startup file here : **<Geronimo-Installation-Directory>/bin**

Steps to create a new monitor

To create an Apache Geronimo Monitor, follow the steps given below:

- Click on **New Monitor** link. Choose **Apache Geronimo.**
- Specify the **Display Name** of the Apache Geronimo monitor.
- Enter the **HostName** or **IP Address** of the host where Apache Geronimo runs.
- Enter the **JMX Port** of the Apache Geronimo. By default, it will be 1191.
- Enter the credential details like **JMX user name** and **password** of Apache Geronimo server or select credentials from a **Credential Manager list**.
- Enter the polling interval time in minutes.

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- Click Test Credentials button, if you want to test the access to Spark server.
- Choose the Monitor Group from the combo box with which you want to associate Spark Monitor (optional). You can choose multiple groups to associate your monitor.
- Click Add Monitor(s). This discovers Spark from the network and starts monitoring

Demo

Use the AddMonitor API to add an Apache Geronimo Monitor

Syntax of Rest API for adding the monitor:

```
http://[HOST]:[PORT]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=ApacheGeronimo&HostName=[HostName]&Port=[JMX PORT]&UserName=[Username]&Password=[password]&displayname=Apache Geronimo Server&JNDIPath=[JNDIPATH]
```

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
apikey	The key generated from the **Generate API Key** option in the 'Admin' tab.
type	The type of the monitor you want to add. Value should be **Apache Geronimo Server.**
displayname	The display name of the Apache Geronimo monitor.
HostName	The name of the host in which Apache Geronimo server is running.
port	The port number where Apache Geronimo server is running.
Port	The JMX Port of the Apache Geronimo server
Username	The Username of Apache Geronimo instance.
Password	The password of Apache Geronimo instance.
JNDI Path	The JNDI Path of the server

Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on the **Apache Geronimo Server** monitors under the **Application Servers** Table. Displayed is the Apache Geronimo Server bulk configuration view distributed into three tabs:

- **Availability tab** displays the Availability history for the past 24 hours or 30 days.
- **Performance tab** displays the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

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Click on the monitor name to see all the server details listed under the following tabs:

- Monitor Information
- Overview
- JVM
- Web
- Data Sources
- EJB
- ActiveMQ
- JUDDI
- Cache
- Configuration

Monitor Information

Field	Description
Display Name	The display name of Apache Geronimo monitor.
Host Name / IP Address*	The name or Ip address of the host where Apache Geronimo is running.
Port	The Port in which Apache Geronimo server is running.
JMX Port	The JMX port of the server.
Username	The Username of Apache Geronimo instance.
Password	The password of Apache Geronimo instance.
JNDI Path	The JNDI Path of the server

Overview

Parameter	Description
Server Response Time	The response time of the Geronimo server.
Used heap memory percentage	The percentage of heap memory used.
Free heap memory percentage	The percentage of heap memory free.
Used non-heap memory percentage	The percentage of non heap memory used.
Free non-heap memory percentage	The percentage of non heap memory free.
THREAD USAGE	
Daemon Thread Count	The number of live daemon threads.
Peak Thread Count	The peak count of active threads in the system.

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Parameter	Description
Live Thread Count	The current number of live threads.
Total Thread Started	The total number of threads started since the java virtual machine started.
TRANSACTIONS	
Active Count	The number of active transactions.
Total Commits	The total number of transaction commits.
Total Rollbacks	The total number of transaction rollbacks.

JVM

Parameter	Description
Class Loading	
Loaded class count	The number of classes currently loaded in the java virtual machine.
Unloaded class count	The number of classes unloaded since the java virtual machine has started.
Total Class count	The total number of classes loaded since the java virtual machine has started execution.
Garbage Collector	
PC Scavenge Collection count rate	The number of garbage collections carried out by the PC Scavenge
PC Scavenge Collection time rate	The time taken to collect garbage by PC Scavenge
PC MarkSweep Collection time rate	No. of garbage collected by MarkSweep
PC MarkSweep Collection time rate	Time taken to collect garbage by MarkSweep
Memory Details	
Name	Heap Memory/ Non- Heap Memory usage in MB.
Committed	Current allocated memory in MB.
Max	Max allocated memory in MB.
Used	Current used memory in MB.
Free	Current free memory in MB.
Free%	The percentage of currently free memory.
Used%	The percentage of currently used memory.
Buffer Pool	
Direct Buffer Connection Count	The total connections to Direct Buffer pool.
Direct Buffer Space Used	The total space used in the Direct Buffer pool.
Direct Buffer Total Space	The total space in the Direct Buffer pool.
Mapped Buffer Connection Count	The total connections to Mapped Buffer pool.
Mapped Buffer Space Used	The total space used in the Mapped Buffer pool.
Mapped Buffer Total Space	The total space in the Mapped Buffer pool.

Buffer Pool: A direct buffer is a chunk of memory typically used to interface Java to the OS I/O subsystems, for example as a place where the OS writes data as it receives it from a socket or disk, and from which Java can read directly. The mapped buffer pool is all the memory used by Java for its FileChannel instances.

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Web

Parameter	Description
Web apps	
Context	Web application's context name
Active Sessions	Number of active sessions at this moment
Duplicate Sessions	Number of duplicated session ids generated
Expired Sessions	Number of sessions that expired.
Rejected Sessions	Number of sessions we rejected due to maxActive being reached
Session Average Alive Time	Average time an expired session had been alive.
Session Max Alive Time	Longest time an expired session had been alive.
Session Create Rate	Session creation rate in sessions per minute.
Session Expire Rate	Session expiration rate in sessions per minute.
Global Request Processor	
Connector Name	Connector name of the global request processor.
Request Count	Number of requests served by this global request processor.
Error Count	Number of error request received.
Processing Time	Time taken by this global request processor to process the requests in milliseconds.
Bytes Sent Per Second	Average bytes sent per second.
Bytes Received Per Second	Average bytes received per second.
Successful Request (%)	Percentage of successful requests.
Failed Request (%)	Percentage of failed requests.

Data Sources

Parameter	Description
Name	Name of the data source.
Active Connections	Number of active connections to the data source.
Idle Connections	Number of idle connections to the data source.

EJB

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Parameter	Description
EJP Pool	
Name	Name of the EJB Pool
Active Instances	The no. of active instances
Idle Instances	The no. of idle instances.
Initializing Instances	The no. of initializing instances.
Pooled Instances	The no. of pooled instances.
Access Timeouts	The no. of times, access timeouts occurred.
Aged	The no. of aged instances.
Flushed	The no. of times, the pool is flushed.
Garbage Collected	The no. of times, the garbage collection occurred.

ActiveMQ

Parameter	Description
Apache ActiveMQ Broker	
Name	Name of the Active MQ Broker.
Memory Usage Percentage	The percentage of the memory limit .
Dequeue Count	Number of messages that have been acknowledged on the broker.
Enqueue Count	Number of messages that have been sent to the broker.
Consumer Count	Number of message consumers subscribed to destinations on the broker.
Message Count	Number of unacknowledged messages on the broker.
Temp Usage Percentage	Percent of temp limit used.
Store Usage Percentage	Percent of store limit used.
Apache ActiveMQ Topic	
Name	Name of the Active MQ queue.
Queue Size	Number of messages in the destination which are yet to be consumed. Potentially dispatched but unacknowledged.
Dequeue Count	Number of messages that have been acknowledged (and removed from) from the destination.
Enqueue Count	Number of messages that have been sent to the destination.
Dispatch Count	Number of messages that have been delivered (but potentially not acknowledged) to consumers.
Expired Count	Number of messages that have been expired.
InFlight Count	Number of messages that have been dispatched to, but not acknowledged by, consumers.
Consumer Count	Number of consumers subscribed to this destination.
Producer Count	Number of producers publishing to this destination.
Max Enqueue Time	The longest time a message has been held this destination.
Min Enqueue Time	The shortest time a message has been held this destination.
Avg Enqueue Time	Average time a message has been held this destination.
Memory Usage Percentage	The percentage of the memory limit used

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JUDDI

The Universal Description, Discovery and Integration (UDDI) protocol is one of the major building blocks required for successful Web services. UDDI creates a standard interoperable platform that enables companies and applications to quickly, easily, and dynamically find and use Web services over the Internet (or Intranet).

Parameter	Description
Name	Name of the JUDDI implementation.
Failed API Queries	Count of API queries failed.
Successful API Queries	Count of successful API queries.
Total API Queries	Total number of API queries performed.

Cache

Parameter	Description
Name	Name of the cache.
Cache Max Size	Max size of the cache.
Cache Size	Current cache size.
Access Count	Number of times the cache is accessed.
Hit Count	Number of cache hits.

Note: Geronimo provides built-in caches for Active MQ, juddi, open-ejb server and system-database.

Configuration

Parameter	Description
HostName/IP Address	Host name or IP address of the server.
Port	The port geronimo is running
Geronimo Installation Directory	The file directory where geronimo installed.
Geronimo Version	The version of the geronimo server.
Host OS	The operating system where the server is running.
JVM Vendor	Vendor of the virtual machine.
JVM version	Version of the virtual machine.

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Cloud Applications

Cloud computing services help organizations to improve the flexibility and scalability of IT services delivered to their end users. Hence it is vital to monitor your client’s cloud infrastructure seamlessly. Applications Manager's Cloud monitoring tool addresses this monitoring need.

Applications Manager's monitoring capabilities enables you to ensure that your public cloud computing services perform their best at all times and that cloud resources are being effectively utilized.

The following server types supported by Applications Manager under the Cloud Applications category:

- Amazon Monitors
- Windows Azure Cloud Service (Classic) Monitor
- OpenStack

Many IT organizations are moving a portion of their IT infrastructure to the cloud in order to improve flexibility and scalability of IT services delivered to end users. Public cloud services such as those provided by Amazon Web Services (AWS) allows companies to rent virtual computers on which to run their own applications and services. It is important to continuously monitor these cloud hosted applications in order to ensure they perform at expected levels at all times, and also to ensure cloud resources are being effectively utilized.

Applications Manager enables high performance business process management by detecting and diagnosing problems of cloud applications faster. The following cloud services are supported:

- Amazon
  - EC2 Instance
  - RDS Instance
  - S3 Bucket
- Windows Azure Cloud Service
- OpenStack

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Amazon Monitors

Creating a new Amazon Monitor

To create a new Amazon monitor, follow the steps given below:

1. Click on New **Monitor** link.
2. Select Amazon under Cloud Apps category.
3. Specify the **Display Name** of the Amazon server
4. Enter the **Access Key Id** of the AWS for accessing the AWS through the API. The access key has 20 alpha-numeric characters.
5. Enter the **Secret Access Key** of the AWS. The secret key should be 40 alpha-numeric characters long.
6. Specify the Polling Interval in minutes.
7. If you are adding a new monitor from an Admin Server, select a Managed Server.
8. Choose the Monitor Group with which you want to associate the Amazon monitor to, from the combo box (optional). You can choose multiple groups to associate your monitor.
9. Click Add Monitor(s). This discovers the Amazon server from the network and starts monitoring it.

Note: Before creating a new Amazon monitor, you have to configure proxy settings under 'Admin' tab.

Applications Manager automatically discovers all the EC2 and RDS instances, and S3 buckets under your Amazon account. You can then enable monitoring for those instances and buckets as per your requirement.

Monitored Parameters

Amazon accounts are monitored based on the parameters or the attributes listed below. These attributes provide detailed information about the functioning of the Amazon account. You can also configure thresholds to the numerical attributes based on these details and get notified when the thresholds are violated.

Go to the **Monitors** Category View by clicking the **Monitors** tab. Click on the **Amazon** monitor under the **Cloud Apps** Table. Displayed is the Amazon bulk configuration view distributed into three tabs:

- **Availability tab** displays the Availability history for the past 24 hours or 30 days.
- **Performance tab** displays the Health Status and events for the past 24 hours or 30 days along with key performance indicators of the Amazon account such as Total EC2 Instances running and Total RDS Instances along with heat charts for these attributes.
- **List view** enables you to perform bulk admin configurations and displays all the Amazon instances along with an overall idea

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of their availability and health status.

Click on the monitor listed in the *Availability* tab to view detailed performance metrics of the Amazon instance. These metrics are categorized into 2 different tabs for easy understanding. Here is an explanation of the metrics shown in these tabs:

1) **Instances**

This tab provides a high-level overview of your Amazon account as well as information about the EC2 instances present in this account.

Parameter	Description
Monitor Information	
Name	The name of the Amazon account.
Type	The type you are monitoring.
Health	The health (Clear, Warning, Critical) status of the Amazon account.
Total EC2 Instances Running	The number of EC2 instances running in the account
Total EBS Volumes in use	The number of EBS storage volumes currently in use
Total RDS Instances	The total number of RDS instances present in the account
Last Polled at	The time at which the last poll was performed
Next Poll at	The time at which the next poll is scheduled
Today's Availability	The overall availability status of the account for the day. You can also view 7/30 reports and the current availability status of the account
EC2 Instances	
Instance ID	The unique identifier of the EC2 instance
Region Name	The region where this EC2 instance is running (Supported regions).
State	The current state of the instance. The values include running, stopped, shutdown and terminated
Platform	The OS on which the instance is running
Public DNS Name	The DNS name associated with the instance

You can perform the following admin actions on the EC2 instances:

- **Delete**: Delete the EC2 instance from the account.
- **Assign Platform**: Assign platforms such as Windows, Mac OS, etc. to instances
- **Start Instances**: Option to start the EC2 instance from Applications Manager.
- **Stop Instances**: Option to stop EC2 instances from Applications Manager
- **Reboot Instances**: Option to reboot the EC2 instances from within Applications Manager.

2) **RDS Instances**

This tab provides details about the RDS Instances present in the Amazon account.

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Parameter	Description
Instance ID	The unique identifier of the instance.
Region Name	The region in which the RDS instance is running.
State	The current state of this instance. The possible values for this field are available, creating, failed, rebooting, etc.
DB Engine Name	The name of the database engine associated with this instance
Allocated Storage	The storage space allocated to this instance in Giga Bytes

3) **S3 Buckets**

This tab provides details about the S3 buckets present in the Amazon account.

Parameter	Description
Bucket Name	The unique name of the S3 bucket.
Bucket Size	The size of the S3 bucket in megabytes.
Bucket Location	The geographical region where Amazon has stored this bucket. Regions currently supported by Amazon are US-Standard, US-West (Northern California), EU (Ireland) and APAC-Singapore.
Creation Time	The time when the bucket was created.
Virtual Folders	The number of folders present in this S3 bucket.
Number of Objects	The number of objects stored in this S3 bucket.

You can perform the following admin actions on the S3 buckets from within Applications Manager.

- **Disable**: Disable the monitoring of S3 bucket.
- **Enable**: Enable the monitoring of S3 bucket.
- **Delete**: Delete the S3 bucket from Applications Manager.Use this option when S3 bucket is deleted from your Amazon account.

You can also view comparison reports based on attributes such as bucket size, virtual folders and number of object

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Supported Regions

AWS Global Regions

From Version 13600, we support the 15 global AWS regions. Here is a list of regions available in AWS Global account:
1. US East (Ohio)
2. US East (N. Virginia)
3. US West (N. California)
4. US West (Oregon)
5. Asia Pacific (Tokyo)
6. Asia Pacific (Seoul)
7. Asia Pacific (Mumbai)
8. Asia Pacific (Singapore)
9. Asia Pacific (Sydney)
10. Canada (Central)
11. EU (Frankfurt)
12. EU (Ireland)
13. EU (London)
14. EU (Paris)
15. South America (Sao Paulo)

AWS China Regions

The China regions are isolated from all other AWS (Global) regions and operated by AWS's Chinese partners separately from all other AWS regions. While the cloud services offered in both AWS China regions are the same as those available in other AWS (Global) regions.

From Version 13620, we support monitoring of Amazon Web Services in AWS China regions. Here is a list of regions available in the AWS China account:
1. China (Beijing)
2. China (Ningxia)

The default **Account Type** when adding a new Amazon monitor is **AWS Globa**l. Choose **AWS China** as the **Account Type** to monitor services in the AWS China regions.

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Amazon EC2 Instance Monitoring

Monitored Parameters

The Amazon EC2 instances are monitored based on the parameters or the attributes listed below. These attributes provide information about the functioning of the EC2 instances. You can also configure thresholds to the numerical attributes based on these details and get notified when the thresholds are violated.

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on the **EC2 Instance** of **Amazon monitors** under the **Cloud Apps** Table. Displayed is the Amazon EC2 bulk configuration view distributed into three tabs:

- **Availability tab** displays the Availability history for the past 24 hours or 30 days.
- **Performance tab** displays the Health Status and key performance indicators of an EC2 instance such as CPU Utilization, Volume Idle Time, Network In and Network Out along with the heat charts for these attributes for the past 24 hours or 30 days.
- **List view** displays all the EC2 instances present in the Amazon account along with an overall idea of their availability and health status. In this tab, you can also perform bulk admin configurations. Click on the individual instance listed to view detailed performance metrics.

The metrics monitored are categorized into 3 different tabs for easy understanding. Below is an explanation of the metrics shown in these tabs:

- Overview
- Attached Volumes
- Configuration

Note: The metrics marked with an * are collected using Amazon's Cloudwatch

Overview

This tab provides a high-level overview of the EC2 instance as well as its performance indicators.

Parameter	Description
Monitor Information	
Name	The name of the EC2 instance
Type	Denotes the type you are monitoring.
Health	Denotes the health (Clear, Warning, Critical) status of the EC2 instance.
Region Name	Name of the region where the instance is running
Instance Type	Indicates the type of the EC2 instance

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Parameter	Description
State	The current state of the instance. Valid values include running, stopped, shutdown and terminated
Public IP Address	The IP address of the instance.
Platform	Indicates the platform of the instance (eg: Windows)
Last Polled at	Specifies the time at which the last poll was performed.
Next Poll at	Specifies the time at which the next poll is scheduled.
Today's Availability	Shows the overall availability status of the instance for the day. You can also view 7/30 reports and the current availability status of the instance.
CPU Utilization *	The CPU utilization of the instance
Network Traffic	
Network IN *	Incoming traffic in bytes per minute
Network Out *	Outgoing traffic in bytes per minute
Disk I/O	
Disk Read Ops *	The average number of disk read operations per second.
Disk Write Ops *	The average number of disk write operations per second.

Attached Volumes

This tab provides metrics about the EBS volumes attached to the EC2 instance.

Parameter	Description
Configuration	
Volume ID	The ID of the Amazon EBS volume. The volume and instance must be within the same Availability Zone and the instance must be running.
Size	The size of the volume in Giga Bytes.
Snapshot ID	Snapshot from which the volume was created.
Created Time	Time stamp when volume creation was initiated.
Attached Time	Time stamp when the attachment was initiated.
Delete on Termination	Specifies whether the Amazon EBS volume is deleted on instance termination.
Health	Denotes the health of the volume (clear, warning, critical)
Latency	
Idle Time *	The time period when no read or write operations were waiting to be completed in percentage(%)
Write Latency *	The average of the total number of seconds spent by all Write operations that completed in the period
Read Latency *	The average of the total number of seconds spent by all Read operations that completed in the period
Volume Traffic	
Read Bandwidth *	The sum of total number of Read operations in the period in bytes per second
Write Bandwidth *	The sum of total number of write operations in the period in bytes per second
Volume IO	
Read Throughput *	The sum of read operations in the period in seconds
Write Throughput *	The sum of write operations in the period in seconds
Queue Length *	The average number of read and write operation requests waiting to be completed over the period.

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Configuration

This tab provides the configuration details of the EC2 instance.

Parameter	Description
Instance ID	The unique key that identifies the EC2 instance.
Instance Type	Indicates the type of the instance.
Instance Launch Time	The time at which the instance was launched
State	The current state of the instance. The values include running, stopped, shutdown and terminated
Image ID	Image ID of the AMI used to launch the instance.
AMILaunch Index	The AMI launch index, which can be used to find this instance within the launch group.
Public DNS Name	The public DNS name assigned to the instance. This DNS name is contactable from outside the Amazon EC2 network.
Private DNS Name	The private DNS name assigned to the instance. This DNS name can only be used inside the Amazon EC2 network.
Public IP Address	The IP address of the instance.
Private IP Address	The private IP address assigned to the instance.
KeyPair Name	The name of the key pair, if this instance was launched with an associated key pair.
Platform	Indicates the platform of the instance (eg: Windows)
Availability Zone	The instance's availability zone.
Architecture	The architecture of the image.
RamDisk Id	RAM disk associated with this instance.
Kernel Id	Kernel associated with this instance.
RootDevice Type	The root device type used by the AMI. The AMI can use an Amazon EBS or instance store root device.
RootDevice Name	The name of the root device used by the AMI.
Monitoring	Indicates whether monitoring is enabled for the instance.

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Amazon RDS Instance Monitoring

Monitored Parameters

Amazon RDS Instances are monitored based on the parameters or the attributes listed below. These attributes provide information about the functioning of the RDS instance. You can also configure thresholds to the numerical attributes based on these details and get notified when the thresholds are violated.

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on the **RDS Instance** of **Amazon monitors** under the **Cloud Apps** Table. Displayed is the Amazon RDS bulk configuration view distributed into three tabs:

- **Availability tab** displays the Availability history of the RDS instances for the past 24 hours or 30 days.
- **Performance tab** displays the Health Status and key performance indicators of an RDS instance such as CPU Utilization, Free Storage Space, Database Connections and Write Throughput along with the heat charts for these attributes for the past 24 hours or 30 days.
- **List view** displays all the RDS instances present in the Amazon account along with an overall idea of their availability and health status. The list view also enables you to perform bulk admin configurations.

The metrics monitored are categorized into 2 tabs for easy understanding. Below is an explanation of the metrics shown in these tabs:

- Overview
- Configuration

Note: The metrics marked with an * are collected using Amazon's Cloudwatch

Overview

This tab provides a high-level overview of the RDS Instance as well as its resource utilization.

Parameter	Description
Monitor Information	
Name	The name of the RDS instance.
Type	Denotes the type you are monitoring.
Health	Denotes the health (Clear, Warning, Critical) status of the RDS instance.
Region Name	The region in which the RDS instance is running.
Instance Type	Indicates the type of instance
Created Time	The time when the instance was created.

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Parameter	Description
State	The current state of the instance. The values include running, stopped, shutdown and terminated
DB Engine Name	The name of the database engine associated with this instance
Last Polled at	Specifies the time at which the last poll was performed.
Next Poll at	Specifies the time at which the next poll is scheduled.
Today's Availability	Shows the overall availability status of the instance for the day. You can also view 7/30 reports and the current availability status of the instance.
CPU Utilization	
CPU Utilization *	The percentage of CPU Utilization
Free Storage Space *	The amount of available storage space.
Database Connections *	The number of database connections in use.
Network Traffic	
Read Throughput *	The average number of bytes read from the disk per second.
Write Throughput *	The average number of bytes written to the disk per second.
Network Latency	
Read Latency *	The average amount of time taken per disk read operation.
Write Latency *	The average amount of time taken per disk write operation.
Disk I/O	
Read Ops *	The average number of disk Read operations per second.
Write Ops *	The average number of disk write operations per second.

Configuration

This tab provides the configuration details of the RDS instance.

Parameter	Description
Instance ID	The unique key that identifies the RDS instance
Instance Type	Indicates the type of instance
Created Time	The time when the instance was created.
State	The current status of the instance. Valid values include available, backing-up, creating, deleted, deleting, failed, modifying, rebooting and resetting-master-credentials
DB Engine Name	The name of the database engine used for this instance.
MasterUser Name	The master username for the instance.
DB Name	Name of the initial database created when the instance was created.
Allocated Storage	The storage space initially allocated to this instance, specified in GBs
Endpoint Address	The DNS Address of the DB instance
Endpoint Port	Port used to connect to the DB instance
Multi(A-Z)Deployment	Indicates if this is a Multi-AZ DB Instance.
Availability Zone	The instance's availability zone
PreferredBackup Window	The daily period during which automated backups are created.
LatestRestorableTime	The latest time to which a database can be restored using point-in-time restore.
BackupRetentionPeriod	The number of days that automated backups are retained before deletion.

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Parameter	Description
PreferredMaintenanceWindow	The period during which patching and instance modifications will be performed.

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Amazon Simple Notification Service Monitoring (Amazon SNS)

- Amazon Simple Notification Service (SNS) - An Overview
- Monitoring Amazon Simple Notification Service (SNS) - What we do
- Adding a new Amazon SNS monitor / Using AddMonitor API
- Monitored Parameters

Amazon Simple Notification Service (SNS) - An Overview

Simple Notification Service (SNS) is a cloud messaging service from the host of Amazon web services. SNS is a flexible, fully managed pub/sub messaging and mobile notifications service for coordinating the delivery of messages to subscribing endpoints and clients. With SNS you can fan-out messages to a large number of subscribers, including distributed systems and services, and mobile devices.

Monitoring Amazon SNS - What we do

Applications Manager provides you with insight into the performance of your Amazon SNS service. Monitor region and topic-wise metrics like notification status (delivery and failure),SMS deliveries, messages throughput - sent and failed counts, subscription count and more.

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Create a new Amazon monitor

Mode of Monitoring: CloudWatch & Amazon API using SDK.

Prerequisites for setting up Amazon SNS monitoring:

To create a new Amazon monitor, follow the steps given below:

1. Click on New **Monitor** link.
2. Select Amazon under Cloud Apps category.
3. Specify the **Display Name** of the Amazon server
4. Enter the **Amazon Access Key Id** of the AWS for accessing the AWS through the API. The access key has 20 alpha-numeric characters.
5. Enter the **Secret Access Key** of the AWS. The secret key should be 40 alpha-numeric characters long.
6. Specify the Polling Interval in minutes. (Default polling interval is set to 60 minutes.)
7. If you are adding a new monitor from an Admin Server, select a Managed Server.
8. Choose the Monitor Group with which you want to associate the Amazon monitor to, from the combo box (optional). You can choose multiple groups to associate your monitor.
9. Click Add Monitor(s). This discovers the Amazon server from the network and starts monitoring it.

Enabling the Amazon SNS Tab

All SNS metrics are mapped under performance polling:

- Go to the **Admin** tab.
- Click **Performance Polling** under **Discovery and Data Collection**.
- Under **Performance Data Collection**, Click on the **Optimize Data Collection** tab.
- Select **Amazon** from the **Monitor Type** drop-down menu.
- Select **SNS Service** from the **Metric Name** drop-down menu.
- Select how you wish to configure the mertics:
  - By **Monitor Type -** This will be the default polling status, for any new monitor added. All the monitors of this type, will have the default polling status, until any exclusive customization is done for the monitor. You can choose between three different polling settings: **Never collect data, Collect data in every polling** and **Collect data at customized time interval.** Changing the polling status of 'Monitor Type', will also change any configuration done for its 'Monitors'.
  - By **Monitors** - Use this option to change the polling status of any particular monitor(s).
- Click **Save**.

Note

1. Before creating a new Amazon monitor, you have to configure proxy settings under 'Admin' tab.

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2. Click here to know more about AWS credentials.

3. It is not advisable to change the polling interval to less than 60 minutes as it may increase the number of request to amazon services.

Use the AddMonitor API to add an Amazon SNS Monitor

Syntax of Rest API for adding the monitor:

```
http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&accessKey=[ACCESSKEY]&SecretAccessKey=[SECRETACCESSKEY]&displayname=[DISPLAYNAME]
```

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the monitor you want to add. Value should be Amazon.
accesskey	The Amazon Access Key Id of the AWS for accessing the AWS.
secretaccesskey	The Secret Access Key of the AWS. The secret key should be 40 alpha-numeric characters long.
displayname	The display name of the Amazon server monitor.

Monitored Parameters

- SNS Usage
- Message Throughput
- Notification Delivery Rate
- Notification Failure Rate
- Region-Wise Metrics
- Topic-Wise Metrics

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SNS USAGE

Metric	Description
Total Messages Published	The total number of messages published throughout all the AWS supported regions.
Total Notifications Delivered	The total number of messages delivered throughout all the AWS supported regions.
Total Notifications Failed	The total number of messages failed throughout all the AWS supported regions.
Total Published Size (KB)	The total size of messages published throughout all the AWS supported regions.
Notifications Delivered (%)	The percentage of total delivered notifications.
Notifications Failed (%)	The percentage of total failed notifications.
SMS Month-To-Date charges	The total charges accrued since the start of the current calendar month for sending SMS messages in AWS supported regions. Unit - USD

MESSAGE THROUGHPUT

Metric	Description
Publish Size / Hour	The published message size per hour in KB

NOTIFICATION DELIVERY RATE

Metric	Description
Notifications Delivered / Hour	The number of notifications delivered per hour.

NOTIFICATION FAILURE RATE

Metric	Description
Notifications Failed / Hour	The number of notifications failed per hour.

REGION-WISE METRICS

Metric	Description
Region	The name of the AWS SNS supported region.
Topic Count	The number of topics available in a region.
Message Published	The number of message published in a region.

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Metric	Description
Notifications Delivered	The number of notifications delivered in a region.
Notifications Failed	The number of notifications failed in a region.
Published Size (KB)	The total Published size in a region. (KB)
SMS Month-To-Date charge (USD)	The total SMS spent charges in a region.

TOPIC-WISE METRICS

Metric	Description
Topic Name	The user-specified name of a SNS topic.
Region	The name of the AWS SNS supported region.
Messages Published	The number of message published in a topic.
Notifications Delivered	The number of notifications delivered in a topic.
Notifications Failed	The number of notifications failed in a topic.
Published Size (KB)	The total published size in a topic. (KB)
Subscription Count	The total number of subscriptions in a topic.

We have restricted topic count to 200 per region

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Microsoft Azure Monitoring

- Microsoft Azure - An Overview
- Monitoring Microsoft Azure - What we do
- Creating a new Azure Monitor
- Monitored Parameters

Microsoft Azure - An Overview

Microsoft Azure, formerly known as Windows Azure, is Microsoft's public cloud computing platform. It provides a range of cloud services, including those for compute, analytics, storage and networking. Users can pick and choose from these services to develop and scale new applications, or run existing applications, in the public cloud.

Monitoring Microsoft Azure - What we do

Applications Manager's Microsoft Azure monitor enables users to discover Virtual machines under an Azure subscription and monitor them. You can also monitor the health and performance of your Azure Storage account for better managing and utilizing our Azure hosted storage resources.

Applications Manager connects with Azure Virtual Machines through Azure-sdk-for-java to determine the health status and other performance counters. With Microsoft Azure monitoring, you can:

- Discover Azure Virtual machines under an Azure subscription.
- Find the number of VMs that are provisioned and running.
- View the status and configuration information of all the discovered resources.
- Collect and monitor performance metrics(CPU, Memory, Disk, Network, Thread&Process count, .NetCLR metrics).
- Collect and monitor Disk Utilization, Disk IO statistics, Network interface details by enabling Guest OS configuration.

Creating a new Microsoft Azure Monitor

To create a new Azure monitor, follow the steps given below:

- Click on the New Monitor link in the Applications Manager web client.
- Select 'Microsoft Azure' under Cloud Apps category
- Specify the Display Name of Microsoft Azure monitor
- Enter the Subscription ID for your Microsoft Azure subscription.

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- Choose the Discovery mode
- Following are the 2 discovery modes available,

Discovery using Azure Organizational Account (Powershell):

Prerequisite: Refer Prerequisites section.

Provide the User email & Password fields in New monitor page with the Username & Password of the created Organizational account

Discovery using AD Application & Service Principal:

Prerequisite: Refer Prerequisites section.

Provide the Client ID, Tenant ID & Application key that were obtained in the above mentioned prerequisite step in the New monitor page.

- Specify the polling interval in minutes and timeout in seconds

Note: Azure resources deployed using 'Azure Resource Manager(ARM)' model will be monitored by Applications Manager. Azure Resources deployed using Classic model are not supported.

Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **Microsoft Azure** under the **Cloud Apps** Table. Displayed is the Microsoft Azure bulk configuration view distributed into three tabs:

- **Availability tab** gives the Availability history for the past 24 hours or 30 days.
- **Performance tab** gives the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

Microsoft Azure monitor provides a brief detail of the Azure virtual machines under the given subscription. Click on the monitor name to see all the server details listed under the following tabs:

- Monitor Information
- Overview
- Virtual Machines
- Storage Accounts

Monitor Information

Parameter	Description
Name	Name of the Microsoft Azure monitor
Subscription ID	Subscription ID of the Azure subscription
Azure services	The services that are monitored under this subscription

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Parameter	Description
Discovery mode	The discovery mode chosen while creating the monitor
User Email	The organizational account used to access Azure resources
Client ID	Client ID of the Active Directory Application
Tenant ID	Tenant ID of the Active Directory
Timeout	Timeout Duration(seconds)
Total Azure Virtual Machines Provisioned	Count of virtual machines under this subscription
Total Azure Virtual Machines Running	Count of virtual machines in running state
Associated groups	The monitor groups to which this monitor is associated
Last polled at	Specifies the time at which the last poll was performed
Next poll at	Specifies the time at which the next poll is schedule

Overview

Parameter	**Description**
Total Azure Virtual Machines Provisioned	Count of virtual machines under this subscription
Total Azure Virtual Machines Running	Count of virtual machines in running state

Virtual Machines

Parameter	Description
Virtual Machine Name	Name of the Virtual machine
Status	Virtual machine's state
Resource group name	The Resource Group which has this Virtual Machine
OS Type	The Operating System of the Virtual Machine
Location	The Location where the Virtual Machine is located
Public IP Address	IP address of the Virtual Machine

Storage Accounts

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Parameter	Description
Azure Standard Storage Accounts	
Storage Account Name	The Azure Storage Account Name.
Provisioning State	Provisioning state of Storage Account Possible values : • Invalid • Creating • Deleting • Succeeded • Failed • Cancelled
Resource Group	Resource Group where the Storage Account is allocated in.
Location	Region where the storage account is provisioned
Primary Status	Status of Storage Account. Possible Values: • Available • Unavailable

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Azure Virtual Machines

The Azure Virtual machines are monitored based on the parameters or the attributes listed below. These attributes provide information about the functioning of Azure Virtual machines. You can also configure thresholds to the numerical attributes based on these details and get notified when the thresholds are violated.

Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **Azure Virtual Machines** under the **Cloud Apps** Table. Displayed is the Azure Virtual Machine bulk configuration view distributed into three tabs:

- **Availability tab** gives the Availability history for the past 24 hours or 30 days.
- **Performance tab** gives the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

Click on the monitor name to see all the server details listed under the following 9 tabs:

- Monitor Information
- Overview
- CPU
- Memory
- Disk
- Network
- Threads & Processes
- .NET CLR
- Configuration

Monitor Information

Parameter	Description
Name	Display name of the Virtual machine
Subscription ID	Subscription ID of the Azure subscription which contains this VM

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Virtual Machine name	Name of the Virtual machine
Virtual Machine Resource ID	Resource ID of the Virtual machine
Timeout	Timeout Duration(seconds)
Enable Guest OS monitoring	Guest OS monitoring option given in Edit monitor page
Username	VM's username
Timeout	Timeout Duration(seconds)
Associated groups	The monitor groups to which this monitor is associated
Last polled at	Specifies the time at which the last poll was performed
Next poll at	Specifies the time at which the next poll is scheduled

Overview

Parameter	**Description**
CPU UTILIZATION	
CPU Utilization	Task Manager's CPU usage counter
MEMORY METRICS	
Physical Memory Utilization	Percentage of RAM used
Swap Memory Utilization	
Free Physical Memory	Amount of free RAM

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CPU

Parameter	Description
PROCESSOR METRICS	
% Interrupt Time	Percentage of Time the processor handles Interrupts
% Priviledged Time	Percentage of time the processor was running in privileged mode
% User Time	Percentage of time the processor was running in user mode
Processor Frequency	

Memory

Parameter	Description
Committed Bytes	Amount of commited Virtual Memory
Available Bytes	Amount of available Physical Memory
% Committed Bytes In Use	Ratio of Committed Bytes to the Commit Limit
Pool Paged Bytes	Size in bytes of the paged pool
Pool Nonpaged Bytes	Size in bytes of physical memory that cannot be written to disk eventhough it is not in use
Cache Faults/sec	Number of Cache faults per second
Page Faults/sec	Number of Page Faults per second
Transition Faults/sec	Number of soft page faults per second

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Disk

Parameter	**Description**
DISK UTILIZATION	
Disk	Disk Partition
Disk Usage	Disk Free space & Used space
Total Size(MB)	Total disk size
Used(%)	Used disk space as percentage
Used MB	Used disk space
Free(%)	Free disk space as percentage
Free MB	Free disk space
DISK IO STATISTICS	
Disk	Disk partition
Transfers/Sec	The number of read/write operations on the disk that occur each second
Writes/sec	The percentage of elapsed time that the disk drive was busy servicing write requests
Reads/Sec	The percentage of elapsed time that the disk drive was busy servicing read requests
% Busy Time	The percentage of time the disk was busy
Average queue length	The average number of both read and write requests that were queued for the disk during the sample interval
Disk Read Bytes/sec	Bytes read from the disc per second

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Disk Write Bytes/sec	Bytes written on the disc per second
DISK SPACING	
Disk Name	Name of the hard disk
VHD URI	Virtual hard disk URI that identifies this disk
Disk Size	Total size of the disk

Network

Parameter	**Description**
NETWORK INTERFACE	
Network Interface	The name of the network interface
Speed(Mbps)	The estimate of the current bandwidth in Mbps
Input traffic(Kbps)	The rate at which packets are received on the interface, in kilo bytes per second.
Input Utilization(%)	Input traffic percentage
Output traffic(Kbps)	The rate at which packets are sent on the interface, in kilo bytes per second.
Output Utilization(%)	Output traffic percentage
Inbound Errors	Number of packets that could not be received
Outbound Errors	Number of packets that could not be sent
TCPV4 CONNECTIONS	

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Connections establised	Number of established TCP connections
Connection failures	Number of Failed TCP connections
Connections reset	Number of resetted TCP connections
TCPV4 SEGMENTS	
Segments sent/sec	Number of TCP segments sent per second
Segments received/sec	Number of TCP segments received per second
Segments retransmitted/sec	Number of TCP segments retransmitted per second

Threads & Processes

Parameter	**Description**
THREAD STATS	
System thread count	The total number of threads
Context switches/sec	The total number of context switches per sec
PROCESS STATS	
Process count	The total number of processes
% Processor time	The percentage of total time the processor was busy servicing the processes
Total page faults/sec	The total number of pages faulted per second
HANDLES	
Handle count	The total number of handles

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.NET CLR

Parameter	Description
.NET CLR THREADS	
Logical threads	Count of both running and stopped Threads
Physical threads	Count of threads created and owned by the common language runtime to act as underlying threads for managed thread objects
.NET CLR STATS	
JIT compilation time(%)	Percentage of elapsed time spent in JIT compilation
Current Queue length	The total number of threads that are currently waiting to acquire a managed lock in the application
Marshalling count	Total number of times arguments and return values have been marshaled from managed to unmanaged code, and vice versa, since the application started
Contention Rate/sec	Rate at which threads in the runtime attempt to acquire a managed lock unsuccessfully
Remote Calls/sec	Number of remote procedure calls invoked per second
Exceptions/sec	Number of exceptions thrown per second
.NET CLR MEMORY STATS	
Time in GC(%)	The percentage of elapsed time that was spent performing a garbage collection
Allocated Bytes/sec	The number of bytes per second allocated on the garbage collection heap

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Gen 0 heap size	The maximum bytes that can be allocated in generation 0
Gen 1 heap size	Current number of bytes in generation 1
Gen 2 heap size	Current number of bytes in generation 2
Large Object Heap size	Current size, in bytes, of the Large Object Heap
Bytes in all Heaps	Current memory allocated in bytes on the garbage collection heaps

Configuration

Parameter	**Description**
SYSTEM INFORMATION	
Resource Name	Virtual machine name
Resource ID	Virtual machine resource ID
Status	State of the VM
Resource Group Name	The resource group which has this VM
VM Size	Size of the VM
Location	Location at which the VM is set up
Public IP Address	Public IP of the VM
Private IP Address	Private IP of the VM
OS INFORMATION	

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OS Type	VM's Operating system
VM Image	VM server configuration
NETWORK INTERFACE	
Network Interface Name	The name of the network interface
Network Interface ID	The ID of the network interface
MAC Address	MAC address of the network
Network security group ID	Network security group of the network interface

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Microsoft Azure Storage Monitoring

- Microsoft Azure Storage - An Overview
- Creating a new Azure Storage Monitor
- Monitored Parameters

Microsoft Azure Storage- An Overview

Azure Storage is a group of highly scalable cloud-based storage services available for applications running in Azure cloud. Azure Storage provides facilities for storing files (File storage), files and media (Blob storage), messages (Queue storage) and non-relational schema-less data (Table storage).

Creating a new Microsoft Azure Monitor

Prerequisites:
Follow these steps to enable metrics in the Azure portal:

- Navigate to your storage account.
- Select Diagnostics on the Menu blade
- Ensure that Status is set to On.
- Select all the metrics provided.
- Specify a retention policy to indicate how long to retain metrics and log data.
- Select Save.

To create a new Azure Storage monitor, follow the steps given below:

- Click on the New Monitor link in the Applications Manager web client.
- Select '**Microsoft Azure**' under **Cloud Apps category.**
- Specify the **Display Name** of Microsoft Azure monitor.
- Enter the **Subscription ID** for your Microsoft Azure subscription.
- Click the **Azure Services textbox** and choose **Storage Accounts** from the drop-down menu.
- Choose the **Discovery mode:**

  Discovery using Azure Organizational Account (Powershell):

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Prerequisite: Refer Prerequisites section.

Provide the User email & Password fields in New monitor page with the Username & Password of the created Organizational account

Discovery using AD Application & Service Principal:

Prerequisite: Refer Prerequisites section.

Provide the Client ID, Tenant ID & Application key that were obtained in the above mentioned prerequisite step in the New monitor page.

- Specify the polling interval in minutes and timeout in seconds

Note:

- Azure Storage Account Monitoring does not support ZRS Storage Accounts as they do not have metrics or logging capability enabled at this time.
- Azure Premium Accounts are not supported for monitoring. Only Azure Standard Accounts with the exception of ZRS accounts are monitored for performance.
- Blobs capacity metrics data is stored in Azure Diagnostics once per day.

Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **Microsoft Azure Storage** under the **Cloud Apps** Table. Displayed is the Microsoft Azure Storage bulk configuration view distributed into three tabs:

- **Availability tab** gives the Availability history for the past 24 hours or 30 days.
- **Performance tab** gives the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

Microsoft Azure monitor provides a brief detail of the Azure virtual machines under the given subscription. Click on the monitor name to see all the server details listed under the following tabs:

- Overview
- Blobs
- Tables
- Files
- Queues

Overview

Parameter	Description
Storage Services Availability	

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Parameter	Description
Blob Availability	The percentage of availability for the Blob storage service. **Availability** is calculated by taking the **TotalBillableRequest** value and dividing it by the number of applicable requests, including those that produced unexpected errors. All unexpected errors result in reduced availability for the storage service or the specified API operation.
Table Availability	The percentage of availability for the Table storage service.**Availability** is calculated by taking the **TotalBillableRequests** value and dividing it by the number of applicable requests, including those that produced unexpected errors. All unexpected errors result in reduced availability for the storage service or the specified API operation.
Queue Availability	The percentage of availability for the Queue storage service . **Availability** is calculated by taking the **TotalBillableRequests** value and dividing it by the number of applicable requests, including those that produced unexpected errors. All unexpected errors result in reduced availability for the storage service or the specified API operation.
File Availability	The percentage of availability for the File storage service .**Availability i**s calculated by taking the **TotalBillableRequests** value and dividing it by the number of applicable requests, including those that produced unexpected errors. All unexpected errors result in reduced availability for the storage service or the specified API operation.
Configuration	
Storage Account Name	The Azure Storage Account Name
Primary Status	Status of Storage Account. Possible Values: • Available • Unavailable
Secondary Status	Status of the Replica of Storage Account. Possible Values: • Available • Unavailable This attribute is available only if the Replication Type is Standard_RAGRS or Standard_GRS.
Resource Group	Resource Group where the Storage Account is allocated in.
Location	Region where the storage account is provisioned
Provisioning State	Provisioning state of Storage Account Possible values : • Invalid • Creating • Deleting • Succeeded • Failed • Cancelled
Replication Type	The replication type used by the Storage account: Possible values: • Standard_LRS • Standard_GRS • Standard_RAGRS • Standard_ZRS • Premium_LRS

Blobs

Parameter	Description
Capacity	

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Parameter	Description
Blobs User Data Size	The amount of storage used by the storage account's Blob service, in MB
Container Count	The number of blob containers in the storage account's Blob service.
Blob Object Count	The number of blob containers in the storage account's Blob service.
Blobs Capacity Data Collected Time	The time at which blobs capacity metrics data was stored in Azure Diagnostics.
Throughput	
Blobs Total Ingress	The amount of ingress data, in MB. This number includes ingress from an external client into Azure Storage as well as ingress within Azure.
Blobs Total Egress	The amount of egress data, in MB. This number includes egress from an external client into Azure Storage as well as egress within Azure. As a result, this number does not reflect billable egress.
Blobs Total Requests	The number of requests made to Blobs storage service or the specified API operation. This number includes successful and failed requests, as well as requests which produced errors.
Blobs Total Billable Requests	The number of billable requests to Blobs
Blobs Data Collected Time	The time at which blobs performance metrics data was stored in Azure Diagnostics.
Latency	
Blobs Average End-To-End Latency	The average end-to-end latency of successful requests made to Blobs or the specified API operation, in milliseconds. This value includes the required processing time within Azure Storage to read the request, send the response, and receive acknowledgment of the response.
Blobs Average Server Latency	The average latency used by Azure Storage to process a successful request, in milliseconds. This value does not include the network latency specified in **AverageE2ELatency**.
Requests Failed- Throttling Errors	
Blobs Throttling Errors	The number of authenticated requests to Blob storage service or the specified API operation that returned a ThrottlingError.
Blobs Anonymous Throttling Errors	The number of anonymous requests to Blob storage service or the specified API operation that returned an AnonymousThrottlingError.
Blobs SAS Throttling Errors	The number of SAS requests to Blob storage service or the specified API operation that returned a SASThrottlingError.
Blobs Throttling Error Percentage	The percentage of requests that failed with a throttling error.
Requests Failed – Timeout Errors	
Blobs Client Timeout Errors	The number of authenticated requests to Blob storage service or the specified API operation that returned a ClientTimeoutError.
Blobs Anonymous Client Timeout Errors	The number of anonymous requests to Blob storage service or the specified API operation that returned an AnonymousClientTimeoutError.
Blobs SAS Client Timeout Errors	The number of SAS requests to Blob storage service or the specified API operation that returned an SASClientTimeoutError.
Blobs Server Timeout Errors	The number of authenticated requests to Blob storage service or the specified API operation that returned a ServerTimeoutError.
Blobs Anonymous Server Timeout Errors	The number of anonymous requests to Blob storage service or the specified API operation that returned an AnonymousServerTimeoutError.

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Parameter	Description
Blobs SAS Server Timeout Errors	The number of SAS requests to Blob storage service or the specified API operation that returned an SASServerTimeoutError.
Blobs Percent Timeout Errors	The percentage of requests that failed with a timeout error. This number includes both client and server timeouts.
Requests Failed – Other Client Errors	
Blobs Client Other Errors	The number of authenticated requests to a storage service or the specified API operation that returned a ClientOtherError.
Blobs SAS Client Other Errors	The number of SAS requests to a storage service or the specified API operation that returned an SASClientOtherError.
Blobs Anonymous Client Other Errors	The number of anonymous requests to a storage service or the specified API operation that returned an AnonymousClientOtherError.
Blobs Client Other Error Percentage	The percentage of requests that failed with a ClientOtherError.
Requests Failed – Other Server Errors	
Blobs Server Other Errors	The number of authenticated requests to Blob storage service or the specified API operation that returned a ServerOtherError.
Blobs Anonymous Server Other Errors	The number of anonymous requests to Blob storage service or the specified API operation that returned an AnonymousServerOtherError.
Blobs SAS Server Other Errors	The number of SAS requests to Blob storage service or the specified API operation that returned an SASServerOtherError.
Blobs Server Other Error Percentage	The percentage of requests that failed with a ServerOtherError.
Requests Failed – Authorization Errors	
Blobs Authorization Errors	The number of authenticated requests to Blob storage service or the specified API operation that returned an AuthorizationError.
Blobs Anonymous Authorization Errors	The number of anonymous requests to Blob storage service or the specified API operation that returned an AnonymousAuthorizationError.
Blobs SAS Authorization Errors	The number of SAS requests to Blob storage service or the specified API operation that returned an SASAuthorizationError.
Blobs Authorization Errors Percentage	The percentage of requests that failed with an AuthorizationError.
Requests Failed – Network Errors	
Blobs Network Errors	The number of authenticated requests to Blob storage service or the specified API operation that returned a NetworkError.
Blobs Anonymous Network Errors	The number of anonymous requests to Blob storage service or the specified API operation that returned an AnonymousNetworkError .
Blobs SAS Network Errors	The number of SAS requests to Blob storage service or the specified API operation that returned a SASNetworkError.
Blobs Network Errors Percentage	The percentage of requests that failed with a NetworkError.
Successful Requests	
Successful Requests to Blobs	The number of successful requests made to a storage service or the specified API operation.
Blobs Anonymous Successful Requests	The number of successful anonymous requests made to a storage service or the specified API operation.
Blobs SAS Successful Requests	The number of successful Shared Access Signature (SAS) requests made to a storage service or the specified API operation.

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Parameter	Description
Blobs Successful Requests Percentage	The percentage of successful requests. **Note**: that if there are no requests made against storage, the value of the **PercentSuccess** metric will be zero. If you are monitoring **PercentSuccess**, you will also want to ensure that the value of the **TotalRequests** metric is greater than zero.

Tables

Parameter	Description
Throughput	
Tables Total Ingress	The amount of ingress data, in MB. This number includes ingress from an external client into Azure Storage as well as ingress within Azure.
Tables Total Egress	The amount of egress data, in MB. This number includes egress from an external client into Azure Storage as well as egress within Azure. As a result, this number does not reflect billable egress.
Tables Total Requests	The number of requests made to Table storage service or the specified API operation. This number includes successful and failed requests, as well as requests which produced errors.
Tables Total Billable Requests	The number of billable requests to Tables
Tables Data Collected Time	The time at which tables performance metrics data was stored in Azure Diagnostics.
Latency	
Tables Average End-To-End Latency	The average end-to-end latency of successful requests made to Tables or the specified API operation, in milliseconds. This value includes the required processing time within Azure Storage to read the request, send the response, and receive acknowledgment of the response.
Tables Average Server Latency	The average latency used by Azure Storage to process a successful request, in milliseconds. This value does not include the network latency specified in **AverageE2ELatency**.
Requests Failed- Throttling Errors	
Tables Throttling Errors	The number of authenticated requests to Table storage service or the specified API operation that returned a ThrottlingError.
Tables Anonymous Throttling Errors	The number of anonymous requests to Table storage service or the specified API operation that returned an AnonymousThrottlingError.
Tables SAS Throttling Errors	The number of SAS requests to Table storage service or the specified API operation that returned a SASThrottlingError.
Tables Throttling Error Percentage	The percentage of requests that failed with a throttling error.
Requests Failed – Timeout Errors	
Tables Client Timeout Errors	The number of authenticated requests to Table storage service or the specified API operation that returned a ClientTimeoutError.
Tables Anonymous Client Timeout Errors	The number of anonymous requests to Table storage service or the specified API operation that returned an AnonymousClientTimeoutError.
Tables SAS Client Timeout Errors	The number of SAS requests to Table storage service or the specified API operation that returned an SASClientTimeoutError.
Tables Server Timeout Errors	The number of authenticated requests to Table storage service or the specified API operation that returned a ServerTimeoutError.

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Parameter	Description
Tables Anonymous Server Timeout Errors	The number of anonymous requests to Table storage service or the specified API operation that returned an AnonymousServerTimeoutError.
Tables SAS Server Timeout Errors	The number of SAS requests to Table storage service or the specified API operation that returned an SASServerTimeoutError.
Tables Percent Timeout Errors	The percentage of requests that failed with a timeout error. This number includes both client and server timeouts.
Requests Failed – Other Client Errors	
Tables Client Other Errors	The number of authenticated requests to Table storage service or the specified API operation that returned a ClientOtherError.
Tables SAS Client Other Errors	The number of SAS requests to Table storage service or the specified API operation that returned an SASClientOtherError.
Tables Anonymous Client Other Errors	The number of anonymous requests to Table storage service or the specified API operation that returned an AnonymousClientOtherError.
Tables Client Other Error Percentage	The percentage of requests that failed with a ClientOtherError.
Requests Failed – Other Server Errors	
Tables Server Other Errors	The number of authenticated requests to Table storage service or the specified API operation that returned a ServerOtherError.
Tables Anonymous Server Other Errors	The number of anonymous requests to Table storage service or the specified API operation that returned an AnonymousServerOtherError.
Tables SAS Server Other Errors	The number of SAS requests to Table storage service or the specified API operation that returned an SASServerOtherError.
Tables Server Other Error Percentage	The percentage of requests that failed with a ServerOtherError.
Requests Failed – Authorization Errors	
Tables Authorization Errors	The number of authenticated requests to Table storage service or the specified API operation that returned an AuthorizationError.
Tables Anonymous Authorization Errors	The number of anonymous requests to Table storage service or the specified API operation that returned an AnonymousAuthorizationError.
Tables SAS Authorization Errors	The number of SAS requests to Table storage service or the specified API operation that returned an SASAuthorizationError.
Tables Authorization Errors Percentage	The percentage of requests that failed with an AuthorizationError.
Requests Failed – Network Errors	
Tables Network Errors	The number of authenticated requests to Table storage service or the specified API operation that returned a NetworkError.
Tables Anonymous Network Errors	The number of anonymous requests to Table storage service or the specified API operation that returned an AnonymousNetworkError .
Tables SAS Network Errors	The number of SAS requests to Table storage service or the specified API operation that returned a SASNetworkError.
Tables Network Errors Percentage	The percentage of requests that failed with a NetworkError.
Successful Requests	
Tables Requests to Blobs	The number of successful requests made to Table storage service or the specified API operation.

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Parameter	Description
Tables Anonymous Successful Requests	The number of successful anonymous requests made to Table storage service or the specified API operation.
Tables SAS Successful Requests	The number of successful Shared Access Signature (SAS) requests made to Table storage service or the specified API operation.
Tables Successful Requests Percentage	The percentage of successful requests. Note that if there are no requests made against storage, the value of the **PercentSuccess** metric will be zero. If you are monitoring **PercentSuccess**, you will also want to ensure that the value of the **TotalRequests** metric is greater than zero.

Files

Parameter	Description
Throughput	
Files Total Ingress	The amount of ingress data, in MB. This number includes ingress from an external client into Azure Storage as well as ingress within Azure.
Files Total Egress	The amount of egress data, in MB. This number includes egress from an external client into Azure Storage as well as egress within Azure. As a result, this number does not reflect billable egress.
Files Total Requests	The number of requests made to File storage service or the specified API operation. This number includes successful and failed requests, as well as requests which produced errors.
Files Total Billable Requests	The number of billable requests to Files
Files Data Collected Time	The time at which files performance metrics data was stored in Azure Diagnostics.
Latency	
Files Average End-To-End Latency	The average end-to-end latency of successful requests made to File Storage Service or the specified API operation, in milliseconds. This value includes the required processing time within Azure Storage to read the request, send the response, and receive acknowledgment of the response.
Files Average Server Latency	The average latency used by Azure Storage to process a successful request, in milliseconds. This value does not include the network latency specified in **AverageE2ELatency**.
Requests Failed- Throttling Errors	
Files Throttling Errors	The number of authenticated requests to File storage service or the specified API operation that returned a ThrottlingError.
Files Anonymous Throttling Errors	The number of anonymous requests to File storage service or the specified API operation that returned an AnonymousThrottlingError.
Files SAS Throttling Errors	The number of SAS requests to File storage service or the specified API operation that returned a SASThrottlingError.
Files Throttling Error Percentage	The percentage of requests that failed with a throttling error.
Requests Failed – Timeout Errors	
Files Client Timeout Errors	The number of authenticated requests to File storage service or the specified API operation that returned a ClientTimeoutError.
Files Anonymous Client Timeout Errors	The number of anonymous requests to File storage service or the specified API operation that returned an AnonymousClientTimeoutError.

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Parameter	Description
Files SAS Client Timeout Errors	The number of SAS requests to File storage service or the specified API operation that returned an SASClientTimeoutError.
Files Server Timeout Errors	The number of authenticated requests to File storage service or the specified API operation that returned a ServerTimeoutError.
Files Anonymous Server Timeout Errors	The number of anonymous requests to File storage service or the specified API operation that returned an AnonymousServerTimeoutError.
Files SAS Server Timeout Errors	The number of SAS requests to File storage service or the specified API operation that returned an SASServerTimeoutError.
Files Percent Timeout Errors	The percentage of requests that failed with a timeout error. This number includes both client and server timeouts.
Requests Failed – Other Client Errors	
Files Client Other Errors	The number of authenticated requests to File storage service or the specified API operation that returned a ClientOtherError.
Files SAS Client Other Errors	The number of SAS requests to File storage service or the specified API operation that returned an SASClientOtherError.
Files Anonymous Client Other Errors	The number of anonymous requests to File storage service or the specified API operation that returned an AnonymousClientOtherError.
Files Client Other Error Percentage	The percentage of requests that failed with a ClientOtherError.
Requests Failed – Other Server Errors	
Files Server Other Errors	The number of authenticated requests to File storage service or the specified API operation that returned a ServerOtherError.
Files Anonymous Server Other Errors	The number of anonymous requests to File storage service or the specified API operation that returned an AnonymousServerOtherError.
Files SAS Server Other Errors	The number of SAS requests to File storage service or the specified API operation that returned an SASServerOtherError.
Files Server Other Error Percentage	The percentage of requests that failed with a ServerOtherError.
Requests Failed – Authorization Errors	
Files Authorization Errors	The number of authenticated requests to File storage service or the specified API operation that returned an AuthorizationError.
Files Anonymous Authorization Errors	The number of anonymous requests to File storage service or the specified API operation that returned an AnonymousAuthorizationError.
Files SAS Authorization Errors	The number of SAS requests to File storage service or the specified API operation that returned an SASAuthorizationError.
Files Authorization Errors Percentage	The percentage of requests that failed with an AuthorizationError.
Requests Failed – Network Errors	
Files Network Errors	The number of authenticated requests to File storage service or the specified API operation that returned a NetworkError.
Files Anonymous Network Errors	The number of anonymous requests to File storage service or the specified API operation that returned an AnonymousNetworkError .
Files SAS Network Errors	The number of SAS requests to File storage service or the specified API operation that returned a SASNetworkError.
Files Network Errors Percentage	The percentage of requests that failed with a NetworkError.
Successful Requests	

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Parameter	Description
Files Requests to Blobs	The number of successful requests made to File storage service or the specified API operation.
Files Anonymous Successful Requests	The number of successful anonymous requests made to File storage service or the specified API operation.
Files SAS Successful Requests	The number of successful Shared Access Signature (SAS) requests made to File storage service or the specified API operation.
Files Successful Requests Percentage	The percentage of successful requests. Note that if there are no requests made against storage, the value of the **PercentSuccess** metric will be zero. If you are monitoring **PercentSuccess**, you will also want to ensure that the value of the **TotalRequests** metric is greater than zero.

Queues

Parameter	Description
Throughput	
Queues Total Ingress	The amount of ingress data, in MB. This number includes ingress from an external client into Azure Storage as well as ingress within Azure.
Queues Total Egress	The amount of egress data, in MB. This number includes egress from an external client into Azure Storage as well as egress within Azure. As a result, this number does not reflect billable egress.
Queues Total Requests	The number of requests made to Queue storage service or the specified API operation. This number includes successful and failed requests, as well as requests which produced errors.
Queues Total Billable Requests	The number of billable requests to Queues
Queues Data Collected Time	The time at which queues performance metrics data was stored in Azure Diagnostics.
Latency	
Queues Average End-To-End Latency	The average end-to-end latency of successful requests made to Queue or the specified API operation, in milliseconds. This value includes the required processing time within Azure Storage to read the request, send the response, and receive acknowledgment of the response.
Queues Average Server Latency	The average latency used by Azure Storage to process a successful request, in milliseconds. This value does not include the network latency specified in **AverageE2ELatency**.
Requests Failed- Throttling Errors	
Queues Throttling Errors	The number of authenticated requests to Queue storage service or the specified API operation that returned a ThrottlingError.
Queues Anonymous Throttling Errors	The number of anonymous requests to Queue storage service or the specified API operation that returned an AnonymousThrottlingError.
Queues SAS Throttling Errors	The number of SAS requests to Queue storage service or the specified API operation that returned a SASThrottlingError.
Queues Throttling Error Percentage	The percentage of requests that failed with a throttling error.
Requests Failed – Timeout Errors	
Queues Client Timeout Errors	The number of authenticated requests to Queue storage service or the specified API operation that returned a ClientTimeoutError.

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Parameter	Description
Queues Anonymous Client Timeout Errors	The number of anonymous requests to Queue storage service or the specified API operation that returned an AnonymousClientTimeoutError.
Queues SAS Client Timeout Errors	The number of SAS requests to Queue storage service or the specified API operation that returned an SASClientTimeoutError.
Queues Server Timeout Errors	The number of authenticated requests to Queue storage service or the specified API operation that returned a ServerTimeoutError.
Queues Anonymous Server Timeout Errors	The number of anonymous requests to Queue storage service or the specified API operation that returned an AnonymousServerTimeoutError.
Queues SAS Server Timeout Errors	The number of SAS requests to Queue storage service or the specified API operation that returned an SASServerTimeoutError.
Queues Percent Timeout Errors	The percentage of requests that failed with a timeout error. This number includes both client and server timeouts.
Requests Failed - Other Client Errors	
Queues Client Other Errors	The number of authenticated requests to Queue storage service or the specified API operation that returned a ClientOtherError.
Queues SAS Client Other Errors	The number of SAS requests to Queue storage service or the specified API operation that returned an SASClientOtherError.
Queues Anonymous Client Other Errors	The number of anonymous requests to Queue storage service or the specified API operation that returned an AnonymousClientOtherError.
Queues Client Other Error Percentage	The percentage of requests that failed with a ClientOtherError.
Requests Failed - Other Server Errors	
Queues Server Other Errors	The number of authenticated requests to Queue storage service or the specified API operation that returned a ServerOtherError.
Queues Anonymous Server Other Errors	The number of anonymous requests to Queue storage service or the specified API operation that returned an AnonymousServerOtherError.
Queues SAS Server Other Errors	The number of SAS requests to Queue storage service or the specified API operation that returned an SASServerOtherError.
Queues Server Other Error Percentage	The percentage of requests that failed with a ServerOtherError.
Requests Failed - Authorization Errors	
Queues Authorization Errors	The number of authenticated requests to Queue storage service or the specified API operation that returned an AuthorizationError.
Queues Anonymous Authorization Errors	The number of anonymous requests to Queue storage service or the specified API operation that returned an AnonymousAuthorizationError.
Queues SAS Authorization Errors	The number of SAS requests to Queue storage service or the specified API operation that returned an SASAuthorizationError.
Queues Authorization Errors Percentage	The percentage of requests that failed with an AuthorizationError.
Requests Failed - Network Errors	
Queues Network Errors	The number of authenticated requests to Queue storage service or the specified API operation that returned a NetworkError.
Queues Anonymous Network Errors	The number of anonymous requests to Queue storage service or the specified API operation that returned an AnonymousNetworkError .
Queues SAS Network Errors	The number of SAS requests to Queue storage service or the specified API operation that returned a SASNetworkError.

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Parameter	Description
Queues Network Errors Percentage	The percentage of requests that failed with a NetworkError.
Successful Requests	
Queues Requests to Blobs	The number of successful requests made to Queue storage service or the specified API operation.
Queues Anonymous Successful Requests	The number of successful anonymous requests made to Queue storage service or the specified API operation.
Queues SAS Successful Requests	The number of successful Shared Access Signature (SAS) requests made to Queue storage service or the specified API operation.
Queues Successful Requests Percentage	The percentage of successful requests. Note that if there are no requests made against storage, the value of the **PercentSuccess** metric will be zero. If you are monitoring **PercentSuccess**, you will also want to ensure that the value of the **TotalRequests** metric is greater than zero.

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Windows Azure Cloud Service Monitoring (Classic)

Applications Manager's Windows Azure monitor enables users to collect diagnostic data for the applications deployed in Windows Azure platform. Windows Azure is monitored using REST API to discover the list of deployed applications and get the performance counters based on the Role instances of the service.

With Windows Azure monitoring capabilities in ManageEngine Applications Manager, you can:

- Discover Windows Azure applications and all its roles instances.
- Collect and monitor performance information based on role instances.
- Collect and monitor Windows Azure Event Logs, Trace Logs and Diagnostic Infrastructure Logs

Adding a Windows Azure application will include all the Hosted Services, deployments and its roles instance based on the Storage account. The hosted services and deployments will be created as a group.

- Creating a Windows Azure Monitor.
- Monitored Parameters

Creating a Windows Azure Monitor in Applications Manager :

Prerequisites: To add Windows Azure in Applications Manager, you must first export your Windows Azure Managed Certificates file (eg., testcertificate.pfx) and the password of the pfx file. To export your Windows Azure Managed Certificates file , invoke the batch script **exportCertificateToAppManager.bat** in the **<Applications Manager Home>bin** directory.

To create a new Windows Azure monitor, follow the steps given below:

1. Click on the **New Monitor** link in the Applications Manager web client.
2. Enter the **Subscription ID** for your Windows Azure account. (**Note:** Subscription ID can be obtained by signing into **windows.azure.com** using your windows live id. Then click Hosted Service and navigate to Storage & CDN, then to Storage Accounts)
3. Enter the **Account Name** and **Account key** of your Windows Azure Storage account.
4. Check the checkbox if your service is **https-**enabled.
5. Specify a **Timeout** interval in seconds
6. Specify the **Polling Interval** in minutes
7. If you are adding a new monitor from an Admin Server, select a Managed Server.

Note: Before creating a new Windows Azure monitor, you have to configure proxy settings under 'Admin' tab.

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Creating and deploying Management Certificates in Azure

- Login to the machine where you have installed Windows Azure SDK and IIS 7.
- To load the IIS 7 Management console, go to the **Control Panel,** select **Administrative Tools** and then **IIS Manager**.
- In the **IIS** section of the center pane, double-click **Server Certificates**.
- Click **Create Self-Signed Certificate** in the Actions panel.
- Enter a name for the file.
- Close the **IIS Manager** and open the **Certificate Manager**.
- Under **Trusted Root Certification Authorities**, open **Certificates**.
- Right-click your certificate, choose **All Tasks** and **Export**. The Certificate Export Wizard appears. Click **Next**.

You can export the certificate with or without a private key. First, export the certificate without a private key to be uploaded to Windows Azure Portal. Then export the certificate again with a private key to be used in Service Management API.

Exporting the certificate without a private key:

- When the **Certificate Export Wizard** appears, Click **Next**.
- On the **Export Private Key** page, click **No**.
- Select the CER file format and click **Next**.
- Enter a name and click **Next**.
- Click **Finish** to start the export process.

Exporting the certificate with a private key:

- When the **Certificate Export Wizard** appears, Click **Next**.
- On the **Export Private Key** page, click **Yes, export the private key**.
- Keep the default value, then click **Next**.
- Specify a password for protecting your private key and click **Next**.
- Specify a name for the PFX file and click **Next**.
- Click **Finish** to start the export process.

The **.cer** file can be uploaded in the Windows Azure portal and the **.pfx** file which has the private key can be used in Applications Manager.

Monitored Parameters

Windows Azure platforms are monitored based on the parameters or the attributes listed below. You can also configure thresholds to the numerical attributes based on these details and get notified when the thresholds are violated.

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The *Availability* tab shows the availability history for Azure Role instances for the past 24 hours or 30 days. The *Performance* tab shows some key performance indicators such as CPU, Memory Utilization, Exceptions thrown and Health History along with heat charts for these attributes. This tab also shows the health status and events for the past 24 hours or 30 days.

The *List view* displays all the Azure role instances along with an overall idea of their availability and health status. The list view also enables you to perform bulk admin configurations. You can click on the individual role instances to view detailed performance metrics.

Click on the monitor listed in the *Availability* tab to view detailed performance metrics of the Azure role instances. These metrics are categorized into 4 different tabs for easy understanding:

- Overview
- Event Logs
- Trace Logs
- Diagnostic Infrastructure Logs

Overview :

This tab provides a high-level overview of your Azure account as well as information about the Role instances present in this account.

Parameter	Description
Monitor Information	
Name	The name of the Windows Azure account.
Type	Denotes the type you are monitoring.
Health	Denotes the health (Clear, Warning, Critical) status of the Windows Azure account.
Associated Groups	Denotes the monitor groups associated with the Windows Windows Azure monitor.
Last Polled at	Specifies the time at which the last poll was performed
Next Poll at	Specifies the time at which the next poll will be performed
CPU Utilization	Usage of CPU resources or the amount of work handled by CPU

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Memory Utilization	Memory Available Memory Usage Time Spend in Garbage Collection
Exceptions Thrown	Number of exceptions thrown per second
ASP .NET System Performance Counters	• Number of times Application Restarted • Request Execution Time • Number of Requests Disconnected • Number of times Worker Process Restarted • Total Number of Requests • Number of Requests executed per second • Current Requests • Recent Request Waited Time • Number of Queued Request waiting for service • Number of Requests Rejected
TCP Connections	• Number of TCP Connections failed • Number of TCP Connections Established • Number of TCP Connections Reset
TCP Segment Connections	TCP segments sent per sec
Network Traffic	• Total number of Bytes received per second for all interfaces • Total number of Bytes sent per second for all interfaces
Network Traffic VM Bus Adapter	• Total number of bytes send and received per sec for VM Bus Network Adapter • Total number of bytes received per second for VM Bus Network Adapter • Total number of bytes sent per second for VM Bus Network Adapter

Monitoring Logs in Applications Manager :

Event Logs, Trace logs and Diagnostic infrastructure logs of the Windows Azure Role Instances can be monitored by defining rules. On clicking Windows Azure Log rule configuration, you can create rules for Diagnostic Infrastructure and Trace logs.

When the Azure Role Instance starts it data collection, all the logs associated to the role instance will be matched the rule. On matching the rule, an event will be generated and the log entry will be persisted in the database. The log information will be available in the GUI of the Azure role instance

Event Logs:

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On clicking Event Log Rules configuration tab, you can create rules on various category such as Application, System, Application, Security, DNS Server, File replication service and Directory service.

You can view Windows Azure Event Log Details like:

Parameter	Description
Rule Name	Specify the name of the rule.
Provider Guid	Globally unique identifier of the provider
Provider Name	Provider name of the event.
Event ID	The identifier of the event.
Level	This field provides the severity of the event.
Process ID	The process ID of the event.
Thread ID	The thread ID of the event.
Channel	You can get notified by the events from channels like Applications, Security, System, etc.
Generated Time	The time at which the event is generated.

Trace logs:

In the trace logs tab, you can view Windows Azure Event Log Details like:

Parameter	Description
Rule Name	Specify the name of the rule.
Event ID	The identifier of the events
Level	This field provides the severity of the log event.
Process ID	The process ID of the log.
Thread ID	The thread ID of the log.
Generated Time	The time at which the event is generated.

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Diagnostic infrastructure logs:

In the Diagnostic infrastructure logs tab, you can view Windows Azure Diagnostic Infrastructure Log Details like :

Parameter	Description
Rule Name	Specify the name of the rule.
Error Code	Specify the error code of the log.
Level	This field provides the severity of the log event.
Process ID	The process ID of the log.
Thread ID	The thread ID of the log.
Function	Specify the function of the log event.
Line	Specify the line containing the function.
MD Result	Specify the MDetect result of the log.
Event Generated Time	The time at which the event is generated.

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OpenStack Monitoring

Prerequisites for monitoring OpenStack:

To create a new OpenStack monitor, follow the steps given below:

1. Click on **New Monitor** link.
2. Select **OpenStack** under Cloud Apps category.
3. Specify the **Display Name** of the OpenStack server
4. Enter the **Base Authentication URL** of the OpenStack for accessing the OpenStack. The sample URL is: http://openstack:5000/
5. Enter the **Tenant Name**. Tenant Name is the project name of the OpenStack
6. Choose the **Credential Details** either use below credentials or select from credential list
7. Enter the **Username** and **Password** of the OpenStack.
8. Select **Need Proxy**, if you require to give proxy server details
9. Specify the **Polling Interval** in minutes.
10. Choose the **Monitor Group** with which you want to associate the Amazon monitor to, from the combo box (optional). You can choose multiple groups to associate your monitor.
11. Click **Add Monitor(s)**. This discovers the OpenStack server from the network and starts monitoring it.

> **Note:** If you require proxy server, you have to configure proxy settings under 'Admin' tab.

Applications Manager automatically discovers all the OpenStack instances under your OpenStack account. You can then enable monitoring for those instances and images as per your requirement.

Monitored Parameters

Click on the monitor listed in the *Availability* tab to view detailed performance metrics of the OpenStack instance. These metrics are categorized into 2 different tabs for easy understanding. Here is an explanation of the metrics shown in these tabs:

1) **Instances**

This tab provides a high-level overview of your OpenStack account as well as information about the OpenStack instances present in this account.

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Parameter	Description
Instances	
Name	The name of the instance
Status	Current status of the instance
Image	A virtual machine image is a single file which contains a virtual disk that has a bootable operating system installed on it
Images	
Name	Name of the image
Status	Current status of the image
Visibility	
Visibility is orthogonal of ownership	
Disk Format	The disk format of a virtual machine image is the format of the underlying disk image
Size	The size of the image data, in bytes

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Office 365 Monitoring

- Office 365 - An Overview
- Monitoring Office 365 - What we do
- Adding a new Office 365 monitor / Using AddMonitor API
- Monitored Parameters

Office 365 - An Overview

Office 365 refers to a group of subscription plans that provide productivity software like access to Office applications plus and related services. This includes server that are enabled over the Internet (cloud services), such as Lync web conferencing and Exchange Online hosted email for business and additional online storage with OneDrive and Skype world minutes for home.

There are different tiers to Office 365, such as *personal, home* and *business*. In its most basic form, you get access to full Office desktop apps, mobile apps for Android and iOS, OneDrive storage, Skype minutes and more. For business users, Office 365 also offers service subscriptions for e-mail and social networking services through hosted versions of Exchange Server, Skype for Business Server, SharePoint Office Online, and integration with Yammer.

Monitoring Office 365 - What we do

Applications Manager provides operational intelligence into Office 365 applications, including Exchange Online, SharePoint Online and Skype for Business. You can view a holistic picture of the health and performance of Office 365 deployments and associated services using custom, interactive dashboards.

- **Exchange Online -** Gather long-term data and present detailed reports for Exchange Online, such as mailbox statistics, Exchange Online service health, endpoint connectivity and dozens of other details.
- **SharePoint Online -** Get detailed metrics into the health and affected tenant count of SharePoint Online services, including Access Services, Office Web Apps, Yammer components, etc. Applications Manager also keeps track of the TCP connectivity of various SharePoint Online endpoints as well as the performance of SharePoint applications and sites.
- **Skype For Business Online -** Monitor key metrics of Skype for Business Online, including the health status of services such

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as audio and video, federation, sign-in, etc. Checks for the connectivity status and response time of various endpoints as well as the top sessions by duration.

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Applications Manager offers comprehensive performance monitoring for Office 365, enabling admins to minimize downtime and performance degradation as well as take corrective actions before any problems arise. The latest monitoring capabilities in Applications Manager also include:

- **Microsoft Office 365 License Reporting and Management -** Stay on top of the provisioning of licenses; manage user licenses in bulk and know the actual Assigned License Count under each service type. Get organization license information like Consumed Licenses, Locked out units, Suspended Units, Unassigned Licenses, Total User Count, License and Tenant Name.
- **Office 365 Service Health -** You can view the health of Office 365, and associated services on the Service health page. If you are experiencing problems with a cloud service, you can check the service health to see its Affected Tenant Count and Last Updated Time to determine if a resolution in progress before you call support or spend time troubleshooting.
- **Endpoints Connectivity -** Keep track of the TCP connectivity of various SharePoint Online endpoints as well as the performance of SharePoint applications and sites.
- **Fix Performance Problems Faster -** Get instant notifications of common performance issues with a cloud service; check the service health to diagnose service incidents, drill down to their root cause and resolve them quickly to ensure smooth and uninterrupted service delivery. Ensure Office 365 applications are consistently delivering a high-quality experience for end users

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Adding a new Office 365 monitor

Supported Versions of Office 365:

Mode of Monitoring: PowerShell

Prerequisites for setting up Office 365 monitoring: Click here to know the necessary prerequisites to add an Office 365 monitor.

Steps to create a new monitor

To create an Office 365 Monitor, follow the steps given below:

- Click on **New Monitor** link. Choose **Office 365**.
- Specify the **Display Name** of the Office 365 monitor.

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- Enter the **Domain Name/ Tenant Name** used to sign up for Office 365. Example: The tenant name for apm@apmtest.onmicrosoft.com is **apmtest**
- Enter the Office 365 admin account **User Email.**
- Enter the **Password** for the Office 365 admin email.
- Choose **Microsoft Office 365 Services**: Exchange Online, Skype For Business Online or Sharepoint Online
- Specify the **polling interval** in minutes and **timeout** in seconds

Note:

The office 365 admin account used for monitoring must be assigned the below roles: Exchange administrator, SharePoint administrator or Skype For Business administrator

Use the AddMonitor API to add an Office 365 Monitor

Syntax of Rest API for adding the monitor:

```
http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&Office365TenantName=[OFFICE365TENANTNAME]&Office365Useremail=[ADMINEMAIL]&Office365Password=[PASSWORD]&Office365Services=[OFFICE365SERVICES]&displayname=[DISPLAYNAME]&Timeout=[TIMEOUT]
```

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the monitor you want to add. Value should be WindowsAzure
Office365TenantName	The tenant name used by the Office 365 subscription
Office365Useremail	The Office 365 user email with admin privileges
Office365Password	The Office 365 user account password
Office365Services	Required services to monitor. Supported services are "ExchangeOnline,SharepointOnline,SkypeForBusinessOnline"
Timeout	Specify a Timeout interval in seconds.

Sample Request:

```
http://prod-server2:9098/AppManager/xml/AddMonitor?apikey=4c362569ccc528be78fafdcc2317bc5c&type=Office365&Office365TenantName=appmanager&Office365Useremail=apm@appmanager.onmicrcosoft.com&Office365Password=test123&Office365Services=ExchangeOnline,SharepointOnline,SkypeForBusinessOnline&displaynam
```

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e=officemonitor&Timeout=600

Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on the **Office 365** monitors under the **Cloud Apps** Table. Displayed is the **Office 365** bulk configuration view distributed into three tabs:

- **Availability tab** displays the Availability history for the past 24 hours or 30 days.
- **Performance tab** displays the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

Click on the monitor name to see all the server details listed under the following tabs:

- Overview
- Exchange Online
- Sharepoint Online
- Skype For Business Online

OVERVIEW

Parameter	Description
LICENSE DETAILS	
Total License Count	The number of licenses that have been purchased for a specific licensing plan.
Consumed Licenses	The number of licenses that have been assigned to users from a specific licensing plan.
Unlicensed User Count	The number of user accounts without license.
Warning Units	The number of licenses in a licensing plan that you haven't renewed, and that will expire after the 30-day grace period.
Locked Out Units	The number of accounts that have been locked out
Suspended Units	The number of accounts that have been suspended
Unassigned Licenses	The number of licenses available for assignment
Total User Count	The total number of users for the office 365 subscription
License	The License Type.
Tenant Name	The name of the account the SKU belongs to.
OFFICE 365 SERVICE HEALTH	
Service – Feature	The Office 365 Service – Feature Name
Status	The status of the Service – Feature
Affected Tenant Count	The number of tenants potentially affected by service incident.
Last Updated Time	The last updated time for service incident.
ENDPOINTS CONNECTIVITY	
Endpoint	The Office 365 endpoint / URL.
Port	The port on which endpoint / URL is accessible.

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Parameter	Description
Status	The status of endpoint/ URL.
Response Time	The time taken for connecting to endpoint/URL.

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Exchange Online Monitoring

- Exchange Online - An Overview
- Monitoring Exchange Online - What we do
- Monitored Parameters

Exchange Online - An Overview

Exchange Online is a business-class email and calendaring service developed by Microsoft and hosted in the public cloud. It is available as a stand-alone service or as part of an Office 365 plan. Exchange Online provides the benefits of a cloud-based email service with the robust capabilities of an on-premises Exchange server deployment.

Monitoring Office 365 - What we do

Applications Manager gathers long-term data and present detailed reports for Exchange Online, such as mailbox statistics, Exchange Online service health, endpoint connectivity and dozens of other details.

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Monitored Parameters

Go to the **Monitors Category** View by clicking the **Monitors** tab. Click on the Exchange Online monitors under the Cloud Apps

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Table. Displayed is the Exchange Online bulk configuration view distributed into three tabs:

- **Availability tab** displays the Availability history for the past 24 hours or 30 days.
- **Performance tab** displays the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

You can also navigate to the Exchange Online bulk configuration view through the Exchange Online Tab in the Office 365 Monitor page.

Click on the monitor name to see all the server details listed under the following tabs:

- Overview
- Exchange Online

Overview

Parameter	Description
Exchange Online Service Health	
Service – Feature	The Exchange Online Service – Feature Name
Status	The status of the Service – Feature
Affected Tenant Count	The number of tenants potentially affected by service incident.
Last Updated Time	The last updated time for service incident.
Endpoints Connectivity	
Endpoint	The Exchange Online endpoint / URL
Port	The port on which endpoint / URL is accessible
Status	The status of endpoint/ URL
Response Time	The time taken for connecting to endpoint/URL

Mailbox Statistics

Parameter	Description
Top Mailboxes by Size	
Mailbox UserName	The mailbox account username
Total Mailbox Size(MB)	The total size of Mailbox in MB
Number of Items	The number of items in mailbox
Inactive Mailbox Users	
Mailbox UserName	The Mailbox account username
Last Logon Time	The last Login Time of Mailbox User

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Sharepoint Online Monitoring

- Sharepoint Online - An Overview
- Monitoring Sharepoint Online - What we do
- Monitored Parameters

Sharepoint Online - An Overview

Exchange Online is a business-class email and calendaring service developed by Microsoft and hosted in the public cloud. It is available as a stand-alone service or as part of an Office 365 plan. Exchange Online provides the benefits of a cloud-based email service with the robust capabilities of an on-premises Exchange server deployment.

Monitoring Sharepoint Online - What we do

Get detailed metrics into the health and affected tenant count of SharePoint Online services, including Access Services, Office Web Apps, Yammer components, etc. Applications Manager also keeps track of the TCP connectivity of various SharePoint Online endpoints as well as the performance of SharePoint applications and sites.

Microsoft Office 365 Services are supported only on Windows installations of Applications Manager

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Monitored Parameters

Go to the **Monitors Category** View by clicking the **Monitors** tab. Click on the Sharepoint Online monitors under the Cloud Apps Table. Displayed is the Sharepoint Online bulk configuration view distributed into three tabs:

- **Availability tab** displays the Availability history for the past 24 hours or 30 days.
- **Performance tab** displays the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

You can also navigate to the Sharepoint Online bulk configuration view through the Sharepoint Online Tab in the Office 365 Monitor page.

Click on the monitor name to see all the server details listed under the following tabs:

- Overview
- Sites and Applications

Parameter	Description
Service – Feature	The Sharepoint Online Service – Feature Name
Status	The status of the Service – Feature
Affected Tenant Count	The number of tenants potentially affected by service incident.
Last Updated Time	The last updated time for service incident.
Endpoints Connectivity	
Endpoint	The Sharepoint Online endpoint / URL
Port	The port on which endpoint / URL is accessible
Status	The status of endpoint/ URL
Response Time	The time taken for connecting to endpoint/URL
SITES AND APPLICATIONS	
Sites Statistics	
Site URL	The sharepoint Site URL
Storage Used (GB)	The storage used by sites in GB
Storage Free (GB)	The storage free for use for site in GB
Resources Used	The resources used out of allocated limit
Resources Free	The resources free for use from allocated limit.
Lock State	The lock status of site.
Last Content Modified Time	The last content modified time of sharepoint site.
Status	The status of site.
Websites Count	The number of websites in sharepoint site collection.
Application Statistics	
Product ID	
Application Name	
Source	
Install Errors	
Runtime Errors	
Upgrade Errors	

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Skype for Business Online Monitoring

- Skype for Business - An Overview
- Monitoring Skype for Business - What we do
- Monitored Parameters

Skype for Business - An Overview

Skype for Business, formerly known as Microsoft Lync Server, is a unified communications (UC) platform that integrates common channels of business communication and online meetings, including instant messaging (IM), presence, voice over IP (VoIP), voicemail, file transfers, video conferencing, web conferencing and email.

Skype for Business can be deployed on premises, in the cloud or as a hybrid service..

Monitoring Skype for Business - What we do

Monitor key metrics of Skype for Business Online, including the health status of services such as audio and video, federation, sign-in, etc. Checks for the connectivity status and response time of various endpoints as well as the top sessions by duration.

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Monitored Parameters

Go to the **Monitors Category** View by clicking the **Monitors** tab. Click on the **Skype for Business** monitors under the Cloud Apps Table. Displayed is the Skype for Business bulk configuration view distributed into three tabs:

- Availability tab displays the Availability history for the past 24 hours or 30 days.
- Performance tab displays the Health Status and events for the past 24 hours or 30 days.
- List view enables you to perform bulk admin configurations.

You can also navigate to the Skype for Business bulk configuration view through the Skype for Business Tab in the Office 365 Monitor page.

Parameter	Description
Skype For Business Online Service Health	
Service – Feature	The Skype For Business Online Service – Feature Name.
Status	The status of the Service – Feature.
Affected Tenant Count	The number of tenants potentially affected by service incident.
Last Updated Time	The last updated time for service incident.
Endpoints Connectivity	
Endpoint	The Skype For Business Online endpoint / URL.
Port	The port on which endpoint / URL is accessible.
Status	The status of endpoint/ URL.
Response Time	The time taken for connecting to endpoint/URL.
Sessions	
Top Sessions Statistics	
From URI	The user's SIP URI from which the call was made.
To URI	The user's SIP URI to which the call was made.
Call Duration (Minutes)	The length of calls (actively connected) in a time slot.
Media Type	The media type - Conference, IM, Audio, Video

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Custom Monitors

The following custom monitors are available in Applications Manager.

- JMX / SNMP Dashboard
- File / Directory Monitor
- Windows Performance Counters
- Script Monitors
- Database Query Monitor

JMX / SNMP Dashboard

These custom monitors provide a real-time, correlated view of the entire application stack improving J2EE/J2SE application performance by monitoring its data sources such as JMX MBean source and SNMP Agents.

JMX / SNMP Dashboard is a logical grouping that consist of data sources such as JMX MBean and SNMP OID. It can have both the JMX and SNMP attributes.*Availability* tab, gives the Availability history for the past 24 hours or 30 days. *Performance* tab gives the Health Status and events for the past 24 hours or 30 days. *List view* enables you to perform bulk admin configurations. Building JMX / SNMP Dashboard involves

- Creating JMX / SNMP Dashboard and adding it to a specific Monitor Group
- Adding Attributes

The advantage of creating the dashboard is to monitor various data source at a common place.

Creating a JMX / SNMP Dashboard

For example, you have a Java application with built-in manageability using JMX and any application that has an SNMP interface, then they are managed by building JMX / SNMP Dash Board.

To create a JMX / SNMP Dash Board, follow the given steps:

1. Select New Monitor. Choose **JMX / SNMP Dashboard.**
2. Provide any name for the custom monitor and a description.
3. Click Add JMX / SNMP Dashboard to create the custom monitor. This opens a screen that allows you to add attributes for

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custom monitors.

The next step is to build the custom monitor to enable monitoring your data sources. Refer to the Custom Monitors section of Monitor Information, for more details on the same.

You need to discover JMX MBeans and SNMP Agent data source to add attributes. The following are the JMX MBean resources whose MBean attributes are monitored by Applications Manager using Custom Monitor.

Troubleshoot: Having trouble in monitoring custom applications? Refer the online Troubleshooting section.

Adding Attributes

Once you add a JMX / SNMP Dashboard, the **Add Attributes** option is available. Click that to add custom attributes to your Custom Monitor. The following are the data source for which custom monitors are built by Applications Manager. Click on the topics to view the steps required to add the respective data sources or attributes to the Custom Monitor.

- Adding JMX MBean Attributes.
- Adding SNMP OID Attributes.

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Adding JMX MBeans Attributes

The following are the JMX MBean resources whose MBean attributes are monitored by Applications Manager using Custom Monitor:

- JMX [MX4J / JDK 1.5]
- WebLogic Server
- JBoss Server

To add the attributes, follow these steps:

1. In the Add Attributes screen, select the **JMX MBean resource** from the combo box and click **Add.** You can also discover a resource using **Add Monitor**provided alongside the combo box and add them to the list of resources.
2. Select the domains and click **Show MBeans** to list all the MBeans of those domains. You can also specify some filter criteria to match the MBean names. Alternatively, you can add the MBean atrributes directly, by choosing the **Add the MBean attributes directly** option. You can enter the MBean ObjectName, Attribute Name and Attribute Type (String / Numeric) and then add that attribute to be monitored. For Numeric attributes, you can edit and set whether you want to view the values as Counters or Non Counters. From the next poll onwards, the latest type would be displayed.
3. On clicking Show MBeans button, you get the list of all the MBeans. Select the MBean (all attributes) or only the required attribute(s) by enabling the check box provided alongside. In case of tabular MBeans, select the attribute (all columns) or only the required columns.
4. Click **Add Attributes**. All the selected attributes will be listed with their details. **Note**: You have an option to enable / disable reports for **scalar numerical attributes**, which is indicated through the above images in the Reports column. Refer to Viewing Reports for more details on report generation.
5. Click the **Back to Details Page** button to view the newly created Custom Monitor. This screen lists all the attributes added.
6. If you want to add or delete attributes, click **Add or Delete Custom Attributes**.

Note: If the JMX data source is WebLogic Server 6.1 or WebLogic 6.1 sp1, you have to specify the full object name in the filter criteria to get the MBean attributes. This is because of the implementation bug in WebLogic 6.1.

However, versions WebLogic 6.1 SP2 and above do not have this problem.

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Note: Steps to Create **JMX Notification Listener** (JMX [MX4J / JDK 1.5])

- In the JMX [MX4J / JDK 1.5] Monitor page, click on the 'Create new JMX Notification Listener' link.
- The first step is to choose the Domain of the JMX Agent. After selecting the Domain, Click on 'Show MBeans' to view the MBeans that belong to the selected Domain.
- The second step is to choose the Mbeans from the list that is shown.
- The third step will be to create the new JMX Notification Listener. Enter the Name and select the status of the Listener as enabled or disabled. Set the severity of the Alarm that will be generated once a JMX notification is received, as Critical/Warning/Clear. Associated actions that need to be executed when the notification is received can be chosen from the list of actions configured.
- Clicking on 'Save' will have a JMX Notification Listener configured, which would generate alarms of the configured severity and execute actions.

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Adding SNMP OID Attributes

Once the Custom Monitor is created, you have to add the required SNMP attributes added to it. Follow these steps:

1. Click on **Add attributes** link.
2. It opens up Customize screen - Select a **SNMP monitor** from the combo box for adding the attributes. Click add.
3. **Mib Browser** opens up - select the MIB that contains the attribute to be added to the Custom Monitor.
4. Select the **attributes** that you want to monitor. Click **Add** to add the selected attributes.

Note:

- The MIB, whose attributes are required to be added to the Custom Monitor, must be present in the <Applications Manager Home>/***working/mibs*** directory of Applications Manager. To add the MIBs to the directory, use **Add Mib** Form.
- The MIB must be implemented in the SNMP Agent being monitored.

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File / Directory Monitor

To create a file/directory monitor, follow the steps given below:

- From the **New Monitor tab**, select **File / Directory Monitor**.
- Provide a **Display Name** for the monitor.
- Select whether it is a **File** or **Directory** monitor.
- Specify whether the File / Directory to be monitored is in the **Local** or **Remote Server.**
- If it is in the Local server, give the absolute path to the file / directory. If it is in a Remote server, select the **Host Name** (remote server) from the combo box or you can create a **new host** (by giving a new host name / IP address, username and password of the host) and the file / directory's absolute path. This new host thus added can be deleted by clicking on the **Delete Host** link. Host names already present and configured for server monitoring cannot be deleted in this manner. Also select the **Mode Of Monitoring** (**WMI** for Windows, **Telnet/SSH** for Linux), the **port** and **Command Prompt** if required.
- If the path that you have selected is in a Remote server,you can either enter the credential details like **user name, password,** the **command prompt** or select credentials from a **Credential Manager list**. Enter the respective **port**.
- For a File monitor, select the **Do Content Check** box if you wish to run a content check. Enter the string for which you want to check content matching in **Check Content** text box. Once any/ all of these contents match, the monitor status becomes up/down. You can perform content check for regular expressions by checking the **Regular Expressions** checkbox. (Regex Guide)

Note: Applications Manager cannot perform multiple regex checks. Checks can be done only for non-regex matches by separating strings with a comma.

If the Monitor Status is selected as **'Down'**, the following conditions can be used to make the status **Up**. If the Monitor status is selected as **'Up'**, the following conditions can be used to make the status **Down**.

Note: The file present in a remote Windows server cannot be monitored by using the Applications Manager which is installed in the Linux OS.

Conditions:

There are two conditions to configure monitor status:

Example:

For a file monitor, if the Monitor status is marked **'Down if any/ all content(s) matched'** and the content in the **Check Content box** is **'error, down, problem'**, then the monitor status will become down if any of these content match. In order to make the monitor status up, one of the following conditions has to be selected.

If, the option **'If the above content(s) is/ are not matched'** is selected, then the monitor status will become up if the above

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content is not matched.

If, the option '**If any/ all content(s) matched**' is selected, then the content has to be specified for which the monitor will become up. Example, '**success, up, fine**'. Once any/ all of these content(s) are matched, the monitor will become up. (If this option is chosen and none of the contents match, the monitor will continue to remain down.)

- **If the above content(s) is/ are not matched:** When this option is chosen, the monitor status will become up/ down if none of the contents in the above **Check Content** box match.
- **If any/ all of the contents to make monitor status up/ down are matched:** Enter the string for which you want to check content matching in the text box given. If any/ all of these contents match, the monitor status will become up/ down. If none of the contents match, the monitor status will continue to remain in the existing state.
- Choose between the **File Parsing Options** to perform content check to **Only appended content** or the **Whole File**. Also, you can set the monitor status to UP/DOWN if ANY/ALL of the contents/Regular Expressions are matched. For a Directory monitor, select the **Show SubDirectory Count** checkbox to display the subdirectory count of a directory.
- For both File and Directory monitor, you can select the **Do file/directory age check** check box if you wish to display the Monitor Status to UP/DOWN if the FILE/DIRECTORY is MODIFIED/NOT MODIFIED within a certain time.
- Enter the **Polling interval** time period in minutes and the **Timeout** in seconds.
- If you are adding a new monitor from an Admin Server, select a Managed Server.
- Choose the **Monitor Grou**p from the combo box to which you want to associate the Monitor (optional). You can choose multiple groups to associate your monitor.
- Click Add Monitor(s). This discovers the file / directory from the network and starts monitoring them.

Applications Manager uses this File / Directory Monitor to monitor the changes in the selected files and directories. *Availability* tab, gives the Availability history for the past 24 hours or 30 days. *Performance* tab gives the Health Status and events for the past 24 hours or 30 days. *List view* enables you to perform bulk admin configurations. Click on the individual monitors listed, to view the following information.

File Monitor	Checks
File size	the size of the file
File Size changed	the % change in file size
Content	string that needs to be monitored
Last Modified Time	the time at which the file was last modified

Directory Monitor	Checks
Directory Size	the size of the directory
Change in Directory Size	the % change in directory size
Total No.of Subdirectories	the subdirectory count of a directory

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Total No. of Files	the total count of files in the directory
Last Modified Time	time of last modification.

Limitations for 'Check Content' String:

For Windows file, double quotes (") will be not be supported .

For Non-Windows file, double quotes(") needs to be prepended with backslash as (").

Important Note:

- File Name / Directory Name should be specified with Absolute Path. (eg) C:Desktoptest.txt (or) /home/test/test.txt.
- Pattern matching for file names is supported in both windows and Linux servers. If we get the multiple files for the pattern matching, monitoring is carried out for the last modified file.
- In case of Multiple Checks for Content in File Monitoring specify them as comma separated. (eg) NullPointerException,File System Monitor,testString
- Support for configuring files which will be created on a daily basis.Say for example you can configure filename as localhost.$YYYY-$MM-$DD.log.
- Ensure that the file you are monitoring has Read Permission.
- Content Matching in File Monitoring is supported in both Windows and Linux Servers.
- Displaying the subdirectory count of a directory is configurable

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Database Query Monitor

Database Query Monitor is used to monitor a single query or a set of queries for any given database. This SQL based query monitor allows user to monitor the status of that particular query.

To add Database Query Monitor, follow the given steps:

1. Click New **Monitor**. Choose Database Query Monitor.
2. Enter the **Display Name** of the Monitor.
3. Enter the **Host Name** of the Monitor on which the database is running.
4. Enter the **Port number**.
5. Select the **DB** type for which the query is being executed.
6. Enter the **Username and Password** of the database server.
7. Enter the **Database name**.
8. Select whether you would prefer **Query Output** by choosing the **Yes** or **No** radio button.
9. Enter the **Query**. Please note that the number of queries is limited to five queries. Also, note that the delimiter for a query is new line.
10. Enter the **Polling Interval**. By default, it is 5 minutes.
11. If you are adding a new monitor from an Admin Server, select a Managed Server.
12. Choose the Monitor Group from the combo box with which you want to associate Database Query monitor.

Database Query Monitor is used to monitor a single or a specific set of queries for any given database.

- *Availability* tab, gives the Availability history for the past 24 hours or 30 days.
- *Performance* tab gives the Health Status and events for the past 24 hours or 30 days.
- *List view* enables you to perform bulk admin configurations.

Using a single query or a given set of queries, you can monitor the status of any given database using Applications Manager Database Query monitor. Queries are the best way to find out whether your database is up and running 24x7. In business enterprises such as an online store, there are a number of applications and databases used for e-commerce. Any interruption in such an environment could mean only one thing: loss of revenue.

The execution of such a query or a set of queries can be automated by setting the polling interval. By fixing the polling interval, user can automate this process and the results are obtained at the end of the polling. The result includes execution time (time taken by the query to provide results) and also displays any error that may occur during regular polling intervals. These errors help identify any issue that may occur with the database.

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Let us consider an example. Many enterprise environment run critical applications which need to be up and running 24x7. Let us assume, the status of such applications are maintained in a "APPLICATION_STATUS" table. Using Database Query monitor, the user shall be able to send a select set of queries to that database to find out if they are operational or not.

```
|-----------------------------------------------------------|
| APPLICATIONS_STATUS                                       |
|-----------------------------------------------------------|
| APPLICATIONS_NAME   | Status         |
|-----------------------------------------------------------|
| PURCHASE                    | OK             |
| CRM                         | CRITICAL     |
| PAYROLL                     | OK             |
| LEADS                       | OK             |
|-----------------------------------------------------------|
```

SELECT * APPLICATIONS_STATUS

By executing the above command using Database Query monitor, the user will then obtain the list of applications that are running along with its status. The user can then identify the applications whose status is **'Critical'** and then carry out necessary action by configuring Alarms in Applications Manager. This action could be in the form of creating a ticket, or executing a script to rectify the problem.

Database Query monitor can also be used to identify any bottle necks in the networks which are linked to several databases and help remove them by identifying the correct database which has the issue. This bottle neck issue can arise because there is a problem with the one of applications or with the databases. Using Database Query monitor, user can then execute a given set of queries and analyze the result which provides a clear indication of the error that has caused such an occurance. The result includes

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the execution time (time taken by the query to generate the result). If the execution time is above a certain pre-assigned threshold, then the issue is with the database or if the result is below the pre-assigned threshold, then the issue is elswhere.

The Database Query monitor currently supports queries of the following databases:
- DB2
- Informix
- Ingres
- MS SQL
- MySQL
- Oracle
- Oracle RAC
- Postgres
- Sybase

Applications Manager also provides the ability to compare various column value in the output by attributes types. Option to Enable or Disable Reports is provided.

> **Note:** Please note that the number of queries is limited to **five queries**. Total number of rows shown in the output is limited to **50 rows**.

Here is a list of the compatible JDBC URLs for Oracle database type under Database query monitor:

jdbc:oracle:thin:@HOSTNAME:PORTNUMBER:INSTANCE

jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=HOSTNAME)(PORT=PORTNUMBER)))(CONNECT_DATA=(SID=INSTANCE)(SERVER=DEDICATED)))

jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=HOSTNAME)(PORT=PORTNUMBER))(CONNECT_DATA=(SERVER=DEDICATED)(SERVICE_NAME=INSTANCE)))

jdbc:oracle:thin:@(DESCRIPTION=(LOAD_BALANCE=yes)(ADDRESS=(PROTOCOL=TCP)(HOST=NODE1-VIP)(PORT=1521))(ADDRESS=(PROTOCOL=TCP)(HOST=NODE2-VIP)(PORT=1521))(CONNECT_DATA=(SERVER=DEDICATED)(SERVICE_NAME=MYRAC)))

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Script Monitors

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Script Monitor - An Overview

Custom script monitoring can be a tedious task if the output of the scripts that are run, are to be monitored manually. Applications Manager provides with script monitoring functionality to ease the process by automatically monitoring the output of in-house custom scripts (Windows/Linux) and by creating alarms as per the configuration. Script monitor allows you to monitor the script that is present in the local system or in the remote system, transfers the output to an Output File, parses the output and executes the actions configured.

Applications Manager provides Script Monitoring functionality to automatically monitor the output of ad-hoc Windows/Linux/Solaris scripts that are used in-house.

- During creation of a new script monitor, you must give the **location** of the custom script (local / remote), **attributes** (numeric/string) to be monitored, the **Output File** in which the output is going to be redirected and the **polling interval**.
- Based on the polling interval, Applications Manager executes the script.
- The script will transfer its output to the **Output File** configured. The output of the script should be in a Key=Value format where '=' can be any delimiter.
- Applications Manager parses the Output File and executes the actions configured. It enables you to alert an Administrator or automatically take corrective actions by way executing other OS scripts.
- Reports for the attributes configured would be shown as graphs. Option to enable or disable reports is given.

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Creating a new Script Monitor

To add a Script Monitor, follow the given steps:

1. Click **New Monitor**. Choose **Script Monitor**.
2. Enter the **Display Name** of the Monitor.
3. Specify if the script to be monitored is present in the **Local Server** or in a **Remote Server.**
4. If it is Local Server, Give the absolute path of the **Script to be Monitored** and also the absolute path of the directory from which the script should be executed. The execution directory should in the same hierarchy of the 'script to be monitored' directory structure.
5. Select the script location as **command** or **script / batch file.**
6. Specify the absolute path of the script / command to be monitored.
7. Specify the absolute path of the execution directory from which the script should be executed.. The execution directory should in the same hierarchy of the script to be monitored directory structure.
8. Check the Output Settings checkbox, to configure output settings
   - Check the **Get output from file** checkbox and specify the path of the file. If the checkbox is not checked, Applications Manager takes the output from the output stream.
   - Enter the **String** and **Numeric** attributes (one attribute per line).
   - Enter the value of **Delimiter** used in the output file. By default, it is "=". If you don't specify a delimiter, then 'space' would be considered as a delimiter.
9. If you want to monitor a **tabular Output file**, enter the details of the tables - **Name, String** and **Numeric column attributes, delimiter** and also specify which attribute is the **Unique Column.**
   - Inorder to identify a tabular output file, execute the following commands before and after the actual script.
     echo <--table <*table-name*> starts-->
     [Script Commands]
     echo <--table <*table-name*> ends-->
     This would enable Applications Manager to identify the Output File's table.
   - Even if you're using a command instead of a script as input, then the output of the command should be in the above format. It is also mandatory to have the headers and footer in the command output as the first line in the file.
10. Specify the **Arguments**. For e.g., hostname 80 http
11. Set the **Polling Interval**. By default, it is 5 minutes
12. Specify the **Timeout** value in seconds. The value can be the maximum time taken by the script to execute.
13. In Linux, Specify the **mode** in which script should be executed. By default, it is "sh".
14. If the script is in a remote server, select the Host Name from the list
15. If the remote server is a new host, then enter the server's **Host Name / IP Address**. Choose the mode of monitoring - **Telnet or SSH**.
16. Enter the **User Name** and **Password** of the server.
17. Enter the **Port** number - Default Telnet port no: 23, SSH: 22
18. Specify the command prompt value, which is the last character in your command prompt. Default value is $ and possible

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values are >, #, etc.

19. Upon adding the script monitor, you can view the details of the newly added Script Monitor

Note

You must add "-encoding ascii" for output files created via powershell.

Tips

1. **If you choose the Script Location as command:**
   - Command Length must not exceed 255 characters.
   - Linux commands must not contain backslash ()
   - Here is an example.
2. **If you choose the Command type of script:**
   - Here is an example.
3. **If you choose the Script Location as script:**
   - Any Script in a **Local Windows server** will be executed as, *cmd /C [ScriptName] [Arguments]* **Example**: cmd /C D:testScript.bat hostname username password.
4. **To execute a VBS, Powershell or any script that is not a batch file:**
   - The script should write the output to command prompt or file.
   - You can also execute files by embedding them inside a Batch script and using the Batch script for monitoring. Here are some examples.
5. You can use them directly by selecting **"Command"**, without using another batch file:

   C:windowssystem32cscript.exe D:testFile.vbs hostname username > outputfile.txt
6. Arguments can be used in the script.

Note: Remote Windows script monitoring is *Not Supported.*

Local & Remote Non-Windows Script Monitoring:

- Provide proper "**Shell Type**" for executing the scripts. By default "**sh**" is used.
- You can execute script directly as "Command":

```
sh ./test.sh
```

Note: The user must have permission to execute the script and read/write permission for Output file.

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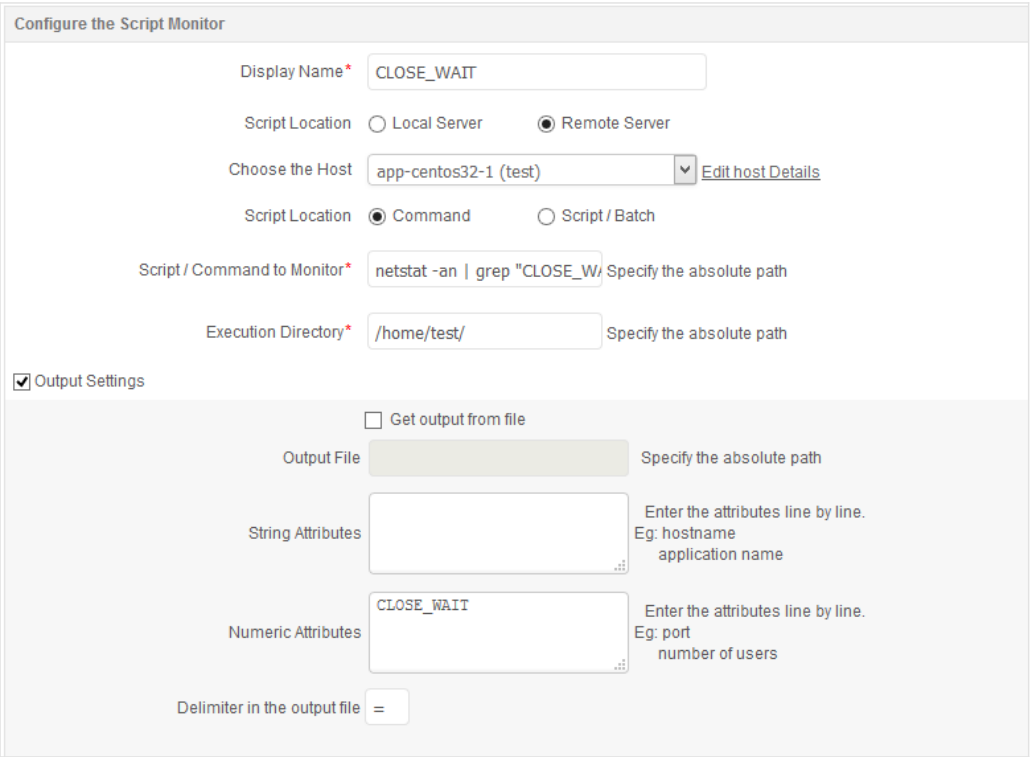
Examples

Command: netstat -an | grep "CLOSE_WAIT" | wc -l | awk '{print "CLOSE_WAIT=" $1}'



Examples

To Execute VBS files:
• To execute **testFile.vbs**, embed it inside a batch script **testScript.bat**
• Contents of **testScript.bat file**:

c:windowssystem32cscript.exe D:testFile.vbs > outputFile.txt
• Add **testScript.bat** for monitoring and use **outputFile.txt** to get Output.

To Execute a Powershell file:
• To execute **test.ps1,** embed it inside a batch script **testScript.bat**
• Content of **test.bat**:

PowerShell.exe **-NoProfile -ExecutionPolicy Bypass** -Command
• Add **test.bat** file for monitoring and use **outputFile.txt** to get Output.

Note:
• PowerShell script must be executed with **-NoProfile -ExecutionPolicy Bypass**
• Need to add "-encoding ascii" for output files created via powershell.

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Sample Input

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Add Monitor of type: Script Monitor

Display Name*: Interface Status

Script Location: (•) Local Server ( ) Remote Server

Script Location: ( ) Command (•) Script / Batch

Script / Command to Monitor*: c:\interfaceststatus.bat — Specify the absolute path

Execution Directory*: c:\ — Specify the absolute path

Shell type: sh

[x] Output Settings

[x] Get output from file

Output File: interfaceststatusoutput.txt — Specify the absolute path

String Attributes: DiskStatus — Enter the attributes line by line. Eg: hostname application name

Numeric Attributes: No.ofProcess DiskErrors — Enter the attributes line by line. Eg: port number of users

Delimiter: =

[x] Tables in output file — More Help

Table Name	Numeric Attributes	String Attributes	Unique Column	Column Delimiter
InterfaceStats	In Out	Name Ip	IP	

More Fewer

Arguments: (Eg: hostname 80)

Polling Interval *: 5 minute(s)

Timeout*: 30 second(s)

Associate Monitor Instance to Monitor Group

Select the Monitor Group: Search.... — Create New Monitor Group

Add Monitor(s) Reset Cancel

To monitor a script ***interfacestatus.bat*** that creates a user defined table called ***InterfaceStats*** and user defined parameters like *DiskStatus*, *DiskErrors* and *No. ofProcess*, in the output file ***interfacestatusoutput.txt***

- In the Script Monitor creation form, give the **absolute path of the script** : *c:interfacestatus.bat*
- Under ***Output settings,*** *give the* ***absolute path of Output file: c:interfacestatusoutput.txt***

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- Give *DiskStatus* as the string attribute, *No.ofProcess* and *DiskErrors* are the numeric attributes with *Delimiter* "="
- If you want to monitor statistics in a table format , select Tables in output file.
  - Here, we have the table *InterfaceStats* with the stats Name, IP, Status, In, Out where Name, IP, Status are string attributes; In & Out are numeric attributes. The*Delimiter* is the separater between the two column names -> space. If tab is the delimiter, then give ***t .*** Usually tab will be the delimiter for sql queries results.
- **Note:** The starting tag of the table, *InterfaceStats* is "*<--table InterfaceStats starts-->*" and the end tag is "*<--table InterfaceStats ends-->*". Also, the first line of the table should contain the attribute names. The attribute names or the column names should also be separated by the same delimiter used to separate the data rows and that is specified as the column delimiter. In this case, they are Name, IP, Status, In and out. The remaining lines between the start and end tag should comprise of the actual data. Make sure that the delimiter for the table is unique and you should specify that as the column delimiter.
- **Unique Column** is the attribute that doesn't repeat itself in the rows and identify the row by that value. Here it is *IP*.

Sample Output

```
DiskStatus=Up
No.ofProcess=1
DiskErrors=0

<--table InterfaceStats starts-->
Name IP In Out
eth0 192.168.1.1 123451 234567
eth1 192.168.1.2 345633 453267
<--table InterfaceStats ends-->
```

Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **Script Monitor** under the **Custom Monitors** Table. Displayed is the Script Monitor bulk configuration view distributed into three tabs:

- **Availability** tab, gives the Availability history for the past 24 hours or 30 days.
- **Performance** tab gives the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

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Overriding Availability and Response Time of the Script

This option would be useful, if you want to override the response time measured for custom scripts using a defined value in the output file. Applications Manager looks for few reserved keywords in the output file, if it matches then it will replace the corresponding attribute.

For eg., if the script output looks like this,

```
script_availability=1 (Allowed values are 0 or 1. "0" refers to success. "1" refers to failure.)
script_message=Server is not running.
script_responsetime=10
```

Then, while parsing the output file, script_availability value will be taken and based on that the availability is calculated.The same is the case for response time.

Examples:

Sample Scalar Usecase

Let's assume you want to monitor a script < *filesystem.sh*> present under */home/test-solaris/* in test-solaris machine. The output from this script is dumped to *output.txt*file present under the same directory. The format of *output.txt* is as shown below :

SystemTemperature=37
TimeSinceLastReboot=30
TopPaginApp=sendmail
IOReads=1050

Setting up Script Monitor:

- Login to the Applications Manager Web Client.
- Click **New Monitor**. From the combo box, choose **Script Monitor**.
- For the **Display Name** give some name. For e.g FileSystem
- Choose whether the script to be monitored is present in the **Local Server** or in a **Remote Server**. If the script is in a Remote Server, then make sure you put the script in the Remote Server.
- If it is Local Server/ Remote Server, give the absolute path of the Script to Monitor (*/home/test-solaris/filesystem.sh*) and also the absolute path of the directory from which the script should be executed(*/home/test-solaris/*).
- Under Output Settings, give the **Output file name** (*/home/test-solaris/output.txt*) with absolute path. This is the file where the output from the script is dumped.
- Enter the Name of the **Non Numeric** and **Numeric** attributes.

In the **Numeric area**, add

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SystemTemperature
TimeSinceLastReboot
IOReads

In the **String Attributes Text area**, add :

TopPaginApp

- Enter the value of **Delimiter** (=) used in the output file. By default, it is "=". If you don't specify a delimiter, then 'space' would be considered as a delimiter.
- Specify the additional **Arguments** (if required to pass to the script). For e.g., hostname 80 http
- Set the **Polling Interval.** By default, it is 5 minutes
- Specify the **Timeout** value in seconds. The value can be the maximum time taken by the script to execute.
- In Linux, Specify the **mode** in which script should be executed. By default, it is "sh".
- If the script is in a **Remote Server**, select the Host Name from the list
- If the remote server is a new host choose **New Host**, then enter the server's **Host Name / IP Address** (test-solaris). Choose the mode of monitoring - **Telnet** or**SSH.**(Telnet)
- Enter the **User Name**(test) and **Password**(test) of the server.
- Enter the **Port** number - Default Telnet port no: 23, SSH: 22
- Specify the command prompt value, which is the last character in your command prompt. Default value is $ and possible values are >, #, etc.
- Once all the values are entered select **Add Monitor(s)**.

The success message should be displayed. Click *Monitor Details* > *Script Monitor* and go to the create script, to view the details.

Note: AppManager uses either ANSI or UTF-8 encoding. Hence it is advised that you use the same format while writing output to the file.

Sample Table Usecase

Let's assume you want to monitor a script <*prustat.sh*> present under */home/test-solaris/* in test-solaris machine. The output from this script is dumped to *output.txt* file present under the same directory. The format of *output.txt* is as shown below

```
<--table prustat starts-->
PID CPU Mem Disk Net COMM
7176 0.88 0.70 0.00 0.00 dtrace
7141 0.00 0.43 0.00 0.00 sshd
7144 0.11 0.24 0.00 0.00 sshd
3 0.34 0.00 0.00 0.00 fsflush
```

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```
7153 0.03 0.19 0.00 0.00 bash
99 0.00 0.22 0.00 0.00 nscd
7146 0.00 0.19 0.00 0.00 bash
52 0.00 0.17 0.00 0.00 vxconfigd
7175 0.07 0.09 0.00 0.00 sh
98 0.00 0.16 0.00 0.00 kcfd
<--table prustat ends-->
```

Note: the table headers <--table prustat starts-->. This is mandatory and should follow the same format as mentioned. Here "prustat" should be replaced by the Table Name explained below

Setting up Script Monitor

- Follow the same instructions as mentioned for Scalar till point 6
- Select Tables in output file check box
- For the Table Name provide some name(prustat). Note that this same should be present in the table header(<--table prustat starts-->) in the output file.
- For the Numeric Attributes area provide the column names in the script output that are numeric*: CPU, Mem, Disk, Net*
- For the String Attributes provide the column names in the script output that are non numeric*: PID, COMM*
- For the Unique Column provide the column names that can identify a row data. This can be a single value or multiple value*: PID, COMM*
- For the Column Delimiter provide the column separator. The default value is a space.
- In case you have scripts that output multiple tables then you can select More and configure the values.
- Once all the values are entered select Add Monitor(s).

You can use script monitor to monitor the SNMP OIDs

Please look at the steps below for creating a script monitor,

- Create a script file (say script.sh) under the */opt/ManageEngine/AppManager_Home/* directory
- Edit that file and type in the following content into that file,
  snmpwalk -v 1 -c public app-w2k1 CPQHLTH-MIB::cpqHeFltTolPowerSupplyRedundant.0.1| awk '{ y = $1; x = $4 ; gsub(/[a-zA-Z()]/, "", x)}
  {print y " = " x}'>> output.txt
  snmpwalk -v 1 -c public app-w2k1 CPQHLTH-MIB::cpqHeFltTolPowerSupplyRedundant.0.2 | awk '{ y = $1; x = $4 ; gsub(/[a-zA-Z()]/, "", x)}
  {print y " = " x}' >> output.txt
- Click on "New Monitor" in applications manager and choose script monitor. Then create a new monitor using the following parameters,
  Script to Monitor </opt/ManageEngine/AppManager_Home/script.sh> *Directory from which the script should be executed* </opt/ManageEngine/AppManager_Home/>
  Under Output Settings,Output File </opt/ManageEngine/AppManager_Home/output.txt> *Numeric Attributes* <CPQHLTH-MIB::cpqHeFltTolPowerSupplyRedundant.0.1>
  <CPQHLTH-MIB::cpqHeFltTolPowerSupplyRedundant.0.2>
- Use the default parameters for configuring the remaining attributes.

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REST API to get the HostName

This API gives host name for the given Script Monitor.

Sample Request:

```
http://[Host]:[Port]/AppManager/json/GetRemoteHost?apikey=[APIKEY]&resourceid=[RESOURCEID]
```

Request Parameters

The parameters involved in executing this API request are:

Field	Description
apikey	The key generated using the **Generate API Key** option in the 'Admin' tab.
resourceid	The resource id of the monitor that needs to be polled.

Example:

```
http://app-windows:9090/AppManager/json/GetRemoteHost?apikey=095cb3835ff015b01a3b3a6c4ab2c38a&resourceid=10000293
```

Sample Output:

```
{"response":{"result":[{"hostname":"app-w7-64-8"}],"uri":"/AppManager/json/GetRemoteHost"},"response-code":"4000"}
```

Custom Monitor Types

Custom Monitor Types in Applications Manager allow you to associate a monitor type to the inhouse scripts, for monitoring your own applications. You can define your **own monitor types** apart from the monitor types that are available by default. Know more.

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Windows Performance Counters

To create windows performance counters in Applications Manager, follow the steps given below:

1. Select New Monitor. Choose **Windows Performance Counters.**
2. Provide Name for Windows Performance Counter.
3. Enter the **Description** for the counter.
4. Enter the **Polling Interval** for the counter.
5. If you are adding a new monitor from an Admin Server, select a Managed Server.
6. Select the **Host Name** from the combo box or you can create a new host (by giving the new host name / IP address, username and password of the host)

Note:

Windows Performance Counters is currently supported for **Windows Vista, Windows 7, Windows 8, Windows Server 2000, 2003, 2008 and 2012**.

Applications Manager uses **WMI (Windows Management Instrumentation)** for monitoring Windows Performance

Counters. WMI gives preinstalled performance counter classes; each class describes an object in performance libraries.

For eg., the object that appears in the **Perfmon System Monitor** named *NetworkInterface* is represented in WMI by the *Win32_PerfRawData_Tcpip_NetworkInterface class* for raw data *Win32_PerfFormattedData_Tcpip_NetworkInterface class* for pre-calculated, or "cooked" data.

Currently Applications Manager supports monitoring the counters of classes derived from *Win32_PerfFormattedData*

Some of the WMI Performance classes for Performance Objects that are present in Perfmon are
Processor -Win32_PerfFormattedData_PerfOS_Processor
Browser -Win32_PerfFormattedData_PerfNet_Browser
PagingFile -Win32_PerfFormattedData_PerfOS_PagingFile
Memory -Win32_PerfFormattedData_PerfOS_Memory
Server -Win32_PerfFormattedData_PerfNet_Server

Some classes can only have one instance of it, they are called "*Singleton Classes*".

After creating Windows Performance Counters, You will see the *WMI Monitor details page* showing availability and other details.*Availability* tab, gives the Availability history for the past 24 hours or 30 days. *Performance* tab gives the Health Status and events for the past 24 hours or 30 days. *List view* enables you to perform bulk admin configurations. Click on the individual monitors listed, to view the following information. The windows performance counter values can be added and monitored as attribues. The overall ability to configure thresholds on attributes and taking corrective actions are supported out-of-the-box.

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Adding Attributes

- Click on *Add Attributes* link.
- This will take you to the list of *WMI Performance Classes*. You can choose the classes whose attributes you want to monitor.
- Click on *Show Attributes;* the list of WMI classes selected along with their attributes and instances are displayed. Select the *attributes* and *instances*. The attributes would then be added for monitoring.
- You can configure thresholds and alarms for the attributes. At a class level, you can configure alarms for Health, which inturn depends on the attributes it comprises of.

Note: Windows Performance Counters is currently supported for **Windows Vista, Windows 7, Windows 8, Windows Server 2000, 2003, 2008 and 2012.**.

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Database Servers

Applications Manager provides Database Server monitoring that monitors system resources. It also provides proactive measures by notifying database and system administrators about potential problems that could compromise database performance. This database server monitoring has the ability to connect to the database source, process any query received in the database, monitor various system table column values, collect data, etc. and also notify through alarms, if the database system properties are beyond a given threshold.

The different database servers supported are:

- MySQL Database Servers
- Oracle Database Servers
- MS SQL Database Servers
- IBM DB2 Database Servers
- IBM Informix Database
- SAP HANA Database Servers
- Sybase Database Servers
- PostgreSQL Database Servers
- Database Query Monitor
- Apache HBase Database Servers
- NoSQL Database Servers
  - Cassandra Database Servers
  - CouchBase Database Servers
  - MongoDB Database Servers
  - Redis Database Servers
  - Memcached Database Servers
  - Oracle NoSQL Database Servers

Please browse through the different database servers that provide server information and their parameters being monitored. For all databases, data collection happens by establishing a JDBC connection and executing queries to collect the data.

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MySQL Database / MariaDB Monitoring

Note: In the MySQL database (that you are trying to monitor), ensure that the user name assigned to Applications Manager has the permission to access the MySQL database from the host where Applications Manager is running. Else, give a relevant user who has the privileges to do the same.

Minimum User Privileges : The user should have privileges to execute SELECT, SHOW DATABASES, REPLICATION commands in the MySQL server. Also, Applications Manager machine should be allowed to access the MySQL database server.

For enabling the privileges, execute the below commands in the remote MySQL Server

```
INSERT INTO user (Host,User) VALUES('<host>','<user>');
 GRANT SELECT,SHOW DATABASES,REPLICATION CLIENT ON *.* TO '<user>'@'<host>';
 FLUSH PRIVILEGES;
```

(Host -> Applications Manager machine) /

To create a MySQL database server Monitor, follow the given steps:

1. Click on New **Monitor** link.
2. Select MySQL DB Server.
3. Enter the IP Address or hostname of the host.
4. Enter the SubNetMask of the network.
5. Enter the port number in which MySQL is running.
6. Enter the polling interval time in minutes.
7. If you are adding a new monitor from an Admin Server, select a Managed Server.
8. Provide the user name and password of user who has permission to access the MySQL database.
9. Specify the database name. Please note that the Database name must be valid. Also, the database name is associated with the user name. Hence, provide the database name corresponding to the user name given in the above field.
10. Choose the Monitor Group from the combo box with which you want to associate MySQL database server Monitor (optional). You can choose multiple groups to associate your monitor.
11. Click Add Monitor(s). This discovers MySQL database server from the network and starts monitoring them.

Troubleshoot: Having trouble in monitoring MySQL database server? Refer to the online Troubleshooting section.

Supported Versions

- MySQL 3.23.x
- MySQL 4.x, 4.1.x
- MySQL 5.x, 5.1.x, 5.5.x, 5.6.x, 5.7.x
- All Versions of MariaDB

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Monitored Parameters

The *Availability* tab gives the Availability history for the past 24 hours or 30 days. The *Performance* tab gives the health status and events for the past 24 hours or 30 days. The *List view* enables you to perform bulk admin configurations.

To view detailed performance metrics of a MySQL server, click the corresponding monitor listed in the *Availability* tab. These metrics are categorized into two different tabs for better understanding.

Overview

This tab provides information into the overall performance of the MySQL server.

Parameter	Description
Monitor Information	
Name	Denotes the name of MySQL server monitor.
Health	Denotes the health (Clear, Warning, Critical) of the MySQL server.
Type	Denotes the type you are monitoring.
MySQL Version	Specifies the version of the database server.
Port	Specifies the port number at which the database server is running.
Base Directory	Specifies the directory in which the database server is installed.
Data Directory	Specifies the directory in the hard disk of the system where the data for the database server is stored.
Host Name	Specifies the host at which the database server is running.
Host OS	Specifies the OS of the host where the database server is running.
Last Alarm	Specifies the last alarm that was generated for the database server.

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Last Polled at	Specifies the time at which the last poll was performed.
Next Poll at	Specifies the time at which the next poll is scheduled.
Availability	Shows the current status of the server - available or not available.
Connection Time	
Connection Time	The time taken to connect to the MySQL database server from Applications Manager server.
Connection Time Out	Specifies the maximum time taken by the application to connect to MySQL Server
Request Statistics	
Request Rate	Number of request received in one second.
Bytes Received Rate	Number of bytes received in one second.
Bytes Sent Rate	Number of bytes sent in one second.
Connection Statistics	
Open Connections	The number of connections opened at present in the MySql Server.
Aborted Connections	Number of tries to connect to the MySQL server that failed.
Aborted Clients	Number of clients aborted by MySQL server.
Thread Details	
Threads Used	Number of threads processing the request.
Threads in Cache	Number of threads currently placed in the thread cache.
Thread Cache Size	Specifies the cache size in the MySQL server.
Database Details	
Database Name	Name of the database instance.
Database Size	Size of the various databases in the MySQL server.
Table Lock Statistics	
Immediate Locks	Number of times a table lock for the table is acquired immediately.
Locks Wait	Number of times a table lock could not be acquired after waiting.
Key Efficiency	

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Key Hitrate	Percentage of key read requests that resulted in actual key reads from the key buffer.
Key Buffer Used	Amount of allocated key buffer in use.
Key Buffer Size	Size of the buffer used for index blocks. Also known as the key cache.
Query Statistics	
Queries Inserted/Min	No. of Insert Queries executed per minute
Queries Deleted/Min	No. of Delete Queries executed per minute
Queries Updated/Min	No. of Update Queries executed per minute
Queries Selected/Min	No. of Select Queries executed per minute
Query Cache Hitrate (This performance data is not available for MySQL versions 3.23.x)	
Query Cache Hitrate	Ratio of queries that were cached and queries that were not cached.
Query Cache Size	Amount of memory allocated for caching query results.
Query Cache Limit	Maximum amount of memory for storing cache results.
Replication Details	
Replication Status	The status of Slave process in MySQL Server
Slave IO Running	Status of the Slave IO Process in MySQL Server. Possible values are Yes/No
Slave SQL Running	Status of the Slate SQL Process in MySQL Server.Possible values are Yes/N.
Last Error	The last error occured when Slave is synching the data from master.
Master Host	The hostname or IP number of the master replication server.
Master Port	The TCP/IP port number that the master is listening on
Master User	The username of the account that the slave thread uses for authentication when it connects to the master
Time Behind Master	This indicates of how “late” the slave is behind the Master

Configuration

This tab provides information about the system variables maintained by the MySQL server. These system variables indicate how the server is configured.

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You can also view realtime and historical data of any of the attributes present in the 'Configuration Information' section in the Configuration tab. Click on any attribute under the Configuration tab. This will open up a new window named 'History Data' that provides more information about these attributes.

There are two tabs in the History Data window - History Report and Global View.

History Report: This tab provides historical reports of the attribute selected based on the time period chosen. You can also use the *Select Attribute* drop-down box and view reports for other attributes.

Global View: This tab displays the current values of the attribute selected, across multiple monitors. To view information about other attributes present in the monitor, use the *Select Attribute* drop-down box and change the attribute.

If you want to view data of multiple attributes, click the *Customize Columns* link present at the top left corner of the window. This will take you to the *Edit Global View*screen. In this screen, you can change the monitor type using the *Filter by Monitor Type* drop-down box, select the metrics to be displayed, and show monitors on a monitor basis or a monitor group basis. After you select your options, click the *Show Report* button to view those information in the Global View tab.

The **View Process List** option present on the right side under the *Show Status* section gives you information on the current threads that are running in the MySQL server.

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Oracle Database Servers

Follow the given steps to create a Oracle database server monitor:

Note: For you to create a new Oracle database monitor, you should have admin privileges. Minimum User Privileges -> user with CONNECT and SELECT_CATALOG_ROLE roles

1. Click on New **Monitor** link.
2. Select Oracle DB Server.
3. Enter the IP Address or hostname of the host.
4. Enter the SubNetMask of the network.
5. Enter the port number in which the Oracle is running.
6. Enter the polling interval ime in minutes.
7. If you are adding a new monitor from an Admin Server, select a Managed Server.
8. Provide the user name of the admin user ('system' is the default username) and its corresponding password.
9. Provide a valid **System Identifier / Host Connection String**.
10. Choose the Monitor Group from the combo box with which you want to associate Oracle database server Monitor (optional). You can choose multiple groups to associate your monitor.
11. Click Add Monitor(s). This discovers Oracle database server from the network and starts monitoring them.

Supported Versions

Applications Manager supports monitoring of Oracle database servers of versions 8.x, 9*i*, 10g, 10.1.3, 11g, RAC *(Real Application Clusters)* and 12c.

Monitored Parameters

Applications Manager provides out-of-the-box performance metrics and helps you visualize the health and availability of an Oracle Database server farm. Database administrators can login to the web client and visualize the status and Oracle performance metrics.

Go to the **Monitors Category View** by clicking the **Monitors tab**. Click on **Oracle** Server under the **Database Servers Table**. Displayed is the Oracle servers bulk configuration view in three tabs:

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- **Availability** tab, gives the Availability history for the past 24 hours or 30 days.
- **Performance** tab gives the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

Note: To create a new Oracle database monitor, you should have admin privileges. Minimum User Privileges -> user with CONNECT and SELECT_CATALOG_ROLE roles

Click on the monitor name to see all the server details listed under the following tabs:

- Overview
- Table Space
- Session
- Rollback & Corrupted blocks*
- SGA
- Query
- Lock Statistics
- Jobs & Backup*
- PGA
- Process
- ASM*
- RPO
- Alert Logs
- Redo Logs

Note: The server details marked with an * symbol is supported in Oracle database servers version 10g and above.

Overview

Monitor Information

Parameters	Type	Description
Name	String	Name of the Oracle server monitor
Oracle Version	String	The Version of the Oracle Database.
Oracle Start Time	String	The time when Oracle server was started.
Availability	String	The status of the database server - available or not available.

Today's Availability

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Parameters	Type	Description
Current Status	String	Availability history graph with uptime

Connection Statistics

Parameters	Type	Description
Response Time	String	The time taken to connect to the database.

Session Activity

Parameters	Type	Description
Number of Session Users	Numeric	Graph for the number of users executing an SQL Statement. vs time

Table spaces with least free bytes

Parameters	Type	Description
Name	String	The name of the table space.
Free Bytes (MB)	Numeric	The free space available in bytes.
% of Free Bytes	Numeric	The percentage of free space available in bytes.

Database Details

Parameters	Type	Description
Database Created Time	String	Creation time of the database.
Open Mode	String	Indicates the Open mode of the Instance which can be either **Read Write** or **Read**.
Log Mode	String	The two Log Modes are: • NOARCHIVELOG - When you run your database in NOARCHIVELOG mode, you disable the archiving of the redo log. • ARCHIVELOG - When you run a database in ARCHIVELOG mode, you enable the archiving of the redo log.
DB Role	String	Current role of the database: • LOGICAL STANDBY • PHYSICAL STANDBY • PRIMARY
Control File type	String	Type of control file: • STANDBY - Indicates that the database is in standby mode • CLONE - Indicates a clone database • BACKUP | CREATED - Indicates the database is being recovered using a backup or created control file • CURRENT - database is available for general use
Switch over status	String	Indicates whether switchover is allowed: • NOT ALLOWED - Either this is a standby database and the primary database has not been switched first or this is a primary database and there are no standby databases. • SESSIONS ACTIVE - Indicates that there are active SQL sessions attached to the primary or standby database that need to be disconnected before the switchover operation is permitted. Query the V$SESSION view to identify the specific processes that need to be terminated. • SWITCHOVER PENDING - This is a standby database and the primary database switchover request has been received but not processed. • SWITCHOVER LATENT - The switchover was in pending mode, but did not complete and went back to the primary database. • TO PRIMARY - This is a standby database and is allowed to switch over to a primary database. • TO STANDBY - This is a primary database and is allowed to switch over to a standby database. • RECOVERY NEEDED - This is a standby database that has not received the switchover request. • PREPARING SWITCHOVER - Either this is a primary database that is accepting redo data from a logical standby database in preparation for switch over to the logical standby database role, or it is a logical standby database sending redo data to a primary database and other standby databases in preparation for switch over to the primary database role. In the latter case, a completed dictionary has already been sent to the primary database and other standby databases. • PREPARING DICTIONARY - This is a logical standby database that is sending redo data to a primary database and other standby databases in the configuration in preparation for switch over to the primary database role. • TO LOGICAL STANDBY - This is a primary database that has received a complete dictionary from a logical standby database.
Protection Mode	String	Protection mode currently in effect for the database: • MAXIMUM PROTECTION - Database is running in maximized protection mode • MAXIMUM AVAILABILITY - Database is running in maximized availability mode • RESYNCHRONIZATION - Database is running in resynchronization mode • MAXIMUM PERFORMANCE - Database is running in maximized protection mode • UNPROTECTED - Database is unprotected (this normally occurs when the primary database is mounted and not open)

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Open reset logs	String	Indicates whether the next database open allows or requires the resetlogs option • NOT ALLOWED • ALLOWED • REQUIRED
Guard Status	String	Protects data from being changed: • ALL - Indicates all users other than SYS are prevented from making changes to any data in the database. • STANDBY - Indicates all users other than SYS are prevented from making changes to any database object being maintained by logical standby. • NONE - Indicates normal security for all data in the database.
Force logging	String	Indicates whether the database is under force logging mode (YES) or not (NO).

Database Status

Parameters	Type	Description
Database Size	Numeric	Size of the database in Megabytes.
Average Executions	Numeric	This is the average number of executions that happen during the execution of every SQL Statement.
Reads	Numeric	Refers to the number of reads from the database.
Writes	Numeric	Refers to the number of writes to the database.
Block Size	Numeric	This refers to the lowest possible storage area for an Instance in bytes.
Free Space	Numeric	Size of free extents in all tablespaces in the database (Size in MB).
Invalid/Unusable Index Count	Numeric	Number of Invalid/Unusable indexes in the databse.

Hit Ratio

Parameters	Type	Description
Buffer	Numeric	Creation time of the database.
Data Dictionary	Numeric	The ratio of the data gets to the data misses in the row cache is Data Dictionary Hit Ratio.
Library	Numeric	The Library cache stores all shared SQL and PL/SQL blocks, along with their parse trees. In OLTP environments where a large numbers of users are entering and exchanging data, there is a great chance for overlapping the parse and execute needs of those different queries. Such an overlap in the library is called a cache hit and the ratio determined to the misses and hits is called Library Cache Hit Ratio.

SGA Details

Parameters	Type	Description
Buffer Cache Size	Numeric	The total size of the Buffer Cache given in bytes.
Shared Pool Size	Numeric	The size of the shared pool given in bytes.
Redolog Buffer Size	Numeric	The size of the buffers for the Redo Logs in mb.
Library Cache Size	Numeric	The size of the Library Cache given in bytes.
Data Dictionary Cache Size	Numeric	The cache size of the data dictionary or row cache in bytes.
SQL Area Size	Numeric	The size of the SQL Area for usage of SQL/PL statements (bytes).
Fixed Area Size	Numeric	The size of the SGA, which is fixed throughout the instance.

Oracle DB Links

Parameters	Type	Description
DB link name	String	Name of the database link
Owner	String	Owner of the database link

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Parameters	Type	Description
User	String	Name of the user when logging in
Oracle Net connect string	String	Host Name
Creation time	String	Creation time of the database link

Invalid Objects

Parameters	Type	Description
Owner	String	Owner of the invalid dba object.
Object Name	String	Name of the invalid object.
Status	String	Status of the invalid object.

Invalid/Unusable Indexes

Parameter	Type	Description
Index Name	String	Name of the index
Tablespace Name	String	Name of the tablespace containing the index
Owner	String	Owner of the index
Table Name	String	Name of the indexed object
Index Status	String	Indicates whether a nonpartitioned index is VALID or UNUSABLE. We list all UNUSABLE indexes.

Table Space

Table Space Details

Parameters	Type	Description
Name	String	Refers to the name of the Table space.
Allocated Bytes	Numeric	Refers to the size of the Table space in bytes.
Allocated Blocks	Numeric	Refers to the number of allocated blocks in Table space.
Data Files	Numeric	Refers to the number of data files in Table space.

Table Space Status

Parameters	Type	Description
Name	String	Refers to the name of the Table space.
Status	String	Tablespace status: ONLINE, OFFLINE, or INVALID (tablespace has been dropped)

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Parameters	Type	Description
Free Bytes	Numeric	Refers to the available free space in bytes.
Free Blocks	Numeric	Refers to the number of free blocks in Table space.
Reads	Numeric	Refers to the number of reads from the Table space.
Writes	Numeric	Refers to the number of writes on the Table space.
Read Time	Numeric	Time taken for a single read from the Table space.
Write Time	Numeric	Time taken for a single write on the Table space.

Performance of Data Files

Parameters	Type	Description
Data File Name	String	Name and location of the data file.
Table Space Name	String	Name of the Table space.
Status	String	If a data file is a part of the system table space, its status is SYSTEM (unless it requires recovery). If a data file in a non-SYSTEM table space is online, its status is ONLINE. If a data file in non-SYSTEM table space is offline, its status can be either OFFLINE OR RECOVER.
Created Bytes	Numeric	Size of the Data file in bytes.
Reads	Numeric	Refers to the number of reads from the Data file.
Writes	Numeric	Refers to the number of writes to the Data file.
Average Read Time	Numeric	Refers to the average read time.
Average Write Time	Numeric	Refers to the average write time.

Objects Approaching MAX Extents

Parameters	**Type**	Description
Owner	String	Owner name of the table space.
Table space name	String	
Segment Name	String	Name of the segment approaching maximum extents
Segment Type	String	The type of segment approaching maximum extents
Extents	Numeric	Number of extents allocated to the segment
Max Extents	Numeric	Maximum allowed extents that can be filled in a segment
Next Extent (MB)	Numeric	Next extent size in MB

Note:

Data collection is scheduled to take place once a day; the user can use the 'Optimize datacollection' option to change the schedule.

Session

Session Details

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Parameters	Type	Description
ID	String	Session Identifier for the connected session.
Status	String	Current status: ONLINE, OFFLINE, or INVALID (tablespace has been dropped).
Machine	String	Name of the operating system user.
User Name	String	Name of the Oracle process user.
Elapsed Time	Numeric	Time elapsed in seconds after which the user has logged into the oracle server.
CPU Used	Numeric	CPU centiseconds (divide by 100 to get real CPU seconds) used by this session.
Memory Sorts	Numeric	Number of memory sorts performed.
Table Scans	Numeric	Number of table scans performed.
Physical Reads	Numeric	Physical reads for the session.
Logical Reads	Numeric	Sum of **consistent gets** and **db block gets**.
Commits	Numeric	Number of commits made by user in a second.
Cursor	Numeric	Number of cursor currently in use.
Buffer Cache Hit Ratio	Numeric	Percentage of session logical reads taking place from the buffer (1-physical reads/session logical reads*100).

Session Waits

Parameters	Type	Description
ID	String	Session Identifier for the connected session.
User Name	String	Name of the Oracle process user.
Event	Numeric	Resource or event for which the session is waiting
State	Numeric	Wait state: 0 - WAITING (the session is currently waiting) -2 - WAITED UNKNOWN TIME (duration of last wait is unknown) -1 - WAITED SHORT TIME (last wait <1/100th of a second) >0 - WAITED KNOWN TIME (WAIT_TIME = duration of last wait)
Wait Time	Numeric	A nonzero value is the session's last wait time. A zero value means the session is currently waiting.
Seconds in Wait	Numeric	If WAIT_TIME = 0, then SECONDS_IN_WAIT is the seconds spent in the current wait condition. If WAIT_TIME 0, then SECONDS_IN_WAIT is the seconds since the start of the last wait, and SECONDS_IN_WAIT - WAIT_TIME / 100 is the active seconds since the last wait ended.

Users

Parameters	Type	Description
Username	String	The username assigned to the user.
Expiry Date	String	The date when the user account expires.
Days to Expiry	Numeric	The number of days to account expiration.
Account Status	String	The current status of the user account.
User Profile	String	The profile name of user.

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Rollback & Corrupted blocks

Rollback Segment

Parameters	Type	Description
Segment Name	String	Name of the rollback segment.
Table Space Name	String	Name of the tablespace containing the rollback segment.
Status	String	ONLINE if the segment is online, or PENDING OFFLINE if the segment is going offline but some active (distributed) transactions are using the rollback segment. When the transaction(s) complete, the segment goes OFFLINE.
Current Size	Numeric	Current size in bytes of the rollback segment.
Initial Extent	Numeric	Initial extent size in bytes.
Next Extent	Numeric	Secondary extent size in bytes.
Min. Extent	Numeric	Minimum number of extents.
Max. Extent	Numeric	Maximum number of extents.
Hit Ratio	Numeric	Ratio of **gets** to **waits**. This should be >= 99%.
HWMSize	Numeric	High Water Mark of rollback segment size.
Shrinks	Numeric	Number of times rollback segment shrank, eliminating one or more additional extents each time.
Wraps	Numeric	Number of times rollback segment wraps from one extent to another.
Extend	Numeric	Number of times rollback segment was extended to have a new extent.

Blocks Corrupted

Parameters	**Type**	Description
File Number	Numeric	Datafile number
Data File Name	String	Name of the database file.
Block Number	Numeric	First block of the corrupted range
Number of corrupted blocks	Numeric	Number of contiguous blocks in the corrupted range
Type of block corruption	String	Type of block corruption in the datafile: • ALL ZERO - Block header on disk contained only zeros. The block may be valid if it was never filled and if it is in an Oracle7 file. The buffer will be reformatted to the Oracle8 standard for an empty block. • FRACTURED - Block header looks reasonable, but the front and back of the block are different versions. • CHECKSUM - optional check value shows that the block is not self-consistent. It is impossible to determine exactly why the check value fails, but it probably fails because sectors in the middle of the block are from different versions. • CORRUPT - Block is wrongly identified or is not a data block (for example, the data block address is missing) • LOGICAL - Specifies the range is for logically corrupt blocks. CORRUPTION_CHANGE# will have a nonzero value.

Note:

Data collection is scheduled to take place once every 12 hours; the user can use the 'Optimize datacollection' option to change the schedule.

Fast Recovery Area

Parameters	**Type**	Description
FRA Name	String	Current location of the FRA.

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Parameters	**Type**	Description
FRA Space Limit (MB)	Numeric	The maximum amount of disk space (in bytes) that the database can use for the flash recovery area.
FRA Space Used (MB)	Numeric	The amount of disk space (in bytes) used by flash recovery area files created in current and all previous flash recovery areas.
Used Percentage	Numeric	The percentage of disk space used by flash recovery area files created in current and all previous flash recovery areas.

SGA

SGA Performance

Graph displaying value (in %) of Buffer Hit Ratio, Data Dictionary Hit Ratio and Library Hit Ratio vs time

Parameters	**Type**	Description
Buffer Hit Ratio	Numeric	When a scan of the buffer cache shows that there are no free buffers, Database Block Writer determines which blocks to be eliminated based on a least recently used algorithm or LRU. Having a block required by a user process in the buffer cache already is called a buffer cache hit or is determined as a ratio. Hits are good because they reduce the amount of disk I/O required for the user process.
Data Dictionary Hit Ratio	Numeric	The purpose of the row or dictionary cache is to store rows of information from the data dictionary in memory for faster access. The row cache is designed to hold the actual rows of data from objects in data dictionary. While this data is held in the row cache, the users of the database may access that information more quickly than if Oracle had to read the data into memory from disk. The ratio of the data gets to the data misses in the row cache is Data Dictionary Hit Ratio.
Library Hit Ratio	Numeric	The Library cache stores all shared SQL and PL/SQL blocks, along with their parse trees. In OLTP environments where a large numbers of users are entering and exchanging data, there is a great chance for overlapping the parse and execute needs of those different queries. Such an overlap in the library is called a cache hit and the ratio determined to the misses and hits is called Library Cache Hit Ratio.

SGA Details

Parameters	**Type**	Description
Buffer Cache Size	Numeric	The total size of the Buffer Cache given in bytes.
Shared Pool Size	Numeric	The size of the shared pool given in bytes.
Redolog Buffer Size	Numeric	The size of the buffers for the Redo Logs in bytes.
Library Cache Size	Numeric	The size of the Library Cache given in bytes.
Data Dictionary Cache Size	Numeric	The cache size of the data dictionary or row cache in bytes.
SQL Area Size	Numeric	The size of the SQL Area for usage of SQL/PL statements (bytes).
Fixed Area Size	Numeric	The size of the SGA, which is fixed throughout the instance.

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SGA Status

Parameters	**Type**	Description
Buffer Hit Ratio	Numeric	When a scan of the buffer cache shows that there are no free buffers, Database Block Writer determines which blocks to be eliminated based on a least recently used algorithm or LRU. Having a block required by a user process in the buffer cache already is called a buffer cache hit or is determined as a ratio. Hits are good because they reduce the amount of disk I/O required for the user process.
Data Dictionary Hit Ratio	Numeric	The purpose of the row or dictionary cache is to store rows of information from the data dictionary in memory for faster access. The row cache is designed to hold the actual rows of data from objects in data dictionary. While this data is held in the row cache, the users of the database may access that information more quickly than if Oracle had to read the data into memory from disk. The ratio of the data gets to the data misses in the row cache is Data Dictionary Hit Ratio.
Library Hit Ratio	Numeric	The Library cache stores all shared SQL and PL/SQL blocks, along with their parse trees. In OLTP environments where a large numbers of users are entering and exchanging data, there is a great chance for overlapping the parse and execute needs of those different queries. Such an overlap in the library is called a cache hit and the ratio determined to the misses and hits is called Library Cache Hit Ratio.
Free Memory	Numeric	Refers to the size of the free memory in bytes.

Query

Query attributes are not monitored by default. Applications Manager allows you to enable/disable data collection of query metrics. Once enabled ,you can also customize the polling interval of these metrics. To monitor query metrics:

- Go to **Admin** tab.
- Click **Performance Polling** under **Discovery and Data Collection**.
- Under **Performance Data Collection**, Click on the **Optimize Data Collection** tab.
- Select **Oracle** from the **Monitor Type** drop-down menu.
- Select **Top 10 Queries by Buffer Gets** from the **Metric Name** drop-down menu.
- Select how you wish to configure the queries:
  - By **Monitor Type -** This will be the default polling status, for any new monitor added. All the monitors of this type, will have the default polling status, until any exclusive customization is done for the monitor. You can choose between three different polling settings: **Never collect data, Collect data in every polling** and **Collect data at customized time interval.** Changing the polling status of 'Monitor Type', will also change any configuration done for its 'Monitors'.
  - By **Monitors** - Use this option to change the polling status of any particular monitor(s).

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Buffer Gets

Parameters	**Type**	Description
Buffer Gets	Numeric	Number of buffer gets for the child cursor
Executions	Numeric	Number of executions that took place on the object since it was brought into the library cache
Buffer Gets per Executions	Numeric	The ratio of buffer gets to execution in the current polling interval
Query	String	First thousand characters of the SQL text for the current cursor

Disk Reads

Parameters	**Type**	Description
Disk Reads	Numeric	Number of disk reads for this child cursor
Executions	Numeric	Number of executions that took place on this object since it was brought into the library cache
Disk Reads per Executions	Numeric	The ratio of disk reads to execution in the current polling interval
Query	String	First thousand characters of the SQL text for the current cursor

Lock Statistics

Lock statistics are not monitored by default. Applications Manager allows you to enable/disable data collection of Lock statistics. Once enabled ,you can also customize the polling interval of these metrics. To monitor Lock statistics:

- Go to **Admin** tab.
- Click **Performance Polling** under **Discovery and Data Collection**.
- Under **Performance Data Collection**, Click on the **Optimize Data Collection** tab.
- Select **Oracle** from the **Monitor Type** drop-down menu.
- Select **Lock and Wait Statistics** from the **Metric Name** drop-down menu.
- Select how you wish to configure the Lock and Wait Statistics:
  - By **Monitor Type -** This will be the default polling status, for any new monitor added. All the monitors of this type, will have the default polling status, until any exclusive customization is done for the monitor. You can choose between three different polling settings: **Never collect data, Collect data in every polling** and **Collect data at customized time interval.** Changing the polling status of 'Monitor Type', will also change any configuration done for its 'Monitors'.
  - By **Monitors** - Use this option to change the polling status of any particular monitor(s).

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Sessions holding a lock

Parameters	Type	Description
Id	Numeric	Session identifier of Session holding a lock
Serial	Numeric	Session serial number. Used to uniquely identify a session's objects. Guarantees that session-level commands are applied to the correct session objects if the session ends and another session begins with the same session ID.
Machine	String	Operating system machine name.
PROGRAM	String	Operating system program name.
Lock Wait	String	Address of lock waiting for; null if none.

Sessions waiting for a lock

Parameters	Type	Description
Waiting Session ID	Numeric	ID of Session waiting for lock.
Holding Session ID	Numeric	ID of Session holding lock.
Lock Type	String	The lock type.
Mode Held	String	The mode held.
Mode Requested	String	The mode requested.
Lock ID1, ID2	String	The Lock IDs.

Lock Statistics

Parameters	Type	Description
Object Name	String	Name of the locked object
Session Id	Numeric	The session ID of a locked object.
Serial	Numeric	The session serial number. Used to uniquely identify a session's objects.
Lock Mode	Numeric	The lock mode in which the session holds the lock.
OS Process ID	Numeric	The operating system process identifier.
Blocked Session Time	Numeric	If the session STATUS is currently ACTIVE, then the value represents the elapsed time in minutes since the session has become active. If the session STATUS is currently INACTIVE, then the value represents the elapsed time in minutes since the session has become inactive.
Time of logon	String	Login time.

Jobs & Backup

Parameter	Type	Description
Schedule jobs details		
Job Name	String	Name of the job.
Current State	String	Current state of the job (DISABLED, RETRY SCHEDULED, SCHEDULED, RUNNING, COMPLETED, BROKEN, FAILED, REMOTE, SUCCEEDED, CHAIN_STALLED)
Last Run Status	String	Status of the job run.
Last Run Date	String	Last date on which the job started running.
Last Run Duration (sec)	Numeric	Amount of time the job took to complete during the last run (in seconds)
Next Run Date	String	Next date on which the job is scheduled to run.
Schedule Jobs Stats		
Job Name	String	Name of the job.

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Parameter	Type	Description
Run Count	Numeric	Number of times the job has run.
Failure Count	Numeric	Number of times the job has failed to run.
Retry Count	Numeric	Number of times the job has retried, if it is retrying.
Elapsed Time (sec)	Numeric	Elapsed time since the job was started (in seconds).
Running Backup Jobs Count		
DB FULL	Numeric	Number of jobs running of type DB FULL.
RECVR AREA	Numeric	Number of jobs running of type RECVR AREA.
DB INCR	Numeric	Number of jobs running of type DB INCR.
DATAFILE FULL	Numeric	Number of jobs running of type DATAFILE FULL.
DATAFILE INCR	Numeric	Number of jobs running of type DATAFILE INCR.
ARCHIVELOG	Numeric	Number of jobs running of type ARCHIVELOG.
CONTROLFILE	Numeric	Number of jobs running of type CONTROLFILE.
SPFILE	Numeric	Number of jobs running of type SPFILE.
Backup Jobs Details		
Session Key	Numeric	The Session identifier.
Backup Type	String	Type of input files backed up in this session. Can have one of the following values: • DB FULL • RECVR AREA • DB INCR • DATAFILE FULL • DATAFILE INCR • ARCHIVELOG • CONTROLFILE • SPFILE
Last Backup Time	String	Last backup start time.
Backup Status	String	Back up status with the value FAILED.
Time Taken	Numeric	Time Taken to complete last back-up (in seconds).
Backup Size (MB)	Numeric	Backup size in megabytes.
Backup Jobs History Recent Backups		
Backup Type	String	Type of input files backed up in this session.
Session Key	Numeric	The Session identifier.
Last Backup Time	String	Last backup start time.
Backup Status	String	Back up status with the value FAILED.
Time Taken	Numeric	Time Taken to complete last back-up (in seconds).
Backup Size (MB)	Numeric	Backup size in megabytes.

Click the **Recent backups** link on the top right-hand corner of the **Backup Job Details** table to view **recent backup job details** for each backup type.

Note:
• Data collection is scheduled to take place once every 12 hours; the user can use the 'Optimize datacollection' option to change the schedule.
• **Limitation:** Thresholds configured on older backup jobs status will not be retained for PPM users.

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PGA

TOP 10 Process using PGA

Graphical representation of the PGA used by processes.

PGA Stats Per Process (TOP 10)

Parameters	Type	Description
Process Id	Numeric	Oracle process identifier.
Program Name	String	Program in progress.
PGA used (MB)	Numeric	Amount of PGA memory consumed in megabytes.
PGA Allocated (MB)	Numeric	Maximum PGA memory allocated at one time since instance startup.
Max PGA Used (MB)	Numeric	PGA memory currently used by the process.
Freeable PGA (MB)	Numeric	Allocated PGA memory which can be freed.

PGA Stats

Parameters	Type	Description
Total PGA used (MB)	Numeric	Indicates how much PGA memory is currently consumed.
Total PGA allocated (MB)	Numeric	Current amount of PGA memory allocated by the instance.
Maximum PGA allocated (MB)	Numeric	Maximum amount of PGA memory consumed .
Total freeable PGA (MB)	Numeric	Number of bytes of PGA memory in all processes that could be freed back to the operating system.
PGA freed back to OS (MB)	Numeric	Number of bytes of PGA memory freed back to the operating system.
Cache hit percentage	Numeric	Percentage of PGA memory component, cumulative since instance startup
Resource being used by processes (%)	Numeric	Percentage resources currently being used by processes.

Resouce limit for processes

Parameters	Type	Description
Resource being used by processes	Numeric	Resources (locks or processes) currently being used.
Free Resource	Numeric	Percentage of unused resources.

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Process

Session Details

Parameters	Type	Description
Process Id	Numeric	Oracle process identifier.
PGA used (MB)	Numeric	Indicates how much PGA memory is currently consumed.

PGA Stats Per Process(TOP 10)

Parameters	Type	Description
Process Id	Numeric	Oracle process identifier.
Program Name	String	The program in progress.
PGA used(MB)	Numeric	Indicates how much PGA memory is currently consumed.
PGA Allocated(MB)	Numeric	Current amount of PGA memory allocated by the instance.
Max PGA Used(MB)	Numeric	Maximum amount of PGA memory consumed .
Freeable PGA(MB)	Numeric	Number of bytes of PGA memory in all processes that could be freed back to the operating system.

ASM

Applications Manager allows you to enable/disable data collection of several metrics. Once enabled ,you can also customize the polling interval of these metrics. Data collection for ASM is not enabled by default and here is how you can enable it:

Enabling ASM Metrics

- Go to the **Admin** tab.
- Click **Performance Polling** under **Discovery and Data Collection**.
- Under **Performance Data Collection**, Click on the **Optimize Data Collection** tab.
- Select **Oracle** from the **Monitor Type** drop-down menu.
- Select **ASM Details** from the **Metric Name** drop-down menu.
- Select how you wish to configure the mertics:
  - By **Monitor Type -** This will be the default polling status, for any new monitor added. All the monitors of this type, will have the default polling status, until any exclusive customization is done for the monitor. You can choose between three different polling settings: **Never collect data, Collect data in every polling** and **Collect data at customized time interval.** Changing the polling status of 'Monitor Type', will also change any configuration done for its 'Monitors'.
  - By **Monitors** - Use this option to change the polling status of any particular monitor(s).
- Click **Save**.

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Disk Group Details

Parameters	Type	Description
Disk Group Number	Numeric	Cluster-wide number assigned to the disk group.
Name	String	Name of the disk group.
State	String	State of the disk group relative to the instance (Connected, Broken, Unknown, Dismounted, Mounted).
Type	String	Redundancy type for the disk group (EXTERN, NORMAL, HIGH).
Total Memory (GB)	Numeric	Total capacity of the disk group (in megabytes).
Free Memory (GB)	Numeric	Unused capacity of the disk group (in megabytes).

RPO

RPO statistics are not monitored by default. Applications Manager allows you to enable/disable data collection of RPO statistics. Once enabled, you can also customize the polling interval of these metrics. To monitor RPO statistics:

- Go to **Admin** tab.
- Click **Performance Polling** under **Discovery and Data Collection**.
- Under **Performance Data Collection**, Click on the **Optimize Data Collection** tab.
- Select **Oracle** from the **Monitor Type** drop-down menu.
- Select **Log Apply Gap details in Primary Server/Log Apply Lag details in Standby Server** from the **Metric Name** drop-down menu.
- Select how you wish to configure the **Log Apply Gap details**:
  - By **Monitor Type -** This will be the default polling status, for any new monitor added. All the monitors of this type, will have the default polling status, until any exclusive customization is done for the monitor. You can choose between three different polling settings: **Never collect data, Collect data in every polling** and **Collect data at customized time interval.** Changing the polling status of 'Monitor Type', will also change any configuration done for its 'Monitors'.
  - By **Monitors** - Use this option to change the polling status of any particular monitor(s).

Log Apply Gap Details (only from primary)

Parameters	Type	Description
Last log sequence created in primary server	Numeric	Shows the last log sequence that was applied to the primary database
Last log sequence synched in secondary server	Numeric	Shows the last log sequence that was applied to the secondary database
Log apply gap	Numeric	Amount of time that the application of archive data on the standby database lags behind the primary database. This data will be collected only once a day. The user can change it using 'Optimize Data Collection' option.

Log Apply Lag Details (only from standby)

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Parameters	Type	Description
Transport Lag	Numeric	Amount of redo data generated by the primary database is not available or applicable on the standby database at the time of computation.
Log Apply Lag	Numeric	Amount of time that the application of redo data on the standby database lags behind the primary database.
Apply Finish Time	Numeric	Estimated time before log apply services will finish applying the redo data available on the standby database.

Archive Log Destination Details are not monitored by default. Applications Manager allows you to enable/disable data collection of archive log destination metrics. Once enabled ,you can also customize the polling interval of these metrics. To monitor metrics:

- Go to **Admin** tab.
- Click **Performance Polling** under **Discovery and Data Collection**.
- Under **Performance Data Collection**, Click on the **Optimize Data Collection** tab.
- Select **Oracle** from the **Monitor Type** drop-down menu.
- Select **Archive Log Destination Monitoring** from the **Metric Name** drop-down menu.
- Select how you wish to configure the queries:
  - By **Monitor Type -** This will be the default polling status, for any new monitor added. All the monitors of this type, will have the default polling status, until any exclusive customization is done for the monitor. You can choose between three different polling settings: **Never collect data, Collect data in every polling** and **Collect data at customized time interval.** Changing the polling status of 'Monitor Type', will also change any configuration done for its 'Monitors'.
  - By **Monitors** - Use this option to change the polling status of any particular monitor(s).

Archive Log Destination Details (only from primary)

Parameters	Type	Description
Dest Id	Numeric	Identifies the log archive destination parameter
Name	String	Archived log file name.
Status	String	Status of the archived log.
Type	String	Type of archival destination database: • LOCAL - Local to primary database • PHYSICAL - Physical standby • CROSS-INSTANCE - An instance of the primary • LOGICAL - Logical standby
Destination	String	Original destination from which the archive log was generated.
Protection Mode	String	Indicates whether the database is protected: • MAXIMUM PROTECTION • MAXIMUM AVAILABILITY • RESYNCHRONIZATION • MAXIMUM PERFORMANCE • UNPROTECTED
Transmit mode	String	Specifies network transmission mode: • SYNCHRONOUS • PARALLELSYNC • ASYNCHRONOUS
Recovery mode	String	Current mode of media recovery at the archival destination database: • IDLE - Managed recovery is not active • MANUAL - Manual media recovery active • MANAGED - Managed recovery is active • MANAGED REAL TIME APPLY - Log apply services recover redo data from standby redo logs at the same time the logs are being written to, as opposed to recovering redo from archived redo logs when a log switch occurs

Archive Log Destination Stats (only from primary)

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Parameters	Type	Description
Dest Id	Numeric	Log archive destination parameter identifier
Log sequence	Numeric	Identifies the sequence number of the last archived redo log to be archived
Net timeout	Numeric	Number of seconds the log writer process will wait for status from the network server of a network operation issued by the log writer process
Fail Sequence	Numeric	Sequence number of the archived redo log being archived when the last error occurred
Archived Sequence	Numeric	Identifies the log sequence number of the most recent archived redo log received at the destination
Applied Sequence	Numeric	Identifies the log sequence number of the most recent applied redo log received at the destination
Delay (Mins)	Numeric	Identifies the delay interval (in minutes) before the archived redo log is automatically applied to a standby database
Error	String	Displays the error text

Alert Logs

Alert Logs are not monitored by default. Applications Manager allows you to enable/disable data collection for Lock statistics. Once enabled, you can also customize the polling interval of these metrics.

To monitor Alert Log Statistics:

- Go to the **Admin** tab.
- Click **Performance Polling** under **Discovery and Data Collection**.
- Under **Performance Data Collection**, click on the **Optimize Data Collection** tab.
- Select **Oracle** from the **Monitor Type** drop-down menu.
- Select **Oracle Alert Log** from the **metric** drop-down menu.
- Select how you wish to configure the **Alert Log Statistics**:
  - **By Monitor Type** - This will be the default polling status, for any new monitor added. All the monitors of this type will have the default polling status, until any exclusive customization is performed. You can choose between three different polling settings: *Never collect data, Collect data at every poll* and *Collect data at customized time interval*. Changing the polling status of 'Monitor Type', will also change any configuration done for its 'Monitors'.
  - **By Monitors** - Use this option to change the polling status of a particular monitor(s).

Oracle Error List table lists only recent errors. To view history of ORA errors, click **View Alert Log history.**

Monitored Parameters

Parameter	**Type**	Description
Oracle ORA Error Count		
Critical / Severe / Important / Normal	Numeric	The number of critical errors, severe errors, important message and normal messages.
Oracle ORA Error List		
Record ID	Numeric	The record number for the message (this value is same as the row number).
Message Level	String	Level the message belongs to. Lower level values imply higher severity for errors. Possible values include: • 1: CRITICAL: critical errors • 2: SEVERE: severe errors • 8: IMPORTANT: important message • 16: NORMAL: normal message
Originating Time	String	The date and time at which the message was generated.
Host Address	String	The IP of other network address of the originating host for the mesaage.

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Parameter	**Type**	Description
Message Text	String	The fully formed and localized text of the message.

Redo Logs

Redo Logs are not monitored by default. To enable Redo Log monitoring:

- Go to the **Admin** Tab
- Click **Performance polling.**
- Go to the **Optimize data collection** tab.
- Select **Oracle** from the **Monitor Type** drop-down menu.
- Select **Redo Logs**.

Parameter	Type	**Description**
REDO PERFORMANCE		
Buffer Allocation Retries Ratio	Numeric	The ratio of redo buffer allocation retries/redo writes in Percentage. Ideal value is upto 1%.
Space Request Ratio	Numeric	The ratio of redo log space requests/redo entries in Percentage.Ideal value is upto 1%.
Space Wait Ratio	Numeric	The ratio of redo log space requests/redo writes in Percentage.Ideal value is upto 1%
REDO LOG DETAILS		
RedoLog Buffer Size	Numeric	The size of the buffers for the Redo Logs in Mb.
Log switches in past 1 hour	Numeric	The average number of log switches in the last hour.
Current Redo Log Usage	Numeric	The percentage of redo logs used/filled up.
REDO LOG GROUPS INFORMATION		
Group	Numeric	The redo log group identifier.
Thread	Numeric	The number of redo log threads. (The redo log file groups of an instance are collectively called a redo log thread.)
Log Size (MB)	Numeric	The size of each log in the redo log groups.
Member Count	Numeric	The number of members in the log group.
Archive Status	String	Archive status: YES or NO. (Oracle lets you save filled groups of redo log files to one or more offline destinations, known as the archived redo log.)
Log Status	String	Log status: • UNUSED - Online redo log has never been written to. This is the state of a redo log that was just added, or just after a RESETLOGS, when it is not the current redo log. • CURRENT - Current redo log. This implies that the redo log is active. The redo log could be open or closed. • ACTIVE - Log is active but is not the current log. It is needed for crash recovery. It may be in use for block recovery. It may or may not be archived. • CLEARING - Log is being re-created as an empty log after an ALTER DATABASE CLEAR LOGFILE statement. After the log is cleared, the status changes to UNUSED. • CLEARING_CURRENT - Current log is being cleared of a closed thread. The log can stay in this status if there is some failure in the switch such as an I/O error writing the new log header. • INACTIVE - Log is no longer needed for instance recovery. It may be in use for media recovery. It may or may not be archived.
REDO LOG MEMBERS INFORMATION		
Member Name	String	The redo log member name.
Group	Numeric	The redo log group identifier.
Member Status	String	The status of the log member: • INVALID - File is inaccessible • STALE - File's contents are incomplete • DELETED - File is no longer used • IN USE - File is in use
Member Type	String	The member status type: • ONLINE • STANDBY

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MS SQL DB Servers Monitoring

Supported Versions - Applications Manager supports monitoring of MS SQL 2000, 2005, 2008, 2008 R2, 2012, 2014 and 2016 versions.

To create a MS SQL database server Monitor, follow the given steps:

1. Click on New **Monitor** link.
2. Select MS SQL DB Server.
3. Enter the IP Address or Hostname of the host.
4. Enter the SubNetMask of the network.
5. Enter the Port number in which the MS SQL is running.
6. Enter the polling interval time in minutes.
7. If you are adding a new monitor from an Admin Server, select a Managed Server.
8. Provide the User Name and Password of user who has permission to access the MS SQL database. The user name specified for collecting the data from MS SQL Server should have either System Administrator role or the user should be the DB owner for master database. Alternatively, you can provide the **Windows Authentication** details (give the User Name like domainnameusername) also.
9. If you want to connect using a Named Instance, check the **Connect using Named Instance** checkbox and specify the InstanceName.
10. Choose the Monitor Group from the combo box with which you want to associate MS SQL database server Monitor (optional). You can choose multiple groups to associate your monitor.
11. Click Add Monitor(s). This discovers MS SQL database server from the network and starts monitoring them.

Note:
Minimum User Privileges: User should be permitted to access MASTER database & MSDB database.
Roles: public + db_datareader should be selected for both MASTER and MSDB databases.

For MS SQL 2005, 2008 and 2012 user roles:
Database Accessed: Master
Permit in Database Role: db_datareader & Requires **VIEW SERVER STATE** permission on the server.

To grant **VIEW SERVER STATE**, you can use any of the following methods :

1) Execute the following query

GRANT VIEW SERVER STATE TO username;

2) In SQL management studio for user choose Properties -> Securables -> Click **Add** (under securables) -> choose "**All objects of the Types...**" -> choose **Servers** -> choose **Grant** for "**View server state**" permission.

To monitor SQL jobs

The user should be a member of sysadmin or members of one of these fixed database roles roles:
• SQLAgentUserRole
• SQLAgentReaderRole
• SQLAgentOperatorRole

Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **MS SQL** under the **Databases** Table. Displayed is the

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MS SQL bulk configuration view distributed into three tabs:

- Availability tab, gives the Availability history for the past 24 hours or 30 days.
- Performance tab gives the Health Status and events for the past 24 hours or 30 days.
- List view enables you to perform bulk admin configurations.

Monitor Information

Parameters	Description
Name	Specifies the name of MS SQL server monitor.
Health	Specifies the health (Clear, Warning, Critical) of the MS SQL server.
Type	Specifies the type you are monitoring.
Version	Specifies the version of the database server.
Port	Specifies the port number at which the database server is running.
ODBC Driver Version	Specifies the ODBC driver version used.
Host Name	Specifies the host at which the database server is running.
Host OS	Specifies the OS of the host where the database server is running.
Last Alarm	Specifies the last alarm that was generated for the database server.
Last Polled at	Specifies the time at which the last poll was performed.
Next Poll at	Specifies the time at which the next poll is scheduled.
Availability	Shows the current status of the server - available or not available.

Memory Usage

Parameters	Description
Total Memory	Total amount of dynamic memory the server is currently consuming.
SQL Cache Memory	Total amount of dynamic memory the server is using for the dynamic SQL cache.
Lock Memory	Total amount of dynamic memory the server is using for locks.

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Optimizer Memory	Total amount of dynamic memory the server is using for query optimization.
Connection Memory	Total amount of dynamic memory the server is using for maintaining connections.
Granted WorkSpace Memory	Total amount of memory granted to executing processes. This memory is used for hash, sort and create index operations.
Memory Grants Pending	Current number of processes waiting for a workspace memory grant.
Memory Grants Success	Current number of processes that have successfully acquired a workspace memory grant.

Buffer Manager Statistics

Parameters	Description
Buffer Hit Ratio	Percentage of pages that were found in the buffer pool without having to incur a read from disk.
Page LookUps/Min	Number of requests to find a page in the buffer pool.
Page Reads/Min	Number of physical database page reads issued.
Page Writes/Min	Number of physical database page writes issued.
Total Pages	Number of pages in the buffer pool (includes database, free, and stolen).
Database Pages	Number of pages in the buffer pool with database content.
Free Pages	Total number of pages on all free lists.
Page Life Expectancy	The number of seconds a page will stay in the buffer pool without references.

Connection Statistics

Parameters	Description
Connection Time	The time taken to connect to the Microsoft SQL database server from Applications Manager server.
Active Connections	Number of users connected to the system.
Logins/Min	Total number of logins started per minute.

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Logouts/Min	Total number of logouts started per minute.

Cache Details

Parameters	Description
Cache Hit Ratio	Ratio between cache hits and lookups
Cache Used/Min	Times each type of cache object has been used
Cache Count	Number of cache objects in the cache
Cache Pages	Number of 8k pages used by cache objects

Lock Details

Parameters	Description
Lock Requests/Min	Number of new locks and lock conversions requested from the lock manager.
Lock Waits/Min	Total wait time for locks in the last minute.
Lock Timeouts/Min	Number of lock requests that timed out. This includes internal requests for NOWAIT locks.
Deadlocks/Min	Number of lock requests that resulted in a deadlock.
Average Lock Wait Time	The average amount of wait time for each lock request that resulted in a wait.

SQL Statistics

Parameters	Description
Batch Requests/Min	Number of SQL batch requests received by server.
SQL Compilations/Min	Number of SQL compilations.
SQL Recompilations/Min	Number of SQL re-compiles.
AutoParams/Min	Number of auto-parameterization attempts.

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Failed AutoParams/Min	Number of failed auto-parameterizations.

Latch Details

Parameters	Description
Latch Waits/Min	Number of latch requests that could not be granted immediately and had to wait before being granted.
Average Latch Wait Time	Average latch wait time for latch requests that had to wait.

Access Method Details

Parameters	Description
Full Scans/Min	Number of unrestricted full scans. These can either be base table or full index scans.
Range Scans/Min	Number of qualified range scans through indexes.
Probe Scans/Min	Number of probe scans. A probe scan is used to directly look up rows in an index or base table.

Database Details

Parameters	Description
DataFile Details	Gives the DataFile size.
Log File Size	Gives the Size of the Log File, used size of the Log File.
Transaction Details	Gives the number of transaction per minute, replication transaction per minute, and the active transactions.
Log Flush Details	Gives the number of Log Flush/minute, Log Flush waits/minute, and the Log Flush wait time.

In addition, Applications Manager displays more in-depth performance metrics such as System Tables, Table Relationship, User Tables etc., of the selected database details page..

Parameters	**Description**
System Tables	• **System Table Name** - Name of the System Table. • **Total Rows** - Total number of rows present in that table. • **Total Space Used in MB** - Size of the table (MB).

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Table Relationship	• **Parent Table** – Table which contains the primary / parent column for the foreign key. • **Parent Column** – The primary column for which a foreign exists. • **Foreign Table** – Table name of foreign key column. • **Foreign Column** – The foreign key column name.
User Tables	• **System Table Name** - Name of the User Table. • **Total Rows** - Total number of rows present in that table. • **Total Space Used in MB** - Size of the table (MB).
View Details	• **View Name** - Name of the View. • **Schema Name** - Schema Name to which this view is associated. • **IsIndexed** - Shows if there is an index for the view (1 = Index Present, 0 = No Index). • **IsIndexable** - Shows whether an index can be created (1 = Index can be created, 0 = No Index can be created). • **Create Date** - Date on which the view was created. • **Modify Date** - Date on which the view was last modified.
Index Details	• **Table Name** - Name of the Table. • **Index Name** - Name of Index present in the table. • **Maximum Size Row** - Maximum size for a row in that table (in bytes). • **Max Noleafindex Row** - Maximum size of a nonleaf index row (in bytes). • **File Group Name** - Name of the filegroup (Primary or User-defined). • **Column Name** - Name of the column for which index is present. • **Type** - Data type of the Column. • **Clustered Index** - Shows if the index is a Clustered Index or not (Yes or No). A clustered index determines the physical order of data in a table.
Indexes that have not been used	• **Object Name** – Name of the table in which the index is present. • **Index Name** – Name of the index which is not used. • **Type** – Type of the Index.
Fragmentation Details	• **Table Name** - Name of the table in which the index is present • **Index Name** - Name of Index present in the table • **Fragmentation Percent** - Percentage of Logical fragmentation present in the Index. This is the percentage of out-of-order pages in the leaf pages of an index. The Percentage of Fragmentation should be as close to zero as possible for maximum performance. However, values from 0% through 10% may be acceptable

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Indexes that have been used	• **Object Name** – Name of the table in which the index is present. • **Schema Name** – Schema Name to which this table is associated. • **Index Name** – Name of the index which is not used. • **Type** – Type of the Index. • **User Seeks** - The number of seeks in this index by user queries. • **User Scans** - The number of scans in this index by user queries. • **User Lookups** - The number of bookmark lookups in this index by user queries. • **User Updates** - The number of updates in this index by user queries.

Scheduled Jobs

Parameters	Description
Job Status	Gives the Status of the job
Run date & time	Gives the date & time for which the jobs are scheduled to run.
Job Time	Gives the time taken by the job.
Retries Attempted	Gives the number of times the scheduled jobs attempted to run.

SQL Performance

Applications Manager presents a host of performance metrics for the SQL Server. They are:

- Top Queries by CPU (displayed by default)
- Top Queries by I/O (Input/Output)
- Top Queries by CLR
- Top Slow Running Queries
- Top Queries by most frequently executed
- Top Queries by most frequently blocked
- Top Queries by Lowest Plan Reuse

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- Cost of Missing Indexes
- Top Components by Memory Usage
- Top Waits by Waiting Tasks
- Top Waits by Waiting Tasks

Top Queries by CPU

Parameters	Description
Avg. CPU Time	Average CPU Time taken to execute the query.
Total CPU Time	The cumulative total amount of CPU time that has been spent running this query since the plan was compiled.
Query	The SQL Query Text.
DB Name	The database against which this query has been executed.
Last Execution Time	The last time at which the query started executing.
Average Execution Time	Average time taken to execute an individual query.

Top Slow Running Queries

Displays information of Top 10 costly queries as measured by the Average Execution Time.

Parameters	Description
Avg. Execution Time	Average time taken for complete execution of this query.
Maximum Execution Time	Maximum elapsed time for any complete execution of this query.
Minimum Execution Time	Minimum elapsed time for any complete execution of this query.
No of Executions	The number of times that the query has been executed since the plan was last compiled.

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Query	The SQL query text.
Last Execution Time	The last time at which the query started executing.

Top Queries by Lowest Plan Reuse

Displays information of Top 10 queries whose query plan are not cached by the SQL Server. Query plan will be cached by SQL Server for faster query execution.

Parameters	**Description**
Plan Usage	Number of times this cache object has been used since its inception.
Cache Object Type	Type of object in the cache. (Possible Values : Compiled Plan / Compiled Plan Stub / Parse Tree / Extended Proc / CLR Compiled Func / CLR Compiled Proc).
Query	The SQL Query Text.
DB Name	The Database against which this query has been executed (will be empty for ad hoc and prepared batches).
Last Execution Time	The last time at which the query started executing.
Average Execution Time	Average time taken to execute an individual query.

Top Queries by I/O

Displays information of the Top 10 costly queries as measured by Average I/O operation (logical read and logical write operations).

Parameters	**Description**
Avg. Logical I/O	Average number of logical reads and logical writes performed by executions of this query.
Total I/O	The cumulative total number of logical reads and logical writes performed by executions of this query since the plan was compiled.

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Query	The SQL query text.
DB Name	The Database against which this query has been executed (will be empty for ad hoc and prepared batches).
Last Execution Time	The last time at which the query started executing.
Average Execution Time	Average time taken to execute an individual query.

Top Queries by Most Frequently Executed

Parameters	**Description**
Execution Count	The number of times that the query has been executed since the plan was last compiled.
Query	The SQL query text.
DB Name	The Database against which this query has been executed (will be empty for ad hoc and prepared batches).
Last Execution Time	The last time at which the query started executing.
Average Execution Time	Average time taken to execute an individual query.

Cost of Missing Indexes

Displays information of the Top 10 missing indexes in the SQL Server. These indexes will have varying levels of impact on query performance. From this table, you can find out the most costly missing indexes across all the databases on the server and thus help finding out which missing indexes are likely to have the most significant impact on performance.

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Parameters	Description
Total Cost	Overall cost of the queries executing without having the recommended indexes. It simply is a unit, the SQL Server Query Optimizer does its calculations with and is not associated with any type of known measurement unit like seconds or CPU time. Bigger the total cost number, more the resources could be saved after creating the recommended index. You need to check the query execution plan before creating the index for these particular columns and you need not check any other details. Also note that every index has a negative impact on the inserts/updates/deletes on that table and this impact can not be measured.
Avg. User Impact	Displays the average percentage of benefit that the user queries could experience if this missing index group was implemented. This value means that the query cost would on average drop by this percentage if this missing index group was implemented.
Table Name	Displays the name of table (along with Database Name and Schema Name) in which the index is missing.
Equality Usage	Displays the column names for which Index is missing. These column names are used in equality predicates of the form: table.column = constant_value
Inequality Usage	Displays the column names for which Index is missing. These column names are used in inequality predicates (any comparison operator other than "=") of the form: table.column > constant_value.
Include Columns	Displays the column names for which Index is missing. These column names are Comma-separated list of columns needed as covering columns for the query.

Top Queries by CLR

Displays information of the Top 10 queries having high CLR time (Common Language Runtime inside Microsoft .NET Framework).

Parameters	Description
Average CLR	Average Time consumed inside Microsoft .NET Framework Common Language Runtime (CLR) for executions of this query.
Total CLR	The cumulative Total Time consumed inside Microsoft .NET Framework Common Language Runtime (CLR) objects by executions of this query since the plan was compiled.

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DB Name	The Database against which this query has been executed.
Last Execution Time	The last time at which the query started executing.
Average Execution Time	Average time taken to execute an individual query.

Top Queries by most frequently blocked

Parameters	**Description**
Average Time Blocked	The average amount of time the query was blocked.
Total Time Blocked	The cumulative total amount of time for which the query was blocked.
Query	The SQL query text.
DB Name	The Database against which this query has been executed.
Last Execution Time	The last time at which the query started executing.
Average Execution Time	Average time taken to execute an individual query.

Top Components by Memory Usage

Displays information about the various Memory clerks. Memory clerks allocates resource / memory to SQL memory object during times of need.

Parameters	**Description**
Component Type	Displays the type of memory clerk.

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Single Pages(KB)	Displays the Total amount of single page memory allocated in kilobytes (KB) directly from the buffer pool. Its is the memory consumed by this component from the Buffer pool.
Multi Pages(KB)	Displays the total amount of multipage memory allocated in (KB) from outside the buffer pool.
Virtual Memory Reserved(KB)	Displays the total amount of virtual memory reserved directly by the component that uses this clerk.
Virtual Memory Committed(KB)	Displays the total amount of virtual memory that is committed by the memory clerk. This should be always less than the amount of reserved memory.
AWE Memory Allocated(KB)	Displays total amount of memory that is allocated by the memory clerk by using Address Windowing Extensions (AWE).
Shared Memory Allocated(KB)	Displays the total amount of shared memory that is reserved by a memory clerk memory reserved for use by shared memory and file mapping.
Shared Memory Committed(KB)	Displays the total amount of shared memory that is committed by the memory clerk.

Top Waits by Waiting Tasks

Parameters	**Description**
Wait Type	Indicates name of the wait type.
Waiting Tasks	Displays the number of waits on that particular wait type.
Wait Time	Total time in milliseconds for that particular type of wait.
Average Wait Time	Average time in milliseconds for that particular type of wait.
Signal Time	Displays the difference between the time the waiting thread was signaled and when it started running.

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Backup/Restore Details

Backup Details

Displays the performance metric about various SQL backup set present in the SQL Server.

Parameters	Description
DB Name	Displays the name of the database involved in the backup operation.
Start	Displays the date and time of the back up operation started.
End	Displays the date and time of the back up operation ended.
Expiration	Displays the date and time the back up operation is supposed to expire.
Damaged	If the value is 1, then it means that the damage to database was detected while this back up was being created. However the back up operation continued despite the errors.
Size	Displays the size of the back up set (in bytes).
Physical Name	Displays the physical name of the back up device.
Backup Age (Hours)	Displays the number of hours passed since the back up operation was completed.

Restore Details

Displays the performance metrics about various Restore operation in the SQL Server.

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Parameters	Description
DB Name	Displays the name of the destination database for which the restore operation operate upon.
Restore by	Displays the name of the user who performed the restore operation on the database.
Restore Type	Displays the type of restore operation performed which could be either Database / File / Filegroup / Log / Verifyonly / Differential / Revert.
Started	Displays the date and time of the restore operation.
Restore From	Displays the physical name of the backup file created.
Restore To	Displays the name of the file where the backup was restored to.

Replication Details

Log Shipping Status

Parameters	Description
Database Name	Displays the name of the database.
Agent Type	Displays the type of agent - Backup, Copy or Restore.
Status	Displays the status of the database log shipping - Starting, Running, Success, Error, Warning.
Time Elapsed (in min)	Displays the total time taken to run the log shipping operation.
Log Time	Displays the time and date last log shipping operation.
Error Log Time	Displays the time of the last error log shipping operation ran.
Error Message	Displays the error messages received while running the log shipping operation if any.

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Replications Monitor Details

Publications

This table displays status information for all publications available in the corresponding SQL monitor.

Parameters	Description
Status	The status of each publication.
Publication	Name of the publication
Type	Type of the publication
No. of Subscriptions	Number of subscriptions associated with the corresponding publication.
Synchronizing	The number of distribution agents running for the publication.
Current Average Performance	Current average performance of the replication based on the latency.
Current Worst Performance	Current worst performance of the replication based on the latency.

Subscriptions

Applications Manager provides information about subscriptions available in the corresponding monitor.

Parameters	Description
Running status	Status of each subscription.
Subscription	Name of the subscription
Publication	Name of the publication running the corresponding subscription.

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Performance	Performance of the subscription.
Latency	Latency value
Expiration Status	Shows expiring status of the subscription which can be one of the following • Expired • Expiring soon • Critical

Replication Agents

Replication Agents tab displays information about each replication agent running in the corresponding monitor.

Parameters	**Description**
Agent Name	Name of the agent involved in the replication
Agent Type	Type of the agent
Current Status	Current status of the agent
[Database].[Publication]	Name of the publisher
Last Start Time	Last start time of the agent
Duration (HH:mm:ss)	Duration of the agent session.
Delivary Rate (cmds/sec)	Ratio of delivered commands to the duration of the agent.
Latency	The current amount of time, in milliseconds, elapsed from when transactions are applied at the Publisher to when they are delivered to the distributor.
#Trans	The number of transactions delivered to the distributor.
#Cmds	The number of commands delivered to the distributor.
Avg #Cmds	The average number of commands per transaction delivered to the distributor for the session.

Replication Agent History Table

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Displays the performance metrics of various agents history running in SQL server. You will be able to view replication agent's history when you click on the corresponding agent from Agent Details table. This will show the step by step agent execution history for that corresponding agent in a pop-up window.

Parameters	**Description**
Current status	Current status of the agent
Last start time	Last start time of the agent
Duration (HH:mm:ss)	Duration of the agent session.
Last Action	Displays the last action message of the agent.

SQL Session Details

Parameters	**Description**
PID	Displays the SQL server session ID running in SQL Server.
Status	Displays the status of the process in SQL Server. The possible values are: • **Dormant** : SQL Server session that hasn't done any work in more than an hour. • **Running** : SQL Server session running one or more batches. A session can run multiple batches when Multiple Active Result Sets (MARS) is enabled. • **Background** : SQL Server session running a background task, such as deadlock detection. • **Rollback** : SQL Server session which has a transaction rollback in process. • **Pending** : SQL Server session waiting for a worker thread to become available. • **Runnable** : The task in SQL Server session which is in the runnable queue of a scheduler while waiting to get a time quantum. • **Spinloop** : The task in SQL Server session waiting for a spinlock (Spinlock is a lock where the thread waits in a loop, repeatedly checking until the lock becomes available) to become free. • **Suspended** : SQL Server session is waiting for an event, such as I/O, to complete.
User Name	The login name used for executing the process.

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Host	The host machine name from where the session has been established from.
Program	The application in SQL Server which has established the session.
Memory Usage	The number of pages in the procedure cache that are currently allocated to this process.
CPU Time (ms)	The cumulative CPU time for the process running in the SQL Server.
I/O	The cumulative Disk reads and writes for the process running in the SQL Server.
Blocked	Displays the ID of the session that is blocking the request. • If this column is 0, then the request is not blocked, or the session information of the blocking session is not available (or cannot be identified). • If value is -2, then the blocking resource is owned by an orphaned distributed transaction. • If value is-3, then the blocking resource is owned by a deferred recovery transaction. • If value is -4, then the Session ID of the blocking latch owner could not be determined due to internal latch state transitions.
DB Name	Displays the name of the database currently being used by the process.
Command Name	Displays the command that is being currently executed.
Query	Displays the query for the selected database session.
Kill	Allows you to kill the session of the selected database.
Wait Time (ms)	The time, in milliseconds, in which this task is waiting for a resource. When the task is not waiting, the wait time is 0.
Last Wait Type	The name of the last wait type.
Wait Resource	The name of the resource that is needed.

SQL Host Details

Parameters	**Description**

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Host Connected to the SQL	Displays the hosts name connected to the SQL server.
No. of Connections	Displays the number of connections each host has to the SQL server.
Memory Usage	Displays the total memory usage by each host connected to the SQL server.
CPU Time (ms)	Displays the total CPU time (in milliseconds) of each host connected to the SQL server.
I/O	The cumulative Disk reads and writes for the process running in the SQL Server.

SQL Session Lock Details

Parameters	Description
PID	The SQL Server sessions ID.
Status	The status of the process in SQL Server. The possible values are: • **Dormant** : SQL Server session that hasn't done any work in more than an hour. • **Running** : SQL Server session running one or more batches. A session can run multiple batches when Multiple Active Result Sets (MARS) is enabled. • **Background** : SQL Server session running a background task, such as deadlock detection. • **Rollback** : SQL Server session which has a transaction rollback in process. • **Pending** : SQL Server session waiting for a worker thread to become available. • **Runnable** : The task in SQL Server session which is in the runnable queue of a scheduler while waiting to get a time quantum. • **Spinloop** : The task in SQL Server session waiting for a spinlock (Spinlock is a lock where the thread waits in a loop, repeatedly checking until the lock becomes available) to become free. • **Suspended** : SQL Server session is waiting for an event, such as I/O, to complete.
Lock Type	The type of Lock.
User Name	The SQL login name used for executing the process in SQL Server.
DB Name	The database currently being used by the process in SQL Server.
Object ID	The Object ID associated the resource.

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Host	The host machine on which the SQL Server is running.
Program	The application in SQL Server which has established the session.
Command Name	The command that is being currently executed.
CPU Time (ms)	The cumulative CPU time for the process running in the SQL Server.
I/O	The cumulative Disk reads and writes for the process running in the SQL Server.
Memory Usage	The number of pages in the procedure cache that are currently allocated to this process.
Wait Time (ms)	The time, in milliseconds, in which this task is waiting for a resource. When the task is not waiting, the wait time is 0.
Last Wait Type	The name of the last wait type.
Wait Resource	The name of the resource that is needed.

SQL Session Blocked Lock Details

Parameters	Description
Holding ID	The Blocked sessions ID.
Status	The status of the process in SQL Server. The possible values are: • **Dormant** : SQL Server session that hasn't done any work in more than an hour. • **Running** : SQL Server session running one or more batches. A session can run multiple batches when Multiple Active Result Sets (MARS) is enabled. • **Background** : SQL Server session running a background task, such as deadlock detection. • **Rollback** : SQL Server session which has a transaction rollback in process. • **Pending** : SQL Server session waiting for a worker thread to become available. • **Runnable** : The task in SQL Server session which is in the runnable queue of a scheduler while waiting to get a time quantum. • **Spinloop** : The task in SQL Server session waiting for a spinlock (Spinlock is a lock where the thread waits in a loop, repeatedly checking until the lock becomes available) to become free. • **Suspended** : SQL Server session is waiting for an event, such as I/O, to complete.

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Lock Type	The type of Lock.
Hold User	The user the Lock.
Wait User	The blocked user waiting for the Lock.
DB Name	The Name of the database being used by the process.
Object ID	The Object ID associated with the resource.
Hold Host	The host machine holding the Lock.
Wait Host	The Blocked Host waiting the Lock.
Host Command	The Command being executed by the process holding the Lock.
Wait Command	The Command to be executed by the process waiting for the Lock.
Memory Usage	The number of pages in the procedure cache that are currently allocated to this process.
Wait Time (ms)	The time, in milliseconds, in which this task is waiting for a resource. When the task is not waiting, the wait time is 0.
Last Wait Type	The name of the last or wait type.
Wait Resource	The name of the resource that is needed.

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IBM DB2 Server Monitoring

Overview

IBM DB2 is a family of relational database management system (RDBMS) products from IBM that serve a number of different operating system platforms. DB2 is designed to store, analyze and retrieve the data efficiently and is supported across Linux, Unix, and Windows operating systems.

Applications Manager's DB2 Server Monitoring capability helps database administrators (DBAs) monitor the availability and performance of production databases.

Creating a new monitor

Supported Versions: Applications Manager supports monitoring of IBM DB2 Versions 8, 9, 10 and 11.

Prerequisites: A DB2 user with SYSMON instance level authority is required for monitoring DB2 server.

To create a IBM DB2 database server Monitor, follow the given steps:

1. Click on New **Monitor** link.
2. Select DB2 DB Server.
3. Enter the IP Address or hostname of the host.
4. Enter the SubNetMask of the network.
5. Enter the port number in which DB2 is running.
6. Enter the polling interval time in minutes.
7. If you are adding a new monitor from an Admin Server, select a Managed Server.
8. Provide the user name and password of user who has permission to access the DB2 database. The user name specified for collecting the data from DB2 Server should have either System Administrator role or the user should be the DB owner for master database.
9. Specify the Database Name.
10. Choose the Monitor Group from the combo box with which you want to associate DB2 database server Monitor (optional). You can choose multiple groups to associate your monitor.
11. Click Add Monitor(s). This discovers DB2 database server from the network and starts monitoring them.

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Monitored Parameters

Availability tab, gives the Availability history for the past 24 hours or 30 days. *Performance* tab gives the Health Status and events for the past 24 hours or 30 days. *List view* enables you to perform bulk admin configurations. Click on the individual monitors listed, to view the following information.

Monitor Information

Parameters	Description
Name	Specifies the name of IBM DB2 server monitor.
Health	Specifies the health (Clear, Warning, Critical) of the IBM DB2 server.
Type	Specifies the type you are monitoring.
Version	Specifies the version of the database server.
Port	Specifies the port number at which the database server is running.
Instance Name	The name of the instance in which the database is present
Server Status	The current status of the database server itself
Started Time	The date and time that the database manager was started using the db2start comma
Host Name	Specifies the host at which the database server is running.
Host OS	Specifies the OS of the host where the database server is running.
Last Alarm	Specifies the last alarm that was generated for the database server.
Last Polled at	Specifies the time at which the last poll was performed.
Next Poll at	Specifies the time at which the next poll is scheduled.
Availability	Shows the current status of the server - available or not available.

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Connection Statistics

Parameters	Description
Connection Time	Time taken to get connected to the IBM DB2 database server
Total Connections	The total number of local and remote connections that currently present in the database manager
Local Connections	The number of connections initiated from remote clients to the current instance of the database manager
Remote Connections	The number of local applications that are currently connected to the database within the database manager

Agents Statistics

Parameters	Description
Active Agents	The number of agents in the agent pool that are currently active and assigned to an application
Idle Agents	The number of agents in the agent pool that are currently unassigned to any application
Number of Agents	The number of agents registered in the current database manager instance
Agents Waiting	The number of agents waiting for a token so they can execute a transaction in the database manager

Database Information

Parameters	Description
Database Name	The real name of the database for which information is collected
Health	Specifies the health (Clear, Warning, Critical) of the database.
Database Alias	The alias of the database provided when calling the snapshot function
Database Path	The full path of the location where the database is stored on the monitored system
Database Status	The current status of the database
Connected Time	The date and time when the activate database was issued
Deadlock Rate	The total number of deadlocks that have occurred in the given polling interval
Percentage of Log Utilization	The total amount of active log space used in bytes in the database
Percentage of Sorts Overflowed	The percentage of sorts that have over flowed

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Transaction Statistics

Parameters	Description
Successful Queries	The total number of successful SQL statements executed at the database in the given polling interval
Failed Queries	The number of SQL statements that were attempted, but failed at the database in the given polling interval
Units of Work	This represents the total number of sql commits, internal commits, sql roll backs and internal roll backs done by the database manager in the given polling interval

Cache Performance

Parameters	Description
Package Cache Hit Ratio	The hit ratio is a percentage indicating how well the package cache is helping to avoid reloading packages and sections for static SQL from the system catalogs as well as helping to avoid recompiling dynamic SQL statements.
Catalog Cache Hit Ratio	The hit ratio is a percentage indicating how well the catalog cache is helping to avoid actual accesses to the catalog on disk

Buffer Statistics

Parameters	Description
Buffer Pool Hit Ratio	The buffer pool hit ratio indicates the percentage of time that the database manager loaded the required page from buffer pool in order to service a page request
Index Page Hit Ratio	The Index Page hit ratio indicates the percentage of time that the database manager accessed the index pages present in the buffer pools.
Data Page Hit Ratio	The Data Page hit ratio indicates the percentage of time that the database manager accessed the data pages present in the buffer pools.
Direct Reads	The number of read operations that do not use the buffer pool
Direct Writes	The number of write operations that do not use the buffer pool

TableSpace Status

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Parameters	Description
Name	Refers to the name of the Table space.
Allocated Bytes	calculated from (tablespace_total_pages)*(tablespace_page_size) and converted to MB
Free Bytes	calculated from (tablespace_free_pages)*(tablespace_page_size) and converted to MB
% of Free Bytes	calculated from (tablespace_free_pages) /(tablespace_total_pages)*100

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IBM DB2 for i Monitoring

- IBM DB2 for i - An Overview
- Monitoring IBM DB2 for i - What we do.
- Adding a new IBM DB2 for i monitor / Using AddMonitor API
- Monitored Parameters

IBM DB2 for i - An Overview

DB2 for i is a member of IBM's family of DB2 databases. It is an integrated relation database management system for the IBM i platform. DB2 for i contains a rich set of security features and services that pertain to the goals of authentication, authorization, integrity, confidentiality, and auditing.

Monitoring IBM DB2 for i - What we do.

Applications Manager aims to help database admins with tuning their DB2 and gather operating system level data to understand performance issues. Let's take a look at what you need to see to monitor IBM DB2 for i, the performance metrics to gather and how you can ensure that your DB2 database is up and operating as expected with Applications Manager:

- Monitor Jobs status and health and also optimize your server's resources by minimizing network traffic, disk I/O and CPU time.
- Track memory usage details and keep track of JVM metrics to correlate server performance.
- Get instant notifications when there are performance issues with the components of your DB2.
- Become aware of performance bottlenecks and take quick remedial actions before your end users experience issues.

Adding a new IBM DB2 for i monitor / Using AddMonitor API

Prerequisites for monitoring IBM DB2 for i:

- To monitor IBM DB2 Version 8 and 9, the minimum user privileges required is the ability to access the SYSPROC procedures.

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- To monitor IBM DB2 Version 10, the minimum user privileges required is the ability to access the SYSIBMADM functions.

To create a IBM DB2 for i database server Monitor, follow the given steps:

1. Click on New **Monitor** link.
2. Select DB2 for i Server.
3. Enter a Display Name for your monitor.
4. Enter the IP Address or hostname of the host.
5. Enter the SubNetMask of the network.
6. Enter the port number in which DB2 is running.
7. Enter the polling interval time in minutes.
8. If you are adding a new monitor from an Admin Server, select a Managed Server.
9. Provide the user name and password of user who has permission to access the DB2 database. The user name specified for collecting the data from DB2 Server should have either System Administrator role or the user should be the DB owner for master database.
10. Specify the Database Name.
11. Choose the Monitor Group from the combo box with which you want to associate the DB2 database server Monitor (optional). You can choose multiple groups to associate your monitor.
12. Click Add Monitor(s). This discovers DB2 for i database server from the network and starts monitoring them.

Use the AddMonitor API to add an IBM DB2 Monitor

Monitored Parameters

- Overview
- System Information
- Jobs and JVM Information
- Configuration

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Overview

ATTRIBUTE NAME	DESCRIPTION	UNITS
CPU DETAILS		
Average CPU Utilization	The average CPU utilization for all the active processors.	%
Average CPU Rate	The average CPU rate expressed as a percentage where 100% indicates the processor is running at its nominal frequency. A value above or below 100% indicates how much the processor has been slowed down (throttled) or speeded up (turbo) relative to the nominal frequency for the processor model. For instance, a value of 120% indicates the processor is running 20% faster against its nominal speed.	%
Configured CPUs	The total number of configured CPUs.	-
Current CPU Capacity	The current processing capacity specifies the processor units that are being used in the partition. For a partition sharing physical processors, the current processing capacity represents the share of the physical processors in the pool it is running. For a partition using dedicated processors, the current processing capacity represents the number of virtual processors that are currently active in the partition.	GHz
SCHEMA DETAILS FOR TOP 10 SCHEMA BY SIZE		
Schema	Schema Name	-
Table Count	The number of tables in the schema	-
Size	The size of the Schema	MB
Partition Count	The number of Partitions present in the Schema	-
Pages	The number of 64K pages in all partitions or members of the table.	-
Distinct Indexes	The number of distinct indexes built over any partitions or members of the table. This does not include maintained temporary indexes.	-
Insert Operations	The number of insert operations of all partitions or members of the table since the last IPL(Initial Program Load).	-
Update Operations	The number of update operations of all partitions or members of the table since the last IPL.	-
Delete Operations	The number of delete operations of all partitions or members of the table since the last IPL.	-
Logical Reads	The number of logical read operations of all partitions or members of the table since the last IPL.	-

System Information

ATTRIBUTE NAME	DESCRIPTION	UNITS
SYSTEM DETAILS		
Main Storage Size	The amount of main storage in the system.	GB
System ASP Storage	The amount of ASP storage in the system.	GB
System ASP Used	The amount of ASP Memory used by the System	MB
Partitions Count	The number of Partitions in the System	-
Active Threads in System	The number of Active Threads in the System	-
MEMORY POOL INFORMATION		

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ATTRIBUTE NAME	DESCRIPTION	UNITS
Pool Name	The name of the storage pool. The name may be a number, in which case it is a private pool associated with a subsystem, or one of the following special values. • MACHINE - The specified pool definition is defined to be the machine pool. • BASE - The specified pool definition is defined to be the base system pool, which can be shared with other subsystems. • INTERACT - The specified pool definition is defined to be the shared pool used for the QINTER subsystem. • SPOOL - The specified pool definition is defined to be the shared pool used for spooled writers. • SHRPOOLx - The specified pool definition is defined to be a shared pool.	
Reserved Size	The amount of storage in the pool reserved for system use (for example, for save/restore operations).	GB
Current Size	The amount of main storage in the pool.	GB
Maximum Active Threads	The maximum number of threads that can be active in the pool at any one time.	-
Current Threads	The number of threads currently using the pool.	-
Elapsed Time	The time since the measurement start time.	Sec

Jobs and JVM Information

ATTRIBUTE NAME	DESCRIPTION	UNITS
JOB DETAILS		
Active Jobs in System	The number of jobs active in the system (jobs that have been started, but have not yet ended), including both user and system jobs	-
Interactive Jobs in System	The percentage of interactive performance assigned to this logical partition. This value is a percentage of the total interactive performance available to the entire physical system.	%
Total Jobs in System	The total number of user and system jobs that are currently in the system. The total includes: • All jobs on job queues waiting to be processed. • All jobs currently active (being processed). • All jobs that have completed running but still have output on output queues to be produced.	
Maximum Jobs in System	The maximum number of jobs that are allowed on the system. When the number of jobs reaches this maximum, you can no longer submit or start more jobs on the system. The total includes: • All jobs on job queues waiting to be processed. • All jobs currently active (being processed). • All jobs that have completed running but still have output on output queues to be produced.	
TOP 10 GARBAGE COLLECTIONS AND HEAP TIME USING JVM INFORMATION		
Job Name	The name of Job that is running in DB2 Database	-
Process ID	The process identifier used by the kernel to uniquely identify the process.	-
Total GC Time	The total time spent performing garbage collection tasks.	Min
Current Java Threads	The current number of java threads within the JVM job.	-
Current Heap Size	The amount of memory currently allocated for heap space.	MB
In Use Heap Size	The amount of memory currently in use by the heap.	MB

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ATTRIBUTE NAME	DESCRIPTION	UNITS
Max Heap Size	The maximum heap size available to the JVM code,	MB

Configuration

ATTRIBUTE NAME	DESCRIPTION
Aliases	Alias is an alternative name for database objects.
Sequences	The number of Sequences
Global Variables	The number of Global Variables
Journals	The number of Journals
Journal Receivers	The number of Journal Receivers
Schemas	The number of Schemas
Tables	The number of Tables
Partitioned Tables	The number of Partitioned Tables
Distributed Tables	The number of Distributed Tables
Materialized Tables	The number of Materialized Tables
Physical Files	The number of Physical Files
Source Files	The number of Source Files
Logical Files	The number of Logical Files
DDM Files	The number of DDM Files
External Triggers	The number of External Triggers
SQL Procedures	The number of SQL Procedures
External Procedures	The number of External Procedures
SQL Procedures	The number of SQL Procedures

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IBM Informix Database Monitoring

Supported versions of Informix Server: Informix 10.x & above.

Prerequisite: Click to know about the user previleges and other necessary prerequisites to monitor IBM Informix database.

To create an Informix Server Monitor

1. Click on New **Monitor** link.
2. Select **Informix** under **Database Servers**.
3. Specify the **Display Name** of the Informix monitor
4. Enter the HostName or IP Address of the host where Informix server is installed.
5. Enter the **port number** for eg., 1526.
6. Enter the **Database Server** name i.e the name of the Informix database server to which you want to connect.
7. You can enter your own credential details or select preconfigured credentials from Credentials Manager. If you wish to enter your own credentials, specify **Informix username** and **password** details for this monitor.
8. Set the Polling Interval.
9. If you are adding a new monitor from an Admin Server, select a Managed Server.
10. Choose the Monitor Group from the combo box with which you want to associate Informix Server Monitor (optional). You can choose multiple groups to associate your monitor.
11. Click Add Monitor(s). This discovers Informix server from the network and starts monitoring them.

IBM Informix is one of the industry's most widely used database servers with a comprehensive set of high availability options, high levels of performance, data replication capabilities, scalability and minimal administrative overhead for both simple and complex IT infrastructures. Applications Manager performs effective monitoring, which is very critical in Informix administration, to collect system and database performance stats, session details and to identify problems at an early stage for proactive troubleshooting and performance tuning.

IBM Informix - Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **Informix** under the **Database Servers** Table. Displayed is the Informix Database bulk configuration view distributed into three tabs:

- **Availability** tab, gives the Availability history for the past 24 hours or 30 days.
- **Performance** tab gives the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

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Click on the monitor name to see all the server details listed under the following tabs:

- Overview
- Database
- Sessions

Overview

Parameter	Description
Response time	The time taken to establish a JDBC connection with the Informix Server.
Database Space Details	
Dbspace Name	The unique name of the Database Space.
Allocated (MB)	The total physical disk size allocated for the Database Space in MB.
Free (MB)	The free physical disk size for the Database Space in MB.
Used %	The percentage of physical disk utilization by the Database Space.
Disk Reads/sec	The number of Disk Reads happening in the Database Space per second.
Disk Writes/sec	The number of Disk Writes happening in the Database Space per second.

Database

Parameter	Description
Name	The name of the Database
Dbspace Name	The Database Space which stores data for this database.
Owner	The User ID of the creator of the database.
Created On	The time at which the Database was created.
Is Logging Is Buff Log Is ANSI Is NLSIs Case Insens	The current logging modes of a database: • Unbuffered logging. Values are 1=Yes, 0=No • Buffered logging. Values are 1=Yes, 0=No • ANSI mode database. Values are 1=Yes, 0=No • NLS support. Values are 1=Yes, 0= No1 • Values are: I if case-insensitive for NCHAR and NVARCHAR columns, 0 if not

Sessions

Parameter	Description
Session Id	A unique identifier number assigned to the session.

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User Name	The User name of the Informix user account.
Host Name	The host from which the user is connecting to the Informix database
Login Time	The time at which the user connected to the database server.

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SAP HANA Monitoring

To create an SAP HANA DB Server Monitor:

1. Click on **New Monitor** link.
2. Select **SAP HANA** under **Database Servers**.
3. Specify the **Display Name** of the SAP HANA monitor
4. Enter **Host Name** of HANA server.
5. If Using SAP HANA Cloud Platform,
   - Select **SAP HANA Cloud Platform.**
   - Enter Cloud **Account Name, UserName and Password.**
6. Enter **Port** as IndexServer port, default port is 30015.
7. You can enter your own credential details or select pre-configured credentials from Credentials Manager. If you wish to enter your own credentials, specify SAP HANA username and password details for this monitor.
8. Enter **Database Username and Database Password.**
9. Enter **Instance Name.**
10. Set the **Polling Interval**.
11. If you are adding a new monitor from an Admin Server, select a Managed Server.
12. Choose the **Monitor Group** from the combo box with which you want to associate SAP HANA Server Monitor (optional). You can choose multiple groups to associate your monitor.
13. Click **Add Monitor(s)**. This discovers Informix server from the network and starts monitoring them.

Prerequisites:

1. Need to copy ngdbc.jar into the location /working/classes. **ngdbc.jar** can be copied from installed SAP HANA Client folder. Click here to download SAP HANA Client
2. If HANA is running ondemand, in addition to the above SAP Cloud Platform SDK is needed, this is not needed for HANA On premise. Click here to download SAP Cloud Platform SDK. The downloaded zip should be extracted under APM_HOME/working/hanacloud folder. After extracting need to verify whether APM_HOME/working/hanacloud/tools folder is available.
3. Need to restart APM after performing the above steps.
4. To effectively monitor SAP HANA, the SAP HANA DB User must have the below privileges,
   - **System privilege CATALOG READ.**
   - **Object privilege SELECT on the schema _SYS_STATISTICS.**
5. To grant these privileges to the user, execute the below statements in SAP HANA SQL console.(Replace USER_NAME with actual HANA DB Username)
   - GRANT MONITORING to USER_NAME
   - CALL GRANT_ACTIVATED_ROLE ('sap.hana.admin.roles:Monitoring','USER_NAME')

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Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **SAP HANA** under the **Database Servers** Table. Displayed is the SAP HANA bulk configuration view distributed into three tabs:

- **Availability** tab, gives the Availability history for the past 24 hours or 30 days.
- **Performance** tab gives the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

Click on the monitor name to see all the server details listed under the following tabs:

- Overview
- Alerts
- Caches
- Jobs
- Expensive Statements
- Transactions
- Workload
- Backup
- Replication
- Schema
- Disk
- Services

Overview

Parameter	Description
Memory and CPU	
Memory Utilization	Percentage of Memory Utilized by HANA System as a whole
CPU Utilization	Percentage of CPU Utilized by HANA System as a whole
CPU Available	No. of CPU Available
CPU Used	Used no. of CPU.
Total Physical Memory	Total Physical Memory of HANA System
Used Physical Memory	Memory Used by HANA System
Total Swap Memory	Total Swap Memory allocated for HANA System
Connection Statistics	
Active Connections	Total No. of Active Connections
Inactive Connections	Total No.of Inactive connections
Memory Details of Host	
Total Physical Memory	Total Memory for each host in the HANA system.
Free Physical Memory	Free Memory Available in individual host
Used Physical Memory	Used Memory in individual host (HANA+other appllications)

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Swap Memory	Swap Memory of individual host
Used Swap Memory	Swap Memory used.
Peak Memory	Peak Memory used in each host
Memory Used By HANA	
Allocation Limit	Memory allocated for HANA in each host
HANA used memory	Memory Used only by HANA in each host (Total resident)
Memory Used by Column Tables	The amount of memory used for column tables. (A major part of the SAP HANA Used Memory is taken up by the data tables).
Memory Used by Row tables	The total amount of memory used for row tables. (A major part of the SAP HANA Used Memory is taken up by the data tables).
Code & Stack Memory	Memory used by HANA Code and Stack
DataBase Resident	The amount of physical memory actually in operational use by a process. (When a part of the virtually allocated memory actually needs to be used, it is loaded or mapped to the real, physical memory of the host, and becomes "resident".)
System Information	
Version	The version of the SAP HANA database that is installed on the system.
System Type	A SAP HANA system can be configured as a single-host or multiple-host system.
All Services Started	Indicates if all services are started and the system is operational and accessible.
Platform	The operating system of the SAP HANA system.
Instance ID	The instance ID of the SAP HANA database.

Services

Parameter	Description
Service name	The name of the service.
CPU used	The percentage of CPU used by the service.
Memory Used	The memory used by each service.
Requests per sec	The number of requests that are processed by the host computer.
Response Time	The time (in milliseconds) that is taken by the service to respond to requests from the clients.
Active Requests count	The number of active requests that are being processed by the service.
Pending requests count	The number of requests that are waiting in a queue to be processed by a service in the SAP HANA database server.
Active Threads count	The total number of active threads for the service.
Open File Count	The number of files that are currently opened through a service in the SAP HANA database server.
Service status	The status of the service. The status can be no, yes, unknown, starting, and stopping.

Disk

Parameter	Description
Disk usage Type	The type of disk usage on the host computer. The usage types are log, data, trace, data_backup, and log_backup.
Total Disk Space	The total Space allocated for each Disk
Disk Used	Disk Used
Disk Free percentage	The free space percentage of the disk.
Disk Path	The path to the disk, disk location.
Disk Volume size	The total disk space in GB.

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Disk Volume	
Service Name	The name of the service.
Volume ID	The unique volume identifier.
File Type	The type of file in the volume directories. Possible values are - DATA, LOG, TRACE.
File Name	The name of the file,
Total Volume Size	The total data volume sizes of the SAP HANA servers.
Used Volume Size	The total data volume sizes used.
Free Size	The free memory size of the module.
Volume IO Statistics	
Service Name	The name of the service.
Volume ID	The unique volume identifier.
Volume Path	The Filesystem path.
Disk Type	The Filesystem type.
Blocked Write Quotes	The count of blocked write requests.
Total Reads	Total number of file reads on the disk for all file types.
Total Failed Reads	The number of failed reads from the disk.
Total Read Size	The size of read data.
Total Appends	Total number of file appends on the disk for all file types.
Total Writes	Total number of file writes on the disk for all file types.
Total Failed Writes	The number of of failed writes
Total Write Size	The total size of written data.
Total I/O Time	
Speed	The I/O performance measured in MB per Second.

Schema

Parameter	Description
No.of Column Tables	The number of Column Tables in this partition.
Size of Column Tables	Allocated memory size for fixed-size and variable-size column table paritions.
No. of Row Tables	The number of Row Tables in this partition.
Size of row tables	Allocated memory size for fixed-size and variable-size row table paritions.

Replication

Parameter	Description
Host	Host name
Service Name	Name of the Service
Site Name	Logical site name
Secondary Host	The secondary host name.
Secondary Site Name	The secondary logical site name.
Replication Status	Replication Status

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Backup

Parameter	Description
Backup Size	The size of the backup.
Source Type name	Type of persistence to be backed up: 'volume', 'topology'.
Service Type Name	Type of database service: 'indexserver', 'nameserver', 'statisticsserver'.
Entry type Name	Classification of backup catalog entries: 'complete data backup', 'data snapshot', 'log backup', 'log missing'
Start time	Time stamp when backup started
Total Time	TimeTaken for Backup
Backup status	Result of corresponding action: 'successful', 'failed', 'running', 'cancel pending', 'canceled'
Backup Configuration	
Max Recovery File Age	The maximum recovery file age in seconds.
Log Replay Step Size	The Log replay step size in bytes.
Max Recovery Backint Channels	The max number of parallel backint channels per request during recovery.
Backint Executable Link	The link name of the backint executable.
Backint Executable	The filename of the backint executable.
Backint Data Backup Path	The data backup directory for backint.
File Data Backup Path	The default directory for file-based data backups.
File Log Backup Path	The current directory for file-based log backups.
Latest Backup Details	
Latest Backup ID	The unique ID of a data backup or a log backup respectively.
Latest Backup Start Time	The start time of the backup operation.
Latest Backup End Time	The end time of the backup operation.
Latest Backup Entry Type	The classification of backup catalog entries. The following types are supported: 'complete data backup', 'log backup', 'log missing'.
Latest Backup Destination Type	The type of backup location. Possible values are - 'file' or 'backint'.
Latest Backup Size	Specifies the size of the backup.

Workload

Parameter	Description
Current Execution Rate/min	The current statement execution count per minute.
Current Compilation Rate/min	The current statement preparation count per minute.
Current Transaction Rate/min	The current transaction count per minute.
Current Commit Rate/min	The total number of commits per minute.
Current Rollback Rate/min	The total number of rollbacks per minute.
Current Memory Usage Rate/min	The total size of used memory per minute.

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Transactions

The Blocked Transaction data set provides information about the transactions that are waiting to acquire transaction locks held by another transaction, network, or disk.

Parameter	Description
Blocked Transaction Id	The connection ID of the blocked transaction.
Lock Owner Transaction Id	The connection ID associated with the write transaction that is holding the lock.
Blocked Time	The time from when the transaction is blocked.
Waiting Schema Name	The name of the schema on which the lock is placed.
Waiting Object Name	The type of the object on which the lock is placed.
Lock Type	The type of lock that is held by the blocking transaction. The lock type can be record, object, and metadata.
Lock Mode	The access level of transactions to the locked record, table, and database. The lock mode can be shared, exclusive, and intentional exclusive.
Blocked Statement	The statement that is blocking the transaction.

Expensive Statements

The Expensive Statement data set provides information about the statements for which execution time was greater than the configured threshold.

Parameter	Description
Statement Duration	The time that is required for executing the statement.
Records	The number of records in the database table.
Memory Size	The memory required for computing the statement.
DB User	The user name that is used to connect to the database.
Operation	Type of operation: e.g. prepare, execute, fetch, close.
Statement	The SQL statement that runs for duration longer than the defined threshold.
Error Code	The error code associated with the query.
Error Message	The error message associated with the error code.

Jobs

Parameter	Description
Connection Id	The connection that triggered the operation.
Schema name	Schema of the object.
Object name	Name of the object.
Job Name	The type of the operation.
Start Time	The time when the operation was started.

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Current Job Progress	The current status of the operation. One of the following values is possible: inactive, active, precommitted, aborting, partial_aborting, and active_prepare_commit.

Caches

Parameter	Description
Cache id	The unique identifier for the cache.
Total Size	Maximum available memory for each cache instance
Used Size	Memory Used by Cache instance
Hits Count	Number of cache hits for the cache instance.
Misses Count	Number of cache misses for the cache instance.

Alerts

Parameter	Description
Alert ID	The ID of the current alert.
Alert rating	The severity of the alert occurrence. The severity might be different for each alert. The following values are possible: 1 (information message), 2 (warning level 1), 3 (warning level 2), 4 (warning level 3), 5 (error message).
Alert TimeStamp	The time according to the local server time when the alert was occurred.
Description	The information about the alert.

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Sybase Database Server Monitoring

Supported Versions: Applications Manager supports monitoring of Sybase ASE 12.5.3 and above.

To create a Sybase database server Monitor, follow the given steps:

1. Click on New **Monitor** link.
2. Select Sybase.
3. Enter the IP Address or Host Name of the host.
4. Enter the SubNetMask of the network.
5. Enter the port number in which sybase is running.
6. Enter the polling interval time in minutes.
7. If you are adding a new monitor from an Admin Server, select a Managed Server.
8. Provide the user name and password of user who has permission to access the Sybase database. The user name specified for collecting the data from Sybase should have either System Administrator role or the user should be the DB owner for master database.
9. Specify the Database Name.
10. Choose the Monitor Group from the combo box with which you want to associate Sybase database server Monitor (optional). You can choose multiple groups to associate your monitor.
11. Click Add Monitor(s). This discovers Sybase database server from the network and starts monitoring them.

Monitored Parameters

Availability tab, gives the Availability history for the past 24 hours or 30 days. *Performance* tab gives the Health Status and events for the past 24 hours or 30 days. *List view* enables you to perform bulk admin configurations. Click on the individual monitors listed, to view the following information.

Monitor Information

Parameters	Description
Name	Specifies the name of Sybase server monitor.
Health	Specifies the health (Clear, Warning, Critical) of the Sybase server.

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Type	Specifies the type you are monitoring.
Version	Specifies the version of the database server.
Port	Specifies the port number at which the database server is running.
Server Status	The current status of the database server itself
Started Time	The date and time that the database manager was started
Host Name	Specifies the host at which the database server is running.
Host OS	Specifies the OS of the host where the database server is running.
Last Alarm	Specifies the last alarm that was generated for the database server.
Last Polled at	Specifies the time at which the last poll was performed.
Next Poll at	Specifies the time at which the next poll is scheduled.
Availability	Shows the current status of the server - available or not available.

Memory Usage

Parameters	Description
Total Memory	Total memory used by ASE server in kb
Used Memory	Used memory available in ASE
Free Memory	Free memory available in ASE
Used Memory %	Percentage of memory used by ASE server

Connection Statistics

Parameters	Description
Connection Time	Time taken to get connected to the Sybase database ASE server

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Active Remote Connections	The number of active remote connections after the ASE server has restarted
Max Remote Connections	The number of max remote connections available in the ASE server
Active User Connections	The number of active user connections after the ASE server has restarted
Max User Connections	The number of max user connections available in the ASE server

Database Details

Parameters	Description
Database Name	Name of the database instances
Total Size	Allocated space for the database in MB
Used Size	Used space of database in MB
Used Size %	Percentage of Used Size
Creator	User who created the database
Health	Health of the database

Current Process

Parameters	Description
Process Name	The name of the process currently connected to ASE server
Host/IPAddress	The Host Name / IP address of the process connected to ASE

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User Name	The name in which the process is connected to ASE
DB Name	The name of the Database to which process is connected to ASE
Command	The command executed by process connected to ASE (command shown here limits to 255 chrs)
Status	The current status of the process
Physical_IO	The Physical_IO of the process
MemUsage	The memory used by the process
Time_Blocked secs	The time blocked by the process is shown in secs

Current Transactions

Parameters	Description
Type	The type of the transaction
Coordinator	The coordinator of the transaction
State	The state of the current transaction like it is started or in process or ended
Connection	The type of connection
DB Name	The database name in which the transaction is executed
Process Name	The process which is executing the transaction
Transaction Name	The name of the transaction
Starttime	The time at which the transaction started

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PostgreSQL DB Servers

To create a PostgreSQL database server monitor, follow the steps given below:

1. Click on New **Monitor** link.
2. Select PostgreSQL.
3. Enter the Display Name of the database server.
4. Enter the IP Address or Host Name of the host.
5. Enter the port number in which PostgreSQL is running.
6. Provide the user name and password of user who has permission to access the PostgreSQL database.
7. Specify the DBName.
8. Enter the polling interval time in minutes.
9. If you are adding a new monitor from an Admin Server, select a Managed Server.
10. Choose the Monitor Group with which you want to associate the PostgreSQL database server to, from the combo box (optional). You can choose multiple groups to associate your monitor.
11. Click Add Monitor(s). This discovers PostgreSQL database server from the network and starts monitoring them.

Supported Versions: 8.1 and above

The *Availability* tab displays the availability history of the PostgreSQL database servers in your network for the past 24 hours or 30 days. The *Performance* tab displays the Health Status and events for the past 24 hours or 30 days. The *List view* displays all the PostgreSQL servers that you monitor along with their current availability and health status. You can also perform bulk admin configurations from this view. Click on the individual monitors listed to view the following information:

Monitor Information

Parameter	Description
Name	Denotes the name of PostgreSQL database server monitor.
Type	Denotes the type you are monitoring.
Health	Denotes the health (Clear, Warning, Critical) status of the PostgreSQL server.
Last Polled at	Specifies the time at which the last poll was performed.
Next Poll at	Specifies the time at which the next poll is scheduled.

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Availability	Shows the current status of the server - available or not available.

Connection Statistics

Parameter	Description
Active Connections	Number of currently active connections to the database
Total Users	The total number of users active at the time of data collection

Lock Statistics

Parameter	Description
Locks Held	Number of locks held by the indicated session
Locks Wait	Number of locks waiting in the database

Buffer Statistics

Parameter	Description
Buffer Hits/min	Total buffer hits (i.e., block read requests avoided by finding the block already in buffer cache) per minute
Block Reads/Min	Total disk blocks read per minute
Cache Hit Ratio	The current ratio of buffer cache hits to total requests

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Disk Usage Details

Parameter	Description
Disk Usage	Size of the on-disk representation of all tables in the database in MB
Index usage	Size of the on-disk representation of all indexes in the database in MB

Index Scan Details

Parameter	Description
Index scans/min	Total number of index scans initiated per minute
Index Reads/min	Total number of index entries returned by index scans per minute
Index Fetches/min	Total number of live table rows fetched by simple index scans per minute

Query Statistics

Parameter	Description
Row inserts/min	Total numbers of rows returned by each type of scan per minute
Row Updates/min	Total of row insertions and updates per minute
Row Deletes/min	Total number of rows deleted per minute

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Transaction Details

Parameter	Description
Total Commits	Total transactions committed
Total Rollbacks	Total transactions rolled back
Commits/Min	Total transactions committed per minute
Rollbacks/Min	Total transactions rolled back per minute

Table Level Scan Details

Parameter	Description
Sequential Scans/min	Total number of sequential scans per minute
Table Index Scans/min	Total number of index scans per minute
Sequential Scan Rows Read/min	Total number of rows returned by sequential scans per minute
Table Index Scan Rows Read/min	Total numbers of rows returned by index scans per minute

Primary Database Object Statistics

Parameter	Description
Total Tables	Total number of tables in the database server
Total Triggers	Total number of triggers in the database server

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Total Procedures	Total number of procedures in the database server
Size of the Largest Table	Size of the largest table in the database server
Largest Table(s)	Largest table in the database server

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Apache HBase Monitoring

- Apache HBase - An Overview
- Monitoring Apache HBase - What we do
- Adding a new Apache HBase monitor / Using AddMonitor API
- Monitored Parameters

Apache HBase - An Overview

Apache HBase is a distributed, scalable, data store. Being open-sourced and non-relational, HBase is the database for you when you need random, real-time read/write access to your Big Data. Apache HBase provides Google's Bigtable-like capabilities on top of Hadoop and HDFS.

Top

Monitoring Apache HBase - What we do.

Applications Manager aims to help Apache HBase administrators monitor the cluster in terms of region distribution. Let’s take a look at what you need to see to monitor Apache HBase, the performance metrics to gather and how you can ensure that your HBase database is up and operating as expected with Applications Manager:

- **Track HBase cluster metrics -** Monitor HBase clusters to make sure your HBase cluster is up and running and is continuously operating as expected. Track the average load, requests, and the number of dead, live and overall number of region servers.
- **Memory and JVM usage** - Track memory usage details such as available memory, free and total swap space size, the committed virtual memory size, etc. Keep track of JVM metrics to correlate server performance.
- **Guage Region servers performance** - Get metrics about the block cache, the cache hit and miss counts and the hit ratio. Look at compaction metrics and and the total size of storage files that have been compacted.
- **Fix performance problems faster -** Get instant notifications when there are performance issues with the components of Apache HBase components. Become aware of performance bottlenecks and take quick remedial actions before your end users experience issues.

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Apache HBase - Adding a new monitor

Supported versions: HBase version 1.x

Prerequisites for monitoring Apache HBase:

JMX MBeans are used to collect HBase metrics. To enable JMX, open HBase/conf/HBase-env.sh and uncomment/add the below JVM arguments.

export HBase_JMX_BASE="-Dcom.sun.management.jmxremote.ssl=false -Dcom.sun.management.jmxremote.authenticate=false"

export HBase_MASTER_OPTS="$HBase_MASTER_OPTS $HBase_JMX_BASE -Dcom.sun.management.jmxremote.port=10101"

export HBase_REGIONSERVER_OPTS="$HBase_REGIONSERVER_OPTS $HBase_JMX_BASE -Dcom.sun.management.jmxremote.port=10102"

Steps to create a new monitor

- To create an Apache HBase Monitor, follow the steps given below:
  - Click on New Monitor link. Choose Apache HBase.
  - Enter Display Name of the monitor.
  - Enter the IP Address or hostname of the host in which HBase is running.
  - Enter the JMX Port in the JMX Port field. For default installations of HBase, the JMX port number is **10101** for Master and **10102** for RegionServer.
  - Enter the credential details like **user name, password** and **JNDIPath** or select credentials from a **Credential Manager list**. If no authentication is required, then leave the fields blank.
  - Enter the polling interval time in minutes.
  - Click Test Credentials button, if you want to test the access to Apache HBase Server.
  - Choose the Monitor Group from the combo box with which you want to associate Apache HBase Monitor (optional). You can choose multiple groups to associate your monitor.
  - Click Add Monitor(s). This discovers Apache HBase from the network and starts monitoring.

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Use the AddMonitor API to add an Apache HBase monitor:

Syntax:

http://[hostname]:[port]/AppManager/xml/AddMonitor?apikey=[apikey]&type=HBase&displayname=[Displayname]&HostName=[HostName]&Port=[Port]&UserName=[UserName]&Password=[Password]&JNDIPath=/jmxrm

Request Parameters:

The parameters involved in the API request are described below.

Field	Description
apikey	API key to create the HBase monitor.
type	The type of the database you want to add. Value should be HBase
displayname	Display name of the HBase monitor.
hostname	The name of the host in which HBase is running.
port	The port number where HBase is running.
username	The name of the user who has permission to access the HBase database.
password	The password of the user who has permission to access the HBase database.
JNDIPath	JNDI path to be used.

Sample Request:

http://Prod-server7:9010/AppManager/xml/AddMonitor?apikey=0b719d6a4a564c8be86fbc60d3f0b996&type=HBase&displayname=HBase&HostName=APP-W8-AIO-5&Port=5000&UserName=admin&Password=Abc@123&JNDIPath=/jmxrmi

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Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **HBase** under the **Database** Table. Displayed is the HBase bulk configuration view distributed into three tabs:

- **Availability tab, gives the Availability history for the past 24 hours or 30 days.**
- **Performance tab gives the Health Status and events for the past 24 hours or 30 days.**

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- **List view enables you to perform bulk admin configurations.**

Click on the monitor name to see all the server details listed under the following tabs:

- Overview
- IPC
- Master
  - Region Server Details
- RegionServer
  - Region Details
  - Region Server Details
- HLog
- Configuration

Overview

Parameter	Description
HBase MASTER OVERVIEW	
Average Load	The average number of regions served by each region server.
Dead Region Servers Count	The number of dead region servers.
Region Servers Count	The number of online region servers.
Cluster Requests / Min	The total number of requests from all region servers to a cluster per minute.
HBase JVM METRICS	
Total Heap Memory	Calculates the total heap memory in MB.
Used Heap Memory	Calculates the heap memory used in MB.
Committed Heap Memory	Calculates the heap memory committed in MB.
Total Garbage Collections	Total JVM garbage collection.
MEMORY DETAILS	
Free Physical Memory Size	The amount of free physical memory in Megabytes.
Free Swap Space Size	Total amount of free swap space in Megabytes.
Total Physical Memory Size	Total amount of physical memory in Megabytes.
Total Swap Space Size	Total amount of swap space in Megabytes.
Committed Virtual Memory Size	The amount of virtual memory that is guaranteed to be available to the running process in Megabytes.
THREAD DETAILS	
Timed Waiting Threads Count	The number of threads that are waiting for another thread to perform an action for up to a specified waiting time.
Waiting Threads Count	The number of threads waiting for another thread to perform a particular action.
Blocked Threads Count	The number of threads that are blocked waiting for a monitor lock.
Runnable Threads Count	The number of threads that are being executed in the JVM

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IPC

Parameter	Description
IPC DETAILS	
Number of Open Connections	The number of open connections at the RPC layer.
Total Call Time	The total call time, including both queued and processing time.
Number of Active RPC Handlers	The number of RPC handlers actively servicing requests.
Number of Calls In Replication	The number of currently enqueued operations received from replication.
DATA TRANSFERRED	
Sent Data	The number of bytes of sent data in the call queues.
Received Data	The number of bytes of recieved data in the call queues.
EXCEPTIONS	
Out of Order Scanner Exception	
Unknown Scanner Exception	
Region Too Busy Exception	The region server is too busy exception.

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Master - RegionServer

Parameter	Description
REGIONS IN TRANSITION	
Regions in Transition	Counts the number of regions in transition.
Regions in Transition over Threshold	Counts the number of regions in transition that exceed the threshold as defined by the property rit.metrics.threshold.time.
REGION SERVERS	
Name	The name of the region server.

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Start Time	The HBase master start time.

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Region Server - Region Details

Parameter	Description
STORE FILES	
Store File Count	The number of store files in the RegionServer.
Store File Size	The total size of the store files (data files) in the RegionServer.
MEMSTORE	
Memstore Size	The total Memstore memory size of the RegionServer.
COMPACTION DETAILS	
Compactions Completed Count	Total number of compactions completed since startup by the nodes.
Num Bytes Compacted Count	The number of bytes compacted across all this entity's hregions.
Num Files Compacted Count	The number of files compacted across all this entity's hregions.
HLog COUNT	
Delete Count	The total number of Delete requests in the RegionServer.
Increment Count	The total number of Increment requests in the RegionServer.
Append Count	The total number of Append requests in the RegionServer.
Mutate Count	The total number of Mutate requests in the RegionServer.
OPERATIONAL LATENCY - SCAN NEXT	
Scan Next Num Operations	The numer of Scan Next operations across all this entity's hregions.
Scan Next Min	The minimum latency for Scan operation in the RegionServer.
Scan Next Max	The maximum latency for Scan operation in the RegionServer.
Scan Next Mean	The mean latency for Scan operation in the RegionServer.
Scan Next Median	The median latency for Scan operation in the RegionServer.
OPERATIONAL LATENCY - GET	
Get Num Operations	The total number of Get requests per second in the RegionServer.
Get Min	The minimum latency for Get operation in the RegionServer.
Get Max	The maximum latency for Get operation in the RegionServer.
Get Mean	The mean latency for Get operation in the RegionServer.
Get Median	The median latency for Get operation in the RegionServer.

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Region Server Details

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Parameter	Description
CACHE DETAILS	
Block Cache Count	The number of Store Files cached in the block cache.
Block Cache Eviction Count	The total number of blocks that have been evicted from the block cache.
Block Cache Free Size	The number of bytes that are free in the block cache.
Block Cache Express Hit Percent	The block cache hit percent for requests where caching was turned on.
Block Cache Hit Count	The total number of block cache hits for requests, regardless of caching setting.
Block Cache Count Hit Percent	The block cache hit percent for all requests regardless of the caching setting.
Block Cache Miss Count	The total number of block cache misses for requests, regardless of caching setting.
Block Cache Size	The number of bytes used by cached blocks.
SLOW OPERATIONS COUNT	
Slow Append Count	The number of appends that took more than 1000 ms to complete.
Slow Get Count	The number of gets that took more than 1000 ms to complete.
Slow Put Count	The number of puts that took more than 1000 ms to complete.
Slow Increment Count	The number of increments that took more than 1000 ms to complete.
Slow Delete Count	The number of deletes that took more than 1000 ms to complete.

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HLog

Parameter	Description
HLog FILES SPLIT TIME	
HLog Split Time Mean	The average time to split the total size of a write-ahead log file.
HLog Split Time Min	The minimum time to split the total size of a write-ahead log file.
HLog Split Time Max	The maximum time to split the write-ahead log file after a restart.
HLog Split Time Num Operations	The time to split write-ahead log files.
HLog FILE SPLIT SIZE	
HLog Split Size Mean	The average time to split the total size of an HLog file.
HLog Split Size Min	The minimum time to split the total size of an HLog file.
HLog Split Size Max	The maximum time to split the total size of an HLog file.
HLog Split Size Num Operations	The size of write-ahead log files that were split.

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Configuration

Parameter	Description
CONFIGURATION	
VM Name	The Java virtual machine implementation name.
Boot Class Path	The boot class path that is used by the bootstrap class loader to search for class files.
VM Vendor	The Java virtual machine implementation vendor.
Spec Version	The version of the JMX specification implemented by this product.

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NoSQL Database Servers

NoSQL databases defined as a non-relational, distributed database, are gaining recognition as an alternative mode to the relational database management system among the organizations.

Inspite of the fact that NoSQL databases have a number of significant advantages, they share almost an equal set of setbacks. However when used appropriately, NoSQL databases can offer real benefits. How will you ensure a smooth and unruffled operation of these boundless unstructured data?

Applications Manager provides NoSQL database monitoring, helping you to keep track of how the database is used and alerts you on any threshold breaches ensuring the performance of the database to the highest standards.

The Applications Manager functionality includes the ability to collect metrics like Bytes received / sent per minute helping to monitor the network traffic, Transaction details, response time, number of open connections, items cached, etc., from the NoSQL database and present them using our dashboard in a simple and impactful manner.

The different NoSQL database servers supported are:

- CassandraDB Server
- CouchBase Server
- MongoDB Server
- Redis Server
- Memcached Database Server
- Oracle NoSQL

Browse through the different database servers that provide server information and their parameters being monitored.

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Cassandra Database Servers

To create a Cassandra database server monitor, follow the steps given below:

1. Click on New **Monitor** link.
2. Select Cassandra .
3. Specify the **Display Name** of the Cassandra monitor
4. Enter the HostName or IP Address of the host where Cassandra server runs.
5. Enter the **JMX Port** where the server is running.By default, it will be 7199 or else check in cassandra-env.sh file for the JMX_PORT.
6. If you want to discover only this node, disable the option **Discover all nodes in the Cluster**. By default, it is enabled which means all the nodes in the cluster are discovered by default.
7. Check the Is Authentication Required field, to give the JMX credentials to be used to connect to the Cassandra server. Now enter the **UserName** and **Password** of the credential.
8. Specify the Polling Interval in minutes.
9. If you are adding a new monitor from an Admin Server, select a Managed Server.
10. Choose the Monitor Group with which you want to associate the Cassandra server to, from the combo box (optional). You can choose multiple groups to associate your monitor.
11. Click Add Monitor(s). This discovers the Cassandra server from the network and starts monitoring it.

Monitored Parameters

Applications Manager monitors attributes of your Windows Server Cluster components - nodes in a cluster, cluster networks, resource groups and critical cluster events. You can also configure thresholds to the numerical attributes monitored by the server based on these details.

The *Availability* tab shows the Availability history of the Cassandra database for the past 24 hours or 30 days. The *Performance* tab shows the Health Status and events for the past 24 hours or 30 days. The *List view* enables you to perform bulk admin configurations. Click on the individual monitors listed to view the following information:

Monitor Information

This tab displays the basic information like the name of the server, host name and the JMX port where the server is running. Additional parameters like Token, Gossip Active, Load, Generation No, Uptime, DataCenter, Rack Name are also displayed. These are the equivalent of the Nodetool result got using the command'*nodetool.bat/sh -h -p info*'

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Performance

Parameters	Description
Availability and Performance History	Displays the availability and performance history for the last six hours.
CPU Usage	Specifies the usage of CPU in percentage.
Memory Utilization	Specifies the used, free and total memory of the server in mega bytes
Exceptions	Count of various exceptions such as not found, invalid, unavailable, timed out, etc.
Storage Stats	Specifies the storage load in GB.
Operation Stats	Number of range, read and write operations per second since executor start.
Operation Latency	The latency of range, read and write operations since the last time the attribute was read.
Bloom Filter Statistics (available from Version 2.0.9 onwards)	
Bloom Filter False Positives	Number of false positives (Occurs when the bloom filter says a non-existential row exists)
Bloom Filter False Positive Ratio	Fraction of all bloom filter checks resulting in a false positive
Bloom Filter Disk Space Used	The size of the bloom filter files on disk
Memtable Statistics (available from Version 2.0.9 onwards)	
Memtable Columns Count	Total number of columns present in memtable
Memtable Data Size	Amount of data stored in memtable, including column-related overhead
Memtable Switch Count	Number of times flushing results in the memtable being switched out
Client Details	
Connected Native Clients	Number of Native Clients currently connected to the server instance
Connected Thrift Clients	Number of Thrift Clients currently connected to the server instance
Average Operational Latency	
Average Range Latency	The average latency per range operation since the last poll
Average Read Latency	The average latency per read operation since the last poll
Average Write Latency	The average latency per write operation since the last poll
Operational Timeouts	
Recent Timeouts	Number of read, write and range slice operation timeouts since the last poll

Pending Tasks

Parameters	Description
Commitlog/Compaction- Pending Tasks	Number of Commitlog and Compaction tasks waiting in the queue to be executed.
Commands/Responses - Pending Tasks	Number of Command and Response tasks waiting in the queue to be executed.
Task Statistics of Thread Pools	Status of various stages of thread pools like active and pending tasks, completed and blocked tasks are being displayed. These are equivalent of the Nodetool result got using the command 'nodetool.bat/sh -h <hostname> -p <portnumber> tpstats'.

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Cluster Stats

Parameters	Description
Cluster Details	Specifies details on live, leaving, moving, joining and unreachable nodes.
Cluster Node Details	Health status and storage load (in GB) of the nodes in the cluster.

Messages

This tab contains the **Dropped Message** and **Message Timeout** statistics:

Parameters	Description
Recent Total Timeouts	Number of timeouts since last poll

Configurations

This tab contains the configuration values of files that are part of cassandra.yaml config file.

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CouchBase Monitoring

To create a CouchBase server monitor, follow the steps given below:

1. Click on New **Monitor** link.
2. Select **CouchBase** from Database Servers.
3. Specify the **Display Name** of the Mongo monitor
4. Enter the HostName or IP Address of the host where CouchBase process runs.
5. Enter the **Port** where the server is running.By default, it will be 8091.
6. Specify the Polling Interval in minutes.
7. Choose the Monitor Group with which you want to associate the CouchBase server to, from the combo box (optional). You can choose multiple groups to associate your monitor.
8. Click Add Monitor(s). This discovers the CouchBase server from the network and starts monitoring it.

CouchBase Server is an open-source, distributed NoSQL document-oriented database and key-value store that is optimized for interactive applications. CouchBase is designed to provide easy-to-scale key-value or document access with low latency and high sustained throughput.

Applications Manager helps to actively monitor all aspects of a CouchBase server like health, availability, response time etc., and helps take informed decisions in case of downtimes.

CouchBase - Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **CouchBase** under the **Database** table. Displayed is the CouchBase bulk configuration view distributed into three tabs:

- **Availability** tab, gives the availability history for the past 24 hours or 30 days.
- **Performance** tab gives the health status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

Click on the monitor name to see all the database details listed under the following tabs:

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- Monitor Information
- Performance Overview
- Server Nodes
- Data Buckets

Monitor Information:

This tab contains all general information regarding the monitor like Monitor name, port, hostname, username, associated groups etc.

Performance Overview

Cluster Details

Parameters	Description
Total Memory (MB)	Total memory available for the cluster.
Used Memory (MB)	RAM usage of the cluster.
Free Memory (MB)	Free memory available.
Cluster Disk Utilization (GB)	Total disk usage of the cluster.
Total Cluster Storage (GB)	Total disk space available for the cluster.
Other Data (GB)	Disk used by other data other than Couchbase.
Usable Free Space (GB)	Maximum free space available for Couchbase server.

Server Nodes

Parameters	Description

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Server Node Name	Server IP address where the Couchbase is running.
RAM Usage	RAM usage of the server.
Swap Usage	Swap usage of the server
CPU Usage	CPU usage of the server.
Data Usage	Data usage of this node.
Disk Usage	Disk usage of this node.
Node Memory Utilization	Memory Utilization of the alloted memory.
Active Items	Active data is the data written in this node.
Replica Items	Replica item is the copy of item from another node.
Node Disk Usage	Individual node disk consumed by Couchbase.
Background Data Fetches	Data not in cache and pulled from the disk.

Data Buckets

Parameters	**Description**
Bucket Name	Bucket name is the given name for the bucket.
Bucket Type	Bucket type can be either memcached or Couchbase.
Nodes	Number of nodes available in the Couchbase server.
Item Count	Item count indicates the number of objects stored in the bucket.
Ops/Sec	Ops/sec shows the number of operations per second for this data bucket.
Disk Fetches/Sec	Disk fetches/sec shows the number of operations required to fetch the items from disk.
Used RAM Quota (MB)	Memory used from the given quota.
RAM Quota (MB)	Memory allocated for this bucket.
Quota Memory Utilization (%)	Memory utilization from the available quota.
Data Usage (MB)	Data used by this bucket.
Disk Usage (MB)	Disk used by this bucket.
Current Connections	The number of connections per host.
Cache miss ratio	Ratio of the objects fetched from disk as opposed to memory. Value should be as for be as close to 0 performance.
Resident item ratio	Ratio of items that are kept in memory versus stored on disk.
Total disk drain rate	Number of items actually written to disk from the disk queue.
Memory Headroom	This value indicates when you need to allocate more memory to a bucket.

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MongoDB Database Monitoring

MongoDB is a NoSQL database designed for ease of development and scalability to support massive data processing and storage. With Applications Manager's MongoDB monitoring capability, we're letting users gain in-depth visibility into critical metrics to optimize their data infrastructures. Users can collect statistical data like Memory Utilizations statistics, open connections statistics, CPU usage, database operation performance and latency, transaction details, response time, lock current queue and journaling statistics. Applications Manager features graphs, custom dashboards and automated alerts to track performance and resource utilization of your database systems from a centralized console.

Creating a new MongoDB monitor

Supported Versions: MongoDB 3.2 and older versions. We support mongod services and mopngos services

Prerequisites for monitoring MongoDB: To create a MongoDB monitor in Applications Manager, a user should have *read privileges* to all the MongoDB databases

To create a Mongo database server monitor, follow the steps given below:

1. Click on New **Monitor** link.
2. Select Mongo.
3. Specify the **Display Name** of the Mongo monitor.
4. Enter the HostName or IP Address of the host where MongoDB/mongo process runs.
5. Enter the **Port** where the server is running.By default, it will be 27017.
6. To discover only this node and not all nodes in the ReplicaSet / Sharding disable the option **Discover all nodes in the ReplicaSet / Sharding**. By default, it is enabled.
7. Check the Is Authentication Required field, to give the credentials to be used to connect to the MongoDB server. Now enter the **UserName** and **Password** of the credential.
8. Specify the Polling Interval in minutes.
9. If you are adding a new monitor from an Admin Server, select a Managed Server.
10. Choose the Monitor Group with which you want to associate the MongoDB server to, from the combo box (optional). You can choose multiple groups to associate your monitor.
11. Click Add Monitor(s). This discovers the MongoDB server from the network and starts monitoring it.

Monitored Parameters

MongoDB is monitored based on the parameters or the attributes listed below. These attributes provide information about the

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functioning of the monitors of MongoDB. You can also configure thresholds to the numerical attributes monitored by the server based on these details.

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **MongoDB** under the **Database** Table. Displayed is the Mongodb bulk configuration view distributed into three tabs:

- **Availability** tab, gives the Availability history for the past 24 hours or 30 days.
- **Performance** tab gives the Health Status and events for the past 24 hours or 30 days.
- **List** view enables you to perform bulk admin configurations.

The Monitor Snapshot displays the availability and performance history for the past 6 hours. The businessview will help you have an integrated high-level view of the links between the different nodes in the replica set or sharding server. However, this view will not be available for single servers that are not part of any replica set or sharding server.

Server Stats

Parameters	Description
Performance Status	Specifies the used and free memory of the server in percentage.
Memory Utilization	Specifies the used, free and total memory of the server in mega bytes.
Current Connections	Number of used and available connections in the database server. This will help to asses the current load and capacity requirements of the server.
Network Traffic	Specifies the amount of network traffic sent and received by the database, in bytes per second. This value will help you ensure that network traffic sent to and by the mongod process is consistent.
Database Operations Counter	The total number of various database operations (insert, get, query, update, command) per second since the mongod instance last started. This data helps to analyze and track the load on the database.
Assert Errors	The number of asserts (regular, warning, message, user, rollover) per second raised since the server process started.
Lock Statistics	The time, in seconds, since the database last started.
Lock Current Queue Details	Number of operations that are currently queued and waiting for the read-lock/ write-lock.
Lock Active Client Details	Number of active client connections to the database, performing read/ write operations.
Background Flushes	Number of times the database has flushed all writes to disk per second.
Background Flushes Statistics	Total number of seconds that the mongod processes have spent writing data to disk.

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Parameters	Description
Journaling Commits	Number of transactions written to the journal during the last journal group commit interval. A Journal is a sequential, binary transaction used to bring the database into a consistent state in the event of a hard shutdown. MongoDB performs group commits when journaling, i.e., a series of operations are committed at once over many milliseconds. This is done to achieve high performance.
Journaling Data	Number of data in megabytes (MB) written to journal during the last journal group commit interval.
Journaling Statistics	Number of seconds spent for each phase of journaling in the last journal group commit interval.

Note: All the metrics above in Server Stats will be displayed for a mongod device. Whereas for a mongos device, only the first six metrics will be displayed.

Cursors

Parameters	Description
Number of open cursors	The maximum number of open cursors a session can have at once. You can use this parameter to prevent a session from opening an excessive number of cursors.
Number of timed-out cursors	The number of timed out cursors since the last server restart.

Index Counters

Parameters	Description
Index Accessed	The number of indexes accessed by a MongoDB statement.
Index served from Memory	Indexes that reside in memory and when queried, will be served from memory as long as the whole set fits in the memory.
Index served from Disk	Indexes that don't fit in the memory and must be served from disk.

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Parameters	Description
Miss Ratio	The ratio of hits to misses. The misses is the total number of times that an operation tried to access an index that was not in memory per collection. The hits is the total number of times that indexes have been accessed and the mongod was able to return the index from memory per collection.

Page Faults

Parameters	Description
Total Page Faults	The total number of page faults that occured when MongoDB reads from or writes data to parts of its data files that are not currently located in physical memory or when physical memory is exhausted .
Page Faults Counter	MongoDB on Windows counts both hard and soft page faults. The MongoDB page fault counter may increase dramatically in moments of poor performance and may correlate with limited physical memory environments.

Database Statistics

Parameters	Description
Database Name	The name of the database whose statistics are being monitored.
Collections	The number of the Collections, i.e a group of MongoDB documents, in the database.
Objects	All the json data and performance objects in a collection.
Avgerage Object Size	The average size of all the KEY:VALUE objects contained within the shard.
Data Size	The size of data stored in a collection in MB.
Indexes	The total number of indexes in the database.
Index Size	The total size of all indexes on the database in KB.
File Size	The size of the files that hold the database contents in MB.

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Replica Stats

Parameters	Description
Replication Details	Status information for MongoDB's replica set configuration. Only when the current host has replication enabled these values will be displayed.
Replication Operations Counter	Total number of various database replication operations (insert, update, delete, getmore, command) per second since the mongod instance last started. These values will help to analyze the load on the replica.
Sharding Operations Counter - Sharded/ NotSharded	Total number of various database sharding and notsharding operations (insert, update, delete, getmore, command) per second since the mongos instance last started.

Note: The tab Replica Stats display only replication details for a mongod device and sharding details for a mongos device.

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Redis

To create a Redis database server monitor, follow the steps given below:

1. Click on New **Monitor** link.
2. Select Redis.
3. Specify the **Display Name** of the Redis monitor
4. Enter the HostName or IP Address of the host where Redis server runs.
5. Enter the **Port** where the server is running.By default, it will be 6379. Or else you can also check it in the redis.conf file.
6. To discover only this node and not all nodes in the cluster disable the option **Discover all nodes in the cluster**. By default, it is enabled.
7. Check the Is Authentication Required field, to give the credentials to be used to connect to the Redis server. Now enter the **Password** of the credential.
8. Specify the Polling Interval in minutes.
9. If you are adding a new monitor from an Admin Server, select a Managed Server.
10. Choose the Monitor Group with which you want to associate the Redis server to, from the combo box (optional). You can choose multiple groups to associate your monitor.
11. Click Add Monitor(s). This discovers the Redis server from the network and starts monitoring it.

If you have added Monitors and not associated them with a Monitor Group, you can do this manually anytime. For information on associating a Monitor with a Monitor Group, refer to Associating Monitor with Monitor Groups topic.

Supported Versions: Redis 2.4 and above

Monitored Parameters

Redis database server is monitored based on the parameters or the attributes listed below. These attributes provide information about the functioning of Redis database. You can also configure thresholds for the attributes monitored by the server based on these details.

The *Availability* tab shows the Availability history of the Redis database for the past 24 hours or 30 days. The *Performance* tab shows the Health Status and events for the past 24 hours or 30 days. The *List view* enables you to perform bulk admin configurations. Click on the individual monitors listed to view the following information:

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Monitor Information

This tab displays the basic information like the name of the server, host name and the port where the server is running. Additional parameters like ProcessID, RunID, uptime and associated groups are also displayed.

Performance

Parameters	Description
Availability and Performance History	Displays the availability and performance history for the last six hours.
CPU Usage	Specifies the usage of CPU in percentage.
Children CPU Usage	The CPU consumed by the background processes (like SORT, SUNION, BGSAVE, BGREWRITEAOF).
Memory Utilization	Specifies the used, free and total memory of the server in mega bytes.
Memory Fragmentation Ratio	The ratio between the number of bytes that Redis allocated as seen by the operating system and the total number of bytes allocated by Redis using its allocator.
Connected/ Blocked Clients	Number of client connections and number of clients pending on a blocking call.
Rejected Connections	Number of connections rejected because of maxclients limit.
Connections Stats	Number of connections accepted by the server per second.
Operations Stats	Number of commands processed per second.
Keyspace Stats	Specifies the number of successful and failed lookup of keys in the main dictionary.
Keyspace Hit Percentage	Percentage of the number of successful and failed lookup of keys in the main dictionary.
Expired/ Evicted Key Stats	Displays the total number of key expiration events and the number of evicted keys due to max memory limits.
Publish Subscribe Stats	The global number of pub/sub channels with cleint subscriptions.

Persistence

Parameters	Description
Persistence Stats	Displays the details about RDB and AOF persistence states like the status of the last RDB save operation, status of the AOF rewrite operation, etc.
Database Stats	Displays the details about the database, like the db name, total number of keys and number of expired keys.

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Replication

Parameters	Description
Replication Details	Displays if the replication role is master or slave. In case of slave, master node details like master host, master port and status of the link, etc., are displayed.
Slave Connections	Specifies the number of slaves connected. This graph will be populated in case of master node alone.

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Memcached Servers

To create a Memcached database server monitor, follow the steps given below:

1. Click on New **Monitor** link.
2. Select Memcached under Cloud Computing/Virtualization category.
3. Specify the **Display Name** of the memcached server
4. Enter the HostName or IP Address of the host where Memcached server runs.
5. Enter the **Port** where the server is running.
6. If you want to enable Transaction test, select 'Yes' radio button, otherwse select 'No' button.
7. Set the Polling Interval.
8. If you are adding a new monitor from an Admin Server, select a Managed Server.
9. Choose the Monitor Group with which you want to associate the Memcached server to, from the combo box (optional). You can choose multiple groups to associate your monitor.
10. Click Add Monitor(s). This discovers the Memcached server from the network and starts monitoring it.

Supported Versions: Memcached v*1.2* and above.

Monitored Parameters

Memcached Servers are monitored based on the parameters or the attributes listed below. These attributes provide information about the functioning of the monitors of Memcached server. You can also configure thresholds to the numerical attributes monitored by the server based on these details.

The *Availability* tab shows the Availability history of the Memcached server for the past 24 hours or 30 days. The *Performance* tab shows the Health Status and events for the past 24 hours or 30 days. The *List view* enables you to perform bulk admin configurations. Click on the individual monitors listed to view the following information:

Parameters	Description
Monitor Details	

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Availability	Shows the current status of the Memcached server - available or not available
Performance Status	
Used Memory	Specifies the used memory of the server in percentage
Free Memory	Specifies the free memory of the server in percentage
Hit Ratio	Refers to the hit ratio in percentage
Memory Utilization	
Used Memory	Specifies the used memory of the server in mega bytes
Free Memory	Specifies the free memory of the server in mega bytes
Total Memory	Specifies the total memory of the server in mega bytes
CPU Utilization	
User CPU*	Specifies the accumulated user time for a process in seconds
System CPU*	Specifies the accumulated system time for a process in seconds
Cached Hits and Misses	
Hits/min	Number of keys that have been requested and found present per minute
Misses/min	Number of items that have been requested and not found per minute
GET and SET Requests	
Gets/min	Number of retrieval requests per minute
Sets/min	Number of storage requests per minute
Cached Items	
Items cached	Current number of items stored by server
Evictions	Number of valid items removed from cache to free memory for new items
Network Traffic	
Bytes Received	Number of bytes read by this server from network per min
Bytes Sent	Number of bytes sent by this server to network per min

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Current Connections	
Connections	Number of open connections
Response Time	
Response Time	The time taken by Applications Manager to execute the STATS command on the memcached server
Version	Version of Memcached server
Transaction	
SET-Time	The time taken by Applications Manager to set the content on the memcached server
GET-Time	The time taken by Applications Manager to fetch the content from the memcached server
DELETE-Time	The time taken by Applications Manager to delete the content from the memcached server
Total Transaction Time	The total time taken to connect to memcached server, set content, fetch content and delete content from the server

* - not supported in Memcached installed in Windows

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Oracle NoSQL Database Server Monitoring

Applications Manager provides out-of-the-box performance metrics and helps you visualize the health and availability of an Oracle NoSQL server farm. Database administrators can login to the web client and visualize the status and Oracle NoSQL performance metrics.

Follow the given steps to create a Oracle NoSQL server monitor:

1. Click on **New Monitor** link.
2. Select **Oracle NoSQL**.
3. Enter the **Display Name** of the monitor
4. Enter the **IP Address** or **hostname** of the host.
5. Enter the **JMX Port** in which the JMX is running.
6. Enter the **Additional JMX Port** in which the JMX is already running in any of the other machine of the same cluster.
7. Choose the **Credential Details** either use below credentials or select from credential list
8. Enter the **Username** and **Password** of the Oracle NoSQL.
9. Enter JNDI Path ex. /jmxrmi
10. Enter the polling interval time in minutes.
11. Choose the **Monitor Group** from the combo box with which you want to associate Oracle database server Monitor (optional). You can choose multiple groups to associate your monitor.
12. Click **Add Monitor(s)**. This discovers Oracle database server from the network and starts monitoring them.

Note:

Ensure that you enable JMX for Oracle NoSQL monitoring. To create a new Oracle *NoSQL* monitor, you should have admin privileges.

Setting up JMX for Oracle NoSQL monitoring

Oracle NoSQL Database allows Java Management Extensions (JMX) or Simple Network Management Protocol (SNMP) agents to be optionally available for monitoring, in addition to the native monitoring provided by the Admin CLI and the Admin Console. These agents provide interfaces on each storage node that allow management clients to poll them for information about the status, performance metrics, and operational parameters of the storage node and its managed services, including replication nodes and admin instances. Both these management agents can also be configured to push notifications about changes in the status of any of the services, and for violations of preset performance limits. The JMX interface can be enabled in either the Community Edition or the Enterprise Edition. To use SNMP, however, you must have the Enterprise Edition. The JMX service exposes MBeans for the three

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types of components. These MBeans are the java interfaces StorageNodeMBean, RepNodeMBean, and AdminMBean in the package oracle.kv.impl.mgmt.jmx. For more information about the status reported for each component, see the javadoc for these interfaces.

The same information that is reported via JMX can also be reported through SNMP. In this case, the information is organized according to the Management Information Base (MIB) named OracleNosqlMIB, which is included with the Enterprise Edition, in the file lib/nosql.mib.

Simple Network Management Protocol (SNMP) and Java Management Extensions (JMX)

Both the SNMP and JMX agents in NoSQL Database are read-only interfaces and allow you to poll the storage nodes for information about the storage node and about any replication nodes or admins that are hosted on the storage node. The available information includes service status (such as, RUNNING, STOPPED etc.), operational parameters, and performance metrics. SNMP and JMX traps/notifications are also delivered for particular events. Notifications are sent for every service status state change; and for violations of performance limits.

Enabling Monitoring

Monitoring can be enabled on a per-storage node basis in two different ways:

In the Bootfile

You can specify that you want to enable JMX or SNMP in the storage node's boot configuration file. Usually, these files are created by using the makebootconfig utility, which has the following options to control these features:

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- [-mgmt {snmp|jmx|none} -pollport <snmp poll port>]
- -traphost <snmp trap/notification hostname>]
- -trapport <snmp trap/notification port>]

Note

When you specify -mgmt snmp, you must also specify -pollport. The SNMP agent listens for connections from SNMP management clients on this port. You may also optionally specify -traphost and -trapport to indicate the destination address for notifications. This would be the hostname and port number of an SNMP management service that is configured to receive notifications at that address.

Note

When you specify -mgmt jmx, you do not have to specify -pollport. A storage node's JMX agent uses the RMI registry at the same port number as is used for all other RMI services managed by the storage node. (This port number is specified as the -port argument to makebootconfig.)

By Changing Storage Node Parameters

You can still enable JMX or SNMP after a store is deployed, by changing the storage node parameters "mgmtClass", "mgmtPollPort", "mgmtTrapHost", and "mgmtTrapPort". Similar to configuring via makebootconfig, the "mgmtPollPort", "mgmtClass", "mgmtTrapHost", and "mgmtTrapPort" are used only for SNMP; and the parameter "mgmtPollPort" must be set when enabling SNMP.

The value of the "mgmtClass" parameter may be one of the following class names:

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- To enable JMX:
  oracle.kv.impl.mgmt.jmx.JmxAgent
- To enable SNMP:
  oracle.kv.impl.mgmt.snmp.SnmpAgent
- To enable neither JMX nor SNMP:
  oracle.kv.impl.mgmt.NoOpAgent

For example, you could issue the following command in the Admin CLI to enable SNMP on a storage node:

```
plan change-parameters -service sn1 -wait -params
mgmtClass=oracle.kv.impl.mgmt.snmp.SnmpAgent
mgmtPollPort=5002 mgmtTrapHost=192.168.26.42
mgmtTrapPort=32767
```

> **Note**
>
> Only a single implementation of the management agent may be enabled at a particular time. If you enable SNMP on a storage node where JMX is already enabled; the JMX agent shuts down, and the SNMP agent takes its place.

Displaying the NoSQL DB MBeans

To view the NoSQL Database JMX Mbeans in a monitoring tool such as JConsole, connect using the hostname and registry port for each Storage Node that you would like to view. This is the port that is named by the "-port" argument to the java -jar kvstore.jar makebootconfig command. It is also used in the deploy-sn plan during configuration. The documentation examples use 5000 as the registry port.
For example, you would specify localhost:5000 to the JConsole Remote Process connection box in the New Connection tab.

Monitored Parameters

> **Note**:
> • To create a new Oracle NoSQL monitor, you should have admin privileges.
> • Jconsole can also be used to access the Mbeans

Oracle NoSQL Monitoring Metrics

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Admin Attributes

Attribute Name	Description
Admin ID	Number of an Admin instance.
HttpPort	The port number used by the Admin Console web application.
LogFileCount	Number of log files that are kept.
LogFileLimit	The maximum size of log files.
Master	Whether this Admin is the master among Admin instances.
PollPeriodMillis	The polling period for collecting metrics.
ServiceStatus	The reported service status of the Admin.

Storage Attributes

Attribute Name	Description
Capacity	The number of Replication Nodes that can be hosted on this Storage Node.
AdminHttpPort	The http port used by the Admin Console web application.
HostName	The name of the network interface used for communication between Replication Nodes
HAPortRange	The range of port numbers available for assigning to Replication Nodes that are hosted on this Storage Node.
HostingAdmin	True if this Storage Node hosts an Admin instance
MemoryMB	The amount of memory known to be available on this Storage Node, in megabytes.
MountPoints	A list of file system mount points on which Replication Nodes can be deployed
NumCPUs	The number of CPUs known to be available on this Storage Node.
RegistryPort	The port number of the Storage Node's RMI registry.
RootDirPath	The pathname of the store's root directory
SnId	the StorageNodeId number of this Storage Node.
StoreName	The configured name of the store to which this Storage Node belongs.

Replicated Node Table Attribute

Attribute Name	Description
CacheSize	The size of the BDB-JE cache, in MBytes.
CollectEnvStats	If true, then the underlying BDB-JE subsystem will dump statistics into a local .stat file.
CommitLag	Average commit lag(in milliseconds) for a given replication node's update operations during a given time interval.
RepNodeId	The RepNodeId, in its String form
CommitLagThreshold	Average commit lag (in milliseconds) for a given replication node during a given time interval exceeds the value returned by this method, a notification event will be sent to any parties that have registered interest.
CumulativeEnd	The timestamp at the end of a cumulative measurement period.
CumulativeLatAvg	The average latency for single operations since service startup.
CumulativeLatMax	The highest latency measured for single operations since service startup.
CumulativeStart	The timestamp at the beginning of a cumulative measurement period
CumulativeThroughput	Single operations per second since service startup.
CumulativeTotalOps	The total number of single operations since service startup.
HeapMB	The size of the Java heap for this Replication Node, in MB.
IntervalLatAvg	Average Latency of Operations in the given Interval

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Oracle E-Business Suite Monitoring Add On!

Oracle E-Business Suite (Oracle EBS) monitor allows you to monitor the availability and performance of Oracle EBS from a centralized web console. Data of Oracle E-Business Suite are collected using DMS stands for Dynamic Monitoring Service (a web application which get data from the fusion middleware components). Data that is created and updated by DMS-enabled applications and components is accessible through the DMS Spy Servlet. Only users having administrator rights can access this servlet.

Create an Oracle EBS monitor

Oracle EBS Versions Supported: R11i, R12.0 and R12.2.0
Prerequisites for monitoring Oracle EBS: Applications Manager uses the **Dynamic Monitoring Service (DMS)** provided by Oracle Application Server to monitor the same. For this reason, the DMS Servlet has to be made accessible to the system where the Applications Manager is running. Refer Prerequisites Section.
Follow the steps given below to create a new Oracle EBS monitor in Applications Manager:

1. Click on New Monitor. Click on **Oracle EBS.**
2. Enter **Display Name.**
3. Provide Host Name & Port.
4. Select the **EBS Server Version** - **R11i, R12.0 or R12.2.0**
5. If you select Version **R12.2.0**, a username and password details are mandatory. You can enter your own credential details or select preconfigured credentials details in Credentials Manager. If you wish to enter your own credentials, specify **username** and **password** details for this monitor.
6. **SSL Enabled checkbox**- If SSL authentication is enabled on the server connection channel then select this option.
7. Enter the polling interval time in minutes.
8. If you are adding a new monitor from an Admin Server, select a Managed Server.
9. Choose the Monitor Group from the combo box to which you want to associate the Monitor (optional). You can choose multiple groups to associate your monitor.
10. Click **Add Monitor(s)**. Upon adding the Oracle EBS monitor, you can view the details of the newly added Oracle monitor.

Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **Oracle EBS** under the **ERP** Table. Displayed is the Oracle EBS bulk configuration view distributed into three tabs:

- **Availability** tab, gives the Availability history for the past 24 hours or 30 days.
- **Performance** tab gives the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

Click on the monitor name to see all the server details listed under the following tabs:

- **For Oracle E-Business Suite R11i:**
  - Performance Overview
- **For Oracle E-Business Suite R12.0:**
  - Performance Overview
  - Process Information

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- Applications
- **For Oracle E-Business Suite R12.2.0:**
  - Performance Overview
  - Process Information
  - Clusters
  - Servers
  - Applications
  - Forms
  - Oracle Process Manager and Notification Server
  - Web Cache

For Oracle E-Business Suite R11.0:

Performance Overview

Parameter	Description
Name	The name of Oracle EBS monitor.
Health	The health (Clear, Warning, Critical) of the server
Type	The type you are monitoring.
Last Polled at	The time at which the last poll was performed.
Next Poll at	The time at which the next poll is scheduled.
Availability	The current status of the server - available or not available.
Connection Statistics	
Connections per Minute	Number of times an HTTP connection was established.
Active Connections	Number of connections that are active.
Requests Statistics	
Active Requests	Number of requests that are active
Completed Requests per min	Number of HTTP request completed per minute
Response Time	
Average Response Time	Average Response time of the request
Minimum Response Time	Minimum Response time for the request
Maximum Response Time	Maximum Response time for the request
Process Stats	
Process Name	Name of the process like BDMSProcess
Heap Size	Heap memory size of the process

For Oracle E-Business Suite R12.0:

Performance Overview

Parameter	Description
Active Requests	Number of child servers currently in the request processing phase.

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Completed Requests per min	Number of HTTP request completed per minute
Average Response Time	Average time required to service an HTTP request
Min Response Time	Minimum time required to service an HTTP request
Max Response Time	Maximum time required to service an HTTP request
Active Connections	Number of connections currently open
Connections per Minute	Number of times an HTTP connection was established.
Virtual Host Processes	
Virtual Host Name	Specifies Virtual host name.
Active Requests	Total time spent processing requests for this virtual host.
Completed Requests Per Minute	Number of requests processed completely per minute.
Average Response Time	Average time spent processing requests for this virtual host.

Applications

Parameter	Description
Applications Requests	
Applications	The echo of the value specified as the path for OC4J Mount directive in mod_oc4j.conf.
Success Requests per Minute	Specifies the number of requests per minute, both session and non-session together, that mod_oc4j successfully routed to an OC4J instance.
Error Requests per Minute	The number of requests per minute, both session and non-session, that mod_oc4j failed to route to an OC4J.
Sessions Success Requests per Minute	Specifies the number of session requests per minute that mod_oc4j successfully routed to an OC4J instance.
Sessions Error Requests per Minute	The number of session requests per minute that mod_oc4j failed to route to an OC4J.
Non-Sessions Success Requests per Minute	Specifies the number of non-session requests per minute that mod_oc4j successfully routed to an OC4J instance.
Non-Sessions Error Requests per Minute	The number of non-session requests per minute that mod_oc4j failed to route to an OC4J.

Process Information

Parameter	Description
Process Details	
Process ID	The process ID for the process.
Process Name	The process name.
Heap Size	The heap size of the process in MB.

For Oracle E-Business Suite R12.2.0:

Performance Overview

Parameter	Description
Server Name	The name of the Server.
Process	Name of the process. For eg, opmn:/EBS_web_VIS_OHS.
Min Response Time (ms)	Minimum time required to service an HTTP request.
Max Response Time (ms)	Maximum time required to service an HTTP request.

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Average Response Time (ms)	Average time required to service an HTTP request.
Active Requests	Child servers currently in the request processing phase.
Completed Requests per minute	Number of HTTP request completed per minute.
Active Connections	Number of connections currently open
Connections per Minute	Number of times an HTTP connection was established.
Virtual Hosts Process Stats	
Virtual Host Name	Host name of the virtual host.
Server Name	The name of the Server.
Active Requests	Number of requests currently being processed by this host.
Average Response Time	Average time spent processing requests for this virtual host
Completed Requests Per Minute	Number of requests processed completely per minute

Process Information

Parameter	Description
Process Details	
Process	Name of the process. For eg, opmn:/EBS_web_VIS_OHS.
Host Name	The name of the host where the process is running.
Server name	The name of the Server.
Heap Size	The heap size of the process.

Clusters

Parameter	Description
Cluster Statistics	
Cluster Name	Specifies Cluster Name
Running Servers	Number of managed servers in running state. Servers in the following states are taken as running servers: • RUNNING • STARTING • ADMIN • STANDBY • RESUMING • SUSPENDING • FORCE_SUSPENDING
Shutdown Servers	Number of managed servers in shutdown state. Servers in the following states are taken as Shutdown servers: • SHUTTING_DOWN • SHUTDOWN
Failed Servers	Number of managed servers in failed state
Server Status	
Server Name	Specifies Server Name

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Server State	Specifies state of the server. Possible States are: • Starting - During the STARTING state, a WebLogic Server instance transitions from SHUTDOWN to STANDBY, as a result of a Start, Start in Admin, or Start in Standby command. • Resuming - The WebLogic Server performs the operations required to move itself from the STANDBY or ADMIN state to the RUNNING state. • Running -The WebLogic Server is fully functional, offers its services to clients, and can operate as a full member of a cluster. • Admin - In the ADMIN state, WebLogic Server is up and running, but available only for administration operations, allowing you to perform server and application-level administration tasks. • StandBy - The WebLogic Server instance transitions from SHUTDOWN to STANDBY. A server instance in STANDBY does not process any requestâ€"its regular Listen Port is closed. • Suspending - The WebLogic Server performs the operations required to place itself in the ADMIN state, suspending a subset of WebLogic Server subsystems and services, and completing a predefined portion of the application work currently in process • Force_Suspending - The WebLogic Server performs the operations required to place itself in the ADMIN state, suspending a subset of WebLogic Server subsystems and services in an ordered fashion. During the FORCE_SUSPENDING state, WebLogic Server does not complete in-flight work; application work in progress is abandoned. • Shutdown - The WebLogic Server instance is configured but inactive. The WebLogic Server completes the suspension of subsystems and services and does not accept application or administration requests. • Shutting_Down - The WebLogic Server is in the process of shutting down. • Failed - A running server instance can fail as a result of out-of-memory exceptions or stuck application threads, or if one or more critical services become dysfunctional.
Cluster Name	Name of the cluster

Servers

Parameter	Description
Threads in JVM	
Server Name	The name of the Server.
Active Threads	The number of active threads.
Daemon Threads	The number of daemon threads.
Deadlock Threads	The number of threads which are deadlock**.**
Self-Tuning Thread Pool	
Server Name	The name of the Server.
Hogged Threads	The number of threads that are being held by a request right now.
Idle Threads	The number of idle threads in the pool.
Pending Requests	The number of pending user requests in the priority queue.
StandBy Threads	The number of threads in the standby pool.
Active Threads	The total number of threads in the pool.
Server Login Rate	
Server Name	Specifies the server where metrics come
Success Logins	Percentage of successful logins
Failed Logins	Percentage of failed logins
Blocked Logins	Percentage of blocked logins
Forms Resource Usage	
Server Name	The name of the Server.
Instance Name	The name of the FMW instance home.
CPU Usage	The Percentage of CPU space used.
Memory Usage	Percentage of Total Memory Used.
Private Memory Usage	The total private memory used by the run-time process in MB.
Resource Usage of Forms JVM	
Server Name	Specifies server name from where metrics come

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CPU Usage by JVM	Percentage of CPU used by form's JVM processes
Memory Usage by JVM	Memory used by form's JVM processes in MB.

Applications

Parameter	Description
Applications Status	
Server Name	The name of the Server.
Applications	The name of the cluster application
Cluster Name	The name of the cluster in which the application is deployed
Status	The current status of the application

Forms

Parameter	Description
Form Application Details	
Server Name	The name of the Server.
Form Applications	The name of the Forms Application.
Instance Name	The name of the FMW instance home.
Process	The process where metrics come.
Number of Sessions	The total number of sessions in the application.
Status	The status of the application.

Oracle Process Manager and Notification Server

Parameter	Description
OPMN Components Resource Usage	
Server Name	The name of the Server.
Component Name	The name of the component in server.
Memory Usage	The percentage of memory space used by component.
CPU Usage	The percentage of CPU used by the component.

Web Cache

Parameter	Description
Webcache Performance	
Server Name	The name of the Server.
Process Name	The processes where metrics are monitored.
Average Latency	The average amount of time for client requests forwarded by Oracle Web Cache to be resolved.
Processed Requests Per Minute	The number of client requests forwarded by Oracle Web Cache processed by origin server
Failed Requests Per Minute	The number of client requests forwarded by Oracle Web Cache that resulted in an error.
WebCache Requests Filter	
Site Name	The name of the website

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Server Name	The processes where metrics are monitored.
Instance Name	The name of the instance
Cache Size	The size of the objects currently stored in the cache
Hit Rate	The percentage of requests resolved by cache content
Denied Request Per Minute	The number of requests denied by request filters.
Served Request Per Minute	The number of requests that Oracle Web Cache has served.

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SAP CCMS Monitors Add On!

Creating SAP CCMS Monitor

Prerequisites for monitoring SAP CCMS Monitors: *SAP JavaConnector (JCo)* should be present in Applications Manager's classpath. More

Follow the steps given below to add a SAP CCMS monitor in Applications Manager:

1. Click on New Monitor. Click on **SAP CCMS** monitor.
2. Enter **Display Name**.
3. Provide Host Name / IP Address.
4. Check the **Connect using Router String** checkbox to enter the SAP Router String through which SAP Server is connected.
5. Enter the SAP Logon client.
6. Enter the SAP System number.
7. Enter the SAP Logon language like EN for English.
8. Enter the polling interval time in minutes.
9. If you are adding a new monitor from an Admin Server, select a Managed Server.
10. Enter the **User Name** & **Password** for SAP server.
11. Select CCMS Monitor Sets by clicking on **Click Here** link. It then displays a list of CCMS monitor sets present in SAP server. Select a CCMS monitor set from the list which you would like to monitor.
12. Choose the Monitor Group from the combo box to which you want to associate the Monitor (optional). You can choose multiple groups to associate your monitor.
13. Click **Add Monitor(s)**. Upon adding the SAP CCMS monitor, you can view the details of the newly added SAP CCMS monitor.

Kindly refer SAP CCMS Parameters to know more about the attributes monitored. Please note that while creating a SAP monitor, you need a SAP user profile with the following authorization objects: S_RFC, S_XMI_LOG and S_XMI_PROD which are minimum prerequisities for adding a SAP monitor.
Applications Manager allows you to monitor the availability and connection time of SAP CCMS monitors from a centralized web console. The availability tab, gives the availability history for the past 24 hours or 30 days. The connection time refers to the time taken by Applications Manager to connect to SAP server. You can also add performance / status / log attributes in the same page by clicking on link **'Add Attributes'** or by clicking on **'Add Custom Attributes'** under **Quick Links** section.

Monitored Parameters

The following parameters are monitored for SAP CCMS.

Parameter	Description
Monitor Information	
Health	Specifies the health of the monitor based on its dependencies
Type	Type of the Monitor
Host Name	Specifies the host in which SAP is running
Host OS	The Operating System of the host
Last Polled at	The time at which last polling happened
Next Polled at	The time at which the next polling is scheduled
Availability	The current status of the SAP CCMS Monitor - whether it is up or down.

Adding SAP CCMS Attributes

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To add a SAP CCMS monitor set's attributes, follow the steps given below:

1. Click on Add Attributes or Add Custom Attributes link in SAP CCMS monitor page.

2. In the Add Attributes screen, you will find the entire set of CCMS monitoring tree elements (MTE) listed below. Click on MTE which you would like to monitor, and this will expand the entire set of attributes available inside the monitor set.

3. Similarly, you can also select various MTE and its attributes inside available CCMS monitors.

4. If there are no attributes present inside MTE, an error message appears: "*There are no Performance / Status / Log Attributes present in this Node*"

5. Click on Add Attributes button to complete the process.

6. If you would like to delete exisiting attributes, click on Add Custom Attributes link. In SAP Custom Attributes screen, Applications Manager will list the exisiting attributes that are being monitored and provides you the option to delete attributes. You can also enable / disable reports for the attributes in the same screen.

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SAP Server Monitoring Add On!

Creating an SAP Server Monitor

Prerequisites for monitoring SAP Server: *SAP JavaConnector (JCo)* should be present in Applications Manager's classpath. More

Follow the steps given below to create an SAP server monitor in Applications Manager:

1. Click on New Monitor. Click on **SAP Server.**
2. Provide Host Name / IP Address.
3. Enter the SubNetMask of the network.
4. Check the **Connect using Router String** checkbox to enter the SAP Router String through which SAP Server is connected (optional).
5. Enter the SAP Logon client.
6. Enter the SAP System number.
7. Enter the SAP Logon language like EN for English.
8. Enter the polling interval time in minutes.
9. If you are adding a new monitor from an Admin Server, select a Managed Server.
10. Enter the **User Name** & **Password** for SAP.
11. Choose the Monitor Group from the combo box to which you want to associate the Monitor (optional). You can choose multiple groups to associate your monitor.
12. Click **Add Monitor(s)**. Upon adding the SAP monitor, you can view the details of the newly added SAP monitor.

Please note that while creating an SAP monitor, you need an SAP user profile with the following authorization objects: S_RFC, S_XMI_LOG and S_XMI_PROD which are minimum prerequisites for adding an SAP monitor.

SAP monitor allows you to monitor the availability and performance of SAP environment from a centralized web console. SAP monitor takes advantage of the SAP CCMS (Computer Center Management System) architecture to give insightful information about the SAP system along with fault management and reporting capabilities.

Availability tab, gives the Availability history for the past 24 hours or 30 days. Performance tab gives the Health Status and events for the past 24 hours or 30 days. List view enables you to perform bulk admin configurations.

- Monitor Information
- Background
- Buffer
- Dialog
- Enqueue
- OS
- Spool
- Background Jobs
- RFC

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Monitored Parameters

The following parameters are monitored for SAP:

Parameter	Description
Monitor Information	
Health	Specifies the health of the monitor based on its dependencies
Type	Type of the Monitor
Host Name	Specifies the host in which SAP is running
Host OS	The Operating System of the host
Last Polled at	The time at which last polling happened
Next Polled at	The time at which the next polling is scheduled
Availability	The current status of the SAP Monitor- whether it is up or down.
Background Processing	
Background Utilization	Percentage of the background processing capacity currently utilized.
System Wide Queue Length	Number of jobs that are ready to be executed, have start authorization and have no target server specified for which there are no free background work processes, averaged over all application servers with background work processes.
System Wide Free Processes	Number of free background work processes
Server Specific Queue Length	Number of released jobs that are explicitly to be executed on this application server, but for which there are no free background work processes
Background work processes count	Number of background work processes on an application server
Error count	Number of errors in background work processes since the monitoring segment was created (that is, since the application server was started)
Error frequency	Number of errors in background work processes per minute
Terminated on error count	Number of background work processes terminated after an error
Buffer	
Hit Ratio	Percentage of the database queries that were met from the buffer (hit rate) and did not have to be passed on to the database for different buffer types like Program, Repository, Table & GUI
Directory Used	Percentage usage of the directory (number of entries) for different buffer types like Program, Repository, Table & GUI
Space Used	Percentage usage of the buffer storage for different buffer types like Program, Repository, Table & GUI
Swap	Swaps due to a full buffer per minute for different buffer types like Program, Repository, Table & GUI
Dialog	
Frontend Response Time	Average time that a user waits at the front end for the processing of his or her request
Database Request Time	Average time for processing logical database requests
Load And Generation Time	Average load and generation time of CUA objects
Response Time	Average response time of the dialog service
Network Time	Time used in the network during the first data transfer from the front end to the application server and during the last data transfer from the application server to the front end.
Users Logged In	Number of users logged on
Queue Time	Average time in the dispatcher wait queue
Enqueue	
Enqueue Requests	Number of lock requests
Enqueue Request Rejects	Number of rejected lock requests
Enqueue Requests Errors	Number of errors that occurred during lock requests
Dequeue Requests	Number of release requests
Dequeue Requests Errors	Number of errors that occurred when releasing locks
Dequeue All Requests	Number of releases of all locks of an LUW
CleanUp Requests	Number of releases of all locks of an application server

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Backup Requests	Number of update calls for which locks were forwarded to the update.
Reporting Requests	Number of operations for reading the lock table.
Owner Names Actual Utilization	Current number of lock owners in the lock table
Granule Arguments Actual Utilization	Current number of different lock arguments in the lock table
Granule Entries Actual Utilization	Current number of elementary locks in the lock table
Update Queue Actual	Current number of open update requests with locks
Recent Lock Time (per minute)	Time spent in the critical path of the lock table for lock operations (in seconds per minute)
Recent Lock Wait Time (per minute)	Wait time of parallel processes before entering the critical path of the lock table (in seconds per minute)
Recent Server Time (per minute)	Total time spent in the enqueue server (in seconds per minute)
Enqueue Frequency	Enqueue operations (logical data locks) per minutes that are coming from another instance to the central instance
Operating System	
CPU Utilization	Average usage of the CPU in a host system
Disk Utilization	Average usage of the disk in a host system
Extended Memory	Utilization of the extended memory as a percentage.
Private Memory	Utilization of the private memory as a percentage.
Roll Area Usage	Usage of the roll area as a percentage
Page In	Average number of page-ins per second; a page-in occurs if a process must access a data page that is not available in the main memory
Page Out	Average number of page-outs per second (page-out occurs if a page is stored out of the main memory to make room for the pages required by other processes)
Syslog Frequency	Number of messages per minute that appeared in the system log of an application server.
Spool system Details	
Spool Utilization	Utilization of the spool work processes as a percentage
Spool Work Processes Count	Number of spool work processes
Spool Work Processes Errors	Number of errors in spool work processes
Spool Work Processes Terminated	Number of spool work processes that terminated after errors
Dispatcher Queue Utilization	Used area of the dispatcher queue as a percentage
Request Queue Utilization	Used area of the spool request queue as a percentage
Service Queue Priv	Used area of the spool request queue for processing in chronological order as a percentage
Service Queue Pages	Number of pages in the spool request queue
Device Cache Used	Used area of the entire device cache as a percentage
Device Cache Fixed	Used area of the fixed device cache as a percentage
Host Spool List Used	Used area of the host spool request list as a percentage
Alerts	Shows all the alerts under System Errors tree node of SAP CCMS monitor [RZ 20]. When you set an alert to **completed status**, it is deleted from the active alerts that are shown in the Alert Monitor and the Alert Browser.
Background Jobs	
Job Name	The name of the background job monitored.
Current Status	The current status of the background job. Possible Statuses are: • No Released Job Exists, • Scheduled, • Released, • Active.
Last Run Status	The status of the background job during last execution. Possible Statuses are: • Finished, • Terminated, • - (No Status If it is executed for first time)
Last Run Date & Time	The date & time of the last executed background job.
Runtime (Sec)	The runtime in seconds (the difference between starttime and endtime) of the last executed background job.

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Delay(Sec)	The delay in seconds (the difference between scheduled starttime and starttime) of the last executed background job.
Age	Time since last execution of the background job in minutes.

Note:
Click the icon to view the logs of a terminated background job and it's history.

SAP RFC Monitoring

Remote Function Call (RFC) is the standard SAP interface for communication between SAP systems. The RFC calls a function to be executed in a remote system. Applications Manager monitors metrics pertaining to Queued RFCs (qRFC) and Transactional RFC (tRFC) like:

- **QOUT Scheduler (SMQS)** - The QOUT Scheduler processes qRFC outbound queues and controls the sending of qRFC calls. This information can be used to monitor the QOUT Scheduler.
- **QIN Scheduler (SMQR)** - The QIN Scheduler processes qRFC inbound queues and controls the processing of inbound qRFC calls.This information can be used to monitor the QIN Scheduler.
- **QOUT Data (SMQ1)** - QOUT Data can be used to monitor the Individual qRFC Outbound queues.
- **QIN Data (SMQ2)** - QOUT Data can be used to monitor individual qRFC inbound queues.
- **Transactional RFC (SM58)** - Every transactional RFC that is executed in a monitored SAP Server is listed here.

Parameter	Description
QOUT Scheduler (SMQS)	
Client	The Logon Client.
State	The status of the Scheduler at the moment when SMQS is executed. Possible states are: SYSFAIL, CPICERR, INACTIVE, WAITING, WAITCONN, STARTING, ACTIVE.
Time	The time of last update.
Group	The group to which this scheduler belongs.
Host	The host in which this scheduler is running.
QIN Scheduler (SMQR)	
Client	The Logon Client.
State	The status of the Scheduler. Possible states are: SYSFAIL, CPICERR, INACTIVE, RESOURCE LACK, WAITING, BATCH , ACTIVE,STARTING.
Time	The time of last update.
Group	The group to which this scheduler belongs.
Host	The host in which this scheduler is running.
QOUT Data (SMQ1)	
Client	The Logon Client.
Queue Name	The name of the queue.
Destination	The target destination of the queue.
State	The current state of the queue. Possible states are: SYSFAIL, CPICERR, STOP, SYSLOAD, VBERROR, READY, RUNNING, NOSEND, NOSENDS, WAITING, WAITSTOP, WAITUPDA, RETRY, ARETRY, ANORETRY, MODIFY, EXECUTED, AFINISH, FINISH.
Message	The message while executing the queue.
Time	The time of last update.
QIN Data (SMQ2)	
Client	The logon Client.
Queue Name	The name of the queue.
State	The current state of the queue. Possible States are:SYSFAIL, CPICERR, STOP, READY, RUNNING, WAITING, WAITSTOP, RETRY, ARETRY, ANORETRY, MODIFY, EXECUTED, NOEXEC, AFINISH, FINISH, SAVED.

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Message	The message while executing the queue.
Time	The time of last update.
Transactional RFC (SM58)	
Transactional ID	The identifier of the Transaction.
Functional Name	The name of the function that executed for transaction.
Destination	The target destination where this function is executed.
Caller	The user who called this transaction.
State	The state of the transaction. Possible States are : CPICERR, SYSFAIL, CONFAIL, RECORDED, VBERROR, SYSLOAD, RETRY, ARETRY, ANORETRY, EXECUTED, MAILED, READ, VBRECORD, SENDED, DEBUG, VXRECORD
Message	The message while executing the transaction.
Time	The time of last update.
Tcode	The Tcode from where this transaction is called.

Note:
Data Retention: For Transactional RFC, only 2 hours of RAW data will be retained. After two hours the collected RAW data available in Applications Manager database will be deleted. This is because of the HUGE volume of transaction data available in SAP system. Applications Manager database will not scale the huge volume of transaction data.
Data Archiving: Data archiving of transaction data will not happen due to the following reasons.
• The RAW data is deleted after two hours.
• Archiving huge volume of transaction data is not a scalable option.
The alert history will be available but no reporting is possible for Transactional RFC.

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Siebel Server Monitoring

Applications Manager lets you monitor the status of Siebel server components that are essential to keeping the application up and running. You can monitor as far down as the process level CPU and memory utilization of a Siebel task. Auto-discover your entire Siebel Enterprise; get out-of-the-box performance graphs showing Application Object Manager and Enterprise Application Integration Stats of processes within your enterprise.

Adding a new Siebel Monitor

Follow the steps given below to create a new Siebel Enterprise Server monitor in Applications Manager:

1. Copy the **"AppManager_Home/working/resource/APMSiebelCommands.txt"** file and paste it under **"Siebel Installation directory/bin"**.
2. Click on New Monitor in Applications Manager.
3. Click on **Siebel Enterprise Server** under **ERP.**
4. Enter **Display Name.**
5. Provide the **Host Name** or **IP Address** of the server where Siebel is installed .
6. Select the **Operating System** of the server where Siebel is installed from the drop-down menu. Adding windows installed siebel from linux installed Applications Manager is not supported.
7. Enter your **UserName** and **Password** to the server where Siebel is running.
8. Enter the **Siebel Gateway Server** and **Enterprise Server** names.
9. Enter the **Siebel administrator name** (administrator or equivalent user) and **Password**.
10. Enter the path to the **Siebel Installation Directory**.
11. Enter the polling interval time in minutes.
12. If you are adding a new monitor from an Admin Server, select a Managed Server.
13. Choose the Monitor Group from the combo box to which you want to associate the Monitor (optional). You can choose multiple groups to associate your monitor.
14. Click **Add Monitor(s)**. Upon adding the Siebel Server monitor, you can view the details of the newly added Siebel Server monitor.

Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors tab**. Click on **Siebel server** under the **ERP Table**. Displayed is the Siebel Server bulk configuration view distributed into three tabs:

- **Availability** tab, gives the Availability history for the past 24 hours or 30 days.
- **Performance** tab gives the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

Click on the monitor name to see all the server details listed under the following tabs:

- Monitor Information
- Performance
- Components
- AOM Statistics

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- DB Statistics
- InfraStructure
- EAI Statistics
- Task
- Active Sessions

Monitor Information

Monitor Information

Parameters	Description
Name	Name of the Siebel server monitor
Last Polled at	Specifies the time at which the last poll was performed.
Next Poll at	Specifies the time at which the next poll will be performed.
Associated Groups	Denotes the monitor groups associated with the Siebel server monitor.

Performance

Parameters	Description
Availability history for last 6 hours	Name of the Siebel server monitor
Performance history for last 6 hours	Specifies the time at which the last poll was performed.
CPU Utilization	Displays the current CPU utilization of the server.
Memory Utilization	Displays the current memory utilization of the server.
Statistic Name	Siebel application statistic name.
Statistic Value	Siebel application statistic value.
Description	Description of the statistic.
Transactions from PIM in Progress	Number of inprocess transactions from PIM
Global Data Cursor Cache Misses	Number of global data cursor cache misses
Tests Successful	Number of tests that were successful
Global Data Cursor Cache Objects	Number of objects currently in the global data cursor cache
Transactions form Siebel in Progress	Number of inprocess transactions from Siebel
Maximum OOB Component Time	Maximum OOB Component Time
Global Data Cursor Cache CPU	Total CPU time spent on creating global data cursor objects in cache (in seconds)
Failed Transactions from Siebel	Number of failed transactions from Siebel
Global Data Cursor Cache Memory	Total memory spent on creating global data cursor objects in cache (in bytes)
Global Data Cursor Cache Hits	Number of global data cursor cache hits
Events Processed	Total number of events processed
Data Cursor Cache Objects	Number of objects currently in the data cursor cache
Failed Transactions from PIM	Number of failed transactions from the PIM
Events Processed Rate	Rate of Processing the events
Data Cursor Cache Memory	Total memory spent on creating data cursor objects in cache (in bytes)
Number of Component Crashes	The number of times a process of the component has crashed.
Data Cursor Cache Misses	Number of SQL data cursor cache misses
Number of Component Restarts	The number of times a process of the component has restarted.

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Number of Errors	Total number of level 0 and 1 errors.
Number of object rows assigned	This statistics represents the cumulative number of records assigned by this component since the server was started
PSP Cache Hit Total	Total PSP Cache Hit Number
PSP Cache Miss Total	Total PSP Cache Miss Number
SQL Object Cache Memory	Total memory spent on creating SQL object objects in cache (in bytes)
Data Cursor Cache CPU	Total CPU time spent on creating data cursor objects in cache (in seconds)
Completed Transactions from Siebel	Number of completed transactions from Siebel
Completed Transactions from PIM	Number of completed transactions from the PIM Server
Average OOB Queue Size	Average OOB Queue Size
SearchEvents Processed Rate	Rate of Processing the records during indexing
Average OOB Component Time	Average OOB Component Time
SearchEvents Processed	Total number of records processed during indexing
Tests Failed	Number of tests that failed
Tests Attempted	Number of tests that were started
Data Cursor Cache Hits	Number of SQL data cursor cache hits

Components

Parameters	Description
Component	Specifies the name of the Siebel component.
Component Group	Specifies the name assigned to the Siebel component group.
RunState	Specifies the value returned for the state of the component. An example value of RunState is offline
ActiveMTSProcess	The number of running multi-threaded shell (MTS) processes.
RunningTasks	The current number of running tasks for the component.

AOM Statistics

Application Object Manager Statistics

Parameters	Description
Average Connect Time	The time required to perform all the activities required to establish an interactive session (such as authentication, initialization, and allocating the necessary resources) with Object Manager.
Average Response Time	The average (mean) time required to respond to an end-user action. If application performance is deteriorating, the metric value increases.
Statistic Name	Siebel application statistic name.
Statistic Value	Siebel application statistic value.
Description	Description of the statistic.
Average Request Size	The average size of request messages (in bytes)
Average Reply Size	The average size of reply messages (in bytes)
Average Requests Per Session	The average number of requests per Object Manager session
Total Think Time	The total end-user think time (in seconds)
Average Think Time	The average end-user think time between requests (in seconds)
Object Manager Errors	The number of errors encountered during Object Manager session
Reply Messages	The number of reply messages sent by the server
Request Messages	The number of request message received by the server
Total Database Response Time	The total Database Response/Processing Time (milliseconds)

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Total Reply Size	The total size (in bytes) of reply messages
Total Request Size	The total size (in bytes) of request messages
Total Response Time	The total Object Manager response time (msec)

Database Statistics

Parameters	Description
Average Execution Time	The average (mean) amount of time the database requires to process the SQL statement after the statement is parsed.
Average Fetch Time	The average (mean) amount of time the database requires to fetch records by an SQL statement after the statement is parsed.
Statistic Name	Siebel application statistic name.
Statistic Value	Siebel application statistic value.
Description	Description of the statistic.
SQL Cursor Cache Misses	The number of SQL cursor cache misses
SQL Cursor Total Cpu	The total CPU time spent on creating SQL cursor objects in cache (in seconds)
SQL Parse Time	The total elapsed time for SQL parse operations (in seconds)
Number of SQL Fetches	The total number of SQL fetch operations
SQL Object Cache Objects	The number of objects currently in the SQL object cache
Number of SQL Executes	The total number of SQL execute operations
SQL Object Cache Misses	The number of SQL object cache misses
SQL Cursor Cache Hits	The number of SQL cursor cache hits
Number of SQL Parses	The total number of SQL parse operations
SQL Object Cache Hits	The number of SQL object cache hits
SQL Object Cache CPU	The total CPU time spent on creating SQL object objects in cache (in seconds)
SQL Fetch Time	The total elapsed time for SQL fetch operations (in seconds)
Avg SQL Parse Time	The average time for SQL parse operations (in seconds)
SQL Execute Time	The total elapsed time for SQL execute operations (in seconds)

InfraStructure

Parameters	Description
Statistic Name	Siebel application statistic name.
Statistic Value	Siebel application statistic value.
Description	Description of the statistic.
Tasks Exceeding Configured Capacity	The number of tasks stated that exceeded configured capacity
CPU Time	The total CPU time for component tasks (in seconds)
Num of DLRbk Retries	The number of Retries due to Deadlock Rollbacks
Num of Exhausted Retries	The number of Times All Retries are Exhausted
Elapsed Time	The total running time elapsed for component tasks (in seconds)
Number of Sleeps	The total number of sleeps for component tasks
FDR Avg time between aging	Avg Seconds per buffer wrap
Sleep Time	The total amount of sleep time for component tasks (in seconds)
FDR Buffer Life in seconds	Seconds since buffer was created

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Num of DBConn Retries	The number of retries due to DB Connection Loss
Minimum Peak Memory Usage	Peak Mem used by task. Rolls up differently than MaxPeakMemory
Maximum Peak Memory Usage	The Peak Memory used by task. Rolls up differently from MinPeakMemory
Total Tasks	The total number of tasks completed for server components
FDR Buffer Wraps	The number of buffer wraps

EAI Statistics

Parameters	Description
Statistic Name	Siebel application statistic name.
Statistic Value	Siebel application statistic value.
Description	Description of the statistic.
EAI Receiver Total Messages Processed	The total number of messages processed by the Enterprise Application Integration receiver.
Siebel Adapter Total Query Calls	The total cumulative size of output property sets (in KB) for all queries
Siebel Adapter Total Sync/Upsert Calls	The total number of non-query (synchronize, upsert, update or insert) calls made to Siebel Adapter
Total XML Converter Size of Input Buffer	The total cumulative size of input buffer (in KB)
Siebel Adapter Total Query Size	The total cumulative size of output property sets (in KB) for all queries
Siebel Adapter Total Sync Size	The total cumulative size of input property sets (in KB) for all non-query calls (synchronize, upsert, update or insert)
Total XML Parser Calls	The total number of XML parser calls
Total XML Converter Size of Output Buffer	The total cumulative size of output buffer (in KB)
Total XML Generator Calls	The total number of XML generator calls

Tasks

Parameters	Description
Tasks Running	The current number of concurrent task instances running in the Siebel component.
Tasks Paused	The tasks that have been temporarily placed in a suspended state.
Tasks Completed	The tasks that have run to completion.
Tasks Exited with Errors	The tasks that encountered an error during its processing and exited.
Tasks Killed	The tasks that were not able to shut down cleanly, and were forced to shut down.
Error Tasks	
Component	Name of the Siebel component.
TaskID	The operating system identification number assigned to the task.
Run State	Current run state for the Siebel task (Running, Paused, Stopping,
Task Status	A task may be in one of four states • Running • Paused • Stopping • Completed
Task Label	The task label.
Start Time	The time when this task started.
End Time	The time when this task ended.

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Active Sessions

Parameters	Description
Component	Specifies the name of the Siebel component.
TaskID	Siebel task ID for the application OM that handles the user session
Run State	The running state of the users' sessions for the selected Siebel Server.
Hung State	The state of the users' sessions for the selected Siebel Server not responding.
DB Session ID	A unique session number created for the user
OM Login	Object Manager login ID of the user.
Task Status	Current status of the task i.e running or paused.

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Microsoft Dynamics CRM Monitoring

Supported versions of Microsoft Dynamics CRM: CRM 2011 and 2013

Prerequisites for monitoring Microsoft Dynamics CRM: Click to know about the user previleges and other necessary prerequisites to monitor Microsoft Dynamics CRM.

Applications Manager connect with Microsoft Dynamics CRM Application and used to determine the Performance of various services and components of CRM. Follow the steps given below to create a new Dynamics CRM Application monitor:

1. Click on New **Monitor** link.
2. Select Microsoft Dynamics CRM under ERP category.
3. Specify the **Display Name** of the CRM Application.
4. Enter the CRM Host Name or IP Address of the host where the CRM Application runs.
5. Select the **Version** number from the drop-down menu.
6. If you choose the **Use Below Credentials option**, then enter the credentials - UserName and Password of the Host Machine.**UserName** - To monitor a Microsoft Dynamics CRM application, use Administrator user account which has the permission to execute WMI queries on 'root/CIMV2' namespace of the CRM Server.**Password** - Password of the above user who has the permissions to execute WMI Queries.If you choose the **Select from credential list** option, then select the respective credential from preconfigured credential list.
7. Select **Enable Event Log Monitoring** if you wish to monitor event logs.
8. Specify the Polling Interval in minutes.
9. Choose the Monitor Group with which you want to associate the Dynamics CRM monitor to, from the combo box (optional). You can choose multiple groups to associate your monitor.
10. Click Add Monitor(s). This discovers the Dynamics CRM Application from the network and starts monitoring it.

Dynamics CRM is Microsoft's fully integrated customer relationship management system that helps organizations attract and develop new profitable relationships with customers while managing ongoing relationships from a single operating platform. Microsoft Dynamics CRM offers both on-premise and cloud-based options, tight integration with Microsoft Office and Outlook, and all-out customization flexibility.

As a system administrator you need to be able to to respond quickly to critical events and prevent service outages. Applications Manager helps you track the set of counters that generate data about how various components perform as they run in the Microsoft Dynamics CRM environment. You can monitor the WMI Performance counters, Services, Transactions and Eventlogs for CRM Applications. You can get deeper insight into the performance of CRM's Authentication, Outlook Sync, e-mail Router, Discovery, Locator, Platform Services, Sandbox counters and Async Services.

Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **Microsoft Dynamics CRM** under the **ERP** Table. Displayed is the Microsoft Dynamics CRM bulk configuration view distributed into three tabs:

- **Availability** tab, gives the Availability history for the past 24 hours or 30 days.
- **Performance** tab gives the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

Click on the monitor name to see all the server details listed under the following tabs:

- Overview

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- Server
- Requests
- Sandbox
- Async Services
- Events

OVERVIEW

Parameter	Description
Authentication Failures in Last Minute	
Claims Authentication Failures In The Last Minute	The total number of failed authentication requests processed per minute using claims. This counter measures the whole deployment including all organizations.
Config DB Windows Authentication Failures In The Last Minute	The number of unsuccessful authentication requests per minute that are processed by using Active Directory authentication credentials. This counter measures the entire Microsoft Dynamics CRM deployment including all organizations.
CRM Post Authentication Failures In The Last Minute	The number of unsuccessful authentication requests per minute that are processed by using Microsoft Dynamics CRM authentication credentials. This counter measures the entire deployment including all organizations.
Passport Authentication Failures In The Last Minute	The number of failed authentication requests per minute that are processed by using Microsoft account authentication credentials. This counter measures the entire Microsoft Dynamics CRM deployment including all organizations. This counter is CRM Online - specific.
Windows Authentication Failures In The Last Minute	The number of unsuccessful authentication requests per minute. There are several possible causes for authentication failure. For example, the user may have been authenticated successfully by Active Directory but Microsoft Dynamics CRM authentication failed to communicate with the Kerberos servers, or a token expired, or the user's credentials are incorrect. This counter measures the entire Microsoft Dynamics CRM deployment including all organizations.
Outlook Sync Requests	
Current MAPI Sync Requests	The number of MAPI sync requests currently executing.
Current Offline Sync Requests	The number of offline sync requests currently executing.
Current Outlook Sync Requests	The number of Microsoft Office Outlook sync requests currently executing.
Total ABP Sync Requests	The total number of Address Book Provider (ABP) synchronization requests made from CRM for Outlook to a Microsoft Dynamics CRM server; a high count indicates a high client load on the Asynchronous Processing Service.
Total Offline Sync Requests	The total number of offline synchronization requests made from CRM for Outlook to a Microsoft Dynamics CRM server; a high count indicates a high client load on the Asynchronous Processing Service.
Total Outlook Sync Requests	The total number of ABP Sync Requests and the Offline Sync Requests; a high count indicates a high client load on the Asynchronous Processing Service.
Total Succeeded Offline Sync Requests	The number of successful offline synchronization requests made from CRM for Outlook to a Microsoft Dynamics CRM server; a count that is much lower than the total number of offline synchronization requests may indicate a problem with clients that try to synchronize with the server.
Total Failed Offline Sync Requests	The number of failed offline synchronization requests made from CRM for Outlook to a Microsoft Dynamics CRM server. This is calculated from 'Total Offline Sync Requests' and 'Total Succeeded Offline Sync Requests' . A count greater than 'Total Succeeded Offline Sync Requests' or a count close to 'Total Offline Sync Requests' may indicate a problem with clients that try to synchronize with the server.
Services	
Name	The name of the service. Note that the display name and the service name (which is stored in the registry) are not always the same.

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Start Mode	The Start mode of the service. The different start modes are: • **Boot** - The device driver is started by the operating system loader (valid only for driver services). • **System** - The device driver started by the operating system initialization process. This value is valid only for driver services. • **Auto** - The service to be started automatically by the service control manager during system startup. Auto services are started even if a user does not log on. • **Manual** - The service to be started by the Service Control Manager when a process calls the StartService method. These services do not start unless a user logs on and starts them. • **Disabled** - The service that cannot be started until its StartMode is changed to either Auto or Manual.
State	The current state of the base service. The values are: Stopped, Start Pending, Stop Pending, Running, Continue Pending, Pause Pending, Paused, Unknown.

SERVER

Parameter	Description
Server	
Number of Organizations	The number of organizations that are currently active.
Failed Internal Organization Service Requests	The total number of failed web service requests to Microsoft Dynamics CRM InProc calls that are made by applications that use the methods described in the Microsoft Dynamics CRM SDK.
Failed Organization Service Metadata Requests	The total number of metadata requests received by the Microsoft Dynamics CRM Organization Web Service that failed because of a time-out or other SOAP failure.
Failed Organization Service Requests	The total number of requests to the Microsoft Dynamics CRM Organization Web Service that failed because of a time-out or other SOAP failure.
Failed Report Render Requests	The number of requests to render Microsoft SQL Server Reporting Services reports that failed because of a time-out or error.
Script Error Reports	The total number of error reports generated by the web client and CRM for Outlook. This counter is reset weekly to zero. This counter is an indicator of high script error frequency. If a large number of error reports are received in a short time, the operations team should investigate to determine which pages are producing errors. We recommend that you set a monitoring alert to notify you if there are more than 500 error reports in a 10-minute period.

REQUESTS

Parameter	Description
Discovery Service	
Failed Discovery Service Requests	The number of requests to the Microsoft Dynamics CRM Discovery service that are unsuccessful for any reason. For example, a request may fail because the requesting party is not recognized as a user in the organization. A high count may indicate that the system is possibly under a denial-of-service (DoS) attack, or there is some problem with the Discovery service configuration.
Successful Discovery Service Requests	The number of requests to the Microsoft Dynamics CRM Discovery service that completed successfully.
Total Discovery Service Requests	The total number of requests (successful and unsuccessful) received by the Microsoft Dynamics CRM Discovery service. This counter can be used to track traffic patterns for Discovery service capacity planning.
Locator Service	
Failed Cache Flush Requests	The number of LocatorService cache flush requests that were unsuccessful for any reason. For example, a request may fail because it was for an invalid cache entry, or the cache may not flush because of an incorrect cache state. A high count may indicate a problem with the LocatorService cache, or a problem with the connection to CONFIG_DB. For information about the cause, review the event log for errors.
Total Cache Flush Requests	The total number of successful LocatorService cache flush requests that have been received.
Router Service Request	
AppFabric Request Timeout	The number of time-outs seen making requests to Windows Azure.
Router Request Faulted	The number of requests made on the faulted channel to the router.

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Router Request Received (Throughput)	The number of requests received by the router.
Router Request Timeout	The number of time-outs seen making requests to the router.
Platform	
Average Time Of Import Request	The average time that is required to process Microsoft Dynamics CRM data import requests. Import requests are resource-intensive SQL Server operations. If the average time is too high and the number of concurrent imports is high, some organizations may have to be moved to a different deployment. Also, you may want to consider processing import jobs during a maintenance window to reduce the performance effect on users.
Number Of Import Requests Per Hour	The number of import requests that have been submitted by organizations in the deployment in the past hour. This counter is useful to indicate how many import requests are being processed concurrently.
Number Of Publish Requests Per Hour	The number of requests that have been submitted by organizations in the deployment in the past hour. This counter is useful to indicate how many publish requests are being processed concurrently.

SANDBOX

Parameter	Description
Sandbox Host	
Worker Processes Crashed Percentage	The percentage of Sandbox Worker processes that have crashed.
Worker Processes Terminated Percentage	The percentage of Sandbox Worker processes that have been terminated due to excessive resource usage or no response.
Active Assemblies	The number of plug-in assemblies currently in use.
Active Organizations	The number of organizations that currently have a Sandbox Worker process active.
Active Plugins	The number of plug-ins currently in use.
Handles	The total handle count used by all Sandbox Worker processes.
CPU Usage Percentage	The total CPU percentage used by all Sandbox Worker processes.
Assembly Cache Hits Percentage	The assembly cache hit rate percentage.
Assembly Cache Usage Percentage	The percentage of the total assembly cache disk space that is in use.
Execute Failures Percentage	The incoming execution failure rate percentage in the Sandbox Host.
SDK Failures Percentage	The outgoing Request failure rate percentage in the Sandbox Host.
Assembly Cache Disk Space (KB)	The total disk space used by all plug-in assemblies in the assembly cache, in KB.
Memory Usage (MB)	The total memory used by all Sandbox Worker processes, in MBytes.
Sandbox Client	
Execute Failures Percentage	The outgoing execution failure rate percentage in the Sandbox Client.
SDK Failures Percentage	The incoming SDK Request failure rate percentage in the Sandbox Client.

ASYNC SERVICES

Parameter	Description
Async Services	
Active Organizations	The total number of organizations in the Microsoft Dynamics CRM deployment that are actively being polled by the Microsoft CRM Asynchronous Processing Service.
Total Organizations	The number of organizations being monitored for the entire Microsoft Dynamics CRM deployment.
Capacity Per Organization	The number of asynchronous operations to be removed from the processing queue that are currently allocated to an organization.
Items In Memory (high)	The maximum number of asynchronous operations to hold in memory for processing.
Items In Memory (low)	The threshold of asynchronous operations to trigger loading of additional operations.
Threads In Use	The number of threads currently employed in the processing of asynchronous operations for all organizations in the deployment.
Total Operations Failed	The total number of asynchronous operations that failed for all organizations in the deployment.

EVENTS

Event Log from the Dynamics CRM Application can be monitored by creating EventLog Rules in Applications Manager.

Parameter	Description
Events	

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Rule Name	The name of the event log rule
Log File Type	The Log File Type - Application, system, security, file replication service, DNS Server or directory service.
Source	The Application which created the event.
Event Id	The Event ID associated with the Event Log File.
Type	The Event Type - Error, Warning, Information or Event of Any Type. In case of Security Events, the types would vary between Success Audit and Failure Audit.
User Name	The system component or User account that was running the process which caused the event.
Description	A description of the event.
Generated Time	The time when the event entry was submitted.

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Microsoft Dynamics AX Monitoring

- Microsoft Dynamics AX - An Overview
- Monitoring Microsoft Dynamics AX - What we do.
- Adding a new Microsoft Dynamics AX monitor / Using AddMonitor API
- Monitored Parameters

Microsoft Dynamics AX - An Overview

Microsoft Dynamics AX 2012 is an Enterprise Resource Planning (ERP) system suitable for midsize to large enterprises. It provides your enterprise with comprehensive core functionality like financial, human resources and operations management so that your business can thrive. Microsoft Dynamics AX offers complete functionality for inventory control, warehouse management, transportation management, demand and supply chain planning, material requirements planning, production management, quality assurance, product lifecycle management, asset management, and business intelligence so you can make important business decisions.

Monitoring Microsoft Dynamics AX - What we do

To actively monitor the behavior of the Microsoft Dynamics AX application and related applications, Applications Manager effectively collects information pertaining to the performance of each component of the system architecture, i.e.: Application Object Server (AOS), the SQL Database Server, and their Server Stats.

Adding a new Microsoft Dynamics AX monitor

Supported versions of Microsoft Dynamics AX

Microsoft Dynamics AX 2012, Microsoft Dynamics AX 2012 R2, Microsoft Dynamics AX 2012 R3

Prerequisites for monitoring Microsoft Dynamics AX :

1. To monitor a Microsoft Dynamics AX application, use an Administrator user account which has the permission to execute WMI queries on 'rootCIMV2' namespace of the AX Server.
2. **Firewall access for monitoring** - Ports required for monitoring via WMI:
   - Windows Management Instrumentation (WMI) (default : TCP 445)
   - Remote Procedure Call (RPC) (default : TCP 135)
   - Target server uses random port above 1024 by default to respond back for remote communication (DCOM) (default : TCP 1025 to 1030)

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Steps to create a new monitor:

To create a Dynamics AX Monitor, follow the steps given below:

- Click on New **Monitor** link.
- Select Microsoft Dynamics AX under ERP category.
- Specify the **Display Name** of the Dynamics AX Application.
- Enter the AX Host Name or IP Address of the host where the AX Server runs.
- Select the **Version** number from the drop-down menu.
- Select the services to be monitored from the drop down list.
- If you choose the **Use Below Credentials option**, then enter the credentials - UserName and Password of the Host Machine.**UserName** - To monitor a Microsoft Dynamics AX application, use Administrator user account which has the permission to execute WMI queries on 'root/CIMV2' namespace of the AX Server.**Password** - Password of the above user who has the permissions to execute WMI Queries.If you choose the **Select from credential list** option, then select the respective credential from preconfigured credential list.
- Specify the Polling Interval in minutes.
- Choose the Monitor Group with which you want to associate the Dynamics AX monitor to, from the combo box (optional). You can choose multiple groups to associate your monitor.
- Click Add Monitor(s). This starts monitoring the Dynamics AX Server Application from the network.

Use the AddMonitor API to add a Microsoft Dynamics AX Monitor

Syntax

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST NAME]&Version=[VERSION NO]&UserName=[USERNAME]&Password=[PASSWORD]&pollinterval=[INTERVAL]

Request Parameters

Field	Description
apikey	The key generated from the Generate API Key option in the 'Admin' tab.
type	The type of the monitor you want to add. The value should be MSDynamicsAX
displayname	.The Display Name of the AX Application
host	The AX Host Name or IP Address of the host where the AX server runs
Version	The version of the AX Application.
UserName	The UserName of the Host Machine. To monitor a Microsoft Dynamics AX application, use Administrator user account which has the permission to excute WMI queries on 'rootCIMV2' namespace of the AX Server.
Password	The password of the above user who has the permissions to execute WMI Queries.

Sample Request

http://prod-4409:9210/AppManager/xml/AddMonitor?apikey=aca1b8f2f109e319f46733675983e847&type=MSDynamicsAX&displayname=AXTest&host=user-4409&Version=2012&UserName=user-4409&Password=Qwerty@123&pollinterval=5

Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on the **Microsoft Dynamics AX** monitor under the **ERP** Table. Displayed is the Microsoft Dynamics AX bulk configuration view distributed into three tabs:

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- **Availability tab** displays the Availability history for the past 24 hours or 30 days.
- **Performance tab** displays the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

Click on the monitor name to see all the server details listed under the following tabs:

- Overview
- Application Object Server (AOS)
- AOS Data Cache
- SQL Server
- Server Statistics

Overview

Parameter	Description
AOS Active Sessions	
Active Sessions	The number of currently active server sessions
Total Sessions	The total number of active sessions since the AOS instance started
Microsoft Dynamics AX and MSSQL Services	
Service Name	The name of the service. Note that the display name and the service name (which is stored in the registry) are not always the same.
Availability	The current state (Running or stopped) of the base service.

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Application Object Server (AOS)

Parameter	Description
AOS Traffic	
Bytes Received/Sec	The number of bytes received by the AOS instance per second
Bytes Sent/Sec	The number of bytes sent by the AOS instance per second
Request Statistics	
Total Client Requests	The number of client-to-server requests since the AOS instance started
Client requests/Min	The number of client-to-server requests per minute
Client requests processed/Sec	The number of client-to-server requests processed per second
Server responses/Min	The number of server-to-client requests that have been processed per minute

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AOS Data Cache

Parameter	Description
Hits & Miss	
Hits/Min	The number of times a record was found successfully in the cache per minute
Miss/Min	The number of times a record was not found in the cache
Data Cache Clears(Total)	
Total Number of Clears	The total number of times the cache was cleared of all contents
Clears due to AOS Synchronization(Total)	The total number of times the cache was cleared because of AOS synchronization
Deletes from Data Cache(Total)	The total number of times records were deleted from the data cache
Cache flushes due to Size(Total)	The total number of times the cache was flushed due to size
Selects on Cached Tables(Total)	The total number of selects on tables that are cached
Data Cache Clears(Rate)	
Number of Clears / Min	The number of times the cache was cleared of all contents per minute
Number of Clears by AOS / Min	The number of times the cache was cleared because of AOS synchronization per minute
Deletes from Data Cache / Min	The number of times records were deleted from the data cache per minute
Cache Flush due to Size / Min	The number of times the cache was flushed due to size per minute
Selects on Cached Tables / Min	The number of selects on tables that are cached per minute

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SQL Server

Parameters	Description
General Statistics	
Total Active Transactions	The total number of active transactions
Transactions/Sec	Number of transactions started for the database per second
Total Server Memory	Total amount of dynamic memory, in kilobytes, that the server is currently consuming
User Connections	Number of users connected to the system
SQL Statistics	
SQL Compilations / Sec	Number of SQL Server query compilations per second
SQL Re-Compilations / Sec	Number of SQL Server query re-compilations per second
Batch Requests / Sec	Number of SQL Server batch request executed per seconds
Buffer Manager	
Buffer Cache Hit Ratio	Percentage of pages that were found in memory, this not requiring a physical I/O operation
Free List Stalls / Sec	The number of requests per second that had to wait for a free page
Lazy Writes / Sec	Pages written to the disk during the LazyWriter process freeing up SQL cache.
Page Life Expectancy	Estimated number of seconds a page will stay in the buffer pool before it is written out
Page lookups / Sec	Indicates the number of requests per second to find a page in the buffer pool
Lock Statistics	
Lock Requests / Sec	Number of new locks and lock conversions per second requested from the lock manager
Lock Memory	The total amount of memory in kilobytes, that is allocated to locks
Access Method Metrics	
Forwarded Records / Sec	The number of records fetched through forwarded record pointers
FreeSpace Scans / Sec	The number of scans per second that were initiated to search for free space within pages already allocated to an allocation unit to insert or modify record fragment
Full Scans / Sec	Either table or Index is fully scanned. This could be caused because of wrong or unhelpful indexes
WorkFiles Created / Sec	The number of work files created per second
WorkTables Created / Sec	The number of worktables created in tempdb per second. Worktables are used for queries that use various spools (table spool, index spool, etc)

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Server Statistics

Parameters	Description
Processor	
% Privileged Time	The percentage of non-idle processor time spent in privileged mode
% User Time	The percentage of non-idle processor time spent in user mode
Memory	
Available bytes	The amount of physical memory available to processes running on the computer in megabytes
Committed bytes	The amount of committed virtual memory in megabytes
Page Faults / Sec	The average number of pages faulted per second
Disk	
Average Queued Requests	The average number of both read and write requests that were queued for the selected disk during the sample interval.
% Disk Time	Measures how busy a physical array is.
Average time / Disk Read	The average time in seconds for a read of data from the disk.
Average time / Disk Read	The average time in seconds for a write of data from the disk.
Network	
Segments Sent / Sec	The rate at which segments are sent.
Segments Received / Sec	The rate at which segments are received.
Segments Re-transmitted / Sec	The rate at which segments are re-transmitted.

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Exchange Server Monitoring

Exchange Server Versions Supported: Exchange 2016, Exchange 2013, Exchange 2010, Exchange 2007, Exchange 2003 and older versions.

Prerequisites for monitoring Exchange Server: Monitoring of Exchange Server is possible only if Applications Manager is running in a Windows System. Refer Prerequisites Section.

Attributes Monitored: Refer Exchange Server Parameters to know more about the attributes monitored.

To create a Exchange Server Monitor, follow the given steps:

1. Click on New **Monitor** link. Choose **Exchange Server** under **Mail Servers**.
2. Enter a **Display name** for the new monitor that you're going to add.
3. Enter the IP Address or hostname of the host in which the Exchange Server is running.
4. Select **Exchange Server version** - *Exchange 2016*, *Exchange 2013, Exchange 2010, Exchange 2007, Exchange 2003 or below.*
5. Select the **Server Role** to be monitored.
6. Choose the **Exchange Server Services** you want to monitor from the list.
7. You can enter your own credential details or select preconfigured credentials details in Credentials Manager. If you wish to enter your own credentials, specify **username** and **password** details for this monitor.
8. Choose the Mode of Monitoring - Powershell or WMI.(Know more about using the Powershell option). By default, the connectionURI will be detected. If neccessary, it can be customized.
9. Provide the port number in which Exchange Server is running. Also, you can provide multiple ports separated by commas.
10. Enter the polling interval time in minutes.
11. If you are adding a new monitor from an Admin Server, select a Managed Server.
12. Select the Exchange Server **Services** you want to monitor.
13. Provide the authentication details User Name Domain Name and Password for the system in which Exchange server is running.
14. Choose the Monitor Group from the combo box to which you want to associate the Monitor (optional). You can choose multiple groups to associate your monitor.
15. Click Add Monitor(s). This discovers the Monitor from the network and starts monitoring them.

Know more about Exchange Server's component-specific performance counters that Applications Manager monitors.

Note:
Monitoring of Exchange Server is possible only if Applications Manager is running in a Windows System. Also, Exchange Server monitor will work only if WMI is enabled in the remote machine in which Exchange Server is running.
Exchange Monitoring now supports data collection in two ways :
• **WMI** - For users who have not installed /don't require powershell In the new monitor page- Choose the WMI Mode of MonitoringMailbox and Database Statistics for Mailbox Server Role is not available for this setting.
• **Powershell:** In the new monitor page, Choose the Powershell Mode of Monitoring and provide the connectionURI.To use Powershell for datacollection make sure the proper steps have been followed to enable powershell remoting.

If the user has not modified any ports or connectionURI, it need not be customized. Default value for connectionURI will be used.

Applications Manager lets you effectively monitor the different versions of your Exchange Server and report on performance, availability, and the working of its server roles. You can collect Exchange component-specific performance counters in one central location, detect issues, send alerts and thus prevent possible service outages or configuration problems. Users can proactively manage Exchange servers and identify issues before they become critical.

Applications Manager gathers data related to each of your Exchange Server Roles:

- **Mailbox Server Role** - Monitor your mailbox and public folder databases and diagnose issues pertaining to all related messaging data.

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- **Client Access Server Role** - Monitor overall client access like ActiveSync, .NET, OWA, Web Services connections and hardware performance.
- **Unified Messaging Server Role** - Track integrated dial-in access performance and monitor e-mail, voicemail, fax, calendar information and contacts.
- **Hub Transport Server Role** - Monitor the mail flow, routing, and delivery within the Exchange organization and identify disk performance bottlenecks.
- **Edge Transport Server Role** - Monitor EdgeSync services, Active Directory Application Mode, SMTP connection authentication, transport queue databases and logs.

Applications Manager supports monitoring of counters relevant to the following server roles:

- **Exchange Server 2016 server roles:**
  - Mailbox Server Role Counters | Mailbox and Database Statistics (This includes Client Access Role Counters too because Mailbox server in Exchange 2016 includes all of the server components from Exchange 2013 Mailbox and Client Access roles)
  - Edge Transport Server Role Counters
- **Exchange Server 2013 Server roles:**
  - Mailbox Server Role Counters | Mailbox and Database Statistics
  - Client Access Server Role Counters
  - Edge Transport Server Role Counters
- **Exchange Server 2010 and 2007 Server roles:**
  - Mailbox Server Role Counters | Mailbox and Database Statistics
  - Client Access Server Role Counters
  - Hub Transport Server Role Counters
  - Edge Transport Server Role Counters
  - Unified Messaging Server Role Counters
- **Exchange Server 2003 and older versions**
  - Performance Counters
- **Common Counters (For all versions and roles)**
  - Exchange Services and Active-Directory Access Domain Controllers
  - Host Performance Counters

Exchange Server - Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **Exchange Server** under the **Mail Servers** Table. Displayed is the Exchange Server bulk configuration view distributed into three tabs:

- **Availability** tab, gives the Availability history for the past 24 hours or 30 days.
- **Performance** tab gives the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

Mailbox Role Counters		**Exchange Server Version**			
Attribute name	**Description**	**2007**	**2010**	**2013**	**2016**
POP & IMAP Connections					
Current POP Connections	The total number of POP connections opened since the computer was last started.	✓	✓	✓	✓
Current IMAP Connections	The total number of POP connections opened since the computer was last started.	✓	✓	✓	✓
SMTP Connections					
Inbound Connections	The total number of currently inbound connections.	✓	✓	✓	✓
Outbound Connections	The number of connections that were currently outbound.	✓	✓	✓	✓
Messages Sent Per Second	The rate at which outbound messages are being sent.	✓	✓	✓	✓
Messages Received Per Second	The rate at which inbound messages are being received.	✓	✓	✓	✓
Latency Requirements Counters					
Database PageFault Stalls Per Second	The rate of page faults that can't be serviced because there are no pages available for allocation from the database cache. This counter should be 0 on production servers.	✓	✓	✓	✓

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Database I/O Reads Average Latency	The average time, in ms, to read from the database file. The average value should be below 200 ms. Maximum values shouldn't be higher than 1,000 ms.	✓	✓	✓	✓
Database I/O Writes Average Latency	The average time, in ms, to write to the database file. This latency should be less than the MSExchange Databasel/O Database Reads (Recovery) Average Latency when battery-backed write caching is utilized.	✓	✓	✓	✓
I/O Log Reads Per Second	The number of times data was read from a log file. Specific to log replay and database recovery operations.	✓	✓	✓	✓
I/O Log Writes Per Second	The number of times a log buffer was written to the active log file. Specific to log replay and database recovery operations	✓	✓	✓	✓
Log Record Stalls Per Second	The number of log records that can't be added to the log buffers per second because the log buffers are full. The average value should be below 10 per second. Maximum values shouldn't be higher than 100 per second.	✓	✓	✓	✓
Log Threads Waiting	The number of threads waiting to complete an update of the database by writing their data to the log. The average value should be less than 10 threads waiting.	✓	✓	✓	✓
Message Queuing Counters					
Mailbox Messages Queued For Submission	The current number of submitted messages not yet processed by the transport layer. The threshold value should be below 50 at all times. Shouldn't be sustained for more than 15 minutes.	✓	✓	✓	✓
Public Messages Queued For Submission	The current number of submitted messages not yet processed by the transport layer. The threshold value should be less than 20 at all times.	✓	✓	✓	✓
Information Store RPC Processing Counters					
IS RPC Requests	The latency, in ms, averaged for the past 1,024 packets.	✓	✓	✓	✓
IS RPC Averaged Latency	The number of client requests currently being processed by the RPC Client Access service.	✓	✓	✓	✓
Cache Statistics					
Number Of Cache Active Connections	The number of active connections in all data connection pools created for a specific PowerPivot service application instance.	✓	✓	✓	✓
Number Of Cache Idle Connections	The number of idle connections in all data connection pools created for a specific PowerPivot service application instance.	✓	✓	✓	✓
Number Of Cache Connections	The number of connections to the server stored in the cache.	✓	✓	✓	✓
Cache Total Capacity	The size of the cached server connection pool.	✓	✓	✓	✓
RPC Client Throttling & Client Activity Counters					
Client RPC Average Latency	RPC Average Latency is server RPC latency, in ms, averaged for the past 1,024 packets. The threshold value should be less than 50 ms on average for each client.	✓	✓	✓	✓
RPC Client BackOff Per Second	The rate that the server notifies the client to back-off. Higher values may indicate that the server may be incurring a higher load resulting in an increase in overall averaged RPC latencies, causing client throttling to occur.	✓	✓	✗	✗
Client: RPCs Failed Per Second	The client-reported rate of failed RPCs since the store was started.	✓	✓	✓	✓
Client: RPCs Failed	The client-reported number of failed RPCs since the store was started.	✓	✓	✓	✓
Content Indexing Counters					
Percentage Processor Time of indexing	The amount of processor time being consumed to update content indexing within the store process. Full crawls increase overall processing time, but should never exceed overall store CPU capacity.	✓	✓	✓	✓
Average Document Indexing Time	The average, in ms, of how long it takes to index documents. The threshold value should be less than 30 seconds at all time.	✓	✓	✓	✗
Full Crawl Mode Status	This counter is used to determine if a full crawl is occurring for any specified database. Possible values are • 1 - going through a full crawl • 0 - not going through a full crawl	✓	✓	✗	✗
Average Latency of RPCs used to Obtain Content	The average latency, in ms, of the most recent RPCs to the Information Store service. These RPCs are used to get content for the filter daemon for the specified database.	✓	✓	✗	✗
Crawler Mailboxes Remaining	Any value of 1 or higher indicated the mailboxes in the database are being crawled but when the crawl is completed, the value is set to 0.	✗	✗	✓	✓
Client-Related Search Counters					
Slow Find Row Rate	The rate at which the slower FindRow needs to be used in the mailbox store. The threshold value should be no more than 10 for any specific mailbox store. Higher values indicate applications are crawling or searching mailboxes, which is affecting server performance.	✓	✓	✗	✗
Search Task Rate	The number of search tasks created per second. The threshold value should be less than 10 at all times.	✓	✓	✗	✗
Slow QP Threads	The number of query processor threads currently running queries that aren't optimized. The threshold value should be less than 10 at all times.	✓	✓	✗	✗
Slow Search Threads	The number of search threads currently running queries that aren't optimized. The threshold value should be less than 10 at all times.	✓	✓	✗	✗
Database Counters					
Log Bytes Writes Per Second	The rate of bytes written to the log. The threshold value should be less than 10,000,000 at all times.	✓	✓	✓	✓
Database Cache Percent Hit	The percentage of database file page requests fulfilled by the database cache without causing a file operation. If this percentage is too low, the database cache size may be too small. The threshold value should be over 90% for companies with majority online mode clients. The threshold value should be over 99% for companies with majority cached mode clients. If the hit ratio is less than these numbers, the database cache may be insufficient.	✓	✓	✓	✓
Database Cache Size in MB	The amount of system memory, in megabytes (MB), used by the database cache manager to hold commonly used information from the database files to prevent file operations. Maximum value is RAM-2GB. Use this counter along with store private bytes to determine if there are store memory leaks.	✓	✓	✓	✓
Version Buckets Allocated	The total number of version buckets allocated. The threshold value should be less than 12,000. The maximum default version is 16,384.	✓	✓	✓	✓
Log Threads Waiting	The number of threads waiting for their data to be written to the log to complete an update of the database. If this number is too high, the log may be a bottleneck. The threshold value should be less than 10 on average. Regular spikes concurrent with log record stall spikes indicate that the transaction log disks are a bottleneck.	✓	✓	✓	✓
Log Generation Check Point Depth	Represents the amount of work in the log file count that needs to be redone or undone to the database files if the process fails. The threshold value should be below 500 at all times for the Mailbox server role. A healthy server should indicate between 20 and 30 for each database instance. If checkpoint depth increases continually for a sustained period, this indicates either a long-running transaction, or a bottleneck.	✓	✓	✓	✓
Database I/O Reads Average Latency	The average length of time, in ms, per database read operation. The threshold value should be 20 ms on average.	✓	✓	✓	✓
Database I/O Writes Average Latency	The average length of time, in ms, per database write operation. The threshold value should be 50 ms on average. Maximum values of up to 100 ms are acceptable if not accompanied by database page fault stalls.	✓	✓	✓	✓
Mailbox Assistant Counters					
Percentage Processor Time of Mailbox Assistant	Percentage Processor Time of Mailbox Assistant. The threshold value should be less than 5% of overall CPU capacity.	✓	✓	✓	✓
Average Event Processing Time in Seconds	The average processing time of the events chosen. The threshold value should be less than 2 at all times.	✓	✓	✓	✓
Events in Queue	The number of events in the in-memory queue waiting to be processed by the assistants. The threshold value should be a low value at all times. High values may indicate a performance bottleneck.	✓	✓	✓	✓
Events Polled Per Second	The number of events polled per second. Determines current load statistics for this counter.	✓	✓	✓	✓
Mailboxes Processed Per Second	The rate of mailboxes processed by time-based assistants per second. Determines current load statistics for this counter.	✓	✓	✓	✓
Resource Booking Counters					
Average Resource Booking Processing Time	The average time to process an event in the Resource Booking Attendant. High values may indicate a performance bottleneck.	✓	✓	✓	✓
Requests Failed in Resource Booking	The total number of failures that occurred while the Resource Booking Attendant was processing events. The threshold value should be 0 at all times.	✓	✓	✓	✓
Calendar Attendant Counters					
Average Calendar Attendant Processing Time	The average time to process an event in the Calendar Attendant. High values may indicate a performance bottleneck.	✓	✓	✓	✓
Requests Failed in Calendar Attendant	The total number of failures that occurred while the Calendar Attendant was processing events.The threshold value should be 0 at all times.	✓	✓	✓	✓
Store Client Request Counters					
RPC Latency Average	The average latency, in ms, of RPC requests. The average is calculated over all RPCs since exrpc32 was loaded. The threshold value should be less than 100 ms at all times.	✓	✓	✓	✓
ROP Requests Outstanding	The total number of outstanding remote operations requests. Used for determining current load.	✓	✓	✓	✓
RPC Requests Outstanding	The current number of outstanding RPC requests.	✓	✓	✓	✓
RPC Requests Sent Per Second	The total number of outstanding RPC requests. Used for determining current load.	✓	✓	✓	✓
Percentage RPC Requests Failed	The percentage of failed requests in the total number of RPC requests. Failed means the sum of failed with error code plus failed with exception. The threshold value should be less than 1 at all times.	✓	✓	✓	✓
Percentage RPC Slow Requests	The percentage of slow RPC requests among all RPC requests. A slow RPC request is one that has taken more than 500 ms. The threshold value should be less than 1 at all times.	✓	✓	✓	✓
HUB Servers in Retry	The number of Hub Transport servers in retry mode. The threshold value should be 0 at all times.	✓	✓	✗	✗
Successful Submission Per Second	The number of currently successful mail submission per second.	✓	✓	✓	✓
Failed Submission Per Second	The number of failed submissions per second.	✓	✓	✓	✓
Temporary Submission Failures Per Second	The number of temporary submission failures per second.	✓	✓	✓	✓
RPC Operations Per Second	The current number of RPC operations occurring per second.	✓	✓	✓	✓
Information Store Counters					
Client: RPC Operations Per Second	The client protocol performing an excessive amount of RPC Operations Per Second.	✓	✓	✓	✓
JET Log Records Per Second	The rate that database log records are generated while processing requests for the client. Used to determine current load.	✓	✓	✓	✓
JET Pages Read Per Second	The rate that database pages are read from disk while processing requests for the client. Used to determine current load.	✓	✓	✓	✓
Directory Access: LDAP Reads Per Second	The current rate that LDAP reads occur while processing requests for the client. Used to determine the current LDAP read rate per protocol.	✓	✓	✓	✓
Directory Access: LDAP Writes Per Second	The current rate that LDAP writes occur while processing requests for the client. Used to determine the current LDAP read rate per protocol.	✓	✓	✓	✓
Messages Delivered Per Second	The rate that messages are delivered to all recipients. Indicates current message delivery rate to the store.	✓	✓	✓	✓
Messages Sent Per Second	The rate that messages are sent to transport. Used to determine current messages sent to transport.	✓	✓	✓	✓
Messages Submitted Per Second	The rate that messages are submitted by clients. Used to determine current rate that messages are being submitted by clients.	✓	✓	✓	✓
User Count of IS	The number of users connected to the information store. Used to determine current user load.	✓	✓	✓	✓
Replication Receive Queue Size	The number of replication messages waiting to be processed.	✓	✓	✗	✗

Mailbox and Database Statistics Counters		**Exchange Server Version**			
Attribute name	**Description**	**2007**	**2010**	**2013**	**2016**
Top Mailboxes By Size					
Mailbox User Name	Username for Exchange Mailbox User.	✓	✓	✓	✓
Total Item Size	Specifies used mailbox size, in MB.	✓	✓	✓	✓
Item Count	Specifies number of items in mailbox.	✓	✓	✓	✓
Inactive Mailbox Users					
Mailbox User Name	Username for Exchange Mailbox User.	✓	✓	✓	✓

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Last Logon Time	Time of Last Login by Mailbox User.	✓	✓	✓	✓
Database Statistics (2010, 2013 & 2016)					
Master Type	Specifies if the Mailbox Database is part of a DAG/ Server.	✗	✓	✓	✓
DAG Name / Server	The Database Accessibility Group (DAG) name. DAG allows you to replicate your database where your mail is stored across any number of servers.	✗	✓	✓	✓
Database Name	Name of the mailbox database.	✗	✓	✓	✓
Mount Status	The mount status of the mailbox stores on the server. Mailboxes contained in unmounted mailbox stores cannot receive incoming messages.	✗	✓	✓	✓
Mailbox Count	The total number of mailboxes that reside in all mailbox stores and public folders.	✗	✓	✓	✓
Database Size(GB)	The size of the mailbox database.	✗	✓	✓	✓
Available New Mailbox Space(GB)	The disk space consumed by the mailbox stores on this server in GB.	✗	✓	✓	✓
Last Full Backup	Detailed information about backups performed on storage groups on the connected server.	✗	✓	✓	✓
Circular Logging Enabled	Specifies whether or not circular logging is enabled. Circular Logging saves storage on your Exchange Server by preventing transaction logs from building up on the Server.	✗	✓	✓	✓
Database Statistics (2007)					
Database Name	Name of the mailbox database	✓	✗	✗	✗
Mount Status	The mount status of the mailbox stores on the server. Mailboxes contained in unmounted mailbox stores cannot receive incoming messages.	✓	✗	✗	✗
Mailbox Count	The total number of mailboxes that reside in all mailbox stores and public folders.	✓	✗	✗	✗
Storage Group	The exchange storage group name. A Storage Group is a grouping of one or more Mailbox Databases along with Log Files and a Checkpoint File. Not available for versions later than 2007.	✓	✗	✗	✗
Database Availability Groups					
Database Availability Group Name	The name of the database availability group.	✗	✓	✓	✓
DAG Members	The database availability group members.	✗	✓	✓	✓
DAG Members Count	The number of members in the particular database availability group.	✗	✓	✓	✓
Database Copy Statistics					
Database Name	The name of the mailbox database.	✗	✓	✓	✓
Database Status	The current status of the database. Possible Statuses are: • Failed - The mailbox database copy is in a Failed state because it is not suspended, and it is notable to copy or replay log files. While in a Failed state and not suspended, the system will periodically check whether the problem that caused the copy status to change to Failed has been resolved. After the system has detected that the problem is resolved, and barring no other issues, the copy status will automatically change to Healthy • Seeding - The mailbox database copy is being seeded, the content index for the mailbox database copy is being seeded, or both are being seeded. Upon successful completion of seeding, the copy status should change to Initializing. • SeedingSource - The mailbox database copy is being used as a source for a database copy seeding operation. • Suspended - The mailbox database copy is in a Suspended state as a result of an administrator manually suspending the database copy by running the Suspend-MailboxDatabaseCopy cmdlet • Healthy - The mailbox database copy is successfully copying and replaying log files, or it has successfully copied and replayed all available log files • Service Down - The Microsoft Exchange Replication service is not available or running on the server that hosts the mailbox database copy; • Initializing - The mailbox database copy will be in an Initializing state when a database copy has been created, when the Microsoft Exchange Replication service is starting or has just been started, and during transitions from Suspended, ServiceDown, Failed, Seeding, SinglePageRestore, LostWrite, or Disconnected to another state. While in this state, the system is verifying that the database and log stream are in a consistent state. In most cases, the copy status will remain in the Initializing state for about 15 seconds, but in all cases, it should generally not be in this state for longer than 30 seconds • Resynchronizing - The mailbox database copy and its log files are being compared with the active copy of the database to check for any divergence between the two copies. The copy status will remain in this state until any divergence is detected and resolved; • Mounted - The active copy is online and accepting client connections. Only the active copy of the mailbox database copy can have a copy status of Mounted; • Dismounted - The active copy is offline and not accepting client connections. Only the active copy of the mailbox database copy can have a copy status of Dismounted; • Mountind - The active copy is coming online and not yet accepting client connections. Only the active copy of the mailbox database copy can have a copy status of Mounting • Dismounting - The active copy is going offline and terminating client connections. Only the active copy of the mailbox database copy can have a copy status of Dismounting; • Disconnected And Healthy - The mailbox database copy is no longer connected to the active database copy, and it was in the Healthy state when the loss of connection occurred. This state represents the database copy with respect to connectivity to its source database copy. It may be reported during DAG network failures between the source copy and the target database copy • Disconnected And Resynchronizing - The mailbox database copy is no longer connected to the active database copy, and it was in the Resynchronizing state when the loss of connection occurred. This state represents the database copy with respect to connectivity to its source database copy. It may be reported during DAG network failures between the source copy and the target database copy • Failed And Suspended - The Failed and Suspended states have been set simultaneously by the system because a failure was detected, and because resolution of the failure explicitly requires administrator intervention. An example is if the system detects unrecoverable divergence between the active mailbox database and a database copy. Unlike the Failed state, the system will not periodically check whether the problem has been resolved, and automatically recover. Instead, an administrator must intervene to resolve the underlying cause of the failure before the database copy can be transitioned to a healthy state • Single Page Restore - This state indicates that a single page restore operation is occurring on the mailbox database copy; Based on these values, we want the Status attribute to be either Mounted (true for the server where the database is mounted) or Healthy (for the servers that hold a copy of it). For the ContentIndexState attribute, we want it to be always Healthy.	✗	✓	✓	✓
Copy Queue Length	The Copy Queue Length shows the number of transaction log files waiting to be copied to the passive copy log file folder. A copy is not considered complete until it has been checked for corruption.	✗	✓	✓	✓
Content Index State	The state of Microsoft Exchange Server content indexes: • Crawling - Database is in the process of indexing database content. Depending on the size of the database, this process could take some time to complete. • Disabled - Indexing for the database has been disable by an administrator. • Failed - An error has occurred causing the content index to fail. • Failed and Suspended - The Failed and Suspended states have been set simultaneously by the system because a failure was detected, and because resolution of the failure explicitly requires administrator intervention. • Healthy - This indicates the Content Index is up to date and has not detected any issues. This is the only state in which a failover (automatic process) to a specific database copy can occur. • Seeding - A database copy is in the process of updating its Content Index from another database copy. • Suspended - The Suspended status occurs if an administrator manually pauses or suspends it from receiving updates from the active copy. This might be done to update a failed Content Index or to perform troubleshooting for other issues.	✗	✓	✓	✓
Latest Full Backup Time	Last full backup time for the mailbox database	✗	✓	✓	✓
Active Copy	If the database copy is active "True" is shown else,if Passive, "False" is shown	✗	✓	✓	✓

Client Access Server Role Counters		**Exchange Server Version**			
Attribute name	**Description**	**2007**	**2010**	**2013**	**2016**
Outlook Web Access Counters					
Current Users	The number of users currently logged on to Outlook Web Access. This value monitors the number of unique active user sessions, so that users are only removed from this counter after they log off or their session times out. Determines current user load.	✓	✓	✓	✓
Outlook Requests Persec	The number of Outlook requests processed each second. Determines current user load.	✓	✓	✓	✓
Average Search Time	The average time elapsed while waiting for a search to complete.	✓	✓	✓	✓
Searches timed out	The number of Outlook requests timed out.	✗	✗	✓	✓
Average response time	The average time (in milliseconds) that elapsed between the beginning and end of an OEH or ASPX request. Used to determine the latency that a client is experiencing. The threshold value should be less than 100 ms at all times. Higher values may indicate high user load or higher than normal CPU time.	✗	✗	✓	✓
ASP.NET Counters					
Application Restarts	The number of times the application has been restarted during the Web server's lifetime.	✓	✓	✓	✓
Worker Process Restarts	The number of times a worker process has restarted on the computer.	✓	✓	✓	✓
Request Wait Time	The number of ms the most recent request was waiting in the queue.	✓	✓	✓	✓
Availability Service Counters					
Availability Requests sec	The number of requests in the application request queue per second. The request can be only for free/busy information or include suggestions. One request may contain multiple mailboxes. Determines the rate at which Availability service requests are occurring.	✓	✓	✓	✓
Average Time to Process a Free Busy Request	The average time to process a free/busy request in seconds. A single request may contain multiple mailboxes.	✓	✓	✓	✓
Current requests	The number of HTTP requests waiting to be assigned to a thread.	✗	✗	✓	✓
Mailbox Session Hits Per Second	The number of hits in a mailbox session.	✓	✓	✗	✗
Public Folder Queries Per Second	Public Folder Queries per second is the number of mailboxes for which free busy information is requested from the public folders per second.	✓	✓	✓	✓
Public Folder Request Failures Per Second	The number of public folder free busy requests failed per second.	✓	✓	✓	✓
ActiveSync Service Counters					
ActiveSync Requests Per second	The number of HTTP requests waiting to be assigned to a thread. (Average of 50-100.)	✓	✓	✓	✓
Ping Commands Pending	The number of ping commands currently pending on the server. Ping Commands Pending are the number of hanging requests, which should be almost equal to the number of Direct Push and hanging sync users.	✓	✓	✓	✓
Sync Commands Pending	The number of sync commands currently pending on the server. Sync Commands Pending are the number of hanging requests, which should be almost equal to the number of Direct Push and hanging sync users.	✓	✓	✓	✓
Requests Queued	The number of HTTP requests queued in a thread.	✓	✓	✗	✗
CAS OAB Download Counters					
Download Task Queued	The number of OAB download tasks queued since the File Distribution service started. The threshold value should be 0 at all times.	✓	✓	✗	✗
Download Tasks Completed	The number of OAB download tasks completed since the File Distribution service started. The default value is every 480 minutes or 8 hours. The threshold value should be less than or equal to 3 per day.	✓	✓	✗	✗
WebService Counters					
Current Connections	The current number of connections established with the Web service. Determines current user load.	✓	✓	✓	✓
Connection Attempts Per Second	The rate that connections to the Web service are being attempted. Determines current user load.	✓	✓	✓	✓
Current ISAPI Extension Requests	The rate that Internet Server API (ISAPI) extension requests are received by the Web service. Determines current user load.	✓	✓	✓	✓
Other Request Methods Per Second	The rate HTTP requests are made that don't use the OPTIONS, GET, HEAD, POST, PUT, DELETE, TRACE, MOVE, COPY, MKCOL, PROPFIND, PROPPATCH, SEARCH, LOCK, or UNLOCK methods. Determines current user load.	✓	✓	✓	✓
Requests Per Second	The number of requests processed each second. Determines current user load.	✓	✓	✓	✓
Completed requests Per Second	The number of requests completed each second. Determines current user load.	✗	✗	✓	✓
Autodiscover Counters					
Autodiscover Requests Per Second	The number of Autodiscover service requests processed each second. Determines current user load.	✓	✓	✓	✓
Unified Messaging Counters					
Percentage of failed mailbox connection attempts over the last hour	The percentage of mailbox connection attempts that failed in the last hour. The threshold value should be less than 5%.	✗	✗	✓	✓
Percentage of inbound calls rejected by the Unified Messaging service over the last hour.	The percentage of inbound calls that were rejected by the Microsoft Exchange Unified Messaging service over the last hour	✗	✗	✓	✓

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Percentage of inbound calls rejected by the Unified Messaging worker process over the last hour	The percentage of inbound calls that were rejected by the UM worker process over the last hour.	✗	✗	✓	✓
Percentage of messages successfully processed over the last hour	The percentage of messages that were successfully processed by the Microsoft Exchange Unified Messaging service over the last hour.	✗	✗	✓	✓
Percentage of partner voice message transcription failures over the last hour	The percentage of voice messages for which transcription failed in the last hour.	✗	✗	✓	✓
Unified Messaging calls disconnected on irrecoverable internal error	The number of calls disconnected after an internal system error occurred.	✗	✗	✓	✓
Unified Messaging calls disconnected by user failure	The total number of calls disconnected after too many user entry failures.	✗	✗	✓	✓
Unified Messaging current calls	The number of calls that are currently connected to the UM server.	✗	✗	✓	✓
Unified Messaging total calls per second	Total Calls per Second is the number of new calls that have arrived in the last second.	✗	✗	✓	✓
Unified Messaging user response latency	User Response Latency is the average response time, in milliseconds, for the system to respond to a user request. This average is calculated over the last 25 calls. This counter is limited to calls that require significant processing.	✗	✗	✓	✓
Exchange Control Panel Counters					
Explicit Sign-On Outbound Proxy Requests - Average Response Time	The average time (in ms) that requests sent to a secondary Client Access server took to complete during the sampling period. The threshold value should be under 6,000 ms.	✗	✗	✓	✓
Requests - Average Response Time	The average time (in ms) the Exchange Control Panel took to respond to a request during the sampling period. The threshold value should be under 6,000 ms.	✗	✗	✓	✓
ASP.net Request Failures Per Second	The number of failures per second detected by ASP.NET in the Exchange Control Panel.	✗	✓	✗	✗
Powershell Runspaces - Average Active Time	The average time (in seconds) that a Windows PowerShell runspace stays active while executing cmdlets in the Exchange Control Panel during the sampling period.	✗	✓	✗	✗
Powershell Runspaces Per Second	The number of Windows PowerShell runspaces created per second in the Exchange Control Panel.	✗	✓	✗	✗
RBAC sessions Per Second	The number of RBAC sessions loaded per second in the Exchange Control Panel.	✗	✓	✗	✗

Hub/Edge Transport Role Counters		**Exchange Server Version**			
Attribute name	**Description**	**2007**	**2010**	**2013**	**2016**
Transport Database Counters (HUB,EDGE)					
IO Log Writes Per Second	The rate of log file write operations completed. Determines the current load.	✓	✓	✓	✓
IO Log Reads Per Second	The rate of log file read operations completed. Determines the current load.	✓	✓	✓	✓
Log Generation Checkpoint Depth	The amount of work (in count of log files) that needs to be redone or undone to the database files if the process fails.	✓	✓	✓	✓
Version Buckets Allocated	Total number of version buckets allocated. Shows the default backpressure values as listed in the edgetransport.exe.config file.	✓	✓	✓	✓
IO Database Reads Per Second	The rate of database read operations completed. Determines the current load.	✓	✓	✓	✓
IO Database Writes Per Second	The rate of database write operations completed. Determines the current load.	✓	✓	✓	✓
Log Record Stalls Per Second	The number of log records that can't be added to the log buffers per second because they are full. If this counter is nonzero most of the time, the log buffer size may be a bottleneck.	✓	✓	✓	✓
Log Threads Waiting	The number of threads waiting for their data to be written to the log to complete an update of the database. If this number is too high, the log may be a bottleneck.	✓	✓	✓	✓
Transport Dumpster Counters (HUB,EDGE)					
Dumpster Size	The total size (in bytes) of mail items currently in the transport dumpster on this server.	✓	✓	✓	✗
Dumpster Inserts Per Second	The rate at which items are inserted into the transport dumpster on this server. Determines the current rate of transport dumpster inserts.	✓	✓	✓	✗
Dumpster Item Count	The total number of mail items currently in the transport dumpster on this server. Shows the current number of items being held in the transport dumpster.	✓	✓	✓	✗
Dumpster Deletes Per Second	The rate at which items are deleted from the transport dumpster on this server. Determines the current rate of transport dumpster deletions.	✓	✓	✓	✗
Transport Queue Length Counters (HUB,EDGE)					
Aggregate Delivery Queue Length All Queues	The number of messages queued for delivery in all queues. The threshold should be less than 3,000 and not more than 5,000.	✓	✓	✓	✓
Active Remote Delivery Queue Length	The number of messages in the active remote delivery queues. The threshold should be less than 250.	✓	✓	✓	✓
Active Mailbox Delivery Queue Length	The number of messages in the active mailbox queues. The threshold should be less than 250.	✓	✓	✓	✓
Submission Queue Length	The number of messages in the submission queue. The threshold should be less than 100. If sustained high values occur, investigate Active Directory and Mailbox servers for bottlenecks or performance-related issues.	✓	✓	✓	✓
Active Non-SMTP Delivery Queue Length	The number of messages in the drop directory used by a Foreign connector. The threshold should be less than 250.	✓	✓	✓	✓
Retry Mailbox Delivery Queue Length	The number of messages in a retry state attempting to deliver a message to a remote mailbox. The threshold should be less than 100.	✓	✓	✓	✓
Retry Non-SMTP Delivery Queue Length	The number of messages in a retry state in the non-SMTP gateway delivery queues. The threshold should be less than 100.	✓	✓	✓	✓
Retry Remote Delivery Queue Length	The number of messages in a retry state in the remote delivery queues. The threshold should be less than 100.	✓	✓	✓	✓
Unreachable Queue Length	The number of messages in the Unreachable queue. The threshold should be less than 100.	✓	✓	✓	✓
Largest Delivery Queue Length	The number of messages in the largest delivery queues. The threshold value should be less than 200 for the Edge Transport and Hub Transport server roles.	✓	✓	✓	✓
Poison Queue Length	The number of messages in the poison message queue. The threshold value should be 0 at all times.	✓	✓	✓	✓
Transport Load Assessment Counters (HUB,EDGE)					
Messages Submitted Per Second	The number of messages queued in the Submission queue per second. Determines current load. Compare values to historical baselines.	✓	✓	✓	✓
Messages Completed Delivery Per Second	The number of messages delivered per second. Determines current load. Compare values to historical baselines.	✓	✓	✓	✓
Inbound Local Delivery Calls Per Second	The number of local delivery attempts per second. Determines current load. Compare values to historical baselines.	✓	✓	✓	✗
Average Bytes Per Message	The average number of message bytes per inbound message received. Determines sizes of messages being received for an SMTP receive connector.	✓	✓	✓	✓
Messages Received Per Second	The number of messages received by the SMTP server each second. Determines current load. Compare values to historical baselines.	✓	✓	✓	✓
Messages Sent Per Second	The number of messages sent by the SMTP send connector each second. Determines current load.	✓	✓	✓	✓
Items Queued for Delivery PerSecond	The number of messages queued for delivery per second. Determines current load.	✓	✓	✓	✓
Inbound Message Delivery Attempts Per Second	The number of attempts for delivering transport mail items per second. Determines current load. Compare values to historical baselines.	✓	✓	✓	✗
Messages Queued for Delivery Per Second	The number of messages queued for delivery per second. Determines current load. Compare values to historical baselines.	✓	✓	✓	✓
Edge Sync Counters(EDGE)					
Total topology updates	Exchange topology updates found by EdgeSync	✗	✗	✓	✓
Exchange servers total	Total number of Exchange Servers found by EdgeSync.	✗	✗	✓	✓
Edge servers total	Total number of Edge Transport servers found by EdgeSync.	✗	✗	✓	✓
Hub transport servers total	Total number of Hub Transport servers found by EdgeSync.	✗	✗	✓	✓
Edge servers leased total	Total number of Edge Transport servers leased by EdgeSync.	✗	✗	✓	✓
Edge objects added Per Second	The rate of Edge objects added per second by EdgeSync.	✓	✗	✗	✗
Edge objects deleted Per Second	The rate of Edge objects deleted per second by EdgeSync.	✓	✗	✗	✗
Edge objects updated Per Second	The rate of Edge objects updated per second by EdgeSync.	✓	✗	✗	✗
Scan jobs completed successfully total	The total number of scan jobs completed successfully by EdgeSync.	✓	✗	✗	✗
Scan jobs failed because could not extend lock total	The total number of EdgeSync scan jobs that failed because EdgeSync could not extend its lease of an Edge Transport server.	✓	✗	✗	✗
Scan jobs failed because of directory error total	The total number of EdgeSync directory errors.	✓	✗	✗	✗
Scan jobs failed because could not lock total	The total number of Scan jobs failed because could not lock total.	✓	✗	✗	✗
Source objects scanned Per Second	The rate of Active Directory objects scanned per second by EdgeSync.	✓	✗	✗	✗
Target objects scanned Per Second	The rate of Edge objects scanned per second by EdgeSync.	✓	✗	✗	✗
Recipient Filter Agent Counters(EDGE)					
Recipients rejected by recipient validation Per Second	Show the number of recipients rejected by recipient validation per second.	✓	✗	✗	✓
Recipients rejected by block list Per Second	Show the number of recipients rejected by block list per second.	✓	✗	✗	✓
Sender Filter Agent Counters(EDGE)					
Messages filtered by sender filter Per Second	Show the number of messages filtered by the Sender Filter agent per second.	✓	✗	✗	✓
DNS queries Per Second	The number of DNS queries per second performed by the Sender Id agent.	✓	✗	✗	✓
Attachment Filtering Counters(EDGE)					
Messages attachment filtered	The number of messages that were blocked, stripped of attachments, or silently deleted (as per configuration) by the attachment filtering agent.	✓	✗	✗	✗
Messages filtered Per Second	The number of messages per second that the attachment filtering agent blocked, stripped of attachments, or silently deleted. If this rate rises greatly beyond what is “normal” for the Exchange server, it may indicate that the organization is being flooded with malicious e-mail.	✓	✗	✗	✗
Content Filter Agent Counters(EDGE)					
Messages deleted	The total number of messages that were deleted by Content Filter Agent.	✓	✗	✗	✓
Messages quarantined	The total number of messages that were quarantined by Content Filter Agent.	✓	✗	✗	✓
Messages rejected	The total number of messages that were rejected by Content Filter Agent.	✓	✗	✗	✓
Messages that bypassed scanning	The total number of messages that bypass scanning.	✓	✗	✗	✓
Messages scanned per second	The number of messages scanned per second.	✓	✗	✗	✓
Active Directory Application Mode (ADAM) Counters (EDGE)					

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LDAP Searches Per Sec	The number of Lightweight Directory Access Protocol (LDAP) search requests issued per second. Used to determine the current LDAP search rate.	✓	✗	✗	✗
LDAP Writes Per Sec	The rate at which LDAP clients perform write operations.	✓	✗	✗	✗

Edge Transport Role Counters		Exchange Server Version			
Attribute name	**Description**	**2007**	**2010**	**2013**	**2016**
Exchange-Agents					
Agent Name	The Name of the agent counters.	✓	✓	✓	✓
Average Agent Processing Time in sec	The average agent processing time in seconds per event. The threshold value should be less than 20	✓	✓	✓	✓
Total Agent Invocations	The total number of invocations since the last restart. The current invocation rate.	✓	✓	✓	✓
Message Hygiene Counters					
Average Scan Time	Average time taken to perform scanning of mailboxes as part of the message hygiene using scheduled and on-demand scans. A high value could indicate a bottleneck in scanning.	✓	✓	✓	✓
Scan Requests Rejected Per Second	The number of scan requests in this application poolâ€™s queue that were rejected.	✓	✓	✓	✓
Scan Requests Being Scanned	The number of scan processes currently running.	✓	✓	✓	✓
Scan Requests Processing Time Per Request	The amount of time spent in processing a request.	✓	✓	✓	✓
Antimalware Processing Time Per Request	The amount of time taken for the Antimalware engine to process an item.	✓	✓	✓	✓
Unhealthy Antimalware engines	Antimalware engines with errors in engine functioning.	✓	✓	✓	✓
Scan Requests Fatal Errors	Indicates what percentage of scan requests submitted encountered errors that prevented the processing of those scan requests.	✓	✓	✓	✓
Scan Request Timeouts	The number of scan requests that timed out in the last minute.	✓	✓	✓	✓
Scan Processes Running	The number of scan processes currently running.	✓	✓	✓	✓
Scan Time Per Request	The scan time per request.	✓	✓	✓	✓
Scan Requests Processed Per Second	The number of scan requests processed per second.	✓	✓	✓	✓
Scan Request Wait Time Per Request	The time for which a scan request waits in the internal queue.	✓	✓	✓	✓
Scan Requests Queued	The number of scan requests that are currently in the internal queue.	✓	✓	✓	✓
Scan Requests Submitted Per Second	The number of scan requests submitted per second, including requests accepted and rejected by the scanning system.	✓	✓	✓	✓
SafetyNet Counters					
Resubmission Latency		✗	✗	✗	✓
SafetyNet Resubmission Rate		✗	✗	✗	✓
SafetyNet Resubmit Request rate		✗	✗	✗	✓
Shadow SafetyNet Resubmission Rate		✗	✗	✗	✓
Shadow SafetyNet Resubmit Request rate		✗	✗	✗	✓
Resubmit Request rate		✗	✗	✗	✓

Unified Messaging Server Role Counters		Exchange Server Version	
Attribute name	**Description**	**2007**	**2010**
Unified Messaging Counters			
Percentage of failed mailbox connection attempts over the last hour	The percentage of mailbox connection attempts that failed in the last hour.	✗	✓
Percentage of inbound calls rejected by the um service over the last hour	The percentage of inbound calls that were rejected by the Microsoft Exchange Unified Messaging service over the last hour.	✗	✓
Percentage of inbound calls rejected by the um worker process over the last hour	The percentage of inbound calls that were rejected by the UM worker process over the last hour.	✗	✓
Percentage of messages successfully processed over the last hour	The percentage of messages that were successfully processed by the Microsoft Exchange Unified Messaging service over the last hour.	✗	✓
Percentage of partner voice message transcription failures over the last hour	The percentage of voice messages for which transcription failed in the last hour.	✗	✓
Directory access failures	The number of times that attempts to access Active Directory failed.	✗	✓
Calls disconnected on irrecoverable internal error	The number of calls disconnected after an internal system error occurred.	✗	✓
Operations over six seconds	The number of all UM operations that took more than six seconds to complete. This is the time during which a caller was waiting for UM to respond.	✓	✓
Calls disconnected by callers during um audio hourglass	The number of calls during which the caller disconnected while Unified Messaging was playing the audio hourglass tones.	✓	✓
Total inbound calls rejected by the um service	The total number of inbound calls that were rejected by the Microsoft Exchange Unified Messaging Service since the service was started.	✗	✓
Total inbound calls rejected by the um worker process	The total number of inbound calls that were rejected by the UM Worker process since the service was started.	✗	✓
Call answer queued messages	The number of messages created and not yet submitted for delivery.	✓	✗

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Direct access failures	The number of times that attempts to access Active Directory failed.	✓	✗
Hub transport access failures	The number of times that attempts to access a Hub Transport server failed. This number is only incremented if all Hub Transport servers were unavailable.	✓	✗
Unhandled exceptions Per Second	The number of calls that were disconnected after an internal system error occurred in the last second.	✓	✗
Queued ocs user event notifications	The number of notifications that have been created and not yet submitted for delivery. Represents the number of missed call notifications that have been generated in the Office Communications Server environment and have not been submitted for delivery.	✓	✗
Mailbox server access failures	The number of times the system did not access a Mailbox server.	✓	✗

Overview - Common Counters		**Exchange Server Version**			
Attribute name	**Description**	**2007**	**2010**	**2013**	**2016**
Server Component States					
Component Name	Specifies the Exchange Component name.	✗	✗	✓	✓
State	Specifies the Exchange Component Status.	✗	✗	✓	✓
Availability	Specifies the availability of the Exchange Component.	✗	✗	✓	✓
Exchange Services					
Service Name	Specifies the Exchange Agent Service name.	✓	✓	✓	✓
Status	Specifies the Exchange Agent Service Status.	✓	✓	✓	✓
Availability	Specifies the availability of the Exchange Agent Service.	✓	✓	✓	✓
AD Access Domain Controllers					
Domain Controller	The specified domain controller	✓	✓	✓	✓
LDAP Read Time	The time in milliseconds that a LDAP read request takes to be fulfilled. The average value should be under 50 milliseconds. Maximum values should not exceed 100 milliseconds.	✓	✓	✓	✓
LDAP Search Time	The time in milliseconds that it takes a Lightweight Directory Access Protocol (LDAP) search request to be fulfilled. The threshold values should be below 50 ms. Maximum values should not be higher than 100 ms.	✓	✓	✓	✓
LDAP searches timed-out per Minute	The number of LDAP searches that returned LDAP_Timeout during the last minute. The threshold value should be below 10 at all times for all roles. Higher values may indicate issues with Active Directory resources.	✓	✓	✓	✓
Long-running LDAP operations Per Minute	The number of LDAP operations on this domain controller that took longer than the specified threshold per minute. The default threshold value is 15 seconds. The threshold values should be below 50 ms. Higher values may indicate issues with Active Directory resources.	✓	✓	✓	✓

Host Performance Counters		**Exchange Server Version**			
Attribute name	**Description**	**2007**	**2010**	**2013**	2016
Disk Utilization					
Percent Free Space	The percentage of free Space on the disk.	✓	✓	✓	✓
Disk Reads Per Second	Number of disk reads per second on the physical disk. This counter should be well under the maximum capacity for the disk device.	✓	✓	✓	✓
Disk Writes Per Second	Number of disk writes per second on the physical disk. This counter should be well under the maximum capacity for the disk device.	✓	✓	✓	✓
Memory Utilization					
Used Memory Space	The memory space used by the server	✓	✓	✓	✓
Free Physical Memory	The amount of free physical memory available.	✓	✓	✓	✓
Used Memory Percent	The percentage of memory space used by the server	✓	✓	✓	✓
Total Visible Memory Size	Total amount of physical memory available to the operating system.	✓	✓	✓	✓
Exchange Domain Controllers Connectivity Counters					
Cache Hits Per Second	The number of object found in cache events per second.	✓	✓	✓	✗
Cache Misses Per Second	The number of objects not found in cache events per second.	✓	✓	✓	✗
LDAP Searches Per Second	The number of LDAP search requests issued by a process per second.	✓	✓	✓	✗
Outstanding Asyncronous Reads	The number of outstanding LDAP read requests.	✓	✓	✓	✗

Exchange 2003 Performance Counters

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Attribute name	Description

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SMTP Connections	
Inbound Connections	The total number of connections that were currently inbound.

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Outbound Connections	The number of connections that were currently outbound.

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SMTP statistics

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Local Retry Queue Length	The number of messages in the local retry queue.

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Remote Retry Queue Length	The number of messages that were in the retry queue for remote delivery.

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Remote Queue Length	The number of messages that were in the remote queue.

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Messages Pending Routing	The number of messages that were categorized but not routed.

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Messages in Local Delivery	The number of messages that were currently being processed by a server event sink for local delivery.

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Currently Undeliverable Messages	The number of messages that were reported as currently undeliverable by routing.

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Categorizer Queue Length	The number of messages in the categorizer queue waiting to be categorized.

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POP & IMAP Connections

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Current POP Connections	The total number of POP connections opened since the computer was last started.

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Current IMAP Connections	The total number of IMAP connections opened since the computer was last started.

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Information Store Mailbox statistics

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Receive Queue Size	The number of messages in the mailbox's receive queue. The threshold value should be below 500 at all times.

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Send Queue Size	The number of messages in themailbox's send queue. In a server with no mail-enabled mailbox, it should be below 10. Otherwise, it should be below 500 at all times.

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Active Client Logons	The active client logons to Mailbox Stores during the specified time period.

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Client Logons	The client logons to Mailbox stores during the specified time period.

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Logon Operations Per Min	The number of logon operations to Mailbox stores per minute.

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Message Recipients Delivered Per min	The message delivery rate. System Monitor data should match the Exchange Load Generator predicted value for message received rate.

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Messages Delivered Per min	The message submission rate.
Messages Sent Per min	The message sent rate.
Mailbox Used Space	The amount of space used by the Mailbox.
Information Store Public Folder statistics	
Send Queue Size	The number of messag es in the public store's send queue.
Receive Queue Size	The number of messag es in the public store's receive queue.
Active Client Logons	The active client logons to Public Folder Stores during the specified time period.
Client Logons	The client logons to Public Folder Stores during the specified time period.
Logon Operations Per Min	The number of logon operations to Public Folders per minute.
Messages Delivered Per min	The message delivery rate.
Message Recipients Delivered Per min	The message recipients delivery rate. System Monitor data should match the Exchange Load Generator predicted value for message received rate.
Messages Sent Per minute	The message sent rate.
Messages Submitted Per minute	The message submission rate.
Public Folders Used Space	The amount of space used by Public Folders.
Information Store Connections & Users	
Information Store Active Connection Count	The number of connections that have shown some activity in the last 10 minutes.
Information Store Connection Count	The number of client processes connected to the information store.
Information Store Active User Count	The number of user connectio ns that have shown some activity in the last 10 minutes.
MTA statistics	
MTA Work Queue Length	The number of messages in the MTA work queue. This indicates the number of messages not yet processed to completion by the MTA.
MTA Message Bytes Per Min	The rate at which message bytes are processed.
MTA TCP/IP Received Bytes Per Min	The rate at which bytes are received over a TCP/IP connection.
MTA TCP/IP Transmit Bytes Per Min	The rate at which bytes are transmitted over a TCP/IP connection.
MTA Total Recipients Queued	The maximum number of recipients permitted in the MTA queues.
MTA Work Queue Bytes	The total volume of messages (in MB) stored in the message transfer agent (MTA).
Information Store statistics	
Current Pending Local Delivery	Messages currently pending in the MTA Queue
Current message from MSExchangeMTA	Messages currently in transit from MSExchangeMTA to Exchange Store
Currentmessages to MSExchangeMTA	Messages currently in transit to MSExchangeMTA from Exchange Store
Messages Received Per Min	The number of messages received by the SMTP server each min
Messages Sent Per Min	The number of messages sent by the SMTP server each min
HSOT Cache Hits	The number of objects found in cache events per second.
Directory & Event Service statistics	
Pending Replication Synchronizations	The number of directory synchronizations that are queued for this server. This counter helps identify replication backlogs - the higher the number, the larger the backlog.
Remaining Replication Updates	The number of directory synchronizations remaining. This counter helps identify replication backlogs - the higher the number, the larger the backlog.
Notify Queue	The queue of store notifications waiting to be processed.
Address Lists Queue Length	The number of entries in the Address List queue.
Message Transfer Agent Connections	
MTA Queue Length	The number of outstanding messages queued for transfer
MTA Queued Bytes	The total volume of message content (in MB) that is stored in the queue of the Message Transfer Agent.
MTA Current Inbound Associations	The number of inbound (remotely initiated) associations between the MTA and the connected MTA. MTAs can open multiple associations, if additional transfer throughput is necessary.
MTA Current Outbound Associations	The number of inbound (locally initiated) associations between the MTA and the connected MTA. MTAs can open multiple associations, if additional transfer throughput is necessary.

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Mail Server Monitoring

To create a Mail Server Monitor, follow the steps given below:

1. Click on New **Monitor** link. Choose Mail Server
2. Select a **Display Name.**
3. Enter the IP Address or hostname of the host in which the SMTP server is running.
4. You can check the **Secure Connection(SSL)** option to enable TLS for securing data transmission between Applications Manager & other applications.
5. Enter the SMTP Port number.
6. Enter an **email address** available in that SMTP server.
7. If the SMTP server requires authentication, specify the User Name and Password by clicking SMTP Server requires Authentication field.
8. If the POP/Imap service is in a different host, specify its POP/Imap Host (host where POP service runs) and POP Port. Also provide the authentication details User Name and Password for the POP service. If the SMTP and POP/Imap service are running in the same host, then ignore this step. Check the **Secure Connection(SSL)** option to enable TLS for securing data transmission
9. Enter the message to appear in the subject of the mail.
10. Enter the timeout in seconds.
11. Enter the polling interval time in minutes, in Polling Interval field.
12. If you are adding a new monitor from an Admin Server, select a Managed Server.
13. Choose the Monitor Group from the combo box with which you want to associate Mail Server Monitor (optional). You can choose multiple groups to associate your monitor.
14. Click Add Monitor(s). This discovers the Mail server from the network and starts monitoring them.

If you have added Monitors and not associated them with a Monitor Group, you can do this manually anytime. For information on associating a Monitor with a Monitor Group, refer to Associating Monitor with Monitor Groups topic.

- Connects to the Mail Server and performs both SMTP and POP operations, by sending and fetching test mails.
- Checks both SMTP and POP servers to ensure **availability**.
- Enables performance management by monitoring the **response time** of the server and updates the status based on a given threshold.

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Middleware / Portal

Applications Manager monitors middleware software servers and applications to detect performance problems before they could affect the system. Applications Manager provides Middleware / Portal monitoring that monitors system resources. It also provides proactive measures by notifying system operators about potential problems.

The different middleware / portal supported are:

- Microsoft Message Queue (MSMQ)
- Microsoft Office Sharepoint Server Add On!
- WebLogic Integration
- IBM WebSphere MQ Add On!
- WebSphere MQ Message Broker
- VMware vFabric RabbitMQ
- Microsoft Biztalk
- Oracle Tuxedo
- Azure Service Bus

Browse through the different servers that provide server information and their parameters being monitored.

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Microsoft MQ (MSMQ) Monitoring

Follow the steps given below to create a new Microsoft MQ monitor:

1. Click on New **Monitor** link.
2. Select Microsoft MQ (MSMQ) under Middleware/Portal category.
3. Enter the Display Name of the host.
4. Provide the monitor-specific authentication information, such as User Name and Password.
5. Enter the polling interval time in minutes.
6. If you are adding a new monitor from an Admin Server, select a Managed Server.
7. Choose the Monitor Group with which you want to associate the Microsoft MQ server to, from the combo box (optional). You can choose multiple groups to associate your monitor.
8. Click Add Monitor(s). This discovers Microsoft MQ server from the network and starts monitoring it.

Monitored Parameters

Applications Manager monitors the critical components of Microsoft Message Queue (MSMQ) servers to detect any performance problems. These components include message stats, session stats, Microsoft message queue stats, etc.

The *Availability* tab shows the availability history of the MSMQ for the past 24 hours or 30 days. The *Performance* tab shows the response time of the MSMQ as well as the health status and events for the past 24 hours or 30 days.

The *List view* lists all the MSMQ servers monitored by Applications Manager along with their overall availability and health status. You can also perform bulk admin configurations from this view. Click on the individual monitors listed to view detailed performance metrics.

Parameter	Description
Monitor Information	
Name	The name of the Microsoft Message Queue Server (MSMQ) monitor.
Type	Describes the type of monitor.
Health	Represents the health (Clear, Warning, Critical) status of the MSMQ server.
Last Polled at	Specifies the time at which the last poll was performed.
Next Poll at	Specifies the time at which the next poll is scheduled.
Today's Availability	Shows the overall availability status of the monitor for the day. You can also view 7/30 reports and the current availability status of the monitor.
Microsoft Message Queue Services	
Service Name	The name of the message queue service.
Status	The current status of the message queue service.
Messages Stats	
Incoming messages/sec	The rate at which incoming Message Queuing messages are placed in queues on the selected computer by the Message Queuing service.
Outgoing messages/sec	The rate at which outgoing Message Queuing messages are sent from the selected computer by the Message Queuing service.

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MSMQ Incoming Messages	The total number of incoming Message Queuing messages placed in queues on the selected computer by the Message Queuing service.
MSMQ Outgoing Messages	The total number of outgoing Message Queuing messages sent from the selected computer by the Message Queuing service.
Total bytes in all Queues	The total number of bytes in all Message Queuing messages residing in active queues on the selected computer.
Total messages in all Queues	The total number of Message Queuing messages residing in active queues on the selected computer.
Session Stats	
Sessions	The total number of open network sessions involving the selected computer.
IP Sessions	The number of open IP sessions involving the selected computer.
Incoming Multicast Sessions	The number of open incoming multicast sessions involving the selected computer.
Outgoing Multicast Sessions	The number of open outgoing multicast sessions involving the selected computer.
Outgoing HTTP Sessions	The number of open outgoing HTTP sessions involving the selected computer.
Microsoft Message Queue Stats	
Queue Name	The name of the Message queue.
Bytes in Journal Queue	The total number of bytes in all Message Queuing messages that currently reside in the selected journal.
Bytes in Queue	The total number of bytes in all Message Queuing messages that currently reside in the selected queue.
Messages in Journal Queue	The total number of Message Queuing messages that currently reside in the selected journal.
Messages in Queue	The total number of Message Queuing messages that currently reside in the selected queue.

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Azure Service Bus Monitoring

Azure Service Bus is a cloud based messaging system for connecting applications, services and devices irrespective of their locations. Applications running on Azure, on-premise systems, or both, can commmunicate, message delivery can be managed and numerous applications can be accessed with minimum response time.

With Applications Manager, monitoring Azure Service Bus becomes more easier. Usage and throughput statistics of Queues, Relays, Topics, Event Hubs and Subscriptions are accurately displayed that help you track your connectivity and monitor the exchange of messages between various devices. Configure alarms for various metrics and get notified in case of irregularities and take necessary corrective actions.

Creating a new monitor

To add an Azure Service Bus Monitor for a Namespace, follow the steps given below:

1. Enter the **Subscription ID** for your Microsoft Azure account.
2. Enter the Service Bus **Namespace** to be monitored.
3. Specify a **Timeout** interval in seconds.
4. Specify the **Polling Interval** in minutes.

Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **Azure Service Bus** under the **Middleware/Portal** Table. Displayed is the Azure Service Bus bulk configuration view distributed into three tabs:

- **Availability** tab, gives the Availability history for the past 24 hours or 30 days.
- **Performance** tab gives the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

Monitored Parameters

Click on the monitor name to see all the server details listed under the following tabs:

- Monitor Information
- Overview
- Queues
- Topics
- Subscriptions
- Event Hubs
- Relays

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Monitor Information

Lists out all the basic details about the monitor like monitor name, associated groups, next poll time, last poll time etc. Custom fields can be added or removed from here.

Overview

Group/ Table Name	Metric	Description
Service Bus Namespace Configuration	Namespace	The Service Bus Namespace name.
	Location	The location/ region of the Service Bus Namespace.
	Status	Current status of the Service Bus Namespace. Can be one of the following values: • Active • Creating • Suspended • Deleting
	Namespace Enabled	Whether the Namespace is enabled or disabled.
	Namespace Type	• Messaging • Notification hub
	Resource Group	Specifies the Resource Group of the Service Bus Namespace.
	Event Hub Enabled	Specifies whether Event Hub is enabled or not.
Namespace Usage	Queues	Number of Queues being used.
	Topics	Number of Topics being used.
	Subscriptions	Number of Subscriptions being used.
	Event Hubs	Number of Event Hubs being used.
	Relays	Number of Relays being used.

Queues

Group/ Table Name	Metric	Description

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Queue Usage	Queue	Specifies the Name of the Queue.
	Used Percentage	Specifies the percentage of space used in Queue.
	Free Percentage	Specifies the percentage of space free in the Queue.
	Used Size (MB)	Specifies the size used in the Queue in MB.
	Free Size (MB)	Specifies the free size in the Queue in MB.
	Length	Length of the Queue specifies the total number of messages in the Queue.
	Active Message Count	The number of active messages in the Queue.
	Dead Letter Message Count	The number of messages that are dead letters.
	Scheduled Message Count	The number of scheduled messages in Queue.
	Transfer Dead Letter Message Count	The number of messages transferred into dead letters.
	Transfer Message Count	The number of messages transferred to another Queue
	Status	Current state of the Queue entity. • Active • Disabled • SendDisabled • ReceiveDisabled When the Queue is disabled, it cannot be used to send or receive messages.
Queue Throughput	Queue	Specifies the name of the Queue.
	Incoming Rate (Messages/Sec)	Rate of incoming messages in the Queue.
	Outgoing Rate (Messages/Sec)	Rate of outgoing messages in the Queue.
	Failed Requests	Total number of requests failed.
	Requests Failed Internal Server Errors	Number of requests failed due to internal server errors.
	Requests failed -Server Busy Errors	Number of requests failed due to Server Busy errors
	Requests failed -Other Errors	Number of requests failed due to Other errors.

Topics

Group/ Table Name	Metric	Description

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Topic Usage	Topic	Specifies the Name of the Topic
	Used Percentage	Specifies the percentage of space used in Topic.
	Free Percentage	Specifies the percentage of space free in the Topic.
	Used Size (MB)	Specifies the size used in the Topic in MB.
	Free Size (MB)	Specifies the free size in the Topic in MB.
	Active Message Count	The number of active messages in the Topic.
	Dead Letter Message Count	The number of messages that are dead letters.
	Scheduled Message Count	The number of scheduled messages in Topic.
	Transfer Dead Letter Message Count	The number of messages transferred into dead letters.
	Transfer Message Count	The number of messages transferred to another Topic.
	Status	Current state of the Queue entity. • Active • Disabled • SendDisabled When the Topic is disabled, it cannot be used to send or receive messages.
Topic Throughput	Topic	Specifies the name of the Topic
	Incoming Rate (Messages/Sec)	Rate of incoming messages in the Topic.
	Failed Requests	Total number of requests failed.
	Requests Failed Internal Server Errors	Number of requests failed due to internal server errors.
	Requests failed -Server Busy Errors	Number of requests failed due to Server Busy errors
	Requests failed -Other Errors	Number of requests failed due to Other errors.

Subscriptions

Group/ Table Name	Metric	Description

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Subscription Usage	Subscription	Specifies the Name of the Subscription
	Topic	Specifies the name of the Topic to which the Subscription belongs.
	Used Percentage	Specifies the percentage of space used in Subscription.
	Free Percentage	Specifies the percentage of space free in the Subscription.
	Used Size (MB)	Specifies the size used in the Subscription in MB.
	Free Size (MB)	Specifies the free size in the Subscription in MB.
	Length	Length of the Subscription specifies the total number of messages in the Subscription.
	Active Message Count	The number of active messages in the Subscription.
	Dead Letter Message Count	The number of messages that are dead letters.
	Scheduled Message Count	The number of scheduled messages in Topic.
	Transfer Dead Letter Message Count	The number of messages transferred into dead letters.
	Transfer Message Count	The number of messages transferred to another Subscription.
	Status	Current state of the Queue entity. • Active • Disabled • SendDisabled When the Subscription is disabled, it cannot be used to send or receive messages.
Subscription Throughput	Subscription	Specifies the name of the Subscription
	Incoming Rate (Messages/Sec)	Rate of incoming messages in the Subscription.
	Failed Requests	Total number of requests failed.
	Requests Failed Internal Server Errors	Number of requests failed due to internal server errors.
	Requests failed -Server Busy Errors	Number of requests failed due to Server Busy errors
	Requests failed -Other Errors	Number of requests failed due to Other errors.

Event Hubs

Group/ Table Name	Metric	Description

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Event Hub Throughput	Event Hub	Specifies the name of the Event Hub.
	Incoming Rate (Messages/Sec)	Rate of incoming messages in the Event Hub.
	Outgoing Rate (Messages/Sec)	Rate of outgoing messages in the Event Hub.
	Failed Requests	Total number of requests failed.
	Requests Failed Internal Server Errors	Number of requests failed due to internal server errors.
	Requests failed -Server Busy Errors	Number of requests failed due to Server Busy errors
	Requests failed -Other Errors	Number of requests failed due to Other errors.

Relays

Group/ Table Name	Metric	Description
Listeners	Listener	Specifies the name of the listener.
	RelayType	Specifies the type of Relay used. Supported Relays are: • NetTcp • NetOneWay • Http
	Listener Count	Number of listeners for the particular Relay.
	Relay Bytes	The data size in bytes sent through the Relay.
	Connection Attempts	Specifies the number of connection attempts made by the listener.
	Disconnects	Specifies the number of disconnects by the listener.
	Already Exists errors	Number of Already Exists errors.
	Does Not Exist errors	Number of Does Not Exist errors.
	Internal Errors	Number of Internal Errors.
	Other Errors	Number of Other Errors.
	Quota Exceeded errors	Number of Quota Exceeded errors.
	Unauthorized Errors	Number of Unauthorized Errors.
	Availability	Up- The listener is active Down- The listener is inactive.

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Microsoft Office Sharepoint Servers Add On!

Microsoft Office SharePoint Server Versions Supported: 2007, 2010 and 2013

Prerequisites for monitoring Microsoft Office SharePoint Server: To use Powershell for data collection, make sure the proper steps have been followed to enable powershell remoting.

Attributes Monitored: Refer SharePoint Server Parameters to know more about the attributes monitored.

To create a Office SharePoint Server Monitor:

1. Click on New **Monitor** link.
2. Select **MS Office SharePoint**.
3. Give the **Display Name**.
4. Enter the Hostname of the host where Office SharePoint Server runs.
5. Select the **Version** of Microsoft Office SharePoint Server - 2007, 2010 or 2013.
6. Choose the Features to be monitored for the different versions (Click on the Features textbar to display a drop-down features menu).
7. To use powershell for data collection, tick the **Use Powershell** checkbox.Checking this option will display **Installation Type** option:
   - **SharePoint Farm Server:** Select this option if server has Farm setup. If the monitor is added as a SharePoint Farm Server setup, Applications Manager will discover all other servers in the farm and will add them automatically as separate monitors. A monitor group will be created for the farm and all discovered monitors will be added in the **monitor group** with the name same as the **Farm name**. PowerShell is required for discovering servers in the farm.
   - **SharePoint Server:** Select this option if server has Stand-Alone setup.
8. You can enter your own credential details or select preconfigured credentials details in Credentials Manager. If you wish to enter your own credentials, specify **username** and **password** details for this monitor.
9. Enter the **Username** and **Password** for the server.
10. Set the **Poll** interval.
11. If you are adding a new monitor from an Admin Server, select a Managed Server.
12. Choose the **Monitor Group** from the combo box with which you want to associate MS Office SharePoint server (optional). You can choose multiple groups to associate your monitor.
13. Click **Add Monitor(s)**. This discovers MS Office SharePoint server from the network and starts monitoring them.

Applications Manager provides comprehensive monitoring for key SharePoint performance indicators. Monitor underlying server resources for CPU, memory, and disk constraints as well as SharePoint services, requests queued and infrastructure performance for virtual machines and server hardware health. The monitoring details of Microsoft Office Sharepoint Servers are represented graphically that helps to understand the parameters with ease. Administrators can configure thresholds to the attributes monitored, pinpoint and fix problems before users notice performance issues.

Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **MS Office SharePoint** under the **Middleware/Portal** Table. Displayed is the MS Office SharePoint bulk configuration view distributed into three tabs:

- **Availability** tab, gives the Availability history for the past 24 hours or 30 days.
- **Performance** tab gives the Health Status and events for the past 24 hours or 30 days.

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- **List view** enables you to perform bulk admin configurations.

Click on the monitor name to see all the server details listed under the following tabs:

- Performance Overview
- Web Applications
- Databases
- Timer Jobs
- Access Services
- Visio Web Access Services
- InfoPath Services
- Excel Services
- Office Search Gatherer

Performance Overview

Parameter	Description
Active Server Pages	
Errors/sec	The total number of errors per second including runtime, preprocessor and script compilation errors.
Requests Queued	The number of requests waiting for service from the queue.
Requests Rejected	The total number of requests not executed due to insufficient resources.
Requests/sec	The number of requests executed per second.
Current Sessions	The current number of sessions being serviced.
Transactions/sec	Transactions started per second.
Pending Transactions	The number of transactions still in progress.
Server Stats	
Free Memory in MB	The physical memory available for allocation.
Page Faults Per Sec	The number of times that data was not found in memory per second.
Percentage of Committed Bytes In Use	The ratio committed to commit limit.
Percentage of Processor Time	The percent processor time.
SharePoint Server Services	
Service Name	The name of the SharePoint Server Service.
Status	The status of the service.
Availability	The availability status of the service
Office Search Archival Plugin (For Versions 2010 and 2013)	
Queries Commiting	The current number of queues that are committing changes and completing uploads.
Queues Filtering	The current number of queues that are being used by the filter threads.
Queues Waiting	The current number of queues that are waiting to flush data to the property store.
Retried Documents	The number of documents which were marked for retry from the plugin.
Total Documents	The total number of documents which have used the first queue.
Blocked Documents	The number of documents waiting for a queue.
Active Queue	The currently active queue.
Bulk Insert Sessions	The number of active bulk insert sessions to the database server.

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Office Search Archival Plugin (For Version 2007)	
Active Docs in First Queue	The number of documents actively using the first queue.
Total Docs in First Queue	The total number of documents which have used the first queue.
Active Docs in Second Queue	The number of documents actively using the second queue.
Total Docs in Second Queue	The total number of documents which have used the second queue.
Total Documents	The number of documents processed.
Error Documents	The number of documents which returned errors from the plug-in.
Active Queue	The currently active queue.
Bulk Insert Sessions	The number of active bulk insert sessions to the database server.
Web Content Management-Publishing Cache	
Publishing Cache Hit Ratio	The ratio of hits to misses on the Publishing cache.
Total Object Discards	The total number of items that have been removed from the Publishing cache due to cache compaction.
Publishing Cache Hits / sec	The hit rate on the Publishing cache.
Publishing Cache Misses / sec	The miss rate on the Publishing cache.
Publishing Cache Flushes / sec	The rate that we are updating the cache due to site changes.

Web Applications

Parameter	Description
SharePoint Web Applications	
DisplayName	The display name of the web application.
URL	The URL to access the web application.
Content database	The number of Content Databases processed during profile synchronization.
Jobs Succeeded	The number of timer jobs succeeded related to the web application
Jobs Failed	The number of timer jobs failed related to the web application
Status	The status of the web application, if it is online or offline.

Databases

Parameter	Description
SharePoint Content Databases	
Name	The name of the content database
Server	The server in which the database is stored
Disk Size Required (GB)	The size allocated by the database on disk
Web Application	The web applications which use the database
Current Site Count	The number of sites that are stored in the database
Status	The status of the content database, if it is online or offline

Timer Jobs

Parameter	Description
Timer Jobs	
Jobs Succeeded	The total number of timer jobs succeeded
Jobs Failed	The total number of timer jobs failed

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SharePoint Failed Timer Jobs	
DisplayName	The name of the timer job
Status	The status of the content database (online or offline).
LastRunTime	The last time when the timer job was executed
ErrorMessage	The error due to which the timer job failed.

Access Services

Parameter	Description
Access Data Services Applications Server	
Active Requests	The total number of active requests being processed by Excel Calculation Services at sampling time.
Active Sessions	The number of active sessions by Excel Calculation Services at sampling time.
Average Request Processing Time	The average processing time for a request by Excel Calculation Services between sampling times.
Access Services Data Access Layer	
Average Data Fetch Duration	The average time (in seconds) that is spent to retrieve data.
Average Delete Duration	The average time (in seconds) that is spent to delete data.
Average Insert Duration	The average time (in seconds) that is spent to insert data.
Average Update Duration	The average time (in seconds) that is spent to update data.
Failed Insert Requests / sec	The current number of insert requests that failed per second.
Failed Delete Requests / sec	The current number of delete requests that failed per second.
Get Data Requests / sec	The current number of data query requests per second.
Delete Requests / sec	The current number of delete requests per second.
Insert Requests / sec	The current number of insert requests that are active.
Update Requests / sec	The current number of update requests per second.

Visio Web Access Services

Parameter	Description
Visio Web Access Services	
Request Processing Time	The average processing time for a request to Excel Web Front End component. Large value indicates high response time.
Requests Received / Sec	The total number of requests per second to Excel Web Front End component.
Requests with Errors / Sec	The number of requests that are returned with errors. Higher rate of errors indicate unexpected behavior of an Excel Calculation Services that directly affects the performance.

InfoPath Services

Parameter	Description
Infopath Forms Services	
Average Session Duration	The average time to complete a form-filling session, summed up over all transactions in the form-filling session.
Data Connection Submit Failure Rate	The rate of failures for data connection submits in form-filling sessions.
Session Completed Rate	The rate at which form-filling sessions completed.
Transactions Completed Rate	The rate at which transactions completed in form-filling sessions.

Excel Services

Parameter	Description

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Excel Services Web Frontend	
Active Requests - Excel Web FrontEnd	The number of active requests being processed on Excel Calculation Services at sampling time
Requests Per Second	The number of requests received per second on Excel Calculation Services between sampling times
Excel Webaccess	
Excel Web Access Request Time	The Excel Web Access Average Request time between the last two samples
Chart Image Requests per Second	The number of requests for chart images served by Excel Web Access per second
Average Chart Image Request Time	The average time it takes between the request for a chart image and the issuance of the response to the web browser by Excel Web Access
Excel Calculation Services	
Requests With Errors / Sec - Excel Calculation	The number of requests that are returned with errors per second on Excel Calculation Services between sampling times
Sessions Per Second	The average number of sessions opened per second between the last two samples
Cached Charts Requested Per Sec	The number of charts that are provided from a cached image
Active Sessions	The number of active sessions on Excel Calculation Services at sampling time
Rendered Charts Requested Per Sec	The number of chart requests per second
Active Requests	The number of active requests being processed on Excel Calculation Services at sampling time
Requests Received per Sec	The number of requests received per second on Excel Calculation Services between sampling times

Office Search Gatherer

Parameter	Description
Office Search Gatherer	
Delayed Documents	The number of documents delayed due to site hit frequency rules.
Threads Accessing Network	The number of threads waiting for a response from the filter process.
Idle Threads	The number of threads waiting for documents.
Documents Delayed Retry	The number of documents that will be retried after time-out.

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WebLogic Integration Server Monitoring

Supported Versions: WebLogic Integration Server 8.x

Important: Know the Prerequisites that are required to monitor WebLogic Integration Server.

To create a WebLogic Integration Server Monitor

1. Click on New **Monitor** link.
2. Select WebLogic Integration.
3. Enter the IP Address/ hostname of the host.
4. Enter the SubNetMask of the network.
5. Enter the port number in which WebLogic Integration Server is running.
6. Enter the polling interval time in minutes.
7. If you are adding a new monitor from an Admin Server, select a Managed Server.
8. Provide the monitor-specific authentication information, such as user name and password.

Note: WebLogic Integration Server needs some additional configuration and conditions to be followed for monitoring.
• For monitoring WebLogic Integration Server 8.x, you should set the weblogic.disableMBeanAuthorization and **weblogic.management.anonymousAdminLookup** system variable to true for enabling data collection. Follow the steps given below:
1. Edit **startWLS.cmdsh** present in the *<WLS_HOME>/server/bin* directory and add the following argument ***-Dweblogic.disableMBeanAuthorization***=*true* and ***-Dweblogic.management.anonymousAdminLookupEnabled***=*true* (click on the link to view the sample **startWLS.cmdsh file)**
2. Restart the WebLogic Integration Server for the changes to take effect.
3. Copy weblogic.jar from folder */weblogic81/server/lib* in Remote WebLogic server version 8 and place it under *<AppManager Home >workingclasseweblogicversion8* folder in the machine where Applications Manager is running.

8. Choose the Monitor Group from the combo box with which you want to associate WebLogic Integration Server Monitor (optional). You can choose multiple groups to associate your monitor.
9. Click Add Monitor(s). This discovers WebLogic Integration server from the network and starts monitoring them.

Monitored Parameters

WebLogic Integration servers are monitored based on a parameters/ attributes like Business Process Details, Application Integration details & Message Broker details. These attributes provide information about the functioning of WebLogic Integration server monitor and you can receive alarms based on the thresholds configured on the attributes of the server.

Availability tab, gives the Availability history for the past 24 hours or 30 days. *Performance* tab gives the Health Status and events for the past 24 hours or 30 days. *List view* enables you to perform bulk admin configurations. Click on the individual monitors listed, to view the following information.

Parameters	Description
Business Process Details	
Process Name	Name of the Process.
Health	Health of the process, depends on the below given parameters.
Avg Elapsed Time	Specifies the average elapsed time of the process. Elapsed time is the time elapsed since all the instances started.
Completed Instances	Specifies the number of instances completed per minute
SLA Exceeded Instances	Shows the number of instances where SLA exceeded
Running Instances	Shows the number of instances running currently

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Aborted Instances	Shows the number of instances that were aborted - threw an unhandled exception
Frozen Instances	Shows the number of instances running frozen - failed but can be unfrozen. When an instance is unfrozen, it resumes from the point where it failed.
Terminated Instances	Shows the number of instances that were terminated
Application Integration Details	
AppView Name	Application View ID
Health	Health of the Application
Service Count	Number of service invocations since the service counter was last reset
Service Error Count	Number of service errors since the service counter was last reset plus the number of event delivery errors since the event counter was last reset.
Avg. Service Elapsed Time	Average elapsed time in milliseconds for service invocations. This number averages elapsed time for both synchronous and asynchronous services. For asynchronous services, elapsed time includes only time spent communicating with the adapter and excludes time spent waiting on the asynchronous request queue..
Event Count	Number of events delivered since the event counter was last reset..
Event Error Count	Number of event delivery errors since the event counter was last reset.
Message Broker Details	
Channel Name	Specifies the name of the Channel
Health	Specifies the health of the Channel, depends on the Message Count, Subscriber Count & Dead Letter Count
Message Count	Specifies the number of messages delivered to this channel.
Subscriber Count	Specifies the number of process or Web service types that can subscribe to the channel.
Dead Letter Count	When the Message Broker is unable to determine the URI to send a message to (that is, no subscribers are found), the message is sent to the appropriate deadletter channel: /deadletter/xml, /deadletter/string, or /deadletter/rawData. The Dead Letter Count specifies the number of messages sent to the dead letter channels since the count was last reset.

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IBM WebSphere MQ Monitoring Add On!

To create a IBM WebSphere MQ Monitor

1. Click on **New Monitor** link.
2. Enter the **Queue Manager** Name.
3. Give the **Hostname** of the host where IBM WebSphere MQ runs.
4. Enter the **Listener Port.**
5. Give the Coded Character Set Identifier **(CCSID)**.
6. Enter the **ServerConnection Channel**.
7. **SSL Enabled checkbox**- If SSL authentication is enabled on the server connection channel then select this option and also provides **SSL Cipher specifications. T**o use the ssl option please follow the below steps
   - Import the Queue Manager's certificate to AppManager's keystore using the below command<AppManager_Home>/working/bin/MQCert.bat import <Queue Manager Certificate> <Queue Manager Name>
   - Create client certificate using the below command. It will generate the client certificate in <AppManager_Home>/mqseries/ssl directory. Add this client certificate to Queue Manager's key database in order to make two way ssl handshake <AppManager_Home>/working/bin/MQCert.bat export
8. Authentication Enabled **checkbox** - Provide the monitor-specific authentication information, such as **Username** and **Password.**
9. **Filter System Objects checkbox -** Add the**System Objects to Monitor.** This option to Include / Exclude the SYSTEM Queues, Channels and Inactive Channels is added will be helpful in reducing unnecessary data in monitor details page. User can use either INCLUDE_QUEUES or EXCLUDE_QUEUES, INCLUDE_CHANNELS or EXCLUDE_CHANNELS and INCLUDE_INACTIVE_CHANNELS: true/false.
   - INCLUDE_QUEUES: SYSTEM.DEAD.*, *.ADMIN.COMMAND.QUEUE
   - EXCLUDE_CHANNELS: SYSTEM.AUTO.SVRCONN
   - INCLUDE_INACTIVE_CHANNELS:true/false. (**Note:** if this entry is not available in filters then it will be considered as false by default.)
   - **ConfigManagerProxy.jar** located at <Broker Home Directory> classes directory.
   - **ibmjsseprovider2.jar** located at <Broker Home Directory>jrelib directory.
10. Set the **Polling Interval.**
11. Click **Test Credential**.
12. If you are adding a new monitor from an Admin Server, select a Managed Server.
13. Choose the **Monitor Group** from the combo box with which you want to associate IBM WebSphere MQ Monitor (optional). You can choose multiple groups to associate your monitor.
14. Click **Add Monitor(s)**. This discovers IBM WebSphere MQ from the network and Applications Manager starts monitoring it.

Know the Prerequisites that are required to monitor IBM WebSphere MQ (jar files must be added to the respective locations).
Discover Message Broker checkbox:
To discover Message Broker, the following jars are required:
Copy the two jar files to <ProductHome>workingjrelibext directory.

Monitored Parameters

IBM WebSphere MQ servers are monitored based on the attributes such as listener stats, channel monitoring, etc. and the different web applications and EJB deployed in the server. You can also monitor the operation of the queue managers through event logs. The monitoring details of IBM WebSphere MQ server are represented graphically that helps to understand the parameters with

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ease. You can also configure thresholds to the attributes monitored by the server based on these details.

Availability tab, gives the Availability history for the past 24 hours or 30 days. *Performance* tab gives the Health Status and events for the past 24 hours or 30 days. *List view* enables you to perform bulk admin configurations. Click on the individual monitors listed, to view the following information.

The WebSphere MQ server attributes monitored are classified under the following tabs in Applications Manager:

- Monitor Information
- Performance Overview
- Queues
- Channels
- Listeners
- Services
- Event Log
- Configuration

Monitor Information

Parameter	Description
Name	The Display name of the Monitor
Health	Represents the health status
Last Polled at	Time at which the previous poll had started
Next Poll at	Time at which the next poll has been scheduled
Availability	Shows the current status of the server - available or not available.

Performance Overview

Parameter	Description
Name	The Display name of the monitor
Health	Represents the health status
Command Server Status	Specifies the status the command server. It used to check whether the command server on the target queue manager is running or not
Channel Initiator Status	Specifies the status the channel initiator. It used to check whether the channel initiator on the target queue manager is running or not
Active Connections	The current number of connections to the queue manager.
Graphical View of Events Count	Count of events occurred in the below category in last data collection. • Queue Manager • Channel • Performance • Configuration • Command • Logger

Queues

Parameter	Description
Queue Name	Name of the Queue
Current Depth	Current queue depth.
% of Queue Occupied	Percentage of Queue Depth occupied against the max Queue Depth.
Open Input Count	Open input count (parameter identifier: MQIA_OPEN_INPUT_COUNT).
Open Output Count	Open output count (parameter identifier: MQIA_OPEN_OUTPUT_COUNT)
Health	Health of the Queue based on all the above attributes

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Queue Usage Graph	Graphical view queue depth percentage against the max Queue Depth
% of Queue Free	Percentage of Queue Depth free against the max Queue Depth
Uncommitted Messages	It indicates whether there are any uncommitted changes (puts and gets) pending for the queue. • YES - There are uncommitted changes pending. • NO - There are no uncommitted changes pending.
Oldest Message Age	The age, in seconds, of the oldest message on the queue.
Latency	The interval, in seconds, between messages being put on the queue and then being destructively read.
Trigger Control	It indicates whether the triggering on the queue enabled or not. • On triggering enabled for this queue. • Off triggering not enabled for this queue.

Channels

Parameter	Description
Channel Name	Name of the Channel
Status	Status of the channel - running
Bytes Sent	Number of bytes sent
Bytes Received	Number of bytes Received
Buffers Sent	Number of buffers sent
Buffers Received	Number of buffers Received
Availability	Availability of Channel,based on the status attribute.If the status of the channle is RUNNING then it is considered to be available .If the channel is in other states then it is considered to be down.
Health	Health of the Channel based on all the above attributes
Compression Time	The amount of time per message, displayed in milliseconds, spent during compression or decompression.
Compression Rate	Rate of compression achieved in percentage.

Listeners

Parameter	Description
Listener Name	Specifies the name of the listener
Status	The current status of the listener. The value can be: • Initializing • Running • Stopping
Session Count	The number of sessions that the listener can use. This is valid only on Windows.
Backlog	The number of concurrent connection requests that the listener supports.
Health	Health of the Listener based on all the above attributes

Services

Parameter	Description
Name	Name of the service
Mode	Specifies on which mode the service was started • Manual - The service is not to be started automatically or stopped automatically. It is to be controlled by user command. • Queue Manager - The service is to be started and stopped at the same time as the queue manager is started and stopped • Queue Manager Start - The service is to be started at the same time as the queue manager is started, but is not request to stop when the queue manager is stopped.
Type	Type of the service • Server - Only one instance of the service can be executed at a time • Command - Multiple instances of the service can be started
Start Time	Specifies at which time the service was started.It is applicable only for Server type of service
Alteration Time	Specified at which time the service configuration was last altered.

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Status	Status of the service: • Starting • Running • Stopped It is applicable only for the server type of service

Event Log

WebSphere MQ events provide information about errors, warnings, and other significant occurrences in a queue manager. You can monitor the operation of the queue managers by analyzing these events. When an event occurs, the queue manager puts an event message on the appropriate event queue. The event message contains information about the event.

Search Options :

We have provided the On-demand event search with multiple search options in 'Event Log' tab. You can also export the event search result to PDF.

- Event Category
- From Date
- To Date
- Event Type
- Any keyword in the event message

Note:
• All the messages in the event queue will be cleared when you restart the queue manager.
• If the event queue reaches the max depth limit then the further events will not be stored in the queue. So set the threshold for '% of Queue Occupied' property for the event queues to avoid loss of event message.
• All the events are not enabled by default. You can check the enabled or disabled events in the Event Log tab of the MQ monitor details page. Events can be enabled using MQSC commands.
• Enable only necessary events. Because it will slightly affect the performance of the queue manager. Check the following link to control events:
http://publib.boulder.ibm.com/infocenter/wmqv7/v7r0/index.jsp?topic=%2Fcom.ibm.mq.csqzax.doc%2Fmo10670_.htm
• Currently, we are only displaying the count of events occurred in each category. We do not have the option to monitor the events.

Events & Corresponding Queues

Events	**Queues**
SYSTEM.ADMIN.QMGR.EVENT	Local, Remote, Inhibit, Authority, Start & Stop
SYSTEM.ADMIN.CHANNEL.EVENT	IMS Bridge, Channel, SSL
SYSTEM.ADMIN.PERFM.EVENT	Performance
SYSTEM.ADMIN.CONFIG.EVENT	Configuration
SYSTEM.ADMIN.COMMAND.EVENT	Command
SYSTEM.ADMIN.LOGGER.EVENT	Logger

Event Categories:

Events	**Queues**		
Start and Stop Events	Event Name	Identifier	Reason Code
	Queue Manager Active	MQRC_Q_MGR_ACTIVE	2222
	Queue Manager Not Active	MQRC_Q_MGR_NOT_ACTIVE	2223
Performance Events	Event Name	Identifier	Reason Code
	Queue Depth High	MQRC_Q_DEPTH_HIGH	2224
	Queue Depth Low	MQRC_Q_DEPTH_LOW	2225
	Queue Full	MQRC_Q_FULL	2053
	Queue Service Interval High	MQRC_Q_SERVICE_INTERVAL_HIGH	2226
	Queue Service Interval OK	MQRC_Q_SERVICE_INTERVAL_OK	2227

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Configuration Events

Event Name	Identifier	Reason Code
Change Object	MQRC_CONFIG_CHANGE_OBJECT	2368
Create Object	MQRC_CONFIG_CREATE_OBJECT	2367
Delete Object	MQRC_CONFIG_DELETE_OBJECT	2369
Refresh Object	MQRC_CONFIG_REFRESH_OBJECT	2370

Channel Auto Definition Events

DISABLED

Channel Events

Event Name	Identifier	Reason Code
Channel Activated	MQRC_CHANNEL_ACTIVATED	2295
Channel Auto-Definition Error	MQRC_CHANNEL_AUTO_DEF_ERROR	2234
Channel Auto-Definition OK	MQRC_CHANNEL_AUTO_DEF_OK	2233
Channel Blocked	MQRC_CHANNEL_BLOCKED	2577
Channel Conversion Error	MQRC_CHANNEL_CONV_ERROR	2284
Channel Not Activated	MQRC_CHANNEL_NOT_ACTIVATED	2296
Channel Not Available	MQRC_CHANNEL_NOT_AVAILABLE	2537
Channel Started	MQRC_CHANNEL_STARTED	2282
Channel Stopped	MQRC_CHANNEL_STOPPED	2283
Channel Stopped By User	MQRC_CHANNEL_STOPPED_BY_USER	2279

Command Events

Event Name	Identifier	Reason Code
MQSC command is executed	MQRC_COMMAND_MQSC	2412
PCF command is executed	MQRC_COMMAND_PCF	2413

SSL Events

Event Name	Identifier	Reason Code
Channel SSL Error	MQRC_CHANNEL_SSL_ERROR	2371
Channel SSL Warning	MQRC_CHANNEL_SSL_WARNING	2552

Remote Events

Event Name	Identifier	Reason Code
Default Transmission Queue Type Error	MQRC_DEF_XMIT_Q_TYPE_ERROR	2198
Default Transmission Queue Usage Error	MQRC_DEF_XMIT_Q_USAGE_ERROR	2199
Queue Type Error	MQRC_Q_TYPE_ERROR	2057
Remote Queue Name Error	MQRC_REMOTE_Q_NAME_ERROR	2184
Transmission Queue Type Error	MQRC_XMIT_Q_TYPE_ERROR	2091
Transmission Queue Usage Error	MQRC_XMIT_Q_USAGE_ERROR	2092
Unknown Default Transmission Queue	MQRC_UNKNOWN_DEF_XMIT_Q	2197
Unknown Remote Queue Manager	MQRC_UNKNOWN_REMOTE_Q_MGR	2087
Unknown Transmission Queue	MQRC_UNKNOWN_XMIT_Q	2196

Authority Events

Event Name	Identifier	Reason Code
Not Authorized Type	MQRC_NOT_AUTHORIZED	2035

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	Event Name	Identifier	Reason Code
Inhibit Events	Get Inhibited	MQRC_GET_INHIBITED	2016
	Put Inhibited	MQRC_PUT_INHIBITED	2051

	Event Name	Identifier	Reason Code
Logger Events	Logger Status	MQRC_LOGGER_STATUS	2411

	Event Name	Identifier	Reason Code
Local Events	Alias Base Queue Type Error	MQRC_ALIAS_BASE_Q_TYPE_ERROR	2001
	Unknown Alias Base Queue	MQRC_UNKOWN_ALIAS_BASE_Q	2082
	Unknown Object Name	MQRC_UNKNOWN_OBJECT_NAME	2085

	Event Name	Identifier	Reason Code
Bridge Events	Bridge Started	MQRC_BRIDGE_STARTED	2125
	Bridge Stopped	MQRC_BRIDGE_STOPPED	2126

Configuration

Parameter	Description
Name	The Display name of the Monitor
Queue Manager	Name of the Queue Manager
Command Queue	Name of the Command Input Queue
Dead Letter Queue	Name of the Dead Letter Queue
Transmission Queue	Name of the Transmission Queue
Max length of Message	Specifies length of the longest message that the queue manager can handle
Max Number of Handles	Specifies the maximum number of open handles that any one task can use concurrently
Max Uncommitted Messages	Specifies the maximum number of uncommitted messages that can exist within a unit of work.
Max Trigger Interval	Specifies the time interval (in milliseconds) used to restrict the number of trigger messages
Platform	The operating system on which the queue manager is running
Version	Version number of the queue manager

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IBM WebSphere Message Broker Monitoring Add On!

WebSphere Message Broker is an enterprise service bus providing connectivity and universal data transformation for service-oriented architecture (SOA) and non-SOA environments. It performs comprehensive range of operations on data, including routing, filtering, enrichment, multicast for publish-subscribe, sequencing, and aggregation.

Applications Manager monitors availability and performance of the Message Broker, execution group and message flow and memory usage of the execution group. You can also collect Message Flow Accounting and Resource Statistics and configure thresholds to the attributes monitored by the server based on these details. The monitoring details of IBM WebSphere Message Broker are represented graphically that helps to understand the parameters with ease.

Availability tab, gives the Availability history for the past 24 hours or 30 days. *Performance* tab gives the Health Status and events for the past 24 hours or 30 days. *List view* enables you to perform bulk admin configurations. Click on the individual monitors listed, to view the following information.

Monitored Parameters

The WebSphere Message Broker attributes monitored are classified under the following tabs in Applications Manager:

- Performance Overview
- Execution Group
- Message Flow

Performance Overview

Parameter	Description
Graphical view of Execution Group status	• Execution Group Running - Number of execution groups in running state • Execution Group Stopped - Number of execution groups in stopped state
Graphical view of Message Flow status	• Message Flow Running - Number of message flows in running state • Message Flow Stopped - Number of message flows in stopped state

Execution Group

Parameter	Description
Name	Name of the Execution Group
Used Memory In MB	The amount of memory that is currently in use.
Free Memory In MB	The amount of memory that is currently free.Its value might be undefined.
Committed Memory In MB	The amount of memory that is allocated to the JVM by the operating system.
Max Memory In MB	The maximum amount of memory that can be used for memory management. Its value might be undefined.
Garbage Collection per Min	The total number of garbage collections that have occurred per minute for this instance of the JVM
Garbage Collection Time	The garbage collection elapsed time in seconds for this instance of the JVM
Status	Status of the Execution Group

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Message Flow

Parameter	Description
Name	Name of the Message Flow
Execution Group Name	Name of the Execution Group
Messages Processed per Min	Total number of messages that are processed
MQ Errors per Min	Total Number of MQGET errors
Total Commits per Min	Number of transaction commits that occur when processing a message
Total Back outs per Min	Number of transaction backouts that occur when processing a message.
Timeouts per Min	Number of transaction timeouts that occur when processing a message
Processing Time in milliseconds	CPU time in milliseconds spent processing an input message
Status	Status of the message flow

You can also compare the values between the various attributes.

Message Flow Accounting and Statistics

Message flow accounting and statistics data is the information that can be collected by a broker to record performance and operating details of message flow execution. Use the below commands to trigger statistics and reports for the message flows.

- *mqsichangeflowstats <BROKER> -a -e <ExecutionGroup> -j -c active -o xml -n basic - enable statistics for particular execution group* ***OR*** *mqsichangeflowstats <BROKER> -a -g -j -c active -o xml -n basic - enable statistics for all execution group*
- *mqsichangebroker <BROKER> -v <PollInterval> - PollInterval of the monitor in minutes*

Message Broker Resource Statistics

Resource statistics are collected by a broker to record performance and operating details of resources that are used by execution groups. Use the below command to trigger resource statistics

- *mqsichangeresourcestats <BROKER> -c active -e <ExecutionGroup> - enable statistics for particular execution group*
- *mqsichangeresourcestats <BROKER> -c active - enable statistics for all execution group*

Note:
• Enabling the above statistics will moderately affect performance. So it is recommended that you enable these statistics only for the required executions groups.

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VMware vFabric RabbitMQ Monitoring

To create a RabbitMQ Server Monitor:

1. Click on New **Monitor** link.
2. Select **RabbitMQ** under the **Middleware/Portal** list.
3. Enter the **Display Name** and the name of the **host** where the RabbitMQ Server is running.
4. Enter the **Port** ID where the management plugin is configured. For default installations of RabbitMQ management plugin, the port number is 55672.
5. Enter the correct **User Name** and **Password** of RabbitMQ server.
6. Set the **polling interval.**
7. If you are adding a new monitor from an Admin Server, select a Managed Server.
8. Select the **Monitor Group** from the combo box with which you want to associate RabbitMQ server (optional). You can choose multiple groups to associate your monitor.
9. Click **Add Monitor(s**). This identifies RabbitMQ server from the network and starts monitoring.

Applications Manager monitors the critical components of VMware vFabric RabbitMQ servers to detect individual queues and collect metrics which reflect the queue's performance and throughput.

The critical components of RabbitMQ servers include:

- Queued messages and message rates statistics
- Node details like socket descriptor and Erlang process utilization
- Channel statistics like message publish rates
- Exchange message rates
- In depth connection status

Monitored Parameters:

RabbitMQ monitoring includes delivering proactive alarm notifications during network congestion, checking if a consumer is processing slowly or has gone down under heavy message traffic, identifying performance bottlenecks due to high socket descriptors utilization and generating historical reports.

The *Availability* view shows an availability history bar graph of the RabbitMQ server. Using the drop-down list at the right-hand corner of the page, you can set the bar chart to show availability history for the past 24 hours or 30 days.

The *Performance* tab gives a graphical representation of the publish, delivery, acknowledged and unacknowledged rates of RabbitMQ server as well as the health history for the past 24 hours or 30 days. The colored icons at the corners of the graphs pop up a 'heat chart' for the respective metric rate.

The *List view* lists all the RabbitMQ servers monitored by Applications Manager along with their overall availability and health status. You can edit the monitor details and configure alarms from the list. You can also perform bulk admin configurations from this view. Click on the individual monitors listed to view detailed performance metrics.

The table below gives a detailed description of the parameters displayed in each of the tabs:

OVERVIEW

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Parameter	Description
Monitor Information	General details like name, type, health, host name, etc.
Availability history for last 6 hours	Bar graph showing the availability history of the server for the last six hours.
Performance history for last 6 hours	Chart showing the performance history of the server for the last six hours.
Queued Messages	Message vs time graph showing the ready and unacknowledged messages.
Message Rates	Message per second vs time graph showing the deliver, acknowledged and publish rates
Socket descriptors used/available/utilization	The number of concurrently open/available/used socket descriptors for the monitor.
Erlang processes used/available/utilization	The number of concurrently open/available/used Erlang processes for the monitor.

QUEUES

Parameter	Description
Name	The name of the message queue.
Exclusive	Number of messages of the exclusive consumer subscribed to this queue.
Messages Ready	Number of messages ready to be delivered to clients.
Messages Unacknowledged	Number of messages delivered to clients, but not unacknowledged yet (meaning it is in progress or has been reserved).
Total Messages	Sum of ready and unacknowledged messages (queue depth)
Incoming rate	The rate at which messages are received.
Deliver/Get rate	The rate at which messages are delivered.
Ack rate	The rate at which messages are acknowledged.

EXCHANGES

Parameter	Description
Name	The RabbitMQ exchange name.
Type	The exchange type (one of direct, topic, headers, fanout).
Incoming Publish rate	The per second rating of incoming messages.
Outgoing Publish rate	The per second rating of outgoing messages.

CHANNELS

Parameter	Description
Channel	The channel through which messages are sent.
User Name	The RabbitMQ username associated with the channel.
Prefetch msgs	QoS prefetch count value for the channel.
Unacked msgs	Number of messages delivered via this channel, but not yet acknowledged.
Unconfirmed msgs	Number of published messages not yet confirmed. On channels not in confirm mode, this remains 0

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Publish rate msgs/sec	The per second publishing rate of messages.
DeliverGet rate msgs/sec	The per second recieving rate of messages.
Ack rate msgs/sec	The per second acknowledgment rate of messages.

CONNECTIONS	
Parameter	**Description**
Peer Address	The IP address of the host on the other side of the connection.
Protocol	Version of the AMQP protocol in use (currently one of {0,9,1} or {0,8,0})
Receive rate kbps	Rate at which the message is being received.
Send rate kbps	Rate at which the message is being sent.
State	Connection state (one of [starting, tuning, opening, running, closing, closed])

You can enable, disable or delete any of the nodes, queues, exchanges, channels or connections from the drop-down menu at the bottom of the page. You can also compare reports from an adjacent drop-down list.

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Microsoft BizTalk Monitoring

- Microsoft BizTalk - An Overview
- Adding a new Microsoft BizTalk monitor / Using AddMonitor API
- Monitored Parameters

Microsoft BizTalk - An Overview

Microsoft BizTalk Server provides a powerful Web-based development and execution environment for solving integration problems. BizTalk handles enterprise application integration, business process automation, business-to-business communication, message broker and business activity monitoring. With Applications Manager's BizTalk Monitoring capability, you can monitor the core components and performance counters like messaging engine, orchestration engine, throttling and adapter performance, ensuring the overall health of BizTalk Environment.

Microsoft BizTalk - Adding a new monitor

Microsoft BizTalk Server Versions Supported: BizTalk 2010 Server
Prerequisites for monitoring Microsoft BizTalk: Click to know about the user previleges and other necessary prerequisites to monitor Microsoft BizTalk Server.
To create a Microsoft BizTalk Monitor:

1. Click on **New Monitor** link.
2. Select **Microsoft BizTalk**.
3. Enter the **Display Name** of the monitor
4. Enter the **Hostname** of the host where the BizTalk Server is running.
5. You can enter your own credential details or select preconfigured credentials details in Credentials Manager. If you wish to enter your own credentials, specify **username** and **password** details for this monitor.
6. Check **Enable PowerShell** option to enable data collection through PowerShell. If PowerShell is enabled then **Application Name** for the related artifacts will be displayed along with other information. For more help on enabling Powershell Remoting, click here. Enter:
   - **Database Server Name:** If the management database is stored in some other server, provide the name of that database server (optional).
   - **Database Name:** Provide the management database name.
7. Set the **Poll** interval.
8. If you are adding a new monitor from an Admin Server, select a Managed Server.
9. Choose the **Monitor Group** from the combo box with which you want to associate BizTalk server (optional). You can choose multiple groups to associate your monitor.
10. Click **Add Monitor(s)**. This discovers BizTalk server from the network and starts monitoring them.

Use the AddMonitor API to add a Microsoft BizTalk monitor:

Syntax

```
http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displa
```

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```
yname=[DISPLAYNAME]&host=[HOST]
&port=[PORT]&username=[USERNAME]&password=[PASSWORD]&PowerShell=[True/False]&DBSe
rver=[DB Server Name]&DBName=[DB Name]
```

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The category type of the monitor you want to add. The value should be *BizTalkServer*.
host	The name of the host where where BizTalk is installed.
username	The username of the BizTalk server host machine.
password	The password of the BizTalk server host machine.
PowerShell	Is powershell enabled? Values are: • True - powershell is enabled • False - powershell is disabled
DBServer	The name of the server where the configuration database is stored (*required only if PowerShell is enabled*).
DBName	The name of the configuration database (*required only if PowerShell is enabled*).
credssp	Specifies if CredSSP Authentication should be used,when Use Powershell option is chosen. The value is **yes** if credssp needs to be enabled.

Sample Request

```
http://app-xp5:9090/AppManager/xml/AddMonitor?apikey=a169e7aa3b4656d0db29532fd434
7&type=BizTalkServer&displayname=BizTalk2010&host=it360-k8r2s-2&UserName=it360-
k8r2s-2administrator&Password=pass123&PowerShell=True&DBServer=k8r2s-
2&DBName=BizTalkdb
```

Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **Microsoft BizTalk** under the **Middleware/Portal** Table. Displayed is the Microsoft BizTalk bulk configuration view distributed into three tabs:

- **Availability** tab, gives the Availability history for the past 24 hours or 30 days.
- **Performance** tab gives the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configuration.

Click on the monitor name to see all the server details listed under the following tabs:

- Performance Overview
- Messaging
- Orchestrations
- Adapters

Performance Overview

Parameter	Description
Orchestration Engine Performance Counters	
Used Physical Memory	The percentage of used physical memory on the machine.
Database Transactions	The number of database transactions performed since the start of the last host instance.
Orchestrations Dehydrated	The average number of dehydrated orchestrations per second. Dehydration is the process of serializing the state of an orchestration into a SQL Server database. The orchestration engine dehydrates the instance by saving the state, and frees up the memory required by the instance.
Messagebox Database Connection Failures	The number of attempted database connections that failed since the host instance started.
Orchestrations Rehydrated	The average number rehydrated per second. Rehydration is the process of deserializing the last running state of an orchestration from the database.The orchestration engine can be triggered to rehydrate an orchestration instance by the receipt of a message or by the expiration of a time-out specified in a Delay shape.
Orchestrations Suspended	The average number of orchestration instances suspended per second since the host instance started.
Pending Messages	The number of received messages for which receipt has not yet been acknowledged to the message box.
Orchestrations Completed	The average number of orchestration instances completed per second since the host instance started.
Orchestrations Discarded	The average number of orchestration instances discarded per second from memory since the host instance started. An orchestration can be discarded if the engine fails to persist its state.
Orchestrations Created	The average number of orchestration instances created per second since the host instance started.
Running Orchestrations	Number of orchestration instances currently executing.
Host Throttling Performance Counters	
Active Instance Count	The number of service instances active in memory.
Database Session	The number of concurrent MessageBox database connections being used.
Database Size	The number of messages in the database queues that this process has published.

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High Database Session	Indicates whether the number of currently opened database sessions exceeds the threshold. • 0: Normal • 1: Database session count exceeds threshold
High Database Size	Indicates whether the destination queue depth of all message box databases exceeds the threshold. • 0: Normal • 1: Database size has grown beyond threshold
Message Delivery Throttling State	Indicates whether the system is throttling message delivery (affecting XLANG message processing and outbound transports). • 0: Not throttling • 1: Throttling due to imbalanced message delivery rate (input rate exceeds output rate) • 3: Throttling due to high in-process message count • 4: Throttling due to process memory pressure • 5: Throttling due to system memory pressure • 9: Throttling due to high thread count • 10: Throttling due to user override on delivery
High Message Delivery Rate	Indicates whether the message delivery rate is higher than the message processing rate. • 0: Normal • 1: Message delivery rate exceeds the message processing rate
High Message Publishing Rate	Indicates whether the message publishing request rate is higher than the message publishing completion rate. • 0: Normal • 1: Publishing request rate exceeds completion rate
Message Publishing Throttling State	Indicates whether the system is throttling message publishing (affecting XLANG message processing and inbound transports). • 0: Not throttling • 2: Throttling due to imbalanced message publishing rate (input rate exceeds output rate) • 4: Throttling due to process memory pressure • 5: Throttling due to system memory pressure • 6: Throttling due to database growth • 8: Throttling due to high session count • 9: Throttling due to high thread count • 11: Throttling due to user override on publishing
Physical Memory Usage	The amount of physical memory in MB being used on the machine by all processes.
Total Messages Delivered	The number of outbound messages delivered to the Orchestration engine or the End Point Manager (EPM).
Total Messages Published	The number of messages published.
High Process Memory	Indicates whether the process memory consumption exceeds the threshold. • 0: Normal • 1: Process memory exceeds threshold
High System Memory	Indicates whether the system-wide physical memory consumption exceeds the threshold. • 0: Normal • 1: System memory exceeds threshold
High Thread Count	Indicates whether the thread count exceeds the threshold. • 0: Normal • 1: Thread count exceeds threshold
Message Delivery Delay	The current delay in ms imposed on each message delivery batch.
Message Publishing Delay	The current delay in ms imposed on each message publishing batch.
Physical Memory Usage	The amount of physical memory in MB being used on the machine by all processes.
High In-Process Message Count	Indicates whether the number of in-process messages exceeds the threshold: • 0: Normal • 1: In-process message count exceeds limit
Host Instances	
Host Name	The name of the host instance.
Host Type	This metric indicates which runtime model the instances of the BizTalk host will be running in: • **In-process** - In-process hosts represent service instances that an administrator creates, deletes, and fully controls with WMI and the BizTalk Administration console. • **Isolated** - Isolated hosts primarily host adapters that must run outside of the normal BizTalk Server runtime process.
Service State	The current service state of the host instance: • 1: Stopped • 2: Start pending • 3: Stop pending • 4: Running • 5: Continue pending • 6: Pause pending • 7:Paused • 8:Unknown
Status	The status of the host instance, enabled or disabled
Receive Locations	
Name	The name of the Receive Locations.
Inbound Transport URL	The primary location to which the receive location is mapped for receiving the message content.
Host Name	The name of the receive handler used by the receive location.
Adapter Name	The name of the adapter used by the receive location.
Receive Port Name	The name of the port used by the receiver location.
Send Ports	
Name	The name of the send port.
Is Two-Way	Gets a value indicating whether the sent port is set up as a request-response port.
Is Dynamic	Gets a value indicating whether the send port is dynamic or static.
Application	The application that encloses the send port.
Status	The status of the send port.
Receive Ports	
Name	The name of the receive port.
Is Two-Way	Gets a value indicating whether the receive port is set up as a request-response port.
Primary Receive Location	The primary receive location for receiving the message content.
Application	The application that encloses the receive port.

Messaging

Parameter	Description
Message Box Performance Counters	
Spool Size	The size of the spool on a particular message box on a particular server.

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Tracking Data Size	The size of the tracking data table on a particular message box on a server.
Total Instances	The total number of instances of the host.
Suspended Message Length	Total number of messages suspended for the host.
Host Queue Length	Total number of messages in the host queue.
Messaging Performance Counters	
Pending Receive Batches	The number of batches received by the Messaging Engine that have not completed processing. These include batches that have been processed asynchronously by the adapters.
Pending Transmitted Messages	The number of messages given by the Messaging Engine to send adapters that have not completed processing. This includes response messages for adapters.
Throttled Receive Batches	The number of batches that have been blocked on receive by the Messaging Engine due to high service load. These batches contain new messages to be processed.
Inbound Latency	The average latency in seconds from when the Messaging Engine receives a document from the adapter until the time it is published to Message Box.
Outbound Latency	The messaging Engine receives a document from the Message Box until the time document is sent by the adapter.

Orchestrations

Parameter	Description
Name	The name of the orchestration.
Host Name	The name of the BizTalk host instance in which the orchestration runs.
Application	The name of the application to which the orchestration is associated.
Status	This metric returns the status of a specific orchestration. Possible values are: • 1 - Unbound. • 2 - Bound. • 3 - Stopped. • 4 - Started.

Adapters

Parameter	Description
File Adapter Performance Counters	
Byte Received/Sec	The number of bytes received by the file adapter per second. The counter applies only to messages that have been completely read by the file adapter from the file system.
Messages Received/Sec	The number of messages received by the file adapter per second. The counter applies only to messages that have been completely read by the file adapter from the file system.
Bytes Sent/Sec	The number of bytes sent by the file adapter per second. The counter applies only to messages that have been completely written to file system.
Messages Sent/Sec	The number of messages sent by the file adapter per second. The counter applies only to messages that have been completely written to file system.
FTP Adapter Performance Counters	
Bytes Received/Sec	The number of bytes received by the FTP adapter per second. The counter applies only to messages that have been completely read by the FTP adapter from the FTP server.
Messages Received/Sec	The number of messages received by the FTP adapter per second. The counter applies only to messages that have been completely read by the FTP adapter from the FTP server.
Bytes Sent/Sec	The number of bytes sent by the FTP adapter per second. The counter applies only to messages that have been written to the destination FTP server.
Messages Sent/Sec	The number of messages sent by the FTP adapter per second. The counter applies only to messages that have been written to destination FTP server.
HTTP Adapter Performance Counters	
Messages Received/Sec	The number of HTTP requests received by the HTTP adapter per second. The counter applies only to request messages that have been completely read by the HTTP adapter from the HTTP client.
Messages Sent/Sec	The number of HTTP requests sent by the HTTP adapter per second. The counter applies only to request messages that have reached the destination URL.
BizTalk:HTTP Receive Adapter--Memory Queue Size	The number of incoming messages in the HTTP adapter's internal memory queue.
BizTalk:HTTP Send Adapter--Memory Queue Size	The number of outgoing messages in the HTTP adapter's internal memory queue.
MSMQ Adapter Performance Counters	
Bytes Received/Sec	The number of bytes received by the MSMQ adapter per second. The counter applies only to messages that have been completely read by the MSMQ adapter from the source queue.
Messages Received/Sec	The number of messages received by the MSMQ adapter per second. The counter applies only to messages that have been completely read by the MSMQ adapter from the source queue.
Bytes Sent/Sec	The number of bytes sent by the MSMQ adapter per second. The counter applies only to messages that have reached the destination queue.
Messages Sent/Sec	The number of messages sent by the MSMQ adapter per second. The counter applies only to messages that have reached the destination queue.
POP3 Adapter Performance Counters	
Active Sessions	The number of open POP3 connections the POP3 adapter is managing at a time.
Bytes Receive/Sec	The number of bytes downloaded by the POP3 adapter from a mail server per second.
Messages Received/Sec	The number of email messages downloaded by the POP3 adapter from mail server per second.
SQL Adapter Performance Counters	
SQL Messages Sent	The total Messages sent using SQL adapter.
SQL Messages Sent Per Sec	The number of messages sent by the SQL adapter per second. The counter applies only to messages that have reached the destination queue.
SQL Messages Received	The total Messages received using SQL adapter.
SQL Messages Received Per Sec	The number of messages received by the SQL adapter per second. The counter applies only to messages that have been completely read by the SQL adapter from the source queue.
SMTP Adapter Performance Counters	
Messages Sent/Sec	The number of messages sent by the SMTP adapter per second. The counter applies only to messages that have been transmitted to the SMTP server.
Windows SharePoint Services Adapter Performance Counters	
Percentage Receive Message Failures	The percentage of Windows SharePoint Services files that have not been processed by BizTalk Server due to receive errors.
Percentage Send Message Failures	The percentage of failed messages BizTalk Server attempted to send to Windows SharePoint Services.

Note
The application name for artifacts (**Send Ports, Receive Ports, Orchestrations)** will be displayed only if PowerShell is enabled. For more info on how to enable powershell, click here.
Currently, we support only BizTalk 2010 Server monitoring.

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Oracle Tuxedo Monitoring

Oracle Tuxedo Versions Supported: Tuxedo version 6.5 and above.We are using BEA SNMP Agent and the SNMP MIBs to manage Tuxedo applications.

Prerequisites for monitoring Oracle Tuxedo: You must have Tuxedo SNMP agent installed. When you specify the **SNMP community string**, make sure that the community string has at least **'Read-only'** privileges.

Attributes Monitored: Refer Oracle Tuxedo Monitoring Parameters to know more about the attributes monitored.

To create a Oracle Tuxedo Monitor:

1. Click on New **Monitor** link.
2. Select **Oracle Tuxedo**.
3. Enter the **Display Name** of the monitor
4. Enter the Hostname of the host where the Oracle Tuxedo Server is running.
5. Enter the **SNMP port number** , on which the Tuxedo SNMP agent is running. The default port number is **161**.
6. You can enter your own credential details or select preconfigured credentials details in Credentials Manager.
7. Specify the **SNMP community string** of Tuxedo SNMP agent. The default value is **'public'**. Make sure you use a community string, that has **'Read'** privileges.
8. Enter the **timeout** in seconds.
9. Set the **Poll** interval.
10. If you are adding a new monitor from an Admin Server, select a Managed Server.
11. Choose the **Monitor Group** from the combo box with which you want to associate Tuxedo server (optional). You can choose multiple groups to associate your monitor.
12. Click **Add Monitor(s)**. This discovers the Tuxedo server from the network and starts monitoring it.

Oracle Tuxedo provides the framework for building scalable multi-tier client/server applications in heterogeneous distributed environments. From the Web to the Enterprise, Tuxedo users can develop, manage, and deploy distributed applications independent of the underlying hardware, operating system, network and database environment.

Monitoring Oracle Tuxedo applications can be complex, providing requests that run across multiple processes, machines, and domain boundaries. Applications Manager can help you monitor system and application data from key Tuxedo components like the bulletin board, queue and communication bridge details, transaction info, ATMI operations and service details.

Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **Oracle Tuxedo** under the **Middleware/Portal** Table. Displayed is the Oracle Tuxedo bulk configuration view distributed into three tabs:

- **Availability** tab, gives the Availability history for the past 24 hours or 30 days.
- **Performance** tab gives the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

Click on the monitor name to see all the server details listed under the following tabs:

- Performance Overview
- Servers

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- Queue
- Service
- Configuration

Performance Overview

Parameter	Description
BULLETIN BOARD PARAMETERS	
Max Accessers	The maximum number of clients and servers that can have access to the bulletin board on the server machine at one time.
Max Conversations	The maximum number of simultaneous conversations in which clients and servers on the Tuxedo server can be involved.
Max Transactions	The maximum number of simultaneous global transactions in which this machine can be involved.
Max Objects	The default maximum number of active objects to be accommodated in the Active Object Map Tables.
BULLETIN BOARD STATUS	
Accessers Used	The number of processes in use that can have access to a bulletin board on a particular processor at any one time.
Conversations Used	The current number of conversations used.
Service Load Enqueued	The service load currently enqueued on the server machine.
Current Clients Count	The number of clients, both native and workstation, currently logged in to the server machine.
Domain State	The state of the domain. The various states are: • 1 - Active • 2 - Inactive • 3 - Forcible Inactive **Note:** Forcible shutdown works only in case of single-machine applications.
MACHINE STATUS	
Machine Name	The source logical machine name.
Machine State	The state of the source machine. The various states are: • 1 - Active • 2 - InActive • 3 - Partitioned • 4 - Invalid • 5 - Re-Activate • 6 - Cleaning
BULLETIN BOARD LIAISON (BBL)	
Server	The name of the Tuxedo server where the BBL administration process running
Process Name	The name of the BBL process running on the Tuxedo server
State	The state of the BBL Process.
TLISTEN	
Lmid	The logical machine identifier.
TListen State	The state of your workstation listener within the application. Various states are: • 1 - active • 2 - inactive
BRIDGE DETAILS	
Bridge Lmid	The source logical machine identifier.

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Bridge State	The state of the communication bridge. The various states are: • 1 - active • 2 - inactive • 3 - suspended • 4 - pending
Bytes Received/Sec	The average number of bytes sent per second from the destination logical machine to the source logical machine.
Bytes Sent/Sec	The average number of bytes sent per second from the source logical machine to the destination logical machine.
Messages Received/Sec	The average number of messages sent per second from the destination logical machine to the source logical machine.
Messages Sent/Sec	The average number of messages sent per second from the source logical machine to the destination logical machine.
TRANSACTION DETAILS	
Initiated/Sec	The number of transactions initiated per second from the server machine.
Aborted/Sec	The number of transactions aborted per second from the server machine.
Committed/Sec	The number of transactions committed per second from the server machine.
Transactions Used	The number of transactions on the tuxedo server.
ATMI OPERATION DETAILS	
Connections/Sec	The number of connections performed per second from the server.
Dequeues/Sec	The number of dequeue operations performed per second from the server.
Enqueues/Sec	The number of enqueue operations performed per second from the server.
Post/Sec	The number of post operations performed per second from the server.

Servers

Parameter	Description
SERVER DETAILS	
Name	The name of the Tuxedo machine.
Group Number	The group number associated with a server's group.
Server ID	A numeric identifier that uniquely identifies a server within a group.
State	This field displays the state of your server. A server can be in one of the following states: • 1 - active • 2 - inactive • 3 - migrating • 4 - cleaning • 5 - restarting • 6 - suspended • 7 - partitioned • 8 - dead • 9 - invalid
SERVER TRANSACTION DETAILS	
Transaction Initiated/Sec	The number of transactions initiated per second from the server.
Aborted/Sec	The number of transactions aborted per second from the server.
Committed/Sec	The average number of transactions committed per second from the server.
SERVER OPERATION DETAILS	
Dequeues/Sec	The number of dequeue operations performed per second from the server.
Enqueues/Sec	The number of enqueue operations performed per second from the server.

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Post/Sec	The number of post operations performed per second from the server.
Requests/Sec	The number service requests operations performed per second from the server.
Subscriptions/Sec	The number of subscribe operations performed per second from the server.

Queue

Parameter	Description
QUEUE DETAILS	
Queue Address	The address of the request queue for an active server offering the interface.
State	The state of the Interface Queue objects. Values are: • 1 - Active state • 2 - Migration State • 3 - Suspended state • 4 - Partitioned state
Active Servers	The number of active servers associated with this queue.
Queue Length	The sum of the queue lengths of this queue while it has been active.
Workload/Sec	The load on the system imposed per second by the queue.
Requests/Sec	The number of requests enqueued per second for this interface.

Service

Parameter	Description
SERVICE DETAILS	
Name	The name of the service on which the server is currently working.
State	The state of the service: • 1 - active • 2 - inactive • 3 - invalid
Load On System	The relative load that the service imposes on the system.
Timeout (in Seconds)	The time limit (in seconds) for processing requests for this service.

Configuration

Parameter	Description
CONFIGURATION	
Domain Master	The host where the Tuxedo domain master is running.
Model	The classification of your Tuxedo application as a single-machine (SHM) or multiprocessor (MP) application.
License Expiration Date	The expiration date for the binary on the server machine or a 0- length string if binary is not a TUXEDO System/T master binary.
MACHINE DETAILS	
Machine Name	The name of the machine used by Tuxedo for mapping application resources to machines configured for this application.
Machine Lmid	The machine identifier used for mapping application resources to configured machines.

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Machine Role	This field displays the role of this machine. The various roles are: • MASTER • BACKUP • OTHER (Neither the master nor the backup master machine).
TUXDIR	The absolute path name of the installation directory of Oracle Tuxedo.
TUX Conf File	Each Tuxedo application is controlled by a configuration file in which installation-dependent parameters are defined. This parameter displays the path to the location of the configuration file.

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Microsoft Lync Server Monitoring

Microsoft's Lync 2013 is a unified communication application that enables users to use instant messaging (IM), audio and video calls, online meetings, availability information, sharing capabilities and other powerful collaboration tools for corporate users all from one, easy-to-use program. Each server running Lync runs one or more server roles. A server role is a defined set of Lync Server functionalities provided by that server.

Applications Manager lets you effectively monitor your Lync Server, collect metrics pertaining to it's server roles and performance counters in one central location, detect issues, send alerts and thus prevent possible service outages or configuration problems. Users can proactively manage their Lync servers and identify issues before they become critical.

Applications Manager gathers data related to the following Server Roles:

- **Front End Server** - Monitor the Registrar, User Services, SIP related KPIs (peers,protocol,responses), Storage services, MCU performance and diagnose issues pertaining to all mobility related data.
- **A/V Conferencing Server** - Monitor the overall performance and functionality of the Conferencing server in your deployment.
- **Edge Server** - Track client communication over SIP, requests and messages.
- **Mediation Server** - Monitor call failure between proxies and gateways as well as media connectivity checks.

Adding a new monitor

Microsoft Lync Server Versions Supported: Microsoft's Lync 2013.

Prerequisites for monitoring Microsoft Lync: To monitor a Microsoft Lync Server the user must have **"Administrator"** privileges and WMI access enabled for that server.

To create a Microsoft Lync Monitor:

- Click on New **Monitor** link.
- Select **Microsoft Lync**.
- Enter the **Display Name** of the monitor
- Enter the Hostname of the host where the Lync Server is running.
- You can enter your own credential details or select preconfigured credentials details in Credentials Manager. If you wish to enter your own credentials, specify **username** and **password** details for this monitor.
- Select the **Server Roles** to be monitored from the drop-down menu.
- Set the **Poll** interval.
- If you are adding a new monitor from an Admin Server, select a Managed Server.
- Choose the **Monitor Group** from the combo box with which you want to associate Lync server (optional). You can choose multiple groups to associate your monitor.
- Click **Add Monitor(s)**. This discovers Lync server from the network and starts monitoring them.

Applications Manager supports monitoring of counters relevant to the Microsoft Lync 2013 Server roles under the following tabs**:**

- Performance Overview
- Front End Server | Mobility
- A/V Conferencing Server

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- Edge Server
- Mediation Server

Lync Server - Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **Microsoft Lync** under the **Middleware/Portals** Category. Displayed is the Microsoft Lync Server bulk configuration view distributed into three tabs:

- **Availability** tab, gives the Availability history for the past 24 hours or 30 days.
- **Performance** tab gives the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

Performance Overview	
Attribute name	**Description**
System Statistics	
Available Physical Memory	The amount of available physical memory in MB.
Web Components	
ASP.NET Apps v2.0 - Requests Rejected	The number of requests rejected because the request queue was full for ASP.NET Apps v2.0.
ASP.NET Apps v4.0 - Requests Rejected	The number of requests rejected because the request queue was full for ASP.NET Apps v4.0.
Join Launcher Service Failures	The number of join failures.
Failed File Requests Per Sec	The per-second rate of failed Address Book file requests.
Failed Search Requests Per Sec	The per-second rate of failed address book search requests.
Failed Validate Cert Calls to other Cert Authprovider	The number of failed validate cert calls to the cert auth provider.
Timed out Active Directory Requests Per Sec	The per-second rate of timed out Active Directory requests.
Failed Get Locations Requests	The per-second rate of failed Get Locations requests.
HTTP 5xx Responses Per Sec	The per second rate of responses with HTTP 5xx code.
Microsoft Lync Server Services	
Display Name	Name of the Lync service.
Start Mode	The start up type of the service.
State	The current state of the service.

Front End

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Attribute name	Description

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Registrar Module	
REG DB Store - Queue Latency	The average time a request is held in the request queue to RTC database.

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REG DB Store - Sproc Latency	The average time it takes to execute a sproc call against RTC database.

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REG DB Store - Throttled Requests Per Sec	The number of requests that were rejected with a retry since the database queue latency was high.

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User Services Module

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DB Store - Queue Latency	The average time a request is held in the request queue to RTCDyn database.

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DB Store - Sproc Latency	The average time it takes to execute a sproc call against RTCDyn database.

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DB Store - Throttled Requests Per Sec	The number of requests that were rejected with a retry since the database queue latency was high.

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Shared User Services Module

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Shared DB Store - Queue Latency	The average time a request is held in the request queue to RTC Shared database.

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Shared DB Store - Sproc Latency	The average time it takes to execute a sproc call against RTC Shared database in ms.

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Shared DB Store - Throttled Requests Per Sec	The number of requests that were rejected with a retry since the database queue latency was high.

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SIP Peers	

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Authentication System Errors Per Sec	The per-second rate of authentication failures caused by system errors (due to low memory conditions or otherwise).

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Average Outgoing Queue Delay	The average outgoing queue delay in seconds.

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XmppFederation Failure IMDNs Sent Per Sec	The failure IMDNs sent per sec.

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Connections Active	The number of connections that are currently established and active.

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TLS Connections Active	The number of connections that are currently established and active which are authenticated using Transport Layer Security (TLS) protocol.

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Sends Outstanding	The number of messages that are waiting in the outgoing queues.

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Average Flow Control Delay	The average delay timeÂ due to messages waiting in the outgoing queue.

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Incoming Requests Per Sec	The number of request received per second by the server.

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Incoming Responses Per Sec	The number of responses received per second by the server.

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Outgoing Requests Per Sec	The number of request going out per second from the server.

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Outgoing Responses Per Sec	The number of responses going out per second from the server.

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SIP Protocol	

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Outgoing Messages Per Sec	The number of messages sent per second.
Incoming Responses Dropped Per Sec	The per-second rate of incoming responses dropped because they could not be processed (due to bad headers, insufficient routing information, server resource allocation failure).
Average Event Processing Time	The average time to process a SIP transaction or dialog state change event, in seconds.
Average Incoming Message Processing Time	The average time (in seconds) it takes to process an incoming message.
Average Number of Active Worker Threads	The average time to process an incoming message, in seconds.
Events in Processing	This metric shows the number of SIP transactions or dialog state change events, that are currently being processed.
Incoming Messages Per Sec	The number of messages received per second.
Events Processed Per Sec	The number of SIP transaction or dialog state change events that were delivered for processing per second.
Messages in Server	The number of messages that are currently being processed by the server.
SIP Responses	
Incoming 503 Responses Per Sec	The total number of incoming 503 responses per second.
Local 500 Responses Per Sec	The total number of 500 responses generated by the server per second
Local 504 Responses Per Sec	The total number of 504 responses generated by the server per second
SIP Load Management	
Incoming Messages Timed Out	The number of incoming messages currently being held by the server for processing for more than the maximum tracking interval.
Average Holding Time For Incoming Messages	The average time that the server held the incoming messages currently being processed.
Page File Usage	The available page file space currently in use by the server process, in percentage.
Routing Apps	
Primary Registrar Timeouts	Number of requests for which primary registrar timed out.
Backup Registrar Timeouts	Number of requests for which backup registrar timed out.
Number of Incoming Failure Responses	Number of times an Emergency Call failure response was received from Gateway.
LYNC Storage Service	
Lync Storage Service Stale Queue Items	The current number of Storage Service queue items which are not owned and last attempted a long time ago.
Dataloss Events with State Change	The total number of data loss events with state change.
Dataloss Events without State Change	The total number of data loss events without state change.
Failures of Replication Operations Sent to other Replicas Per Sec	The per-second rate of replication operation failures.
Server Connected to Fabric Pool Manager	Indicates whether server is connected to fabric pool manager.
MCU Health and Performance	
ASMCU - Health State	The current health of the MCU (Multi-point Control Unit) responsible for Application Sharing. • 0 = Normal. • 1 = Loaded. • 2 = Full. • 3 = Unavailable.
AVMCU - Health State	The current health of the MCU (Multi-point Control Unit) responsible for Audio/Video support. • 0 = Normal. • 1 = Loaded. • 2 = Full. • 3 = Unavailable.
DATAMCU - Health State	The current health of the MCU (Multi-point Control Unit) responsible for data. • 0 = Normal. • 1 = Loaded. • 2 = Full. • 3 = Unavailable.
IMMCU - Health State	The current health of the MCU (Multi-point Control Unit) responsible for instant messaging. • 0 = Normal. • 1 = Loaded. • 2 = Full. • 3 = Unavailable.
IMMCU Statistics	
Throttled SIP Connections	The number of throttled Sip connections.
Active Conferences	The number of conferences that are currently active.
Connected Users	The number of users which are connected in all conferences.

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Mobility	
Attribute name	**Description**
Mobility Health	
Push Notification Requests Failed Per Sec	The per second rate of failed push notifications.
Push Notification Requests Throttled Per Sec	The per second rate of throttled push notifications.
Requests Failed Per Sec	The per second rate of failed requests.
Requests Rejected Per Sec	The per second rate of rejected requests.

Conferencing	
Attribute name	**Description**
Conferencing Statistics	
CAA Incomplete Calls Per Sec	The per second rate of incomplete calls to Conferencing Attendant. This includes calls disconnected by the user and by the system due to invalid conference id, passcode, etc.
Allocation Latency	The average time (in milliseconds) taken to complete a full MCU allocation request.
Create Conference Latency	The average time (in milliseconds) taken to complete a create conference call.

Edge Server	
Attribute name	**Description**
Edge Server Statistics	
Bad Requests Received Per Sec	The per-second number of bad requests received.
SIP Above Limit Connections Dropped Access(Proxies Only)	The total number of connections that were dropped because the limit on number of incoming connections from a federated partner or clearing house was exceeded.
SIP Sends Timed Out Per Sec	The number of sends dropped per second because they stayed in the outgoing (send) queue for too long.
SIP Flow controlled Connections	The number of connections that are currently being flow-controlled (no socket receives are posted).
SIP Incoming Requests Dropped Per Sec	The per-second rate of incoming requests dropped because they could not be processed (due to bad headers, insufficient routing information, server resource allocation failure).
Average Incoming Message Processing Time	The average time (in seconds) it takes to process an incoming message.

Mediation Server	
Attribute name	**Description**
Mediation Server Statistics	
Total Failed Calls Caused by Unexpected Interaction from the Proxy	The number of calls that failed because of unexpected interaction from the Proxy.
Total Failed Calls caused by Unexpected Interaction from a gateway	The number of calls that failed because of unexpected interaction from the Gateway
Load Call Failure Index	The scaled index between zero and 100 that is related to all call failures due to heavy load
Candidates Missing	The number of times Media stack does not have Media relay candidates.
Media Connectivity Check Failures	The number of media connectivity check failures.

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Apache Kafka Monitoring

- Apache Kafka - An Overview
- Monitoring Apache Kafka - What we do.
- Adding a new Apache Kafka monitor / Using AddMonitor API
- Monitored Parameters

Apache Kafka - An Overview

Apache Kafka is an open-sourced, fault-tolerant publish-subscribe-based messaging system developed by LinkedIn. A distributed log-service, Kafka is often used in place of traditional message brokers because of its higher throughput, scalability, reliability and replication.

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Monitoring Apache Kafka - What we do.

An attractive option for data integration, Apache Kafka is fast and highly scalable. Kafka nodes are created and taken down in an elastic manner; with a single node handling hundreds of read/writes from thousands of clients in real-time. Data streams are split into partitions and spread over different brokers. Although very simple at a high level, Kafka has an incredible depth of technical detail.

Applications Manager aims to help administrators collect Kafka metrics, manage clusters and be alerted automatically of potential issues. Let’s take a look at what you need to see to monitor Kafka and the performance metrics to gather with Applications Manager:

- **Resource utilization details -** Automatically discover Kafka servers, monitor memory and CPU and get alerts of changes in resource consumption.
- **Thread and JVM usage** - Track thread usage with metrics like Daemon, Peak and Live Thread Count. Ensure that started threads don’t overload the server's memory.
- **Broker, Controller and Replication Statistics** - Gauge active controllers and see if brokers are up with the number of unavailable partitions. Monitor broker stats like log flush latency (to make sure longer flushes don’t back up the pipeline) and under-replicated partitions (indicating replication is not going as fast as configured).
- **Network and Topic Details -** Pinpoint the requests segment causing a slowdown. Keep an eye on network usage on your host so degraded performance is not network-related. Ensure disk throughput does not cause performance bottlenecks, with Broker Topic byte rates metrics.
- **Fix Performance Problems Faster -** Get instant notifications when there are performance issues with the components of Apache Kafka. Become aware of performance bottlenecks and take quick remedial actions before your end users experience issues.

Apache Kafka - Adding a new monitor

Supported versions: Versions 0.7.0 to 0.10.0.1

Steps to create a new monitor

To create an Apache Kafka Monitor, follow the steps given below:

- Click on New Monitor link. Choose Apache Kafka.

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- Enter Display Name of the monitor.
- Enter the IP Address or hostname of the host in which Kafka is running.
- Enter the JMX Port in the JMX Port field.
- Enter the credential details like **user name, password** and **JNDIPath** or select credentials from a **Credential Manager list**.
- Enter the polling interval time in minutes.
- Click Test Credentials button, if you want to test the access to Apache Kafka Server.
- Choose the Monitor Group from the combo box with which you want to associate Apache Kafka Monitor (optional). You can choose multiple groups to associate your monitor.
- Click Add Monitor(s). This discovers Apache Kafka from the network and starts monitoring.

Use the AddMonitor API to add an Apache Kafka monitor:

Syntax

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[API KEY]&type=Kafka&displayname=[Displayname]&HostName=[Hostname]&Port=[Port]&UserName=[UserName]&Password=[Password]&JNDIPath=/jmxrmi

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field

	Description
type	The type of the database you want to add. Value should be Kafka.
display name	Display name of the Kafka monitor.
hostname	The name of the host in which Kafka server is running.
port	The port number where Kafka server is running.
username	The name of the user who has permission to access the Apache Kafka server.
JNDIPath	JNDI path to be used.

Sample Request

http://prod-server8:9091/AppManager/xml/AddMonitor?apikey=15c64bc4cca4a3c45d0369fca1877e8a&type=Kafka&displayname=Kafka&HostName=172.20.8.62&Port=9999&UserName=&Password=&JNDIPath=/jmxrmi

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Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **Apache Kafka** under the **Middleware/Portal** Table. Displayed is the Apache Kafka bulk configuration view distributed into three tabs:

- **Availability tab** gives the Availability history for the past 24 hours or 30 days.
- **Performance tab** gives the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

Click on the monitor name to see all the server details listed under the following tabs:

- Overview
- Controller Details
- Broker Details
- Network Details
- Topics Details
- Configurations

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Overview

Parameter	Description
Memory Details	
Total Physical Memory Size	The total amount of physical memory in Megabytes.
Free Physical Memory Size	The amount of free physical memory in Megabytes.
Committed Virtual Memory Size	The amount of virtual memory that is guaranteed to be available to the running process in Megabytes.
Total Swap Space Size	The total size of virtual memory hold by the JVM.
Free Swap Space Size	The free virtual memory size.
Thread Details	
Daemon Thread Count	The number of daemon threads currently running.
Peak Thread Count	The peak live thread count since the Java virtual machine started or peak was reset.
Live Thread Count	The number of live threads currently running.
Total Started Thread Count	The total number of threads created and also started since the Java virtual machine started.
Heap and Non Heap Memory Details	
NonHeapMemoryUsage	The non-heap memory currently in use.
HeapMemoryUsage	The heap memory currently in use.

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Controller Details

In a Kafka cluster, one of the brokers serves as the controller, which is responsible for managing the states of partitions and replicas and for performing administrative tasks like reassigning partitions.

Parameter	Description
Kafka Controller Details	
Active Controller Count	Number of active controllers in the cluster.
Offline Partitions Count	The number of unavailable partitions.
Leader Election Rate	The rate of leader elections. (When a partition leader dies, an election for a new leader is triggered.)
Unclean Leader Election Rate	The rate of Unclean Leader Elections. (Unclean leader elections are caused by the inability to find a qualified partition leader among Kafka brokers. When a broker that is the leader for a partition goes offline, a new leader is elected from the set of ISRs for the partition. An unclean leader election is a special case in which no available replicas are in sync)

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Broker Details

Parameter	Description
Log Details	
Log Flush Rate	The asynchronous disk log flush rate.
Broker Topic Metrics	
Bytes In / Min	The aggregate incoming byte rate (amount of data written to topic on this broker) per minute.
Bytes Out / Min	The aggregate outgoing byte rate per minute.
Bytes Rejected / Min	The amount of data in messages rejected by broker per minute.
Failed Fetch Requests / Min	The number of data read requests from consumers that brokers failed to process for this topic per minute.
Failed Produce Requests / Min	The number of requests from producer that have failed.
Messages In / Min	The number of Messages that comes into the Kafka broker.
Replication Manager	
IsrExpands / Min	The number of "in-sync" replica expansions. (If a broker goes down, ISR for some of the partitions will shrink. When that broker is up again, ISR will be expanded once the replicas are fully caught up).
IsrShrinks / Min	The number of "in-sync" replica shrinks. (If a broker goes down, ISR for some of the partitions will shrink. When that broker is up again, ISR will be expanded once the replicas are fully caught up) .

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Leader Count	The number of partitions for which a particular host is the leader.
Partition Count	The number of partitions in the cluster.
Under Replicated Partitions	This indicates the number of partitions in the cluster are under-replicated.
Request Handler Avg Idle Percent	The average fraction of time the request handler threads are idle.

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Network Details

Parameter	Description
Requests Process Rate	
Request Produce / Min	The number of messages written to topic on this broker.
Request Fetch Consumer / Min	The amount of data that the consumers fetched from this topic on this broker.
Request Fetch Follower / Min	The requests from brokers that are the followers of a partition to get new data.
Time Taken For Requests	
Total Time Produce / Min	The total time to serve the specified request.
Total Time Fetch Consumer / Min	The total time that the consumers fetched data from this topic on this broker.
Total Time Fetch Follower / Min	The total time that is taken by theÂ followers of a partition to get new data
Network Processor Rate	
Network Processor Avg Idle Percent / Min	The average free capacity of the network processors per minutes.

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Topics Details

Parameter	Description
Topic Details	
Topic Name	Specifies the name of the topic.
Bytes in / Min	The aggregate incoming byte rate (amount of data written to topic on this broker) per minute.
Bytes Out / Min	The aggregate outgoing byte rate per minute.
Failed Fetch Requests / Min	The total number of failed Fetch Requests per minute.
Failed Produce Requests / Min	The total number of failed producer requests.
Messages In / Min	The number of messages that comes into the Kafka broker.

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Configurations

Parameter	Description
Storage Details	
Boot Class Path	The boot class path that is used by the bootstrap class loader to search for class files.
Class Path	The Java class path that is used by the system class loader to search for class files.
Spec Vendor	The vendor of the JMX specification implemented by this product.
Spec Version	The version of the JMX specification implemented by this product.
VM Name	The Java virtual machine name.
VM Vendor	The Java virtual machine implementation vendor.

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Apache ActiveMQ Monitoring

- Apache ActiveMQ - An Overview
- Monitoring Apache ActiveMQ - What we do.
- Adding a new Apache ActiveMQ monitor / Using AddMonitor API
- Monitored Parameters

Apache ActiveMQ - An Overview

Apache ActiveMQ is a powerful open source message broker that supports JMS and a variety of Cross Language Clients and Protocols (from Java, C, C++, C#, Ruby, Perl, Python and PHP). ActiveMQ offers full support for the Enterprise Integration Patterns both in the JMS client and the Message Broker.

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Monitoring Apache ActiveMQ - What we do.

Applications Manager aims to help administrators collect ActiveMQ metrics, correlate your queue and broker performance with your infrastructure, maintain configurations for high availability and scalability, and be alerted automatically of potential issues.
Let's take a look at what you need to see to fully utilize ActiveMQ and the performance metrics that you can gather with Applications Manager:

- **Resource utilization details -** Automatically discover ActiveMQ servers, monitor memory and CPU and get alerts of changes in resource consumption.
- **Topic and Queue Details** - Automatically collect and visualize ActiveMQ queue data like memory usage, average message size, average enqueue time and broker metrics all in one place. Analyse topic details including memory consumed by each topic, average message size, blocked sends, health of each topic etc. and make informed decisions.
- **Subscriber Statistics** - Monitor the most important subscriber metrics from the out-of-the-box ActiveMQ dashboard, including subscriber count and subscriber queue metrics. Correlate subscriber metrics with their respective topic metrics to diagnose issues.
- **Fix Performance Problems Faster -** Get instant notifications when there are performance issues with the components of Apache ActiveMQ. Become aware of performance bottlenecks and take quick remedial actions before your end users experience issues.

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Apache ActiveMQ - Adding a new monitor

Prerequisites for setting up Apache ActiveMQ Monitoring:
Apache ActiveMQ has extensive support for JMX to allow you to monitor and control the behavior of the broker via the JMX MBeans. You can enable/disable JMX support by following the steps mentioned here.
Steps to create a new monitor
To create an Apache ActiveMQ Monitor, follow the steps given below:

- Click on New Monitor link. Choose Apache ActiveMQ.

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- Enter Display Name of the monitor.
- Enter the IP Address or hostname of the host in which Apache ActiveMQ Broker is running.
- Enter the JMX Port in the JMX Port field.
- Enter the credential details like **user name** and **password** of Apache ActiveMQ Broker or select credentials from a **Credential Manager list**.
- Enter the JNDI path. For example:- JNDIPATH for default installations of Apache ActiveMQ Broker is /jmxrmi.
- Enter the polling interval time in minutes.
- Click Test Credentials button, if you want to test the access to Apache ActiveMQ Server.
- Choose the Monitor Group from the combo box with which you want to associate Apache ActiveMQ Monitor (optional). You can choose multiple groups to associate your monitor.
- Click Add Monitor(s). This discovers Apache ActiveMQ from the network and starts monitoring.

Note: Click this **link** to know more about establishing Apache ActiveMQ Failover.

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Use the AddMonitor API to add an Apache ActiveMQ monitor:

Syntax

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[apikey]&type=ApacheActiveMQ&displayname=[Displayname]&HostName=[HostName]&Port=[Port]&UserName=[UserName]&Password=[Password]&JNDIPath=/jmxrmi

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the database you want to add. Value should be ApacheActiveMQ.
display name	Display name of the ActiveMQ monitor.
hostname	The name of the host in which ActiveMQ server is running.
port	The port number where ActiveMQ server is running.
username	The name of the user who has permission to access the Apache ActiveMQ server.
JNDIPath	JNDI path to be used.

Sample Request

http://prod-server8:9091/AppManager/xml/AddMonitor?apikey=ff5db35538c534e24dc2154cffbc7e6e&type=ApacheActiveMQ&displayname=Success&HostName=app-w8-aio-5&Port=1099&UserName=&Password=&JNDIPath=/jmxrmi

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Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **Apache ActiveMQ** under the **Middleware/Portal** Table. Displayed is the Apache ActiveMQ bulk configuration view distributed into three tabs:

- **Availability tab** gives the Availability history for the past 24 hours or 30 days.
- **Performance tab** gives the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

Click on the monitor name to see all the server details listed under the following tabs:

- Overview
- Topic Details

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- Queue Details
- Subscriber Details
- Configurations

Overview

Parameter	Description
Configuration Details	
Memory Usage	The memory usage, in bytes, used by undelivered messages.
Store Usage	
Temp Usage	
Memory Details	
Total Physical Memory Size	The total amount of physical memory in Megabytes.
Free Physical Memory Size	The amount of free physical memory in Megabytes.
Committed Virtual Memory Size	The amount of virtual memory that is guaranteed to be available to the running process in Megabytes.
Total Swap Space Size	The total size of virtual memory hold by the JVM.
Free Swap Space Size	The free virtual memory size.
Thread Details	
Daemon Thread Count	The number of daemon threads currently running.
Peak Thread Count	The peak live thread count since the Java virtual machine started or peak was reset.
Live Thread Count	The number of live threads currently running.
Total Started Thread Count	The total number of threads created and also started since the Java virtual machine started.
Heap and Non-Heap Memory Details	
Heap Memory Usage	The heap memory currently in use.
Non-Heap Memory Usage	The non-heap memory currently in use.

Topic Details

Parameter	Description
Topic Details	
Name	
Memory Usage (%)	
Queue Size	The number of messages in the destination which are yet to be consumed (potentially dispatched but unacknowledged).
Average Message Size	The average message size on this destination.
Blocked Sends	The number of messages blocked for Flow Control.
Average Blocked Time	The average time (ms) messages are blocked for Flow Control.
Topic Count Details	
Producer	The total number of producers that have posted messages to the ActiveMQ instance
Consumer Count	The total number of consumers that have consumed the messages posted by the producers.
In Flight Count	The number of messages sent to a consumer session and have not received an acknowledgement.
Enqueue Count	The total number of messages sent to the queue since the last restart.
Dispatch Count	The total number of messages sent to consumer sessions (Dequeue + Inflight).
Dequeue Count	The total number of messages removed from the queue (acknowledged by consumer) since last restart.
Expired Count	The number of messages that were not delivered because they were expired.

Queue Details

Parameter	Description
Queue Details	
Memory Usage	The memory usage, in bytes, used by undelivered messages.
Cursor Usage	The message cursor memory usage, in bytes.
Average Message Size	The average message size on this destination.

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Parameter	Description
Average Enqueue Time	The average time a message has been held this destination.
Average Blocked Time	The average time (ms) a message is blocked for Flow Control.
Cache Enabled	Specifies if caching is enabled.
Blocked Producer Warning Interval	The interval between warnings issued when a producer is blocked from adding messages to the destination.
Queue Count Details	
Enqueue Count	The total number of messages sent to the queue since the last restart.
Dispatch Count	The total number of messages sent to consumer sessions (Dequeue + Inflight).
Dequeue Count	The total number of messages removed from the queue (acknowledged by consumer) since last restart.
Expired Count	The number of messages that were not delivered because they were expired.

Subscriber Details

Parameter	**Description**
Subscriber Details	
Designation Name	
Cursor Usage	The message cursor memory usage, in bytes.
Maximum Pending Messages	The maximum number of pending messages allowed.
Messages Awaiting Acknowledgement	The number of messages dispatched to the client and are awaiting acknowledgement.
Pending Queue Size	The number of messages pending delivery.
Enqueue Counter	Counts the number of messages that matched the subscription.
Dequeue Counter	Counts the number of messages were sent to and acknowledge by the client.

Configuration

Parameter	Description
Configuration Details	
Broker Version	The version of the broker.
Broker ID	The unique id of the broker.
Broker Name	The name of the broker.
Average Message Size	The average message size on this destination.
Current Connection Count	
Job Scheduler Store Limit	The disk limit, in bytes, used for scheduled messages before producers are blocked.
Job Scheduler Store	The percentage of job store limit used.
Maximum Message Size	The maximum message size on this destination.
Memory Limit	The memory limit, in bytes, used for holding undelivered messages before paging to temporary storage.
Minimum Message Size	The minimum message size on this destination.
Total Connection Count	The total number of connections (Both the producer and consumer have to connect to the ActiveMQ instance for posting and consuming messages respectively).
Total Consumer Count	The total number of consumers that have consumed the messages posted by the producers
Total DeQueue Count	The total number of messages removed from the queue (acknowledged by consumer) since last restart.
Total Enqueue Count	The total number of messages sent to the queue since the last restart.
Total Message Count	The total number of messages in the queue, including the number of enqueued and dequeued messages.
Total Producer Count	The total number of producers that have posted messages to the ActiveMQ instance
Store Limit	The percent of store limit used.

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Server Monitoring

In network-level management, maintaining the status and connectivity of the network, is a picture at a higher level. It is of prime importance to know the status of the machines in the network, how loaded (or overloaded) they are and how efficiently they are utilized (or overused) to enable necessary corrective administrative functions to be performed on the identified overloaded/poorly performing systems. Server-level management is a down-to-earth concept which involves lot of manual intervention, human resources, and administrative tasks to be performed. Applications Manager provides with a server-level monitoring functionality to achieve such goals and to ease the process of configuration management of hosts.

Supported Operating Systems

1. Windows
2. Linux
3. Sun Solaris
4. IBM AIX (Page Space Details)
5. IBM AS400/iSeries
6. HP Unix
7. Tru64 Unix
8. FreeBSD
9. Mac OS
10. Novell

To create any of the above server monitors, follow the steps given below:

1. Click **New Monitor**. Choose **Server**.
2. Enter the **IP Address or hostname** of the host.
3. Enter the SubNetMask of the network.
4. Enter the polling interval time in minutes.
5. If you are adding a new monitor from an Admin Server, select a Managed Server.
6. Provide the monitor specific authentication information: Choose the OS type Windows ((2000, 2003, 2003 R2, 2008, 2008 R2, 2012, 2012 R2, XP, NT, Vista, 7, 8 and 10), Linux, Sun OS, IBM AIX, IBM AS400 / iSeries, HP Unix, Tru64 Unix, FreeBSD, Mac OS, Novell, Windows Clusters 2008, 2008 R2) . Based on the type of OS, the 'Mode of Monitoring' information changes.

Monitored Parameters

Availability tab, gives the Availability history for the past 24 hours or 30 days. *Performance* tab gives the Health Status and events for the past 24 hours or 30 days. *List view* enables you to perform bulk admin configurations. Click on the individual monitors listed, to view the following information.

Parameters	Description
System Load	Specifies the number of jobs handled by the system in 1/ 5/ 15 minutes with its peak and current value, and current status.
Disk Utilization	Specifies the hard disk space utilized by the system and updates with the peak and current value, and current status of the Disk Partition parameter.(The parameter includes C, D, E, F drives, etc. in windows, /home, etc. in Linux.)
Memory Utilization	Swap Memory Utilization: Specifies the swap space or the virtual memory utilized by the system with peak and current value, and current status of the parameter. Physical Memory Utilization: Specifies the amount of physical memory utilized by the system with peak and current value, and current status of the parameter.

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Disk I/O Stats	specifies read/writes per second, transfers per second, for each device.
CPU Utilization	Specifies the total CPU used by the system with its peak and current value, and current status.

Note: Option is provided for **ignoring the monitoring of a specific disk** drive in a server. Open *<AMServer.properties>* file in *<AppManager Home/Conf>* and add the drive that you do not want to monitor to *<am.disks.ignore>.* For eg.,

 # The drives beginning with the characters given below will not be monitored in server monitor.
am.disks.ignore=C:

Here, monitoring will not happen for C: drive. Likewise, you can add further disks comma separated*(C;D:,/home)*.

The following table briefs the parameters monitored & the mode of monitoring (✓ - yes).

Note: If the server monitor is added in Telnet & SSH mode, you have the option to **directly access Telnet client** by clicking on the '*Execute Commands on this server*' link found below Today's Availability pie chart. This option is disabled by default.

To enable it, permissions need to be given to admin or operator to use this telnet client. The permissions can be given from *Admin tab->User Administration -->Permissions* link.

Operating System	Telnet	SSH	SNMP	WMI
Windows			✓	✓ (only if Applications Manager is installed on windows machine)
Linux	✓	✓	✓	
Solaris	✓	✓	✓	
HP-UX / Tru64 Unix	✓	✓		
FreeBSD	✓	✓	✓	
Mac OS	✓	✓	✓	
IBM AIX	✓	✓		
Novell			✓	
Attributes				
CPU Utilization (all types except Windows NT)	✓	✓	✓	✓
Disk Utilization (all types)	✓	✓	✓	✓
Physical Memory Utilization (IBM AIX -only for root user, Windows - WMI mode, all other types)	✓	✓	✓	✓
Swap Memory Utilization (IBM AIX - only for root user, FreeBSD, Linux, Solaris, Windows, Novell)	✓	✓	✓	✓
Network Interface (all types)			✓	✓ [status attribute data is not available]
Process Monitoring (all types)	✓	✓	✓	✓
Process Monitoring - Memory Utilization (all types)	✓	✓	✓	✓
Process Monitoring - CPU Utilization (IBM AIX - FreeBSD, Linux, Mac OS, Solaris, HP Unix / Tru64)	✓	✓	✓	
Service Monitoring (only for Windows)				✓
Event log (only for Windows)				✓
System Load (IBM AIX, FreeBSD, Linux, Mac OS, HP-Unix, Solaris, Novell)	✓	✓	✓	
Disk I/O Stats (only for IBM AIX, Linux, Solaris, Novell)	✓	✓		
Hardware monitoring (Dell & HP)			✓	

Note: To know more about the configuration details required while discovering the host resource, click here.
Avg. Queue Length in Disk I/O Statistics for AIX is not supported

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When it comes to choosing the mode of monitoring for servers, we recommend Telnet/SSH over SNMP.

Page Space in AIX Servers:

To get in-depth details on **Page Space** in AIX servers, you can use the following command "**lsps -a**".
The command "**lspa -a**" lists the location of the paging space logical volumes as they were, not as they are.
Normally page spaces are used when the process running in the system has used the entire allocated memory and it has run out of memory space. It then uses the page spaces in the system to move the piece of code/data that is not currently referenced by the running process into the page space area so that it could be moved back to the Primary memory when it is been referenced again by the currently running process.
While trying to monitor the AIX server, if you get **"No data Available"** for Page Space, you can troubleshoot it by following the steps given below:
First, you need to establish connection only through **TELNET** or **SSH** mode.
Second, check whether the command lsps -a exists in the system and then execute it.

Note

Avg. Queue Length in Disk I/O Statistics for AIX is not supported

Displaying Paging Space Characteristics

The "**lsps**" command displays the characteristics of paging spaces, such as the paging space name, physical volume name, volume group name, size, percentage of the paging space used, whether the space is active or inactive, and whether the paging space is set to automatic. The paging space parameter specifies the paging space whose characteristics are to be shown.

The following examples show the use of lsps command with various flags to obtain the paging space information. The "**-c**" flag will display the information in colon format and paging space size in physical partitions.

 # lsps -a

Page Space	Physical Volume	Volume Group	Size	%Used	Active	Auto	Type
paging00	hdisk1	rootvg	80MB	1	yes	yes	lv
hd6	hdisk1	rootvg	256MB	1	yes	yes	lv

Adding and Activating a Paging Space

To make a paging space available to the operating system, you must add the paging space and then make it available. The total space available to the system for paging is the sum of the sizes of all active paging-space logical volumes.

Note: You should not add paging space to volume groups on portable disks because removing a disk with an active paging space will cause the system to crash.

You can get more details about the command here: http://web.utanet.at/mario/exam/5129c72.htm
Apart from the above mentioned parameters, you can also monitor the following

- Processes
- Windows Services

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- Network Interface

To monitor processes in a server

1. In the Server Monitor page under **Process Details**, click **Add New Process**.
2. All the processes that are running would be displayed along with CPU and Memory utilization statistics. (Only memory statistics is shown for Windows and SNMP mode of monitoring)
3. Select the processes that you want to monitor.

After configuring the processes, they are listed under the **Process Details** section of the Server Monitor page. By clicking on the process, you can view its availability graph. You can also configure alarms for a particular process. You can edit the Display Name, Process Name, Commands and Arguments of the particular process by clicking on the Edit Process icon.

To monitor windows services

Note: Windows Services monitoring is possible only in **WMI mode** of monitoring

1. In the Windows Monitor page, under **Service Details**, click **Add New Service**
2. All the services that are running would be displayed along with service name and status.
3. Select the services that you want to monitor.

After configuring the services, they are listed under the **Service Details** section of the Windows Monitor page. By clicking on the service, you can view its availability graph. You can also configure alarms for the availability of that particular service.

Apart from monitoring the availability of the service, you can manage the services by using the *start*, *stop*, *restart* options. When the service goes down, you can configure action "Restart the Service " along with other actions.

To monitor Network Interfaces

Note: Network Interface monitoring is possible only in **SNMP** and **WMI mode** of monitoring

In the Server Monitor page, under **Network Interfaces**, all the network interfaces will be listed. The various attributes that can be monitored are:

- Interface Traffic - Input traffic (bits received), Output Traffic (bits transmitted). You can set alarm thresholds for these attributes.
- Interface utilization - Input Utilization %, Output Utilization %. You can set alarm thresholds for these attributes.
- Packets received - Packets received per second
- Packets transmitted - Packets transmitted per second
- Error packets - No. of packets in error per second after receiving the packets
- Discarded packets - No. of packets discarded per second after receiving the packets
- Health - the health of the interface based on the attributes
- Status - whether the interface is up or down (shown only in SNMP mode of monitoring)

Associating Scripts and URLs to the Host Resource:

By associating a script or a URL to a Host resource, their attributes become one among the other attributes of the Host and their data is also shown under Host Details itself. Health of the Host resource is dependent on the Health of the Scripts and URLs as well. For eg., If you wish to monitor RequestExecutionTime, RequestsCurrent, RequestsDisconnected of the ASP.NET application, WMI scripts can be used to get the statistics (this info is not available when Applications Manager is used). You can write your own script that would fetch these details then configure this script to the Applications Manager. After configuring this script to the Applications Manager you can associate this script to the host monitor itself. Then the attributes of the script would behave like the other

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attributes of the Host monitor. Hence, you can configure in such a way that the Health of the script directly affects the Health of the host.
Likewise, If you want to monitor a website hosted in a system in such a way that, whenever there is a change in the health of the website, the health of the server should reflect the change. In this case you can configure the URL monitor and then associate that url to the host. Hence, if the website is down, the health of the Host resource is affected.

- **Associate/Remove Scripts**: Click on 'Associate/Remove Scripts' link in Host Details. Scripts that are associated and that are not associated with the Host would be listed. Accordingly, you can then select the scripts that you want to associate or remove.
- **Associate/Remove URLs**: Click on 'Associate/Remove URLs' link in Host Details. URLs that are associated and that are not associated with the Host would be listed. Accordingly, you can then select the URLs that you want to associate or remove.

Mode of Monitoring - SSH/Telnet vs SNMP

We recommend Telnet or SSH mode of monitoring because the following attributes are not available through SNMP:

- Disk I/O Stats
- Process Monitoring - CPU Utilization
- Swap Memory Utilization

Please check this link for more details.

System administrators generally prefer to check system resources with commands and will prefer to compare it with the SSH/telnet mode output, rather than running SNMP walk to compare. Also, having the connection to the Linux boxes over SSH will make it easier for you to configure the same for script monitors or 'execute program' actions if required.

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Windows Server Monitoring

- Select the Mode of Monitoring (**SNMP or WMI**).
- If SNMP, provide the port at which it is running (default is 161) and SNMP Community String (default is 'public'). This requires no user name and password information.
- If WMI, provide user name and password information of the server.

For WMI Mode of Monitoring:
In Windows Server 2008 and later versions, and in Windows Vista and later versions, use the following dynamic port range:
Start port: 49152
End port: 65535
If your computer network environment uses only Windows Server 2012, Windows Server 2008 R2, Windows Server 2008, Windows 8, Windows 7, or Windows Vista, you must enable connectivity over the high port range of 49152 through 65535.
Windows 2000, Windows XP, and Windows Server 2003 use the following dynamic port range:
Start port: 1025
End port: 5000
If your computer network environment uses Windows Server 2012, Windows Server 2008 R2, Windows Server 2008, Windows 8, Windows 7, or Windows Vista together with versions of Windows earlier than Windows Server 2008 and Windows Vista, you must enable connectivity over both the following port ranges:
High port range 49152 through 65535
Low port range 1025 through 5000

Limitation:

Adding a Windows Monitor containing a password with double quotes is not supported.

Note:

You have the option to monitor **Windows Event Logs**. Kindly refer Windows Event Log Rules under Admin Operations section. This section deals with the performance metrics displayed for windows servers.

Monitored Parameters

Applications Manager monitors the critical components of Windows servers to detect any performance problems. These components include CPU, memory, disk, network traffic, etc.
The *Availability* tab shows the availability history of the Windows server for the past 24 hours or 30 days. The *Performance* tab shows some key performance indicators of the Windows server such as physical memory utilization, CPU utilization, response time and swap memory utilization along with heat charts for these attributes. This tab also shows the health status and events for the past 24 hours or 30 days.
The *List view* lists all the Windows servers monitored by Applications Manager along with their overall availability and health status. It enables you to perform bulk admin configurations. Click on the individual monitors listed to view detailed performance metrics. The list view also shows the **virtual machines (Windows guest OS)**configured in your data center along with their availability and health status.
To view detailed performance metrics of a Windows server, click on the monitor name listed in the *Availability* or *List View* tabs. The performance metrics have been categorized into 6 different tabs:

- Overview
- CPU
- Disk
- Network
  - Network Interfaces
  - Netwok Adapters
- Event Log
- Configuration

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- Hardware
- Scheduled Tasks

Overview

This tab provides a high-level overview of the health and performance of the Windows server along with information pertaining to the processes and services running on the system.

Parameters	Description
MONITOR INFORMATION	
Name	The name of the Windows server monitor
System Health	Denotes the health status of the Windows server(clear, critical, warning)
Type	Denotes the type you are monitoring
Host Name	The host name of the Windows system
Host OS	The main OS installed on the system
Last Polled at	Specifies the time at which the last poll was performed.
Next Poll at	Specifies the time at which the next poll is scheduled.
Today's Availability	Shows the overall availability status of the server for the day. You can also view 7/30 reports and the current availability status of the server.

You can use the Custom Fields option in the 'Monitor Information' section to configure additional fields for the monitor.

The **CPU and memory utilization - last six hours** graph shows the memory usage and CPU usage values for the last six hours. The attributes shown here are swap memory utilization, physical memory utilization (in % and MB), free physical memory (MB) and CPU utilization (%).
The **Breakup of CPU Utilization** graph provides a break up of metrics for the entire system processor with attributes such as run queue, user time(%), system time(%), I/O wait(%), idle time(%) and interrupts/sec.
The **Process Details** section shows information about the processes running in the Windows server. You can add processes for monitoring using the *Add New Process* option. You can also delete unwanted processes and enable/disable reports for specific processes. Click on any of the attributes listed to view more details.
The **Service Details** section shows the availability of services running in the Windows server. You can add services for monitoring using the *Add New Service* option. You can also stop, start, restart and delete services from within Applications Manager itself.
The **Monitors in this System** section shows the availability and health of the monitors configured in this server. To add new monitors for monitoring, use the *Add Monitors* option.

CPU

This tab provides the CPU usage statistics of the Windows server. The tab includes two graphs - one that displays the *CPU utilization by CPU Cores* and another that shows the *Breakup of CPU utilization - by CPU cores.* You can view additional reports by clicking the graphs present in the *Breakup of CPU Utilization - by CPU cores*section. These reports include Break up of CPU Utilization (%) Vs Time, User Time (%) Vs Time, System Time (%) Vs Time, I/O Wait Time (%) Vs Time, Idle Time (%) Vs Time, CPU Utilization (%) Vs Time and Interrupts/sec Vs Time for all the CPU cores.

The CPU tab also shows the following performance metrics:

Parameter	Description	Monitoring Mode	
		SNMP	WMI
Core	The name of the CPU core		

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User Time(%)	The percentage of time that the processor spends on User mode operations. This generally means application code.	✗	✓
System Time(%)	The percentage of CPU kernel processes that are in use.	✗	✓
I/O Wait Time(%)	The time spent by the processor to waiting for I/O to complete.	✗	✓
Idle Time(%)	The time when the CPU is idle (not being used by any program)	✓	✓
CPU Utilization(%)	Specifies the total CPU used by the system	✗	✓
Interrupts/sec	The rate at which CPU handles interrupts from applications or hardware each second. If the value for Interrupts/sec is high over a sustained period of time, there could be hardware issues.	✗	✓

You can also view graphs for these attributes by selecting the necessary CPU core and then choosing the appropriate attribute.

Disk

This tab displays disk usage and disk I/O statistics of the Windows server.

Parameters	Description
DISK UTILIZATION	
Disk	The name of the disk drive
Used(%)	Denotes how much disk space out of the total disk space has actually been used (in percentage)
Used(MB)	The disk space used in mega bytes
Free(%)	The percentage of total usable space on the disk that was free.
Free(MB)	The unallocated space on the disk in mega bytes.

Disk I/O Statistics

Parameter	Description	Monitoring Mode	
		SNMP	WMI
Transfers/sec	The number of read/write operations on the disk that occur each second.	✗	✓
Writes/sec	The percentage of elapsed time that the disk drive was busy servicing write requests.	✗	✓
Reads/sec	The percentage of elapsed time that the disk drive was busy servicing read requests.	✗	✓
% Busy Time	The percentage of time the disk was busy.	✗	✓
Average Queue Length	The average number of both read and write requests that were queued for the disk during the sample interval.	✗	✓

You can also delete disks that have been physically removed using the **Delete Orphaned Disk** option.

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Network

Network Interfaces

Parameters	Description
NETWORK INTERFACE	
Name	The name of the network interface present in the Windows system.
Speed(Mbps)	The estimate of the current bandwidth in Mbps
Input Traffic(Kbps)	The rate at which packets are received on the interface, in kilo bytes per second.
Output Traffic(Kbps)	The rate at which packets are sent on the interface, in kilo bytes per second.
Errors	Number of packets that could not be sent or received.
Note: You can also delete interfaces that have been physically removed using the Delete Orphaned Interface option.	

Network Adapters:

This tab shows details about Network Adapters.

Parameters	Description
NETWORK INTERFACE	
Name	The name of the network interface present in the Windows system.
Speed(Mbps)	The estimate of the current bandwidth in Mbps
Input Traffic(Kbps)	The rate at which packets are received on the interface, in kilo bytes per second.
Output Traffic(Kbps)	The rate at which packets are sent on the interface, in kilo bytes per second.
Errors	Number of packets that could not be sent or received.
Note: You can also delete interfaces that have been physically removed using the Delete Orphaned Interface option.	

Note:
• Network Adapters monitoring option is only supported in WMI mode.
• By default, Network Adapter monitoring is disabled. To enable it,
Go to Admin tab -> Performance Polling ->Server tab -> Check *Enable Network Adapter Monitoring*
• If an adapter is removed , the alarm will be raised automatically for adapter removal. By default, alarm is enabled. The setting can be changed from:
Admin tab -> Performance Polling ->Server tab -> *Alert if Network Adapter is removed*
• You can also delete adapters that are removed by using the '**Delete Orphaned Adapters**' option.

Event Log

This tab shows information pertaining to the recent Windows events.

Parameters	Description
Rule Name	The name of the event log rule.

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Parameters	Description
Log File Type	The type of the Windows event log file.
Source	The source that generated the event.
Event Id	The identifier of the event.
Type	The type of the event.
User Name	User name of the logged-on user when the event occurred. If the user name cannot be determined, this will be None.
Description	Description of the event.
Generated Time	The time when the event was generated.

Configuration

This tab contains information about system configuration attributes.

Parameters	Description
SYSTEM INFORMATION	
Host Name	The name of the system.
Manufacturer	The name of the machine manufacturer.
Model	Product name that a manufacturer gives to the computer.
Domain	The name of the domain to which the system belongs.
BIOS Version	The current BIOS version that is running on the motherboard of the system
OS INFORMATION	
OS Name	The name of the operating system instance.
OS Version	Version number of the operating system.
OS Release	The latest service pack installed on the computer. If no service pack is installed, the value will be '-'
Manufacturer	Name of the operating system manufacturer. For Windows-based systems, this value is "Microsoft Corporation".
OS Installed Date	The date the OS was installed on the system.
Registered User	Name of the registered user of the operating system.
Windows Directory	Windows directory of the operating system.
OS Language	Language version of the operating system installed.
MEMORY INFORMATION	
Total Physical Memory (MB)	Total amount of physical memory as available to the operating system.
Total Virtual Memory (MB)	The total amount of area on the hard disk that windows uses as if it were RAM.
PROCESSOR INFORMATION	
Id	Unique identifier of a processor on the system
Model	The processor model type
Implementation	The processor family type.
Manufacturer	Name of the processor manufacturer
Speed(MHz)	Current speed of the processor
Cache (KB)	Size of the processor cache. A cache is an external memory area that has a faster access time than the main memory.
NETWORK INTERFACE SETTINGS	
Name	The name of the network adapter.
IP Address	The IP address configured for this network interface
Type	The network medium in use.
Mac Address	The Media access control address for this network adapter. A MAC address is a unique 48-bit number assigned to the network adapter by the manufacturer. It uniquely identifies this network adapter and is used for mapping TCP/IP network communications.

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Parameters	Description
Manufacturer	The name of the network adapter's manufacturer
Status	The current status of the network adapter
PRIN	
Name	Name of the printer
Server	Name of the server that controls the printer. If this value is not shown, it means the printer is controlled locally.
Type	Denotes whether the printer is controlled locally or remotely
Default	Indicates whether the printer is the default one. Values are either True or False.
Status	Current status of the printer
Location	Physical location of the printer

Hardware Metrics

The following are metrics pertaining to the hardware of Dell and HP servers:

Category	Attribute	Description	DELL		HP	
			SNMP Mode	WMI Mode	SNMP Mode	WMI Mode
Temperature	Sensor	The name of the temperature sensor.	✓	✓	✓	✓
	Temperature Reading (deg C)	The current /present temperature reading.	✓	✓	✓	✓
	Status	The temperature status - Critical, Warning, Clear	✓	✓	✓	✓
Fan	Sensor	Name of the fan sensor.	✓	✓	✓	✓
	Fan Speed (RPM)	The fan speed values displayed in RPM.	✓	✓	✓	✗
	Status	The fan status - Critical, Warning, Clear	✓	✓	✓	✓
Power	Sensor	Name of the power supply.	✓	✓	✓	✓
	Reading (Watts)	The power supply reading values displayed in Watts.	✓	✓	✓	✓
	Status	The power status - Critical, Warning, Clear	✓	✓	✓	✓
Voltages	Sensor	Name of the voltage supply.	✓	✓	✗	✗
	Reading (Volts)	The voltage reading values displayed in Volts.	✓	✓	✗	✗
	Status	The voltage status - Critical, Warning, Clear	✓	✓	✗	✗
Battery	Sensor	Name of the Battery sensor..	✓	✗	✓	✗
	Status	The battery status - Critical, Warning, Clear	✓	✗	✓	✗

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Memory	Sensor	Name of the Memory sensor.	✓	✓	✓	✓
	Memory Device Type	The type of memory device	✓	✓	✗	✓
	Size (MB)	The amount of memory currently installed in MB.	✓	✓	✓	✓
	Status	The memory status - Critical, Warning, Clear	✓	✓	✓	✓
Disk	Sensor	Identifies the disk's label	✓	✓	✓	✓
	Device Name	The device name configured for the disk	✓	✓	✗	✗
	Size (MB)	The allocated size in MB	✓	✓	✓	✗
	Status	The disk status - Critical, Warning, Clear.	✓	✓	✓	✓
Array	Sensor	The name of the array disk	✓	✗	✓	✓
	Bus protocol	The bus type of the array disk	✓	✗	✗	✗
	Size (MB)	The amount in MB of the used space on the array disk.	✓	✗	✓	✗
	Status	The array status - Critical, Warning, Clear	✓	✗	✓	✓
Chassis	Sensor	The user-assigned chassis name of the chassis.	✓	✓	✓	✓
	Model	The system model type for this chassis	✓	✓	✓	✓
	Status	The chassis status - Critical, Warning, Clear	✓	✓	✓	✓
Processor	Sensor	The location name of the processor device status probe	✓	✓	✓	✓
	Processor Brand	The brand of the processor device.	✓	✓	✓	✓
	Processor Current Speed	The current speed of the processor device in MHz	✓	✓	✓	✓
	Processor Core Count	The number of processor cores detected for the processor device.	✓	✓	✓	✓
	Status	The processor status - Critical, Warning, Clear	✓	✓	✓	✓

- If a component is functioning normally, the status indicator is green.
- The status indicator changes to orange or red if a system component violates a performance threshold or is not functioning properly. Generally, an orange indicator signifies degraded performance.
- A red indicator signifies that a component stopped operating or exceeded the highest threshold.
- If the status is blank, then the health monitoring service cannot determine the status of the component.

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> **Note:**
> Currently hardware performance monitoring is supported in SNMP and WMI monitoring mode.

Hardware Device-Level Configuration

Hardware Configuration option available under Host Details in the right hand side of the details page, will allow you to opt for the various hardware components you want to monitor. This operation can also be done using the *Performance Polling* option under the *Admin* tab which will globally configure the hardware stats.

Advanced Settings

By clicking the **Advanced Settings** option available under Host Details in the right hand side of the details page, you can go to the **Performance Data Collection**page for Servers.

Here you can use the **Hardware Health monitoring** option to enable or disable hardware monitoring in servers. You can also opt the various hardware components (like power, fan, disk,etc.,) to be monitored by checking the options given. This will globally configure the hardware monitoring status. You can also configure the health status by defining values in the respective text boxes:

Clear Severity: If the status matches with any of the values defined in the Clear Severity text box, then Applications Manager displays the status of the hardware device as clear. The value defined by default is 'ok'.

> **Note**If the status of the device does not match with any of the values defined in the severity text box, the device status is displayed as unknown. Status values defined within the severity text boxes are comma-separated and case-insensitive.

- **Critical Severity:** If the status matches with any of the values defined in the Critical Severity text box, then Applications Manager displays the status of the hardware device as Critical. The values defined by default are failed, error, failure, nonRecoverable, criticalUpper, criticalLower, nonRecoverableLower and critical.
- **Warning Severity:** If the status matches with any of the values defined in the Warning Severity text box, then Applications Manager displays the status of the hardware device as Warning. The values defined by default are degraded, warning, nonCritical, nonCriticalUpper, nonRecoverableUpper and nonCriticalLower.

Scheduled Tasks

Prerequisites:

- WMI access to remote server.
- Administrator user credentials.

The following are the metrics pertaining to Scheduled Tasks:

Parameters	Description
Task Name	Name of the scheduled task.
Enabled	Displays if task is enabled or not.
Last Run Time	Time stamp of when the task ran for the last time.
Last Run Result	Outcome of the last run of the task.
Next Run Time	Time stamp of when task will run again.

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Parameters	Description
Missed Runs	Number of times the task missed its scheduled execution.
Status	Current status of the task.

Scheduled Tasks Monitoring is not supported for Windows 2003 Server/ Windows XP.

Note:
• It works only for WMI mode.
• User can add a scheduled task by clicking 'Add Scheduled Task'.
• A scheduled task can be deleted by clicking 'Delete Orphaned Tasks'.
• If a scheduled task is deleted, then an alarm will be raised automatically depending on the setting in Performance Polling > Servers > *Alert if any Scheduled Task is removed* (by default, value is true).
• AppManager should be running with administrator privileges, else some tasks may not get fetched for monitoring.
• Only tasks that are present in the root folder can be monitored.
• Alarm will only be raised (after threshold is checked) if the current target server time exceeds the next run time for the task although for 'Enabled' attribute, threshold is checked in each poll (since its value can be changed anytime).

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Windows Cluster Monitoring

Follow the steps given below to create a new Windows Cluster monitor in Applications Manager:

1. Click on **New Monitor** link.
2. Select **Windows Cluster** under the **Servers** category.
3. Specify the **Display Name** of the Windows Cluster.
4. Enter the **Cluster Name** or the **IP Address** of the cluster
5. Select the **Version** of the Windows Server from the drop-down menu.
6. You can either use your Cluster Domain Administrator **username** and **password**, or select credentials from the **Credential Manager drop-down menu**. To use your Cluster Domain Administrator credentials, make sure the user account has permission to excute WMI queries on '*rootmscluster*' namespace in cluster server nodes.
7. Select the **Node Discovery** option. The available options are **Do not Discover Nodes** and **Discover and Monitor NodesDo not Discover Nodes** - Selecting this option will not discover the cluster server nodes as a Windows Server. If the node already added as windows server, it will be associated internally for collecting the event logs specific to cluster.**Discover and Monitor Nodes** - Selecting this option will discover the cluster server nodes as a Windows Server and monitor availability and performance. If the node already added as windows server , it will not be discovered again and the existing server will be associated internally for collecting the event logs specific to cluster.
8. Select the **Enable Event Log Monitoring** option:
   - **Checked** - This will enable the eventlog monitoring in all the cluster server nodes. The events generated from the configured eventlog rules will be propagated to cluster. During the eventlog collection of servers, it will collect the events for cluster as well and add them to database without generating the alert. Then, during the data collection of cluster, it will take the cluster events from database from all the nodes and then generate the alert for the configured Eventlog rule.
   - **Unchecked** - This will disable the eventlog monitoring in the Cluster.
     - **Cluster Add :** While adding the cluster, selecting this option will not enable eventlog monitoring in the nodes discovered. If a node already exists, this option will leave the current event log status in the server as it is.
     - **Cluster Update :** If this option is selected while updating the cluster, it will disable event log monitoring in the all the servers & cluster. Also it will clear the eventlog related Alarms and Events from database for all the servers & cluster. Hence use this option only when it is necessary.
9. Enter the polling interval time in minutes.
10. Choose the **Monitor Group** from the combo box to which you want to associate the Monitor (optional).
11. Click **Add Monitor(s)**.

Monitored Parameters

Applications Manager's Windows Cluster monitoring capability includes monitoring of the cluster details, the cluster nodes, resource groups, cluster performance, networks, disk utilization and storage stats. You can also monitor the cluster events by configuring the Event log Rules.

The monitoring details of Windows Cluster are represented graphically that helps to understand the parameters with ease. You can also configure thresholds to the attributes monitored and in case of threshold violation you can get notified on this by associating Actions. This will also help, to get notified on the failover happened in the Cluster.

Availability tab, gives the Availability history for the past 24 hours or 30 days. *Performance* tab gives the Health Status and events for the past 24 hours or 30 days. *List view* enables you to perform bulk admin configurations. Click on the individual monitors listed,

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to view the following information.

The Windows Cluster attributes monitored are classified under the following tabs in Applications Manager:

- Overview
- Performance
- Networks
- Storage
- Resource Groups
- Events

Overview

Parameter	Description
CLUSTER DETAILS	
Cluster Name/IP Address	The name/IP Address of the cluster.
Quorum Owner Node	The node name, which currently owns the Quorum Resource.
Quorum Path	The path to the quorum files.
Quorum Type	The current quorum type. The following are the possible values: • InputObject • Cluster • DiskOnly • NodeAndDiskMajority • NodeAndFileShareMajority • NodeMajority
Number of Nodes	The total number of nodes in a cluster.
Max Nodes	The maximum number of nodes that can participate in a cluster.
Number of Networks	The number of networks used by the server cluster for communication.
Resources Online	The count of resources that are currently online.
Resources Offline	The count of resources that are currently offline.
Resource Groups Online	The count resource groups that are currently online.
Resource Groups Offline	The count resource groups that are currently offline.
Disks in Use	The number of disks currently in use in the cluster.
Number of Nodes	The total number of nodes in cluster.
DISK UTILIZATION	
Disk Used Percentage	The total percentage of used disk space in a Cluster.
Disk Free Percentage	The total percentage of free disk space in a Cluster.
Disk Size	The total size of disk space, in megabytes.
Disk Used	The total used space in the disk, in megabytes.
Disk Free	The total free space available in the disk, in megabytes.
NODES	
Node Name	Specifies the label by which the node is known.
State	Specifies the current state of a node. Node states can be: • Up - The node is physically plugged in, turned on, booted, and capable of executing programs. • Down - The node is turned off or not operational. • Joining - The node is in the process of joining a cluster. • Paused - The node is running but not participating in cluster operations. • Unknown - The operation was not successful.
RESOURCE CONTROL AND MULTICAST RR	
Messages Outstanding	Specifies the length of the internal message queue.
RHS Processes	Specifies how many Resource Host Monitor processes are running on the node.
RHS Restarts	Specifies how many Resource Host Monitor failures have taken place on this node.
NETWORK RECONNECTIONS	

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Reconnect Count	Specifies the number of times the TCP connection was broken and reestablished.

Performance

Parameter	Description
MULTICAST REQUEST REPLY	
Messages Outstanding	Specifies the length of the internal message queue.
RESOURCE CONTROL MANAGER	
RHS Processes	Specifies how many Resource Host Monitor processes are running on the node.
RHS Restarts	Specifies how many Resource Host Monitor failures have taken place on this node.
NETWORK RECONNECTIONS	
Node Name	Specifies the label by which the node is known.
Reconnect Count	Specifies the number of times the TCP connection was broken and reestablished.
Normal Message Queue Length	Specifies the number of messages in the queue waiting to be sent.
Normal Message Queue Length Delta	Specifies the incoming message rate to the queue.
Urgent Message Queue Length	Specifies the number of urgent messages in the queue waiting to be sent.
Urgent Message Queue Length Delta	Specifies the incoming message rate to the queue.
RESOURCE TYPE STATS	
Resource Failure	Indicates the number of times, the Resource Host Monitor get terminated due to a failure of a resource.
Resource Failure Access Violation	Indicates the number of times, the Resource Host Monitor get terminated due to a failure of a resource, which caused by access violation.
Resource Failure Deadlock	Indicates the number of times, the Resource Host Monitor get terminated due to a failure of a resource, which caused by deadlock.

Networks

Parameter	Description
Name	Specifies the name of the network.
Address	Provides the address for the entire network or subnet.
Role	Provides access to the network's Role property i.e, the role of the network in the cluster. The following are the possible values: • None - The network is not used by the cluster. • Cluster - The network is used to carry internal cluster communication. • Client - The network is used to connect client systems to the cluster. • Both - The network is used to connect client systems and to carry internal cluster communication.
State	Specifies the current state of the network. The following are the possible values: • Unknown - The operation was not successful. • Unavailable - All of the network interfaces on the network are unavailable, which means the nodes that own the network interfaces are down. • Down - The network is not operational; none of the nodes on the network can communicate. • Partitioned - The network is operational, but two or more nodes on the network cannot communicate. Typically a path-specific problem has occurred. • Up - The network is operational; all of the nodes in the cluster can communicate.
NETWORK MESSAGES	
Bytes Received	The Bytes Received/sec performance counter shows the number of new cluster message bytes received on the network per second
Bytes Sent	The Bytes Sent/sec performance counter shows the number of new cluster message bytes sent over the network per second.
Messages Received	The Messages Received/sec performance counter shows the number of new cluster messages received on the network per second.
Messages Sent	The Messages Sent/sec performance counter shows the number of new cluster messages sent over the network per second.

Storage

Parameters	Description

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Path	The path (including the drive letter if present) of the clustered disk partition.
Volume Label	Specifies access to the **VolumeLabel** property, which is the volume label of the partition.
Size	The total size for the partition, in megabytes.
Used	The total used space in the partition, in megabytes.
Free	The total free space available for the partition, in megabytes.
Used Percentage	The percentage of used space in the partition.
Free Percentage	The percentage of free space in the partition.

Resource Groups

Parameters	Description
Name	The name of the Resource group.
Current Node	The node in which the resource group is currently running.
Preferred Node	Indicates the preferred node names from the cluster, to which the resource group can failover/failback
State	The current state of the resource group. The following are the possible values. • Unknown • Online • Offline • Failed • PartialOnline • Pending

Events

Parameters	Description
Rule Name	The name of the Windows Cluster Event Log rule.
Log File Type	The Log File Type under which the the Event Log rule was created. The Windows Cluster Events is generated in 'System' log file but Applications Manager users can Create a rule for Cluster under any Log File Type in Applications Manager. Hence, you can see the other events generated in all the Servers in the Cluster Level.
Node Name	Name of the windows cluster node, in whcih the particular Event was generated.
Source	Specifies the Source associated with the Event Log.
Event Id	Specifies the Event ID associated with the Event Log
Type	The Event Type - Event of Any Type, Error, Warning and Information. **Note:** In case of Security Events, the types would vary between Success Audit and Failure Audit.

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Description	Description content for the incoming event
Generated Time	The time at which the event is generated.

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Linux Server Monitoring

1. Select the Mode of Monitoring (**Telnet, SSH** or **SNMP**). For IBM AIX, HP Unix, Tru64 Unix, only **Telnet** and **SSH** are supported. For Novell, only SNMP is supported.
2. If Telnet, provide the port number (default is 23) and user name and password information of the server.
3. If SSH, provide the port number (default is 22) and user name and password information of the server. You have an option to give Public Key Authentication (User name and Private Key). You can also give a Passphrase if the private key is protected with one.

   Note: To identify the Public/Private key, go to command prompt, type **cd.SSH/** then from the list, open the files *<id_dsa.pub>/<id_rsa.pub>* [Public] or *<id_dsa>/<id_rsa>*[Private] to get the keys.
4. If SNMP, provide the port at which it is running (default is 161) and SNMP Community String (default is 'public'). This requires no user name and password information.

   For Telnet/SSH mode of monitoring, specify the command prompt value, which is the last character in your command prompt. Default value is $ and possible values are >, #, etc.

   Note: In the server which you are trying to monitor through SSH, the **PasswordAuthentication** variable should be set as '**yes**' for the data collection to happen. To ensure this, access the file **/etc/ssh/sshd_config** and verify the value of PasswordAuthentication variable. If it is set as '**no**', modify it to **'yes'**and restart the SSH Daemon using the command **/etc/rc.d/sshd restart**.
5. Choose the **Monitor Group** from the combo box to which you want to associate the Monitor (optional).
6. Click **Add Monitor(s)**. This discovers the host or server from the network and starts monitoring them.

Monitored Parameters

Applications Manager monitors the key performance indicators of Linux servers to detect any performance problems. These indicators include CPU, memory, disk, etc.

The *Availability* tab shows the availability history of the Linux server for the past 24 hours or 30 days. The *Performance* tab shows some key performance indicators of the Linux server such as physical memory utilization, CPU utilization, response time and swap memory utilization along with heat charts for these attributes. This tab also shows the health status and events for the past 24 hours or 30 days.

The *List view* lists all the Linux servers monitored by Applications Manager along with their overall availability and health status. It enables you to perform bulk admin configurations. Click on the individual monitors listed to view detailed performance metrics.

To view detailed performance metrics of a Linux server, click on the monitor name listed in the *Availability* or *List View* tabs. The performance metrics have been categorized into 4 different tabs:

- Overview
- CPU
- Disk
- Configuration
- Hardware

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Overview

This tab provides a high-level overview of the health and performance of the Linux server along with information pertaining to the processes and services running on the system.

Parameter	Description
Monitor Information	
Name	The name of the Linux server monitor.
System Health	Denotes the health status of the Linux server(clear, critical, warning).
Type	Denotes the type you are monitoring.
Host Name	The host name of the Linux system.
Host OS	The main OS installed on the system.
Last Polled at	Specifies the time at which the last poll was performed.
Next Poll at	Specifies the time at which the next poll is scheduled.
Today's Availability	Shows the overall availability status of the server for the day. You can also view 7/30 reports and the current availability status of the server.

You can use the Custom Fields option in the 'Monitor Information' section to configure additional fields for the monitor.

The overview tab shows dials for CPU, memory and disk utilization. You can click on these dials to view detailed graphs and charts for these attributes. The graphs available are History report, hour of day report, day of week report and heat chart. These graphs can be generated for both real time and historical data.

The **CPU and memory utilization - last six hours** graph shows the memory usage and CPU usage values for the last six hours. The attributes shown here are swap memory utilization, physical memory utilization (in % and MB) and CPU utilization (%).

The **Breakup of CPU Utilization** graph provides a break up of performance metrics for the entire system processor with attributes such as run queue, blocked process, user time(%), system time(%), I/O wait(%), idle time(%) and interrupts/sec.

The **System Load** graph provides you an idea of the amount of work that the system performs. The system load during the last one-, five- and fifteen-minute periods are represented by parameters such as Jobs in Minute, Jobs in 5 minutes and Jobs in 15 minutes.

The **Process Details** section shows information about the processes running on the Linux server. You can add processes for monitoring using the *Add New Process*option. You can also delete unwanted processes and enable/disable reports for specific processes. Click on any of the attributes listed to view more details.

The **Monitors in this System** section shows the availability and health of the monitors configured in this server. To add new monitors for monitoring, use the *Add Monitors* option.

CPU

This tab provides the CPU usage statistics of the Linux server. The tab includes two graphs - one that displays the *CPU utilization by CPU Cores* and another that shows the *Breakup of CPU utilization - by CPU cores.* You can view additional reports by clicking the graphs present in the *Breakup of CPU Utilization - by CPU cores*section. These reports include Break up of CPU Utilization (%) Vs Time, User Time (%) Vs Time, System Time (%) Vs Time, I/O Wait Time (%) Vs Time, Idle Time (%) Vs Time, CPU Utilization (%) Vs Time and Interrupts/sec Vs Time for all the CPU cores.

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The CPU tab also shows the following performance metrics:

Parameter	Description	Monitoring Mode	
		Telnet/SSH	SNMP
Core	The name of the CPU core		
User Time(%)	The percentage of time that the processor spends on User mode operations. This generally means application code.	✓	✓
System Time(%)	The percentage of CPU kernel processes that are in use.	✓	✓
I/O Wait Time(%)	The time spent by the processor to waiting for I/O to complete.	✓	✓
Idle Time(%)	The time when the CPU is idle (not being used by any program)	✓	✓
CPU Utilization(%)	Specifies the total CPU used by the system	✓	✓
Interrupts/sec	The rate at which CPU handles interrupts from applications or hardware each second. If the value for Interrupts/sec is high over a sustained period of time, there could be hardware issues.	✓	✓

You can also view graphs for these attributes by selecting the necessary CPU core and then choosing the appropriate attribute.

Disk

This tab displays disk usage and disk I/O statistics of the Linux server.

Parameters	Description
Disk Utilization	
Disk	The name of the disk drive
Used(%)	Denotes how much disk space out of the total disk space has actually been used (in percentage)
Used(MB)	The disk space used in mega bytes
Free(%)	The percentage of total usable space on the disk that was free.
Free(MB)	The unallocated space on the disk in mega bytes.
Disk I/O Statistics	
Transfers/sec	The number of read/write operations on the disk that occur each second.
Writes/sec	The percentage of elapsed time that the disk drive was busy servicing write requests.
Reads/sec	The percentage of elapsed time that the disk drive was busy servicing read requests.
% Busy Time	The percentage of time the disk was busy.
Average Queue Length	The average number of both read and write requests that were queued for the disk during the sample interval.

You can also delete disks that have been physically removed using the **Delete Orphaned Disk** option.

Configuration

This tab contains information about system configuration attributes.

Parameters	Description
System Information	
Host Name	The name of the system.
Domain	The name of the domain to which the system belongs.
OS Information	
OS Name	The name of the operating system instance.
OS Version	Version number of the operating system.
OS Release	The Linux distribution
Memory Information	
Total Physical Memory (MB)	Total amount of physical memory as available to the operating system.
Total Swap Memory (MB)	Total amount of swap memory available.

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Processor Information	
Id	Unique identifier of a processor on the system
Model	The processor model type
Implementation	The processor family type.
Manufacturer	Name of the processor manufacturer
Speed(MHz)	Current speed of the processor
Cache (KB)	Size of the processor cache. A cache is an external memory area that has a faster access time than the main memory.
Network Interface Settings	
Name	The name of the network adapter.
IP Address	The IP address configured for this network interface
MTU	The network medium in use.
Type	The type of network adapter.
Mac Address	The Media access control address for this network adapter. A MAC address is a unique 48-bit number assigned to the network adapter by the manufacturer. It uniquely identifies this network adapter and is used for mapping TCP/IP network communications.
Status	The current status of the network adapter.
Broadcast Address	The IP address to which messages are broadcast.
Printer Settings	
Name	Name of the printer.
Device	The name of the server that controls the printer.
Default	Indicates whether the printer is the default one. Values are either True or False.
Status	Current status of the printer.

Note: The data present in the configuration tab is not updated during every poll. So if you make any changes to the server configuration, you need to restart Applications Manager for those changes to be reflected in the 'Configuration' tab.

Hardware Metrics

The following are metrics pertaining to the hardware of Dell and HP servers:

Category	Attribute	Description	DELL		HP	
			SNMP Mode	WMI Mode	SNMP Mode	WMI Mode
Temperature	Sensor	The name of the temperature sensor.	✓	✓	✓	✓
	Temperature Reading (deg C)	The current /present temperature reading.	✓	✓	✓	✓
	Status	The temperature status - Critical, Warning, Clear	✓	✓	✓	✓
Fan	Sensor	Name of the fan sensor.	✓	✓	✓	✓
	Fan Speed (RPM)	The fan speed values displayed in RPM.	✓	✓	✓	✗
	Status	The fan status - Critical, Warning, Clear	✓	✓	✓	✓
Power	Sensor	Name of the power supply.	✓	✓	✓	✓
	Reading (Watts)	The power supply reading values displayed in Watts.	✓	✓	✓	✓
	Status	The power status - Critical, Warning, Clear	✓	✓	✓	✓
Voltages	Sensor	Name of the voltage supply.	✓	✓	✗	✗
	Reading (Volts)	The voltage reading values displayed in Volts.	✓	✓	✗	✗
	Status	The voltage status - Critical, Warning, Clear	✓	✓	✗	✗
Battery	Sensor	Name of the Battery sensor..	✓	✗	✓	✗
	Status	The battery status - Critical, Warning, Clear	✓	✗	✓	✗
Memory	Sensor	Name of the Memory sensor.	✓	✓	✓	✓
	Memory Device Type	The type of memory device	✓	✓	✗	✓
	Size (MB)	The amount of memory currently installed in MB.	✓	✓	✓	✓
	Status	The memory status - Critical, Warning, Clear	✓	✓	✓	✓

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Disk	Sensor	Identifies the disk's label	✓	✓	✓	✓
	Device Name	The device name configured for the disk	✓	✓	✗	✗
	Size (MB)	The allocated size in MB	✓	✓	✓	✗
	Status	The disk status - Critical, Warning, Clear.	✓	✓	✓	✓
Array	Sensor	The name of the array disk	✓	✗	✓	✓
	Bus protocol	The bus type of the array disk	✓	✗	✗	✗
	Size (MB)	The amount in MB of the used space on the array disk.	✓	✗	✓	✗
	Status	The array status - Critical, Warning, Clear	✓	✗	✓	✓
Chassis	Sensor	The user-assigned chassis name of the chassis.	✓	✓	✓	✓
	Model	The system model type for this chassis	✓	✓	✓	✓
	Status	The chassis status - Critical, Warning, Clear	✓	✓	✓	✓
Processor	Sensor	The location name of the processor device status probe	✓	✓	✓	✓
	Processor Brand	The brand of the processor device.	✓	✓	✓	✓
	Processor Current Speed	The current speed of the processor device in MHz	✓	✓	✓	✓
	Processor Core Count	The number of processor cores detected for the processor device.	✓	✓	✓	✓
	Status	The processor status - Critical, Warning, Clear	✓	✓	✓	✓

- If a component is functioning normally, the status indicator is green.
- The status indicator changes to orange or red if a system component violates a performance threshold or is not functioning properly. Generally, an orange indicator signifies degraded performance.
- A red indicator signifies that a component stopped operating or exceeded the highest threshold.
- If the status is blank, then the health monitoring service cannot determine the status of the component.

Note:
Currently hardware performance monitoring is supported in SNMP and WMI monitoring mode.

Hardware Device-Level Configuration

Hardware Configuration option available under Host Details in the right hand side of the details page, will allow you to opt for the various hardware components you want to monitor. This operation can also be done using the *Performance Polling* option under the *Admin* tab which will globally configure the hardware stats.

Advanced Settings

By clicking the **Advanced Settings** option available under Host Details in the right hand side of the details page, you can go to the **Performance Data Collection**page for Servers.

Here you can use the **Hardware Health monitoring** option to enable or disable hardware monitoring in servers. You can also opt the various hardware components (like power, fan, disk,etc.,) to be monitored by checking the options given. This will globally configure the hardware monitoring status. You can also configure the health status by defining values in the respective text boxes:

Clear Severity: If the status matches with any of the values defined in the Clear Severity text box, then Applications Manager displays the status of the hardware device as clear. The value defined by default is 'ok'.

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NoteIf the status of the device does not match with any of the values defined in the severity text box, the device status is displayed as unknown. Status values defined within the severity text boxes are comma-separated and case-insensitive.

- **Critical Severity:** If the status matches with any of the values defined in the Critical Severity text box, then Applications Manager displays the status of the hardware device as Critical. The values defined by default are failed, error, failure, nonRecoverable, criticalUpper, criticalLower, nonRecoverableLower and critical.
- **Warning Severity:** If the status matches with any of the values defined in the Warning Severity text box, then Applications Manager displays the status of the hardware device as Warning. The values defined by default are degraded, warning, nonCritical, nonCriticalUpper, nonRecoverableUpper and nonCriticalLower.

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IBM AS400 / iSeries Monitoring Add On!

1. Click on **New Monitor** link.
2. Select **AS400/iSeries**.
3. Enter the **Host Name / IP Address** of AS400/iSeries server.
4. Provide **Subnet Mask** and set **Polling interval** for the monitor.
5. If you are adding a new monitor from an Admin Server, select a Managed Server.
6. Enter **Username** and **Password** for authentication.
7. Choose the **Monitor Group** from the combo box with which you want to associate AS400/iSeries Monitor (optional). You can choose multiple groups to associate your monitor.
8. Click **Add Monitor(s)**. This discovers AS400/iSeries from the network and starts monitoring them.

There are situations where the host gets automatically discovered with the Monitor running in the host. To disable the default option, disable it using Global Settings.

It is important to note that if Applications Manager server is running in Windows machine, then it can monitor any type of host but if the server is running in Linux, then it can monitor Windows only if an SNMP agent is running in it. Also, any type of user can be used to log into Linux, whereas only Admin users can log into Windows.

Note: The important configuration details that are required while discovering host resource by Applications Manager are available in Appendix - Data Collection.

Monitored Parameters

Availability tab, gives the Availability history for the past 24 hours or 30 days. *Performance* tab gives the Health Status and events for the past 24 hours or 30 days. In addition, it also provides the auxillary storage pool percentage, processing unit percentage, number of users signed on and response time of the server. Each attribute has heat chart report enabled. *List view* enables you to perform bulk admin configurations. Click on the individual monitors listed, to view the following information.

The attributes for IBM AS400 / iSeries monitored are classified under the following tabs by Applications Manager:

- Overview
- Status
- Pool
- Jobs
- Messages
- Spool
- Printer
- Disk
- Problem
- Subsystem
- History Log

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- Queues
- Admin

Overview

Parameters	Description
Server Snapshot	Server snapshot provides an quick overview of current server's auxillary storage pool's usage in percentage, processing units' usage in percentage, permanent address usage in percentage, temporary address usage in percentage and interactive performance usage in percentage. **ASP Usage:** The amount of hard disk capacity available in your system is called Auxiliary Storage Pool (ASP). This can be a deceiving number if you have more than one ASP defined on your system, because this number only reflects the System ASP. Applications Manager provides you with the percentage of disk storage in your System ASP that is currently used. If the percentage exceeds 90 percentage the system can fail. The performance of your AS400 server is affected if the percentage usage crosses 80 percent. You can create an alarm for this percentage and alert you whenever the percentage exceeds 80. **Permanent addresses percentage and Temporary addresses Usage:** Applications Manager provides you the usage in percentage for the two addresses - Permanent and Temporary Addresses - which refer to the possible system addresses created for permanent and temporary objects in your AS400. Any variation in these values may reflect on rapid changed in the creation or destruction of objects in your AS400 at much rapid pace. This may affect the performance of your server.
System Status	This displays the value and health of ASP percentage, Disk Utilization, Processing Unit percentage, Permanent and Temporary Addresses percentage.
History	Displays bar charts showing the **Availability History** and the **Performance History** for the last 6 hours.
Monitor Information	This provides general information about the AS400/iSeries server such as name of the server, current health of the server, type, system model, system serial, and latest polled values. In addition, it also displays system configuration details such as security level, version number, Previous System End, Auto Device Configuration, System Console, Job Message Queue Initial Size, Job Message Queue Maximum Size, Spooling Control Initial Size, Maximum Jobs Allowed, Password Valid Days and Query Processing Time Limit.
Job Counts	Provides the various job counts of various job types currently running in AS400/iSeries server. The information is displayed in a pie-chart with clearly distinction of each job types contribution to total job count. By default, the following services job count is displayed: • Source PF system • Spooled Writer • System • Spooled Reader • Subsystem • Autostart • Interactive • Batch
Disk Utilization	Specifies the hard disk space utilized by the system and updates with the peak and current value, and current status of the Disk Partition parameter.(The parameter includes C, D, E, F drives, etc. in windows, /home, etc. in Linux.)
System Information	System information displays the shared processing pool information, uncapped CPU utilization and current processing capacity resources.
Memory Utilization	Memory utilization for AS400/iSeries is displayed through pool size, reserved size, DB pages and Non DB pages and through DB faults and Non DB faults.

Status

Under **Status** tab, Applications Manager monitors the status of various attributes of AS400 / iSeries server. You can also configure alarms for each of these attributes by clicking on **'Configure Alarms'** link.

Parameters	Description
System Information	This contains details of your AS400 main storage, number of processors, number of pools, number of partitions and the number of active threads in your system along with the health of each individual attribute.
System Status	This displays the value and health of ASP percentage, Disk Utilization percentage, Processing Unit percentage, Permanent and Temporary Addresses percentage.
ASP Percentage	The amount of hard disk capacity available in your system is called Auxiliary Storage Pool (ASP). This can be a deceiving number if you have more than one ASP defined on your system, because this number only reflects the System ASP. Applications Manager provides you with the percentage of disk storage in your System ASP that is currently used. If the percentage exceeds 90 percentage the system can fail. The performance of your AS400 server is affected if the percentage usage crosses 80 percent. You can create an alarm for this percantage and alert you whenever the percentage exceeds 80.
Auxillary Storage	The auxillary storage displays ASP total value and health, current unprotected useage and maximum protected usage along with the health of each attribute.
Additional Information	Displays information like Current Processing Capacity, Current Interactive Performance Percentage, Shared Processor Pool Used Percentage and Uncapped CPU Capacity Used Percentage.

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Jobs	Displays the total number of jobs, number of active jobs, number of batch jobs, jobs waiting for messages, and maximum number of jobs in your AS400 server along with the health of each attribute. For number of active jobs, the 7/30 reporting is enabled.
Batch Jobs	Displays the number batch jobs ended, ending, held on queue and held while running along with the health of each attribute. It also displays the batch jobs on unassigned job queue and waiting to run/already scheduled jobs in AS400 server. For number of batch jobs on jobqueue, the 7/30 reporting is enabled.
Users	Displays the values for total number of users signed on and signed off, along with users suspended by group jobs, users suspended by system request and users temporarily signed off. For number of users signed on, the 7/30 reporting is enabled.

Pool

Under **Pool** tab, Applications Manager displays pool details for the AS400 / iSeries server. Applications Manager provides you in-depth details for Pool such as Pool Name, Pool Size, DB pages, DB faults, Non DB pages and Non DB faults. The health and alarm configuration for each corresponding attribute is also provided. Click on the metric names (say Pool Name, Pool Size or DB pages) for column-wise sorting.

You can enable or disable data collection for a monitor by clicking on the **Enable/Disable Pool** button on the top right hand corner of the **Pool Details** table. In the**Performance Polling Settings** window that pops up, un-check the metrics that you need to disable and click **Apply** to save the settings. You can also apply the same settings to other AS400 servers by clicking on **Apply to Selected Monitors** link.

Parameters	Description
Pool Name	By default, there are four predefined storage pools: ***MACHINE** ***BASE** ***INTER** and ***SPOOL** There are up to 12 user-definable storage pools available.
Pool Size	This displays the amount of memory assigned to each default pools such as *MACHINE, *BASE, *INTER and *SPOOL. You can also edit the amount of memory allocated for each pool by executing the Change Subsystem Description (CHGSBSD) command through Non-interactive Command available in Admin tab. Better allocation would help improve the performance of the server.
Reserved Size	This displays the pool's reserved memory allocation size. The information provided here gives better understanding to how much of the memory allocation has been used by jobs and how much memory is still unused. This reserved size can affect system performance. If insufficient memory is not provided to the default *MACHINE pool, then it can affect overall performance of your AS400 server. Hence monitoring this attribute becomes critical for maintaining better performance of your AS400 server.
DB and Non DB Faults and Pages	This displays the DB and Non DB pages and fault for each pool. This bascially displays how program instructions and database information enter and leave the pool's memory. Monitoring this information provides better visibility on various programs and jobs that are being executed in AS400 server.

Jobs

Under **Jobs** tab, Applications Manager monitor Jobs status and health in detail. You can easily configure alarms for Job details by clicking on **'Configure Alarms'** link. The table consists of the following columns:

- Job Name
- User
- Number
- Type
- Status
- Pool

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- Function
- Priority
- Threads
- Queue
- Subsystem
- CPU (ms)
- Uptime (mins) and
- Log

Parameters	Description
Job Summary	Displays the total number of jobs in clear, critical and warning states along with the health of each attribute. You can view jobs in clear, critical or warning state separately by click on the respective counts. For eg, if there are 25 jobs in critical state, the users can view these jobs alone by clicking on the number. Also, from the pop up window, users can navigate through jobs which are in clear, critical or warning conditions using the **Filter By** option for the respective monitor. You can also navigate through the **For Monitor** drop down menu where all the AS400 monitors in APM are listed. The line graph shows the percentage of jobs in clear, critical and warning condition out of the total number of jobs. The number of jobs collected from the server is set to 100 by default, which can be changed by the user by changing the values in AS400Server.properties file.
Job Details	Displays a wealth of information on various jobs being executed in AS400 server. The user can sort jobs column-wise by clicking on the metric names. Each attribute is explained below. **Batch Job:** The user name is specified on the Submit Job (SBMJOB) command, or it is specified in the job description. **Interactive Job:** The user name is either typed in at signon or is provided by the default in the job description. **Autostart Job:** The user name is specified in the job description referred to by the job entry for the autostart job. You can enable or disable data collection for a monitor by clicking on the **Enable/Disable Job** button on the top right hand corner of the **Job Details** table. If a user wants to monitor a specific job, they can add job(s) by clicking on the link **Add Job(s) to Monitor**. Users can also perform actions like END, HOLD and RELEASE from the **Actions** drop down list and Job(s) can be removed from monitoring by click on the **Remove Job(s)** link. These actions can also be performed from the double click mouse event. Users can configure alarms to jobs by clicking on the **configure alarm** icon and create thresholds for THREADS, PRIORITY and STATUS of the jobs. From the **Add Job(s) to Monitor** pop-up, you can fetch job details of currently running specific job/ all jobs, directly from the AS400 server. This will help you to add jobs to monitor even after disabling data collection for jobs.
Job Name	The name of the job as identified by AS400.
User	The user name is the same as the user profile name and can come from several different sources, depending on the type of job.
Number	The system-assigned job number.
Type	The type of active job. Possible values are: • ASJ: Autostart • BCH: Batch • BCI: Batch Immediate • EVK: Started by a procedure start request • INT: Interactive o M36: Advanced 36 server job • MRT: Multiple requester terminal • PJ: Prestart job • PDJ: Print driver job • RDR: Reader • SBS: Subsystem monitor • SYS: System • WTR: Writer Status
Status	This displays the status of the initial thread of the job. Only one status is displayed per job. The status 'NONE' represents an initial thread that is in transition.
Pool	This displays the system-related pool from which the job's main storage is allocated.
Function	This displays the last high-level function initiated by the initial thread. This field is blank when a logged function has not been performed. The field is not cleared when a function is completed.
Priority	This displays the run priority of the job. A lower number indicates a higher priority. System jobs and subsystem monitors with a run priority higher than priorities allowed for user jobs show a priority of 0. Run priority ranges from 1 (highest) to 99 (lowest). Jobs with the highest priority receive the best service from the CPU. This value is the highest run priority allowed for any thread within the job. Individual threads may have a lower priority.
Threads	Displays the number of active threads in the job.
Queue	Displays the name of the Queue where the job is located.
Subsystem	The name of the subsystem that holds the job.
CPU (ms)	Displays the amount of CPU time used by the job, in milliseconds.
Uptime (mins)	Displays the amount of time the job is running, in minutes.
Logs	View the Job log for any particular job by clicking on the log icon in the **Log** column.

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The job status in AS400/iSeries is classified into three types:

1. Jobs Clear
2. Jobs Warning
3. Jobs Critical

If you would like to define a particular job status as critical, edit *AS400server.properties* in AppManager Conf directory and include the particular job status as critical.

Open the conf file in the Applications Manager directory:

Windows: C:Program FilesManageEngine<AppManagerHome>conf
Linux: ManageEngine<AppManagerHome>Conf

The file consists of jobs in pre-defined classification under clear, warning and critical categories. If you would like to include a particular job status say for example CMNA as critical, add CMNA in the following line as follows

am.as400.critical = MSGW, CMNA

Save the file and restart Applications Manager. After the next polling interval, you will find that the particular job is now classified as a Critical job status.

Messages

Message Information display gives you more detailed information about the various message(s) being received in the message queue (By default we are monitoring 'QSYSOPR' message queue, but user can change this value for key 'am.as400.messagequeue' in AS400Server.properties file'). The messages are displayed with in-depth details such as message ID, severity of the message, type of the message, message text with a cause and recovery information if applicable, date and time of the message generated and help information for that particular message. You can view more detailed information of a particular message by clicking on the Help icon - .

By default only messages that need a reply are displayed. To view all the messages click on the link **Show all messages.** From the pop-up window that appears, the user can also view filter messages by **Messages Need Reply / All Messages**. This can be done for a specific monitor or for all AS400 monitors from **For Monitor** drop down menu.

The number of messages collected from the server is set to most recent 100 messages by default, which can be changed by the user by changing the values in AS400Server.properties file. The user can create thresholds for 'Messages' and configure alarms for MESSAGE ID, SEVERITY, and MESSAGE to capture the critical messages.

The user can sort messages column-wise by clicking on the metric names:

Parameters	Description

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Message ID	The message ID identifies the type of message. This is useful when doing problem analysis.
Severity	A 2-digit value ranging from 00 through 99. The higher the value the more severe or important the condition.
Type	The following values may be shown: • **Completion:** A message that conveys completion status of work. • **Diagnostic:** A message that indicates errors in a system function, errors in an application, or errors in input data. • **Escape:** A message that describes a condition for which a program must end abnormally. • **Information:** A message that provides general non error-related information. • **Inquiry:** A message that conveys information but also asks for a reply. • **Notify:** A message that describes a condition for which a program requires corrective action or a reply. • **Reply:** A message that is a response to a received inquiry or notify message. • **Request:**A message that contains a command for processing by a request processor, such as command entry. • **Sender Copy:** A copy of an inquiry or notify message that is kept in the sender's message queue.
Message	The text of the message.
Date	This is the date (in job format) that the message was sent.
Default Reply	Displays the default reply that was generated by your AS400 server for the particular generated message.
Help	Displays in-depth details for the particular message from your AS400 server. It displays the following values: • Message ID • Date Sent • Alert Option • Current User • From Job Number • From Program • Reply Status • Message Queue • File Name • Message • Cause

Spool

Parameters	Description
Spool Summary	Displays the total number of jobs in clear, critical and warning states along with the health of each attribute. For eg, if there are 10 spool files in critical state and you want to view these spool files alone, you can do it by just clicking on the number. Also, from the pop up window you can navigate through spooled files which are in clear, critical or warning using the **Filter By**options for that respective monitor. You can also do the same for other AS400 monitors through the **For Monitor** drop down menu where all the AS400 monitors in APM are listed. The user can view spooled files in clear, critical or warning condition in all AS400 monitors by choose 'Show all' in 'For monitor' drop down and navigate through all monitors at a glance. The line graph shows the percentage of Spooled files in clear, critical and warning condition out of the total number of spool files.The number of spooled files collected from the server is set to 100 by default, which can be changed by the user by changing the values in AS400Server.properties file. You can enable or disable data collection for a monitor by clicking on the **Enable/Disable Spool** button on the top right hand corner of the details table. The user can sort spools column-wise by clicking on the metric names.
Spool Name	The file name that was specified by the user program when the file was created, or the name of the device file used to create this file**.**
Number	The system-assigned spool number.
Job Name	The name of the job that produced the spooled file.
Job Number	The number of the job that produced this spooled file.
Job Owner	The name of the user who owns the spooled file.
Status	The status of the spooled file. The following list of values is used to describe the file's status: RDY (Ready) The file is available to be written to an output device by a writer. OPN (Open) The file has not been completely processed and is not ready to be selected by a writer. DFR (Deferred) The file has been deferred from printing. SND (Sending) The file is being or has been sent to a remote system. CLO (Closed) The file has been completely processed by a program but SCHEDULE(*JOBEND) was specified and the job that produced the file has not yet finished. HLD (Held) The file has been held. SAV (Saved) The file has been written and then saved. This file will remain saved until it is released. WTR (Writer) This file is currently being produced by the writer on an output device. PND (Pending) The file is pending to be printed. PRT (Printing) The file has been completely sent to the printer but print complete status has not been sent back. MSGW (Message Waiting) This file has a message which needs a reply or an action to be taken.
Printer Name	The name of the printer in which that spooled file is assigned.
Pages	The total number of pages or records in the file (pages for print, records for diskette). If the file is still open, this field is blank for diskette files or will have the current number of pages spooled for printer files. An "R" is displayed after the value if the file is a diskette file.

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Printer

Parameters	Description
Device Name	Specifies the Printer or Device name.
Device Class	Specifies the class of the device. For Eg: virtual/ LAN.
Device Type	Specifies the manufacturer type of the device.
Status	Specifies the status of the printer device. Valid values are: Varied Off Vary Off Pending Vary On Pending Varied On Connect Pending Active Active Writer Held Powered Off Recovery Pending Recovery Canceled Failed Failed Writer Being Serviced Damaged Locked Unknown
Job Name	Specifies the name of the job that created the spooled file.
Job Number	Specifies the number of the job that created the spooled file.
Job Status	Specifies the status of the writer job. Valid values are STR, END, JOBQ, HLD and MSGW.
Job Owner	Specifies the name of the user that created the spooled file.
Started By	Specifies the name of the user who started the writer.
Spooled File Name	Specifies the name of the spooled file.
Spooled File Number	Specifies the spooled file number. Special values allowed are -1 and 0. The value *LAST is encoded as -1, the value *ONLY is encoded as 0.
Output Queue Name	Specifies the name of the output queue.
Output Queue Status	Specifies the status of the output queue. Valid values are RELEASED, HELD.

If a user does not need printer details, he can disable data collection for printer by clicking on the **Enable/Disable Printer** option in the top right hand corner of the**Printer Details** Table.
The user can also sort printer details column-wise by clicking on the metric names.

Disk

The Disk Status display shows performance and status information about the disk units on the system. It displays the number of units currently on the system, the type of each disk unit, the size of disk space, whether the disk is currently on the system, the percentage of disk space used, the average amount of data read and written, and the percentage of time the disk is being used.

If a user does not need disk details, he can disable data collection for disk by clicking on the **Enable/Disable Disk** option in the top right hand corner of the **Disk Details** Table.
The user can also sort Disk Details column-wise by clicking on the metric names.

Parameters	Description

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Disk Arm Number	Specifies the unique identifier of the unit. Each actuator arm on the disk drives available to the machine represents a unit of auxiliary storage. The value of the unit number is assigned by the system when the unit is allocated to an ASP.
Drive Capacity (in MB)	Total number of auxiliary storage provided on the unit for the storage of objects and internal machine functions when the ASP containing it is not under checksum protection. The unit reserved system space value is subtracted from the unit capacity to calculate this capacity.
Drive Available Space (in MB)	Total number of auxiliary storage space that is not currently assigned to objects or internal machine functions, and therefore is available on the unit.
Blocks Write	Number of blocks written: The block length is 520 bytes, which includes 8 bytes of system control information.
Blocks Read	Number of blocks read: The block length is 520 bytes, which includes 8 bytes of system control information.
ASP	Specifies the ASP to which this unit is currently allocated. A value of 1 specifies the system ASP. A value from 2 through 32 specifies a basic ASP. A value from 33 to 255 specifies an independent ASP. A value of 0 indicates that this unit is currently not allocated.
Unit Status	Local mirroring status. 1 = active 2 = resuming 3 = suspended
Disk Wait Time	Combined wait (queue) time of all disk operations completed since last sample (milliseconds). Divide by number of read and write commands to obtain average wait (queue) time. Add to disk service time to obtain disk response time. Set to zero if data is not available.
Arm Utilization(%)	The part of the total interval that the arm was being used for I/O operations.

Problem

Problem ID: Specifies the problem identifier of the problem being selected. Problems with different system origins can have the same identifier. This parameter can be used with the ORIGIN parameter to select a single problem from a particular system origin.

Problem Severity: This specifies the severity level of the problem. Severity levels are assigned by the user when the problem is prepared for reporting. The four severity levels are:

1. High
2. Medium
3. Low
4. None

Problem Type: Specifies which type of problems to work with. *ALL All problem log entries are shown, regardless of the problem type.

1 - Only machine-detected problems are shown.
2 - Only user-detected problems are shown.
3 - Only PTF order problems are shown.
4 - Only application-detected problems are shown.
5 - Only Client machine-detected problems are shown.
6 - Only Client user-detected problems are shown.

Status: Specifies the status of the problem log entries. The various status are:
OPENED,READY,SEND,ANSWERED,PREPARED,VERIFIED,CLOSED.

Date Opened: Specifies the date the problem was opened.

Time Opened: Specifies the time the problem was opened.

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If a user does not need problem details, he can disable data collection for disk by clicking on the **Enable/Disable Problem** option in the top right hand corner of the**Problem Details** Table.
The user can also sort Problem Details column-wise by clicking on the metric names.

SubSystem

Parameters	Description
Subsystem Summary	Displays the total number of subsystems in clear and critical states along with the health of each attribute. For eg, if there are 4 subsystems in critical state and the users want to view those subsystems alone, he can do it by just a click on the number. Also, from the pop up window you can navigate through subsystems which are in clear or critical state using the **Filter By**options for that respective monitor. You can also do the same for other AS400 monitors through the **For Monitor** drop down menu where all the AS400 monitors in APM are listed. The user can view subsystems in clear, critical or warning condition in all AS400 monitors by choosing 'Show all' in 'For monitor' drop down and navigate through all monitors at a glance. The line graph shows the percentage of subsystems in clear, critical and warning condition out of the total number of subsystems. The number of subsystems collected from the server is set to 100 by default, which can be changed by the user by changing the values in AS400Server.properties file.
Subsystem Details	Provides subsystem details like Name, Library, Current Active Jobs, Maximum Active Jobs and Status. If a user wants to monitor a specific subsystem, they can add subsystem(s) by clicking on the link **Add Subsystem(s) to Monitor**. Users can also perform actions like START, END, DELETE and REFRESH from the **Actions** drop down list andSubsystem(s) can be removed from monitoring by a click on the **Remove Subsytem(s)** link. These actions can also be performed from the double click mouse event. You can enable or disable data collection for a monitor by clicking on the**Enable/Disable subsystems** button on the top right hand corner of the details table. The user can sort subsystems column-wise by clicking on the metric names.
Name	The name of the subsystem that was specified on the STRSBS (Start Subsystem) command.
Current Active Jobs	The number of jobs active in the subsystem. If more than one interactive job is started from the same work station (with system request or Transfer to Group Job), they are counted as only one job on this display.
Status	The status of the subsystem, which can be either ACTIVE, END (in the process of ending), or RSTD (the controlling subsystem is in the restricted condition). More information on the restricted condition of the controlling subsystem is in the online help information for the ENDSBS command.
Library	The name of the library where the subsystem description is located.
Maximum Active Jobs	The maximum number of jobs active allowed in the subsystem.

History Log

Display of history log contents, will help you to track the system activities, such as messages related to system failure, security vulnerabilities , warning messages which are send to QHST and dumped.

History Log Details

Parameters	Description
Message ID	The message ID identifies the type of message. This is useful while doing problem analysis.
Severity	A 2-digit value ranging from 00 through 99. The higher the value the more severe or important the condition.
Type	The following values may be shown: • **Completion:** A message that conveys completion status of work. • **Information:** A message that provides general non error-related information. • **Diagnostic:** A message that indicates errors in a system function, errors in an application, or errors in input data. • **Escape:** A message that describes a condition for which a program must end abnormally. • **Inquiry:** A message that conveys information but also asks for a reply. • **Notify:** A message that describes a condition for which a program requires corrective action or a reply. • **Reply:** A message that is a response to a received inquiry or notify message. • **Request:**A message that contains a command for processing by a request processor, such as command entry. • **Sender Copy:** A copy of an inquiry or notify message that is kept in the sender's message queue.

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Message	The text of the message.
Date	This is the date when the log was sent.

Note:

1. Monitoring of history log is supported for versions IBM i 6.1 & above. For other versions, you can monitor an alternate message queue if specified in the AS400Server.properties file for the key 'am.as400.historylogalternative'.
2. Double click on the history log details table , to find options such as 'Configure Alarms', 'Show All Messages', 'Show Debug Info', 'Enable/Disable History Log'.
3. 'Show All Messages' pop up, helps you to navigate through clear/warning/critical messages depending upon the configured alarms for any AS400 or all AS400 servers.
4. History log monitoring will only monitor latest messages. The number of messages collected from the server is set to 100 by default, which can be changed by the user by changing the values in AS400Server.properties file.
5. When there is no data available for historylog or for the alternate message queue configured due to errors like authority failure/ message queue not found/ version not supported , an error message will be displayed under message tab.

Queues

Data queues provide a fast means of inter-process communication, and is a method used to pass information to another program.

Applications Manager allows you to monitor pre-defined system library data queues and objects to let you maintain the overall performance of AS400 server. Queues monitoring is of importance to operators as they are the holding areas for messages, printed reports, batch jobs, and other work that is waiting to be received, released to the CPU, or accessed by a specific user. You can perform in-depth data queue monitoring viz., job queues and output queues and set up alerts for when the queue exceeds resources available over a specified period of time.

Monitored Data Queue(s)

Parameters	Description
Data Queue	The data queue being monitored.
Library	The name of the library where the data queue resides.
Sequence	Specifies the sequence in which entries are received from the data queue.
Object Size (KB)	The object size information of the data queue object in kilobytes.
Object Unchanged (Mins)	The time this object is unchanged in minutes
Number of Messages	The number of messages(Entries) currently on the data queue.
Entries Allocated	The number of entries that will fit into the data queue before it is extended
Max.Entries	The maximum data queue entries allowed in a library.
Current Entries (%)	Percentage of Entries Currently Present in the Queue.
Utilized Allocation (%)	The percentage of allocated storage currently in use by the data queue.

Monitored Job Queue(s)

Parameters	Description
Job Queue	The qualified name of the job queue or queues.
Library	The library in which the specified job queue resides.
Sequence	The job queue entry sequence number. The subsystem uses this number to determine the order in which job queues are processed.
Subsystem	The name of the subsystem that can receive jobs from this job queue.

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Status	The status of the job queue. The status may be one of the following values: **RELEASED** - The job queue is released. **HELD** - The job queue is held.
Object Size (KB)	The object size information of the job queue object in kilobytes.
Number of Jobs	The current number of jobs in the job queue.
Current Active	The current number of active jobs that came through this job queue entry.

Monitored Out Queue(s)

Out Queue's can be added to monitor by clicking on the '**Add Queue(s) to Monitor**' link.

Parameters	Description
Out Queue	The qualified name of the output queue.
Library	The library in which the specified job queue resides.
Sequence	The order of spooled files on this output queue.
Status	The status of the output queue. The status may be one of the following values: • **RELEASED** - The job queue is released. • **HELD** - The job queue is held.
Object Size (KB)	The object size information of the out-queue object in kilobytes.
Number of Files	The number of spooled files that exist on the output queue.
Writer	The name of the spooling writer for which information is to be displayed.
Writer Status	The status of the spooling writer. The status may be one of the following values: • **Started** • **Ended** • **On job queue** • **Held** • **Message waiting**
Printer	The system name of the printer device to which the output is sent.

- Out Queue's can be added to monitoring by click on 'Add Queue(s) to Monitor' link , from the pop up we can select the available out queues (Queues with TYPE *OUTQ) to monitor.
- User can search and fetch available data queue's from AS400 server or from data base if available(we will store the queue info which are fetched from AS400 server for the first time in our db).

Admin

System Value List

Parameters	Description
System Value List	Displays some of the key attributes on which certain actions can be performed. You will be able to execute *Non-interactive commands*from Applications Manager and also will be able to edit any of the **System Value list** attributes.
Message and Logging, Network Attributes, Date and Time, System Control, Library List, Storage, Allocation, Security	Displays a pop-up window with the parameter details for a particular monitor. You can view parameters like Name, Value and Description. You can edit the System Values by clicking on the respective icon in the edit column.
Tools	Some of the key attributes on which certain actions can be performed are as given below
Non-Interactive Command	You can execute non-interactive commands from Applications Manager. Enter the Command in the text box in the pop up window and click on **Execute**.
Job Log	Displays the job log for any job if you enter the job name, user, job number of the required job in the respective text boxes.
Product List	Displays a pop-up window with the Product list parameter details for a particular monitor. You can view parameters like Product ID, Product options and Description.
User List	Lists User list with details like User Name , Description, Status, Group profile Name, Limit Capabilities, Storage Allocated in Bytes, Storage occupied by this user's owned objects in bytes and Number of days left for password expiration.

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Prerequisites:

- To connect to AS400/iSeries server from Applications Manager ensure that the ports mentioned under "Port Non-SSL" column in the link are not blocked in firewall. Also check out: http://www-304.ibm.com/support/docview.wss?uid=nas1acc12fda96496e4b8625668f007ab75f
- It is recommended to use an account having a *QSECOFR permission on the server. If using the *QSECOFR user profile is not possible, then use an account of user class *USER with additional permissions as follows:
  - The user should be permitted to access QMPGDATA/QPFRDATA(used to collect disk details) and QGPL(used to collect problem details) libraries and permitted to execute the command CRTPFRDTA and DSPPRB.
  - Consider the following special authorities when you use an account of user class *USER such as *ALLOBJ, *SAVSYS , *JOBCTL, *SPLCTL to retrieve all data and perform AS400 admin actions from Applications Manager.

Troubleshooting:

For troubleshooting tips, go to our Support Portal.

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Virtualization

Server virtualization is one of the highest impact trends in the IT industry today with proven cost savings and other benefits. It is basically a method of running multiple independent virtual operating systems on a single physical computer. It is a way of maximizing physical resources to maximize the investment in hardware.
Applications Manager's monitoring capabilities enables you to ensure your virtual infrastructure is performing as expected.

Applications Manager enables high performance business process management by detecting and diagnosing problems of virtualization infrastructure faster. Applications Manager supports the following virtual systems:

- VMWare ESX/ESXi Servers
- Hyper-V Servers
- Citrix Xenserver
- VMware Horizon View
- Citrix XenApp
- Docker

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VMware ESX/ESXi Server Monitoring

Creating a new monitor

Supported Versions: ESX 3.5 and above; ESXi 3 and above.
Follow the steps given below to create a new VMware ESX/ESXi server monitor:

1. Click on New **Monitor** link.
2. Select VMware ESX/ESXi under Virtualization category.
3. Specify the **Display Name** of the VMware ESX server
4. Enter the Host Name or IP Address of the host where the VMware server is running.
5. Enter the **Port** where the server is running.
6. Enter **User Name** and **Password** for authentication.
7. Select the **VM Discovery** option. The available options are *Do not discover, Discover VM but do not monitor metrics*, and *Discover and Monitor VM metrics*.
8. Specify the Polling Interval in minutes.
9. If you are adding a new monitor from an Admin Server, select a Managed Server.
10. Choose the Monitor Group with which you want to associate the VMware ESX server to, from the combo box (optional). You can choose multiple groups to associate your monitor.
11. Click Add Monitor(s). This discovers the VMware ESX/ESXi server from the network and starts monitoring it.

User Permissions

In order to add VMWare ESX/ESXi servers for monitoring, we recommend to use the root account. However, in case you are unable to use the root account, you can use a 'view-only' profile to add the servers. This profile has enough rights to be used for monitoring. The user you create must be:

- a member of the group user
- based on the profile 'read only'

Monitored Parameters

VMware ESX servers are monitored based on the parameters or the attributes listed below. These attributes provide information about the functioning of the monitors of VMware ESX server. You can also configure thresholds to the numerical attributes monitored by the server based on these details.

The *Availability* tab shows the Availability history of the ESX server for the past 24 hours or 30 days. The *Performance* tab shows some key performance indicators of the ESX server such as CPU Utilization, Memory Utilization, Disk Usage and Network Usage along with heat charts for these attributes. This tab also shows the health status and events for the past 24 hours or 30 days.

The *List view* displays all the VMware ESX/ESXi servers along with an overall idea of their availability and health status. The list view also enables you to perform bulk admin configurations. Click on the individual servers listed to view detailed performance metrics.

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The *Top ESX/ESXi* tab shows graphs for the top CPU consumers, top memory consumers, top disk I/O consumers and top network consumers of the ESX/ESXi server.

The *Infrastructure View* tab displays all the virtual machines discovered under each ESX/ESXi server. This view provides an overall idea of the availability, health, CPU (%), Memory (%), Disk I/O and Network traffic of all the virtual machines. Click on the individual virtual machines listed to view detailed VM metrics.

Click on the monitor listed in the *Availability* tab to view detailed performance metrics of the ESX/ESXi server. These metrics are categorized into 9 different tabs for easy understanding. Below is an explanation of the metrics shown in these tabs:

1) **Overview**

This tab provides a high-level overview of the ESX/ESXi server as well as its resource utilization.

Parameter	Description
Monitor Information	
Name	The name of VMware ESX/ESXi server monitor
Type	Denotes the type of servers you are monitoring.
Health	Denotes the health (Clear, Warning, Critical) status of the ESX/ESXi server.
Last Polled at	Specifies the time at which the last poll was performed.
Next Poll at	Specifies the time at which the next poll is scheduled.
Availability	Shows the current status of the server - available or not available.
CPU & Memory Utilization	
CPU Utilization	The combined CPU utilization across the system(%)
CPU Idle Time	The average time that the CPU cores remain in an idle state (m/sec)
CPU Usage	The total CPU usage across the system(MHz)
Memory Utilization	Percentage of memory used across the system(%)
Disk & Network Usage	
Disk Usage	Disk usage of ESX/ESXi server in kbps(kilobytes per second)
Network Usage	Network usage of ESX/ESXi server in kbps(kilobytes per second)
Virtual Machines	
VM Name	Name of the virtual machine(VM) present in the host
Availability	Denotes the availability of the VM - available or not available
CPU Utilization	The CPU utilization of this VM in percentage
Memory Utilization	The memory utilization of this VM in percentage
Disk I/O Utilization	The disk input/output utilization of this VM in kilobytes per second
Network Utilization	The network usage of this VM in kilobytes per second
Health	The health status(Clear, Warning, Critical) of this VM

2) **CPU**

This tab provides metrics about CPU Utilization details of the cores.

Parameter	Description
CPU Utilization	The cpu utilization of the CPU core over a period of time(in percentage)
Health	The overall health of the CPU core
CPU Idle Time	The total time that each CPU core remains in an idle state (ms)

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3) **Memory**

This tab provides metrics about memory utilization of the ESX server.

Parameter	Description
Consumed Memory	The value of total memory minus free memory, in mega bytes.
Active Memory	Amount of memory that is actively used
Overhead Memory	Sum of overhead memory across all VMs
Reserved Memory	Amount of memory currently utilized to satisfy minimum memory values set for all VMs.
Shared Memory	Amount of memory shared between virtual machines
Granted Memory	Amount of physical memory granted
Swapped Memory	Amount of memory that is swapped
Heap Memory	Amount of memory allocated for heap
VMKernel Memory	Amount of memory used by the VMKernel

4) **Datastore**

This tab displays metrics pertaining to the data stores of the server.

Parameter	Description
Datastore	Name of the datastore
Type	Type of datastore (example: VMFS or VMware File System)
Capacity GB	The total space available in this datastore in giga bytes
Used GB	The used space of this datastore in giga bytes
Free GB	The free space of this datastore in giga bytes
Utilization %	Percentage of used space in this datastore
Free Space %	Percentage of free space in this datastore
Health	Overall health of the datastore
Read Rate	The rate at which data is read from the datastore (kbps)
Write Rate	The rate at which data is written to the datastore (kbps)
Read Latency	The average time taken for a read from the datastore (ms)
Write Latency	The average time taken for a write to the datastore (ms)

Note

The capacity, used and free metrics are not supported for NFS datastores.

5) **Network**

This tab provides metrics about network utilization

Parameter	Description
Name	Name of the network interface card (NIC) of the host
Data Receive Rate	The rate at which this NIC receives data(Kbps)
Data Transfer Rate	The rate at which this NIC transfers data (Kbps)
Packets received	Number of network packets received by this NIC
Packets Transmitted	Number of network packets transmitted by this NIC
Health	Overall health of this NIC

6) **Disk I/O**

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This tab shows detailed disk I/O(Input/Output) stats of the ESX/ESXi server

Parameter	Description
LUN	Logical unit number associated with the physical disk
Disk Read Rate	Disk read rate of this LUN(Kbps)
Disk Write Rate	Disk write rates of this LUN(Kbps)
Disk Reads	Number of reads to this LUN
Disk Writes	Number of writes to this LUN
Health	Overall health of this LUN
Read Latency	The average amount of time taken during the collection interval to process a SCSI read command issued from the Guest OS to the virtual machine (ms).
Write Latency	Average amount of time taken during the collection interval to process a SCSI write command issued by the Guest OS to the virtual machine (ms).
Commands Aborted	The number of SCSI commands aborted during the collection interval.
Bus Resets	The number of SCSI-bus reset commands issued during the collection interval.

7) **Configuration**

This tab provides info on the ESX/ESXi server's configuration details.

Parameter	Description
Host Name	The name of VMware ESX/ESXi server monitor
Power	The power status of the server. The values include poweredOn, poweredOff and standBy
Vendor Name	The name of the vendor offering Virtualization(VMware)
Version	Version of ESX/ESXi server
Hardware Vendor Name	Hardware vendor identification
Hardware Model	System model identification
CPU Model	Information about the overall CPU
CPU Capacity MHz	The overall CPU capacity in Mega Hertz
CPU Cores	Number of CPU cores present in the server
Number of VMs	Number of virtual machines discovered in the server

8) **Storage**

Applications Manager automatically maps VMware vSphere servers and their VMs to their underlying physical storage arrays. To perform VM-to-storage mapping, you must first integrate Applications Manager with Opstor.

You can track the vSphere servers and their VMs to the datastores, to the host bus adapters and the actual physical storage. This tab displays:

- **A storage map** combining Applications Manager's application and VM performance data with OpStor's storage performance data.
- **A storage mapping table** displaying Virtual Machine, Datastore, Storage Array and corresponding LUN statistics.

Parameter	Description
Virtual Machine	The name of VMware ESX/ESXi server monitor
Datastore	The name of the datastore
Storage Array	Storage infrastructure details from Opstore for the corresponding storage array.
LUN	Virtual disk information for the corresponding LUN

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9) **Hardware**

The folloiwng are metrics pertaining to the hardware of the server.

Parameter	Description
Power	Sensor Reading will be monitored in watts
Fan	Sensor Reading will be monitored in percentage
Temperature	Sensor Reading will be monitored in Degree Celsius
Processors	Health status of the sensor will be monitored.
Memory	Health status of the sensor will be monitored.

- If a component is functioning normally, the status indicator is green.
- The status indicator changes to orange or red if a system component violates a performance threshold or is not functioning properly. Generally, an orange indicator signifies degraded performance.
- A red indicator signifies that a component stopped operating or exceeded the highest threshold.
- If the status is blank, then the health monitoring service cannot determine the status of the component.
- The Reading column displays the current values for the sensors. For instance, the column displays watts consumed for System Board and degrees Celsius for temperature.

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VMware ESX/ESXi Server - Virtual Machines

Monitored Parameters

The virtual machines(VMs) present in a VMware ESX/ESXi server are monitored based on the parameters or the attributes listed below. These attributes provide information about the functioning of the VMs. You can also configure thresholds to the numerical attributes of the VMs based on these details.

The *Availability* tab lists all the virtual machines present in the VSX/VSXi servers and their availability status. You can also view Availability history of the virtual machines for the past 24 hours or 30 days. The *Performance* tab shows some key performance indicators of the virtual machine including CPU Utilization, Memory Utilization, Disk I/O Utilization and Network Utilization along with heat charts for these attributes. This tab also shows the health status and events for the past 24 hours or 30 days.

The *List view* displays all the virtual machines discovered under each VSX/VSXi server. This view provides an overall idea of the availability and health of all the virtual machines. The list view also enables you to perform bulk admin configurations. Click on the individual virtual machines listed to view detailed VM metrics.

The *Top Virtual Machines* tab shows graphs for the top CPU consumers, top memory consumers, top disk I/O consumers, and top network consumers of the VSX/VSXi server. This section enables you to find out which virtual machines are consuming your server resources and take action accordingly.

Click on the individual monitors listed in the *Availability* tab to view detailed performance metrics of the corresponding virtual machine. These metrics are categorized into 6 separate tabs for easy understanding. Below is an explanation of the metrics shown in these tabs:

1) **Overview**

This tab provides a high-level overview of the virtual machine as well as its resource utilization.

Parameter	Description
Monitor Information	
Name	The name of the virtual machine
Type	Denotes the type you are monitoring.
Health	Denotes the health (Clear, Warning, Critical) status of the VM.
Last Polled at	Specifies the time at which the last poll was performed.
Next Poll at	Specifies the time at which the next poll is scheduled.
Availability	Shows the current status of the VM - available or not available.
CPU & Memory Utilization	
CPU Utilization	The CPU Usage of the VM as percentage
CPU Usage	The CPU usage in Mega Hertz
Memory Utilization	The memory utilization of theVM in percentage
CPU Ready	The percentage of time that the virtual machine was ready, but could not be scheduled to run on the physical CPU (ms)
CPU Wait	Total CPU time spent in wait state (ms)
Disk & Network Usage	
Disk I/O Utilization	The disk input/output utilization of the VM(kbps)

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Network Utilization	The network usage of the VM in kbps

2) **Memory**

This tab shows metrics about the memory utilization of the virtual machine

Parameter	Description
Active Memory	Amount of memory that is actively used, measured as recently touched pages(MB)
Overhead Memory	Amount of additional host memory allocated to the virtual machine.
Swapped Memory	Amount of memory that is swapped.
Shared Memory	Amount of memory that is shared between virtual machines.
Ballooned Memory	Amount of memory held by memory control for ballooning.
Granted Memory	Amount of physical memory granted. For hosts this can be represented as regions of memory for each virtual machine.

3) **Datastore**

Parameter	Description
Datastore	Name of the datastore
Type	Type of datastore (example: VMFS or VMware File System)
Capacity GB	The total space available in this datastore in giga bytes
Used GB	The used space of this datastore in giga bytes
Free GB	The free space of this datastore in giga bytes
Utilization %	Percentage of used space in this datastore
Free Space %	Percentage of free space in this datastore
Health	Overall health of the datastore
Read Rate	Rate of reading data from the datastore (kbps)
Write Rate	Rate of writing data to the datastore (kbps)
Read Latency	The average time a read from the datastore takes (ms)
Write Latency	The average time a write to the datastore takes (ms)

4) **Network**

The metrics in this category contain the VM network status details.

Parameter	Description
Network Interface	
Name	Name of the Network Interface Card (NIC)
IP Address	The ip address of the NIC
Mac Address	The Mac address of the NIC
Network	The name of the network
Health	Indicates the health of the Network Interface Card
Network Interface Utilization	
Name	Name of the network inteface card(NIC) of the host
Data Receive Rate	The rate at which this NIC receives data(KBps)
Data Transmit Rate	The rate at which this NIC transfers data (KBps)
Packets Received	Number of network packets received by this NIC

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Packets Transmitted	Number of network packets transmitted by this NIC
Health	Overall health of this NIC

5) **Disk**

This tab shows detailed disk stats of the virtual machine

Parameter	Description
LUN	Logical unit number associated with the physical disk
Disk Read Rate	Disk read rate of this LUN(KBps)
Disk Write Rate	Disk write rate of this LUN(KBps)
Disk Reads	Number of reads to this LUN during the defined interval
Disk Writes	Number of writes to this LUN during the defined interval
Health	Overall health of this LUN
Commands Aborted	Number of SCSI commands aborted during the collection interval
Bus Resets	Number of SCSI-bus reset commands issued during the collection interval
Guest Disk Partitions	
Disk Partition	Name of the partition
Capacity	Capacity of the Disk Partition (GB)
Free	Free Space available in the Partition (GB)
Used	Used Space in the Partition (GB)
Utilization %	Percentage of used space in this datastore
Free Space %	Percentage of free space in this datastore

6) Configuration

Parameter	Description
UUID	Universal Unique Identifier (UUID) assigned to the VM.
OS Name	Operating System assigned to the VM
Power	The status of the power of the virtual machine(poweredOn, poweredOff, suspend)
VM Path Name	Path name to the configuration file for the virtual machine, e.g. the .vmx file. This also implicitly defines the configuration directory.
IP Address	The IP address assigned to the VM
Host Name	The host on which the VM is running
Boot time	The time when the VM was booted.
Tools Version	Current version of VMware Tools running
Number of CPUs	Number of CPUs present in the VM
Configured Memory	The amount of memory configured for this VM
Number of Virtual Disks	The number of virtual disks in the VM

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VMware vCenter Servers

Applications Manager can discover your entire VMware virtual infrastructure through the vCenter server. The VMware virtual infrastructure groups allows you to discover virtual resources and categorize them into components such as Data Center, Cluster, ESX/ESXi hosts, etc.

Monitored Parameters

VMware Virtual Infrastructure groups will be listed among monitor groups and can be accessed from the 'Monitor Group' view under the *Monitors* tab. Within the VMware Virtual Infrastructure group, the *Summary* tab provides an overall view of the components of the VMware virtual infrastructure and their health status. It shows you the number of datacenters, clusters, resource pools, ESX hosts, VMs, datastores and network components present in the vCenter server.

- **Data Centers**The *Summary* tab displays the overall health status of the infrastructure present just below the vCenter server level. For example, if your vCenter has data centers configured, the 'Summary' tab will show the health status of the datacenters. You can drill down into a Data Center and view the health of its underlying components such as Clusters. If the health status of the Data Center turns critical, you can perform root cause analysis to troubleshoot the issue.
- **Clusters**Clusters are displayed one level below the Data Center view. As is the case with the Data Center view, you can drill down into a cluster and view the health of the underlying components such as ESX/ESXi hosts, VMs, etc. If the health of a cluster is found to be critical, you can perform root cause analysis to troubleshoot the issue. At the cluster level, you can also view the DRS migration report that shows the movement of virtual machines from one ESX host to another.
- **Resource Pool**In the next level, correlated performance metrics of the resource pool is displayed. You can monitor and manage your server's current CPU/memory usage, reservation and allocation statistics. This data can be used to re-allocate or organize resources for the server or cluster accordingly.

Summary

The *Summary* tab also shows the following performance metrics at both data center and cluster levels:

Parameter	Description
ESX/ESXi Host Details	
Name	The name of VMware ESX/ESXi server monitor
Datacenter	The name of the Datacenter to which the ESX host belongs
Cluster	The name of the cluster to which the ESX host belongs
CPU(%)	The CPU utilization of the ESX/ESXi host(%)
Memory (%)	The percentage of memory used across the ESX/ESXi host
Network (kbps)	The network usage of the ESX/ESXi host in kbps(kilobytes per second)
Disk I/O (kbps)	The disk usage of the ESX/ESXi host in kbps(kilobytes per second)
Cluster Details	
Cluster Name	The name of the vCenter cluster
Datacenter	The datacenter to which this cluster belongs
Effective CPU	Effective memory resources (in MB) available to run virtual machines. This is the aggregated effective resource level from all running hosts.
CPU Cores	The number of physical CPU cores. Physical CPU cores are the processors contained by a CPU package.
CPU Threads	The aggregated number of CPU threads.

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Tolerated Failover	Number of failures that can be tolerated by the VMware HA.
Memory Utilization	The percentage of memory used across the cluster.
Consumed Memory	The memory utilized so far (in MB).
Total Memory	The amount of memory used by this cluster
Effective Memory	Effective memory resources (in MB) available to run virtual machines. This is the aggregated effective resource level from all running hosts.
Active Memory	The amount of memory that is actively used measured in Mhz.
Swap Memory	The amount of memory that is swapped.
Resource Pool Details	
Overall CPU Usage	The total amount of CPU resources utilized measured in Mhz.
Maximum CPU Usage	The maximum amount of CPU resources utilized measured in Mhz.
CPU Reservation	The amount of CPU resources reserved for a virtual machine measured in Mhz.
CPU Allocation Limit	The amount of CPU resources allocated to a virtual machine measured in Mhz.
Overall Memory Usage	The total amount of RAM being used by a virtual machine measured in MB.
Maximum Memory Usage	The maximum amount of RAM that can be used by a virtual machine measured in MB.
Memory Reservation	The amount of RAM reserved for a virtual machine measured in MB.
Memory Allocation Limit	The amount of RAM allocated to a virtual machine measured in MB.

Business View

In the *Business View* tab, you can configure flash-based business views that help you visually represent the interdependencies between your VMware virtual infrastructure as well as view their health status. In the *Dashboards* tab, you can configure custom dashboards by adding widgets.

Storage

In the *Storage* Tab Applications Manager automatically maps VMware vSphere servers and their VMs to their underlying physical storage arrays. You can track the vSphere servers and their VMs to the datastores, to the host bus adapters and the actual physical storage. This tab displays:

- **A storage map** combining Applications Manager's application and VM performance data with OpStor's storage performance data.
- **A storage mapping table** displaying Virtual Machine, Datastore, Storage Array and corresponding LUN statistics.

Dashboard

In the In the *Dashboards* Tab, dashboards can be used to create your own custom pages by adding widgets. By using Custom Dashboards feature, you can create Dashboards of your choice - like Status View of all the Databases, Status view of all Web Applications deployed in Tomcat Server. If you make a Dashboard as template the same Dashboard can be reused across the Monitor Groups .

> **Note:** The DRS Migration Report will be shown only when the DRS is in automatic mode.

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Microsoft Hyper-V Server Monitoring

Applications Manager monitors the critical components of the Hyper-V server to detect any performance problems.The components includes processor, memory, disk, virtual & physical network, virtual storage, etc.

Follow the steps given below to create a new Microsoft Hyper-V Server monitor:

1. Click the New **Monitor** drop-down link menu.
2. Select Hyper-V Server under Virtualization category. This action will load the Add Monitor screen.
3. Specify the **Display Name** of the Hyper-V server.
4. Enter the Host Name or IP Address of the host where the Hyper-V server is running.
5. Enter **User Name** and **Password** for authentication.
6. Select the **Monitor Performance Metrics of Virtual Machines** option if you want Applications Manager to collect performance metrics of VMs of this server.
7. Select the **Version** of your Microsoft Hyper-V Server from the drop-down menu (2008 or 2012).
8. Specify the Polling Interval in minutes.
9. If you are adding a new monitor from an Admin Server, select a Managed Server.
10. Select the Monitor Group with which you want to associate the Hyper-V server, from the combo box (optional). You can choose multiple groups to associate your monitor.
11. Click Add Monitor(s). This discovers the Hyper-V server from the network and starts monitoring it.

User Permissions

To monitor a Hyper-V host, the user must have 'Administrator' privileges to the root OS (Windows 2008 R2 and other supported Hyper-V versions).

Firewall Requirements

If a firewall is present between Applications Manager and the Hyper-V server, open ports 135,443 and 1025 in the firewall to enable access.

Supported Versions

Hyper-V Server 2008 R2, Windows Server 2008 R2 Standard, Windows Server 2008 R2 Enterprise, Windows Server 2008 R2 Datacenter, Hyper-V Server 2012

Monitored Parameters

The *Availability* tab shows the Availability history of the Hyper-V server for the past 24 hours or 30 days. The *Performance* tab shows some key performance indicators of the Hyper-V server such as Total CPU Utilization, Guest CPU Utilization, Hypervisor CPU

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Utilization and Physical Memory Utilization along with heat charts for these attributes. This tab also shows the health status and events for the past 24 hours or 30 days.

The *List view* lists all the Hyper-V servers monitored by Applications Manager along with their overall availability and health status. You can also perform bulk admin configurations from this view. Click on the individual servers listed to view detailed performance metrics.

The *Top Hyper-V servers* tab shows graphs for the top total CPU utilization consumers, top guest CPU utilization consumers, top memory consumers and top idle CPU utilization consumers.

To view detailed performance metrics of a Hyper-V server, click the corresponding monitor listed in the *Availability* or *List view* tab. These metrics are categorized into six different tabs for easy understanding.

Overview

This tab provides a high-level overview of the availability and performance of the Hyper-V server.

Parameter	Description
Monitor Information	
Name	The name of the Microsoft Hyper-V server monitor.
Type	Denotes the type you are monitoring.
Health	Denotes the health (Clear, Warning, Critical) status of the Hyper-V server.
Partitions	The total number of partitions in the Hyper-V server. Each virtual machine on the Hyper-V Server runs on a container called a partition.
Number of VMs	The number of virtual machines configured in this Hyper-V server (Partitions - 1)
Last Polled at	Specifies the time at which the last poll was performed.
Next Poll at	Specifies the time at which the next poll is scheduled.
Today's Availability	Shows the overall availability status of the server for the day. You can also view 7/30 reports and the current availability status of the server.
Hypervisor CPU Usage Details	
Total CPU Utilization	The sum of Guest CPU utilization and Hypervisor CPU utilization.
Guest CPU Utilization	The percentage of CPU used by guest VMs.
Hypervisor CPU Utilization	The percentage of CPU used by the hypervisor.
Idle CPU Utilization	The percentage of CPU when the processor is in an idle state.
Processor Details	
Logical Processors	The total number of logical processors present in the Hyper-V server. These are the number of cores / HT that the hypervisor is managing.
Virtual Processors	The total number of virtual processors present in the Hyper-V server. All execution in the root and child partitions (where guest VMs run) happens on Virtual Processors.
Physical Processors	The total number of physical processors present in the Hyper-V server.
Memory Details	
Total Physical Memory	The total amount of physical memory utilized by the Hyper-V system.
Total Swap Memory	The total swap space or the virtual memory utilized by the Hyper-V system.
Total Remote Physical Pages	The total number of physical pages not allocated from the preferred NUMA node.
Total Physical Pages Allocated	The total number of guest pages and VID pages needed to manage the VM.
HyperV System Services	
Service Name	The name of the system services of Hyper-V. The services available include Hyper-V Image Management Service, Hyper-V Networking Management Service and Hyper-V Virtual Machine Management.
Service Status	The current status of the service

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Virtual Machines	
Virtual Machine	The name of the virtual machine.
VM State	Specifies the current state of the VM such as Running, Paused, Suspended, etc.
CPU Utilization	The percentage of CPU used by this VM
Total Memory	The amount of memory used by this VM
Health	Denotes the overall health status of the VM

Memory

This tab provides memory usage statistics of the Hyper-V server.

Parameter	Description
Memory Usage Details	
Swap Memory Utilization	The total swap memory or virtual memory used by the system in percentage
Swap Memory Used	The swap memory used by the system in mega bytes.
Physical Memory Utilization	The amount of physical memory used by the system in percentage.
Physical Memory Used	The amount of physical memory used by the system in mega bytes.
Free Physical Memory	The amount of free physical memory, in megabytes, immediately available for allocation to a process or for system use.
Page Details	
Deposited Pages	The total number of deposited pages used by the root partition.
Virtual TLB Pages	The total number of pages used by the virtual TLB of the root partition.
Total Remote Physical Pages	The number of physical pages not allocated from the preferred NUMA node.
Total Physical Pages Allocated	The total number of guest pages and VID pages needed to manage the VM.
Pages Per Second	The rate at which pages are read from or written to the disk to resolve hard page faults.

Network

This tab provides metrics about the overall networking performance of the Hyper-V server.

Parameter	Description
Network Traffic Stats	
Network Adapter Name	The name of the network adapter of the host.
Speed	The rate at which bytes are transferred in Mbps.
Input Traffic	The number of bytes received over the adapter in kilobytes per second.
Input Traffic Utilization	The percentage of input utilization.
Output Traffic	The number of bytes sent over the adapter in kilobytes per second.
Output Traffic Utilization	The percentage of output utilization.
Network Packet Stats	
Offloaded Connections	The number of TCP connections (over both IPv4 and IPv6) that are currently handled by the TCP chimney offload capable network adapter.
Outbound Packets Errors	The number of outbound packets that could not be transmitted because of errors.
Outbound Packets Discarded	The number of outbound packets that were chosen to be discarded even though no errors had been detected to prevent transmission. One possible reason for discarding packets could be to free up buffer space.
Packets Sent Per Second	The rate at which packets are send on the network interface
Packets Received Per Second	The rate at which packets are received on the network interface.

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Storage

This tab displays metrics pertaining to the overall disk performance of the Hyper-V system.

Parameter	Description
Disk IO Details	
Name	The name of the storage device
Current Disk Queue Length	The number of requests outstanding on the disk at the time the performance data is collected.
Disk Bytes Per Second	The rate at which bytes are transferred to or from the disk during write or read operations.
Disk Transfers Per Second	The rate of read and write operations on the disk.
Disk Partition Details	
Free Space	The total usable space on the selected disk drive that is free.
Used Space	The total space on the disk currently in use.
Percent Used Space	The percentage of total space on the disk currently in use.
Percent Free Space	The percentage of total usable space on the selected disk drive that is free.

Virtual Storage

This tab provides information about the virtual storage devices of the Hyper-V server.

Parameter	Description
Virtual Storage Stats	
Name	The name of the virtual storage device.
Error Count	The total number of errors that have occured on this virtual storage device.
Flush Count	The total number of flush operations that have occured on this virtual storage device.
Read Count	The total number of read operations that have occured on this virtual storage device.
Write Count	The total number of write operations that have occured on this virtual storage device.
Read Bytes Per Second	The total number of bytes that have been read per second on this virtual storage device.
Write Bytes Per Second	The total number of bytes that have been written per second on this virtual storage device.
Virtual IDE Controller Details	
Name	The name of the virtual IDE controller.
Read Bytes Per Second	The number of bytes read per second from the disks attached to the IDE controller.
Read Sectors Per Second	The number of sectors read per second from the disks attached to the IDE controller.
Write Bytes Per Second	The number of bytes written per second to the disks attached to the IDE controller.
Written Sectors Per Second	The number of sectors written per second to the disks attached to the IDE controller.

Virtual Network

This tab shows detailed virtual network stats of the Hyper-V server.

Parameter	Description
Virtual Network Adapter Details	
Network Interface Name	The name of the virtual network interface configured in the Hyper-V
Bytes/Sec	The total number of bytes that have traversed the network adapter per second.
Packets/Sec	The total number of bytes received per second by the network adapter.
Legacy Virtual Network Adapter Details	
Legacy Network Interface Name	The name of the legacy network interface configured in the Hyper-V.
Bytes Received Per Second	The number of bytes received per second on the network adapter.
Bytes Sent Per Second	The number of bytes sent per second over the network adapter.

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Bytes Dropped	The number of bytes dropped on the network adapter.
Virtual Switch Details	
Switch Name	The name of the virtual switch configured in the Hyper-V
Bytes Per Second	The total number of bytes per second traversing the virtual switch.
Packets Per Second	The total number of packets per second traversing the virtual switch.

You can enable, disable or delete virtual storage devices/VMs/network adapters/disk from Applications Manager itself. Just select the required item from the corresponding tab, and choose the appropriate action from the *Action* list box. You can also compare reports between any two metrics by using the 'Compare Reports' option.

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Hyper-V Virtual Machines

Monitored Parameters

Applications Manager monitors the virtual machines configured in the Hyper-V server. It gives the ability to manage VMs (Start/Stop/Restart) from the Applications Manager web client in case of any performance problems.

The *Availability* tab lists all the virtual machines present in the Hyper-V servers and their availability status. You can also view Availability history of the virtual machines for the past 24 hours or 30 days. The *Performance* tab shows some key performance indicators of the virtual machine including CPU Utilization, Memory Utilization, Disk I/O Utilization and Network Utilization along with heat charts for these attributes. This tab also shows the health status and events for the past 24 hours or 30 days.

The *List view* displays all the virtual machines discovered under each Hyper-V server. This view provides an overall idea of the availability and health of all the virtual machines. The list view also enables you to perform bulk admin configurations. Click on the individual virtual machines listed to view detailed VM metrics.

The *Top Virtual Machines* tab shows graphs for the top CPU consumers, top memory consumers, top disk I/O consumers, and top network consumers of the Hyper-V server. This section enables you to find out which virtual machines are consuming your server resources and take action accordingly.

Click on the individual monitors listed in the *Availability* tab to view detailed performance metrics of the corresponding virtual machine. Below is an explanation of the metrics shown in these tabs:

Parameter	Description
Monitor Information	
Name	The name of the virtual machine.
Type	Denotes the type you are monitoring.
Health	Denotes the health (Clear, Warning, Critical) status of the VM.
GUID	The unique Hyper-V identifier of this virtual machine.
VM State	Specifies the current state of the virtual machine.
Last Polled at	Specifies the time at which the last poll was performed.
Next Poll at	Specifies the time at which the next poll is scheduled.
Availability	Shows the overall availability status of the VM for the day. You can also view 7/30 reports and the current availability status of the VM.
CPU Stats	
CPU Utilization	The CPU Usage of the VM as percentage
VM Details	
Number of Virtual Processors	The number of virtual processors present in the partition. All execution in this child partition happens on Virtual Processors.
Memory Details	
Total Memory	The total memory current available to the virtual machine, in mega bytes.
Deposited Pages	The number of deposited pages in this partition.
Address Spaces	The number of address spaces in the virtual TLB of the partition.
Virtual TLB Size recommended	The recommended number of pages to be deposited for the virtual TLB.
Virtual TLB Pages	The number of pages used by the virtual TLB of this partition.
GPA space modifications per second	The rate of modifications to the GPA space of this partition.

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Virtual TLB Flush Entires per second	The rate of flushes of the entire virtual TLB.
Physical Pages Allocated	The number of physical pages allocated in this partition.
Preferred NUMA Node Index	The preferred NUMA node index associated with this partition.
Remote Physical Pages	The number of physical pages not allocated from the preferred NUMA node.

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XenServer Monitor

Supported versions of Citrix XenServer: XenServer 5.6 and 6.2.

Follow the steps given below to create a new Citrix XenServer monitor:

> **Do not discover:** Applications Manager will not discover VMs. You can monitor only XenServer Host and its performance.
>
> **Discover VM but do not monitor metrics (Will not count for licensing):** Applications Manager will discover VMs and monitor its availability. You can also monitor XenServer Host and its performance.
>
> **Discover and monitor VM metrics:** Applications Manager will discover VMs, as well as monitor the availability and performance for both XenServer Host and VMs.

1. Click on New **Monitor** link.
2. Select XenServer under Virtualization category.
3. Specify the **Display Name** of the Citrix XenServer
4. Enter the Host Name or IP Address of the host where the XenServer runs.
5. Enter the https **Port** where the XenServer web service runs. The default port is 443.
6. Enter **User Name** and **Password** for authentication. It should be the credentials of any XenServer Host user with admin privileges.
7. Select the **VM Discovery** option. The available options are *Discover Pools And All Host, Discover VM Under Host*, and *Discover VM but do not monitor metrics*.
8. Specify the Polling Interval in minutes.
9. Choose the Monitor Group with which you want to associate the XenServer to, from the combo box (optional). You can choose multiple groups to associate your monitor.
10. Click Add Monitor(s). This discovers the XenServer from the network and starts monitoring it.

XenServer resource pool discovery

Applications Manager automatically discovers the slave XenServer Hosts under the Resource Pool when adding the Master XenServer Host. Once the Master XenServer host is added, the resource pool will be discovered and added as a monitor group. The user must provide the credentials for the slave XenServer Host and manage the XenServer Host to collect the performance metrics. Adding a Slave XenServer Host is equivalent to a standalone XenServer Host and Applications Manager will not determine the master and other slave XenServer Hosts. Read more about XenServer monitor and metrics monitored.

Monitored Parameters

Applications Manager provides monitoring support and virtual machine management of your Citrix XenServer infrastructure with a comprehensive view into individual components. You can monitor XenServer host metrics, virtual machines metrics for your XenServer Host and capture XenMotion under Resource Pools for easier management of hosts and to detect performance problems.

The key performance metrics monitored by Applications Manager include those pertaining to CPU usage, memory usage, storage details, network utilization and configuration info at both the XenServer host and VM level. Once the XenServer Host is added, the virtual machines are auto-discovered. You can receive immediate notification with historical reporting of VM performance to enable the rapid diagnosis of problems in your virtual infrastructure.

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The *Availability* tab shows the Availability history of XenServer for the past 24 hours or 30 days. The *Performance* tab shows some key performance indicators of theXenServer such as Response time, Total CPU Utilization along with heat charts for these attributes. This tab also shows the health status and events for the past 24 hours or 30 days.

XenServer Resource Pool discovery

Applications Manager automatically discovers virtual elements within the environment - including Resource Pools, physical hosts, and VM guests. The Resource Pool will be automatically discovered when the Master XenServer Host is added.

Once the Master XenServer host is added, the Resource Pool will be discovered and added as a monitor group. All the slave XenServer hosts under the resource rool will be discovered automatically and all the XenServer Hosts (both Master & Slaves) will be mapped to the Resource Pool.

> **Note**:
> **The discovered slave XenServer hosts are added in 'UnManaged' state.** To associate/dissociate any monitors to this Resource Pool, the user must provide the credentials for the Slave XenServer Host and change it to managed state. After providing the credentials, Applications Manager discovers the virtual machines under the slave XenServer Host and collects performance metrics.

The Resource Pool will have the separate details view which has the following list of information:

- Master XenServer Host and list of Slave XenServer Hosts.
- Pool Configuration details.
- VM and storage counts for all the hosts under the Resource Pool.

Click on the Resource Pool name under monitor groups to see the availability and health status of the pool, number of hosts, vms, storage and network.

The **Summary tab** displays Xenserver host details like name, type, IP address, number of VMs, cpu core, cpu and memory percentage.

Parameter	Description
Host Name	The name of Citrix XenServer monitor.
Type	Type of Xenserver host (master or slave).
IP Address	IP Address of the host.
Number of VM	Total Number of VM's in the XenServer Host.
Number of CPU Core	Total Number of CPU Cores created in the XenServer Host.
CPU (%)	Average physical CPU usage (%).
Memory (%)	Average memory usage (%).

The **Pool Configuration Details** tab displays high availability, WLB enabled, high availability overcommitted, virtual switch controller address, the number of VM's running, suspended, halted and paused.

Parameter	Description
HA Enabled	Configuration property to enable high availability in XenServer.
WLB Enabled	Configuration property to enable Workload Balancing in XenServer.
HA OverCommitted	Configuration property stating whether pool resources are overcommitted.

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Virtual Switch Controller Address	Pool Virtual Switch Controller Address Configuration.
Number of VM's Running	Number of virtual machines running in the XenServer host.
Number of VM's Suspended	Number of virtual machines in suspended state in the XenServer host.
Number of VM's Halted	Number of virtual machines halted in the XenServer host.
Number of VM's Paused	Number of virtual machines paused in the XenServer host.

Click on the tabs listed below to view the corresponding metrics monitored:

- Overview
- CPU
- Memory
- Storage
- Network
- Configuration

Overview

This tab provides a high-level overview of the XenServer as well as its resource utilization.

Parameter	Description
Availability and Performance History	Displays the availability and performance history for the last six hours.
CPU Utilization	The combined CPU utilization across the system(%).
Memory Utilization	Percentage of memory used across the system(%)
Virtual Machines	
VM Name	Name of the virtual machines(VM) present in the host
Availability	Denotes the availability of the VM - available or not available
Power	Indicates whether the VM is running or not
CPU Utilization	The disk input/output utilization of this VM in percentage
Health	The health status(Clear, Warning, Critical) of this VM
Number of Virtual CPUs	Displays the total number of virtual CPUs.

CPU

This tab provides metrics about CPU Utilization details of the cores.

Parameter	Description
CPU Utilization of Cores	
Core Name	The core name of the processor.
CPU Utilization	The CPU utilization of the CPU core over a period of time(in percentage).
Speed	The speed of the physical processor in Megahertz.
Model Name	The model name of the physical processor.
Family	The family (number) of the physical processor.
Model	The model number of the physical processor.
Stepping	The stepping of the physical processor.
Health	The overall health of the CPU core.

Memory

This tab provides metrics about memory utilization of the XenServer.

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Parameter	Description
Memory Utilization	
Overhead Memory	Memory overhead in MB on the XenServer Host.
Memory Available	The amount of available physical memory in MB.
Memory Usage	The amount of physical memory in use in MB.
Total Memory	The total physical memory in XenServer Host in MB.
Agent Memory Utilization	
Memory Allocation	The allocation of the XAPI process in MB.
Memory Live	The live memory for the XAPI process in MB.
Memory Usage	The memory used by the XAPI process in MB.
Memory Free	The memory which is unutilized/ free for the XAPI process in MB.

Storage

This tab displays metrics pertaining to the overall disk performance of the XenServer.

Parameter	Description
Name	The name of the storage repository.
Description	The description of the storage repository.
Type	The type of the storage repository.
Content Type	The type of content in the storage repository.
Shared	Indicates whether this storage repository can be shared between multiple hosts.
Usage	The percentage of this storage repository that is in use.
Capacity	The total physical size of the repository in GB.
Virtual Allocation	The sum of virtual sizes of all virtual disk images in this storage repository in GB.

Network

This tab provides metrics about network utilization.

Parameter	Description
Network Utilization	
Name	Name of the device
IP Address	IP address of this physical network interface
Mac Address	MAC address of this physical network interface.
Netmask	Netmask of this physical network interface.
Gateway	The IP address of the gateway of this physical network interface.
Speed	Indicates the metrics speed.
Data Received	The network traffic out, measured in KB/sec across all of the physical adapters of this XenServer host.
Data Transmitted	The network traffic in, measured in KB/sec across all of the physical adapters of this XenServer host.
Transmit Errors	Transmit errors per second on this physical network interface.
Received Errors	Received errors per second on this physical network interface.
Duplex	Indicates whether this device is duplex.
MTU	Maximum transmission units of the physical network interface.

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Configuration

This tab provides info on the XenServer's configuration details.

Parameter	Description
HostName	The name of Citrix XenServer monitor.
Power	The power status of the server.
Version	The software product version of this XenServer host.
CPU Model	The model name of the physical processor.
CPU Capacity	The capacity of the physical processor.
CPU Vendor	The vendor of the physical processor.
Number of CPU Cores	Total Number of CPU Cores created in the XenServer Host.
Number of VM's	Total Number of VM's created in the XenServer Host.
Major Version	Major version number of the API of this host.
Minor Version	Minor version number of the API of this host.
Description	The description of this XenServer host.
Enabled	Indicates whether this XenServer host is enabled to run VMs.
Scheduler Policy	The scheduler policy currently enforced on this XenServer host.
License Expiry	The expiration date of the license for this XenServer host.

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XenServer Virtual Machines

Monitored Parameters

The key performance metrics monitored by Applications Manager include those pertaining to CPU usage, memory usage, storage details, network utilization and configuration info at both the XenServer host and VM level. The solution also tracks attributes related to processes, guest OS, event log, etc. at the VM level.

Applications Manager also enables IT administrators to automate the provisioning of XenServer VMs based on threshold breaches. For example, Applications Manager can automatically start/stop/restart VMs in a XenServer farm when the number of active sessions in a Tomcat server or Oracle application server exceeds the specified threshold limit. This automation capability helps IT teams significantly reduce manual intervention and ensure their business-critical applications running in Citrix environments do not experience resource shortage.

The *Availability* tab lists all the virtual machines present in the XenServers and their availability status. You can also view Availability history of the virtual machines for the past 24 hours or 30 days. The *Performance* tab shows some key performance indicators of the virtual machine including CPU Utilization, Memory Utilization, Disk I/O Utilization and Network Utilization along with heat charts for these attributes. This tab also shows the health status and events for the past 24 hours or 30 days.

The *List view* displays all the virtual machines discovered under each XenServer. This view provides an overall idea of the availability and health of all the virtual machines. The list view also enables you to perform bulk admin configurations. Click on the individual virtual machines listed to view detailed VM metrics.

The *Top Virtual Machines* tab shows graphs for the top CPU consumers, top memory consumers, top disk I/O consumers, and top network consumers of the XenServer. This section enables you to find out which virtual machines are consuming your server resources and take action accordingly.

Click on the individual monitors listed in the *Availability* tab to view detailed performance metrics of the corresponding virtual machine. These metrics are categorized into 6 separate tabs for easy understanding. Below is an explanation of the metrics shown in these tabs:

- Overview
- Memory
- Storage
- Network
- Configuration

1) **Overview**

This tab provides a high-level overview of the virtual machine as well as its resource utilization.

Parameter	Description
Monitor Information	
Name	The name of the virtual machine
Type	Denotes the type you are monitoring.

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Health	Denotes the health (Clear, Warning, Critical) status of the VM.
Last Polled at	Specifies the time at which the last poll was performed.
Next Poll at	Specifies the time at which the next poll is scheduled.
Availability	Shows the current status of the VM - available or not available.
CPU Utilization	
CPU Utilization	The CPU Usage of the VM as percentage

2) **Memory**

This tab shows metrics about the memory utilization of the virtual machine

Parameter	Description
Overhead Memory	Amount of additional host memory allocated to the virtual machine in MB.
Target Memory	The maximum memory which is allocated to the virtual machine.
Minimum Dynamic Memory	The minimum dynamic allocation of memory to a VM from a pool of memory on the host.
Maximum Dynamic Memory	The maximum dynamic allocation of memory to a VM from a pool of memory on the host.
Minimum Static Memory	Specifies the minimum amount of static memory allocated to the virtual machine.
Maximum Static Memory	Specifies the maximum amount of static memory allocated to the virtual machine.

3) **Storage**

Parameter	Description
VBD (Virtual Block Device) Details	
Name	Name of this virtual block device.
Bootable	Indicates whether this virtual block device is bootable.
Device Attached	Indicates whether the device is attached or not.
Drive Empty	Indicates whether this device is an empty drive.
Mode	The mode the virtual block device must be mounted with.
Status Code	Error/success code that is associated with last attach-operation.
Storage Level Lock	Indicates whether a storage level lock was acquired.
VBD Type	Indicates how the virtual block device appears to the guest.
Unpluggable	Indicates whether this virtual block device supports hot-unplug.
VDI (Virtual Disk Image) Details	
Name	Name of the virtual disk image.
Description	The description of the virtual disk image.
Location	Displays the location information of the virtual disk image.
Managed Disk	Indicates whether the virtual disk image is a managed disk image.
Missing	Indicates whether the virtual disk image is present on disk.
Physical Utilization	The physical utilization of this virtual disk image in GB.
Size	Displays the size of the disk as presented to the guest in GB.
Read Only	Indicates whether this disk can be mounted only as read-only.
Sharable	Indicates whether this disk can be shared.
SR Name	The name of the storage repository where the virtual disk image is located.

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4) **Network**

The metrics in this category contain the VM network utilization details.

Parameter	Description
Name	Name of this virtual network interface.
MAC Address	Ethernet MAC address of virtual interface, as exposed to guest.
Network	The name of the virtual network to which this virtual network interface is connected.
IP Address	IP Address of the virtual interface.
MTU	Maximum transmission units of the virtual network interface in octets.
Active	Indicates whether the device is attached.
Data Transmit	Data transmitted on virtual interface in kilo bytes per second.
Data Received	Data received on virtual interface in kilo bytes per second.
Transmit Errors	Indicates the transmit errors per second on this virtual interface.
Received Errors	Errors received per second on this virtual interface.
I/O Read	The read bandwidth of the device in kilo bytes per second .
I/O Write	The write bandwidth of the device in kilo bytes per second .

5) **Configuration**

Parameter	Description
VM Name	The name of the Virtual Machine.
Power	Current power state of the VM.
OS Name	Operating System of the VM.
XenServer HostName	Displays the name of the XenServer host where the virtual machine is located.
HA Always Running	Displays the status of the the virtual machine's HA(high availability). If this value is true, it indicates that the system will attempt to keep the VM running.
HA Restart Priority	If ha_always_run is set, this describes the restart priority.
Description	Any description of the VM.
Is Snapshot	Indicates whether this virtual disk image is a snapshot.
Snapshot Name	The name of the VM of which this is a snapshot.
Snapshot Creation Time	Date/time when this snapshot was created.
User Version	A user version number of this machine.
XenTool Status	Indicates the Status of XenTools on the VM
XenTool Version	Version Number of the XenTool.
XenTool Build	Build Number of the XenTool.

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Docker Monitoring

Before creating a new Docker Monitor, the following prerequisites have to be fulfilled.

Docker and Docker Container metrics are collected via their REST API. So, Docker's REST API should be enabled to add a Docker Monitor.

To enable remote API:

1. Open etcdefaultdocker file
2. Add the below option

```
DOCKER OPTS='-H tcp://0.0.0.0:4243-H=unix:///var/run/docker.sock'
```

3. Save the file.
4. Restart Docker.

Once the prerequisites are fulfilled, follow the steps given below to create a new Docker monitor:

1. Click on New **Monitor** link.
2. Select **Docker** under Virtualization category.
3. Specify the **Display Name** of the Docker Monitor.
4. Enter the host name of the server where Docker is running.
5. Enter the Docker socket port to access REST API; default port used is 4243.
6. If you choose the **Use Below Credentials option**, then enter the credentials - UserName and Password to access Remote REST API. If you choose the **Select from credential list** option, then select the respective credential from preconfigured credential list.
7. Choose **SSL is enabled**, if REST API is to be accessed via SSL port. Default SSL port for Docker REST API is 2376.
8. Specify the Polling Interval in minutes.
9. Choose the Monitor Group with which you want to associate the Docker to, from the combo box (optional). You can choose multiple groups to associate your monitor.
10. Click Add Monitor(s). This discovers the Docker from the network and starts monitoring it.

Note:

- Applications Manager supports only Docker Version 1.5, API Version 1.17
- As Docker REST APIs does not Support SSLv3 and lower protocols due to security reasons, Docker Monitoring will work only in Java 7 and above. If your Applications Manager is still in Java 6, migrate it to Java 7.

  Refer Java Migration in Applications Manager for more help.

Docker is a new container technology. Docker allows you to package an application with all of its dependencies into a standardized unit for software development. With Docker, you can separate your applications from your infrastructure and treat your infrastructure like a managed application.

Applications Manager helps to actively monitor all aspects of a Docker monitor like health, availability, running stats etc., and helps take informed decisions in case of downtimes.

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Docker Monitoring - Monitored Parameters

S.No	Parameters	Descripton
1	Total Number of Containers	Total number of containers in Docker.
2	Total Number of Images	Total number of images present.
3	Crashed Containers	Number of containers, that exited abnormally.
4	Running Containers	Containers that are currently running.
5	Error Message	Error message for list of crashed containers.
6	Memory Limit	'True', if a memory limit is set, 'False' otherwise.
7	Memory Used	Total memory used by Docker.
8	Docker Id	The unique Id, used to identify each Docker.
9	Name	Name of the Docker.
10	Docker Version	The version of Docker daemon running in the host machine.
11	API Version	The version of Docker's remote API.
12	Kernel Version	Kernel version used in the host.
13	Operating System	Name of the operating system.
14	Build Time	Last build time of Docker.
15	Init Path	Path of Docker init directory.
16	Docker Root Dir	Root directory path of Docker.

Note:
• As Docker REST APIs does not Support SSLv3 and lower protocols due to security reasons, Docker Monitoring will work only in Java 7 and above. If your Applications Manager is still in Java 6, migrate it to Java 7.
Refer Java Migration in Applications Manager for more help.

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Docker Containers

Container Metrics:

Overall Health

S.No	Parameters	Description
1	State	Current state of the Container. Possible states are 'Running', 'Paused', 'Restarting', 'OOMKilled', 'Dead'.
2	Exit Code	Last exit code of Docker Container.
3	Error	Error message.
4	Started At	Latest start time of the Container.
5	Finished At	Last time the Container had stopped.
6	Restart Count	Number of times the container has restarted.

CPU and Memory Usage:

S.No	Parameters	Description
1	CPU Utilization	The percentage of CPU utilized. In multi core machines, CPU utilization's value can be greater than 100.
2	Memory Utilization	The percentage of memory utilized.
3	Processor Count	Total number of processors available.
4	Memory Usage	Total memory used by the Container (in MB).
5	Memory Limit	Memory limit of the Container (in MB).

Network Stats:

S.No	Parameters	Description
1	Bytes Received	Total number of bytes received by the Container interfaces.
2	Bytes Transmitted	Total number of bytes transmitted by the Container interfaces.
3	I/O Read	Number of IOs read to/from the disk by the Container.
4	I/O write	Number of IOs written to/from the disk by the Container.
5	I/O Total	Number of IOs completed to/from the disk by the Container.
6	tx-packets Dropped	Packets dropped while transmitting data.
7	rx-packets Dropped	Packets dropped while receiving data.

Memory Stats:

S.No	Parameters	Description
1	Active File	Cache memory that has been identified as active by the kernel.
2	InActive File	Cache memory that has been identified as inactive by the kernel.

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3	Active Anonymous	The amount of anonymous memory that has been identified as active by the kernel.
4	Inactive Anonymous	The amount of anonymous memory that has been identified as inactive by the kernel.
5	Cache	The amount of memory used by the processes of this control group.
6	Inevictable	The amount of memory that cannot be reclaimed; generally, it will account for memory that has been locked with mlock. It is often used by crypto frameworks to make sure that secret keys and other sensitive material never gets swapped out to disk.
7	Page Fault	Total number of page faults of the system.
8	Page Major Fault	Total number of major page faults of the system.
9	Page In	Each time a page is "charged" (added to the accounting) to a cgroup, pgpin increases.
1o	Page Out	When a page is “uncharged” (no longer “billed” to a cgroup), pgpgout increases.

Configuration Metrics:

S.No	Parameters	Description
1	Container Name	Name of the Container.
2	Container Id	Unique Id used to represent the Container.
3	Image	Base image used to create the Container.
4	Host Name	'Hostname to use for the Container.'
5	Process Id	Process Id mapped to the Container.
6	Ip Address	Assigned IP address of the Container.
7	Mac Address	Assigned Mac address of the Container.
8.	User	User associated with the Container.
9	Created At	Time when the Container was created.
10	Command	Command used while running the Container.
11	Path	Path where the command will be executed.
12	Ports	Details of all the ports exposed by the Container.
13	Port Binding	Details of all the ports exposed by the Container and their mappings with the host.

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Citrix XenApp Monitoring

XenApp is Citrix's solution for application and desktop delivery, with over 100 million users worldwide. Citrix XenApp extends Microsoft Remote Desktop Sessions and applications to users through the Citrix HDX protocol, enabling secure, remote access to Windows applications and server desktops from any device, over any network.
Applications Manager helps quickly drill down to the root cause of a problem in XenApp and resolve slowness in an application running on a Citrix XenApp server. You can track the performance of Broker Services, client and server sessions and diagnose issues like server overload using event logs.

Adding a new monitor

Supported versions of Citrix XenApp Server: XenApp 7.6 and 6.5

Prerequisites for adding the monitor: You should have .NET 3.5 framework installed in Applications Manager.
Applications Manager connect with XenApp Server and used to determine the Performance of various services and components of XenApp Server. Follow the steps given below to create a new Citrix XenApp monitor:

1. Click on New **Monitor** link.
2. Select XenApp under Virtualization category.
3. Specify the **Display Name** of the Citrix XenApp Server.
4. Enter the Host Name (Delivery Controller) or IP Address of the host where the XenApp server runs.
5. Select the **Version** number from the drop-down menu.
6. If you choose the **Use Below Credentials option**, then enter the credentials - UserName and Password of the XenApp Server Host Machine.**UserName** - Name of the User who has the permission to execute WMI Queries for the respective Versions on the following namespaces in Delivery Controller machine.**NameSpaces For Version 7.6:**
   - rootcimv2
   - rootcitrixeuem
   - rootcitrixprofilesmetrics
7. **NameSpaces For Version 6.5:**
   - rootcimv2
   - rootcitrix

   Password - Password of the above user who has the permissions to execute WMI Queries.If you choose the **Select from credential list** option, then select the respective credential from preconfigured credential list.
8. Select **Enable Event Log Monitoring** if you wish to monitor event logs.
9. Specify the Polling Interval in minutes.
10. Choose the Monitor Group with which you want to associate the XenApp to, from the combo box (optional). You can choose multiple groups to associate your monitor.
11. Click Add Monitor(s). This discovers the XenApp from the network and starts monitoring it.

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Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **XenApp** under the **Virtualization** Table. Displayed is the XenApp bulk configuration view distributed into three tabs:

- **Availability** tab, gives the Availability history for the past 24 hours or 30 days.
- **Performance** tab gives the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

Click on the tabs listed below to view the corresponding metrics monitored for different versions of Xenapp:

Xenapp Version 7.6	**Xenapp Version 6.5**
• Performance Overview • End-User Experience • Session Performance • Profile Server • Event Logs	• Performance Overview • Services • Web Interface • IMA and ICA • Zones and Servers • Applications • Sessions and Clients • Event Log

Monitored Parameters for Xenapp Version 7.6

Performance Overview

Parameter	Description
Performance of Broker Services	
Average Transaction Time (in Seconds)	The time on average taken to process an XML transaction in Citrix Broker Service.
Concurrent Transactions	The number of concurrent XML transactions being processed in the Broker Service.
Transactions/Sec	The number of XML transactions being processed per second.
Services	
Service Name	The name of the service. Note that the display name and the service name (which is stored in the registry) are not always the same.
Start Mode	The Start mode of the service. The different start modes are: • **Boot** - The device driver is started by the operating system loader (valid only for driver services). • **System** - The device driver started by the operating system initialization process. This value is valid only for driver services. • **Auto** - The service to be started automatically by the service control manager during system startup. Auto services are started even if a user does not log on. • **Manual** - The service to be started by the Service Control Manager when a process calls the StartService method. These services do not start unless a user logs on and starts them. • **Disabled** - The service that cannot be started until its StartMode is changed to either Auto or Manual.
Status	The current status of the object. Both operational and nonoperational statuses can be defined. Operational statuses include: "OK", "Degraded", and "Pred Fail" etc. Non-operational statuses include: "Error", "Starting", "Stopping", and "Service" etc.

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State	The current state of the base service. Possible values are: • Stopped • Start Pending • Stop Pending • Running • Continue Pending • Pause Pending • Paused • Unknown

End User Experience

Parameter	Description
Server Session Start-Up Durations	
Session ID	The unique ID for each user session.
Client IP	The IP address of the device connecting to a XenApp / Presentation Server.
Client Machine Name	The name of a device connecting to a XenApp / Presentation Server.
Logon Client User Name	The name of the user who is connecting to the XenApp / Presentation Server and accessing published application.
Credentials Authentication (in ms)	The Credentials Authentication Server Duration (CASD) is the time the application server spends authenticating the user's credentials against the authentication provider, which may be Kerberos, Active Directory, or a Security Support Provider Interface.
Credentials Obtention (in ms)	The Credentials Obtention Server Duration (COSD) is the time taken for the server to obtain the user credentials. Because this metric may be artificially inflated if a user fails to provide credentials in a timely manner, it is not included in the Session Start-up Server Duration (SSD).
Drive Mapping (in ms)	The Drive Mapping Server Duration (DMSD) is the time needed for the server to map the user's client drives, devices and ports.
Printer Creation (in ms)	The Printer Creation Server Duration (PCSD) is the time required for the server to synchronously map the user’s client printers. If the configuration is set such that printer creation is performed asynchronously, no value is recorded for PCSD as it is does not impact completion of the session start-up.
Profile Load (in ms)	The Profile Load Server Duration (PLSD) is the time required for the server to load the user’s profile.
Session Creation (in ms)	The Session Creation Server Duration (SCSD) is the time the server spends creating the session. This should not be confused with the overall SSD.
Session Startup (in ms)	The Session Startup Server Duration (SSSD) is the high-level server-side connection start-up metric that encompasses the time XenApp takes to perform the entire start-up operation. When an application starts in a shared session, this metric is normally much smaller than when starting a new session, which involves potentially high-cost tasks such as profile loading and login script execution.
Client Session Startup Durations	
Session ID	The unique ID for each user session.
Client IP	The IP address of the device connecting to a XenApp / Presentation Server.
Client Machine Name	The name of a device connecting to a XenApp / Presentation Server.
Logon Client User Name	The name of the user who is connecting to the XenApp / Presentation Server and accessing published application.
Application Name	The name of the application user request to get session.
Application Enumeration (in ms)	The Application Enumeration Client Duration measures the time needed to retrieve the list of applications from the Web Interface service. Application enumeration is one of the issues slowing down session start times.
Back-Up URL Client Count	The BackUp URL Client Count (BUCC) is a recording of the number of back-up URL retries before a successful launch. This is the only start-up metric that is a measure of attempts, rather than time duration. If this metric has a value higher than 1, it indicates the Web Interface server is unavailable and the XenApp Plugin (formerly known as Program Neighborhood Agent) is attempting to connect to back-up Web Interface servers to launch the application.
Credentials Obtention (in ms)	The Credentials Obtention Client Duration (COCD) is the time it takes to obtain user credentials. **Note:** COCD is only measured when the credentials are entered manually by the user. Because this metric may be artificially inflated if a user fails to provide credentials in a timely manner, it is subtracted from the Startup Client Duration (SCD). This consideration is especially important if the metric is to be used for threshold alerting.
Configuration File Download (in ms)	The Configuration File Download Client Duration (CFDCD) is the time it takes to get the configuration file from the XML server.
ICA File Download (in ms)	The ICA File Download Duration (IFDCD) is the time it takes for the plugin (client) to download the ICA file from the server. **Note:** The overall process involved in downloading the ICA file is: • The user clicks on application icon. • The user’s browser requests the Web Interface launch page. • The Web Interface launch page receives the request and starts to process the launch, communicating with XenApp server and potentially other components such as Secure Ticket Authority (STA). • The Web Interface generates ICA file data. • The Web Interface sends the ICA file data back to the user’s browser. • The browser passes ICA file data to the plugin (client). IFDCD metrics represents the time it takes for the complete process (step 1 to 6). Metric stops counting time when the client receives the ICA file data.

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Launch Page Web Server (in ms)	The Launch Page Web Server Duration (LPWD) metric is only used when Web Interface is the application launch mechanism. If LPWD is slow, there is a bottleneck on the Web Interface server.Process under this: • 1. The Web Interface launch page receives the request and starts to process the launch, communicating with XenApp server and potentially other components such as Secure Ticket Authority (STA). • 2. The Web Interface generates ICA file data.
Session Look-Up (in ms)	The Session Look Up Client Duration (SLCD) represents the time it takes to query every session to host the requested published application. The check is performed on the client to determine whether an existing session can handle the application launch request. The method used depends on whether the session is new or shared.
Session Creation (in ms)	The Session Creation Client Duration (SCCD) is the time it takes to create a new session, from the moment wfica32.exe is launched to when the connection is established.
Startup Client (in ms)	The Startup Client Duration (SCD) is a high-level client connection startup metric. It starts as close as possible to the time of the request (mouse click) and ends when the ICA connection between the client device and server running the XenApp / Presentation Server has been established. In the case of a shared session, this duration will normally be much smaller, as many of the setup costs associated with the creation of a new connection to the server are not incurred.

Session Performance

Parameter	Description
ICA Sessions Round Trip Metrics	
SessionID	The unique ID for each user session.
Client IP	The IP address of the device connecting to a XenApp / Presentation Server.
Client Machine Name	The name of a device connecting to a XenApp / Presentation Server.
Logon Client User Name	The name of the user who is connecting to the XenApp / Presentation Server and accessing published application.
Network Latency (in Seconds)	The detected network latency between the XenApp / Presentation Server Client device and the server running XenApp / Presentation Server.
Round Trip Time (in Seconds)	The time interval measured at the client between the first step (user action) and the last step (graphical response displayed). This metric can be thought of as a measurement of the screen lag that a user experiences while interacting with an application hosted in a session on a server running XenApp / Presentation Server.
Input Bandwidth Available (in Mbps)	The bandwidth available on the network (XenApp / Presentation Server Client to XenApp / Presentation Server) in bits per second.
Output Bandwidth Available (in Mbps)	The bandwidth available on the network (XenApp / Presentation Server to XenApp / Presentation Server Client) in bits per second. A value of 0 indicates that no data is available.
Frame Send Round Trip Duration (in Seconds)	The time from the start of the frame until the completion of sending frame data to the client.

Profile Server

Parameter	Description
Logon Timings	
Session ID	The unique ID for each user session.
Time Taken for Loading Profile (in Seconds)	The profile load time for the given session calculated as Profile Loaded (Time at which the profile finished loading) - Profile Load Start (Time at which the profile started to load).
Time Taken for Logon Script Execution (in Seconds)	The logon script execution duration which is displayed in the Director console calculated as LogonScriptComplete (Time at which Start-up script is completed) + LogonScriptStartup (Start time of the start-up logon)
Logoff Timings	
Session ID	The unique ID for each user session
Time Taken for Processing Registry	The registry processing duration. The registry values for the current user are processed and saved to the profile store. It is calculated as: Registry processing duration = Registry Processing complete (Registry processing finish time) -- Registry Processing Start (Registry processing start time).
Time Taken for File System Processing	The time taken for file synchronization and file system processing. It is calculated as: File System Processing = File System Processing complete (File synchronization and related file system processing finish time) - File System Processing Start (File synchronization and related file system processing start time).
Time Taken for CPS Processing	The Cross Platform Setting (CPS) processing duration. It is calculated as: Cross Platform Setting (CPS) processing duration = CPS Processing Complete (Cross-platform settings processing finish time) - CPS Processing Start (Cross-platform settings processing start time).
Time Taken for Logoff	The logoff processing duration. It is calculated as: Logoff processing duration = Logoff completed (Time at which logoff process finished) - Logoff start (Logoff process start time)
Diagnostics	
Session ID	The Unique ID for each user session.

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Network Latency	Users can create their own profiles in XenApp Server. Whenever a user logs in or logs out from a session, the profile server is used to authenticate the user, to check accessibility of resources for each user etc. The Network Latency metric indicates if the profile server is online or offline. Possible Values: • -1 - Offline, no network connection and no active sync enabled • 1 - Online
Disk Usage	The total bytes consumed by the user of this session.
Folder Name	The name of the redirected special folder or the name of the profile store folder in the profile store path.

Event Logs

Parameter	Description
Rule Name	The name of the event log rule
Log File Type	The Log File Type - Application, system, security, file replication service, DNS Server or directory service.
Source	The Application which created the event.
Event Id	The Event ID associated with the Event Log File.
Type	The Event Type - Error, Warning, Information or Event of Any Type. In case of Security Events, the types would vary between Success Audit and Failure Audit.
User Name	The system component or User account that was running the process which caused the event.
Description	A description of the event.
Generated Time	The time when the event entry was submitted.

Monitored Parameters for Xenapp Version 6.5

Performance Overview

Parameter	Description
SERVER DETAILS	
Server Name	The name of the XenApp Server.
IP Address	The IP Address of the XenApp Server.
Farm Name	The name of the Farm under which XenApp Server is Configured.
Zone Name	The name of the Zone to which the XenApp Server belongs.
Zone Ranking	Zone Ranking specifies the ranking of server in the Zone. Possible ranks are Most Preferred, Preferred, Default Preference, Not Preferred and Unknown.
Domain Name	The Domain Name of the XenApp Server.
Server Type	The type of the Server - Windows server or not.
XENAPP SERVER PERFORMANCE	
DataStore Connection Failure	The number of minutes that the XenApp server has been disconnected from the data store. Threshold should take into account events such as reboots and scheduled maintenance.
Number of XML Threads	The number of threads allocated to service Web-based sessions.
Busy XML Threads	The number of XML threads currently being processed. There are 16 worker threads in the Citrix XML Service. A count of 16 or more shows that XML requests are not being processed in a timely manner.
Resolution Work Item Queue Ready Count	The number of resolution work items (related to application launches) that are ready to be executed. A value above 0 indicates that requests are being queued while IMA handles other requests.
Work Item Queue Ready Count	The number of work items that are ready to be executed. A value above 0 indicates that requests are being queued while IMA handles other requests. This counter should not be over 1 for an extended period of time.
Number of Zone Elections	The number of zone elections. This value starts at zero each time the IMA Service starts and is incremented each time a zone election takes place.
Zone Elections Triggered	The number of times a server triggers a zone election.
Active Sessions	The number of active user sessions.
Disconnected Sessions	The number of disconnected user sessions.
Total number of Sessions	The total number of user sessions (active and disconnected).

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TRACKING XENAPP GROWTH	
Application Resolution Time	The time in milliseconds that a resolution took to complete. This is also the time required to determine the “least-loaded” server during an application launch.
Application Enumerations/Sec	The number of non-XML-based enumerations (requests for application lists) per second.
Application Resolutions/Sec	The number of resolutions (applicable launch requests) per second.
Filtered Application Enumerations/Sec	The number of XML-based enumerations (requests for application lists) per second
LICENSE SERVER CONNECTION FAILURE	
License Server Performance	The number of minutes that the XenApp server has been disconnected from the License Server.
Average License Check-In Response Time	The average license check-in response time in milliseconds.
Average License Check-Out Response Time	The average license check-out response time in milliseconds.
Last Recorded License Check-In Response Time	The last recorded license check-in response time in milliseconds
Last Recorded License Check-Out Response Time	The last recorded license check-out response time in milliseconds. A value of more than 5000 milliseconds indicates a performance issue at the license server.Â
CPU UTILIZATION	
CPU Usage	The percentage of CPU resource consumed by a user at a given time, averaged over a few seconds
CPU Entitlement	The percentage of CPU resource that Citrix CPU Utilization Management makes available to a user at a given time
CPU Reservation	The percentage of total computer CPU resource reserved for a user, should that user require it
CPU Shares	The proportion of CPU resource assigned to a user
Long Term CPU Usage	The percentage of CPU resource consumed by a user, averaged over a longer period than the CPU Usage counter

Services

Parameter	Description
SERVICES	
Service Name	Name of the Services in XenApp
Start Mode	Represent the starting mode(like Auto/Manual/Disabled) of the Services
State	Represent the state(like Running/Stopped/Paused) of the Services

Web Interface

Parameter	Description
WEB INTERFACE PERFORMANCE	
Service Name	Name of the Services in XenApp
Queued Request Count	The number of requests waiting to be processed
Rejected Request Count	The number of requests rejected because the request queue was full
TRACKING WEB INTERFACE GROWTH	
Request Execution Time	The number of milliseconds that it took to execute the most recent request
Current Request Count	The current number of requests, including those that are queued, currently executing, or waiting to be written to the client

IMA and ICA (Independent Computing Architecture and Independent Management Architecture)

Parameter	Description
CITRIX IMA NETWORKING	
Server Name	Name of the XenApp Server with IMA Service.
Network Connections	The number of active IMA network connections to other IMA servers.
Bytes Received/Sec (Mbps)	The inbound bytes in Mbps
Bytes Sent/Sec (Mbps)	The outbound bytes in Mbps.
ICA SESSION STATS	

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Client Name	The name of the Client connected with XenApp Server along with it's Session Name.
Average of Session's Latency	The average client latency over the lifetime of a session.
Deviation in Latency	The difference between the minimum and maximum measured latency values for a session.
Input Session Bandwidth (Mbps)	The bandwidth, measured in Mbps, used from client to server for a session.
Output Session Bandwidth (Mbps)	The bandwidth, measured in Mbps, used from server to client for a session.
ICA ROUND TRIP LATENCY	
Median of ICA Round Trip Latency	The median time of ICA roundtrip latency for all sessions on the server.

Zones and Servers

Parameter	Description
ZONE STATS	
Zone Name	The name of the Zone to which XenApp Server belongs.
Data Collector	The one Server in a Zone is elected as the data collector for the other servers.
Number of Servers	The number of XenApp servers in each Zone.
SERVERS IN ZONES	
Server Name	The name of the XenApp Server.
IP Address	The IP Address of the XenApp Server.
Farm Name	The name of the Farm under which XenApp Server is Configured.
Zone Name	The name of the Zone in which XenApp Server belongs to.
Zone Ranking	The ranking of server(like Most Preferred, Preferred, Default Preference, Not Preferred) in the Zone.
Domain Name	The domain name to which XenApp Server belongs.

Applications

Parameter	Description
PUBLISHED APPLICATIONS	
Application Name	The name of the Published Application.
Application ID	The Application ID is a number that uniquely identifies the application even if the application name changed.
Server Name	The name of the XenApp Server in which the application get published / deployed.
Farm Name	The name of the Farm in which application get published.
Permissions	The value of the application Read Only flag. Values are Read Only, Read/Write
Folder Name	The client's Program Neighborhood folder.
Application Status	The value of the 'Enable application' flag. When you publish an application, it is enabled by default. Enabled applications are then available to the users specified when the application was published. Disabled applications are not available to users.

Sessions and Clients

Parameter	Description
SESSION DETAILS	
Session ID	The unique ID for each session created in XenApp Server-
Session Name	The name of the Session
Session User	The name of the user who is running the Session
Session State	The Current state of the Session: userLoggedOn, connectedToClient, connectingToClient, shadowingOtherSession, loggedOnButNoClient, waitingForConnection, listeningForConnection, resetInProgress, downDueToError, initializing.
Client Name	The session client name. The session client name is usually the client device name
Number of Applications	The number of applications in Session
LogOn Time	The session logon time
Connect Time	The connect time of the session

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Current Time	The current time of the session
Last Input Time	the session's last input time.
Disconnect Time	The last session disconnect time. If the session is connected, the time is 0 for all the values.
ICA CLIENT DETAILS	
Client Name	The session client name is usually the client device name.
Client Address	The network address of the client.
ICA Buffer Length	The ICA buffer length of the session.

Event Log

Parameter	Description
Rule Name	The name of the event log rule
Log File Type	The Log File Type - Application, system, security, file replication service, DNS Server or directory service.
Source	The Application which created the event.
Event Id	The Event ID associated with the Event Log File.
Type	The Event Type - Error, Warning, Information or Event of Any Type. In case of Security Events, the types would vary between Success Audit and Failure Audit.
User Name	The system component or User account that was running the process which caused the event.
Description	A description of the event.
Generated Time	The time when the event entry was submitted.

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VMware Horizon View Monitoring

Applications Manager lets you auto-discover, monitor and manage your VMware Horizon View environments. Applications Manager collects data from your managed virtual desktops and multiple Horizon View instances, spread across one or more datacenters. This data is then presented in preconfigured dashboards for real-time performance analysis. Applications Manager supports multiple Horizon View instances and provides you with a single intuitive dashboard that allows you to view all VMware Horizon View components, status of services used by the View and underlying infrastructure as well.

While configuring the VMware Horizon View, Applications Manager discovers the following components as different monitors associates them to Monitor Group for Horizon View:

- VMware Horizon View Connection Broker
- Active Directory
- vCenter
- MsSQL or ORacle DB used for Events
- Query Monitor with events query

Create a new VMware Horizon View Monitor :

1. Click on New **Monitor Group** link.
2. Select VMware Horizon View from the drop-down list.
3. Specify the **Display Name** of the VMware Horizon View.
4. Enter the Connection Broker Hostname or IP Address of the host where the Connection Broker is running.
5. Enter **User Name** and **Password** for authentication.
6. Specify the Polling Interval in minutes.
7. Click Fetch Horizon View Components. This discovers the VMware Horizon View Components namely vCenter Servers, Active Directory, MsSQL or Oracle DB used for Events and Query Monitor with events query from the network and starts monitoring it.

Note
Check out the Prerequisite for adding the Connection Broker monitor & the APM host.

Create a new VMware Horizon View Connection Broker monitor:

1. Click on New **Monitor** link.
2. Select VMware Horizon View Connection Broker under the **Virtualization** category.
3. Specify the **Display Name** of the VMware Horizon View.
4. Enter the Connection Broker Hostname or IP Address of the host where the Connection Broker is running.
5. Enter **User Name** and **Password** for authentication.
6. Specify the Polling Interval in minutes.
7. Choose the Monitor Group with which you want to associate the VMware ESX server to, from the combo box (optional).
8. Click Add Monitor(s). This discovers the VMware ESX/ESXi server from the network and starts monitoring it.

Note
Check out the Prerequisite for adding the Connection Broker monitor & the APM host.

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Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **VMware Horizon View Connection Broker** under the **Virtualization** Table. Displayed is the VMware Horizon View bulk configuration view distributed into three tabs:

- **Availability** tab, gives the Availability history for the past 24 hours or 30 days.
- **Performance** tab gives the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

Click on the monitor name to see all the server details listed under the following tabs:

- Connection Broker
- View Pool
- VM Details
- Session Details
- vCenter Details
- Composer Domain Details
- Events DB Details
- License Details

Connection Broker

Parameters	Description
Connection Broker Configuration	
Connection Broker ID	The ID of the View connection broker.
Name	The name of the View connection broker.
DNS Name	The domain's DNS name.
NetBIOS Name	The domain's NetBIOS name of the connection broker server.
IP Address	The IP address of the connection broker server.
Version	VMware View Version.
Build	VMware View Buiild.
Activation	Activation Status.
Is Alive	Indicates whether the broker component is up.
Last Backup Time	The time during which the last View LDAP backup was performed.
Type	The internal monitoring type.
External URL	URL throught whichh other modules connects.
Connection Broker Stats	
Total Sessions	The total number of desktop sessions.
Maximum Session	The highest recorded number of current VDM sessions.
Total SVI Sessions	The current number of VDM SVI sessions.
Maximum SVI Sessions	The highest recorded number of current VDM SVI sessions.
Total Checked Out VMs	The current number of checked out VDM VMs.
Maximum Checked Out VMs	The highest recorded number of current checked out VDM VMs.

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View Pool

Parameters	Description
Horizon View Pool Configuration	
Pool ID	This indicates the View desktop pool ID. Spaces are not allowed when specifying the pool ID.
Name	The name of the desktop pool
Datastore Path	This specifies which datastores to use for provisioning full-clone desktops.
Resource Pool Path	This indicates the path to the resource pool that will contain the virtual desktops. If resource pools are not being used, simply specify the vSphere cluster.
VM Folder Path	This specifies the vCenter folder in which we have to create the virtual machines.
Parent VM Path	Indicates the full path to the parent VM used to export the network label data.
Parent VM Snapshot Path	Indicates the path to the parent VM snapshot,
Composer Domain	Your View Composer servers and the domains they are attached to.
Delivery Model	Indicates if the Hosted Virtual Desktop delivery model is automatically provisioned into View pools.
Provision Enabled	Indicates if the provisioning of VM for VDM is enabled or not.
Protocol	This specifies the default display protocol from either RDP or PCoIP
Horizon View Pool Stats	
Minimum Provisioned Desktops	This indicates the minimum number of linked-clone desktops that should be provisioned and available during View Composer maintenance operations. This value must be smaller than the MinimumCount value.
Head Room Count	This specifies the minimum number of desktops to have powered on and available at all times.
Maximum Count	This specifies the maximum number of desktops to create.
Minimum Count	This specifies that desktops should be provisioned on demand, in amounts equal to the number provided. To provision all desktops up front, use the same value specified for MaximumCount.

VM Details

Parameters	Description
Horizon View VM Details	
Hostname	The hostname of the virtual machine.
IP Address	The IP address of the virtual machine.
VM Name	The machine name of the virtual machine to be added to the pool.
Guest Full Name	The name of the guest machine.
Is In Pool	This retrieves desktops based on whether or not they are in a desktop pool. Options are true or false.
Pool ID	This indicates the desktop pool ID.
Is Linked Clone	This retrieves desktops based on whether or not they are a linked clone. Options are true or false.
Machine ID	The Physical machine ID used to identify the physical desktop.
vCenter ID	The vCenter Server ID.
Path	The full path to the parent virtual machine.

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Session Details

Parameters	Description
Remote Sessions Details	
Session	Indicates the View session ID for remote VMs.
DNS Name	Indicates the DNS name of the Virtual Desktop for remote VMs.
Pool ID	Indicates the desktop pool ID for remote VMs.
Start Time	Indicates the time the session was started including the day, time, time zone, and year.
State	Indicates the state of the desktop (Connected or Disconnected).
Protocol	Indicates the protocol being used in session (PCoIP or RDP).
Duration	Indicates the duration of the session.
Local Sessions Details	
Session	Indicates the View session ID for local VMs
DNS Name	Indicates the DNS name of the Virtual Desktop for local VMs
Pool ID	Indicates the desktop pool ID for local VMs
Start Time	Indicates the time the session was started including the day, time, time zone, and year.
State	Indicates the state of the desktop (Connected or Disconnected).
Protocol	Indicates the protocol being used in session (PCoIP or RDP).
Duration	Indicates the duration of the session.

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vCenter Details

Parameters	Description
vCenter Configuration	
Hostname	Hostname of the vCenter Server.
Port	This indicates the port to use with vCenter Server.
Server URL	The Â URL of the vCenter via which the View connects.
Composer URL	The View Composer server URL.
AD Configuration	The Active directory configuration.
Version	The version of the vCenter server.
Composer Enabled	Indicates whether the View composer is enabled.
Broker Entry	The Connection Broker details.
Create Ramp Factor	This indicates the maximum concurrent vCenter desktop provisioning operations.
Delete Ramp Factor	This indicates the maximum concurrent desktop power operations.
State	The state of the vCenter.
vCenter Certificate Details	
Hostname	The hostname of the vCenter server.
Certificate Valid	The SSL certificate Validity.
Validity Start Date	The SSL certificate Validity start date.
Validity Expiry Date	The SSL certificate Validity expiry date.
Reason	The Â resason for any SSL error.
Certificate About To Expire	The flagÂ to the certificate about to expire.

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Certificate Thumb print Matched	The SSL certificate Thumb print matched or not.

Composer Domain Details

Parameters	Description
Domain	The Active Directory Domain used for Vieew Set up.
Username	The administrator Username.
vCenter ID	The vCenter ID to which the set up is linked.
Domains	Domains and sum domain details
Is Problem	Health status of the Composer domain

Events DB Details

Parameters	Description
Server	The database hostname.
Port	The database Port.
Server Type	The database type (MsSQL /Oracle DB).
DB Name	The database name of the Alerts & Events.
Table Prefix	The table prefix for alerts or events tables.
State	The health of the Events DB.
Connected	Indicates whether the database is connected.
Connected Node	The components that are connected.
Error	Error.

License Details

Parameters	Description
License Expiry Date	The expiry date of the VMware View license.
Local Mode Enabled	Determines whether users can check out desktops for local use.
View Composer Enabled	Indicates whether users can use View Composer.

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Web Server / Services

Applications Manager supports monitoring of the following Web Services to check their status :

- Apache Server
- IIS Server
- Nginx Server
- Real Browser Monitor
- PHP
- SSL Certificate Monitor
- Web Server
- Web Services
- HTTP - URLs and HTTP - URL Sequence (Record and Playback)
- REST API

It performs the following checks to ensure its availability and represents the information in the form of graphs. *Availability* tab, gives the Availability history for the past 24 hours or 30 days. *Performance* tab gives the Health Status and events for the past 24 hours or 30 days. *List view* enables you to perform bulk admin configurations. Click on the individual monitors listed, to view the following information.

Apache Server

To create an Apache Monitor, follow the steps given below: Refer to the Prerequisites that are needed for Apache monitoring.

1. Click on New **Monitor** link. Choose Apache Server.
2. Enter the IP Address or hostname of the host in which the Monitor is running.
3. Enter the SubNetMask of the network.
4. Provide the port number in which the monitor is running.
5. Choose SSL option, if SSL is enabled in Apache Server.
6. Enter the polling interval time in minutes.
7. If you are adding a new monitor from an Admin Server, select a Managed Server.
8. Enter the **Apache User Name** and **Password** if the Apache Server is **authenticated**.
9. Modify the **Apache Server Status URL** if required. The default Server Status URL through which the data transfer details, access details, etc., are collected is *http://<host-name:portNumber>server-status?auto.* You can now modify the server status URL using this option, if the server status URL is different.
10. Choose the Monitor Group from the combo box with which you want to associate Apache Monitor (optional). You can choose multiple groups to associate your monitor.
11. Click Add Monitor(s). This discovers the Apache from the network and starts monitoring them.

Service Type	Checks

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<table>
<tr><td>Apache Server</td><td>
• Connects to the Apache and checks its availability and response time.
• When Server Status and Extended Status are enabled, then the following data can be obtained.
<table>
<tr><th>Parameters</th><th>Description</th></tr>
<tr><td>Response Time</td><td>The time taken for the apache server to respond while monitoring in milliseconds.</td></tr>
<tr><td>CPU Load</td><td>Specifies the percentage of load on the machine.</td></tr>
<tr><td>Requests/Minute</td><td>The average number of requests received by the server in one minute.</td></tr>
<tr><td>Bytes/Request</td><td>The number of bytes transferred per request.</td></tr>
<tr><td>Busy Servers</td><td>Number of servers currently busy.</td></tr>
<tr><td>Idle Servers</td><td>Number of servers currently idle.</td></tr>
<tr><td>Bytes per Sec</td><td>The number of bytes transferred per second.</td></tr>
</table>
• To Enable the Server Status, follow the steps given below:
1. In Apache's httpd.conf file, locate "Location /server-status" tag. If you are not able to locate the server-status tag, do the following.
2. Remove the comment in the Location/Server-status tag, to Enable SetHandler server-status
3.Change the attribute "deny from all" to "Allow from all"
4. Remove the comment in "LoadModule status_module modules/mod_status.so".
5. Save the conf file and restart the Apache Server
• To enable the Extended-status, follow the steps given below:
1. Locate "ExtendedStatus" Attribute in httpd.conf file.
2. Remove the comment to enable the status.
3. Save the conf file and restart the Apache Server
Note
For Apache 2.2.3 and above, make the following changes in the
/opt/apache-httpd-2.2.3/conf/httpd.conf file.
Add the following lines at the end of the file,
<Location /server-status>
SetHandler server-status
Order deny,allow
Deny from all
Allow from all
</Location>
ExtendedStatus On
Then restart the Apache server, try to connect to http://<your.server.name>/server-status and then you should be able to view the server status.
</td></tr>
</table>

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IIS Server

To create an IIS Monitor, follow the steps given below:

1. Click on New **Monitor** link. Choose IIS Server.
2. Enter the IP Address or hostname of the host in which the Monitor is running.
3. Enter the SubNetMask of the network.
4. Provide the port number in which the monitor is running.
5. Choose SSL option, if SSL is enabled in IIS Server.
6. Enter the polling interval time in minutes.
7. If you are adding a new monitor from an Admin Server, select a Managed Server.
8. Choose the Monitor Group from the combo box with which you want to associate IIS Monitor (optional). You can choose multiple groups to associate your monitor.
9. Click Add Monitor(s). This discovers the IIS Server from the network and starts monitoring them.

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IIS Server	• Connects to the IIS server and checks its availability. • Monitors response time and updates the status based on a given threshold. • If the host in which IIS server is running is monitored in WMI mode, the website stats can also be monitored. Health of the IIS Server depends upon the health of the websites. Health of the Website depends upon attributes that are mentioned below. • **Bytes Transferred** : Bytes Sent Per Second, Bytes Received per Second, Bytes Total Per Second • **Files Transferred**: Files Sent Per sec, Files Received Per sec, Files Transferred Per Sec • **Connection Statistics**: Current Connections • **Anonymous Users**: Current Anonymous Users, Anonymous Users per Second • **Non Anonymous Users**: Current NonAnonymous Users, Non Anonymous Users per Second • **Application Pools**: Availability and health of the various web applications in the pool. • **CPU Usage (in %):** The percentage of time that the worker process has used the CPU since last update. • **Memory Usage (in %):** The percentage of used memory in an IIS application pool. • **Number of Worker Process:** The number of worker processes (different programs) assigned to a pool.

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Nginx Server

To create a Nginx Monitor, follow the steps given below:

1. Click on New **Monitor** link. Choose Nginx Server.
2. Enter Display Name of the server.
3. Enter the IP Address or hostname of the host in which the monitor is running.
4. Provide the port number in which the monitor is running.
5. Choose SSL option, if SSL is enabled in Nginx Server.
6. Enter the Nginx User Name and Password if the Nginx Server is **authenticated**.
7. Modify the **Nginx Server Status URI** if required. This is for getting the server status. The default Server Status URI is *nginx_status*. You can modify the server status URI using this option, if the server status URI is different.
8. Enter the polling interval time in minutes.
9. If you are adding a new monitor from an Admin Server, select a Managed Server.
10. Choose the Monitor Group from the combo box with which you want to associate Nginx Monitor (optional). You can choose multiple groups to associate your monitor.
11. Click Add Monitor(s). This discovers the Nginx Server from the network and starts monitoring them.

To Enable the Server Status, follow the steps given below:

1. Configure the location /server_status method in nginx.conf file, to enable server_status.
2. The value of stub_status attribute should be "on".
3. Change the attribute "deny all" to "Allow all".
4. Save the conf file and restart the Nginx Server.

Nginx Server	• Connects to the Nginx server and checks its availability. • **Active Connections**: Refers to connections that are active currently. • **Requests Per Second**: Refers to number of requests received per second. • **Requests in Reading State**: Refers to number of requests in reading state currently. • **Requests in Writing State**: Refers to number of requests in writing state currently. • **Requests in Waiting State**: Refers to number of requests in waiting state currently.

PHP

To create a PHP Monitor, follow the steps given below:

Initially, you need to place **phpstats.php** , the bundled Applications Manager's PHP file in the webserver's document root.

1. Click on New **Monitor** link. Select PHP Monitoring.
2. Enter the IP Address or hostname of the host in which the Monitor is running.
3. Enter the SubNetMask of the network.

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4. Provide the port number in which the monitor is running.
5. Choose SSL option, if SSL is enabled in PHP.
6. Enter the **path** to be connected. By default, ' /phpstats.php ' is shown. http://hostname:portNo/"path to be connected" will be used for connection
7. Enter the polling interval time in minutes.

1. If you are adding a new monitor from an Admin Server, select a Managed Server.
2. Choose the Monitor Group from the combo box with which you want to associate PHP Monitor (optional). You can choose multiple groups to associate your monitor.
3. Click Add Monitor(s). This discovers the PHP Service from the network and starts monitoring them.

PHP Monitoring	• Connects to the server and retrives PHP and checks its availability. • Monitors response time and updates the status based on a given threshold. • In Linux, Page fault of the system in which the PHP is hosted is also shown. We can configure the alarm and actions based on the threshold condition.

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SSL Certificate Monitor

To create a SSL Certificate Monitor, follow the steps given below:

1. Click on New **Monitor** link. Choose SSL Certificate Monitor.
2. Provide an appropriate **Display Name** for the SSL Certificate monitor.
3. Enter the Domain name for which SSL certificate is required to be monitored.
4. Provide the port in which the server is running [Default port is 443].
5. Check the box **Need proxy to connect to the domain** if the server is connected through proxy. In such cases you should also configure proxy server settings through the 'Configure Proxy' option available in the Admin tab.
6. Enter the **Timeout** value in seconds.
7. Provide the **polling interval** in minutes.
8. If you are adding a new monitor from an Admin Server, select a Managed Server.
9. Choose the Monitor Group from the combo box with which you want to associate the SSL Certificate Monitor (optional). You can choose multiple groups to associate your monitor.
10. Click Add Monitor(s). This discovers the SSL Certificate from the server and starts monitoring it.

SSL Certificate Monitoring	• Connects to the server and retrieves the details pertaining to the validity and authenticity of the SSL Certificate. • Monitors the **availability** and response time of the domain being added. • **Issued To**: Displays the details of the organization for which the certificate is issued. • **Issued By**: Displays the details about the Certification Authority of your domain. • **Validity**: Specifies details such as the issue date and expiry date of the SSL Certificate and also the number of days left for expiry. • Threshold can be set to configure alarms which will alert you before your certificate expires.

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Web Server

To create a Web Server Monitor, follow the steps given below:

1. Click on New **Monitor** link. Choose Web Server.
2. Enter the IP Address or hostname of the host in which the Monitor is running.
3. Enter the SubNetMask of the network.

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4. Provide the port number in which the monitor is running.
5. Enter the polling interval time in minutes.
6. If you are adding a new monitor from an Admin Server, select a Managed Server.
7. Choose the Monitor Group from the combo box with which you want to associate Web Server Monitor (optional). You can choose multiple groups to associate your monitor.
8. Click Add Monitor(s). This discovers the Web server from the network and starts monitoring them.

If you have added Monitors and not associated them with a Monitor Group, you can do this manually anytime. For information on associating a Monitor with a Monitor Group, refer to Associating Monitor with Monitor Groups topic.

Web Server	• Connects to the web server and checks its availability. • Monitors response time and updates the status based on a given threshold.

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Web Services

Web Service Monitoring

Web Services is an XML-based technology that allow applications to communicate with each other, regardless of the environment, by exchanging messages in a standardized format (XML) via web interfaces (**SOAP** and **WSDL APIs**).
ManageEngine Applications Manager provides a flexible approach to manage a SOA that uses SOAP Web Services. It helps business managers configure SLAs and track high level availablity of the Web Service. Application admins can monitor the performance of these Web Services by configuring Applications Manager to execute 'Operations' published by the Web Service. By specifying the WSDL, a simple wizard helps you configure operations that need to be invoked and gives the ability to specify arguments to the operation. In addition to this, there is out-of-the-box support for configuring thresholds on individual operation execution times and user-defined XSLT parameters.
To create Web Services Monitor, follow the steps given below:
Note: If you want to access Web Services through Proxy , Kindly go to Admin > Configure Proxy Settings > Check if Proxy is configured, else configure the same. For hosts that don't require Proxy, add them to the *No Proxy* list.

1. Click on New **Monitor** link. Choose Web Services.
2. Enter the **WSDL URL**.
3. Select the checkbox if **proxy** is required for connection to the WSDL URL.
4. Enter the polling interval time in minutes.
5. If you are adding a new monitor from an Admin Server, select a Managed Server.
6. Enter the **Timeout**.
7. Give the **User Name** and **Password,** if it is required to invoke the webservice operation.
8. Add a **Header:** You can use our pre-defined headers or create your own custom headers to invoke operations. Use '#' to seperate multiple headers.Use ':' to sepearate individual keys and values. For Example- Content-Type:text/application+xop;charset=UTF-9#Pragma:no-cache
9. During monitor creation, provide the token for extracting a specific value from the SOAP Response for sequential execution. The token is of the format OperationName_SEP_TagToBeExtracted.
10. Choose the Monitor Group from the combo box with which you want to associate Web Services Monitor (optional). You can choose multiple groups to associate your monitor.
11. Click Add Monitor(s).

If you have added Monitors and not associated them with a Monitor Group, you can do this manually anytime. For information on associating a Monitor with a Monitor Group, refer to Associating Monitor with Monitor Groups topic.
After creation of Web Services monitor, you can proceed to add the required **operations** and configure the thresholds and alarms

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for the same.

Adding Operations

You can add Operations to the Web Service for monitoring. Operations are abstract descriptions of actions supported by the service.

Follow the steps given below to add operations:

1. Click the **Add Operation** link present on the right-hand side of the web services monitor screen. This displays the Add Operation screen.
2. The operations configured in the web service will be listed in the **Select Operation** drop-down list box. You can either choose any of these operations or choose custom operation.
3. If you select a pre-configured operation, the **SOAP Action** and **SOAP Request** values for the operation will be automatically displayed. Replace the '?' in the SOAP request with your input value. The Operation Name has to be specified for pre-defined operations too.
4. If you choose the custom operation, you have to specify the Operation Name, SOAP Action and SOAP Request values. (Click to know about Adding XSLT segment.)
5. You can use the **Test Operation** option to check the output before adding the operation for monitoring.
6. Click **Save** button to add the operation. Click **Save and Configure Another** button to add the operation and configure another operation.

The Operations thus added, will be listed in the details page under the **Operation Statistics** section. In this section, you can view the details of the operation such as Operation Name, SOAP Request, SOAP Response, status and execution time. Applications Manager provides a link in the Alert Email for SOAP Action, to view the SOAP response for the specific operation. You can also configure thresholds and alarms for all the operations.

The Web Service Functions are used to give dynamic input for each SOAP Request. You have to replace the input value with the function specified in the above format.

Function	Description	Usage
${random(MinValue,MaxValue)}	This function will generate Random numbers as input.	${random(100,1000)} This will generate a random number between 100 and 1000 *E.g. 446*.
${time(TimeFormat)}	This method will generate current date and time as input. You can specify your own Date and Time Format.	${time(yyyy-MM-dd(HH:mm:SSS))} This will generate the date and time in this format*2015-09-21(16:49:717)*.
${time(TimeFormat)#(1d,-1y)}	This method will generate custom year,date and time as input. You can specify your own Date and Time Format.	${time(yyyy-MM-dd(HH:mm:SSS))#(5d,2m,-1y)} This will generate the date and time in this format*2014-11-26(16:49:717)*.
${passAuthToken(authtoken)}	This method will replace token/access key which is already derived from SOAP Response mentioned in ''Authentication Token''.	${passAuthToken(authtoken)} This will generate token node in this format*<LogOnToken>${passAuthToken(authtoken)}</LogOnToken>*. Tag name <LogOnToken> is just an example, it could be anything actually.
${nonce()}	This method will generate a random base64 encoded,16-byte nonce value.	${nonce()} This will generate a random base64 encoded,16-byte nonce value to prevent request duplication. Ex : NGMzb05BeHF6V1dHNTNuNQ==

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Adding XSLT input

How to use XSLT for a particular SOAP Operation?

When adding a particular operation, click 'Add XSL Transformation' button and provide the necessary formatting input. To return mulitple values, ensure that:

- The output format is set to text. This can be done by adding the XSLT code using the output tag. Ex : <xsl:output method="text"/>.
- Provide the output in key-value pairs. For example, to add an attribute for checking the temperature, make sure that the XSLT output is of the format "Temperature:100".
- The key-value pairs should be separated by a new line entry.Key1 : Value1Key2 : Value2Key3: Value3

The keys should be unique within a particular SOAP Operation. They can be duplicated across operations.

How to add XSLT input to existing operations ?

- Click Manage operations and select edit and add the necessary changes. Click **Update**.
- Click on the operation details. Select the SOAP Request tab and add the changes and click **Update**.

Where to view the attributes created using XSLT ?

Under the Operation Statistics table, select the operation for which you wish to view the XSLT data. This opens the SOAP Response tab under which the attributes are listed in a tabular format with functionality to add thresholds and view reports. For numeric data, the graphic data is displayed after the table.

How do I enable reports for the attributes?

- Go to the Reports tab and select Enable reports.
- Select Web Services type
- Check the attributes for which you wish to generate reports.
- Click Update. Wait for data archival to occur to view the reports.

Editing Arguments

Click the **Manage Operation** link under the 'Operation Statistics' section to go to the 'Manage Operation' page. In this page, click the icon to edit the **Operation Display name** as well as the **Arguments** including SOAP Action and SOAP Request values.

How to add XSLT input to existing operations ?

- Click **Manage operations** and select edit and add the necessary changes. Click Update.
- Click on the operation details. Select the SOAP Request tab and add the changes and click Update.

Where to view the attributes created using XSLT ?

- Under the Operation Statistics table, select the operation for which you wish to view the XSLT data. This opens the SOAP Response tab under which the attributes are listed in a tabular format with functionality to add thresholds and view reports. For numeric data, the graphic data is displayed after the table.

How do I enable reports for the attributes?

You can enable **reports for the attributes** in the following two ways:

From the SOAP Response Page:

- In the **SOAP Response Page**, the details of all the XSLT attributes are listed in a table.
- The check boxes provided in the table allow the user to enable / disable reports for the attributes at the Operation level.
- Select the attributes from the table and select either **enable reports** or **disable reports** option present at the bottom of the table to perform the required action.

From the Reports Tab:

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- Go to the **Reports** tab and select **Enable reports**.
- Select **Web Services type.**
- Check the attributes for which you wish to generate reports.
- Click **Update**.
- Wait for data archival to occur to view the reports.

Web Service	• Connects to the web service and checks its availability. • Monitors WSDL URL response time and updates the status based on a given threshold. • Monitors Web Service Operation Execution time. • Monitors the values of the user defined XSLT attributes.

Note:
Sequential execution of SOAP Operations
• Create a sequence of SOAP Operations wherein the output obtained from one SOAP Response is used as the input for the next SOAP Request.
• **Procedure:**
  ◦ During monitor creation, provide the token for extracting a specific value from the SOAP Response. The token is of the format OperationName_SEP_TagToBeExtracted.
  ◦ For example, the SOAP Operation GetCitiesByCountry returns the list of cities present in a particular country. Each city is specified within <City> tag in the SOAP Response. To extract the first city from the SOAP Response the Authentication token would be GetCitiesByCountry_SEP_City.
After monitor creation, add the operations. For the operations where the input is taken from the response of another operation, call the function passAuthToken. Syntax : ${passAuthToken(authtoken)}. Example : ${passAuthToken(GetCitiesByCountry_SEP_City)}

REST API - An Overview

REST (REpresentational State Transfer) is a design concept (architecture) for managing state information which defines how data communication is to be done using HTTP protocols. The API calls which adhere to the REST definition (pretty much most of them!) are called REST APIs.

- Adding a new REST API monitor / Use the AddMonitor API to add a monitor
- Monitored Parameters

Monitoring REST API - What we do.

- Monitor the availability and response time of your REST API endpoints.
- Get insight into the response time of mobile and web applications that use your API.
- Verify that the APIs are returning the correct data in the response details tab.
- Get notification when key API transactions fail.
- Detect downtime and fix critical issues before customers are affected.

REST API monitoring - Adding a new monitor

To configure an API Monitor, follow the steps mentioned below :

- Click on New Monitor link. Select REST API.
- Enter Display Name of the monitor.
- Enter **REST API URL** i.e the API call to be monitored.
- Enter Timeout in Seconds - the amount of time spent by APM to establish a connection with the server hosting the API service.
- Select the **Form Submission** method used to access the API.
- Enter the credential details for User Authentication like user name and password if required or select credentials from a **Credential Manager list**. If no authentication is required, then leave the fields blank.
- Configure the **HTTP(s) Headers** required to establish a connection with the API server. Use '#' to separate the header name and value. For specifying multiple headers, use the separator key '_sep_'. Example:User-Agent#Mozilla/5.0 (Windows NT 6.3;

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Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/46.0.2490.86 Safari/537.36_sep_Accept-Charset#utf-8.

- Specify the type of response to be expected. For XML and JSON response, user can define specific response values to monitor in the Response Details tab in the Monitor Details page.
- Make sure the proxy settings configured in AppManager matches with the proxy settings in the browser. Bypassing the local addresses and subnet mask are required based on the API being monitored.
- Make sure that the content you try to match is present in the API response.
- Click Test Credentials button, to make sure the API service is accessible from the Applications Manager installed machine.
- Choose the Monitor Group from the combo box with which you want to associate REST API Monitor (optional). You can choose multiple groups to associate your monitor.
- Click Add Monitor(s). This discovers the API service from the network and starts monitoring.

Use the AddMonitor API to add a REST API monitor

Syntax

http://[hostname]:[port]/AppManager/xml/AddMonitor?apikey=[apikey]&type=RESTAPIMonitor&displayname=[Displayname]&API=[API URL]&Timeout=[Timeout]&Method=[GET/POST/PUT/DELETE]&RespType=[Text/XML/JSON]

Parameter	Description
type	The type of the monitor you want to add. Value should be RESTAPI
displayname	The display name of the monitor.
API	The API call to be monitored.
Timeout	The amount of time spent by APM to establish a connection with the server hosting the API service. (in seconds)
Method	The **Form Submission** method used to access the API. (GET/POST/PUT/DELETE)
RespType	The type of response to be expected.(Text/XML/JSON)

Example

http://Prod-server7:9010/AppManager/xml/AddMonitor?apikey=8519e4fadfd79d5dc78bce7489bd9319&type=RESTAPIMonitor&displayname=Dummy&API=http://www.google.co.in/&Timeout=10&Method=GET&RespType=Text

Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **REST API** under the **Web Server/Services** Table. Displayed is the REST API bulk configuration view distributed into three tabs:

- **Availability** tab, gives the Availability history for the past 24 hours or 30 days.
- **Performance** tab gives the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

Parameter	Description
Response Time	It is the total time taken to get a REST API response. The response time of a REST API monitor is calculated as the sum of DNS lookup time, connection time and the time contracted to receive the response in JSON, text or XML. • Response Time • Domain Name Resolution Time • Connection Time • Request Processing Time • Download Time
Response Content Details	The size of the response in bytes along with the percentage change in size between consecutive polls. • Page Size • Page Size Change

Custom Attribute definition :

Based on the response obtained, the user can define their own attributes for monitoring specific values in the API response.

- **If the response is of type XML** - Using the XSLT transformation (Ref. http://www.w3schools.com/xsl/), the user can define specific values to be monitored. Ensure that the following criteria are met :
  - The output method should be of type text. Syntax : <xsl:output method="text"/>
  - The final output should be of the format AttrName::AttrVal. Example : Days:<xsl:value-of select="days"/> would create an attribute 'Name' whose value will be the value of the <days> tag present in the API Response.

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- **If the response if of type JSON -** The JSON schema can be used to configure user-defined attributes. Ensure that the following criteria are met :
  - The attribute should be defined as AttrName::AttrValue. Example: Temperature::response.weather.temperature. This will create an attribute name 'Temperature' containing the value of the temperature variable returned
  - Multiple JSON Schemas can be defined by using new line as the delimiter.
  - If the JSON key itself contains a dot(.) then please replace it with '_sep_'. This should be done for all the individual keys which contain a dot(.) in it. In the above example, say the last key 'temperature' was defined as 'temperature.celsius'. Then the format should be Temperature::response.weather.temperature_sep_celsius.

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Monitoring Apache Solr

- Apache Solr - An Overview
- Monitoring Apache Solr - What we do.
- Adding a new Apache Solr monitor / Using AddMonitor API
- Monitored Parameters

Apache Solr - An Overview

Solr is a popular, open source enterprise search platform built on Apache Lucene. Providing distributed search and index replication, Solr is designed for scalability and Fault tolerance. With load-balanced querying, automated failover and recovery, Solr drives the search and navigation features of many of the world's largest internet sites.

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Monitoring Apache Solr - What we do.

Let’s take a look at what you need to see to monitor Solr, the performance metrics to gather and how you can ensure that your Solr search server is up and operating as expected with Applications Manager:

- **Resource utilization details -** Applications manager automatically discovers Solr servers, monitors memory and CPU and notifies you of changes in resource consumption.
- **Thread and JVM usage** - Track thread usage in Solr by monitoring the status of the threads such as blocked, waiting, etc. Ensure open threads don’t overload Solr server's memory.
- **Core and Replication Statistics** - Monitor the cores and their replicase with details like health and overall index size. Know if a core is a master or a slave node and its replication enabled status.
- **Query and update stats, cache level details and search times -** Make sure Solr's query handler is processing incoming requests properly with metrics like the number of search requests, search errors, search timeouts and Luke requests per minute. Know cache level details like lookups, hit ration, evictions, and cache size. Understand how the update handler is handling update by looking at the number of commits, rollbacks and documents added/deleted/pending. Find out how long it takes for searcher or caches to load.
- **Fix performance problems faster -** Get instant notifications when there are performance issues with the components of Apache Solr. Become aware of performance bottlenecks and take quick remedial actions before your end users experience issues.

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Apache Solr - Adding a new monitor

Supported versions : Apache Solr 6.0 and lower versions.

- **Steps to create a new monitor**
  - To create an Apache Solr Monitor, follow the steps given below:
    - Click on New Monitor link. Choose Apache Solr.
    - Enter Display Name of the monitor.
    - Enter the IP Address or hostname of the host in which the Solr instance is running.
    - Provide the port number in which the Solr instance is running.
    - Choose SSL option, if SSL is enabled in Apache Solr Server.

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- Enter the polling interval time in minutes.
- Click Test Credentials button, if you want to test the access to Apache Solr Server
- Choose the Monitor Group from the combo box with which you want to associate Apache Solr Monitor (optional). You can choose multiple groups to associate your monitor.
- Click Add Monitor(s). This discovers Apache Solr from the network and starts monitoring.

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Use the AddMonitor API to add an Apache Solr monitor:

Syntax

http://[Host]:[Port]http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]&SSL=[TRUE/FALSE]

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]&SSL=[TRUE/FALSE]&UserName=[USERNAME]&Password=[PASSWORD]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the database you want to add. Value should be ApacheSolr
display name	Display name of the Apache Solr monitor
host	The name of the host in which Apache Solr server is running.
port	The port number where Apache Solr server is running.
SSL	Denotes if SSL is enabled or not. Value should be either true or false

Sample Request

http://prod-server8:9091/AppManager/xml/AddMonitor?apikey=90c166a4646e29315a57eca1d6b88858&type=ApacheSolr&displayname=SolrInstance&host=app-xp2&port=8993&ssl=false

http://localhost:9080/AppManager/xml/AddMonitor?apikey=a5f75b0fd164d85bb6730b0c78a5af86&type=ApacheSolr&displayname=SolrInstance&host=localhost&port=7574&ssl=false&UserName=solr&Password=SolrRocks

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Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **Apache Solr** under the **Web Server/Services** Table. Displayed is the Apache Solr bulk configuration view distributed into three tabs:

- **Availability tab** displays the Availability history for the past 24 hours or 30 days.
- **Performance tab** displays the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

Click on the monitor name to see all the server details listed under the following tabs:

- Core Details
- JVM
- Core Statistics
- Configuration

Core Details

Parameter	Description
Core Details	
Total number of cores	The total number of Solr cores on a single Solr instance. (A Solr core is an index and associated transaction log and configuration files. An installation can have multiple cores.)

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Active cores	The total number of active Solr cores, i.e a core that is in active state for querying, on the Solr instance.
Lead Cores	The total number of active leader Solr cores.
Cores	
Core Name	The name of the Solr core on the instance.
Host Name	The host name of the machine running Solr.
Number of Docs / Min	The number of documents added into a collection per minute.
Max Docs / Min	The maximum number of documents that can be added to a collection per minute.
Deleted Docs / Min	The number of documents deleted from the collection per minute.
State	The state of corresponding core, whether it is active or inactive. This is referred in turn for querying.
Searcher Warmup Time	The warmup time taken by searcher in between the query processing.
Average Search Time	The average time taken for processing the query and searching.
Replication	
Core Name	The name of the Solr core on the instance.
Master Node	Specifies if a replication instance of Solr is a master.
Slave Node	Specifies if a replication instance of Solr is a slave.
Index Size	Specifies the index size of the individual cores.
Replications Enabled	Specifies if you have master/slave replication enabled.

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JVM

Parameter	Description
Thread Details	
WAITING Threads	Thread State - A thread that is waiting indefinitely for another thread to perform a particular action.
TIMED_WAITING Threads	Thread State - A thread that is waiting for another thread to perform an action for up to a specified waiting time.
RUNNABLE Threads	Thread State - A thread executing in the Java virtual machine.
BLOCKED Threads	Thread State - A thread that is blocked waiting for a monitor lock.
TERMINATED Threads	Thread State - A thread that has exited.
Memory Usage	
Core Name	The name of the Solr core on the instance.
Used Memory (MB)	The space that is currently occupied.
Free Memory (MB)	The total free memory available to the JVM.
Committed Virtual Memory Size (MB)	The total size of virtual memory that is currently occupied by the corresponding Solr cores.
Free Physical Memory Size (MB)	The total size of physical memory that is free and available for the Solr cores.
Free Swap Space Size (MB)	The total size of the swap space that is free and available for swapping when the virtual memory reaches the limit.
ProcessCPUTime (sec)	The total CPU time taken by the corresponding Solr cores, for executing the instructions.
Used Memory (%)	The percentage of space that is currently occupied.
Free Memory (%)	The percentage of free memory available to the JVM.
Memory Utilization	
Total Physical Memory Size	The total size of physical memory that is available for the Solr for its operations and storage.
Total Swap Space Size	The total size of the swap space that is available for swapping when the virtual memory reaches the limit.
Total Heap Memory	The total heap memory available for the Solr instance.
Max Heap Memory	The maximum heap memory that the Solr instance can use.

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Core Statistics

Parameter	Description
Query Handler	
Core Name	The name of the Solr core on the instance.
Search Requests / Min	The total search requests handled by the corresponding Solr cores per minute.
Search Errors / Min	The total errors that occur during the search requests handled by the corresponding Solr cores per minute.

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Search Timeouts / Min	The total timeouts that occur during the search requests handled by the corresponding Solr cores per minute.
Average Search Time	The average time taken for handling the each search requests handled by the corresponding Solr cores per minute.
Replication Requests / Min	The total replication requests handled by the corresponding Solr cores per minute.
Update Requests / Min	The total update requests handled by the corresponding Solr cores per minute.
Luke Requests / Min	The total Luke requests handled by the corresponding Solr cores per minute.
Cache	
Core Name	The name of the Solr core on the instance.
Cache Name	The name of your application cache.
Lookups / Min	Number of Solr query cache lookups per minute.
Hits / Min	Number of query hits per minute.
Hit Ratio / Min	The percentage of requests that are satisfied by entries already in the cache per minute.
Evictions / Min	The number of entries removed from the cache per minute.
Cache Size (Bytes)	The size of the field value cache.
Update Handler	
Core Name	The name of the Solr core on the instance.
Commits / Min	The number of commits per minute. (A commit writes all loaded documents to one or more segment files on the disk.)
Rollbacks / Min	The number of rollbacks per minute. (The rollback reverts all add and deletes made to the index since the last commit.)
Docs Add / Min	The number of documents added per minute.
Docs Deleted by Query / Min	The number of documents deleted by Query per minute.
Docs Deleted by ID / Min	The number of documents deleted by ID per minute.
Docs Pending	The number of documents pending commit.
Errors / Min	The number of errors occurred per minute.
Optimizations / Min	The number of optimizations done per minute.
Number of Transaction Logs	The total number of the transaction logs.
Transaction Logs size (Bytes)	The total size of the transaction logs.

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Configuration

Parameter	Description
OS Name	The name of the operating system used in the running machine.
Architecture	The architecture of the machine where the instance is running.
Available Processors	The total available processors of the machine where the instance is running.
Java Installation Directory	The home directory where the java instance used by Apache Solr is installed on the machine.
Java Version	The version of the java instance used by Apache Solr installed in the machine.
Java Vendor	The vendor of the Java instance used by Apache Solr installed in the machine.
Jetty Home	The home directory where the jetty server is installed in the machine.
Controller Port	The port where the jetty server is currently running in the machine.
Client Name	The current machine name.
User Directory	The home directory where the Solr is installed.
Solr Version	The version of the Solr installed.
Lucene Version	The version of the Lucene installed.
Deployment Mode	The current deployment mode of the Solr (Cloud or Standalone).
Cluster Client TimeOut	The maximum timeout set for the connection establishment with zookeeper.

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Elasticsearch Monitoring

- Elasticsearch - An Overview
- Monitoring Elasticsearch - What we do
- Adding a new Elasticsearch monitor (How to demo) / Using AddMonitor API
- Monitored Parameters

Elasticsearch - An Overview

Elasticsearch is a highly scalable, distributed, open source RESTful search and analytics engine. It is multitenant-capable with an HTTP web interface and schema-free JSON documents. Based on Apache Lucene, Elasticsearch is one of the most popular enterprise search engines today and is capable of solving a growing number of use cases like log analytics, real-time application monitoring, and click stream analytics.

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Monitoring Elasticsearch - What we do

Let’s take a look at what you need to see to monitor Elasticsearch, the performance metrics to gather and how you can ensure that your search server is up and operating as expected with Applications Manager:

- **Resource Utilization Details** - Applications Manager automatically discovers Elasticsearch servers, monitors memory and CPU and notifies you of changes in resource consumption of thread pool queues.
- **Real-Time Data -** You get up-to-the-second insight into cluster runtime metrics, individual cluster nodes, real-time threads and configurations.
- **Cluster and Node Monitoring** - Stay on top of your cluster and node health in real-time with fine-grained statistics of performance from Disk I/O Java to Memory usage metrics.
- **Search and Indexing Performance** - Gain complete control of your indexes and mappings. Monitor query latency, file system cache usage and request rates and take action if it surpasses a threshold.
- **Fix Performance Problems Faster** - Get instant notifications when there are performance issues. Become aware of performance bottlenecks and take quick remedial actions before your end users experience issues.

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Elasticsearch - Adding a new monitor

Supported versions :

Steps to create a new monitor

To create an Elasticsearch Monitor, follow the steps given below:

- Click on **New Monitor** link. Choose **ElasticsearchCluster**.
- Specify the **Display Name** of the Elasticsearch monitor.
- Enter the **HostName** or **IP Address** of the host where Elasticsearch Cluster runs.
- Enter the **Port** of the Elasticsearch Cluster. By default, it will be 9200.
- Enter the polling interval time in minutes.
- Click Test Credentials button, if you want to test the access to Elasticsearch server.

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- Choose the Monitor Group from the combo box with which you want to associate Elasticsearch Monitor (optional). You can choose multiple groups to associate your monitor.
- Click Add Monitor(s). This discovers Elasticsearch from the network and starts monitoring.

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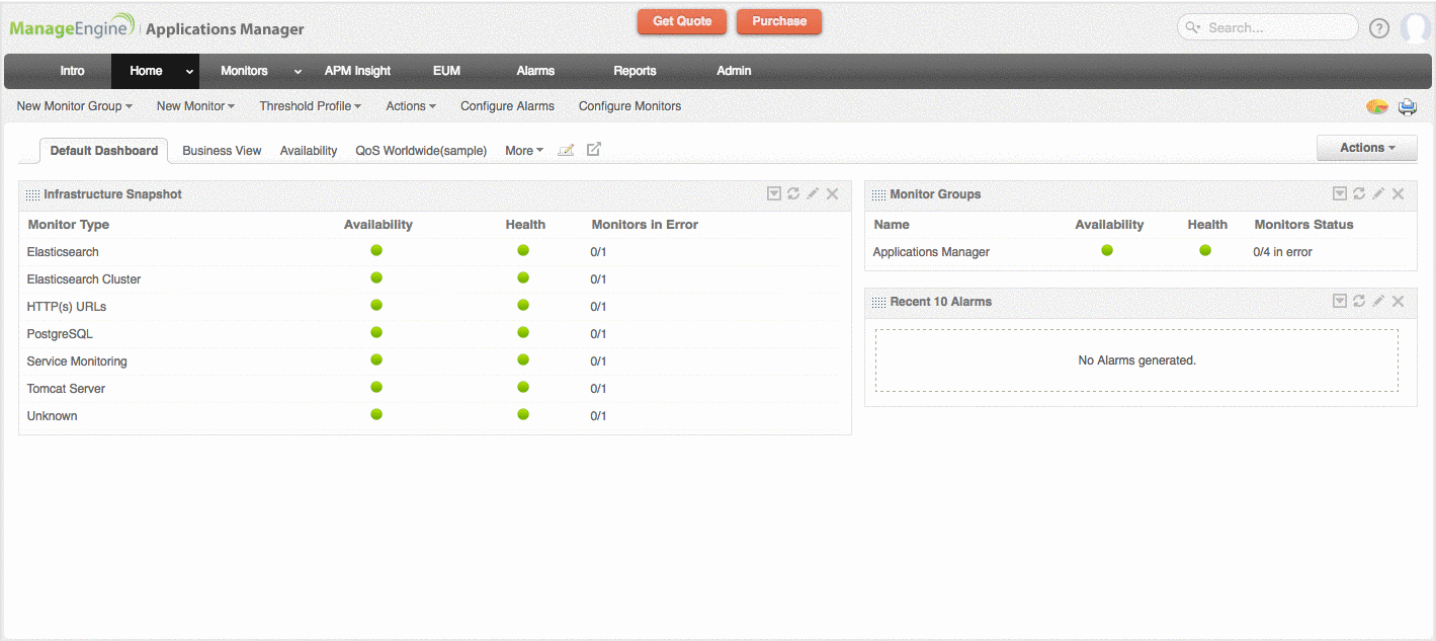
Demo



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Use the AddMonitor API to add an Elasticsearch Monitor

Syntax of Rest API for adding monitor:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]
&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]&SSL=[TRUE/FALSE]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
apikey	The key generated from the **Generate API Key** option in the 'Admin' tab.
type	The type of the monitor you want to add. Value should be **ElasticSearchCluster**.
displayname	The display name of the Elasticsearch monitor.
host	The name of the host in which Elasticsearch server is running.
port	The port number where Elasticsearch server is running.
ssl	Specfies if SSL is enabled or not. Value can be either **true** or **false.**

Sample Request:

http://localhost:9097/AppManager/xml/AddMonitor?apikey=7c18de184b2c8b1caa8d65790b382f32&type=ElasticSearchCluster&displayname=localhost&host=localhost&port=9200&SSL=FALSE

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Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on the **Elasticsearch** and **ElasticsearchCluster** monitors under the **Web Server/Services** Table. Displayed is the Elasticsearch or the ElasticsearchCluster bulk configuration view distributed into three tabs:

- **Availability tab** displays the Availability history for the past 24 hours or 30 days.
- **Performance tab** displays the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

Click on the monitor name to see all the server details listed under the following tabs:

- **ElasticsearchCluster**
  - Overview
  - Cluster Details
  - Configuration
- **Elasticsearch**
  - Overview
  - Memory Details
  - I/O Details
  - Thread Pools
  - Network
  - Configuration

Elasticsearch Cluster

Overview

PARAMETER	DESCRIPTION
NODE DETAILS	
Cluster Name	The name of the cluster in which the node is located.
Node Name	The name of the node
Node Type	The type of the node (Client or Data or Master-Eligible or Master-Data)
Avg Query Time	The first phase of search operation is Query. The time taken to process the query in all shards
Avg Fetch Time	The second phase of search operation is Fetch. The time taken to retrieve the query result, only from the shards which have the requested data.
CLUSTER OVERVIEW	
Cluster Status	The status of the cluster depending on the replicas of the cluster.
Total Nodes	The total number of nodes in the cluster.
Total Indices	The total number of indices in the cluster.
Total Shards	The total number of shards in the cluster.
Total Docs	The total number of documents present in the cluster.
Total Pending Tasks	The total number of pending tasks in the cluster.

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Cluster Details

PARAMTER	DESCRIPTION
NODES SPLITUP	
Client Node	The total number of Client Nodes in the cluster.
Data Node	The total number of Data Nodes in the cluster.
Master Node	The total number of Master Eligible Nodes in the cluster.

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PARAMTER	DESCRIPTION
Data-Master Node	The total number of Data Nodes, which also acts as Master Eligible Nodes in the cluster.
SHARDS COUNT	
Active Shards	The number of Active Shards present in the cluster.
Active Primary Shards	The number of Primary Shards that are Active in the cluster.
Relocating Shards	The number of Relocating Shards present in the cluster.
Initializing Shards	The number of Initializing Shards present in the cluster.
Unassigned Shards	The number of Unassigned Shards present in the cluster.
Delayed Unassigned Shards	The number of Delayed Unassigned Shards present in the cluster.
Total Shards	The number of Shards present in the cluster.
Active Shards Percent	The percentage of Active Shards
Active Primary Shards Percent	The percentage of Active Primary Shards Shards
Relocating Shards Percent	The percentage of Relocating Shards
Initializing Shards Percent	The percentage of Initializing Shards
Unassigned Shards Percent	The percentage of Unassigned Shards
Delayed Unassigned Shards Percent	The percentage of Delayed Unassigned Shards
PENDING TASKS	
Insert Order	The order of the task in which it is inserted into the queue
Priority	The priority assigned for the particular Task
Source	The Source for the Pending Task
Time in Queue	The total waiting time of the Task in that queue.

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Configuration

PARAMETER	DESCRIPTION
CONFIGURATION DETAILS	
Cluster Name	The name of the cluster.
Cluster Status	The status of the cluster.
Total Nodes	The total number of nodes in the cluster.
Master Node Name	The name of the Master Node in the cluster.
Master Node Port	The port on which the Master node of Elasticsearch runs.
Master Node IP	The IP address in which the Master Node runs.
Publish Port	The publish port of the cluster.

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Elasticsearch

Overview

PARAMETER	DESCRIPTION
SEARCH TIME	
Average Query Time	The first phase of search operation is Query. The time taken to process the query in all shards
Average Fetch Time	The second phase of search operation is Fetch. The time taken to retrieve the query result, only from the shards which have the requested data.
SEGMENT TIME	
Average Merge Time	The average time taken for segment merging in a node. (A shard in elasticsearch is a Lucene index, broken down into segments. Segments are, periodically, merged into larger segments to keep the index size at bay and expunge deletes.)
Average Refresh Time	The average time spent in refreshing an index. (Refresh time increases with the number of file operations for the Lucene index).
INDEXING TIME	
Average Index Time	The average time taken to index a document. (Documents are indexed i.e stored and made searchable.)

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PARAMETER	DESCRIPTION
Average Delete Time	The average time taken to delete an existing index.
Indexed Count	The number of documents indexed.
Deleted Count	The number of deleted documents.
GET TIME	
Average Get Time	The average time taken to retrieve information about one or more indexes
Existing Count	The number of get requests that were present.
Missing Count	The number of get requests that were missing.
FLUSH TIME	
Average Flush Time	The average time taken to flush one or more indices to disk. (The flush process of an index basically frees memory from the index by flushing data to the index storage and clearing the internal transaction log.)
WARMER TIME	
Average Warmer Time	The average time taken to perform a warmup search on an index. (Index warming allows to run registered search requests to warm up the index before it is available for search.)
PERCOLATE TIME	
Average Percolate Time	The average time spent running percolator queries. (One of Elasticsearch's core feature is the ability to do search in reverse with the percolator. The percolator automatically indexes the query terms with the percolator queries. This allows the percolator to percolate documents more quickly.)

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Memory Details

The total space used in the Direct Buffer pool.

PARAMETER	DESCRIPTION
HEAP MEMORY	
Used Heap Percent	The percentage of JVM heap currently in use.
Free Heap Percent	The percentage of JVM heap currently free
NON-HEAP MEMORY	
Used Non-Heap Percent	The percentage of non-heap memory currently in use.
Free Non-Heap Percent	The percentage of non-heap memory currently free.
GARBAGE COLLECTION	
GC Time - Young	The total time spent on young-generation garbage collections.
GC Time - Old	The total time spent on old-generation garbage collections.
GC Count - Young	The total number of young-generation garbage collections.
GC Count - Old	The total number of old-generation garbage collections.
BUFFER POOLS	
Direct Buffer Space Used	The total space used in the Direct Buffer pool.
Mapped Buffer Space Used	The total space used in the Mapped Buffer pool.
Direct Buffer Connection Count	The total connections to Direct Buffer pool.
Mapped Buffer Connection Count	The total connections to Mapped Buffer pool.

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I/O Details

PARAMETER	DESCRIPTION
DISK I/O COUNT	
Disk Read Count	The number of read (from the disk) requests by Elasticsearch.
Disk Write Count	The number of write (to the disk) requests by Elasticsearch.
DISK I/0 SIZE	
Disk Read Size	The total size of read requests (from the disk) by Elasticsearch.
Disk Write Size	The total size of write requests (to the disk) by Elasticsearch.
CACHE DETAILS	
Cache Name	The name of the cache.
Total Size (MB)	The size of the cache.

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PARAMETER	DESCRIPTION
Evictions	The number of evictions from the filter cache.
BREAKER DETAILS	
Breaker Name	The name of the Circuit Breaker. (Circuit breakers are designed to deal with situations when request processing needs more memory than available. This would mean OOM (OutOfMemoryException). So sometimes it is better to fail a query instead of getting OOM, because when OOM appears JVM becomes not responsive.)
Limit Size (MB)	The limit size of the particular Breaker.
Used Size (MB)	The used size of the particular Breaker.
Tripped	The total number of times the breaker circuit tripped.

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Thread Pools

PARAMETER	DESCRIPTION
THREAD DETAILS	
Thread Name	The name of the thread.
Configured Threads	The number of threads of current configured type.
Queue	The number of thread of current type in queue.
Active	The number of active threads of current type.
Rejected	The number of rejected threads of current type.
Largest	The number of largest threads of current type.

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Network

PARAMETER	DESCRIPTION
TRANSPORT	
Transmitted Bytes	The number of bytes sent by the network. (Transport metrics about cluster communication)
Received Bytes	The number of bytes received by the network. (Transport metrics about cluster communication)
Transmitted Packets	The number of data packets sent by the network. (Transport metrics about cluster communication)
Received Packets	The number of data packets sent by the network. (Transport metrics about cluster communication)
TCP CONNECTOR	
Active Connections	The number of active TCP connections.
Passive Connections	The number of passive TCP connections.
HTTP CONNECTOR	
Current Connections	The number of http connections currently active.
Total Connections	The total number of http connections.

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Configuration

PARAMETER	DESCRIPTION
CONFIGURATION DETAILS	
Cluster Name	The name of the cluster.
Node Name	The name of the node in the cluster.
Node Type	The type of the node (Client/Data/Master-Eligible/Data-Master).
Host	The IP address of the Host.
ElasticSearch Version	The version of the installed Elasticsearch.
Port	The port in which Elasticsearch runs.
ElasticSearch Home	The home directory of Elasticsearch.
Total Processors	The total number of processors in the current node
Java Version	The version of Java running in the node.

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PARAMETER	DESCRIPTION
Java Vendor	The Java vendor.

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ManageEngine OpManager Monitoring

ManageEngine OpManager is a comprehensive network management software for heterogeneous, multi-vendor enterprise IT networks. It offers advanced fault and performance management functionality across critical IT resources viz. network devices, WAN or VoIP links, servers, virtual servers, Domain controllers, MS Exchange, MS SQL and other IT infrastructure components. Applications Manager provides you with critical information (like CPU and memory usage, thread count and PGSQL database details) essential to track the performance of OpManager. Get instant notifications when there are performance issues. Become aware of performance bottlenecks and take quick remedial actions before your end users experience issues.

- Adding a new ManageEngine OpManager monitor / Using AddMonitor API
- Monitored Parameters

ManageEngine OpManager - Adding a new monitor

Mode of Monitoring: Remote JMX

For PGSQL DB, statistics will be collected by connecting to the database.

Prerequisites for monitoring ManageEngine OpManager:

1. Add below entries in wrapper.conf /run.bat

C:ManageEngineOpManagerconfwrapper.conf .

Or

C:ManageEngineOpManagerbinrun.bat

Enable Remote JMX

wrapper.java.additional.16=-Dcom.sun.management.jmxremote

wrapper.java.additional.17=-Dcom.sun.management.jmxremote.port=1999

wrapper.java.additional.18=-Dcom.sun.management.jmxremote.ssl=false

wrapper.java.additional.19=-Dcom.sun.management.jmxremote.authenticate=false

2. To monitor PGSQL DB, do the following changes:

- Open postgresql.conf under <postgres home>/data
- Check the value of the configuration parameter **listen address.** It should be "*". Click here for more details on configuring postgresql.conf
- open pg_hba.conf under <postgres home>/data
- Add a new line host all all *0.0.0.0/0 md5* to allow all the machines with proper password authentication to acces PostgreSQL database server. Click here for more details on configuring pg_hba.conf.
- Open C:ManageEngineOpManagerconfdatabase_params.conf.
- Update the hostname/ipadress instead of localhost .

Steps to create a new monitor

To create an ManageEngine OpManager Monitor, follow the steps given below:

- Specify the **Display Name** of the ManageEngine OpManager monitor.
- Enter the **HostName** or **IP Address** of the host where OpManager is running.
- Enter the **JMX Port** where OpManager is running. By default, it will be 8080.
- Enter the credential details like **user name, password** and **JNDIPath** or select credentials from a **Credential Manager list**.
- Click **Monitor PGSQL Database for PGSQL stats. (**Enter DataBase Name, DataBasePort, UserName and Password).

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- Enter the polling interval time in minutes.
- Choose the Monitor Group from the combo box with which you want to associate ME OpManager Monitor (optional). You can choose multiple groups to associate your monitor.
- Click Add Monitor(s). This discovers OpManager from the network and starts monitoring.

Use the AddMonitor API to add a ME OpManager Monitor

Syntax

```
http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=OPMMonitor&hostname=[HOST]&port=[PORT]&authEnabled=[true/false]&username=[USERNAME]&password=[PASSWORD]&displayname=[DISPLAYNAME]&JNDIPath=[JNDIPATH]&MonitorPGSQLDB=[Yes/No]&dbtype=[DBType]&DBHost=[DatabaseHost]&DBName=[DataBaseName]&DBPort=[DataBasePort]&DBUserName=[DataBaseUserName]&DBPassword=[DBPassword]&namedInstance=[IsNameInstance]&instance=[instance]&SSLEnabled=[SSLEnabled]
```

Request Parameter:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
Hostname	The name or Ip address of the host where ME OPManager is running.
Port	The running port of ME OPManager.
authEnabled	Specifies if authentication is enabled for ME OPManager.
username and password	Credential of the user.
JNDIPath	JNDIPATH for installation of OpManager
MonitorPGSQLDB	Specify if you wish to monitor **PGSQL Database** with Yes/No. Displaying the respective tab in UI depends on this value. (Case Sensitive)
DBType	The Database Type. Values can be *pgsql* or *mssql*. (Case Sensitive)
DBName, DBPort, DBUserName and DBPassword	PostgresSQL database credentials.
SSLEnabled	True if the SSL is enabled.

Sample Request

```
http://prod-server3:9090/AppManager/xml/AddMonitor?apikey=38cb51649cf3ac0614c3aab294a7bebd&type=OPMMonitor&hostname=172.21.151.93&port=1998&authEnabled=false&username=&password=&displayname=testOPM&JNDIPath=/jmxrmi&MonitorPGSQLDB=Yes&dbtype=pgsql&DBHost=172.21.151.93&DBPort=13306&DBName=OpManagerDB&DBUserName=postgres&namedInstance=[IsNameInstance]&instance=[instance]&SSLEnabled=false
```

Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **ME OpManager** under the **Web Server/ Services** Table. Displayed is the OpManager bulk configuration view distributed into three tabs:

- **Availability tab** gives the Availability history for the past 24 hours or 30 days.
- **Performance tab** gives the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

List of metrics captured during data collection :

Performance Overview

Parameter	Description
Thread Details	
Thread Count	The total number of threads created and also started since the Java virtual machine started.

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Parameter	Description
Threads in Running State	The total number of threads executing in the Java virtual machine in running state.
Threads in Waiting State	The total number of threads in the Java virtual machine in waiting state.
Blocked Threads	A thread that is blocked waiting for a monitor lock is in this state.
Timed Waiting Threads	A thread that is waiting for another thread to perform an action, for up to a specified waiting time is in this state.
Deadlock Threads	The number of threads that are in deadlock waiting to acquire object monitors.
Memory Details	
Name	The Heap Memory/ Non- Heap Memory usage in MB.
Commited Memory	The current allocated memory in MB.
Total Memory	The total allocated memory in MB.
Used Memory	The current used memory in MB.
Free Memory	The current free memory in MB.
CPU Details	
CPU Usage	This indicates the CPU usage of the JVM on the server.

MSSQL DataBase Statistics

ATTRIBUTE NAME	DESCRIPTION
MEMORY USAGE	
Total Memory	The total amount of dynamic memory the server is currently consuming.
SQL Cache Memory	The total amount of dynamic memory the server is using for the dynamic SQL cache.
Lock Memory	The total amount of dynamic memory the server is using for locks.
Optimizer Memory	The total amount of dynamic memory the server is using for query optimization.
Connection Memory	The total amount of dynamic memory the server is using for maintaining connections.
Granted WorkSpace Memory	The total amount of memory granted to executing processes. This memory is used for hash, sort and create index operations.
Memory Grants Pending	The current number of processes waiting for a workspace memory grant.
Memory Grants Success	The current number of processes that have successfully acquired a workspace memory grant.
BUFFER MANAGER STATISTICS	
Buffer Hit Ratio	The percentage of pages that were found in the buffer pool without having to incur a read from disk.
Page LookUps/Min	The number of requests to find a page in the buffer pool.
Page Reads/Min	The number of physical database page reads issued.
Page Writes/Min	The number of physical database page writes issued.
Total Pages	The number of pages in the buffer pool (includes database, free, and stolen).
Database Pages	The number of pages in the buffer pool with database content.
Free Pages	The total number of pages on all free lists.
Page Life Expectancy	The number of seconds a page will stay in the buffer pool without references.
CONNECTION STATISTICS	
Connection Time	The time taken to get connected to the MS SQL database server.
Active Connections	The number of users connected to the system.
Logins/Min	The total number of logins started per minute.
Logouts/Min	The total number of logouts started per minute.
CACHE DETAILS	
Cache Hit Ratio	The ratio between cache hits and lookups
Cache Used/Min	The times each type of cache object has been used
Cache Count	The number of cache objects in the cache
Cache Pages	The number of 8k pages used by cache objects
LOCK DETAILS	
Lock Requests/Min	The number of new locks and lock conversions requested from the lock manager.
Lock Waits/Min	The total wait time for locks in the last minute.
Lock Timeouts/Min	The number of lock requests that timed out. This includes internal requests for NOWAIT locks.

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ATTRIBUTE NAME	DESCRIPTION
Deadlocks/Min	The number of lock requests that resulted in a deadlock.
Average Lock Wait Time	The average amount of wait time for each lock request that resulted in a wait.
SQL STATISTICS	
Batch Requests/Min	The number of SQL batch requests received by server.
SQL Compilations/Min	The number of SQL compilations.
SQL Recompilations/Min	The number of SQL re-compiles.
AutoParams/Min	The number of auto-parameterization attempts.
Failed AutoParams/Min	The number of failed auto-parameterizations.
LATCH DETAILS	
Latch Waits/Min	The number of latch requests that could not be granted immediately and had to wait before being granted.
Average Latch Wait Time	The average latch wait time for latch requests that had to wait.
TOP SLOW RUNNING QUERIES	
Avg. Execution Time	The average time taken for complete execution of this query.
Maximum Execution Time	The maximum elapsed time for any complete execution of this query.
Minimum Execution Time	The minimum elapsed time for any complete execution of this query.
No of Executions	The number of times that the query has been executed since the plan was last compiled.
Query	The SQL query text.
Last Execution Time	The last time at which the query started executing.
TOP QUERIES BY MOST FREQUENTLY EXECUTED	
Execution Count	The number of times that the query has been executed since the plan was last compiled.
Query	The SQL query text.
DB Name	The Database against which this query has been executed (will be empty for ad hoc and prepared batches).
Last Execution Time	The last time at which the query started executing.
Average Execution Time	The average time taken to execute an individual query.
TOP QUERIES BY MOST FREQUENTLY BLOCKED	
Average Time Blocked	The average amount of time the query was blocked.
Total Time Blocked	The cumulative total amount of time for which the query was blocked.
Query	The SQL query text.
DB Name	The Database against which this query has been executed.
Last Execution Time	The last time at which the query started executing.
Average Execution Time	The average time taken to execute an individual query.

PGSQL STATISTICS

ATTRIBUTE NAME	DESCRIPTION
CONNECTION STATISTICS	
Active Connections	The number of currently active connections to the database.
LOCK STATISTICS	
Locks Held	The number of locks held by the indicated session
Locks Wait	The number of locks waiting in the database
BUFFER STATISTICS	
Buffer Hits/min	The total buffer hits (i.e., block read requests avoided by finding the block already in buffer cache) per minute
Block Reads/Min	The total disk blocks read per minute
Cache Hit Ratio	The current ratio of buffer cache hits to total requests
DISK USAGE DETAILS	
Disk Usage	The size of the on-disk representation of all tables in the database in MB
Index Scan Ratio	The current ratio of index scans to total scans(index scan+sque scan)
TRANSACTION DETAILS	
Total Commits	The total transactions commited.
Total Rollbacks	The total transactions rolled back

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ATTRIBUTE NAME	DESCRIPTION
Commits/Min	The total transactions committed per minute
Rollbacks/Min	The total transactions rolled back per minute
PRIMARY DATATBASE OBJECTS STATISTICS	
Size of the Largest Table	The size of the largest table in the database server
Largest Table(s)	The largest table in the database server
DATABASE DETAILS	
Database Name	The name of the database
DB Size	The size of the database
LONG RUNNING QUERY DETAILS	
Database Name	The name of the database where the Query is running for longer time.
Username	The username of the database.
Runtime	The amount of time the query ran.
Query	The query that is running for longer time in the database.(more than 2 mins)
TOP 50 TABLE ROW DETAILS	
Tablename	The name of the table
No.of Rows	The total no.of rows in the table
Table size	The size of the Table

Configuration

Parameter	Description
Configuration Details	
Available Processors	The number of processors available to the JVM.
Uptime	The uptime of the Java virtual machine.
Start Time	The start time of the Java virtual machine in milliseconds.
Free Physical Memory	The amount of free physical memory in Megabytes.
Total Physical Memory	Total amount of physical memory in Megabytes.
Total Swap Space	Total amount of swap space in Megabytes.
Free Swap Space	The amount of free swap space in Megabytes.
Committed Virtual Memory	The amount of virtual memory that is guaranteed to be available to the running process in Megabytes.

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HAProxy Monitoring

Contents

- HAProxy - An Overview
- Monitoring HAProxy - What we do
- Adding a new HAProxy monitor / Using AddMonitor API
- Monitored Parameters

HAProxy - An Overview

HAProxy (stands for High Availability Proxy) is a popular open source TCP/HTTP Load Balancing software and proxying solution for TCP and HTTP-based applications. It is fast, reliable and particularly suited for very high traffic web sites and powers quite a number of the world's most visited ones.

Monitoring HAProxy - What we do

As HAProxy is most commonly used to improve the performance and reliability of a server environment by distributing the workload across multiple servers (e.g. web, application, database), the best way to ensure proper HAProxy performance and operation is by monitoring its key metrics of the Listener, Frontend, Backend and Server. Applications Manager's HAProxy Monitoring provides you with:

- **Frontend metrics** such as client connections and requests
- **Backend metrics** such as availability and health of backend servers
- **Health metrics** that reflect the state of your HAProxy setup

You can correlate frontend metrics with backend metrics for a more comprehensive view of your infrastructure and quickly identify potential hotspots. Applications Manager helps you become aware of performance bottlenecks and take quick remedial actions before your end users experience issues.

Adding a new HAProxy monitor

To add a HAProxy Monitor, follow the steps given below:

- Specify the **Display Name** of the HAProxy monitor.
- Enter the **HostName** or **IP Address** of the host where stats of the HAProxy runs.
- Enter the **Port** where stats of the HAProxy are displayed. By default, it will be 8080.
- Specify the **Polling Interval** in minutes.
- Choose the Monitor Group with which you want to associate the HAProxy Monitor (optional).

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Using AddMonitor API

Syntax of Rest API for adding monitor:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=HAProxy&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]&SSL=[TRUE/FALSE]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
apikey	The key generated from the **Generate API Key** option in the 'Admin' tab.
type	The type of the monitor you want to add. Value should be **HAProxy**.
displayname	The display name of the HAProxy monitor.
host	The name of the host in which HAProxy server is running.
port	The port number where HAProxy server is running.
ssl	Specfies if SSL is enabled or not. Value can be either **true** or **false.**

Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **HAProxy** under the **Web Server/Services** Table. Displayed is the HAProxy bulk configuration view distributed into three tabs:

- **Availability tab** displays the Availability history for the past 24 hours or 30 days.
- **Performance tab** displays the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

Click on the monitor name to see all the server details listed under the following tabs:

- Overview
- Listener
- Frontend
- Backend
- Server
- Configuration

Overview

PARAMETER	DESCRIPTION
HAPROXY UTILIZATION DETAILS	
HAProxy Utilization Percentage	HAProxy's CPU utilization in percentage.
Running Tasks	Total number of tasks currenlty running in HAProxy
CONNECTION RATE	
Connections per Second	HAProxy's client connections per second.
CONNECTION DETAILS	
Current Connections	The number of current connections.

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PARAMETER	DESCRIPTION
PIPE DETAILS	
Current Pipes	The number of current pipes open.

Listener

PARAMETER	DESCRIPTION
SESSION UTILIZATION	
Utilized Sessions	The number of sessions used.
Free Sessions	The number of inactive sessions.
TRANSACTION DETAILS	
Denied Requests	The number of requests denied due to security concerns (ACL-restricted).
Denied Responses	The number of responses denied due to security concerns (ACL-restricted).
Request Errors	The number of requests whose responses yielded an error.
OVERVIEW	
Current Sessions	The current number of sessions being used to issue requests.
Utilized Sessions (%)	The percentage of sessions used.
Bytes In (KB)	The number of bytes received by the listener.
Bytes Out (KB)	The number of bytes sent by the listener.
Address	The http address of the listener (host:port or "unix". IPV6 has brackets around the address)
Mode	Mode of the proxy (tcp, http, etc.)
Status	The service status (UP/DOWN/NOLB/MAINT/MAINT(via)/MAINT(resolution)...)
TRANSACTION DETAILS	
Denied Requests	The number of requests denied due to security concerns (ACL-restricted).
Denied Responses	The number of responses denied due to security concerns (ACL-restricted).
Request Errors	The number of requests whose responses yielded an error.
Request Denied by Connection	The number of requests denied by a connection.
Request Denied by Session	The number of requests denied by a session.

Frontend

Frontend metrics provide information about the client's interaction with the load balancer itself.

PARAMETER	DESCRIPTION
SESSION UTILIZATION	
Utilized Sessions	The number of sessions used.
Free Sessions	The number of inactive sessions.
TRANSACTION DETAILS	
Denied Requests	The number of requests denied due to security concerns (ACL-restricted).
Denied Responses	The number of responses denied due to security concerns (ACL-restricted).
Request Errors	The number of requests whose responses yielded an error.
OVERVIEW	
Service Name	The service name (FRONTEND for frontend, BACKEND for backend, any name for server/listener).
Current Sessions	The current number of sessions being used to issue requests.
Utilized Sessions (%)	The percentage of sessions used.
Session Rate	The number of sessions created per second.
Max Session Rate	The maximum number of new sessions per second.
Bytes In (KB)	The number of bytes received by the frontend.
Bytes Out (KB)	The number of bytes sent by the frontend.
Mode	Mode of the proxy (tcp, http, etc.)
Status	The frontend status (UP/DOWN/NOLB/MAINT/MAINT(via)/MAINT(resolution)...)
TRANSACTION DETAILS	
Service Name	The service name (FRONTEND for frontend, BACKEND for backend, any name for server/listener).

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PARAMETER	DESCRIPTION
Denied Requests	The number of requests denied due to security concerns (ACL-restricted).
Denied Responses	The number of responses denied due to security concerns (ACL-restricted).
Request Errors	The number of requests whose responses yielded an error.
Total Requests	The total number of HTTP requests.
Request Denied by Connection	The number of requests denied by "tcp-request connection" rules.
Request Denied by Session	The number of requests denied by "tcp-request session" rules
Request Rate	The rate of HTTP requests per second.
Max Request Rate	The maximum number of HTTP requests per second
Connections per Second	The number of connections over the last elapsed second.
HTTP RESPONSE COUNT	
Service Name	The service name (FRONTEND for frontend, BACKEND for backend, any name for server/listener).
Total HTTP Responses	HAProxy exposes the number of responses by HTTP status code - 1xx, 2xx, 3xx, 4xx, 5xx and other codes. Ideally, all responses forwarded by HAProxy would be class **2xx** codes.
COMPRESSION DETAILS	
Bytes into Compressor	The number of HTTP response bytes fed to the compressor.
Bytes from Compressor	The number of HTTP response bytes emitted by the compressor.
Bytes bypassed Compressor	The number of bytes that bypassed the HTTP compressor.
Responses Compressed	The number of HTTP responses that were compressed.

Backend

PARAMETER	DESCRIPTION
QUEUE UTILIZATION	
Utilized Queue	The currently queued requests.
Free Queue	The number of free queued requests.
SESSION DETAILS	
Utilized Sessions	The number of sessions used.
Free Sessions	The number of inactive sessions.
OVERVIEW	
Total Weight	Servers can be assigned a weight parameter to manipulate how frequently the server is selected.
Total Downtime (sec)	The total downtime in seconds. The value for the backend is the downtime for the whole backend, not the sum of the server downtime.
Downtime Percentage	The total downtime in percentage. This is calculated with the uptime of HAProxy.
Active Servers	The number of active servers.
Backup Servers	The number of backup servers
No. times Server selected	The total number of times a server was selected, either for new sessions, or when re-dispatching. The server counter is the number of times that server was selected.
Mode	Mode of the proxy (tcp, http, etc.)
Status	The frontend status (UP/DOWN/NOLB/MAINT/MAINT(via)/MAINT(resolution)...)
SESSION DETAILS	
Current Queue Size	The current number of requests unassigned in queue. For the backend, this reports the number queued without a server assigned.
Utilized Queue (%)	The percentage of queues used.
Current Sessions	The current number of sessions being used to issue requests.
Utilized Sessions (%)	The percentage of sessions used.
Session Rate	Session rate is the number of new sessions per second.
Max No.of new Sessions	The maximum number of new sessions that can be created per second.
Time Since Last Session Assigned (sec)	The seconds since last session assigned to server/backend.
TRANSACTION DETAILS	
Bytes In (KB)	The Rate of bytes in on backend hosts.
Bytes Out (KB)	The Rate of bytes in on backend hosts.
Denied Requests	The requests denied by "tcp-request connection" rules.
Denied Responses	The requests denied by "tcp-request session" rules.

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PARAMETER	DESCRIPTION
Connection Errors	The number of requests that encountered an error trying to connect to a Backend server.
Response Errors	The number of response errors generated by your backends.
RESPONSE SUMMARY	
Total HTTP Responses	HAProxy exposes the number of responses by HTTP status code - 1xx, 2xx, 3xx, 4xx, 5xx and other codes. Ideally, all responses forwarded by HAProxy would be class **2xx** codes.
Average Session Time (ms)	The average time taken for the sessions.
Average Response Time (ms)	The sum of average queue, connect and response time.
Connection Retries	Multi-process configurations involving source port ranges may cause random failures under high loads (because more than one process may try to use the same source port to connect to the same server). The system will report an error and a retry will happen, picking another port. A high value in the "retries" parameter comes with increased CPU usage and processing time.
Requests Redispatched	The number of times a request was redispatched to another server. The server value counts the number of times that server was switched away from.
Client Aborts	The number of data transfers aborted by the client.
Server Aborts	The number of data transfers aborted by the server.
COMPRESSOR DETAILS	
Bytes into Compressor	The number of HTTP response bytes fed to the compressor.
Bytes from Compressor	The number of HTTP response bytes emitted by the compressor.
Bytes bypassed Compressor	The number of bytes that bypassed the HTTP compressor.
Responses Compressed	The number of HTTP responses that were compressed.

Server

PARAMETER	DESCRIPTION
QUEUE UTILIZATION	
Utilized Queue	The currently queued requests.
Free Queue	The number of free queued requests.
SESSION DETAILS	
Utilized Queue	The number of sessions used.
Free Queue	The number of inactive sessions.
OVERVIEW	
Server Weight	The total server weight. The "weight" parameter is used to adjust the server's weight relative to other servers. All servers will receive a load proportional to their weight relative to the sum of all weights, so the higher the weight, the higher the load.
Total Downtime (sec)	The total server downtime (in seconds).
Downtime Percentage	The total downtime in percentage. This is calculated with the uptime of HAProxy.
Active Server	The number of active servers.
Backup Server	The number of backup servers.
No. times Server selected	The total number of times a server was selected, either for new sessions, or when re-dispatching.
Address	The Server IP address.
Mode	Mode of the proxy (tcp, http, etc.)
Status	The frontend status (UP/DOWN/NOLB/MAINT/MAINT(via)/MAINT(resolution)...)
SESSION DETAILS	
Current Queue Size	The total queue size in a backend (backend + sum of servers).
Utilized Queue (%)	The percentage of queues used.
Current Sessions	The current number of sessions being used to issue requests.
Utilized Sessions (%)	The percentage of sessions used.
Session Rate	Session rate is the number of new sessions per second.
Max No.of new Sessions	The maximum number of new sessions that can be created per second.
Time Since Last Session Assigned (sec)	The seconds since last session assigned to server/backend.
TRANSACTION DETAILS	
Bytes In (KB)	The total number of bytes recieved by the server in the last second from the client.
Bytes Out (KB)	The total number of bytes sent by the server in the last second.
Denied Responses	The number of requests denied due to security restrictions.
Connection Errors	The number of requests that encountered an error trying to connect to a Backend server.

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PARAMETER	DESCRIPTION
Response Errors	The number of response errors generated by your server.
Throttle Percentage	The throttle percentage for the server, when slowstart is active, or no value if not in slowstart.
RESPONSE SUMMARY	
Total HTTP Responses	HAProxy exposes the number of responses by HTTP status code - 1xx, 2xx, 3xx, 4xx, 5xx and other codes. Ideally, all responses forwarded by HAProxy would be class **2xx** codes.
Average Session Time (ms)	The average time taken for the sessions.
Average Response Time (ms)	The sum of average queue, connect and response time.
Connection Retries	Multi-process configurations involving source port ranges may cause random failures under high loads (because more than one process may try to use the same source port to connect to the same server). The system will report an error and a retry will happen, picking another port. A high value in the "retries" parameter comes with increased CPU usage and processing time.
Requests Redispatched	The number of times a request was redispatched to another server. The server value counts the number of times that server was switched away from.
Client Aborts	The number of data transfers aborted by the client.
Server Aborts	The number of data transfers aborted by the server.
HEALTH CHECKS	
Failed Checks	The number of failed checks (Only counts checks failed when the server is up.)
Failed Health Checks	The number of failed health checks.
Health Check Response Code	The Response Code of the failed health check.
Health Check Content, Health Check Description, Health Check Description, Health Check Duration in ms	The failed health checks details.
Agent Check Response Code, Agent Check Content, Agent Check Description, Agent Check Duration in ms	The last agent check details.

Configuration

PARAMETER	DESCRIPTION
CONFIGURATION DETAILS	
Process ID	The process id of HAProxy assigned by the system.
Server Start Time	The time when the server is last restarted.
Version	The version of HAProxy.
Maximum Memory	Maximum allowed memory for HAProxy.
Maximum Sockets	Maximum number sockets allowed to create.
Maximum Connections	The maximum number of connections HAProxy can handle is limited by your configuration and platform
Maximum Pipes	Maximum number of pipes allowed to create for tranferring information
Maximum File descriptors	Maximum number of file descriptors allowed to open.

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ME ServiceDesk Plus Monitoring

ManageEngine ServiceDesk Plus is a web-based Help Desk and Asset Management Software. It offers an integrated package with Incident management(Trouble Ticketing), Asset Tracking, Purchasing, Contract Management, Self-Service Portal and Knowledge Base. It provides great visibility and central control in dealing with IT issues to ensure that businesses suffer no downtime. Applications Manager provides you with critical information (like CPU and memory usage, thread count, mail fetch and database details) essential to track the performance of ServiceDesk Plus. Get instant notifications when there are performance issues. Become aware of performance bottlenecks and take quick remedial actions before your end users experience issues.

- Adding a new SDP monitor / Using AddMonitor API
- Monitored Parameters

ServiceDesk Plus - Adding a new monitor

Supported versions: ServiceDesk Plus MSP 9202, ServiceDesk Plus 9228

Prerequisites:

To monitor PGSQL DB , do the following changes :

- C:ManageEngineServiceDeskpgsqldatapostgresql.conf

  Uncomment and update ip address : listen_addresses = '172.22.168.171'

- C:ManageEngineServiceDeskpgsqldatapg_hba.conf

  # IPv4 local connections:

  #host all all 127.0.0.1/32 trust

  host all all 0.0.0.0/0 trust

- Update the hostname/ipadress instead of localhost in <SDP_HOME>ServiceDeskserverdefaultdeploypostgres-ds.xml file.

Steps to create a new monitor:

To create an ServiceDesk Plus Monitor, follow the steps given below:

- Specify the **Display Name** of the ServiceDesk Plus monitor.
- Enter the **HostName** or **IP Address** of the host where ServiceDesk Plus is running.
- Enter the **Port** where ServiceDesk Plus is running. By default, it will be 8080.
- Enable the **SSL is enabled** option if SSL is enabled.
- Specify the **RestAPI Key** of ServiceDesk Plus.
- Check the **Monitor Database** checkbox to select the type of database.
- Enter the DBHostname and the Database name.
- Check the **is SSL enabled** option if SSL is enabled.
- Specify the Database Port of ServiceDesk Plus.
- Enter the username and password for accessing the database.
- Enter the **polling interval** time in minutes.
- Choose the Monitor Group from the combo box with which you want to associate ServiceDesk Plus Monitor (optional). You can choose multiple groups to associate your monitor.
- Click Add Monitor(s). This discovers ServiceDesk Plus from the network and starts monitoring.

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Use the AddMonitor API to add an ServiceDesk Plus Monitor

Syntax:

```
http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&hostname=[HOST]&port=[PORT]&ssl=[TRUE/FALSE]&restapiKey=[RestAPIKey]&MonitorPGSQLDB=[MonitorPGSQLDB]&dbtype=[DBType]&DBHost=[DatabaseHost]&DBName=[DataBaseName]&DBPort=[DataBasePort]&DBUserName=[DataBaseUserName]&DBPassword=[DBPassword]&namedInstance=[IsNameInstance]&instance=[instance]
```

Request Parameter:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
Hostname	The name or Ip address of the host where Servicedesk-Plus / SDP MSP is running.
Port	The Running Port of Servicedesk-Plus / SDP MSP.
SSL If Enabled	Specifies if SSL enabled for Servicedesk-Plus / SDP MSP.
restapiKey	To generate a new API key in ServiceDesk Plus, follow the steps given below: • Log in to ServiceDesk Plus. • Go to the **Personalize** tab available in the top pane. • Click **API key Generation**.You can either select the **Never Expire** option or specify the date of expiry: • If you select the **Never Expire** option, the key will be used in Applications Manager, until you generate a new key. • If you have set a **date of expiry**, you must manually update the new key in APM after that set time period for data collection to happen. • Click **Generate**. ◦ Copy the API Key generated to use it in Applications Manager.
MonitorPGSQLDB	Specify if you wish to monitor **PGSQL Database** with Yes/No. Displaying the respective tab in UI depends on this value. (Case Sensitive)
DBType	The Database Type. Values can be *pgsql* or *mssql*. (Case Sensitive)
DBName, DBPort, DBUserName and DBPassword	PostgresSQL database credentials.
SSLEnabled	True if the SSL is enabled.

Sample Request

```
http://prod-server3:9090/AppManager/xml/AddMonitor?apikey=5b43655d12396a7917e5d5b036ced3aa&type=SDPMonitor&displayname=satya_sdp&hostname=satyavani-0618&port=8081&ssl=false&restapiKey=5B7ADE19-D4D7-4556-9F54-07FAF42D2C29&MonitorPGSQLDB=Yes&dbtype=[DBType]&DBHost=[DatabaseHost]&DBName=[DataBaseName]&DBPort=[DataBasePort]&DBUserName=[DataBaseUserName]&DBPassword=[DBPassword]&namedInstance=[IsNameInstance]&instance=[instance]
```

Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **ServiceDesk Plus** under the **Web Server/ Services** Table. Displayed is the ServiceDesk Plus bulk configuration view distributed into three tabs:

- **Availability tab** gives the Availability history for the past 24 hours or 30 days.
- **Performance tab** gives the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

List of metrics captured during data collection :

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Parameter	Description
MAIL FETCHING DETAILS	
Mail Fetching Status	The fetching status for incoming and outgoing mail in SeviceDesk Plus. The possible values are: • Running • Stopped
Task Performed By	This specifies if the task is performed by a user or by the admin. The possible values are: • Administrator • System
Last Mail Fetch Run status	The fetching status of the last mail in SeviceDesk Plus.The possible values are: • Success • Failed
Mail Fetch Error Message	The relevant error message of the failed mail fetch run.
DATABASE DETAILS	
DB Connection Status	The status of the connection between SeviceDesk Plus and the database. The possible values are: • Success • Failed
DB Connection Status Message	The relevant error message of the failed database connection run.
BACKUP SCHEDULING DETAILS	
Backup Scheduling Status	The status of the scheduled backup. The possible values are: • Enabled • Disabled
Successful Backup taken at	The time when the last successful backup was performed.
No.of Days since Backup taken	The number of days since successful backup was performed.
Last Backup Status	The status of the Last Backup Scheduled. The possible values are: • Success • Failed
Last Backup Scheduled Time	The time for which the last backup was scheduled.
Backup Scheduling Error Message	The relevant error message of the a failed scheduled backup process.
THREADS	
Total Thread Count	The total number of threads created and started since the JVM started.
Thread Count	The current number of live threads .
Blocked Thread Count	Thread State - The number of threads blocked waiting for a monitor lock.
Deadlock Thread Count	The number of threads that are blocked in the JVM. (A deadlock is a state where two, or more, threads are blocked waiting for the other blocked waiting thread (or threads) to finish; thus none of the threads will ever complete.)
MEMORY USAGE	
Type	The type of memory. The possible values are: • Heap • Non-Heap
Max Memory (MB)	The maximum allocated memory in MB.
Used Memory (MB)	The space that is currently occupied by Java objects.
Free Memory (MB)	The total free memory available to the JVM for new objects.
Used Memory (%)	The percentage of used memory by the JVM.
Free Memory (%)	The percentage of free memory not being used by the JVM.
CPU USAGE	
CPU Usage (%)	The percentage of CPU usage of the JVM.

PGSQL Statistics

Parameter	Description
Connection Statistics	
Active Connections	Number of currently active connections to the database
Lock Statistics	
Locks Held	Number of locks held by the indicated session
Locks Wait	Number of locks waiting in the database
Buffer Statistics	
Buffer Hits/min	Total buffer hits (i.e., block read requests avoided by finding the block already in buffer cache) per minute
Block Reads/Min	Total disk blocks read per minute
Cache Hit Ratio	The current ratio of buffer cache hits to total requests

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Parameter	Description
Disk Usage Details	
Disk Usage	Size of the on-disk representation of all tables in the database in MB
Index Scan Ratio	The current ratio of index scans to total scans(index scan+sque scan)
Transaction Details	
Total Commits	Total transactions committed
Total Rollbacks	Total transactions rolled back
Commits/Min	Total transactions committed per minute
Rollbacks/Min	Total transactions rolled back per minute
Primary Database Object Statistics	
Size of the Largest Table	Size of the largest table in the database server
Largest Table(s)	Largest table in the database server
Database Details	
Database Name	Name of the database
DB Size	Size of the database
Long Running Query Details	
Database Name	Name of the database where the Query is running for longer time.
Username	Username of the database
Runtime	Time for how long the query ran.
Query	Query that is running for longer time in the database.(more than 2 mins)
Top 50 Table Row Details	
Tablename	Name of the table
No.of Rows	Total no.of rows in the table
Table size	Size of the Table

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ME ADManager Plus Monitoring

ManageEngine ADManager Plus is an easy-to-use Windows Active Directory Management and Reporting Solution that helps AD Administrators and Help Desk Technicians with their day-to-day activities. With a centralized and Intuitive web-based UI, the software handles a variety of complex tasks like Bulk Management of User accounts and other AD objects, delegates Role-based access to Help Desk Technicians, and generates an exhaustive list of AD Reports, some of which are an essential requirement to satisfy Compliance Audits. This Active Directory tool also offers mobile AD apps that empower you to perform important user management tasks right from your mobile devices.
Applications Manager provides you with critical information (like CPU and memory usage, thread count and PGSQL / MSSQL database details) essential to track the performance of ADManager Plus. Get instant notifications when there are performance issues. Become aware of performance bottlenecks and take quick remedial actions before your end users experience issues.

- Adding a new ManageEngine ADManager Plus monitor / Using AddMonitor API
- Monitored Parameters

ME ADManager Plus - Adding a new monitor

Supported versions: ADManager Plus 6.5
Mode of Monitoring: Remote JMX
Prerequisites for monitoring ManageEngine ADManager Plus:

1. Add below entries in wrapper.conf /run.bat:

D:ManageEngine ProductsADManager Plusconfwrapper.conf

or

D:ManageEngine ProductsADManager Plusbinrun.bat

Enable Remote JMX

wrapper.java.additional.16=-Dcom.sun.management.jmxremote
wrapper.java.additional.17=-Dcom.sun.management.jmxremote.port=1999
wrapper.java.additional.18=-Dcom.sun.management.jmxremote.ssl=false
wrapper.java.additional.19=-Dcom.sun.management.jmxremote.authenticate=false

2. **To monitor PGSQL DB,do the following changes:**

- D:ManageEngine ProductsADManager Plus pgsqldatapostgresql.conf
  Uncomment and update ip address: listen_addresses = '172.22.168.171'
- D:ManageEngine ProductsADManager Plus pgsqldatapg_hba.conf
  # IPv4 local connections:
  #host all all 127.0.0.1/32 trust
  host all all 0.0.0.0/0 trust
- D:ManageEngine ProductsADManager Plusconfdatabase_params.conf
  Update the hostname/ipadress instead of localhost .

For PGSQL/MSSQL database, Statistics will be collected by connecting to the database.

Steps to create a new monitor:

To create an ADManager Plus Monitor, follow the steps given below:

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- Specify the **Display Name** of the ADManager Plus monitor.
- Enter the **HostName** or **IP Address** of the host where ADManager Plus is running.
- Enter the **JMX Port** where ADManager Plus is running. By default, it will be 8080.
- Check the **Monitor Database** checkbox to select the type of database.
- Enter the DBHostname and the Database name.
- Check the **is SSL enabled** option if SSL is enabled.
- Specify the Database Port of ADManager Plus.
- Enter the username and password for accessing the database.
- Enter the **polling interval** time in minutes.
- Choose the Monitor Group from the combo box with which you want to associate ADManager Plus Monitor (optional). You can choose multiple groups to associate your monitor.
- Click Add Monitor(s). This discovers ADManager Plus from the network and starts monitoring.

Use the AddMonitor API to add an ADManager Plus Monitor

Syntax:

```
http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=ADMPMonitor&hostname=[HOST]&port=[PORT]&authEnabled=[AUTHENABLED]&username=[USERNAME]&password=[PASSWORD]&displayname=[DISPLAYNAME]&JNDIPath=[JNDIPATH]&MonitorPGSQLDB=[Yes/No]&dbtype=[DBType]&DBHost=[DatabaseHost]&DBName=[DataBaseName]&DBPort=[DataBasePort]&DBUserName=[DataBaseUserName]&DBPassword=[DBPassword]&namedInstance=[IsNameInstance]&instance=[instance]&SSLEnabled=[SSLEnabled]
```

Request Parameter:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
hostname	The name or Ip address of the host where ADManager Plus is running.
port	The Running Port of ADManager Plus.
authEnabled	Specifies if authentication is enabled.
username and password	Credential of the user.
displayname	The displayname of the ADManager Plus monitor.
JNDIPath	The JNDIPATH for installation of ADManager Plus.
MonitorPGSQLDB	Specify if you wish to monitor **PGSQL Database** with Yes/No. Displaying the respective tab in UI depends on this value. (Case Sensitive)
dbtype	The Database Type. Values can be *pgsql* or *mssql.* (Case Sensitive)
DBName, DBPort, DBUserName and DBPassword	PostgresSQL database credentials.
SSLEnabled	Specifies if SSL enabled for ADManager Plus.

Sample Request

```
http://prod-server3:9090/AppManager/xml/AddMonitor?apikey=3be1ffd5109b27613464da89545964ba&type=ADMPMonitor&hostname=localhost&port=1991&authEnabled=false&username=&password=&displayname=test&JNDIPath=/jmxrmi&MonitorPGSQLDB=Yes&dbtype=pgsql&DBHost=satyavani-0618&DBName=DB&DBPort=13306&DBUserName=postgres&DBPassword=postgres&namedInstance=false&SSLEnabled=false
```

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Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **ADManager Plus** under the **Web Server/ Services** Table. Displayed is the ADManager Plus bulk configuration view distributed into three tabs:

- **Availability tab** gives the Availability history for the past 24 hours or 30 days.
- **Performance tab** gives the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

List of metrics captured during data collection:

- Performance Overview
- MSSQL DataBase Statistics
- PGSQL Statistics
- Configuration

Performance Overview

ATTRIBUTE NAME	DESCRIPTION
THREAD DETAILS	
Thread Count	The total number of threads created and also started since the Java virtual machine started.
Threads in Running State	The total number of threads executing in the Java virtual machine in running state.
Threads in Waiting State	The total number of threads in the Java virtual machine in waiting state.
Blocked Threads	The threads blocked and waiting for a monitor lock.
Timed Waiting Threads	The threads waiting for another thread to perform an action, for up to a specified waiting time.
Deadlock Threads	The number of threads that are in deadlock waiting to acquire object monitors.
CPU DETAILS	
CPU Usage	The CPU usage of the JVM on the server.
MEMORY DETAILS	
Name	The heap memory/ non-heap memory usage in MB.
Commited	The current allocated memory in MB.
Max	The maximum allocated memory in MB.
Used	The currently used memory in MB.
Free	The currently free memory in MB.
Free %	The percentage of currently free memory.
Used %	The percentage of currently used memory.

MSSQL DataBase Statistics

ATTRIBUTE NAME	DESCRIPTION
MEMORY USAGE	
Total Memory	The total amount of dynamic memory the server is currently consuming.
SQL Cache Memory	The total amount of dynamic memory the server is using for the dynamic SQL cache.
Lock Memory	The total amount of dynamic memory the server is using for locks.
Optimizer Memory	The total amount of dynamic memory the server is using for query optimization.
Connection Memory	The total amount of dynamic memory the server is using for maintaining connections.
Granted WorkSpace Memory	The total amount of memory granted to executing processes. This memory is used for hash, sort and create index operations.
Memory Grants Pending	The current number of processes waiting for a workspace memory grant.
Memory Grants Success	The current number of processes that have successfully acquired a workspace memory grant.
BUFFER MANAGER STATISTICS	

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ATTRIBUTE NAME	DESCRIPTION
Buffer Hit Ratio	The percentage of pages that were found in the buffer pool without having to incur a read from disk.
Page LookUps/Min	The number of requests to find a page in the buffer pool.
Page Reads/Min	The number of physical database page reads issued.
Page Writes/Min	The number of physical database page writes issued.
Total Pages	The number of pages in the buffer pool (includes database, free, and stolen).
Database Pages	The number of pages in the buffer pool with database content.
Free Pages	The total number of pages on all free lists.
Page Life Expectancy	The number of seconds a page will stay in the buffer pool without references.
CONNECTION STATISTICS	
Connection Time	The time taken to get connected to the MS SQL database server.
Active Connections	The number of users connected to the system.
Logins/Min	The total number of logins started per minute.
Logouts/Min	The total number of logouts started per minute.
CACHE DETAILS	
Cache Hit Ratio	The ratio between cache hits and lookups
Cache Used/Min	The times each type of cache object has been used
Cache Count	The number of cache objects in the cache
Cache Pages	The number of 8k pages used by cache objects
LOCK DETAILS	
Lock Requests/Min	The number of new locks and lock conversions requested from the lock manager.
Lock Waits/Min	The total wait time for locks in the last minute.
Lock Timeouts/Min	The number of lock requests that timed out. This includes internal requests for NOWAIT locks.
Deadlocks/Min	The number of lock requests that resulted in a deadlock.
Average Lock Wait Time	The average amount of wait time for each lock request that resulted in a wait.
SQL STATISTICS	
Batch Requests/Min	The number of SQL batch requests received by server.
SQL Compilations/Min	The number of SQL compilations.
SQL Recompilations/Min	The number of SQL re-compiles.
AutoParams/Min	The number of auto-parameterization attempts.
Failed AutoParams/Min	The number of failed auto-parameterizations.
LATCH DETAILS	
Latch Waits/Min	The number of latch requests that could not be granted immediately and had to wait before being granted.
Average Latch Wait Time	The average latch wait time for latch requests that had to wait.
TOP SLOW RUNNING QUERIES	
Avg. Execution Time	The average time taken for complete execution of this query.
Maximum Execution Time	The maximum elapsed time for any complete execution of this query.
Minimum Execution Time	The minimum elapsed time for any complete execution of this query.
No of Executions	The number of times that the query has been executed since the plan was last compiled.
Query	The SQL query text.
Last Execution Time	The last time at which the query started executing.
TOP QUERIES BY MOST FREQUENTLY EXECUTED	
Execution Count	The number of times that the query has been executed since the plan was last compiled.
Query	The SQL query text.
DB Name	The Database against which this query has been executed (will be empty for ad hoc and prepared batches).
Last Execution Time	The last time at which the query started executing.
Average Execution Time	The average time taken to execute an individual query.
TOP QUERIES BY MOST FREQUENTLY BLOCKED	
Average Time Blocked	The average amount of time the query was blocked.

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ATTRIBUTE NAME	DESCRIPTION
Total Time Blocked	The cumulative total amount of time for which the query was blocked.
Query	The SQL query text.
DB Name	The Database against which this query has been executed.
Last Execution Time	The last time at which the query started executing.
Average Execution Time	The average time taken to execute an individual query.

PGSQL STATISTICS

ATTRIBUTE NAME	DESCRIPTION
CONNECTION STATISTICS	
Active Connections	The number of currently active connections to the database.
LOCK STATISTICS	
Locks Held	The number of locks held by the indicated session
Locks Wait	The number of locks waiting in the database
BUFFER STATISTICS	
Buffer Hits/min	The total buffer hits (i.e., block read requests avoided by finding the block already in buffer cache) per minute
Block Reads/Min	The total disk blocks read per minute
Cache Hit Ratio	The current ratio of buffer cache hits to total requests
DISK USAGE DETAILS	
Disk Usage	The size of the on-disk representation of all tables in the database in MB
Index Scan Ratio	The current ratio of index scans to total scans(index scan+sque scan)
TRANSACTION DETAILS	
Total Commits	The total transactions commited.
Total Rollbacks	The total transactions rolled back
Commits/Min	The total transactions committed per minute
Rollbacks/Min	The total transactions rolled back per minute
PRIMARY DATATBASE OBJECTS STATISTICS	
Size of the Largest Table	The size of the largest table in the database server
Largest Table(s)	The largest table in the database server
DATABASE DETAILS	
Database Name	The name of the database
DB Size	The size of the database
LONG RUNNING QUERY DETAILS	
Database Name	The name of the database where the Query is running for longer time.
Username	The username of the database.
Runtime	The amount of time the query ran.
Query	The query that is running for longer time in the database.(more than 2 mins)
TOP 50 TABLE ROW DETAILS	
Tablename	The name of the table
No.of Rows	The total no.of rows in the table
Table size	The size of the Table

Configurations Details

ATTRIBUTE NAME	DESCRIPTION
Available Processors	The number of processors available to the JVM.
Uptime	The uptime of the Java virtual machine.
Start Time	The start time of the Java virtual machine in milliseconds.
Free Physical Memory	The amount of free physical memory in Megabytes.
Total Physical Memory	The total amount of physical memory in Megabytes.
Total Swap Space	The total amount of swap space in Megabytes.

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ATTRIBUTE NAME	DESCRIPTION
Free Swap Space	The amount of free swap space in Megabytes.
Committed Virtual Memory	The amount of virtual memory that is guaranteed to be available to the running process in Megabytes.

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Website Content Monitoring

- Website Defacement - An Overview
- Monitoring Website Content - What we do.
- Adding a new Website Content Monitor.
- Monitored Parameters

Website Defacement - An Overview

Website defacement, a great threat to any online business, refers to unauthorized hacks on your website. It includes modifying or altering a website with insertion of potentially hazardous content, images, malicious code, or even deletion of the same and in some cases, instances like code injections. A defaced web page can thus inflict severe damage to your business reputation and reliability.

Monitoring Website Content - What we do.

Applications Manager lets you monitor your websites for defacement, modification and malicious insertions and be notified promptly during a hack detection. The Website Content Monitoring feature from Applications Manager allows you to monitor six basic HTML elements namely ***Text, Script, Image, Anchor, Iframe and Link***. It detects website hack and any change in website content and reports before it can affect your customer. The altered content is displayed in separate tabs. The tabs (hidden by default) are shown only when there is a content modification or defacement.
Our standard defacement monitoring includes tracking for unauthorized addition or modification of the following HTML elements:

- **Text Defacement** - Identify content changes concerning the visible content in the rendered web page.
- **Script Defacement** - Identify changes in the scripts embedded and detect any 'src' attribute changes for the external script.
- **Image Defacement** - Identify 'src' attribute changes in the images present in the web page. Alert if there is any image displayed from a new domain other than the captured domains.
- **Anchor Defacement** - Identify 'href' attribute changes in the anchor links present in the web page. Alert if there is a link to a new domain other than the captured domains.
- **Iframe Defacement** - Identify 'src' attribute changes in the iframe elements and notify if there is a change in the domain name in the configured URL.
- **Link Defacement** - Identify 'href' attribute changes in the link elements of the web page.

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Adding a new Website Content Monitor

Steps to create a new monitor:

- Click on **New Monitor** link.
- Select **Website Content Monitor** under **Web Server/Services** category.
- Specify the **Display Name** of the Website Content Monitor.
- Enter the complete **URL** of the Website which you want to monitor.
- Check the **Auto overwrite the defaced content**, if you want to overwrite the original web content with the web content fetched during the particular poll. This overwrite will happen only when the defacement persists for **1 hour**.
- Enter the **Username** and **Password**, if you have enabled it for the website.
- Specify the **Polling Interval** in minutes.
- Choose the **Monitor Group** with which you want to associate the Monitor (optional).
- Click on **Get Webpages** to fetch the webpages present in the current website.
- Select the monitors which you want to add as child monitors. A maximum of 10 child monitors can be selected.
- Edit the **Threshold percentage** or Display names of the webpages listed.
- Click on **Add Monitor** to add the monitors.

Monitored Parameters

Website Content Monitoring

- Overview

Webpage Content Monitoring

- Overview
- Defaced Script Elements
- Defaced Text Elements
- Other Elements Defaced

Website Content Monitoring

Overview

Parameter	Description
WEBPAGE DETAILS	
Webpage URL	The URL of the webpage.
Defaced Script Percent (%)	The percentage change in the current script against the original script.
Defaced Text Percent (%)	The percentage change in the current text against the original text.
Page Size (KB)	The current page size. This metric helps you validate the current web page size and the percentage change in present page size to earlier page dimension.

Webpage Content Monitoring

Overview

Parameter	Description
PAGE SIZE	

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Parameter	Description
Page Size	The current page size. This metric helps you validate the current web page size and the percentage change in present page size to earlier page dimension.
DEFACEMENT PERCENTAGE DETAILS	
Defaced Script Percent	The percentage change in the current script against the original script.
Defaced Text Percent	The percentage change in the current text against the original text.
RESPONSE TIME	
Response Time	The response time of the website.

Defaced Script Elements

Parameter	Description
DEFACED SCRIPT DETAILS	
Original & Modified Content	The current and original script to help you identify changes with respect to the scripts embedded and detect any 'src' attribute change for the external script.

Defaced Text Elements

Parameter	Description
DEFACED TEXT DETAILS	
Original & Modified Content	The current and original text to help you identify any content changes with respect to the visible content in the rendered website page.

Other Elements Defaced

Parameter	Description
DEFACED ANCHOR DETAILS	
Original & Modified Content	The current and original content to help you identify 'href' attribute changes in the anchor links present in the website page. You can also identify 'src' attribute changes in the iframe element and notify if there is a change in the domain name in the configured URL.

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Service Monitoring

Applications Manager supports monitoring of the following Services to check their status:

- JMX Applications
- Ping Monitor
- Service Monitoring
- SNMP
- Telnet
- Active Directory
- DNS Monitor
- FTP/SFTP Monitor
- LDAP Monitor
- Ceph Storage Monitor
- Hadoop Monitor
- Oracle Coherence Monitor
- Apache Zookeeper

JMX Applications

To create a MX4J RMI Connector Monitor, follow the given steps:

1. Click on New **Monitor** link. Choose **JMX Applications**.
2. Enter the IP Address or hostname of the host in which the Monitor is running.
3. Enter the SubNetMask of the network.
4. Provide the port number in which RMI Adapter is running. Also, you can provide multiple ports separated by commas.
5. You can enter your own credential details or select preconfigured credentials details in Credentials Manager. If you wish to enter your own credentials, specify **username** and **password** details for this monitor.
6. Enter the JNDI name. For example, /jmxconnector.
7. To enable customized JMX URL, check the **Enable JMX URL checkbox** and enter the JMX URL. (The URL should be of the format *service:jmx:rmi:///jndi/rmi://HOST:PORT/jmxrmi*. For example, a jboss customized jmx URL can be - *service:jmx:remoting-jmx://HOST:PORT* and a websphere customized jmx URL - *service:jmx:wsrmi://HOST:PORT/*)
8. If Authentication is enabled, enter the Username and password.
9. Enter the polling interval time in minutes.
10. If you are adding a new monitor from an Admin Server, select a Managed Server.
11. Choose the Monitor Group from the combo box to which you want to associate the Monitor (optional). You can choose multiple groups to associate your monitor.
12. Click Add Monitor(s). This discovers the Monitor from the network and starts monitoring them. Refer the Prerequisites Section for configuration details.

JMX Applications	• Connects to the MX4J-JMX agent to check **availability** and **response time** of RMI Connector. You can also view the custom attributes of the MX4J-JMX agent in the same page. Further, alarms can be generated for JMX notifications through JMX Notification Listener. For information on adding Custom Monitors, refer to Custom Monitors topic.

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Ping Monitor

To create a Ping monitor, follow the steps given below:

1. Click on New **Monitor** link. Choose **Ping Monitor** under 'Services' category.
2. Provide Host Name / IP Address.
3. Enter the **Timeout** value for the monitor in seconds.
4. Specify the **Polling Interval** for the monitor in minutes.
5. If you are adding a new monitor from an Admin Server, select a Managed Server.
6. Select the Monitor Group with which you want to associate the monitor to, from the combo box (optional). You can choose multiple groups to associate your monitor.
7. Associate the monitor instance to the agent.
   1. Enable **Run on Server** option to run the ping monitor in the local instance of Applications Manager.
   2. Enable **Run on Agent** option to run the ping monitor from multiple locations. Select the necessary agents from where you want this monitor to be executed. This option will be available only if you enable the EUM add-on.
8. Click **Add Monitor(s)**. This adds the ping monitor and the monitoring will be started as per the polling interval configured.

Note:
In some cases, AppManager may not provide the expected metrics output due to incorrect responses for non-English OS. To get the expected output, regex support is available for Ping Monitor. The user needs to customize the output in a property file based on the language. The user can define ping response for metrics like Packet Stats and Round Trip Time for different languages. Create a properties files called **ping.properties** and place it under **AppManager/conf** directrory (or under the **EUMAgent/conf** in case of Agent based Ping monitor). The user can understand the response pattern of the ping request and he can customize it by using the same patterns as in the properties file. This is a sample Italian ping.properties file:

```
################################ Windows properties
#####################################
#Windows Status poll matcher String.

ReplyFrom=Risposta da

bytes=byte
#Windows ResponseTime String. Ex: Minimum or Maximum or Average.

Windows_ResponseTime=Medio
#Windows Packet Sent matcher String.

Windows_PacketSent=Trasmessi
#Windows Packet Received matcher String.

Windows_PacketReceived=Ricevuti
#Windows Packet Loss matcher String(case sensitive).

Windows_PacketLoss=persi
```

Ping Monitor	• Applications Manager uses **Ping Monitor** to track if the particular host / IP address is accessible or not. It checks for availability of a device, server or network device • The parameters that are monitored are**Packet Statistics:**Packet Loss (%): Packet loss gives the percentage of packets that fail to reach the destination. Packets Sent: No. of Packets sent. Packet Received: No. of Packets received.**Round Trip Time**: Time taken for each packet exchange. Ping places a timestamp in each packet, which is echoed back and is used to compute how long each packet exchange took

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Service Monitoring

To create a Service Monitoring Monitor, follow the steps given below:

1. Click on New **Monitor** link. Choose Service Monitoring.
2. Enter the IP Address or hostname in which the Monitor is running.
3. Enter the SubNetMask of the network.
4. Enter the port number in which the service you want to monitor is running.
5. Enter the polling interval time in minutes.
6. If you are adding a new monitor from an Admin Server, select a Managed Server.
7. Enter the command that will be executed after connecting to the port mentioned above. For example, if the port added is where your web server is running , then you can give the command as GET / HTTP1.0 . This will get the index page of the web server.
8. Enter the string that has to be searched after executing the command.
9. Choose the Monitor Group from the combo box with which you want to associate Service Monitoring Monitor (optional). You can choose multiple groups to associate your monitor.
10. Click Add Monitor(s). This discovers the Service and starts monitoring them.

Service Monitoring	• Monitors different services running in particular/default ports such as FTP-21, Telnet-23 etc running in the network. • Connects to the server configured for monitoring. • Checks **availability** and the **response time** of the service. Here, the response time is the time taken to connect to the port, execute the given command and search the string.

SNMP

To create a SNMP Monitor, follow the steps given below:

1. From the **Admin tab**, select **New Monitor** from the **Discovery and Data Collection** panel.
2. Choose the '**SNMP/Network Device**' option from '**Add Monitor of type**' drop down list.
3. Enter the **Display Name & IP Address/hostname** of the system where the monitor is running.
4. Enter the **SubNetMask** of the network. In case of multiple system IP addresses configured with single DNS name , then select the check-box in the Advanced option.
5. Enter the polling intervall time in minutes.
6. If you are adding a new monitor from an Admin Server, select a Managed Server.
7. Enter the **timeout value** in seconds.
8. Provide the **port number** in which SNMP service is running in the host (default port number is 161).
9. Choose SNMP version **V1/V2c** or **V3.**
10. To associate Monitor Instance to Monitor Group you select a monitor group from the default list or make a new monitor group by clicking "**Create New Monitor Group**".

For SNMP Version V1/V2c:

- Enter the **Community String** ('public' by default).
- To test the validity of the credentials entered for a particular host name click on '**Test Credentials**'.

For SNMP Version V3:

Select one of the three **Security Levels** in the drop-down list:

- **NoAuthNoPriv** - Messages can be sent unauthenticated and unencrypted. Enter a UserName and Context Name.

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- **AuthNoPriv** - Messages can be sent authenticated but unencrypted. Enter a UserName, Context Name and anAuthentication Password. You can select an Authentication Protocol like MD5 or SHA from the drop-down list.
- **AuthPriv** - Messages can be sent authenticated and encrypted. Enter a UserName, Context Name,an Authentication Password and a Privacy Password. You can select an Authentication Protocol like MD5 or SHA from the drop-down list. By default 'DES' encryption technique will be used.

Note: SMUX (tcp 199 port) is the snmp multiplexing protocol (RFC 1227). It can be used by an snmp agent to query variables maintained by another user-level process. For monitoring user-processes like kernel related details using the SNMP agent, you must install SMUX and register the mibs. If SMUX is implemented, by default, tcp port 199 should be open for connection.

SNMP	• Connects to SNMP agent running in an application and monitors the **availability** and **performance** of the service. You can also view the custom attributes of the SNMP agent in the same page. For information on adding Custom Monitors, refer to Custom Monitors topic.

Telnet

To create a Telnet Monitor, follow the steps given below:

1. Click on New **Monitor** link. Choose Telnet.
2. Enter the IP Address or hostname of the host in which the Monitor is running.
3. Enter the SubNetMask of the network.
4. Provide the port number in which the monitor is running.
5. Enter the polling intervall time in minutes.
6. If you are adding a new monitor from an Admin Server, select a Managed Server.
7. Choose the Monitor Group from the combo box with which you want to associate Telnet Monitor (optional). You can choose multiple groups to associate your monitor.
8. Click Add Monitor(s). This discovers the telnet from the network and starts monitoring them.

Telnet	• Connects to Telnet port (default 23)and checks its **availability**. • Monitors **response time** and updates the status based on a given threshold.

DNS Monitor

To create an DNS Monitor, follow the given steps:

1. Click on New **Monitor** link. Choose **DNS Monitor** under **Services** category.
2. Enter the DisplayName of the host in which the monitor is running.
3. Enter the **Target Address**.
4. Enter the **Lookup Address**.
5. Enter **Timeout** value in seconds.
6. Select the **Record Type** from the pull down menu.
7. Select the **Search Field** from the drop-down box.
8. Enter **Search Value**.
9. Provide the Polling interval for monitoring the DNS montior.
10. If you are adding a new monitor from an Admin Server, select a Managed Server.
11. Choose the Monitor Group from the combo box to which you want to associate the Monitor (optional). You can choose multiple groups to associate your monitor.
12. Associate the monitor instance to the agent.
    1. Enable **Run on Server** option to run the DNS monitor in the local instance of Applications Manager.

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2. Enable **Run on Agent** option to run the DNS monitor from multiple locations. Select the necessary agents from where you want this monitor to be executed. This option will be available only if you enable the EUM add-on.
13. Click Add Monitor(s). This discovers the Monitor from the network and starts monitoring them.

DNS Monitor	Monitors the **availability** and **performance** of DNS monitors. It also monitors individual attribute of DNS monitor such as Response Time, Record Type, Record Available, Search Field, Search Value, Search Value Status and Search Time.

FTP/SFTP Monitor

To create an FTP/SFTP Monitor, follow the given steps:

1. Click on New **Monitor** link. Choose **FTP/SFTP** under **Services** .
2. Enter the Display Name for the Monitor.
3. Enter the **Target Address** to connect FTP/SFTP.
4. If Authentication is enabled, enter the **Username** and **Password**.
5. Enter **Port No**. (Default port number for FTP is 21 and 22 for SFTP)
6. Enter **Time Out** value.
7. Select the option **YES** or **NO** to indicate whether FTP is secure or not.
8. If you would like to monitor the downloads (mget) through FTP/SFTP while simulateneously downloading the file, select the option **YES** else select **NO**.
9. If the above option is **YES**, then enter the **Remote Src. FileName** (Remote Source FileName) located in the target address.
10. Enter the **Local Dest. FileName** (Local Desitnation FileName) with full path. The file will download in the given path where the Applications Manager is running.
11. If you would like to upload a file to target address, Select **Upload File** option as **YES** else select **NO**.
12. If YES, enter the **Local Src. FileName** (Local Source FileName) with full path. The file must be available where the Applications Manager is running.
13. Enter the **Remote Dest. FileName** (Remote Destination FileName) with full path where the file will be downloaded in the target address.
14. Provide the **Polling interval** for monitoring the FTP/SFTP montior.
15. If you are adding a new monitor from an Admin Server, select a Managed Server.
16. Choose the **Monitor Group** from the combo box to which you want to associate the Monitor (optional). You can choose multiple groups to associate your monitor.
17. Click Add Monitor(s). This discovers the Monitor from the network and starts monitoring them.

FTP/SFTP Monitor	Monitors the **availability** and **performance** of FTP/SFTP monitor. In addition, it monitors Connection Time, Login Time, File Transfer, File Transfer Speed, Full Transaction and Files & Directories located in the Home Directory. **Connection Time:** Time taken by Applications Manager to connect to FTP server. **Login Time:** Time taken by Applications Manager to login to FTP server. **File Transfer:** It is the time taken for a file to either upload (mput) or download (mget) to a FTP server. In addition, the file size is also monitored while being uploaded or downloaded. **File Transfer Speed:** It is the time taken by a particular file transfered to (mput) or from (mget) a FTP server. **Full Transaction:** This provides the number of uploads/downloads that was completed correctly. **Files & Directory (Home Directory):** This provides the number of files and directories that were present in the FTP server.

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LDAP Monitor

To create an LDAP Monitor, follow the given steps:

1. Click on New **Monitor** link. Choose **LDAP** under **Services** .
2. Enter the Display Name for the monitor.
3. Enter the **LDAP Server** and **LDAP Server Port** of the server wherein the services are running.
4. If Authentication is enabled, enter the **Username** and **Password**. If no username and password is provided, then it will connect to LDAP server as anonymous login.
5. Enter the **Searchbase** value.
6. Enter the **Searchfilter** value.
7. Select the **Matching Attribute** from the pull down menu.
8. Select the **Filter Condition** from the pull down menu.
9. Enter the **Search Result** string value which will match with search results.
10. Enter the **Timeout** period which will be used to establish connection with the LDAP server.
11. Click **YES** or **NO** option to check if the connection is secured. If **YES** (to enable SSL mode), then import the certificate of LDAP server into Applications Manager. Please follow the steps (given below) provided to import the LDAP certificate into Applications Manager Truststore.truststore. Once the procedure is complete, restart Applications Manager.
12. Provide the **Polling interval** for monitoring the LDAP montior.
13. If you are adding a new monitor from an Admin Server, select a Managed Server.
14. Choose the **Monitor Group** from the combo box to which you want to associate the Monitor (optional). You can choose multiple groups to associate your monitor.
15. Click Add Monitor(s). This discovers the Monitor from the network and starts monitoring them.

Note: To import certificate into Applications Manager, execute the following command:

<Applications_Manager_Home>/working/jre/bin/keytool -import -keystore <Applications_Manager_Home>/working/conf/Truststore.truststore -storepass appmanager -trustcacerts -alias <alias_name> -file <ldap_certificate_file_path>

<Applications_Manager_Home> - Applications Manager installed home directory

<alias_name> - Provide an alias name for the LDAP certificate

<ldap_certificate_file_path> - Provide absolute path to the LDAP certificate

appmanager - This is the password for the LDAP certificate. Ensure that you do not change the password.

LDAP Monitor monitors the **availability** and **performance** of LDAP server. It monitors the Login Time attribute - the time taken for a user to log in to the LDAP server. In addition, it also monitors Search Details and Search Results Details.
The 'Search Details' section displays the time taken for a search to execute and the total response time. The **total response time**is the login time plus the time taken for a search in the LDAP server.
The 'Search Results Details' displays the search result row count which displays the total rows returned after a search was executed and the search result matching details which displays whether it was a success or a failure.

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Active Directory

To create an Active Directory Monitor, follow the given steps:

1. Click on New **Monitor** link. Choose **Active Directory** under **Services** .
2. Enter the DisplayName of the host in which the Monitor is running.
3. Enter the **HostName** on which the monitor is running.
4. If Authentication is enabled, enter the **Username** and **Password**.
5. Provide the Polling interval for monitoring the Active Directory montior.
6. If you are adding a new monitor from an Admin Server, select a Managed Server.
7. Choose the Monitor Group from the combo box to which you want to associate the Monitor (optional). You can choose multiple groups to associate your monitor.
8. Click Add Monitor(s). This discovers the Monitor from the network and starts monitoring them.

Note: Kindly ensure that for User accounts, relevant privileges must be provided before creating Active Directory monitor. If you have added Monitors and not associated them with a Monitor Group, you can do this manually anytime. For information on associating a Monitor with a Monitor Group, refer to Associating Monitor with Monitor Groups topic.

Active Directory Monitor connects to the Active Directory server and checks its **availability**. Active Directory Counters that are monitored by Applications Manager are given below.

Parameters	Description
Network Monitors	
AB Client Sessions	AB Client Sessions is the number of connected Address Book client sessions.
DS Notify Queue Size	The number of pending update notifications that have been queued, but not yet transmitted to clients
Database Monitors	
Database Disk Free Space	Shows the percentage of the total usable space on the selected logical disk drive that was free
Database File Size	Shows the DataFile Size in bytes.
Database Disk Total Size	Shows the Total Size of the disk drive
NTFRS Process Monitors	
NTFRS CPU Usage	Percentage of elapsed time that all of the threads of NTFRS process used the processor to execute instructions. An instruction is the basic unit of execution in a computer, a thread is the object that executes instructions, and a process is the object created when a program is run. Code executed to handle some hardware interrupts and trap conditions is included in this count.
NTFRS Handle Count	Total number of handles the NTFRS process has open. This number is the sum of the handles currently open by each thread in the process.
NTFRS Process File Reads	Rate at which the NTFRS process is reading bytes from I/O operations. This property counts all I/O activity generated by the NTFRS process to include file, network, and device I/Os.
NTFRS Process File Writes	Rate at which the NTFRS process is writing bytes to I/O operations. This property counts all I/O activity generated by the NTFRS process to include file, network, and device I/Os
NTFRS Process Memory	Amount of memory in bytes that a NTFRS process needs to execute efficiently—for an operating system that uses page-based memory management. If the system does not have enough memory (less than the working set size), thrashing occurs. If the size of the working set is not known, use NULL or 0 (zero).
System Monitors	
CPU Utilization	Percentage of time that the processor is executing a non-idle thread. This property was designed as a primary indicator of processor activity. It is calculated by measuring the time that the processor spends executing the thread of the idle process in each sample interval and subtracting that value from 100%.
Disk Utilization	It is calculted as follows ((size-freesize)/size)*100 where size-----It is the total Size of the disk drive on Logical Disk freesize---Space, in bytes, available on the logical disk
Memory Utilization	It is calculated as follows ((TotalVisibleMemorySize- FreePhysicalMemory)/TotalVisibleMemorySize)*100 where TotalVisibleMemorySize- Total amount, in kilobytes, of physical memory available to the operating system. This value does not necessarily indicate the true amount of physical memory, but what is reported to the operating system as available to it. FreePhysicalMemory- Number, in kilobytes, of physical memory currently unused and available.
Number of Processes	Number of process contexts currently loaded or running on the operating system.
OS Processor Queue Length	Number of threads in the processor queue. There is a single queue for processor time even on computers with multiple processors. Unlike the disk counters, this property counts ready threads only, not threads that are running.

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Performance Counter Monitors	
DS Client Binds	Shows the number of Ntdsapi.dll binds per second serviced by this domain controller.
DS Server Binds Per Sec	Shows the number of domain controller–to–domain controller binds per second that are serviced by this domain controller.
Directory Reads Per Sec	Shows the number of directory reads per second.
Directory Writes Per Sec	Shows the number of directory writes per second.
NTLM Authentications	Shows the number of NTLM authentications per second serviced by this domain controller.
Kerberos Authentications	Shows the number of times per second that clients use a ticket to this domain controller to authenticate to this domain controller.
LSASS Process Monitors	
LSASS CPU Usage	Percentage of elapsed time that all of the threads of LSASS process used the processor to execute instructions. An instruction is the basic unit of execution in a computer, a thread is the object that executes instructions, and a process is the object created when a program is run. Code executed to handle some hardware interrupts and trap conditions is included in this count.
LSASS Handle Count	Total number of handles the LSASS process has open. This number is the sum of the handles currently open by each thread in the LSASS process.
LSASS Process File Reads	Rate at which the LSASS process is reading bytes from I/O operations. This property counts all I/O activity generated by the LSASS process to include file, network, and device I/Os.
LSASS Process File Writes	Rate at which the LSASS process is writing bytes to I/O operations. This property counts all I/O activity generated by the LSASS process to include file, network, and device I/Os
LSASS Process Memory	Amount of memory in bytes that a LSASS process needs to execute efficiently—for an operating system that uses page-based memory management. If the system does not have enough memory (less than the working set size), thrashing occurs. If the size of the working set is not known, use NULL or 0 (zero).
LDAP Stats	
LDAP Active Threads	Shows the current number of threads in use by the LDAP subsystem of the local directory service.
LDAP Bind Time	Shows the time, in milliseconds, taken for the last successful LDAP bind.
LDAP Client Sessions	Shows the number of currently connected LDAP client sessions
LDAP Searches Per Sec	Shows the rate at which LDAP clients perform search operations
LDAP UDP operations Per Sec	Shows the number of User Datagram Protocol (UDP) operations that the LDAP server is processing per second.
LDAP Writes Per Sec	Shows the rate at which LDAP clients perform write operations.
Replication Stats	
Replication Objects Applied Per Sec	Shows the rate at which replication updates received from replication partners are applied by the local directory service. This counter excludes changes that are received but not applied
Replication Objects Remaining	Shows the number of object updates received in the current directory replication update packet that have not yet been applied to the local server.
Total Replication Objects In /Sec	Shows the number of objects received from neighbors through inbound replication. A neighbor is a domain controller from which the local domain controller replicates locally.
Total Replication Objects Out /Sec	Shows the number of objects replicated out.
Replication Traffic In	Shows the total number of bytes replicated in. This counter is the sum of the number of uncompressed bytes (never compressed) and the number of compressed bytes (after compression).
Replication Traffic Out	Shows the total number of bytes replicated out. This counter is the sum of the number of uncompressed bytes (never compressed) and the number of compressed bytes (after compression)
Active Directory Services	
Kerberos Key Distribution Center Service	The Kerberos Key Distribution Center (KDC) is a network service that supplies session tickets and temporary session keys to users and computers within an Active Directory domain. The KDC runs on each domain controller as part of Active Directory Domain Services (AD DS). .
Server Service	This service enables the computer to connect to other computers on the network based on the SMB protocol
Net Logon Service	This service supports pass-through authentication of account logon events for computers in a domain
Workstation Service	This service enables the computer to connect to other computers on the network based on the SMB protocol.
Remote Procedure Call (RPC) Service	This service provides the name services for RPC clients.
Security Accounts Manager Service	This service signals other services that the Security Accounts Manager subsystem is ready to accept requests.
File Replication Service	This service maintains file synchronization of file directory contents among multiple servers
DNS Client Service	This service resolves and caches (Domain Name Server) DNS names.
Intersite Messaging Service	This service is used for mail-based replication between sites. Active Directory includes support for replication between sites by using SMTP over IP transport.

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Windows Time service	The service synchronizes the time between domain controllers, which prevents time skews from occurring.

Replication Statistics

Replication is the process of sending *update information* for data that has changed in the directory to other domain controllers. It is important to have a firm understanding of replication and how it takes place, both within the domain and in multiple-site environments.

Monitoring for Active Directory Replication **-** If there are two or more domain controllers,that are replicating changes to each other, the replication statistics information will be displayed in the **Replication Statistics tab.** In a Single-Domain-controller setup,no replication stats will be shown.

Parameters	Description
Domain Controller	
Domain Controller Site	The Site that the host domain controller resides in.
Is Global Catalog Server	Provides a value of true / false. True,if the domain controller is a global catalog server.
Percent of RIDs Left	The percentage of Relative Identifiers left in RID Pool.
Pending Replication Operations	The count of Pending Replication Operations.
Replication Partners	
Partition Name	DN of the Naming Context(Partition) for which the partners replicate.
Source DC	CN of directory system agent (DSA) that represents the source domain controller (DC).
Source DC Domain	The canonical name of the domain of the replicated NC.
Source DC Site	The site that contains the source DC.
Time of Last Sync Attempt	The timestamp for the last replication attempt.
Time of Last Sync Success	The timestamp for the last successful replication attempt.
Consecutive Failure Count	The number of consecutive failed replication attempts.
Last Sync Result	Values can be Success or Failed.
Pending Replications	
Partition Name	The X.500 path of the naming context (NC) that is associated with this operation.
Source DC	CN of directory system agent (DSA) that represents the source domain controller (DC).
Time Enqueued	The time at which this operation was added to the queue.
Operation Start Time	The time when the operation was started.NULL if operation is still in Queue.
Position in Queue	The position of this operation in the queue.

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Apache Zookeeper Monitoring

- Apache Zookeeper - An Overview
- Monitoring Apache Zookeeper - What we do.
- Adding a new Apache Zookeeper monitor / Using AddMonitor API
- Monitored Parameters

Apache Zookeeper - An Overview

Apache Zookeeper is an open-source server that reliably coordinates distributed processes and applications. It allows distributed processes to coordinate with each other through a shared hierarchal namespace which is organized similarly to a standard file system. ZooKeeper server maintains configuration information, naming, providing distributed synchronization, and providing group services, used by distributed applications.

Monitoring Apache Zookeeper - What we do.

Apache Zookeeper provides a hierarchical file system (with ZNodes as the system files) that helps with the discovery, registration, configuration, locking, leader selection, queueing, etc of services working in different machines. Applications Manager aims to help administrators manage their Zookeeper server, collect all the metrics that can help when troubleshooting and be alerted automatically of potential issues. Let’s take a look at what you need to see to monitor Zookeeper and the performance metrics to gather with Applications Manager:

- **Resource utilization details -** Automatically discover Zookeeper Clusters, monitor memory (heap and non-heap) on the znode get alerts of changes in resource consumption.
- **Thread and JVM usage** - Track thread usage with metrics like Daemon, Peak and Live Thread Count. Ensure that started threads don’t overload the server's memory.
- **Performance Statistics** - Gauge the amount of time it takes for the server to respond to a client request, queued requests and connections in the server and performance degradation due to network usage (client packets sent and recieved).
- **Cluster and Configuration details -** Track the number of Znodes, the watcher setup over the nodes and the number of followers within the ensemble. Keep an eye on the leader selection stats and client session times.
- **Fix Performance Problems Faster -** Get instant notifications when there are performance issues with the components of Apache Zookeeper. Become aware of performance bottlenecks and take quick remedial actions before your end users experience issues.

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Apache Zookeeper - Adding a new monitor

Supported versions: 3.4.9

Prerequisites for monitoring Apache Zookeeper:

- Remote JMX should be enabled.
- To ensure that please open the ZKServer file under bin folder and check the below following:

  1) JMXPORT =**<PORT NO>**

  2) ZOOMAIN="-Djava.rmi.server.hostname=**<IP address >** -Dcom.sun.management.jmxremote -Dcom.sun.management.jmxremote.port=$JMXPORT -Dcom.sun.management.jmxremote.authenticate=$JMXAUTH -Dcom.sun.management.jmxremote.ssl=$JMXSSL -Dzookeeper.jmx.log4j.disable=$JMXLOG4J

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org.apache.zookeeper.server.quorum.QuorumPeerMain"

Note: Replace <PORT NO> with JMXPORT and <IP address > with IP address of the machine.

Steps to create a new monitor

- To create an Apache Zookeeper Monitor, follow the steps given below:
  - Click on New Monitor link. Choose **Apache Zookeeper.**
  - Enter **Display Name** of the monitor.
  - Enter the IP Address or hostname of the host where zookeeper server runs.
  - Enter the **JMX Port** of the Zookeeper server. By default, it will be 7199. Or Check in zkServer.sh file for the JMX_PORT.
  - To discover only this node and not all nodes in the cluster disable the option **Discover all nodes in the Cluster**. By default, it is enabled which means all the nodes in the cluster are discovered by default.
  - Enter the credential details like **user name, password** and **JNDIPath** or select credentials from a **Credential Manager list**.
  - Check **Is Authentication Required** field to give the jmx credentials to be used to connect to the Zookeeper server..
  - Enter the polling interval time in minutes.
  - Click Test Credentials button, if you want to test the access to Apache Zookeeper Server.
  - Choose the Monitor Group from the combo box with which you want to associate Apache Zookeeper Monitor (optional). You can choose multiple groups to associate your monitor.
  - Click Add Monitor(s). This discovers Apache Zookeeper from the network and starts monitoring.

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Use the AddMonitor API to add an Apache Zookeeper monitor:

Syntax:

```
http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=Zookeeper&displayname=Zookeeper&host=[Host Name]&port=[Port Number]&discoverclusternodes=[non mandatory column, if given the value should be 'Yes']&authReq=[non mandatory column, if given the value should be 'true']&username=[username]&password=[password]
```

Request Parameter:

The parameters involved in the API request are described below.

Field	Description
type	The type of the Service you want to add. Value should be Zookeeper.
host	The name of the host in which Zookeeper is running.
port	The port number where Zookeeper is running.
username	The name of the user who has permission to access the Zookeeper.
password	The password of the user who has permission to access the Zookeeper.
discoverclusternodes	Specifies if the Cluster Nodes must be discovered. Value can be YES/NO. This column is not mandatory.
authReq	Specifies if authentication is required. Value can be true/false.

Sample Request

```
http://prod-server3:9090/AppManager/xml/AddMonitor?apikey=849c51ce33436587873a08d69d5447fc&type=Zookeeper&displayname=Zookeeper&host=172.20.7.36&port=7199&username=&password=123
```

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Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **Apache Zookeeper** under the **Services** Table. Displayed is the Apache Zookeeper bulk configuration view distributed into three tabs:

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- **Availability tab** gives the Availability history for the past 24 hours or 30 days.
- **Performance tab** gives the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

Click on the monitor name to see all the server details listed under the following tabs:

- Overview
- Performance
- InMemory Data Tree
- Cluster Details
- Configurations

Overview

PARAMETER	DESCRIPTION
LEADER ELECTION STATUS	
Replica Name	The shard replica name.
State	The serving mode: leader, follower,Leader Election or standalone if not running in an ensemble.
Election in Progress	Indicates whether election is in progress or not. Values can be YES or NO.
Election Start Time	The time of start of leader elections.
MEMORY DETAILS	
Total Physical Memory Size	The total size of physical memory that is available for the Zookeeper for its operations and storage.
Free Physical Memory Size	The total size of physical memory that is free and available for the Zookeeper clusters and nodes.
Committed Virtual Memory Size	The total size of virtual memory that is currently occupied by the corresponding Zookeeper nodes.
Total Swap Space Size	The total size of the swap space that is available for swapping when the virtual memory reaches the limit.
Free Swap Space Size	The free swap space size that is available for swapping when the virtual memory reaches the limit.
THREAD DETAILS	
Daemon Thread Count	The number of daemon threads that are running. A daemon thread is a thread that does not prevent the JVM from exiting when the program finishes, even if the thread is still running.
Peak Thread Count	The maximum thread count since JVM start.
Live Thread Count	The current number of live threads (daemon and non-daemon) on the node.
Total Started Thread Count	The total number of started threads.
HEAP MEMORY DETAILS	
Committed Heap Memory	The total amount of committed heap memory.
Initial Heap Memory	The Minimum heap memory allocated.
Maximum Heap Memory	The maximum heap memory that the Zookeeper can use.
Used Heap Memory	The total used heap memory.
NON-HEAP MEMORY DETAILS	
Committed Non-Heap Memory	The total amount of committed non-heap memory.
Initial Non-Heap Memory	The Minimum Non-Heap memory allocated.
Maximum Non-Heap Memory	The maximum non-heap memory that the Zookeeper can use.
Used Non-Heap Memory	The total used non-heap memory.

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Performance

PARAMETERS	DESCRIPTION
PACKETS STATISTICS	
Packets Received/Min	The number of packets received. (Rate per minute)
Packets Sent/Min	The number of packets sent. (Rate per minute)
LATENCY	
Minimum Request Latency	The minimum amount of time it takes for the server to respond to a client request (since the server was started). The unit of the time is milliseconds.
Average Request Latency	The average time it takes for the server to respond to a client request (since the server was started). The unit of the time is milliseconds.
Maximum Request Latency	The maximum amount of time it takes for the server to respond to a client request (since the server was started). The unit of the time is milliseconds.

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PARAMETERS	DESCRIPTION
NUMBER OF CONNECTIONS ALIVE	
Number of Connections Alive	The number of live connections.
NUMBER OF OUTSTANDING REQUESTS	
No of Outstanding Requests	The number of queued requests in the server. This goes up when the server receives more requests than it can process.

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InMemory Data Tree

PARAMETER	DESCRIPTION
NODE COUNT	
Node Count	The number of nodes in the Zookeeper.
WATCH COUNT	
Watch Count	The number of watchers setup over Zookeeper nodes.
EPHEMERAL NODE COUNT	
Ephemeral Node Count	The number of Ephemerals nodes.
APPROXIMATE DATA SIZE	
Approximate Data Size	The size of the data used. (in bytes).

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Cluster Details

PARAMETER	DESCRIPTION
NODE COUNT	
Node Count	The number of znodes in the Zookeeper cluster.
WATCH COUNT	
Watch Count	The number of watchers setup over Zookeeper nodes.
EPHEMERAL NODE COUNT	
Ephemeral Node Count	The number of ephemeral nodes. *(*Ephemeral *nodes* in Apache ZooKeeper are great for transient data: These znodes exists as long as the session that created the znode is active.)
APPROXIMATE DATA SIZE	
Approximate Data Size	

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Configuration

PARAMETER	DESCRIPTION
ZOOKEEPER CONFIGURATION DETAILS	
Replica Name	
State	
Client Port	The port to listen for client connections.
Init Limit	The amount of time, in ticks (see Tick Time), to allow followers to connect and sync to a leader. Increased this value as needed, if the amount of data managed by ZooKeeper is large.
Max Client Connections Per Host	The maximum number of concurrent connections (at the socket level) that a single client, identified by IP address.
Max Session Timeout	The maximum session timeout in milliseconds that the server will allow the client to negotiate. Defaults to 20 times the Tick time.
Min Session Timeout	The minimum session timeout in milliseconds that the server will allow the client to negotiate. Defaults to 2 times the Tick Time.
Quorum Address	A replicated group of servers in the same application is called a *quorum*, and in replicated mode, all servers having quorum address to contact the each other.
Zookeeper Start Time	The time of start of the Zookeeper.
Sync Limit	The amount of time, in ticks (see Tick Time), to allow followers to sync with ZooKeeper. If followers fall too far behind a leader, they will be dropped.
Tick	The length of a single tick, which is the basic time unit used by ZooKeeper, as measured in milliseconds.
Tick Time	The length of a single tick, which is the basic time unit used by ZooKeeper, as measured in milliseconds. It is used to regulate heartbeats, and timeouts. For example, the minimum session timeout will be two ticks.
Version	The version of the zookeeper installed.
CONFIGURATION DETAILS	
VM Name	The Java virtual machine name.
Boot Class Path	The boot class path that is used by the bootstrap class loader to search for class files.

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PARAMETER	DESCRIPTION
VM Vendor	The Java virtual machine implementation vendor.
Class Path	The Java class path that is used by the system class loader to search for class files.
Spec Vendor	The vendor of the JMX specification implemented by this product.
Spec Version	The version of the JMX specification implemented by this product.

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Ceph Storage Monitoring

Ceph is an open source software platform designed to provide highly scalable object, block and file-based storage from a single distributed computer cluster. Ceph's main goals are to be completely distributed without a single point of failure, scalable to the exabyte level, and freely-available. Applications Manager's Ceph storage monitors the performance and helps you maintain the overall health of your distributed Ceph cluster, ensures the availability of OSD nodes, proactively tracks the status of Placement Groups and storage availability.

Ceph Monitor

Ceph Storage Versions Supported: v0.66 and above (We use ceph status command and get the output in Json format.Returning the output in Json is supported from Ceph release v0.66)
Prerequisites for monitoring Ceph Storage Clusters: To collect performance stats of Ceph Storage Monitor a user should be given read privileage to ceph.keyring file. Read More.
Attributes Monitored: Refer Ceph Storage Parameters to know more about the attributes monitored.
To create a Ceph Storage monitor, follow the steps given below:

1. Specify the **Display Name** of the Ceph Storage monitor.
2. Enter the **HostName** or **IP Address** of the host where the Ceph storage cluster runs.
3. Specify the **command prompt value**, which is the last character in your command prompt. Default value is $ and possible values are >, #, etc.
4. Enter the **Username** and **Password**
5. Provide the **Polling interval** for monitoring the Ceph Storage montior.
6. If you are adding a new monitor from an Admin Server, select a Managed Server.
7. Choose the Monitor Group from the combo box to which you want to associate the Monitor (optional). You can choose multiple groups to associate your monitor.
8. Click Add Monitor(s). This discovers the Monitor from the network and starts monitoring them.

Ceph Server - Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **Ceph Storage** under the **Services** Table. Displayed is the Ceph Storage bulk configuration view distributed into three tabs:

- **Availability** tab, gives the Availability history for the past 24 hours or 30 days.
- **Performance** tab gives the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

Click on the monitor name to see all the server details listed under the following tabs:

- Performance Overview
- Monitor Details
- Storage Availability

Performance Overview

Parameter	Description
PG Status	

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PGS (Placement groups)	The number of Placement Group.
Active PGs	The total number of Active Placement Groups. (Ceph processes requests to the placement group.)
Active+Clean PGs	The total number of Active and Clean Placement Groups. • Active PGs - Ceph processes requests to the placement group. • Clean PGs - Ceph replicates all objects in the placement group the correct number of times.
Active+Remapped PGs	The total number of Active and Remapped Placement Groups. • Active PGs - Ceph processes requests to the placement group. • Remapped PGs - The placement group is temporarily mapped to a different set of OSDs from what CRUSH specified.
Active+Degraded PGs	The total number of Active and Degraded Placement Groups. • Active PGs - Ceph processes requests to the placement group. • Degraded PGs - Ceph has not replicated some objects in the placement group the correct number of times yet.
Down+Remapped+Peering	The total number of Down, Remapped and Peering Placement Groups. • Down PGs - A replica with necessary data is down, so the placement group is offline. • Remapped PGs - The placement group is temporarily mapped to a different set of OSDs from what CRUSH specified. • Peering PGs - The placement group is undergoing the peering process.
Active+Clean+Scrubbing+Deep	The total number of Active, Clean, Scrubbing and Deep Placement Groups. • Active PGs - Ceph processes requests to the placement group. • Clean PGs - Ceph replicates all objects in the placement group the correct number of times. • Scrubbing PGs - Ceph is checking the placement group for inconsistencies. • Deep PGs - Ceph automatically takes care of deep-scrubbing all placement groups periodically.
Down	The number of replica placement groups where the necessary data is down, so the placement group is offline.
Degraded	The number of placement groups, that has not replicated some objects in the placement group the correct number of times.
Peering	The number of placement groups undergoing the peering process.
Incomplete	The number of placement groups in Incomplete state i.e PGs with missing information about writes that may have occurred, or does not have any healthy copies.
Stale	The number of placement groups in an unknown state - the monitors have not received an update for it since the placement group mapping changed.
OSD Status	
OSDS	Number of OSDS Present.
OSDUP	Number of OSDs up and running.
OSDIN	Number of OSDs in the cluster.
OSDOUT	Number of OSDs out of the cluster.
OSDs In and Down	If an OSD is down and in, there is a problem and the cluster will not be in a healthy state.This attribute will capture the number os OSDs In and Down
FULL	Is the OSD Full.
NEARFULL	Is the OSD reaching near full.
Time Checks	
Monitor Name	The name of the monitor in the cluster.
Severity	The health severity message of the monitor.

Monitor Details

Parameter	Description
Monitor Health Summary	
Monitor Name	Name of the monitor.
Total (GB)	The total disk memory in GB.
Used (GB)	The total used memory in GB.
Available(GB)	The available free memory in GB.
Available In (%)	The percentage of available free memory.
Last Updated	The last time of Monitor status updated.
Severity	The health severity of the monitor.
Rank	Rank of the Ceph monitor in the Cluster. Ranks are (re)calculated whenever you add or remove a monitor (Lower the value, higher the rank). Ceph monitor with lowest value will be the lead or admin, clients will try to connect to the lead first and when lead is down, clients connect to the next rank monitor.

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Monitor address	The address required for monitors to discover each other using the monitor map.

Storage Availability

Parameter	Description
Read Bytes	The rate of bytes read per sec.
Write Bytes	The rate of bytes written per sec.
Data Size	The total storage data size in GB.
Total Bytes	The total storage space available in GB.
Available	The total free storage space available in GB.
Used	The total amount of used storage space in GB.
Available %	The percentage of free storage space.
Used %	The percentage of used storage space.

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Hadoop Monitoring

Hadoop is an open source software framework designed for distributed storage and distributed processing of big data (very large data sets). Hadoop's primary architecture mainly consists of a storage part and a processing part. Hadoop splits files into large blocks and distributes them amongst the nodes in the cluster. The processor part of Hadoop transfers tasks to nodes for processing in parallel, thus taking advantage of data locality (nodes manipulating data they have on hand), for faster and efficient processing. Applications Manager's Hadoop Monitor provides monitoring for both versions of Hadoop i.e. Hadoop 1.x and Hadoop 2.x and helps you maintain the overall health of your distributed Hadoop cluster, ensures their availability and processes tasks faster and accurately.

To create a Hadoop monitor, follow the steps given below:

1. Click on **New Monitor** link and select **Hadoop** under **Services**.
2. Enter a **Display Name** for the monitor.
3. Choose the **Mode of Monitoring**.

For **REST API** mode:

1. Specify the **Version** of Hadoop to be monitored.
2. Specify the **host** of the **NameNode**.
3. Specify the **web port** of the **NameNode.**
4. Choose **YES** or **NO** to ensure SSL is enabled or not.
5. Select **Authentication type**. If you select **Simple Authentication**, specify a **username**.
6. Specify the name of the **ResourceManager host.**
7. Specify the name of the **ResourceManager web port.**
8. Again, choose **YES** or **NO** to ensure SSL is enabled or not.
9. Again, select **Authentication type**. If you select **Simple Authentication**, specify a **username**.
10. Specify a duration for **Polling Interva**l.
11. Choose the Monitor Group from the combo box to which you want to associate the Monitor(optional). You can choose multiple groups to associate your monitor.
12. Click Add Monitor(s). This discovers the Monitor from the network and starts monitoring them.

For **JMX** mode:

1. Specify the **Version** of Hadoop to be monitored.
2. Specify the **host** of the **NameNode.**
3. Specify the **JMX port** of the **NameNode.**
4. Enter a **Username** and **Password**.
5. Enter a **JNDIPath** for the **NameNode**.
6. Specify the name of the **ResourceManager host.**
7. Specify the name of the **ResourceManager JMX port.**
8. Enter a **Username** and set a **Password**.
9. Set a ResourceManager **JNDIPath**.
10. Set the duration for **Polling Interval**.
11. Choose the Monitor Group from the combo box to which you want to associate the Monitor(optional). You can choose multiple groups to associate your monitor.
12. Click Add Monitor(s). This discovers the Monitor from the network and starts monitoring them.

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Hadoop Server - Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **Hadoop** under the **Services** table. Displayed is the Hadoop bulk configuration view distributed into three tabs:

- **Availability** tab, gives the availability history for the past 24 hours or 30 days.
- **Performance** tab gives the health status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

Click on the monitor name to see all the server details listed under the following tabs.

Hadoop Version 1.x	Hadoop Version 2.x
• Overview • HDFS • Mapreduce • Job	• Overview • HDFS • YARN • Applications

Hadoop 1.x

Overview:

SAFEMODE	
Safemode status	Safemode status Possible values: -Operational -Safemode
DFS	
Total DFS Capacity (in GB)	Total capacity of the HDFS .
NonDFS Used Space (in GB)	Used memory of the HDFS which is not done using DFS commands.
DFS Used Space (in GB)	Used memory of the HDFS which is done using DFS commands.
DFS Used (in %)	Percentage of HDFS memory used.
DFS Free Space (in GB)	Free memory of the HDFS.
DFS Free (in %)	Percentage of free memory in HDFS.
BLOCKS	
Block Capacity	Total block capacity of Hadoop.
Total Blocks	Total number of blocks in Hadoop.
Missing Blocks	Number of missing blocks in Hadoop.
Corrupt Blocks	Number of corrupt blocks in Hadoop.
Excess Blocks	Number of excess blocks in Hadoop.
UnderReplicated Blocks	Number of under replicated blocks in Hadoop.
Pending Deletion Blocks	Number of pending deletion blocks in Hadoop.
Pending Replication Blocks	Number of pending replication blocks in Hadoop.
FILES	
Total Files and Directories	Total number of file and directories in HDFS.
Files and Directories created per sec	Number of files and directories created per sec.
LOAD	
Total Load	Total load over the Hadoop service.

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HDFS:

NameNode JVM	
NonHeap Memory Committed	Total nonheap memory committed for usage currently.
NonHeap Memory Used	Currently used nonheap memory.
Heap Memory Commited	Total heap memory committed for usage currently.
Heap Memory Used	Currently used heap memory.
Namenode OS	
Total Physical Memory (in GB)	Total RAM of namenode.
Free Physical Memory (in GB)	Free RAM of namenode.
Total Swap Space (in GB)	Total swap space available in namenode OS.
Free Swap Space (in GB)	Free swap space available in namenode OS.
Maximum File Descriptor Count	Total file descriptor capacity.
Open File Descriptor Count	Number of file descriptor in open state.
Average System Load	Average load in namenode OS.
DataNodes	
Node Name	Name of the datanode
State	Current state of namenode: • Live • Dead • Decommissioned
Used Space (in GB)	Used space in HDFS.

MapReduce:

Tracker Summary	
Total TaskTracker	Total number of tasktracker.
Alive Tasktracker	Number of tasktracker in alive state.
Blacklisted TaskTracker	Number of tasktracker in blacklisted state.
Graylisted TaskTracker	Number of tasktracker in graylisted state.
Total Number of Jobs	Total number of job executed in mapreduce.
Slots Summary	
Total Map Slots	Total map slots capacity in mapreduce.
Used Map Slots	Number of map slots used currently.
Total Reduce Slots	Total reduce slots capacity in mapreduce.
Used Reduce Slots	Number of reduce slots used currently.
TaskTrackers	
TaskTracker Name	Name of the tasktracker
State	Current state of tasktracker: • Alive • Blacklisted • Graylisted • Dead
Health	Current health state of tasktracker: • OK • <health error message>
Failure Count	Number of failure in tasktracker.
Queue	
Queue Name	Name of the queue.
State	Current state of queue.

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Info	Any error information that is thrown from queue.

Job:

Jobs Summary	
Jobs Submitted	Number of jobs in submitted state.
Jobs Preparing	Number of jobs in preparing state.
Jobs Running	Number of jobs in running state.
Jobs Failed	Number of jobs in failed state.
Jobs Killed	Number of jobs in killed state.
Jobs Completed	Number of jobs in completed state.
Completed Percent (in %)	Percentage of completed jobs.
Killed Percent (in %)	Percentage of killed jobs.
Failed Percent (in %)	Percentage of failed jobs.
Jobs Stats (in last pillong interval)	
Submitted jobs count	Number of jobs submitted in last polling interval.
Failed jobs count	Number of jobs failed in last polling interval.
Killed jobs count	Number of jobs killed in last polling interval.
Completed jobs count	Number of jobs completed in last polling interval.

Hadoop 2.x

Overview:

SAFEMODE	
Safemode status	Safemode status Possible values: -Operational -Safemode
DFS	
Total DFS Capacity (in GB)	Total capacity of the HDFS .
NonDFS Used Space (in GB)	Used memory of the HDFS which is not done using DFS commands.
DFS Used Space (in GB)	Used memory of the HDFS which is done using DFS commands.
DFS Used (in %)	Percentage of HDFS memory used.
DFS Free Space (in GB)	Free memory of the HDFS.
DFS Free (in %)	Percentage of free memory in HDFS.
BLOCKS	
Block Capacity	Total block capacity of Hadoop.
Total Blocks	Total number of blocks in Hadoop.
Missing Blocks	Number of missing blocks in Hadoop.
Corrupt Blocks	Number of corrupt blocks in Hadoop.

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Excess Blocks	Number of excess blocks in Hadoop.
UnderReplicated Blocks	Number of under replicated blocks in Hadoop.
Pending Deletion Blocks	Number of pending deletion blocks in Hadoop.
Pending Replication Blocks	Number of pending replication blocks in Hadoop.
FILES	
Total Files and Directories	Total number of file and directories in HDFS.
Files and Directories created per sec	Number of files and directories created per sec.
LOAD	
Total Load	Total load over the Hadoop service.

HDFS:

DataNode Summary	
Live Datanodes	Number of datanode in live state.
Dead Datanodes	Number of datanode in dead state.
Live-Decommissioned Datanodes	Number of datanode in live but decommissioned.
Dead-Decommissioed Datanodes	Number of datanode in dead and decommissioned.
Decommissioning Datanodes	Numer of datanode in decommissioned state.
Stale Datanodes	Number of datanode in stale state.
Live Datanode Percent (in %)	Percentage of datanode in live state.
Dead Datanode Percent (in %)	Percentage of datanode in dead state.
DataNodes	
Node Name	Name of datanode.
State	Current state of the datanode: • Live • Decommission In Progress • Live - Decommissioned • Dead - Decommissioned • Dead
Total Capacity (in GB)	Total capacity of the HDFS.
NonDFS Used (in GB)	Amount of memory used in HDFS by non- HDFS commands.
DFS Used (in GB)	Amount of memory used in HDFS by HDFS commands.
DFS Used Percent (in %)	Percentage of memory used in HDFS by HDFS commands
DFS Free (in GB)	Amount of memory free in HDFS.
DFS Free Percent (in GB)	Percentage of memory free in HDFS.

YARN:

NodeManger Summary	
Active NodeManagers	Number of nodemanagers in active state.
Decommissioned NodeManagers	Number of nodemanagers in decommissioned state.
Lost NodeManagers	Number of nodemanagers in lost state.
UnHealthy NodeManagers	Number of nodemanagers in unhealthy state.
Rebooted NodeManagers	Number of nodemanagers in rebooted state.
Active NodeManager Percent (in %)	Percentage of nodemanager in active state.
Lost NodeManager Percent (in %)	Percentage of nodemanager in lost state.
UnHealthy NodeManager Percent (in %)	Percentage of nodemanager in unhealthy state.
NodeManager	
HostName	Hostname of nodemanager.

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Rack	Rack to which this nodemanager belongs.
State	Current state of nodemanager. • Running • Unhealthy • Dead
Memory used (in %)	Percentage of main memory used by nodemanager.
Version	Version of nodemanager.

Applications:

Applications	
Apps Submitted	Number of applications in submitted state.
Apps Completed	Number of applications in completed state.
Apps Pending	Number of applications in pending state.
Apps Running	Number of applications in running state.
Apps Failed	Number of applications in failed state.
Apps Killed	Number of applications in killed state.
Percent Completed (in %)	Percentage of completed applications.
Percent Killed (in %)	Percentage of killed applications.
Percent Failed (in %)	Percentage of failed applications.
Applications stat (in last polling interval)	
Submitted apps count	Number of applications submitted in last polling interval.
Failed apps count	Number of applications failed in last polling interval.
Killed apps count	Number of applications killed in last polling interval.
Completed apps count	Number of applications completed in last polling interval.

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Oracle Coherence Servers Monitoring

Applications Manager provides out-of-the-box performance metrics and helps you visualize the health and availability of an Oracle coherence server farm. Database administrators can login to the web client and visualize the status and Oracle coherence performance metrics.

Oracle Coherence Server

Follow the given steps to create a Oracle coherence server monitor:

Note: Ensure that you enable JMX for Oracle Coherence monitoring. For you to create a new Oracle *coherence* monitor, you should have admin privileges.

1. Click on **New Monitor** link.
2. Select **Oracle Coherence**.
3. Enter the **Display Name** of the monitor
4. Enter the **IP Address** or **hostname** of the host.
5. Enter the **JMX Port** in which the JMX is running.
6. Enter the **Additional JMX Port** in which the JMX is already running in any of the other machine of the same cluster.
7. Choose the **Credential Details** either use below credentials or select from credential list
8. Enter the **Username** and **Password** of the OpenStack.
9. Enter JNDI Path ex. /jmxrmi
10. Enter the polling interval time in minutes.
11. Choose the **Monitor Group** from the combo box with which you want to associate Oracle database server Monitor (optional). You can choose multiple groups to associate your monitor.
12. Click **Add Monitor(s)**. This discovers Oracle database server from the network and starts monitoring them.

It performs the following checks to ensure its availability and represents the information in the form of graphs. *Availability* tab, gives the Availability history for the past 24 hours or 30 days. *Performance* tab gives the Health Status and events for the past 24 hours or 30 days. *List view* enables you to perform bulk admin configurations. Click on the individual monitors listed, to view the following information.

Note:
• To create a new Oracle Coherence monitor, you should have admin privileges.
• Jconsole can also be used to access the Mbeans

Oracle Coherence Monitoring Metrices

Cluster Details

Attribute Name	**Description**	Access Method
ClusterName	Name of Cluster	Cluster - > attributes
Cluste Size	Size of Cluster	Cluster - > attributes
LocalMemberID (Management ID)	Member ID of the Node to which the JMX gets Connected	Cluster - > attributes
OldestMemberID	The Node ID that is Running at First	Cluster - > attributes
MemberDepartureCount	Number of nodes that gets Departed	Cluster - > attributes

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Version	Version of Oracle Coherence	Cluster - > attributes
LicenseMode	License Mode Either Development or Production or Evaluation	Cluster - > attributes
DistributedServiceCount	Number of Distributed Service that is Configured	Number of services under partition Assignment
NonDistributedServiceCount	Number of Replicated Based Service that is Configured	(Number of Services under Cache) - (Number of services under partition Assignment)
ExtendServiceConnection	Extend Service Connection Count	Number of Service under Connection manager without including NameServices

Partition Assignment

Attribute Name	**Description**	Access Method
CoordinatorId	OwnerShip Distribution Co-Ordinator	Partition Assignment ->Service name -> attributes
ServiceMachineCount (Storage Machine Count)	Number of Service Machine	Partition Assignment ->Service name -> attributes
ServiceNodeCount	Number of Service Node	Partition Assignment ->Service name -> attributes
StrategyName	Strategy Name	Partition Assignment ->Service name -> attributes
HAStatus	Status of Storage Backups	Partition Assignment ->Service name -> attributes
Service Name	Name of Service	Name Given under Partition Assignment

Distributed and Replicated Services

Attribute Name	**Description**	Access Method
StorageEnabled	Whether Storage enabled or not	Services -> Service Name - > Node ID -> Attributes
MessagesLocal (Number of Messages)	Number of Local Messages in Node	Services -> Service Name - > Node ID -> Attributes
MessagesReceived	Number of Messages Received	Services -> Service Name - > Node ID -> Attributes
MessagesSent	Number of Messages Sent	Services -> Service Name - > Node ID -> Attributes
PartitionsAll	Partition All	Services -> Service Name - > Node ID -> Attributes
PartitionsEndangered	Endangered Partitions	Services -> Service Name - > Node ID -> Attributes
PartitionsVulnerable	Vulnerable Partitions	Services -> Service Name - > Node ID -> Attributes
ServiceName	Name of Service	Name of Service under Services
StatusHA	Status of Node	Services -> Service Name - > Node ID -> Attributes
Type	Type of Service	Services -> Service Name - > Node ID -> Attributes
Unicast	Unicast address	Refer Node Id with Unicast address : Port in Node Mbean

Extend Connection Manager

Attribute Name	**Description**	Access Method
ConnectionTimeMillis	Amount of milliseconds of Connection	Connection -> Connection Name -> attributes
TotalMessagesReceived	Total Messages Received	Connection -> Connection Name -> attributes
TotalMessagesSent	Total Messages Sent	Connection -> Connection Name -> attributes
TotalBytesReceived	Total Bytes Received	Connection -> Connection Name -> attributes
TotalBytesSent	Total Bytes Sent	Connection -> Connection Name -> attributes
RemoteAddress	Remote Address	Connection -> Connection Name -> attributes
Timestamp	Time of Connection Establishment	Connection -> Connection Name -> attributes

ExtendTcpProxyService

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Attribute Name	Description	Access Method
ConnectionCount	Number of Connection	Connection Manager -> Connection Name(Excluding NameService) -> nodeid -> attributes
UnauthorizedConnectionAttempts	Unauthorized Connection Attempts	Connection Manager -> Connection Name(Excluding NameService) -> nodeid -> attributes
TotalMessagesSent	Total Messages Sent	Connection Manager -> Connection Name(Excluding NameService) -> nodeid -> attributes
TotalMessagesReceived	Total Messages received	Connection Manager -> Connection Name(Excluding NameService) -> nodeid -> attributes
TotalBytesReceived	Total Bytes Received	Connection Manager -> Connection Name(Excluding NameService) -> nodeid -> attributes
TotalBytesSent	Total Bytes Sent	Connection Manager -> Connection Name(Excluding NameService) -> nodeid -> attributes
HostIP	Host IP	Connection Manager -> Connection Name(Excluding NameService) -> nodeid -> attributes

NodeGeneralDetails

Attribute Name	Description	Access Method
Id	Id of Node	Under Node
UnicastAddress	Unicast Address	Under Node -> Node ID -> attribute Unicast Address : Unicast Port
WeakestChannel	Weakest Channel	Under Node -> Node ID -> attribute
PacketsSent	Packets Sent	Under Node -> Node ID -> attribute
PacketsReceived	Packets Received	Under Node -> Node ID -> attribute
PublisherSuccessRate	Publisher Success rate	Under Node -> Node ID -> attribute
ReceiverSuccessRate	Receiver Success rate	Under Node -> Node ID -> attribute
MemoryAvailableMB	Memory Available	Under Node -> Node ID -> attribute
MemoryMaxMB	Memory Maximum	Under Node -> Node ID -> attribute

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Apache Spark Monitoring

- Apache Spark - An Overview
- Monitoring Apache Spark - What we do.
- Adding a new Apache Spark monitor / Using AddMonitor API
- Monitored Parameters

Apache Spark- An Overview

Apache Spark is an open source big data processing framework built for speed, with built-in modules for streaming, SQL, machine learning and graph processing. Apache Spark has an advanced DAG execution engine that supports acyclic data flow and in-memory computing. Spark runs on Hadoop, Mesos, standalone, or in the cloud. It can access diverse data sources including HDFS, Cassandra, HBase, and S3.

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Monitoring Apache Spark - What we do

Let’s take a look at what you need to get real-time operational visibility into Spark applications, the performance metrics to gather and how you can ensure that your search server is up and operating as expected with Applications Manager:

- **Resource Utilization Details** - Applications Manager automatically discovers your Spark components and shows key metrics of Apache Spark clusters (master and worker nodes), monitors memory and CPU and notifies you of changes in resource consumption of memory pool.
- **Real-Time Data -** Track garbage collection and memory across the cluster on each component, specifically, the executors and the driver. Get useful information about the application and cores.
- **Fix Performance Problems Faster** - Get instant notifications when there are performance issues. Become aware of performance bottlenecks and take quick remedial actions before your end users experience issues.

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Apache Spark - Adding a new monitor

Note:
Uncomment the following lines in the file **SPARK_HOME/conf/metrics.properties.template** and save it as **metrics.properties** and restart the Apache Spark instances to collect the metrics:-

```
master.source.jvm.class=org.apache.spark.metrics.source.JvmSource
worker.source.jvm.class=org.apache.spark.metrics.source.JvmSource
driver.source.jvm.class=org.apache.spark.metrics.source.JvmSource
executor.source.jvm.class=org.apache.spark.metrics.source.JvmSource
```

You can monitor the **Worker Nodes** under the given Apache Spark Master by checking the option **Discover All Nodes**.

Steps to create a new monitor

To create an Apache Spark Monitor, follow the steps given below:

- Click on **New Monitor** link. Choose **Apache Spark.**
- Specify the **Display Name** of the Apache Spark monitor.
- Enter the **HostName** or **IP Address** of the host where Apache Spark Master runs.

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- Enter the **Port** of the Apache Spark Master. By default, it will be 8080.
- Enter the polling interval time in minutes.
- Click Test Credentials button, if you want to test the access to Spark server.
- Choose the Monitor Group from the combo box with which you want to associate Spark Monitor (optional). You can choose multiple groups to associate your monitor.
- Click Add Monitor(s). This discovers Spark from the network and starts monitoring.

Use the AddMonitor API to add an Apache Spark Monitor

Syntax of Rest API for adding monitor:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=ApacheSparkMaster&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]&SSL=[TRUE/FALSE]&DiscoverAllNodes=[YES/NO]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
apikey	The key generated from the **Generate API Key** option in the 'Admin' tab.
type	The type of the monitor you want to add. Value should be **ApacheSparkMaster**.
displayname	The display name of the Apache Spark monitor.
host	The name of the host in which Apache Spark server is running.
port	The port number where Apache Spark server is running.
ssl	Specfies if SSL is enabled or not. Value can be either **true** or **false.**
DiscoverAllNodes	Specfies if you wish to discover all worker nodes.

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Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on the **Apache Spark Master or Apache Spark Worker** monitors under the **Web Server/Services** Table. Displayed is the Apache Spark bulk configuration view distributed into three tabs:

- **Availability tab** displays the Availability history for the past 24 hours or 30 days.
- **Performance tab** displays the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

Click on the monitor name to see all the server details listed under the following tabs:

- **Apache Spark Master**
  - Overview
  - Workers
  - Applications
  - Memory
  - RDD Details
  - Configuration
- **Apache Spark Worker**
  - Overview
  - Executors
  - Memory
  - RDD Details
  - Configuration

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Apache Spark Master

Overview

Parameter	Description
NODE DETAILS	
Node Name	The name of the Apache Spark worker node.
Used Memory (%)	The percentage of total memory that the Spark worker node uses on the machine.
Free Memory (%)	The percentage of total free memory on the machine.
MEMORY UTILIZATION	
Used Memory	The percentage of total memory that the Spark Master node uses on the machine.
Free Memory	The percentage of total free memory of the Spark Master node.
Total Memory	The total amount of memory to allow Spark applications to use on the machine
Used Memory	The total amount of memory used by Spark applications.
MASTER OVERVIEW	
Alive Workers	The number of alive workers in the Spark cluster. A worker in the ALIVE state can accept applications.
Active Applications	The number of active applications that run on the Spark infrastructure.
Waiting Applications	The number of waiting applications.
Completed Applications	The number of completed applications.
Used Cores	The number of used CPU cores on the Apache Spark Master.

Workers

In standalone mode, the workers are processes running on individual nodes that manage resource allocation requests for that node and also monitor the executors.

Parameter	Description
WORKER DETAILS	
Web UI Address	The URL of the worker's Web UI. The **Web UI** is the web interface of a running Spark application to monitor and inspect Spark job executions in a web browser.
ID	The ID of the particular worker node, to uniquely identify them.
Cores Used	The number of CPU cores used by the particular Worker node.
Cores Free	The number of free CPU cores, which are unused.
Used Memory (GB)	The total memory used by the Worker Node.
Free Memory (GB)	The total free memory in the Worker node.
Used Memory (%)	Percentage of memory used by the Worker node.
Time Since Last Heart Beat (seconds)	The time elapsed since last heart beat (i.e.) The last time when the Worker node contacted the Master Node.
State	The current state of the Worker node, say, ALIVE or DEAD.

Applications

Parameter	Description
APPLICATION DETAILS	
Application Name	The name of your application.
ID	The application is referenced by its application ID.
User	The user associated with the particular application.
Memory Allocated Per Slave (GB)	The amount of memory allocated for each worker.
Running Duration (min)	The total running duration of the application, since it is started.
State	The current state of the particular Application, say, WAITING or RUNNING

Memory

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Parameter	Description
HEAP MEMORY	
Used Heap	The percentage of total used heap memory.
Free Heap	The percentage of free heap memory.
Max Heap Size	The maximum heap memory that the Spark can use.
Init Heap Size	The minimum heap memory allocated.
Committed Heap Size	The total amount of committed heap memory.
Used Heap Size	The total used heap memory.
NON HEAP MEMORY	
Used Non Heap	The percentage of total used non-heap memory.
Free Non Heap	The percentage of free non-heap memory.
Max Non Heap Size	The maximum non-heap memory that the Spark can use.
Initial Non Heap Size	The minimum non-heap memory allocated.
Committed Non Heap Size	The total amount of committed non-heap memory.
Used Non Heap Size	The total used non-heap memory.
JVM	
Used JVM	The amount of used JVM memory, in MB.
Free JVM	The amount of memory available for the JVM, in MB
Max JVM Size	The maximum amount of heap that can be used for memory management in GB.
Initial JVM Size	The amount of heap that the Java virtual machine initially requests from the operating system in MB.
Committed JVM Size	The total amount of committed JVM memory.
Used JVM Size	The total amount of used JVM memory.
MARKSWEEP AND SCAVENGE	
MarkSweep Count	The number of times garbage collection have occurred in the Marksweep GC.
MarkSweep Time	The time taken for garbage collection that have occurred in the Marksweep GC.
Scavenge Count	The number of times garbage collection have occurred in the Scavenge GC.
Scavenge Time	The time taken for garbage collection that have occurred in the Scavenge GC.
MEMORY POOL DETAILS	
Memory Pool	The memory pool name
Maximum (MB)	The maximum pool memory allocated in MB.
Committed (MB)	The total amount of committed pool memory.
Initial (MB)	The pool memory initially requests from the operating system in MB.
Used (MB)	The total amount of used pool memory.
Utilization (%)	The percentage of used pool memory.

RDD Details

Parameter	Description
COMPILATION DETAILS	
Compilation Time (Mean)	The time it took to compile source code text.
Compilation Count	The total number compilations occurred while loading the files.
COMPILATION DETAILS	
Generated Class Size (Mean)	The size of each method in classes generated.
Generated Method Size (Mean)	The size of each method in classes generated.
Source Code Size (Mean)	The time it took to compile source code text.
Generated Class Count	The number of classes generated.
Generated Method Count	The number of methods in classes generated.
Source Code Count	The total number of source code files, that were loaded into the node for compilation.
COUNTERS	
File Cache Hits	The total number of file level cache hits occurred.
Files Discovered	The total number of files discovered.

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Parameter	Description
Hive Client Calls	The total number of client calls sent to Hive for query processing.
Parallel Listing Job Count	The total number of jobs running in parallel.
Partitions Fetched	The total number of partitions fetched.

Configuration

Parameter	Description
CONFIGURATION DETAILS	
Master URL	The URL of the master node.
Total Workers	The total number of workers provisioned in the cluster.
Available Cores	The number of CPU cores to allow Spark applications to use on the machine.
Total Memory	Total memory allocated for the Spark Master node.

Apache Spark Worker

Overview

Parameter	Description
MEMORY UTILIZATION	
Used Memory Percentage	The percentage of total memory that the Spark worker node uses on the machine.
Free Memory Percentage	The percentage of total free memory on the machine.
Used Memory	The total memory used by the Worker node, from the available memory.
Free Memory	The total free memory available for the Worker node.
WORKER OVERVIEW	
Active Executors	Number of active executors
Finished Executors	Number of finished executors (Spark executor exits either on failure or when the associated application has also exited.)
Free Cores	The total number of cores free and available for the particular Worker.
Used Cores	The total number of cores used by the particular Worker.

Executors

Parameter	Description
EXECUTOR DETAILS	
Executor ID	The unique ID for the particular Executor.
Executor Memory (GB)	The total memory available for the particular Executor.
Application ID	The unique ID for the application associated with the Executor.
Application Name	The name of the particular Application.
User	The user associated with the particular Application.
Memory Allocated Per Slave (GB)	The amount of memory allocated for each worker.

Memory

Parameter	Description
HEAP MEMORY	
Used Heap	The percentage of total used heap memory.
Free Heap	The percentage of free heap memory.
Max Heap Size	The maximum heap memory that the Spark can use.
Init Heap Size	The minimum heap memory allocated.
Committed Heap Size	The total amount of committed heap memory.
Used Heap Size	The total used heap memory.
NON-HEAP MEMORY	
Used Non Heap	The percentage of total used non-heap memory.

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Parameter	Description
Free Non Heap	The percentage of free non-heap memory.
Max Non Heap Size	The maximum non-heap memory that the Spark can use.
Initial Non Heap Size	The minimum non-heap memory allocated.
Committed Non Heap Size	The total amount of committed non-heap memory.
Used Non Heap Size	The total used non-heap memory.
JVM	
Used JVM	The amount of used JVM memory, in MB.
Free JVM	The amount of memory available for the JVM, in MB.
Max JVM Size	The maximum amount of heap that can be used for memory management in GB.
Initial JVM Size	The amount of heap that the Java virtual machine initially requests from the operating system in MB.
Committed JVM Size	The total amount of committed JVM memory.
Used JVM Size	The total amount of used JVM memory.
MARKSWEEP AND SCAVENGE	
MarkSweep Count	The number of times garbage collection have occurred in the Marksweep GC.
MarkSweep Time	The time taken for garbage collection that have occurred in the Marksweep GC.
Scavenge Count	The number of times garbage collection have occurred in the Scavenge GC.
Scavenge Time	The time taken for garbage collection that have occurred in the Scavenge GC.
MEMORY POOL DETAILS	
Maximum (MB)	The maximum pool memory allocated in MB.
Initial (MB)	The pool memory initially requests from the operating system in MB.
Committed (MB)	The total amount of committed pool memory.
Used (MB)	The total amount of used pool memory.
Utilization (%)	The percentage of used pool memory.

RDD Details

Parameter	Description
COMPILATION DETAILS	
Compilation Time (Mean)	The time it took to compile source code text.
Compilation Count	The total number compilations occurred while loading the files.
COMPILATION DETAILS	
Generated Class Size (Mean)	The size of the class generated.
Generated Method Size (Mean)	The size of each method in classes generated.
Source Code Size (Mean)	The size of the compiled source code text.
Generated Class Count	The number of classes generated.
Generated Method Count	The number of methods in classes generated.
Source Code Count	The total number of source code files, that were loaded into the node for compilation.
COUNTERS	
File Cache Hits	The total number of file level cache hits occurred.
Files Discovered	The total number of files discovered.
Hive Client Calls	The total number of client calls sent to Hive for query processing.
Parallel Listing Job Count	The total number of jobs running in parallel.
Partitions Fetched	The total number of partitions fetched.

Configuration

Parameter	Description
CONFIGURATION DETAILS	
Worker ID	The worker is referenced by its worker ID.
Master URL	The URL of the master node.
Master Web UI URL	The URL of the master node's Web UI.

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Parameter	Description
Total Memory	The total memory allocated and available for the particular Worker node.

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HTTP URL Monitoring

In an environment, where the downtime of any website applications and services can cause a negative impact on the business performance, problems must be accurately identified and solved.
Applications Manager acts as a continuous URL monitoring service that keeps constant watch over a specified URL or website page. They test the website applications and web services to ensure that they are functioning properly. URL monitors verify the availability of specified, addressable, standard HTTP and HTTPS URLs. They scan the HTTP and HTTPS pages looking for a predefined keyword to check whether the website is available.

- HTTP(s)-URLs
- HTTP(s)-URL Sequence Recorder (Transaction Recorder Tool)

The difference between the two types of monitoring is that URL Monitoring monitors single HTTP and HTTPS URL, whereas URL sequence monitors a set of HTTP and HTTPS URLs in sequence. Also, any HTTP and HTTPS URL can be monitored using URL Monitoring. Please go through the following sections to know about the configuration details.

HTTP-URLs

To configure for URL monitoring, follow the given steps:
Enter any keyword as match content. The URL monitoring searches the keyword in the content of the URL page to check the availability of the URL. This is optional.

Note: The content search is case-sensitive. If you provide 2 words, the content match is performed for the words separately. For example, if you specify the content as applications manager, the match is found for applications and manager separately. If you need the content match to be performed for the complete text, specify the 2 words in quotes, example "applications manager".Space character will be acting as the delimiter.

4.
select a Managed Server. 5.
6.
select URL Payload Type for Post form submission. 7.
8.

Apart from the basic URL Monitoring, Applications Manager also provides you with advanced options that furnish effective and more flexible URL Monitoring. This is optional and you need to choose these options only if the HTTP/ HTTPS URL requires Form-based authentication.

1. Provide the request parameters, if any. The request parameters must be provided as name=value pairs for Post and Get methods.

   For example, if you want to monitor a URL like, http://appmanager:9090/showresource.do?haid=1&type=UrlMonitor&method=getMonitorForm, then provide "?haid=1&type=UrlMonitor&method=getMonitorForm" as request parameter.
2. Enter a keyword which when matches with the content in the URL must be notified of error in Error If Match field. Note: The search is case sensitive. Multiple keywords should be put within quotes. Otherwise, it will be treated as 'Any' one of the multiple keywords.
3. Enter the Response Code details by choosing them from the combo box. By default, it is greater than 200. Hence the error will be notified once the criteria mentioned are met.
4. Enter the time, in minutes, for which the URL monitor should wait for a page to complete downloading before timing out in Time out field.

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5. Check "If monitor detects error, re-try immediately to verify error", where the monitoring is automatically performed when it detects an error, i.e. when an error is detected, the monitor will immediately be scheduled to run again once.
6. Provide the User name and password, if the URL requires Form-based authentication.
7. Sometimes you may want to customize the default HTTP request header. You have the option to customize the "User-Agent" field. Check the **Custom HTTP Headers and User Agent** checkbox and enter the HTTP Header and User Agent in the text boxes. You may add multiple HTTP Headers and User Agents.

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Note
We support NTLMv1 and NTLMv2 authenticated URLs. To monitor **NTLM** authenticated URLs, copy the *cryptix-jce-provider.jar* from http://www.cryptix.org/cryptix-jce-20050328-snap.zip to *<AppMgr Home>libext*. Restart Applications Manager.

HTTP-URL Sequence Recorder (Transaction Recorder Tool)

The purpose of URL Sequence is to monitor multiple web pages of an online application. It checks pages with dynamically generated information enhancing interactive transactions such as logging into a login page, creating an account using a web form, instructing the application to perform some action, etc.
URL Sequencing starts with a specific URL such as the Login page and then followed by additional links/URL in it. The URL Sequence monitoring thus performs end-to-end verification of particular transactions helping you to troubleshoot any problems while monitoring.

Note: If you are connecting to an URL using a proxy server, then you must configure proxy to initiate the URL sequence monitoring. Refer to the Configuring Proxy section of Performing Admin Activities, for further details.

You can use the **Transaction Recorder Tool** to record all user online transactions in their exact sequence. These transactions will then be replayed at regular intervals of time and notifications will be sent when any error is detected.
Browse through the following topics to use the Transaction Recorder tool:

- Getting Started
  - Hardware/Software Requirements
  - Download and Installation
- Recording a New Transaction
  - Recording a Sequence
  - Editing captured URL's
  - Saving a transaction
- Modify an existing Transaction
- Monitoring URLs with Dynamic Parameters

Getting Started

You must download and install the recorder tool to record the sequence of user transactions. Every step of the transaction will be captured and recorded. You also can modify or edit your transactions.

Hardware/Software Requirements

The Transaction Recorder is developed using the Microsoft .NET Platform version 2.0. This is the minimum software requirement. A minimum of 2 MB of disk space is also required for installing the software.

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Download and Installation

Download the new Recorder and start the installation process. The installation wizard takes you through a four step process after which the Recorder will be started:

- A welcome screen is displayed, after which you will be asked for confirmation of the license requirements. Click **Yes**.
- After confirmation, a **Chose Destination Location** screen is displayed. The user is allowed to select the drive and directory where he wishes to install the Transaction Recorder. Click **Browse** and select the **Destination Location**. The default installation path is "C:Program FilesApplications ManagerTransaction Recorder". Click **Next**.
- Review the settings in the confirmation dialog and click **Back** if you wish to make changes. If not, click **Next**. The Recorder will be installed in your machine.
- After the installation is completed, click **Finish**. Make sure the "Start Transaction Recorder" option is checked, if you would like to start the tool automatically after the installation is complete.

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Recording a New Transaction

After installing, the Transaction Recorder can be accessed under All Programs in Windows Start Menu. You can record a new transaction following these steps:

- **Record the Sequence.**
  - Click on the **New** button to start a new recording.
  - Enter the URL of the application you wish to monitor then press enter to load the corresponding web page.
  - Follow the sequence of steps that you wish to monitor.

Domain Components -- You can also filter URLs based on the domains from which they originate. You have the option to include / exclude websites from a particular domain in the Domain Filter list.

> **Note:** These domains are not stored for future references. You have to re-enter such preferences if you re-start the tool.

- **Preview & Save**. A Login Credentials dialog box is displayed.

Close.

- **Preview Transaction** screen will be displayed with a list of transaction steps and their corresponding URLs.
- : In the Preview Transactions screen, click the **Filter URL** link on the top right corner to open a URL Filter Screen. URLs can be filtered based on the following three categories:
- The captured URLs can be filtered based on their extensions. For example, .gif, png, jpg etc. for images, .js for scripts and more.
- URLs can be filtered based on the MIME type like image, video, audio, text and application.
- Click on a URL to select it, then click **Move Up** or **Move Down** to move the url up or down the list of

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transaction steps.

Click on a URL from the list of transactions and click the **Delete URL** link on the top right corner to delete it.

You can edit basic URL details like URL link, Display name, header and post data by clicking the Basic tab at the bottom of the**Preview Transaction** screen.

- **Alert Configuration:** You can configure the recorder such that alerts are generated when specific keywords are present/not present. Enter the keywords in the text boxes provided.
- **Basic Authentication Details:** Enter Authentication details like username and password.
- **Response Code Configuration:** You can configure the recorder to generate alerts if response time is **greater than, equal to, not equal to, less than, less than or equal to** a specified value.

next to go to the **save transactions** screen.

- **Saving the transaction.**In the save transactions screen, you can configure or edit the following fields:
  - URL sequence name: The wizard generates a sequence name. You can edit the default sequence name.
  - Poll interval: Poll interval is the time in minutes between two consecutive attempts to check for each recorded URL.
  - Host name
  - Port number
  - Username and Password. (The username and password used for Applications Manager with administrative privilege should be used).
- Click **Save** to save the changes.

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Modify an existing transaction

You can modify an existing transaction

- Click **Re-record**.
- Record the Sequence.
- Edit the captured URL's
- Select the transaction which needs to be modified from the drop-down menu and the click **Fetch URLs**.
- Click next to perform a side-by-side comparison of the list of old URL's and the list of newly recorded URL's.
- Click **Update** to update the existing transaction with the currently recorded sequence in the server.Top

Note:
• If you would like to set User Agent for monitoring URL sequence, add the following key in *AMServer.Properties* file located in your Applications Manager installation folder.

am.httpclient.useragent=<Browser User Agent which you would like to set>
Example: **am.httpclient.useragent=Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; Q312461; SV1)**
Save the file and restart Applications Manager for the changes to take effect.

Monitoring Dynamic URLs:

Suppose your login page has hidden parameters that needs to be submitted while logging into your application and the value for the hidden parameter is different for each login request. In this case, the hidden parameter value in the login page needs to be fetched dynamically and passed to the subsequent URL.
For monitoring these kind of dynamic URL Sequences, you can use **$<Parameter name>** [eg., $sessionID = 12] in the *Request Parameter* text box of the URL. So, while monitoring the URL Sequence, $*<Parameter name>* will fetch the dynamic values and

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pass it to the next URL in the sequence.

While using the Recorder tool, you cannot specify the parameters in the *Request Parameter* text box, so instead, after adding the URL Sequence, go to corresponding URL's 'Edit Monitor' page and enter the parameters. Consider the following URL Sequence :

- URL 1 : http://api.appmanager.com/oauth/token?client_id=32faff282a68a03c2eb0f41aeca63a88&grant_type=client_credentials&client_secret=9de7337627ab85f3
- URL 2 : http://api.appmanager.com/bestoffer/97232/354992/offers.xml?**access_token**=fcdee0e94da9b934a4cef6c2dee70384
- URL 3 : http://api.appmanager.com/selectoffer/97232/3549/offers.xml?**access_token**=fcdee0e94da9b934a4cef6c2dee70384
- ...
- ...
- URL N : ...

In the above example **access_token** is a dynamic parameter whose value changes every time we login. In order to monitor the above sequence, follow the below mentioned steps :

- Download the Transaction Recorder tool and record a new transaction sequence.
- The recorder tool will have recorded all the steps along with dynamic request parameter for that session.
- After adding the URL Sequence, click 'Edit Monitor' for the corresponding URL to enter the parameters.
- In the Edit Monitor page, for the field 'Request Parameters (if any)' provide the dynamic request parameter as **$parameter=TEXT:-:<parameter_name>:-:For Eg - In URL 1:** The 'parameter' is 'access_token' and 'parameter_name' is 'access_token='. So, for the text box correponding to the 'Request Parameters' provide **$access_token=TEXT:-:access_token=:-:** and save the page
- Click 'Edit Monitor' for the second URL, remove the dynamic request parameter from the 'URL address' field and use the same parameter to fill the 'Request Parameters (if any)' field**For Eg - In URL 2:** Edit http://api.appmanager.com/bestoffer/97232/354992/offers.xml?access_token=fcdee0e94da9b934a4cef6c2dee70384, remove the dynamic request parameter (access_token) and change the 'URL address' to **http://api.appmanager.com/bestoffer/97232/354992/offers.xml?**. Provide the 'Request Parameters' as **$access_token=fcdee0e94da9b934a4cef6c2dee70384**
- Repeat the above steps for the rest of the URLs in the sequence where the dynamic parameter is present

So for every polling interval Applications Manager will search for this dynamically generated parameter and it will replace it.

Applications Manager acts as a continuous URL monitoring service that keeps a constant watch over the specified URL or web site pages. URL monitors verify the availability of specified, addressable, standard HTTP and HTTPS URLs. They scan the HTTP and HTTPS pages looking for a predefined keyword to check whether the web site is available.

There are two ways of URL monitoring provided by Applications Manager.

- URL Monitoring
- URL Sequence (Record & Playback)

In URL Sequence, click on the individual URL listed, to view its monitored parameters.

Real Browser Monitor: RBM provides live End-User experience measurement. RBM opens up a Web Browser and monitors a web application just like how a real user sees it. It supports playback from different geographical locations.

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Monitored Parameters

Availability tab, gives the Availability history for the past 24 hours or 30 days. *Performance* tab gives the Health Status and events for the past 24 hours or 30 days. *List view* enables you to perform bulk admin configurations. Click on the individual monitors listed, to view the following information.

Parameter	Description
Monitor Information	
Health	Specifies the health of the monitor based on its dependencies.
Type	Type of Monitoring
URL address	Specifies the URL being monitored
Match Content	The string that is searched in the resulting html page.
Request Method	The request method sent to the HTTP/ HTTPS URL (Get or Post)
Monitored Parameters	
Availability	The current status of the URL / URL Sequence- whether it is up or down.
Response Time	The response time for accessing an URL or total response time of URL Sequence (takes into account the response time of the individual URLs in the Sequence)
Current Status	Current status of the response time. Click on the icon to know its RCA details.
Current Page Size	The current page size of the URL in bytes (only in URL monitoring)
% Change in Page Size	The percentage change between the current page size and the previous page size. (only in URL monitoring)
Response Time Split Up	
DNS Time	The time that it takes to resolve the website's hostname to a certain IP address. If the DNS lookup time is high, it means that you or your hosting provider has a problem with their DNS servers.
Connection Time	Once the URL has been resolved to an IP address, the connection time shows how long it takes to establish a connection to your server. The connection time helps in discovering network latency, routing issues, and server bandwidth problems.
First Byte Time	The first byte shows how long it takes from the moment the connection was created until the first byte is about to be transferred. The time to perform any negotiations with the server and the time needed for the server to calculate the result are also included.
Last Byte Time	Once the first byte of HTML has been received, the Web server continues to send the HTML that represents the layout of the Web page, including CSS and Java Script. Last byte time includes time till the last byte for all documents with the HTML to load. Also commonly referred to as the "Download Time" or "HTML Content Time".

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Java Runtime Monitors

Java Runtime Monitor provides out-of-the-box remote monitoring and management on the Java platform and of applications that run on it. The different JVM vendors supported by Applications Manager are Sun JVM, IBM JVM and Oracle JRockit JVM.

Prerequisites for Java Runtime Monitor: Know more about the JVM arguments to add to your application for Java Runtime Monitoring.

Create a Java Runtime Monitor:

- Click **New Monitor**. Choose **Java Runtime.**
- Enter the IP Address or hostname of the host in which the Monitor is running.
- Enter the SubNetMask of the network.
- Provide the port number in which JDK is running (default: 1099). Also, you can provide multiple ports separated by commas.
- You can enter your own credential details or select preconfigured credentials details in Credentials Manager. If you wish to enter your own credentials, specify **username** and **password** details for this monitor.
- Enter the JNDI name. For example, /jmxrmi.
- To enable customized JMX URL, check the **Enable JMX URL checkbox** and enter the JMX URL. (The URL should be of the format *service:jmx:rmi:///jndi/rmi://HOST:PORT/jmxrmi*. For example, a jboss customized jmx URL can be - *service:jmx:remoting-jmx://HOST:PORT* and a websphere customized jmx URL - *service:jmx:wsrmi://HOST:PORT/*)
- If Authentication is enabled, enter the **username** and **password**.
- Enter the polling interval time in minutes.
- If you are adding a new monitor from an Admin Server, select a Managed Server.
- Choose the Monitor Group, to which you want to associate the Monitor (optional). You can choose multiple groups to associate your monitor.
- Click **Add Monitor(s)**. This discovers the Monitors from the network and starts monitoring them.

Java Runtime Monitor provides out-of-the-box remote monitoring and management on the Java platform and of applications that run on it. It monitors performance metrics like Memory (JVM), Garbage Collection (GC) and Thread Statistics. Thresholds can be associated and alarms generated. Further, operations such as Automated Thread dump ,Heap dump and PerformGC for management are also supported.

The different JVM vendors supported by Applications Manager are Sun JVM, IBM JVM and Oracle JRockit JVM.

Note
• Support is available for JRE1.5 and above for Java Runtime. Support for Heap dump operation is available if HotSpotDiagnostic MBean is present in the JVM.
• Support given for JDK 1.8 : When monitoring with JDK 1.8 MetaSpace, Applications Manager monitors and displays new memory space called MetaSpace and Compressed Class Space instead of the former Permanent Generation (Non-Heap).

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The *Availability* tab gives the Availability history for the past 24 hours or 30 days. The *Performance* tab gives the Health Status and events for the past 24 hours or 30 days. The *List view* enables you to perform bulk admin configurations. Java Runtime Monitor checks the **availability, response time, connection time** (time taken by the Applications Manager to look up the JMX agent on the remote JVM) of the monitor, along with many other parameters listed below.

Parameter	Description
Monitor Information	
Name	Name of the JavaRuntime monitor.
Health	Specifies the health (Clear, Warning, Critical) of the JavaRuntime monitor
Type	Specifies the type you are monitoring.
Host Name	Specifies the host at which the Java virtual machine is running.
Port	Specifies the port number at which the Java virtual machine is running.
Host OS	Specifies the OS of the host where the JavaRuntime monitor is running.
JVM	Specifies the Java virtual machine name and version.
Vendor	Specifies the Java virtual machine Vendor Name.
Processor Count	Specifies the number of processors available to the Java virtual machine.
Last Polled at	Specifies the time at which the last poll was performed.
Next Poll at	Specifies the time at which the next poll is scheduled.
Availability	Shows the current status of the JavaRuntime monitor - available or not available.
Connection Time	Time taken to connect to the Java virtual machine.
Memory Pool	
Eden Space (Heap Memory)	The pool from which memory is initially allocated for most objects.
Survivor Space (Heap Memory)	Pool containing objects that have survived GC of eden space.
Tenured Generation (Heap Memory)	Pool containing objects that have existed for some time in the survivor space.
Java Heap	Space where the JVM stores the objects.
Permanent Generation (Non-Heap) *(for versions older than JDK 1.8)*	Holds all the reflective data of the virtual machine itself, such as class and method objects. With JVMs that use class data sharing, this generation is divided into read-only and read-write areas.
MetaSpace *(for JDK 1.8)*	The Native memory space for the representation of class metadata is called Metaspace**.** MetaSpace use native memory Â to store meta-data and that grows automatically.
Compressed Class Space *(for JDK 1.8)*	Compressed Class Space contains only class metadata.
Code Cache (Non-Heap)	Memory used for compilation and storage of native code.
JIT Code Cache	Memory that is converted to assembler and stored for running at higher speed.
Nursery	Separate space for newly allocated objects.
Thread Parameters	
Total threads started	Total number of threads created and also started since the Java virtual machine started.
Peak Threads	Peak live thread count since the Java virtual machine started or peak was reset.
Live Threads	Number of live threads currently running.
Daemon Threads	Number of daemon threads currently running.
Runnable Threads	A thread executing in the Java virtual machine is in this state.
Blocked Threads	A thread that is blocked waiting for a monitor lock is in this state.
Waiting Threads	A thread that is waiting indefinitely for another thread to perform a particular action is in this state.
Timed waiting Threads	A thread that is waiting for another thread to perform an action, for up to a specified waiting time is in this state.
Deadlocked	Number of threads that are in deadlock waiting to acquire object monitors.
Class Loading	
Classes loaded	Number of classes loaded
Classes Unloaded	Number of classes unloaded
JVM Statistics	
CPU Load	Specifies the percentage of load on the machine caused by the JVM. 0 indicates no load is created and 100 indicates all load is created by the JVM.

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CPU Usage	This indicates the CPU usage of the JVM on the server.
Max file descriptor	Maximum permissible open file descriptor. Available only for UNIX.
Host Memory	
Total Physical Memory	Total amount of physical memory in Megabytes.
Free Physical Memory	The amount of free physical memory in Megabytes.
Total Swap Space	Total amount of swap space in Megabytes.
Committed Virtual Memory	The amount of virtual memory that is guaranteed to be available to the running process in Megabytes.
Garbage Collector	
Time Spent/Min	Approximate collection elapsed time in milliseconds.
Collections/Min	Total number of collections that have occurred.
Thread Count	Number of threads used for Garbage Collector.
Last Start Time	Start time of this GC.
Last End Time	End time of this GC.
Memory usage before GC	Memory usage of all memory pools at the beginning of this GC.
Memory usage after GC	Memory usage of all memory pools at the end of this GC.
GC time	Time taken to perform garbage collection.
Compile time	Time spent in just-in-time (JIT) compilation.
Configuration	
Uptime	The uptime of the Java virtual machine.
Java Virtual Machine	The Java virtual machine implementation name.
Vendor	The Java virtual machine implementation vendor.
Process ID	The process identifier is a number used by some operating system kernels to uniquely identify a process.
Name	The name representing the running Java virtual machine.
VM arguments	The input arguments passed to the Java virtual machine which does not include the arguments to the main method.
Class path	The Java class path that is used by the system class loader to search for class files.
Library path	The Java library path.
Boot class path	The boot class path that is used by the bootstrap class loader to search for class files.
JIT compiler	The name of the Just-in-time (JIT) compiler
Objects Pending for finalization	The approximate number of objects for which finalization is pending.
Operating System	The name of the operating system.
Architecture	The operating system architecture.
Processors	The number of processors available to the Java virtual machine.
MaxÂ Metaspace	The maximum metaspace containing all other large class metadata including methods, bytecode ,constant pool etc.
Max non-heap	Max Non Heap = Commit Non Heap + free Physical Memory. Note - In case of Virtual Memory also,we consider only Free Physical Memory to calculate Max Metaspace value.

The table below lists the different JVM vendors supported by Applications Manager and the major parameters monitored by them.

Parameters Monitored	Sun JVM	IBM JVM	JRockit JVM
Connection Time	✓	✓	✓
Memory Usage	✓	✓	✓
CPU Usage	✓	✓	
CPU Load			✓
System Memory	✓	✓	✓
Process Memory	✓	✓	✓
Heap Memory	✓	✓	✓
Non Heap Memory	✓	✓	✓
VM Statistics	✓	✓	✓

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Total Physical Memory	✓	✓	
Free Physical Memory	✓	✓	
Total Swap Space	✓		
Free Swap Space	✓		
Committed Virtual Memory	✓		
Garbage Collector- Summary	✓	✓	✓
Garbage Collector - View impact for specific collector	✓		
Total Threads Started	✓	✓	✓
Peak Threads	✓	✓	✓
Live Threads	✓	✓	✓
Runnable Threads	✓	✓	✓
Blocked Threads	✓	✓	✓
Waiting Threads	✓	✓	✓
Timed Waiting Threads	✓	✓	✓
Daemon Threads	✓	✓	✓
Deadlocked	✓	✓	✓
Configuration Details	✓	✓	✓
JVM Actions	✓	✓	✓

View Thread Dump

There is an option to view the thread dump history under 'Threads' tab. Click the 'View Thread Dump' link in the threads tab. The *Thread Dump* screen will open up in a new window and you will be able to view the current thread dump details. Once you close this window, the thread dump details will be moved under the *Thread History*section. You can view this information any time you want from this section.

Reports

We provide the option to view both realtime and historical data of any of the attributes present in the 'Configuration Information' section in the *Configuration* tab. Click on any attribute under the Configuration tab. This will open up a new window named 'History Data' that provides more information about these attributes.

There are two tabs in the *History Data* window - History Report and Global View

History Report: This tab provides historical reports of the attribute selected based on time period chosen. You can also use the *Select Attribute* drop-down box and view reports for other attributes.

Global View: This tab displays the current values of the attribute selected, across multiple monitors. To view information about other attributes present in the monitor, use the *Select Attribute* drop-down box and change the attribute.

If you want to view data of multiple attributes, click the *Customize Columns* link present at the top left corner of the window. This will take you to the *Edit Global View*screen. In this screen, you can change the monitor type using the *Filter by Monitor Type* drop-down box, select the metrics to be displayed, and show monitors on a monitor basis or a monitor group basis. After you select your options, click the *Show Report* button to view those information in the *Global View* tab.

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Few Help Links for Reference:

Tuning Garbage Collection with the JVM

FAQ About the Java HotSpot VM

FAQ about Garbage Collection in the Hotspot JVM

Java Performance Documentation

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Real Browser Monitoring Add On!

Real Browser Monitor For Internet Explorer:

Real Browser Monitor (RBM) provides live End-User experience measurement. RBM opens up a Microsoft Internet Explorer Browser and monitors a web application just like how a real user sees it. It supports playback from different geographical locations.

Note: Real Browser Monitor supports IE and Mozilla Firefox browsers only.

To create a Real Browser Monitor, follow the steps given below:

1. Click on New **Monitor** link. Choose Real Browser Monitor, under Web Server / Services.
2. Enter the Display Name of the RBM
3. Select the **WebScript**, from the available webscripts. To create new webscripts or to modify webscripts, follow the below steps:
   - Click on *Add/View Webscripts*. It opens up a **Webscript Manager**
   - Click on *New link*
   - Enter New *webscript name*
   - Click on *Record New webscript*
   - This will prompt you to download the **RBM Toolbar**. Once, you have downloaded the toolbar, a new browser will be opened.
   - In the browser, you can give the required application URL and go about doing the end user operations.
   - Click on *stop recording* after the required sequence along with the actions have been recorded.
   - Save the script in Webscript Manager
   - For modifying the scripts, select the webscript, do the required changes and save the script.
   - **Note:** Following functions can be added for each URL

     1. webCheckText
     2. checkElementProperty

webCheckText

Syntax : webCheckText(searchText,prefixText,suffixText)

prefixText and SuffixText are Optional. It checks if the given text is present in the current page. The result of this check will be updated in the details page of the monitor.

Usage :

```
# URL : "http://appmanager/home.html"
setWindowNM("Welcome to ManageEngine Applications Manager","Welcome to ManageEngine Applications Manager","index",0,1)
webCheckText("Applications Manager")
```

checkElementProperty

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Syntax: checkElementProperty(tagName,propertyName,propertyValue,index,propertyNeeded,matchValue)

It checks if a particular element property is present in the current page.

For example in *http://www.appmanager.com* page, I need to check the link Home(Home)

then this function is used to check it.

Usage :

# URL : "http://appmanager/home.html"
setWindowNM("Welcome to ManageEngine Applications Manager","Welcome to ManageEngine Applications Manager","index",0,1)
checkElementProperty("A","href","home.html",1,"target","index")

Here the function searches for the element with tagname "A" and the property "href=home.html" . And it checks if the property "target" is equal to "index" . The index denotes the number of occurences. If the same element is present more than once then we can indicate which element by using index.

4. Select the **Playback Agents**. Multiple selection option is also possible.
   1. Download the **RBMAgent.exe** and install it in remote host/localhost.
   2. Invoke EUM agent through **Start-> All Programs-> ManageEngine EUM agent -> Start Agent** .
   3. While starting EUM agent, configure the Applications Manager Host and Port details to add the agent to Applications Manager.
5. Set the polling interval time in minutes.
6. Set the **Timeout** in minutes. Timeout is the maximum waiting time taken for the Webscript to execute. If the playback in the EUM agents got struck or was not played back properly, then EUM agent will wait for timeout and then move to the next polling.
7. Click Add RBM Monitor.

Real Browser Monitoring For Mozilla Firefox:

For RBM in Mozilla Firefox, click here.

Real Browser Monitor (RBM) provides live End-User experience measurement. RBM launches a browser and monitors a web application, mimicing the user's interaction with the site. Applications Manager uses behavioral scripts to describe the path that would be taken by a end-user on the site. These paths are monitored periodically to obtain performance metrics such as the availability and response time. We support playback from different geographical locations.

Why Applications Manager Real Browser Monitoring?

Applications Manager uses a web browser to collect metrics, taking into consideration aspects such as the network latency content

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check and availability of web element. This results in greater accuracy than synthetic monitoring which simply emulates a web browser rather than launching an actual browser. Actual rendering of a web page does not occur in the traditional web monitoring. In RBM, we render the webpage, build the DOM and even execute the JavaScript in the web browser. Response time of the webpage includes CSS, images, links loaded from third party websites etc.

Assume you have users logging in to your application from different locations around the world like the UK, US, Germany, Australia, etc. You can monitor their experience from the central Applications Manager Server. You could have the Applications Manager running in a data center in India and have the Real Browser Monitor agents deployed in other geographical locations and have it report Web Application Performance data to the central site.

Browse through the following topics to understand Real Browser Monitoring in Applications Manager:

- Working of Real Browser Monitor
- Real Browser Monitoring using Firefox
  - Deployment architecture & System Requirements.
  - Adding Monitor using Real Browser Recorder
  - Importing Selenium IDE testcases as Monitor
- Real Browser Monitoring using Internet Explorer
  - Deployment architecture & System Requirements.
  - Adding a new RBM Monitor
- RBM Dashboards
- Monitored Parameters
- FAQ

Working of Real Browser Monitor

EUM agents register to ManageEngine Applications Manager on startup. You need to specify the "host and Web Client Port" of Applications Manager the first time the agent is installed and running. The agents get listed automatically.

Real Browser monitor is created in Applications Manager server by recording the web transaction and specifying the agent(s) where the playback should occur. Each EUM agent will periodically check Applications Manager Server if RBM monitor has been configured for it and replay the actions in the browser. Once the playback is complete, EUM agent will update the results of the playback [response time, response code, etc] in Applications Manager.

The availability and performance of the websites are monitored in real time by using the Real Browser monitor. If the health of the URLs is critical, then alarms can be generated. Based on the alarms, the admin can fix the issue.

Real Browser Monitoring using Firefox

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Deployment architecture & System Requirements

- Components of RBM - Real Browser Recorder **for Mozilla Firefox**, **EUM agent** to be installed from where the playback has to be performed and**Applications Manager Server**. The EUM Agent version should be **11.0.0** or higher.
- EUM agents (separate .exe downloads) have to be installed in the client locations on a dedicated Windows Machine - 256 MB RAM, 1 GB HD, with Mozilla Firefox v35.0. Firefox is bundled with our EUM Agent so users needn't worry about ensuring that the right version of Firefox is installed on their machine. However, Applications Manager can be installed on Windows or Linux. This works with the Professional Edition and Enterprise Edition (with Managed Server).

Real Browser Recorder

For Real Browser Monitoring using Mozilla Firefox we use the Real Browser Recorder to record all user online transactions in their exact sequence. The Recorder is used to record the transactions which get stored as webscripts. These transactions will then be replayed at regular intervals of time and notifications will be sent when error is detected.
We support simultaneous playback of transactions. Multiple browsers can open at the same time and playback different transactions. It is not a linear execution like Internet Explorer based RBM. The recorded actions will be replayed in the browser. Once the playback is complete, EUM agent will update the results of the playback [response time, response code, etc] in Applications Manager.
Browse through the following topics to use the Real Browser Recorder tool:

- Getting Started
  - Hardware/Software Requirements
  - Download and Installation
- Recording a New Transaction

Getting Started

You must download and install the recorder tool to record the sequence of user transactions. Every step of the transaction will be captured and recorded. You also can modify or edit your transactions.

Hardware/Software Requirements

A minimum of at least 45MB of disk space is required for installing the software.

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Download and Installation

Download the new Recorder and start the installation process. The installation wizard takes you through a four step process after which the Recorder will be started:

- A welcome screen is displayed, after which you will be asked for confirmation of the license requirements. Click **Yes**.
- After confirmation, a **Choose Destination Location** screen is displayed. The user is allowed to select the drive and directory where he wishes to install the Real Browser Recorder. Click **Browse** and select the **Destination Location**. The default location is "C:Program Files (x86)ManageEngineRealBrowserRecorder". Click **Next**.
- Choose the language in which to install the recorder. Click **Next**.
- Review the settings in the confirmation dialog and click **Back** if you wish to make changes. If not, click **Next**. The Recorder will be installed in your machine.
- After the installation is completed, click **Finish**. Make sure the "Launch Real Browser Recorder now" option is checked, if you would like to start the tool automatically after the installation is complete.

Recording a New Transaction

After installing, the Real Browser Recorder can be accessed under All Programs in Windows Start Menu. You can record a new transaction following these steps:

- The user has to login first. Enter the **hostname** and **SSL port**.
- Support for APM Plugin is provided. If you are an APM Plugin user, check the Is APM Plugin checkbox.
- In the login screen, specify the **username** and **password**. Only **admin and delegated admin users** have the authorization to use the recorder.
- **Record the Sequence.**
  - Click on the **Record New** button to start a new recording.
  - Enter the URL of the application you wish to monitor then press enter to load the corresponding web page.
  - Follow the sequence of steps that you wish to monitor.
- After recording the sequence, click **Preview & Save**. A Preview & Save screen will be displayed with a list of transaction steps, their corresponding URLs and the actions performed in each page.
- You can delete the actions which are not required, if necessary, and apply keyword checks and edit the step name.
- Once you are done, click **next** to go to the save monitor page.
- An optional test playback can be carried out by clicking on the **"Perform Test Playback"** button :
  - This takes you to the **Select Agent** page which lists out all the existing agents. The agents that are not compatible with the recorder are grayed out. Agents that are not currently running are shown in red.
  - Select the agent where you want the test playback to take place. Click Next.
  - After successful playback, the test playback result page is shown where the result of the keyword checks placed earlier on are also displayed. Click **next**to go to the save monitor page.
- In the save monitor page, provide basic details such as the monitor name, polling frequency, association with a monitor group etc. The user should also select the agent locations from which he wants to monitor the transactions.
- After providing the necessary details, click **Save** to create the monitor. Repeat the process to create more monitors.
- If you wish to add existing scripts, use the Import from Selenium IDE option.

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- **Edit the captured URL's**
  - You can edit the scripts once the monitor has been created. This can be done by selecting **Edit Playback Script** from the monitor actions drop down in the monitor details page.

> **Note:**
> Only **admin and delegated admin users** have the authorization to use the recorder.

Importing Selenium IDE Test cases for Firefox based RBM.

The user can import previously recorded HTML test cases from the Selenium IDE and create monitors automatically instead of recording them all over again. Here is how you can import a test case:

- Click on **New Monitor** link.
- Select **Real Browser Monitoring** under **Add EUM Monitor** category.
- In the RBM page, click on the **Create Selenium IDE Testcases** option to import existing test cases from the Selenium IDE Firefox plugin.
- In the ensuing form, fill in the **display name** and **polling interval.**
- Click on the **Browse** button to import a Selenium IDE testcase from your local machine.
- Select the **location agents** from the agents displayed where the current testcase has to be replayed periodically.
- Click the **Test** button to perform a rudimentary test playback to see if Applications Manager has accepted the script and it is successfully executed. In case of failure, Applications Manager informs you of the reason for failure. Performing a test playback is recommended as it helps detect the errors in the testcase before data collection.
- Click on the **Save** button to create a new Real Browser monitor.

> **Note:**
> Currently, we support importing of **HTML** test cases only.

Real Browser Monitoring using Internet Explorer

Deployment architecture & System Requirements

- Components of RBM - **Toolbar** for Browser (Internet Explorer), **EUM agent** to be installed from where the "Internet Explorer" playback has to be performed and **Applications Manager Server**.
- EUM agents (separate .exe downloads) have to be installed at the client locations on a dedicated Windows Machine - 256 MB RAM, 1 GB HD, with Internet Explorer 6 and above (Internet Explorer 10 not supported). However, Applications Manager can be installed on Windows or Linux. This works with the Professional Edition and Enterprise Edition (with Managed Server).
- **Supported versions of Internet Explorer (32-bit only) for RBM Recording and playback:**
  - Internet Explorer 7
  - Internet Explorer 8

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- Internet Explorer 9

Adding a monitor

For Internet Explorer based RBM, you can use the RBM Toolbar to record the required URL sequences and the actions that a typical end-user would access. The actions will be recorded as webscripts. The webscripts can be viewed in the webscript manager. Only one Internet Explorer used by EUM agent can run in the background / foreground while playback is in progress. This means only one transaction can be executing at a time. Applications Manager takes care of ensuring this synchronized playback.

Steps to Configure RBM:

- Download the **Toolbar .msi file** from the link provided in the UI and install it for your Internet Explorer browser.
- Record the necessary URL sequences and the actions of your web transaction using the installed toolbar. The actions will be recorded as webscripts. Click the Add/View Webscripts link to view the recorded web scripts in the Webscript Manager window.
- Download the **EUM Agent**. Install it in your client locations (from where the Internet Explorer playback has to be performed).
- Start EUM agent(s) by providing the **Host Name** and **Port Number** of the central Applications Manager server. You can view the active EUM agents by clicking the **View Playback Agents** link.
- Specify **Display Name**, select the **webscript** and **playback agents** from the list, and specify the polling interval and timeout values.
- Associate to a monitor group (optional).
- Click **Add RBM Monitor** to complete the configuration.

Once the playback is complete, the EUM agent will update the results of the playback (response time, response code, etc.) in Applications Manager.

> **Note**
> Please do not close the Internet Explorer browser during playback.

Steps to Record a New Webscript:

- Click the **Add/View Webscripts** link. This will open the **WebScript Manager** window.
- In this window, click the **New** link, specify the new **webscript name**, and click **Record new webscript.**
- Internet Explorer will open automatically. Load your application URLs and perform the actions. All these actions will be recorded and displayed in the WebScript Manager.
- Click **Stop Record** to stop recording.
- You can now view the recorded webscripts in the **Webscript Manager** window.

RBM Dashboard

The RBM dashboard provides an overview of the status of your webscripts or transactions from multiple locations. If you click on the individual scripts listed, it will take you to a page which shows the following metrics:

This section provides a graphical representation of the total Transaction time of transactions across the different locations where the webscript is running.

This section provides a tabular representation of the current status and response time (in milliseconds) of the webscript from the locations where the script is running. The location showing maximum response time will be highlighted on the page. This indicates

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you the location from where the transaction is responding slow.
This section provides a good indication of how each individual URL present within a transaction performs from different geographical locations. This section lists all the URLs of the transaction and shows the response time of each URL from multiple locations. The location from which the URL has the maximum response time value will be highlighted. Click on any of the response time values listed to navigate to the 'Monitor Information' page of that particular URL.

- **Transaction time of transactions across each location(agent)**:
- **Current status and response time of the transaction across each location**:
- **Response time of the individual URLs in the transaction**:

Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **Real Browser Monitoring** under the **Web Server/Services** Table. The RBM bulk configuration view is displayed distributed into three tabs:

- Availability tab, gives the Availability history for the past 24 hours or 30 days.
- Performance tab gives the Health Status and events for the past 24 hours or 30 days.
- List view enables you to perform bulk admin configurations.

Monitor Information

Parameter	Description
Name	The name of the monitor
Health	The health (Clear, Warning, Critical) of the monitor based on its dependencies.
Polling Interval	The time set as the polling interval
Agent	The name of the EUM agent
Script	The name of the Webscript
Availability	The current status of the monitor - whether up or down
Validation	The results of the functions - Content Check, Element check will be updated for each URL: • Content Check - You can validate a specific content in the page. • Element Check - You can validate a specific element like Hyperlink in the page.

Performance - Last One hour

Parameter	Description
Transaction time	The time taken for the entire transaction, i.e, all the URLs, to load.
Response Time	The average response time for the entire Web transaction.
Step page load time	The time taken for an individual page, in the transaction, to load.

Web Page Analysis:

Displays the screenshot of a webpage and performance information such as the load time and size of various components on this webpage like images, css, javascript,etc. This information can be used to optimize the website and reduce the page's loading time. The screenshots and metrics are displayed by default. This can be altered in the **Edit Monitor** page under **Monitor Actions** menu in the **Monitor Details** page.

FAQ:

1. How does Real Browser monitor differ from URL Sequence monitor?

	URL Sequence Monitoring	Real Browser Monitoring

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What does it Monitor?	Monitors the availability and performance of multi-step web transactions, such as online shopping cart. The URL sequence monitor supports only the recording of URL sequences and not the actions performed in the URLs.	Monitor the availability and performance of multi-step web transactions using a real browser, such as online shopping cart. RBM supports playback from different geographical locations unlike a URL sequence monitor.
Ideal for Monitoring	Ideal for monitoring web application response time.	Ideal for monitoring web applications that contain form fillings and AJAX content.
How does it Monitor?	Monitors via server side programs without actual rendering of a web page.	Monitors via a real browser (Mozilla Firefox) with actual rendering of the web page.
Metrics captured	Analyses server response time of the web application sequence. Only the response time of the actual HTML content is only considered.	Analyses multi-step Web Applications. Captures response time of the webpage which includes CSS, images, links loaded from third party websites etc.

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Web User Experience Monitoring BETA

Applications Manager delivers real-time and trending data about your web application's performance and the level of satisfaction that your end users experience.
Get user satisfactions details at a glance. Track Web transactions response time like where is the most time being spent and which transactions are the slowest. Use Apdex scores to know customers' satisfaction details at your website and identify trends in across different locations. Know how many users had quick pageload times, how many experienced moderate latency, and how many were frustrated by the experience. Guage error rate and throughput for a particular time period. Know the impact of various browsers and devices on the performance of your webpage.
With Applications Manager's Web User Experience Monitoring dashboard, you get end-to-end Web User Experience monitoring with a variety of color-coded charts and reports to visualizes your data.

Adding a new monitor

Prerequisties for adding a WUE monitor - The client needs to have a Site24x7 account with the necessary license for using the RUM feature in Site24x7.
Steps to set up a Web User Experience Dashboard -

- Specify a **Web Application Name.** This will be the name of dashboard created too.
- Enter the **Apdex Threshold** (Response time (in milliseconds) threshold for calculating the apdex score. All the responses which are handled within this threshold are considered to satisfy the user).
- Enter your **Site24x7 user ID.** If the client is adding an account for the first time, in APM, the AuthToken field is shown for authentication. (Site24x7 User IDs Authtoken which can be generated using details available in https://www.site24x7.com/help/admin/developer/api.html.)
- Enter the **Injection Script** (The JavaScript snippet which collects the web user metrics). Once the AuthToken has been generated successfully, a new JavaScript Script is generated for the web application. Copy this JavaScript snippet and insert it into the headers or footers of the pages for which you want to see these metrics.
- Choose the Monitor Group from the combo box with which you want to associate Web User Experience Monitor (optional). You can choose multiple groups to associate your monitor.
- Click Add Monitor(s).

Monitored Parameters

Go to the **Monitors Category View** by clicking the **Monitors** tab. Click on **Web User Experience** under the **Web Server/ Services** Table. Displayed is the **Web User Experience** bulk configuration view distributed into three tabs:

- **Availability tab** gives the Availability history for the past 24 hours or 30 days.
- **Performance tab** gives the Health Status and events for the past 24 hours or 30 days.
- **List view** enables you to perform bulk admin configurations.

List of metrics captured during data collection :

- Overview
- Geographic Details
- Browser Details
- Device Details
- ISP Details

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- Web Transaction Details
- Error Details

Overview

Parameter	Description
Summary Report- World View	
Apdex Score	Apdex is a measure of response time against a set threshold. It measures the ratio of satisfactory response times to unsatisfactory response times. The Apdex Score is calculated using the following formula: $\text{Apdex} = \frac{\text{Satisfied Count} + \frac{\text{Tolerating Count}}{2}}{\text{Total Samples}}$
Unique Users	The number of unique users/visitors actively running an application/url.
Total Page Views	The total number of page views per user session.
Components And Response Times	
Total Response Time	The total response time is defined as the time between issuing a web page request to the system until the page is visible to the user (or the time taken for an application to complete an activity)
Network Time	The network latency time for the request.
Redirection Time	The measurement of how long it takes the site to redirect from one URL to another before the page is fetched.
DNS Resolution Time	The time taken to resolve the URL domain name to the IP address.
Connection Time	Server Connection Time is the interval between the time that a user initiates a request and the start of fetching the response document from the server. This includes time spent on redirects, domain lookups, TCP connects and SSL handshakes.
Server Time	The server request processing time.
Frontend Time	The front-end network time is the time span that is consumed for sending data from/to the front end
Document Download Time	The time for the browser to download the complete HTML document content.
Document Processing Time	The time for the browser to build the Document Object Model (DOM).
Page Rendering Time	The total time between opening a page (opening a new URL, clicking a link, opening a new workflow or refreshing a page) and the availability of a page on the browser.

Geographic Details

Parameter	Description
Location	The monitoring location.
Apdex Score	Apdex is a measure of response time against a set threshold. It measures the ratio of satisfactory response times to unsatisfactory response times.
Average Response Time In Ms	The average response time is defined as the time between issuing a web page request to the system until the page is visible to the user
Total Page Views	The total number of page views per user session.
Throughput	The amount of work the system is doing per unit time.

Browser Details

Parameter	Description
Response Time By Browser	The average response time sorted by browser type.
Browser Usage Split-Up	The graph of browser usage split-up.
Browser Name	The name of the browser used for the session.
Total Page Views	The total number of page views per user session.
Average Response Time In Ms	The average response time is defined as the time between issuing a web page request to the system until the page is visible to the user.
Throughput	The amount of work the system is doing per unit time.

Device Details

Parameter	Description
Response Time By Device	The average response time sorted by device type.

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Parameter	Description
Device Usage Split Up	The graph of device usage split-up.
Device Name	The name of the device used for the session.
Total Page Views	The total number of page views per user session.
Average Response Time In MS	The average response time is defined as the time between issuing a web page request to the system until the page is visible to the user.
Throughput	The amount of work the system is doing per unit time.

ISP Details

Parameter	Description
Response Time By ISP	The response time sorted by ISP type.
Browser Usage Split Up	The graph of browser usage split-up.
ISP Name	The name of the Internet service provider.
Total Page Views	The total number of page views per user session.
Average Time in MS	The average response time is defined as the time between issuing a web page request to the system until the page is visible to the user.
Throughput	The amount of work the system is doing per unit time.

Web Transaction Details

Parameter	Description
Transaction Name	The name of the transaction for which the current metric data is collected.
Average Response Time in MS	The average response time is defined as the time between issuing a web page request to the system until the page is visible to the user.
Total Page Views	The total number of page views per user session.
Throughput	The amount of work the system is doing per unit time.

Error Details

Parameter	Description
JavaScript Errors	The type of JavaScript Errors, the URL location of the error and the time of occurance.
Total Error Count	The number of errors.
Click on the JavaScript Errors to get details about the error like File Name, Line Number where the error exists, Column Number and a graph of the Error count.	

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Alarms

What is an Alarm?

Alarms are notifications generated based on some condition or criteria, helping to detect problems when any of the servers running in the network is experiencing it. This improves the fault management ensuring productive application monitoring

There are three severity levels for the Alarms and they are

- Critical
- Warning
- Clear

Alarms are generated for the following type of attributes:

1. **Availability** of a Monitor. When the availability of the Monitor is down, the severity is represented as and when it is up, the severity is represented as .
2. **Health** of a Monitor.
3. **Attributes** of a Monitor. Alarms will be generated, if the threshold profile condition set for these attributes is met.

> **Note**:
> • The availability of a Monitor requires no configurations from your side.
> • Alarms are also generated based on dependencies configured to the attributes. Refer to Configuring Dependencies section for more details.

The Alarms screen displays a table provides the following:

- **Severity** - Click on the severity of an alarm to view a Root Cause Analysis pop-up window.
- **Alarm Message** - Click on the Alarm Message for individual alarms to display the Alarm Details.
- **Monitor Name** - Click on the monitor name to view the monitor details.
- **Monitor Type** - Displays the monitor type.
- **Technician** - The technician who attended on the Alarm. Click on the technician name to pick up the alarm.
- **Date / Time** - The Date and Time when the alarm was added.

You can generate alarms and perform actions based on your configuration. Go through the following sections to know more about the alarms tab:.

1. Filtering Alarms
2. Creating Threshold Profile
3. Creating Actions
4. Associating Threshold and Action with Attributes
5. Configuring Dependencies
6. Configuring Consecutive Polls
7. Search
8. **Alarm Views:** This is an option to view the alarms based on a particular Monitor Group or Monitor Type by selecting them from the respective combo box.
9. **Alarms for traps:** Traps received via SNMP Trap Listener can be seen here. Also, the other unsolicitated traps can be viewed here.
10. **JMX Notifications:** You can view the JMX Notifications received.

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> **Note**:
> • Bulk Alarms Configuration is also possible. Refer Bulk Alarm Configuration

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Filtering Alarms

Go to the Alarms Tab to view all the alarms configured in Applications Manager along with their severity, type, date and the technician to whom the alarm is assigned. You can sort the alarms by clicking on the parameter type at the top of the table.

You can view all alarms or filter the Critical, Warning and Clear alarms or sort between Configured Traps, Unsolicited Traps or JMX Notification by clicking on the respective buttons. You can also fillter alarms by:

- **Alarm Actions**You can perform bulk alarm actions by checking the check-boxes of the alarms and selecting the action you require from the **Alarm Actions** drop-down menu at the top of the table. You can perform actions like:
  - Set the alarm as clear.
  - Acknowledge the alarm.
  - Assign a Technician to take care of the alarm.
  - Generate a PDF report showing the History Report of the alarm.
  - Generate an Excel report showing the History Report of the alarm.
- **Selected Time**You can filter alarms to show alarms generated in a specific period or a specific day by selecting the time you require from the **Select Time** drop-down menu at the top of the table. You can filter alarms generated by Last One Hour, Last 2 hours, Last 4 hours, Last 6 hours, Last 12 hours, Last 24 hours, Today or Yesterday
- **Selected Monitor Group**You can filter alarms to show only alarms associated with monitor groups or only with monitors. You can do this by selecting the option you require from the **Select Monitor Group** drop-down menu at the top of the table.
- **Selected Monitor Type**You can filter alarms to show only alarms associated with a particulat monitor type. Select the monitor type that you require from the **Select Monitor Type** drop-down menu at the top of the table and click **Go**.

Search

You can search through alarms by clicking the search button at the top of the alarms table. When you click the button text boxes appear in the alarms table under the parameter names. You can search for alarms by typing the alarm message, alarm name, type, or technician to whom the alarm is assigned and then clicking**Submit**.

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Alarm Details

Under Alarms tab, By clicking on the 'Alarm Message' for individual alarms, the alarm details for each alarm is displayed.

Under the Alarm Details page, you can view:

- The **Monitor** to which the alarm is associated and an "At a Glance Report".
- The **Attribut**e for which the alarm is configured.
- The **Time of Creation** of the alarm.
- The **Last Updated Time** of the alarm.
- **The Current & Previous Severity** of the alarm
- **Dependency Rule Configuration**
- The **technician** who attended on the Alarm.
- The **Root Cause Analysis Message**
- **Custom Fields**
- **Annotations** can be added to describe the details of the alarm.
- The **Anomaly Dashboard** for troubleshooting.

Root Cause Analysis (RCA)

Based on the threshold and dependencies associated with the attributes of Monitor, the severity of the Monitor and Monitor Group is determined. You can view the Root Cause Analysis report by clicking the status icon of the attributes (Refer to the Icon Representation section of Appendix, to know the different status icons). Expand the nodes to view the actual cause of the problem.

The following are the quick links that can be viewed in Alarms page.

All	Lists all the alarms based on Alarm Views where there are options to choose a particular or all Monitor Groups and Monitor Types.
Last One Hour	Lists all the alarms generated for the last one hour.
Last One Day	Lists all the alarms generated for the last one day.

Note:
Check out the blog post about RCA Messages.

Alarms Health and Availability History

Alarm history gives you the history of the changes in the status of Health and Availability of an alarm over a period of one week. The history table displays:

- Status: Indicates the severity of the Monitor based on its pre-defined threshold.
- Monitor Name: Name of the Monitor that created the alarm.
- Message: Refers to the problem that caused the alarm. Click on the message to know more about the alarm details. Also view the Alarm History that gives you a detailed idea on generation of the alarm and its status.
- Date/Time: Date and Time at which the alarm was generated.

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Viewing and Configuring Alarms Globally through Alarm Templates

The purpose of Global Alarm Configuration is that you can associate thresholds and actions to Monitors/ Monitor Groups/ Monitor Types directly rather than from their individual screens. Additionally, you can view all the thresholds and actions associated with the attributes of a Monitor Type/ Monitor Group / Monitor in a **single**screen.

How to Demos: Have a look at our demo on configuring Alarms in our website.

You can perform the following functions in the screen:

- Create and associate a threshold for an attribute by clicking 'Associate' link. It opens the 'Configure Alarms' page, herein you can create a new threshold or apply an existing threshold for the attribute.
- Edit already existing thresholds by clicking on the threshold name.
- Configure Alarms for:
  - Monitors
  - Monitor Groups
  - Monitor Types

Monitors:

- Select the Monitor Type from the list.
- Select the specific Monitor for which you want to configure alarms.
- Select from the list of attributes given and associate thresholds.

Monitor Groups:

- Select the Monitor Group from the list.
- Select Action Type: Individual or Template.For Individual,
  - Select the desired attributes listed for each Monitor and associate thresholds.
- For Template,
  - Select Monitor Type.
  - Select from the list of attributes given and associate thresholds.
  - For information about "Override existing Threshold Configuration" option, see below.

Monitor Types:

- Select the Monitor Type from the list.
- Select from the list of attributes given and associate thresholds.
- For information about "Override existing Threshold Configuration" option, see below.

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Known Limitations:
• **Overriding existing Threshold Configuration.**
For **Monitor Groups** and **Monitor Types**, while associating thresholds, an option, **"Override existing Threshold Configuration"**is displayed. Checking this option will override the threshold configurations of Monitors whose thresholds were configured individually(not from templates) with the threshold configurations of the current Monitor Group/ Type. If left unchecked, the existing threshold configuration of the Monitor(s) is maintained and the new threshold configurations are applied to all other Monitors of the Group/ Type.
• **Monitor Group templates are given priority over Monitor Type templates.**
For example,

• If a monitor of a given Monitor Type belongs to a Monitor Group and the thresholds are configured for the Monitor Group as well the Monitor Type of this monitor, the Monitor Group configurations will take precedence over Monitor Type configurations.
• Also if a Monitor has a preciously applied Monitor Type template and it is newly associated to a Monitor group with a Group template, the thresholds/actions of the Monitor Group template are applied to the Monitor.
• **Configuring Thresholds when a Monitor belongs to two Monitor Groups.**
It is not recommended to configure two different thresholds for a given attribute of a Monitor belonging to two Monitor Groups. When tried, an error message is generated for the same.
• In the case where a monitor belonging to two monitor groups with different thresholds/actions configured via Monitor Group Template for the same attributes, the thresholds/actions pertaining to the Monitor group template that was first applied is maintained.
• Different Actions for various severities configured at Monitor / Monitor Type / Monitor Group level cannot be merged together. Any of the Monitor / Monitor Type / Monitor Group level action-severity configuration is possible.
• For best practices it s advisable to use separate thresholds/actions for Monitor Group/ Monitor Type template level configuration and for Monitor level configuration

For more information, refer to the Associating Threshold and Action with Attributes section.

Note: You can also view the Global Alarm Configuration screen by clicking 'Configure Alarms' under Admin tab, Alarm / Action settings.

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Creating Threshold Profile

Thresholds let you define the status of an attribute based on specific conditions. For example, you can define a threshold to show the status of the web server as critical, if the *response time* exceeds *100 seconds*. Likewise, you can define a threshold to show the status as clear, if the MBean's attribute - *Active* is equal to *true*.

To define a threshold, follow the steps given below:

1. Click **New Threshold**. This opens the **Create New Threshold Profile** screen.
2. Create New Threshold Profile for **Numeric Values**, **String Values** or **Float Values.**
3. Specify the **Threshold Name**.
4. You can set the profile for **Critical, Warning** or **Clear** severity.
5. We provide two condition support for every severity when creating Threshold Profiles. You can set the monitored value of a particular severity to be **> (greater than), < (lesser than), = (equal to), != (not equal to), <= (lesser than or equal to), >= (greater than or equal to)** to a customizable **Threshold Limit**. You can even set multiple conditions when defining your threshold limit for each severity by clicking on the **More** link at the right-hand corner of the **Create New Threshold Profile** table.
6. You can also specify a message that has to be appended to the alarm. By default, you can configure Critical severity, By clicking on advanced, you can configure Warning and Clear severity.
7. Specify the **number of polls** that can be scheduled before reporting an error. If you do not want to generate alarm for the very first time the threshold condition is crossed, you can set Applications Manager to examine a certain X number of polls from a Y number of consecutive polls (both numbers are customizable), before generating an alarm. For e.g., If you want an email alarm to be generated only if the CPU Disk utilization is above 100%, consecutively for more than three polls out of five polls, then you can configure the number of polls to be examined out of a number consecutive polls before generating an alarm. By default, it takes the value from Global Settings. Refer Configuring Consecutive Polls for setting configurations for individual monitors.
8. Click **Create Threshold Profile** to add the threshold after defining all the conditions.
9. Choose the **View Threshold** option available in the top menu to view the threshold. The Threshold Profile screen lists all the default thresholds and newly created thresholds. **Note:** You can also edit the threshold created using the edit icon.

The thresholds thus defined can be associated with the attributes for determining the status of the attributes of the Monitor Group. You can also associate thresholds and actions directly through Global Alarm Configuration instead of the individual Monitor screen. Refer to Associating Threshold and Action with Attributes for more details.

Threshold & Action Profile CSV

Applications Manager gives you the ability to create a Threshold & Action profile report in .csv format. This report shows the threshold creation time, Monitor Group, Type, Threshold Profile, Threshold Status, Critical,Warning and Clear Actions and more for catagorized and uncatagorized monitors. Here's how you can create the report:

- Click on **View Threshold Profiles** under the **Threshold Profiles** tab.
- Click the **Threshold & Action Profile CSV** button at the right- corner of the **Threshold Details** page.
- Select the check box for the kind of thresholds you want to create a report for. You can create a report for all thresholds, particular groups or unassociated monitors alone.
- Click **Create CSV**.
- A notification appears at the top of the page informing you that **"Threshold & Action profile report was successfully**

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created. Download"

- Click **download** to download the csv file.

Threshold Profiles in the Enterprise Edition

You can create Threshold Profiles from the Admin Server in Applications Manager, the same as in the Professional Edition, and the profiles created automatically syncs with the Managed Servers. However, although these profiles can only be used and cannot be edited from the Managed Servers.

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Creating Actions

Applications Manager provides the flexibility in fault management by triggering actions, such as sending e-mail, SMS, trap, and executing a command, to notify you of the alarms generated while monitoring the applications. These corrective actions make fault detection easier and faster enhancing Monitor Group management.

To trigger such corrective actions, you should have defined the action, which can then be associated with an attribute. Applications manager supports the following actions:

- Sending E-mail
- Sending SMS
- Executing Program
- Sending Trap
- Execute MBean Operation
- Log a Ticket
- Perform Java Action
- Amazon EC2 Instance Action
- Virtual Machine Action
- Replaceable Tags
- Container Actions

Note:
• Have a look at Creating actions - How to Demos in website.
• These special characters [- **%** ' " **!**] will not be accepted in Action Names.

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Sending E-mail

This action will send e-mail to the specified persons in the event of an alarm. To create an e-mail action, follow the steps given below:

1. Click the **New Action** link at the top menu. It opens **Send Email** screen, by default. **Note:** If the mail server is not configured already, you will see the *Configure Mail Server* screen initially. Specify mail server details and continue to configure Send E-mail action.
2. Specify the following details:
   1. Any **display name** for the action.
   2. The **from** and **to** e-mail addresses.
   3. The **subject** and **message** of the e-mail.
   4. Choose the format of the message: **HTML**, **Plain Text** or **Both**.
   5. Choose whether to append the alarm information generated by Applications Manager to the Email.
   6. If you want to execute the action during specific time periods, enable the **Execute Action during Selected Hours** option and select the Business Hour during which the action has to be executed.
3. Click **Create Action** to finish. This will list the e-mail action name and its details along with the other actions configured.
4. Click **Add New** for creating more e-mail actions or **Delete** (on selecting the respective action's check box) to delete the action.

After creating an e-mail action, you can edit or execute that action. These two tasks can be performed from the "View Actions" page.

- To edit the action, click the **Edit** icon .
- You can also have a trial execution of the action. To do so, click the **Execute** icon of that action.

> **Note:**
> The Subject and Message of the e-mail action can be further enhanced by using Replaceable Tags. Further, you can edit the EMail template by changing *<mail.html>* file present in the *<AppManager_Home>/working/conf* directory. Restart Applications Manager on changing *<mail.html>*.

E-mail Action in the Enterprise Edition

You can create e-mail actions from the Admin Server in Applications Manager, the same as in the Professional Edition, and the actions created automatically sync with the Managed Servers. However, although these actions can be used in the Managed Servers. They cannot be edited from the Managed Servers.

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Sending SMS

This action can be used to send SMS (Short Message Service) to specific users in the event of the alarm. To create an SMS action, follow the steps given below:

1. Select the **New Action** link from the top menu.
2. Click **Send SMS** from the **Actions** menu in the left frame and specify the following details:
   1. Any display name for the action.
   2. Choose the mode of SMS - Either through EMail or through Modem.
   3. In case of EMail, enter the **from** and **to** addresses.
   4. In case of Modem [Available in Windows only], enter the **mobile number** to which the message has to be sent. You should have configured the SMS Server beforehand to use this facility. To know more about sending SMS through modem, refer Admin - Configure SMS Server.
   5. The message for the SMS.
3. Click **Create Action** to finish. This will list the SMS action name and its details along with the other actions configured.
4. Click **Add New** for creating more SMS actions or **Delete** (on selecting the respective action's check box) to delete the action.

Also refer "Add complete Information to SMS" section under Admin > Action-Alarm-Settings.

After creating an SMS action, you can edit or execute that action. These two tasks can be performed from the "View Actions" page.

- To edit the action, click the **Edit** icon .
- You can also have a trial execution of the action. To do so, click the **Execute** icon of that action.

Note: The Message of the SMS action can be further enhanced by using Replaceable Tags.

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Executing Program

On the occurrence of an alarm, a specific program can be executed. To execute a program, follow these steps:

1. Select the **New Action** link from the top menu.
2. Click **Execute Program** from the **Actions** in the left frame and specify the following details:
   1. Enter the display name for the action.
   2. Choose whether the program to be executed is from the local server or from a remote server.
   3. If the program is in a remote server, choose the Host Name from the list of existing servers or else you can add a new host.
   4. For configuring a new host, enter the following details - Host Name / IP Address, Mode of monitoring (Telnet/SSH), User Name and Password of the host, port number (Default Telnet port no: 23, SSH port no: 22) and then specify the command prompt value, which is the last character in your command prompt. Default value is $ and possible values are >, #, etc
   5. Enter the Program to be executed. Use the Upload Files/Binaries option to upload the script file .
   6. Enter the directory path from which the script should be executed.
   7. The **Abort after** field is used to specify the timeout value for the program. Specify the time after which the program should be terminated.

> **Note**: It is important to provide the required time for aborting the command execution since the alarm processing is held up by the program execution. That is, while executing the program, the command runs synchronously in the mail alarm processing thread. This will delay all the alarms, following the alarms being processed, until the program execution is completed or terminated

3. Click **Create Action** to finish. This will list the Execute Program action name and its details along with the other actions configured.
4. Click **Add New** for creating more actions or **Delete** (on selecting the respective action's check box) to delete the action.

After creating an execute program action, you can edit or execute that action. These two tasks can be performed from the "View Actions" page.

- To edit the action, click the **Edit** icon .
- You can also have a trial execution of the action. To do so, click the **Execute** iconn of that action.

Note: Passing arguments to custom scripts can be further enhanced by using Replaceable Tags.

Usages : Pointers to where you can use Execute Progam action

- Integrate a .vbs script to be executed by writing a simple .bat file. With this you can restart a remote service, reboot a machine etc.
- Execute custom actions like calling a python script or Java class etc.
- Invoke a .wav file to make some alarm noise on the server
- Execute a script on a remote server
- Trigger actions like cleaning up a harddisk when the usage exceeds some threshold limit

> **Note**: Remote Windows Server is not supported

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Sending Trap

There are some circumstances where some Manager Applications also need to be intimated about occurrence of fault in the servers or applications being monitored. In such case, the alarms can be sent as traps to the manager applications and they can be viewed by any standard SNMP Manager such as Trap Viewer, HP Openview, IBM Tivoli etc. The supported versions of SNMP Trap are SNMPv1, SNMPv2c and SNMPv3

To configure an alarm as a trap and send it as an action, follow these steps:

1. Select the **New Action** link from the top menu.
2. Click **Send Trap** under the **Actions** menu in the left frame. This opens the **Create Send Trap action** screen.
3. Select the SNMP trap version (**v1 / v2c / v3**) from the combo box.
4. Specify the following details:
   1. Any display name for the action.
   2. The destination or the manager application **host name** to which the trap has to be sent.
   3. The **port number,** where the manager host is running.
      The following are the details required to be filled for a trap PDU:
   4. The **OID (Object Identifier)** of the management object of a MIB.
   5. The **community** for the trap.
   6. The message, which will be sent as trap **varbinds**. The message can be enhanced by using Replaceable Tags.

      Note : Multiple Varbinds can be specified by having multiple ObjectIDs and their values as comma separated in "ObjectID" and " Message (Varbinds) " field respectively. For e.g., you can give ObjID1, ObjID2, ObjID3 in the ObjectID field to represent 3 Object IDs and correspondingly give ObjValue1, $RCAMESSAGE (the root cause message will be passed through the replaceable tag - $RCAMESSAGE), ObjValue3 etc., in the varbinds field to specify the values. ObjID1 and ObjValue1 will be passed as varbinds, same is the case with the other varbinds.For SNMP Version V3:Select one of the three **Security Levels**:
      - **NoAuthNoPriv** - Messages can be sent unauthenticated and unencrypted. Enter a UserName and Context Name.
      - **AuthNoPriv** - Messages can be sent authenticated but unencrypted. Enter a UserName, Context Name and anAuthentication Password. You can select an Authentication Protocol like MD5 or SHA from the drop-down list.
      - **AuthPriv** - Messages can be sent authenticated and encrypted. Enter a UserName, Context Name,an Authentication Password and a Privacy Password. You can select an Authentication Protocol like MD5 or SHA from the drop-down list. By default 'DES' encryption technique will be used.
   7. Select the **Generic type** of trap PDU from the combo box. Specify the **Enterprise OID** for the trap You can also use the MIB Browser to provide the OID. In case, you want to upload a new MIB, then use the Upload Files/Binaries option. In case of SNMPv2c trap, mention the **SNMP Trap OID**.
5. Click **Create Action** to complete the configurations. This will list the trap action name and its details along with the other actions configured.
6. Click **Add New** for creating more trap actions or **Delete** (on selecting the respective action's check box) to delete the action.

After creating an send trap action, you can edit or execute that action. These two tasks can be performed from the "View Actions" page.

- To edit the action, click the **Edit** icon .
- You can also have a trial execution of the action. To do so, click the **Execute** iconn of that action.

Note: You can configure alarm actions (for eg., EMails to be sent) for unsolicited traps. Refer FAQ.

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Execute MBean Operation

Actions of type Execute MBean Operation can be created to invoke operations on MBeans of JMX Compliant Resources. The JMX compliant resources that are supported by Applications Manager are : WebLogic, WebSphere, JBoss, AdventNet RMI Adapter and JMX agents (JDK1.5 / MX4J). Creating a MBean Operation would be helpful if you want to monitor the value of any custom attribute and do any action based on its value.
For Eg, When you want to shut down your JBoss server when the number of threads running in it goes above a specified value, you can add the necessary code to shutdown the server on the JBoss Montor side as a MBean operation and invoke this as a MBean Operation action from the Applications Manager.

To configure an Execute MBean , follow these steps:

1. Select the **New Action** link from the top menu.
2. Click **Execute MBean** under the **Actions** menu in the left frame. This opens the **Create New MBean Operation Action** screen.
3. By following a simple set of 4 steps you can create a MBean Operation. First Step : If you have a JMX compliant monitor already configured, it will be listed in the Combo box. Provide a name for the action and select any one of the resources for which you create a MBean Operation. If you donot have any monitor configured, use the link given the page to discover a new monitor. Click on the **Show Domains** Button to go to the next step.
4. Secondly, The list of domains present in the agent you have selected are displayed. Select any of the Domains and click on the button **Show MBeans.**
5. In the third Step, Select any one of the MBeans for which you want to create the action and click **Show Operations.**
6. All the MBean Operations are listed in this screen with varying return types and arguments. Click **Create Action** button for the operation for which you want to create this action. A success message that you have created this action would be displayed and the newly created action will be listed under the head **Execute MBean Operations Action(s)**

> **Note**: You can give multiple values to the operation arguments as comma separated values. For an operation with multiple arguments, the combinations of the values supplied, can also be executed. This is done in order to ensure that we need not create separate actions to represent different combinations of argument values.
> For Example, if you want to create actions for the logging level of a product, the operation change logginLevel may take two arguments as, "User" and "Level". You can supply, admin and operator as values for User and debug and info for Level respectively. You can execute the operation manually by choosing any of the combinations using the "Manual Execution" option. By default the first values given will be taken to execute the action, as Admin and debug in the above example.
>
> Passing multiple values can be further enhanced by using Replaceable Tags.

After creating an MBean Operation action, you can test the execution of that action in two ways:

- You can have a trial execution of the action. To do so, click the **Execute** icon of that action.
- You can also manually execute the action, click on This opens a popup with the operation details. Select the options from the list and click **Execute Action**button. The action would be called with the given values and return value will be given in the UI.

> **Note**: There is a link **Fetch data now** in the corresponding monitor details page, which will fetch the data from the server, after you have executed the action. This will help you to see the value of the custom attribute without waiting for the next polling interval.

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Log a Ticket

This action will send a Trouble Ticket to the configured help desk, in the event of an alarm. To create a Ticket action, follow the steps given below:

1. Select the **New Action** link from the top menu.
2. Click **Log a Ticket** under the **Actions** menu in the left frame. This opens the **Configure Ticket Details** screen.
3. Enter the name of the Ticket.
4. If ServiceDesk Plus is configured, choose log a ticket action based on REST API Key or Credential. If SDP is above version 9, then REST API is recommended.
5. Choose the fields to be tagged in the help desk for the tickets generated. If no fields are assigned to the ticket action, the default template for the ticket to be generated in the helpdesk will be used.
6. Enter the title of the ticket, the title supports the usage of replaceable tags. You can add alarm variables to the title, by selecting those from the combo box.
7. Give the **description** of the mail content. The description also supports passing alarm variables as replaceable tags
8. Choose the format of the message: **HTML**, **Plain Text** or **Both**.
9. You can choose whether to append the alarm message that was generated, to the trouble ticket.

Note: More information on how to integrate Help Desk software with Applications Manager is available here.

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Perform Java Action

This action will perform Java actions such as generating thread dump, heap dump or garbage collection in the event of an alarm. To create a Java action, follow the steps given below:

1. Select the **Java Heap Dump/Thread Dump/GC** option from the **Actions** menu.
2. Enter the **Display Name** of the action.
3. Choose the **Action Type** to be performed in the event of an alarm. You can choose either 'Thread Dump', 'Heap Dump' or 'Perform GC' option.
   1. If you choose the 'Thread Dump' option, specify the **Number of thread dumps** to be performed and the **Delay between thread dumps** in seconds.
   2. If you choose the 'Heap Dump' option, specify the **Number of heap dumps** to be performed and the **Delay between heap dumps** in seconds.
   3. If you choose the 'Perform GC' option, specify the **Number of GCs** to be performed and the **Delay between GCs** in seconds.
4. Select the email action to be associated with this Java action using **Associate Email Action**. You can either select an existing email action from the drop-down box or create a new email action by clicking the 'New Action' link.
5. **Select Target JRE** for this action from the drop-down box. The available options include Auto-select JRE, All JREs in the selected monitor group, Specific host and Specific JRE.
   1. If you select **Auto-select JRE**, Applications Manager will automatically detect and trigger Java actions based on the associated monitor. For example, if the action is associated with a host, this will trigger thread dump for the JREs available in the host. Or if the action is associated with a Tomcat/JRE monitor, this will trigger thread dump for the JREs present in the host of Tomcat server or JRE.
   2. If you select **All JREs in the selected monitor group,** this will trigger java actions for all the JREs present in that monitor group.
   3. If you select **Specific host** option, this will trigger java actions for all the JREs present in the selected host.
   4. Selecting a **Specific JRE** will trigger java actions for that JRE.
6. Click the **Create Action** button to finish creating the Java action.

After creating the Java action, you can test its execution by clicking the **Execute** icon of that action.

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Perform Amazon EC2 Instance Action

This action can be used to start/stop/restart Amazon EC2 instances in the event of an alarm.

To create an Amazon EC2 instance action, follow the steps given below:

1. Select the **Amazon EC2 Instance Action** option from the **Actions** menu.
2. Enter the **Display Name** of the action.
3. Choose the **Action Type** to be performed in the event of an alarm. You can choose either *Start Instances*, *Stop Instances* or *Restart Instances* option.
4. Use the **Select Target EC2 Instance** option to associate the action to EC2 instance(s). There are two ways of selecting the target instance(s).
   1. *All EC2 Instances in the selected monitor group:* This triggers the action for all the instances present in the selected monitor group.
   2. *Specific EC2 Instance*: This triggers the action for the selected EC2 instance alone.
5. You can use the **Notify after action executes** option to receive an email notification once the action is successfully executed. You can either select an existing email address or define new email addresses using the *New Action* option.
6. Click the **Create Action** button to finish creating the Amazon EC2 Instance action.

After creating the Amazon EC2 Instance action, you can test its execution by clicking the **Execute** icon of that action.

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Perform Virtual Machine Action

This action can be used to start/stop/restart virtual machines of VMware ESX and/or Hyper-V servers in the event of an alarm.

To create a virtual machine action, follow the steps given below:

1. Select the **Virtual Machine Action** option from the **Actions** menu.
2. Enter the **Display Name** of the action.
3. Choose the **Host Type** on which the action has to be performed in the event of an alarm. You can choose either *VMware* or *Hyper-V*.
4. Choose the **Action Type** to be performed in the event of an alarm. You can choose either *Start VM*, *Stop VM* or *Restart VM* options.
5. Use the **Select Target Virtual Machine** option to associate the action to a virtual machine. There are three ways of selecting the target virtual machine(s).
   1. *All VMs in the selected monitor group:* This triggers the action for all the virtual machines present in the selected monitor group.
   2. *All VMs in the selected ESX/Hyper-V host*: This triggers the action for all the virtual machines present in the selected ESX/Hyper-V host.
   3. *Specific Virtual Machine*: This triggers the action for the selected virtual machine alone.
6. Specify the **Maximum time for action execution** in seconds. This is the time limit within which the action has to be executed or else the action will be cancelled.
7. You can use the **Notify after action executes** option to receive an email notification once the action is successfully executed. You can either select an existing email address or define new email addresses using the *New Action* option.
8. Click the **Create Action** button to finish creating the Virtual Machine action.

After creating the Virtual Machine action, you can test its execution by clicking the **Execute** icon of that action.

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Replaceable Tags

Alarm Configuration can be further enhanced by 'Replaceable Tags'. An email action is configured, if, for e.g., Tomcat Server goes down. While creating the E-Mail action, you can specify the "Message" as "This resource is running $HOSTNAME at port $PORT". If the Tomcat Server goes down, then email action is triggered with a message that contains the actual name of the Host and Port Number. Hereby the Dollar Tags are replaced with the host in which the tomcat server is running and the exact port of the tomcat server.
Further, if you want Applications Manager to pass arguments to Custom Scripts, which would be invoked as part of 'Execute Program Action', you can make use of Replaceable Tags.

For e.g., in 'Execute Program Action' , you can give the value for 'Program To Execute' to be
<run.bat $HOSTIP $MONITORNAME $PORT>

If the action is invoked then the $tags would be replaced with the then actual values say
<run.bat 191.167.111.27 MyServer 9090>
Find below the dollar tag parameters that can be associated with their probable values.

Tags	**Values**
$MONITORNAME	Name of the Monitor
$MONITORGROUP	Name of the monitor group/ sub group/ web application group.
$ATTRIBUTE	Various Attributes like Health, Availability, etc.,
$ATTRIBUTEVALUE	Value of the attribute (eg., response time, memory usage,etc.,) that triggered the alarm.
$SEVERITYASNUMBER	1 (Critical/Down) 4 (Warning) 5 (Clear/Up)
$SEVERITY	Critical, Warning, Clear, Up and Down
$HOSTIP	The IP Address of the Host
$MONITORTYPE	Various Monitor Types like Tomcat-server, MYSQL-DB-server, Script Monitor, etc.,
$OBJECTNAME	MBean Object name when associated to Custom Monitor attributes
$HOSTNAME	Name of the Host
$PORT	Port Number
$DATE	Date
$OID	SNMP OID
$RCAMESSAGE	Root Cause Message like Average Response Time of SQS_Tomcat-server_9095 is critical because its value 652 > 10ms. [Threshold Details : Critical if value > 10, Warning if value = 10, Clear if value < 10]
$THRESHOLDMESSAGE	The message specified by the user for the different severity levels in Threshold Profile.
$URL	The URL of the monitor from where the action is triggered.
$TECHNICIAN	The user who acknowledges the alarm generated.

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Tags	Values
$ANNOTATION	Use the $ANNOTATION tag to add more details on a particular alarm
$STATUSFROM	Shows the time value in which the attribute's last status occurred
$Label	Custom Fields tag for the label of a resource.
$Configuration Item Id	Custom Fields tag for the Configuration Item ID of a resource.
$Department	Custom Fields tag for the department of a resource
$Description	Custom Fields tag giving the description of a resource.
$Location	Custom Fields tag for Location Details like Name, Floor, Building, City, State, Country and Postal code
$User / Owner	Custom Fields tag for the user or owner assigned.
$ENTITY	Unique identifier for each monitoring object in Applications Manager. Will be in $RESOURCEID_$ATTRIBUTEID format where, RESOURCEID is unique for each monitor and ATTRIBUTEID is unique for each metric.
$GROUPHIERARCHY	List the hierarchy of monitor groups for a particular monitor/monitor group. Will work for all monitors and monitor groups
$RCAMSG_PLAINTEXT	Root Cause Message without any html content like: Average Response Time of SQS_Tomcat-server_9095 is critical because its value 652 > 10ms. [Threshold Details : Critical if value > 10, Warning if value = 10, Clear if value < 10] You can use it in the **Program to Execute field** in the **Execute Program action.**

Limitation of Dollar tags

$ATTRIBUTE $DATE $MONITORNAME $MONITORGROUP $MONITORTYPE $RCAMESSAGE $SEVERITY $SEVERITYASNUMBER	These attributes will work for all the monitors / monitor groups
$HOSTIP $HOSTNAME $PORT	These attributes will not work for Monitor groups / URL / URL sequence monitor / Script Monitor / WMI counters / Web Services.
$OBJECTNAME	This will work only for JMX custom attributes
$OID	This will work only for SNMP custom attributes
$HOSTIP, $HOSTNAME	These will not work for Ping monitor and File Monitor.

Note

The $ tags will not be replaced when you execute the actions manually and not supported in Alarm Escalation.

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Container Actions

This action can be used to start/stop/restart a Container of Docker in the event of an alarm.

To create a Container action, follow the steps given below:

1. Select the **Containe**r option from the **Actions** menu.
2. Enter the **Display Name** of the action.
3. Choose the **Action Type** to be performed in the event of an alarm. You can choose either *Start Container*, *Stop Container* or *Restart Container* options.
4. Use the **Select Target Container** option to associate the action to a Container. There are three ways of selecting the target Container(s).
   1. *All Containers in the selected monitor group:* This triggers the action for all the Containers present in the selected monitor group.
   2. *All Containers in the selected Docker*: This triggers the action for all the Containers present in the selected Docker.
   3. *Specific Container*: This triggers the action for the selected Container alone.
5. Specify the **Maximum time for action execution** in seconds. This is the time limit within which the action has to be executed or else the action will be cancelled.
6. You can use the **Notify after action executes** option to receive an email notification once the action is successfully executed. You can either select an existing email address or define new email addresses using the *New Action* option.
7. Click the **Create Action** button to finish creating the Container action.

After creating the Container action, you can test its execution by clicking the **Execute** icon of that action.

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Windows Services Action

This action can be used to start/stop/restart Windows services in the event of an alarm.

To create a Windows Services action, follow the steps given below:

1. Select the **Windows Services Action** option from the **Actions** menu.
2. Enter the **Display Name** of the action.
3. Choose the **Action Type** to be performed in the event of an alarm. You can choose either *Start Services*, *Stop Services* or *Restart Services* options.
4. Use the **Select Windows Services** option to add windows services. Click the *Add Services* link. The *Add Windows Services* window will pop up. From this window, you can select Windows services using any of the methods described below:
   1. ***Select from Windows Servers****:* The Windows servers configured in your Applications Manager will be listed in the screen. Select the monitor type and the monitor from the respective drop-down boxes, and click Show Service link. This will list all the Windows services along with their current statuses. You can choose the services you want to add from this list.
   2. ***Select from Windows Services Template***: If you select this option, the services associated with the Windows services templates configured in Applications Manager will be displayed on screen. Select the necessary services from this list and click the *Add Services* button to add the services.
5. Specify the **Target Servers** on which these actions are to be executed. There are three options available here:
   1. ***Auto-select Servers****:* This option will automatically detect and trigger Windows Services action based on the associated monitor. For example, if the action is associated with a host, the action will be triggered for that particular host. If the action is associated with a Tomcat monitor, this action will be triggered for the host of the Tomcat server.
   2. ***Selected Servers***: This option lets you specify the exact servers on which the action will be triggered. You can select the servers from the ones listed.
   3. ***All Servers in the Selected Monitor Group***: This option lets you specify the exact servers on which the action will be triggered. You can select the servers from the ones listed.
6. You can use the **Notify after action executes** option to receive an email notification once the action is successfully executed. You can either select an existing email address or define new email addresses using the *New Action* option.
7. Click the **Create Action** button to finish creating the Windows Services action.

After creating the Virtual Machine action, you can test its execution by clicking the **Execute** icon of that action.

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Associating Threshold and Action with Attributes

The next step after creating the thresholds and actions is to associate them with the appropriate attributes of Monitor for generation of alarms. Follow the steps given below to associate a threshold and actions with an attribute:

Note: Have a look at Associating Threshold & Action with attributes - How to Demos in website.

1. Select the **Home** tab from the client.
2. Click the Monitor Group. This lists the Monitors in it.
3. Click the Monitor to whose attributes, threshold and actions must be associated.
4. Click **Configure Alarm** from the respective attributes. The attribute name is listed in the combo box. You can either associate threshold or action or both.
5. To associate threshold, select the threshold from the **Associate Threshold** combo box. Click **View Thresholds** to view details about the selected Threshold. If no threshold is configured, select **New Threshold**.

   Note: By selecting 'Apply to selected monitors' , the threshold for this attribute is applied to the selected monitors.
6. To associate action, select the action you want to perform from the Available actions and move it to the Associated Actions list box for each severity. Click **View Actions** to view details about the selected action. If no action is configured, click **New Action**.
7. Click **Save All** to save the configurations.

You can also associate threshold and actions from Global Alarm Configuration screen.

The threshold and/ or actions are now associated with the attribute. Based on this, alarms will be generated and action will be performed for that attribute.

> **Note**: Thresholds are configured and associated to attributes. You cannot associate threshold with attributes such as **Availability** and **Health.** Also in case of health, you must configure dependencies to generate alarms.

Remove Configurations

You also have an option to delete/ remove the above configurations using the **Remove Configurations** option. This will remove all the configurations and alarms.

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Alarm Escalation

Using this option, you can escalate if any alarm has not been attended to for a given time period. You can configure rules to send Escalation EMails or send SMS or to Execute Program about unattended alarms to the Admin or to the superior.

Alarm Escalation Configuration:

- Under the Admin Tab, click on Alarm Escalation icon.
- Set the rule. For eg., Send Escalation EMail if the critical alarms of all monitors are not cleared within 2 hours. You can set rules for alarms in individual monitor groups too.
- Select the option to Send EMail/ SMS/ Execute Program Actions. These actions have to be created earlier from the *Actions* drop-down at the top band. Execute Program Action will trigger a specific batch file or script, whereas Send EMail and SMS will send notifications to the mail id and mobile number provided, on the escalation of an alarm. For more on creating action, refer this section.
- Set the time period for which the rule should be executed repeatedly.
- By choosing not to receive duplicate escalation for the same alarm, you opt for optimizing the number of escalation EMails/ SMS sent and Program Action executions. For eg., If there are five critical alarms that were escalated in the first execution run (say 10 minutes), only if there is an addition of new alarm or deletion of alarm, the next set of alarms will be escalated in the second run. If there is no change in the environment in the next 10 minutes, ie., if the five critical alarms still remain the same, escalation EMail will not be sent.

Note

Replaceable tags are not supported in Alarm Escalation Rule.

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Bulk Alarm Configuration

After configuring alarm for a particular monitor, if the same configuration holds good for all other monitors of the same type, then by using **Alarm Template** functionality you can do Bulk Alarm Configuration. Currently, Threshold and Action configurations are supported. It is very useful in cases where you want to configure identical Thresholds/Actions for a huge number of similar monitors.

For e.g., If there are ten Tomcat servers and you want to configure an email action, if the response time for Tomcat exceeds 100 seconds. The alarm (Threshold and Action) is configured for one Tomcat server and by using Alarm Template this configuration can be applied to all the other Tomcat servers.
Usage of Alarm Template is illustrated below:

1. Click on the **Alarm Template** link under 'Snapshot' of the particular monitor.
2. A popup opens up with two choices: **Overwrite existing Threshold Configuration** and **Overwrite existing Action Configuration**
3. If you choose to overwrite the existing Threshold Configuration, then Thresholds already associated would be overwritten with the new configuration, otherwise the old setting is retained.
4. If you choose to Overwrite existing Action Configuration, then actions already associated, are removed and the new configuration added. Otherwise new configuration is appended to the existing configuration.
5. Under the Advanced option, you can choose the monitors to which alarm template can be applied.
6. On clicking on **Apply**, the alarm configuration is applied across all monitors of the same Monitor Type.

Limitation: In Enterprise Edition, When a Monitor is removed from a monitor group, the associated Monitor Group template's thresholds/actions are not removed from the monitor, in the Managed Server.

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Associate Actions, Dependent Devices and Define Alarm Rules

- Configuring Dependencies
- Defining Alarm Rules
- Dependent Devices
- Dependent Monitor Group

Configuring Dependencies for Monitors:

You have the option to associate multiple dependent devices across managed servers. Dependencies determine the **health**/**availability** of a Monitor. This includes dependent parameters of the Monitor based on which the severity of the health and availability are determined. By configuring dependencies, you can specify whether the health or availability depends on all or few dependencies. The severity is also determined by order of severity which is given below:

1. Critical
2. Warning
3. Clear

For example, If there are 9 dependencies in a Monitor Group where three are critical, three are warning, and three are clear and the severity of **Health** of Monitor Group is based on any three selected dependencies, then the severity will be **Critical** as per the order of severity.

To configure dependencies for the Monitor, do the following steps:

1. Select the **Home** tab that lists all the Monitor Groups.
2. Click on the **Monitor Group** that lists the Monitor.
3. Click on the **Configure Alarm** icon of the respective Monitor. This opens the Configure Alarm screen.
4. Choose **Health** or **Availability** from the combo box. The dependent attributes will be shown in the list box under dependencies.
5. Select and move the required attributes from the left box to the right box using >> button. By default, all the dependencies for the attributes of the monitors are added in the right box. You can also remove the default settings using the Action / Alarm Settings option.
6. Specify whether the rule for determining the severity for health or availability.

   Depends on all selected parameters: The severity of health depends on the severity of all the selected parameters.
   Depends on any "n" selected parameters: The severity of health depends on only 'n' selected parameters. The number of parameter, **n** has to be selected from the combo box.

7. Click **Save All** to complete configuring dependencies.

Define Alarm Rules

Configuring Alarm Rules for Monitors / Monitor Groups:

By configuring Alarm Rules, you can specify how the health or availability depends on the constituent Monitors in that Monitor Group. For eg., using Alarm Rules, you can say Health of the Monitor Group is Critical if the health of any two monitors in the monitor group is critical or Availability of the Monitor Group is Critical if health of any one of the monitors is critical.

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To configure alarm rules for the Monitor Group, do the following steps:

1. Select the **Home** tab that lists all the Monitor Groups.
2. Click on the **Monitor Group** you want to configure alarm rules.
3. Click on the **Configure Alarm** icon of the Monitor Group [under Today's Availability]. This opens the Configure Alarm screen.
4. Click the **Health** or **Availability** button to select the status you wish to alarm on.

For Availability Alarm Rule

- **Action** - Configure an Alarm Action. The action will be executed when the alarm is generated. Refer Action / Alarm Settings.
- **Define Alarm Rules (For Monitor Groups)** - Create rules for Alarm, Rules enable users to specify the conditions that must be met for the alarm to be generated. The alarm will generated when any one of the rule is matched. You can **Configure Alarm Rule** to show the Monitor Group as Down depending on the health/ avalability of
  - **Any of the monitors** - You can set the number of monitors on which the health of the monitor group depends.
  - **All of the monitors**
  - **Selected monitors** - Click the**+**symbol to select Associated / Non-Associated Monitors & Monitor Groups. You can select the attributes of the selected monitors on which the health of the monitor group depends.
  - **Percentage of monitors** - You can set the percentage of monitors on which the health of the monitor group depends.

  Dependent Device - Monitor Group can have a device where Child Monitors Availability status will depend on the Device Availability.

For Health Alarm Rule

- **Action** - Configure an Alarm Action. The action will be executed when the alarm is generated. Refer Action / Alarm Settings.
- **Define Alarm Rules (For Monitor Groups)** - Create rules for Alarm, Rules enable users to specify the conditions that must be met for the alarm to be generated. The alarm will generated when any one of the rule is matched. You can **Configure Alarm Rule** to show the Monitor Group as Down depending on the health/ avalability of
  - **Any of the monitors** - You can set the number of monitors on which the health of the monitor group depends.
  - **All of the monitors**
  - **Selected monitors** - Click the**+**symbol to select Associated / Non-Associated Monitors & Monitor Groups. You can select the attributes of the selected monitors on which the health of the monitor group depends.
  - **Percentage of monitors** - You can set the percentage of monitors on which the health of the monitor group depends.

  Dependent Device - Monitor Group can have a device where Child Monitors Availability status will depend on the Device Availability.

You have the option of setting any number of rules. For eg., it can be Monitor Group's Availability is down if any one of the monitor's availability is down or if the health of any one of the monitor is critical. Likewise, you can have your customized set of Alarm Rules.

Note:
In Alarm Rules
• Rule processing order will be Down, Critical and Warning i.e., Applications Manager will first process Down rules followed by Critical and Warning.
• Processing rules will be stopped at any condition if rules is matched, further it won't proceed to process rules.
• In 'Selected' rule type, Monitor Group status will depend on all the selected monitors severity.

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Dependent Devices

You can configure a dependent device in such a manner that if the availability of the dependent device is down, the concerned Monitors/Monitor Group's availability will be down. You can configure the dependent device for a Monitor Group or individual monitor to suppress false downtime alarms caused by the dependent device being down.

Configuring Dependent Device

To configure dependent device for the Monitor Group, do the following steps:

1. Select the **Admin** tab.
2. Click on the **Configure Alarms** link, found under Alarm / Action settings.
3. Select the **monitor or monitor group** for which you want to configure dependent device
4. Under Availability, click on **Configure Availability**. Then select **Dependent Device** tab. It opens up the Configure Dependent Device screen.
5. From the list of monitors, select the monitor you wish to assign as Dependent Device.
6. You also have the option of supressing the alarms generated from the Dependent Device.

Note:
• Sub Group will override MG Group Dependent Device Configuration.
• Monitor level configuration will override all the Dependent Group(Monitor Group and Sub Group) level Dependency configuration.
• Configuring Dependent device at monitor group level is like configuring dependent device for each device under monitor group.

Dependent Monitor Group

You can configure a dependent monitor group in such a manner that if the availability or health of that dependent monitor group is affected, the corresponding monitor group's availability or health will also be affected.

Configuring a Dependent Monitor Group

To configure a dependent Monitor Group, do the following steps:

1. Select the **Admin** tab.
2. Click on the **Configure Alarms** link, found under Alarm / Action settings.
3. Select the **Monitor group** for which you want to configure dependent group
4. Click on **Configure Availability** or **Configure Health** button. Then select **Dependent Monitor Group** tab. It opens up the Configure Dependent Monitor Group screen.
5. From the list of monitor groups, Select the groups that you wish to assign as Dependent Groups.

Cyclic Dependencies

Cyclic Dependencies sometimes arise when multiple dependent devices are associated across managed servers to form a loop, resulting in infinite recursions. As it is a rather tedious task to track errors caused by circular dependencies, it is important to consider how your device dependencies are configured and to try to keep all of the dependencies *acyclic.* This means that if device A depends on device B, and device B depends on device C, we don’t want device C to depend on device A.

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Configuring Consecutive Polls

If you do not want Applications Manager to generate alarm for the first time the threshold condition is crossed, then you can use this option to specify the number of consecutive polls before generating an alarm. For e.g., If you want an email alarm to be generated only if the CPU Disk utilization is above 100%, consecutively for more than two polls, then you can configure the number of consecutive polls before reporting an error as two. In Action / Alarm Settings , you can have a common setting for all the monitors.
If you want to overwrite the common settings, you can also configure the polls before reporting an error on availability and threshold of individual monitors.

To Configure Polls on **Availability** for Individual monitors

1. Click on Configure Alarm Icon, in the 'Today's availability' graph of the selected monitor.
2. You can configure the number of times consecutive polling should take place before reporting that the monitor is up or down.
3. You can also click on the Configure Alarm Link in the Snapshot view of the monitor, and by clicking on the Configure Alarm icon, for availability attribute, you can configure the consecutive polls.
4. You can enter the number of times consecutive polling needs be done before reporting that the availability is up or down. You can leave the 'Polls before reporting an error' field empty to have the action / alarm settings for consecutive polls take effect.

To Configure Polls on **Threshold** for Individual monitors

1. Click **New Threshold Profile**. This opens the **Create new Threshold Profile** screen.
2. Create New Threshold Profile, as per details found in Creating Threshold Profile.
3. **Note:** Specify the **number of polls** that can be scheduled before reporting an error. By default, it takes the value from action / alarm settings. For e.g., if you have created a threshold for web server to be critical if the response time crosses 100 seconds. And you wish to receive an email alarm only if the web server becomes critical after two polls and not at the first poll itself. Then configure the number of polls before reporting an error as two. You can leave the 'Polls before reporting an error' field empty to have the action / alarm settings for consecutive polls to take effect.

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Reports

An important aspect of all management tasks is that you can analyze the trend over time and evaluate the performance. The analysis is also useful in making calculated predictions and taking corrective actions as necessary. These calculated predictions allows you to plan for any future impact on performance for various services. To view these reports, you can follow either of the given steps:

- Click the **Reports** module tab. This opens the index page that lists all the reports generated dynamically by Applications Manager (or)
- Click on the Monitor Group and select **Application Report** Link in the left frame. By default, it takes you to the **Availability** report of the Monitor Group. By default, the graph for the attribute reports will be depicted for top 10 monitors.

The reports generated by Applications Manager depicts the availability, health, response time and alarms of the application over a specified period of time. The reporting function enables you to analyze your servers / applications / databases/ web servers / web applications / services even across months and all this even without having to make any additional configuration changes. The reports are generated dynamically, which means that you only see reports for monitors that you have created in Applications Manager. Before proceeding, please ensure that you have enabled reports for all the monitors. The generated reports has 7 / 30 report details which enables you to understand the behaviour of your applications under various business hours or during a particular period of the week/month. This feature allows you to make predictive calculations on future impact.

Some of the common functionalities of reports are as follows:

- Options to view 10/20/50/All reports by choosing them from the **Top N Reports** field. They are enabled by default for all availability and health reports.

> **Note:** This is not applicable to reports generated for Monitor Groups.

- Options to schedule reports or enable reports can be done quickly by clicking on '**Schedule Reports | Enable Reports**' link.
- Option to view **Custom Time Period** reports for Availability and Attributes, i.e, the time period for which the reports are needed can be selected. Additionally, you have the option to set the **Business Hours** during which you want the reports.
- Option to view **Custom Attribute Reports** and **Downtime Summary Report** configuration. Click here for detailed information.
- Option to save the reports in **CSV format by clicking on icon , PDF format by clicking on icon and also save in Excel format** (available only for Monitor Group - Availability & Health Snapshot - Current Snapshot, Critical Snapshot, History report, Outage Comparison Report, Availability Trend Report) for each individual report under reports tab. And also, you can mail these particular report to yourself by clicking on icon, fill out the email address and click**Send**.
- Option to **delete known Down Time reports**. You can delete known downtime reports from the database by clicking the icon in the Availability Report. For eg, go to *Application Server* and select *Weblogic* from the pull down menu in the top. Now click on *Availability of Application Servers.* Now click on the monitor's*Total Downtime.* Select the known downtime from the **Monitor Downtime detail*.** This will delete this known downtime report from the database.
- **Downtime History:** Gives the downtime/uptime chart for 'today''s period and also the downtime history for that particular monitor across all time periods. You can also assign Groups as well as Sub-Groups to downtime scheduler and generate reports. In Downtime history report, you can view the summary details of Scheduled Downtimes and Unmanaged time. This will give you more clarity in knowing the monitor's exact downtime. You can also add notes on why the monitor was down for that particular time period.
- **Summary Report of Monitor** : Gives the summary of all the reports for that particular monitor.
- **Comparison Reports**: You can compare the attribute reports of various monitors within a particular monitor group. For eg., to

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compare the response time between monitors, click on *Response Time Reports* attribute link; from the list, select the monitors for which you need comparison. You can either select the time period for which the comparision is required or select the particular **Business Hours** for which the comparison is required. Currently, availability and health comparison reports are not supported.

- **At a Glance Reports**: The performance of top 10 monitors within the monitor group can be compared in a single view. For eg, in server monitor group, you can compare the performance of top 10 servers within the group. By clicking on the bars in the report, you can see all the attributes of the monitor in a single view. Further, you can drill down to see the individual attribute reports.

Note: Scheduling of reports is possible by using **Schedule Reports** under Admin tab.

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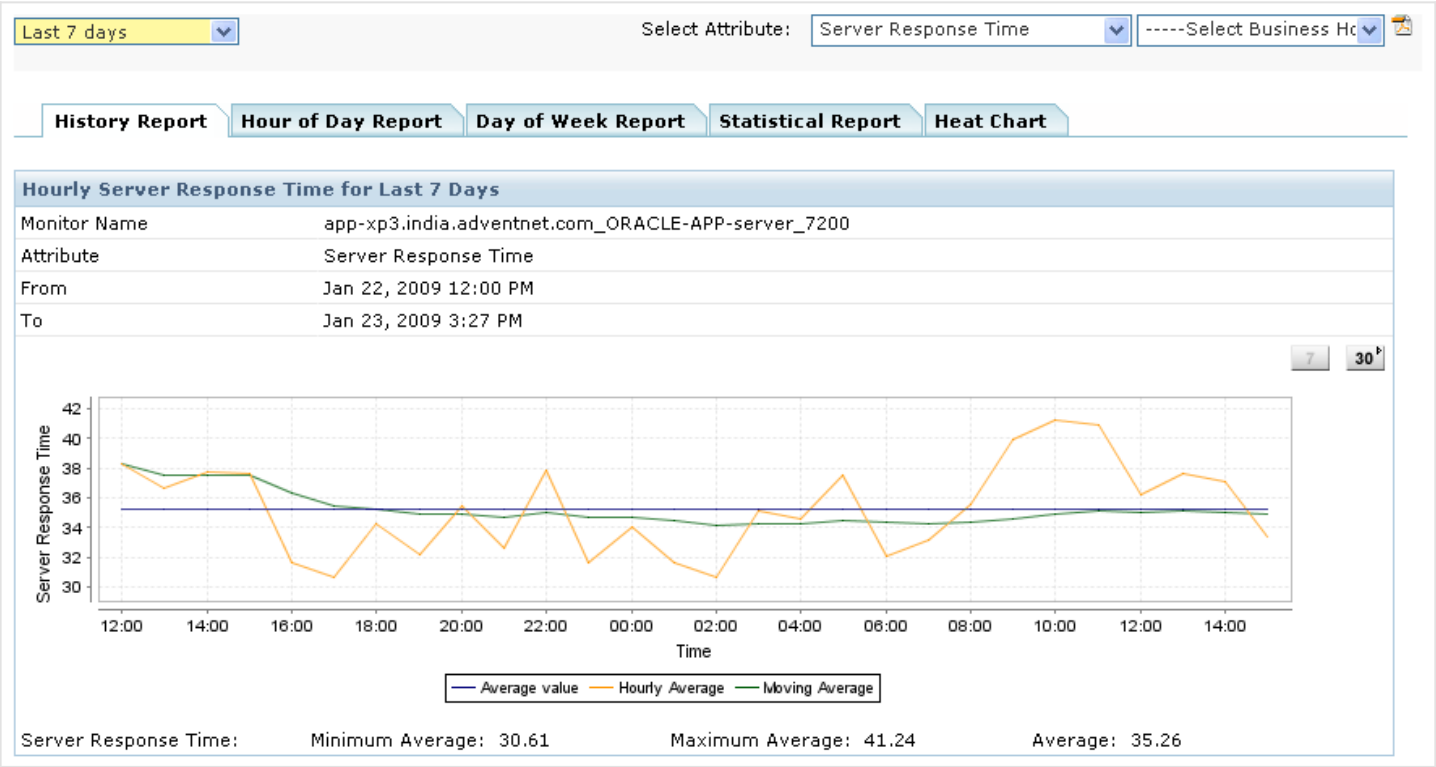
7 / 30 Reports

The 7/30 Reports is available for various attributes/resource of a particular monitor. The 7/30 reports, apart from displaying availability for the past 7 days or 30 days, they also display the following reports for each attribute/resource. These reports can be exported into PDF formats.

- History Report
- Hour of Day Report
- Day of Week Report
- Statistical Report
- Heat Chart

History Report

History Report in Applications Manager provides detailed history of the particular attribute of a monitor. You can also generate history trend across business hours for a particular attribute. This provides you with an understanding to the amount of resources that has been utilized by the particular attribute over a period of time (week/month/year).



Archiving: All the data are archived and stored every one hour. Eg. Data from 10 AM to 11 AM are archived and marked as 11 AM when stored. If the monitor instance is completely down during the archiving interval of one hour, archiving will not take place for that hour.

Minimum value: It represents the lowest value from the collected values in an hour. Eg. 6 on *Sep 01, 2008 - 14:00* hours represents the lowest value '6' collected on *Sep 01, 2008 between 13:00 and 14:00 hours*.

Maximum value: It represents the highest value from the collected values in an hour. Eg. 12 on *Sep 01, 2008 - 14:00* hours represents the highest value '12' collected on *Sep 01, 2008 between 13:00 and 14:00 hours*.

Hourly Average: It represents the average value from the collected values in an hour. Eg. 9 on *Sep 01, 2008 - 14:00* hours represents the average value '9' collected on *Sep 01, 2008 between 13:00 and 14:00 hours*.

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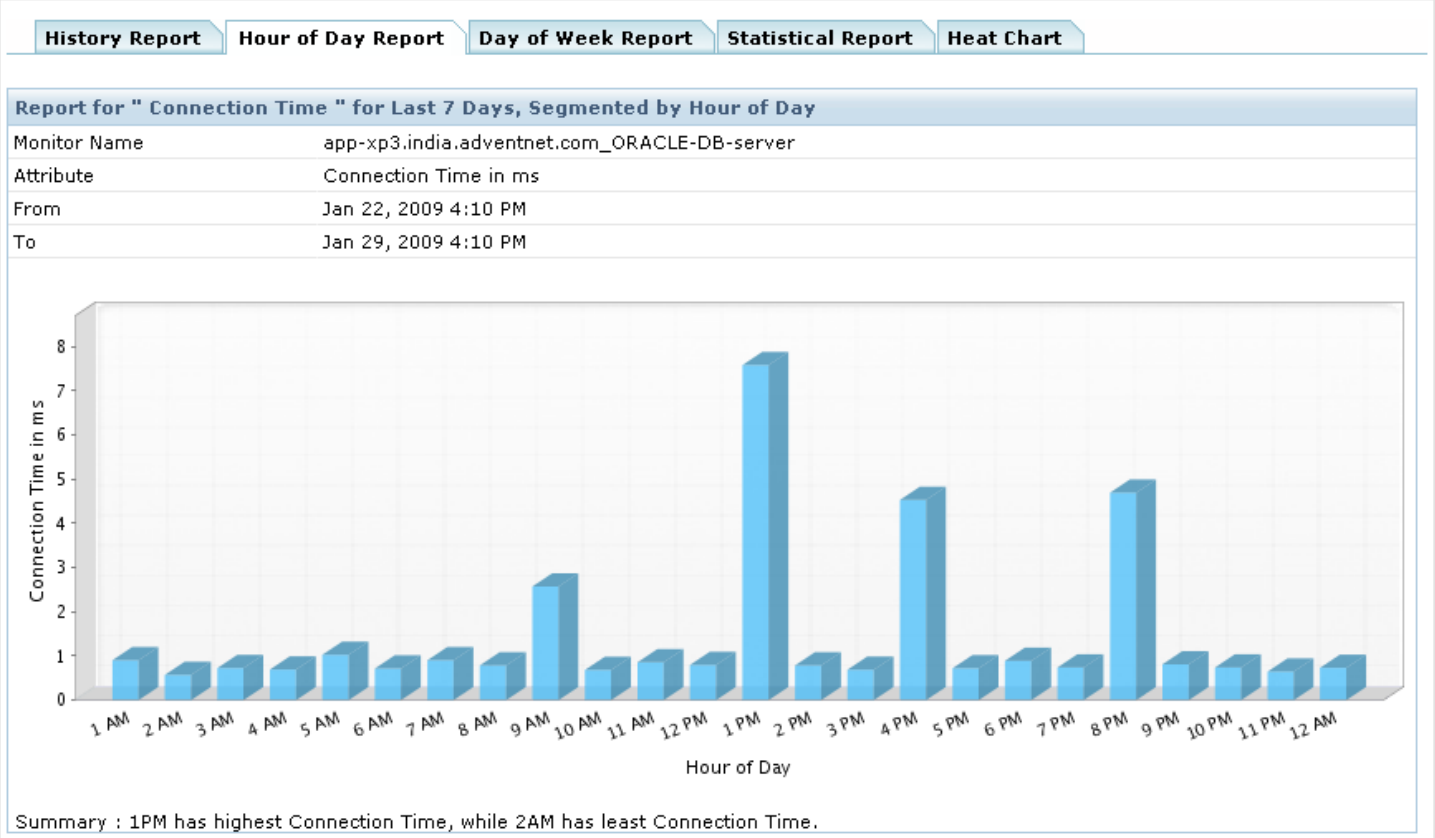
Hour of Day Report

A sample Hour of Day Report is shown below. This report generates hour's average for a particular time period (week/month/year) for the particular attribute. For example, if you have selected last 7 days data, the report generates hour's minimum, maximum and hourly average. This report helps you visualize the various bottlenecks that appear for this attribute / resource during a particular time period. This allows you to plan future impact of bottleneck on this attribute / resource.



Minimum value: It represents the lowest value among the collected values in a particular hour of the day over a period of time. Eg. The lowest value '41' represents the data collected between 13:00 - 14:00 hours from *Dec 4, 2008 3:55 PM* to *Dec 11, 2008 3:55 PM*.

Maximum value: It represents the highest value among the collected values in a particular hour of the day over a period of time. Eg. The highest value '81' represents the data collected between 13:00 - 14:00 hours from *Dec 4, 2008 3:55 PM* to *Dec 11, 2008 3:55 PM*.

Hourly Average: It represents the average value of the collected values in a particular hour of the day over a period of time. Eg. The average value '62' represents the data collected between 13:00 - 14:00 hours from *Dec 4, 2008 3:55 PM* to *Dec 11, 2008 3:55 PM*.

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Day of Week Report

A sample of Day of Week Report is shown below. This report generates average of a day for a particular time period (week/month/year) for the particular attribute. For example, if you have selected last 7 days data, the report generates everyday's minimum, maximum and hourly average and is shown below in this report. As shown in the graph below, the connection time for Oracle DB server has been highest for Wednesday and lowest for Monday. This implies that the traffic on Wednesday has been high when compared to rest of the days during the week. This would allow you to ensure that the connection time of Oracle DB server remains low for that particular day and help you troubleshoot performance issue quickly.

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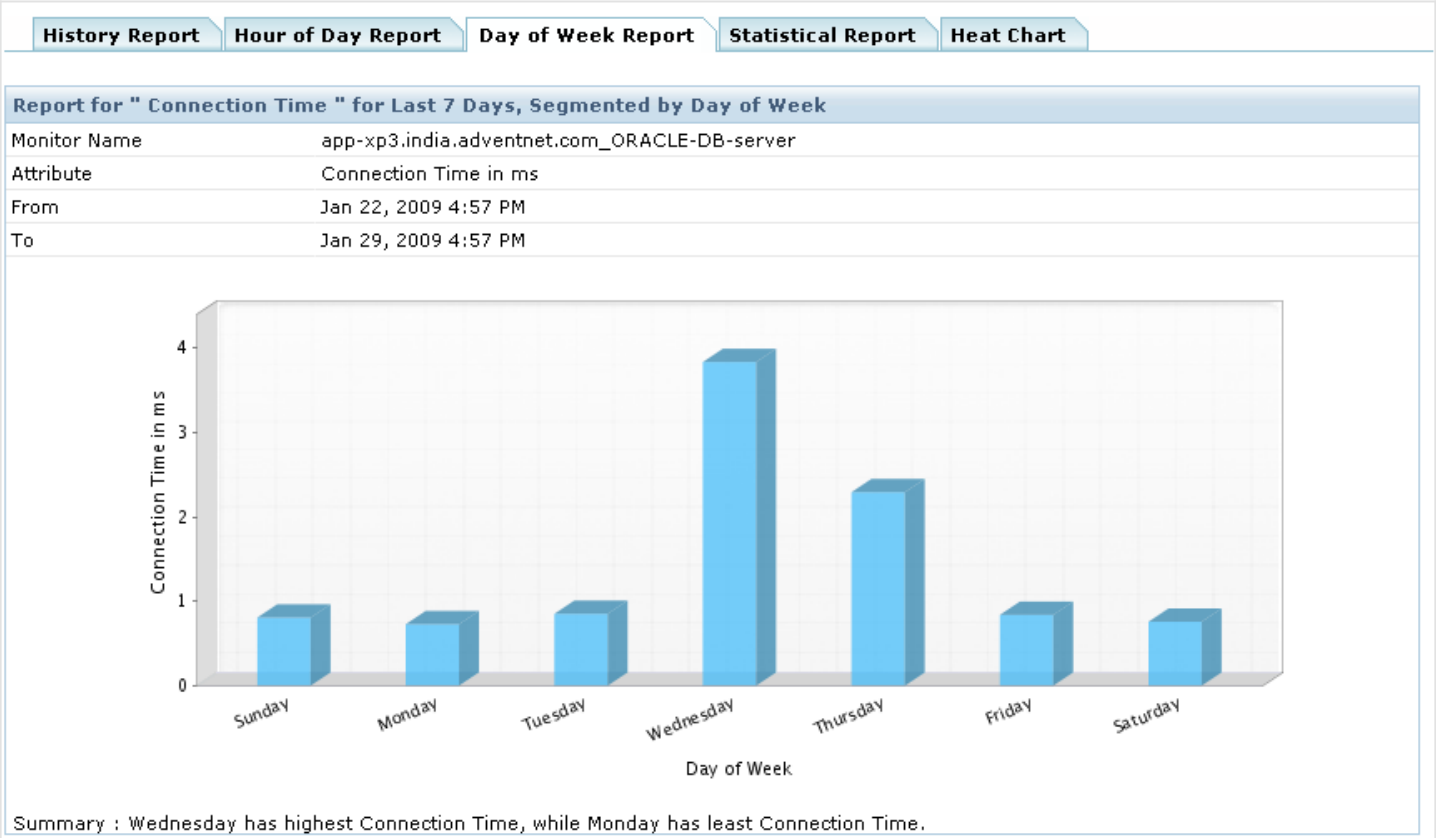

Minimum value: It represents the lowest value among the collected values in a particular day of the week over a period of time. Eg. The lowest value '41' represents the data collected on Wednesdays from *Nov 11, 2008 3:55 PM* to *Dec 11, 2008 3:55 PM*.

Maximum value: It represents the highest value among the collected values in a particular day of the week over a period of time. Eg. The highest value '81' represents the data collected on Wednesdays from *Nov 11, 2008 3:55 PM* to *Dec 11, 2008 3:55 PM*.

Hourly Average: It represents the average value of the collected values in a particular day of the week over a period of time. Eg. The average value '62' represents the data collected on Wednesdays from *Nov 11, 2008 3:55 PM* to *Dec 11, 2008 3:55 PM*.

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Statistical Report

A sample Statistical Report is shown below. This report represents the standard deviation of this attribute over a period of time. For eg. lets consider CPU utilization attribute over a period of time. X-axis represents CPU Utilization range in percentage and Y-axis represents Count in percentage. Lets consider peak value of Count percentage to be 55% and is within the range of 70% - 80%. This means that for 55% of the polled value is within the range of 70% and 80%. This data can be used to re-allocate or organize resources for the server accordingly.

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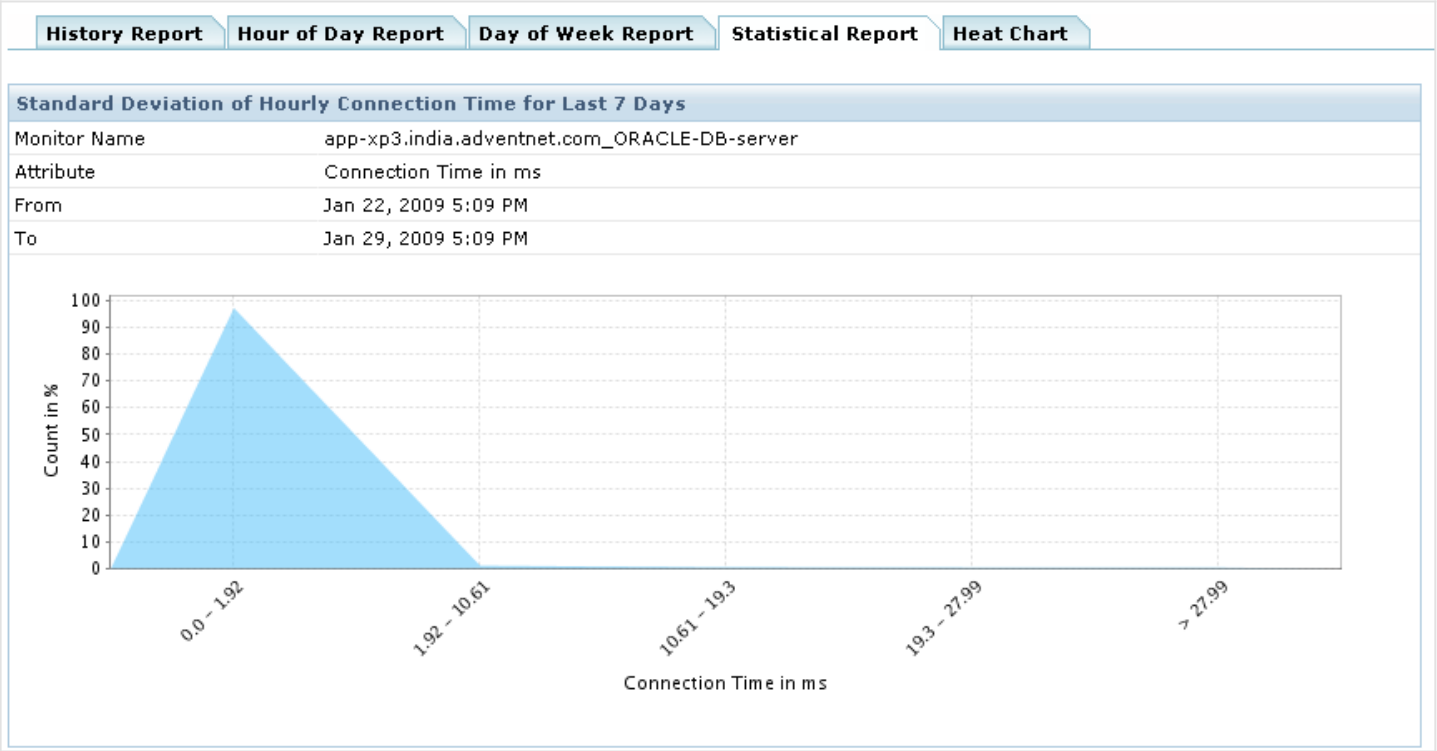

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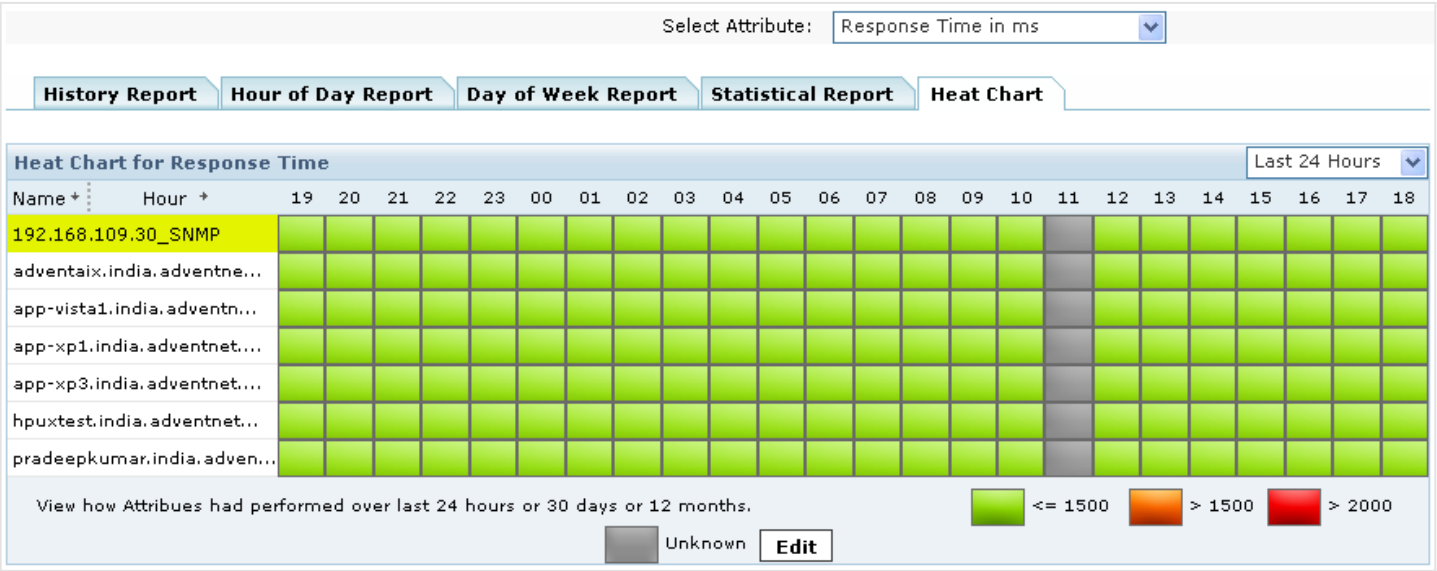
Heat Report

A sample Heat Report is shown below. This report is largely useful to compare the similar types of monitors and to check their performance of each monitor with other monitors. These heat charts are plotted based on how the attribute of the particular monitor type performs according to the threshold configured for that particular monitor. If a threshold is configured for the attribute of a particular monitor, then the threshold is taken and heat chart is plotted. There are three colors by which heat chart is plotted. Red color indicates critical breach in threshold, Orange color indicates warning, and Green color is clear.

If the threshold is breached, then the color of the heat chart changes accordingly. This implies drop in performance, thus providing clear understanding of various monitors performance of the same type. If the threshold value for each attribute for that particular monitor is not set, then the common threshold value is automatically assumed and this heat chart is generated.

The '**Edit**' option provided in this chart will facilitate the user to view the heat chart in any other threshold definition on the fly. Please note that by editing threshold the view won't affect the original threshold configured for the attribute.



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Capacity Planning Reports

Capacity planning helps IT enterprises balance hardware costs with computing needs. The major objectives of effective capacity management are:

- Making efficient use of existing capacity.
- Minimizing wastage of computing resources.

To view capacity planning reports generated by Applications Manager:

- Click the **Reports** module tab to open the index page that lists all the reports generated by Applications Manager.
- Click on the **Capacity Planning** link in the list of reports at the left side of the page.

These reports render resources like CPU and Memory utilization for both Physical and Virtual Servers. Before proceeding, make sure that you have enabled reports for all the monitors.

You can get reports over various customized time periods. The capacity planning reports can be exported in .pdf, excel, CSV and e-mail formats. The reports are classified into three types:

- Undersized Servers/Machines
- Oversized Servers/Machines
- Idle Servers/Machines

Undersized Monitors/Machines

These are servers that consistently use nearly all of their configured capacity. For a given amount of time, if the average CPU or Memory utilization of a server are very high, the resources allotted to the server is undersized. The server need to be **right-sized** so that workloads running within the virtual machine can get sufficient resource capacity.

Oversized Monitors/Machines

These are servers that consistently use less resources than their configured capacity. For a given amount of time, if the average CPU or Memory utilization of a server are very low, the resources allotted to the server is oversized. The server needs to be **right-sized** down to a lower capacity that is sufficient for the workloads running within the virtual machine.

Idle Monitors/Machines

With Applications Manager capacity planning reports you can also view individual resource utilization details of a particular monitor for a specific time interval configured by the user. These are monitors that show an insignificant level of capacity usage on one or more resources most of the time. For example, say the average CPU utilization is very low over most hours of day. This analysis is to identify servers that are not being used, for example, users are no longer running workloads.

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Rightsizing Virtual Machines

Applications Manager analyzes oversized and undersized machines using CPU and memory utilization metrics. A utilization threshold is configured for a specific metric like CPU or Memory. If a machine uses resources capacity less than this threshold, the machine is **oversized**. The degree to which a virtual machine is oversized is calculated along with the the amount of time a machine spends in an overutilized state.

Similarly, if a machine uses resources capacity more than this threshold, the machine is **undersized**. The degree to which a virtual machine is undersized is calculated along with the the amount of time a machine spends in an underutilized state.
You can view the reports for selected servers from the **Select Server** drop-down list. You can also select a particular Monitor group from the **Select Monitor Group** drop-down.

Click on the server type to generate reports for the specified time period and threshold limit. You can set the conditions to be satisfied for a server to be undersized, oversized or idle.

Click on one of the server types (undersized, oversized or idle servers). A new window is opened to display a capacity planning report with server details like:

- **Monitor Name -** Name of the Monitor
- **Undersized/ oversized/ idle -** The state of the server.
- **CPU Utilization** - Percentage of CPU Utilized
- **Memory Utilization** - Percentage of Memory Utilized
- **User Notes** - The user can add and save notes which will appear in the report.

The attribute column is **RED** or **GREEN** and the undersized column has values **YES** or **NO** respectively, depending upon the condition specified.

By default the table shows all the monitors for the day. You can click on the **Show Undersized/ Oversized/ Idle Servers Today** button to show only the respective servers for the day.

Click on the **YES** or **NO** under the **Undersized/ Oversized/ Idle** column in the capacity planning table to view a **Utilization Summary** and an **Hourly Utilization Details** Report.

Click on any of the attributes under the **CPU Utilization** or **Memory Utilization** column to get an indepth history data for that particular attribute(Disk Utilization History Report, Hour of Day Report ,Day of Week Report, Statistical Report and Heat Chart). You can select required attributes from the drop down menu in the right-hand corner of the page.

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Configure settings for diagnosis

Configure the following details for the server. To change values of attributes used in diagnosis,click on **Change settings Used in Diagnosis** button and update respective values:

- Servers are Undersized if Percentage of Time (The time for which CPU & Memory Utilization should be more or less than the configured value)
- Conditions used in diagnosis of Undersized Server (You can select any one or all of the conditions)

Monitor Type	Attribute
Servers	• CPU Utilization • Memory Utilization
VMWare ESX/ESXis	• CPU Utilization • Memory Utilization • Disk Usage in kbps • Network Usage in kbps
Hyper-V-Servers	• Total CPU Utilization • Physical Memory Utilization
Virtual Machines	• CPU Utilization • Memory Utilization • Disk I/O Utilization in kbps • Network Utilization

Note:

To disable any attribute used in diagnosis,click on Change Settings used in Diagnosis button .Click on the Disable link for the respective attribute. Save settings.

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Forecast Reports

Forecasting helps IT enterprises to predict future disk utilization based on current utilization trends and balance hardware costs with computing needs. The major objectives of effective forecasting are:

- Staying informed about current disk usage trends.
- Plan future disk utilization requirement based on forecast reports.

To view Forecast Reports generated by Applications Manager:

- Click the **Reports** module tab to open the index page that lists all the reports generated by Applications Manager.
- Click on the **Forecast Reports** link from the list of reports at the left side of the page.

Forecast Reports can be attained for a number of attributes of all servers. Before proceeding, make sure that you have enabled Reports for all the monitors. Forecast Reports uses hourly archiving to collect data for ''today, yesterday, this week, last week'' and daily archiving to collect data for ''this month, last month, this quarter, this year and last one year.''

You can get Reports over various customized time periods. The Forecast Reports can be exported in CSV format. The Reports are classified into two types:

- Forecast by growth trend
- Forecast by utilization

Forecast by growth trend

Forecast by growth trend generates Reports based on current utilization statististics and predicts the growth in utilization in the future based on present statistics. This Report is generated for all attributes monitored by ManageEngine Applications Manager. Variations in growth for every day can also be viewed by clicking on the individual monitors.

Forecast by utilization

Similar to growth trend, Forecast by utilization generates Reports based on current utilization statistics but, it also notifies when the utilization level reaches an extreme high (80%-90%, 90%-100%), allowing to take appropriate actions. This Report is generated only for attributes measured in the percentage (%) scale.

Note:

You can also schedule Forecast Reports for a future date and get notified via email regarding the same.

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Grouping Reports

The Reports page contains a list of reports, generated using Applications Manager, by grouping them with respect to Monitor Groups and Monitor Type. The reports are grouped for easier report analysis and for providing more flexibility in report generation. They are grouped as follows:

- Monitor Group
- Custom Monitor Reports
- Trend Analysis Reports
- Server Reports
- Application Servers
- Database Servers
- Web Services Reports
- Web Servers Reports
- URLs/Web Apps Reports
- Middleware/Portal Reports
- Services Reports
- Mail Server Reports
- Java / Transactions Reports
- ERP Reports
- Custom Types
- EUM Reports

Note: The details available for each attribute of the Monitor Type (except Monitor Groups) are shown in descending order. For example, in Availability report of a Monitor Type, the Monitor with the poorest availability is displayed first.

Monitor Group Reports

This generates reports for all the Monitor Groups created using Applications Manager. Choose the Monitor Group from the Select Application combo box. The following are the different Report types that are generated for the Monitor Group.

Report Types	Details
Availability & Health	**Current Snapshot**: The overall Availability and Health snapshot of Monitor Group and also the respective monitors in the Monitor Group. **Critical Snapshot**: The Availability and Health snapshot of monitors which are in Critical / Warning State in the Monitor Group. **History**: Availability and Health Outage reports for Monitor Group with details of Monitors that are in down state

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Availability Reports	**Percentage**: The overall availability of the Monitor Group and the availability details for the respective monitors in the Monitor Group. **Outage Comparison Report**: With this report, you can compare the outages for current & past week / month. You would be able to find the details of how many times (count) outages have happened and also the duration of the outage. Also, you have the option to select the business hours for which you want the metrics to be calculated. You can define your custom business hours by using the *Business Hours* tool under Admin tab. **Availability Trend Report**: You have the history of 12 days, 12 weeks, 12 months availability report. Using this, you can follow the trend that is happening. Also, you have the option to select the business hours for which you want the metrics to be calculated. You can define your custom business hours by using the *Business Hours* tool under Admin tab. **Availability and Downtime Trend Report**: This section shows three reports - the availability of the monitor group in percentage, the downtime count, and the total downtime of the monitor group for the specified time period. The availability in percentage values are compared against the target availability to give you an idea of the availability trend of the specified monitor group. These information is also summarized in a table that shows the availability percentage, downtime count and the total downtime for the respective time periods. You can generate these reports for the last 12 days, last 12 weeks or the last 12 months. You can also generate these reports based on the business hour chosen. The business hours have to be defined using the 'Business Hours' tool under the 'Admin' tab. The reports thus generated can be exported as Microsoft Excel files (.xls).
Health Reports	**Percentage:** The overall health of Monitor Group and the health details for the respective monitors in the Monitor Group.
At a Glance Report	The performance of top 10 monitors within this monitor group can be compared in a single view. By clicking on the bars in the report, you can see all the attributes of the monitor in a single view. Further, you can drill down to see the individual attribute reports.
Alarm Summary	Alarm Occurrences for the application, attributes grouped in the application, and monitors, with graphical representation. Additionally, a graph representing the split up of total critical alarm occurrences in application by most critical monitors is also generated.
Monitor Group Attribute Report	The attribute report of the constituent monitors in the Monitor Group

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Custom Monitor Reports

This generates report for all the numerical attributes of the Custom Monitors created using Applications Manager. The list of all the scalar numerical attributes available in the Custom Monitor will be listed with the reports and the agent name.

The following are the parameters in the report details of any attribute for which the report generation is enabled.

Parameters	Details
Attribute Details	This contains the following details: • Name of the attribute. • The agent from which the attributes were added to the Custom Monitor. • The port at which the agent is running. • The type of the service or resource through which the JMX or SNMP agents are monitored. • The minimum value obtained for every polling interval. • The maximum value obtained for every polling interval. • The average value of the attribute obtained for every polling interval.
Average Value	Graphical representation that depicts the relationship between the average value and time of the attribute.
Time	Tabular representation that shows the relationship between the average value and time of the attribute.

If the custom monitor is created and the attributes are not listed, then you can click on the link provided in the Custom Monitor Reports to enable or disable the same.

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Trend Analysis Reports

This generates reports for the individual monitors. The following are the different Report types that are generated.

Report Types	Details

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Downtime History	Gives the downtime/uptime chart for 'today''s period and also the downtime history for that particular monitor across all time periods. Also, you can view the summary details of Scheduled Downtimes and Unmanaged time. This will give you more clarity in knowing the monitor's exact downtime. You can also add notes on why the monitor was down for that particular time period.
Summary Report	Gives the summary of all the reports for that particular monitor.
At a Glance Report	The performance of the selected monitors can be compared in a single view. By clicking on the bars in the report, you can see all the attributes of the monitor in a single view. Further, you can drill down to see the individual attribute reports.

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Application Servers Reports

This generates reports for the Application Server Monitor Type created using Applications Manager. The reports can be generated either for all the Monitor Types (by choosing ALL from the combo box) or for any specific Monitor Type (by choosing the respective type of Application Server Monitor Type from the combo box). The following are the different Report types that are generated for the Application Server.

Report Types	Details
Availability	The availability details that include total down time in hours and minutes, average time taken to repair the failure (MTTR), average time between the failures (MTBF), and average Uptime percentage for all the Application server Monitors being monitored by the Applications Manager.
Health	The health of all the monitors in the Applications Manager server.
At a Glance Report	The performance of top 10 Application servers can be compared in a single view. By clicking on the bars in the report, you can see all the attributes of the monitor in a single view. Further, you can drill down to see the individual attribute reports.
Response Time	The minimum, maximum, and average response time of all the Application server monitors, in milliseconds. (not for .NET)
Memory Usage	The minimum, maximum, and average JVM usage by all the Application server monitors, in bytes. (not for Oracle AS, .NET)
JDBC Connection Usage	The minimum, maximum, and average JDBC Connections of Application server monitors (not for Oracle AS, .NET, Tomcat)
Thread	The minimum, maximum, and average number of threads spawned by Application server monitors (not for Oracle AS, JBoss)
Session Details	The minimum, maximum, and average HTTP Sessions of Application server monitors (not for .NET, Tomcat, JBoss)
Request Throughput of Application Servers	Number of requests processed per unit of time in the server. (not for .NET, Tomcat, Websphere, JBoss, WLI, Weblogic)
Web Application Throughput of Application Servers	Number of requests processed per unit of time in the web application (not for .NET, Tomcat, Websphere, JBoss, WLI, Weblogic)

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Database Reports

This generates reports for the Database Monitor Type created using Applications Manager. The reports can be generated either for all the Monitor Types (by choosing ALL from the combo box) or for any specific Monitor Type (by choosing the respective type of Database Monitor Type from the combo box). The following are the different Report types that are generated for the Database monitor.

Report Types	Details
Availability	The availability details that include total down time in hours and minutes, average time taken to repair the failure (MTTR), average time between the failures (MTBF), and average Uptime percentage for all the Database Monitors being monitored by the Applications Manager.
Health	The health of all the monitors in the Applications Manager server.
At a Glance Report	The performance of top 10 database servers can be compared in a single view. By clicking on the bars in the report, you can see all the attributes of the monitor in a single view. Further, you can drill down to see the individual attribute reports.
Response Time	The minimum, maximum, and average time taken to connect to the database server by the Applications Manager server, in milliseconds.
Buffer Hit Ratio	The minimum, maximum, and average Buffer Hit Ratio of the database
Cache Hit Ratio	The minimum, maximum, and average Cache Hit Ratio of the database

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Service Reports

This generates reports for the Service Monitor Type created using Applications Manager. The reports can be generated either for all the Monitor Types (by choosing ALL from the combo box) or for any specific Monitor Type (by choosing the respective type of Service Monitor Type from the combo box). The following are the different Report types that are generated for the Service Monitor Type.

Report Types	Details
Availability	The availability details that include total down time in hours and minutes, average time taken to repair the failure (MTTR), average time between the failures (MTBF), and average Uptime percentage for all the Service Monitors being monitored by the Applications Manager.
Health	The health of all the monitors in the Applications Manager server.
At a Glance Report	The performance of top 10 services can be compared in a single view. By clicking on the bars in the report, you can see all the attributes of the monitor in a single view. Further, you can drill down to see the individual attribute reports.
Response Time	The minimum, maximum, and average response time of all the Service monitors, in milliseconds.

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Mail Server Reports

This generates reports for the Mail Server monitor type created using Applications Manager. The reports can be generated either for all the Monitor Types (by choosing ALL from the combo box) or for any specific Monitor Type (by choosing the respective type of Mail Server Monitor Type from the combo box). The following are the different Report types that are generated for the Mail Server Monitor Type.

Report Types	Details
Availability	The availability details that include total down time in hours and minutes, average time taken to repair the failure (MTTR), average time between the failures (MTBF), and average Uptime percentage for all the Mail Server Monitors being monitored by the Applications Manager.
Health	The health of all the monitors in the Applications Manager Mail Server Group.
At a Glance Report	The performance of top 10 mailservers can be compared in a single view. By clicking on the bars in the report, you can see all the attributes of the monitor in a single view. Further, you can drill down to see the individual attribute reports.
Response Time	The minimum, maximum, and average response time of all the Mail Server monitors, in milliseconds.

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Server Reports

This generates reports for the Server Monitor Type created using Applications Manager. The reports can be generated either for all the Monitor Types (by choosing ALL from the combo box) or for any specific Monitor Type (by choosing the respective type of Server Monitor Type from the combo box). The following are the different Report types that are generated for the Server Monitor Type.

Report Types	Details
Availability	The availability details that include total down time in hours and minutes, average time taken to repair the failure (MTTR), average time between the failures (MTBF), and average Uptime percentage for all the Server Monitor Types such as Linux and Windows being monitored by the Applications Manager.
Health	The health of all the monitors in the Applications Manager server.
At a Glance Report	The performance of top 10 servers can be compared in a single view. By clicking on the bars in the report, you can see all the attributes of the monitor in a single view. Further, you can drill down to see the individual attribute reports.
Response Time	The minimum, maximum, and average response time of all the Server Monitors, in milliseconds.
CPU Usage	The minimum, maximum, and average amount of CPU utilized by the Server Monitor.
Memory Usage	The minimum, maximum, and average amount of memory utilized by the Server Monitor.
Disk Usage	The minimum, maximum, and average amount of Disk space utilized by the Server Monitor.

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Web Service Reports

This generates reports for the Web Service Monitor Type created using Applications Manager. The reports can be generated either for all the Monitor Types (by choosing ALL from the combo box) or for any specific Monitor Type (by choosing the respective type of Web Service Monitor Type from the combo box). The following are the different Report types that are generated for the Web Service Monitor Type.

Report Types	Details
Availability	The availability details that include total down time in hours and minutes, average time taken to repair the failure (MTTR), average time between the failures (MTBF), and average Uptime percentage for all the Web Service Monitors being monitored by the Applications Manager.
At a Glance Report	The performance of top 10 webservices can be compared in a single view. By clicking on the bars in the report, you can see all the attributes of the monitor in a single view. Further, you can drill down to see the individual attribute reports.
Health	The health of all the monitors in the Applications Manager server.
Response Time	The minimum, maximum, and average response time of all the Web Service monitors, in milliseconds.
Operation Execution Time	The time taken for getting response from the Service.

Web Server Reports

This generates reports for the Web Server Monitor Type created using Applications Manager. The reports can be generated either for all the Monitor Types (by choosing ALL from the combo box) or for any specific Monitor Type (by choosing the respective type of Web Server Monitor Type from the combo box). The following are the different Report types that are generated for the Web Server Monitor Type.

Report Types	Details
Availability	The availability details that include total down time in hours and minutes, average time taken to repair the failure (MTTR), average time between the failures (MTBF), and average Uptime percentage for all the Web Server Monitors being monitored by the Applications Manager.
At a Glance Report	The performance of top 10 webserver can be compared in a single view. By clicking on the bars in the report, you can see all the attributes of the monitor in a single view. Further, you can drill down to see the individual attribute reports.
Health	The health of all the monitors in the Applications Manager server.
Response Time	The minimum, maximum, and average response time of all the Web Server monitors, in milliseconds.

URLs/ Web Apps Reports

This generates reports for the URLs/ Web Apps Monitor Type created using Applications Manager. The reports can be generated either for all the Monitor Types (by choosing ALL from the combo box) or for any specific Monitor Type (by choosing the respective type of URLs/ Web Apps Monitor Type from the combo box). The following are the different Report types that are generated for the URLs/ Web Apps Monitor Type.

Report Types	Details
Availability	The availability details that include total down time in hours and minutes, average time taken to repair the failure (MTTR), average time between the failures (MTBF), and average Uptime percentage for all the Web Service Monitors being monitored by the Applications Manager.
At a Glance Report	The performance of top 10 webservices can be compared in a single view. By clicking on the bars in the report, you can see all the attributes of the monitor in a single view. Further, you can drill down to see the individual attribute reports.
Health	The health of all the monitors in the Applications Manager server.
Response Time	The minimum, maximum, and average response time of all the Web Service monitors, in milliseconds.

Middleware/Portal Reports

This generates reports for the Middleware/Portal Monitor Type created using Applications Manager. The reports can be generated either for all the Monitor Types (by choosing ALL from the combo box) or for any specific Monitor Type (by choosing the respective type of Middleware/Portal Monitor Type from the combo box). The following are the different Report types that are generated for the Middleware/Portal Monitor Type.

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Report Types	Details
Availability	The availability details that include total down time in hours and minutes, average time taken to repair the failure (MTTR), average time between the failures (MTBF), and average Uptime percentage for all the Web Service Monitors being monitored by the Applications Manager.
At a Glance Report	The performance of top 10 webservices can be compared in a single view. By clicking on the bars in the report, you can see all the attributes of the monitor in a single view. Further, you can drill down to see the individual attribute reports.
Health	The health of all the monitors in the Applications Manager server.
Response Time	The minimum, maximum, and average response time of all the Web Service monitors, in milliseconds.
JVM Usage	The minimum, maximum, and average JVM usage by the monitors
Connection Pool Usage	The minimum, maximum, and average JDBC Connections of the monitors
Thread Details	The minimum, maximum, and average number of threads spawned by the monitors
Session Details Time	The minimum, maximum, and average HTTP Sessions of the monitors

Java / Transactions Reports

This generates reports for the Java Runtime Monitor created using Applications Manager. The following are the different Report types that are generated:

Report Types	Details
Availability	The availability details that include total down time in hours and minutes, average time taken to repair the failure (MTTR), average time between the failures (MTBF), and average Uptime percentage for all the Web Service Monitors being monitored by the Applications Manager.
Health	The health of all the monitors in the Applications Manager server.
At a Glance Report	The performance of top 10 java runtime monitors can be compared in a single view. By clicking on the bars in the report, you can see all the attributes of the monitor in a single view. Further, you can drill down to see the individual attribute reports.
Response Time	The minimum, maximum, and average time taken to connect, in milliseconds.
Memory Usage	The minimum, maximum, and average amount of memory utilized
CPU Usage	The minimum, maximum, and average amount of CPU utilized

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ERP Reports

This generates reports for the SAP Monitor created using Applications Manager. The following are the different Report types that are generated:

Report Types	Details
Availability	The availability details that include total down time in hours and minutes, average time taken to repair the failure (MTTR), average time between the failures (MTBF), and average Uptime percentage for all the Web Service Monitors being monitored by the Applications Manager.
Health	The health of all the monitors in the Applications Manager server.
CPU Utlilization	The minimum, maximum, and average time taken to connect, in milliseconds.
Memory Utlilization	The minimum, maximum, and average amount of memory utilized
Disk Utlilization	The minimum, maximum, and average amount of disk utilized
PageIn Rate	The Average number of page-ins per second
PageOut Rate	The Average number of page-outs per second
Spool Utilization	Utilization of the spool work processes as a percentage
Background Utilization	Percentage of the background processing capacity currently utilized;
Front End Response Time	Average time that a user waits at the front end for the processing the request
Enqueue Requests	Number of lock requests
Connection Time	The minimum, maximum, and average time taken to connect, in milliseconds.

Custom Types

This generates reports for the Custom Monitors types created using Applications Manager. The following are the different Report types that are generated:

Report Types	Details
Availability	The availability details that include total down time in hours and minutes, average time taken to repair the failure (MTTR), average time between the failures (MTBF), and average Uptime percentage for all the monitors in the custom monitor type being monitored by the Applications Manager.
Health	The health of all the monitors in the custom monitor type.

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At a Glance Report	The performance of top 10 custom monitors can be compared in a single view. By clicking on the bars in the report, you can see all the attributes of the monitor in a single view. Further, you can drill down to see the individual attribute reports.
Response Time	The minimum, maximum, and average response time of all the custom monitors, in milliseconds.

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EUM Reports

You can view comprehensive reports about the health, availability, downtime and response time of web applications or website across all locations.

Report Types	Details
At a Glance Report	The **At a Glance Report** displays the availability information of the EUM Monitors and agents, average Transaction Time and Outage stats by Location.
Location Agent Report	This report displays the average Response Time, Availability and Downtime at different locations.
Availability Reports	The availability details include total down time in hours and minutes, average time taken to repair the failure (MTTR), average time between the failures (MTBF), and average Uptime percentage for all the EUM Monitors in Applications Manager.
Health Reports	The state of health of all the EUM Monitors in Applications Manager.
EUM At a Glance Report	**At a Glance** Report of a particular EUM Monitor across locations.
EUM Summary Report	The summary Report of a particular EUM Monitor across locations.

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Performing Admin Activities

Applications Manager enhances effective business management allowing system operators and administrators to configure any activity with ease. The **Admin** module tab in the client lists all the administrative functions that can be performed with the product. The following are the group of activities performed by the system administrators to monitor their system/ service/ application running in the network through Applications Manager. Click on the respective topics to know the details.

Discovery and Data Collection:

- Bulk adding of Monitors
- Network Discovery
- Custom Monitor Types
- Performance Polling
- Downtime Scheduler
- Server Process Templates
- Windows Service Templates

Alarm/Action:

- Availability Settings
- Action / Alarm Settings
- Event Log Rules
- Alarm Escalation
- Global Trap Action
- SNMP Trap Listener

Applications Manager Server Settings:

- Global Settings
- Configure Mail Server
- Configure SMS Server
- Configure Proxy
- User Administration
- Add-On/Product Settings
- Product License
- Upload Files/Binaries
- Business Hours
- World Map
- Reports Settings
- Personalize Web Client
- Enable Reports
- REST API

Tools:

- Schedule Reports

Admin Activities:

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- Data Backup
- Server Settings
- Production Environment

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Bulk Import of Monitors

Selecting this option, you would be able to add monitors of the same type in bulk. By giving all the configuration details in a **.csv file**, bulk import of monitors is made possible.

Bulk Import of Monitors:

Click on **New Monitor link**, select the monitor type you want to add. In the New Monitor screen, you will find the link to **Bulk Import Monitor**.Clicking on that link will take you to Bulk Import Monitor screen. Here, you can **upload the .csv file** that has all the configuration details. The file would be uploaded to the Applications Manager Machine in the location *<Product-Home>workingbulkadd<particular.csv>*. This file will be deleted once the discovery for monitors is scheduled, for security reasons. The list of all monitors to be added is listed down. On clicking '**Start Discovery**', all the monitors would be added to Applications Manager.

Format for Bulk Import .csv file

Monitor Type	Details
Active Directory	Format for the Bulk Import csv file : #Header:DisplayName,HostName,UserName,Password,MonitorGroup,PollInterval * Download a sample csv file.
Amazon	Format for the Bulk Import csv file : #Header:DisplayName,Access Key ID,Secret Access Key,MonitorGroup,PollInterval * Download a sample csv file.
Apache Solr	Format for the Bulk Import csv file : #Header: DisplayName,Host Name / IP Address,Port,SSL is enabled,MonitorGroupID,PollInterval * Download a sample csv file
BizTalk	Format for the Bulk Import csv file : #Header:DisplayName,credentialID,HostName,UserName,Password,Enable PowerShell (for Application Name),Database Server,Database Name,MonitorGroupID,PollInterval * Download a sample csv file.
Ceph Storage	Format for the Bulk Import csv file : #Header:DisplayName,HostName/IP Address,Prompt,UserName,Password,credentialID,MonitorGroupID,PollInterval * Download a sample csv file.
CouchBase	Format for the Bulk Import of csv file : #Header: DisplayName,HostName,SubNetMask,Port,UserName,Password,DatabaseName,MonitorGroup,PollInterval ***MonitorGroup,PollInterval* entries are optional. * Download a sample csv file.
DNS	Format for the Bulk Import csv file : #Header:DisplayName,Target Address,Lookup Address,Timeout,Record Type,Search Field,Search Value,MonitorGroup,PollInterval,Run on server,Run on agent * Download a sample csv file.
Docker	Format for the Bulk Import csv file : #Header:DisplayName,HostName/IP Address,Port,Username,Password,SSL is enabled,credentialID,MonitorGroupID,PollInterval TestDocker,apm-u12-temp,4243,,,false,,,5 SecuredDocker,102.198.12.4,2376,User,User123,true,,10000095,10 * Download a sample csv file.
DOTNET	Format for the Bulk Import csv file : #Header: DisplayName,HostName,SubNetMask,UserName,password,credentialID,MonitorGroupID,PollInterval * Download a sample csv file.
ESX	Format for the Bulk Import csv file : #Header:DisplayName,HostName/IP Address,Port,UserName,Password,VM Discovery,MonitorGroupID,PollInterval * Download a sample csv file.
Exchange	Format for the Bulk Import csv file : #Header:DisplayName,Host Name / IP Address,Version,Exchange 2013 Role,Exchange 2010 Role,Exchange 2007 Role,Exchange 2013 Mailbox Services,Exchange 2013 Client Access Services,Exchange 2013 Edge Services,Exchange 2010 Mailbox Services,Exchange 2010 Client Access Services,Exchange 2010 Hub Transport Services,Exchange 2010 Edge Services,Exchange 2010 Unified Services,Exchange 2007 Mailbox Services,Exchange 2007 Client Access Services,Exchange 2007 Hub Transport Services,Exchange 2007 Edge Transport Services,Exchange 2007 Unified Messaging Services,Exchange 2003/below Services,User Name,Password,credentialID,Mode Of Monitoring,Customize ConnectionURI,Connection URI,MonitorGroupID,PollInterval * Download a sample csv file.
FTP	Format for the Bulk Import csv file : #Header:DisplayName,Target Address,User Name,Password,Port No,Timeout,Is Secured,Download File,Show availability down when download fails,Remote Source,File Name,Local Destination,File Name,Upload File,Show availability down when upload fails,Local Source,File Name,Remote Destination,File Name,MonitorGroup,PollInterval * Download a sample csv file.
GlassFish	Format for the Bulk Import csv file : #Header:DisplayName,HostName,Port,UserName,Password,JNDIPath,MonitorGroup,PollInterval * Download a sample csv file.
Hadoop	Format for the Bulk Import csv file : #Header:DisplayName,Mode Of Monitoring,Version,NameNode, HostNameNode, JMX Port,NameNode Web Port,is SSL Enabled,Authentication Type,UserName,Password,NameNode JNDIPath,JobTracker/ResourceManager Host,JobTracker/ResourceManager JMX Port,JobTracker/ResourceManager Web Port,is SSL Enabled,Authentication Type,UserName,Password,JobTracker/ResourceManager JNDIPath,MonitorGroupID,PollInterval * NameNode and JobTracker/ResourceManager must be added using the same mode * Download a sample csv file.
HBase	Format for the Bulk Import csv file: #Header:DisplayName,Host Name / IP Address,JMX Port,typeOfNode,credentialID,Is Authentication required,UserName,Password,JNDI Path,PollInterval,MonitorGroupID * Download a sample csv file.

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Horizon View	Format for the Bulk Import csv file : #Header:DisplayName,Connection Broker Hostname / IP,User Name,Password,MonitorGroupID,PollInterval * Download a sample csv file.
HyperV	Format for the Bulk Import csv file : #Header:DisplayName,Host Name / IP Address,User Name,Password,Monitor Performance Metrics of Virtual Machines,MonitorGroup,PollInterval * Download a sample csv file.
IBM Websphere	Format for the Bulk Import csv file : #Header:DisplayName,Queue Manager,Host Name,Listener Port,CCSID,Server Connection Channel,MonitorGroup,PollInterval * Download a sample csv file.
IBM DB2	Format for the Bulk Import csv file : #Header: DisplayName,HostName,SubNetMask,Port,Username,Password,DatabaseName,MonitorGroup,PollInterval * Download a sample csv file.
IBM Informix	Format for the Bulk Import csv file : #Header:DisplayName,Host Name / IP Address,Port,Database Server,UserName,Password,credentialID,MonitorGroupID,PollInterval * Download a sample csv file
Java Runtime	Format for the Bulk Import csv file : #Header: DisplayName,HostName,Port,Credential Details,Credential Manager,JNDIName,UserName,Password,MonitorGroup,PollInterval * Download a sample csv file.
JBOSS	Format for the Bulk Import csv file : #Header: DisplayName, HostName, SubNetMask, Port, JBOSSVersion, Username, Password, isSSLEnabled, MonitorGroup, PollInterval **MonitorGroup,PollInterval entries are optional * JBOSSVersion can have the following values : 3.2.x or 4.x or 4.0.1 or 4.0.2. * Download a sample csv file.
Kafka	Format for the Bulk Import csv file : #Header:DisplayName,HostName,JMX Port,credentialID,PollInterval,UserName,Password,JNDIPath,MonitorGroupID * Download a sample csv file
LDAP	Format for the Bulk Import csv file : #Header:DisplayName,LDAP Server,LDAP Server Port,UserName,Password,Search Base,Search Filter,Matching Attribute,Filter Condition,Search Result,Timeout Is Secured,MonitorGroup PollInterval,Run on server,Run on agent * Download a sample csv file.
Mail Server	Format for the Bulk Import csv file : #Header:DisplayName HostName / IP Address Is Secure Connection(SSL) Enable TLS SMTP Port Email ID SMTP Server requires Authentication SMTP UserName SMTP Password Enable POP/IMAP Monitoring Select Mail Fetching Server POP/IMAP Host Is Secure Connection(SSL) Enable TLS Port UserName Password Mail Subject Timeout MonitorGroup PollInterval Run on server Run on agent * Download a sample csv file.
Memcached	Format for the Bulk Import csv file : #Header:DisplayName,HostName / IP Address,Port,Enable transaction test,MonitorGroup,PollInterval * Download a sample csv file.
MSMQ	Format for the Bulk Import csv file : #Header:DisplayName,HostName,UserName,Password,MonitorGroup,PollInterval * Download a sample csv file.
MSSQL	Format for the Bulk Import csv file : #Header: DisplayName,HostName,SubNetMask,Port,UserName,Password,InstanceName,MonitorGroup,PollInterval ***MonitorGroup,PollInterval* entries are optional * If you want to connect using Named Instance specify the field InstanceName .If not please leave this field empty. * Download a sample csv file.
MYSQL	Format for the Bulk Import csv file : #Header: DisplayName,HostName,SubNetMask,Port,UserName,Password,DatabaseName,MonitorGroup,PollInterval ***MonitorGroup,PollInterval* entries are optional * Each monitor information should be given in the order of the fields specified in the Header. * Download a sample csv file.
Nginx	Format for the Bulk Import csv file : #Header:DisplayName,Hostname,Port SSL is enabled,Is Authentication required,UserName,Password,Server,Status,URL,MonitorGroup,PollInterval * Download a sample csv file.
OpenStack	Format for the Bulk Import csv file: #Header:DisplayName,Base Authentication URL,Tenant Name,Username,Password,Need Proxy,credentialID,MonitorGroupID,PollInterval * Download a sample csv file
ORACLE AS	Format for the Bulk Import csv file : #Header: DisplayName,HostName,SubNetMask, Port,MonitorGroup,PollInterval ***MonitorGroup,PollInterval* entries are optional * Download a sample csv file.
Oracle EBS	Format for the Bulk Import csv file : #Header:DisplayName,HostName,Port,SSL Enabled,MonitorGroup,PollInterval * Download a sample csv file.
ORACLE	Format for the Bulk Import csv file : #Header: DisplayName,HostName,SubNetMask,Port,UserName,Password,InstanceName,MonitorGroup,PollInterval ***MonitorGroup,PollInterval* entries are optional * Download a sample csv file.
Oracle Coherence	Format for the Bulk Import csv file : #Header:DisplayName,HostName,JMX Port,Additional JMX Port,credentialID,PollInterval,UserName,Password,JNDIPath,MonitorGroupID * Download a sample csv file.
Oracle NoSQL	Format for the Bulk Import csv file : #Header:DisplayName,HostName,Port,credentialID,PollInterval,UserName,Password,JNDIPath,MonitorGroupID * Download a sample csv file
Ping	Format for the Bulk Import csv file : #Header:DisplayName,HostName / IP Address,Timeout,MonitorGroup,PollInterval,Run on server,Run on agent * Download a sample csv file.
Postgresql	Format for the Bulk Import csv file : #Header: DisplayName,HostName,Port,UserName,Password,DBname,MonitorGroup,PollInterval * Download a sample csv file.
Rabbitmq	Format for the Bulk Import csv file : #Header:DisplayName Host Name,Port,User Name,Password,MonitorGroup,PollInterval * Download a sample csv file.
Resin Server	Format for the Bulk Import csv file : #Header:DisplayName,HostName,Port,UserName,Password,JNDIPath,credentialID,MonitorGroupID,PollInterval * Download a sample csv file
REST API	Format for the Bulk Import csv file : #Header:DisplayName,Rest API URL,Timeout,Form Submission Method,Pay Load,credentialID,UserName,Password,Custom HTTP(s) Headers,Response Type,Add content check for response,Should contain,Should not contain,is Case Sensitive,is Regular Expression,MonitorGroupID,PollInterval *Download a sample csv file

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SAP HANA	Format for the Bulk Import csv file : #Header: DisplayName,Host Name / IP Address,SAP HANA Cloud Platform,Port,Account Name,User Name,Password,credentialID,DB User Name,DB Password,Instance Name,MonitorGroupID,PollInterval * Download a sample csv file
Server	Format for the Bulk Import csv file : #Header: DisplayName,HostName,OperatingSystem,SubNetMask,ModeOfMonitoring,UserName,Password,SNMPCommunityString,TelnetSSHCommandPrompt,MonitorGroup,PollInterval ***MonitorGroup,PollInterval* entries are optional * OperatingSystem can have the following values : Windows 2003 or Windows 2000 or windows XP or WindowsNT or AIX or FreeBSD or HP-UX or Linux or Mac OS or Solaris or HP-TRU64. * ModeOfMonitoring can have the following values : WMI or SNMP or SSH or TELNET . * Download a sample csv file.
Service Monitor	Format for the Bulk Import csv file : #Header: DisplayName,HostName,SubNetMask,Port,CommandtoExecute,MatchContent,PollInterval * Download a sample csv file.
SharePoint	Format for the Bulk Import csv file : #Header:DisplayName,HostName,UserName,Password,MonitorGroup,PollInterval * Download a sample csv file.
Siebel Monitor	Format for the Bulk Import csv file : #Header:DisplayName,Host Name / IP Address,Operating System,Prompt,UserName,Password,Gateway Server,Enterprise Server,Siebel Administrator,Siebel Admin Password,Installation Directory,MonitorGroup,PollInterval * Download a sample csv file.
SilverStream	Format for the Bulk Import csv file : #Header:DisplayName,HostName,Port,MonitorGroup,PollInterval * Download a sample csv file.
SSL Certificate	Format for the Bulk Import csv file : #Header:DisplayName,Domain,Port,Need proxy to connect the domain,Timeout,MonitorGroup,PollInterval * Download a sample csv file.
SYBASE	Format for the Bulk Import csv file : #Header: DisplayName,HostName,SubNetMask,Port,UserName,Password,DatabaseName,MonitorGroup,PollInterval ***MonitorGroup,PollInterval* entries are optional * Download a sample csv file.
Telnet	Format for the Bulk Import csv file : #Header: DisplayName,Host Name / IP Address,Port,Timeout(in Seconds),MonitorGroup,PollInterval * Download a sample csv file.
TOMCAT	Format for the Bulk Import csv file : #Header: DisplayName,HostName,SubNetMask,Port,TomcatVersion,isSSLEnabled,UserName,Password,MonitorGroup,PollInterval ***MonitorGroup,PollInterval* entries are optional * TomcatVersion can have the following values : 3.x or 4.x or 5.x or 6.x. * Download a sample csv file.
Tuxedo	Format for the Bulk Import csv file : #Header:DisplayName,HostName/IP Address,Port,Community String,Timeout,credentialID,MonitorGroupID,PollInterval * Download a sample csv file.
URL Monitor	Format for the Bulk Import csv file : #Header: DisplayName,URLAddress,CheckForContent,ErrorIfMatch,UserName,Password,TimeoutInSeconds,FormSubmissionMethod,MonitorGroup,PollInterval ***MonitorGroup,PollInterval* entries are optional * Each monitor information should be given in the order of the fields specified in the Header. * FormSubmissionMethod can have the following values : post or get * The attributes CheckForContent,ErrorIfMatch,UserName,Password,TimeoutInSeconds,FormSubmissionMethod are all optional. * For sample a simple form of monitor can just have #DisplayName,URLAddress,CheckForContent. * Download a sample csv file.
vFabric	Format for the Bulk Import csv file : #Header:DisplayName,HostName,Port,UserName Password,JNDIPath,MonitorGroup,PollInterval * Download a sample csv file.
Weblogic Server	Format for the Bulk Import csv file : #Header: DisplayName,HostName,SubNetMask,Port,WeblogicVersion,Username,Password,MonitorGroup,PollInterval ***MonitorGroup,PollInterval* entries are optional * Weblogic_Version can have the following values : 7.0 or 8.1 or 9.x . * Download a sample csv file.
Web Service	Format for the Bulk Import csv file : #Header: DisplayName,URLAddress,TimeoutInSeconds,MonitorGroup,PollInterval,Username,Password * Download a sample csv file.
Websphere Server	Format for the Bulk Import csv file : #Header: DisplayName,HostName,SubNetMask,port,WebsphereVersion,SOAPPort,UserName,Password,DeploymentMode,NetworkDeployerHost,NetworkDeployerSOAPPort,MonitorGroup,PollInterval ***MonitorGroup,PollInterval* entries are optional * Each monitor information should be given in the order of the fields specified in the Header. * WebsphereVersion can have the following values : 5.x or 6.x * DeploymentMode can have the following values BASE or ND. * Download a sample csv file.
Windows Azure Monitor	Format for the Bulk Import csv file : #Header: DisplayName,Subscription Id, Account Name, Account Key,https,Timeout,MonitorGroup,PollInterval * Download a sample csv file.
WebLogic Integration	Format for the Bulk Import csv file : #Header: DisplayName,HostName,SubNetMask,Port,WeblogicIntegrationVersion,Username,Password,MonitorGroup,PollInterval ***MonitorGroup,PollInterval* entries are optional * WeblogicIntegrationVersion can have the following values : 8.x . * Download a sample csv file.
XenServer Monitor	Format for the Bulk Import csv file : #Header:DisplayName,HostName/IP Address,Https Port,UserName,Password,VM Discovery,MonitorGroup,PollInterval * Download a sample csv file.
XenApp	Format for the Bulk Import csv file : #Header:DisplayName,HostName,Version,UserName,Password,credentialID,Enable Event Log Monitoring,MonitorGroupID,PollInterval * Download a sample csv file.

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Add / Discovery

The Add / Discovery section consists of the following tabs:

- Add
- Add Network Device
- Bulk Import
- Discovery
- Network Discovery
- Add Storage Device

Add

In the Add tab, you can create a new monitor, i.e discover the Monitor from the network and start collecting monitoring data. Click here to learn how to create a new monitor.

Add Network Device

The **Add Network Device** tab is displayed once you have integrated with the comprehensive Network Monitoring Tool, ManageEngine OpManager. Click here to learn how to configure the ManageEngine OpManager Network Monitoring Connector. From the **Add Network Device** tab, you can add network devices to your network in OpManager from the Applications Manager dashboard.

To add a network Device to OpManager:

- Enter the **Device Name** or the **IP Address** of the network device.
- Enter the **Netmask address** for the device.
- Add the **Credentials to use** for the device.
- Click **Add Device** to add the device to OpManager.

Bulk Import

Using the **Bulk Import** capability, you can add monitors of the same type in bulk. Bulk import of monitors is performed by using a .csv file which contains all the configuration details of the monitor you wish to add. Click here to learn how to perform Bulk Import of monitors.

Discovery

Network Discovery is the process of discovering all Monitors in a specified network. It discovers Monitors running in the default port only.

To discover all the Monitors in a network:

1. Click the **Admin** module tab.
2. Click **Discover a Network** under **Discovery** from the Admin Activities. This opens the **Configure Network Discovery** screen.
3. Enter the **Network IP Address**.

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4. Enter the SubNetMask of the network.
5. Click **Start Discovery** to start discovering Monitors within the mentioned network.

Some **FAQs** regarding Network Discovery

Question: *How does "Network Discovery" function work? How to discover the network? Eg.Through what mode?*

Initially, Applications Manager gets all the Ip addresses in the given domain and then Applications Manager discovers them by using ping test. If the ping test succeeds and if SNMP agent is running on that machine, Applications Manager will try to add it to the appropriate category (i.e., windows / linux / solaris) and collect data, otherwise Applications Manager will add that server to unknown category.

Question: *If I add a new "Network Discovery", does it only discover once or discover at regular intervals? Because there are only "Add New" and "Disable Network Discovery" buttons, I don't know when it will start to discover and when it will complete discovery.*

When you add Network Discovery, it will rediscover the network every time you restart Applications Manager and also it will do rediscovery once in every 24 hours. Once you start network discovery, it will start discovering the servers in the network. It will wait for 20 seconds interval between discovering servers.

Question: *I find "Network Discovery" can find a small part of the monitors in the network only, there are lots of monitors that can't be found.*

In the professional trial version of Applications Manager, only 50 servers are discovered using Network Discovery.

Question: *I don't want to monitor a certain monitor, I delete it manually; but I don't disable network discovery, will it be discovered and monitored again?*

Yes, it will discover that monitor again in the next rediscovery which takes place after 24 hours.

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Services - Using this option, you can choose which of the services needs to monitored by default.

The services are listed down along with their default ports. For eg., if you had already added a Windows Server monitor, by using this option, you can choose the services (that are running in that windows server) to be monitored. You choose to monitor all the tomcats & IIS servers that are running in the windows server. Data Collection does not happen for services that are not enabled, thereby increasing the efficiency of monitoring in general.

By using the edit option, you can edit the port number. If there are multiple ports, enter the

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ports as comma separated.

Network Discovery

The **Network Discovery** tab is displayed once you have integrated with the comprehensive Network Monitoring Tool, ManageEngine OpManager. Click here to learn how to configure the ManageEngine OpManager Network Monitoring Connector. Under the **Network Discovery** tab**,** you can Add a Network to OpManager from the Applications Manager dashboard.

To add a network to OpManager:

- You can add a network using
  - **IP Range** - You can use an IPv4 or IPv6 Address to add your network. If you are using an IPv4 Address, enter the Start IP, End IP and choose your NetMask address from the drop-down menu. If you are using an IPv6 Address, enter the Start IP, End IP and the network IP.
  - **CIDR** - You can use an IPv4 or IPv6 Address to add your network. Enter your Network IP.
  - **CSV File Import -** You can use an IPv4 or IPv6 Address to add your network. Browse and select the location from which to import your CSV File. Enter the NetMask Address.
- Add the **Credentials to use** for the network.
- Click **Discover** to discover the network.

Add Storage Device

The **Add Storage Device** tab is displayed once you have integrated with the comprehensive Storage Monitoring Tool, ManageEngine OpStor. Click here to learn how to configure the ManageEngine OpStor SAN Monitoring Connector. From the **Add Storage Device** tab, you can add storage devices to OpStor from the Applications Manager dashboard.

To add a network Device to OpManager:

- Enter the **IP Address** of the storage device.
- Choose the **Device Type** from the drop-down menu.
- You can verify if the device is reachable from the server by selecting the **Ping the given IP** option.
- Click **Add Device** to add the device to OpStor.

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Custom Monitor Type

By using this option, you can define your **own monitor types** apart from the monitor types that are available by default.
This feature allows to associate a monitor type to the inhouse scripts that might be used for monitoring your own applications. For eg., if you are using various scripts to monitor Siebel CRM, you can now associate these scripts and model Siebel as one of the monitor types. Thereby having robust out of the box support for monitoring Forum Software, build Business Intelligence Dashboards, monitor Custom Application Log Files on multiple servers etc.

Custom Monitor Demo: Have a look at the demo that helps you to add a new Custom Monitor Type

WorkFlow

Step1) The custom monitor type helps you create and define *metrics / attributes* that will be tracked.

Step 2) Then specify a script (Linux Shell Script / Windows Batch File) that needs to be executed to get the data and provide it to Applications Manager in the appropriate format.
In these scripts users can use any mechanism to get the data. For example users can :

- Invoke a Java Program, PHP, Python Scripts etc and make database calls to pull data and feed it to Applications Manager
- Can make native calls to other programs and pipe the data to the output file
- Parse Log Files and give a summary of metrics as the input to Applications Manager

Creating New Monitor Types:

You can create new monitor type by clicking on the '*New Monitor Type*' link inside the *New Monitor* link or by clicking on the *Custom Monitor Types icon* under *Admin*tab.

- Enter the *Monitor Type* name
- Select Base type - Currently, scripts are the base to build new monitor type.
- Select the Monitor Type *Category* - For eg., If you are monitoring postgresql using in-house scripts, you can add postgresql monitor type and you can place it under Database category

Define the **attributes** you want to monitor

- Enter the String Attributes that you want to monitor - Enter the attributes line by line.
- Enter the Numeric Attributes that you want to monitor - Enter the attributes line by line.
- You can monitor the output in a *table format*, enter the Table Name, Numeric attributes, Sting attributes, Unique column and Column delimiter. More help.
- Click on *Create Monitor Type* to finish the configuration of new monitor type.

Now, you have defined a custom Monitor type. The next step would be to create instances & associate them to the new monitor type defined.

[**Script Monitor Overview:** Based on the polling interval, Applications Manager executes the script to be monitored. The script will transfer its output to another specific *Output File* configured. The output of the script should be in a Key=Value format where '=' can be any delimiter. Applications Manager parses the Output File and executes the actions configured]

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Adding Custom Monitors:

- In the *User Created Monitor Type* screen, the newly created monitor types are listed down. Click on the *Add New* icon to add the monitors
- Add New monitor screen opens up, Select the custom monitor type from Monitor Types drop down box. [For eg., Siebel]
  - Enter the Display Name.
  - Choose the location of script that you want to monitor - Local or Remote.
  - Specify the absolute path of the script.
  - Specify the absolute path of the execution directory.
  - Specify the absolute path of the Output File
  - Enter the arguments that needs to be passed.
  - Enter the polling interval and timeout.
  - Click Add Monitor(s)

  You have already given the attributes to be monitored as common to all monitors under custom Monitor Type. So there is no need to give input attributes to be monitored again
- Upon adding the custom monitors, you can see the performance attributes in the monitor details page.

Usage Scenario 1: Creating New Siebel Monitor Type

One customer had 6 Siebel applications running in 6 different machines. As, out of the box support for Siebel Application is not available, he uses the Script Monitoring feature of ManageEngine Applications Manager to monitor his applications. He has identical scripts running in the 6 machines and they produce the same output in the output file in the respective machines. Now he configures them as six Script Monitors. This gives him an opportunity to monitor his Siebel applications. Using Script Monitor facility, he monitors the following attributes

- transaction Router
- server request processor
- transaction processor

There are few disadvantages in his usage.
1. He has to give the same Output details while specifying the same six applications.
2. If he has to edit / add / delete the attributes , then he has to do so in all the 6 Script Monitors.
3. Further he would like to see them as 6 Siebel Monitors rather than 6 Script Monitors.

Here comes the usage of New Monitor Type, that would avoid all the above inconveniences.
1. Output Settings can be specified only once. You could specify the Scalar String / Numeric attributes and tabular settings only once while defining the type, say Siebel.
2. You could create any number of monitor instances for that particular type , just like any other in-built type say SAP / Weblogic / Oracle monitors in Applications Manager. While doing so, you just need to specify the Hostname and the corresponding Scripts
3. Adding / Deleting / Modifying attributes of some particular monitor type commonly will affect all the monitors of that monitor type.
4. Now you will be seeing 6 Siebel monitors rather than 6 Script Monitors.
5. Reports can be enabled for this type like any other type.
The same concept can be applied to any other application say for monitoring People Soft applications.

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Usage Scenario 2: Business Intelligence Dashboard

Users can build custom **Business Intelligence dashboards** and have it reported and alerted on. Some possible metrics could be

- Call Volume in the last one Month
- Time taken to finish a call
- Number of simultaneous Calls

Usage Scenario 3: Custom Application Log Files

Some metrics that you can add with a little bit of coding are :

- Number of security breaches
- Number of Errors During Login etc.

Managing Custom Monitor Types:

You can edit the configuration of the Monitor types by clicking on the **Custom Monitor Type** link under **Admin Ta**b. It opens up to list all the User created Monitor Types. From here you add new monitors to the custom monitor types, edit the configuration and more importantly **enable or disable reports** of these custom monitor types.

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Performance Polling

Under the Performance polling tab, you can see performance data collection options like:

- Data Collection
- Servers
- Database Servers
- MS SQL
- WebLogic
- SNMP
- HTTP(s) URLs
- Amazon
- Web Services
- Ping Monitor
- Optimize Data Collection

Data Collection

Using this option, Performance Data collection can be scheduled for the given number of polls. Except for Availability check and health, other performance parameters like memory usage data can be collected at the scheduled number of polls. This would be helpful in decreasing the load on the system of the users who want to monitor availability and health alone.
For eg., If the polling interval of a particular server monitor is one minute and the performance data is scheduled to be collected once in five pollings. In this case, the availability of the server is checked every minute whereas the performance data like CPU Memory is collected every five minutes.

Servers

Disk I/O Statistics Monitoring: Using this option, Disk IO Stats can be Enabled or Disabled for the servers. On enabling the option, Data Collection will happen for Disk IO stats and you can see the details of Disk IO Stats in the Server details page. If it is not enabled, Data Collection will be stopped for Disk IO Stats.

Note: This option is available for Windows, IBM AIX, Linux and Solaris servers.

Disk Monitoring: Windows Disk Monitoring option can be used to enable or disable monitoring of Local Disk, Network Mapped Drives and Volume Mount Points. By default, Local Disk monitoring is enabled for all windows servers

Note: Details associated with Windows Network Mapped drives and Windows Volume Mount Points will not be collected in SNMP mode.

Process & Service monitors availability: You can also set the Process & Service monitors availability to show process and server monitors as down when the server is down.
Server Error Alert Settings: Server Error Alert settings option will allow you to select the severity levels of server error at which you want to get alerted.
Hardware Health monitoring: Server Hardware Health monitoring can be used to enable or disable hardware monitoring in servers. You can also opt the various hardware components (like power, fan, disk,etc.,) to be monitored by checking the options given. This will globally configure the hardware monitoring status.You can do the same for individual monitors in the respective monitor details page.

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Hardware Device level configuration: Hardware Configuration option is also available under Host Details in the right hand side of the details page, will allow you to opt for the various hardware components you want to monitor. You can also use this option to change the globally configured hardware status for a particular server.

You can customize alerts for hardware device monitoring. If the status of the device matches with the values defined in the severity text box, then the device status is displayed as the corresponding severity. For example, the nonCriticalLower status need not be defined as a Warning status, it can also be defined as Clear according to user requirement. The alarm severities are:

- **Critical Severity:** If the status matches with any of the values defined in the Critical Severity text box, then APM displays the status of the hardware device as Critical.
  The values defined by default are *failed, error, failure, nonRecoverable, criticalUpper, criticalLower, nonRecoverableLower* and *critical.*
- **Warning Severity:** If the status matches with any of the values defined in the Warning Severity text box, then APM displays the status of the hardware device as Warning.
  The values defined by default are *degraded, warning, nonCritical, nonCriticalUpper, nonRecoverableUpper* and *nonCriticalLower.*
- **Clear Severity:** If the status matches with any of the values defined in the Clear Severity text box, then APM displays the status of the hardware device as clear.
  The value defined by default is '*ok*'.

  Note: If the status of the device does not match with any of the values defined in the severity text box, the device status is displayed as unknown. Status values defined within the severity text boxes are comma-separated and case-insensitive.

Database Servers

- **Enable MySQL Database Monitoring** - By default, the data collection for MySQL database tables takes place for every polling. You can customize it, such that the data collection for databases takes place only once in a day or to never collect data.
- **Enable Sybase Database Monitoring** - By default, the data collection for Sybase database tables takes place for every polling. You can customize it, such that the data collection for databases takes place only once in a day or to never collect data.
- **Rediscover instance of Mongo DB, Cassandra and Redis -** By default, rediscovering instances of Mongo database, Cassandraand Redis happens in 60 minutes. You can customize the time interval which instance of Mongo database, Cassandra and Redis are rediscovered.
- **Oracle Monitoring -** By default, only failed backup jobs of Oracle will be monitored.

WebLogic

Using this option, You can Enable or Disable Data Collection for Wep Applications, EJBs and Servlet Statistics for Weblogic servers. The list of Weblogic servers are displayed by selecting the checkbox. Data Collection will happen for the Weblogic components that are displayed under the corresponding Enable listbox.

By default, EJB and Servlet Data Collection are disabled.You can enable Data Collection for EJB and Servlet by selecting the Weblogic server from Disable list box and move it to the Enable listbox and save the configuration.

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MS SQL

Enable data collection

- By Default, the data collection for MS SQL scheduled jobs will be disabled. You can enable it by checking the **Start collecting data for MS SQL scheduled jobs** checkbox.
- Check the **Delete MSSQL jobs** checkbox to delete jobs from the monitor details page.
- To enable Secure Connection (SSL), check the **Connect with SSL Encryption** checkbox.

Backup

- You can set the number of days to Store SQL Database Backup Details.

Replications

- Enable SQL-Replications to monitor replication data like publication and subscription data.
- Enable SQL-Replications Failed History.
- You can set the number of days to maintain the Replication agent history.

Applications Manager allows you to enable/disable data collection of the SQL Server Performance metrics listed here. Once enabled, you can also customize the polling interval of these metrics.

Note :The customized time interval should be greater than or equal to the polling interval of the monitor.

My SQL :

Using this option, you can enable or disable data collection for database tables, to takes place Once in a Day.

By default, the data collection takes place for every polling.

You can Enable/Disable datacollection for Database Tables by selecting the "*Collect Database tables information once in Day*" checkbox and save the configuration.

SNMP

Using this option, you can choose different SNMP versions(v1/v2c) to monitor the SNMP devices/ Servers in SNMP mode.

HTTP(s)-URLs

Under the HTTP(s)-URLs tab, you can change the following settings:

- **Enable logging of Responses for the Http(s) Urls and Http(s)-Url Sequences monitoring in Applications Manager** - Enabling this option allows you to log the responses of the HTTP(s) URLs or HTTP(s) Sequences in workingDebug-InfoURL Directory.
- **Send Responses of the Http(s) Urls and Http(s)-Url Sequences along with configured alarms when the availability is down** - This option allows Applications Manager to send the alarms along with the link to the responses of the HTTP(s) URLs Sequences that you have logged. This response will be send whenever the availability of the HTTP(s) URLs goes down.

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Amazon

Amazon Data Collection - Settings

You can enable Data collection for EC2 Instance according to given option based on either tag name or instanceid. Before enabling Signature Version 4 Signing Process ensure that these prerequisites are installed.

Web services Operation

Under the Web services Operation - Settings tab, you can set the Operation's Execution time beyond which to enable logging of responses for the Web Service's Operation in Applications Manager. The responses of the web services operations are logged in the following directory: *workingDebug-InfoWebService Directory.*

Ping Monitor

Applications Manager allows you to configure packets to be sent for ping monitoring.

Optimize Data Collection

Applications Manager allows you to enable/disable data collection of the metrics listed in the **Optimize Data Collection** tab. Once enabled, you can also customize the polling interval of these metrics.

Under the **Optimize Data Collection** tab, select the **monitor type** and the **metric name** that you want to enable/disable from the respective drop-down menus. The **Optimize Data Collection option works as follows for the following monitor types:**

- Java Runtime
- Tomcat Server
- Amazon
- Script Monitor
- File/Directory Monitor
- Database Query Monitor
- PostgreSql
- Oracle
- SAP HANA
- Exchange Server
- IBM Websphere MQ
- RabbitMQ
- FTP/SFTP Monitor
- JMX Applications
- VMware ESX/ESXi
- XenServer

Java Runtime

Applications Manager allows you to update **the number of days to retain Thread dumps of JRE Monitor** without restart. The number of days is 30 by default.

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Tomcat Server

You can enable/disable data collection of the metrics listed here:

- Web Applications Details
- Servlets Details
- DataSource Connection Pool Details
- Thread Pool Details
- Global Request Processor Details
- Memory Pool Details
- Garbage Collector Details
- Stuck Threads

Under the **Optimize Data Collection** tab, select the **monitor type** and the **metric name** that you want to enable/disable from the respective drop-down menus. You can configure polling status by:

- **Monitor Type**: This will be the default polling status, for any new monitor added. All the monitors of this type, will have the default polling status, until any exclusive customization is done for the monitor.
- **Monitors**: Use this option to change the polling status of any particular monitor(s).

Note : Changing the polling status of the 'Monitor Type', will also change any customizations done for its monitors.

Amazon

You can enable/disable data collection of the S3 Bucket metrics.
Under the **Optimize Data Collection** tab, select the **monitor type** and the **metric name** that you want to enable/disable from the respective drop-down menus. You can configure polling status by:

- **Monitor Type**: This will be the default polling status, for any new monitor added. All the monitors of this type, will have the default polling status, until any exclusive customization is done for the monitor.
- **Monitors**: Use this option to change the polling status of any particular monitor(s).

Note : Changing the polling status of the 'Monitor Type', will also change any customizations done for its monitors.

Script Monitor

Applications Manager allows you to Enable Script Row Deletion. For example, consider the script monitor's tabular data. If the **Enable Script Row Deletion option** is enabled, each time a new row is created , the previously configured thresholds and actions will be removed. If the option is disabled, all the configurations will be retained.

File/Directory Monitor

You can set the File contentCheck string count and the default units used to measure the Directory size and File size.

Database Query Monitor

You can set the **Query monitor row count** and the **Query execution timeout** in seconds.

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PostgreSql

You can enable/disable data collection of the **Database details.**
Under the **Optimize Data Collection** tab, select the **monitor type** and the **metric name** that you want to enable/disable from the respective drop-down menus. You can configure polling status by:

- **Monitor Type**: This will be the default polling status, for any new monitor added. All the monitors of this type, will have the default polling status, until any exclusive customization is done for the monitor.
- **Monitors**: Use this option to change the polling status of any particular monitor(s).

Note : Changing the polling status of the 'Monitor Type', will also change any customizations done for its monitors.

Oracle

You can enable/disable data collection of the metrics listed here:

- Lock and Wait Statistics
- Top 10 Queries by Disk Reads
- Top 10 Queries by Buffer Gets
- Average Executions for database instance
- Backup Jobs and Blocks Corrupted.
- Objects Approaching Max Extents
- Log Apply Gap details in Primary Servers
- Archive Log Destination Monitoring
- Log Apply Lag details in Standby Server
- ASM details
- Oracle Scheduled Jobs
- TableSpace Statistics
- Recovery Area Usage

Under the **Optimize Data Collection** tab, select the **monitor type** and the **metric name** that you want to enable/disable from the respective drop-down menus. You can configure polling status by:

- **Monitor Type**: This will be the default polling status, for any new monitor added. All the monitors of this type, will have the default polling status, until any exclusive customization is done for the monitor.
- **Monitors**: Use this option to change the polling status of any particular monitor(s).

Note : Changing the polling status of the 'Monitor Type', will also change any customizations done for its monitors.

SAP HANA

You can enable/disable data collection of the metrics listed here:

- Expensive Statements
- Long Running Jobs
- System Alerts
- Backup Catalog
- Blocked Transactions
- Caches

Under the **Optimize Data Collection** tab, select the **monitor type** and the **metric name** that you want to enable/disable from the respective drop-down menus. You can configure polling status by:

- **Monitor Type**: This will be the default polling status, for any new monitor added. All the monitors of this type, will have the

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default polling status, until any exclusive customization is done for the monitor.

- **Monitors**: Use this option to change the polling status of any particular monitor(s).

Note : Changing the polling status of the 'Monitor Type', will also change any customizations done for its monitors.

Exchange Server

You can enable/disable data collection of the metrics listed here:

- Top Mailboxes By Size
- Inactive Mailbox Users
- Server Component States

Under the **Optimize Data Collection** tab, select the **monitor type** and the **metric name** that you want to enable/disable from the respective drop-down menus. You can configure polling status by:

- **Monitor Type**: This will be the default polling status, for any new monitor added. All the monitors of this type, will have the default polling status, until any exclusive customization is done for the monitor.
- **Monitors**: Use this option to change the polling status of any particular monitor(s).

Note : Changing the polling status of the 'Monitor Type', will also change any customizations done for its monitors. The customized time interval should be greater than or equal to the polling interval of the monitor.

IBM Websphere MQ

You can enable/disable data collection of the metrics listed here:

- Listener Statistics
- Service Statistics
- Channel Statistics
- Queue Statistics
- Performance

Under the **Optimize Data Collection** tab, select the **monitor type** and the **metric name** that you want to enable/disable from the respective drop-down menus. You can configure polling status by:

- **Monitor Type**: This will be the default polling status, for any new monitor added. All the monitors of this type, will have the default polling status, until any exclusive customization is done for the monitor.
- **Monitors**: Use this option to change the polling status of any particular monitor(s).

Note : Changing the polling status of the 'Monitor Type', will also change any customizations done for its monitors. The customized time interval should be greater than or equal to the polling interval of the monitor.

RabbitMQ

You can enable/disable data collection of the metrics listed here:

- Exchanges
- Connections
- Queues

Under the **Optimize Data Collection** tab, select the **monitor type** and the **metric name** that you want to enable/disable from the respective drop-down menus. You can configure polling status by:

- **Monitor Type**: This will be the default polling status, for any new monitor added. All the monitors of this type, will have the default polling status, until any exclusive customization is done for the monitor.
- **Monitors**: Use this option to change the polling status of any particular monitor(s).

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Note : Changing the polling status of the 'Monitor Type', will also change any customizations done for its monitors. The customized time interval should be greater than or equal to the polling interval of the monitor.

FTP/SFTP Monitor

You can set the **FTP file size in MB.** The Value is 10 by default. The update will take effect without restart.

JMX Applications

You can set the **MBeans list size.** The Value is 250 by default. The update will take effect without restart.

VMware ESX/ESXi

You can set the **VMWare read timeout and the VMWare API connection timeout in seconds.** Both Values are 18 0 by default. The update will take effect without restart.

XenServer

Applications Manager allows you to enable the discovery of your Xenserver resource-pools. The update will take effect without restart.

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Downtime Scheduler

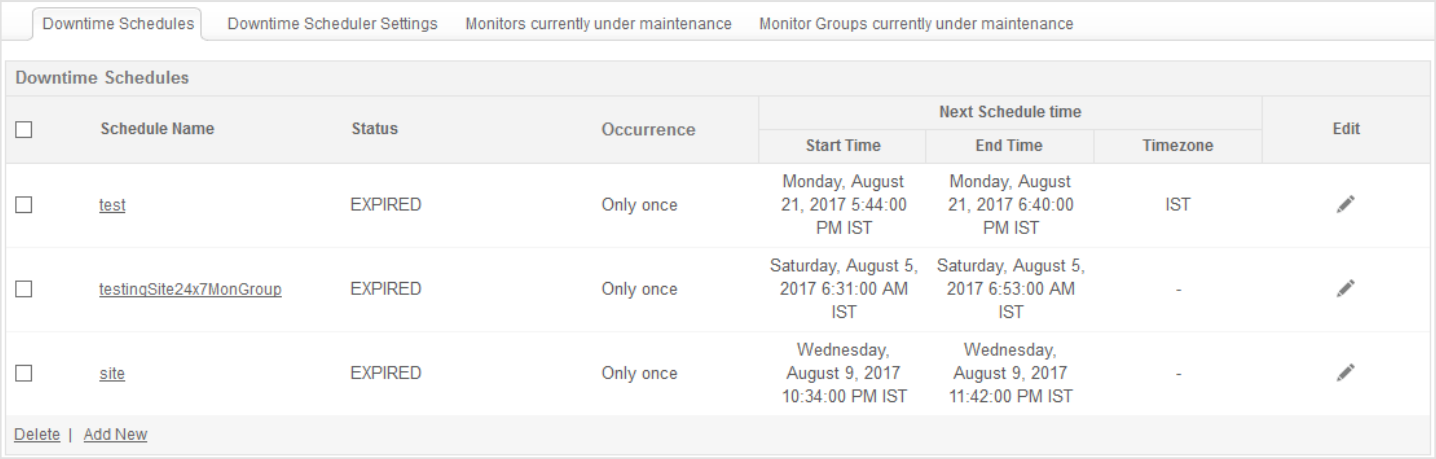
Scheduled downtimes for planned outages

IT-operations distinguish between two types of outages: planned and unplanned. *Planned Outages* are necessary to carry out essential maintenance. But the monitoring system initially cannot know if a detected outage was planned or not. If a monitor/service is removed from the network, or rebooted, for maintenance, then you will see unnecessary alarms indicating that the monitor or application is unavailable when polled for status.

With the concept of *scheduled downtimes* in Applications Manager, the system can be informed of planned outages by a host or service by defining a scheduled downtime for the corresponding object. To prevent the monitors/services from being monitored for status during maintenance, you can schedule a maintenance task for such monitors.

Downtime Scheduler Overview

- Go to the **Admin** Tab.
- Click on the **Downtime Scheduler view**.
- The **Downtime Schedules** page displays 4 tabs:
  - Downtime Schedules (How to create a new schedule)
  - Downtime Scheduler Settings
  - Monitors currently under maintenance
  - Monitor Groups currently under maintenance



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Creating a new downtime schedule

The Downtime Schedules table displays:

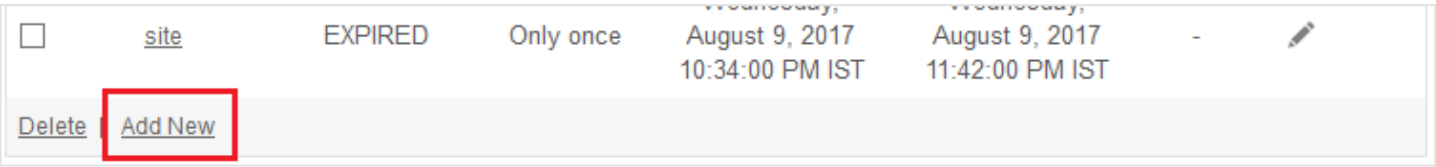
- The Schedule Name
- Status of the schedule
- Occurrence Periods
- Next schedule time i.e the start time, end time and the corresponding time zone.

Edit and delete options are available in the table to modify the schedule or delete it.

Creating a new schedule

The Downtime Scheduler provides you with the option to schedule a time period for which monitoring can be paused. You can choose between time periods of recurrence - Daily, Weekly or Once. You can add a new Schedule and view it from the Admin tab. Follow the given steps to add a schedule:

- Click **Add New**. It takes you to 'New Schedule' page.



- Enter the **Task Name.**
- Enter the **Description** of the Task.
- By default, the **Status** would be 'Enable'.
- Under Recurrence Details, choose the **time period** for which monitoring is not needed. The schedule can be Daily, Weekly or Once. (You can use the Edit option to modify the time period later.)
- By checking the **Select Timezone** checkbox you can select the required timezone from the drop-down list.
- Set the **Start** and **Completion time**.
- In the Monitors Details table, you can associate the downtime scheduler task to your monitors and process monitors for which monitoring is not needed. You can either associate the task to the existing list of monitors listed or to the monitor groups available. Select the **Monitors** for which monitoring is not needed. On saving, the chosen Monitors would have their Maintenance Tasks scheduled.

Note: If you want to add downtime schedules for processes and/or Windows services, you should select the Enable downtime scheduling for processes/Windows Services option under 'Downtime Scheduler Settings' tab.

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Downtime Scheduler Settings

You can change the following settings under the Downtime Scheduler Settings tab by checking the checkboxes respectively:

- Show the status of a monitor as up when under Downtime Schedule.
- Clear the health alert during Maintenance Period.
- Automatically revert unmanaged monitors to unmanaged state after scheduled maintenance.
- Enable Downtime Scheduling for Processes/Windows Services.

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Monitors and Groups Under Maintenance

Monitors currently under maintenance

The Monitors currently under maintenance tab displays a list of all monitors currently under maintenance. You can select the option to either:

- Show all monitors under maintenance or
- Show individual monitors under maintenance

The Table displays the following details about the monitors under maintenance:

- The name of the monitor
- The monitor type
- Monitor Groups to which the monitor is associated.
- The maintenance schedule name.
- Maintenance Start and End Time

Monitor Groups currently under maintenance

The Monitors groups currently under maintenance tab displays a list of all monitors groups currently under maintenance. The Table displays the following details about the monitors under maintenance:

- The name of the monitor group
- The maintenance schedule name.
- Maintenance Start and End Time

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Server Process Templates

A server process template is a pre-defined reusable collection of processes. It provides an easy way to add multiple processes for monitoring across a group of servers. For example, if you want to monitor the 'init' process in all your Linux servers, you can configure a server process template for this process and apply the template across all your Linux servers. This is better than manually adding the 'init' process in your Linux servers one by one.

Steps to Add a New Server Process Template:

1. Click **Server Process Templates** link under Admin tab.
2. Specify **Template Name** and **Description**.
3. Click **Add Process** link to add processes for monitoring. You can either *Manually Enter the Process Details* or *Choose Process Details from Available Servers*.
   - If you opt for the first option, specify the Process Name and Arguments. You can use Regular expressions while entering the Process Name and the Arguments by checking the **Use Regular Expressions** checkbox. (Regex Guide).
   - If you opt for the second option, select the appropriate monitor type and the monitor(s), and click the *Show Process* link. All the processes running in the servers will be listed. Select the necessary process from the list and click OK.
4. If you want to receive notifications when the threshold values of the process attributes are violated, you have to **Configure Alarms for Attributes**. The attributes of the process will be listed on the left-hand side. Click the *Associate* link corresponding to the attribute to open the *Configure Alarms* screen.
   - Select the necessary threshold from the *Associate Threshold* list box.
   - You can also *Associate Actions* for the thresholds if necessary. Choose the necessary action from the Available Actions list and add them to the Associated Actions list. By default, you can associate action for critical severity. If you want to associate actions for warning and clear severities, click the*Show Advanced Options* checkbox, and select the appropriate actions from the list.
   - Click *Add to Template* button once you have configured the thresholds and actions.
5. You can apply your process and threshold configuration under the **Associate Configuration to Monitors** section. You can either apply the configuration to monitor types or choose from a list of monitors or apply to specific monitor groups.
   - To apply the configuration to specific monitor types, choose the *Apply to Monitor Types* option. The server types available in your Applications Manager installation will be listed below. Choose the required server type to apply the template to all servers of that type.
   - To apply the template to individual monitors, choose the *Apply to Monitors* option and choose the necessary monitor(s) from the list.
   - To apply the template to monitor groups, choose the *Apply to Monitor Groups* option and select from the monitor groups listed.
6. Click **Save Template** to complete your server process template configuration.

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Note:
Command & Arguments: F:MySQLmysqlbinmysqld-nt.exe
1. **Applications Manager will check if the process is running and whether the command and arguments are same as that was being added initially. If the arguments change often then you can retain the command and remove the argument. You can also update the command & argument field with certain path which will not change throughout the lifecycle of the process. Example One:**Process Name: javaCommand & Arguments: java/root/jdk1.5.0_07/bin/java -server -Xms128m -Xmx128m -Dprogram.name=run.sh -Dcom.sun.management.jmxremote -Dcom.sun.management.jmxremote.port=1999 -Dcom.sun.management.jmxremote.ssl=false -Dcom.sun.management.jmxremote.authenticate=false -Djava.endorsed.dirs=/root/JBoss/jboss-4.0.2/lib/endorsed -classpath /root/JBoss/jboss-4.0.2/bin/run.jar:/root/jdk1.5.0_07/lib/tools.jar org.jboss.Main**Example Two:**Process Name: mysqld-nt.exeCommand & Arguments: F:MySQLmysqlbinmysqld-nt.exe mysqld-nt --defaults-file=..my.ini -u root -b .. --tmpdir=..temp --standalone --port=13326 --default-character-set=latin1If the port or any other property changes often, you can just monitor the process using its name and command. Look at the command and arguments below for our recommendation w.r.t. the two examples above:Process Name: javaCommand & Arguments: /root/jdk1.5.0_07/bin/javaProcess Name: mysqld-nt.exe
2. **At present, there is no support for pattern matching in process monitoring.**

Adding a Server Process Template from the Admin Server (Enterprise Edition)

You can create a new Server Process Template, associate services and configure alarms for attributes from the Admin Server using the same steps as in the Managed Server. However, templates configured in the Admin Server can be applied to different monitor types and monitor groups, not to individual monitors.

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Windows Service Templates

A Windows service template is a pre-defined reusable collection of Windows services. It provides an easy way to add multiple services for monitoring across a group of Windows servers. For example, if you want to monitor the 'EventLog' service in all your Windows XP servers, you can configure a Windows service template for this service and apply the template across all your XP servers at once. This is better than manually adding the 'EventLog' service in your Windows XP servers one by one.

Steps to Add a New Windows Service Template:

1. Click **Windows Services Templates** link under Admin tab.
2. Specify **Template Name** and **Description**.
3. Click **Add Service** link to add services for monitoring. You can either *Manually Enter the Service Details* or *Choose Service Details from Available Servers*.
   1. If you opt for the first option, specify the Service Display Name and Service Name.
   2. If you opt for the second option, select the appropriate monitor type and the monitor(s), and click the *Show Service* link. All the services running in the servers will be listed. Select the necessary service from the list and click OK.
4. If you want to receive notifications when the threshold values of the service attributes are violated, you have to **Configure Alarms for Attributes**. The attributes of the service will be listed on the left-hand side. Click the *Associate* link corresponding to the attribute to open the *Configure Alarms* screen.
   1. Select the necessary threshold from the *Associate Threshold* list box.
   2. You can also *Associate Actions* for the thresholds if necessary. Choose the necessary action from the Available Actions list and add them to the Associated Actions list. By default, you can associate action for critical severity. If you want to associate actions for warning and clear severities, click the *Show Advanced Options* checkbox, and select the appropriate actions from the list.
   3. Click Add to Template button once you have configured the thresholds and actions.
5. You can apply your service and threshold configuration under the **Associate Configuration to Monitors** section. You can either apply the configuration to monitor types or choose from a list of monitors or apply to specific monitor groups.
   1. To apply the configuration to specific monitor types, choose the *Apply to Monitor Types* option. The server types available in your Applications Manager installation will be listed below. Choose the required server type to apply the template to all servers of that type.
   2. To apply the template to individual monitors, choose the *Apply to Monitors* option and choose the necessary monitor(s) from the list.
   3. To apply the template to monitor groups, choose the *Apply to Monitor Groups* option and select from the monitor groups listed.
6. Click **Save Template** to complete your Windows service template configuration.

Adding a Windows Service Template from the Admin Server (Enterprise Edition)

You can create a new Windows Service Template, associate services and configure alarms for attributes from the Admin Server using the same steps as in the Managed Server. However, templates configured in the Admin Server can be applied to different monitor types and monitor groups, not to individual monitors.

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Credential Manager

Credential Manager in Applications Manager will help you to store the various credentials like password/ snmp community, port, etc., for all type of monitors in a common place. This preconfiguration of credentials in a central location will help in avoiding the need to edit every monitor when a password or SNMP/ SSH info changes. For instance, you can create a credential for type MySQL monitors. Consider the name of the credential is SampleMySQL. This SampleMySQL contains parameters for MySQL monitor, username, password and database name.

When you want to add a MySQL monitor, credentials of type MySQL alone will be displayed. On selecting the name SampleMySQL, the parameter for this credential will be associated internally to this monitor and it gets added. You need not give the user and database name separately.

When more monitors, say 20 monitors for MySQL type is added with the same Credential Name (SampleMySQL), it is easier for a user to maintain all of these in a single place. Any change in this credential, will be reflected to all the monitors associated with the credential.

The credential manager support is available for servers, databases and application server monitors.

1. In the Admin page, click **Credential Manager**.
2. Click **Add Credential**.
3. Select the **Credential Type**. When a type is selected, fields associated to that type is displayed. You need to create a profile based on the type required.
4. Provide a **Credential Name**. This name is used to associate credentials to monitors during discovery of monitors. When this name is mentioned, all the properties associated to this name will be associated to the monitor.
5. Provide other details like the **Username** and **Password**. More fields are displayed as per the credential type selected.
6. Click **Save** to add the credentials.

You can edit or delete these credentials from the details page by clicking on the respective icons on mouse hover of a particular credential name.

Credential Management in the Enterprise Edition

You can add, edit or delete a credential from the Admin Server in Applications Manager, the same as in the Professional Edition, and the credentials get automatically synced with the Managed Servers. However, these credentials cannot be edited from the Managed Servers.

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Availability Settings

This section explains the availability settings that can be made in Applications Manager. To access availability Settings, click the **Admin** tab and click **Availability Settings**.

Show Monitor Status as Up during Maintenance

Using Downtime Scheduler, you have the option to schedule a time period for which monitoring is not needed. If you want to show the availabilty of monitors under maintenance as Up, irrespective of their previous state, select this option.

Clear Health Alert during Maintenance Period

When you schedule a downtime or unmanage a monitor, it will show the last health status. If the monitor is down before a downtime or maintenance, it will be displayed as 'Down'.

If you choose this option, then Applications Manager will clear the last health status of the monitor.

Check for Network Availability

When Applications Manager is out of the network or is not connected to the network, the status of all the Monitors that are currently been monitored will be shown as 'Down'. You can avoid this by enabling the '**Check for Network Availability**' option.

When this option is enabled, Applications Manager will generate alarms for the unavailability of resources only if the specified host is reachable in the network. For example, let us assume that the system/host which runs the Applications Manager has been isolated from the network. Enable this option and specify a hostname in the network (preferably not the hostname where Applications Manager runs). Now, Applications Manager tries to ping that machine for its availability in the network. If not available, alarms are not generated and resources are not shown as down.

You can also specify the IP of your routers, gateways, etc., to check the system/host which runs the Applications Manager is present in the network.

Check for URL Availability

When the Applications Manager is out of the network or if external proxy settings are not configured, the status of all the URLs that are currently been monitored will be shown as 'Down'. You can avoid this (and false alarms) by enabling the '**Check URL Availability**' option.

When this option is enabled, Applications Manager will generate alarms for the unavailability of URL only if the other specified URL - reference URL is not down. For eg, let us assume that the system/host which runs the Applications Manager has been isolated from the network. Enable this option and specify another URL say for eg., google.com which is expected to be up always. Now, Applications Manager tries to monitor URL for its availability. If not available, it checks reference URL, if the reference URL is available the alarms are generated. If the reference URL itself is not available (meaning the machine is out of network or any such case) false alarms are not generated and URL is not shown as down. Further a mail is sent to the configured mail address intimating the same. View Related Blog

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Availability Timeout Check

Using this option, you can set timeout for checking availability globally.

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Action / Alarm Settings

This section explains the Action and Alarm Settings that can be made in Applications Manager. To access the Action / Alarm Settings page, click the **Admin** tab and go to the **Action / Alarm Settings** link. You can change the following settings:

- General Settings
- Repeat Action Executions Settings
- EMail Settings
- Error Mail Monitoring Settings
- Settings for Date Format for $DATE replacable tag in Alarm
- SMS Settings
- Consecutive Polls Count Settings

General:

Enable Actions
When alarms are generated, actions are triggered for those alarms (if you have configured any). If you do not want the actions to be executed in spite of the alarms, deselect this option.

Execute Actions Repeatedly

Using this functionality you can trigger an action continuously during every poll, till an alarm changes from critical/warning to clear or you can restrict the number of action executions for the same threshold. The three types of recursive actions that are involved are:

- **Availability -** If a Monitor is down, you can execute actions repeatedly till the Monitor is up.
- **Health -** If the Health of the monitor is in a Critical or Warning state, you can choose to do one of the following:
  - Execute actions repeatedly till the Health is clear, if the Health is critical/warning. You can also restrict the executions to a certain number of times by setting a value (1 is the default value and blank for unrestricted executions).
  - Execute actions associated to the health of the monitor repeatedly, until it is Acknowledged/Picked Up.
- **Attribute Level -** If the attribute status is critical/warning, you can execute actions repeatedly till the attribute status is clear.

EMail

Under Email settings, you have the option to:

- Send a Server Snapshot as inline attachment to an email if the health is Critical. You can also select the Content Transfer Encoding for email action from a drop-down menu.
- Send one email when multiple Email actions are configured for an alarm

Monitor Error Mail

Under the Error Mail Monitoring Settings, you can choose to send emails in case of any fatal monitor error like data collection being performed. This mail will be sent to the email address specified in the 'admin' user account. If no email address is specified, the mail will be sent to the email address specified in the 'Mail Server' settings.

Furthermore, you can specify the number of times the error has to occur before email is triggered in the **Check for consecutive polls before sending error** box.

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Date Format

Under **Date Format for $DATE replacable tag in Alarm** settings, you can set the required date format in the Email alarms. It can set to either:

- Day Mon dd HH:mm:ss IST yyyy (Default) - Thu Feb 22 12:02:40 IST 2007 or
- MM/dd//yyyy HH:mm:ss - 02/22//2007 12:02:40. See Replaceable tags for usage of **$Date**.

SMS:

By default , the complete information that you configure while adding SMS Action is sent via an SMS. Some SMS service providers restrict the length of characters sent through the SMS. This could result in truncated message delivery. If you would want to send only information on the Monitor, Attribute, and its Severity, deselect this option. For E.g., "*Health of JBoss Server is critical*" will be the SMS format that is received. (This is in addition to the message provided when creating the SMS action.)

Consecutive Polls before Reporting an Error:

The Critical, Warning, and Clear alarms are generated based on attributes that you have configured. You have control over the alarms that are being generated. Simply specify the number times after which the alarm should actually be generated. It would eradicate false alarms. You can set the number of Consecutive Polls Count that should be checked before reporting:

- A service is down or an attribute is in a critical state.
- An attribute is in warning state.
- A service is up or an attribute is in clear state.

If you want to Applications Manager to check 3 out of 5 Consecutive Polls before reporting that a system (or any Monitor) is down or an attribute is critical, specify the value as 3 in the first and 5 in the second text box. Similarly, you can change the remaining four text boxes (warning, Clear) also. If you have set the poll as 2 out of 5 times before reporting a service is up, for the first time of polling, the service will be shown as Unknown. Only on the second poll, if the service is running, the status would be shown as 'Up'. Changes made will be reflected across all the monitors.

Apart from Action / Alarm settings, Polls before reporting an error, can be configured for threshold and availability of individual monitors. Refer Configuring Consecutive Polls.

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Event Log Rules

By using this option, you can monitor the various Windows and Windows Azure events. The events received will be displayed in the Windows Monitor details page.

Also, you can generate alarms in Applications Manager based on the configured rule. For e.g., when an event of type Error occurs in System Log, you can generate a critical alarm which will in turn affect the health of the Windows or Azure Monitor.

Browse through the following topics to understand Event Log Configuration:

- Event Logs Rules Configuration
  - Adding a new event log | Adding a new event log from the Admin Server (**Enterprise Edition**)
  - Deleting an event log
  - Adding a new event log rule
- Windows Azure Logs Rules Configuration
- Adding a new Trace Log rule
- Adding a new Diagnostic Infrastructure Log rule

Note:
- Event Log Monitoring is available in Windows Installations and only in WMI mode of monitoring only.

Event Logs Rules Configuration:

For receiving windows events, you have to configure Event Log Rules. You can get notified by the events from the following Log Files:

- Application (By default Event Log rule is configured for any Application Error)
- System
- Security (By default Event Log rule is configured for any Security Failure)
- File Replication Service
- DNS Server
- Directory Service
- **Adding a new Event Log File**
  - To add new event log file other than what are available by default, click the option "*Add New Event Log*" in the right hand bottom corner of the web client.
- **Adding a new event log from the Admin Server (Enterprise Edition)**
  - Event Logs created in the Admin Server in your Enterprise setup is automatically synced to all the respective Managed Servers.
- **Deleting an Event Log**
  - Click on the Delete Event log button at the top right corner of the event log box, to delete an event log that you have created.
- **Adding a new Event Log rule**

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- Under Admin tab, click on **Log Rules**
- Click on **'New Rule' for the required Log File type**
- Enter the **Rule Name** of your choice
- Enter the **Event ID** associated with the Event Log File (not mandatory)
- By clicking the **Advanced Options** checkbox, you can formulate the rule more specifically by associating:
  - **Source** - Application which created the event.
  - **Category** - Task Category which contains more information about the event.
  - **User Name** - System component or User account that was running the process which caused the event.
  - **Description contains word or matches Regex**: The description content of the incoming event, and if the Description contains a particular word. You can perform content check for regular expressions by checking the **Regular Expressions** checkbox. For e.g., select Log File as [System] and Event Type as [Error] , to get all events of type Error from System Log File.
  - The **number of its occurrences in a poll**.
  - Select the **Log File Type** (application, system, security, file replication service, DNS Server, directory service).
- Choose the **Event Type** - **Error, Warning, Information** or **Event of Any Type** . In case of Security Events, the types would vary between **Success Audit** and **Failure Audit.**
- Alarm severity can be set to **'Critical'** or **'Warning'** based on the following conditions :
  - Depending on the severity of the incoming event and when the event matches a certain number of consecutive polls
  - The matching event is not generated in the given time window
- Alarm severity can be set to **'Clear'** based on the following conditions :
  - If no matching event found for certain number of consecutive polls
  - If a matching event is generated
- At the outset, you can **Enable** or **Disable** the rule.
- You can set the rule to be applicable to:
  - **All Monitors** - All the monitors.
  - **Specific Monitor Types -** For e.g., Windows XP, Windows 7, Windows 8 and so on
  - **Selected Monitors** - You can select the monitors from a drop down menu or search for the required monitor to which the new rule must me applicable.
- The new rule will be displayed in the LogFile rule window.
- You can also enable, disable and delete one or more rules by selecting the rule(s) and clicking the **Enable, Disable** or **Delete** button.

Note:
The event logs added by default cannot be deleted.

Windows Azure Logs Rules Configuration:

You can monitor Windows Azure Trace logs and Diagnostic Infrastructure logs using Applications Manager. You must first configure Trace Log or Diagnostic Infrastructure log rules. The logs received will be displayed in the details page of the Windows Azure Role Instances. You can also generate alarms in Applications Manager based on the configured rule.

For e.g., when an event of type **Error** occurs in the System Log, you can generate a critical alarm. This alarm will, in turn, affect the Health of the Windows Azure Role Instance.

Here is how you can configure a new rule for Windows Azure:

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- **Trace Logs**
  - Click on **New Rule** at the right hand corner of the Trace Logs box**.**
  - In the **Add New Rule for Windows Azure Trace Logs** page, enter the name of the rule that you wish to create.
  - Enter the **event id** of the rule that you are creating
  - Enter the string that the message contains.
  - Select the event type: **Any Type, Error, Warning** or **Information**
  - You also have the option to set the severity of the alarm as **critical** or **warning**.
  - You can enable or disable the rule status.
  - Click on the **Create Rule** button.
  - The new rule wil be displayed in the **Trace Logs**.
  - You can edit the rules by clicking on the **Edit Rule** icon.
  - You can also enable, disable and delete one or more rules by selecting the rule(s) and clicking the **Enable, Disable** or **Delete** button.
- **Diagnostic Infrastructure Logs**
  - Click on **New Rule** at the right hand corner of the Diagnostic Infrastructure Logs box**.**
  - In the **Add New Rule for Diagnostic Infrastructure Logs** page, enter the name of the rule that you wish to create.
  - Enter the **Error Code** of the rule that you are creating.
  - Enter the string that the message contains.
  - Enter the string that the **Error Message** contains.
  - Select the event type: **Any Type, Error, Warning** or **Information**.
  - You also have the option to set the severity of the alarm as **critical** or **warning.**
  - You can enable or disable the rule status.
  - Click on the **Create Rule** button.
  - The new rule will be displayed in the **Diagnostic Infrastructure Logs**.
  - You can edit the rules by clicking on the **Edit Rule** icon.
  - You can also enable, disable and delete one or more rules by selecting the rule(s) and clicking the **Enable, Disable** or **Delete** button.

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Alarm Escalation

Applications Manager provides an option to configure rules which ensure that any alarm that lies unattended for a while is brought to the notice of the IT administrator. You can escalate the alarm if it has not been attended to for a given time period. This ensures that all critical alarms are taken care of before it gets late. You can configure rules to send Escalation EMails or send SMS or to Execute Program about unattended alarms to the Admin or to the superior.

Alarm Escalation Configuration:

- Under the Admin Tab, click on Alarm Escalation icon.
- Click on **New Rule** to create a new rule.
- Add a **Rule name.**
- You can set an **alarm to escalate a Critical/ Warning alarm** for
  - **All your Monitors**
  - Selected **Monitor Groups**
  - **Selected Monitors**
  - Specific **Monitors in a Monitor Groups**
- Set the rule. For eg., Send Escalation EMail if the critical alarms of all monitors are not cleared within 2 hours. You can set rules for alarms in individual monitor groups too.
- Select the option to Send EMail/ SMS/ Execute Program Actions. These actions have to be created earlier from the *Actions* drop-down at the top band. Execute Program Action will trigger a specific batch file or script, whereas Send EMail and SMS will send notifications to the mail id and mobile number provided, on the escalation of an alarm. For more on creating action, refer this section.
- Set the time period for which the rule should be executed repeatedly.
- By choosing not to receive duplicate escalation for the same alarm, you opt for optimizing the number of escalation EMails/ SMS sent and Program Action executions. For eg., If there are five critical alarms that were escalated in the first execution run (say 10 minutes), only if there is an addition of new alarm or deletion of alarm, the next set of alarms will be escalated in the second run. If there is no change in the environment in the next 10 minutes, ie., if the five critical alarms still remain the same, escalation EMail will not be sent.

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Configure Global SNMP Trap

Global SNMP Trap action supports the sending of alerts generated by Applications Manager as SNMP Traps to your Trap Listeners. You can configure Global SNMP Trap action in Applications Manager to send alerts to SNMP trap listeners. The alerts generated can be viewed from SNMP trap listeners at the corresponding destination address and port.

Follow the steps given below to create a global SNMP Trap action:

1. Click '**Global Trap Action**' under Admin tab. It takes you to '**Create Global Trap Action**' page.
2. Select the **SNMP Trap Version** from the drop-down box. You can select either v1,v2c or v3.
3. Enable or disable the action by choosing the appropriate radio button under **Status.** By default, the 'disable' button is selected.
4. Specify the hostname where the SNMP Trap listener is running under **Destination Address.**
5. Specify the port at which traps are received in the **Destination Port** field.

   For SNMP V1 and V2C:

   Enter the **Community String** of the trap. The default value is 'public'.

   For SNMP V3:

   Enter the **UserName** and **Context Name**.

   Select a **Security Level** : NoAuthNoPriv, AuthNoPriv or AuthPriv.
6. Click **Create Action** button to complete the configuration.

Once you have configured the global trap action, traps will be sent to the configured destination address and port whenever an alert is generated . The trap will be received in the SNMP listener as OID as mentioned in the below table. To receive trap, the following Applications Manager MIBs should be downloaded from C:Program Files (x86)ManageEngine13200AppManager_Homeworkingmibs directory :

- APPLICATION-MANAGER-MIB
- SNMPv2-TC
- RFC1213-MIB
- SNMPv2-SMI

Attribute	**Trap Varbinds**
Subject	APPLICATION-MANAGER-MIB::trapMessage (.1.3.6.1.4.1.2162.1.1.2.1)
Monitor Name	APPLICATION-MANAGER-MIB::monitorname (.1.3.6.1.4.1.2162.1.1.2.2)
Type	APPLICATION-MANAGER-MIB::monitortype (.1.3.6.1.4.1.2162.1.1.2.3)
Host	APPLICATION-MANAGER-MIB::hostname (.1.3.6.1.4.1.2162.1.1.2.4)
Attribute	APPLICATION-MANAGER-MIB::attribute (.1.3.6.1.4.1.2162.1.1.2.5)
Severity	APPLICATION-MANAGER-MIB::severity (.1.3.6.1.4.1.2162.1.1.2.6)
Generated Time	APPLICATION-MANAGER-MIB::createdtime (.1.3.6.1.4.1.2162.1.1.2.7)
RCA Message	APPLICATION-MANAGER-MIB::rcaMessage (.1.3.6.1.4.1.2162.1.1.2.8)

Note:

To receive trap from Applications Manager, the following MIBs from ***<Applications Manager home>workingmibs*** directory should be added to corresponding SNMP Trap receiver:

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- APPLICATION-MANAGER-MIB
- SNMPv2-TC
- RFC1213-MIB
- SNMPv2-SMI

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SNMP Trap Listener

SNMP Trap Listener can be configured in such a way that, if a particular trap is received, actions can be configured and alarms will be generated accordingly. For e.g., you can configure a trap listener for system shutdown, you can assign the severity as critical and also associate an email action through SNMP Trap Listener. If the trap is received, then the severity becomes critical and an email alarm is generated.

The default port through which the traps are received is **1620**. The default port can be changed by modifying <am.traplistener.port> property in <AMServer.properties> under AppManager Home/Conf directory. Restart the server for the changes to take effect.

Follow the steps given below to add a SNMP Trap Listener.

1. Click the **Add New** option in SNMP Trap Listener under the Admin Tab. This will take you to the **Add SNMP Trap Listeners** page.
2. Enter the **Trap Listener Name**.
3. Choose the **Status** of the trap. The Status is 'enable' by default.
4. Select the **SNMP Trap version -** V1, V2C or V3

   If you select **v1**, select the **Generic Type**. The various generic types are coldStart, warmStart, linkDown, linkUp, authenticationFailure, egpNeighborLoss, and enterpriseSpecific. If you select enterpriseSpecific type, you can also provide wildcard symbol ' * ' or numeric value for**Specific Type** field. Enter the **Enterprise OID**. **The Enterprise OID can configured as either exact OID or part of an OID.** You can use the MibBrowser to get the Object ID. If you select a Parent OID from the MibBrowser, all child OIDs will also be automatically listened.

   - If the version is **v2c**, then enter the **Trap OID**. **The Trap OID can configured as either exact trapoid or part of trapoid which ends with '.*'** . You can use the MibBrowser to get the Object ID.
   - V3 also requires the Username of the host from which the trap should be recieved. **The Trap OID can configured in APM as exact Trap OID.**

5. Check the **Customize Message (Varbinds)** checkbox to customize the trap message. Enter the message. Message (Varbinds) can be defined using:
   - $*
   - $1, $2, $3,...,$N
   - Any user defined message with selected variables {eg.$4 configuration changed in $2. Changed By: $5 }
6. Select the **Severity**. It can be Clear, Warning, Critical or New Threshold Profile. If you select the 'New Threshold Profile' option, you have to specify the threshold name and the conditions for the different severities of alarms. By default, you can configure the condition for *Critical* severity. Select the 'Show Advanced Options' checkbox to configure *Warning* and *Clear* alarm severities.
7. You can associate a trap severity with server health
8. Trap can be received from any Host or you can specify the Host from which the trap can be received.
9. **Associate Actions** that need to be executed when the trap is received. The actions can be chosen from the list of actions configured. If you have selected the 'New Threshold Profile' option under Severity, you have to associate the actions for the severities defined in the threshold profile.
10. **Save** the Trap Listener.

You can view the Traps by clicking on 'View' from the Admin Tab. It opens up to 'View SNMP Trap Listeners' page, in which details about the trap listeners are given.**Edit** option is available to modify the traps listeners. Also, the alarms configured for the traps received can be viewed from the Alarms Tab.

> **Note: Dell OpenManage** can be integrated with ManageEngine Applications Manager via the SNMP Trap Listener. More in Applications Manager's blog.

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Enterprise Edition - Monitor Group Rules

In Applications Manager's Enterprise Edition, you can configure rules for associating a Monitor to a monitor group from the Admin Server. Here is how you can create a new Monitor Group rule:

1. Under the **Admin Tab,** click **Monitor Group Rules** in the **Alarm/Action table**. This opens a new **Add New Rule window**.
2. Click **Add New Rule** to open a new **Add Monitor Group Rule** pop-up window.
3. Enter a **Rule Name** and give your **Description** of the rule.
4. Select the **Monitor Group** to which you wish to associate the rule from the drop-down list.
5. You can also set up **multiple filter criteria** like name or type to a monitor group rule. For eg.
   - You can set multiple rules to associate only monitors whose name is Win and Monitor Type is Windows XP.
   - You can set multiple rules to associate only monitors whose name contains 192.168.27 or 192.168.26
6. This will automatically assign monitors created in managed server to monitor groups created in admin server based on the corresponding rules.
7. You can edit or delete the Monitor Group Rule from the **Add New Rule window** by clicking on the **edit** or **delete icon** displayed near the rule name.

Note:
New Rules created will be applied to groups in the Managed Servers only after the rules have been synced with the Managed Servers. However, these rules cannot be edited from the Managed Servers.

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REST API

Applications Manager provides REST-style APIs for fetching data from Applications Manager and integrating them into an internal portal or a third-party system management software. These data can be inserted to your own database or put in any format that you need. To start using our APIs, you need a valid Applications Manager user account and an API key.

For complete information on how to use our REST APIs, please refer this section.

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JSON Feed

JSON feeds are used as an alternative for using XML for asynchronously transmitting structured information between client and server. It is a lightweight text-based open standard designed for human-readable data interchange.

Applications Manager provides the status of monitors and monitor groups in the form of JSON feeds. Using these feeds, you can integrate Applications Manager's data into your intranet web portal.

To view the status of monitors/monitor groups, access this URL:

<http://<Applications Manager Hostname>:<port>/jsonfeed.do?method=createMonitorGroupFeed>

We bundle a sample file (jsonsample.html) under *<AppManager_Home>/working/html* directory to parse the JSON data.

The following changes should be done in the jsonsample.html file:

- Change the hostname and port in the URL in first line in the sample file to suit your environment.

  <script src="http://<appmanagerhostname>:<port>/jsonfeed.do?method=createMonitorGroupFeed">

  Example: *<script src="http://<appmanager>:<9090>/jsonfeed.do?method=createMonitorGroupFeed">*
- If you want to view the monitor group status coming through JSON feed, you can invoke the URL below:

  http://<appmanagerhost>:<port>/html/jsonsample.html

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Dashboards

Applications Manager monitors over 50 applications and servers out-of-the-box and tracks a variety of performance indicators for each application or server monitored. In a typical IT environment however, there are certain servers and metrics that are more business critical than others. Therefore, you might want to provide more importance to those servers and their metrics. Dashboards are an easy way to put together such business-critical applications and view their performance and alerts at one place.

Applications Manager provides 4 dashboards by default - default dashboard, business view, Availability and Qos Worldwide. In addition, you can create custom dashboards such as ones that capture the status of all web applications deployed in a Tomcat server or status view of all databases and so on.

For more information on dashboards, refer this section.

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World Map Business View

World Map Business View in Applications Manager enables network administrators to get a comprehensive understanding of how distributed their network really is.

You can represent a monitor group in the World Map. Monitor Groups are a logical group of one or more monitors that provides a holistic view of your business environment. You can visually represent the status of all your monitor groups across the globe. The root cause analysis (RCA) data is available in the map.

To represent **Monitor Groups** in World Map, follow the given steps.

- While creating a new monitor group, you can associate the monitor group to the location chosen from the list.
- Else, click on **Advanced** and then **Add Location**, it opens up a world map. From the map, you can select and add custom locations.

You can also save the zoom level, as per your need, by clicking on the option, "*Save current zoom level*" present in the right top corner of the web client.

World Map Settings

1. You can add or delete location from the 'Manage Location' drop down box.
2. You can click Add Location, it opens up a world map.
3. To navigate to a location, use the controls on the top left of the map.
4. Select a location in the Map by clicking it with the mouse. You will see an image indicating your selection.
5. Add a name for the location in the 'Location Name' field and click 'Add Selected Location'.
6. You can also customize the Height and Width of the World Map.

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Global Settings

This section explains the global settings that can be made in Applications Manager. To access Global Settings, click the **Admin** tab and click **Global Settings**. On performing any of the configurations, click **Update Global Settings** button provided at the bottom of the page.

General

- **Show Intro Tab** - When you login into the Web Client, an Introduction page is diaplayed to helps novice users to get started and to understand the terms used in the product. If you want the Introduction page to be displayed every time you login, select this option.
- **Do not redirect logout page to external website www.manageengine.com** - By selecting this option, logout page will not be redirected to external website www.manageengine.com.
- **Do not hide Advanced configuration in Alarm Configuration** - By selecting this option, you can always have all the advanced options expanded by default in the "Configure Alarms" and "New Threshold" screens. By default, while configuring actions at attribute level, only the 'Critical Severity' actions can be associated with the Health of the attribute. Associations of Warning and Clear severity actions are hidden. Likewise, by default, while creating new Thresholds, only the critical threshold is set. Warning and clear thresholds are hidden. This is to aid customers who require only the critical configurations and they may not be interested in fine grained configuration of thresholds & alarms.
- **Add Host as a Monitor when you associate a service running in it to the monitor group** - By default, when you associate a Monitor (service or server running in particular host) with a Monitor Group, the host (in which the Monitor runs) is also associated with the Monitor Group. If you do not require the host to be associated with the Monitor Group, deselect this option. For example, if you are add and associate a monitor (say WebSphere) with a Monitor Group, Applications Manager will add and associate the host (say Windows) also in which the WebSphere runs with that Monitor Group.
  Note: *This host will be monitored only if you have provided the required configuration information.*
- **Add Host also when you add a new service -** While adding a service as monitor, by selecting this option, the host on which the service runs will also be added.
- **Restart the product in case of serious server error** - By selecting this option, you can restart Applications Manager automatically, incase any serious server error like out of memory error occurs.***Note:*** *This host will be monitored only if you have provided the required configuration information.*
- **Send automated mails to admin user Email from Applications Manager -** By selecting this option, the admin user will receive automated mails like license expiry notification, weekly report for availability of servers and applications etc.
- **Easy Upgrade Option** - If this option is checked, Applications Manager performs auto upgrade of the PPM without user intervention.

Enterprise Edition Settings

You can convert the standalone professional server to Managed Server by giving the Admin Server Host name and SSL port. Note: This option is available only if you have installed the full build and does not work for upgrades through PPM.

Collect Usage Statistics

Applications Manager collects statistical data associated with quality, stability, and usability of the product.
By checking the ***Enabled*** option you grant permission to collect this data. The data collected will remain confidential and be used during analysis.

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Configure Mail Server

Mail servers are configured to send EMails to desired destinations. For instance, when you perform an action to send EMail for some alarms, you need to configure mail server through which mails are sent. Follow the given steps to configure mail server.

1. In the Admin page, click **Configure Mail Server**.
2. Provide the **SMTP server name** and the **port number**.
3. Provide the EMail Address . It will be used as the Sender address when configuring actions.
4. Provide the **user name** and **password**, if the SMTP server requires authentication details (Select the checkbox).
5. For TLS Support in the mail server configuration, select **TLS Authentication Enabled** option.
6. To enable Secure Connection(SSL), check the **Secure Connection(SSL) Enabled** checkbox.
7. If the chosen mail server is down for some reasons, you have an option to configure a **Secondary Mail Server** that functions as a back up mail server. Check the **Configure Secondary Mail Server checkbox**
   - Provide the **SMTP server name & the Port number.**
   - Provide the **user name and password**, if the SMTP server requires authentication.
8. When configuring Mail Server in the Enterprise edition, you can allow the mail server configuration performed in the Admin server to propogate to all your Managed Servers. To enable this, check the **Use same mail settings for all managed servers checkbox.**
9. Click **Save** to save the configuration.

The SMTP server is configured and all the e-mails will be sent through this server.

> **Note**: To verify, SMTP access for Gmail from your Applications Manager installed system, you will need to run a telnet test, which will check that your computer can contact gmail SMTP servers. Enter *telnet smtp.gmail.com 465* (or 587) and check for any response.In case you fail to receive a response, we recommend contacting your system administrator to get the access.

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Configure SMS Server

SMS Server should be configured for sending SMS alarms via Modem. Available in Windows only.

SMS Servers Settings:

Prerequisites:

- Connect your GSM Modem to the **Serial Communication Port**.
- Know the Modems that are supported - Link (Can’t find the modem that you're looking for?)
- Only a **serial cable** must be used for connectivity

Enter the **Port Number** to which Modem is connected: For eg. COM3 . To find the Port Number - Click on *My Computer*->right click *Properties->Hardware->Device Manager->Ports (COM & LPT)* under *->Prolific USB-to-Serial Comm Port* (COM3).

The Modem Status details that would be displayed are

Details:

- Modem Manufacturer
- Modem Model
- Battery Status
- Signal Status
- Status

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Configure Proxy

In situations where any URL to be monitored is available in the Internet, then the requests have to be routed through a HTTP proxy server. Such URL monitoring can be performed by setting the proxy configuration. For eg., to access websites from your browser, you should configure an HTTP Proxy (In Internet Explorer, Click on Tools >Internet Options > Connections > LAN Settings). Follow the steps given below to configure a proxy server:

1. Open Web Client, click on Admin tab, then click Configure Proxy.
2. Select Automatically detect settings, if the proxy is to be detected automatically.
3. To specify the proxy settings manually, select Use a proxy server and specify the following details:
   1. Host and port number of the proxy server.
   2. User Name and password of the user to access the Internet.
   3. Specifies whether you want to use the proxy server for all local (intranet) addresses. Because a proxy server acts as a security barrier between your internal network (intranet) and the Internet, you could need extra permissions from your system administrator to gain access to Web pages through a proxy server. You might be able to gain access to local addresses easier and faster if you do not use the proxy server.
   4. Specify Internet addresses you want to connect to without using a proxy server. For example, you might not want to use the proxy server to contact other computers on your local network. Use semicolon (;) to specify multiple IPs.
      The entries may be any of the following:
      a complete host name (e.g. "www.zohocorp.com")
      a domain name; domain names must begin with a dot (e.g. ".zohocorp.com")
      an IP-address (e.g. "12.34.56.78")
      an IP-subnet, specified as an IP-address and a netmask separated by a "/" (e.g. "34.56.78/255.255.255.192"); a 0 bit in the netmask means that that bit won't be used in the comparison (i.e. the addresses are AND'ed with the netmask before comparison).
4. Click Save.

All request to the Internet will then be routed through the proxy server.

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User Administration

Applications Manager permits five different roles to work with the product apart from the default admin role. The different roles are Normal Admin, Delegated Admin, User, Operator and Manager.

Default / Super Admin : The system Super Administrators are allowed to perform all admin activities. The Super Administrator role also has the privilege to configure user administration. The Super Admin role is the **default** admin user and it cannot be deleted or renamed.

1. **Normal Admin :** Normal Administrators are allowed to perform all default admin activities except the following :
   - Access query tool and DB status from Support under Tools in Admin tab.
   - Shut down the Applications Manager service from within the product.
   - Access Account Policy tab in User Management under Product Settings in Admin tab.
   - Access all Admin permissions in Permissions tab in User Management under Product Settings in Admin tab.
2. **Delegated Admin :** The delegated administration role is used to assign limited administrative privileges to users in your organization who aren't default administrators. More information on Delegated Admin role and how to enable Delegated Admin Preferences can be viewed here.
3. **User :** A system user will have read-only access to all components of the product. Users will not have the privilege to access, configure or edit the different components of the product.
4. **Operator:** The system operators have read-only access to only those components of the product that the default administrator assigns to the operator. The operator role does not have the privilege to access, configure or edit the different components of the product. If an operator is part of a Monitor Group, then the restrictions will be in effect only for the operator and not others.
5. **Manager:** The Manager has an integrated high-level view of the Business Infrastructure. Service Level Agreements (SLAs) can be created and associated with various business applications and servers. More information on Manager role can be viewed here.

In the **Admin** page, click **User Administration** under Global Configurations to browse through the following tabs:

- Profiles
- User Groups
- Domains
- Permissions
- Views
- Account Policy

> **Note**
> User management is not supported for the Applications Manager plugin build over OpManager. At present, there are only two types of roles available for plugin users - Administrator and Read-Only User. Operator, Delegated Admin and Manager role is not supported. Applications Manager Plugin users cannot assign monitors to the any specific users in the Apps tab. They can view all the default monitors only.

Profiles

Applications Manager provides you with the ability to manage users and roles for your enterprise, with roles assigned to users and different permissions associated to each role. This is achieved by first adding users and associating the users with the roles.

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You can also import users from Active Directory or LDAP. This functionality is implemented as a more convenient method to add a large number of users and to ease the user administration in Applications Manager. You can import users and perform role configuration for LDAP and Active Directory users and groups in Applications Manager.

- Adding new users to Applications Manager
- Importing users from active directory or LDAP
  - Importing users from a new domain
- Deleting users

Add new users to Applications Manager

The system administrators are allowed to perform all admin activities as explained in Performing Admin Activities. The admin role also has the privilege to configure user administration as explained below.

- In **Admin** page, click **User Administration** under **Global Configurations**. This lists the User Profile(s) that consists of the User name and the role.
- To add a new user, click **Add new**. This opens the **'New User'** screen.
- Specify a unique **user name** and provide a **password**.
- Provide a description and an e-mail for the user.
- Assign a **role** to the user (User/ Operator/ Administrator/ Manager).
- Check the delegated admin checkbox if you wish to assign delegated administration privileges.
- You can upload a profile photo for the user in jpg, gif, png or jpeg format(optional). A file size less than 100 KB is preferred.
- You can select **user groups** to give a group of users the same privileges as the new user. (Not applicable to users without Operator, Administrator or Manager roles).
- Select the **monitor group** to which the new user or users must be granted privileges.(Not applicable to users without Operator, Administrator or Manager roles).
- Click **Create User**. The new user or user groups will be displayed in the User Profile(s) table displaying the status, description, e-mail address,role and the monitor groups assigned.

> **Note**
> The default user access of Applications Manager is **admin** (Administrator). All users log into Applications Manager as Admin users and are given all the administrative privileges to work with the tool.
> You can also assign the owners for the Monitor Groups while creating the Monitor Groups or while editing the existing Monitor Groups

Importing users from active directory or LDAP

You can import users and perform role configuration for LDAP and Active Directory users and groups in Applications Manager.

Users imported from the Active Directory or LDAP can login into Applications Manager using their Active Directory/LDAP credentials. Since user authentication is done in the Domain Controller all the account policy regulations of the company/domain is automatically inherited to Applications Manager credentials also.

- In **Admin** page, click **User Administration** under **Global Configurations**. This lists the User Profile(s) that consists of the User name and the role.
- Click the **Import Users from Active Directory / LDAP** link under the list of user profile
- Select a domain name from the drop-down list.

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Adding a New Domain

You can select an already added domain from the drop-down list or add a new domain. You can also edit the existing Domain controller settings in the same manner.

- Select the **Add New Domain** option from the **Domain Name** drop-down list.
- Enter the following details:
  - **Domain Name**: Name of the domain from where the users need to be imported.
    Domain Controller: The hostname or the IP address of the DNS server for the domain.
  - **Domain Port:** The port of the DNS server.
  - **Authentication Type:** LDAP or Active Directory.
  - **Username and Password**: The active directory username of the domain user should be provided in DOMAINusername format. The LDAP user name should be provided in cn=user,dc=domain,dc=name format.
  - **Search Filter**: To filter out search result you can use characters followed by *.
- Click on **the Fetch Users** button to import users from the active directory or LDAP.
- When the list of existing users is displayed select the user(s) to be added, assign roles and click on **Add Users** to add the users.
- In the new **Import User**s tab from the pop-up window select the users that you wish to add from the drop-down list.
- Assign a role - Operator,User,Administrator or Manager to each of the users.
- Click on the **Add User** button to import the user to Applications Manager or click on **Add Users And Configure Another** to add more users.

You can edit User Profiles from the list of users.

Delete a user

- In **Admin** page, click **User Administration** under Global Configurations.
- Select the user(s) to be deleted.
- Click **Delete**

User Groups

You can create User Groups in Applications Manager with roles assigned to users or import user groups from Active Directory or LDAP.

- Adding new user groups to Applications Manager
- Importing user groups from active directory or LDAP
  - Importing user groups from a new domain
- Deleting user groups

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Add new user groups to Applications Manager

- In **Admin** page, click **User Administration** under **Global Configurations**.
- Click the **User Groups** tab. This lists down the User Groups in Applications Manager.
- To add a new user group, click **Add new**. This opens the **'New User Group'** screen.
- Specify a **User Group name**.
- Choose the users to be added to the group.
- Select the **monitor group** to which the new users must be granted privileges.
- Click **Create User Group**. The new user groups will be displayed in the User Groups table.

Importing user groups from active directory or LDAP

Users in the groups imported from the Active Directory or LDAP can login into Applications Manager using their Active Directory/LDAP credentials. Since user authentication is done in the Domain Controller all the account policy regulations of the company/domain is automatically inherited to Applications Manager credentials also.

- In **Admin** page, click **User Administration** under **Global Configurations**.
- Click the **User Groups** tab.
- Click the **Import User Groups from Active Directory / LDAP** link under the list of user profile
- Select a domain name from the drop-down list.

The users in groups imported from Active DirectoryLDAP will be associated automatically to that particular usergroup during login.

For Active Directory Users, the admin can import their group and use this feature in permissions tab (Create a new user account if the user logs in with domain authentication.)

Adding a New Domain

You can select an already added domain from the drop-down list or add a new domain. You can also edit the existing Domain controller settings in the same manner.

- Select the **Add New Domain** option from the **Domain Name** drop-down list.
- Enter the following details:
  - **Domain Name**: Name of the domain from where the users need to be imported.
    Domain Controller: The hostname or the IP address of the DNS server for the domain.
  - **Domain Port:** The port of the DNS server.
  - **Authentication Type:** LDAP or Active Directory.
  - **Username and Password**: The active directory username of the domain user should be provided in DOMAINusername format. The LDAP user name should be provided in cn=user,dc=domain,dc=name format.
  - **Search Filter**: To filter out search result you can use characters followed by * as well as the role criterion in LDAP search filter format. These search filters use one of the following formats <filter>=(<attribute><operator><value>) or (<operator><filter1><filter2>). For example: "(&(objectCategory=person)(objectClass=user)(!cn=andy))"- All user objects but "andy".
- Click on **the Fetch User Groups** button to import user groups from the active directory or LDAP.
- When the list of existing users is displayed select the user(s) to be added, assign roles and click on **Add User Groups** to add the users.
- You can also edit User Profiles from the list of users.

Delete a user group

- In **Admin** page, click **User Administration** under Global Configurations.
- Click the **User Groups** tab.

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- Select the user groups to be deleted.
- Click **Delete.**

Domains

You can import multiple users from other domains like Active Directory and OpenLDAP to Applications Manager. Configure the following details:

- **Domain Name :** The name of the domain from which users are to be imported.
- **Domain Controller :** The hostname or the IP address of the DNS server for the domain.
- **Domain Port :** The port of the DNS server.
- **Directory Service :** OpenLDAP or Active Directory.
- **User Permissions :** The permission level for this domain.
  - **Read Only** - All users logged in through this domain will have read-only access.
  - **Full Control** - Users logged in will behave according to their roles specified.

Associating Users and User Groups to Multiple Domains:

You can associate users and user groups to multiple domains:

- Click on **Import Users from Active Directory / OpenLDAP** or **Import User Groups from Active Directory / OpenLDAP** and import users/user groups from the directory.
- Go to Profiles or User Groups and click on a user or group. The domain to which the user or group belongs will be displayed in the Domain Name field.
- To add another domain, click in Domain Name text box and a drop-down list with other domains will be listed.
- Choose the domain you wish to add.
- Click Update User/User group.

If the **'Create a new user account if the user logs in with domain authentication'** checkbox in the **Permissions** tab is checked, users are created automatically based on their role in the user group.

Permissions:

Operator Permissions:

Using the Permissions options, you can allow Operators to manage / unmanage monitors, reset the status of monitors, edit display names, execute actions, start/stop/restart services, update IP Addresses, use Command Shell and clear Alarms.

The operator role can also be granted permission to configure the Downtime Schedule and view Downtime Schedules. If you've chosen the option "Allow operator to configure Downtime Schedule", you will only see the Downtime Schedules configured by this user and you can schedule new downtimes to Monitors and Monitor Groups associated to you. If you'd like the user to view all the Downtime Schedules then please make sure you also choose the option "Allow operator to view all Downtime Schedules". The Downtime Scheduler option will be available as link in the Bulk Configuration view under the Monitor tab since the Admin tab is not available for the Operators.

You can also allow the "Jump to link" option to be displayed for operators (Jump to link refers to access Add-On Products(like OpManager,OpStor,Service Desk) and Managed Servers)

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Admin Permissions:

You can allow admin to use Command Shell and to stop/start/restart Windows services. You can give permission to an administrator to Enable Delegated Admin Preferences. The admin can also be granted permission to create a new user account if the user logs in with domain authentication. The new user account will be created only when the Usergroup to which the user belongs is already imported from the same domain

AS400 Permissions:

AS400 Permissions allow you to permit Operators to execute AS400 Admin activities like controlling Message and Logging, Network Attributes, Date and Time, System Control, Library List, Storage, Allocation, Security, Jobs, Spool, Subsystem and using Non-Interactive Commands. By default, Applications Manager allows admin user(s) to execute AS400/iSeries operations but the option can be disabled.

Views:

This is for Operator only. Using View option, you can define how to represent your subgroup in the webclient.You can either show the associated subgroups directly in the home tab itself or from the corresponding top level Monitor Group.

Account Policy:

To enhance Web Client security, Account Policies can be configured. You can define the number of continuous failed login attempts to lock user account and Idle session timeout. You can enforce single user session and strong password rules.

Strong password rules:

- Password cannot be same/part of your Login name
- Password length should not be less than 8 characters
- Password length should not be greater than 255 characters
- Password should contain at least 1 numeric character
- Password should contain at least 1 special character
- Password should contain both uppercase and lowercase character
- Password should not be same as your last 4 password(s)

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Configuring Active Directory / LDAP with the configuration file

You can import users and perform role configuration for LDAP users and groups in Applications Manager. Users and groups are fetched into Applications Manager from different domains, based on the entry in the authentication.conf file found in the following location. For LDAP configuration, you can edit the**ldapauthentication.conf** file found in the location: ManageEngine/AppManager_Home/conf.

Ldap Configuration

ldap.group.commonNameAttribute=cn
ldap.group.primaryAttribute=cn
ldap.group.displayNameAttribute=cn
ldap.group.objectCategory=group
ldap.group.objectClass=posixGroup;groupOfNames
ldap.group.memberAttribute=member;memberUid
ldap.group.memberofAttribute=
ldap.group.groupTokenAttribute=gidNumber

ldap.user.commonNameAttribute=cn
ldap.user.primaryAttribute=uid
ldap.user.displayNameAttribute=cn
ldap.user.objectCategory=person
ldap.user.objectClass=person;posixAccount
ldap.user.memberofAttribute=
ldap.user.groupidAttribute=gidNumber

Active Directory Configuration

ad.group.commonNameAttribute=cn
ad.group.primaryAttribute=sAMAccountName
ad.group.displayNameAttribute=cn
ad.group.objectCategory=group
ad.group.objectClass=group
ad.group.memberAttribute=member
ad.group.memberofAttribute=memberOf
ad.group.groupTokenAttribute=primaryGroupToken

ad.user.commonNameAttribute=cn
ad.user.primaryAttribute=sAMAccountName
ad.user.displayNameAttribute=displayname
ad.user.objectCategory=person
ad.user.objectClass=
ad.user.memberofAttribute=memberOf

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ad.user.groupidAttribute=primaryGroupID

> **Note**
> If you have changes in LdapConfiguration.conf and later want to retain the initial configuration, simply rename the file (for example, rename it to LdapConfiguration_old.conf) or move the file to different location and restart Applications Manager.

Delegated Admin Preferences

The delegated administration role is used to assign limited administrative privileges to users in your organization who aren't administrators. By delegating administration, you can assign a range of administrative tasks to the appropriate users and let operators take more control of their local network resources.

Enabling Delegated Admin Preferences:

- In the **Admin** page, click **User Administration** under **Applications Manager Server Settings**
- Navigate to the **Permissions** tab.
- In the **Admin Permissions** table, check the **Enable Delegated Admin Preferences**. Once this checkbox is checked, when an administrator adds a new user to Applications Manager, he is asked to specify by a checkbox if he wishes to add the new user as a Delegated Admin.
- You can also perform the enable the following actions from the **Admin Permissions** table:
  - Allow Delegated Admin to view/use thresholds and anomaly profiles created by administrators (non-delegated administrators) and other delegated administrators in the same user group.
  - Allow Delegated Admin to view/use all actions created by administrators (non-delegated administrators) and other delegated administrators in the same user group.

Delegated Administrator Privileges

The following table lists the User Privileges of the Delegated Admin role in various scenarios:

Scenario	Delegated Administrator User Privileges
Credential Manager	Permission to create profiles and to edit and delete profiles which he has created.
Action	Permission to create new actions and to edit and delete actions which he has created. Additionally he can also view the actions associated to the monitors for which he has ownership.
New Monitor and Monitor Group	Permission to create new monitors and monitor groups, and to edit and delete new monitors and monitor groups for which he has ownership.
Threshold and Anomaly Profiles	Permission to create new profiles and to edit and delete profiles which he has created. Additionally he can also view the profiles associated to the monitors for which he has ownership.
Schedule Report	Permission to create reports and to edit and delete reports which he has created.
Downtime Scheduler	Permission to schedule the time period for which monitoring is not required.
Alarm Escalation	Permission to escalate an alarm and configure rules for alarm escalation.
Configure Alarms	Permission to configure alarms by monitor groups for which he has ownership.
Process and Service Template	Permission to add and apply new process template to monitor groups and selected monitors alone.
Event Log Rules	Permission to configure Event Log Rules applicable only to monitor groups and selected monitors.
Dashboards / Widgets	Permission to create dashboards and view default dashboards in Read-Only mode.
Performance Polling, Global Trap, SNMP Trap Listener, User Administration, Data Retention, Managed Server Administration, SLA, World Map View, Product License, Action Alarm Settings	Not supported for Delegated Admin Role

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Logging

By default, the debug prints are added to log files and are placed under *<Applications Manager Home>/logs* directory. You can configure the logging mechanism using the following **Logging Settings**.

- **Stop logging:** If this option is selected, debug prints are not added to the log files.
- **Print Fatal errors only:** If this option is selected, the debug prints are added to the log files only when there are fatal or critical errors in the functioning of Applications Manager.
- **Print Warning errors only:** If this option is selected, only the warning level debug prints are added to the log files.
- **Print Detailed debug errors:** If this option is selected, detailed debug prints are added to the log files.
- **Print all logs:** This is the default setting. All debug prints are added to the logs generated by Applications Manager.

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Personalize Web Client

You can personalize the Applications Manager web client to suit your tastes. There are options to change the web client skin and layout, set the auto-refresh time for web client and customize the tabs.

Select the **Personalize Web Client** option from the 'Admin' tab. A pop-up window with 3 tabs named **Skin**, **Web Client** and **Customize Tabs** will be displayed .

To Change Web Client Skin and Layout

1. From the **Skin** tab, select the color of your choice. The colors available are blue, green, brown and orange.
2. Select the layout of your choice. The options available are **Classic** and **Simple**. The Simple layout will be similar to the Classic layout, except for the absence of links on the left hand side and the top band. The monitoring data gets more prominence in the Simple layout.
3. Click the **Apply** button. This changes the color and layout of the client's look and feel.

Auto-Refresh Web Client

Using this option, you can set the time interval for auto refreshing the web client. This option is available under the **Web Client** tab.

Customize Tabs

The default order of tabs in the Applications Manager web client is Home, Monitors, EUM, Alarms, Reports, Support and Admin. You can re-arrange the order in which the tabs are displayed as well as select new tabs for displaying. Just select the necessary tab options from the respective drop-down boxes and click the 'Save' button.

If you want to remove a tab, choose the ‘Not Selected’ option from the drop-down box against the necessary tab order. This option is available from the fourth tab onwards.

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Product Integration

- ManageEngine ServiceDesk Plus
- ServiceNow
- Site24x7 Data Integration

ManageEngine ServiceDesk Plus

ManageEngine Applications Manager integrates with a web-based Help Desk and Asset Management software, ManageEngine ServiceDesk Plus. If ServiceDesk Plus is installed in your network, you can automatically log trouble tickets for specific alarms, from Applications Manager . So, besides the provision to email, sms, and notification of alarms in other forms, the alarms can also be tracked by logging trouble tickets to ServiceDesk Plus. This helps in issue tracking. To know more, click here.

ServiceNow

ManageEngine Applications Manager integrates with a web-based Help Desk and Asset Management software, ServiceNow. If ServiceNow is installed in your network, you can automatically log trouble tickets for specific alarms, from Applications Manager . So, besides the provision to email, sms, and notification of alarms in other forms, the alarms can also be tracked by logging trouble tickets to ServiceNow. This helps in issue tracking. To know more, click here.

Site24x7 Data Integration

ManageEngine Applications Manager supports integration with Site24x7 website monitoring service. With Site24x7 integration, you can view the uptime and performance status of all your websites from from inside your data center and out on a single console.

> **Note**: By clicking on the **Jump To** link in the Web Client, You can shift to *ManageEngine ServiceDesk Plus*

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Integrating with ServiceDesk Plus

ServiceDesk Plus is a web-based Help Desk and Asset Management software, offered by ManageEngine. With ServiceDesk Plus installed in your network, you can automatically log trouble tickets for specific alarms and maintain a Configuration Management Database (CMDB) that allows you to plot out your IT infrastructure from Applications Manager.

Logging trouble tickets:

Applications Manager has the ability to automatically log trouble tickets for a specific alarms and to notify the concerned technician when a particular process exceeds the set threshold point. Along with the provision to e-mail, SMS, and other notifications, alarms can also be tracked by automatically logging trouble tickets to ServiceDesk Plus. Applications Manager takes care of the two way synching of Alerts & Tickets status from SDP. For example, you can automatically log a ticket when an alarm is raised, reopen the ticket whenever an alarm is reoccured or close the ticket if the alarm is cleared.

For logging the trouble ticket to ServiceDesk Plus correctly, the following needs to be ensured:

- If Credential based configuration is chosen, Incoming Mail Settings should be configured properly in ServiceDesk Plus and Mail Settings of Applications Manager must be configured.
- ServiceDesk Plus Settings should be configured in Applications Manager.
- Log a Ticket Action should be configured.
- An alarm should be associated to the Ticket Action, to log a trouble ticket to ServiceDesk Plus. If REST API based ticketing is chosen, ensure that the ticket action is associated to all severities.

Configuration Management Database

From a CMDB perspective, all the components monitored in Applications Manager are referred to as Configuration Items (CI). With the ServiceDesk Plus integration, Applications Manager takes care of :

- Identification of CIs in your IT environment,
- Mapping the relationship between the CIs and
- Helping you predict the impact of CIs before performing any change.

You can track of all the pending requests, problems and change raised for the CI Type. Once a problem ticket is logged you can also assign a technician for the ticket. Any impact cause by the malfunctioning of these CIs and other CI details can be identified with Relationship Mapping, and specific measures can be adapted to minimize the effect.

ServiceDesk Plus - MSP

ServiceDesk Plus - MSP help-desk software is specifically built for managed service providers. ServiceDesk Plus - MSP helps service providers. With the integrated Applications Manager and ServiceDesk Plus management solution, service providers like can get end-to-end visibility of your client's IT infrastructure.

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Configuring ServiceDesk Plus in Applications Manager:

This section describes the method in which ServiceDesk Plus Settings are to be configured in Applications Manager:

- Under **Admin Tab**, click on **Add-On/Product Settings** under **Applications Manager Server Settings**.
- An Add-on/Product Settings Table is displayed.
- Click on **Add** action for Service Desk. This takes you to the ManageEngine ServiceDesk Plus Server Details page.
- Configuring ServiceDesk Plus Settings in Applications Manager can be done in two ways: **Using REST APIs** or **Using Credentials**.

  - **Using REST APIs**This feature supports Applications Manager with ServiceDesk Plus integration using SDP REST API Keys and automatic closing of tickets. Follow the steps below to configure ServiceDesk Plus Settings in Applications Manager:
    - Under the **Use Rest API tab** enter the ServiceDesk Plus Server Details, specify the product that you wish to add - **ServiceDesk Plus** or**ServiceDesk Plus - MSP.**
    - Name of the **server** and **port number** where ServiceDesk Plus is running
    - Enter the **REST API key.** (While a ticket action is created, and a technician is assigned from the Log a Ticket form, the technician must have an SDAdmin privilege in SDP. Make sure that the technician whose key you're using has SDAdmin privilege in SDP.)
    - Select one of the given protocols: **http** or **https(SSL).**
    - By checking the Advanced Settings checkbox you have the option to configure
      - Enable Ticketing - Ticket Settings
      - Enable Configuration Item (CI) sync - Configuration Item Settings (only if you have selected **ServiceDesk Plus** and not**ServiceDesk Plus - MSP**)
    - Test if the connection is working and save the settings.
  - **Using Credentials**
  - Under Admin Tab, click on ServiceDesk Settings
  - Enter the **ServiceDesk Plus Server Details**
    - Enter the Name of the server where ServiceDesk Plus is running.
    - Enter the Port Number of that server.
  - Enter the **Authentication Details** of the ServiceDesk Plus Server - Login and Password.
  - Enter the **Email Address** configured in ServiceDesk Plus. All the trouble tickets generated would be sent to that Email ID.
  - Enter the Email Address from which the trouble tickets should be sent.
  - Test if the connection is working and save the settings.

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> **Note:**
> • It is mandatory to have sample account and site if you are using SDP-MSP as add-on product. In case, if the sample account and site are deleted from SDP-MSP, tickets action will not getting executed.
> • The 'Using Credentials' operation will not be supported if the SDP version is above 9101.
> • CMDB should be enabled only if SDP version is 9 or above.
> • If you select **ServiceDesk Plus - MSP**, you will not be able to use the CMDB modules.

Ticket Settings

You can configure the following settings:

- Set Applications Manager to perform one of the following actions when an alarm is raised again for a closed ticket:
  - To reopen the ticket whenever an alarm is reoccured.
  - To reopen the ticket within a certain number of days from the closed time. If the ticket is not reopened a new ticket is automatically created. (To reopen the ticket whenever an alarm is reoccured within a certain number of days else open a new ticket.)
  - To create a new ticket or to open a new ticket whenever an alarm has re-occured.
- Set Applications Manager to perform one of the following actions when an alarm is cleared for a ticket:
  - To close the ticket
  - To update the notes associated with that ticket.
- Add notes for the ticket whenever an annotation is made for the alarm.
- Enable on-demand ticket generation using :
  - **Raise a ticket action**, so that you can raise a ticket on demand using a ticket action from alarms page. The new on-demand tickets are mapped to the respective configuration items.
  - **Request Form,** so that you can raise a ticket on demand using the request form from alarms page. The new on-demand tickets are mapped to the respective configuration items.
- Access ticket details from Application Manager. User can access the ticket details from the ticket details link in the alert details page.
- Launch Read only ticket. When selected, the ticket details launched from AppManager would be read only.
- Update the ticket only if there is a status change in the alarm.
  - If enabled, action is triggered only when there is a status change in alarm.
- Over-write the request template with the fields selected in the action profile.
  - This option is disabled by default. In Log a ticket action, on selecting the Incident template, the other fields will be hidden. The default values of the Incident template chosen would be used to log the trouble ticket in ServiceDesk Plus.
  - If enabled, the other fields will become visible, thereby, allowing the user to modify the default fields of the Incident template (https://www.manageengine.com/products/service-desk/help/adminguide/configurations/helpdesk/request_template.html).

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Configuration Item Details and Relationship Mapping

Once the ServiceDesk Plus Settings are be configured, Applications Manager identifies all the monitors (unless you have configured to exclude a monitor(s) or a selected monitor type(s)) and **adds them as Configuration Items in ServiceDesk Plus CMDB**.

You can change the following Configuration Item Settings by clicking on the **Advanced Settings** checkbox and then enabling the **Enable Configuration Item (CI) sync** option.

- Delete the CI if the corresponding monitor is deleted
- Exclude the monitor(s) of the selected monitor type(s). Users can select the monitors types that they wish to exclude from the list provided to be added as CI(s). Select the monitors that you wish to exclude from the first list and move it to the second list.
- Configure custom fields of the monitor as attributes of a configuration item. The new custom field need not get added in Service Desk Plus.
- Users can access configuration item and relationship details from Application Manager in the monitor snapshot page.

To View the details of a Configuration Item and view Relationship Maps:

- Go to the **Monitors** tab.
- From the Select View list, choose the Bulk Configuration View.
- Open the List View which will give you a list of all the monitors.
- In the list, click on the icon near a monitor to view the CI Details.
- Click on the icon to view the Relationship Map.

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Integrating with ServiceNow

ServiceNow is a web-based Help Desk and Asset Management software. With ServiceNow, you can automatically log trouble tickets for specific alarms and manage incidents from Applications Manager.

Logging trouble tickets:

Applications Manager has the ability to automatically log trouble tickets for a specific alarms and to notify the concerned technician when a particular process exceeds the set threshold point. Along with the provision to e-mail, SMS, and other notifications, alarms can also be tracked by automatically logging trouble tickets to a help desk software. Applications Manager takes care of the two way synching of Alerts & Tickets status from ServiceNow. For example, you can automatically log a ticket when an alarm is raised, reopen the ticket whenever an alarm is re-occurred or close the ticket if the alarm is cleared.

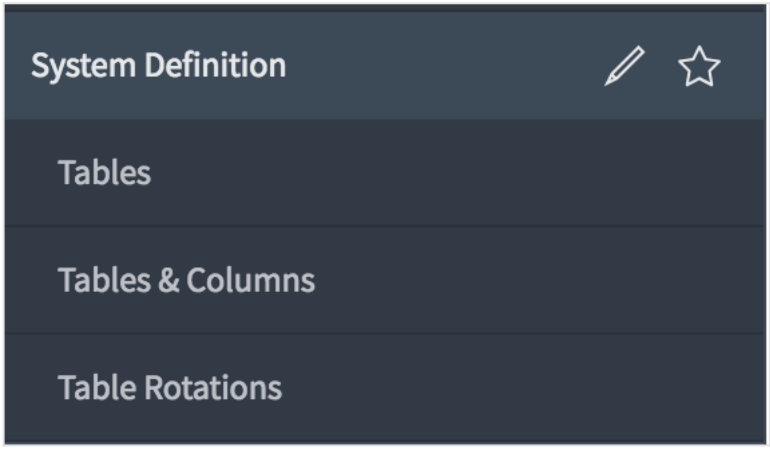
Configuring ServiceNow in Applications Manager:

- Under Admin Tab, click on Product Settings > Add-On Settings > Product Settings
- Add-on Settings - Product Settings page is displayed.
- Click on Add action for HelpDesk. This takes you to the ManageEngine ServiceDesk Plus Server Details page with a choice to Select HelpDesk Product. Choose ServiceNow.
- Provide the Instance name (e.g.: [instancename].service-now.com) , User name and Password. Secure connection will be used by default while connecting to ServiceNow and so the protocol must not be specified in the Instance field.

Prerequisites

The user in ServiceNow should have itil and itil_admin roles assigned for successful integration in Applications Manager.
Log in to ServiceNow as an admin user and perform the following:

- Go to System Definition and then Tables.



- Search for "Incident".
- Click on the entry that has the Label as "Incident". This will load the Incident table.
- Now, select Controls tab. Enable "Create access controls" and type itil_admin in the "User role" field.
- Save this table.

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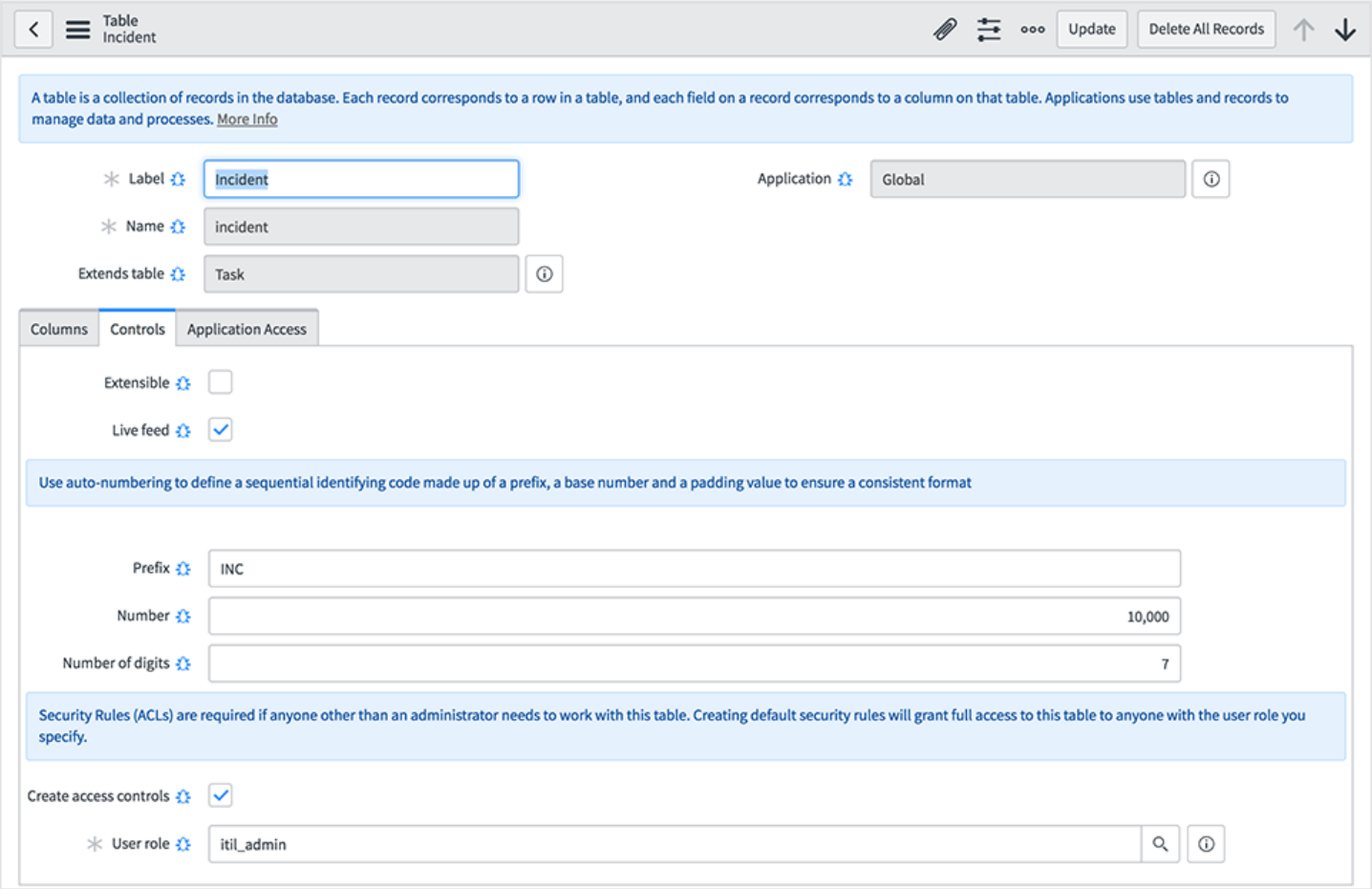

Configuring ServiceNow in Applications Manager:

- Under Admin Tab, click on Add-On/Product Settings under Applications Manager Server Settings.
- An Add-on/Product Settings Table is displayed.
- Click on Add action for HelpDesk. This takes you to the ManageEngine ServiceDesk Plus Server Details page with a choice to Select HelpDesk Product. Choose ServiceNow.
- Provide the Instance name (e.g.: [instancename].service-now.com), Username and Password. Secure connection will be used by default while connecting to ServiceNow and so the protocol must not be specified in the Instance field.

Ticket Settings

You can configure the following settings:

- Set Applications Manager to perform one of the following actions when an alarm is raised again for a closed ticket:
  - To reopen the ticket whenever an alarm re-occurrs
  - To reopen the ticket within a certain number of days from the closed time. If the ticket cannot reopened, a new ticket is automatically created
  - To create a new ticket or to open a new ticket whenever an alarm has re-occurred.
- Set Applications Manager to perform one of the following actions when an alarm is cleared for a ticket:
  - To close the ticket
  - To update the notes associated with that ticket
- Add notes for the ticket whenever an annotation is made for the alarm
- Enable on-demand ticket generation using :

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- **Raise a ticket action**, so that you can raise a ticket on demand using a ticket action from alarms page. The new on-demand tickets are mapped to the respective configuration items
- **Request Form,** so that you can raise a ticket on demand using the request form from alarms page. The new on-demand tickets are mapped to the respective configuration items

- Access ticket details from Application Manager. User can access the ticket details from the ticket details link in the alert details page
- Launch Read only ticket. When selected, the ticket details launched from Applications Manager would be read only
- Update the ticket only if there is a status change in the alarm
  - If enabled, action is triggered only when there is a status change in alarm

Reference: http://www.servicenow.com/solutions/it-service-management.html

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Applications Manager integration with Site24x7

ManageEngine Applications Manager supports integration with Site24x7, the website monitoring service based on the SaaS model. Site24x7 provides effective website uptime monitoring capability so you know how well your sites, hosts, mail servers and web applications are performing from outside your data center. With Site24x7 integration, you can view the uptime and performance status of all your websites from from inside your data center and out on a single console.

Key Benefits

With Site24x7 integration, you can:

- View performance metrics both from within your corporate LAN (Applications Manager Monitoring) and from multiple locations outside your data center (Site24x7 Monitoring).
- Availability and health reports from over 40+ locations (Servers) inside Applications Manager.
- Single Alarm Console.

Browse through the following topics to understand and configure Site24x7 Data Integration:

- Configuring Site24x7
- Configuring Applications Manager
- Associating network device monitors into existing monitor-groups

---

Configuring Site24x7 for data integration:

Sign up for a Site24x7 account. Once you sign up, you can add monitors as per your requirement.

Configuring Applications Manager:

Once Site24x7 is configured correctly, you need to configure Applications Manager to sync data:

1. Log in to Applications Manager.
2. Click on the **Admin** tab.
3. Click on **Add-on/Product Settings**.
4. Click **Add New Account** in the right-hand corner of the **Site24x7 Data Integration** table.
5. Enter the following Site24x7 product details:
   - **Authtoken**Site24x7 Authtoken to import monitors. (Generating an AuthToken)
   - **Account Name**Your Site24x7 Account Name or Display Name.
   - **Polling Interval**Enter the polling interval time in minutes
6. Click **Save** button to save the settings.

You can edit account details, disable data collection, fetch data and delete a monitor by clicking the **Actions** icons in the Site24x7 Data Integration table.

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Associating Site24x7 monitors into existing monitor groups

To associate a Site24x7 monitor to a Monitor Group in Applications Manager:

- Click on the **Home** tab in Applications Manager.
- Under the Default Dashboard**,** click on a group name in the monitor group table**. Monitor Group Information** is displayed.
- **C**lick the **Associate Monitor** link found at the right-side of the page.
- A list of Monitors that are available for associating and those that have already been associated with that Monitor Group is displayed. You can also see a list of Site24X7 monitors.
- Select the check box of the corresponding Monitor from **Monitors not present in this Monitor Group** list and click **Associate**.
- You can also remove a Monitor which has already been associated with the Monitor Group by selecting the check box of Monitor(s) under **Monitors present in this Monitor Group** and clicking **Remove**.

Note
The data shown on the details page of Site24x7 monitor is fetched in real time from Site24x7 directly. It does not depend on the data collection for the Site24x7 account.
The following monitors will not be imported into Applications Manager:
• vCenter
• Amazon
• Website Defacement Monitor
• RUM
• APM Insight
• Mobile APM
The first three monitors will have only the details of the dependent MOs. The RUM monitor is available as "Web User Experience" monitor under APM, which will in turn add RUM monitor into the particular Site24x7 account.

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ManageEngine OpStor SAN Monitoring Connector

ManageEngine Applications Manager integrates with the comprehensive Storage Monitoring Tool, ManageEngine OpStor. OpStor is a heterogeneous storage infrastructure monitoring solution that helps enterprises to monitor their storage resources.Using OpStor SAN Monitoring Connector, an Applications Manager User can view the status of his Storage Devices in addition to Servers, Application Servers, Databases monitored by Applications Manager.

Key Benefits:

1. Single console to monitor Storage devices, Server & Applications.
2. Single console to view all Alarms.

To Configure OpStor:

1. Login into OpStor.
2. Proceed to **Admin** tab and click on **User Manager**. Under User Manager, you will find **Add User** option.
3. Click on **Add User** with user permission as **Read Only Access**.

To Configure Applications Manager:

Once OpStor is configured correctly, you need to configure Applications Manager to obtain the data from OpStor

1. Login into Applications Manager.
2. Click on the **Admin** tab in Applications Manager.
3. Click to **Add-on/Product Settings**.
4. Click on **OpStor- Add** link. Enter the **Server name** and **Port number** of the machine where OpStor is running. Enter the **Username** and **Password** of the Read Only user created in OpStor
5. Click **Save** button to save the settings.

Associate storage device Monitors into exisiting Monitor Groups:

1. In order to associate OpStor monitor against a Monitor Group in Applications Manager, click on the **Home** tab.
2. Under **Monitor Group Information**, click **Associate Monitor** of Monitor Group Links in the left frame.
3. A list of discovered Monitors (for both Applications Manager and OpStor) that are available for associating and those that have already been associated with that Monitor Group is displayed. You will also see a list of storage devices under **Storage Devices** being displayed.
4. Select the check box of the corresponding Monitor from **Monitors not present in this Monitor Group** list and click **Associate**. You can also remove a Monitor which has already been associated with the Monitor Group by selecting the check box of Monitor(s) under **Monitors present in this Monitor Group** and clicking **Remove**.
5. Click on **Monitors** tab to view the list of storage devices that are now configured. Clicking on **Storage Devices** in category view would provide the availability and performance of all the Monitors associated under it. For example, if you have configured a server to be monitored, the performance metrics that are shown in Applications Manager are: availability, response time, CPU, Memory and Disk utilization and so on.

Associate Storage Device Monitors into new Monitor Groups:

1. Click on the **New Monitor Group**.
2. Provide a Monitor Group name, description of that monitor group and assign the owner for the monitor group.
3. Once the Monitor Group is created, click on **Associate Monitors** provided in the **Summary** tab of that Monitor Group.
4. A list of discovered Monitors (both Applications Manager and OpStor) that are available for associating is displayed. You will also see a list of storage devices under **Storage Devices** being displayed.
5. Select the check box of the corresponding Monitor from the list and click **Associate**.

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6. Click on **Back to Monitor Group** to view the list of Monitors that you have associated for that group.

Modifying the Poll Interval

You can configure the poll interval and set the time when Applications Manager must check for updates from the External Connectors. Go to **Poll Interval** tab under **Add-on Settings**. The poll interval settings that you can modify are:

- **Update Alarms from External Connectors** - This option indicates the alarm update interval, in which the alarms from external connectors are updated in Appmanager. This can be configured as per the user requirements. The default time interval is 5 minutes.
- **Update All Devices and Alarms from External Connectors -** This option indicates the full update interval in which all the devices and alarms from external connectors are updated in AppManager. This can be configured as per the user requirements. The default full update interval is 30 minutes.

Associating Alarms and Actions for Storage devices

With the OpStor SAN Monitoring Connector, you can view alarms from your OpStor storage devices in Applications Manager and associate actions to OpStor attributes.

Alarms:
Once you have imported all your devices from OpStor, go to the **Alarms** Tab to view all the alarms configured in Applications Manager along with their severity, type, date and the technician to whom the alarm is assigned. You can filter and sort through the alarms by clicking on the parameter type at the top of the table.

You can view all alarms or filter the Critical, Warning and Clear alarms. You can also filter alarms by:

- Alarm Actions
- Selected Time
- Selected Monitor Group
- Selected Monitor Type

You can search through alarms by clicking the search button at the top of the alarms table. Click here to know more about the Alarms Tab.

Actions:
You can trigger corrective actions to OpStor attributes, once you have imported your storage devices, such as sending e-mail, SMS, trap, and executing a command, to notify you of the alarms generated while monitoring the storage devices. To trigger such corrective actions, you should have defined the action, which can then be associated with an attribute. Click here to learn how to define actions.

> **Note:**
> You cannot create or associate thresholds for Opstor attributes.

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ManageEngine OpManager Network Monitoring Connector

ManageEngine Applications Manager integrates now with a comprehensive Network Monitoring Tool, ManageEngine OpManager. ManageEngine OpManager provides an effective network monitoring software that offers comprehensive fault and performance management across WAN and all other IT infrastructure. Using Network Monitoring Connector, an Applications Manager User can view the status of his Network Devices in addition to Servers, Application Servers, Databases monitored by Applications Manager.

Key Benefits:

1. Single console to monitor Network, Server & Applications.
2. View SLA and Availability Metrics of your Business Application by taking in to consideration the network, servers and applications.
3. Single console to view all Alarms.

To Configure OpManager:

In order to collect data, you need to configure OpManager properly. Create a read-only user in OpManager using the following steps:

1. Login into OpManager.
2. Proceed to Admin tab and click on User Manager. Under User Manager, you will find Add User option.
3. Click on Add User with user permission as Read Only Access.
4. Login once with that user in OPM.

To Configure Applications Manager:

Once OpManager is configured correctly, now you need to configure Applications Manager to obtain the data from OpManager.

1. In AppManager, go to **AppManager Managed server - Admin-->Add on Products settings** and select **OpManager**.
2. Provide the details of the **server** and **port** in which OpManager is running. (Make sure that OpManager is up and running in this step)
3. Also, provide the **user** to be used for integration (created in Step 2 in OpManager).
4. If you want to import all your devices from OpManager when integration is complete, then enable the "Import All Devices" option. (You also have the option to leave "Import All Devices" unchecked and associate the required devices to Monitor Groups after integration is complete.)
5. Save the form.

Modifying the Poll Interval

You can configure the poll interval and set the time when Applications Manager must check for updates from the External Connectors. Go to **Poll Interval** tab under **Add-on Settings**. The poll interval settings that you can modify are:

- **Update Alarms from External Connectors** - This option indicates the alarm update interval, in which the alarms from external connectors are updated in Appmanager. This can be configured as per the user requirements. The default time interval is 5 minutes.
- **Update All Devices and Alarms from External Connectors -** This option indicates the full update interval in which all the devices and alarms from external connectors are updated in AppManager. This can be configured as per the user requirements. The default full update interval is 30 minutes.

Associate network device Monitors into existing Monitor Groups:

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1. In order to associate OpManager monitor against a Monitor Group in Applications Manager, click on the **Home** tab.
2. Under **Monitor Group Information**, click **Associate Monitor** of Monitor Group Links in the left frame.
3. A list of discovered Monitors (for both Applications Manager and OpManager) that are available for associating and those that have already been associated with that Monitor Group is displayed. You will also see a list of network devices under **Network Devices** being displayed.
4. Select the check box of the corresponding Monitor from **Monitors not present in this Monitor Group** list and click **Associate**. You can also remove a Monitor which has already been associated with the Monitor Group by selecting the check box of Monitor(s) under **Monitors present in this Monitor Group** and clicking **Remove**.

Associate network device Monitors into a new Monitor Groups:

1. Click on the **New Monitor Group**.
2. Provide a Monitor Group name, description of that monitor group and assign the owner for the monitor group.
3. Once the Monitor Group is created, click on **Associate Monitors** provided in the **Summary** tab of that Monitor Group.
4. A list of discovered Monitors (both Applications Manager and OpManager) that are available for associating is displayed. You will also see a list of network devices under **Network Devices** being displayed.
5. Select the check box of the corresponding Monitor from the list and click **Associate**.
6. Click on **Back to Monitor Group** to view the list of Monitors that you have associated for that group.

Additional Configurations

The following table contains additional configurations that can be made in OPM Connector:

Requirement	Steps to follow
To add attributes in Applications Manager when a device is added in OpManager	In **OPMConnector.properties** under **AppManager-Home/conf** (only for Professional edition and Managed Server) : • Add/set **opmConnector.populate.attributes=true.** • To view the attributes, restart Applications Manager and wait for the first full update. The attributes will be listed under **Configure Alarms** for OpManager device type.
To add interfaces as monitors in Applications Manager	In **OPMConnector.properties** under **AppManager-Home/conf** (only for Professional edition and Managed Server) : • Add/set **opmConnector.fetch.extprod.interfaces=true.** • To view the interfaces, restart Applications Manager and wait for the first full update.
To include a default Networks dashboard	In **OPMConnector.properties** under **AppManager-Home/conf** (only for Professional edition and Managed Server) : • Add/set **opmConnector.show.nwd.widgets=true.** • To include the dashboard, restart Applications Manager.

Associating Alarms and Actions for Network devices

With the OpManager Network Monitoring Connector, you can view alarms from your OpManager network devices in Applications Manager and associate actions to Opmanager attributes.

Alarms:

Once you have imported all your devices from OpManager, go to the **Alarms** Tab to view all the alarms configured in Applications Manager along with their severity, type, date and the technician to whom the alarm is assigned. You can filter and sort through the alarms by clicking on the parameter type at the top of the table.

You can view all alarms or filter the Critical , Warning and Clear alarms. You can also fillter alarms by:

- Alarm Actions
- Selected Time
- Selected Monitor Group
- Selected Monitor Type

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You can search through alarms by clicking the search button at the top of the alarms table. Click here to know more about the Alarms Tab.

Actions:

You can trigger corrective actions to OpManager attributes, once you have imported your network devices, such as sending e-mail, SMS, trap, and executing a command, to notify you of the alarms generated while monitoring the network devices. To trigger such corrective actions, you should have defined the action, which can then be associated with an attribute. Click here to learn more about how to define actions.

Note:
You cannot creating or associate thresholds for Opmanager attributes.

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Reports Settings

This section explains the report settings that can be configured in Applications Manager as well as data retention settings. To access this section, click the **Report Settings** link under the **Admin** tab. The section consists of the following inner tabs:

- Reports Settings
- Data Retention
- Logo Settings
  - Customize the logo in Applications Manager's dashboard

Reports Settings

Availability Reporting:

Treat Monitor Groups as Application Cluster (Availability based on default calculation) : By default, the Monitor Group availability will be shown as down (0%) if any one of the monitors in the Monitor Group is down.

Treat Monitor Groups as Services Group: By selecting this option, you can calculate Monitor Group availability based on the services availability. For eg., if there are 5 monitors in a Monitor Group and one monitor is down, Monitor Group availability is calculated as 80% available (one monitor - 20%).

Do not include Scheduled Maintenance and Unmanaged state in availability reporting: If you select this option, you can exclude scheduled maintenance and unmanaged state data from availability reports.

Attributes Reporting:

Plot attributes report with Bar chart: If you select this option, you can view the attributes report in the form of bar charts.

Plot attributes report with Line Graph: If you select this option, you can view the attributes report in the form of line graphs.

Show Plot shape in graph: By selecting this option, you can see the dots / blobs in the line graphs.

Moving Average: A simple moving average is the unweighted mean of the previous n data points. For example, a 10-day simple moving average of attribute value like CPU utilization is the mean of the previous 10 days' CPU Utilization value. By selecting this option, you can add moving average graph in the 7, 30 graphs of the various monitors.

Data Retention

To plot graphs and generate reports, Applications Manager collects data from the monitors at regular intervals. By default, Applications Manager aggregates the performance data into hourly data at the end of each hour. The hourly data thus calculated will be aggregated into daily data at the end of each day. The aggregated data will be used in graphs and reports.
Applications Manager allows you to maintain the database with the required data. By default, the detailed data will be maintained for six hours max, the hourly data for 90 days and the daily data for 365 days. After the specified period, the database will be cleaned up automatically.
To configure your *own settings for database retention*, follow the steps given below:

- Click on the **Admin** tab
- Under 'Reports Settings' section, click **Data Retention** tab.
- Enter the number of days for which **hourly statistics** should be maintained.
- Enter the number of days for which **daily statistics** should be maintained.

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- Enter the number of recent **alarms** that should be maintained in the alarm database.
- **Save** the changes.

Note: Unsolicited traps will be maintained for a default value of the last 5 Hours.

Logo Settings

Click on the **Logo Settings** Tab to configure the report logo settings.By default, presentation reports display the ManageEngine Applications Manager Logo in the upper left corner.

- Click on **Change** to change the logo.
- Click on the **Browse** button and select an Image.
- Click on **Save** to set the logo.

The user can change Logo in pdf and Excel Report. The ideal image size should be about 262*54 Dimensions and not more than 100KB. You can upload any file in format /gif/jpg/png

Customize the logo in Applications Manager's dashboard

To update the Applications Manager dashboard with your company's logo, please follow these steps:

- Create a file called **OEM.txt** and add following entries in that file.

  am.header.logo=am_logo.gif

  am.loginpage.logo=/images/new_login-logo.png

- Copy the OEM.txt file to <AppManagerHome>workingconf folder.
- Create two image of your company's logo as per your requirement and rename it **am_logo.gif.**
- Take a backup of the existing **am_logo.gif** and **new_login-logo.png** outside Applications Manager directory and remove the two files.
- Paste the images you have created to <AppManager Homeworkingimages folder and restart the product.
- Now check the dashboard to see if the Applications Manager logo has been replaced with your company's logo.

Note: *Please ensure that while changing the Key values, no spaces are included, as that will affect the functioning of the product.*

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Enable Reports

Using this option, you can generate reports with additional performance metrics for selected resource(s)/monitor(s) apart from already available performance metrics.

To Enable Reports

1. Click on the **Admin** tab
2. In the **Admin Actions** table, click on **Enable Reports** under **Reporting**.

Now you can configure **Custom Monitors** and **Downtime Summary Report** by following the steps given below.

Custom Monitors

1. Under **Custom Reports** tab, you will be able to select the required resource and associated performance metrics.
2. Select the tick box besides the performance metric that needs to be included in the reports.
3. Click **Save** button below and the selected performance metric will be added automatically in your reports and in your scheduled reports.

Downtime Summary Report

1. The **Downtime Summary Report** is enabled by default.
2. This option sends out a downtime summary for all resources that are monitored. The email will be sent in html format to the specified email id.
3. To configure new email action, click **New Action** and provide the email address and click **Save** .
4. This report will provide you the **top 20** downtime summary of all individual monitors.

Another method to **Enable Reports**:

1. Click on **Reports** tab
2. You can enable reports by clicking on **Enable Reports** link above the **Monitor Group**.
3. Follow the steps prescribed above to select the required attributes.
4. If email actions are already configured, select the email to which the reports need to be sent else you can configure new email action.
5. Click **Save** to create the reports schedule.

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Schedule Reports

Applications Manager generates many reports that help you to analyze the performance over a period of time. Using this option, you can schedule the time at which the reports need to be generated.

To create New schedule of reports

1. Click on the **Admin** tab
2. Under Tools, click on **Schedule Reports**.
3. If reports have been already scheduled, the schedule details would be listed. Else, it would prompt you to create new schedule.
4. Give a **name** for the schedule
5. Enter the **description** of the schedule
6. By default, the schedule for the report is enabled.
7. Choose the **Report Type** like Availability report, Downtime history report.
8. Select the Report period.
9. Choose whether you want report for monitor types, monitor groups or for individual monitors. Accordingly, the resources will be listed down. Select the resource for which the report is expected.
10. Set the **time** for the reports to be delivered.
    For eg., If you want the Health report of database servers to be delivered everyday at 10.00 a.m, choose '*Daily*' option and set the *time* as 10.00
    If you want the report to be delivered every monday at 10.00 a.m, choose '*Weekly*' option, set *time* as 10.00 and choose '*Monday*' option.
    If you want the report to be delivered every month on 15th day at 10.00 a.m, choose '*Monthly*' option, set *time* as 10.00, choose 15 from the *day* list and select*all* for the report to be delivered every month. (you can select individual months also)
11. Select whether you want to receive the report as **PDF** files, **CSV** format or as **URL** links.
12. If email actions are already configured, select the email to which the reports need to be sent else you can configure new email action.
13. Click 'save' to create the reports schedule.

Note: *Reportadmin* user is used to generate EmailPDF and Schedule Reports Feature. The password is generated dynamically for each and every user, hence no one can access the webclient using this username and password as this is secured.

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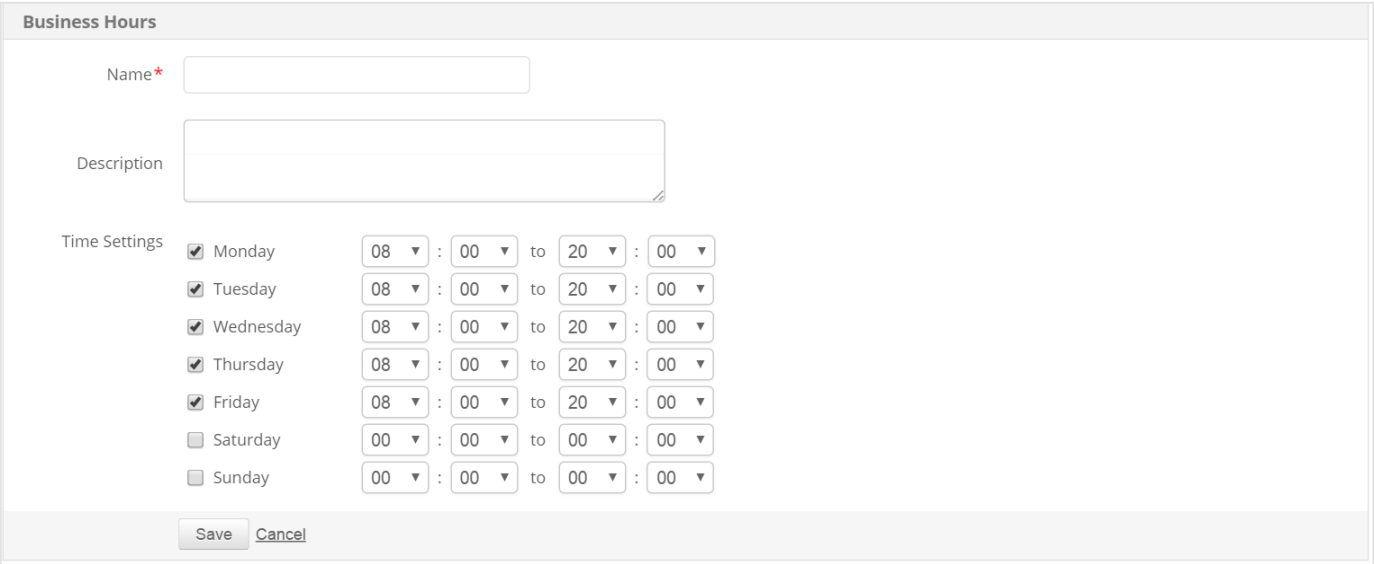
Business Hours

Business hours is a pre-determined set of hours which helps you to view reports for the particular hours during the day. Instead of viewing data for the entire 24 hour period, you can now view reports for the particular business hour you have set. It helps you identify the critical issue which may have arised during business hour for a particular application or resource.

To create a business hour, follow the instructions given below:

1. Click on **Admin** tab.
2. Click on **Business Hour** under **Reporting**.
3. Click the New Business Hour link.



4. Provide **Name** for the business hour (Eg. Office Hours). Provide **Description** for that business hour.
5. Now select which day(s) do you want to view reports for. Then select the time period for which you would like to view the reports for. Refer to the screenshot for reference:
6. Click **Save**.

Once the business hour is created, you can now generate various reports for the particular business hours you have created.

Setting Business Hours in the Enterprise Edition

You can set Business Hours from the Admin Server and the Managed Servers in the Enterprise Edition of Applications Manager. The business hours set in the Admin Server automatically syncs with the Managed Servers. However, the hours set in the Admin Server can only be reused and cannot be edited from the Managed Servers.

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Upload Files/Binaries

This is an option to upload the required files such as jars, zip, MIB, and scripts (batch and shell) into Applications Manager directory, without much of manual effort. You just have to provide the file by browsing it from your local machine and it gets automatically uploaded to the required directory of Applications Manager. Follow the given steps to upload a file.

Note: By default, the Upload Files/Binaries page is enabled in the Web Client. As an administrator, if you want to disable this option, follow the steps given below.
1. Edit the file **AMServer.properties** located in the <*Applications Manager Home*>*/conf* directory.
2. Set the value of **am.upload.enabled** as **false**.
3. Restart the Applications Manager server.
To enable this page, set the value of **am.upload.enabled** as **true**.

1. In Admin page, select **Upload Files/Binaries** .
2. Click **Browse** to locate the file to be uploaded in your local machine. **Note**: The file to be uploaded must be present in your local machine.
3. Choose the type of Upload such as JAR/ MIB/ Script. The purpose of choosing the type is to upload the files in the directories mentioned for each type of upload.
4. Click **Upload** to upload the files to the desired directory of Applications Manager Home. You can also see the Applications Manager Home directory below the File Upload table.

The uploaded files will be available under the specified directory of Applications Manager and can be used for other operations.

The following files can be uploaded to the Applications Manager using the **Upload Files/Binaries** option.

- MIB file for Sending Trap Action
- Script file for Executing Program Action
- MIB file for adding SNMP OID attributes in Custom Monitors

The user can alternatively

- Put the MIBs in mibs folder eg : <AppManager-home>workingmibs.
- Scripts for execution in the <AppManager-home>working or <AppManager-home>resources folder and then give the path appropriately with respect to the <AppManager-home>working folder.

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Self-Monitoring

Self-monitoring functionality helps you detect issues across all the components of Applications Manager's services and ensures their health and performance to provide uninterrupted monitoring support. You are provided with critical information about the occurred problem to help you drill down to the root cause and thus prevent possible service outages.

Currently, Applications Manager performs a periodic checkup for the health of the following components:

- Server Monitoring (APM service running host machine)
- Database Monitoring (SQL servers being used as backend of APM service)
- JVM Monitoring
- Load-specific performance attribute monitoring.

Diagnostic Detail Configuration

User can modify the poll interval, consecutive poll count and threshold value for each attributes as follows:

- Under **Admin Tab**, click on **Self Monitoring** under **Tools**.
- A **Diagnostic Details** table is displayed with a description of the diagnostic.
- You can configure the Poll Interval, Consecutive Polls and Threshold Value by clicking on the edit icon ( ).

Diagnostics Alerts

Diagnostics Alerts and their current status are displayed in a band at the top of the Applications Manager window. You can also view the list of alerts under the **Alarms Tab** - click on **Diagnostics Alert** button to view a list of diagnostic alerts, their status, time of generation and description. Click on the alert message to view the message history and add comments.

- All users with ADMIN role will receive mail notifications whenever a problem is raised and cleared/discarded.
- When a problem is detected, it is shown in Error state [red].
- When a corrective action is taken, manually or automatically, the Error state moves [automatically or manually] to a Clear state [Green].

List of attributes supported are categorized and described below :

Server Monitoring:

Server Monitoring	
Attribute name	**Description**
CPU Usage	This will monitor the CPU utilization of Applications Manager's server. By default, we will alert the user when the CPU usage exceeds threshold value 90% for the last 15 minutes (polling interval 5 minutes & consecutive polls count 3) with Top 10 process which are consuming more CPU.
Memory Usage	This will monitor the Memory utilization of the APM running server. By default, we will alert the user when the memory usage exceeds threshold value 90% for the last 15 minutes (polling interval 5 minutes & consecutive polls count 3) with Top 10 process which are consuming more memory.
Disk Usage	This will monitor the Disk (where APM is installed) utilization of the APM running server. By default, we will alert the user when the disk usage exceeds threshold value 90% for the last 60 minutes (polling interval 60 minutes & consecutive polls count 1).
Disk I/O Usage	This will monitor the Disk busy time of the physical disk (where APM is installed). By default, we will alert the user when the disk busy time exceeds threshold value 90% for the last 15 minutes (polling interval 5 minutes & consecutive polls count 3).

Database Monitoring(currently supported for MSSQL only)

Database Monitoring

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Attribute name	Description
Database Status	This will monitor the DB Connectivity. • For DB Connectivity, alerts cannot be raised since DB Connection itself is lost. Diagnostic message will be there in Logs (/logs/diagnostics/selfdiagnostics.txt). • This attribute will not be shown in Diagnostic configuration details page. • Default setting is that ,If DB is down for 2 minutes. Entry is made in logs.
Database File Size	This will monitor the DB File size, By default, if file size exceeds 90% of the total size, alert is raised.
Database Log Size	This will monitor the DB Log size. By default, if log size exceeds 90% of the total size, alert is raised.

Note
If total size of DB File & Log is infinite in MSSQL v12 & above, DB installed disk's total size is considered, and alert is raised if used size of the disk exceeds threshold (By Default 90%).

JVM Monitoring

JVM Monitoring	
Attribute name	**Description**
JVM Memory Usage	This will monitor the JVM Memory Usage. By default, we will alert the user when the JVM Memory usage exceeds threshold value 90% for the last 15 minutes (polling interval 5 minutes and consecutive polls count 3).
JVM Thread Blocked	This will monitor the JVM Thread Blocked details. By default, we will alert the user when the JVM Thread block exceeds threshold value 50% for the last 15 minutes (polling interval 5 minutes and consecutive polls count 3).

Load-specific performance attributes

Load-specific attributes	
Attribute name	**Description**
Polling Delay	This is based on load factor calculation. We will take top 50 server monitors which takes more time for datacollection, and then find the last 1 hour polled values based on the polling interval. If that polled vales are less than 70 % then we alert that there is some delay in the polling interval for that particular monitor. This will happen after 1 hour when the build has started.
Polling Stops	This will alert when the polling has stopped for the past 1 hour for a particuar monitor. This check will happen after 1 hour when the build has started.
Syncing Delay	When a particular managed server is not syncing data for the past 30 mins by default we alert in the Admin Server.

diagnosticconfig.properties
This properties file is used to add the diagnostics entry in AM_DIAGNOSTICS_CONF table.

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Bulk Configuration of Monitors

Selecting this option, would enable you to perform bulk administrative operations on Monitors. Clicking on this link, will take you to the Monitors Bulk Configuration View - where all monitors are listed.

- **Availability** tab, gives the Availability history for the past 24 hours or 30 days.
- **Performance** tab gives the Health Status and events for the past 24 hours or 30 days.
- **List view** tab lists all the servers monitored by Applications Manager along with their overall availability and health status You can also perform bulk admin configurations. Click on the individual monitors listed to view detailed performance metrics.

You can perform the following Monitor Admin Operations from the *List View*:

- Assign Custom Fields
- Delete
- Edit Display Names
- Update IP
- Manage and Unmanage Monitors
- Unmanage & Reset Status
- Update Username/Password
- Update Polling Interval
- Copy and Paste Monitor

Manage/Unmanage Monitors:

This option enables you to choose the monitors that you want to monitor or not. Under Monitors tab, select 'Bulk Config' view, here all the monitors discovered are listed. Select the monitors for which data collection needs to be done and then click on **Manage** link, likewise select the monitors for which you do not want data collection to happen and then click on **Unmanage** link. For license information, the count of the 'number of monitors' would be based on the number of Managed Monitors.

Update Username/Password:

This option enables you to bulk update usernames and passwords across monitor types.

For eg., if you have five tomcat servers running, you can select all the five tomcat servers from the list. Click on Update Username/Password. Your selection would be listed and you can enter the username and password that is common across all the five tomcat servers.

Edit Display Names:

This option enables you to bulk edit the Display Names of the Monitors.

Update Polling Interval:

This option enables you to bulk update poll intervals across monitor types.

For eg., if you have five apache servers running, you can select all the five apache servers from the list. Click on Update Polling Interval link. Your selection would be listed and you can enter the desired poll interval.

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Copy and Paste Monitors:

This option enables you to copy and paste the configuration of one monitor to create new monitors of the same type.
For eg., if you want to monitor the apaches running in 10 different servers, then you can configure the monitoring parameters of one apache in Host1 and copy those configurations to the other apaches in Host2 , Host3 ..to..Host10

On clicking copy and paste icon, you need to enter the host names of the servers to which the configurations have to be pasted (the host names can be given comma separated). Enter the SubNet mask too.

Note: If you want to copy and paste the configurations of server monitor, then you can choose to copy the configuration of the services running inside the server or only the server configuration.

Currently we do not support the copy and paste function for the following monitors.

- Custom Monitors
- Java Runtime
- php
- http URLs
- http URL Sequence
- Web Services
- Web Server
- JMX Application
- Ping Monitor
- Glassfish
- Silverstream
- MQ Series
- Office Sharepoint

Update IP

You can update the IP address of a host. Using the **Update IP** option, you can also perform the following operations:

- **Refresh Host Name** - Retrieve the Host Name for the given IP Address and update the Host Name.
- **Replace Host Name with IP Address** - Replace the Host Name with the given IP Address

  A shortcut to edit the host name or Ip Address:

  - Log in to Applications Manager
  - Click the search box at the top right corner and select the 'Search All' option.
  - Enter the IP/Hostname (for example '193.188.112.48') of the host that you wish to edit. A list of Monitors configured using that Hostname/IPaddress will be displayed.
  - Select the Monitor, by checking the checkbox and choose 'Update IP' from the Action drop down menu.
  - In the pop-up window, Select the option 'Refresh Hostname'.
  - Click Apply.
  - Restart Applications Manager and then check if the IP Address had been changed.

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Data-Backup

You can execute the scripts **BackupPGSQLDB.bat/.sh** and **RestorePGSQLDB.bat/.sh** to take a backup of and restore the data.

- You can find the BackupPGSQLDB.bat/.sh under <*Applications Manager Home/bin*>.
- To back up data, execute the following commands in the command prompt:

  BackupPGSQLDB.bat/.sh

  the output (back up data) would be put under <*working/backup/backupzip_date_time*>

  for eg.,

  /<*working/backup/backupzip_Jan_3_2008_14_51_15/backupzip_Jan_3_2008_14_51_15.zip*>/

- To restore the backup data, Execute the following command in command prompt**RestorePGSQLDB.bat/.sh** ***<Absolute path of the zip file that was backed up on executing BackupDB script >***For eg.,

  RestorePGSQLDB.bat/.sh

  "*C:AppManager_Homeworkingbackupbackupzip_Jan_3_2008_14_51_15backupzip_Jan_3_2008_14_51_15.zip*"

While restoring backup, Applications Manager and Applications Manager's PostgreSQLDB should not be running.

Configuring a backup task:

You can configure a backup task with Task Scheduler as follows:

Program/Scripts : <AppManager_Home>binBackupPGSQLDB.bat

Start In: <AppManager>bin

- Configure the triggers and other information in the Task Scheduler. Please make sure you choose the option "Run whether the User is Logged On or Not" so that the Task runs irrespective of the fact that the user is logged on or not.
- In the Actions, please configure it as follows

  Program/Scripts : <AppManager_Home>binBackupPGSQLDB.bat

  Start In: <AppManager>bin

- Then save the task and test it to know if it works.

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Administrator: Command Prompt - BackupPGSQLDB.bat

```
D:\APM\Migrate_PGSQL_91\AppManager13\bin>BackupPGSQLDB.bat
DataBase Name : amdb
DataBase Port : 15432
BackUp in           : "APPMANAGER"
D:\APM\Migrate_PGSQL_91\AppManager13\bin
amdb1
D:\APM\Migrate_PGSQL_91\AppManager13\working\pgsql\bin
Starting  PostgreSQL Database Server...
server starting
Started PostgreSQL Database Server Successfully..
"Start PGSQL Called"
LOG:  skipping missing configuration file "D:/APM/Migrate_PGSQL_91/AppManager13/
working/pgsql/data/amdb/postgres_ext.conf"
"Initializing backup process"
pg_dump: reading schemas
pg_dump: reading user-defined tables
pg_dump: reading extensions
pg_dump: reading user-defined functions
pg_dump: reading user-defined types
pg_dump: reading procedural languages
pg_dump: reading user-defined aggregate functions
```

Administrator: Command Prompt

```
scoveryid_fkey
pg_dump: setting owner and privileges for FK CONSTRAINT discovereddevicesinfo_re
sourceid_fkey
pg_dump: setting owner and privileges for FK CONSTRAINT discoveredservicesinfo_d
iscoveryid_fkey
pg_dump: setting owner and privileges for FK CONSTRAINT discoveredservicesinfo_s
ervice_resid_fkey
pg_dump: setting owner and privileges for FK CONSTRAINT discoveryscandetails_dis
coveryid_fkey
pg_dump: setting owner and privileges for FK CONSTRAINT discoverytocredentialmap
ping_discoveryid_fkey
pg_dump: setting owner and privileges for FK CONSTRAINT sitetomanagedservermappi
ng_siteid_fkey
pg_dump: setting owner and privileges for FK CONSTRAINT ticketprofilerequesterma
pping_profileid_fkey
Apr 20, 2017 11:36:01 AM com.adventnet.appmanager.util.MysqlZip main
INFO: AM_HOME D:\APM\Migrate_PGSQL_91\AppManager13\
Apr 20, 2017 11:36:01 AM com.adventnet.appmanager.util.MysqlZip main
INFO: length 1
Apr 20, 2017 11:36:01 AM com.adventnet.appmanager.util.MysqlZip main
INFO: backupfile
Apr 20, 2017 11:36:01 AM com.adventnet.appmanager.util.MysqlZip getFileName
INFO: backupfile
Apr 20, 2017 11:36:01 AM com.adventnet.appmanager.util.MysqlZip main
INFO: Zipping the databases
Apr 20, 2017 11:36:01 AM com.adventnet.appmanager.util.MysqlZip main
INFO: Zipping the configuration files
Apr 20, 2017 11:36:02 AM com.adventnet.appmanager.util.MysqlZip main
INFO: Data successfully backed up in  D:\APM\Migrate_PGSQL_91\AppManager13\worki
ng\backup\backupzip_NORM_13100_Apr_20_2017_11_36_1\backupzip_NORM_13100_Apr_20_2
017_11_36_1.zip
waiting for server to shut down.... done
server stopped
"DBStopped"
```

For Microsoft SQL Server backend:

- **For Database Backup:** Connect to the SQL Management Studio tool & backup the complete AMDB database. Click here to

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know how to backup SQL database.

- **For Database Restore:** Connect to SQL Management Studio tool & restore the complete AMDB database backup. Click here to know how to restore the SQL database backup.

Applications Manager should not be running during database restore. Refer the below link for more detailed information about SQL database backup & restore steps: https://docs.microsoft.com/en-us/sql/relational-databases/backup-restore/back-up-and-restore-of-sql-server-databases

Note: Users should not use the SQL Server Import and Export Wizard to perform backup or restore of Applications Manager database.

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Server Settings

By editing **AMServer Properties file** & **AvailabilityTests.conf file** (AppManager Home/Conf/), you can change the default server settings used in ManageEngine Applications Manager.

AMServer Properties file	
am.webserver.port	This is the web server port used by Applications Manager to connect to the browser.
am.ssl.port	Keys to enable SSL (https) and this will be enabled by default
am.dbserver.type	Backend database type. Possible values : pgsql, mysql, mssql. If key not present, it will use mysql backend
am.db.port / am.mysql.port	Port used by the database. am.mysql.port was used before 11
am.tomcat.shutdown.port	
am.webcontainer.port	Tomcat ports for Applications Manager. If any of these ports is occupied when Applications Manager starts, it will be changed automatically. In builds before 11, am.tomcat.shutdown.port will not change automatically even if it is occupied and it has to be changed manually
am.rmiregistry.port	
am.shutdown.port	
am.traplistener.port	Port in which Applications Manager will listen and receive traps from other device
am.createSupportZipFile	Key for zipping of support file. Not used by Applications Manager. Only used by IT360
am.dbport.check	While starting up, Applications Manager will check if the DB port mentioned in am.db.port / am.mysql.port is already occupied. If the ports are occupied, it will automatically change am.db.port / am.mysql.port to next unoccupied port and start DB server in that port. This will be done for mysql and pgsql backend. By default these key(s) are true. If customer is using his own pgsql / mysql, these key(s) needs to be set to false. am.mysqlport.check was used before 11
am.webserverport.check	While starting up, Applications Manager will check if the web server port mentioned in am.webserver.port is already occupied. If the ports are occupied, it will alert user and shutdown Applications Manager.
am.sockettest.timeout	Socket test timeout value in seconds used by various monitors like MySQL, MsSQL, DB2, JBoss, Oracle, Service monitor etc. This value can be also changed from Admin > Availability Settings > Availability Check: Timeout value
am.server.language	These keys determine the language of Applications Manager. Default values are am.server.language=en and am.server.country=US. Possible values are : English (en / US), Chinese (zh / CN), German (de / DE), Spanish (es / ES), French (fr / FR), Hungarian (hu / HU), Japanese (ja / jp), Korean (ko / KR), Taiwanese (zh / TW), Vietnamese (vi / VN)
am.server.country	
am.server.type	Key to see if its Professional edition / Enterprise Edition. Possible values are : NORM, AAM, MAS
am.edition.type	
am.adminserver.host	For Enterprise Edition managed server this will have the host name of admin server
am.adminserver.port	For Enterprise Edition managed server this will have the SSL port of admin server
am.server.startresidrange	The resourceid range for this Applications Manager. For Enterprise Edition this will be in range according to serverid.
am.failover.preferredstandby	

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am.ntlm.hostname	Fully qualified Hostname of Applications Manager is required for monitoring URLs with windows NTLM authentication. If this field does not have FQHN, we need to update it manually for proper URL NTLM monitoring
am.ntlm.hostdomainname	This has the domain name of Applications Manager server which is required for monitoring URLs with windows NTLM authentication.
am.adminpollstry.count	For Enterprise Edition, admin server will report that managed server is down according to polls to try set in this key. By default value is 1.
am.appmanager.hostname	Hostname of Applications Manager which is used in alert mail, alarm escalation mail, report mails sent by Applications Manager.
am.external.hostname	If Applications Manager is in DMZ or behind firewall and has an Internal and External Hostname/IP, we can set External hostname / Ip here so that when users access JRE Thread dumps, MySQL and Ingres Process list.
am.log.dir	Key for changing location of logs directory. Not used by Applications Manager. Only used by IT360
am.scheduleReports.enableSSL	
am.user.resource.enabled	
am.sso.enabled	
am.wmi.encoding	Encoding to be used for parsing vbscripts output in WMI mode

- Under **Admin Tab**, click on **Server Settings** under **Product Settings**.
- Here is a list of keys that can be configured from the UI:

General Settings	
Enable SSL*	Enable SSL - This key enables SSL(https) and will be enabled by default.
Enable Subgroups view	Enable Subgroups view - If Enabled, displays subgroups in Alarms, Reports and New Monitor page's Monitor Group.
Enable Subgroups in SLA view	Enable Subgroups in SLA view - Lists sub groups in SLA page, if enabled along with 'Enable subgroups view'.
Send mail if datacollection stopped	Send mail if datacollection stopped - Admin receives email,if data collection for monitor(s) doesn't occur for more than an hour or if there are out Of memory errors or if data collection stops for 50% of monitors.
Send Monitor Error Mail	Send Monitor Error Mail - Sends a mail if data collection stopped for any monitor.
Disable datacleanup in business hours	Disable datacleanup in business hours - Enabling this key ,ensures that data cleanup doesn't happen between 8:00 am to 6:00 pm.
Open browser on Startup*	Open browser on Startup - If enabled, the browser automatically opens when Applications Manager starts.
Enable file Upload	Enable file Upload - Enables file uploads option in Admin tab -> Upload Files/Binaries
Delete Synced SQL files in Admin Server *	Delete Synced SQL files in Admin Server - Disabling this will ensure .sql files(sent from managed server to Admin server for syncing data) are not deleted in admin server, after syncing data.
Maximum Subgroup level	Maximum Subgroup level - Number of levels of subgroups that can be created in a monitor group.
Error poll count	Error poll count - if any monitor error continuously occurs poll count times then error mail will be sent to admin id.
Raw data cleanuptime (hours)*	Raw data cleanuptime - Time period (in hours) of raw data stored in database for all non-conf monitor's attributes can be changed by using this key.
Conf data cleanup interval (days)	Conf data cleanup interval - To change the clean interval of data stored in conf monitors, this key value is changed.

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Week Start Day of MG outage comparison Report	Week Start Day of MG outage comparison Report- For Monitor group outage comparison week report, the week starts from Sunday.
OutOfMemoryException duration (mins)	OutOfMemoryException duration - If 20 (am.oomexception.count) out of memory error occurs in less than 30 minutes (am.oomexception.duration), Applications Manager restarts
OutOfMemoryException count	OutOfMemoryException count - No of retries out of Memory errors occurred. Default set to 20.
Maximum threads for scheduler *	Maximum threads for scheduler - Max threads allowed for Scheduler Task.
Maximum polling load factor to add monitor *	Maximum polling load factor to add monitor - Represents Managed server maximum polling load factor to add monitor
Maximum database load factor to add monitor *	Represents Managed server maximum database load factor to add monitor
Generate heap dump for free JVM memory (MB)	Generate heap dump for free JVM memory(MB) - If free JVM memory is less than 20 MB, a heap dump for Applications Manager is generated.
Debug-Info directory size limit (bytes)	Debug-Info directory size limit(bytes) - Old files in AppManagerworkingDebug-Info directory are cleared, once it reaches 80% of this key value.
Command size in Execute program action	Command size in Execute program action - Changing the key value will increase the size limit of 400 characters, for commands in execute program.
Managed server maximum monitor count *	Maximum no.of monitors allowed per Managed server.
Availability Settings	
Enable NativePing	Enable NativePing - Enables Native Ping to determine server monitor availability.
Enable PortTest	Enable PortTest - Enables port test for Server monitoring.
Ports to test	Ports to test - Ports mentioned here will be used for port test.
PortTest timeout in seconds	PortTest timeout in seconds - Timeout value for checking the ports.
Ping retries	Ping retries - No.of retries to execute the ping command in case of failure to check the availability of server.
Application Server timeout	Application Server timeout - Tomcat, Apache, PHP, WebSphere monitor's connection time out value in minutes.
Threads Configuration	
Main *	Main Thread - This thread is used for JMX/SNMP Dashboard,Schedule Reports
URLMonitor *	URLMonitor Thread - Monitors like HTTP(s) URLs,HTTP(s)-URL Sequence,SAP-CCMS uses this thread for data collection.
KeyValue_Monitor *	KeyValueMonitor Thread - Monitors like Active Directory Amazon,Cassandra,Ceph Storage,DNS Monitor,Database Query Monitor,Exchange Server,Script Monitor etc. uses this thread for data collection.
RBM_Monitor *	RBMMonitor Thread - Real Browser Monitoring uses this thread for data collection.
MQSeries *	MQSeriesMonitor Thread - IBM Websphere MQ monitor uses this thread for data collection
DataCollection *	DataCollection Thread - This thread is used for datacollection of monitors like AIX,AS400/iSeries,Apache Server,DB2,FreeBSD / OpenBSD,HP-UX / Tru64 UNIX,IIS Server etc.
CustomMonitor *	CustomMonitor Thread - This thread used for dataCollection of Custom Attributes for monitors like RMI,WEBLOGIC-server,JBOSS-server,WebSphere-server,JMX1.2-MX4J-RMI.
WebServiceMonitor Thread *	WebServiceMonitor Thread - This thread is used for WebServices.
QueryMonitor Thread *	QueryMonitor Thread - This thread is used for Query Monitors.
DataBase Params Configuration	
No.of Database Connections*	This key is used to configure the no.of non transaction connections to be established with the database.
JVM Params Configuration spacer	

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Maximum Java Heap Size (MB) *	Maximum memory allocated for Applications Manager.
Maximum Permgen Size (MB)*	Maximum Permgen size allocated for Applications Manager.

* - Indicates changes will take effect only after restart of APM.

* - Enterprise Edition

List of Keys that were moved to DB

Key	Option to Configure in GUI
am.host.deleteDisk	Admin > Performance Data Collection > servers
am.cli.telnet.passwordprompt	
am.cli.telnet.loginprompt	
am.cli.bulkcmd.exec.responsetimeout	
am.server.cli.match.category.index	
am.server.command.responsetimeout	
am.cli.command.bulk.execute	
am.cli.loginprefix	
am.cliSession.caching	
am.disks.ignore	
am.spacecheck.warning	
am.telnet.loginTimeOut	
am.wmi.encoding	
am.server.windows.resend.vbscripts	
am.rawdata.enabled	
am.processinstance.equals	
am.nosql.rediscover.interval	Admin >Performance Data Collection > Database Servers
am.mssql.deleteJobs	
am.htmldata.mysql.daystoretain	
am.pingtest.command	Admin >Performance Data Collection > Ping Monitor
am.repoll.interval	Admin >Performance Data Collection > HTTP(s) URLs
am.cam.mbeanslistsize	Admin >Performance Data Collection > Optimize Data Collection >JMX Application
am.dirsize.unit	Admin >Performance Data Collection > Optimize Data Collection >File/Directory Monitor
am.filesize.unit	
am.file.contentcheckcount	
am.ftp.filesize	Admin >Performance Data Collection > Optimize Data Collection >FTP/SFTP Monitor
am.htmldata.jre.daystoretain	Admin >Performance Data Collection > Optimize Data Collection >JavaRuntime Monitor
	Admin >Performance Data Collection > Optimize Data Collection >WebSphere Server
am.mqseries.ccsid	
am.mqdelrow.enabled	

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Key	Option to Configure in GUI
am.script.deleterow	Admin >Performance Data Collection > Optimize Data Collection >Script Monitor
	Admin >Performance Data Collection > Optimize Data Collection >Database Query Monitor
am.querymonitor.rowcount	
am.query.timeout	
	Admin >Performance Data Collection > Optimize Data Collection >VMware ESX/ESXi Monitor
am.vsphere.connection.timeout	
am.vsphere.read.timeout	
am.xen.resourcepool.discovery.enable	Admin >Performance Data Collection > Optimize Data Collection >Xen Server

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Key	Option to Configure in GUI
am.ssl.enabled	Admin >Server Setting > General Settings
am.subgroups.enabled	
am.slasubgroups.enabled	
am.senddcstoppedmail.enabled	
am.detailview.show - (MAS & Prof)-hidden	
am.server.deleteMonitor.comparing.csvToCmdb - hidden	
am.server.defaultDiscovery.enabled - hidden	
am.upload.enabled	
am.userresource.onLogin.update - Hidden	
am.admin.mgstatusview.enabled	
am.querytracker.enable - Hidden	
am.simple.theme.enabled - Hidden	
am.startmonthread.enabled - Hidden	
am.monitorGroup.rules.enable - remove	
am.standalonesdp.enabled	
am.cleanup.nonbusinesshours	
am.expandWidgets - need to check..	
am.adminserver.deletesql	
am.spacecheck.warning - remove key and related code	
am.sendmonerrormail.enabled	
am.browser.startup	
am.dbconnection.refresh - Hidden	
am.push.userconfig.details - remove	
am.useresource.operations.concurrent.update - Hidden	
cmdb.xml.path	
am.api.response.timeout	
am.triggerheapdump.freememorymbst	
am.mas.polling.max.loadfactor	
am.mas.database.max.loadfactor	
am.executeaction.size	
am.errorpoll.count	
am.rawdata.value - move to servers tab	
am.report.weekStartDay	
am.userResUpdateThread.schedule.interval - Hidden	
am.subgrouplevels.count	
am.html.dirsize	
am.server.maximum.thread.schedulerTask - restart	
am.oomexception.duration	
am.oomexception.count	
am.confdata.cleanupinterval	
am.rawdata.cleanuptime	
am.enablenativeping	Admin >Server Setting > Availability Settings
am.porttestenabled	
am.portstotest	
am.tomcattimeout	
am.porttest.timeout.seconds	
am.ping.retries	

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Production Environment

This document covers configuration details that you need to take care of when moving Applications Manager into Production:

User Accounts (OS User / Applications Manager Web Client User)

Note

OS User will be referred to as *OS User*. A user login account to the Applications Manager Web Client will be referred to as *Web Client User*. Refer User Administration document for more information on users.

- Make sure you change the password for the default "admin" Web Client User within Applications Manager.
- Have a dedicated OS User (System) account for installing Applications Manager. This OS user account needs full permissions on all folders and sub-folders in the installation root of Applications Manager only. Also make sure this OS User account is fully secure.It is NOT necessary to install Applications Manager in a root (in Linux) or administrator (windows) OS User account. But make sure the whole installation is done using the same OS user account. Do not install using root and try to run using an OS user account. That will fail.
- If you want to give full "Read-Only" priviledges to certain Web Client Users in your organisation, then make sure you create a client login with "USER" role.
- If you want to give restricted "Read-Only" privileges to certain Web Client Users in your organisation, then make sure you create a client login with "Operator" role. "Operator" can view only servers that they own.

Other General Guidelines

- Refer the Security/Firewall Requirements document to understand what changes are required in the firewall.
- You can install Applications Manager as a Windows Service or configure a cron job on Linux to start on server start up.
- If you are planning to use the Enterprise Edition, fully understand the EE architecture.
- By default, uploading binaries, MIBs, scripts are allowed in Applications Manager. This may be required in the intial stages while using Applications Manager for uploading MIBs, action scripts etc. However while going in to production, it is strongly recommended to disable this
- Are you getting false alarms for server availabilty? This could be because, your production servers are taking too long to respond. You can set higher timeouts.
- To change the default HTTP port used by Applications Manager, refer the Server Settings document . You can refer to this document on other settings that you can modify. For eg., whenever Applications Manager starts, if you do not want the browser to open automatically, you need to modify the entry *<am.browser.startup=false>*
- Backup the Applications Manager configuration and data.

From a **security point of view**, the following are done :

- All passwords are encrypted
- The encryption keys are uniquely generated for each customer environment.

Note: Kindly inform appmanager-support@manageengine.com, if you feel that some more information can be added.

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Applications Manager REST APIs

ManageEngine Applications Manager provides REST APIs for fetching data from Applications Manager. Using these APIs, Applications Manager's data can be integrated with any internal portal or 3rd party System Management software. The data can be represented in a single dashboard itself.
By using any XML parser in a scripting language, Java, C, Perl or Python, etc. you can make HTTPs requests in the format recommended in the API. This data can then be inserted into your own database or put in any format that you need.

Prerequisites

Applications Manager User Account
Each Applications Manager User should have a valid UserName to use the API.
Take an intranet portal for example. When each user logs in, the assigned monitors and alarms will be shown. So, it is imperative that each user should have separate API keys. When GetAlarms API is invoked with the key generated for that particular operator, it will list the alarms that are assigned to that person alone.

How do APIs work?

In order to use the API, each user should obtain an API key - which is a long text and is unique to their Applications Manager Account. The API key has to be passed as parameter in every API request made.

Generate API Key

The User can register for the API key from within Applications Manager product using the "REST API" option in the Admin tab.

Note: Generating an API Key is a one-time process. The API Key you generate is unique to that particular installation.

Steps for using REST API

- Click on the **Admin** tab
- Under **Integration with Portals,** click **REST API.**
- An API key is generated - eg.*7b5fde68148fa2419bc2f1a1ab87e757*
- Open the browser, the URL would be http://<my*appmanager-server*>:9090/AppManager/xml/ListServer?apikey=7b5fde68148fa2419bc2f1a1ab87e757&type=all
- By changing <type> to the required monitor, data pertaining to that monitor can be retrieved. Check if the following URL works fine http://<my*appmanager-server*>:9090/AppManager/xml/ListServer?apikey=7b5fde68148fa2419bc2f1a1ab87e757&type=server will give data of all the server monitors. 'all' will give the entire Applications Manager's data.
- By using any xml parser in a scripting language, Java, C, Perl or Python etc, you can make HTTPs requests in the format recommended in the API. This data can then be inserted into your own database or put in any format that you need.

Note:
REST API xsd files are available in *AppManager_Home/help/RESTAPI/xsd* folder.

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AddMonitor API

This API allows the user to configure monitors in Applications Manager. The different monitors supported are:

- Application Servers
- Cloud Apps
- Custom Monitors
- Database Servers
- ERP
- EUM
- Java/Transaction
- Mail Servers
- Middleware/Portal
- Servers
- Services
- Virtualization
- Web Server/Services

Request Parameters

The common parameters involved in the API request are described below:

Field	Description
apikey*	The key generated from the **Generate API Key** option in the 'Admin' tab.
displayname*	The display name of the monitor.
subnet	The subnet where the server is running. The default value is 225.225.225.0.
pollInterval	The interval at which the server needs to be polled. This variable is optional. If no value is mentioned, the default value of 5 minutes will be taken.
groupID (haid)	The id of the monitor group. In Applications Manager, you can find the groupID of a monitor group using the following method: • Click on the Group Name in the monitor groups table. This will open the Monitor Group details page • The url of the Monitor Group details page will be in the following format: **http://app-windows:9090/showapplication.do?&method=showApplication&haid=10000040** • The haid in the URL is the Group ID that you require, in this case, 10000040.
resolvedns	The value can be 'True' or 'False'. Do not resolve DNS name when you have multiple system IP addresses configured with single DNS name.
credentialID	A unique identifier set by Applications Manager for a credential.
label	Assign labels for a resource.

* - mandatory

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Adding a new monitor as a Delegated Admin user

When adding a new monitor as a Delegated Admin user, the following parameters should be appended in the API URL:

Field	Description
addToGroup*	Denotes if the monitor should be added to monitor group. Value is either *true* or *false*.
groupID*	The group ID of the monitor group to which the monitor is to be added.

* - mandatory

Sample Request:

http://app-windows:9090/AppManager/AppManager/xml/AddMonitor?apikey=f746be1da5fb1a2668b00251742ccd2d&type=SilverStream&displayname=sliverstream&host=hostname&port=8081&ManagedServerID=1&addToGroup=true&groupID=10069

Adding a new monitor from an Admin server in the Enterprise Edition

When adding a new monitor from an admin server in the Enterprise Edition, the user can select the Managed server of his preference. To do so, the following parameters should be appended in the API URL:

Field	Description
ManagedServerID*	The new monitor will be added in the Managed Server of which the ID is specified
ManagedServerGroupName*	The new monitor will be added in a Managed Server in the specified Group

If these parameters are not specified, the managed server will be selected based on the load-factor.

Note:

HTML encoding will be required for parameters with special characters (For example: display name or password). For example, if a password contains a special character like " # , & , % or + :

should be replaced with %23

& should be replaced with %26

% should be replaced with %25

+ should be replaced with %2B while passing the password in the RESTAPI.

For More information about HTML Encoding, refer the following document: http://www.w3schools.com/tags/ref_urlencode.asp

Invoking the Add Monitor API will change the display name for existing monitors.

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Sample Request

This example helps you add a Windows server to Applications Manager:

http://app-windows:9090/AppManager/xml/AddMonitor?apikey=0b0fd47feeff9050d6a45dd7b5bb5791&type=servers&displayname=APM-Windows&host=hostname&snmptelnetport=161&os=WindowsXP&mode=SNMP&username=administrator&password=vembu

Example output:

```
<AppManager-response uri="/AppManager/xml/AddMonitor">
  <result>
    <response response-code="4000">
      <message>Monitor added successfully.</message>
    </response>
  </result>
</AppManager-response>
```

Sample Error

If the API is not executed correctly, the request will fail and errors will be thrown as shown below.

```
<Apm-response uri="/AppManager/xml/AddMonitor">
  <result>
    <response response-code="4225">
      <message>The Transaction mentioned in the request URL should be yes or no.</message>
    </response>
  </result>
</Apm-response>
```

Samples for adding a new monitor from an Admin server

- **ManagedServerIDSample:** *http://app-windows:9090/AppManager/xml/AddMonitor?apikey=627b1432529fbace2867388e6abf15e&type=mssql&displayname=mssql&username=sa&host=hostname&password=password@123&port=1433&instance=&authentication=SQL&ManagedServerID=2*
- **ManagedServerGroupNameSample:** *http://app-windows:9090/AppManager/xml/AddMonitor?apikey=627bce9dvsdv0db9fbace2867388e6abf15e&type=mssql&displayname=mssql&username=sa&host=hostname&password=password@123&port=1433&instance=&authentication=SQL& ManagedServerGroupName=WIN4*

Refer this page for a list of common error conditions.

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AddMonitor API - Application Servers

This section explains how to use the AddMonitor API to add monitors of the 'Application Servers' category. The following application servers are supported:

- Microsoft .NET
- GlassFish
- JBoss Server
- Oracle Application Server
- Resin Server
- SilverStream
- Tomcat Server
- VMware vFabric TC Server
- WebLogic Server
- WebSphere Server
- Jetty Server

Microsoft .NET

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]
&username=[USERNAME]&password=[PASSWORD]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The category type of the monitor you want to add. Value should be '.Net'.
host	The name of the host where the .Net server is running.
username	The username of the .Net server.
password	The password of the .Net server.

Sample Request:

http://prod-server5:9090/AppManager/xml/AddMonitor?apikey=4df5040d6db873dcdaf4359b259fd494&type=.Net&displayname=AppmanagerDotNet&host=app-xp3&username=administrator&password=vembu

Adding a new monitor from an Admin server in the Enterprise Edition
When adding a new monitor from an admin server in the Enterprise Edition, the user can select the Managed server of his preference. Know more about the mandatory parameters to be appended.

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GlassFish

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&host=[HOST]
&port=[PORT]&username=[USERNAME]&password=[PASSWORD]&displayname=[DISPLAYNAME]&JNDIPath=[JNDIPATH]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The category type of the monitor you want to add. Value should be 'glassfish'.
host	The name of the host where the GlassFish server is running.
port	The port number where GlassFish server is running.
username	The username of the GlassFish server.
password	The password of the GlassFish server.
JNDIPath	The JNDI path name. For example, the JNDIPATH for default installations of GlassFish is **/jmxrmi**.

Sample Request:

http://prod-server1:9090/AppManager/xml/AddMonitor?apikey=136edbeb3ccb83c6cc71df03ef273313
&type=glassfish&host=app-xp2&port=8686&username=admin&password=adminadmin
&displayname=glfish&JNDIPath=/jmxrmi

JBoss Server

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]
&version=[VERSION]&authEnabled=[AUTHENABLED]&username=[USERNAME]&password=[PASSWORD]&LaunchType=[LAUNCHTYPE]&HostController=[HOSTCONTROLLER]&ServerName=[SERVERNAME]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The category type of the monitor you want to add. Value should be 'JBoss server'.
host	The name of the host where the JBoss server is running.
port	The port number where JBoss server is running.
version	The version of the JBoss server. Supported versions include 3.2.x, 4.x, 4.0.1, 4.0.2, 5.x, 6.x , 7.x and Wildfly_8.x .
authEnabled	Denotes whether authentication is enabled in the JBoss server. Value should be either 'on' or 'off'
username	The username of the JBoss server. This should be specified only if authEnabled value is 'on'.
password	The password of the JBoss server. This should be specified only if authEnabled value is 'on'
LaunchType	The launch type of the JBoss server. Value should be 'DOMAIN', if JBoss server is started as domain. This is applicable for version 7.x and above, else value can be 'STANDALONE' or optional.
HostController	The host controller name of the JBoss server, eg., master/slave. This should be specified only if LaunchType is 'DOMAIN'.

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ServerName	The server name specified for the JBoss server running under the host controller, eg, server-one/server-two. This should be specified only if LaunchType is 'DOMAIN'.

Sample Request:

1.http://prod-server2:9090/AppManager/xml/AddMonitor?apikey=136edbeb3ccb83c6cc71df03ef273313&type=JBoss server&displayname=AppmanagerJBoss4&host=app-xp2&port=8080&version=Wildfly_8.x&authEnabled=on&username=guest&password=guest

2.http://prod-server2:9090/AppManager/xml/AddMonitor?apikey=136edbeb3ccb83c6cc71df03ef273313&type=JBoss server&displayname=AppmanagerJBoss7_domain&host=app-win7-64-2&port=9990&version=7.x&authEnabled=on&username=domain&password=appman&LaunchType=Domain&HostController=master&ServerName=server-one

Oracle Application Server

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]&version=[VERSION]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	Denotes the category type of the monitor you want to add. If you want to add an Oracle application server monitor, specify the value as 'oracle application server'.
host	The name of the host where the Oracle application server is running.
port	The port number where Oracle application server is running.
version	The version of the Oracle application server. Supported version is 10.1.3

Sample Request:

http://prod-server5:9090/AppManager/xml/AddMonitor?apikey=136edbeb3ccb83c6cc71df03ef273313&type=oracle application server&displayname=appmanageroracle&host=app-xp5&port=7200&version=10.1.3

Resin Server

Syntax:

http://[HOST]:[PORT]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=Resin&host=[HostName]&port=[JMXPORT]&UserName=[Username]&Password=[password]&displayname=Resin&JNDIPath=[JNDIPATH]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The category type of the monitor you want to add. Value should be Resin.

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host	The name of the host where the Resin server is running.
port	The port number where Resin server is running.
username	The username of the Resin server.
password	The password of the Resin server.
JNDIPath	The JNDI path name. For example, the JNDIPATH for default installations of Resin is **/jmxrmi**.

Sample Request:

http://prod-server1:9090/AppManager/xml/AddMonitor?apikey=136edbeb3ccb83c6cc71df03ef273313
&type=resin&host=app-xp2&port=8686&username=admin&password=adminadmin
&displayname=resinmonitor&JNDIPath=/jmxrmi

SilverStream Server

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]
&host=[HOST] &port=[PORT]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The category type of the monitor you want to add. Value should be 'SilverStream'
host	The name of the host where the SilverStream server is running.
port	The port number where the SilverStream server is running.

Sample Request:

http://prod-server6:8090/AppManager/xml/AddMonitor?apikey=136edbeb3ccb83c6cc71df03ef273313
&type=SilverStream&displayname=sl&host=myesuraj&port=8080

Tomcat Server

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]
&port=[PORT]&username=[USERNAME]&password=[PASSWORD]&version=[VERSION]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The category type of the monitor you want to add. The value should be 'tomcat server'.
host	The name of the host where the Tomcat server is running.

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port	The port number where Tomcat is running.
username	The username of the Tomcat server.
password	The password of the Tomcat server.
version	The version of the Tomcat server. Supported version is 5 and above.

Sample Request:

http://app-xp5:9090/AppManager/xml/AddMonitor?apikey=136edbeb3ccb83c6cc71df03ef273313
&type=tomcat
server&displayname=appmanagertomcat&host=shakthiprian&port=8080&username=admin&password=admin&version
=5

VMware vFabric TC Server

Syntax:

http://[APM Host]:[APM Port]/AppManager/xml/AddMonitor?apikey=[API Key
]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]&username=[USERNAME]
&password=[PASSWORD]&JNDIPath=[JNDI Path]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	Denotes the category type of the monitor you want to add. The value should be as VMware vFabric TC Server.
host	The name of the host where VMware is running.
port	The port number where VMware is running.
username	The username of the VMware server.
password	The password of the WebLogic server.
JNDIpath	The JNDI path name.

Sample Request

http://app-windows:9090/AppManager/xml/AddMonitor?apikey=c4bc4e45a43d2d6bfbca6bdcaf31f436&type=VMwarevFa
brictcServer&displayname=vFabric&host=app-centos32-
2&port=6969&username=admin&password=springsource&JNDIPath=/jmxrmi

WebLogic Server

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[H
OST]
&port=[PORT]&username=[USERNAME]&password=[PASSWORD]&version=[VERSION]

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Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	Denotes the category type of the monitor you want to add. The value should be as 'WEBLOGIC SERVER'.
host	The name of the host where the WebLogic is running.
SSL enabled	Option to enable SSL (applicable for version 9 and above).
port	The port number where WebLogic is running.
username	The username of the WebLogic server.
password	The password of the WebLogic server.
version	The version of the WebLogic server. Supported versions include 6.1, 7.0, 8.1, 9.x and 10.x

Sample Request:

http://app-windows:9090/AppManager/xml/AddMonitor?apikey=136edbeb3ccb83c6cc71df03ef273313
&type=WEBLOGIC SERVER&displayname=Appmanagerweblogic&host=app-linux1&port=7001&username=weblogic
&password=weblogic&version=8.1

For SSL support over Weblogic:

Rest API:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]
<&port=[PORT]&username=[USERNAME]&password=[PASSWORD]&version=[VERSION]&sslenabled=[ISSSLENABLED]

Example:

http://app-windows:9090/AppManager/xml/AddMonitor?apikey=136edbeb3ccb83c6cc71df03ef273313&type=WEBLOGIC SERVER&displayname=Appmanagerweblogic&host=app-linux1&port=7001&username=weblogic&password=weblogic&version=10.x&sslenabled=true

WebSphere Server

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]
&port=[PORT]&version=[VERSION]&mode=[MODE]&soapport=[SOAPPORT]

Request Parameters:

Field	Description
type	Denotes the category type of the monitor you want to add. The value should be 'websphere server'.
host	The name of the host where the WebSphere is running.
port	The port number where WebSphere is running.
username	The username of the WebSphere server.
password	The password of the WebSphere server.
version	The version of the WebSphere server. Supported versions include 6.x
mode	The deployment mode of the server. Value is 'BASE'
soapport	The SOAP connector port.

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Sample Request:

Base Deployment

http://prod-server4:9090/AppManager/xml/AddMonitor?apikey=136edbeb3ccb83c6cc71df03ef273313&type=websphere server&displayname=AppmanagerwebsphereBASE&host=app-w2k8r2-64ee&port=9082&version=8.x&mode=BASE&soapport=8880

Base Deployment With Global Security Enabled

http://prod-server4:9090/AppManager/xml/AddMonitor?apikey=136edbeb3ccb83c6cc71df03ef273313&type=websphere server&displayname=AppmanagerwebsphereBASE&host=app-w2k8r2-64ee&port=9082&version=8.x&mode=BASE&soapport=8880&authEnabled=true&username=admin&password=123

Base Deployment With SSL Enabled

http://prod-server4:9090/AppManager/xml/AddMonitor?apikey=136edbeb3ccb83c6cc71df03ef273313&type=websphere server&displayname=AppmanagerwebsphereBASE&host=app-w2k8r2-64ee&port=9444&version=8.x&mode=BASE&soapport=8880&sslenabled=true

Network Deployment

http://prod-server4:9090/AppManager/xml/AddMonitor?apikey=136edbeb3ccb83c6cc71df03ef273313&type=websphere server&displayname=AppmanagerwebsphereND&host=app-w2k8r2-64ee&port=9081&version=8.x&mode=ND&soapport=8880&ndhost=app-w2k8r2-64ee&ndport=9082

Jetty Server

Syntax:

http://[HOST]:[PORT]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=Jetty Server&host=[HostName]&port=[JMX PORT]&UserName=[Username]&Password=[password]&displayname=Jetty&JNDIPath=[JNDIPATH]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The category type of the monitor you want to add. Value should be Jetty Server.
host	The name of the host where the Jetty server is running.
port	The port number where Jetty server is running.
username	The username of the Jetty server.
password	The password of the Jetty server.
JNDIPath	The JNDI path name. For example, the JNDIPATH for default installations of Jetty is **/jmxrmi**.

Sample Request:

http://prod-server1:9090/AppManager/xml/AddMonitor?apikey=136edbeb3ccb83c6cc71df03ef273313 &type=Jetty Server&host=app-xp2&port=8686&username=admin&password=adminadmin &displayname=jettymonitor&JNDIPath=/jmxrmi

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AddMonitor APIs - Cloud Apps

This section explains how to use the AddMonitor API to add monitors of the category type 'Cloud Apps'. The following monitors are supported:

- Amazon
- Windows Azure
- OpenStack
- Amazon SNS

Amazon

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]
&accessKey=[ACCESSKEY]&SecretAccessKey=[SECRETACCESSKEY]&displayname=[DISPLAYNAME]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the monitor you want to add. Value should be *Amazon*
accessKey	The Access Key Id of the AWS for accessing the AWS through the API.
SecretAccessKey	The secret access key of the AWS.

Sample Request:

http://prod-server2:9098/AppManager/xml/AddMonitor?apikey=4c362569ccc528be78fafdcc2317bc5c
&type=Amazon&accessKey=19879sd&SecretAccessKey=2dhsoid&displayname=amazon monitor

Windows Azure

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=WindowsAzure&displayname=[displayName]&SubscriptionID=[SubscriptionID]&AccountName=[AccountName]&AccountKey=[AccountKey]&Timeout=[Timeout]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the monitor you want to add. Value should be *WindowsAzure*
SubscriptionID	Enter your Windows Azure subscription ID. (**Note:** Subscription ID can be obtained by signing into **windows.azure.com** using your windows live id. Then click Hosted Service and navigate to Storage & CDN, then to Storage Accounts).
AccountName	Enter the Account Name of your Windows Azure Storage account.
AccountKey	Enter the Account key of your Windows Azure Storage account.
Timeout	Specify a **Timeout** interval in seconds.

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Sample Request:

http://prod-server2:9098/AppManager/xml/AddMonitor?apikey=f664b86118740af22c6ac7af7f86c06f&type=WindowsAzure&displayname=azure&SubscriptionID=deepak-1470&AccountName=1888&AccountKey=deepak&Timeout=30

OpenStack

Syntax:

http://[HOST]:[PORT]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=OpenStack&displayname=[DISPLAY_NAME]&baseAuthURL=[IDENTITY_URL]&tenantName=[PROJECT_NAME]&username=[USENAME]&password=[PASSWORD]&isProxyRequired=[true/false]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
apikey	Applications Manager API key (To get the API Key, go to *AppManager > Admin > REST API*)
displayname	The display name of the OpenStack monitor
type	The type of the monitor you want to add. For OpenStack, it should be "OpenStack"
baseAuthURL	The Base Authentication URL for OpenStack. Eg: http://controller:5000
tenantName	Project Name associated with User of OpenStack account
username	Username of OpenStack account
password	Password of OpenStack account
IsProxyRequired	true/false

Sample Request:

http://prod-server2:9098/AppManager/xml/AddMonitor?apikey=37e05e898e97f63b66aec9fbd10b9d3c&type=OpenStack&displayname=OpenStack_API&baseAuthURL=http://controller:5000&tenantName=Venus&username=admin&password=Abc@123&isProxyRequired=false

Error Handling:

4601 - The Authentication URL should not be empty.
4602 - The Tenant Name should not be empty.

Amazon SNS

Syntax of Rest API for adding the monitor:

```
http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&accessKey=[ACCESSKEY]&SecretAccessKey=[SECRETACCESSKEY]&displayname=[DISPLAYNAME]
```

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the monitor you want to add. Value should be Amazon.

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Field	Description
accesskey	The Amazon Access Key Id of the AWS for accessing the AWS.
secretaccesskey	The Secret Access Key of the AWS. The secret key should be 40 alpha-numeric characters long.
displayname	The display name of the Amazon server monitor.

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AddMonitor APIs - Custom Monitors

This section explains how to use the AddMonitor API to add monitors of the category type 'Custom Monitors'. The following monitors are supported:

- Windows Performance Counters
- Database Query Monitor
- File/Directory Monitor
- Script Monitor

Windows Performance Counters

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&username=[USERNAME]&password=[PASSWORD]&pollinterval=[POLLINTERVAL]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the monitor you want to add. Value should be *Windows Performance Counters*.
host	The name of the host where the Windows Performance Counters is running.
username	The user name of the host running Windows Performance Counters.
password	The password of the host running Windows Performance Counters.
pollinterval	The interval at which you want the polling to happen.

Sample Request:

http://app-xp4:9090/AppManager/xml/AddMonitor?apiey=ee8d8e237bd5e1a0d8aed16a381c3b73&type=Windows Performance Counters&host=app-xpmll&displayname=hhhh&username=asasaa&password=admin123

Database Query Monitor

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]&username=[USERNAME]&password=[PASSWORD]&databasetype=[DATABASETYPE]&databasename=[DATABASENAME]&showqueryoutput=[SHOWQUERYOUTPUT]&queries=[QUERIES]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the monitor you want to add. Value should be *QueryMonitor*.
host	The name of the host where the databae server is running.
port	The port number where the database is running
username	The user name of the database server .

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password	The password of the database server.
databasetype	The database type for which the query is executed.
databasename	The name of the database server.
showqueryoutput	Option to specify whether you prefer query output. Values are *yes* and *no*
queries	Denotes the database query. There can be a maximum of five queries.

Sample Request:

http://prod-server8:9090/AppManager/xml/AddMonitor?apikey=bbab7f01458e96595b06d5c27efcc3af&type=QueryMonitor&displayname=qury&host=app-xp2&port=1433&username=sa&password=Advent1&databasetype=MsSQL&databasename=AMDB&showqueryoutput=yes&queries=select * from user

File/Directory Monitor

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=File Monitor&displayname=[DISPLAYNAME]&filepath=[FILEPATH]&serversite=[SERVERSITE]&pollinterval=[POLLINTERVAL]&timeout=[TIMEOUT]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the monitor you want to add. Value should be *File Monitor* or *Directory Monitor*.
host	The name of the host where the File Monitor is running.
serversite	Specifies whether the File / Directory to be monitored is on the Local or Remote Server.
filepath	The path to the file to be monitored
contentChk	Specifies if you wish to run a content check. If Content check is to be performed then use contentChk=on
monitoringmode	Specifies the **Mode Of Monitoring** (**WMI** for Windows, **Telnet/SSH** for Linux)
choosehost	If the File / Directory to be monitored is in the Remote Server, you can choose the Host by providing the host name or using the value -1 to add a new host.
username	The username to add a new host.
password	The password for the new host username.
timeval	Configuring daily basis created files / directories are supported in both Windows and Linux Servers.Say for example you can configure filename as localhost.$YYYY-$MM-$DD-$HH-$mm.log or directoryname as $YYYY$MMDDHH$mm.
monitoringmode	The Mode Of Monitoring : • **WMI** for Windows • **Telnet/SSH** for Linux
prompt	The Command Prompt to connect in the **Telnet/SSH** mode. Specify the command prompt value, which is the last character in your command prompt
port	The port number where the File/Directory Monitor is running.
fileCheckType	The **File Parsing Options** to perform content check. Possible Values are: • **0** - Perform content check to only appended content • **1, Whole** - Perform content check to the whole file.

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selectStatusType	You can set the monitor status to **UP / DOWN** if ANY/ALL of the contents/Regular Expressions are matched. Possible values are: • **UP** • **DOWN**
selectRuleType	You can set the monitor status to UP / DOWN if **ANY / ALL** of the contents/Regular Expressions are matched. Possible values are: • **Any** - Set monitor status when any of the contents/Regular Expressions is matched. • **All** - Set monitor status when all of the contents/Regular Expressions are matched.
countval	
fileDirAge	For both File and Directory monitor, you can select the **Do file/directory age check** check box if you wish to display the Monitor Status to UP/DOWN if the FILE/DIRECTORY is MODIFIED/NOT MODIFIED within a certain time.
selectMonStatus	You can set the Monitor Status to **UP / DOWN** if the FILE or DIRECTORY is MODIFIED or NOT MODIFIED within a certain time. Possible Values are: • **UP** • **DOWN**
selectChangeType	You can set the Monitor Status to UP / DOWN if the FILE/DIRECTORY is MODIFIED/NOT MODIFIED within a certain time: • **MODIFIED** • **NOT MODIFIED**
timeUnit	The time unit for which the above said selectMonStatus and selectChangeType should be set.
sshkey	The SSH Key for SSH authentication.
passphrase	The passphrase for key based authentication for SSH.
ccontent	The string for which you want to check content matching.
regexChk	You can perform content check for regular expressions by specifying **regexChk=on**
subDirCntChk	Use **subDirCntChk=on** to display the subdirectory count of a directory.

Sample Request:

For a Local File

http://prod-server8:9090/AppManager/xml/AddMonitor?apikey=bbab7f01458e96595b80f042db3eff62f0&type=FileMonitor&displayname=test1&filepath=F:LATESTAppManagerlogsstdout.txt&serversite=local&pollinterval=5&timeout=60

For a Remote File

http://prod-server8:9090/AppManager/xml/AddMonitor?apikey=1bbab7f01458e96595bb3eff62f0&type=FileMonitor&displayname=test7&filepath=F:LATESTAppManagerlogsstdout.txt&serversite=remote&pollinterval=5&timeout=60&choosehost=-1&monitoringmode=WMI&host=app-support-w7&username=administrator&password=Apmsupport1

For a Local File when Content Check is enabled

http://prod-server8:9090/AppManager/AppManager/xml/AddMonitor?apikey=945bbab7f01458e96595b795cd7&type=FileMonitor&displayname=test2&filepath=d:stdout.txt&serversite=local&pollinterval=5&timeout=60&contentChk=on®exChk=on&ccontent=a*b&fileCheckType=whole&selectStatusType=down&selectRuleType=all

For a Remote File when Content Check is enabled

http://prod-server8:9090/AppManager/xml/AddMonitor?apikey=6a3803a905cbbab7f01458e96595b856&type=FileMonitor&displayname=test12&filepath=C:TestGrep.txt&serversite=remote&pollinterval=5&timeout=60&contentChk=on&ccontent=Exception&fileCheckType=whole&selectStatusType=down&selectRuleType=all&choosehost=-1&monitoringmode=WMI&host=app-xp2&username=asasaa&password=001

When both file/directory age check and content check are enabled

http://prod-server8:9090/AppManager//AppManager/xml/AddMonitor?apikey=1561056503f5164180f042db3eff62f0&type=FileMonitor&displayname=test6&filepath=F:LATESTAppManagerlogsstdout.txt&serversite=local&pollinterval=5&timeout=60&fileDirAge=yes&selectMonStatus=down&selectChangeType=notmodified&timeval=50&timeUnit=Minutes&contentChk=on&ccontent=test&fileCheckType=whole&selectStatusType=down&selectRuleType=any&countval=3

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Script Monitor

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[Script Monitor]&displayname=[DISPLAYNAME]&serverpath=[SERVERPATH]&workingdirectory=[FILEPATH]&serversite=[LOCAL/REMOTE]&pollinterval=[POLLINTERVAL]&timeout=[TIMEOUT]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Value	Description
type	Script Monitor	The type of the monitor you want to add. Value should be *Script Monitor*.
displayname		Display name of the monitor
serverpath		The path of the script file in the server, to be monitored
workingdirectory		The directory in which the script will be executed
serversite	local/remote	Specifies whether the script to be monitored is on the Local or Remote Server.

If Remote Server option is selected, the parameters are:

Field	Value	Description
host		The name or IP address of the host where the script monitor is running.
monitoringmode	WMI/TELNT/SSH	Specifies the **Mode Of Monitoring** (**WMI** for Windows, **Telnet/SSH** for Linux)
choosehost	-1/hostid	For new host use -1, else use id value from the query select * from AM_SCRIPTHOSTDETAILS
port	23/22	
username		The username to add a new host.
password		The password to add a new host.
sshkey	on/off	The SSH Key for SSH authentication. Public Key Authentication (Supported for SSH2 only). Default value off
passphrase		The passphrase for key based authentication for SSH.
prompt		The Command Prompt to connect in the **Telnet/SSH** mode. Specify the command prompt value, which is the last character in your command prompt. Default value is $
mode	sh	Enter the mode. The default value will be 'sh'
description		Private key

If the Output Settings enabled, the parameters are:

Field	Value	Description
opfile	true/false	Specify if you want to Get output from file.
outputfile		Specify the path of the output file

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string_att		Enter the **String** attributes
numeric_att		Enter the **Numeric** attributes
delimiter		Enter the value of **Delimiter** used in the output file. By default, it is "=". If you don't specify a delimiter, then 'space' would be considered as a delimiter.

If Tables in output file is enabled, the parameters are:

Field	Value	Description
tablepresent	on/off	Output Settings.Default value off
table_row		Number of rows in the table
table<index>		Table name
numericati<index>		Numeric attribute
stringati<index>		String attribute
pcati<index>		Unique column
cdi<index>		Column delimiter
message		Arguments
pollinterval		Polling interval
timeout		Time out

Sample Request:

For a local server:

http://prod-server8:9090/AppManager/xml/AddMonitor?apikey=1561056503f5164180f2db3eff62f0&type=ScriptMonitor&displayname=test1&serverpath=F:AppManagerbinCkServerConnection.bat&workingdirectory=F:ManagedAppManagerbin&serversite=local&pollinterval=5&timeout=30

For a remote server:

http://prod-server8:9090/AppManager/xml/AddMonitor?apikey=151056503f5164180f2db3b3eff62f0&type=ScriptMonitor&displayname=test2&serverpath=/home/likewise-open/ZOHOCORP/prodserver-9091/test.sh&workingdirectory=/home/ZOHOCORP/prodserver-9091&serversite=remote&pollinterval=5&timeout=60&choosehost=-1&monitoringmode=SSH&host=prodserver-9091&username=prodserver-9091&password=Zoho123&prompt=$port=22

With Output Settings enabled, (Give new line with %0A):

http://prod-server8:9090/AppManager/xml/AddMonitor?apikey=1561003f5164180f280f042db3eff62f0&type=ScriptMonitor&displayname=test3&serverpath=F:AppManagerbinChkServerConnection.bat&workingdirectory=F:AppManagerbin&serversite=local&pollinterval=5&timeout=60&opfile=true&outputfile=F:AppManagerbinresult.txt&string_att=Name1,Name2&numeric_att=Age1,Age2&delimiter==

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With the tables in output file enabled:

http://prod-server8:9090/AppManager/xml/AddMonitor?apikey=1561056503f5164180f042db3eff62f0&type=ScriptMonitor&displayname=test3&serverpath=F:AppManagerbinChkServerConnection.bat&workingdirectory=F:AppManagerbin&serversite=local&pollinterval=5&timeout=60&opfile=true&outputfile=F:AppManagerbinresult.txt&string_att=Name1,Name2&numeric_att=Age1,Age2&delimiter==&tablespresent=on&table_row=1&table1=Test1&numericatt1=Num1&stringatt1=Str1&pcatt1=Num1&cdl1==

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AddMonitor APIs - Database Servers

This section explains how to use the AddMonitor API to add monitors of the category type 'Database Servers''. The following databases are supported:

- IBM DB2
- IBM Informix
- Memcached
- MS SQL
- MySQL
- Oracle
- Oracle NoSQL
- PostgreSQL
- Sybase
- SAP HANA
- Cassandra
- Redis
- MongoDB
- CouchBase
- HBase

IBM DB2

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&username=[USERNAME]&host=[HOST]&password=[PASSWORD]&port=[PORT]&instance=[INSTANCE]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the database you want to add. Value should be *db2*.
username	The user name of the user who has permission to access the DB2 database.
host	The name of the host in which DB2 is running.
password	The password of the user who has permission to access the DB2 database.
port	The port number where DB2 is running.
instance	The database/instance name.

Sample Request:

http://prod-server1:9090/AppManager/xml/AddMonitor?apikey=5bc6a8e9a30d5bf894586d4db90282f5&type=db2&displayname=appmanagerdb2&username=db2admin&host=app-xp4&password=admin&port=50000&instance=SAMPLEDB

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IBM Informix

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=type&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]&informixserver=[DATABASE SERVER NAME]&username=[USERNAME]&password=[PASSWORD]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the database you want to add. Value should be *Informix*.
username	The user name of the user who has permission to access the Informix database.
host	The name of the host in which the Informix database is running.
password	The password of the user who has permission to access the Informix database..
port	The port number where the Informix database is running.
instance	The database/instance name.
informixserver	The name of your Informix server. By default, the name will be ol_machinename.

Sample Request:

http://prod-server1:9090/AppManager/xml/AddMonitor?apikey=f5297a51be2f6f962a5cdbd68521ee61&type=Informix&displayname=test&hostname=app-win7-64-1&port=9088&username=informix&password=informix&informixserver=ol_informix1210

Memcached

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]&Transaction=[TRANSACTION]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the database you want to add. Value should be *Memcached*.
host	The name of the host in which Memcached server is running.
port	The port number where Memcached server is running.
Transaction	Denotes if transaction test is enabled or not. Value should be either *yes* or *no*

Sample Request:

http://prod-server4:9090/AppManager/xml/AddMonitor?apikey=40648ef160f4786b20ed89ea51aa3f98&type=Memcached&displayname=mem_test&host=app-linux2&port=11211&Transaction=yes

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MS SQL

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&username=[USERNAME]&host=[HOST]&password=[PASSWORD]&port=[PORT]&instance=[INSTANCE]&authentication=[AUTHENTICATION]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the database you want to add. Value should be *ms sql*.
username	The name of the user who has permission to access the MS SQL server.
host	The name of the host in which MS SQL is running.
password	The password of the user who has permission to access the MS SQL server.
port	The port number where MS SQL is running.
instance	The database/instance name. This is optional field.
authentication	The authentication type. Value should be either *SQL* or *Windows.*

Sample Request:

http://prod-server7:9090/AppManager/xml/AddMonitor?apikey=5bc6a8e9a30d5bf894586d4db90282f5&type=ms sql&displayname=appmanagermssql&username=sa&host=app-xp2&password=Advent1&port=1433&instance=&authentication=SQL

MySQL

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&username=[USERNAME]&host=[HOST]&password=[PASSWORD]&port=[PORT]&instance=[INSTANCE]&authentication=[AUTHENTICATION]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the database you want to add. Value should be *mysql*.
username	The name of the user who has permission to access the MySQL server.
host	The name of the host in which MySQL is running.
password	The password of the user who has permission to access the MySQL server.
port	The port number where MySQL is running.
instance	The database/instance name. This is optional field.
authentication	The authentication type. Value should be *SQL*

Sample Request:

http://prod-server3:9090/AppManager/xml/AddMonitor?apikey=5bc6a8e9a30d5bf894586d4db90282f5&type=mysql&displayname=appmanagermysql&username=root&host=shakthiprian&password=appmanager&port=133

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29&instance=mysql&authentication=SQL

Oracle

Syntax:

```
http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&username=[USERNAME]&host=[HOST]&password=[PASSWORD]&port=[PORT]&instance=[INSTANCE]&SSLEnabled=[isSSLEnabled]
```

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the database you want to add. Value should be *oracle*.
username	The name of the user who has permission to access the Oracle database.
host	The name of the host in which Oracle is running.
password	The password of the user who has permission to access the Oracle database.
port	The port number where Oracle is running.
instance	The database/instance name. This is optional field.
SSLEnabled	True if the SSL is enabled otherwise the value is false.

Sample Request:

```
http://prod-server7:9090/AppManager/xml/AddMonitor?apikey=5bc6a8e9a30d5bf894586d4db90282f5&type=oracle&displayname=appmanageroracle&username=rajesh&host=swissql-xp1&password=rajesh&port=1521&instance=orcl&SSLEnabled=false
```

Oracle NoSQL

Syntax:

```
http://[hostname]:[port]/AppManager/xml/AddMonitor?apikey=[apikey]&type=OracleNoSQL&displayname=[Displayname]&HostName=[HostName]&Port=[Port]&UserName=[UserName]&Password=[Password]&JNDIPath=/jmxrmi
```

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
apikey	API key to create the Oracle coherence monitor
type	The type of the database you want to add. Value should be *coherence*.
displayname	Display name of the Oracle coherence monitor
hostname	The name of the host in which Oracle coherence is running.
port	The port number where Oracle is running.
username	The name of the user who has permission to access the Oracle coherence database.
password	The password of the user who has permission to access the Oracle coherence database.
JNDIPath	JNDI path to be used

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Sample Request:

```
http://Prod-server7:9010/AppManager/xml/AddMonitor?apikey=0b719d6a4a564c8be86fbc60d3f0b996&type=OracleNoSQL&displayname=OracleNoSQL&HostName=APP-W8-AIO-5&Port=5000&UserName=admin&Password=Abc@123&JNDIPath=/jmxrmi
```

Top

PostgreSQL

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]&username=[USERNAME]&password=[PASSWORD]&instance=[INSTANCE]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the database you want to add. Value should be *PostgreSQL*.
host	The name of the host in which PostgreSQL is running.
port	The port number where PostgreSQL is running.
username	The name of the user who has permission to access the PostgreSQL database.
password	The password of the user who has permission to access the PostgreSQL database.
instance	The database/instance name. This is optional field.
SSLEnabled	True if the SSL is enabled otherwise the value is false.

Sample Request:

http://prod-server8:9090/AppManager/xml/AddMonitor?apikey=40648ef160f4786b20ed89ea51aa3f98&type=PostgreSQL&displayname=postSQL&host=app-xp2&port=5432&username=postgres&password=postgres&instance=postgres&SSLEnabled=false

Sybase

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&username=[USERNAME]&host=[HOST]&password=[PASSWORD]&port=[PORT]&instance=[INSTANCE]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the database you want to add. Value should be *sybase*.
host	The name of the host in which Sybase is running.

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port	The port number where Sybase is running.
username	The name of the user who has permission to access the Sybase database.
password	The password of the user who has permission to access the Sybase database.
instance	The database/instance name. This is optional field.

Sample Request:

http://prod-server3:9090/AppManager/xml/AddMonitor?apikey=5bc6a8e9a30d5bf894586d4db90282f5&type=sybase&displayname=appmanagersybase&username=sa&host=app-xp3&password=&port=5000&instance=master

SAP HANA

Syntax:

To Monitor OnPremise System:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=SapHana&displayname=[DISPLAYNAME]&host=[HOST]&isOndemand=false&port=[PORT]&dbuser=[DB_USERNAME]&dbPassword=[DB_PASSWORD]&instance=[INSTANCE]

To Monitor OnDemand System:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=SapHana&displayname=[DISPLAYNAME]&host=[HOST]&isOndemand=true&accountName=[ACCOUNT_NAME]&username=[USER_NAME]&password=[ACCOUNT_PASSWORD]&dbuser=[DB_USERNAME]&dbPassword=[DB_PASSWORD]&instance=[INSTANCE]

Request Parameters Description:

Field	Description
Host	Hostname/ Landscape Host as given in https://help.hana.ondemand.com/help/frameset.htm?350356d1dc314d3199dca15bd2ab9b0e.html
Port	IndexServer SQL Port. Default 30015. [Required only for On Premise Setup]
isOndemand	Value is true for On Demand setup, false for On Premise setup.
accountName	On demand CLoud Account Name. [Required only for On demand Setup]
username	UserName for the cloud account. [Required only for On demand Setup]
password	Password for the cloud account. [Required only for On demand Setup]
dbUser	Database User Name
dbPassword	Database Password
nstance	Instance Name

Sample Request:

http://app-support-w7:9090/AppManager/xml/AddMonitor?apikey=151c7e98b0f2a3cbc44fbd56ec66a6c9&displayname=RestHana&type=SapHana&host=hanatrial.ondemand.com&isOndemand=true&accountName=s0004447540trial&username=s0004447540&password=Zoho@123&dbUser=SYSTEM&dbPassword=Zoho@1234&instance=mdchana

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HBase

Syntax:

http://[hostname]:[port]/AppManager/xml/AddMonitor?apikey=[apikey]&type=HBase&displayname=[Displayname]&HostName=[HostName]&Port=[Port]&UserName=[UserName]&Password=[Password]&JNDIPath=/jmxrmi

Request Parameters:

The parameters involved in the API request are described below.Also, refer the list of common Request Parameters.

Field	Description
apikey	API key to create the HBase monitor
type	The type of the database you want to add. Value should be HBase
displayname	Display name of the HBase monitor
hostname	The name of the host in which HBase is running.
port	The port number where HBase is running.
username	The name of the user who has permission to access the HBase database.
password	The password of the user who has permission to access the HBase database.
JNDIPath	JNDI path to be used

Sample Request:

http://Prod-server7:9010/AppManager/xml/AddMonitor?apikey=0b719d6a4a564c8be86fbc60d3f0b996&type=HBase&displayname=HBase&HostName=APP-W8-AIO-5&Port=5000&UserName=admin&Password=Abc@123&JNDIPath=/jmxrmi

Cassandra

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=Cassandra&displayname=Cassandra&host=[Host Name]&port=[Port Number]&discoverclusternodes=[non mandatory column, if given the value should be 'Yes']&authRequired=[non mandatory column, if given the value should be 'true']&username=[username]&password=[password]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the database you want to add. Value should be *Cassandra*.
host	The name of the host in which Cassandra database is running.
port	The port number where Cassandra database is running.
username	The name of the user who has permission to access the Cassandra database.
password	The password of the user who has permission to access the Cassandra database.
discoverclusternodes	Specify if the Cluster Nodes must be discovered. Value can be YES/NO. This column is not mandatory.
authRequired	Specify if authentication is required. Value can be True/False.

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Sample Request:

http://prod-server3:9090/AppManager/xml/AddMonitor?apikey=849c51ce33436587873a08d69d5447fc&type=Cassandra&displayname=Cassandra&host=172.20.7.36&port=7199&username=&password=123

Redis

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=Redis&displayname=Redis&host=[Host Name]&port=[Port Number]&discoverclusternodes=[non mandatory column, if given the value should be 'Yes']&authRequired=[non mandatory column, if given the value should be 'true']&password=[password]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the database you want to add. Value should be *Redis*.
host	The name of the host in which Redis is running.
port	The port number where Redis is running.
username	The name of the user who has permission to access the Redis database.
password	The password of the user who has permission to access the Redis database.
discoverclusternodes	Specify if the Cluster Nodes must be discovered. Value can be YES/NO. This column is not mandatory.
authRequired	Specify if authentication is required. Value can be True/False.

Sample Request:

http://prod-server3:9090/AppManager/xml/AddMonitor?apikey=849c51ce33436587873a08d69d5447fc&type=Redis&displayname=Redis&host=172.20.6.200&port=6379&password=123

MongoDB

Syntax

http://[Host]:[Port]/http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=MongoDB&displayname=MongoDB&host=[Host Name]&port=[Port Number]&discoverchildren=[non mandatory column, if given the value should be 'Yes']&authRequired=[non mandatory column, if given the value should be 'true']&username=[username]&password=[password]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the database you want to add. Value should be *MongoDB*.
host	The name of the host in which MongoDB is running.
port	The port number where MongoDB is running.
username	The name of the user who has permission to access the Mongo database.

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password	The password of the user who has permission to access the Mongo database.
discoverclusternodes	Specify if the Cluster Nodes must be discovered. Value can be YES/NO. This column is not mandatory.
authRequired	Specify if authentication is required. Value can be True/False.
discoverchildren	Values can be true/false.

Sample Request:

http://prod-server3:9090/AppManager/xml/AddMonitor?apikey=849c51ce33436587873a08d69d5447fc&type=MongoDB&displayname=MongoDB&host=172.20.6.200&port=6379&password=123

CouchBase

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the database you want to add. Value should be *CouchBase*.
displayname	The display name of the Couchbase database.
host	The name of the host in which CouchBase is running.
port	The port number where CouchBase is running.

Sample Request:

http://prod-server8:9090/AppManager/xml/AddMonitor?apikey=3a45dc93b4eb6d7fbefe550e4a2a7c6c&type=Couchbase&displayname=Couchmonitoring&host=app-win7-64-4.csez.zohocorpin.com&port=8091

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AddMonitor APIs - ERP

This section explains how to use the AddMonitor API to add monitors of the 'ERP' category type. The following monitors are supported:

- Oracle EBS
- SAP Server
- SAP CCMS
- Siebel Enterprise Server
- Microsoft Dynamics CRM
- Microsoft Dynamics AX

Oracle EBS

Syntax for versions R11i and R12.0:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]&SSL=[SSL]&Version=[version]

Syntax for versions R12.2.0 (Username and Password Mandatory):

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]&SSL=[SSL]&Version=[version]&Username=[username]&Password=[pwd]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the ERP server you want to add. Value should be *OracleEBS*.
host	The name of the host in which Oracle EBS is running.
port	The port number where the Oracle EBS is running.
SSL	Indicates if SSL option is enabled. The value should be either *yes* or *no*.
Version	The running version of the Oracle EBS (R11i, R12.0 or R12.2.0).
Username and Password	Weblogic admin server credentials.

Sample Request:

http://prod-server5:9090/AppManager/xml/AddMonitor?apikey=4df5040d6db873dcdaf4359b259fd494&type=OracleEBS&displayname=oebs&host=app-xp2&port=80&SSL=no

SAP Server

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&username=[USERNAME]&password=[PASSWORD]&systemnumber=[SYSTEMNUMBER]&logonClient=[LOGONCLIENT]&language=[LANGUAGE]&routerString=[ROUTERSTRING]

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Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the ERP server you want to add. Value should be *sap server.*
host	The name of the host in which SAP server is running.
username	The user name used for accessing the SAP server.
password	The password of the SAP server.
systemnumber	The SAP system number.
logonClient	The SAP logon client.
language	The SAP logon language. Default value is *en*.
routerString	The SAP Router String through which SAP Server is connected.(Optional)

Sample Request:

http://prod-server1:9090/AppManager/xml/AddMonitor?apikey=136edbeb3ccb83c6cc71df03ef273313&type=sap server&displayname=appmanagersap&host=app-xp1&username=BCUSER&password=minisap&systemnumber=00&logonClient=000&language=en&routerString=/H/it360-m4600-1

SAP CCMS

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&username=[USERNAME]&password=[PASSWORD]&systemnumber=[SYSTEMNUMBER]&logonClient=[LOGONCLIENT]&language=[LANGUAGE]&monitorset=[MONITOR SET NAME]routerString=[ROUTERSTRING]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the ERP server you want to add. Value should be sap server.
host	The name of the host in which SAP server is running.
username	The user name used for accessing the SAP server.
password	The password of the SAP server.
systemnumber	The SAP system number.
logonClient	The SAP logon client.
language	The SAP logon language. Default value is en.
monitorset	The CCMS Monitor Set name.
routerString	The SAP Router String through which SAP Server is connected.(Optional)

Sample Request:

http://prod-server1:9090/AppManager/xml/AddMonitor?apikey=86f7324e6e1651f704da21f6c119d8a4&type=SAP CCMS&displayname=appmanagersapccms&host=amp-2k8r2-

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2&username=BCUSER&password=minisap1&systemnumber=00&logonClient=001&language=en&monitorset=SAP CCMS Technical Expert Monitors&routerString=/H/it360-m4600-1

Siebel Enterprise Server

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE] &displayname=[DISPLAYNAME]&host=[HOST]os=[Windows=1,Linux=2,Solaris=3,AIX=4,HP-UX=5]&userName=[Host user name]&password=[password]&GatewayServer=[Siebel gateway server name]&EnterpriseServer=[Enterprise server]&SUserName=[siebel admin user]&SPassword=[]&InsDirectory=[siebel installation directory absolute path]&prompt=[bash prompt for unix based servers]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the ERP server you want to add. Value should be *SiebelEnterpriseServer*.
displayname	The display name of the Siebel Server.
hostname	The name of the host in which Siebel server is installed.
os	The operating system on which the server is installed. Possible values are: • 1 - Windows • 2 - Linux • 3 - Solaris • 4 - AIX • 5 - HP-UX
username	Siebel installed server username (user role with executable permission).
password	Siebel installed server password.
GatewayServer	The Siebel gateway server name.
EnterpriseServer	The Siebel enterprise server.
SUserName	The Siebel administrator user.
SPassword	The Siebel Administrator Password
InsDirectory :	The directory where Siebel is installed.

Sample Request:

http://prod-server5:9090/AppManager/xml/AddMonitor?apikey=817f0d4d4ae2edc2e3ee6b9aa27d0601&type=SiebelEnterpriseServer&displayname=test&HostName=aixserver&os=4&userName=root&password=a1X6Bm&GatewayServer=gate&EnterpriseServer=ent&SUserName=sadmin&SPassword=sadmin&InsDirectory=/home/guest/ramac&prompt=#

Microsoft Dynamics CRM

Syntax:

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http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST NAME]&Version=[VERSION NO]&username=[USERNAME]&password=[PASSWORD]&eventlog=[YES/NO]&pollinterval=[INTERVAL]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
apikey	The key generated from the **Generate API Key** option in the 'Admin' tab.
type	The type of the monitor you want to add. The value should be *Microsoft Dynamics CRM*.
host	The **CRM Host Name** or **IP Address** of the host where the CRM Application runs.
displayname	The **Display Name** of the CRM Application.
UserName	The UserName of the Host Machine. To monitor a Microsoft Dynamics CRM application, use Administrator user account which has the permission to excute WMI queries on 'rootCIMV2' namespace of the CRM Server.
password	The password of the above user who has the permissions to execute WMI Queries.
Version	The version of the CRM Application.

Sample Request:

http://prod-server6:9090/AppManager/xml/AddMonitor?apikey=1f9323d96809a1ff38c941e575b9507a8a&type=Microsoft Dynamics CRM&displayname=API CRM&host=192.18.3.75&version=2013&username=apmcluster2012administrator&password=pass&eventlog=NO&pollinterval=5

Microsoft Dynamics AX Monitor

Syntax

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST NAME]&Version=[VERSION NO]&UserName=[USERNAME]&Password=[PASSWORD]&pollinterval=[INTERVAL]

Request Parameters

Field	Description
apikey	The key generated from the Generate API Key option in the 'Admin' tab.
type	The type of the monitor you want to add. The value should be MSDynamicsAX
displayname	.The Display Name of the AX Application
host	The AX Host Name or IP Address of the host where the AX server runs
Version	The version of the AX Application.
UserName	The UserName of the Host Machine. To monitor a Microsoft Dynamics AX application, use Administrator user account which has the permission to excute WMI queries on 'rootCIMV2' namespace of the AX Server.
Password	The password of the above user who has the permissions to execute WMI Queries.

Sample Request

http://prod-4409:9210/AppManager/xml/AddMonitor?apikey=aca1b8f2f109e319f46733675983e847&type=MSDynamicsAX&displayname=AXTest&host=user-4409&Version=2012&UserName=user-4409&Password=Qwerty@123&pollinterval=5

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AddMonitor APIs - EUM Monitors

This section explains how to use the AddMonitor API to add monitors of the category type End User Monitoring (EUM). The following monitors are supported:

- Ping
- DNS
- LDAP Server
- Mail Server
- Real Browser Monitor

The following parameters are common in API requests for EUM monitors:

Field	Description
eumAgents	The display name(s) of the EUM agent(s). If there are multiple entries, they can be comma separated.
eumAgentsId	The unique ID of the EUM agents configured. These can be specified as comma separated.
runOnServer	Specifies if the monitor has to be created in Applications Manager. Possible values are 'True' or 'False'

Note:
1) It is not mandatory to use both 'eumAgents' and 'eumAgentsId' parameters in the same API request. You can use either one of these.
2) The runOnServer parameter is not applicable for Real Browser Monitor (RBM)

Ping

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&timeout=[TIMEOUT]&eumAgents=[EUMAGENTS]&eumAgentsId=[EUMAGENTID]&runOnServer=[RUNONSERVER]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the service you want to add. Value should be 'Ping Monitor'.
host	The host in which the monitor is running.
timeout	The timeout value in seconds.

Sample Request:

http://prod-server5:9090/AppManager/xml/AddMonitor?apikey=40648ef160f4786b20ed89ea51aa3f98&type=Ping Monitor&displayname=apmping&host=smrithil&timeout=5&eumAgents=eumflorida&runOnServer=True

DNS

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&timeout=[TIMEOUT]&SearchField=[SEARCHFIELD]&TargetAddress=[TARGETADDRESS]&LookupAddress=[LOOKUPADDRESS]&RecordType=[RECORDTYPE]&eumAgents=[EUMAGENTS]&eumAgentsId=[EUMAGENTID]&runOnServer=[RUNONSERVER]

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Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the service you want to add. Value should be 'DNSMonitor'.
displayname	The display name of the host in which the monitor is running.
timeout	The timeout value in seconds.
SearchField	The value of SearchField. Options include None, Record Name, Address, Additional Name, Target, Admin, Host, Alias, Port and Priority.
TargetAddress	Host Name / IP Address to connect to the service
LookupAddress	The address you want to check in the DNS Server.
RecordType	The expected record type returned for the lookup address. The options include A, AAAA, CNAME, MX, NS, PTR, SOA, SPF, SRV and TXT.

Sample Request:

http://prod-server8:9090/AppManager/xml/AddMonitor?apikey=40648ef160f4786b20ed89ea51aa3f98
&type=DNSMonitor&displayname=dnsttttttt&timeout=15&SearchField=Record Name
&TargetAddress=192.168.4.121&LookupAddress=appmanager.com&RecordType=A&eumAgents=eumbe1
&runOnServer=True

LDAP Server

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]
&displayname=[DISPLAYNAME]&username=[USERNAME]&timeout=[TIMEOUT]&LDAPServer=[LDAPSERVER]
&LDAPServerPort=[LDAPSERVERPORT]&MatchingAttribute=[MATCHINGATTRIBUTE]&FilterCondition=[FILTERCONDITION]
&IsSecured=[ISSECURED]&SearchFilter=[SEARCHFILTER]&SearchResult=[SEARCHRESULT]&SearchBase=[SEARCHBASE]
&password=[PASSWORD]
&eumAgents=[EUMAGENTS]&eumAgentsId=[EUMAGENTID]&runOnServer=[RUNONSERVER]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the service you want to add. Value should be 'LDAP Server'.
username	The user name of the LDAP server.
timeout	The timeout value in seconds.
LDAPServer	The name of the LDAP Server.
LDAPServerPort	The port at which the LDAP server is running.
MatchingAttribute	The matching attribute value. Values include cn, uid, sn, displayname, givenname, objectclass, dc and ou
FilterCondition	The value of filter condition. Values include equals, contains and notequals
IsSecured	Specifies if the connection is secure or not. Value is either *yes* or *no*.
SearchFilter	The value of Search Filter. This field is optional.
SearchResult	The string value that matches with search results.
SearchBase	The value of SearchBase. This is mandatory field when adding a LDAP monitor.
password	The password of the LDAP server.

Sample Request:

http://operations-server9:9090/AppManager/xml/AddMonitor?apikey=40648ef160f4786b20ed89ea51aa3f98
&type=LDAP Server&displayname=ldap_serverqqqq&username=cn=administrator,cn=users,dc=pmp,dc=com

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&timeout=10&LDAPServer=pmp-2k8s&LDAPServerPort=389&MatchingAttribute=cn&FilterCondition=equals&IsSecured=no&SearchFilter=&SearchResult=&SearchBase=&Password=admin123123&eumAgents=eumbe1&runOnServer=True

Mail Server

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&host=[HOST]&port=[PORT]&displayname=[DISPLAYNAME]&emailid=[EMAILID]&timeout=[TIMEOUT]&authRequired=[AUTHREQUIRED]&sslEnabled=[SSLENABLED]&username=[USERNAME]&password=[PASSWORD]&tlsEnabled=[TLSENABLED]&pollinterval=[POLLINTERVAL]&mailsubject=[MAILSUBJECT]&fetchEnabled=[FETCHENABLED]&fetchType=[FETCHTYPE]&fsHost=[FSHOST]&fsport=[FSPORT]&fsSSLEnabled=[FSSSLENABLED]&fsTLSEnabled=[FSTLSENABLED]&fsUserName=[FSUSERNAME]&fsPassword=[FSPASSWORD]&eumAgents=[EUMAGENTS]&eumAgentsId=[EUMAGENTID]&runOnServer=[RUNONSERVER]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the service you want to add. Value should be 'Mail Server'.
host	The SMTP host name
port	The port at which SMTP is running.
emailid	The email address to which the mail will be sent.
timeout	The timeout value in seconds.
authRequired	Indicates if the SMTP requires authentication. Values are 'Yes' or 'No'
sslEnabled	Indicates if the SMTP host should be accessed through SSL. Values are 'Yes' or 'No'
username	The username of the SMTP host
password	The password of the SMTP host
tlsEnabled	Denotes whether TLS should be used for SMTP
pollinterval	The polling interval of the monitor in seconds.
mailSubject	The message to appear in the subject of the email.
fetchEnabled	Indicates if the POP/IMAP server should be monitored. Values are 'Yes' or 'No'.
fetchType	Indicates the service that is monitored. If you want to add POP type, specify the value as 1. If you want to monitor IMAP server, specify the value as 2.
fsHost	The host name of the POP/IMAP server
fsport	The port at which the POP/IMAP server is running.
fsSSLEnabled	Indicates whether the POP/IMAP server is SSL enabled or not. Values are 'Yes' or 'No'.
fsTLSEnabled	Indicates whether TLS should be used for POP/IMAP. Values are 'Yes' or 'No'.
fsUserName	The user name of the POP/IMAP server.
fsPassword	The password of the POP/IMAP server

Sample Request:

http://operations-server9:9090/AppManager/xml/AddMonitor?apikey=40648ef160f4786b20ed89ea51aa3f98&type=Mail Server&host=smtp1&port=23&displayname=apmsmtp&emailid=admin@yourdomain.com&timeout=5&authRequired=Yes&sslEnabled=Yes&username=guest&password=guest&tlsEnabled=Yes&pollinterval=60&mailsubject=Testing Mail

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Server
&fetchEnabled=Yes&fetchType=1&fsHost=POP1&fsport=110&fsSSLEnabled=Yes&fsTLSEnabled=Yes&fsUserName=admin&fsPassword=admin123
&eumAgents=eum1&runOnServer=True

Real Browser Monitor

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]
&displayname=[DISPLAYNAME]&scriptname=[SCRIPTNAME]&pollinterval=[POLLINTERVAL]&timeout=[TIMEOUT]
&eumAgents=[EUMAGENTS]&eumAgentsId=[EUMAGENTID]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the monitor you want to add. Value should be 'RBM'.
scriptname	The script name for RBM
pollinterval	The polling interval for the monitor in seconds
timeout	The time out value in seconds.

Sample Request:

http://operations-server9:9090/AppManager/xml/AddMonitor?apikey=40648ef160f4786b20ed89ea51aa3f98
&type=RBM&displayname=rbm1&scriptname=script1&pollinterval=60&timeout=30&eumAgents=eum1

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AddMonitor APIs - Java Transaction

This section explains how to use the AddMonitor API to add Java Runtime monitors :

Java Runtime

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]&jndiurl=[JNDIURL]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the monitor you want to add. Value should be *Java Runtime*.
host	The name of the host where the monitor is running.
port	The port number where the Java Runtime monitor is running.
jndiurl	The JNDI name. The default value is *jmxrmi*.

Sample Request:

http://op-server5:9090/AppManager/xml/AddMonitor?apikey=4df5040d6db873dcdaf4359b259fd494&type=Java Runtime&displayname=apmjava&host=myesuraj&port=1099&jndiurl=/jmxrmi

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AddMonitor APIs - Mail Servers

This section explains how to use the AddMonitor API to add monitors of the category type 'Mail Server'. The following monitors are supported:

- Exchange Server
- Mail Server

Exchange Server

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&username=[USERNAME]&password=[PASSWORD]&version=[VERSION]&ServerRole[2013/2010/2007]=[ServerRole]&UsePowershell=[USEPOWERSHELL]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the mail server you want to add. Value should be *Exchange Server*.
host	The name of the host where the Exchange server is running.
username	The user name for the system in which Exchange server is running.
password	The password for the system in which Exchange server is running.
version	The Exchange server version. Supported versions are 2003, 2007, 2010 and 2013.
ServerRole2013	Supported roles are *mbxserver2013*, *casserver2013* and *edgeserver2013*.
ServerRole2010	Supported roles are *mbxserver2010*, *casserver2010*, *edgeserver2010*, *hubserver2010* and *umserver2010*.
ServerRole2007	Supported roles are *mbxserver2007*, *casserver2007*, *hubserver2007*, *edgeserver2007* and *umserver2007*.
UsePowershell	To use powershell for datacollection use “Yes” or else use “No”.This argument is Mandatory.

Sample Request:

http://prod-server6:9090/AppManager/xml/AddMonitor?apikey=2712f158d675135e9b3d81d9efd533c0&type=ExchangeServer&displayname=apmexchange&host=emp-ex03&username=exchangeadministrator&password=admin123&version=2013&ServerRole2013=mbxserver2013&UsePowershell=Yes

Mail Server

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]&username=[USERNAME]&password=[PASSWORD]&version=[VERSION]

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Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the monitor you want to add. Value should be *Mail Server*.
host	The name of the host where the mail server is running.
port	The SMTP port number
emailid	An email id available in the mail server.
timeout	The time out value in seconds.
mailMsg	The message to appear in the subject of the email.
mailSubject	The message to appear in the subject of the mail.
smtpauth	Use the **smtpauth=true** option to enable SSL.
username password	If the SMTP server requires authentication, specify the User Name and Password
sslEnabled	Use the **SSLEnabled=true** option to enable SSL.
tlsEnabled	Use **tlsEnabled=true** to enable TLS for securing data transmission.
popenabled	If you with to select POP as the Mail Fetching Server, use **popenabled=true.**
fetchEnabled	Specify **fetchEnabled=true** to Enable POP or IMAP Mail Fetching Server.
popPort	If the POP/Imap service is in a different host, specify its POP/Imap Port where POP service runs.
popUserName popPassword	If the POP/Imap service is in a different host, provide the authentication details User Name and Password for the POP service.
popSSLEnabled	Use **popSSLEnabled=true** to enable SSL for securing data transmission in POP/Imap
popTLSEnabled	Use **poptlsEnabled=true** to enable TLS for securing data transmission in POP/Imap.
fetchType	Select the Mail Fetching Server. Values are *POP* and *IMAP.*
fsHost	The Mail Fetching Server POP/IMAP Host.
fsport	The Mail Fetching Server POP/IMAP port.
fsSSLEnabled	Use the **fsSSLEnabled=true** option to enable SSL.
fsTLSEnabled	Use the **fsTLSEnabled=true** option to enable TLS.

Sample Request:

http://prod-server5:9098/AppManager/xml/AddMonitor?apikey=4c362569ccc528be78fafdcc2317bc5c&type=Mail Server&host=smtp&displayname=apmmail&port=25&emailid=myesura@zohocorp.com&timeout=15&mailMsg=Testing mail server.

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AddMonitor APIs - Middleware/Portal

This section explains how to use the AddMonitor API to add monitors of the category type 'Middleware/Portal'. The following monitors are supported:

- MS Office SharePoint
- WebLogic Integration
- IBM WebSphere MQ
- Microsoft Message Queue (MSMQ)
- RabbitMQ
- Microsoft BizTalk
- Oracle Tuxedo
- Microsoft Lync
- Azure Service Bus
- Apache ActiveMQ

MS Office SharePoint

Versions Supported: 2007, 2010 and 2013

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&username=[USERNAME]&password=[PASSWORD]Version=[SHAREPOINT VERSION]&SPType=[SHAREPOINT TYPE]&Powershell=[IS POWERSHELL ENABLED]& Services=[SHAREPOINT SERVICES]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the monitor you want to add. Value should be *MSOfficeSharePointServer*.
host	The name of the host where the Office SharePoint server is running.
username	The user name of the SharePoint server .
password	The password of the SharePoint server.t
SPType	The SharePoint server type. Possible Values are: • **Farm** -If the server has a Farm setup. • **SPServer**-If the server has a Stand Alone setup.
Powershell (optional):	Specifies if Powershell is enabled. Possible values are: • **True** - If powershell is enabled. • **False** - If powershell is not enabled.
Service (optional):	The service details. Possible Values are: • **For Version 2007** - ExcelServices / DocumentConversions / OfficeSearchGatherer • **For Version 2010 & 2013** - SharepointServices / ContentDB / WebApplication / TimerJobs / AccessServices / InfoPathServices / VisioWebAccess Services / ExcelServices / OfficeSearchGatherer

Sample Request:

http://prod-server5:9090/AppManager/xml/AddMonitor?apikey=4df5040d6db873dcdaf4359b259fd494&type=MSOfficeSharePointServer&displayname=ms&host=app-server&username=administrator&password=admin123&Version=2010&SPType=SPServer&Powershell=True&Services=SharepointServices,ContentDB,WebApplication,TimerJobs,AccessServices,InfoPathServices,VisioWebAccess

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Services,ExcelServices,OfficeSearchGatherer

WebLogic Integration

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]&username=[USERNAME]&password=[PASSWORD]&version=[VERSION]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the monitor you want to add. Value should be *WebLogic Integration*.
host	The name of the host where the WebLogic Integration server is running.
port	The port number where the WebLogic Integration server is running.
username	The user name of the WebLogic Integration server .
password	The password of the WebLogic Integration server.
version	The WebLogic Integration server version. Value is *8.1*

Sample Request:

http://prod-server3:9090/AppManager/xml/AddMonitor?apikey=136edbeb3ccb83c6cc71df03ef273313&type=WebLogic Integration&displayname=apm&host=app-server&port=7001&username=weblogics&password=weblogic&version=8.1

IBM WebSphere MQ

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&listenerport=[PORT]&displayname=[USERNAME]&serverconnectionchannel=[SERVERCONNECTIONCHANNEL]&QueueManager=[QUEUEMANAGER]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the monitor you want to add. Value should be *IBM WebSphere MQ*.
host	The name of the host where the WebSphere MQ server is running.
listenerport	The listener port number of the IBM WebSphere MQ server.
displayname	The display name of the monitor.
serverconnectionchannel	The server connection channel through which the WebSphere MQ clients communicate.

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Sample Request:

http://prod-server8:9090/AppManager/xml/AddMonitor?apikey=bc76b1abb8e9b209824a39d84578a194&type=IBM%20Websphere%20MQ&host=app-server&listenerport=1416&displayname=mqws&serverconnectionchannel=SCCHANEL1&QueueManager=QMANAGER_QA1

Microsoft Message Queue (MSMQ)

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&username=[USERNAME]&password=[PASSWORD]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the monitor you want to add. Value should be *Microsoft MQ*.
host	The name of the host where the Microsoft MQ server is running.
username	The username of the MSMQ server
password	The password of the MSMQ server

Sample Request:

http://prod-server8:9090/AppManager/xml/AddMonitor?apikey=256d041620d0aee9901558b44706dc84&type=Microsoft MQ&displayname=msmq&host=app-server&username=administrator&password=password

RabbitMQ

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]&username=[USERNAME]&password=[PASSWORD]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	Denotes the category type of the monitor you want to add. The value should be as 'RabbitMQ'.
host	The name of the host where the RabbitMQ server is running.
port	The port number where RabbitMQ server is running.
username	The username of the RabbitMQ server server.
password	The password of the RabbitMQ server server.

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Sample Request:

http://app-xp5:9090/AppManager/xml/AddMonitor?apikey=bc76b1abb8e9b209824a39d84578a194&type=VMware vFabric tc Server&displayname=vFabric&host=app-server&port=6969&username=admin&password=admin123&JNDIPath=/jmxrmi

Microsoft BizTalk

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]&username=[USERNAME]&password=[PASSWORD]&PowerShell=[True/False]&DBServer=[DB Server Name]&DBName=[DB Name]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The category type of the monitor you want to add. The value should be *BizTalkServer.*
host	The name of the host where where BizTalk is installed.
username	The username of the BizTalk server host machine.
password	The password of the BizTalk server host machine.
PowerShell	Is powershell enabled? Values are: • True - powershell is enabled • False - powershell is disabled
DBServer	The name of the server where the configuration database is stored (*required only if PowerShell is enabled*).
DBName	The name of the configuration database (*required only if PowerShell is enabled*).
credssp	Specifies if CredSSP Authentication should be used,when Use Powershell option is chosen. Value=yes if credssp needs to be enabled.

Sample Request:

http://app-xp5:9090/AppManager/xml/AddMonitor?apikey=a169e7aa3b4656d0db29532fd4347&type=BizTalkServer&displayname=BizTalk2010&host=it360-k8r2s-2&UserName=it360-k8r2s-2administrator&Password=pass123&PowerShell=True&DBServer=k8r2s-2&DBName=BizTalkdb

Oracle Tuxedo

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&SNMPPORT=[PORT]&snmpCommunityString=[COMMUNITYSTRING]&timeout=[TIMEOUT]

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Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The category type of the monitor you want to add. The value should be *Oracle Tuxedo.*
host	The name of the host where where Tuxedo is installed.
displayname	The Display Name of the monitor.
SNMPPORT	The SNMP port number , on which the Tuxedo SNMP agent is running. The default port number is **161**.
snmpCommunityString	The SNMP community string of Tuxedo SNMP agent. The default value is 'public'. Make sure you use a community string, that has at least 'Read-only' privileges.
timeout	The timeout in seconds.

Sample Request:

http://app-xp5:9090/AppManager/xml/AddMonitor?apikey=a169e7aa3b4656d0db29532fd4347&type=Oracle Tuxedo&displayname=Tuxedo&host=172.31.10.1&SNMPPORT=161&snmpCommunityString=public&timeout=40

Microsoft Lync

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[LyncServer]&displayname=[DISPLAYNAME]&host=[HOST]&username=[USERNAME]&password=[PASSWORD]&Roles=[Roles]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The category type of the monitor you want to add. The value should be *LyncServer.*
host	The Host Name or IP Address of the host where the Lync Server runs.
displayname	The Display Name of the monitor.
UserName	The UserName of the Lync Account used to monitor the Lync Server. The ,account should have administrator privileges to access Lync Server.
password	The password of the above user who has administrator privileges to access Lync Server.
Roles	Provide the role(s) that you wish to monitor as comma separated values : • FrontEndServer • A/V Conferencing Server • EdgeServer • MediationServer

Sample Request:

http://app-xp5:9090/AppManager/xml/AddMonitor?apikey=4787dvds8941bc5a7b0db85d43a5b789&type=LyncServer&displayname=LyncAPI&host=172.31.10.1&UserName=APMadministrator&Password=pass&Roles=FrontEndServer,A/V Conferencing Server,MediationServer

Azure Service Bus

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[AzureServiceBus]&displayname=

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[DISPLAYNAME]&SubscriptionId=[SUBSCRIPTIONID]&Namespace=[NAMESPACE]&Timeout=[TIMEOUT]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
SubscriptionID	Subscription ID of the Azure Subscription used.
Namespace	Service Bus Namespace name.
Timeout	Timeout in seconds.

Sample Request:

http://anne-2394:9096/AppManager/xml/AddMonitor?apikey=35eb5a8f77a1595f9d9e575a7c3575ad&type=AzureServiceBus&displayname=azureapmsbadmin&SubscriptionId=1591f1b0-6e8c-461f-8916-df7954193ec2&Namespace=applicationsmanager&Timeout=20

Apache ActiveMQ

Syntax

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[apikey]&type=ApacheActiveMQ&displayname=[Displayname]&HostName=[HostName]&Port=[Port]&UserName=[UserName]&Password=[Password]&JNDIPath=/jmxrmi

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the database you want to add. Value should be ApacheActiveMQ.
display name	Display name of the ActiveMQ monitor.
hostname	The name of the host in which ActiveMQ server is running.
port	The port number where ActiveMQ server is running.
username	The name of the user who has permission to access the Apache ActiveMQ server.
JNDIPath	JNDI path to be used.

Sample Request

http://prod-server8:9091/AppManager/xml/AddMonitor?apikey=ff5db35538c534e24dc2154cffbc7e6e&type=ApacheActiveMQ&displayname=Success&HostName=app-w8-aio-5&Port=1099&UserName=&Password=&JNDIPath=/jmxrmi

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AddMonitor APIs - Servers

This section explains how to use the AddMonitor API to add monitors of the category type 'Servers'. The following servers are supported:

- AIX
- AS400
- FreeBSD/OpenBSD
- HP-UX/Tru64
- Linux
- Mac OS
- Novell
- Sun Solaris
- Windows
- Windows Clusters

AIX

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]
&os=[OS]&username=[USERNAME]&mode=[MODE]&snmptelnetport=[SNMPTELNETPORT]&password=[PASSWORD]&prompt=[PROMPT]&timeout=[TIMEOUT]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The category type of the monitor you want to add. Value should be 'servers'.
host	The name of the host where the AIX server is running.
os	The operating system of the server. Value is 'AIX'.
username	The username of the AIX server.
mode	The mode of monitoring the AIX server. Value should be either TELNET or SSH.
snmptelnetport	The port number where Telnet service is running. Default value is 23.
password	The password of the AIX server.
timeout	The time out value in seconds.
prompt	The command prompt value. Value is '$'
forceadd	This parameter is used to force Applications Manager to bypass availability and other authentication-related checks and add the monitor. Possible values are: • True - Force-adds the monitor • False - Does not force-add the monitor.
addgivenname	Specifies if you want to set the host name of the monitor as the Host Name / IP Address that you have configured in the API.
passphrase	Specify a Passphrase if the private key is protected with one for SSH Authentication.

Sample Request:

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http://prod-server1:9098/AppManager/xml/AddMonitor?apikey=624436f73f9fda2109cc916c8c8be5c1&type=servers&displayname=apmaix&host=adventaix&os=AIX&username=root&mode=TELNET&snmptelnetport=23&password=sankho&prompt=#&timeout=2

AS400

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]
&subnet=[SUBNET]&pollInterval=[POLLINTERVAL]&os=[OS]&username=[USERNAME]&password=[PASSWORD]&timeout=[TIMEOUT]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The category type of the monitor you want to add. Value should be 'servers'.
host	The name of the host where the AS400 server is running.
subnet	The subnet mask value
pollInterval	The polling interval for the monitor.
os	The operating system of the server. Value is 'AS400/iSeries'.
username	The username of the AS400/iSeries server.
timeout	The time out value in seconds.
password	The password of the AS400/iSeries server.
forceadd	This parameter is used to force Applications Manager to bypass availability and other authentication-related checks and add the monitor. Possible values are: • True - Force-adds the monitor • False - Does not force-add the monitor.
addgivenname	Specifies if you want to set the host name of the monitor as the Host Name / IP Address that you have configured in the API.
passphrase	Specify a Passphrase if the private key is protected with one for SSH Authentication.

Sample Request:

http://prod-server2:9090/AppManager/xml/AddMonitor?apikey=5bc6a8e9a30d5bf894586d4db90282f5&type=servers&displayname=apmas400&host=pub1.rzkh.de&subnet=255.255.255.0&pollInterval=5&os=AS400/iSeries&username=nimda&password=admin&timeout=3

FreeBSD

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]
&subnet=[SUBNET]&pollInterval=[POLLINTERVAL]&os=[OS]&username=[USERNAME]&password=[PASSWORD]
&mode=[MODE]&snmptelnetport=[SNMPTELNETPORT]&prompt=[PROMPT]&timeout=[TIMEOUT]

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Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The category type of the monitor you want to add. Value should be 'servers'.
host	The name of the host where the FreeBSD server is running.
subnet	The subnet mask value
pollInterval	The polling interval for the monitor.
os	The operating system of the server. Value is 'FreeBSD'.
username	The username of the FreeBSD server.
password	The password of the FreeBSD server.
mode	The mode of monitoring. Value should be either SNMP, TELNET or SSH.
snmptelnetport	The port where Telnet service is running. Default value is 23.
timeout	The time out value in seconds.
prompt	The command prompt value. Value is $.
forceadd	This parameter is used to force Applications Manager to bypass availability and other authentication-related checks and add the monitor. Possible values are: • True - Force-adds the monitor • False - Does not force-add the monitor.
addgivenname	Specifies if you want to set the host name of the monitor as the Host Name / IP Address that you have configured in the API.
passphrase	Specify a Passphrase if the private key is protected with one for SSH Authentication.

Sample Request:

http://prod-server4:9090/AppManager/xml/AddMonitor?apikey=5bc6a8e9a30d5bf894586d4db90282f5&type=servers&displayname=apmfreebsd&host=cm-bsd&subnet=255.255.255.0&pollInterval=5&os=FreeBSD&username=test&password=test&mode=TELNET&snmptelnetport=23&prompt=$&timeout=4

HP-UX

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&username=[USERNAME]&password=[PASSWORD]&os=[OS]&mode=[MODE]&snmptelnetport=[SNMPTELNETPORT]&host=[HOST]&timeout=[TIMEOUT]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The category type of the monitor you want to add. Value should be 'servers'.
username	The username of the HP-UX server.
password	The password of the HP-UX server.
os	The operating system of the server. Value is 'HP-UX'.
mode	The mode of monitoring. Values are SSH or TELNET
snmptelnetport	The port where SSH/Telnet service is running. Default values are 23 (for Telnet) and 22 (for SSH).
timeout	The time out value in seconds.

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host	The name of the host where the HP-UX server is running.
forceadd	This parameter is used to force Applications Manager to bypass availability and other authentication-related checks and add the monitor. Possible values are: • True - Force-adds the monitor • False - Does not force-add the monitor.
addgivenname	Specifies if you want to set the host name of the monitor as the Host Name / IP Address that you have configured in the API.
passphrase	Specify a Passphrase if the private key is protected with one for SSH Authentication.

Sample Request:

http://prod-server5:9090/AppManager/xml/AddMonitor?apikey=5bc6a8e9a30d5bf894586d4db90282f5&type=servers&displayname=apmhpux&username=test&password=test&os=HP-UX&mode=SSH&snmptelnetport=22&host=hpuxtests&timeout=5

Linux

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&snmptelnetport=[SNMPTELNETPORT]&os=[OS]&mode=[MODE]&timeout=[TIMEOUT]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The category type of the monitor you want to add. Value should be 'servers'.
host	The name of the host where the Linux server is running.
snmptelnetport	The port where SSH/Telnet/SNMP is running. Default values are 23 (for Telnet), 22 (for SSH) and 161 (for SNMP).
os	The operating system of the server. Value is 'Linux'.
timeout	The time out value in seconds.
mode	The mode of monitoring. Value is either SNMP, SSH or TELNET.
forceadd	This parameter is used to force Applications Manager to bypass availability and other authentication-related checks and add the monitor. Possible values are: • True - Force-adds the monitor • False - Does not force-add the monitor.
addgivenname	Specifies if you want to set the host name of the monitor as the Host Name / IP Address that you have configured in the API.
passphrase	Specify a Passphrase if the private key is protected with one for SSH Authentication.

Sample Request:

http://prod-server5:9090/AppManager/xml/AddMonitor?apikey=5bc6a8e9a30d5bf894586d4db90282f5&type=servers&displayname=apmlinux&host=shakthiprian&snmptelnetport=161&os=Linux&mode=SNMP&timeout=2

Mac OS

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]

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&host=[HOST]&snmptelnetport=[SNMPTELNETPORT]&os=[OS]&mode=[MODE]&username=[USERNAME]&password=[PASSWORD]&timeout=[TIMEOUT]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The category type of the monitor you want to add. Value should be 'servers'.
host	The name of the host where the Mac OS is running.
snmptelnetport	The port where SSH/Telnet/SNMP is running. Default values are 23 (for Telnet), 22 (for SSH) and 161 (for SNMP).
os	The operating system of the server. Value is 'Mac OS'.
mode	The mode of monitoring. Value is either SNMP, SSH or TELNET.
username	The user name of the Mac OS server.
timeout	The time out value in seconds.
password	The password of the Mac OS server.
forceadd	This parameter is used to force Applications Manager to bypass availability and other authentication-related checks and add the monitor. Possible values are: • True - Force-adds the monitor • False - Does not force-add the monitor.
addgivenname	Specifies if you want to set the host name of the monitor as the Host Name / IP Address that you have configured in the API.
passphrase	Specify a Passphrase if the private key is protected with one for SSH Authentication.

Sample Request:

http://prod-server3:9090/AppManager/xml/AddMonitor?apikey=5bc6a8e9a30d5bf894586d4db90282f5&type=servers&displayname=apmmac&host=apptest-mac&snmptelnetport=23&os=Mac OS&mode=TELNET&username=administrator&password=admin123&timeout=2

Novell

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&snmptelnetport=[SNMPTELNETPORT]&os=[OS]&mode=[MODE]&timeout=[TIMEOUT]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The category type of the monitor you want to add. Value should be 'servers'.
host	The name of the host where the Novell server is running.
snmptelnetport	The port where SNMP is running. Default value is 161.
os	The operating system of the server. Value is 'Novell'.
timeout	The time out value in seconds.
mode	The mode of monitoring specified for the server. Value is 'SNMP'.
forceadd	This parameter is used to force Applications Manager to bypass availability and other authentication-related checks and add the monitor. Possible values are: • True - Force-adds the monitor • False - Does not force-add the monitor.
addgivenname	Specifies if you want to set the host name of the monitor as the Host Name / IP Address that you have configured in the API.

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passphrase	Specify a Passphrase if the private key is protected with one for SSH Authentication.

Sample Request:

http://production-server2:9090/AppManager/xml/AddMonitor?apikey=5bc6a8e9a30d5bf894586d4db90282f5&type=servers&displayname=apmnovell&host=smrithil&snmptelnetport=161&os=Novell&mode=SNMP&timeout=2

Sun Solaris

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&snmptelnetport=[SNMPTELNETPORT]&os=[OS]&mode=[MODE]&username=[USERNAME]&password=[PASSWORD]&timeout=[TIMEOUT]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The category type of the monitor you want to add. Value should be 'servers'.
host	The name of the host where the Sun Solaris server is running.
snmptelnetport	The port where SSH/Telnet/SNMP is running. Default values are 23 (for Telnet), 22 (for SSH) and 161 (for SNMP).
os	The operating system of the server. Value is 'SUN'.
mode	The mode of monitoring specified for the server. Value should be either SNMP, TELNET or SSH.
username	The user name of the Sun Solaris server.
timeout	The time out value in seconds.
password	The password of the Sun Solaris server.
forceadd	This parameter is used to force Applications Manager to bypass availability and other authentication-related checks and add the monitor. Possible values are: • True - Force-adds the monitor • False - Does not force-add the monitor.
addgivenname	Specifies if you want to set the host name of the monitor as the Host Name / IP Address that you have configured in the API.
passphrase	Specify a Passphrase if the private key is protected with one for SSH Authentication.

Sample Request:

http://prod-server7:9090/AppManager/xml/AddMonitor?apikey=5bc6a8e9a30d5bf894586d4db90282f5&type=servers&displayname=apmsolaris&host=cagent-solaris2&snmptelnetport=23&os=SUN&mode=TELNET&username=guest&password=guest&timeout=3

Windows

Syntax:

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http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&snmptelnetport=[SNMPTELNETPORT]&os=[OS]&mode=[MODE]&username=[USERNAME]&password=[PASSWORD]&timeout=[TIMEOUT]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The category type of the monitor you want to add. Value should be 'servers'.
host	The name of the host where the Windows server is running.
snmptelnetport	The port where SNMP is running. Default value is 161.
os	The operating system of the server. Values can be Windows 2000, Windows 2003, Windows 2008, Windows 2012, Windows 7, Windows 8, Windows XP, WindowsNT or Windows Vista
mode	The mode of monitoring specified for the server. Value should be either SNMP or WMI.
username	The user name of the Windows server.
password	The password of the Windows server.
timeout	The time out value in seconds.
eventlog_status	Specifies if Event Log Monitoring is enabled. Parameter values are true/false.
snmpCommunityString	A string of characters for user authentication.
forceadd	This parameter is used to force Applications Manager to bypass availability and other authentication-related checks and add the monitor. Possible values are: • True - Force-adds the monitor • False - Does not force-add the monitor.
addgivenname	Specifies if you want to set the host name of the monitor as the Host Name / IP Address that you have configured in the API.
passphrase	Specify a Passphrase if the private key is protected with one for SSH Authentication.

Sample Request:

To add Windows server in SNMP mode:

http://prod-server6:8080/AppManager/xml/AddMonitor?apikey=5bc6a8e9a30d5bf894586d4db90282f5&type=servers&displayname=apmwindows&host=app-xp5&os=Windows XP&mode=SNMP&snmptelnetport=161&snmpCommunityString=public&timeout=2&timeout=2

To add Windows server in WMI mode:

http://prod-server6:8080/AppManager/xml/AddMonitor?apikey=5bc6a8e9a30d5bf894586d4db90282f5&type=servers&displayname=apmwindows&host=app-xp5&os=Windows XP&mode=WMI&username=administrator&password=pass&timeout=300

Windows Clusters

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOSTNAME]&Version=[VERSION NO]&username=[USERNAME]&password=[PASSWORD]&DiscoverNodes=[NO OF

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NODES]&EventLog=[YES/NO]&pollinterval=[INTERVAL]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The category type of the monitor you want to add. Value should be **Windows Cluster**
host	The name of the host where the Windows server clusters are running.
version	The Version of the Windows Server Clusters. Possible Values are: • 2008 (Default) • 2008 R2
DiscoverNodes	Specify if you need to discover nodes. Possible Values are: • 0 - No(Default) • 1 - Yes
EventLog	Specify if you need to display Event Logs.Possible Values are: • Yes • No(Default)
pollInterval	The interval at which the server needs to be polled. This variable is optional. If no value is mentioned, the default value of 5 minutes will be taken.
forceadd	This parameter is used to force Applications Manager to bypass availability and other authentication-related checks and add the monitor. Possible values are: • True - Force-adds the monitor • False - Does not force-add the monitor.
addgivenname	Specifies if you want to set the host name of the monitor as the Host Name / IP Address that you have configured in the API.
passphrase	Specify a Passphrase if the private key is protected with one for SSH Authentication.

Sample Request:

https://prod-server6:8080/AppManager/xml/AddMonitor?apikey=5bc6a8e9a30d5bf894586d4db90282f5&type=Windows Cluster&displayname=clusterApi&host=apmcluster&Version=2008 R2&username=apmcluster2012administrator&password=12345&DiscoverNodes=1&EventLog=No&pollinterval=5

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AddMonitor APIs - Services

This section explains how to use the AddMonitor API to add monitors of the category type 'Services'. The following services are supported:

- Active Directory
- Ceph Storage
- DNS Monitor
- FTP/SFTP Monitor
- Hadoop Monitor
- JMX Applications
- LDAP Server
- Ping Monitor
- Service Monitoring
- SNMP/Network Device
- Telnet
- Oracle Coherence
- Apache Zookeeper

Active Directory

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&username=[USERNAME]&password=[PASSWORD]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the service you want to add. Value should be 'ActiveDirectory'.
host	The name of the host in which the Active Directory service is running.
username	The Active Directory username.
password	The Active Directory password.

Sample Request:

http://operation-server3:9099/AppManager/xml/AddMonitor?apikey=123b7328e4b41d1efe64aa7980d83d77&type=ActiveDirectory&displayname=active_mon&host=app-xp4&username=administrator&password=admin123

Ceph Storage

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=Ceph Storage&displayname=[DISPLAYNAME]&host=[HOST]&prompt=[Prompt]&userName=[UserName]&password=[Password]

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Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the service you want to add. Value should be 'Ceph Storage'.
host	The name of the host in which the Ceph service is running.
username	The Ceph Storage service username.
password	The Ceph Storage service password.
prompt	The command prompt value - '$'

Sample Request:

http://operation-server3:9099/AppManager/xml/AddMonitor?apikey=5e403cfde0653d142fac29b18863923b&type=Ceph Storage&displayname=ceph&host=ctl-cephadmin&prompt=$&userName=appmgr&password=appmgr%123

DNS Monitor

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]
&displayname=[DISPLAYNAME]&timeout=[TIMEOUT]&SearchField=[SEARCHFIELD]
&TargetAddress=[TARGETADDRESS]&LookupAddress=[LOOKUPADDRESS]&RecordType=[RECORDTYPE]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the service you want to add. Value should be 'DNSMonitor'.
displayname	The display name of the host in which the monitor is running.
timeout	The timeout value in seconds.
SearchField	The value of SearchField. Options include None, Record Name, Address, Additional Name, Target, Admin, Host, Alias, Port and Priority.
TargetAddress	Host Name / IP Address to connect to the service
LookupAddress	The address you want to check in the DNS Server.
RecordType	The expected record type returned for the lookup address. The options include A, AAAA, CNAME, MX, NS, PTR, SOA, SPF, SRV and TXT.

Sample Request:

http://prod-server8:9090/AppManager/xml/AddMonitor?apikey=40648ef160f4786b20ed89ea51aa3f98
&type=DNSMonitor&displayname=dnsttttttt&timeout=15&SearchField=Record Name
&TargetAddress=192.168.4.121&LookupAddress=appmanager.com&RecordType=A

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FTP/SFTP Monitor

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]
&displayname=[DISPLAYNAME]&port=[PORT]&username=[USERNAME]&password=[PASSWORD]
&TargetAddress=[TARGETADDRESS]&DownloadFile=[DOWNLOADFILE]
&IsSecured=[ISSECURED]&UploadFile=[UPLOADFILE]&RemoteSourceFileName=[REMOTESOURCEFILENAME]
&RemoteDestinationFileName=[REMOTEDESTINATIONFILENAME]&LocalSourceFileName=[LOCALSOURCEFILENAME]
&LocalDestinationFileName=[LOCALDESTINATIONFILENAME]&timeout=[TIMEOUT]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the service you want to add. Value should be 'FTPMonitor'.
port	The port number where the FTP/SFTP service is running.
username	The FTP/SFTP user name.
password	The FTP/SFTP password.
TargetAddress	Host Name / IP Address to connect to the service.
DownloadFile	Indicates if download is enabled. Possible values include *yes* and *no*. If you would like to monitor the downloads (mget) through FTP/SFTP while simulateneously downloading the file, specify *yes*.
IsSecured	Specifies if the connection is secure or not. Value is either *yes* or *no*.
UploadFile	Indicates if upload file option is enabled. Values include *yes* and *no*. If you would like to upload a file to target address, specify *yes*.
RemoteSourceFileName	The Remote Source FileName located in the target address. This is applicable only if the value of 'DownloadFile' option is specified as *yes.*
RemoteDestinationFileName	The Remote Destination FileName located in the target address. This is applicable only if the value of 'UploadFile' option is specified as *yes*.
LocalSourceFileName	The name of the local source file with full path. The file must be available where Applications Manager instance is running. This is applicable only if the value of 'UploadFile' option is specified as *yes.*
LocalDestinationFileName	The local destination FileName with full path. The file will download in the given path where Applications Manager instance is running. This field is applicable only if the value of 'DownloadFile' option is specified as *yes*
timeout	The timeout value in seconds.

Sample Request:

http://prod-server8:9090/AppManager/xml/AddMonitor?apikey=40648ef160f4786b20ed89ea51aa3f98
&type=FTPMonitor&displayname=ladpapitestooooo&port=22&username=sprasadh&password=sprasadh
&TargetAddress=sprasadh&DownloadFile=no&IsSecured=yes&UploadFile=no
&RemoteSourceFileName=&RemoteDestinationFileName=&LocalSourceFileName=&LocalDestinationFileName=&timeout
=15

Hadoop Monitor

Note: NameNode and JobTracker/ ResourceManager must be added using same Mode (JMX or RESTAPI).

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Syntax:

1. Add Hadoop monitor through REST API mode of monitoring:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=Hadoop&displayname=[DISPLAYNAME]&ModeOfMonitoring=RESTAPI&Version=[1.x/2.x]&NameNodeHost=[NAMENODE HOST]&NameNodeWebPort=[NAMENODE WEBPORT]&NameNodeSSLEnabled=[yes/no]&NameNodeWebAuthType=[SimpleAuth/NoAuth]&NameNodeUserName=[NAMENODE USERNAME]&JobTrackerHost=[JOBTRACKER HOSTNAME]&JobTrackerWebPort=[JOBTRACKER WEBPORT]&JobTrackerSSLEnabled=[yes/no}&JobTrackerWebAuthType=[SimpleAuth/NoAuth]&JobTrackerUserName=[JOBTRACKER USERNAME]

2. Add Hadoop monitor through JMX mode of monitoring:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=Hadoop&displayname=[DISPLAYNAME]&ModeOfMonitoring=JMX&Version=[1.x/2.x]&NameNodeHost=[NAMENODE HOST]&NameNodeJMXPort=[NAMENODE JMXPORT]&NameNodeUserName=[NAMENODE JMX USERNAME]&NameNodePassWord=[NAMENODE JMX PASSWORD]&NameNodeJNDIPath=[NAMENODE JNDIPATH]&JobTrackereHost=[JOBTRACKER HOSTNAME]&JobTrackerJMXPort=[JOBTRACKER JMXPORT]&JobTrackerUserName=[JOBTRACKER JMX USERNAME]&JObTrackerPassWord=[JOBTRACKER JMX PASSWORD]&JobTrackerJNDIPath=[JOBTRACKER JNDIPATH]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
ModeOfMonitoring	The mode in which datacollection for Hadoop monitor will happen. Possible values: 1) RESTAPI 2)JMX
Version	Version of Hadoop. Possible values: 1) 1.x 2) 2.x
NameNodeHost	HostName of Namenode.
NameNodeWebPort	Web port of Namenode.
NameNodeJMXPort	JMX Port of Namenode
NameNodeSSLEnabled	Is SSL is enabled for Namenode webport? Possible values: 1) yes 2) no
NameNodeWebAuthType	Type authentication used by namenode web. Possible values: 1) NoAuth 2)SimpleAuth
NameNodeUserName	• Username of web access, if simple authentication is used in namenode. • Username of JMX access, if JMX mode of monitoring is chosen in namenode.
NameNodePassWord	Password for JMX access, if it is necessary for JMX access in namenode.
NameNodeJNDIPath	JNDI path of the Namenode.
JobTrackerHost	HostName of Jobtracker.
JobTrackerWebPort	Web port of Jobtracker.
JobTrackerJMXPort	JMX Port of Jobtracker.
JobTrackerSSLEnabled	Is SSL is enabled for Jobtracker webport? Possible values: 1) yes 2) no

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JobTrackerWebAuthType	Type authentication used by Jobtracker web. Possible values: 1) NoAuth 2)SimpleAuth
JobTrackerUserName	• Username of web access, if simple authentication is used in Jobtracker. • Username of JMX access, if JMX mode of monitoring is chosen in Jobtracker.
JObTrackerPassWord	Password for JMX access, if it is necessary for JMX access in Jobtracker.
JobTrackerJNDIPath	JNDI path of the Jobtracker.

Sample Request:

1. Add Hadoop monitor through REST API mode of monitoring:

http://app-test-vm:9090/AppManager/xml/AddMonitor?apikey=90b71e0866f0f92488fbb4a2ab8d1195&type=Hadoop&displayname=Hadoop&ModeOfMonitoring=RESTAPI&Version=1.x&NameNodeHost=naga-2385&NameNodeWebPort=50070&NameNodeSSLEnabled=no&NameNodeWebAuthType=SimpleAuth&NameNodeUserName=hduser&JobTrackerHost=naga-2385&JobTrackerWebPort=50030&JobTrackerSSLEnabled=no&JobTrackerWebAuthType=SimpleAuth&JobTrackerUserName=hduser

2. Add Hadoop monitor through JMX mode of monitoring:

http://app-test-vm:9090/AppManager/xml/AddMonitor?apikey=90b71e0866f0f92488fbb4a2ab8d1195&type=Hadoop&displayname=Hadoop&ModeOfMonitoring=JMX&Version=1.x&NameNodeHost=naga-2385&NameNodeJMXPort=8004&NameNodeUserName=&NameNodePassWord=&NameNodeJNDIPath=/jmxrmi&JobTrackerHost=naga-2385&JobTrackerJMXPort=8004&JobTrackerUserName=&JobTrackerPassWord=&JobTrackerJNDIPath=/jmxrmi

JMX Applications

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]&jndiurl=[JNDIURL]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the service you want to add. Value should be 'JMX Applications'.
host	The name of the host in which the monitor is running.
port	The port number where the RMI adapter is running.
jndiurl	The JNDI name. Example:/jmxrmi

Sample Request:

http://prod-server1:9090/AppManager/xml/AddMonitor?apikey=40648ef160f4786b20ed89ea51aa3f98

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&type=JMX Applications&displayname=apmjmxapp&host=app-xp2&port=1099&jndiurl=/jmxrmi

LDAP Server

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]
&displayname=[DISPLAYNAME]&username=[USERNAME]&timeout=[TIMEOUT]&LDAPServer=[LDAPSERVER]
&LDAPServerPort=[LDAPSERVERPORT]&MatchingAttribute=[MATCHINGATTRIBUTE]&FilterCondition=[FILTERCONDITION]
&IsSecured=[ISSECURED]&SearchFilter=[SEARCHFILTER]&SearchResult=[SEARCHRESULT]&SearchBase=[SEARCHBASE]
&password=[PASSWORD]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the service you want to add. Value should be 'LDAP Server'.
username	The user name of the LDAP server.
timeout	The timeout value in seconds.
LDAPServer	The name of the LDAP Server.
LDAPServerPort	The port at which the LDAP server is running.
MatchingAttribute	The matching attribute value. Values include cn, uid, sn, displayname, givenname, objectclass, dc and ou
FilterCondition	The value of filter condition. Values include equals, contains and notequals
IsSecured	Specifies if the connection is secure or not. Value is either *yes* or *no*.
SearchFilter	The value of Search Filter. This field is optional.
SearchResult	The string value that matches with search results.
SearchBase	The value of SearchBase. This is mandatory field when adding a LDAP monitor.
password	The password of the LDAP server.

Sample Request:

http://operations-server9:9090/AppManager/xml/AddMonitor?apikey=40648ef160f4786b20ed89ea51aa3f98
&type=LDAP Server&displayname=ldap_serverqqqq&username=cn=administrator,cn=users,dc=pmp,dc=com
&timeout=10&LDAPServer=pmp-
2k8s&LDAPServerPort=389&MatchingAttribute=cn&FilterCondition=equals&IsSecured=no
&SearchFilter=&SearchResult=&SearchBase=&Password=admin123123

Ping Monitor

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]

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&host=[HOST]&timeout=[TIMEOUT]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the service you want to add. Value should be 'Ping Monitor'.
host	The host in which the monitor is running.
timeout	The timeout value in seconds.

Sample Request:

http://prod-server5:9090/AppManager/xml/AddMonitor?apikey=40648ef160f4786b20ed89ea51aa3f98
&type=Ping Monitor&displayname=apmping&host=smrithil&timeout=5

Service Monitoring

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]
&host=[HOST]&port=[PORT]&timeout=[TIMEOUT]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the service you want to add. Value should be *service monitoring*.
host	The host in which the monitor is running.
timeout	The timeout value in seconds.
port	The port number in which the service is running.

Sample Request:

http://prod-server3:9090/AppManager/xml/AddMonitor?apikey=40648ef160f4786b20ed89ea51aa3f98
&type=Service Monitoring&displayname=apmservice&host=smrithil&port=9090&timeout=3

SNMP/Network Device

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]
&host=[HOST]&port=[PORT]&snmpCommunityString=[SNMPCOMMUNITYSTRING]&timeout=[TIMEOUT]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the service you want to add. Value should be *SNMP / Network Device*.

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host	The host in which the monitor is running.
port	The port number in which SNMP is running.
snmpCommunityString	The SNMP community string value. Default value is *public*.
timeout	The timeout value in seconds.

Sample Request:

http://prod-server4:9099/AppManager/xml/AddMonitor?apikey=c9684ec1361be61f48cd1bd2221ac3fc&type=SNMP/Network Device&displayname=apmsnmp&host=sprasadh&port=161&snmpCommunityString=public&timeout=5

Telnet

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]&timeout=[TIMEOUT]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the service you want to add. Value should be *telnet*.
host	The host name in which the monitor is running.
timeout	The time out value in seconds.
port	The port number in which Telnet is running.

Sample Request:

http://operation-server2:9090/AppManager/xml/AddMonitor?apikey=40648ef160f4786b20ed89ea51aa3f98&type=telnet&displayname=apmtelnet&host=smrithil&port=23&timeout=2

Oracle Coherence

Syntax:

```
http://[hostname]:[port]/AppManager/xml/AddMonitor?apikey=[apikey]&type=Coherence&displayname=[Displayname]&HostName=[HostName]&Port=[Port]&UserName=[UserName]&Password=[Password]&JNDIPath=/jmxrmi
```

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
apikey	API key to create the Oracle coherence monitor
type	The type of the database you want to add. Value should be *coherence*.
displayname	Display name of the Oracle coherence monitor
hostname	The name of the host in which Oracle coherence is running.
port	The port number where Oracle is running.
username	The name of the user who has permission to access the Oracle coherence database.
password	The password of the user who has permission to access the Oracle coherence database.

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JNDIPath	JNDI path to be used

Sample Request:

```
http://prod-server7:9090/AppManager/xml/AddMonitor?apikey=27d484c4527d4f0911daef26e131a260&type=Coherence&displayname=Coherence_API&HostName=it360-m4600-1&Port=1099&PortAdd=1095&UserName=admin&Password=Abc@123&JNDIPath=/jmxrmi
```

Apache Zookeeper

Syntax:

```
http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=Zookeeper&displayname=Zookeeper&host=[Host Name]&port=[Port Number]&discoverclusternodes=[non mandatory column, if given the value should be 'Yes']&authReq=[non mandatory column, if given the value should be 'true']&username=[username]&password=[password]
```

Request Parameter:

The parameters involved in the API request are described below.

Field	Description
type	The type of the Service you want to add. Value should be Zookeeper.
host	The name of the host in which Zookeeper is running.
port	The port number where Zookeeper is running.
username	The name of the user who has permission to access the Zookeeper.
password	The password of the user who has permission to access the Zookeeper.
discoverclusternodes	Specifies if the Cluster Nodes must be discovered. Value can be YES/NO. This column is not mandatory.
authReq	Specifies if authentication is required. Value can be true/false.

Sample Request

```
http://prod-server3:9090/AppManager/xml/AddMonitor?apikey=849c51ce33436587873a08d69d5447fc&type=Zookeeper&displayname=Zookeeper&host=172.20.7.36&port=7199&username=&password=123
```

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AddMonitor APIs - Virtualization

This section explains how to use the AddMonitor API to add monitors of the category type 'Virtualization'. The following monitors are supported:

- VMware ESX/ESXi Server
- VMware Horizon View Connection Broker
- Microsoft Hyper-V Server
- Citrix Xenserver
- Citrix XenApp
- VCenter
- Docker

VMware ESX/ESXi Server

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]
&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]&username=[USERNAME]&password=[PASSWORD]
&addtoGroup=[ADDTOGROUP]&groupID=[GROUPID]&monitorvms=[MONITORVMS]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the monitor you want to add. Value should be *VMware ESX/ESXi*.
host	The name of the host where the VMWare ESX/ESXi server is running.
port	The port number where the VMware ESX/ESXi server is running.
username	The user name of the VMware ESX/ESXi server.
password	The password of the VMware ESX/ESXi server.
addtoGroup	Denotes if the monitor should be added to monitor group. Value is either *true* or *false*
groupID	The monitor group ID
monitorvms	Indicates the way the virtual machines of the ESX server are to be monitored. Possible values are *no*, *yes* and*onlyavailability*. The value *no* means the VMs will not be discovered. The value *yes* indicates that the VMs will be discovered and monitored. The value *onlyavailability* indicates that the VMs will be discovered but the metrics will not be monitored (will not count for licensing).

Sample Request:

http://prod-server5:9090/AppManager/xml/AddMonitor?apikey=e249ce592ad1052c4ea605bcf3125ad9
&type=VMWare ESX/ESXi&displayname=vnwgroup&host=esx-
2&port=443&username=root&password=password&addToGroup=true
&groupID=10000024&monitorvms=onlyavailability

VMware Horizon View Connection Broker

You can add the VMware Horizon View Connection Broker monitor in the following two ways:

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- **Add VMware Horizon View as a new monitor group** (New Monitor Group --> VMware Horizon View).This will discover all the components in the Horizon View Set up including View Connection Broker.**Syntax:** http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=VMwareView&displayname=[DISPLAYNAME]&host=[HOST]&username=[USERNAME]&password=[PASSWORD]&pollInterval=[POLL INTERVAL]**Sample Request:** http://prod-server5:9090/AppManager/xml/AddMonitor?apikey=f6ad2a431bb2cd5aa85c195262daef7f&type=VMwareView&displayname=HorizonView&host=172.18.144.52&username=vmwarehzviewuser-test&password=APM@13&pollInterval=5
- **Add VMware Horizon View Connection Broker as a new monitor** (New Monitor --> VMware Horizon View Connection Broker). This will discover View Connection Broker alone.**Syntax:** http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=ViewConnectionBroker&displayname=[DISPLAYNAME]&host=[HOST]&username=[USERNAME]&password=[PASSWORD]&pollInterval=[POLL INTERVAL]&addtoGroup=[TRUE/FALSE]&groupID=[GROUPID]**Sample Request:** http://prod-server5:9090/AppManager/xml/AddMonitor?apikey=f6ad2a431bb2cd5aa85c195262daef7f&type=ViewConnectionBroker&displayname=ViewBroker&host=172.18.144.52&username=vmwarehzviewmaran-test&password=Zoho@13&pollInterval=5&addtoGroup=true&groupID=10000028

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the monitor you want to add. Value should be *VMwareView* or *ViewConnectionBroker*.
host	The name of the host where the VMware Horizon View server is running.
username	The user name of your VMware server.
password	The password of your VMware server.

Microsoft Hyper-V Server

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]
&host=[HOST]&displayname=[DISPLAYNAME]&password=[PASSWORD]
&addvms=[ADDVMS]&username=[USERNAME]&Version=[2008/2012]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the monitor you want to add. Value should be *Hyper-V Server*.
host	The name of the host where the Hyper-V server is running.
password	The password of the Hyper-V server.
addvms	Denotes whether the performance metrics of VMs should be collected. Value is either *yes* or *no*

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username	The user name of the Hyper-V server.
Version	The version of your Microsoft Hyper-V Server. Values are 2008 or 2012.

Sample Request:

http://prod-server6:9090/AppManager/xml/AddMonitor?apikey=256d041620d0aee9901558b44706dc84 &type=Hyper-V Server&host=amp-w2k8-64&displayname=apmhyperv&password=admin123app2 &addvms=yes&username=administrator&Version=2008

Citrix Xenserver

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE] &host=[HOST]&displayname=[DISPLAYNAME]&username=[USERNAME]&password=[PASSWORD]&port=[PORT] &addvms=[ADDVMS]&addToGroup=[TRUE/FALSE]&groupID=[GROUPID]&monitorvms=[AVAILABILITY]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the monitor you want to add. Value should be *XenServerHost*.
host	The name of the host where the XenServerHost is running.
password	The password of the XenServerHost
addvms	Denotes whether the performance metrics of VMs should be collected. Value is either *yes* or *no*
username	The user name of the XenServerHost
addToGroup	Denotes if the monitor should be added to monitor group. Value is either *true* or *false*
groupID	The monitor group ID
monitorvms	Indicates the way the virtual machines are to be monitored. Possible values are *no*, *yes* and *onlyavailability*. The value *no* means the VMs will not be discovered. The value *yes* indicates that the VMs will be discovered and monitored. The value *onlyavailability* indicates that the VMs will be discovered but the metrics will not be monitored (will not count for licensing).

Sample Request:

http://prod-server6:9090/AppManager/xml/AddMonitor?apikey=bc76b1abb8e9b209824a39d84578a194 &type=XenServerHost&host=192.18.3.75&displayname=newxen&password=sankho &addvms=yes&username=root

Citrix XenApp

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE] &host=[HOST]&displayname=[DISPLAYNAME]&UserName =[USERNAME]&Password=[PASSWORD]&Version=[VERSION]

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Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
apikey	The key generated from the **Generate API Key** option in the 'Admin' tab.
type	The type of the monitor you want to add. The value should be *XenApp*.
host	The name of the host where the XenApp Server is running.
displayname	The display name of the monitor.
UserName	The user name of the XenApp Server Host Machine.
password	The password of the XenApp Server Host Machine.
version	The version of XenApp.

Sample Request:

http://prod-server6:9090/AppManager/xml/AddMonitor?apikey=bc76b1abb8e9b209824a39d84578a194&type=XenApp&host=192.18.3.75&displayname=XenAppServer&UserName =administrator&Password=pass&Version=7.6

VCenter

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]&username=[USERNAME]&password=[PASSWORD]&addtoGroup=[ADDTOGROUP]&groupID=[GROUPID]&monitorvms=[MONITORVMS]

```
http://[host]:[port]/AppManager/xml/AddMonitor?apikey=[apikey]&type=vCenter&displayname=vctest&vcHost=vcenter&vcPort=443&username=test&password=test&pollInterval=5&isHostDCViaVC=on
```

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the monitor you want to add. Value should be *vCenter*.
vcHost	The name of the host where *vCenter* is running.
vcPort	The port number where the *vCenter* is running.
username	The user name of the *vCenter* server.
password	The password of the *vCenter* server.
addtoGroup	Denotes if the monitor should be added to monitor group. Value is either *true* or *false*
isHostDCViaVC	Specifies if datacollection should happen using Vcenter credentials or not. Value can be *on* or *off*. (optional parameter).

Sample Request:

http://[host]:[port]/AppManager/xml/AddMonitor?apikey=[apikey]&type=vCenter&displayname=vctest&vcHost=vcenter&vcPort=443&username=test&password=test&pollInterval=5

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Docker

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]&username=[USERNAME]&password=[PASSWORD]&sslenabled=[isSSLEnabled]

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the monitor you want to add. Value should be *Docker*.
host	The name of the host where *Docker* is running.
port	The port number where *Docker* is running.
username	The user name of the *Docker* server.
password	The password of the *Docker* server.
SSL enabled	Option to enable SSL.

Sample Request:

http://Host:port/AppManager/xml/AddMonitor?apikey=[API KEY]&type=Docker&displayname=docker&host=apm-u12-temp&port=4243&username=&password=&isSSLEnabled=false

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AddMonitor APIs - Web Server/Services

This section explains how to use the AddMonitor API to add monitors of the category type 'Web Server/Services'. The following monitors are supported:

- Apache Server
- Apache Solr
- IIS Server
- Nginx Server
- PHP
- Real Browser Monitor (RBM)
- URL Monitor
- Web Server
- SSL Certificate Monitor
- Elasticsearch Monitor
- ServiceDesk Plus Monitor
- HAProxy Monitor
- Web Services

Apache Server

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]&serverstatusurl=[SERVERSTATUSURL]&apacheurl=[APACHEURL]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the monitor you want to add. Value should be *Apache Server*.
host	The name of the host where the Apache server is running.
port	The port number where the Apache server is running.
apacheauth	Denotes whether the Apache server is authenticated. Possible values are *true* and *false*.
apacheUserName	The user name of the Apache server. This is required only if apacheauth value is true.
apachepassword	The password of the Apache server. This is required only if apacheauth value is true.
sslenabled	Indicates whether SSL is enabled. The value should be either *on* or *off*
serverstatusurl	Indicates whether the Apache Server Status url can be modified. The value should be either *true* or *false*.
apacheurl	The Apache server status url. Example: *http://<host-name:portNumber>server-status?auto*

Sample Request:

http://prod-server5:9090/AppManager/xml/AddMonitor?apikey=256d041620d0aee9901558b44706dc84&type=Apache Server&displayname=apmapache&host=shakthiprian&port=8080&serverstatusurl=true&apacheurl=ddss

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Apache Solr

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]
&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]&SSL=[TRUE/FALSE]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the database you want to add. Value should be Apache Solr
display name	Display name of the Apache Solr monitor
host	The name of the host in which Apache Solr server is running.
port	The port number where Apache Solr server is running.
SSL	Denotes if SSL is enabled or not. Value should be either *true* or *false*

Sample Request:

http://sudhan-3565:9091/AppManager/xml/AddMonitor?apikey=b74833e8881ec4cd68dcd893f96180bf&type=ApacheSolr&displayname=SolrInstance&host=AMP-W2012S-64-1&port=8983&ssl=false

IIS Server

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]
&host=[HOST]&port=[PORT]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the monitor you want to add. Value should be *IIS Server*.
host	The name of the host where the IIS is running.
port	The port number where the IIS is running.

Sample Request:

http://prod-server8:9091/AppManager/xml/AddMonitor?apikey=90c166a4646e29315a57eca1d6b88858
&type=IIS Server&displayname=apmiis&host=app-xp2&port=80

Nginx Server

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPALYNAME]&host=[H

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OST]&port=[PORT]&sslenable=[TRUE/FALSE]&nginxauth=[TRUE/FALSE]&username=[USERNAME]&password=[PASSWORD]&nginxstatusurl=[NGNIX STATUS URL]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the monitor you want to add. Value should be *Nginx*.
host	The name of the host where the Nginx server is running.
port	The port number where the Nginx server is running.
nginxauth	Denotes whether the Nginx server is authenticated. Possible values are true and false.
username	The user name of the Nginx server. This is required only if *nginxauth* value is true.
password	The password of the Nginx server. This is required only if *nginxauth* value is true.
nginxstatusurl	Nginx Server Status url. The value should be either true or false. Please do insert /(slash) in prefix for nginxstatusurl as the example given below.

Sample Request:

http://operation-server9:9091/AppManager/xml/AddMonitor?apikey=a7867d64c831a50f8eb5be8bcfebab34&type=Nginx&displayname=apmnginx&host=deepak&port=8080&sslenable=true&nginxauth=true&username=deepak&password=deepak&nginxstatusurl=/nginx_status

PHP

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]&serverpath=[SERVERPATH]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the monitor you want to add. Value should be *PHP*.
host	The name of the host where the PHP is running.
port	The port number where the PHP is running.
serverpath	The path to be used for connection. The default value is */phpstats.php*

Sample Request:

http://operation-server9:9091/AppManager/xml/AddMonitor?apikey=90c166a4646e29315a57eca1d6b88858&type=PHP&displayname=apmiis&host=myesuraj&port=80&serverpath=/phpstats.php

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Real Browser Monitor (RBM)

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]
&displayname=[DISPLAYNAME]&rbmagentID=[RBMAGENTID]&timeout=[TIMEOUT]&scriptname=[SCRIPTNAME]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the monitor you want to add. Value should be *RBM*.
rbmagentID	The ID of the RBM agent.
timeout	The timeout value in seconds.
scriptname	The name of the web script.

Sample Request:

http://prod-server8:9091/AppManager/xml/AddMonitor?apikey=90c166a4646e29315a57eca1d6b88858
&type=RBM&displayname=RBM_test&rbmagentID=10000000&timeout=15&scriptname=newS

URL Monitor

Syntax

```
http://[host]:[port]/AppManager/xml/AddMonitor?apikey=[apikey]&type=[type]&displayname=[displaynam
e]&timeout=[timeout]&url=[httpurl]&urlMethod=[method]&httpCondition=[condition]&httpValue=[respons
eCode]&checkForContent=[matchContent]&pollInterval=[pollInterval]&regex=true&casesensitive=true
```

Request Parameters

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the monitor you want to add. Value should be UrlMonitor.
displayname	Name of the monitor to be created.
timeout	The timeout value in seconds.
url	The HTTP / HTTPS URL address that you want to monitor.
urlMethod	This method specifies how to send form-data. Value should be G / P for Get and Post respectively.
httpCondition	Error Response Code condition. Value should be LT / GT / EQ / NE / LE / GE (default GT).
httpValue	The response code number based on which the monitor will be shown as up or down (default 200).
requestParams	Specify the request parameters(eg., username, password).
checkForContent	The keyword for content match.
verifyError	The keyword for error verification.
errorIfMatch	Enter a keyword which when matches with the content in the URL must be notified of error. Note: The search is case sensitive. Multiple keywords should be put within quotes. Otherwise, it will be treated as 'Any' one of the multiple keywords
userName	Provide the User name if the URL requires Form-based authentication.

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password	Provide password, if the URL requires Form-based authentication.
payload	Specify the payload type for POST form submission method. The types are FORM, Text, XML, JSON.
regex	Specify if the content for content check contains a regular expression. The value of this field should be 'true', if you want to enable it.
casesensitive	Specify if you want to do a case sensitive keyword search. The value of this field should be 'true', if you want to enable it.
userAgent	Set the User Agent for monitoring the URL. (Values can be added like Mozilla/5.0 (compatible; MSIE 9.0; Windows Phone OS 7.5; Trident/5.0; IEMobile/9.0))
sslVersion	Specify the version of SSL configured for the URL. The values can one of the following values: SSLv3, TLSv1, TLSv1.1 or TLSv1.2. Default value will be Auto. (NON-MANDATORY PARAMETER)

Sample Request

```
http://prod-server8:9090/AppManager/xml/AddMonitor?apikey=90c166a4646e29315a57eca1d6b88858&type=UrlMonitor&displayname=appmanager&timeout=60&url=http://appmanager.com&urlMethod=G&httpCondition=EQ&httpValue=200&requestParams=username=appAdmin%0Apassword=adminPass%0Arole=admin&checkForContent=Applications&verifyError=Exception&errorIfMatch=quit&regex=true&casesensitive=true
```

Web Server

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
type	The type of the monitor you want to add. Value should be *Web Server*.
host	The name of the host where the web server is running.
port	The port number where the web server is running.

Sample Request:

http://prod-server8:9091/AppManager/xml/AddMonitor?apikey=90c166a4646e29315a57eca1d6b88858&type=Web Server&displayname=apmweb&host=app-xp2&port=80

SSL Certificate Monitor

Syntax:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=SSLCertificateMonitor&displayname=[displayName]&domain=[domain]&port=[port]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description

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type	The type of the monitor you want to add. Value should be *SSLCertificateMonitor*.
host	The name of the host where the SSL Certificate Monitor is running.
port	The port number where the SSL Certificate Monitor is running.
domain	Enter the Domain name for which SSL certificate is required to be monitored.
isProxyNeeded	Use isProxyNeeded if the server is connected through proxy. Possible values are: • isProxyNeeded = true • isProxyNeeded = false
ignoreHostNameError	Specify if you want to **Ignore SSL Certificate name mismatch error.** Possible Values are: • ignoreHostNameError = true • ignoreHostNameError = false
timeout	Enter the **Timeout** value in seconds.

Sample Request:

http://prod-server8:9091/AppManager/xml/AddMonitor?apikey=bc76b1abb8e9b209824a39d84578a194&type=SSLCertificateMonitor&displayname=SSLCertificateMonitor&domain=www.zoho.com&port=443&timeout=60

Elasticsearch Monitor

Syntax of Rest API for adding monitor:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]
&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]&SSL=[TRUE/FALSE]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
apikey	The key generated from the **Generate API Key** option in the 'Admin' tab.
type	The type of the monitor you want to add. Value should be **ElasticSearchCluster**.
displayname	The display name of the Elasticsearch monitor.
host	The name of the host in which Elasticsearch server is running.
port	The port number where Elasticsearch server is running.
ssl	Specfies if SSL is enabled or not. Value can be either **true** or **false.**

Sample Request:

http://localhost:9097/AppManager/xml/AddMonitor?apikey=7c18de184b2c8b1caa8d65790b382f32&type=ElasticSearchCluster&displayname=localhost&host=localhost&port=9200&SSL=FALSE

ServiceDesk Plus Monitor

Syntax:

```
http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=[TYPE]&displayname=[DISPLAYNAME]&hostname=[HOST]&port=[PORT] &ssl=[TRUE/FALSE]&restapiKey=[RestAPIKey]
```

Request Parameter:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
Hostname	The name or Ip address of the host where Servicedesk-Plus / SDP MSP is running.
Port	The Running Port of Servicedesk-Plus / SDP MSP.
SSL If Enabled	Specifies if SSL enabled for Servicedesk-Plus / SDP MSP.

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Field	Description
restapiKey	To generate a new API key in ServiceDesk Plus, follow the steps given below: • Log in to ServiceDesk Plus. • Go to the **Personalize** tab available in the top pane. • Click **API key Generation**.You can either select the **Never Expire** option or specify the date of expiry: • If you select the **Never Expire** option, the key will be used in Applications Manager, until you generate a new key. • If you have set a **date of expiry**, you must manually update the new key in APM after that set time period for data collection to happen. • Click **Generate**. • Copy the API Key generated to use it in Applications Manager.

Sample Request

```
http://prod-server3:9090
/AppManager/xml/AddMonitor?apikey=5b43655d12396a7917e5d5b036ced3aa&type=SDPMonitor&displayname=sat
ya_sdp&hostname=app-1&port=8081&ssl=false&restapiKey=5B7ADE19-1234-4556-9F54-07FAF42D2C29
```

HAProxy Monitor

Syntax of Rest API for adding monitor:

http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=HAProxy&displayname=[DISPLAYNAME]&host=[HOST]&port=[PORT]&SSL=[TRUE/FALSE]

Request Parameters:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
apikey	The key generated from the **Generate API Key** option in the 'Admin' tab.
type	The type of the monitor you want to add. Value should be **HAProxy**.
displayname	The display name of the HAProxy monitor.
host	The name of the host in which HAProxy server is running.
port	The port number where HAProxy server is running.
ssl	Specfies if SSL is enabled or not. Value can be either **true** or **false.**

Web Services

Syntax:

```
http://[Host]:[Port]/AppManager/xml/AddMonitor?apikey=[APIKEY]&type=Web
Service&displayname=[DISPLAYNAME]&WSDLUrl=[WSDLURL]&endPointUrl=[ENDPOINTURL]&resFulWebservice=[tr
ue/false]&haid=[Monitor GroupId]&username=[USERNAME]&password=[PASSWORD]&customHeaders[Custom
Header]&authToken[Authentication Token]
```

Request Parameter:

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters.

Field	Description
WSDLUrl	The WSDL URL required to add the monitor.
endPointUrl	The end-point URL required to add the monitor.
resFulWebservice	Set this value to true to enable REST-compliant Web services.
haid	The Monitor Group ID.
username	The **username** required to invoke the webservice.
password	The **password** required to invoke the webservice.
customHeaders	You can use our pre-defined headers or create your own custom headers to invoke operations.
authToken	Provide the Authentication Token, if required.

Sample Request

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```
http://prod-server3:9090/AppManager/xml/AddMonitor?apikey=d0588c8b72c6e76713ac55c66e8d&type=Web
Service&displayname=apmservice&WSDLUrl=http://www.dataaccess.com/webservicesserver/numberconversio
n.wso?WSDL&endPointUrl=http://www.dataaccess.com/webservicesserver/numberconversion.wso&timeout=30
&resFulWebservice=true&haid=10001&username=user&password=pass123&customHeaders=test&authToken=auth
token
```

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MaintenanceTask API

The APIs given below allow you to work with downtime schedules in Applications Manager:

- Create Downtime Scheduler Task
- Delete Downtime Scheduler Task
- Edit Downtime Scheduler Task
- Get Downtime Scheduler Task Details

Request Parameters

The common parameters involved in these API requests are described below:

Field	Description
apikey	The key generated from the **Generate API Key** option in the 'Admin' tab.
taskName	The name of the maintenance task. This should be a unique value.
taskType	The type of task to be created. Possible values are **monitor** (for an individual monitor) and **group** (for a monitor group) **.**You can configure a schedule for a monitor group by providing the tasktype as **group**.
taskStatus	Current status of the schedule. You have to choose from either 'enable' or 'disable'
taskid	The unique identifier for the task
resourceid	The resource id of the **monitor** or **monitor group** for which the schedule has to be created

Sample Request:

This example helps you to create a downtime schedule in Applications Manager:

http://app-windows:9090/AppManager/xml/CreateMaintenanceTask?apikey=bdd4d0643c6f591e123b7ba6fb69d9dd&taskMethod=daily
&taskStartTime=20:00&taskEndTime=21:00&taskStatus=disable&taskEffectFrom=2010-05-24%2016:48&taskName=dr1&taskType=monitor&resourceid=10000055
If the API is not executed correctly, the request will fail and errors will be thrown. Refer this page for a list of common error conditions.

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Creating Downtime Scheduler Tasks

This API allows the user to create downtime schedules in Applications Manager. The schedules can be created with any of the following recurrence types:

- Daily
- Weekly
- Once

You can schedule a maintenance task for for monitor groups as well as individual monitors. To configure a schedule for a monitor group, just provide the **tasktype** as**group** and **resourceid** as the **monitor group id**.

Downtime Schedule with Recurring type Daily

Sample Request:

http://[Host]:[Port]/AppManager/xml/CreateMaintenanceTask?apikey=[APIKEY]&taskMethod=daily&taskStartTime=[STARTTIME]&taskEndTime=[ENDTIME]&taskStatus=disable&taskEffectFrom=[DATE]&taskName=[NAME]&taskType=monitor&resourceid=[RESOURCEID]

Request Parameters

The parameters involved in this API request are described below. Also, refer the list of common Request Parameters involved in executing the CreateMaintenanceTask API requests.

Field	Description
taskMethod	Denotes the recurring frequency of the maintenance schedule, 'daily' indicates the schedule runs every day.
taskStartTime	The time when the maintenance task starts running
taskEndTime	The time when the maintenance task stops running
taskEffectFrom	The date and time from which the maintenance task becomes active
offset	The difference in the number of hours with respect to GMT. If the offset value provided is invalid, Applications Manager uses the user's system time as the offset value.
taskType	The type of task to be created. Possible values are **monitor** (for an individual monitor) and **group** (for a monitor group) **.**You can configure a schedule for a monitor group by providing the tasktype as **group**.
resourceid	The resource id of the **monitor** or **monitor group** for which the schedule has to be created

Example:

http://app-windows:9090/AppManager/xml/CreateMaintenanceTask?apikey=bdd4d0643c6f591e123b7ba6fb69d9dd&taskMethod=daily
&taskStartTime=20:00&taskEndTime=21:00&taskStatus=disable&taskEffectFrom=2010-05-24%2016:48&taskName=dr1

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&taskType=monitor&resourceid=10000055

Output for the above example:

```
<AppManager-response uri="/AppManager/xml/CreateMaintenanceTask">
  <result>
    <response response-code="4000">
      <message>Maintenance Task successfully created.</message>
    </response>
  </result>
</AppManager-response>
```

Downtime Schedule with Recurring type Weekly

Sample Request:

http://[Host]:[Port]/AppManager/xml/CreateMaintenanceTask?apikey=[APIKEY]&taskType=[TASKTYPE]&resourceid=[RESOURCEID]
&totalNumber=[TOTALNUMBER]&taskMethod=[TASKMETHOD]&taskDescription=[TASKDESCRIPTION]&taskStatus=[TASKSTATUS]
&taskEffectFrom=[DATETIME]&startDay1=[STARTDAY1]&startTime1=[STARTTIME1]&endDay1=[ENDDAY1]&endTime1=[ENDTIME1]
]
&taskName=[TASKNAME]

Request Parameters

The parameters involved in the API request are described below:

Field	Description
totalNumber	The number of schedules to be created. You can create a maximum of 7 weekly schedules
taskMethod	Denotes the recurring frequency of the maintenance schedule, 'weekly' indicates the schedule runs every week.
taskDescription	The description of what the maintenance schedule does, optional value.
taskEffectFrom	The date and time from which the maintenance task becomes active
startDay[n]	The day on which the maintenance task starts running. The allowed values for n are 1,2,3,4,5,6 and 7
startTime[n]	The time when the maintenance task starts running. The allowed values for n are 1,2,3,4,5,6 and 7
endDay[n]	The day on which the maintenance task stops running. The allowed values for n are 1,2,3,4,5,6 and 7
offset	The difference in the number of hours with respect to GMT. If the offset value provided is invalid, Applications Manager uses the user's system time as the offset value.
endTime[n]	The time at which the maintenance task stops running. The allowed values for n are 1,2,3,4,5,6 and 7
taskType	The type of task to be created. Possible values are **monitor** (for an individual monitor) and **group** (for a monitor group) **.**You can configure a schedule for a monitor group by providing the tasktype as **group**.
resourceid	The resource id of the **monitor** or **monitor group** for which the schedule has to be created

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Example:

http://app-windows:9090/AppManager/xml/CreateMaintenanceTask?apikey=983a7d7ed56c5753f4977df5883e2b2d&taskType=monitor
&resourceid=10000028&totalNumber=1&taskMethod=weekly&taskDescription=&taskStatus=disable&taskEffectFrom=2010-06-01%2011:25
&startDay1=tuesday&startTime1=10:00&endDay1=friday&endTime1=12:00&taskName=week
You can create up to 7 weekly schedules at one go.

Downtime Schedule with Recurring type Once

Sample Request:

http://[Host]:[Port]/AppManager/xml/CreateMaintenanceTask?apikey=[APIKEY]&taskMethod=[TASKMETHOD]&customTaskStartTime=[CUSTOMTASKSTARTTIME]
&customTaskEndTime=[CUSTOMTASKENDTIME]&taskStatus=[TASKSTATUS]&taskName=[TASKNAME]&taskType=[TASKTYPE]
&taskDescription=[TASKDESCRIPTION]&resourceid=[RESOURCEID]
Request Parameters

The parameters involved in this API request are described below. Also, refer the list of common Request Parameters involved in executing the API requests.

Field	Description
API Key	The key generated from **"Generate API Key"** option in the Admin tab.
taskMethod	Denotes the recurring frequency of the maintenance schedule, 'weekly' indicates the schedule runs every week.
customTaskStartTime	The date and time when the schedule starts running
customTaskEndTime	The date and time when the schedule stops running
taskDescription	The description of what the maintenance schedule does. This parameter is optional.
offset	The difference in the number of hours with respect to GMT. If the offset value provided is invalid, Applications Manager uses the user's system time as the offset value.
taskType	The type of task to be created. Possible values are **monitor** (for an individual monitor) and **group** (for a monitor group) **.**You can configure a schedule for a monitor group by providing the tasktype as **group**.
resourceid	The resource id of the **monitor** or **monitor group** for which the schedule has to be created

Example:

http://app-windows:9090/AppManager/xml/CreateMaintenanceTask?apikey=095cb3835ff015b01a3b3a6c4ab2c38a&taskMethod=o

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nce
&customTaskStartTime=2010-06-03%2012:46&customTaskEndTime=2010-06-05%2012:46&taskStatus=disable&taskName=once
&taskType=monitor&taskDescription=&resourceid=10000322

Note

You can obtain the resourceid of a monitor by executing the ListMonitor API request. The output of this request contains resourceid of the monitor, among other values.
REST API xsd files are available in *AppManager_Home/help/RESTAPI/xsd* folder.

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EditMaintenanceTask API

This API allows the user to edit downtime schedules in Applications Manager. Users can edit schedules with the following recurring types:

- Daily
- Weekly
- Once

You can schedule a maintenance task for for monitor groups as well as individual monitors. To configure a schedule for a monitor group, just provide the **tasktype** as**group** and **resourceid** as the **monitor group id**.

Editing Downtime Schedule with Recurring type Daily

Sample Request:

http://[Host]:[Port]/AppManager/xml/EditMaintenanceTask?apikey=[APIKEY]&taskMethod=[TASKMETHOD]&taskStartTime=[TASKSTARTTIME]
&taskEndTime=[TASKENDTIME]&taskStatus=[TASKSTATUS]&taskEffectFrom=[TASKEFFECTFROM]&taskName=[TASKNAME]&taskType=[TASKTYPE]
&resourceid=[RESOURCEID]&taskid=[TASKID]

Request Parameters
The parameters involved in the API request are described below. Also, refer the list of common Request Parameters involved in executing the EditMaintenanceTask API requests.

Field	Description
taskMethod	Denotes the recurring frequency of the maintenance schedule, 'daily' indicates the schedule runs every day.
taskStartTime	The time when the maintenance task starts running
taskEndTime	The time when the maintenance task stops running
taskEffectFrom	The date and time from which the maintenance task becomes active
offset	The difference in the number of hours with respect to GMT. If the offset value provided is invalid, Applications Manager uses the user's system time as the offset value.
taskType	The type of task to be created. Possible values are **monitor** (for an individual monitor) and **group** (for a monitor group) **.**You can configure a schedule for a monitor group by providing the tasktype as **group**.
resourceid	The resource id of the **monitor** or **monitor group** for which the schedule has to be created

Example:

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http://app-windows:9090/AppManager/xml/EditMaintenanceTask?apikey=095cb3835ff015b01a3b3a6c4ab2c38a&taskMethod=daily&taskStartTime=20:00&taskEndTime=21:00&taskStatus=enable&taskEffectFrom=2010-06-05%2016:48&taskName=june4a&taskType=monitor&resourceid=10000059&taskid=10000003

Example output:

```
<AppManager-response uri="/AppManager/xml/EditMaintenanceTask">
  <result>
    <response response-code="4000">
      <message>Maintenance Task successfully edited.</message>
    </response>
  </result>
</AppManager-response>
```

Editing Downtime Schedule with Recurring type Weekly

Sample Request:

http://[Host]:[Port]/AppManager/xml/EditMaintenanceTask?apikey=[APIKEY]&taskType=[TASKTYPE]&resourceid=[RESOURCEID]&totalNumber=[TOTALNUMBER]&taskMethod=[TASKMETHOD]&taskDescription=[TASKDESCRIPTION]&taskStatus=[TASKSTATUS]&taskEffectFrom=[DATETIME]&startDay1=[STARTDAY1]&startTime1=[STARTTIME1]&endDay1=[ENDDAY1]&endTime1=[ENDTIME1]&taskName=[TASKNAME]&taskid=[TASKID]

Request Parameters

The parameters involved in the API request are described below. Also, refer the list of common Request Parameters involved in executing the EditMaintenanceTask API requests.

Field	Description
totalNumber	The number of schedules to be created. You can create a maximum of 7 weekly schedules
taskMethod	Denotes the recurring frequency of the maintenance schedule, 'weekly' indicates the schedule runs every week.
taskDescription	The description of what the maintenance schedule does, optional value.
taskEffectFrom	The date and time from which the maintenance task becomes active
startDay[n]	The day on which the maintenance task starts running. The allowed values for n are 1,2,3,4,5,6 and 7
startTime[n]	The time when the maintenance task starts running. The allowed values for n are 1,2,3,4,5,6 and 7
endDay[n]	The day on which the maintenance task stops running. The allowed values for n are 1,2,3,4,5,6 and 7
endTime[n]	The time at which the maintenance task stops running. The allowed values for n are 1,2,3,4,5,6 and 7
offset	The difference in the number of hours with respect to GMT. If the offset value provided is invalid, Applications Manager uses the user's system time as the offset value.

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taskType	The type of task to be created. Possible values are **monitor** (for an individual monitor) and **group** (for a monitor group) **.**You can configure a schedule for a monitor group by providing the tasktype as **group**.
resourceid	The resource id of the **monitor** or **monitor group** for which the schedule has to be created

Example:

http://app-windows:9090/AppManager/xml/EditMaintenanceTask?apikey=095cb3835ff015b01a3b3a6c4ab2c38a&taskType=monitor
&resourceid=10000028&totalNumber=1&taskMethod=weekly&taskDescription=&taskStatus=enable&taskEffectFrom=2010-06-01%2011:25
&startDay1=tuesday&startTime1=10:00&endDay1=friday&endTime1=12:00&taskName=week1&taskid=10000004

Downtime Schedule with Recurring type Once

Sample Request:

http://[Host]:[Port]/AppManager/xml/EditMaintenanceTask?apikey=[APIKEY]&taskMethod=[TASKMETHOD]&customTaskStartTime=[CUSTOMTASKSTARTTIME]
&customTaskEndTime=[CUSTOMTASKENDTIME]&taskStatus=[TASKSTATUS]&taskName=[TASKNAME]&taskType=[TASKTYPE]
&taskDescription=[TASKDESCRIPTION]&resourceid=[RESOURCEID]&taskid=[TASKID]

Request Parameters

The parameters involved in the API request are described below:

Field	Description
taskMethod	Denotes the recurring frequency of the maintenance schedule, 'weekly' indicates the schedule runs every week.
customTaskStartTime	The date and time when the schedule starts running
customTaskEndTime	The date and time when the schedule stops running
taskDescription	The description of what the maintenance schedule does. This parameter is optional.
offset	The difference in the number of hours with respect to GMT. If the offset value provided is invalid, Applications Manager uses the user's system time as the offset value.
taskType	The type of task to be created. Possible values are **monitor** (for an individual monitor) and **group** (for a monitor group) **.**You can configure a schedule for a monitor group by providing the tasktype as **group**.
resourceid	The resource id of the **monitor** or **monitor group** for which the schedule has to be created

Example:

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http://app-windows:9090/AppManager/xml/EditMaintenanceTask?apikey=095cb3835ff015b01a3b3a6c4ab2c38a&taskMethod=once&customTaskStartTime=2010-06-03%2012:46&customTaskEndTime=2010-06-05%2012:46&taskStatus=enable&taskName=once1&taskType=monitor&taskDescription=&resourceid=10000322&taskid=10000005

Note: You can obtain the resourceid of a monitor by executing the ListMonitor API request. The output of this request contains resourceid of the monitor, among other values. REST API xsd files are available in *AppManager_Home/help/RESTAPI/xsd* folder.

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GetMaintenanceTaskDetails/ListMaintenanceTaskDetails API

This API allows the user to view the details of downtime schedules configured in Applications Manager.

Sample Request

http://[Host]:[Port]/AppManager/xml/ListMaintenanceTaskDetails?apikey=[APIKEY]

Request Parameters

The parameters involved in the API request are described below:

Field	Description
apikey	The key generated from **"Generate API Key"** option in the Admin tab.

Example:

http://app-windows:9090/AppManager/xml/ListMaintenanceTaskDetails?apikey=93c6eb60184e41f10fba2f365060b8e3

Output for the above example:

```
<AppManager-response uri="/AppManager/xml/ListMaintenanceTaskDetails">
  <result>
    <response response-code="4000">
      <Schedules>
        <Schedule TASKNAME="Test_Weekly" TASKID="10000001" STATUS="RUNNING" OCCURENCE="Weekly">
            <ScheduledTime STARTTIME="Monday 20:00" ENDTIME="Wednesday 20:00" />
            <ScheduledTime STARTTIME="Tuesday 14:00" ENDTIME="Wednesday 15:00" />
        </Schedule>
      </Schedules>
    </response>
    </result>
</AppManager-response>
```

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DeleteMaintenanceTask API

This API allows the user to delete a downtime schedule in Applications Manager.

Sample Request

http://[Host]:[Port]/AppManager/xml/DeleteMaintenanceTask?apikey=[APIKEY]&taskid=[TASKID]

Request Parameters

The parameters involved in the API request are described below:

Field	Description
API Key	The key generated from **"Generate API Key"** option in the Admin tab.
taskid	The TASKID in the AM_MAINTENANCECONFIG table

Example:

http://app-windows:9090/AppManager/xml/DeleteMaintenanceTask?apikey=5bc6a8e9a30d5bf894586d4db90282f5&taskid=10000001

Output for the above example:

```
<AppManager-response uri="/AppManager/xml/DeleteMaintenanceTask">
  <result>
    <response response-code="4000">
      <message>Maintenance Task successfully deleted.</message>
    </response>
  </result>
</AppManager-response>
```

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Edit Monitor API

With the APIs given below, you can edit or modify the details of a specific monitor:

- DNS Monitor
- Service Monitor
- SSL Certificate Monitor
- Http URL Monitor

Request Parameters

The common parameters involved in these API requests are described below:

Field	Description
apikey	The key generated from the **Generate API Key** option in the 'Admin' tab.
displayname	The display name for the monitor. Html encoding for special characters is required (ex: Html encoding for **&** is **&** and" is **"**).
newdisplayname	The new display name for the monitor. Html encoding for special characters is required (ex: Html encoding for **&** is **&**and **"** is **"**).
host	The host name of applications manager server.
pollInterval	The interval at which the server needs to be polled. The default value is 5 minutes.
port	The port of Applications Manager server.
resourceid	The unique id which can be found from AM_ManagedObject table in the database.

Sample Request:

This example helps you to edit the display name of a service monitor in Applications Manager:

http://[Host]:[Port]/AppManager/xml/EditMonitor?apikey=[APIKEY]&type=ServiceMonitoring&resourceid=[RESOURCEID]&newdisplayname=[NEWDISPLAYNAME]&pollInterval=[pollInterval]&command=[COMMAND]&search=[SEARCH]

If the API is not executed correctly, the request will fail and errors will be thrown.

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Edit DNS Monitor API

This API allows you to edit the values used in the DNS Monitors.

APIs for Edit DNS Monitor

By Resource ID:

http://[Host]:[Port]/AppManager/xml/EditMonitor?apikey=[APIKEY]&type=DNSMonitor&resourceid=[RESOURCEID]&newdisplayname=[NEWDISPLAYNAME]&pollInterval=[pollInterval]&domain=[DOMAIN]&isProxyNeeded=[ISPROXYNEEDED]&timeout=[TIMEOUT]

By Display Name:

http://[Host]:[Port]/AppManager/xml/EditMonitor?apikey=[APIKEY]&type=DNSMonitor&displayname=[DISPLAYNAME]&newdisplayname=[DISPLAYNAME]&pollInterval=[pollInterval]&LookupAddress=[LOOKUPADDRESS]&RecordType=[RECORDTYPE]&SearchField=[SEARCHFIELD]&SearchValue=[SEARCHVALUE]&TargetAddress=[TARGETADDRESS]&timeout=[TIMEOUT]

Request Parameters

Field	Description
LookupAddress	The address you want to check in the DNS Server.
RecordType	The expected record type returned for the lookup address. The options include -None-, A, AAAA, CNAME, MX, NS, PTR, SOA, SPF, SRV, TXT.
SearchField	The value of Search Field. Options include -None-, Record Name, Address, Additional Name, Target, Admin, Host, Alias, Port, Priority.
SearchValue	The value you want to search in the specified field.
TargetAddress	Host Name / IP Address of the DNS Server.
timeout	The timeout value in seconds.
Other Common APIs	

Example Requests:

http://app-windows:9090/AppManager/xml/EditMonitor?apikey=9481566a94f26d8e44ee0889fd7628a0&type=DNSMonitor&resourceid=10000657&LookupAddress=sample
http://app-windows:9090/AppManager/xml/EditMonitor?apikey=9481566a94f26d8e44ee0889fd7628a0&type=DNSMonitor&resourceid=10000657&RecordType=AAAA
http://app-windows:9090/AppManager/xml/EditMonitor?apikey=9481566a94f26d8e44ee0889fd7628a0&type=DNSMonitor&resourceid=10000657&SearchField=Host
http://app-windows:9090/AppManager/xml/EditMonitor?apikey=9481566a94f26d8e44ee0889fd7628a0&type=DNSMonitor&resourceid=10000657&SearchValue=zoho
http://app-windows:9090/AppManager/xml/EditMonitor?apikey=9481566a94f26d8e44ee0889fd7628a0&type=DNSMonitor&resourceid=10000657&TargetAddress=192.168.5.11
http://app-windows:9090/AppManager/xml/EditMonitor?apikey=9481566a94f26d8e44ee0889fd7628a0&type=DNSMonitor&resourc

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eid=10000657&LookupAddress=sample
&RecordType=AAAA&SearchField=Host&SearchValue=zoho&TargetAddress=192.168.5.11&timeout=45

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Edit Service Monitor API

This API allows you to edit the details of the service monitors.

APIs for Edit Service Monitor

http://[Host]:[Port]/AppManager/xml/EditMonitor?apikey=[APIKEY]&type=Service Monitoring&resourceid=[RESOURCEID]&newdisplayname=[NEWDISPLAYNAME]&pollInterval=[poll Interval]&command=[COMMAND]&search=[SEARCH]

OR

http://[Host]:[Port]/AppManager/xml/EditMonitor?apikey=[APIKEY]&type=Service Monitoring&displayname=[DISPLAYNAME]&newdisplayname=[DISPLAYNAME]&pollInterval=[pollIn terval]&command=[COMMAND]&search=[SEARCH]

Request Parameters

Field	Description
command	The command that will be executed after connecting to the port.
search	The string that has to be searched after executing the command
Other Common APIs	

Example Requests:

http://app-windows:9090/AppManager/xml/EditMonitor?apikey=9481566a94f26d8e44ee0889fd7628a0&type=Service Monitoring&resourceid=10000116&newdisplayname=zoho

http://app-windows:9090/AppManager/xml/EditMonitor?apikey=9481566a94f26d8e44ee0889fd7628a0&type=Service Monitoring&resourceid=10000116&command=GET / HTTP1.1

http://app-windows:9090/AppManager/xml/EditMonitor?apikey=9481566a94f26d8e44ee0889fd7628a0&type=Service Monitoring&resourceid=10000116&search=h

http://app-windows:9090/AppManager/xml/EditMonitor?apikey=9481566a94f26d8e44ee0889fd7628a0&type=Service Monitoring&resourceid=10000116&pollInterval=10&search=&command=GET/HTTP1.0&newdisplayname=zoho

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Edit SSL Certificate Monitor API

This API allows you to edit the values provided in the SSL certificate monitor.

APIs for Edit Service Monitor

http://[Host]:[Port]/AppManager/xml/EditMonitor?apikey=[APIKEY]&type=SSLCertificateMonitor&resourceid=[RESOURCEID]&newdisplayname=[NEWDISPLAYNAME]&pollInterval=[pollInterval]&domain=[DOMAIN]&isProxyNeeded=[ISPROXYNEEDED] &timeout=[TIMEOUT]

http://[Host]:[Port]/AppManager/xml/EditMonitor?apikey=[APIKEY]&type=SSLCertificateMonitor&displayname=[DISPLAYNAME]&newdisplayname=[DISPLAYNAME]&pollInterval=[pollInterval]&domain=[DOMAIN]&isProxyNeeded=[ISPROXYNEEDED]&timeout=[TIMEOUT]

Request Parameters

Field	Description
domain	The domain name for the SSL certificate which should be monitored.
isProxyNeeded	Yes, if server is connected through proxy. No, if its not.
timeout	The Timeout value in seconds
Other Common APIs and error conditions.	

Example Requests:

http://app-windows:9090/AppManager/xml/EditMonitor?apikey=9481566a94f26d8e44ee0889fd7628a0&type=SSLCertificateMonitor&resourceid=10000661&pollInterval=10

http://app-windows:9090/AppManager/xml/EditMonitor?apikey=9481566a94f26d8e44ee0889fd7628a0&type=SSLCertificateMonitor&resourceid=10000661&domain=zoho.com

http://app-windows:9090/AppManager/xml/EditMonitor?apikey=9481566a94f26d8e44ee0889fd7628a0&type=SSLCertificateMonitor&resourceid=10000661&timeout=60

http://app-windows:9090/AppManager/xml/EditMonitor?apikey=9481566a94f26d8e44ee0889fd7628a0&type=SSLCertificateMonitor&resourceid=10000661&isProxyNeeded=Yes

http://app-windows:9090/AppManager/xml/EditMonitor?apikey=9481566a94f26d8e44ee0889fd7628a0&type=SSLCertificateMonitor&resourceid=10000661&domain=zoho.com&isProxyNeeded=No&timeout=60

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Edit URL Monitor API

This API allows you to edit the values configured in the URL Monitors.

Syntax for editing URL Monitor:

Using Resource ID:

http://[Host]:[Port]/AppManager/xml/EditMonitor?apikey=[APIKEY]&type=UrlMonitor&resourceid=[RESOURCEID]

By Display Name:

http://[Host]:[Port]/AppManager/xml/EditMonitor?apikey=[APIKEY]&type=UrlMonitor&displayname=[DISPLAYNAME]

Using URL: http://[Host]:[Port]/AppManager/xml/EditMonitor?apikey=[APIKEY]&type=UrlMonitor&url=[URL]

Request Parameters

Field	Description
apikey	The key generated from the **Generate API Key** option in the 'Admin' tab.
resourceID	The resourceid of the URL monitor that you are going to edit.
displayname	The display name of the HTTP-URL monitor.
url	The HTTP/HTTPS URL address that you want to monitor.
checkForContent	The keyword for content matching. The URL monitoring searches the keyword in the content of the URL page to check the availability of the URL. This field is optional.
errorIfMatch	The keyword which when matches with the content in the URL must be notified of error . **Note:** The search is case sensitive. Multiple keywords should be put within quotes. Otherwise, it will be treated as 'Any' one of the multiple keywords.
httpCondition	The condition/criteria of the Response Code with respect to the httpValue at which error should be notified. Possible values are: • LT - Lesser than httpValue • GT - Greater than httpValue • EQ - Equal to httpValue • NE - Not equal to httpValue • LE - Lesser than or Equal to • GE - Greater than or Equal to
httpValue	The threshold value with respect to which the httpCondition should be met.
pollInterval	The polling interval for which Applications Manager updates the status of the monitor.
requestParams	The request parameters. For example, if you want to monitor a URL like *http://appmanager:9090/showresource.do?haid=1&type=UrlMonitor&method=getMonitorForm*, then provide "?haid=1&type=UrlMonitor&method=getMonitorForm" as request parameter.
timeout	The time, in minutes, for which the URL monitor should wait for a page to complete downloading before timing out in Time out field.
urlMethod	Choose between the Post and Get method, which are the two types of Form method for any HTTP/HTTPS URL. Possible values are: • P - Post • G - Get
userName	The Username if the URL requires Form-based authentication.
password	The password for the corresponding Username if the URL requires Form-based authentication.
verifyError	Specify if want the monitor to immediately be scheduled to run again for verification, when an error is detected. Possible values are: • True - Verify the error. • False - Do not verify the error.
Other Common APIs	

Sample Requests:

http://app-windows:9090/AppManager/xml/EditMonitor?apikey=9481566a94f26d8e44ee0889fd7628a0&type=UrlMonitor&resourceid=10000657

http://app-windows:9090/AppManager/xml/EditMonitor?apikey=9481566a94f26d8e44ee0889fd7628a0&type=UrlMonitor&displayname=APM-URL-Monitor

http://app-windows:9090/AppManager/xml/EditMonitor?apikey=9481566a94f26d8e44ee0889fd7628a0&type=UrlMonitor&url=

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http://app-windows:9090/AppManager/xml/EditMonitor?apikey=9481566a94f26d8e44ee0889fd7628a0&type=UrlMonitor&displayname=APM-URL-Monitor&httpCondition=GT&httpValue=200

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Add Monitor Group API

This API allows the user to create a monitor group in Applications Manager.

Sample Request

http://[host]:[port]/AppManager/xml/AddMonitorGroup?apikey=[apikey]&grouptype=[type]&name=[displayname]

Request Parameters

The parameters involved in the API request are described below:

Field	Description
grouptype	Define the type of monitor group you want to create - monitorgroup / webappgroup.
name	Display name for the group.
ApplicationServerGroup, WebServerGroup, DatabaseGroup, ServersGroup, EdgeDevicesGroup, NetworkDevicesGroup, EndUserTransactionGroup	To add the default sub-groups while creating a Web Application Group via Rest API, you must enable the subgroup. (For example, ApplicationServerGroup=enable)

Example:

http://app-windows:9090/AppManager/xml/AddMonitorGroup?apikey=98597c390e092add5d53466794a769eb&grouptype=monitor group
&name=Bob's+Blog

http://app-windows:9090/AppManager/xml/AddMonitorGroup?apikey=98597c390e092add5d53466794a769eb&grouptype=monitor group
*&name=Bob's+Blog&WebServerGroup=enable *

**

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Add Sub-Group API

This API allows the user to create a subgroup in Applications Manager.

Sample Request

http://[host]:[port]/AppManager/xml/AddSubGroup?apikey=[apikey]&haid=[groupid]&name=[displayname]&grouptype=[sub group type]

or

http://[host]:[port]/AppManager/xml/AddSubGroup?apikey=[apikey]&mgname=[groupname]&name=[displayname]&grouptype=[sub group type]

Request Parameters

The parameters involved in the API request are described below:

Field	Description
grouptype	Define the type of sub group you want to create. **The sub-group type should be the same as that of the parent group.**The grouptype should be one of the following types: sub-group / WebServerGroup / DatabaseGroup / DatabaseCluster / ServersGroup / EdgeDevicesGroup / NetworkDevicesGroup / EndUserTransactionGroup / Site24x7
name	Display name for the sub group.
haid	The resourceid of the monitor group in which you want to create the sub group.
mgname	Display name of the monitor group in which you want to create the sub group.

Example:

http://app-windows:9090/AppManager/xml/AddSubGroup?apikey=98597c390e092add5d53466794a769eb&haid=10000168&name=Bob's+Blogsg&grouptype=sub-group

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Associate Monitor to Monitor Group API

This API allows the user to associate monitor to monitor group configured in Applications Manager.

Sample Request

http://[host]:[port]/AppManager/xml/AssociateMonitortoMG?apikey=[apikey]&resourceid=[ids]&haid=[groupid]

or

http://[host]:[port]/AppManager/xml/AssociateMonitortoMG?apikey=[apikey]&resourceid=[ids]&mgname=[groupname]

Request Parameters

The parameters involved in the API request are described below:

Field	Description
resourceid	The resource ids of monitor, monitor group, sub group which you want to associate to corresponding groups, separated by commas.
haid	The resourceid for the monitor group to which the monitor group, sub group, monitor has to be associated.
mgname	Group name for the monitor group to which the monitor group, sub group, monitor has to be associated
allowCreateMG	Value is true by default. If set to false, this prevents the default creation of a new Monitor Group if mgname is provided in the request and no Monitor Group with this name is present.

Example:

http://app-windows:9090/AppManager/xml/AssociateMonitortoMG?apikey=98597c390e092add5d53466794a769eb&resourceid=10000095,10000170&haid=10000169

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Delete Monitor Group API

This API allows the user to delete a monitor group configured in Applications Manager.

Sample Request

http://[host]:[port]/AppManager/xml/group/delete?apikey=[apikey]&name=[groupname]

or

http://[host]:[port]/AppManager/xml/group/delete?apikey=[apikey]&haid=[resourceid]

Request Parameters

The parameters involved in the API request are described below:

Field	Description
name	Display name of the monitor group which you want to delete.
haid	Resource id of the monitor group which you want to delete.

Example:

http://app-windows:9090/AppManager/xml/group/delete?apikey=98597c390e092add5d53466794a769eb&name=AppName

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Delete Sub-Group API

This API allows the user to delete a sub-group configured in Applications Manager.

Sample Request

http://[host]:[port]/AppManager/xml/subgroup/delete?apikey=[apikey]&haid=[groupid]

or

http://[host]:[port]/AppManager/xml/subgroup/delete?apikey=[apikey]&name=[displayname]

Request Parameters

The parameters involved in the API request are described below:

Field	Description
haid	Resourceid of the sub group which you want to delete.
name	Display name of the sub group which you want to delete.

Example:

http://app-windows:9090/AppManager/xml/subgroup/delete?apikey=98597c390e092add5d53466794a769eb&haid=10000169</fon
t>
**

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Edit Monitor Group API

This API lets you to edit the details of a particular monitor group.

APIs for Edit Monitor Group

http://[Host]:[Port]/AppManager/xml/group/edit?apikey=[APIKEY]&haid=[HAID]&groupname=[GROUPNAME]&owners=[OWNERS]&location=[LOCATION]&description=[DESCRIPTION]

Request Parameters

Field	Description
apikey	The key generated from the Generate API Key option in the 'Admin' tab.
haid	The unique resourceid for any monitor which can be found from AM_ManagedObject table in database.
groupname	The new display name for the group. Html encoding for Special characters in displayname is required (ex: Html encoding For **&** is **&** and **"** is **"**)
owners	The new owner of the group
location	The new location of the monitor group.
description	The new description of the monitor group.
Error codes	

Example Requests:

http://app-windows:9090/AppManager/xml/group/edit?apikey=9481566a94f26d8e44ee0889fd7628a0&haid=10000671&groupname=new

http://app-windows:9090/AppManager/xml/group/edit?apikey=9481566a94f26d8e44ee0889fd7628a0&haid=10000671&owners=admin

http://app-windows:9090/AppManager/xml/group/edit?apikey=b810259d38f463afc4a168dd98d7abb5&haid=10000475&groupname=MYTEST7 &owners=oper&location=India&description=MYTEST3Description

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Get Monitor Group Availabilty

This API allows the user to pull up availability data on a monitor group in Applications Manager.

Sample Request

http://[hostname]:[port]/AppManager/json/getMonitorGroupAvailability?apikey=[REST API Key]

Request Parameters

The parameters involved in the API request are described below:

Field	Description
apikey*	The key generated from the **Generate API Key** option in the 'Admin' tab.
IncludeSubGroup	Specify **IncludeSubGroup = true** if you also wish to know the availability status of the sub-group within the monitor group.
CustomTime	Specify **CustomTime=true** for custom time availability report. If CustomTime is true then you must provide StartTime and EndTime
StartTime	The start time of the report in milliseconds.
EndTime	The end time of the report in milliseconds.
ReportPeriod	The time period for which the report should be created. If this parameter is not provided then today's availability is shown. Possible Values are: • 0 = Todays Availability • 1 = Last 7 Days Availability • 2 = Last 30 Days Availability • 3 = Yesterday Availability • 5 = Last 1 Year Availability • 6 = This week Availability • 7 = This month Availability • 8 = This year Availability • 9 = This quarter Availability • 11= Last month Availability • 12= Last week Availability

* - mandatory

Examples:

http://localhost:9090/AppManager/json/getMonitorGroupAvailability?apikey=833015a191b75b11f953774ab34f034d

To include sub-group -

http://localhost:9090/AppManager/json/getMonitorGroupAvailability?apikey=833015a191b75b11f953774ab34f034d&IncludeSubGroup=true

For service availability calculation:

http://localhost:9090/AppManager/json/getMonitorGroupAvailability?apikey=833015a191b75b11f953774ab34f034d&ServiceAvailability=true

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For custom time availability report:
http://localhost:9090/AppManager/json/GetMonitorGroupAvailability?apikey=833015a191b75b11f953774ab34f034d&CustomTime=true&StartTime=2&EndTime=4

To set the Report Period:
http://localhost:9090/AppManager/json/GetMonitorGroupAvailability?apikey=833015a191b75b11f953774ab34f034d&ReportPeriod=1

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Move Monitor Group API

This API lets you to move a particular monitor group.

APIs for Move Monitor Group

http://[Host]:[Port]/AppManager/xml/group/move?apikey=[APIKEY]&haid=[HAID]&tohaid=[HAID]

Request Parameters

Field	Description
apikey	The key generated from the Generate API Key option in the 'Admin' tab.
haid	The unique resourceid for any monitor which can be found from AM_ManagedObject table in database.
Error codes	

Example Requests:

http://localhost:9091/AppManager/xml/group/move?apikey=3feef451ed7d7e30c08b2908aed0de40&haid=10000278&tohaid=10000279

http://localhost:9091/AppManager/xml/group/move?apikey=3feef451ed7d7e30c08b2908aed0de40&haid=10000278&tohaid=0

The above URL will move monitor group 10000278 outside its parent group when specifying **0** in the **tohaid**. It will be listed as main group in monitor group view.

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Unassociate Monitor from Monitor Group API

This API allows the user to unassociate a monitor from a monitor group configured in Applications Manager.

Sample Request

http://[host]:[port]/AppManager/xml/removemonitor/group?apikey=[apikey]&resourceid=[ids]&haid=[groupid]

or

http://[host]:[port]/AppManager/xml/removemonitor/group?apikey=[apikey]&resourceid=[ids]&mgname=[groupname]

Request Parameters

The parameters involved in the API request are described below:

Field	Description
resourceid	The resource ids of monitor, monitor group, sub group which you want to associate to corresponding groups, separated by commas.
haid	The resourceid for the monitor group to which the monitor group, sub group, monitor has to be associated.
mgname	group name for the monitor group to which the monitor group, sub group, monitor has to be associated

Example:

http://localhost:9091/AppManager/xml/removemonitor/group?apikey=2a0ac0c950e0bf3a90db7792b0572c1e&resourceid=10000096,10000096&haid=10000097

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Get Downtime Details API

This API is used to obtain the downtime data use of a monitor or a monitor group requested by the user for a specific period of time.

API for XML Response:

*http://[APM Host]:[APM Port]/AppManager/xml/**GetDowntimeDetails**?apikey=[API Key]&period=6&resourceid=[resourceid]&showFullDetails=true*

API for JSON Response:

*http://[APM Host]:[APM Port]/AppManager/json/**GetDowntimeDetails**?apikey=[API Key]&period=6&resourceid=[resourceid]&showFullDetails=true*

Request Parameters:

Field	Description
apikey	The key generated using the **Generate API Key** option in the 'Admin' tab.
resourceid	The resource id of the monitor, using which you can ping the host corresponding to the monitor. You can get downtime details for multiple resource ids by using comma separated values.
period	The period for which the downtime details have been requested: Period: 0 ===> Today Period: 3 ===> Yesterday Period: 6 ===> This Week Period: 1 ===> Last 7 days Period: 12 ===> Last Week Period: 7 ===> This Month Period: 2 ===> Last 30 days Period: 11 ===> Last Month Period: 9 ===> This Quarter Period: 8 ===> This Year Period: 5 ===> Last 1 year
showFullDetails	An optional parameter used to specify if user needs downtime details on a daily basis as additional data in response. Values are true or false (false dy default).

XML Input

http://apm-prod1:9090/AppManager/xml/GetDowntimeDetails?apikey=c4e547c2330e2eb92d3e7af2362da9e9&period=6&resourceid=10000135&showFullDetails=true

XML Response


```
<AppManager-response uri="/AppManager/xml/GetDowntimeDetails">
<result>
<response response-code="4000">
<Monitor AvailabilityMessage="-" SchedulePercent="0.0" DisplayName="LocalFile" ResourceId="10000135" UnmanagePercent="0.0" AvailabilitySeverity="-"
DownPercent="100.0" UpPercent="8.012714E-4" Period="6">
<Downtimes Date="August 21, 2013" DownPercent="54.88" SchedulePercent="0.0" UpPercent="45.12" UnmanagePercent="0.0">
<DowntimeSummary DownTimeMillis="1377062383743" UpTime="11:59:59 PM" DownTime="10:49:44 AM" Downtime_Reason="No Information Available."
TotalDownTime="13 Hrs 10 Mins 15 Secs" ReasonID="-1"/>
</Downtimes>
<Downtimes Date="May 20, 2013" DownPercent="0.0" SchedulePercent="0.0" UpPercent="100.0" UnmanagePercent="0.0"/>
<Downtimes Date="May 19, 2013" DownPercent="0.0" SchedulePercent="0.0" UpPercent="100.0" UnmanagePercent="0.0"/></Monitor></response>
</result>
</AppManager-response>
```


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JSON Input
http://apm-prod1:9090/AppManager/xml/GetDowntimeDetails?apikey=c4e547c2330e2eb92d3e7af2362da9e9&period=6&resourceid=10000135&showFullDetails=true
JSON Response

{"response":{"result":[{"AvailabilityMessage":"-","SchedulePercent":"0.0","DisplayName":"LocalFile","ResourceId":"10000155","UnmanagePercent":"0.0","AvailabilitySeverity":"-","DownPercent":"100.0","Downtimes":[{"Date":"August 22, 2013","DownPercent":"100.0","SchedulePercent":"0.0","UpPercent":"0.0","UnmanagePercent":"0.0","DowntimeSummary":[{"DownTimeMillis":"1377109801322","UpTime":"11:59:59 PM","DownTime":"12:00:01 AM","Downtime_Reason":"No Information Available.","TotalDownTime":"23 Hrs 59 Mins 58 Secs","ReasonID":"-1"}]},{"Date":"August 21, 2013","DownPercent":"54.88","SchedulePercent":"0.0","UpPercent":"45.12","UnmanagePercent":"0.0","DowntimeSummary":[{"DownTimeMillis":"1377062383743","UpTime":"11:59:59 PM","DownTime":"10:49:44 AM","Downtime_Reason":"No Information Available.","TotalDownTime":"13 Hrs 10 Mins 16 Secs","ReasonID":"-1"}]},{"Date":"August 20, 2013","DownPercent":"0.0","SchedulePercent":"0.0","UpPercent":"100.0","UnmanagePercent":"0.0","DowntimeSummary":[]},{"Date":"August 19, 2013","DownPercent":"0.0","SchedulePercent":"0.0","UpPercent":"100.0","UnmanagePercent":"0.0","DowntimeSummary":[]}],"UpPercent":"2.8367646E-4","Period":"6"}],"uri":"/AppManager/json/GetDowntimeDetails"},"response-code":"4000"}

Response Parameters:

Field	Description
AvailabilityMessage	The current availability RCA message of the resource.
SchedulePercent	The total scheduled downtime percentage of the resource.
DisplayName	The display name of the resource.
ResourceId	The resource id of the monitor, using which you can ping the host corresponding to the monitor.
UnmanagePercent	The total unmanaged downtime percentage of the resource.
AvailabilitySeverity	The current availability severity of the resource.
DownPercent	The total downtime percentage of the resource.
UpPercent	The total uptime percentage of the resource.
Period	The period for which the downtime details have been requested: Period: 0 ===> Today Period: 3 ===> Yesterday Period: 6 ===> This Week Period: 1 ===> Last 7 days Period: 12 ===> Last Week Period: 7 ===> This Month Period: 2 ===> Last 30 days Period: 11 ===> Last Month Period: 9 ===> This Quarter Period: 8 ===> This Year Period: 5 ===> Last 1 year

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Field	Description
Downtimes (displayed only when requested for FullDetails)	

Field	Description
Date	Represents the date for which the below details are calculated
DownPercent	Downtime percentage on above for the above date field
SchedulePercent	Scheduled downtime percentage on above for the above date field
UpPercent	Availability percentage on above for the above date field
UnmanagePercent	Unmanaged percentage on above for the above date field
DowntimeSummary (Appears only if there is a downtime on that date)	

Field	**Description**
DownTimeMillis	Total Downtime in Milliseconds ex: 1342381696674
UpTime	Formatted Time at which the resource went up after being down for some period. ex: 3:28:42 PM
DownTime	Formatted Time at which the resource went down. ex: 1:18:17 AM
TotalDownTime	Total downtime in Hrs,mins and sec ex: 14 Hrs 10 Mins 25 Secs
ReasonID	Reason Id for the Below mentioned Downtime Reason. (-1 if no information is available for downtime)
Downtime_Reason	Reason for downtime occured. ex: Outage is due to power supply. No Information Available. : if no reason is mentioned

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Get Monitor Data API

This API allows the user to fetch the data for the latest poll from monitors. At the moment, we support fetching of first-level attributes of a monitor, i.e. the current data for the important attributes of a monitor such as response time, collection time, etc.

Sample Request:

http://[Host]:[Port]/AppManager/xml/GetMonitorData?apikey=[APIKEY]&resourceid=[RESOURCEID]

Request Parameters

The parameters involved in the API request are described below:

Field	**Description**
API Key	The key generated from **"Generate API Key"** option in the Admin tab.
resourceid	The resource id of the monitor for which data needs to be fetched
period	The period for which the downtime details have been requested: Period : 0 ===> Today Period : 3 ===> Yesterday Period : 6 ===> This Week Period : 1 ===> Last 7 days Period : 12 ===> Last Week Period : 7 ===> This Month Period : 2 ===> Last 30 days Period : 11 ===> Last Month Period : 9 ===> This Quarter Period : 8 ===> This Year Period : 5 ===> Last 1 year

Example:

http://app-windows:9090/AppManager/xml/GetMonitorData?apikey=095cb3835ff015b01a3b3a6c4ab2c38a&resourceid=10000293

The above example fetches the current data of a Sybase monitor.

Output for the above example:

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```
<AppManager-response uri="/AppManager/xml/GetMonitorData">
<result>
<response response-code="4000">
<Monitorinfo
DetailsPageURL="/showresource.do?resourceid=10001267&method=showResourceForResourceID&PRINTER_FRIENDLY=true"
TODAYUNAVAILPERCENT="0.0" HEALTHATTRIBUTEID="1651" TARGETADDRESS="" RESOURCENAME="app-
xp2.csez.zohocorpin.com" TODAYAVAILPERCENT="100.0"
TARGETNAME="" TODAYSCHEDDOWNPERCENT="0.0" AVAILABILITYATTRIBUTEID="1650" HEALTHSEVERITY="5" DISKUTIL="-1"
MANAGED="true" PHYMEMUTIL="-1"
AVAILABILITYMESSAGE="Resource up. <br>The resource APM-Windows is available." AVAILABILITYSEVERITY="5"
TYPESHORTNAME="Windows" TYPE="Windows XP"
DESCRIPTION="Network Resource" LASTPOLLEDTIME="Mar 29, 2012 2:40 PM" RESOURCEID="10001267"
TODAYUNMANGDPERCENT="0.0"
HEALTHMESSAGE="Health of APM-Windows is clear. <br>Root Cause : <br>1. Data Collection Successful<br>2. APM-Windows is
up<br>"
CPUUTIL="-1" DISPLAYNAME="APM-Windows" HEALTHSTATUS="clear"
RCAPageURL="/jsp/RCA.jsp?resourceid=10001267&attributeid=1651"
IMAGEPATH="/images/icon_monitors_windows.gif" AVAILABILITYSTATUS="up">
<Attribute DISPLAYNAME="Physical Memory Utilization" Value="37" Units=" %" AttributeID="1652" />
<Attribute DISPLAYNAME="Swap Memory Utilization" Value="No Data Available." Units=" %" AttributeID="1653" />
<Attribute DISPLAYNAME="CPU Utilization" Value="5" Units=" %" AttributeID="1657" />
<Attribute DISPLAYNAME="Free Physical Memory (MB)" Value="No Data Available." Units=" " AttributeID="1659" />
<Attribute DISPLAYNAME="CPU Utilization" Value="5" Units=" %" AttributeID="9641" />
<Attribute DISPLAYNAME="Total Disk Utilization(MB)" Value="40657" Units=" " AttributeID="1660" />
<Attribute DISPLAYNAME="Total Disk Utilization(%)" Value="16" Units=" " AttributeID="1661" />
<Attribute DISPLAYNAME="Total Disk FreeSpace(MB)" Value="215329" Units=" " AttributeID="1662" />
<Attribute DISPLAYNAME="Total Disk FreeSpace(%)" Value="84" Units=" " AttributeID="1663" />
<Attribute DISPLAYNAME="Disk Utilization" Value="16" Units=" %" AttributeID="711" />
<Attribute DISPLAYNAME="Disk Utilization" Value="40657" Units=" MB" AttributeID="712" />
<Attribute DISPLAYNAME="Free Disk Space(%)" Value="84" Units=" " AttributeID="736" />
<Attribute DISPLAYNAME="Free Disk Space(MB)" Value="215329" Units=" " AttributeID="737" />
<Attribute DISPLAYNAME="Response Time" Value="1" Units=" ms" AttributeID="1658" />
<CHILDMONITORS AVAILABILITYID="NA" DISPLAYNAME="Disk" HEALTHID="710">
<CHILDMONITORINFO DISPLAYNAME="C:" RESOURCEID="10001270" AVAILABILITYSEVERITY="-" HEALTHSEVERITY="-">
<CHILDATTRIBUTES DISPLAYNAME="Disk Utilization" Value="38" Units=" %" AttributeID="711" />
<CHILDATTRIBUTES DISPLAYNAME="Disk Utilization" Value="38495" Units=" MB" AttributeID="712" />
<CHILDATTRIBUTES DISPLAYNAME="Free Disk Space(%)" Value="62" Units=" " AttributeID="736" />
<CHILDATTRIBUTES DISPLAYNAME="Free Disk Space(MB)" Value="63902" Units=" " AttributeID="737" />
</CHILDMONITORINFO>
<CHILDMONITORINFO DISPLAYNAME="D:" RESOURCEID="10001271" AVAILABILITYSEVERITY="-" HEALTHSEVERITY="-">
<CHILDATTRIBUTES DISPLAYNAME="Disk Utilization" Value="1" Units=" %" AttributeID="711" />
<CHILDATTRIBUTES DISPLAYNAME="Disk Utilization" Value="2162" Units=" MB" AttributeID="712" />
<CHILDATTRIBUTES DISPLAYNAME="Free Disk Space(%)" Value="99" Units=" " AttributeID="736" />
<CHILDATTRIBUTES DISPLAYNAME="Free Disk Space(MB)" Value="151427" Units=" " AttributeID="737" />
</CHILDMONITORINFO>
</CHILDMONITORS>
<CHILDMONITORS AVAILABILITYID="NA" DISPLAYNAME="NetInterface" HEALTHID="730">
<CHILDMONITORINFO DISPLAYNAME="MS TCP Loopback interface" RESOURCEID="10001268" AVAILABILITYSEVERITY="-"
HEALTHSEVERITY="-">
<CHILDATTRIBUTES DISPLAYNAME="Input Traffic" Value="75" Units=" Kbps" AttributeID="732" />
<CHILDATTRIBUTES DISPLAYNAME="Output Traffic" Value="75" Units=" Kbps" AttributeID="733" />
<CHILDATTRIBUTES DISPLAYNAME="Input Utilization" Value="0.0" Units=" (%)" AttributeID="734" />
<CHILDATTRIBUTES DISPLAYNAME="Ouput Utilization" Value="0.0" Units=" (%)" AttributeID="735" />
</CHILDMONITORINFO>
<CHILDMONITORINFO DISPLAYNAME="Realtek RTL8139 Family PCI Fast Ethernet NIC - Packet Scheduler Miniport"
RESOURCEID="10001269" AVAILABILITYSEVERITY="-" HEALTHSEVERITY="-">
<CHILDATTRIBUTES DISPLAYNAME="Input Traffic" Value="61563" Units=" Kbps" AttributeID="732" />
<CHILDATTRIBUTES DISPLAYNAME="Output Traffic" Value="27866" Units=" Kbps" AttributeID="733" />
<CHILDATTRIBUTES DISPLAYNAME="Input Utilization" Value="0.06" Units=" (%)" AttributeID="734" />
<CHILDATTRIBUTES DISPLAYNAME="Ouput Utilization" Value="0.03" Units=" (%)" AttributeID="735" />
</CHILDMONITORINFO>
</CHILDMONITORS>
</Monitorinfo>
</response>
</result>
</AppManager-response>
```


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ListActions API

This API lists all the actions configured for the monitors associated to the users. The details of each action is grouped according to the action type.

API for XML Response:
*http://[APM Host]:[APM Port]/AppManager/xml/**ListActions**?apikey=[API Key]&type=all*

API for JSON Response:
*http://[APM Host]:[APM Port]/AppManager/json/**ListActions**?apikey=[API Key]&type=all*

In future versions the following features will be included:
i) Listing Actions will be supported in Admin server.
ii) Listing Actions based on the type.

Request Parameters:

Field	Description
type	This value specifies the type of action to be listed, to get all types of actions, we need to pass 'all' as the value for the field type.(In absence of this parameter also it will return all the types)

Response Details:

Field	Description
DisplayName	This is the displayname of the action.
Action	ID - Represents the Action ID ExecuteActionPath - Represents the uri for executing the action NAME - Represents the Name of the Action ActionProps - Represents the Action Proepeties like From Address, To Address, Message etc., this changes for each and every action type

XML Input
http://apm-prod1:9090/AppManager/xml/ListActions?apikey=c4e547c2330e2eb92d3e7af2262da9e9&type=all
XML Response

```
<AppManager-response uri="/AppManager/xml/ListActions">
<result>
<response response-code="4000">
<Actions DisplayName="SMS Action(s)">
<Action ID="10000003" ExecuteActionPath="/common/executeSMS.do?method=testAction&remote=true&actionID=10000003" NAME="SMS">
<ActionProps MESSAGE="This information has been generated by the Applications Manager" FROMADDRESS="karthi@zohomail.com"
TOADDRESS="karthi@zohomail.com" />
</Action>
</Actions>
</response>
</result>
</AppManager-response>
```

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JSON Input
http://apm-prod1:9090/AppManager/json/ListActions?apikey=c4e547c2330e2eb92d3e7af2262da9e9&type=all
JSON Response
{"response-code":"4000","response":{"uri":"/AppManager/json/ListActions","result":[{"Action":[{"ID":"20000003","ExecuteActionPath":"/common/executeAction.do?method=testAction&remote=true&actionID=20000003","NAME":"alert_mail","ActionProps":{"FROMADDRESS":"user1@zohocorp.com","TOADDRESS":"user2@zohocorp.com","SUBJECT":"Alarm from the Applications Manager"}}],"DisplayName":"E-mail Action(s)"}]}}

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List Alarms API

ManageEngine Applications Manager provides List Alarms API that allows the user to list the information regarding recent alarms in an XML format. The alarm APIs are listed as follows.

- Listing all recent alarms
- Listing all critical recent alarms
- Listing all warning recent alarms
- Listing all clear recent alarms
- Listing recent alarms by time filter
- Listing alarms by monitor type
- Listing alarms by monitor resourceid
- Listing alarms by top N

This API will list all alarms of the monitors configured in the Applications Manager for the user corresponding to the API Key. This details will include the Health and Availability of the monitor types, type image, Health outages, Critical/Warning/Clear/UP/Down count for each and every monitor type.

APIs for ListAlarms.

- Listing all the alarms.

http://[Host]:[Port]/AppManager/xml/ListAlarms?apikey=[API key]&type=all

- Listing all critical recent alarms

http://[Host]:[Port]/AppManager/xml/ListAlarms?apikey=[API key]&type=critical

- Listing all warning recent alarms

http://[Host]:[Port]/AppManager/xml/ListAlarms?apikey=[API key]&type=warning

- Listing all clear recent alarms

http://[Host]:[Port]/AppManager/xml/ListAlarms?apikey=[API key]&type=clear

- Listing recent alarms after specified time.

http://[Host]:[Port]/AppManager/xml/ListAlarms?apikey=[API key]&time=[Time]

- Listing alarms by monitor name

http://[Host]:[Port]/AppManager/xml/ListAlarms?apikey=[API key]&resourceid=[resourceid]

- Listing alarms by monitor type

http://[Host]:[Port]/AppManager/xml/ListAlarms?apikey=[API key]&type=[TYPE]

- Listing alarms by top N

http://[Host]:[Port]/AppManager/xml/ListAlarms?apikey=[API key]&topN=[XYZ]

- Listing alarms by group

http://[Host]:[Port]/AppManager/xml/ListAlarms?apikey= [API key]&groupName=Applications Manager

- Listing all the alarms excluding monitor groups

http://[Host]:[Port]/AppManager/xml/ListAlarms?apikey=[API key]&type=allmonitors

Note:

a) For getting all the alarms we need to pass 'type=all' .... its mandatory.

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b) For combination of severity of alarms, ex: we can pass 'critical,warning' as a value for type to get both critcal and warning.

Request Parameters

Field	Description
API Key	The key generated from **"Generate API"** option in the Admin tab.
resourceid	**"resourceid=[resourceid of monitor]"** is used to list the alarms of particular monitor.
Type	**"type=all"** is used to list all alarms. **"type=critical"** is used to list all the critical alarms. **"type=warning"** is used to list all the warning alarms. **"type=clear"** is used to list all the clear alarms. **"type=[Monitor type]"** is used to list alarms by monitor type where <monitor type> is TYPE in AM_ManagedObject table like Linux, Windows XP, MYSQL-DB-server, Apache-server, UrlMonitor, Tomcat-server, etc.
Top N	**"topN=[N]"** is used to list the top N alarms.
Time	**"time=[Time]"** is used to list the alarms generated after the specified time. **<Time>** is repesented in milli second.

Extra Attributes:

AVAILABILITYSEVERITY	This is the monitor availability severity (1 - critical, 5- clear)
HEALTHSEVERITY (previously known as SEVERITY)	This is the monitor severity for health (1-critical, 4-warning & 5- clear)
TECHNICIAN	This value specifies the technician who has acknowleged/ picked up the Alarm generated for this monitor.
ANNOTATION	This value is the annotation added regarding the alarm generated for this monitor.
DetailsPageURL	This value is the link to the details page of the monitor for which the alarm is generated.

API for XML Response :

http://[APM Host]:[APM Port]/AppManager/xml/ListAlarms?apikey=[API Key]&type=all

API for JSON Response :

http://[APM Host]:[APM Port]/AppManager/json/ListAlarms?apikey=[API Key]&type=''critical,clear'

Example API that is used to get XML of all recent alarms details.

http://app-windows:9090/AppManager/xml/ListAlarms?apikey=65d0fa3e1f6c6bdcce1c3969f24c39a

Example output:

Alarm Details

DISPLAYNAME	Display Name of the Monitor like Linux-1
RESOURCEID	Resource ID of the Monitor
HEALTHSEVERITY	This is the monitor severity for health (1-critical, 4-warning & 5- clear)

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MESSAGE	Alarm message like 'Resource is down. Health is critical as the resource is not available'
ATTRIBUTE ID	Attribute ID of health of monitor
MODTIME	Time when the Alarm was generated (ms)
STATUS	Clear/Warning/Critical - status of the alarm
TYPE	Type of the Monitor like Linux
TYPEDISPLAYNAME	Display Name of the Type like 'Linux'
AVAILABILITYSEVERITY	This is the monitor availability severity (1 - critical, 5- clear)
TECHNICIAN	This value specifies the technician who has acknowleged/ picked up the Alarm generated for this monitor.
ANNOTATION	This value is the annotation added regarding the alarm generated for this monitor.
DetailsPageURL	This value is the link to the details page of the monitor for which the alarm is generated.


```
<AppManager-response uri="/AppManager/xml/ListAlarms">
<result>
<response response-code="4000">
<Alarm DISPLAYNAME="DB2" MODTIME="1333012233887" AVAILABILITYSEVERITY="5" ATTRIBUTEID="2601" TECHNICIAN="None"
STATUS="warning" MESSAGE="Health of DB2 is warning. <br>Root Cause : <br>1. Connection Time 1504 > 1500 ms (threshold).<br>"
ANNOTATION="YES" RESOURCEID="10001307" TYPE="DB2-server"
DetailsPageURL="/showresource.do?resourceid=10001307&method=showResourceForResourceID&PRINTER_FRIENDLY=true"
TYPEDISPLAYNAME="DB2" SHORTMESSAGE="Health is Warning" HEALTHSEVERITY="4" />
</response>
</result>
</AppManager-response>
```


Example API that is used to get XML of all recent alarms details which are generated after a particular time.

http://app-windows:9090/AppManager/xml/ListAlarms?apikey=65d0fa3e1f6c6bdcce1c3969f24c39a8&time=1248868798412

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ListDashboards API

This API fetches the List of Dashboards created in the Server which includes all the widgets configured in the Dashboards as there is no concept of assigning the dashboards/widgets to operators. But the data which is to be populated will be based on the monitors assigned for the user.

API for XML Response:

http://[APM Host]:[APM Port]/AppManager/xml/ListDashboards?apikey=[Api Key]

API for JSON Response:

http://[APM Host]:[APM Port]/AppManager/json/ListDashboards?apikey=[API Key]

Response Details:

Field	Description
DashboardId	This is the username.
DashboardName	This is the description of the user account given at the time of creation of user account
Widget	WidgetName -- This represents the display name of the widget WidgetId -- This is the id of the widget created in this dashboard. WidgetURL -- This is the link to the widget of this dashboard


```
<AppManager-response uri="/AppManager/xml/ListDashboards">
<result>
<response response-code="4000">
<Dashboard DashboardId="10000001" DashboardName="Default Dashboard">
<Widget WidgetName="Top N Monitors" WidgetId="10000040" WidgetURL="/MyPage.do?method=getWidget&pageid=10000001&widgetid=10000040"/>
<Widget WidgetName="Current Availability " WidgetId="10000044" WidgetURL="/MyPage.do?method=getWidget&pageid=10000001&widgetid=10000044"/>
<Widget WidgetName="Last 24 Hours / 30 Days Availability History" WidgetId="10000046"
WidgetURL="/MyPage.do?method=getWidget&pageid=10000001&widgetid=10000046"/>
<Widget WidgetName="Last 24 Hours / 30 Days Health History" WidgetId="10000047"
WidgetURL="/MyPage.do?method=getWidget&pageid=10000001&widgetid=10000047"/>
<Widget WidgetName="Availability,Health and Alarm Summary" WidgetId="10000048"
WidgetURL="/MyPage.do?method=getWidget&pageid=10000001&widgetid=10000048"/>
<Widget WidgetName="Monitor Groups" WidgetId="10000057" WidgetURL="/MyPage.do?method=getWidget&pageid=10000001&widgetid=10000057"/>
<Widget WidgetName="Infrastructure Snapshot" WidgetId="10000078" WidgetURL="/MyPage.do?method=getWidget&pageid=10000001&widgetid=10000078"/>
<Widget WidgetName="Recent 10 Alarms" WidgetId="10000079" WidgetURL="/MyPage.do?method=getWidget&pageid=10000001&widgetid=10000079"/>
<Widget WidgetName="Performance Metric Widget" WidgetId="10000088" WidgetURL="/MyPage.do?method=getWidget&pageid=10000001&widgetid=10000088"/>
</Dashboard>
<Dashboard DashboardId="10000005" DashboardName="pavan dashboard">
<Widget WidgetName="Top N Monitors" WidgetId="10000007" WidgetURL="/MyPage.do?method=getWidget&pageid=10000005&widgetid=10000007"/>
<Widget WidgetName="Tabular Data" WidgetId="10000008" WidgetURL="/MyPage.do?method=getWidget&pageid=10000005&widgetid=10000008"/>
<Widget WidgetName="Recent 10 Alarms" WidgetId="10000009" WidgetURL="/MyPage.do?method=getWidget&pageid=10000005&widgetid=10000009"/>
</Dashboard>
</response>
</result>
</AppManager-response>
```


JSON Input

http://apm-prod1:9090/AppManager/json/ListDashboards?apikey=c4e547c2330e2eb92d3e7af2262da9e9

JSON Response


```
{"response-code":"4000","response":{"uri":"/AppManager/json/ListDashboards","result":[{"Widget":[{"WidgetName":"Monitor
Groups","WidgetId":"20000001","WidgetURL":"/MyPage.do?method=getWidget&pageid=20000001&widgetid=20000001"},{"WidgetName":"Infrastructure
Snapshot","WidgetId":"20000002","WidgetURL":"/MyPage.do?method=getWidget&pageid=20000001&widgetid=20000002"},{"WidgetName":"Recent 10
Alarms","WidgetId":"20000003","WidgetURL":"/MyPage.do?method=getWidget&pageid=20000001&widgetid=20000003"}],"DashboardId":"20000001","DashboardName":"Default
Dashboard"}]}}
```


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List Monitor API

ManageEngine Applications Manager provides List Monitor API that allows the user to list details of monitor by the following categories.

- By monitor Type
- By monitor ResourceID
- Listing all the added monitors

This API lists all the monitors of a given type that are configured in Applications Manager for the user corresponding to the API Key. This details displayed includes the Health and Availability of the monitor types, image type, Health outages and Critical/Warning/Clear/UP/Down count for each monitor type.

APIs for ListMonitor

1. By monitor Type

   http://[Host]:[Port]/AppManager/xml/ListMonitor?apikey=[API key]&type=[TYPE in AM_ManagedObject table]

2. By particular monitor name

   http://[Host]:[Port]/AppManager/xml/ListMonitor?apikey=[API key]&resourceid=[Resourceid]

3. Listing all the added monitors

   http://[Host]:[Port]/AppManager/xml/ListMonitor?apikey=[API key]&type=all

4. API For XML Response

   *http://[APM Host]:[APM Port]/AppManager/xml/**ListMonitor**?apikey=[API Key]&type=all*

5. For JSON Response

   *http://[APM Host]:[APM Port]/AppManager/json/**ListMonitor**?apikey=[API Key]&type=[Type]*

Note:

a) For getting both Esx VirtualMachine and HyperV VirtualMachine , we can simply pass VirtualMachine as type

b) For getting all windows types, pass 'Windows' as type value

c) For all network devices (devices added to APM from OPM or OpStor) simply pass 'NWD' as value for type.

d) *Additional attributes for CHILD MONITORS are displayed when the RESOURCEID parameter is used.*

Request Parameters

Field	Description
API Key	The key generated from "Generate API" option in the Admin tab.
Type	"type=<monitor type>" is used to list all the monitors in a specified monitor type. <monitor type> is TYPE in AM_ManagedObject table like Linux, Windows XP, MYSQL-DB-server, Apache-server, UrlMonitor, Tomcat-server, etc.
resourceid	The resourceid of the monitor
type	This value specifies the monitor type, to get all monitor types we need to pass 'all' as the value for the field type.

Other Attributes:

IMAGEPATH	This monitor type's image path

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LASTALARMTIME	This is the time at which last alarm has been generated.

Example API that is used to get XML of monitors by monitor type:

http://app-windows:9090/AppManager/xml/ListMonitor?apikey=[Api Key]&type=Windows

Example API that is used to get XML of all monitors:

http://app-windows:9090/AppManager/xml/ListMonitor?apikey=65d0fa3e1f6c6bdcce1c3969f24c39a8&type=all

Example API that is used to get XML of a particular monitor:

http://app-windows:9090/AppManager/xml/ListMonitor?apikey=65d0fa3e1f6c6bdcce1c3969f24c39a8&resourceid=10000047

Example output:

Monitor Details:

DISPLAYNAME	Monitor's Display Name
RESOURCE ID	Monitor's Resource ID
TYPE	Monitor type like Windows, Linux
Health Details	Contains HEALTHMESSAGE that gives the Health Root Cause Message, Health Attribute ID, HEALTHSEVERITY - (5/4/1) - Clear/Warning/Crirical , STATUS - Clear/Warning/Critical
Availability Details	Contains AVAILABILITYMESSAGE that gives the Availability Root Cause Message, Availability Attribute ID, AVAILABILITYSEVERITY - Up/Down (5/1), STATUS - UP/Down
Managed	True - the monitor is in Managed state, False - the monitor is in Unmanaged State
RESOURCENAME	Monitor's Resource Name
DESCRIPTION	Description of the Resource like Network Resource
RCAPageURL	URL that links to Root Cause Analysis details
DetailsPageURL	URL that links to details page of the monitor
LASTALARMTIME	This is the time at which last alarm has been generated.

The following attributes are displayed only for child resource types like Disk, Backup details..etc:

parentid	ResourceID of Parent Monitor
parentname	The parent monitor's DisplayName
parenttype	The parent type
DetailsPageURL	The URL of Parent Monitor's details page.

XML Input:
http://app-windows:9090//AppManager/xml/ListMonitor?apikey=831975d6aace66d71c4f63027&resourceid=1000003
Response:
<AppManager-response uri="/AppManager/xml/ListMonitor"><result><response response-code="4000"><Monitor DetailsPageURL="/showresource.do?resourceid=10000035&method=showResourceForResourceID&PRINTER_FRIENDLY=true" HEALTHATTRIBUTEID="1931" ASSOCIATEDGROUPS="Name:Applications Manager;Id:10000029,Name:SubGrp11;Id:10000105" RESOURCENAME="app-windows:9090.csez.zohocorpin.com" Managed="true" HEALTHSEVERITY="1" AVAILABILITYATTRIBUTEID="1930" AVAILABILITYMESSAGE="Resource up.
The resource app-windows:9090_Windows 7 is available." AVAILABILITYSEVERITY="5" TYPESHORTNAME="Windows" TYPE="Windows 7" DESCRIPTION="Network Resource" HOSTNAME="app-windows:9090.csez.zohocorpin.com" RESOURCEID="10000035" HEALTHMESSAGE="Health of app-windows:9090_Windows 7 is critical.
Root Cause :
1. aaa is down
2. 111 is down
" PORT="-1" DISPLAYNAME="app-windows:9090_Windows 7" RCAPageURL="/jsp/RCA.jsp?resourceid=10000035&attributeid=1931" HEALTHSTATUS="critical" HOSTIP="192.168.26.145" IMAGEPATH="/images/icon_monitors_windows.gif" AVAILABILITYSTATUS="up" LASTALARMTIME="1409221314773"/></response></result></AppManager-response>

Note: You can obtain the resourceid of a monitor by executing the ListMonitor API request. The output of this request contains resourceid of the monitor, among other values.

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ListMonitorGroups API

This API will fetch all the List of Monitor Groups created in the Server which includes all the sub- groups and associated monitors configured of the Monitor group. This will also list the monitor groups associated to the user. This will have information about monitor groups today's availability, monitor health outages among subgroups and associated monitors.

API for XML Response:
http://[APM Host]:[APM Port]/AppManager/xml/ListMonitorGroups?apikey=[API Key]&type=all

API for JSON Response:
http://[APM Host]:[APM Port]/AppManager/json/ListMonitorGroups?apikey=[API Key]&groupId=10000035

Request Parameters:

Field	Description
type	To get all monitor groups we need to pass 'all' as the value for the field type.
groupId	This parameter is used to get the Monitor Group and its associated monitors based on the monitor group id for the user
groupName	This parameter is used to get the Monitor Group and its associated monitors based on the monitor group name for the user.
outageReports	This parameter is used to determine whether the user need outage reports. The value of this parameter is either true or false. The default value is true. The following details are added in the response if value is "true": • TODAYAVAILPERCENT • TODAYSCHEDDOWNPERCENT • TODAYUNMANGDPERCENT • TODAYUNAVAILPERCENT • OUTAGES • AvailabilityUnknownCount • UPCOUNT • DOWNCOUNT • HealthUnknownCount • CLEARCOUNT • WARNINGCOUNT • CRITICALCOUNT
severityDetails	This parameter is used to define whether the user need severity details or not. The value of this parameter is either true or false. The default value is true. The following details are added in the response if value is "true": • HEALTHSEVERITY • HEALTHSTATUS • HEALTHMESSAGE • HealthRCAURL • AVAILABILITYSEVERITY • AVAILABILITYSTATUS • AVAILABILITYMESSAGE • AvailabilityRCAURL
treeview	This parameter is used for displaying the tree view structure of the given monitor group. The values are, • toplevlel - Displays the all parent monitor groups of the given group. • bottomlevel - Displays the all child monitor groups of the given group. • all - Displays the all parent and child monitor groups of the given group. If none of the above arguments passed, by default the first level sub-group will be displayed.

Response Details:

Field	Description
DetailsPageURL	This is the url for the details page of the monitor group
TODAYUNAVAILPERCENT	This value represents the today's unavailability perecentage
AvailabilityRCAURL	This represents the Availability RCA Url.
Action	This represents status of the monitor group whether actions or enabled or not
CRITICALCOUNT	This represents the critical monitors/monitorgroups count
NAME DISPLAYNAME	This Represents the displayname of the monitor group

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DOWNCOUNT	This represents the total number of monitors/monitor groups down in this group
TODAYAVAILPERCENT	This value represents the today's availability perecentage
TODAYSCHEDDOWNPERCENT	This value represents the today's scheduled downtime perecentage
Type	This value represents type i.e Monitor group or sub group
HEALTHSEVERITY	This represents the severity of the health for this Monitor group (1-critical, 4-warning & 5-clear)
HealthUnknownCount	This represents the number of monitors or subgroups for which the health is unknown.
AVAILABILITYSEVERITY	This represents the severity of the availability for this monitor group (1-down , 5-up)
AVAILABILITYMESSAGE	This is the availability message for this group
RESOURCEID	This is the resourceid of the monitor group.
CLEARCOUNT	This represents the number of monitors or subgroups for which the health is clear.
UPCOUNT	This represents the number of monitors or subgroups for which the availability is up.
HealthRCAURL	This represents the link which show the Health RCA of this group.
TODAYUNMANGDPERCENT	This value represents the today's unmanaged perecentage
HEALTHMESSAGE	This is the health message for this group
AvailabilityUnknownCount	This represents the number of monitors or subgroups for which the availability is unknown.
OUTAGES	This represents the number of monitors or subgroups for which the health is not clear.
WARNINGCOUNT	This represents the number of monitors or subgroups for which the health is warning.
HEALTHSTATUS	This represents health status of this group (CRITICAL / CLEAR / WARNING)
AVAILABILITYSTATUS	This represents availablility status of this group (UP/ DOWN)
SubMonitorGroup	DetailsPageURL --- This is the details page of the sub group TODAYUNAVAILPERCENT --- this is today's unavailability percentage for sub group AvailabilityRCAURL --- this represents the availability RCA url for sub group Action --- this states whether the actions are enabled for this subgroup or not. NAME DISPALYNAME --- this is the displayname of the subgroup TODAYAVAILPERCENT --- this is today's availability percentage for sub group TODAYSCHEDDOWNPERCENT --- this is today's scheduled downtime percentage for sub group HEALTHSEVERITY --- this is health severity of the sub group TYPE --- this represents whether it is subgroup/group AVAILABILITYSEVERITY --- this is availability severity of the sub group AVAILABILITYMESSAGE --- this is availability message of the sub group RESOURCEID --- this is resource id the sub group HealthRCAURL --- this is health RCA url of this sub group TODAYUNMANGDPERCENT --- this is today's unmanaged percentage of the sub group HEALTHMESSAGE --- this is health message of the sub group HEALTHSTATUS --- this is health status of the sub group AVAILABILITYSTATUS --- this is availability status of the sub group

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Case 0: When the type is all


```
<AppManager-response uri="/AppManager/xml/ListMonitorGroups">
<result>
<response response-code="4000">
<MonitorGroups>
<MonitorGroup DetailsPageURL="/showresource.do?method=showResourceForResourceID&resourceid=10000036&method=showApplication"
TODAYUNAVAILPERCENT="0.0" AvailabilityRCAURL="/jsp/RCA.jsp?resourceid=10000036&attributeid=17" Action="enabled" CRITICALCOUNT="0" NAME="Applications
Manager"
DOWNCOUNT="0" TODAYAVAILPERCENT="100.0" TODAYSCHEDDOWNPERCENT="0.0" Type="Monitor Group" HEALTHSEVERITY="5" HealthUnknownCount="0"
AVAILABILITYSEVERITY="5" AVAILABILITYMESSAGE="Resource Applications Manager is up. <br>Root Cause : <br>Resource is Up" RESOURCEID="10000036"
CLEARCOUNT="5" UPCOUNT="5"
HealthRCAURL="/jsp/RCA.jsp?resourceid=10000036&attributeid=18" TODAYUNMANGDPERCENT="0.0" HEALTHMESSAGE="Health of Applications Manager is clear.
<br>Root Cause : <br>Health is Clear"
AvailabilityUnknownCount="0" OUTAGES="0/5" DISPLAYNAME="Applications Manager_karthi-0031" WARNINGCOUNT="0" HEALTHSTATUS="clear"
AVAILABILITYSTATUS="up" />
</MonitorGroups>
</response>
</result>
</AppManager-response>
```


Case 1: When the outageReports is false


```
<AppManager-response uri="/AppManager/xml/ListMonitorGroups"><result><response response-code="4000"><MonitorGroups><MonitorGroup
HEALTHMESSAGE="Health of Applications Manager is critical. <br>Root Cause : <br><ol><li>Health of host-0589_Windows 7 is critical. <br>Root Cause : <br>1. aaa is
down <br>2. 111 is down <br></li></ol>" Type="Monitor Group" DISPLAYNAME="Applications Manager" AVAILABILITYMESSAGE="Resource Applications Manager is up.
<br>Root Cause : <br>Resource is Up" AVAILABILITYSEVERITY="5" Action="enabled" HEALTHSTATUS="critical" DESCRIPTION="The resources used by Applications
Manager" HealthRCAURL="/jsp/RCA.jsp?resourceid=10000029&attributeid=18" RESOURCEID="10000029" AVAILABILITYSTATUS="up"
AvailabilityRCAURL="/jsp/RCA.jsp?resourceid=10000029&attributeid=17"
DetailsPageURL="/showresource.do?method=showResourceForResourceID&resourceid=10000029&method=showApplication" NAME="Applications Manager"
HEALTHSEVERITY="1"/></MonitorGroups></response></result></AppManager-response>
```


Case 2: When the severityDetails is false


```
<AppManager-response uri="/AppManager/xml/ListMonitorGroups"><result><response response-code="4000"><MonitorGroups><MonitorGroup
DetailsPageURL="/showresource.do?method=showResourceForResourceID&resourceid=10000029&method=showApplication" TODAYUNAVAILPERCENT="0.0"
Action="enabled" CRITICALCOUNT="1" NAME="Applications Manager" TODAYAVAILPERCENT="100.0" DOWNCOUNT="0" TODAYSCHEDDOWNPERCENT="0.0"
Type="Monitor Group" HealthUnknownCount="0" DESCRIPTION="The resources used by Applications Manager" RESOURCEID="10000029" UPCOUNT="4"
CLEARCOUNT="3" TODAYUNMANGDPERCENT="0.0" AvailabilityUnknownCount="0" OUTAGES="1/4" DISPLAYNAME="Applications Manager"
WARNINGCOUNT="0"/></MonitorGroups></response></result></AppManager-response>
```


Case 3: When both the outageReports and the severityDetails are false


```
<AppManager-response uri="/AppManager/xml/ListMonitorGroups"><result><response response-code="4000"><MonitorGroups><MonitorGroup
RESOURCEID="10000029" DISPLAYNAME="Applications Manager" DESCRIPTION="The resources used by Applications Manager" Type="Monitor Group"
DetailsPageURL="/showresource.do?method=showResourceForResourceID&resourceid=10000029&method=showApplication" Action="enabled" NAME="Applications
Manager"/><MonitorGroup RESOURCEID="10000103" DISPLAYNAME="ParentGrp1" DESCRIPTION="Description....This service is critical to our business" Type="Monitor
Group" DetailsPageURL="/showresource.do?method=showResourceForResourceID&resourceid=10000103&method=showApplication" Action="enabled"
NAME="ParentGrp1"><SubMonitorGroup RESOURCEID="10000104" DISPLAYNAME="SubGrp1"
DetailsPageURL="/showresource.do?method=showResourceForResourceID&resourceid=10000104&method=showApplication" Action="enabled" NAME="SubGrp1"
IMAGEPATH="/images/icon_monitors_app.gif" TYPE="Sub Group"></SubMonitorGroup></MonitorGroups></response></result></AppManager-response>
```


JSON Input

http://apm-prod1:9090/AppManager/json/ListMonitorGroups?apikey=c4e547c2330e2eb92d3e7af2262da9e9&groupId=10000035

JSON Response


```
{"response-code":"4000","response":{"uri":"/AppManager/json/ListMonitorGroups","result":[{"DetailsPageURL":"/showresource.do?method=showResourceForResourceID&resourceid=20000036&method=showApplication","TODAYUNAVAILPERCENT":"100.0","AvailabilityRCAURL":"/jsp/RCA.jsp?resourceid=20000036&attributeid=17","Action":"enabled","CRITICALCOUNT":"1","NAME":"Applications
Manager","DOWNCOUNT":"1","TODAYAVAILPERCENT":"0.0","TODAYSCHEDDOWNPERCENT":"0.0","Type":"Monitor Group","HEALTHSEVERITY":"1","HealthUnknownCount":"0","AVAILABILITYSEVERITY":"1","AVAILABILITYMESSAGE":"Resource Applications Manager is down. <br>Root Cause : <br><ol><li>Resource down. <br>The resource AppManager Home Page is not available.Connection
Timed Out. Increase the time out level:ResponseCode -200<br>-->></li></ol>","RESOURCEID":"20000036","CLEARCOUNT":"2","UPCOUNT":"2","HealthRCAURL":"/jsp/RCA.jsp?resourceid=20000036&attributeid=18","TODAYUNMANGDPERCENT":"0.0","HEALTHMESSAGE":"Health of Applications Manager is Critical. <br>Root Cause : <br><ol><li>Health of AppManager Home Page is critical.
<br>Root Cause : <br>1. AppManager Home Page is down<br></li></ol>","AvailabilityUnknownCount":"0","OUTAGES":"1/3","DISPLAYNAME":"Applications Manager","WARNINGCOUNT":"0","HEALTHSTATUS":"critical","AVAILABILITYSTATUS":"down"}]}}
```


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ListMGDetails API

This API will fetch the Monitor Group Details of the given monitor group id which includes all the sub-groups and associated monitors configured of the Monitor group. This will also list the monitor groups associated to the user. This will have information about monitor groups today's availability, monitor health outages among subgroups and associated monitors.

API for XML Response:
*http://[APM Host]:[APM Port]/AppManager/xml/**ListMGDetails**?apikey=[API Key]&groupId=10000048*

API for JSON Response:
*http://[APM Host]:[APM Port]/AppManager/json/**ListMGDetails**?apikey=[API Key]&groupName=''Test Group'*

Request Parameters:

Field	Description
groupId	This parameter is used to get the Monitor Group and its associated monitors based on the monitor group id for the user
groupName	This parameter is used to get the Monitor Group and its associated monitors based on the monitor group name for the user

Response Details:

Field	Description
NAME DISPLAYNAME	This is the displayname of this group
DetailsPageURL	This is the url for the details page of this group
TODAYUNAVAILPERCENT	This the today's unavailability percentage of this group
Action	This represents whether action is enabled or not
TODAYAVAILPERCENT	This the today's availability percentage of this monitor group
TODAYSCHEDDOWNPERCENT	This is the today's scheduled downtime percentage of this monitor group
Type	This represents the type
HEALTHSEVERITY	This represents the severity of the health for this group
AVAILABILITYSEVERITY	This represents the severity of the availability for this group
AVAILABILITYMESSAGE	This represents the availability message for this group
RESOURCEID	This is the resourceid of this group
HealthRCAURL	This is the health RCA url of this group
TODAYUNMANGDPERCENT	This is the today's unamanaged percentage of this monitor group
HEALTHMESSAGE	This represents the health message for this group
HEALTHSTATUS	This is the health status of this group
AVAILABILITYSTATUS	This is the availability status of this group

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SubMonitorGroup	DetailsPageURL ---------> this is details page of the sub group TODAYUNAVAILPERCENT ---------> This the today's unavailability percentage of this sub group AvailabilityRCAURL ---------> this is availability RCA url of the sub group Action ---------> this is action status of the sub group NAME DISPLAYNAME ---------> this is displayname of the sub group TODAYAVAILPERCENT ---------> this is today's availability percentage of the sub group TODAYSCHEDDOWNPERCENT ---------> this is today's scheduled downtime percentage of the sub group HEALTHSEVERITY ---------> this is health severity of the sub group TYPE ---------> this represents the type of the group AVAILABILITYSEVERITY ---------> this is availability severity of the sub group AVAILABILITYMESSAGE ---------> this is availability message of the sub group RESOURCEID ---------> this is resourceid of the sub group HealthRCAURL ---------> this is health RCA url of the sub group TODAYUNMANGDPERCENT ---------> this is today's unmanage percentage of the sub group HEALTHMESSAGE ---------> this is health message of the sub group HEALTHSTATUS ---------> this is health status of the sub group AVAILABILITYSTATUS ---------> This is the availability status of a sub group
Monitors	DetailsPageURL ---------> this is details page of the monitor TODAYUNAVAILPERCENT ---------> This the today's unavailability percentage of this monitor AvailabilityRCAURL ---------> this is availability RCA url of the monitor Action ---------> this is action status of the monitor NAME DISPLAYNAME ---------> this is displayname of the monitor TODAYAVAILPERCENT ---------> this is today's availability percentage of the monitor TODAYSCHEDDOWNPERCENT ---------> this is today's scheduled downtime percentage of the monitor HEALTHSEVERITY ---------> this is health severity of the monitor TYPE ---------> this represents the type of the monitor AVAILABILITYSEVERITY ---------> this is availability severity of the monitor AVAILABILITYMESSAGE ---------> this is availability message of the monitor RESOURCEID ---------> this is resourceid of the monitor HealthRCAURL ---------> this is health RCA url of the monitor TODAYUNMANGDPERCENT ---------> this is today's unmanage percentage of the monitor HEALTHMESSAGE ---------> this is health message of the monitorof the monitor HEALTHSTATUS ---------> this is health status of the monitor AVAILABILITYSTATUS ---------> This is the availability status of the monitor

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```
<AppManager-response uri="/AppManager/xml/ListMGDetails">
<result>
<response response-code="4000">
<MonitorGroups>
<MonitorGroup DetailsPageURL="/showresource.do?method=showResourceForResourceID&resourceid=10000035&method=showApplication"
TODAYUNAVAILPERCENT="0.0" AvailabilityRCAURL="/jsp/RCA.jsp?resourceid=10000035&attributeid=17" Action="enabled" NAME="Applications Manager"
TODAYAVAILPERCENT="100.0" TODAYSCHEDDOWNPERCENT="0.0" Type="Monitor Group" HEALTHSEVERITY="1" AVAILABILITYSEVERITY="5"
AVAILABILITYMESSAGE="Resource Applications Manager is up. <br>Root Cause : <br>Resource is Up" RESOURCEID="10000035"
HealthRCAURL="/jsp/RCA.jsp?resourceid=10000035&attributeid=18" TODAYUNMANGDPERCENT="0.0" HEALTHMESSAGE="Health of Applications Manager is critical.
<br>Root Cause : <br><ol><li>Health of pavankumar-0549 is critical. <br>Root Cause : <br>1. Application Layer Gateway Service is down<br>2. Application Identity is
down<br>3. Application Information is down<br></li><li>Health of appman sub1 is critical. <br>Root Cause : <br><ol><li>Health of pavankumar-0549 is critical.
<br>Root Cause : <br>1. Application Layer Gateway Service is down<br>2. Application Identity is down<br>3. Application Information is
down<br></li></ol></li><li>Health of pavankumar-0549_Tomcat Server_9090 is critical. <br>Root Cause : <br>1. Average Response Time 2694 > 2000 ms
(threshold).<br></li></ol>" DISPLAYNAME="Applications Manager" HEALTHSTATUS="critical" AVAILABILITYSTATUS="up">
<Monitors DetailsPageURL="/showresource.do?method=showResourceForResourceID&resourceid=10000042&method=showApplication" TODAYUNAVAILPERCENT="0"
AvailabilityRCAURL="/jsp/RCA.jsp?resourceid=10000042&attributeid=17" Action="enabled" NAME="127.0.0.1_MS SQL_pavansqlexpress" TODAYAVAILPERCENT="100"
TODAYSCHEDDOWNPERCENT="0" HEALTHSEVERITY="5" TYPE="MSSQL-DB-server" AVAILABILITYSEVERITY="5" AVAILABILITYMESSAGE="Resource up. <br>The resource
127.0.0.1_MS SQL_pavansqlexpress is available." RESOURCEID="10000042" HealthRCAURL="/jsp/RCA.jsp?resourceid=10000042&attributeid=18"
TODAYUNMANGDPERCENT="0" HEALTHMESSAGE="Health of 127.0.0.1_MS SQL_pavansqlexpress is clear. <br>Root Cause : <br>1. 127.0.0.1_MS SQL_pavansqlexpress is
up<br>2. Buffer Hit Ratio 100 > 90 % (threshold).<br>3. is clear.<br>4. master is ONLINE <br>5. model is ONLINE <br>6. msdb is ONLINE <br>7. tempdb is ONLINE
<br>8. AMDB_10100 is ONLINE <br>9. AMDB_10030 is ONLINE <br>10. AMDB_test is ONLINE <br>11. syspolicy_purge_history --> Scheduled Job
syspolicy_purge_history. is clear. <br>12. AMDB_app_xp4_admin is ONLINE <br>13. AMDB_app_xp4_admin1 is ONLINE <br>14. AMDB_pavan_admin is ONLINE <br>15.
AMDB_pavan_MANAGED is ONLINE <br>16. AMDB_imac is ONLINE <br>17. AMDB_ADMIN is ONLINE <br>18. AMD_10100 is ONLINE <br>19. AMDB_sahad is ONLINE
<br>" HEALTHSTATUS="clear" DISPALYNAME="127.0.0.1_MS SQL_pavansqlexpress" AVAILABILITYSTATUS="up"/>
<Monitors DetailsPageURL="/showresource.do?method=showResourceForResourceID&resourceid=10000045&method=showApplication" TODAYUNAVAILPERCENT="0"
AvailabilityRCAURL="/jsp/RCA.jsp?resourceid=10000045&attributeid=17" Action="enabled" NAME="AppManager Home Page" TODAYAVAILPERCENT="100"
TODAYSCHEDDOWNPERCENT="0" HEALTHSEVERITY="5" TYPE="UrlMonitor" AVAILABILITYSEVERITY="5" AVAILABILITYMESSAGE="Resource up. <br>The resource
AppManager Home Page is available.ResponseCode - 200" RESOURCEID="10000045" HealthRCAURL="/jsp/RCA.jsp?resourceid=10000045&attributeid=18"
TODAYUNMANGDPERCENT="0" HEALTHMESSAGE="Health of AppManager Home Page is clear. <br>Root Cause : <br>1. AppManager Home Page is up<br>2. Response
Time 33 <= 1500 ms (threshold).<br>" HEALTHSTATUS="clear" DISPALYNAME="AppManager Home Page" AVAILABILITYSTATUS="up"/>
<Monitors DetailsPageURL="/showresource.do?method=showResourceForResourceID&resourceid=10000038&method=showApplication" TODAYUNAVAILPERCENT="0"
AvailabilityRCAURL="/jsp/RCA.jsp?resourceid=10000038&attributeid=17" Action="enabled" NAME="pavankumar-0549" TODAYAVAILPERCENT="100"
TODAYSCHEDDOWNPERCENT="0" HEALTHSEVERITY="1" TYPE="Windows 7" AVAILABILITYSEVERITY="5" AVAILABILITYMESSAGE="Resource up. <br>The resource
pavankumar-0549 is available." RESOURCEID="10000038" HealthRCAURL="/jsp/RCA.jsp?resourceid=10000038&attributeid=18" TODAYUNMANGDPERCENT="0"
HEALTHMESSAGE="Health of pavankumar-0549 is critical. <br>Root Cause : <br>1. Application Layer Gateway Service is down<br>2. Application Identity is down<br>3.
Application Information is down<br>" HEALTHSTATUS="critical" DISPALYNAME="pavankumar-0549" AVAILABILITYSTATUS="up"/>
<Monitors DetailsPageURL="/showresource.do?method=showResourceForResourceID&resourceid=10000044&method=showApplication" TODAYUNAVAILPERCENT="0"
AvailabilityRCAURL="/jsp/RCA.jsp?resourceid=10000044&attributeid=17" Action="enabled" NAME="pavankumar-0549-9090" TODAYAVAILPERCENT="100"
TODAYSCHEDDOWNPERCENT="0" HEALTHSEVERITY="5" TYPE="Port-Test" AVAILABILITYSEVERITY="5" AVAILABILITYMESSAGE="Resource up. <br>The resource
pavankumar-0549-9090 is available." RESOURCEID="10000044" HealthRCAURL="/jsp/RCA.jsp?resourceid=10000044&attributeid=18" TODAYUNMANGDPERCENT="0"
HEALTHMESSAGE="Health of pavankumar-0549-9090 is clear. <br>Root Cause : <br>1. Response Time 24 <= 1500 ms (threshold).<br>2. pavankumar-0549-9090 is
up<br>" HEALTHSTATUS="clear" DISPALYNAME="pavankumar-0549-9090" AVAILABILITYSTATUS="up"/>
<Monitors DetailsPageURL="/showresource.do?method=showResourceForResourceID&resourceid=10000043&method=showApplication" TODAYUNAVAILPERCENT="0"
AvailabilityRCAURL="/jsp/RCA.jsp?resourceid=10000043&attributeid=17" Action="enabled" NAME="pavankumar-0549_Apache Server_9090"
TODAYAVAILPERCENT="100" TODAYSCHEDDOWNPERCENT="0" HEALTHSEVERITY="5" TYPE="Apache-server" AVAILABILITYSEVERITY="5"
AVAILABILITYMESSAGE="Resource up. <br>The resource pavankumar-0549_Apache Server_9090 is available." RESOURCEID="10000043"
HealthRCAURL="/jsp/RCA.jsp?resourceid=10000043&attributeid=18" TODAYUNMANGDPERCENT="0" HEALTHMESSAGE="Health of pavankumar-0549_Apache
Server_9090 is clear. <br>Root Cause : <br>1. pavankumar-0549_Apache Server_9090 is up<br>2. Response Time 6 <= 1500 ms (threshold).<br>"
HEALTHSTATUS="clear" DISPALYNAME="pavankumar-0549_Apache Server_9090" AVAILABILITYSTATUS="up"/>
<Monitors DetailsPageURL="/showresource.do?method=showResourceForResourceID&resourceid=10000055&method=showApplication" TODAYUNAVAILPERCENT="0"
AvailabilityRCAURL="/jsp/RCA.jsp?resourceid=10000055&attributeid=17" Action="enabled" NAME="pavankumar-0549_Tomcat Server_9090"
TODAYAVAILPERCENT="100" TODAYSCHEDDOWNPERCENT="0" HEALTHSEVERITY="1" TYPE="Tomcat-server" AVAILABILITYSEVERITY="5"
AVAILABILITYMESSAGE="Resource up. <br>The resource pavankumar-0549_Tomcat Server_9090 is available." RESOURCEID="10000055"
HealthRCAURL="/jsp/RCA.jsp?resourceid=10000055&attributeid=18" TODAYUNMANGDPERCENT="0" HEALTHMESSAGE="Health of pavankumar-0549_Tomcat
Server_9090 is critical. <br>Root Cause : <br>1. Average Response Time 2694 > 2000 ms (threshold).<br>" HEALTHSTATUS="critical" DISPALYNAME="pavankumar-
0549_Tomcat Server_9090" AVAILABILITYSTATUS="up"/>
<SubMonitorGroup DetailsPageURL="/showresource.do?method=showResourceForResourceID&resourceid=10000267&method=showApplication"
TODAYUNAVAILPERCENT="0.0" AvailabilityRCAURL="/jsp/RCA.jsp?resourceid=10000267&attributeid=17" Action="enabled" NAME="appman sub1"
TODAYAVAILPERCENT="100.0" TODAYSCHEDDOWNPERCENT="0.0" HEALTHSEVERITY="1" TYPE="Sub Group" AVAILABILITYSEVERITY="5"
AVAILABILITYMESSAGE="Resource appman sub1 is up. <br>Root Cause : <br>Resource is Up" RESOURCEID="10000267"
HealthRCAURL="/jsp/RCA.jsp?resourceid=10000267&attributeid=18" TODAYUNMANGDPERCENT="0.0" HEALTHMESSAGE="Health of appman sub1 is critical. <br>Root
Cause : <br><ol><li>Health of pavankumar-0549 is critical. <br>Root Cause : <br>1. Application Layer Gateway Service is down<br>2. Application Identity is
down<br>3. Application Information is down<br></li></ol>" HEALTHSTATUS="critical" DISPALYNAME="appman sub1" AVAILABILITYSTATUS="up"/>
<SubMonitorGroup DetailsPageURL="/showresource.do?method=showResourceForResourceID&resourceid=10001149&method=showApplication"
TODAYUNAVAILPERCENT="0.0" AvailabilityRCAURL="/jsp/RCA.jsp?resourceid=10001149&attributeid=17" Action="enabled" NAME="Opman"
TODAYAVAILPERCENT="100.0" TODAYSCHEDDOWNPERCENT="0.0" HEALTHSEVERITY="-" TYPE="Sub Group" AVAILABILITYSEVERITY="-" AVAILABILITYMESSAGE="-"
RESOURCEID="10001149" HealthRCAURL="/jsp/RCA.jsp?resourceid=10001149&attributeid=18" TODAYUNMANGDPERCENT="0.0" HEALTHMESSAGE="-"
HEALTHSTATUS="UnKnown" DISPALYNAME="Opman" AVAILABILITYSTATUS="UnKnown">
<SubMonitorGroup DetailsPageURL="/showresource.do?method=showResourceForResourceID&resourceid=10001151&method=showApplication"
TODAYUNAVAILPERCENT="0" AvailabilityRCAURL="/jsp/RCA.jsp?resourceid=10001151&attributeid=17" Action="enabled" NAME="123" TODAYAVAILPERCENT="100"
TODAYSCHEDDOWNPERCENT="0" HEALTHSEVERITY="-" TYPE="Sub Group" AVAILABILITYSEVERITY="-" AVAILABILITYMESSAGE="-" RESOURCEID="10001151"
HealthRCAURL="/jsp/RCA.jsp?resourceid=10001151&attributeid=18" TODAYUNMANGDPERCENT="0" HEALTHMESSAGE="-" HEALTHSTATUS="UnKnown"
DISPALYNAME="123" AVAILABILITYSTATUS="UnKnown"/>
</MonitorGroup>
</MonitorGroups>
</response>
</result>
</AppManager-response>
```


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JSON Input
http://apm-prod1:9090/AppManager/json/ListMGDetails?apikey=c4e547c2330e2eb92d3e7af2262da9e9&type=all
JSON Response
{"response-code":"4000","response":{"uri":"/AppManager/json/ListMGDetails","result":[{"DetailsPageURL":"/showresource.do?method=showResourceForResourceID&resourceid=20000036&method=showApplication","Monitors":[{"DetailsPageURL":"/showresource.do?method=showResourceForResourceID&resourceid=20000043&method=showApplication","TODAYUNAVAILPERCENT":"0","AvailabilityRCAURL":"/jsp/RCA.jsp?resourceid=20000043&attributeid=17","Action":"enabled","NAME":"AppManager Home Page","TODAYAVAILPERCENT":"100","TODAYSCHEDDOWNPERCENT":"0","HEALTHSEVERITY":"1","TYPE":"UrlMonitor","AVAILABILITYSEVERITY":"1","AVAILABILITYMESSAGE":"Resource down.
The resource AppManager Home Page is not available.Connection Timed Out. Increase the time out level:ResponseCode -200
-->>","RESOURCEID":"20000047","HealthRCAURL":"/jsp/RCA.jsp?resourceid=20000043&attributeid=18","TODAYUNMANGDPERCENT":"0","HEALTHMESSAGE":"Health of Home Page","TODAYAVAILPERCENT":"100","TODAYSCHEDDOWNPERCENT":"0","HEALTHSEVERITY":"1","TYPE":"UrlMonitor","AVAILABILITYSEVERITY":"1","AVAILABILITYMESSAGE":"Resource down.
The resource AppManager Home Page is not available.Connection Timed Out. Increase the time out level:ResponseCode -200
-->>","RESOURCEID":"20000047","HealthRCAURL":"/jsp/RCA.jsp?resourceid=20000043&attributeid=18","TODAYUNMANGDPERCENT":"0","HEALTHMESSAGE":"Health of AppManager Home Page is critical.
Root Cause :
1. AppManager Home Page is down
","HEALTHSTATUS":"critical","DISPALYNAME":"AppManager Home Page","AVAILABILITYSTATUS":"down"},{"DetailsPageURL":"/showresource.do?method=showResourceForResourceID&resourceid=20000041&method=showApplication","TODAYUNAVAILPERCENT":"0","AvailabilityRCAURL":"/jsp/RCA.jsp?resourceid=20000041&attributeid=17","Action":"enabled","NAME":"apm-prod1_Apache Server_9090","TODAYAVAILPERCENT":"100","TODAYSCHEDDOWNPERCENT":"0","HEALTHSEVERITY":"5","TYPE":"Apache-server","AVAILABILITYSEVERITY":"5","AVAILABILITYMESSAGE":"Resource up.
The resource apm-prod1_Apache Server_9090 is available.","RESOURCEID":"20000041","HealthRCAURL":"/jsp/RCA.jsp?resourceid=20000041&attributeid=18","TODAYUNMANGDPERCENT":"0","HEALTHMESSAGE":"Health of apm-prod1_Apache Server_9090 is clear.
Root Cause :
1. apm-prod1_Apache Server_9090 is up
2. Response Time 16 <= 1500 ms (threshold).
","HEALTHSTATUS":"clear","DISPALYNAME":"apm-prod1_Apache Server_9090","AVAILABILITYSTATUS":"up"},{"DetailsPageURL":"/showresource.do?method=showResourceForResourceID&resourceid=20000039&method=showApplication","TODAYUNAVAILPERCENT":"0","AvailabilityRCAURL":"/jsp/RCA.jsp?resourceid=20000039&attributeid=17","Action":"enabled","NAME":"apm-prod1_Windows Vista","TODAYAVAILPERCENT":"100","TODAYSCHEDDOWNPERCENT":"0","HEALTHSEVERITY":"5","TYPE":"Windows Vista","AVAILABILITYSEVERITY":"5","AVAILABILITYMESSAGE":"Resource up.
The resource apm-prod1_Windows Vista is available.","RESOURCEID":"20000039","HealthRCAURL":"/jsp/RCA.jsp?resourceid=20000039&attributeid=18","TODAYUNMANGDPERCENT":"0","HEALTHMESSAGE":"Health of apm-prod1_Windows Vista is clear.
Root Cause :
1. Data Collection Successful
2. apm-prod1_Windows Vista is up
","HEALTHSTATUS":"clear","DISPALYNAME":"apm-prod1_Windows Vista","AVAILABILITYSTATUS":"up"},{"TODAYUNAVAILPERCENT":"100.0","AvailabilityRCAURL":"/jsp/RCA.jsp?resourceid=20000036&attributeid=17","Action":"enabled","NAME":"Applications Manager","TODAYAVAILPERCENT":"0.0","TODAYSCHEDDOWNPERCENT":"5.0","Type":"Monitor Group","HEALTHSEVERITY":"1","AVAILABILITYSEVERITY":"1","AVAILABILITYMESSAGE":"Resource Applications Manager is down.
Root Cause :
Resource down.
The resource AppManager Home Page is not available.Connection Timed Out. Increase the time out level:ResponseCode -200
-->><\li><\ol>","RESOURCEID":"20000036","HealthRCAURL":"/jsp/RCA.jsp?resourceid=20000036&attributeid=18","TODAYUNMANGDPERCENT":"0.0","HEALTHMESSAGE":"Health of Applications Manager is Critical.
Root Cause :
Health of AppManager Home Page is critical.
Root Cause :
1. AppManager Home Page is down
<\li><\ol>","DISPLAYNAME":"Applications Manager","HEALTHSTATUS":"critical","AVAILABILITYSTATUS":"down"}]}}

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ListMonitorTypes API

This API will list all the monitor types configured in the Applications Manager for the user corresponding to the API Key. The details include the Health and Availability of the monitor types, type image, Health outages, Critical/Warning/Clear/UP/Down count for each and every monitor type.

API for XML Response:
http://[APM Host]:[APM Port]/AppManager/xml/ListMonitorTypes?apikey=[API Key]&type=all

API for JSON Response:
http://[APM Host]:[APM Port]/AppManager/json/ListMonitorTypes?apikey=[API Key]&type=all

NOTE:
We hope to support the others in future, depending on popular customer demand.

Response Details:

Field	Description
AVAILUNKNOWNCOUNT	This is the count of number of monitors for which availability is unknown.
IMAGE	This is the image path for the monitor type
CRITICALCOUNT	This is the count of number of monitors for which health is critical in a type
SUBGROUP RESCATEGORY	This represent the category under which it belongs to. (IIS-Server, Mail-Server, etc.,)
DOWNCOUNT	This is the count of number of monitors for which availability is down in a type
HEALTHSEVERITY	This is the severity of the health (1-critical, 4-warning and 5-clear)
HEALTHMSG	This is the health message for this monitor type
RESCATEGORY	This represents the group under which this monitor type is grouped. like (servers, Databases, etc.,)
UPCOUNT	This is the count of number of monitors for which availability is up in a type
CLEARCOUNT	This is the count of number of monitors for which health is clear in a type
OUTAGES	This is the health outages w.r.t the total number of monitors in this type
DISPLAYNAME	This is the displayname of the monitor type
WARNINGCOUNT	This is the count of number of monitors for which health is warning in a type
AVAILMSG	This is the availability message for this monitor type
COUNT	This is the total number of monitors in this type
HEALTHUNKNOWNCOUNT	This is the count of number of monitors for which health is unknown in a type
RESOURCETYPEURL	This is the url of the page where all the monitor's of this type will be listed.
AVAILSEVERITY	This is the severity of the availability for this type (clear -5, down -1)

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```
<AppManager-response uri="/AppManager/json/ListMonitorTypes">
<result>
<response response-code="4000">
<MonitorType AVAILUNKNOWNCOUNT="0" IMAGE="/images/icon_monitors_solaris.gif" CRITICALCOUNT="0" SUBGROUP="Sun Solaris" DOWNCOUNT="0"
HEALTHSEVERITY="5" HEALTHMSG="Health is clear.<br>Root Cause:<br>1. Health of Sunsolaris is clear <br>" RESCATEGORY="SYS" UPCOUNT="1" CLEARCOUNT="1"
OUTAGES="0/1" DISPLAYNAME="Sun Solaris" WARNINGCOUNT="0" AVAILMSG="Resource is up.<br>Root Cause:<br>1. Sunsolaris is up <br> <br>" COUNT="1"
HEALTHUNKNOWNCOUNT="0" RESOURCETYPEURL="/showresource.do?method=showResourceTypes&direct=true&network=Sun
Solaris&detailspage=true&PRINTER_FRIENDLY=true" AVAILSEVERITY="5"/>
<MonitorType AVAILUNKNOWNCOUNT="0" IMAGE="/images/icon_monitor_vmware.gif" CRITICALCOUNT="7" SUBGROUP="VirtualMachine" DOWNCOUNT="8"
HEALTHSEVERITY="1" HEALTHMSG="Health is critical.<br>Root Cause:<br>1. Health of amp-vm-centos64 is critical <br>2. Health of opman-xp32-2-test is critical
<br>3. Health of opman-ubuntu10-1-ttt11 is critical <br>4. Health of tes-111-5689-linux-2 is critical <br>5. Health of opman-ubuntu10-6-test2 is critical <br>6. Health of
Jim Linux Box is critical <br>7. Health of ICONVM is critical <br>" RESCATEGORY="VIR" UPCOUNT="8" CLEARCOUNT="8" OUTAGES="7/16" DISPLAYNAME="Virtual
Machine" WARNINGCOUNT="0" AVAILMSG="Resource is down.<br>Root Cause:<br>1. amp-vm-centos64 is down <br> <br>2. null is down <br> <br>3. opman-xp32-2-
test is down <br> <br>4. opman-ubuntu10-1-ttt11 is down <br> <br>5. tes-111-5689-linux-2 is down <br> <br>6. opman-ubuntu10-6-test2 is down <br> <br>7. Jim
Linux Box is down <br> <br>8. ICONVM is down <br> <br>" COUNT="16" HEALTHUNKNOWNCOUNT="1"
RESOURCETYPEURL="/showresource.do?method=showResourceTypes&direct=true&network=VirtualMachine&detailspage=true&PRINTER_FRIENDLY=true"
AVAILSEVERITY="1"/>
<MonitorType AVAILUNKNOWNCOUNT="0" IMAGE="/images/icon_monitor_SSL.gif" CRITICALCOUNT="0" SUBGROUP="SSLCertificateMonitor" DOWNCOUNT="0"
HEALTHSEVERITY="5" HEALTHMSG="Health is clear.<br>Root Cause:<br>1. Health of ZOHO is clear <br>" RESCATEGORY="URL" UPCOUNT="1" CLEARCOUNT="1"
OUTAGES="0/1" DISPLAYNAME="SSL Certificate Monitor" WARNINGCOUNT="0" AVAILMSG="Resource is up.<br>Root Cause:<br>1. ZOHO is up <br> <br>" COUNT="1"
HEALTHUNKNOWNCOUNT="0"
RESOURCETYPEURL="/showresource.do?method=showResourceTypes&direct=true&network=SSLCertificateMonitor&detailspage=true&PRINTER_FRIENDLY=true"
AVAILSEVERITY="5"/>
</response>
</result>
</AppManager-response>
```


JSON Input
http://apm-prod1:9090/AppManager/json/ListMonitorTypes?apikey=c4e547c2330e2eb92d3e7af2262da9e9&type=all
JSON Response


```
{"response-code":"4000","response":{"uri":"/AppManager/json/ListMonitorTypes","result":[{"AVAILUNKNOWNCOUNT":"0","IMAGE":"/images/icon_monitors_urlmonitor.gif","CRITICALCOUNT":"1","SUBGROUP":"UrlMonitor","DOWNCOUNT":"1","HEALTHSEVERITY":"1","HEALTHMSG":"Health is critical.<br>Root Cause:<br>1. Health of AppManager Home Page is critical
<br>","RESCATEGORY":"URL","UPCOUNT":"0","CLEARCOUNT":"0","OUTAGES":"1/1","DISPLAYNAME":"HTTP(s) URLs","WARNINGCOUNT":"0","AVAILMSG":"Resource is down.<br>Root Cause:<br>1. AppManager Home Page is down
<br>","COUNT":"1","HEALTHUNKNOWNCOUNT":"0","RESOURCETYPEURL":"/showresource.do?method=showResourceTypes&direct=true&network=UrlMonitor&detailspage=true&PRINTER_FRIENDLY=true","AVAILSEVERITY":"1"},{"AVAILUNKNOWNCOUNT":"0","IMAGE":"/images/icon_monitors_apache.gif","CRITICALCOUNT":"0","SUBGROUP":"Apache-server","DOWNCOUNT":"0","HEALTHSEVERITY":"5","HEALTHMSG":"Health
is clear.<br>Root Cause:<br>1. Health of apm-prod1_Apache Server_9090 is clear <br>","RESCATEGORY":"URL","UPCOUNT":"1","CLEARCOUNT":"1","OUTAGES":"0/1","DISPLAYNAME":"Apache Server","WARNINGCOUNT":"0","AVAILMSG":"Resource is up.<br>Root Cause:<br>1. apm-prod1_Apache Server_9090 is up
<br>","COUNT":"1","HEALTHUNKNOWNCOUNT":"0","RESOURCETYPEURL":"/showresource.do?method=showResourceTypes&direct=true&network=Apache-server&detailspage=true&PRINTER_FRIENDLY=true","AVAILSEVERITY":"5"},{"AVAILUNKNOWNCOUNT":"0","IMAGE":"/images/icon_monitors_windows.gif","CRITICALCOUNT":"0","SUBGROUP":"Windows","DOWNCOUNT":"0","HEALTHSEVERITY":"5","HEALTHMSG":"Health
is clear.<br>Root Cause:<br>1. Health of apm-prod1_Windows Vista is clear <br>","RESCATEGORY":"SYS","UPCOUNT":"1","CLEARCOUNT":"1","OUTAGES":"0/1","DISPLAYNAME":"Windows","WARNINGCOUNT":"0","AVAILMSG":"Resource is up.<br>Root Cause:<br>1. apm-prod1_Windows Vista is up
<br>","COUNT":"1","HEALTHUNKNOWNCOUNT":"0","RESOURCETYPEURL":"/showresource.do?method=showResourceTypes&direct=true&network=Windows&detailspage=true&PRINTER_FRIENDLY=true","AVAILSEVERITY":"5"}]}}
```


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List Server API

ManageEngine Applications Manager provides List Server API that allows the user to list information about the server by the following categories.

- Listing all the server details.
- By particular server name.
- By IP Address of server.

APIs for ListServer:

1. Listing all the added servers

http://[Host]:[Port]/AppManager/xml/ListServer?apikey=[API key]&type=all

2. By server name

http://[Host]:[Port]/AppManager/xml/ListServer?apikey=[API key]&type=[Server display name]

3. By IP Address

http://[Host]:[Port]/AppManager/xml/ListServer?apikey=[API key]&ipaddress=[IP Address of server]

Request Parameters

Field	Description
API Key	The key generated from "Generate API " option in the Admin tab.
Type	**"type=<Server PARENTNODE name>"** is used to list details of specified server in Applications Manager **< Server PARENTNODE name>** is PARENTNODE in IpAddress table.
ipaddress	**ipaddress = [IP Address of server]**

Example API that is used to get the XMLof all servers and their services details

http://app-windows:9090/AppManager/xml/ListServer?apikey=65d0fa3e1f6c6bdcce1c3969f24c39a8&type=all

Example API that is used to get XML of a particular server and it's services details.

http://app-windows:9090/AppManager/xml/ListServer?apikey=65d0fa3e1f6c6bdcce1c3969f24c39a8&type=app-windows

API for XML Response :

*http://[APM Host]:[APM Port]/AppManager/xml/**ListServer**?apikey=[API Key]&type=all*

API for JSON Response :

*http://[APM Host]:[APM Port]/AppManager/json/**ListServer**?apikey=[API Key]&type=all*

Example output:

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Server Details:

Server Name	Name of the Server
Parent IP	Parent Network IP address of the Server
resourceid	Resource ID of the Server
Type	Server Type like Windows
DISPLAYNAME	Display Name of the Server like XP1
IPADDRESS	IP Address of the Server
Service Details	Contains information about the services running in the server. Service DISPLAYNAME - Display Name of the Service TYPE - Type of the service like SNMP RESOURCEID - Resource ID of the Service RESOURCENAME - Resource Name of the Service DESCRIPTION - Description of the Resource like Network Resource ATTRIBUTEID - Service Attribute ID
RCALink	Link to Root Cause Analysis details
DetailsPageLink	Link to the Details page of the Server


```
<AppManager-response uri="/AppManager/xml/ListServer">
<result>
<response response-code="4000">
<Server DISPLAYNAME="pavankumar-0549" RESOURCEID="10000038" Name="pavankumar-0549.csez.zohocorpin.com" PARENTIP="10.0.0.0"
IPADDRESS="192.168.24.211" TYPE="Windows 7">
<Service ATTRIBUTEID="2100" RESOURCEID="10000043" DISPLAYNAME="pavankumar-0549_Apache Server_9090" DESCRIPTION="Network Resource"
RESOURCENAME="IF-pavankumar-0549.csez.zohocorpin.com_Apache-server_9090"
DetailsPageLink="/showresource.do?resourceid=10000043&method=showResourceForResourceID" RCALink="/jsp/RCA.jsp?resourceid=10000043&attributeid=2100"
TYPE="Apache"/>
<Service ATTRIBUTEID="152" RESOURCEID="10000044" DISPLAYNAME="pavankumar-0549-9090" DESCRIPTION="Network Resource" RESOURCENAME="IF-pavankumar-
0549.csez.zohocorpin.com_Port-Test_9090" DetailsPageLink="/showresource.do?resourceid=10000044&method=showResourceForResourceID"
RCALink="/jsp/RCA.jsp?resourceid=10000044&attributeid=152" TYPE="Service Monitoring"/>
<Service ATTRIBUTEID="15" RESOURCEID="10000055" DISPLAYNAME="pavankumar-0549_Tomcat Server_9090" DESCRIPTION="Network Resource"
RESOURCENAME="IF-pavankumar-0549.csez.zohocorpin.com_Tomcat-server_9090"
DetailsPageLink="/showresource.do?resourceid=10000055&method=showResourceForResourceID" RCALink="/jsp/RCA.jsp?resourceid=10000055&attributeid=15"
TYPE="Tomcat"/>
<Service ATTRIBUTEID="2000" RESOURCEID="10000149" DISPLAYNAME="pavankumar-0549" DESCRIPTION="Network Resource" RESOURCENAME="IF-pavankumar-
0549.csez.zohocorpin.com_IIS-server_80" DetailsPageLink="/showresource.do?resourceid=10000149&method=showResourceForResourceID"
RCALink="/jsp/RCA.jsp?resourceid=10000149&attributeid=2000" TYPE="IIS"/>
<Service ATTRIBUTEID="3301" RESOURCEID="10000154" DISPLAYNAME="pavankumar-0549 dot net" DESCRIPTION="Network Resource" RESOURCENAME="IF-
pavankumar-0549.csez.zohocorpin.com_.NET" DetailsPageLink="/showresource.do?resourceid=10000154&method=showResourceForResourceID"
RCALink="/jsp/RCA.jsp?resourceid=10000154&attributeid=3301" TYPE=".NET"/>
</Server>
</response>
</result>
</AppManager-response>
```


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Search API

This API will fetch the List of Monitors / Monitor Groups that matches the query string and the search condition. Also the search will be with in the list of monitors assigned to the user.

API for XML Response:

http://[APM Host]:[APM Port]/AppManager/xml/Search?apikey=[API Key]&query=[query]&searchCondition=[searchCondition]

API for JSON Response:

http://[APM Host]:[APM Port]/AppManager/json/Search?apikey=[API Key]&query=[query]&searchCondition=[searchCondition]

Request Parameters:

Field	Description
query	This value specifies the string that has to be searched in the monitors list associated to an user.

Additional Parameters:

Field	Description
searchCondition	This value specifies the type of monitor that has to be searched in the monitors list associated to an user. For example - displayname, monitortype, ipaddress and customfields. searchCondition can also be specified as 'all' when if you wish to search in all monitor types.

Response Details:

Field	Description
Type	This represents the type of the element got in search results
HealthStatus	This is health status of the search element
AvailabilityMessage	This is the availability message of the search element
DisplayName	This is the displayname of the search element
ManagedServer	This is the managed server name in which the monitor or group is added.It will have 'NA' as value for professional edition
AvailabilityStatus	This is availability status of the search element
SubGroup	This is category to which the elements belongs to.
ResourceId	This is the resource id of the search element.
HealthMessage	This is the health message of the search element
HealthSeverity	This is the health severity of the search element
ImagePath	This is monitor type/ monitor group image path
AvailabilitySeverity	This is the availability severity of the search element
DetailsPageURL	This is details page of the search element.

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<response response-code="4000"><Monitor Type="Linux" HealthStatus="clear" AvailabilityMessage="Resource up.
The resource karthi linux is available." DisplayName="karthi linux" ManagedServer="Admin Server" AvailabilityStatus="up" SubGroup="Linux" ResourceId="10000117" HealthMessage="Health of karthi linux is clear.
Root Cause :
1. karthi linux is up
2. Data Collection Successful
" HealthSeverity="5" ImagePath="/images/icon_monitors_linux.gif" AvailabilitySeverity="5" DetailsPageURL="/showresource.do?resourceid=10000117&method=showResourceForResourceID&PRINTER_FRIENDLY=true"/><Monitor Type="Linux" HealthStatus="clear" AvailabilityMessage="Resource up.
The resource app-centos32-1 is available." DisplayName="app-centos32-1" ManagedServer="Admin Server" AvailabilityStatus="up" SubGroup="Linux" ResourceId="10000108" HealthMessage="Health of app-centos32-1 is clear.
Root Cause :
1. app-centos32-1 is up
2. Data Collection Successful
" HealthSeverity="5" ImagePath="/images/icon_monitors_linux.gif" AvailabilitySeverity="5" DetailsPageURL="/showresource.do?resourceid=10000108&method=showResourceForResourceID&PRINTER_FRIENDLY=true"/><Monitor Type="Linux" HealthStatus="clear" AvailabilityMessage="Resource up.
The resource prasadh linux is available." DisplayName="prasadh linux" ManagedServer="Admin Server" AvailabilityStatus="up" SubGroup="Linux" ResourceId="10000071" HealthMessage="Health of prasadh linux is clear.
Root Cause :
1. prasadh linux is up
2. Data Collection Successful
" HealthSeverity="5" ImagePath="/images/icon_monitors_linux.gif" AvailabilitySeverity="5" DetailsPageURL="/showresource.do?resourceid=10000071&method=showResourceForResourceID&PRINTER_FRIENDLY=true"/></response>

Search in all Input:
http://apm-prod1:9090/AppManager/json/Search?apikey=4f77fe9c75f4472764a07846bf7f032d&query=linux&searchCondition=all

Response:

<AppManager-response uri="/AppManager/xml/Search"><result><response response-code="4000"><Monitor Type="Linux" HealthStatus="clear" AvailabilityMessage="Resource up.
The resource linux is available." DisplayName="linux" AvailabilityStatus="up" SubGroup="Linux" ResourceId="20000107" HealthMessage="Health of linux is clear.
Root Cause :
1. linux is up
2. Data Collection Successful
" HealthSeverity="5" ImagePath="/images/icon_monitors_linux.gif" AvailabilitySeverity="5" DetailsPageURL="/showresource.do?resourceid=20000107&method=showResourceForResourceID&PRINTER_FRIENDLY=true"/><Monitor Type="Linux" HealthStatus="clear" AvailabilityMessage="Resource up.
The resource app-centos32-2 is available." DisplayName="app-centos32-2" AvailabilityStatus="up" SubGroup="Linux" ResourceId="20000786" HealthMessage="Health of app-centos32-2 is clear.
Root Cause :
1. app-centos32-2 is up
2. Data Collection Successful
" HealthSeverity="5" ImagePath="/images/icon_monitors_linux.gif" AvailabilitySeverity="5" DetailsPageURL="/showresource.do?resourceid=20000786&method=showResourceForResourceID&PRINTER_FRIENDLY=true"/><Monitor Type="Linux" HealthStatus="critical" AvailabilityMessage="Resource up.
The resource app-centos5-64-1 is available." DisplayName="app-centos5-64-1" AvailabilityStatus="up" SubGroup="Linux" ResourceId="20001014" HealthMessage="Health of app-centos5-64-1 is critical.
Root Cause :
1. CPU Utilization 22 > 0 % (threshold).
2. Response Time 2 > 0 ms (threshold).
" HealthSeverity="1" ImagePath="/images/icon_monitors_linux.gif" AvailabilitySeverity="5" DetailsPageURL="/showresource.do?resourceid=20001014&method=showResourceForResourceID&PRINTER_FRIENDLY=true"/></response></result></AppManager-response>

JSON Input
http://apm-prod1:9090/AppManager/json/Search?apikey=4f77fe9c75f4472764a07846bf7f032d&query=linux&searchCondition=monitortype

JSON Response

{"response":{"result":[{"Type":"Linux","HealthStatus":"clear","AvailabilityMessage":"Resource up.
The resource app-centos32-1 is available.","DisplayName":"app-centos32-1","ManagedServer":"Admin Server","AvailabilityStatus":"up","SubGroup":"Linux","ResourceId":"10000108","HealthMessage":"Health of app-centos32-1 is clear.
Root Cause :
1. app-centos32-1 is up
2. Data Collection Successful
","HealthSeverity":"5","ImagePath":"/images/icon_monitors_linux.gif","AvailabilitySeverity":"5","DetailsPageURL":"/showresource.do?resourceid=10000108&method=showResourceForResourceID&PRINTER_FRIENDLY=true"},{"Type":"Linux","HealthStatus":"clear","AvailabilityMessage":"Resource up.
The resource linux is available.","DisplayName":"linux","ManagedServer":"Admin Server","AvailabilityStatus":"up","SubGroup":"Linux","ResourceId":"10000117","HealthMessage":"Health of karthi linux is clear.
Root Cause :
1. linux is up
2. Data Collection Successful
","HealthSeverity":"5","ImagePath":"/images/icon_monitors_linux.gif","AvailabilitySeverity":"5","DetailsPageURL":"/showresource.do?resourceid=10000117&method=showResourceForResourceID&PRINTER_FRIENDLY=true"},{"Type":"Linux","HealthStatus":"clear","AvailabilityMessage":"Resource up.
The resource prasadh linux is available.","DisplayName":"prasadh linux","ManagedServer":"Admin Server","AvailabilityStatus":"up","SubGroup":"Linux","ResourceId":"10000071","HealthMessage":"Health of linux1 is clear.
Root Cause :
1. linux1 is up
2. Data Collection Successful
","HealthSeverity":"5","ImagePath":"/images/icon_monitors_linux.gif","AvailabilitySeverity":"5","DetailsPageURL":"/showresource.do?resourceid=10000071&method=showResourceForResourceID&PRINTER_FRIENDLY=true"}],"uri":"/AppManager/json/Search"},"response-code":"4000"}

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ShowPolledData API

This API allows the user to fetch the polled data from a monitor or monitor group for the time period specified by the user.

API for XML Response:

*http://[APM Host]:[APM Port]/AppManager/xml/**ShowPolledData**?apikey=[API Key]*

API for JSON Response:

*http://[APM Host]:[APM Port]/AppManager/json/**ShowPolledData**?apikey=[API Key]*

Request Parameters:

Field	Description
resourceid	This value is the resourceid of the monitor from which the data has to be fetched.
attributeID	This is the value of the attribute id for which the polled or archived data has to be shown.
period	The period for which the downtime details have been requested: Period : 0 ===> Today Period : 3 ===> Yesterday Period : 6 ===> This Week Period : 1 or -7 ===> Last 7 days Period : 12 ===> Last Week Period : 7 ===> This Month Period : 2 or -30 ===> Last 30 days Period : 11 ===> Last Month Period : 9 ===> This Quarter Period : 8 ===> This Year Period : 5 ===> Last 1 year Period: 20 ===> Shows all polled data
startDate and ***endDate***	Using these parameters you can set custom period for ShowPolledData API. Enter the values for ***startDate*** and ***endDate*** in the format ***YYYY-MM-DD HH:MM*** where HH should be in 24 hour format. Period parameter 'period' should be set to 4 for custom period.

Example urls:

Polled Data:

API for XML Response:

```
http://[ APM Host ]:[ APM Port ]/AppManager/xml/showPolledData?apikey=8c8ec3f2cd30722d3a6f980df12c1e5f&resourceid=10000042&period=20&attributeID=310
```

API for JSON Response:

```
http://[ APM Host ]:[ APM Port ]/AppManager/json/showPolledData?apikey=8c8ec3f2cd30722d3a6f980df12c1e5f&resourceid=10000042&period=20&attributeID=3102
```

Last 7 days Data:

API for XML Response:

```
http://[ APM Host ]:[ APM Port
```

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```
]/AppManager/xml/showPolledData?apikey=8c8ec3f2cd30722d3a6f980df12c1e5f&resourceid=10000042&period
=-7&attributeID=3102
```

API for JSON Response:

```
http://[ APM Host ]:[ APM Port
]/AppManager/json/showPolledData?apikey=8c8ec3f2cd30722d3a6f980df12c1e5f&resourceid=10000042&perio
d=-7&attributeID=3102
```

Last 30 days Data:

API for XML Response:

```
http://[ APM Host ]:[ APM Port
]/AppManager/xml/showPolledData?apikey=8c8ec3f2cd30722d3a6f980df12c1e5f&resourceid=10000042&period
=-30&attributeID=3102
```

API for JSON Response:

```
http://[ APM Host ]:[ APM Port
]/AppManager/json/showPolledData?apikey=8c8ec3f2cd30722d3a6f980df12c1e5f&resourceid=10000042&perio
d=-30&attributeID=3102
```

Custom Period:

API for XML Response:

```
http://[ APM Host ]:[ APM Port
]/AppManager/xml/ShowPolledData?apikey=3d6d7d7fcabfc818ad28de01aa1c9773&resourceid=10000016&attrib
uteID=1938&period=4&startDate=2017-11-06 11:20&endDate=2017-11-16 11:40
```

API for JSON Response:

```
http://[ APM Host ]:[ APM Port
]/AppManager/json/ShowPolledData?apikey=3d6d7d7fcabfc818ad28de01aa1c9773&resourceid=10000016&attri
buteID=1938&period=4&startDate=2017-11-06 11:20&endDate=2017-11-16 11:40
```

Response Details:

Field	Description
StartTime	This is the start time in milli seconds format from which 7/30/ show polled data report is generated
EndTime	This is the end time in milli seconds format from which 7/30/ show polled data report is generated
StartDateTime	This is the start time in date time format from which 7/30/ show polled data report is generated
EndDateTime	This is the end time in date time format from which 7/30/ show polled data report is generated
ResourceName	This is the monitor name from which the data is returned
ResourceType	This is the type of the resource for which the data is returned
AttributeName	This is the name of the attribute
Unit	This is the units of the attribute
AttributeID	This is the ID of the user

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ReportType	This is the type of data this API call is returning (Polled data / 7 days data / 30 days data).
BusinessPeriod	This represents the business period name
ResourceId	This is the monitor resourceid
AttributeImage	This is the attribute graph for the data returned along with this response.
Status	This is the status of the REST API call to get the show polled data
Period	This value specifies the the type of data that needs to be returned. its values are : 20 for show polled data, -7 for 7 days archieved data and -30 for 30 days archieved data.
RawData	• CollectionTime -- represents the time stamp in ms at which the data is collected • DateTime -- represents the time stamp in date time format at which the data is collected • Value -- this represents the value of the attribute
ArchiveData	• ArchivedTime -- represents the archived time in ms • DateTime -- represents the archived time in data time format • AvgValue -- this is the avg time of the value in that archived period • MinValue -- this is the minimum value in that archived period • MaxValue -- this is the maximum value in that archived period


```
<AppManager-response uri="/AppManager/xml/ShowPolledData">
<result>
<response response-code="4000">
<Monitorinfo StartTime="1328775260450" EndDateTime="Mar 29, 2012 3:00 PM" ResourceName="APM-Windows" Unit="ms" EndTime="1333013434474"
BusinessPeriod="NA" MonitorType="Response Time" ReportType="Polled data" ResourceId="10001267" AttributeID="4602"
AttributeImage="/webclient/temp/images/RSVmYs.jpg" ServerType="GlassFish" Status="SUCCESS" StartDateTime="Feb 9, 2012 1:44 PM" Period="20">
<RawData CollectionTime="1333013434474" Value="1" DateTime="Mar 29, 2012 3:00 PM"/>
<RawData CollectionTime="1333013134022" Value="1" DateTime="Mar 29, 2012 2:55 PM"/>
<RawData CollectionTime="1333012833497" Value="1" DateTime="Mar 29, 2012 2:50 PM"/>
<RawData CollectionTime="1333012532708" Value="1" DateTime="Mar 29, 2012 2:45 PM"/>
<RawData CollectionTime="1333012227193" Value="1" DateTime="Mar 29, 2012 2:40 PM"/>
<RawData CollectionTime="1328775260450" Value="1" DateTime="Feb 9, 2012 1:44 PM"/>
</Monitorinfo>
</response>
</result>
</AppManager-response>
```


JSON Input

http://apm-prod1:9090/AppManager/json/ShowPolledData?apikey=c4e547c2330e2eb92d3e7af2262da9e9&resourceid=20000039&period=20&attributeID=1957

JSON Response


```
{"response-code":"4000","response":{"uri":"/AppManager/json/ShowPolledData","result":[{"StartTime":"1337928634448","EndDateTime":"May 25, 2012 3:32 PM","ResourceName":"apm-
prod1_Windows Vista","Unit":"%","EndTime":"1337940130413","BusinessPeriod":"NA","ReportType":"Polled data","ThresholdDetails":[],"ResourceId":"20000039","AttributeName":"CPU
Utilization","AttributeID":"1957","AttributeImage":"/webclient/temp/images/fjrEKg.jpg","Status":"SUCCESS","RawData":[{"CollectionTime":"1337940130413","Value":"18","DateTime":"May
25, 2012 3:32 PM"},{"CollectionTime":"1337939525577","Value":"11","DateTime":"May 25, 2012 3:22 PM"},{"CollectionTime":"1337938920641","Value":"5","DateTime":"May 25, 2012
3:12 PM"},{"CollectionTime":"1337938315808","Value":"6","DateTime":"May 25, 2012 3:01 PM"},{"CollectionTime":"1337937710788","Value":"7","DateTime":"May 25, 2012 2:51
PM"},{"CollectionTime":"1337937105838","Value":"7","DateTime":"May 25, 2012 2:41 PM"},{"CollectionTime":"1337936500971","Value":"9","DateTime":"May 25, 2012 2:31
PM"},{"CollectionTime":"1337935895963","Value":"18","DateTime":"May 25, 2012 2:21 PM"},{"CollectionTime":"1337935291160","Value":"7","DateTime":"May 25, 2012 2:11
PM"},{"CollectionTime":"1337934686297","Value":"31","DateTime":"May 25, 2012 2:01 PM"},{"CollectionTime":"1337934079880","Value":"13","DateTime":"May 25, 2012 1:51
PM"},{"CollectionTime":"1337933475084","Value":"16","DateTime":"May 25, 2012 1:41 PM"},{"CollectionTime":"1337932869853","Value":"34","DateTime":"May 25, 2012 1:31
PM"},{"CollectionTime":"1337932263739","Value":"8","DateTime":"May 25, 2012 1:21 PM"},{"CollectionTime":"1337931658583","Value":"7","DateTime":"May 25, 2012 1:10
PM"},{"CollectionTime":"1337931053751","Value":"17","DateTime":"May 25, 2012 1:00 PM"},{"CollectionTime":"1337930448921","Value":"9","DateTime":"May 25, 2012 12:50
PM"},{"CollectionTime":"1337929844110","Value":"6","DateTime":"May 25, 2012 12:40 PM"},{"CollectionTime":"1337929239270","Value":"3","DateTime":"May 25, 2012 12:30
PM"},{"CollectionTime":"1337928634448","Value":"9","DateTime":"May 25, 2012 12:20 PM"}],"ResourceType":"Windows Vista","StartDateTime":"May 25, 2012 12:20
PM","Period":"20"}]}}
```


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Create User API

This API will allow admin to create a new user.

Sample Request

For XML Response: *http://[APM Host]:[APM Port]/AppManager/xml/Users/create?apikey=[API Key]&userName=[name]&role=[role]&password=[password]*

For JSON Response: *http://[APM Host]:[APM Port]/AppManager/json/Users/create?apikey=[API Key]&userName=[name]&role=[role]&password=[password]*

Request Parameters

The parameters involved in the API request are described below:

Field	Description
userName	The user name of the user.
role	User group of the new user.
password	Password of the new user.
email (optional)	Email id of the user.
description (optional)	Description of the user.
groupId (optional)	Group id of the monitor groups to which the user needs to be associated. The group ids should be comma separated.
groupName (optional)	Name of a monitor group to which the user needs to be associated. If groupId is provided this parameter will be ignored.

Sample Response:

```
<AppManager-response uri="/AppManager/xml/users/create">
<result>
<response response-code="4000">
<User email="manager" userId="6" description="manager" userName="manager" role="MANAGER">
<AssociatedGroups groupId="10000035" groupName="Applications Manager"/>
<AssociatedGroups groupId="10000037" groupName="mg1"/>
<AssociatedGroups groupId="10000038" groupName="mg2"/>
</User>
</response>
</result>
</AppManager-response>
```

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Delete User API

This API will allow admin to delete users.

Sample Request

For XML Response: *http://[APM Host]:[APM Port]/AppManager/xml/Users/delete?apikey=[API Key]&userId=[id]*

For JSON Response: *http://[APM Host]:[APM Port]/AppManager/json/Users/delete?apikey=[API Key]&userName=[name]*

*Only one parameter (userId or userName) is to be mentioned.

Request Parameters

The parameters involved in the API request are described below:

Field	Description
userId*	Id of the users to be deleted. The user ids should be comma separated.
userName	The user name of the user to be deleted. If userId is provided this parameter will be ignored.

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Get All User Roles API

This API allows the user to list all the available user roles with display name, description and role name in Applications Manager.

Sample Request

http://[host]:[port]/AppManager/xml/Users/roles?apikey=[apikey]

Request Parameters

The parameters involved in the API request are described below:

Field	Description
apikey	A long text, unique to every Applications Manager account, required to use the Applications Manager REST APIs. The key can be generated using the **Generate API Key** option in the 'Admin' tab.

Example:

http://app-windows:9090/AppManager/xml/Users/roles?apikey=7b5fde68148fa2419bc2f1a1ab87e75

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ListUserDetails API

Users Details

This API allows an admin user to fetch the details of all the users. Users other than admin can only access their own details.

Sample Request

For XML Response: *http://[APM Host]:[APM Port]/AppManager/xml/Users/?apikey=[API Key]*

For JSON Response: *http://[APM Host]:[APM Port]/AppManager/json/Users/?apikey=[API Key]*

User Id Details

This API allows an admin user to fetch the details of a particular user, by providing either the user id or user name. Other users can only access their own details.

Sample Request

For XML Response: *http://[APM Host]:[APM Port]/AppManager/xml/Users/[userId]?apikey=[API Key]*

(OR) *http://[APM Host]:[APM Port]/AppManager/xml/Users/[username]?apikey=[API Key]*

For JSON Response: *http://[APM Host]:[APM Port]/AppManager/json/Users/[userId]?apikey=[API Key]*

(OR) *http://[APM Host]:[APM Port]/AppManager/json/Users/[username]?apikey=[API Key]*

Request Parameters

The parameters involved in executing this API request are:

Field	Description
userId	Id of the user whose detail is to be fetched.
userName	The user name of the user whose detail is to be fetched.
apikey	The key generated using the **Generate API Key** option in the 'Admin' tab.

Example

http://app-windows:59090/AppManager/xml/Users?apikey=93c6eb60184e41f10fba2f365060b8e3

http://app-windows:59090/AppManager/xml/Users/1?apikey=93c6eb60184e41f10fba2f365060b8e3

http://app-windows:59090/AppManager/xml/Users/admin?apikey=93c6eb60184e41f10fba2f365060b8e3

Example Output:

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```
<AppManager-response uri="/AppManager/xml/users/6">
<result>
<response response-code="4000">
<User email="manager" userId="6" description="manager" userName="manager" role="MANAGER">
<AssociatedGroups groupId="10000035" groupName="Applications Manager"/>
<AssociatedGroups groupId="10000037" groupName="mg1"/>
<AssociatedGroups groupId="10000038" groupName="mg2"/>
</User>
</response>
</result>
</AppManager-response>
```


Note:

Deprecated API: The above API will work for users using Applications Manager 11030 and above. For users with lower versions, the *ListUserDetails* API (Sample: *http://[Host]:[Port]/AppManager/xml/ListUserDetails?apikey=[APIKEY]*
) will continue to work till the next release.

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Update User API

This API will allow an admin user to edit the information of all users, whereas other users will be able to change their own password and email address.

Sample Request

For XML Response: *http://[APM Host]:[APM Port]/AppManager/xml/Users/update?apikey=[API Key]&userId=[id]&userName=[name]&role=[role]&password=[password]*

For JSON Response: *http://[APM Host]:[APM Port]/AppManager/json/Users/update?apikey=[API Key]&userId=[id]&userName=[name]&role=[role]&password=[password]*

Request Parameters for Admin Users

Field	Description
userId	Id of the user to be updated. In case this info is not provided, the particular APIs owner id will be taken by default.
userName	The user name of the user. (User name of the default 'admin' cannot be changed)
role	User group of the new user. (User role of the default 'admin' cannot be changed)
password	New password of the user.
oldPassword	Old password of the user.
email	Email id of the user.
description	Description of the user.
associateGroupId	Group id of the monitor groups to which the user needs to be associated. The group ids should be comma separated.
associateGroupName	Name of a monitor group to which the user needs to be associated. If groupId is provided this parameter will be ignored.
removeGroupId	Group id of the monitor group from which the user needs to be removed. The group ids should be comma separated.
removeGroupName	Name of a monitor group from which the user needs to be removed. If groupId is provided this parameter will be ignored.

*All parameters are optional.

Request Parameters for Normal Users

Field	Description
password	New password of the user.
oldPassword	Old password of the user (This parameter is mandatory to update the password).
email	Email id of the user.

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Sample Response:

```
<AppManager-response uri="/AppManager/xml/users/create">
<result>
<response response-code="4000">
<User email="manager" userId="6" description="manager" userName="manager" role="MANAGER">
<AssociatedGroups groupId="10000035" groupName="Applications Manager"/>
<AssociatedGroups groupId="10000037" groupName="mg1"/>
<AssociatedGroups groupId="10000038" groupName="mg2"/>
</User>
</response>
</result>
</AppManager-response>
```

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Add Usergroup API

This API allows an admin user to add a user group in Applications Manager.

Syntax:

For XML Response:

http://[APM Host]:[APM Port]/AppManager/xml/Usergroup/create?apikey=[API Key]&usergroupName=[User Group Name]&groupName=[Group Name]&userName=[User Name]

http://[APM Host]:[APM Port]/AppManager/xml/Usergroup/create?apikey=[API Key]&usergroupName=[User Group Name]&groupId=[Monitor Group ID]&userId=[User ID]

For JSON Response:

http://[APM Host]:[APM Port]/AppManager/json/Usergroup/create?apikey=[API Key]&usergroupName=[User Group Name]&groupName=[Group Name]&userName=[User Name]

http://[APM Host]:[APM Port]/AppManager/json/Usergroup/create?apikey=[API Key]&usergroupName=[User Group Name]&groupId=[Monitor Group ID]&userId=[User ID]

Request Parameters

The parameters involved in executing this API request are:

Field	Description
apikey	The key generated using the **Generate API Key** option in the 'Admin' tab.
userId	The Id of the user who is to be associated with the user group.
userName	The name of the user to be added.
usergroupName	The name of the usergroup to be added.
groupId	The Id of the group is to be added.

Example

http://app-windows:59090/AppManager/xml/Usergroup/create?apikey=93c6eb60184e41f10fba2f365060b8e3&usergroupName=sample&groupName=ApplicationsManager&userName=user

http://app-windows:59090/AppManager/xml/Usergroup/create?apikey=93c6eb60184e41f10fba2f365060b8e3&usergroupName=sample&groupId=10011,10000019&userId=4,5

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Delete Usergroup API

Users Details

This API allows an admin user to delete a user group. Users other than admin can only access their own details.

Sample Request

For XML Response

http://[APM Host]:[APM Port]/AppManager/xml/Usergroup/delete?apikey=[API Key] &usergroupName= [Group Name]

http://[APM Host]:[APM Port]/AppManager/xml/Usergroup/delete?apikey=[API Key] &usergroupId=[Group Id]

For JSON Response

http://[APM Host]:[APM Port]/AppManager/json/Usergroup/delete?apikey=[API Key] &usergroupName= [Group Name]

http://[APM Host]:[APM Port]/AppManager/json/Usergroup/delete?apikey=[API Key] &usergroupId=[Group Id]

Request Parameters

The parameters involved in executing this API request are:

Field	Description
apikey	The key generated using the **Generate API Key** option in the 'Admin' tab.
usergroupId	The Id of the user group which is to be deleted.
usergroupName	The name of the user group which is to be deleted.

Example

http://app-windows:5909/AppManager/xml/Usergroup/delete?apikey=b9a17b29f5883a2a454ab1711b9f12f9&usergroupName=sample

http://app-windows:5909/AppManager/xml/Usergroup/delete?apikey=b9a17b29f5883a2a454ab1711b9f12f9&usergroupId=1,2

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List Usergroups API

Users Details

This API allows an admin user to list all the user groups in Applications Manager. Users other than admin can only access their own details.

Syntax:

For XML Response:

http://[APM Host]:[APM Port]/AppManager/xml/UsergroupDetails?apikey=[API Key]

For JSON Response:

http://[APM Host]:[APM Port]/AppManager/json/UsergroupDetails?apikey=[API Key]

Request Parameters

The parameters involved in executing this API request are:

Field	Description
userId	Id of the user whose detail is to be fetched.
userName	The user name of the user whose detail is to be fetched.
apikey	The key generated using the **Generate API Key** option in the 'Admin' tab.

Example

http://app-windows:59090/AppManager/xml/UsergroupDetails?apikey=93c6eb60184e41f10fba2f365060b8e3

http://app-windows:59090/AppManager/json/UsergroupDetails?apikey=93c6eb60184e41f10fba2f365060b8e3

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Update User Group API

Users Details

This API allows an admin user to update the details of a user group. Users other than admin can only access their own details.

Syntax:

For XML Response:

http://[APM Host]:[APM Port]/AppManager/xml/Usergroup/update?apikey=[API Key]&usergroupId= [User Group Id] &usergroupName=[User Group Name]&associateGroupId=[associate Group Id]&associateUserId= [Associate User Id]&removeGroupId= [Remove Group Id] &removeUserId= [removeUserId]

For JSON Response:

http://[APM Host]:[APM Port]/AppManager/json/Usergroup/update?apikey=[API Key]&usergroupId= [User Group Id] &usergroupName=[User Group Name]&associateGroupId=[associate Group Id]&associateUserId= [Associate User Id]&removeGroupId= [Remove Group Id] &removeUserId= [Remove User Id]

Request Parameters

The parameters involved in executing this API request are:

Field	Description
userId	Id of the user whose detail is to be updated
userName	The user name of the user whose detail is to be updated
apikey	The key generated using the **Generate API Key** option in the 'Admin' tab.
usergroupId	Id of the user group of which the details are to be updated
usergroupname	Name of the user group of which the details are to be updated

Example

http://app-windows:5909/AppManager/xml/Usergroup/update?apikey=b9a17b29f5883a2a454ab1711b9f12f9&usergroupId=1&usergroupName=sampless&associateGroupId=10000019&associateUserId=4&removeGroupId=10011&removeUserId=5

http://app-windows:5909/AppManager/json/Usergroup/update?apikey=b9a17b29f5883a2a454ab1711b9f12f9&usergroupId=1&usergroupName=sampless&associateGroupId=10000019&associateUserId=4&removeGroupId=10011&removeUserId=5

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Alarm Actions API

This API will be used to execute alarm actions like **Assigning, Unassigning, Clearing Alarms** and **Adding, Listing Annotations** in Applications Manager.

API for XML Response:
*http://[APM Host]:[APM Port]/AppManager/xml/**AlarmAction?**apikey=<api_key>&action=<action_type>&entity=<alarm_entity>&**username**=<user name>&**message**=<message>;*

API for JSON Response:
*http://[APM Host]:[APM Port]/AppManager/json/**AlarmAction?**apikey=<api_key>&action=<action_type>&entity=<alarm_entity>&**username**=<user name>&**message**=<message>;*

Request Parameters:

Field	Description
AppManager_Host	The server in which Applications Manager is installed.
AppManager_Port	The Applications Manager webserver port.
api_key	The API key of the user performing the operation.
action_type	PickupAlarm / UnpickupAlarm / ClearAlarm / AddAnnotation / ListAnnotations
entity	The entity field should have value [Resource ID of Monitor]_[Attribute ID]. This is a unique identifier for an alarm in Applications Manager.
message	Specify the message used to annotate an alarm.
username	Username used to pickup the alarm on the absence of which, the, username of the apikey will be used.

Sample XML Input:
http://apm-prod1:9090/AppManager/xml/AlarmAction?apikey=37097301e45784daa94889f35f2509ab&action=ClearAlarm&entity=10000285_527
Sample XML Response:
<AppManager-response uri="/AppManager/xml/AlarmAction"><result><response response-code="4000"><message>Successfully Cleared the Alarm!</message></response></result></AppManager-response>

JSON Input
http://apm-prod1:9090/AppManager/json/AlarmAction?apikey=37097301e45784daa94889f35f2509ab&action=ClearAlarm&entity=10000285_527
JSON Response
{"response":{"result":[{"message":"Successfully Cleared the Alarm!"}],"uri":"/AppManager/json/AlarmAction"},"response-code":"4000"}

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Authenticator API

For mobile applications, new users may need to reuse the API Key provided to successfully authenticated users, so that they can use it for remaining operations.Authenticator API allows users to fetch details like the their API Keys, Roles, image and any other information associated to the user for successful authentication.

NOTE:
We hope to make it available only in HTTPS (SSL) Mode & POST Method.

API for XML Response : *https://[APM Host]:[APM Port]/AppManager/xml/**Authenticator***
API for JSON Response : *https://[APM Host]:[APM Port]/AppManager/json/**Authenticator***

Request Parameters:

Field	Description
j_username	Username has to be posted to the above mentioned request with 'j_username' as parameter name.
j_password	Password has to be posted to the above mentioned request with 'j_password' as parameter name.

Request Parameters:

a) j_username: Username has to be posted to the above mentioned request with 'j_username' as parameter name.

b) j_password: Password has to be posted to the above mentioned request with 'j_password' as parameter name.

Response Details:

Field	Description
APIKey	This is the username.
Description	This is the description of the user account given at the time of creation of user account
EmailID	This is the e-mail id of the user
GroupName	This is the typ of account the user has. ex: operator, admin, manager etc.
UserImage	This is User image path
UserID	This is the ID of the user
UserName	This is the username of the user.

```
<AppManager-response uri="/AppManager/xml/Authenticator">
<result>
<response response-code="4000">
<UserDetails EmailID="NA" UserID="1" Description="NA" UserName="admin" APIKey="8c8ec3f2cd30722d3a6f980df12c1e5f" UserImage="/images/icon_user.gif"
GroupName="ADMIN"/>
</response>
</result>
</AppManager-response>
```

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JSON Input
https://apm-prod1:8445/AppManager/json/Authenticator?j_username=admin&j_password=admin
JSON Response
{"response-code":"4000","response":{"uri":"/AppManager/json/Authenticator","result":[{"EmailID":"NA","UserID":"1","Description":"NA","UserName":"admin","APIKey":"c4e547c2330e2eb92d3e7af2262da9e9","UserImage":"/images/icon_user.gif","GroupName":"ADMIN"}]}}

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Apply License API

This API allows the user to apply a license in Applications Manager.

Sample Request

http://[host]:[port]/AppManager/xml/ApplyLicense?apikey=[apikey]&filePath=[local-filepath]

(or)

Use multipart/form-data with post method :

Example:

```
<html>
<form action="http://<myappmanager-
server>/AppManager/xml/ApplyLicense?apikey=7b5fde68148fa2419bc2f1a1ab87e75" method="post"
enctype="multipart/form-data"
name="form1" id="form1">
<table border="2">
<tr> <td align="center"><b>Upload a License File </td> </tr>
<tr> <td> License File <input name="file" type="file" id="file"><td> </tr>
<tr> <td align="center"> <input type="submit" name="Submit" value="Register"/> </td> </tr>
</table>
</form>
</html>
```

Request Parameters

The parameters involved in the API request are described below:

Field	Description
filePath	The path to the directory containing the license file.

Example:

*http://app-windows:9090/AppManager/xml//ApplyLicense?apikey=7b5fde68148fa2419bc2f1a1ab87e75&filePath=local-filepath</fo
nt>*

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Mail Server API

Mail Server API allows the user to view mail server details and configure mail server parameters in Applications Manager. This API is designed to support GET and POST requests.

- GET Request - To view/list mail server details.
- POST Request - To add or update mail server details.

GET Request

Whenever the request is sent by "GET" method, the data corresponding to the API will be listed.

Sample Request

http://[host]:[port]/AppManager/xml/MailServer?apikey=[apikey]

POST Request

When the request is sent by "POST" method, the corresponding data will be added/updated.

Sample Request

http://[host]:[port]/AppManager/xml/MailServer?apikey=[apikey]

Request Parameters

The parameters involved in the API request are described below:

For Primary Server

Field	Description
smtpServer	The Server IP or host name of the host in which the SMTP server runs.
smtpPort	The SMTP port number.
smtpEmail	The email address available in that SMTP server.
smtpUserName	User name for authentication
smtpPassword	Password for authentication
prmTlsAuth	Primary Tls Authentication. The value can be either true or false.
prmSslAuth	Primary SSL Authentication. The value can be either true or false.

For Secondary Server

Field	Description
secSmtpServer	The Server IP or host name of the host in which the SMTP server runs.
secSmtpPort	The SMTP port number.
secSmtpEmail	The email address available in that SMTP server.

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secSmtpUserName	Username for authentication.
secSmtpPassword	Password for authentication.
secTlsAuth	Secondary Tls Authentication. The value can be either true or false.
secSslAuth	Secondary SSL Authentication. The value can be either true or false.

Example:

http://app-windows:9091/AppManager/xml/MailServer?apikey=7b5fde68148fa2419bc2f1a1ab87e75

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Configure Proxy Server API

This API allows the user to view proxy server details and configure proxy server parameters. This API is designed to support GET and POST requests.

- GET Request - To view/list proxy server details.
- POST Request - To add or update proxy server details.

GET Request

Whenever the request is sent by "GET" method, the data corresponding to the API will be listed.

Sample Request

http://[host]:[port]/AppManager/xml/ProxyServer?apikey=[apikey]

POST Request

When the request is sent by "POST" method, the corresponding data will be added/updated.

Sample Request

http://[host]:[port]/AppManager/xml/ProxyServer?apikey=[apikey]

Request Parameters

The parameters involved in the API request are described below:

Field	Description
useproxy	Option to automaticcally use default proxy configuration settings.Values can be true or false. If set to false, then automatic proxy configuration settings will be used. **Note:** Specifying any value other than "true" for this will be asssumed as false and the automatic proxy configuration will be used.
host	The host name or host id of the proxy server that has to be used in configuration.
port	The port number of the proxy server.
username	The username for proxy server authentication.
password	The password for proxy server authentication.
bypassproxy	Option to enable bypass for the proxy server. Values can be true or false. If set to true, will enable the bypass for the proxy server. **Note:** Any value other than "true" will be assumed as false.
dontProxyList	Do not use proxy for addresses beginning with the hosts mentioned in this parameter. Multiple hosts are separated by semicolon (;).

Example:

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http://app-windows:9090/AppManager/xml/ProxyServer?apikey=7b5fde68148fa2419bc2f1a1ab87e75

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Configure SMS Server API

This API allows the user to to view SMS server details and configure SMS server parameters. This API is designed to support GET and POST requests.

- GET Request - To view/list SMS server details.
- POST Request - To add or update SMS server details.

GET Request

Whenever the request is sent by "GET" method, the data corresponding to the API will be listed.

Sample Request

http://[host]:[port]/AppManager/xml/SMSServer?apikey=[apikey]

POST Request

When the request is sent by "POST" method, the corresponding data will be added/updated.

Sample Request

http://[host]:[port]/AppManager/xml/SMSServer?apikey=[apikey]

Request Parameters

The parameters involved in the API request are described below:

Field	Description
SMSPort	The port in which the modem is connected.

Example:

http://app-windows:9090/AppManager/xml/SMSServer?apikey=7b5fde68148fa2419bc2f1a1ab87e75

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Delete Monitor API

This API is used to delete a monitor.

Sample Request

http://[Host]:[Port]/AppManager/xml/DeleteMonitor?apikey=[APIKEY]&resourceid=[RESOURCEID]

Request Parameters

The parameters involved in executing this API request are:

Field	Description
apikey	The key generated using the **Generate API Key** option in the 'Admin' tab.
resourceid	The resource id of the monitor that needs to be deleted. You may also add multiple resourceids to delete multiple monitors.

Example

http://app-windows:59090/AppManager/xml/DeleteMonitor?apikey=93c6eb60184e41f10fba2f365060b8e3&resourceid=10000032

Multiple resourceid can be given as comma separated. To delete multiple monitors:

http://app-windows:59090/AppManager/xml/DeleteMonitor?apikey=93c6eb60184e41f10fba2f365060b8e3&resourceid=10000032,10000033,10000034

Example Output:

```
<AppManager-response uri="/AppManager/xml/DeleteMonitor">
  <result>
    <response method="DeleteMonitor">
      <message>The monitor deleted successfully.</message>
    </response>
  </result>
</AppManager-response>
```

If the API is not executed correctly, the request will fail and errors will be shown as given below:

```
<AppManager-response uri="/AppManager/xml/DeleteMonitor">
  <result>
    <response response-code="4004">
      <message>The specified apikey [ "+apiKey+" ] in the request is invalid. Kindly login to Applications Manager and check for the key in generate key in Admin
tab.</message>
    </response>
  </result>
</Apm-response>
```

Refer this page for a list of common error conditions.

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Enable/Disable Actions API

ManageEngine Applications Manager provides REST APIs for bulk enabling or disabling of alarms actions configured for a monitor or monitor-groups.

API to Enable/Disable Alarms for a monitor

http://[Host]:[Port]/AppManager/xml/EnableDisableAlarmsAction?apikey=[API key]&resourceid=[RESOURCEID]&alteraction=[enable/disable]

http://[Host]:[Port]/AppManager/xml/EnableDisableAlarmsAction?apikey=[API key]&haid=[MONITORGROUPID]&alteraction=[enable/disable]

Request Parameters

Field	Description
API Key	The key generated from **"Generate API Key"** option in the Admin tab.
resourceid	resourceid=[**RESOURCEID**] where **RESOURCEID** is the AM_ManagedObject.RESOURCEID of the monitor to be unmanaged.
alteraction	The enable or disable action.

The following is an example for EnableDisableAlarmsAction API

http://app-windows:9090/AppManager/xml/EnableDisableAlarmsAction?apikey=65d0fa3e1f6c6bdcce1c3969f24c39a8&resourceid=10000056&alteraction=enable

Example output:

```
<AppManager-response uri="/AppManager/xml/EnableDisableAlarmsAction"><result><response response-code="4000"><message>Enable/Disable alarms done successfully.</message></response></result></AppManager-response>
```

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ExecuteAction

This API will be used to execute the actions that are configured in Applications Manager. An Operator can only execute an action that is associated to him.

API for XML Response:
*http://[APM Host]:[APM Port]/AppManager/xml/**ExecuteAction**?apikey=[API Key]&ActionId=10000056*

API for JSON Response:
*http://[APM Host]:[APM Port]/AppManager/json/**ExecuteAction**?apikey=[API Key]&ActionId=10000056*

Request Parameters:

Field	Description
ActionId	This value specifies the action id and helps the API to execute the corresponding action.


```
<AppManager-response uri="/AppManager/xml/ExecuteAction">
<result>
<response response-code="4000">
<ExecuteAction ActionTypeID="2" Status="Success" ActionExecPath="/common/executeSMS.do?method=testAction&actionID=10000004" Message="The action test1 has been successfully executed" ActionName="test1" ActionID="10000004" ActionType="SMS Action(s)"/>
</response>
</result>
</AppManager-response>
```

JSON Input
http://apm-prod1:9090/AppManager/json/ExecuteAction?apikey=c4e547c2330e2eb92d3e7af2262da9e9&ActionId=10000056
JSON Response
{"response-code":"4000","response":{"uri":"/AppManager/json/ExecuteAction","result":[{"ActionTypeID":"1","Status":"Success","ActionExecPath":"/common/executeAction.do?method=testAction&actionID=20000003","Message":"The action alert_mail has been successfully executed","ActionName":"alert_mail","ActionID":"20000003","ActionType":"E-mail Action(s)"}]}}

NOTE: For the Actions lilke Ec2Instance / VMActions / Service actions (Start/ Stop/ Restart) will execute the action directly. where as in UI we are asking the user to send a test mail or to execute the action.

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Manage API

ManageEngine Applications Manager provides Manage API that allows the user to manage a monitor.

API to Manage a Monitor

http://[Host]:[Port]/AppManager/xml/ManageMonitor?apikey=[API key]&resourceid=[RESOURCEID]

http://[Host]:[Port]/AppManager/xml/ManageMonitor?apikey=[API key]&haid=[MONITOR GROUP ID]

Note: This API is not supported for Admin Server.

Request Parameters

Field	Description
API Key	The key generated from **"Generate API Key"** option in the Admin tab.
resourceid	resourceid=[**RESOURCEID**] where **RESOURCEID** is the AM_ManagedObject.RESOURCEID of the monitor to be managed.
haid	The resourceid of the monitor group that you want to manage.

The following is an example for ManageMonitor

http://app-windows:9090/AppManager/xml/ManageMonitor?apikey=65d0fa3e1f6c6bdcce1c3969f24c39a8&resourceid=10000031

Example output:

```
<AppManager-response uri="/AppManager/xml/ManageMonitor">
  <result>
    <response response-code="4000">
      <message>Monitor with resourceID 10000031 managed successfully</message>
    </response>
  </result>
</AppManager-response>
```

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UnManage API

ManageEngine Applications Manager provides REST APIs for fetching data from Applications Manager server. This API allows the user to unmanage a monitor.

API to UnManage a Monitor

http://[Host]:[Port]/AppManager/xml/UnmanageMonitor?apikey=[API key]&resourceid=[RESOURCEID]
http://[Host]:[Port]/AppManager/xml/UnmanageMonitor?apikey=[API key]&haid=[MONITORGROUPID]

Request Parameters

Field	Description
API Key	The key generated from **"Generate API Key"** option in the Admin tab.
resourceid	resourceid=[**RESOURCEID**] where **RESOURCEID** is the AM_ManagedObject.RESOURCEID of the monitor to be unmanaged.
haid	The resourceid of the monitor group which you want to un-manage.

The following is an example for UnManageMonitor

http://app-windows:9090/AppManager/xml/UnmanageMonitor?apikey=65d0fa3e1f6c6bdcce1c3969f24c39a8&resourceid=10000056
http://app-windows:9090/AppManager/xml/UnmanageMonitor?apikey=65d0fa3e1f6c6bdcce1c3969f24c39a8&haid=10

Example output:

```
<AppManager-response uri="/AppManager/xml/UnmanageMonitor">
  <result>
    <response response-code="4000">
      <message>Monitor with resourceID 10000056 unmanaged successfully</message>
    </response>
  </result>
</AppManager-response>
```

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Ping API

This API will be used to ping the given server or the server corresponding to the given monitor's resourceid. The ping command will be executed and the result will be passed as response of the request.

API for XML Response:
*http://[APM Host]:[APM Port]/AppManager/xml/**Ping**?apikey=[API Key]&resourceid='10000157'*

API for JSON Response:
*http://[APM Host]:[APM Port]/AppManager/json/**Ping**?apikey=[API Key]&host='hemachand-0591'*

Request Parameters:

Field	Description
resourceid	This value specifies the resourceid of the monitor, So that we can ping host corresponding to monitor.
host	This is the host of any server which can be passed as parameter to ping from the Applications Manager server.

Response Details:

Field	Description
APIKey	This is the username.
Description	This is the description of the user account given at the time of creation of user account
EmailID	This is the e-mail id of the user
GroupName	This is the typ of account the user has. ex: operator, admin, manager etc.,
UserImage	This is User image path
UserID	This is the ID of the user
UserName	This is the username of the user.

```
<AppManager-response uri="/AppManager/xml/Ping">
<result>
<response response-code="4000">
<PingResult Output="Pinging 127.0.0.1 with 32 bytes of data:<br>Reply from 127.0.0.1: bytes=32 time<1ms TTL=128<br><br>Ping statistics for 127.0.0.1:<br>
Packets: Sent = 1, Received = 1, Lost = 0 (0% loss),<br>Approximate round trip times in milli-seconds:<br> Minimum = 0ms, Maximum = 0ms, Average = 0ms<br>"
Host="127.0.0.1" IPAddress="127.0.0.1"/>
</response>
</result>
</AppManager-response>
```

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JSON Input
http://apm-prod1:9090/AppManager/json/Ping?apikey=c4e547c2330e2eb92d3e7af2262da9e9&host=apm-prod1
JSON Response
{"response-code":"4000","response":{"uri":"/AppManager/json/Ping","result":[{"Output":"Pinging apm-prod1.csez.zohocorpin.com [fe80::51a4:f642:390a:7e1f%14] with 32 bytes of data:
Reply from fe80::51a4:f642:390a:7e1f%14: time<1ms

Ping statistics for fe80::51a4:f642:390a:7e1f%14:
 Packets: Sent = 1, Received = 1, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
 Minimum = 0ms, Maximum = 0ms, Average = 0ms
","Host":"apm-prod1.csez.zohocorpin.com","IPAddress":"192.168.26.79"}]}}

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PollNow API

This API allows you to poll a particular monitor.

Sample Request

http://[Host]:[Port]/AppManager/xml/PollNow?apikey=[APIKEY]&resourceid=[RESOURCEID]

Request Parameters

The parameters involved in executing this API request are:

Field	Description
apikey	The key generated using the **Generate API Key** option in the 'Admin' tab.
resourceid	The resource id of the monitor that needs to be polled.

Example

http://app-xp5:9099/AppManager/xml/PollNow?apikey=123b7328e4b41d1efe64aa7980d83d77&resourceid=10000293

Example Output:

```
<AppManager-response uri="/AppManager/xml/PollNow">
<result>
<response method="PollNow">
<message>The monitor polled successfully.</message>
</response>
</result>
</AppManager-response>
```

If the API is not executed correctly, the request will fail and errors will be shown as given below:

```
<AppManager-response uri="/AppManager/xml/PollNow">
  <result>
    <response response-code="4037">
      <message>Improper resourceid in the request.</message>
    </response>
  </result>
</Apm-response>
```

Refer this page for a list of common error conditions.

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UnManage and Reset Status API

ManageEngine Applications Manager provides REST APIs for unmanaging and reseting the current status of your Applications Manager monitors.

API to UnManage and Reset Status of a Monitor

http://[Host]:[Port]/AppManager/xml/UnmanageAndResetMonitor?apikey=[API key]&resourceid=[RESOURCEID]
http://[Host]:[Port]/AppManager/xml/UnmanageAndResetMonitor?apikey=[API key]&haid=[MONITORGROUPID]

Request Parameters

Field	Description
API Key	The key generated from **"Generate API Key"** option in the Admin tab.
resourceid	resourceid=[**RESOURCEID**] where **RESOURCEID** is the AM_ManagedObject.RESOURCEID of the monitor to be unmanaged.
haid	The resourceid of the monitor group which you want to un-manage and reset.

The following is an example for UnmanageAndResetMonitor API

http://app-windows:9090/AppManager/xml/UnmanageAndResetMonitor?apikey=65d0fa3e1f6c6bdcce1c3969f24c39a8&resourceid=10000056

Example output:

```
<AppManager-response uri="/AppManager/xml/UnmanageAndResetMonitor"><result><response response-code="4000"><message>Unmanage and status reset completed successfully.</message></response></result></AppManager-response>
```

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Applications Manager REST APIs for Enterprise Edition

ManageEngine Applications Manager provides REST APIs for configuring business hours, alarms, domains, event logs, thresholds, managing credentials and more from Applications Manager's Enterprise setup. Using these APIs, Applications Manager's data can be integrated with any internal portal or 3rd party System Management software. The data can be represented in a single dashboard itself. Click on the following links to know more:

- How do APIs work?
- Generating an API Key

By using any XML parser in a scripting language, Java, C, Perl or Python, etc. you can make HTTPs requests in the format recommended in the API. This data can then be inserted into your own database or put in any format that you need.

Here is a list of the APIs that you can use in the Admin Server:

- Business Hours
- Configure Alarms
- Credential Manager
- Domain Configuration
- Email Action Configuration
- EventLog Configuration
- Mail Server Configuration
- Threshold Configuration

How do APIs work?

In order to use the API, each user should obtain an API key - which is a long text and is unique to their Applications Manager Account. The API key has to be passed as parameter in every API request made.

Generate API Key

The User can register for the API key from within Applications Manager product using the "REST API" option in the Admin tab.

Note: Generating the API key is a one-time process.

Steps for using REST API

- Click on the **Admin** tab
- Under Applications Manager Server Settings, click on **REST API**.
- The API key is generated - eg.*7b5fde68148fa2419bc2f1a1ab87e757*
- Open the browser, the URL would be http://<my*appmanager-server*>:9090/AppManager/xml/ListServer?apikey=7b5fde68148fa2419bc2f1a1ab87e757&type=all
- By changing <type> to the required monitor, data pertaining to that monitor can be retrieved. Check if the following URL works fine http://<my*appmanager-server*>:9090/AppManager/xml/ListServer?apikey=7b5fde68148fa2419bc2f1a1ab87e757&type=serverwill give data of all the server

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monitors. 'all' will give the entire Applications Manager's data.

- By using any xml parser in a scripting language, Java, C, Perl or Python etc, you can make HTTPs requests in the format recommended in the API. This data can then be inserted into your own database or put in any format that you need.

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Business Hours APIs

These APIs allow an admin user to configure business hours in Applications Manager. Business hours is a pre-determined set of hours which helps you to view reports for the particular hours during the day. Business hours APIs are designed to support GET and POST requests:

- Add Business Hour (POST Method)
- Edit Business Hour (POST Method)
- Delete Business Hour (POST Method)
- List Business Hour (GET Method)

Request Parameters

The parameters involved in executing this API request are:

Field	Description
mondaystarthour, tuesdaystarthour, wednesdaystarthour, thursdaystarthour, fridaystarthour, saturdaystarthour, sundaystarthour	The hour of the day at which business begins.
mondayendhour, tuesdayendhour, wednesdayendhour, thursdayendhour, fridayendhour, saturdayendhour, sundayendhour	The hour of the day at which business ends.
mondaystartminute, tuesdaystartminute, wednesdaystartminute, thursdaystartminute, fridaystartminute, saturdaystartminute, sundaystartminute	The minute of the day at which business begins.
mondayendminute, tuesdayendminute, wednesdayendminute, thursdayendminute, fridayendminute, saturdayendminute, sundayendminute	The minute of the day at which business ends.
workingdays - (Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday)	Working days of the week.

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Add Business Hour

This API allows an admin user to add business hours in Applications Manager.

Syntax:

For XML Response:
http://[APM Host]:[APM Port]/AppManager/xml/businesshours?apikey=[API Key]&mondayendhour=[Monday End Hour]&wednesdayendminute=[Wednesday End Minute]&thursdaystarthour=[Thursday Start Hour]&description=[Description]&name=[Name]&tuesdaystartminute=[Tuesday Start Minute]&mondaystarthour=[Monday Start Hour]&fridaystartminute=[Friday Start Minute]&workingdays=[Working days like Monday,Tuesday,Wednesday,Thursday,Friday]&mondayendminute=[Monday End Minute]&fridayendminute=[Friday End Minute]&tuesdaystarthour=[Tuesday End Hour]
For JSON Response:
http://[APM Host]:[APM Port]/AppManager/json/businesshours?apikey=[API Key]&mondayendhour=[Monday End Hour]&wednesdayendminute=[Wednesday End Minute]&thursdaystarthour=[Thursday Start Hour]&description=[Description]&name=[Name]&tuesdaystartminute=[Tuesday Start Minute]&mondaystarthour=[Monday Start Hour]&fridaystartminute=[Friday Start Minute]&workingdays=[Working days like Monday,Tuesday,Wednesday,Thursday,Friday]&mondayendminute=[Monday End Minute]&fridayendminute=[Friday End Minute]&tuesdaystarthour=[Tuesday End Hour]

Example

http://app-windows:59090/AppManager/xml/businesshours?apikey=09eebdd6893db4d20e16b84dff6664f1&mondayendhour=20&wednesdayendminute=0&saturdayendhour=00&thursdayendhour=20&saturdaystarthour=00&sundaystartminute=0&sundayendminute=0&mondaystartminute=0&thursdaystarthour=08&saturdayendminute=0&fridayendhour=20&description=sample description&name=Test Business Hour&tuesdaystartminute=0&mondaystarthour=08&fridaystartminute=0&sundayendhour=00&tuesdayendminute=0&fridaystarthour=08&thursdaystartminute=0&wednesdaystarthour=08&saturdaystartminute=0&sundaystarthour=00&wednesdayendhour=20&wednesdaystartminute=0&thursdayendminute=0&tuesdayendhour=20&workingdays=Monday,Tuesday,Wednesday,Thursday,Friday&mondayendminute=0&fridayendminute=0&tuesdaystarthour=08

Edit Business Hour

This API allows an admin user to edit the business hours added in Applications Manager.

Syntax

For XML Response:
http://[APM Host]:[APM Port]/AppManager/xml/businesshours?apikey=[API Key]&mondayendhour=[Monday End Hour]&wednesdayendminute=[Wednesday End Minute]&thursdaystarthour=[Thursday Start Hour]&description=[Description]&newbusinessname=[Name]&tuesdaystartminute=[Tuesday Start

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Minute]&mondaystarthour=[Monday Start Hour]&fridaystartminute=[Friday Start Minute]&workingdays=[Working days like Monday,Tuesday,Wednesday,Thursday,Friday]&businessid=[Business Id]&mondayendminute=[Monday End Minute]&fridayendminute=[Friday End Minute]&tuesdaystarthour=[Tuesday End Hour]

For JSON Response:

http://[APM Host]:[APM Port]/AppManager/json/businesshours?apikey=[API Key]&mondayendhour=[Monday End Hour]&wednesdayendminute=[Wednesday End Minute]&thursdaystarthour=[Thursday Start Hour]&description=[Description]&newbusinessname=[Name]&tuesdaystartminute=[Tuesday Start Minute]&mondaystarthour=[Monday Start Hour]&fridaystartminute=[Friday Start Minute]&workingdays=[Working days like Monday,Tuesday,Wednesday,Thursday,Friday]&businessid=[Business Id]&mondayendminute=[Monday End Minute]&fridayendminute=[Friday End Minute]&tuesdaystarthour=[Tuesday End Hour]

Example

http://app-windows:59090/AppManager/xml/businesshours?apikey=09eebdd6893db4d20e16b84dff6664f1&mondayendhour=20&wednesdayendminute=0&saturdayendhour=00&thursdayendhour=20&saturdaystarthour=00&sundaystartminute=0&sundayendminute=0&mondaystartminute=0&thursdaystarthour=08&saturdayendminute=0&fridayendhour=18&newbusinessname=Test Business Hour&description=sample description new description&tuesdaystartminute=0&mondaystarthour=08&fridaystartminute=0&sundayendhour=00&tuesdayendminute=0&fridaystarthour=15&thursdaystartminute=0&wednesdaystarthour=08&saturdaystartminute=0&sundaystarthour=00&wednesdayendhour=20&businessid=10000&wednesdaystartminute=0&thursdayendminute=0&tuesdayendhour=20&workingdays=Friday&mondayendminute=0&fridayendminute=0&tuesdaystarthour=08

Delete Business Hour

This API allows an admin user to delete business hours in Applications Manager.

Syntax

For XML Response:

http://[APM Host]:[APM Port]/AppManager/xml/businesshours?apikey=[API Key]&businessid=[Business Id],&TO_DELETE=true

For JSON Response:

http://[APM Host]:[APM Port]/AppManager/json/businesshours?apikey=[API Key]&businessid=[Business Id],&TO_DELETE=true

Example

http://app-windows:59090 /AppManager/xml/businesshours?apikey=09eebdd6893db4d20e16b84dff6664f1&businessid=10001,&TO_DELETE=true

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List Business Hour

This API allows an admin user to list down the business hours in Applications Manager.

Syntax

For XML Response:

http://[APM Host]:[APM Port]/AppManager/xml/businesshours?apikey=[API Key]

For JSON Response:

http://[APM Host]:[APM Port]/AppManager/json/businesshours?apikey=[API Key]

Example

http://app-windows:59090/AppManager/xml/businesshours?apikey=09eebdd6893db4d20e16b84dff6664f1

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Configure Alarms APIs

These APIs allow an admin user to configure alarms in Applications Manager.

Request Parameters

The parameters involved in executing this API request are:

Field	Description
apikey	The key generated using the Generate API Key option in the 'Admin' tab.
resourceid/monitorname	The resource ID of the monitor / monitorname.
attributeid	The attribute ID of the alarm attribute to be configured.
thresholdid/thresholdname	The ID or name of the threshold which will be assigned to attribute to configure alarm.
criticalactionid/criticalactionname	The ID or name of action to notify critical condition of the attribute .
warningactionid/warningactionname	The ID or name of action to notify warning condition of the attribute.
clearactionid/clearactionname	The ID or name of action to notify clear condition of the attribute.
requesttype	This attribute specifies if you wish to ***Save the Configuration, Save And Configure Another Alarm*** or ***Remove Configuration***. Possible values are 1, 2 and 3 and they stand for: • 1 - Save • 2 - Save And Configure Another • 3 - Remove Configuration

Note: To configure alarm for more than one attribute, specify attributes by comma separation. e.g: 402, 412, 413

Syntax

For XML Response:

http://[APM Host]:[APM Port]/AppManager/xml/configurealarms?apikey=[API Key]&resourceid=[resourceid of monitor]&attributeid=[attribute IDs]&thresholdid=[Threshold ID]&criticalactionid=[Action ID]&warningactionid=[Action ID]&clearactionid=[Action ID]&requesttype=[1/2]

For JSON Response:

http://[APM Host]:[APM Port]/AppManager/xml/configurealarms?apikey=[API Key]&resourceid=[resourceid of monitor]&attributeid=[attribute IDs]&thresholdid=[Threshold ID]&criticalactionid=[Action ID]&warningactionid=[Action ID]&clearactionid=[Action ID]&requesttype=[1/2]

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Example

http://app-windows:59090/AppManager/xml/configurealarms?apikey=44b94e81455533ce7b06b97993b351a2&resourceid=10000026&attributeid=402,412,413&thresholdid=3&criticalactionid=10000004&warningactionid=10000004&clearactionid=10000004&requesttype=1

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Credential Manager APIs

Credential manager REST APIs allow admin users to add, update, delete and list credential by submitting the required parameters. Credential manager APIs are designed to support GET and POST requests:

- Add Credential
- Edit/ Update Credential
- Delete Credential
- List Credentials

Note: HTML encoding will be required for parameters with special characters (For example: display name or password). For example, if a password contains a special character like " # , & , % or + :

should be replaced with %23

& should be replaced with %26

% should be replaced with %25

+ should be replaced with %2B while passing the password in the RESTAPI.

For More information about HTML Encoding, refer the following document: http://www.w3schools.com/tags/ref_urlencode.asp

When using the Credential Manager APIs, for operations like add, edit, delete credentials, it is recommened that the POST method be used.

Add Credential Manager

This API allows an admin user to add business hours in Applications Manager. The common parameters involved in executing this API request are:

Field	Description
credentialName	Enter a unique Credential Name
type	You must specify a credential type. It should be exact same as given in syntax for each type.
credentialDescr	Credential Description
credentialID	A unique identifier set by Applications Manager for a credential.

Field	Description
Servers	
Telnet	**Required parameters:** • type • username • prompt • password **Syntax:** http://[HOST]:[PORT]/AppManager/xml/credential?apikey=[APIKEY]&type=Telnet&credentialDescr=[CREDENTIAL DESCRIPTION]&credentialName=[CREDENTIANL NAME]&username=[USERNAME]&prompt=$&password=[PASSWORD] **Sample Request:** http://apm-server:9090/AppManager/xml/credential?apikey=05b4a12a5fc0747cfaa897850ae9a778&type=Telnet&credentialDescr=Test&credentialName=Telnet&username=test&prompt=$&password=test
SNMP v1/v2	**Required parameters:** • type • snmpCommunityString • timeout **Syntax:** http://[HOST]:[PORT]/AppManager/xml/credential?apikey=[APIKEY]&type=SNMP v1v2&credentialDescr=[CREDENTIAL DESCRIPTION]&credentialName=[CREDENTIANL NAME]&snmpCommunityString=[COMMUNITY STRING]&timeout=[MINUTES] **Sample Request:** http://apm-server:9090/AppManager/xml/credential?apikey=05b4a12a5fc0747cfaa897850ae9a778&type=SNMP v1v2&credentialDescr=Test&credentialName=Credential-SNMPv2&snmpCommunityString=public&timeout=5

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Field	Description
SNMP v3	**Required parameters:** • type • snmpAuthProtocol • snmpContextName • snmpPrivPassword • snmpAuthPassword • snmpSecurityLevel • timeout • snmpUserName **Syntax:** https://apm-server:9090/AppManager/xml/credential?apikey=4dd329f4b42f64c29013c591138eac2a&type=SNMP v3&snmpAuthProtocol=[MD5 or SHA]&credentialName=[CREDENTIAL NAME]&snmpContextName=[CONTEXT NAME]&snmpPrivPassword=[PRIVATE PASSWORD]&snmpSecurityLevel=[NOAUTHNOPRIV or AUTHNOPRIV or AUTHPRIV]&snmpAuthPassword=[AUTHENTICATION PASSWORD]&timeout=[MINUTES]&snmpUserName=[USERNAME] **Sample Request:** https://apm-server:9090/AppManager/xml/credential?apikey=4dd329f4b42f64c29013c591138eac2a&snmpAuthProtocol=MD5&credentialName=snmp-v3-1&snmpContextName=cusu4NfK6N0s6b&snmpPrivPassword=&snmpSecurityLevel=NOAUTHNOPRIV&snmpAuthPassword=&type=SNMP v3&timeout=5&snmpUserName=admin
SSH	**Required parameters:** • type • username • passphrase • description • prompt • password • sshPKAuth **Syntax:** https://apm-server:9090/AppManager/xml/credential?apikey=4dd329f4b42f64c29013c591138eac2a&type=SSH&credentialName=[CREDENTIAL NAME]&username=[USERNAME]&passphrase=[PASS PHRASE]&description=[PRIVATE KEY]&prompt=[PROMPT]&password=[PASSWORD]&sshPKAuth=on **Sample Request:** https://apm-server:9090/AppManager/xml/credential/add?apikey=4dd329f4b42f64c29013c591138eac2a&credentialName=ssh-1&username=guest&passphrase=&description=&prompt=$&type=SSH&password=guest
WMI	**Required parameters:** • type • username • password **Syntax:** http://[HOST]:[PORT]/AppManager/xml/credential?apikey=[APIKEY]&type=WMI&credentialDescr=[CREDENTIAL DESCRIPTION]&credentialName=[CREDENTIANL NAME]&username=[USERNAME]&password=[PASSWORD] **Sample Request:** http://apm-server:9090/AppManager/xml/credential?apikey=05b4a12a5fc0747cfaa897850ae9a778&type=WMI&credentialDescr=Test&credentialName=WMI&username=administrator&password=admin123
Application servers	
GlassFish	**Required parameters:** • type • Password • JNDIPath • UserName **Syntax:** http://[HOST]:[PORT]/AppManager/xml/credential?apikey=[APIKEY]&type=GlassFish&credentialDescr=[CREDENTIAL DESCRIPTION]&credentialName=[CREDENTIANL NAME]&UserName=[USERNAME]&Password=[PASSWORD]&JNDIPath=[PATH] **Sample Request:** http://apm-server:9090/AppManager/xml/credential?apikey=05b4a12a5fc0747cfaa897850ae9a778&type=GlassFish&credentialDescr=Test&credentialName=Glassfish1&UserName=admin&Password=adminadmin&JNDIPath=/jmxrmi
JBoss Server	**Required parameters:** • type • username • password • sslenabled **Syntax:** https://apm-server:9090/AppManager/xml/credential?apikey=4dd329f4b42f64c29013c591138eac2a&type=JBoss Server&credentialName=[CREDENTIAL NAME]&username=[USERNAME]&password=[PASSWORD]&sslenabled=on **Sample Request:** https://apm-server:9090/AppManager/xml/credential?apikey=4dd329f4b42f64c29013c591138eac2a&credentialName=jboss-2&username=admin&type=JBoss Server&password=password123&sslenabled=on
Microsoft .NET	**Required parameters:** • type • username • password **Syntax:** http://[HOST]:[PORT]/AppManager/xml/credential?apikey=[APIKEY]&type=Microsoft .NET&credentialName=[CREDENTIANL NAME]&username=[USERNAME]&password=[PASSWORD]&credentialDescr=[CREDENTIAL DESCRIPTION] **Sample Request:** http://apm-server:9090/AppManager/xml/credential?apikey=a864e174c664b8661e7d8c3a07692b0e&type=Microsoft .NET&credentialName=.Net1&username=administrator&password=password123&credentialDescr=This is .net credential.
VMware vFabric tc Server	**Required parameters:** • type • Password • JNDIPath • UserName **Syntax:** http://[HOST]:[PORT]/AppManager/xml/credential?apikey=[APIKEY]&type=VMware vFabric tc Server&credentialDescr=[CREDENTIAL DESCRIPTION]&credentialName=[CREDENTIANL NAME]&Password=[PASSWORD]&JNDIPath=[JNDI PATH]&UserName=[USERNAME] **Sample Request:** http://apm-server:9090/AppManager/xml/credential?apikey=a864e174c664b8661e7d8c3a07692b0e&type=VMware vFabric tc Server&credentialName=vFabric1&Password=springsource&JNDIPath=/jmxrmi&UserName=admin
WebLogic Server	**Required parameters:** • type • username • password • version **Syntax** http://[HOST]:[PORT]/AppManager/xml/credential?apikey=[APIKEY]&type=WebLogic Server&credentialDescr=[CREDENTIAL DESCRIPTION]&credentialName=[CREDENTIANL NAME]&username=[USERNAME]&password=[PASSWORD]&version=[WLS_6_1 or WLS_7_0 or WLS_8_1 or WLS_9_0 or WLS_10_0] **Sample Request** http://apm-server:9090/AppManager/xml/credential?apikey=a864e174c664b8661e7d8c3a07692b0e&type=WebLogic Server&credentialName=Weblogic6.1&username=weblogic&password=weblogic&version=WLS_6_1
WebSphere Server	**Required parameters:** • type • soapport • username • authEnabled • password • sslenabled • version **Syntax:** https://apm-server:9090/AppManager/xml/credential?apikey=[APIKEY]&type=WebSphere Server&soapport=[SOAP PORT]&credentialName=[CREDENTIAL NAME]&username=[USERNAME]&authEnabled=on&password=[PASSWORD]&version=[5 or 6 or 7 or 8]&sslenabled=on **Sample Request:** https://apm-server:9090/AppManager/xml/credential?apikey=4dd329f4b42f64c29013c591138eac2a&type=WebSphere Server&soapport=8880&credentialName=websphere7.x&username=wasadmin&authEnabled=on&password=admin&version=8&sslenabled=on
Apache Server	**Required parameters:** • type • username • authEnabled • password • sslenabled **Syntax:** https://apm-server:9090/AppManager/xml/credential?apikey=[APIKEY]&type=Apache Server&credentialName=[CREDENTIAL NAME]&username=[USERNAME]&authEnabled=on&password=[PASSWORD]&sslenabled=on **Sample Request:** https://apm-server:9090/AppManager/xml/credential?apikey=4dd329f4b42f64c29013c591138eac2a&type=Apache Server&credentialName=Apache-1&username=test&authEnabled=on&password=test&sslenabled=on
Tomcat Server	**Required parameters:** • type • username • password • sslenabled • version • tomcatmanagerurl **Syntax:** https://apm-server:9090/AppManager/xml/credential?apikey=4dd329f4b42f64c29013c591138eac2a&tomcatmanagerurl=[TOMCAT MANAGER URL]&credentialName=[CREDENTIAL NAME]&username=[USERNAME]&type=Tomcat Server&password=e6Lg48eOS0331s&sslenabled=on&version=[3 or 4 or 5 or 6 or 7] **Sample Request:** https://apm-server:9090/AppManager/xml/credential?apikey=4dd329f4b42f64c29013c591138eac2a&tomcatmanagerurl=/manager&credentialName=Tomcat6&username=tomcat&type=Tomcat Server&password=tomcat&sslenabled=on&version=7
Java/Transactions	
Java Runtime	**Required parameters:** • type • jndiurl • authEnabled • username • password **Syntax:** http://[HOST]:[PORT]/AppManager/xml/credential?apikey=[APIKEY]&type=Java Runtime&credentialDescr=[CREDENTIAL DESCRIPTION]&credentialName=[CREDENTIANL NAME]&jndiurl=[JNDIURL]&authEnabled=on&username=[USERNAME]&password=[PASSWORD] **Sample Request:** http://apm-server:9090/AppManager/xml/credential?apikey=a864e174c664b8661e7d8c3a07692b0e&type=Java Runtime&credentialName=JavaRuntime1&jndiurl=/jmxrmi&authEnabled=on&username=admin&password=admin
Database	
DB2	**Required parameters:** • type • username • password • instance **Syntax:** http://[HOST]:[PORT]/AppManager/xml/credential?apikey=[APIKEY]&type=DB2&credentialDescr=[CREDENTIAL DESCRIPTION]&credentialName=[CREDENTIANL NAME]&username=[USERNAME]&password=[PASSWORD]&instance=[DB NAME] **Sample Request:** http://apm-server:9090/AppManager/xml/credential?apikey=a864e174c664b8661e7d8c3a07692b0e&type=DB2&credentialName=DB2 server1&username=db2admin&password=db2admin&instance=SAMPLE
MS SQL	**Required parameters:** • type • namedInstance • username • authType • instance • password **Syntax:** https://apm-server:9090/AppManager/xml/credential?apikey=[APIKEY]=MS SQL&credentialName=[CREDENTIAL NAME]&username=[USERNAME]&namedInstance=on&authType=[SQL or Windows]&instance=[INSTANCE]&password=[PASSWORD] **Sample Request:** https://apm-server:9090/AppManager/xml/credential?apikey=4dd329f4b42f64c29013c591138eac2a&type=MS SQL&credentialName=SQL Server1&username=sa&namedInstance=on&authType=SQL&instance=instance&password=password123

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Field	Description
MySQL	**Required parameters:** • type • username • password • instance **Syntax:** http://[HOST]:[PORT]/AppManager/xml/credential?apikey=[APIKEY]&type=MySQL&credentialDescr=[CREDENTIAL DESCRIPTION]&credentialName=[CREDENTIANL NAME]&username=[USERNAME]&password=[PASSWORD]&instance=[DB NAME] **Sample Request:** http://apm-server:9090/AppManager/xml/credential?apikey=a864e174c664b8661e7d8c3a07692b0e&type=MySQL&credentialName=MySQL4&username=root&password=root&instance=test
Oracle	**Required parameters:** • type • Password • UserName **Syntax:** http://[HOST]:[PORT]/AppManager/xml/credential?apikey=[APIKEY]&type=Oracle&credentialDescr=[CREDENTIAL DESCRIPTION]&credentialName=[CREDENTIANL NAME]&username=[USERNAME]&password=[PASSWORD] **Sample Request:** http://apm-server:9090/AppManager/xml/credential?apikey=a864e174c664b8661e7d8c3a07692b0e&type=Oracle&credentialName=Oracle11.0.4&username=system&password=password123
PostgreSQL	**Required parameters:** • type • username • password • DBname **Syntax:** http://[HOST]:[PORT]/AppManager/xml/credential?apikey=[APIKEY]&type=PostgreSQL&credentialDescr=[CREDENTIAL DESCRIPTION]&credentialName=[CREDENTIANL NAME]&UserName=[USERNAME]&Password=[PASSWORD]&DBname=[DB NAME] **Sample Request:** http://apm-server:9090/AppManager/xml/credential?apikey=a864e174c664b8661e7d8c3a07692b0e&type=PostgreSQL&credentialName=PostgreSQL3&UserName=postgres&Password=postgres&DBname=postgre
Sybase	**Required parameters:** • type • username • instance • password **Syntax:** http://[HOST]:[PORT]/AppManager/xml/credential?apikey=[APIKEY]&type=Sybase&credentialDescr=[CREDENTIAL DESCRIPTION]&credentialName=[CREDENTIANL NAME]&username=[USERNAME]&instance=[INSTANCE NAME]&password=[PASSWORD] **Sample Request:** http://apm-server:9090/AppManager/xml/credential?apikey=a864e174c664b8661e7d8c3a07692b0e&type=Sybase&credentialName=Sybase server 4&username=sa&instance=test&password=test123
MongoDB	**Required parameters:** • type • authreq • username • password **Syntax:** http://[HOST]:[PORT]/AppManager/xml/credential?apikey=[APIKEY]&type=MongoDB&credentialDescr=[CREDENTIAL DESCRIPTION]&credentialName=[CREDENTIANL NAME]&authreq=on&username=USERNAME&password=[PASSWORD] **Sample Request:** http://apm-server:9090/AppManager/xml/credential?apikey=a864e174c664b8661e7d8c3a07692b0e&credentialName=MongoDB7&authreq=on&type=MongoDB&username=root&password=root
Cassandra	**Required parameters:** • type • username • authreq • password type=Cassandra **Syntax:** http://[HOST]:[PORT]/AppManager/xml/credential?apikey=[APIKEY]&type=Cassandra&credentialDescr=[CREDENTIAL DESCRIPTION]&credentialName=[CREDENTIANL NAME]&username=USERNAME&authreq=on&password=[PASSWORD] **Sample Request:** http://apm-server:9090/AppManager/xml/credential?apikey=a864e174c664b8661e7d8c3a07692b0e&type=Cassandra&credentialName=Cassandra1&username=cassandra&authreq=on&password=cassandra
Middleware/Portal	
Microsoft MQ (MSMQ)	**Required parameters:** • type • Password • UserName **Syntax:** http://[HOST]:[PORT]/AppManager/xml/credential?apikey=[APIKEY]&type=Microsoft MQ (MSMQ)&credentialDescr=[CREDENTIAL DESCRIPTION]&credentialName=[CREDENTIANL NAME]&Password=d6pM4M2&UserName=USERNAME **Sample Request:** http://apm-server:9090/AppManager/xml/credential?apikey=a864e174c664b8661e7d8c3a07692b0e&type=Microsoft MQ (MSMQ)&credentialName=MSMQ4&Password=Admin123&UserName=administrator
MS Office SharePoint	**Required parameters:** • type • Password • UserName **Syntax:** http://[HOST]:[PORT]/AppManager/xml/credential?apikey=[APIKEY]&type=MS Office SharePoint&credentialDescr=[CREDENTIAL_DESCRIPTION]&credentialName=[CREDENTIANL_NAME]&Password=[PASSWORD]&UserName=[USERNAME] **Sample Request:** http://apm-server:9090/AppManager/xml/credential?apikey=05b4a12a5fc0747cfaa897850ae9a778&type=MS Office SharePoint&credentialDescr=Test&credentialName=MS Sharepoint3&Password=Password123&UserName=administrator
RabbitMQ	**Required parameters:** • type • Password • UserName **Syntax:** http://[HOST]:[PORT]/AppManager/xml/credential?apikey=[APIKEY]&type=RabbitMQ&credentialDescr=[CREDENTIAL DESCRIPTION]&credentialName=[CREDENTIANL NAME]&Password=[PASSWORD]&UserName=[USERNAME] **Sample Request:** http://apm-server:9090/AppManager/xml/credential?apikey=05b4a12a5fc0747cfaa897850ae9a778&type=RabbitMQ&credentialDescr=Test&credentialName=RabbitMQ5&Password=guest&UserName=guest

Edit/Update Credential

This API allows an admin user to edit the existing credential by providing the neccessary parameters.

Syntax

For XML Response:

http://[APM Host]:[APM Port]/AppManager/xml/credential?apikey=[APIKEY]&credentialID=[CREDENTIAL_ID]&..

For JSON Response:

http://[APM Host]:[APM Port]/AppManager/json/credential?apikey=[APIKEY]&credentialID=[CREDENTIAL_ID]&..

Example

http://app-windows:59090/AppManager/xml/credential?apikey=05b4a12a5fc0747cfaa897850ae9a778&credentialID=10&password=newpassword

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Delete Credential

We can delete a particular credential by giving its credential id. The credential ID must be a whole number.

Syntax

For XML Response:
http://[APM Host]:[APM Port]/AppManager/xml/credential?apikey=[APIKEY]&type=[TYPE]&credentialID=[CREDENTIAL_ID]&TO_DELETE=true
For JSON Response:
http://[APM Host]:[APM Port]/AppManager/json/credential?apikey=[APIKEY]&type=[TYPE]&credentialID=[CREDENTIAL_ID]&TO_DELETE=true

Example

http://app-windows:59090/AppManager/xml/credential?apikey=05b4a12a5fc0747cfaa897850ae9a778&credentialID=10&TO_DELETE=true

List Credential Manager

This API allows an admin user to list down the credentials in Applications Manager in both xml and json format. The type value could be "all" or a particular type.

Syntax

For XML Response:
http://[APM Host]:[APM Port]/AppManager/xml/credential/list?apikey=[APIKEY]&type=[TYPE]
For JSON Response:
http://[APM Host]:[APM Port]/AppManager/json/credential/list?apikey=[APIKEY]&type=[TYPE]

Example

http://app-windows:59090/AppManager/xml/credential/list?apikey=05b4a12a5fc0747cfaa897850ae9a778&type=all

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Domain Configuration APIs

These APIs allow an admin user to perform domain configuration in Applications Manager. APIs are designed to support GET or POST requests:

- Add Domain Configuration (POST Method)
- Update Domain configuration (POST Method)
- Delete Domain configuration (POST Method)
- List Domain configuration (GET Method)

Request Parameters

The parameters involved in executing this API request are:

Field	Description
domainname *	Name of the domain from which the users need to be imported.
domaincontroller *	The hostname or the IP address of the DNS server for the domain.
domainport *	The port of the DNS server.
service *	OpenLDAP or Active Directory (AD)
permission	The permission level for a domain. The possible values are: • **0** - **Read Only** - All users logged in through this domain will have read-only access. • **1 - Full Control** - Users logged in will behave according to their roles specified.

Add Domain Configuration

This API allows an admin user to add a new domain in Applications Manager.

Syntax:

For XML Response:

http://[APM Host]:[APM Port]/AppManager/xml/domain?apikey=[API Key]&domainname=[Domain Name]&domaincontroller=[Domain Controller]&domainport=[Domain Port]&service=[Service]&permission=[Permission]

For JSON Response:

http://[APM Host]:[APM Port]/AppManager/json/domain?apikey=[API Key]&domainname=[Domain Name]&domaincontroller=[Domain Controller]&domainport=[Domain Port]&service=[Service]&permission=[Permission]

Example

http://app-windows:59090/xml/AppManager/domain?apikey=16c220b3145cb34b1163cc81237e4fd0&domainname=csez.zohocorpin.com&domaincontroller=win2k8master.csez.zohocorpin.com&domainport=389&username=zohocorp

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user-0596&service=AD&permission=1

Update Domain configuration

This API allows an admin user to edit the existing Domain controller settings added in Applications Manager.

Syntax

For XML Response:
http://[APM Host]:[APM Port]/AppManager/xml/domain?apikey=[API Key]&domainname=[Domain Name]&domaincontroller=[Domain Controller]&domainport=[Domain Port]&service=[Service]&permission=[Permission]
For JSON Response:
http://[APM Host]:[APM Port]/AppManager/json/domain?apikey=[API Key]&domainname=[Domain Name]&domaincontroller=[Domain Controller]&domainport=[Domain Port]&service=[Service]&permission=[Permission]

Example

http://app-windows:59090/AppManager/xml/domain?apikey=16c220b3145cb34b1163cc81237e4fd0&domainname=csez.zohocorpin.com&domaincontroller=win2k8master.csez.zohocorpin.com&domainport=389&service=ad&permission=1

Delete Domain configuration

This API allows an admin user to delete domain configurations in Applications Manager.

Syntax

For XML Response:
http://[APM Host]:[APM Port]/AppManager/xml/domain?apikey=[API Key]&domainname=[Domain Name]&TO_DELETE=[True/False]
For JSON Response:
http://[APM Host]:[APM Port]/AppManager/json/domain?apikey=[API Key]&domainname=[Domain Name]&TO_DELETE=[True/False]

Example

http://app-windows:59090/AppManager/xml/domain?apikey=16c220b3145cb34b1163cc81237e4fd0&domainname=csez.zohocorpin.com&TO_DELETE=true

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List Domain configuration

This API allows an admin user to list down the domains configured in Applications Manager.

Syntax

For XML Response:

http://[APM Host]:[APM Port]/AppManager/xml/domain?apikey=[API Key]

For JSON Response:

http://[APM Host]:[APM Port]/AppManager/json/domain?apikey=[API Key]

Example

http://app-windows:59090/AppManager/xml/domain?apikey=bfb8a60112560c40418e6f0bb37be874

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Email Action Configuration APIs

These APIs allow an admin user to configure e-mail to be sent to specified persons in the event of an alarm. Email Action Configuration APIs are designed to support GET and POST requests:

- Create Email Action (POST Method)
- Update Email Action (POST Method)
- Delete Email Action (POST Method)
- List Email Actions (GET Method)

Request Parameters

The parameters involved in executing this API request are:

Field	Description
emailactionname	Any display name for the action. If the display name of the email action contains a special character like # , & or + : • # should be replaced with %23 • & should be repalced with %26 • + should be replaced with %2B while passing the emailactionname parameter in the RESTAPI.
subject	The subject of the e-mail.
message	The message of the e-mail.
businesstype	Possible Values are: • 1 - Execute during business hour • 0 - Execute outside business hour
mailformat	The format of the message: HTML, Plain Text or Both.
smtpserver	The Server IP or host name of the host in which the SMTP server runs.
smtpport	SMTP Port. 25 by default.
businesshouraction	True if a business hour needs to be associated to this action
businessid	Business ID
appendmessage	Choose whether to append the alarm information generated by Applications Manager to the Email. True or false
toaddress	The receiver's address.
fromaddress	The sender's address

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Create Email Action

This API allows an admin user to create an email action in Applications Manager.

Syntax:

For XML Response:
http://[APM Host]:[APM Port]/AppManager/xml/actions/emailaction?apikey=[API Key]&subject=[Subject]&businesstype=[Type]&mailformat=[HTML/Plain Text/Both]&smtpserver=[SMTP Server]&fromaddress=[Sender address]&emailactionname=[Name]&businesshouraction=[True/False]&message=[Message Text]&businessid=[Business ID]&toaddress=[Receiver's Address]&appendmessage=[True/False]&smtpport=[Port]

For JSON Response:
http://[APM Host]:[APM Port]/AppManager/json/actions/emailaction?apikey=[API Key]&subject=[Subject]&businesstype=[Type]&mailformat=[HTML/Plain Text/Both]&smtpserver=[SMTP Server]&fromaddress=[Sender address]&emailactionname=[Name]&businesshouraction=[True/False]&message=[Message Text]&businessid=[Business ID]&toaddress=[Receiver's Address]&appendmessage=[True/False]&smtpport=[Port]

Example

http://app-windows:59090/AppManager/xml/actions/emailaction?apikey=09eebdd6893db4d20e16b84dff6664f1&subject=(Admin) Alarm from the Applications Manager&businesstype=1&mailformat=both&smtpserver=smtp&fromaddress=vijay@appmanager.com&emailactionname=Applications manager&businesshouraction=true&message=This information has been generated by the Applications Manager&businessid=10000&toaddress=vijayakumar.mariappan@zohocorp.com&appendmessage=true&smtpport=25

Update Email Action

This API allows an admin user to edit any email action configured in Applications Manager.

Syntax

For XML Response:
http://[APM Host]:[APM Port]/AppManager/xml/actions/emailaction?apikey=[API Key]&subject=[Subject]&businesstype=[Business Type]&mailformat=[HTML/Plain Text/Both]&smtpserver=[SMTP Server]&fromaddress=[Sender address]&businesshouraction=[True/False]&message=[Message Text]&emailactionid=[ID]&businessid= ID]&toaddress=[Receiver's Address]&appendmessage=[True/False]&displayname=[Display Name]&smtpport=[Port]
For JSON Response:
http://[APM Host]:[APM Port]/AppManager/json/actions/emailaction?apikey=[API Key]&subject=[

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Subject]&businesstype=[Business Type]&mailformat=[HTML/Plain Text/Both]&smtpserver=[SMTP Server]&fromaddress=[Sender address]&businesshouraction=[True/False]&message=[Message Text]&emailactionid=[ID]&businessid= ID]&toaddress=[Receiver's Address]&appendmessage=[True/False]&displayname=[Display Name]&smtpport=[Port]

Example

http://app-windows:59090/AppManager/xml/actions/emailaction?apikey=09eebdd6893db4d20e16b84dff6664f1&subject=(Admin) Alarm from the Applications Manager&businesstype=0&mailformat=html&smtpserver=smtp&fromaddress=vijay@appmanager.com&businesshouraction=true&message=This information has been generated by the Applications Manager&emailactionid=10000&businessid=10000&toaddress=vijayakumar.mariappan@zohocorp.com&appendmessage=true&displayname=Applications manager&smtpport=25

Delete Email Action

This API allows an admin user to delete an email action in Applications Manager.

Syntax

For XML Response:
http://[APM Host]:[APM Port]/AppManager/xml/actions/emailaction?apikey=[API Key]&businessid=[Business Id],&TO_DELETE=true
For JSON Response:
http://[APM Host]:[APM Port]/AppManager/json/actions/emailaction?apikey=[API Key]&businessid=[Business Id],&TO_DELETE=true

Example

http://app-windows:59090/AppManager/xml/actions/emailaction?apikey=09eebdd6893db4d20e16b84dff6664f1&emailactionid=10000,&TO_DELETE=true

List Email Actions

This API allows an admin user to list down the email actions in Applications Manager.

Syntax

For XML Response:
http://[APM Host]:[APM Port]/AppManager/xml/actions/emailaction?apikey=[API Key]
For JSON Response:
http://[APM Host]:[APM Port]/AppManager/json/actions/emailaction?apikey=[API Key]

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Example

http://app-windows:59090/AppManager/xml/actions/emailaction?apikey=09eebdd6893db4d20e16b84dff6664f1

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EventLog Configuration APIs

These APIs allow an admin user to add, edit or delete EventLogs and to perfrom EventLog Configuration.

- EventLogs
  - Add
  - Edit
  - Delete
- EventLog Configuration
  - Add
  - Edit
  - Delete

APIs for EventLogFile

This API allows an admin user to add, edit or delete EventLogs in Applications Manager.

The parameters involved in executing this API request are:

Field	Description
logFileName	LogFile property of the Events
category	The Type of LogFile for Windows or WindowsAzure - EventLogs, AzureTraceLogs, AzureDiagnosticLogs
ruletype	RULETYPE ID column from the AM_RULETYPE table for the logfile.

Add

Syntax

XML

http://[APM Host]:[APM Port]/AppManager/xml/logfile?apikey=[API Key]&logFileName=[Log File Name]&category= [EventLogs Catagory]

JSON

http://[APM Host]:[APM Port]/AppManager/json/logfile?apikey=[API Key]&logFileName=[Log File Name]&category= [EventLogs Catagory]

Example

http://app-windows:59090/AppManager/xml/logfile?apikey=f87f10d80b6addd2b247c0b0b67b0f9a&logFileName=adminlogfile&category=EventLogs

Edit

Syntax

XML - http://[APM Host]:[APM Port]/AppManager/xml/logfile?apikey=[API Key]&logFileName=[Log File Name]&ruletype= [Rule Type]

JSON - http://[APM Host]:[APM Port]/AppManager/json/logfile?apikey=[API Key]&logFileName=[Log File Name

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]&ruletype= [Rule Type]

Example

http://app-windows:59090/AppManager/xmlAppManager/xml/logfile?apikey=f87f10d80b6addd2b247c0b0b67b0f9a&logFileName=newadminname&ruletype=10000

Delete

Syntax

XML - http://[APM Host]:[APM Port]/AppManager/xml/logfile?apikey=[API Key]&ruletype=[Type]&TO_DELETE=[TRUE]

JSON - http://[APM Host]:[APM Port]/AppManager/json/logfile?apikey=[API Key]&ruletype=[Type]&TO_DELETE=[TRUE]

Example

http://app-windows:59090/AppManager/xml/logfile?apikey=f87f10d80b6addd2b247c0b0b67b0f9a&ruletype=10000&TO_DELETE=true

APIs for EventLog Configuration

This API allows an admin user to perform EventLog Configuration in Applications Manager. The parameters involved in executing this API request are:

Field	Description
rulename	Enter the Rule Name of your choice.
eventid	Enter the Event ID associated with the Event Log File
source	Source of the Event Log File
category	EventLogs category
eventtype	Values accepted are • 0 - Event of Any Type • 1 - Error • 2 - Warning • 3 - Information Respectively
severity	1,4 for Critical and Warning respectively
ruletype--	RULETYPE ID column from the AM_RULETYPE table for the logfile for Map to Application or Security events etc.
status	Status of the EventLog. Values accepted are 1 and 0 for Enable and Disable Respectively
resourceids	Resourceids of Windows monitors (Supports comma separated values).
logCategoryName	EventLogs category name for Windows
ruleid	Rule ID
servertypes	Supported Windows Monitor Server types
haid	Monitor Group id

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Syntax

XML - http://[APM Host]:[APM Port]/AppManager/xml/logfile?apikey=[API Key]&logFileName=[Log File Name]&ruletype= [Rule Type]&..

JSON - http://[APM Host]:[APM Port]/AppManager/json/logfile?apikey=[API Key]&logFileName=[Log File Name]&ruletype= [Rule Type]&..

Add

Apply to All monitors:
http://app-windows:59090/AppManager/xml/logrule?apikey=f87f10d80b6addd2b247c0b0b67b0f9a&rulename=addedinrestapi&eventid=121&source=&category=&username=&eventtype=0&message=&severity=1&ruletype=1&status=1&resourceids=&logCategoryName=EventLogs&applyto=allmonitor

Apply to Specific Monitor types
http://app-windows:59090/AppManager/xml/logrule?apikey=f87f10d80b6addd2b247c0b0b67b0f9a&logCategoryName=WindowsEventLogs&status=1&rulename=adminmontyperestapi&rulescope=1&haid=10045&severity=1&eventid=210&resourceids=&message=-1&applyto=monitortype&ruletype=1&username=-1&category=-1&source=-1&servertypes=Windows 2000&eventtype=0&displayname=addmontype

Apply to selected monitors
http://app-windows:59090/AppManager/xml/logrule?apikey=f87f10d80b6addd2b247c0b0b67b0f9a&rulename=admintestindi&eventid=121&alsource=&category=&username=&eventtype=0&message=&severity=1&ruletype=1&status=1&resourceids=10000097,10000100,20000076,20000065&logCategoryName=EventLogs&applyto=monitorlist

Apply to monitors under a group
http://app-windows:59090/AppManager/xml/logrule?apikey=f87f10d80b6addd2b247c0b0b67b0f9a&prerulestatus=&logCategoryName=WindowsEventLogs&status=1&rulename=adminhaid&rulescope=1&haid=10056&severity=1&eventid=210&message=-1&applyto=monitorgroup&ruletype=1&username=-1&category=-1&source=-1&servertypes=&savetype=new&eventtype=0

Edit

Change Advanced Options
http://app-windows:59090/AppManager/xml/logrule?apikey=f87f10d80b6addd2b247c0b0b67b0f9a&logCategoryName=EventLogs&status=1&rulename=newname&severity=1&eventid=121&resourceids=&message=testdesc1&applyto=monitorlist&category=testcatecategory1&username=testuser1&ruletype=1&source=testsource1&ruleid=10003&eventtype=1&displayname=newname

Change Event Type
http://app-windows:59090/AppManager/xml/logrule?apikey=f87f10d80b6addd2b247c0b0b67b0f9a&eventtype=3&ruleid=10004

Change Severity
http://app-windows:59090/AppManager/xml/logrule?apikey=f87f10d80b6addd2b247c0b0b67b0f9a&severity=4&ruleid=10004

Change Applyto Option

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http://app-windows:59090/AppManager/xml/logrule?apikey=f87f10d80b6addd2b247c0b0b67b0f9a&severity=4&ruleid=10004&applyto=monitorlist&resourceids=10000094
http://app-windows:59090/AppManager/xml/logrulet?apikey=f87f10d80b6addd2b247c0b0b67b0f9a&severity=4&ruleid=10005&applyto=monitorgroup&haid=10056

Montype add/remove

http://app-windows:59090/AppManager/xml/logrule?apikey=f87f10d80b6addd2b247c0b0b67b0f9a&type=monitortype&action=add&servertypes=Windows 2012&ruleid=10006
http://app-windows:59090/AppManager/xml/logrule?apikey=f87f10d80b6addd2b247c0b0b67b0f9a&type=monitortype&action=remove&servertypes=Windows 2012&ruleid=10006

To add/remove a monitor from a rule

http://app-windows:59090/AppManager/xml/logrule?apikey=f87f10d80b6addd2b247c0b0b67b0f9a&action=add&resourceids=100001&ruleid=10007&type=monitorlist
http://app-windows:59090/AppManager/xml/logrule?apikey=f87f10d80b6addd2b247c0b0b67b0f9a&action=remove&resourceids=10000097&ruleid=10007&type=monitorlist

Change Status

http://app-windows:59090/AppManager/xml/logrule?apikey=f87f10d80b6addd2b247c0b0b67b0f9a&action=changestatus&ruleids=10000003,10000002&status=disable
http://app-windows:59090/AppManager/xml/logrule?apikey=f87f10d80b6addd2b247c0b0b67b0f9a&action=changestatus&ruleids=10000003,10000002&status=enable

Delete

Delete Logrule

http://app-windows:59090/AppManager/xml/logrule?apikey=f87f10d80b6addd2b247c0b0b67b0f9a&action=changestatus&ruleids=10000003,10000002&status=disable

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Mail Server Configuration APIs

Mail Server API allows the user to view mail server details and configure mail server parameters in Applications Manager. These APIs allow an admin user to configure the mail server to send e-mail to specified persons in the event of an alarm. This API is designed to support GET and POST requests.

- GET Request - To view/list mail server details.
- POST Request - To add or update mail server details.

GET Request

Whenever the request is sent by "GET" method, the data corresponding to the API will be listed.

Sample Request

http://[host]:[port]/AppManager/xml/MailServer?apikey=[apikey]

POST Request

When the request is sent by "POST" method, the corresponding data will be added/updated.

Sample Request

http://[host]:[port]/AppManager/xml/MailServer?apikey=[apikey]

Request Parameters

The parameters involved in the API request are described below:

For Primary Server

Field	Description
smtpServer	The Server IP or host name of the host in which the SMTP server runs.
smtpPort	The SMTP port number.
smtpEmail	The email address available in that SMTP server.
smtpUserName	User name for authentication
smtpPassword	Password for authentication
prmTlsAuth	Primary Tls Authentication. The value can be either true or false.
prmSslAuth	Primary SSL Authentication. The value can be either true or false.

For Secondary Server

Field	Description
secSmtpServer	The Server IP or host name of the host in which the SMTP server runs.
secSmtpPort	The SMTP port number.
secSmtpEmail	The email address available in that SMTP server.
secSmtpUserName	Username for authentication.

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secSmtpPassword	Password for authentication.
secTlsAuth	Secondary Tls Authentication. The value can be either true or false.
secSslAuth	Secondary SSL Authentication. The value can be either true or false.

Example:

http://app-windows:9091/AppManager/xml/MailServer?apikey=7b5fde68148fa2419bc2f1a1ab87e75

Syntax:

For XML Response:

http://[APM Host]:[APM Port]/AppManager/xml/MailServer?apikey=[API Key]&smtpPort=[Port]&prmTlsAuth=true&prmSslAuth=[True/False]&secSslAuth=[True/False]&fromAdminServer=[True/False]&smtpUserName=[Username]&smtpPassword=[Password]&secTlsAuth=[True/False]&smtpServer=[Server Name]&secSmtpPort=[Secondary Port]&secSmtpEmail=[Email Address]&secSmtpUserName=[user Name]&smtpEmail=[Email Address]&secSmtpServer=[Secondary Server Name]&secSmtpPassword=[Password]

For JSON Response:

http://[APM Host]:[APM Port]/AppManager/json/MailServer?apikey=[API Key]&smtpPort=[Port]&prmTlsAuth=true&prmSslAuth=[True/False]&secSslAuth=[True/False]&fromAdminServer=[True/False]&smtpUserName=[Username]&smtpPassword=[Password]&secTlsAuth=[True/False]&smtpServer=[Server Name]&secSmtpPort=[Secondary Port]&secSmtpEmail=[Email Address]&secSmtpUserName=[user Name]&smtpEmail=[Email Address]&secSmtpServer=[Secondary Server Name]&secSmtpPassword=[Password]

Example

http://app-windows:59090/AppManager/xml/MailServer?apikey=09eebdd6893db4d20e16b84dff6664f1&smtpPort=25&prmTlsAuth=true&prmSslAuth=true&secSslAuth=true&fromAdminServer=true&smtpUserName=primary&smtpPassword=f6JO6Wdbo&secTlsAuth=true&smtpServer=smtp&secSmtpPort=25&secSmtpEmail=JohnDoe@yahoo.com&secSmtpUserName=secondary&smtpEmail=JohnDoe@appmanager.com&secSmtpServer=smtp&secSmtpPassword=f6JO5sMs6n7

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Threshold Configuration APIs

These APIs allow an admin user to configure thresholds in Applications Manager. Threshold Configuration APIs are designed to support GET and POST requests:

- Add Threshold (POST Method)
- Update Threshold (POST Method)
- Delete Threshold (POST Method)
- List Threshold (GET Method)

Request Parameters

The parameters involved in executing this API request are:

Field	Description
thresholdname	The threshold display name. If the display name of threshold / action contains a special character like # , & or + : • # should be replaced with %23 • & should be repalced with %26 • + should be replaced with %2B while passing the thresholdname in the RESTAPI.
criticalcondition, warningcondition, clearcondition	Possible Values for conditions are: • Numeric and Float Threshold conditions: ◦ LT - Lesser than httpValue ◦ GT - Greater than httpValue ◦ EQ - Equal to httpValue ◦ NE - Not equal to httpValue ◦ LE - Lesser than or Equal to ◦ GE - Greater than or Equal to • String Threshold Condition: ◦ CT - Contains ◦ DC - Does not contain ◦ QL - Equal to ◦ NQ - Not equal to ◦ SW - Starts with ◦ EW - Ends with
criticalvalue, clearvalue, warningvalue	Values for critical, clearvalue or warning state.
criticalpolls, warningpolls, clearpolls	Value denoting critical, clearvalue or warning polls.
warningmessage, clearmessage, criticalmessage	Message to notify the user of a warning, critical or clear condition.
Type	The type of threshold. Possible values are: • 1 for Numeric Threshold • 4 for Float Threshold • 3 for String Threshold

Add Threshold

This API allows an admin user to add thresholds in Applications Manager.

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Syntax:

For XML Response:
http://[APM Host]:[APM Port]/AppManager/xml/threshold?apikey=[API Key]&clearvalue=[Clear Value]&criticalpolls=[Critical Polls]&clearcondition=[Clear Condition]&criticalmessage=[Critical Message]&thresholdname=[Threshold name]&clearmessage= [Clear Message]&type=1&criticalcondition=GT&warningcondition=GT&warningmessage=Warning Message&warningpolls=[Warning Polls]&clearpolls=[Clear polls]&warningvalue=[Warning Value]&criticalvalue=[Critical Value]
For JSON Response:
http://[APM Host]:[APM Port]/AppManager/json/threshold?apikey=[API Key]&clearvalue=[Clear Value]&criticalpolls=[Critical Polls]&clearcondition=[Clear Condition]&criticalmessage=[Critical Message]&thresholdname=[Threshold name]&clearmessage= [Clear Message]&type=1&criticalcondition=GT&warningcondition=GT&warningmessage=Warning Message&warningpolls=[Warning Polls]&clearpolls=[Clear polls]&warningvalue=[Warning Value]&criticalvalue=[Critical Value]

Example

http://app-windows:59090/AppManager/xml/threshold?apikey=09eebdd6893db4d20e16b84dff6664f1&clearvalue=5&criticalpolls=3&clearcondition=EQ&criticalmessage=Critical message&thresholdname=Sample Threshold&clearmessage=Clear Message&type=1&criticalcondition=GT&warningcondition=GT&warningmessage=Warning Message&warningpolls=3&clearpolls=3&warningvalue=15&criticalvalue=5

Update Threshold Hour

This API allows an admin user to edit the thresholds added in Applications Manager.

Syntax

For XML Response:
http://[APM Host]:[APM Port]/AppManager/xml/threshold?apikey=[API Key]&clearvalue=[Clear Value]&criticalpolls=[Critical Polls]&clearcondition=[Clear Condition]&criticalmessage=updated message&clearmessage=&type=1&criticalcondition=GT&warningcondition=GT&warningmessage=&warningpolls=0&description=&newthresholdname=Sample Threshold&clearpolls=[Warning Polls]&thresholdid=[Threshold Id]&warningvalue=[Warning Value&criticalvalue=[Critical Value]
For JSON Response:
http://[APM Host]:[APM Port]/AppManager/json/threshold?apikey=[API Key]&clearvalue=[Clear Value]&criticalpolls=[Critical Polls]&clearcondition=[Clear Condition]&criticalmessage=updated message&clearmessage=&type=1&criticalcondition=GT&warningcondition=GT&warningmessage=&warningpolls=0&description=&newthresholdname=Sample Threshold&clearpolls=[Warning Polls]&thresholdid=[Threshold Id]&warningvalue=[Warning Value&criticalvalue=[Critical Value]

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Example

http://app-windows:59090/AppManager/xml/threshold?apikey=09eebdd6893db4d20e16b84dff6664f1&clearvalue=5&criticalpolls=0&clearcondition=GT&criticalmessage=updated message&clearmessage=&type=1&criticalcondition=GT&warningcondition=GT&warningmessage=&warningpolls=0&description=&newthresholdname=Sample Threshold&clearpolls=0&thresholdid=10001&warningvalue=5&criticalvalue=5

Delete Threshold

This API allows an admin user to delete thresholds in Applications Manager.

Syntax

For XML Response:
http://[APM Host]:[APM Port]/AppManager/xml/threshold?apikey=[API Key]&thresholdid=[Threshold Id=],&TO_DELETE=true
For JSON Response:
http://[APM Host]:[APM Port]/AppManager/json/threshold?apikey=[API Key]&thresholdid=[Threshold Id=],&TO_DELETE=true

Example

http://app-windows:59090/AppManager/xml/threshold?apikey=09eebdd6893db4d20e16b84dff6664f1&thresholdid=10001,10003,10002,10000,&TO_DELETE=true

List Thresholds

This API allows an admin user to list down the thresholds in Applications Manager.

Syntax

For XML Response:
http://[APM Host]:[APM Port]/AppManager/xml/threshold?apikey=[API Key]
For JSON Response:
http://[APM Host]:[APM Port]/AppManager/json/threshold?apikey=[API Key]

Example

http://app-windows:59090/AppManager/xml/threshold?apikey=09eebdd6893db4d20e16b84dff6664f1

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Error Handling

API execution could result in error conditions. In case of an error, the error information would be sent in the response body. The response body will have <error> as the child node along with the appropriate error code.

Error Codes

The list of HTTP error codes are tabulated below:

Code	Description
4000	Operation Completed Successfully.
4002	The specified resourceid in request URI should be an integer.
4003	The specified resourceid in request URI is wrong.
4004	The specified apikey ["+apiKey+"] in the request is invalid. Kindly log in to Applications Manager and check for the key in generate key in Admin tab.
4005	The specified type in request URI is wrong.
4006	The given ResoureID in the URL is wrong or repeated.
4007	The specified monitorname in request URI is wrong.
4008	The specified request URI is incorrect.
4016	The specified method in request URI is incorrect.
4024	The given taskid in the URL is wrong.
4025	The specified taskname in the URL is already exist or empty.
4032	The specified parameter in request URI is incorrect.
4033	The taskName cannot be empty.
4034	The taskName already exists.
4035	The taskStatus should be either enable or disable.
4036	The taskType should be either group or monitor.
4037	Improper resourceid in the request.
4038	The startTime should be of the format (HH:MM).
4039	The endTime should be of the format (HH:MM).
4040	DestinationAddress DestinationPort GlobalTrap are mandatory for v1 trap
4041	The effectFrom should be of the format YYYY-MM-DD HH:MM .
4042	Task Method should be any one among Daily,Weekly or Once.
4043	The totalNumber should be between 1 to 7 only.
4044	The customTaskStartTime should be of the format (YYYY-MM-DD HH:MM).
4045	The customTaskEndTime should be a valid date format like (YYYY-MM-DD HH:MM).
4046	The startDay,startTime,endDay,endTime for weekly Maintenance are incorrect.
4048	The given taskid in the URL is not an integer.
4049	The monitor is under maintenance. Try pollnow after maintenance.
4050	The monitor cannot be polled when unmanaged.
4064	Kindly buy the License to avail the Applications Manager API's.
4080	DestinationAddress DestinationPort GlobalTrap are mandatory for v2 trap
4128	Server Error while processing the request.
4201	The pollInterval should be a valid whole number.
4202	The type should not be empty.
4203	The groupID should be a valid whole number.

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4204	The WSDLUrl should not be empty.
4205	The field emailid should not be empty.
4206	The username and password mentioned in the request URL should not be empty.
4207	The popHost, smtpUserName and smtpPassword mentioned in the request URL should not be empty.
4208	The rbmagentID mentioned in the request URL should not be empty.
4209	The rbmagentID mentioned in the request URL is repeated or invalid.
4210	The scriptname mentioned in the request URL should not be empty.
4211	The displayname mentioned in the request URL should not be empty.
4212	Invalid OS type.
4213	The mode should be any one among SSH/TELNET/SNMP/WMI
4214	The snmptelnetport should be a valid one.
4215	The type mentioned in the request URL is not supported.
4216	The timeout should be a valid one.
4217	The host should not be empty.
4218	The port should be a valid one.
4219	The username mentioned in the request URL should not be empty.
4220	The password mentioned in the request URL should not be empty.
4221	The authentication should SQL or Windows.
4222	The serverpath should not be empty.
4223	The jndiurl should not be empty.
4224	The instance should not be empty.
4225	The Transaction mentioned in the request URL should be yes or no.
4226	The LDAPServer should not be empty.
4227	The LDAPServerPort should not be empty.
4228	The MatchingAttribute should be anyone of cn, uid, sn, displayname, givenname, objectclass, dc, ou.
4229	The FilterCondition should be one of equals, contains or notequals.
4230	The IsSecured field should be either a yes or a no.
4231	The TargetAddress mentioned in the request URL should not be empty.
4232	The DownloadFile mentioned in the request URL should not be empty.
4233	The UploadFile should be either yes or no.
4234	The SearchField should not be empty.
4235	The TargetAddress should not be empty.
4236	The LookupAddress should not be empty.
4237	The RecordType should not be empty.
4238	The version of WEBLOGIC should be anyone of 6.1,7.0,8.1,9.x,10.x.
4238	The JNDIPath should not be empty.
4239	The version of JBoss server should be one of the following: 3.x, 4.x, 5.x, 6.x, 7.x and newer versions.
4240	The version of Tomcat Server should be anyone of 3,4,5,6.
4241	The version of Websphere Server should be anyone of 5.x,6.x,7.x
4242	The mode of Websphere Server should be BASE or ND.
4243	The soapport should be a valid whole number.
4244	The version of Oracle Application Server should be anyone of 10.1.2 or 10.1.3.
4245	The SSL of OracleEBS should be yes or no.
4246	The systemnumber of SAP Server should not be empty.
4247	The logonClient of SAP Server should not be empty.
4248	The language of SAP Server should not be empty.

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4249	The specified taskMethod and taskid does not match.
4250	The starttime should less than endtime.
4251	Check for the date time configuration of weekly.
4252	The customTaskStartTime should be less than customTaskEndTime.
4253	The method for UrlMonitor should be post or get.
4254	The httpcondition for UrlMonitor should be as follows. LT for <, GT for >, EQ for =, NE for !=, LE <= and GE for >=.
4255	The url should not be empty.
4256	The version of Exchange Server should be any one of 2007, 2003, 2000, 5.
4257	The databasetype of QueryMonitor should be any one of MySQL, Oracle, DB2, MsSQL, Sybase, Postgres.
4258	The databasetypename of QueryMonitor should not be empty.
4259	The showqueryoutput of QueryMonitor should be any one of yes or no.
4260	The queries of QueryMonitor should not be empty.
4261	The name for adding Monitor Group already exists.
4262	The name should not be empty.
4263	The grouptype should be either monitorgroup or webappgroup.
4264	The userid in the request url is wrong or the values are repeated.
4265	The weblogic.jar is missing and is required for monitoring Weblogic server Version 6.
4266	The weblogic.jar is missing and is required for monitoring Weblogic server Version 7.
4267	The weblogic.jar is missing and is required for monitoring Weblogic server Version 8.
4268	The weblogic.jar is missing and is required for monitoring Weblogic server Version 9.
4269	The weblogic.jar is missing and is required for monitoring Weblogic server Version 10.
4270	The accessKey should not be empty.
4271	The SecretAccessKey should not be empty.
4272	The apacheurl should not be empty.
4273	The serverstatusurl should not be true or false.
4274	The listenerport should not be empty.
4275	The serverconnectionchannel should not be empty.
4320	Error occurred while editing the monitor.
4321	Parameter for Edit Monitor is missing. For editing monitor either the monitor resourceid or displayname is required.
4322	Unable to find Monitor with the given resourceid or display name. Verify the details provided.
4323	The Record Type mentioned for DNS Monitor is invalid.
4324	The Search Field mentioned for DNS Monitor is invalid.
4325	The domain name should not be empty.
4326	The given EUM monitor details is not for parent monitor. Try to edit again using the parent monitor details.
4444	Error
4512	The specified time in request URI is incorrect. Either it is more than the current time or not a proper time
4522	Monitor group name already available.
4523	Monitor group name should not be empty.
4524	Owner name(s) [own] in the URL is wrong.
4525	Given location in the URL is wrong.
4526	Problem in editing monitor group.
4540	This API is not available for Admin Server.
4550	The username and password mentioned in the request URL should not be empty when nginxauth is true.
4551	The HostController/ServerName should not be empty if LaunchType of JBoss server is 'DOMAIN'. Applicable for version 7.x and above.
4071	Smtp Server could not be connected.
4072	Proxy Server is not configured

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4073	Proxy configuration failed
4074	Smtp Mail Server Connection Error
4075	Modem is not properly connected.
4076	Smtp host name/port should not be empty
4000 -	Credential added successfully.
4000	Credential updated successfully.
4000	Credential deleted successfully.
5001	The credential name should not be empty.
5002	The type should not be empty.
5003	The Credential Name already exists. Choose another name.
5004	The given Credential ID is not exist.
5005	Credential ID should not be empty.
5006	Credential ID should be a valid whole number.
5007	am.webclient.credentialManager.adminRestriction
5008	The type is null or empty.
5009	Something went wrong.
4303	The fetchType mentioned in the request URL should be either 1 or 2 - 1 for POP / 2 for IMAP.
4304	The fsTLSEnabled mentioned in the request URL should not be empty.
4305	The fsHost, fsUserName and fsPassword mentioned in the request URL should not be empty.
4306	The fsPort mentioned in the request URL should not be empty.
4307	The fetchType mentioned in the request URL should not be empty. Provide fetchType=1 for Pop Server and fetchType=2 for IMAP Server
4308	The tlsEnabled mentioned in the request URL should not be empty
4309	The fetchEnabled mentioned in the request URL should not be empty
4340	The fsSSLEnabled mentioned in the request URL should not be empty.
4341	The sslEnabled mentioned in the request URL should not be empty
4310	The url should not be empty
4311	The urlMethod should be P or G.
4312	The httpValue should be a valid Integer.
4313	The httpCondition should be LT or GT or EQ or NE or LE or GE.
4314	Some parameter missing for edit URL.For editing URL monitor either one of the following 'type with resourceid' or 'type with url' or 'type with displayname' is needed.
4315	The verifyError should be true or false.
4316	The url is not created before.
4300	No EUM agent name configured. Please provide the EUM agent names(eumAgents) or the EUM agent ID(eumAgentsID)
4301	Some of the EUM agent names/IDs are invalid
4302	Error while fetching data for the EUM agent. Error - {0}
4342	Agent -{0} mentioned in the URL request not supported for RBM Monitor. RBM monitors support only agents running in Windows
4105	Unknown Problem occured while calling a Rest API
4500	The monitor group is not Associated to the Delegated Admin of this API key.
4509	Monitor already present in the DB.
4303	The fetchType mentioned in the request URL should be either 1 or 2 - 1 for POP / 2 for IMAP.
4304	The fsTLSEnabled mentioned in the request URL should not be empty
4305	The fsHost, fsUserName and fsPassword mentioned in the request URL should not be empty.
4306	The fsPort mentioned in the request URL should not be empty.
4307	The fetchType mentioned in the request URL should not be empty. Provide fetchType=1 for Pop Server and fetchType=2 for IMAP Server
4309	The fetchEnabled mentioned in the request URL should not be empty.

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4310	When adding a URL monitor via Rest API, the URL field should not be empty.
4311	When adding a URL monitor via Rest API, the urlMethod field should not be empty.
4312	The httpValue should be a valid Integer
4313	The httpCondition should be LT or GT or EQ or NE or LE or GE
4553	File/Directory Name should be specified with Absolute Path
4554	The content field cannot be empty.
4555	The Hostname field cannot be empty.
4556	The Username field cannot be empty.
4557	Private Key cannot be empty if Key Based Authentication is chosen
4558	Script to be Monitored should not be empty
4559	Working directory(directory from which the script is executed) should not be empty
4560	The value for the parameter table_row (Number of tables) is invalid.
4561	The Tablename field cannot be empty.
4562	Either String attributes or Numeric Attributes that are present in that table should be given for monitoring
4563	Unique column for the table should not be empty.
4564	Prompt cannot be empty if the new host is selected
4574	VMware Horizon View Connection Broker is supported only when the product is running on a Windows Server
4300	No EUM agent name configured. Please provide the EUM agent names(eumAgents) or the EUM agent ID(eumAgentsID).
4301	Some of the EUM agent names/IDs are invalid
4302	Error while fetching data for the EUM agent. Error - {0}
5010	Access is denied to perform this operation in Managed Server as SSO is enabled.
4276	The jmxurl should not be empty.
4445	The Managed Server is Down.
4446	The value of datafrequency not equal to 1 or 2 in showpolleddata API.
4447	The GetQueryOutput Rest Api Returns an Empty Row Values.

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Processes and Services

This section explains how to use REST APIs to perform various operations with 'processes' and 'services'.

Processes

- Add process
- Delete process
- Edit process

Services

- Add service

Add Process

/AppManager/xml/process/add?apikey=<API_Key>&resourceid=<Server_ResourceID>&name=<Process_Name>&command=<Commands_Encoded_As_HTML>

Delete Process

/AppManager/xml/process/delete?apikey=<APIKey>&monitorid=<resid>&processid=<Processid>

Edit Process

/AppManager/xml/process/edit?apikey=<APIKey>&type=0&processid=<Processid>&name=<pname>&command=<command>&matchcriteria=<matchcriteria>

Add Service

/AppManager/xml/service/add?apikey=<API_Key>&resourceid=<Server_ResourceID>&name=<Service_Name>&displayname=<Service_Display_Name>

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Add On!

End User Monitoring (EUM)

End User Monitoring (EUM) provides the ability to monitor the health and performance of services from multiple locations outside your corporate firewall. This capability provides you greater visibility into the user experience and behaviors of these services and helps in detecting potential performance problems before end users are affected. It also enables you take steps to improve the user experience of business-critical services.

End user monitoring can be enabled by installing agents in client locations and configuring your monitors to make use of these agents for monitoring. The monitors currently supported by the EUM agent include Ping, DNS, Mail Server, LDAP server and Real Browser Monitor (RBM).

Browse through the following topics to understand EUM better:

- How does End User Monitoring work?
- Installing EUM agent
- EUM Dashboard

How does End User Monitoring (EUM) Work?

End user monitoring enables IT operations ensure that the real end users of an application or service are experiencing good performance. Since the EUM agents take care of collecting and reporting data, the IT administrator is able to accurately keep track of the performance of services without needing to take any additional steps.

To configure EUM monitors, you have to download EUM agents, install them in your branch offices or customer locations, and install Applications Manager server in your head office. Once these agents are enabled, they will collect data about the service performance from these locations and pass it on to the central Applications Manager server. This data will then be processed by Applications Manager and used for measuring the end user experience.

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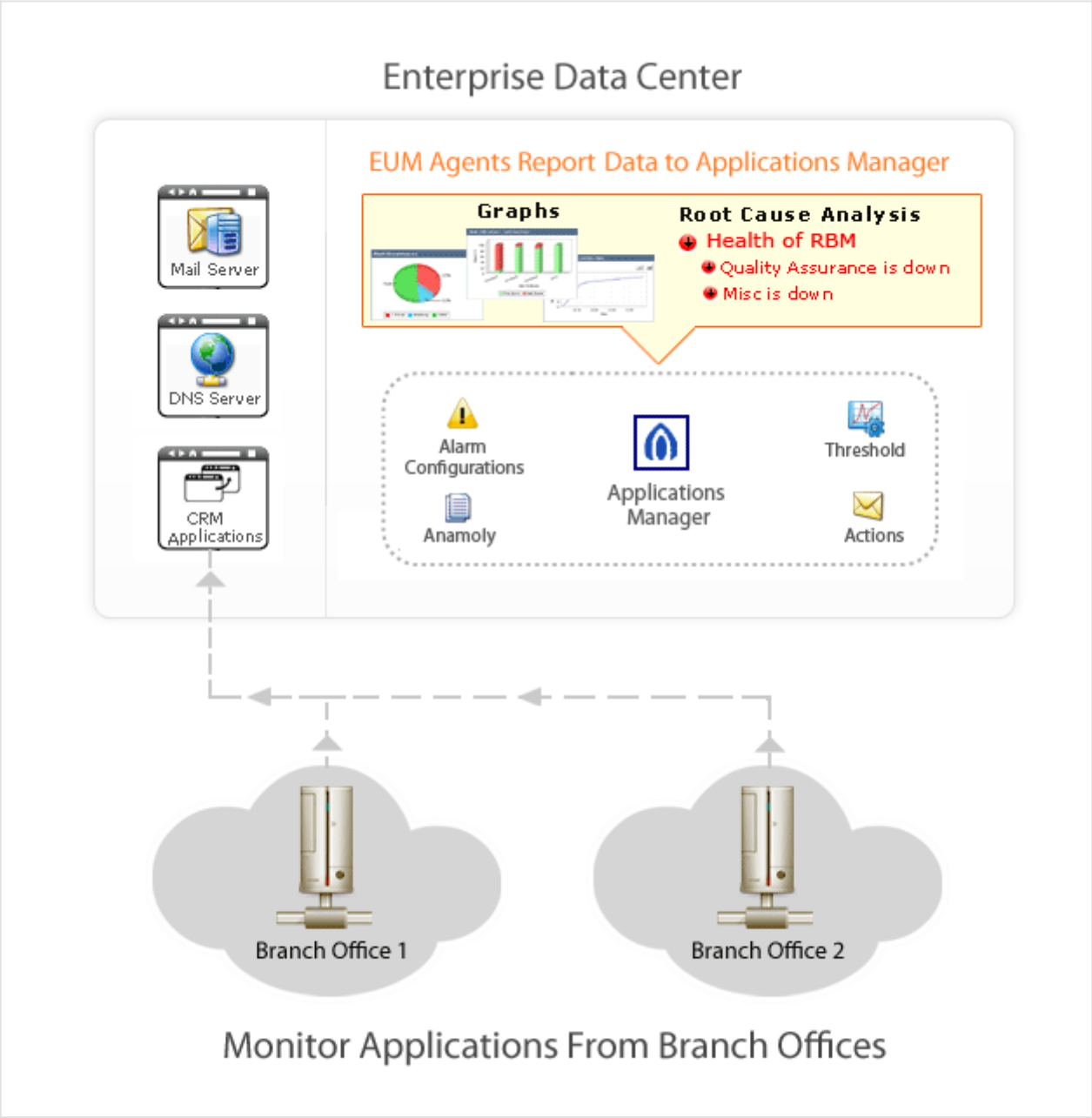

The EUM agents can be installed in multiple branch offices in different cities or in the systems of your end users. All you need is a secure https connection between the agent and the Applications Manager server.

The EUM agent pings the Applications Manager server at specific time intervals and gathers information such as the service configuration details. The service will then be executed from the remote location and the results passed on to the central Applications Manager server. Based on the metrics received from the agent, the Applications Manager server measures the performance of these services and generates performance charts. Some of the performance metrics displayed in the monitor details page include response time from different locations, outage report based on locations, etc.

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Based on the information shown in the EUM monitor, the IT team can determine how the service is performing from different locations. If there is a performance issue in a particular agent, they can troubleshoot initiate root cause analysis, isolate the real performance issue and resolve them before end users are affected.

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Installing and Uninstalling EUM Agent

This section covers the following topics:

- Installing EUM Agent
  - Windows
  - Linux
- Uninstalling EUM Agent
  - Windows
  - Linux
- End User Monitoring Agent Settings

Installing EUM Agent

To start end user monitoring from multiple locations, you have to install the EUM agents in the respective locations. The agents can be installed in both Windows and Linux systems. Please note that the EUM agents will work only if the central Applications Manager server is running.

Windows

Follow the steps given below to install the EUM agent in Windows systems.

1. Download and execute the *EUM_Agent.exe* file. The installshield wizard will open up.
2. Read the license agreement and click the Yes button.
3. Specify the details of your Applications Manager installation such as host, port, username and password. Click Next to proceed.
4. Provide the location where the EUM agent should be installed in your machine. Click Browse to provide a different location of installation. Click Next.
5. Specify the name of the folder to be placed in Program Folder. The default is ManageEngine End User Monitoring Agent. Click Next.
6. If you want to install EUM as a service, select the 'Install End User Monitoring Agent as Service' option and click Next. Please note that you need to have administrative privileges to install the EUM agent as a service.
7. The current settings will be displayed in the next screen. If you need to make any changes, click Back, or else click Next to continue with the installation. Once you click Next, the setup will start copying the jar files necessary for the EUM agent.
8. You have an option to fill up a registration form for technical support.
9. In the final step of the installation wizard, there are options available to *View the Readme file* and to *Launch the End User Monitoring Agent Now*. Select these options if required. Click **Finish** to complete the installation process.

Linux

Follow the steps given below to install the EUM agent in Linux systems.

1. Download the *EUM_Agent.bin* file for Linux.
2. Execute the downloaded file. The Installation Wizard is displayed. Click Next to continue. Read the license agreement and click the Next button.
3. Provide the **location** where the EUM agent should be installed in your machine. Click Next.
4. Current Settings will be displayed in the next screen. If you need to make changes, click Back, else click Next to continue the installation.

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5. Click Finish to complete the installation process.
6. You have an option to fill up a **registration form** for Technical support.
7. Finally, select if you want to view the **ReadMe** file or click **Finish** to launch the EUM agent immediately.

Note:

1) You can also install the EUM agent via **command line**. Just type in the following command in the command prompt:

./EUM_Agent.bin -console

Execution of this command will take you through the installation process.
2) The Real Browser Monitor (RBM) will not work if you install the EUM agent in Linux systems. This is because the RBM requires Internet Explorer browser for playback.

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Uninstalling EUM Agent

In Windows:

1. If the EUM agent is running, you should stop the agent before uninstalling it. You can stop the agent using any of these options:
   1. Use the *Start menu->All Programs->ManageEngine EndUser Monitoring Agent->Stop Server* option.
   2. From the command prompt, execute the *StopServer.bat* file present under the <ManageEngine/EUMAgent> folder.
2. Use the *Start menu->All Programs->ManageEngine EndUser Monitoring Agent->Uninstall* option. The installshield wizard will be displayed. Follow the instructions shown on screen to uninstall the agent.
3. Remove the agent completely using the *Control Panel->Add/Remove Programs* option.

In Linux:

1. From the command line, go to the EUMAgent Home directory and execute the below commands:**sh StopServer.sh.shsh StopServer.sh -force**
2. Exit out of the command prompt and close all the files and folders opened in the EUMAgent Home directory.
3. Execute the command ./uninstaller.bin from the <EUMAgent/_uninst> directory and follow the process. If there is no GUI or if you are uninstalling from a remote server, execute the command ./uninstaller.bin -console from the <EUMAgent/_uninst> directory and follow the process.

End User Monitoring Agent Settings

When you start the End User Monitoring agent, the EUM web client will be automatically launched. The web client can be accessed at http://localhost:9999 url where localhost is the system where the EUM agent is installed and PORT is the port number where the EUM agent is running.

You can modify the EUM agent settings from the EUM agent web client by clicking the Edit button and updating the settings. These changes will take effect only when you restart the agent.

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EUM Dashboard

The performance metrics of all the end user monitoring (EUM) monitors configured in Applications Manager will be displayed in the **End User Monitoring Overview** dashboard under the 'EUM' tab. This dashboard provides you an overview of the performance of your monitors tracked using EUM agents along with their health status from different locations. The metrics shown include the total number of EUM monitors and their current status (Clear, Critical or Warning), the category to which the monitor belongs to, and their health status from the locations configured.

A green dot indicates health status is ‘clear’ from that specific location, a red dot indicates ‘critical’ status while an orange dot indicates 'warning' health status. Click the dot icon to drill down into the monitor performance from that specific location. Click the reports icon in the EUM dashboard to view the 'At a Glance' report for the monitor. The 'At a Glance' report includes charts for availability, response time and outage report of the monitor from different locations.

You can also view performance details based on the monitor type. For example, to view information about DNS monitors, click the DNS Monitor icon.

EUM Agent Details

Click the 'Locations' link present in the right top corner of the 'End User Monitoring Overview' dashboard to view details about the EUM agents being used to collect performance data. This screen shows the following agent configuration details:

Parameter	Description
Name	The name of the EUM agent
IP Address	The IP address of the EUM agent
Port	The port at which the agent is running
Status	Current status of the agent (whether the agent is up or down)
Poll Interval	The time interval in which the EUM agent contacts the Applications Manager server
Agent Version	The version of the EUM agent currently in use
Last Updated at	The time at which agent collected information from the Applications Manager server

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APM Insight - An Overview

APM Insight (previously J2EE Transaction Monitoring) gives you visibility into the way your applications behave for your end users. You get comprehensive end-to-end transaction awareness across your entire infrastructure, enabling you to isolate performance issues and resolve them quickly. Drill-down to the root cause of problems quickly and perform first-level troubleshooting.

With so many different metrics being produced by the wide range of business applications, how can one normalize performance and assemble information into something meaningful to the end users? APM Insight offers visual representations of performance metrics of all components starting from URLs to SQL queries, Apdex scores to measure user satisfaction and transaction tracing.

You can view the trace history of transactions to help identify and resolve performance degradation no matter where they originate. Further, to identify bottlenecks in performance, a trail of the Java method invocations can be viewed to identify the offending code.

Browse through the following topics to understand the working of APM Insight:

- How Does APM Insight Work?
- Installing APM Insight Agent for
  - Java
  - Ruby
  - .NET
- APM Insight Configuration Options
- APM Insight Dashboard
  - Web Transaction, Database Operations and Transaction Traces
  - Apdex Score

View Related Blog

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How does APM Insight work?

APM Insight includes a remote monitoring agent to be deployed in your Application Server. This agent performs the tasks of data collection; acquisition and transmission.

To configure APM Insight you must first download the APM Insight agent and deploy it in your Application Server. Once the agent is deployed, the agent residing in the Application Server uses byte code instrumentation to collect application performance metrics and sends it to the central Applications Manager server at fixed intervals.

APM Insight gives you the following metrics for the applications that it is set to monitor:

- APDEX Scores
- Response Time
- Throughput

Based on the metrics received from the agent, the APM Insight server measures the performance of the application and generates performance charts. This information is assembled and presented in detail in the APM Insight dashboard.

How to install APM Insight?

Download and install

Configure agent

When the Application Server starts up, APM Insight Monitor will be added automatically in the Applications Manager.

Agent auto-upgrade

Supported versions - .Net version 2.0 and Java Version 1.9

When the Agent Auto-upgrade feature is enabled, Applications Manager will automatically download the new agent zip/msi file for upgrade if a new agent version available. By default, auto-upgrade is disabled. You can enable auto-upgrade by clicking on the **Customize Agent Configuration** icon and checking the **Agent Auto-upgrade** checkbox. You can also enable auto-upgrade by setting the **autoupgrade.enabled** property in the **apminsight.conf** file to true.

Note
For java agents, application restart is mandatory for the new agent to take effect. On the other hand, for .Net agents the update process can be scheduled by setting the "scheduledtime" property in apminsight.conf file.

Manual Agent Upgrade

By default, the auto-upgrade feature is disabled i.e the **autoupgrade.enabled** property in the **apminsight.conf** file is set to false. Here is how you can manually upgrade the agent:

- The following message will be displayed at the top of the **APM Insight details** page "*The deployed agent version at this instance is (1.9/2.0), Update Now to the latest version (2.0/2.1)*".
- On clicking the **Update Now** link, a confirmation dialog will appear to initiate agent update. For .Net agents the update process can be scheduled. In the pop-up Agent Update window, configure the schedule time for the update. IIS will be reset during that hour.
- Choose the **Yes, continue** button to start agent update. On doing so the alert message changes to "*Agent update will happen shortly...*".
- After few minutes, either on page refresh or on navigating to other tabs, the alert message will be modified.
- On successful download of the agent, the alert message changes to "*Agent downloaded successfully. Please restart your application*" for the Java Agent and or "*Agent downloaded successfully. Update will happen at the scheduled hour*" for the .Net

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Agent.

- If an error occurs during the agent update, then the message changes be "*Problem encountered during agent update.View details*". On clicking the **View Details** link, the error message will be displayed with options to **retry** or **dismiss**.

Note
The Retry option will clear the upgrade status in the cache and immediately try to perform agent update, so message gets modified to "*Agent update will happen shortly...*" again. The Dismiss option will just clear the upgrade status in Cache and the message changes to "*The deployed agent version at this instance is (1.9/2.0), Update Now to the latest version (2.0/2.1)*".

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Installing the APM Insight Java Agent

APM Insight relies on the agent-based instrumentation technology for data aquisition and transmission.

Requirements : Application Server(s) running on Java 1.5 & above

Application Servers supported:

Glassfish 3.x & above	Oracle Weblogic 10.3.x & above
IBM Websphere 7.x & above	Resin 3.1.x & above
JBoss AS 4.x & above	Tomcat 6.x & above
JBoss EAP 6.2.x & above	WildFly 8.x & above
Jetty	

JDBC Drivers supported :

MySQL	Sybase - jconn2, jconn3, jconn4
Postgres	MS-SQL
IBM DB2 - db2jcc, jt400	Generic JDBC drivers
Oracle - ojdbc14, ojdbc5, ojdbc6	

Frameworks and Components supported :

Struts 1.x, 2.x	Hibernate 3.x, 4.x
Spring	IBatis
Servlets	EJB
Filter	JSP
Play 2.0 framework	

Click on the links below to learn how to install the APM Insight Java Agent in different servers:

- **Deploying APM Insight Java Agent in Apache Tomcat 6.x & above**
- **Deploying APM Insight Java Agent in IBM WebSphere 7.x servers & above**
- **Deploying APM Insight Java Agent in JBoss AS 4.2.x & above**
- **Deploying APM Insight Java Agent in JBoss EAP 6.2.x & above**
- **Deploying APM Insight Java Agent in Oracle Weblogic 10.3.x servers & above**
- **Deploying APM Insight Java Agent in Glassfish 3.x servers & above and clustered environments**
- **Deploying APM Insight Java Agent in Resin 3.1.x servers & above**
- **Deploying APM Insight Java Agent in WildFly 8.x servers & above.**
- **Deploying APM Insight Java Agent in other servers**

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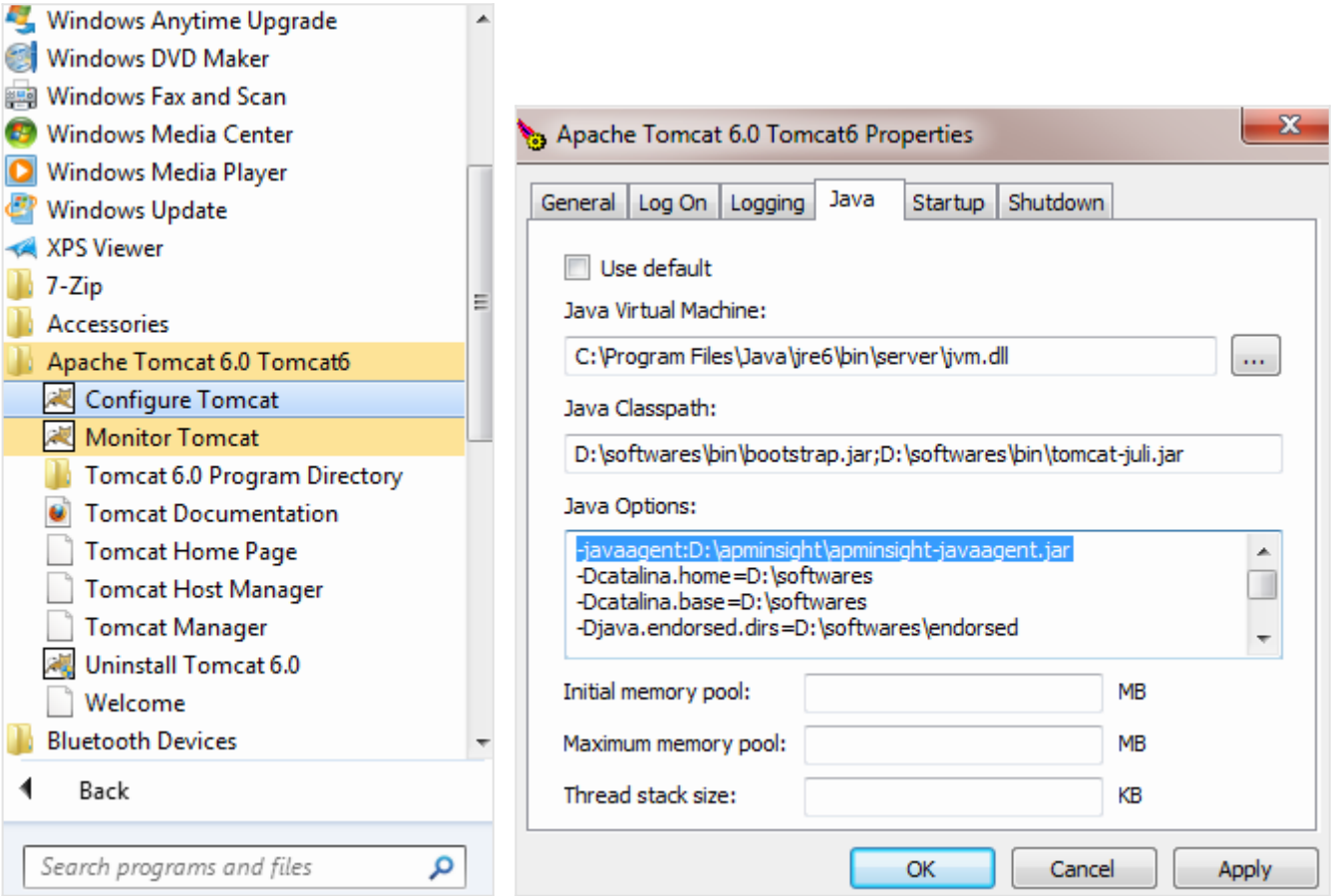
Deploying APM Insight Java Agent in Apache Tomcat 6.x & above:

- Download latest the APM Insight java agent zip file(apminsight-javaagent.zip) here
- Extract the zip file to a new directory to find agent jar and its configuration files
- Open **apminsight.conf** file in any text editor and add **apm.host** & **apm.port** values. To learn more about the configurations, visit our Configuration Guide page
- For Tomcat as non-service installation,**In Windows,** Edit <TOMCAT_HOME>bincatalina.bat and add the following entry to the top and save the file**set JAVA_OPTS=%JAVA_OPTS% -javaagent:<agent_directory_full_path>/apminsight-javaagent.jarIn Linux,** Edit <TOMCAT_HOME>/bin/catalina.sh and add the following entry to the top and save the file**export JAVA_OPTS="$JAVA_OPTS -javaagent:<agent_directory_full_path>/apminsight-javaagent.jar"**
- For **Tomcat as service installation**, Navigate to **Configure Tomcat** and to **JAVA tab** and add the entry **-javaagent:<agent_directory_full_path>/apminsight-javaagent.jar** in **Java Options box**.
- After adding the entry, click **Apply** and then **OK**.



To know more about configuration go to the APM Insight Java Agent Configuration Options page.

Deploying APM Insight Java Agent in IBM WebSphere 7.x servers & above

- Download the latest APM Insight java agent zip file(apminsight-javaagent.zip) here

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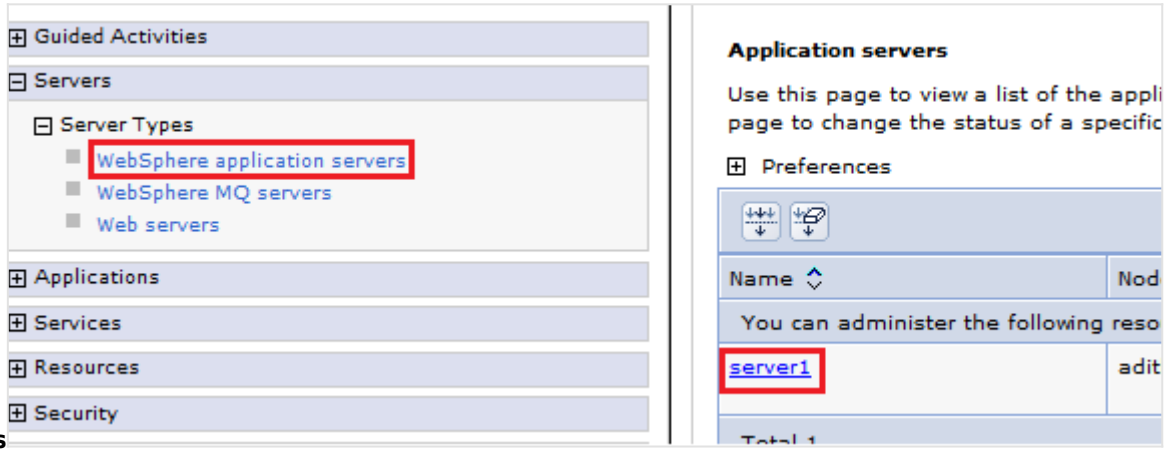
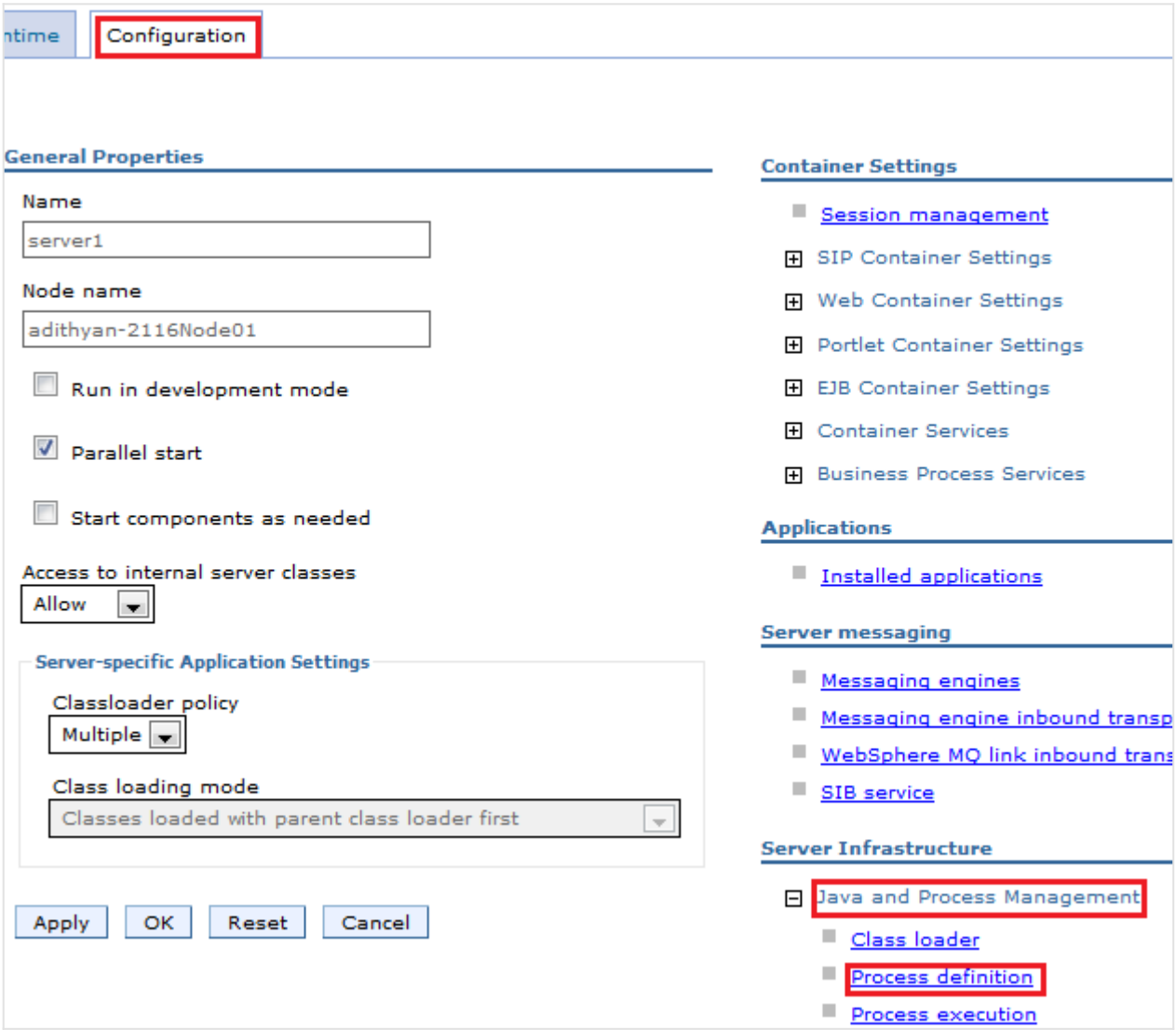
- Extract the zip file to a new directory to find agent jar and its configuration files
- Open **apminsight.conf** file in any text editor and add **apm.host** & **apm.port** values. To learn more about the configurations, visit our Configuration Guide page
- Open administrative console of your IBM Websphere server, **Select Servers >ServerType > WebSphere Application Servers**



- Select **<Your Server Name> > Java and Process Management > Process Definition**



- Under **Additional Properties**, select **Java Virutal Machine**.

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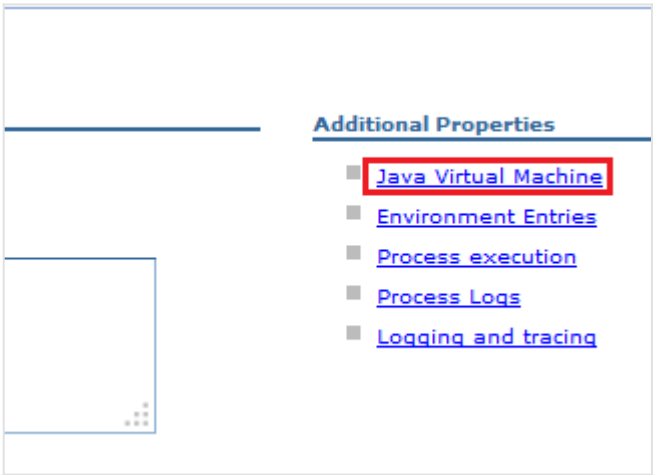
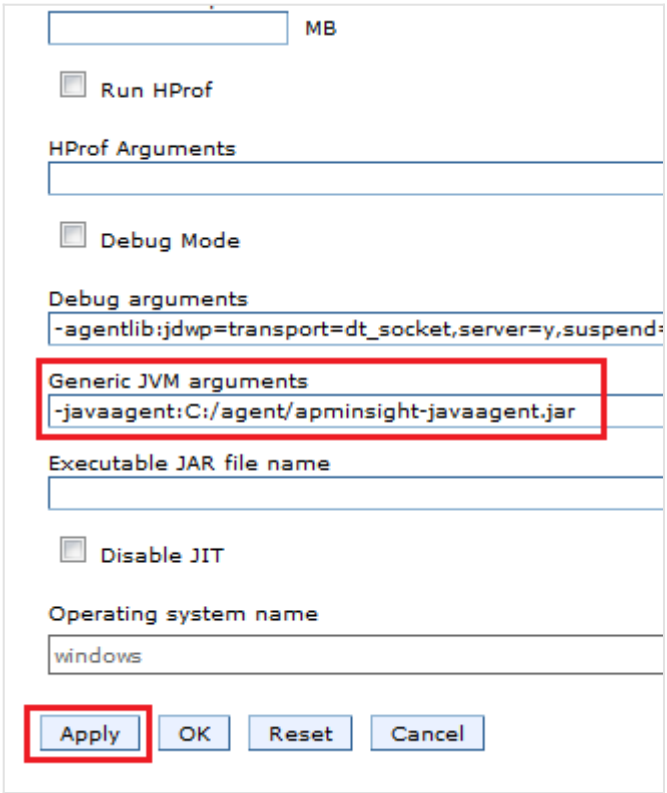
- 

- Locate **Generic JVM Argumnets** textbox and enter the following parameter **-javaagent:<agent_directory_full_path>/apminsight-javaagent.jar**



- Save the settings and start the Websphere server.

To know more about configuration go to the APM Insight Java Agent Configuration Options page.

Deploying APM Insight Java Agent in JBoss AS 4.2.x & above

> **Note**
> There is a bug in JBoss AS 7.2.x with a hindrance to deploy our APM Insight Java Agent in this server. We suggest to upgrade the JBoss server and try our APMInsight

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- Download latest the APM Insight java agent zip file(apminsight-javaagent.zip) here
- Extract the zip file to a new directory to find agent jar and its configuration files
- Open **apminsight.conf** file in any text editor and add **apm.host** & **apm.port** values. To learn more about the configurations, visit our Configuration Guide page
- For **JBoss AS 4.x, 5.x, 6.x servers,**
  - **For Windows,** open <JBOSS_HOME>bin**run.bat** in any text editor and add the following entry at the top and save it*set JAVA_OPTS=-javaagent:<agent_directory_full_path>/apminsight-javaagent.jar %JAVA_OPTS%*
  - **For Linux,** open <JBOSS_HOME>/bin/**run.sh** in any text editor and add the following entry at the top and save it*export JAVA_OPTS="$JAVA_OPTS -javaagent:<agent_directory_full_path>/apminsight-javaagent.jar*"
- For **JBoss AS 7.x servers**,
  - **In standalone setup:**Edit <JBOSS_HOME>/bin/**standalone.bat(**In Linux, **standalone.sh)** file to add the following java arguments to the existing JAVA_OPTS*-Djboss.modules.system.pkgs=org.jboss.byteman,com.manageengine -javaagent:<agent_directory_full_path>/apminsight-javaagent.jar*
  - **In domain setup:**Edit <JBOSS_HOME>/domain/configuration/**Host.xml** file and **locate <servers> tag** and add the mentioned tags under your desired **<server name="your_server" ...> tag**.*<system-properties>*
    <property name="jboss.modules.system.pkgs" value="org.jboss.byteman,com.manageengine" boottime="true"/>
    </system-properties>
    <jvm name="insight">
    <jvm-options>
    <option value="-javaagent:<agent_directory_full_path>/apminsight-javaagent.jar" />
    </jvm-options>
    </jvm>
- Save the file and start the JBoss Application Server

To know more about configuration go to the APM Insight Java Agent Configuration Options page.

Installing Java Agent in JBoss EAP 6.2.x & above

- Download latest the APM Insight java agent zip file(apminsight-javaagent.zip) here
- Extract the zip file to a new directory to find agent jar and its configuration files
- Open **apminsight.conf** file in any text editor and add **apm.host** & **apm.port** values. To learn more about the configurations, visit our Configuration Guide page
- **For Standalone setup,** Edit <JBOSS_HOME>/bin/**standalone.bat(**In Linux, **standalone.sh)** file to add the following java arguments to the existing JAVA_OPTS
  -Djboss.modules.system.pkgs=org.jboss.byteman,com.manageengine -javaagent:<agent_directory_full_path>/apminsight-javaagent.jar
- **For Domain setup**, Edit <JBOSS_HOME>/domain/configuration/**Host.xml** file and **locate <servers> tag** and add the mentioned tags under your desired**<server name="your_server" ...> tag**.*<system-properties>*
  <property name="jboss.modules.system.pkgs" value="org.jboss.byteman,com.manageengine" boottime="true"/>
  </system-properties>
  <jvm name="insight">
  <jvm-options>
  <option value="-javaagent:<agent_directory_full_path>/apminsight-javaagent.jar" />
  </jvm-options>
  </jvm>

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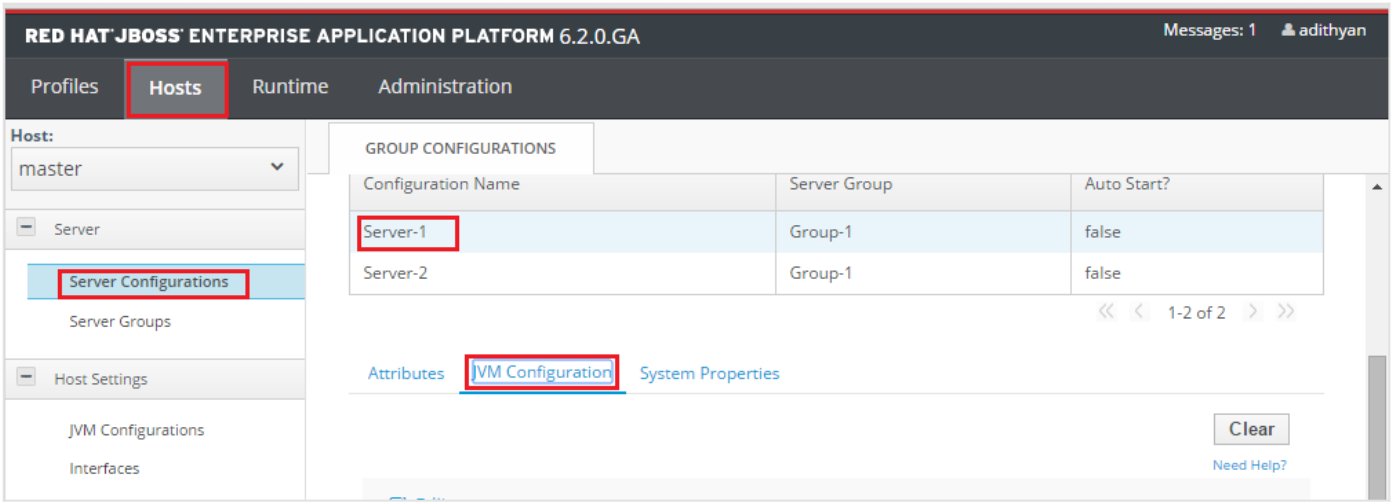
- Save the file and start the JBoss EAP server

To know more about configuration go to the APM Insight Java Agent Configuration Options page.

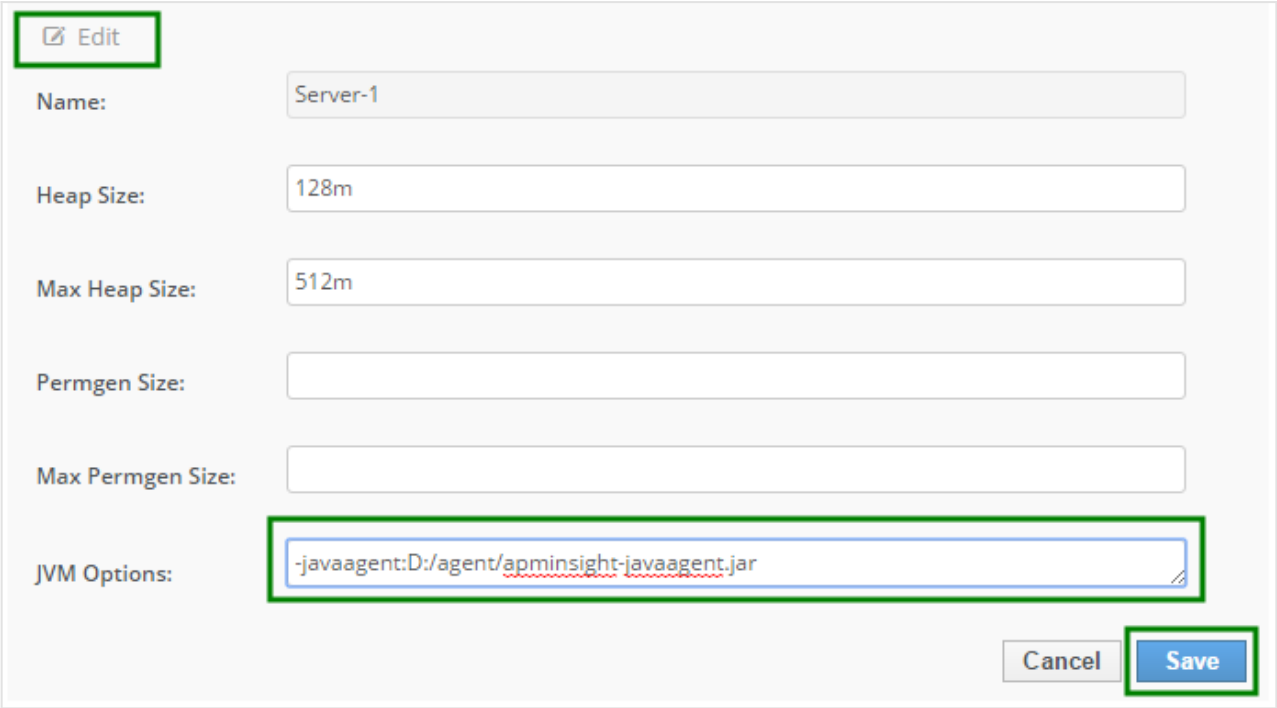
Installing Java Agent in JBoss EAP through Management Console

Open the management console through *localhost:9990/console* and login as "*Management Realm*" user.

- Select Hosts Tab > Server Configurations > Server instance in which you like to install the agent > JVM Configuration Tab



- Click on **Edit** button to create a **JVM Configuration** for the server. In **JVM options text box**, add the following lines (each JVM option must be separated by a new line)*-javaagent:AGENT_HOME/apminsight-javaagent.jar*



- Click on save button, you will see "*Added/Modified JVM Config*" message at top of the page. If the message doesn't appear, check your configuration carefully and save it again.
- Now, select "*System Properties*" tab and Click "*Add*" button.

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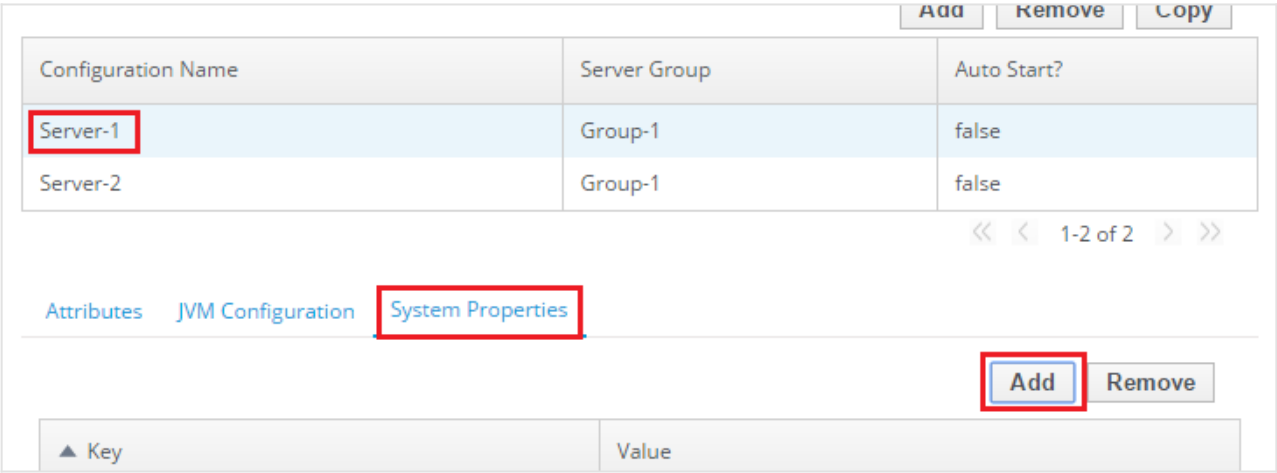


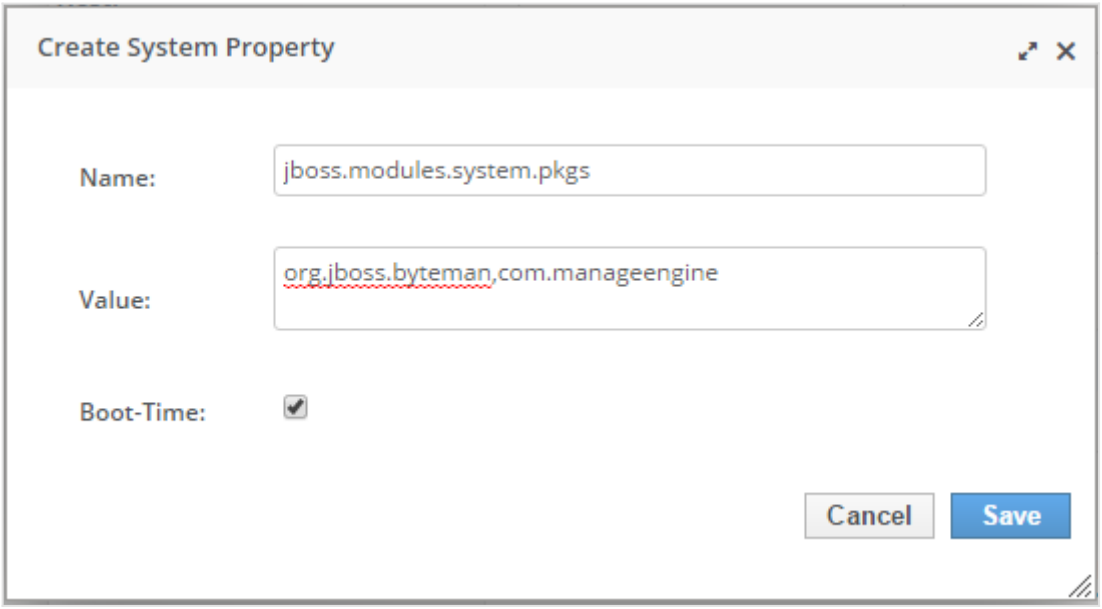
- In the newly opened dialog box, fill in the following values

  Name : jboss.modules.system.pkgs

  Value : org.jboss.logmanager,com.manageengine.apminsight,org.jboss.byteman

  Boot-Time: Check

- And click "*Save*" button.



- Finally, start/restart your configured server instance from "*Runtime*" tab at top left corner of the page.

To know more about configuration go to the APM Insight Java Agent Configuration Options page.

Deploying APM Insight Java Agent in Oracle Weblogic 10.3.x & above

- Download latest the APM Insight java agent zip file(apminsight-javaagent.zip) here
- Extract the zip file to a new directory to find agent jar and its configuration files
- Open **apminsight.conf** file in any text editor and add **apm.host** & **apm.port** values. To learn more about the configurations, visit our Configuration Guide page
- Open the administrative console of Weblogic server, Select **Environment > Servers > Configuration** tab.

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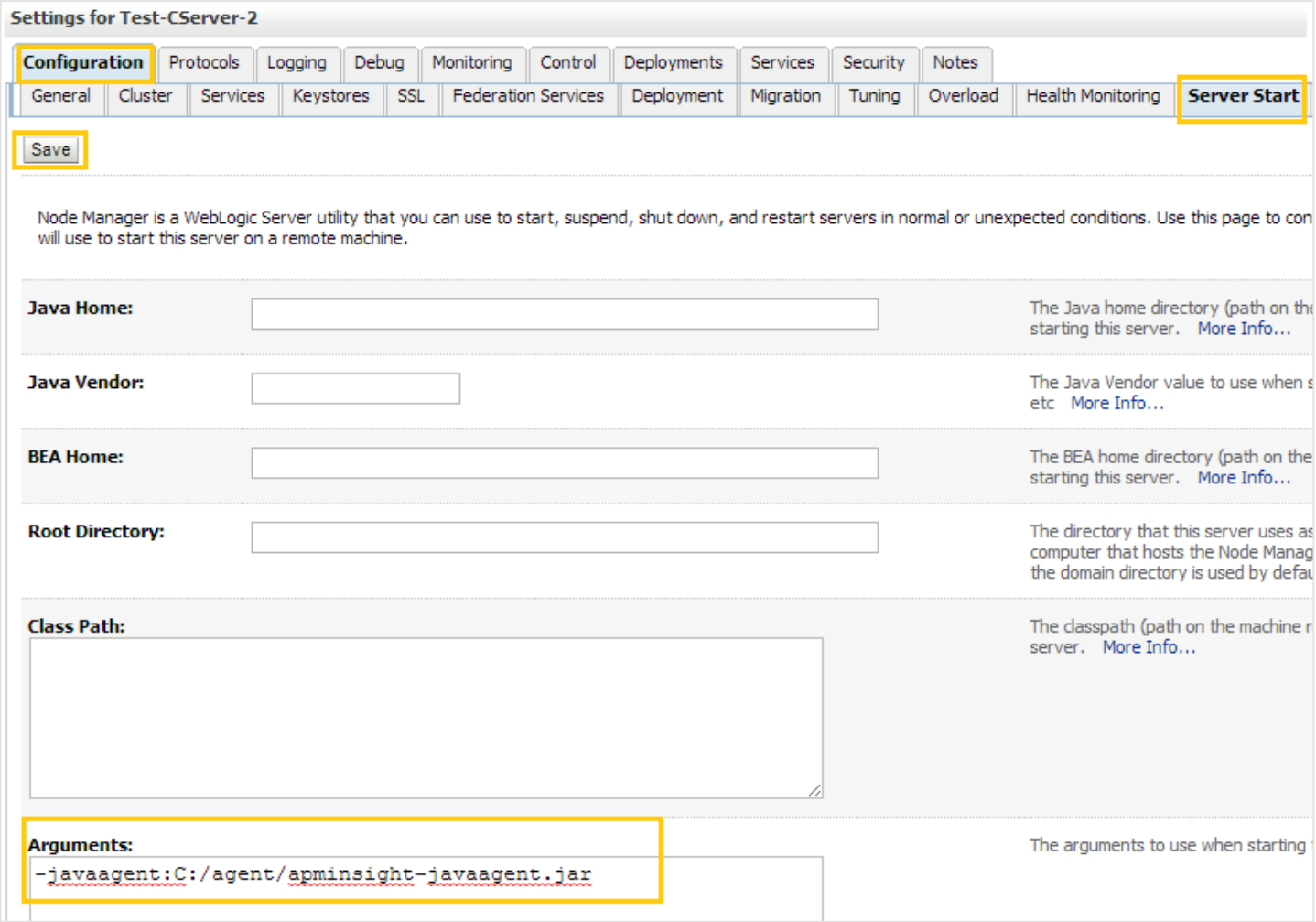
- Select **<Your Server Name> > Configuration > Server Start** tab.
- Locate **Arguments** textbox and enter the following argument **-javaagent:<agent_directory_full_path>/apminsight-javaagent.jar**



- Save the settings and start the Weblogic server.

To know more about configuration go to the APM Insight Java Agent Configuration Options page.

Deploying APM Insight Java Agent in Glassfish 3.x & above

APM Insight Java Agent can be deployed in Glassfish Server through Admin Console as follows:

Example: -javaagent:D:/apminsight/apminsight-javaagent.jar

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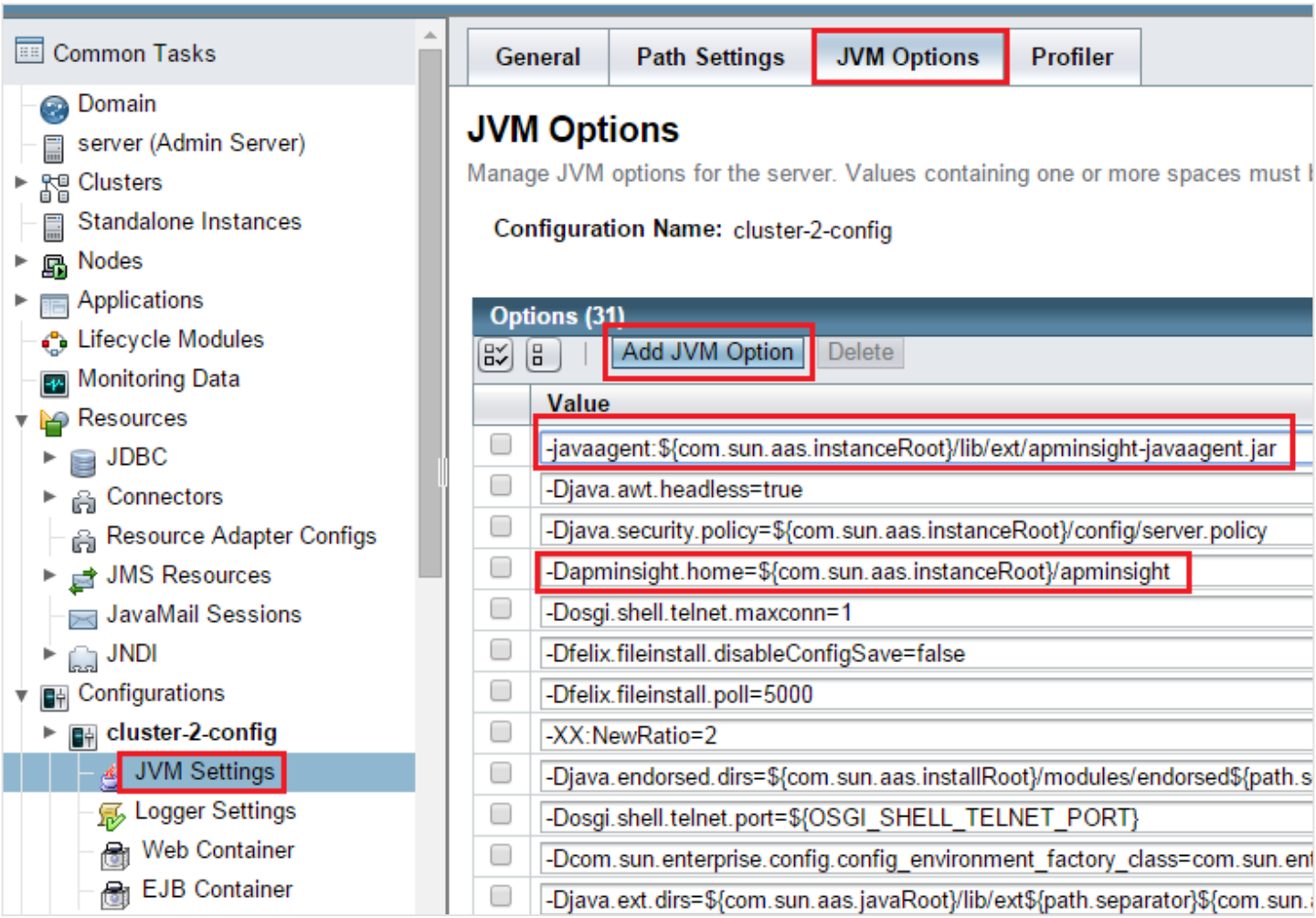

- Download latest the APM Insight java agent zip file(apminsight-javaagent.zip) here
- **For standalone setup,**
  - Extract the zip file to a new directory outside the glassfish server directory
  - Open **apminsight.conf file** in any text editor and **add apm.host** & **apm.port values**. To learn more about the configurations, visit our Configuration Guide page
  - Open the administrative console of your glassfish server. Select Configurations and select the configuration used by the server
  - Select **JVM Settings > Add JVM Option**, then add the following parameter - *javaagent:<agent_directory_full_path>/apminsight-javaagent.jar*
  - Click **Save** button and start the glassfish server
- **For cluster setup**,
  - Extract the zip file to a new directory outside the glassfish server directory
  - Copy the **apminsight-javaagent.jar** file from above directory to **<GLASSFISH_HOME>glassfishdomains<domain>libext directory** of the **domain server**
  - Create a new directory named "**apminsight**" under **<GLASSFISH_HOME>glassfishnodes<node><instance>** in **instance server** and copy only the**agent conf files** from directory created in step 1 to this directory.
  - Open **apminsight.conf** file in any text editor and add **apm.host** & **apm.port** values. To learn more about the configurations, visit our Configuration Guide page
  - Repeat the above two steps for every instance you like to add the java agent
  - Open the administrative console of your glassfish server. Select **Configurations** and **select the configuration used by the cluster**.

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- Select **JVM Settings > Add JVM Option**, then add the following parameters as such- *javaagent:${com.sun.aas.instanceRoot}/lib/ext/apminsight-javaagent.jar-Dapminsight.home=${com.sun.aas.instanceRoot}/apminsight*
- Click **Save** button and start the glassfish cluster.

To know more about configuration go to the APM Insight Java Agent Configuration Options page.

Deploying APM Insight Java Agent in Resin 3.1.x servers & above

- Download latest the APM Insight java agent zip file(apminsight-javaagent.zip) here
- Extract the zip file to a new directory to find agent jar and its configuration files
- Open **apminsight.conf** file in any text editor and add **apm.host** & **apm.port** values. To learn more about the configurations, visit our Configuration Guide page
- For **Resin 3.x servers**, Open <RESIN_HOME>/conf/**resin.conf** file in any text editor. Locate your **<cluster> tag** and the **<server> tag** of the server you need to monitor and add the following tag, **<jvm-arg>-javaagent:<agent_directory_full_path>/apminsight-javaagent.jar</jvm-arg>**
- For **Resin 4.x servers,** Open <RESIN_HOME>/conf/**resin.xml** file in any text editor. Locate your **<cluster> tag** and the **<server> tag** of the server you need to monitor and add the following tag, **<jvm-arg>-javaagent:<agent_directory_full_path>/apminsight-javaagent.jar</jvm-arg>**
- Save the file and start the Resin server.

To know more about configuration go to the APM Insight Java Agent Configuration Options page.

Deploying APM Insight Java Agent in WildFly 8.x servers & above

- Download latest the APM Insight java agent zip file(apminsight-javaagent.zip) here
- Extract the zip file to a new directory to find agent jar and its configuration files
- Open **apminsight.conf** file in any text editor and add **apm.host** & **apm.port** values. To learn more about the configurations, visit our Configuration Guide page
- For **Standalone setup**, Edit <WILDFLY_HOME>/bin/**standalone.conf.bat (**In Linux, **standalone.conf) file** to add the following java arguments to the existing JAVA_OPTS-*Djboss.modules.system.pkgs=org.jboss.byteman,com.manageengine -javaagent:<agent_directory_full_path>/apminsight-javaagent.jar*
- For **Domain setup**, Edit <WILDFLY_HOME>/domain/configuration/**Host.xml file** and locate **<servers>** tag and add the mentioned tags under your desired**<server name="your_server" ...>** tag*<system-properties>*
  <property name="jboss.modules.system.pkgs" value="org.jboss.byteman,com.manageengine" boottime="true"/>
  </system-properties>
  <jvm name="insight">
  <jvm-options>
  <option value="-javaagent:<agent_directory_full_path>/apminsight-javaagent.jar" />
  </jvm-options>
  </jvm>
- Save the file and start the Wildfly server

To know more about configuration go to the APM Insight Java Agent Configuration Options page.

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Deploying APM Insight Java Agent in Other Servers

- Download latest the APM Insight java agent zip file(apminsight-javaagent.zip) here
- Extract the zip file to a new directory to find agent jar and its configuration files
- Open **apminsight.conf** file in any text editor and add **apm.host** & **apm.port** values. To learn more about the configurations, visit our Configuration Guide page
- For **Windows**, open <your application server startup scipt>.bat using a text editor and add the following entry at the top of the startup script*SET JAVA_OPTS=%JAVA_OPTS% -javaagent:"<agent_directory_full_path>/apminsight-javaagent.jar"*
  Example: SET JAVA_OPTS=%JAVA_OPTS% -javaagent:"D:/apminsight/apminsight-javaagent.jar"
- For **Linux**, open <your application server startup scipt>.sh using a text editor and add the following entry at the top of the startup script*export JAVA_OPTS="$JAVA_OPTS -javaagent:<agent_directory_full_path>/apminsight-javaagent.jar"*
  Example: export JAVA_OPTS="$JAVA_OPTS -javaagent:/home/local/softwares/apminsight/apminsight-javaagent.jar"
- Save the file and start the server

To know more about configuration go to the APM Insight Java Agent Configuration Options page.

Troubleshooting:
For troubleshooting tips, go to our Support Portal.

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APM Insight .NET Agent

Applications Manager's .NET agent gives you insight into the way your .NET web-transactions work; helping you quickly drill-down to the root cause of issues. Now you can resolve performance degradation of .NET applications, no matter where they originate. Just download the latest .NET Agent and deploy it in your application server.

Click on the links below to learn more about the working of .NET agent and its usage:

- Working of APM Insight .NET Agent
- Installing the Agent
- Managing the agent:
  - Starting the .NET Agent
  - Stopping the Agent
  - Editing .NET Agent Configuration
- Using Application Filters:
  - Filtering Web Applications in settings dialog
    - For Agent Version 2.3 and above
    - For Agents below Version 2.3
  - Filtering Web Applications manually
    - For Agent Version 2.3 and above
    - For Agents below Version 2.3
- Transaction grouping
- Background transactions
- Use .NET agent API for Custom Instrumentation
- HealthMonitor Diagnostics tool
- FAQ

Working of APM Insight .NET Agent

The .NET Agent, instrumented into the application using .NET profiling API, collects the data (Metric/traces) and sends it to the Agent service through the Inter Process Communication (IPC). The Agent service, in turn, receives the data from the .NET agent and sends it to Applications Manager through a scheduler.

Installing the Agent

Installation Requirements

- Applications running Microsoft .NET Framework Version 3.0 and above.
- IIS 6.0 and above.

Installation Instructions

- Click **APM Insight** tab.

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- Click on **.NET tab** to download the file.
- Click **Download** to deploy the agent in your application server.
- Run the **.msi** file . This opens a "**select installation folder**" window.
- Click on **Browse** and select the folder path to install the .NET Agent. Click **Next**.
- In the next window, under the Startup Options, check the **Start the Agent after installation** check-box if you wish to start the agent. Click **Next** to start installation of the agent.
- A .NET Agent Configuration window appears before the installation is completed. Configure Applications Manager's host and port and other apdex settings.
- Click the **Save** button to complete installation.

Now the .NET agent is ready and all the ASP.NET applications running on the server will be monitored. The collected data should be available in the apm-insight tab of Applications Manager's web client within a few minutes.

Managing the agent

Starting the .NET Agent

- If you have not checked the **Start the Agent after installation** check-box in the Startup Options dialog box during installation, manually start the agent service from Windows Service Manager. The service name is ManageEngine .NET Agent.

Editing the .NET Agent Configuration

- Click on **Edit Configuration** from the **ManageEngine .NET Agent** folder in the **Start Menu** to edit the agent configuration. This opens the .NET agent configuration dialog box. After making the required changes, click **Save** to update the configuration file.

Stopping the .NET Agent

- You can stop the agent service manually from the Windows Service Manager. This will close the IPC connection between the application and the service; removing the profiler variables from system environment variables and disabling the profiler. It also resets the IIS.
- You can manually re-start the agent as mentioned above in Starting the .NET Agent

APM Insight Configuration

- This helps you fine-tune the configuration for tracking web based transactions. These settings can be configured in *.conf file.
- Refer here to know about APM Insight configuration options.

You can uninstall the agent from the Start menu. Click on **Uninstall .NET Agent** from the **ManageEngine .NET Agent** folder in the **Start Menu** to uninstall the agent.

Using Application Filters

You can choose individual application that you would want to monitor in your IIS server and view individual application metrics on your console. With this new feature you get the flexibility to add or remove monitoring of applications hosted under an IIS server.

Filtering Web Applications in settings dialog

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For Agent Version 2.5 and above

- Launch Edit Configuration window (Start Menu > Edit Configuration). This dialog is launched automatically during installation.
- If **apminsight.appname** key is present in any of the web applications in IIS, the dialog will give an option to remove them.
- Go to **AppFilters** tab.
- Select **Use App Filters**.
- Select applications to be monitored. By default, all applications will be selected for monitoring.
- Provide applications a unique name in the text box under column **Apm Insight key**. This will not affect the IIS.
- Click **Save**.

> **Note:** For agent version 2.3 to 2.5,
> • Stop the .NET Agent windows service before launching Edit Configuration window.
> • Start the .NET Agent after Saving your settings.

For Agents below Versions 2.3

1. Versions 2.0 to 2.3

- Stop the .NET Agent windows service (during installation, skip this step).
- Launch Edit Configuration window from (Start Menu > Edit Configuration (x64 or x86). This dialog is launched automatically during installation.
- If **apminsight.appname** key is present in any of the web applications in IIS, the dialog will give an option to remove them. From Version 2.0, this dependency has been removed.
- Go to **AppFilters** tab.
- Select **Use App Filters**.
- Select applications to be monitored. By default, all applications will be selected for monitoring.
- Provide applications a unique name in the text box under column **Apm Insight key**. This will not affect the IIS.
- Click **Save**.
- Start the .NET Agent windows service.

2. Versions older than 2.0

- Launch **Edit Configuration** window (Start Menu -> Edit Configuration (x64 or x86)). Note that, this dialog is launched automatically during installation.
- Go to the **AppFilters** tab and select "Use App Filters".
- Select **multi-monitor checkbox** in the **general** tab under application name group box if your applications have to be individually monitored
- Select the **Use ApmInsight keys** option. This will add a key **apminsight.appname** to the selected applications in their respective **web.config** file, under the**appSettings** section.
- Select applications to be monitored. By default, all applications will be selected for monitoring.
- Provide applications a unique name in the text box under column **Apm Insight key**. (Column will be hidden if **Use ApmInsight keys** in step #3 is not selected)
- Click **Save**.
- Restart .NET Agent windows service to effect changes.

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Filtering Web Applications Manually

For Agent Version 2.3 and above

Changes to be made in Agent configuration

- Go to the **APM Insight .NET Agent installation** folder.
- Open **DotNetAgent** folder.
- Open **appfilter.conf** file and edit the following keys,
  - *use.app.filters=true (default)*
  - *use.apminsight.appnames=true (default is false)*
  - *include.app.names={json formatted appnames}eg: include.app.names = { "Default Web Site/" : "ServerRoot", "Default Web Site/Services/wcf1" : "Service1", ... }*
- Copy this appfilter.conf file and paste it in the following location:
  - %WINDIR%\ProgramData\DotnetAgent
- For Windows server 2003, the corresponding path will be in
  - %WINDIR%\Documents and Settings\All Users\Application Data\DotNetAgent\

  In case of multimonitors, all sub folders in the above locations.
- Restart the .NET Agent windows service to effect changes.

For Agents below Version 2.3

1. Versions 2.0 to 2.3

Changes to be made in Agent configuration

- Go to the **APM Insight .NET Agent installation** folder.
- Open **DotNetAgent** folder.
- Open **appfilter.conf** file and edit the following keys,
  - *use.app.filters=true (default)*
  - *use.apminsight.appnames=true (default is false)*
  - *include.app.names={json formatted appnames}eg: include.app.names = { "Default Web Site/" : "ServerRoot", "Default Web Site/Services/wcf1" : "Service1", ... }*
- Copy this appfilter.conf file and paste it in the following location:
  - %WINDIR%\ProgramData\DotnetAgent\x64 (for 64-bit agent)
  - %WINDIR%\ProgramData\DotnetAgent\x86 (for 32-bit agent)
- For Windows server 2003, the corresponding path will be in
  - %WINDIR%\Documents and Settings\All Users\Application Data\DotNetAgent\x64 (for 64-bit agent)
  - %WINDIR%\Documents and Settings\All Users\Application Data\DotNetAgent\x86 (for 32-bit agent)

  In case of multimonitors, all sub folders in the above locations.
- Restart the .NET Agent windows service to effect change.

2. Versions older than 2.0

To filter Web Applications you must make configuration changes in the following:

- **IIS Manager**
- **Agent configuration**

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Changes to be made in IIS Manager

- Launch **IIS Manager.**
- Select **web application.**
- For IIS 7.0 and newer versions- Go to Applications Settings section and add the following key value pair, to avoid conflicts in application names:
  - *key = apminsight.appname*
  - *value = <custom application name> (Use this name in configuration file).*
- For IIS version 6.0, open the web.Config file and edit <appSettings> section as follows:*<appSettings><add key="apminsight.appname" value="<custom application name>"/>...</appSettings>*
- Save the web.Config
- Repeat the steps for all applications to be monitored.

Changes to be made in Agent configuration

- Go to the APM Insight .NET Agent installation folder.
- Open **DotNetAgent** folder.
- Open **apminsight.conf** file and edit the following keys:
  - *use.apminsight.appnames*=true (default is false)
  - *use.app.filters=true (default)*
  - *include.app.names*=<comma seperated appnames> (NOTE: provide the app names exactly as given in the appSettings section)
- Copy this apminsight.conf file and paste it in the following locations :
  - %WINDIR%\ProgramData\DotnetAgent\x64 (for 64-bit agent)
  - %WINDIR%\ProgramData\DotnetAgent\x86 (for 32-bit agent)
- For Windows server 2003, the corresponding path will be in
  - %WINDIR%Documents and SettingsAll UsersApplication DataDotNetAgentx64 (for 64-bit agent)
  - %WINDIR%\ProgramData\DotnetAgent\x86 (for 32-bit agent)

  In case of multimonitors, all sub folders in the above locations.

- Restart the .NET Agent windows service to effect changes.

Transaction Grouping

Configuration Steps for .NET Agent:

- Open Edit configuration window, select Transactions Merge tab. Add transaction patterns you want to merge.
- See grouping transaction with pattern sample here (refer #tm_samples).

Steps to perform transaction merge pattern configurations manually:

- Go to the APM Insight .NET Agent installation folder after installing the agent.
- Open DotNetAgent folder.
- Open transaction_merge_patterns.conf and add the patterns as mentioned here (refer samples here).
- Copy this transaction_merge_patterns.conf file and paste it in the location mentioned below.
  - %WINDIR%//ProgramData//DotnetAgent//

  For Windows server 2003, the corresponding path will be in,

  - %WINDIR%//Documents and Settings//All Users//Application Data//DotNetAgent//

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For 64-bit agent
%WINDIR%//ProgramData//DotnetAgent//
For Windows server 2003, the corresponding path will be in
%WINDIR%//Documents and Settings//All Users//Application Data//DotNetAgent//
For 32-bit agent
%WINDIR%//ProgramData//DotnetAgent//
For Windows server 2003, the corresponding path will be in
%WINDIR%//Documents and Settings//All Users//Application Data//DotNetAgent//

In case of multi-monitors, all sub folders for every application in the above locations.
We can add, remove or comment the patterns at any point of time in the configuration file.

Transaction Merge Pattern Samples

The below pattern will match with all transactions which start with aspsite/account/ and it will be renamed as account.

aspsite/account/=account*

The below pattern will match with all transactions which start with aspsite/ and end with /basicdetails. They will be renamed as basicdetails.

aspsite//basicdetails=basicdetails*

The above pattern will match with all transactions which end with /educationdetails and it will be renamed as educationdetails.

**/educationdetails=educationdetails*

Background Transactions

Applications Manager allows users the ability to monitor background processes and other jobs running within the web application.

- **Background trace threshold** - You can enable the APM Insight agent to track the background transactions happening in the application server. It will collect traces of slow background transactions. Background transactions are considered to be slow, if it crosses the configured Background trace threshold.
- **Sampling counter** - For example, if you specify the Sampling Factor value as 5, the agent will track one in 5 background transactions.

Use .NET agent API for Custom Instrumentation

APM Insight .NET Agent API helps to track the user defined methods in a web application. It helps instrument specified methods in the web application DLLs for monitoring its performance. It can also be used to track specific parts of code.

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Steps to Add the API

1. Add a reference to the library *DotNetAgent.Api.dll* to your web application project.
2. The API dll is available in the API Manager Tool installed location *(C:Program Files (x86)APM InsightAPM Insight.NET AgentAgentApiDotNetAgent.Api.dll)*.

Note: *For Agent below v2.3, locate the API dll from,(C:Program FilesAPM InsightAPM Insight .NET Agent (<x64 or x86>)AgentApiDotNetAgent.Api.dll)*.

3. The API contains a class named ***CustomTracker*** to track the performance of a method.

CustomTracker Class and its Methods

Constructors

CustomTracker(Type thisType)
thisType - The type of current class or base class.

eg: CustomTracker dotNetAgentCustomTracker = new CustomTracker(this.GetType());>

CustomTracker(Type thisType, string methodName)
thisType - The type of current class or base class.
methodName - The name of the method to be monitored.

eg: CustomTracker dotNetAgentCustomTracker = new CustomTracker(this.GetType(),"BasicDetails");

CustomTracker(Type thisType, string className, string methodName)
thisType - The type of current class or base class.
className - The name of the class to be monitored.
methodName - The name of the method to be monitored.

eg: CustomTracker dotNetAgentCustomTracker = new CustomTracker(this.GetType(), "EmpController", "BasicDetails");

CustomTracker.StartTracker (Type thisType, string className, string methodName)
This method is used to start the metric collection for the custom method.
It is not required as it is called in constructor itself.

CustomTracker.StopTracker()
The metric collection will be stopped on calling this method.
Always call it in a finally block.

4. Create an instance of CustomTracker class at the beginning of a method and invoke StopTracker() at the end of the method.
5. We can create CustomTracker instance with using{} block. The StopTracker() method will be called when disposing object automatically.

The following examples show the usage of this CustomTracker:

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Example 1: Using the "using" statement:

```
public ActionResult BasicDetails(int id = 0)
{
        AdminBL objadmin = new AdminBL();
        using(CustomTracker customTracker = new CustomTracker(base.GetType(),"BasicDetails"))
        {
           ASPSite.BL.MYSQLReference.BasicDetails basicDetails = objadmin.getBasicDetails(id);
             EmpApp.Models.BasicDetails basic = getBasicDetailsModel(basicDetails);
             return View(basic);
    }
}
```

Example 2: Using StartTracker and StopTracker within a try finally block:

```
public ActionResult BasicDetails(int id = 0)
{
            CustomTracker customTracker = null;
            AdminBL adminBL = new AdminBL();
            try
    {
       customTracker = new CustomTracker(base.GetType(),"BasicDetails");
       ASPSite.BL.MYSQLReference.BasicDetails basicDetails = adminBL.getBasicDetails(id);
       EmpApp.Models.BasicDetails basicDetailsModel = getBasicDetailsModel(basicDetails);
    }
   finally
   {
   customTracker.StopTracker();
   }
return View(basicDetailsModel);
}
```

Example 3: Using CustomTracker to Instrument part of a code.

```
public ActionResult BasicDetails(int id = 0)
{
     AdminBL adminBL = new AdminBL();
      using(CustomTracker customTracker = new CustomTracker(base.GetType(),"BasicDetails"))
    {
        //Instrumenting part of a code. To check the time taken by the function FetchAllEmployees and
```

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```
        the SQL calls made from this function.
        using(CustomTracker fetchAllEmpTracker = new
        CustomTracker(base.GetType(),"FetchAllEmployees"))

        {

            FetchAllEmployees();
                }
        ASPSite.BL.MYSQLReference.BasicDetails basicDetails = objadmin.getBasicDetails(id);
        EmpApp.Models.BasicDetails basic = getBasicDetailsModel(basicDetails);
        }
        return View(basicDetailsModel);

}
```

Note:

1. If the method name or class name is not given in the CustomTracker, it will attempt to get the current method name and class name by itself.
2. The StartTracker() method will be called in constructor by default.
3. If the agent not installed or the agent service stopped the invoked methods will have no effect.

Diagnostics tool

APM Insight .Net monitoring also features a diagnostics tool called HealthMonitor.exe. It monitors the health of the agent running in the server. The Health monitor is a self diagnostic tool, intended to provide a snapshot of the agent settings, for identifying and troubleshooting frequently encountered configuration issues in the agent. It is available, as a feature, from APM Insight .NET agent version 1.8 and above. It can be found in the start menu under "APM Insight .NET Agent" folder. Click the button on the left bottom corner of the tool to collects logs and creates a zip file for better troubleshooting and support.

Troubleshooting with APM Insight .NET Agent HealthMonitor

With the HealthMonitor, you can:

- **Create Diagnostic zip file** - The HealthMonitor captures all agent logs, and other system information, necessary to analyze the issue by the support team. You also have the option to append event log information. To include event logs, along with the diagnostic zip, run **HealthMonitor.exe** (found in Installation directoryHealthMonitor folder) via command prompt with "eventlogs" option. This requires administrative privileges.
- **View Service settings** - The Agent service mode (i.e., single/multi- instance), APM agent service status (running/stopped) and log level.
- **Check Network connectivity** - For successful communication, the APM Insight agent must be able to connect to server(s).
- **Check Application filters** - If application filters are applied, verify if the applications running are monitored. Refer Application Filters guide.
- **Monitor worker processes** - If no worker processes are shown as running, perform a transaction and retry. Note : In Agent

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below v2.3, If worker processes are still not counted, then it could be due to the bitness of the agent. APM Insight agent and the worker processes should have the same bit. (i.e., 32-bit agent for 32-bit applications, and 64-bit agent for 64-bit applications).

- **Verify monitor status** - The status of the monitor (i.e., Managed/UnManaged/Deleted/LicenseExpired etc) will be displayed, under the monitor name. For a single instance, only one monitor will be listed. For multiple instances, all the monitors created by the agent would be listed.
- **Verify profiler status** - In order to successfully instrument the IIS applications, the profiler must be loaded into the worker process. If the loading fails, an IIS Reset must be performed to re-load the profiler. Also, ensure that some other profiling agents are not installed in the same machine (i.e. there can be only one active profiler in a machine).

Note:
In case of issues, please ensure that some transactions are done when the agent log level is "DEBUG" before creating the diagnostics zip. This would help us narrow down the issue quicker.
To include event logs, along with the diagnostic zip, select the 'Event logs' check box below 'Create Diagnotics zip file' button. This requires administrative privileges.

FAQ:

If you face problems during the installation or the .Net Agent, go to our .NET Agent FAQ page for troubleshooting tips.

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APM Insight Ruby on Rails Agent

Applications Manager's Ruby agent deployed on a Rails platform gives you end-to-end web-transaction awareness enabling you to isolate performance issues and resolve them quickly.

Applications Manager requires a monitoring agent (ruby gem) to be deployed in your application server to monitor Ruby application performance. Download the latest Ruby Agent and deploy it in your application server. The agent collects application performance metrics and sends it to the central Applications Manager server at fixed intervals i.e. every 60 seconds.

Installing APM Insight Ruby on Rails Agent

Ruby Agent installation can be done in two ways:

- Install from RubyGems by using the following command in the system where Ruby is installed : **gem install apminsight**
  OR
- Download the apminsight.gem file directly from our website or the RubyGems website and run the command **gem install apminsight.gem.**

Configuration

After installation of the gem:

- For each of your applications, add the following line to the application gemfile:**gem 'apminsight'**OR
- For each of your applications, add the following line to the application initializer block:**require 'apminsight'**

A copy of the configuration file apminsight.conf will be available in the **<Gem Installed folder> /apminsight/conf/.** Configure the **class name** in the configuration file(include.packages) ,so that the methods in that class can be instrumented and details will be reported in tracedata.

The following configuration options are mandatory and should be provided for the agent to be initialized:

- **application.name -** The application's name to be displayed in Applications Manager.
- **apm.host -** The host where Applications Manager is running.
- **apm.port** - The HTTP port of Applications Manager.
- **behind.proxy** - The proxy network under which the agent is installed
- **agent.server.port -** The HTTP listening port of the Application Server.

More configuration options of APM Insight Ruby Agent can be found here.

Note:

To check if the agent is installed correctly, use the command **gem list**. This command will list all the installed gem in the machine. Check if the **apminsight** gem file is included in the list.

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Supported Environments :

- Ruby - 1.8.7 and higher
- Rails - 3.0 and higher

Troubleshooting:

For troubleshooting tips, go to our Support Portal.

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APM Insight Agent Configuration Options

This page should help you tune the configuration for tracking web based transactions. These settings can be configured in apminsight.conf file. Make sure that this file is present in the folder where you have deployed the APM Insight agent.

- To configure settings for background transactions, go to Tracking Background Transactions
- To custom instrument classes of your choice, go to Custom Instrumentation
- To merge similar transactions, go to Group Similar Transactions

The following table explains all the configurations:

Configuration	Description	Default Value
application.name*	• Specify the desired Application's Name to show in Applications Manager • If there are multiple instances of your application and you would like to group them, then specify the same application name in all installed APM Insight Agent Configuration files. Example: myonlineshopping.com **Note:** With the APMInsight Java agent, you have the option to configure the **application name** through JVM arguments instead of configuring it in the **apminsight.conf file**. Add the following parameter: **-Dapminsight.application.name=MyApplication**	My Application
apm.host*	• Host Name where the Applications Manager is running. • If an invalid/ unreachable host names is entered, the agent throws a 'Connection Refused' Exception and will retry until the correct host name is entered in apminsight.conf. • It accepts either the host name or an Ipv4 address Example: mymachine.mydomain.com	
apm.protocol.https	• Specify true if the data to the Applications Manager should be sent through HTTPS Protocol. • If false, data will be sent through HTTP Protocol	false
apm.port*	• Specify the HTTP Port of the Applications Manager. If apm.protocol.https is true, specify the HTTPS Port. • If the service is not running in the specified port, the agent throws a 'Connection Refused' Exception and will retry until the correct port is entered in apminsight.conf. Example: 9090	
behind.proxy	• Specify weather the Agent installed Application Server is under a proxy network. • If set True, Proxy credential information should be given in order to send the metric data from the agent to Applications Manager. • If behind.proxy is set to true, specify values for the following keys: ◦ **proxy.server.host**: Host name of the proxy server ◦ **proxy.server.port**: Proxy server's port ◦ **proxy.auth.username**: User name of the proxy server ◦ **proxy.auth.password**: password for the proxy server	false
agent.server.port*	• Specify the HTTP listening port of the Application Server. • It will be useful to distinguish Instances when more than one Application Server runs in same host.Example: 8080	
apdex.threshold	• Application Performance Index (simply called Apdex) is measurement of an Application's Performance ranging from 0 to 1. • Detailed information about Apdex can be found at www.apdex.org • If any transaction response time scores values below the apdex.threshold value, the transaction is labeled as Satisfied. • If any transaction response time scores above four times the apdex.threshold, the transaction is labeled as Frustrated. • If it is exactly equal to apdex.threshold or in between satisfied and frustrated threshold value it is labeled as Tolerating.	0.5 (Second)
sql.capture.enabled	• Enabling this option will listen to all SQL Queries which gets executed. • If this option is disabled, no Database Metrics will be collected.	true
transaction.trace.enabled	• Enabling this option will construct Trace for Slow Transactions. • You can view the traces collected in Applications Manger APM Insight Page by selecting Traces tab	true

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transaction.trace.threshold	• Trace of any transaction whose response time scoring above the specified threshold value will be collected, provided if transaction.trace.enabled is set to true. • The trace can be used to analyze, troubleshoot the transaction working.	2 (Seconds)
transaction.trace.sql.parametrize	• Enabling this option will parametrize all SQL Queries in Slow Transaction Traces. (if sql.capture.enabled set to true & transaction.trace.enabled set to true) • Disabling this option will give you the real query (with parameters). • It is recommended to enable this option if there are queries getting executed using confidential parameters like credit card number, passwords, etc.	true
transaction.trace.sql.stacktrace.threshold	• Enabling this option will collect the stacktrace whenever any sql query executed above this threshold time value.	3 (Second)
webtransaction.trace.input.params.record	• Enabling this option captures parameters of all GET & POST web requests • To skip capturing specific parameters use webtransaction.trace.input.params.ignore key • Captured parameters can be viewed by selecting the required transaction in Traces tab	false
webtransaction.trace.input.params.ignore	• To skip capturing specific web request parameters like password, PIN or any confidential values, specify those parameter names for this key • Use comma(,) to separate multiple entries. Values specified for this key are case-sensitive • If no value is specified, all request parameters will be recorded	password, authKey
webtransaction.naming.use.requesturl	• To display complete URL of web transactions, use **webtransaction.naming.use.requesturl=true** in the apminsight.conf file. This is a hidden configuration and it's default value is false.	
webtransaction.encoding.charset	• To specify encoding charset when handling application data, use **webtransaction.encoding.charset=Windows-1252** in the apminsight.conf file. It's default value is UTF-8	
transaction.skip.listening	• Web transactions of the specified URL patterns will be skipped while tracking • Use comma(,) to separate multiple entries • For ex: transaction.skip.listening=*.jpeg, will skip listening to transactions ending with .jpeg	*.css, *.js, *.gif, *.jpg, *.jpeg, *.bmp, *.png
transaction.tracking.request.interval	• A kind of sampling. If said 20, APM Insight will only track request after every 20 requests of same kind. i.e it will track 1st, 21st, 41st.. request of its kind. • The request count maintained will be reset after every one minute.	1 (request)
include.components	• By default, APM Insight groups transaction into different components like STRUTS, SERVLET, MYSQL, etc. • Custom components can be added by specifying the package name in below mentioned format : packagename/.*:Component_Name • All packages and classes under the specified package will be grouped into specified component • For Ex: include.components=com/test/custom/.*:CUSTOM, all packages and classes under the package com/test/custom/ will be grouped into CUSTOM component • Use comma(,) to separate multiple entries **Note:** The specified package names, by default will be included for instrumentation and you need not repeat this in custom_instrumentation.conf	
apminsight.log.dir	• Directory path where the APM Insight log should be stored. • Use forward slash(/) as path separator • example: D:/apminsight/ • Defaults to the directory where APM Insight agent jar is installed if commented or mentioned incorrectly or unable to create the configured directory.	
apminsight.log.level	• The log level at which the APM Insight agent should record information. • Supported levels are SEVERE,WARNING, INFO and FINE.	INFO (level)
autoupgrade.enabled	• Enabling this option agent will automatically download and install the latest available version	false

APM Insight will use its default factory value, if any invalid value specified for an option. Other than options listed below, all the other options can be changed at run time.

- application.name
- apm.host

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- apm.port
- agent.server.port
- apminsight.log.dir
- apminsight.log.level (only in java agent. Whereas, in .NET agent, this property can be changed at run time)

Note

Options marked with a * are mandatory. If any of the mandatory entries are not provided, the Agent cannot be initialized / started. However the Application Server (where the Agent is deployed) will start normally.

For more detailed information about APDEX threshold go to : http://apdex.org/overview.html

Tracking Background Transactions

Apart from web transactions, most applications run background tasks to perform various tasks like maintenance, schedulers, messaging, etc. APM Insight also captures these transactions and list them under Background tab in APM Insight dashboard.

Note: This feature is available in .Net & Java agents only

For the agent to track background transactions, it has to be enabled in background_transaction.conf file. Configuration for background transactions is explained below.

Configuration	Description	Default Value
bgtransaction.tracking.enabled	• Enabling this option, APM Insight agent starts tracking background transactions • All transactions other than HTTP are considered as background transactions	true
bgtransaction.trace.enabled	• Enabling this option, the agent collects traces for slow background transactions, provided bgtransaction.tracking.enabled is set to true	true
bgtransaction.trace.threshold	• Traces will be collected for background transactions whose response time have crossed the specified threshold value, provided bgtransaction.trace.enabled is set to true.	5 (seconds)
bgtransaction.tracking.request.interval	• Sampling factor for background transactions • If value is set to 1, agent tracks every transaction. If value is set to n, agent tracks 1 in N transactions of same kind.	1 (request) for Java & 5 for .Net agent

Note:
• These values cannot be changed during run-time for java agent. For the changes to be effective, server restart is required.
• Restart is not required servers using .Net agent, the values will be updated in run-time.

Custom Instrumentation

APM Insight agent instruments predefined classes of several Web Components and Frameworks to provide insight into the application. APM Insight also provides an option to custom instrument, classes of your choice. Custom instrumentation helps in providing wider insight into applications, where it will be easier to track performance of specific features or modules in the application.

Java Agent provides two ways to custom instrument your application:

1. Using Configuration File

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To instrument classes of your choice, specify the class name in 'custom_instrumentation.conf' file, as per format specified below.

Fully/qualified/ClassName : Methods to be instrumented

Use comma(,) as method separator for multiple entries. If methods to be instrumented is left blank, all methods under the specified class will be instrumented. If there exists, overloading methods that needs to be instrumented, all the overloaded methods will be instrumented. Each class entry must be given in a new line.
Example:
a/b/c/CustomClass : methodA, methodB
a/b/c/CustomClass :
If all classes in a package needs to be instrumented, specify the package name as described below.

package_name/.* :

Example: a/b/c/.* :
It is not recommended to specify packages as input, as the agent will instrument all methods in all classes and all packages under it. These may cost extra overhead in CPU and memory usage. Also, there will be many methods that are of least interest and also these makes the traces lengthy. Although it can be used to study the code flow.

Note: It requires a application server restart for the changes to be effective

2. Using JAVA Annotations

Using Java annotations, APM Insight provides an easier way to custom instrument your application classes and methods. Usage of Java annotation enables you to define custom names for the transaction and also assign a custom component.

Note: This feature is available from agent version 2.2

Pre-requisites

- Download the **apminsight-javaagent.zip** file which includes agent jar with its associated files along with the **apminsight-javaagent-api.jar**
- Include the apminsight-javaagent-api.jar file to the project build path. Make sure the jar file is exported along with the application's libraries.

There are two annotations that can be used to custom instrument:

ApmTracker - Can be used upon any classes and methods, which will be instrumented and included in the traces.

ApmRootTracker - Can be used upon the methods which are likely to be starting point of transaction execution.

ApmTracker

This annotation can be used on Classes and Methods. When used upon a class, the attributes are applied for all the methods in that class. It will override the method-wise annotations.

Attributes:

component- Default Value: POJO (Plain Java Object)

Defines a component name for the annotated element. Its an optional attribute.

Example:

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Case 1: Usage on Class

```
@ApmTracker
public class Category {
...
}
```

Case 2:

```
@ApmTracker(component="payment")
public class PaymentProcessor {
...
}
```

Case 3: Usage on Methods

```
public class Product {
@ApmTracker
public int getPrice(String product, String brand) {
...
}
...
@ApmTracker(component="FetchBrand")
private List fetchAllBrandsList(String product) {
...
}
}
```

ApmRootTracker

This annotation can be used only on methods. If annotated method is the first method invoked on the server for processing the transaction, then the transaction is re-named using the value of the ***txnName*** attribute. Else, it is considered to be a normal method call and included in the traces.

Attributes:

txnName - Mandatory attribute.

Value of this attribute is used to name the transaction that invoked the ApmRootTracker annotated method.

component - Default Value: POJO

Defines a component name for the annotated element. Its an optional attribute.

Example:

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```
public class AppService {
@ApmRootTracker(txnName="Service-Initialisation")
public void init() {
...
}
}
```

Grouping Similar Transactions

Dynamic Transaction names are becoming more familiar with lots of applications, making it difficult to actually track the performance of the application. Dynamic transactions are web transactions within an application having single URL but get appended with unique alpha numeric identifiers every time they are invoked, making the web transaction name itself look different. Tracking such individual URLs is a herculean task. Here, this feature of grouping similar transactions, will help to group these dynamic transactions into the actual URL that needs to be monitored.

- Configuration Steps for .Net Agent
- Configuration Steps for Java Agent
- Configuration Steps for Ruby Agent

Configuration Steps for .Net Agent

Open Edit configuration UI, select Transactions Merge tab and add the transaction patterns you want to merge (illustrated in manual step 3.).

To do it manually do the following steps:

1. Go to the APM Insight .NET Agent installation folder after installing the agent.
2. Open DotNetAgent folder.
3. Open transaction_merge_patterns.conf and add the patterns as mentioned in the below sample,
   - aspsite/account/~=account - The above pattern will match with all transactions which start with aspsite/account/ and it will be renamed as account.
   - aspsite/~/basicdetails=basicdetails - The above pattern will match with all transactions which start with aspsite/ and end with /basicdetails. They will be renamed as basicdetails.
   - ~/educationdetails=educationdetails - The above pattern will match with all transactions which end with /educationdetails and it will be renamed as educationdetails.
4. Copy this transaction_merge_patterns.conf file and paste it in the following location.
   - %WINDIR%ProgramDataDotnetAgent (for 64-bit agent) - For Windows server 2003, the corresponding path will be in %WINDIR%Documents and SettingsAll UsersApplication DataDotNetAgent
   - %WINDIR%ProgramDataDotnetAgent (for 32-bit agent) - For Windows server 2003, the corresponding path will be in %WINDIR%Documents and SettingsAll UsersApplication DataDotNetAgent
   - In case of multi-monitors, all sub folders for every application in the above locations.
5. We can add, remove or comment the patterns at any point of time in the configuration file.

Note:
Service restart is not required to take effect of this configuration change.
The changes will be affected in the next minute onwards.

Configuration Steps for Java Agent

- Shutdown the Application Server to which the agent is plugged in.
- Create a new file named "transaction_merge_patterns.conf" in the directory where the apminsight.conf exists.

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- Open the file in a text editor and specify key value pairs as per below syntax.
- Regular expression of URLs/web transaction=new name to be assigned.
- Start the Application Server, all transactions performed from now, will use the above defined patterns to merge the transactions

Example:

You have Web transaction URLs:

ebay/shop/user/4534634

ebay/shop/user/1380284

ebay/shop/0278734/chocolate/orion

ebay/shop/0278734/chocolate/snickers

ebay/shop/3847553/stationary/pencil

ebay/shop/9734944/stationary/pen

How to specify in transaction_merge_patterns.conf

ebay/shop/.*/chocolate/.*=ebay/shop/chocolate

ebay/shop/.*/stationary/.*=ebay/shop/stationary

ebay/shop/user/.*=ebay/shop/users

Configuration Steps for Ruby Agent

1. Create a new file named "transaction_merge_patterns.conf" in the directory where apminsight.conf file resides in your application.
2. Open the file in any text editor and specify key value pairs as per syntax given below**Regular expression of URLs=new_name_to_be_assigned**
3. Start or restart the rails server, all transactions performed from now, will use the above defined patterns to merge the transactions

Example:

ruby/shop/item/laptops/.*=shop/laptops

ruby/shop/item/.*/dell/.*=shop/item/dell

.*/cart/purchase=shop/purchase

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APM Insight Dashboard

The performance of complex, distributed applications can be efficiently monitored only when data is presented in a simple and impactful manner. APM Insight's customized dashboards help you understand your applications at a single glance!
The performance metrics of the applications being monitored in APM Insight is displayed under the 'APM Insight' tab. These metrics include mainly:

- Application Performance Index (APDEX)
- Response Time, and
- Throughput

The `Show By' option in the dashboard on the APM Insight page gives you two different views to summarize these metrics:

- Application Level view
- Instance Level view

The Application Level view displays combined results of all the instances running in a particular application. The drop down list in the top right-hand corner of the page gives you the option to view the details from the Last 1 Hour to the Last 1 Day.

To view detailed performance metrics, click the corresponding listed Instance. The metrics are categorized into three different tabs for better understanding:

- Web Transaction & Apdex scores.
- Database Operations
- Transaction Traces

To view Reports on the metrics for the APM Insight monitor click on Reports from the main tab and then select Trend Analysis Report from the list at the left.
The following report types are displayed:

- At a glance Report
- Downtime History
- Summary Report of Monitor

JVM Metrics

Summary

Parameter	Description
JVM CPU Usage	This indicates the CPU usage of the JVM on the server.
Runtime Memory	Returns the total amount of *memory* in the *Java* virtual machine.
Heap Memory	Eden Space - The pool from which memory is initially allocated for most objects. Survivor Space - Pool containing objects that have survived GC of eden space. Tenured Gen - Pool containing objects that have existed for some time in the survivor space.
Non-Heap Memory	Code Cache - Memory used for compilation and storage of native code. Perm Gen - Holds all the reflective data of the virtual machine itself, such as class and method objects. With JVMs that use class data sharing, this generation is divided into read-only and read-write areas.
Just In Time Compiler	Memory that is converted to assembler and stored for running at higher speed.
JVM Classes Count	Number of Loaded and Unloaded classes.

Garbage Collector - PS Scavenge & PS MarkSweep

Parameter	Description
Garbage Collector	Live JVM statistics about garbage collector activity like the number of collected objects and time spend collecting them

Threads

Parameter	Description

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Peak Threads	Peak live thread count since the Java virtual machine started or peak was reset.
Live Threads	Number of live threads currently running.
Daemon Threads	Number of daemon threads currently running.
Deadlock Threads	Number of threads that are in deadlock waiting to acquire object monitors.

Configuration

Parameter	Description
General	
JVM Name	Specifies the Java virtual machine name.
JVM Version	The Java virtual machine version.
Java Arguments	The input arguments passed to the Java virtual machine which does not include the arguments to the main method.
Class Version	The version of Java class that is used by the system class loader to search for class files.
Classpath	The Java class path that is used by the system class loader to search for class files.
Library Path	The Java library path.
Boot Classpath	The boot class path that is used by the bootstrap class loader to search for class files.
Host	
OS	The name of the operating system.
OS Arch	The operating system architecture.
OS Version	The Version of Operating System
Memory	
Heap Initial(MB)	The amount of heap that the Java virtual machine initially requests from the operating system in MB
Heap Maximum(MB)	Maximum amount of heap that can be used for memory management in MB. This amount of memory is not guaranteed to be available if it is greater than the amount of committed memory. The Java virtual machine may fail to allocate memory even if the amount of used memory does not exceed this maximum size.
Non-Heap Initial(MB)	The amount of non-heap memory that the Java virtual machine initially requests from the operating system in MB.
Non-Heap Maximium(MB)	Maximum amount of non-heap memory that can be used for memory management in MB. This amount of memory is not guaranteed to be available if it is greater than the amount of committed memory. The Java virtual machine may fail to allocate memory even if the amount of used memory does not exceed this maximum size.

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Web Transaction Monitoring

The Web Transaction page will give you details pertaining to the action that consumes longer time, frequently accessed actions, tier-wise breakdown of transaction response time (Example: JVM, Database, and much more) from the application level down to the individual transaction level.

The transactions can be sorted out on the basis of Most Time Consuming , Throughput, Lowest Apdex and Slowest Average Response.

Transaction Trace

The Transaction tracing feature will provide you with insight into individual transactions. Transaction Traces are snapshots of transactions to help you identify performance bottlenecks by drilling down the transactions to pinpoint the cause of trouble.

Based on your configuration in apminsight.conf, the SQL Statements executed within the transaction and its stack trace are collected and displayed in tree view.
In the trace page transactions are assembled with various parameters like:

- Transaction Start Time
- Transaction Response Time
- Transaction Average Response Time

Database operations

With APM Insight you can get detailed performance metrics to identify the slow database calls, database usage and overall performance of the database furnished with detailed graphical and tabular representations.

By clicking on individual database operation, you get a list of web transactions that were performed by this particular table, thereby helping you to narrow down and isolate the root cause of performance slowdown.

In the **Database** page you can view all the database operations and represent them as charts based on:

- Overall Database Response Time and Throughput
- Database Response Time by Operation
- Database Throughput by Operation

Database operations can be sorted on the basis of:

- Slowest average response time.
- Throughput
- Most time-comsuming

Note:
You can switch between the graphical or tabular representation of the webtransaction and database operations page using the Graph View and Table View buttons at the right-hand corner of the page.

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Apdex Score

Apdex (Application Performance Index) is an open standard to measure the user satisfaction regarding a web application. It is a metric that provides a single score ranging between 0-1 (0 = no users satisfied, 1 = all users satisfied), giving business application owners an insight into the measure of their customer happiness and satisfaction levels.

Easy to calculate and interpret, the data collected over a period of time are converted into a simple index based on the application responsiveness. Application responsiveness is categorized into three zone based on the Apdex score:

The value T can be defined by the application owners

The Apdex Score is calculated using the following formula:

$$\text{Apdex} = \frac{\text{Satisfied Count} + \frac{\text{Tolerating Count}}{2}}{\text{Total Samples}}$$

1. **Satisfied**: This represents the time value (T seconds) below which users are not impeded by application response time. Depicts the user is fully productive.
2. **Tolerating**: This represents response time greater than T (precisely, T to 4T), where the user notices performance lagging but continues the process, which depicts the response is tolerated by the user.
3. **Frustrated**: This represents response time F, greater than 4T which is unacceptable, and users may abandon the process, which depicts the user is frustrated.

The score of 1 show all the users are satisfied with the application performance, whereas a score of 0 show no users are satisfied. Score of 0.5 shows all the users are tolerating the application performance. As the application responsiveness vary, the score ranges from 0-1.

Apdex Score, as a whole, is critical to measure the service levels and customer satisfaction which in turn measures the business growth. Moreover, these values are easy to decipher; unlike the traditional values of average response time and throughput, that does not accurately interpret a particular transaction that is performing slow and affect user satisfaction.

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Application Discovery and Dependency Mapping (ADDM)?

ADDM is, quite simply, a feature to help you discover your applications and have a comprehensive insight into your business infrastructure. Imagine a map that displays all your applications, along with their relationships to other applications as well as to your infrastructure as a whole. Better yet, you have it all in one place. Yes, that should perhaps encapsulate it.

So, why do you need ADDM?

Clearly, unless you want to manage your IT resources using spreadsheets or by employing audit techniques, ADDM is all that you need.

Here is just a glimpse of what you can do with ADDM:

- Discover and group resources.
- Establish relationships between resources.
- Map the resources and gain a global view of your IT infrastructure.
- Assess the health and impact potential of resources.
- Detect/ Isolate problems with ease if any.
- Get periodic status reports of your applications.
- Make informed decisions and take your business to new levels.

Now that you have some idea about ADDM, let's help you understand it better. Here's how you can use ADDM. Click here.

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ADDM - Features of Dependency Maps

Assuming you have arrived at the Business View successfully, allow us to give you just a little bit more information on what you can do with the Dependency Map.

So, while you can view your Applications and their Dependencies in the map, you will also find a lot of other tasks made easy. For example, if you are at the Business View for a specific Monitor Group, you can configure a lot of Monitor Group actions directly from here by clicking the Monitor Group Actions tab on the right hand side. Some of these actions include,

- Editing Monitor Groups.
- Associating or Deleting Monitors from the Group.
- Creating Sub Groups.
- Configuring Alarms.
- Viewing Application Reports and Anomaly Dashboards.

Furthermore, you can:

- Move your cursor over the Monitor Group or Monitors in the map and explore options.
- Drag and reposition your Monitors in the map to suit your view.
- Access the View Settings from the left hand side to customise your view.

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How to use ADDM?

The first step while using ADDM is to Discover Applications. The next is to Map them.

How to Discover Applications/ Resources?

Discovering resources is a simple process. Here are a few easy steps.

- Once you have logged in to Applications Manager, simply click on the Admin tab.
- There, click on Add/ Discover under the Discovery and Data Collection Heading.
- Click on Discovery tab. From then on, you can follow the instructions on the web client to complete the discovery process.

Need more help on this? Click here.

How to use Dependency Mapping?

Dependency Mapping is an automatic feature, so you don't have to rack your brain over it. Once you have associated Monitors to Monitor Groups, go to Home>Business view and there it is. A holistic Mapview of all your Business Applications!

You can also view Dependency Maps for individual Monitor Groups. Choose your Monitor Group from the Home tab and select Business View.

In case you are unclear about Monitors and Monitor Groups, click here.

Features of Dependency Maps.

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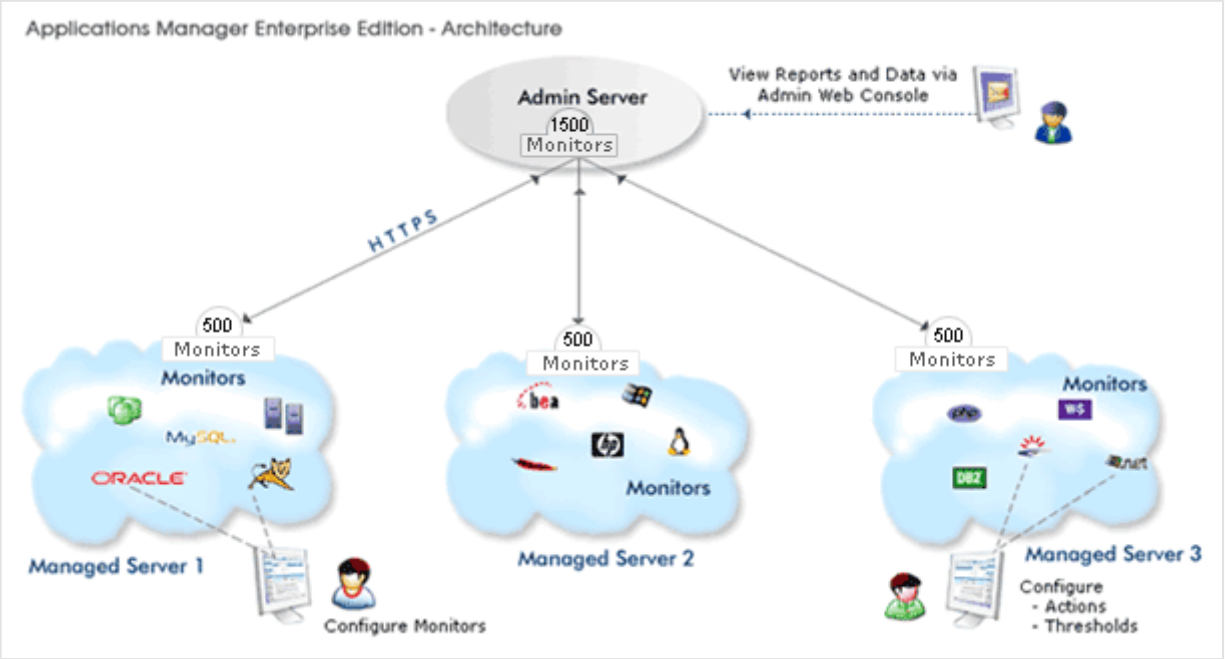
Enterprise Edition

ManageEngine Applications Manager Enterprise Edition allows you to monitor more number of servers and applications in a **distributed setup**. You can configure independent Applications Manager installations to monitor resources and then collectively view the data from all these independent Applications Manager installations ("**Managed Server**") from a single installation ("**Admin Server**").

Installation & Setup

- During installation, you will be provided with options of selecting the type of installation as *Free/Professional/Enterprise* Edition
- On choosing Enterprise Edition, you would be asked to choose whether you want the installation to be that of Admin Server or Managed Server
- In Enterprise Setup, you must first configure the Admin Server and then configure the Managed Server
- **Admin Server**: Enter the WebServer and SSL port and continue with installation.
- **Managed Server**: Enter the Admin server Host Name, SSL Port (8443 by default) and WebServer port. Select the Proxy Settings needed to contact the Admin Server if needed (This is a separate step in Linux but not so in Windows Installation)



Enterprise Edition Overview

As a first step, Admin Server has to be started. When a Managed Server starts, it contacts the Admin Server for registering itself (based on the Admin Host/ SSL Port provided during installation). The Admin Server assigns a unique ID to this Managed Server called the "Server ID". Each managed Server is identified by its Server ID. Every 5 minutes, the Admin Server contacts the Managed Servers that are registered to it and fetches the required data from each of the Managed Servers. You can view all the data from the Managed Servers in the Admin Server console itself.

Converting the Professional Edition to Enterprise Edition

If you are using Applications Manager as a standalone server (Professional) and want to convert it into a distributed setup (Enterprise Edition) without losing the Configuration Information, you will have to do the following steps :

- Do a fresh installation of **Admin** server of Applications Manager and start the same.

- Now, in the existing standalone Applications Manager 's, Click on link **Convert standalone server into Managed Server**

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under the 'Admin tab - Global Settings''. (You can convert only one standalone server to Managed server. You can add more Managed Servers through fresh installations.)

- You will have a popup requesting details of the Admin Server Host and Admin Server SSL port. Provide the details to complete the conversion from Standalone server to Managed Server.
- You can verify from the Support Tab if the type of Server is Managed Server.

Note: It is possible to convert a Standalone installation to a Managed Server only if there are no other Managed Servers already added to the Admin server i.e., only if you are just installing a new Admin Server. If you already have a Enterprise Setup (Admin Server/Managed Server), you cannot convert a Standalone Server to be a part of the setup. It is not possible to change from Admin server type to a Standalone setup or vice versa without reinstalling the product.

Warnings:

It is not possible to revert from Managed server back to Standalone setup although it will still be functioning without any problems

We do not recommend moving a Managed server from one admin server to another.

Know more about the functioning of Admin Servers and Managed Servers.

Note: Visit Enterprise Edition FAQ for details on when to, how to set up Enterprise Edition

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Enterprise Edition - Admin Server

Enterprise Edition Admin Server is the master server through which you will be able to view consolidated data of all the Managed Servers.

- Installation
- Managed Server Configuration
- Adding a New Monitor in Admin Server
- Managed Server Groups
- Creating Monitor Groups in Admin Server
- Managed Server Actions

More:

- Proxy Managed Server request through Admin Server
- User Administration In the Enterprise Editon
- Managed Server Access
- FAQ

Installation

During installation, you need to:

- Select the **Edition option** as 'Enterprise Edition'.
- Select the **installation type** as 'Admin Server'.
- Enter the **HostName, WebServer port, SSL port of the Admin Server.**
- Kindly carry on with the rest of the installation process.

Managed Server Configuration

The Managed Server automatically gets registered with the Admin Server when it starts up. In case you want to edit the configuration, go to **Admin** tab. Click on **Managed Servers** link. This will take you to the Managed Server page from where you can configure the Managed Servers. Alternatively, this can be done by clicking on the Managed Servers link just below the main tabs.

Here is how you can configure a Managed Server:

- Click on the **Add New** link, it opens up the **Add New Managed Server** form
- Enter the **Host Name** of the Managed Server
- Enter the **Web Server Port** number, the port at which the web client is to be connected
- Enter the **SSL port** number, the port at which secure communication is to be made between the Admin and Managed Server.
- Enter the **Server ID**, the ID present under *Installation Information* table under *Support Tab* of the Managed Server
- Enter the **Admin Password** for the Managed Server.(**Note:** This password should be same as that of Admin role password of

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that managed server. If user changes that password in the Managed server, then the user has to manually update the same in admin server)

- Click on **Add Managed Server** and the Managed Server gets added. It is displayed under Managed Servers link along with the details of the number of monitors, status, load factor, etc.,

The following managed sever details are displayed in the table:

- **Server ID -** The id of the managed server.
- **Display Name -** The display name of the managed server.
- **Managed Server Group -** The managed server group to which the server belongs.
- **Monitors Status -** The health status of the monitor
- **Load Factor -** The Load Factor of the server.
- **Last Polled at -** The time last polled at.
- **Synching -** The syncing status of the managed server (completed or in progress)
- **Download -** The status of the Service pack download.
- **Upgrade -** The upgrade status of the Service Pack.

You can select one or more Managed Servers and click the **Download Now** link at the bottom of the table to download the Service Pack and the **Upgrade Now** link to upgrade the Service Pack.

Note

In order to find if a particular Applications Manager installation is heavily loaded you can use the **Load Factor**, which is provided in the 'Support' tab under the 'Applications Manager Installation Information' category. The **load factor** follows the format x.y, where 'x' represents load on Applications Manager Server, while 'y' represents the load on the Database used by Applications Manager. A value of zero represents least loaded, while a value of nine represents most loaded. Hence Load Factor can take values from 0.0 to 9.9 (heavily loaded). The Load Factor of each of the Managed Servers is also displayed in the Admin server under the "Managed Servers" option and you can use the same to distribute load evenly among the Managed Servers.

The Load Factor can be denoted by x.y where x represents Managed server polling load factor and y represents Managed server data base load factor**.**
The Maximum value of x,y can be configured in AMServer.properties file of Admin server:
x - am.mas.polling.max.loadfactor - default value 5
y - am.mas.database.max.loadfactor - default value 5

Creating a New Monitor from an Admin Server

Applications Manager Enterprise Edition allows you to add monitors and group them from the Admin Server in a **distributed setup**. To add a new monitor in a host, refer these links.
However, while adding a new monitor from an Admin server, the managed server under which the monitor is to be added can be selected manually by the user or using load factor by Applications Manager. The value for Maximum monitors allowed per Managed server can be configured in AMServer.properties. The key is am.max.monitorcount.mas and default value is 500.

Selecting Managed Server Using Load Factor:

You can select one of the following options in the Add Monitor Page:

- Least Loaded Managed Server from all Managed Servers
- Least Loaded Managed Server from a Managed Server Group

Selecting Managed Server Specified by the User:

The user can select the managed server. This will add the monitor directly to the selected managed server irrespective of load factor and monitor count.

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Managed Server Groups

Certain resources can be monitored from managed servers running in the same domain/ geographical location as the resource. Load factor calculation across all the distributed managed servers can result in the addition of a monitor in a server located in another domain (since the load factor condition matches). Grouping managed servers in the same area gives the user the option to use load balancing within the group of managed servers.

Creating a Managed Server Group:

- Go to the **Managed Servers** link in Applications Manager.
- In the **Managed Servers** table, click on the edit icon near the managed server that you wish to add to a group.
- In the **Edit Managed Server** window, choose a Managed Server Group from the drop-down menu after entering all the required details. You alternately have the option to **Add New Managed Server Group** to the list using the **+** icon.
- While creating a new monitor from an Admin Server, after entering the required details, choose the **Least Loaded Managed Server from a Managed Server Group** load balancing option and select the Managed Server Group from the drop down menu that appears.
- Click **Add monitor.**

Creating Monitor Groups in Admin Server

Various monitors in Managed Servers can be grouped and a consolidated view can be obtained in Admin Server. For eg., consider a set up that has three Managed Servers and one Admin Server. Each Managed Server has 200 monitors which includes 10 windows servers. If you want to monitor the windows servers in all the three managed servers as a group, then you can create a new Monitor Group in the admin server.

You can create Monitor Groups by following the steps in Create Monitor Group help document. Once you have created the Monitor Group, the next step would be to associate the required monitors from Managed Servers to the Monitor Group in the Admin Server. After the setup is done, you can configure the alarms for the Monitor Group. Currently, only EMail and SMS alarm actions are supported.

Managed Server Actions

Fetch Data: There is an option to fetch the data from the managed servers at the given instant, instead of waiting for the poll to happen.

Edit: You can edit the managed server details using this option.

Enable/Disable: You can enable/disable data collection in the Managed Server. Note that when you disable, data collection will still take place, you only stop syncing with the managed server.

Admin Email Settings: An EMail can be configured to be sent once a Managed Server goes down and also once every 24 hrs till the Managed Server is up again. The EMail setting is available in the Admin EMail Settings" option under the "Admin" tab. The option to enable/disable this EMail, is available in the "Edit" option of the respective Managed Server.

Proxy Managed Server request through Admin Server

When you login to the Admin console, Graphs and images displayed for a monitor are retrieved directly from the corresponding Managed Server itself and are displayed in the Admin console. These graphs/images cannot be retrieved, if the Admin Server is accessible from a particular machine/over the Internet and the Managed Server is not accessible.

In this case, select the "*Proxy Managed Server request through Admin Server*" request option. This will result in the images/graphs

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being fetched to the Admin Server from the Managed Server first and then the image from the Admin Server is viewable in the Web Browser.
E.g., Admin Server is running as part of IDC and accessible via the Internet (From a machine say "ClientMachine") but the Managed Servers are not accessible (from "ClientMachine") this option should be enabled.

User Administration In the Enterprise Editon

In the Enterprise setup, the User Administration module functions independently in the Admin Server and Managed Server. Hence, a user-based view assigned in the Managed Server will not reflect in the Admin Server and vice-versa. Since, you will be viewing the data collectively from the Admin Server, you need to assign owners to the various Monitor Groups of the Managed Server in the Admin Server. Of course, if it is assigned in the Managed Server it will function independently. Also, in the Manager Console (SLA Management console), you can assign SLAs and associate actions to be invoked for SLA violation to the Monitor Groups in the Admin Server.

Managed Server Access

Click on the **Jump To** link in the Admin Server just above the toolbar, which brings down a list of the Managed Servers. Clicking on any of the Managed Server names in the list will take you to the web console of the respective Managed Server in a separate browser Window.

Note

ENTERPRISEADMIN role is used for logging into the Managed Server from Admin Server for data synchronising. The username for this role is systemadmin_enterprise and the password is the regular ADMIN role password. This role is not exposed in the UI, it will be used internally.

Visit our Enterprise Edition FAQ page for more details on when and how to set up the Enterprise Edition.

FAQ - How is the Managed server selected by APM using load factor?

The following two things are used to select the managed server automatically:

- **Load Factor (x.y) where,**
  x represents Managed server polling load factor
  y represents Managed server data base load factor
  Max. value of x,y can be configured in AMServer.properties file of Admin server
  x - am.mas.polling.max.loadfactor - default value 5
  y - am.mas.database.max.loadfactor - default value 5
- **Maximum monitor allowed per Managed server**
  The value can be configurable in AMServer.properties. The key is am.max.monitorcount.mas and default value is 500.

  The Condition for choosing managed server is,
  x < maxAllowedValueOfPollingLoad (and)
  y < maxAllowedValueOfDatabaseLoad (and)
  n < maxMonitorAllowed

If the condition is not matched then we show the "No Managed server is available" message to the user.

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Enterprise Edition - Managed Server

Enterprise Edition allows you to configure independent Applications Manager installations to monitor various resources and then collectively view the data from all these independent Applications Manager installations known as **Managed Servers**, from a single master server known as **Admin Server**.
During installation, you need to select 'Enterprise Edition'. Next select the installation type as 'Managed Server'. Consequently, you need to enter the *HostName, SSL & webserver port* of the *Admin Server*, to which the Managed Server is going to be connected. Managed Server's function is similar to that of a standalone Applications Manager, with the user configuring the various monitors, thresholds and alarms. HTTPS mode of communication is used for the communication with the Admin Server.

Using the *Jump To* link in the Admin Server (just above the toolbar) you can view the Managed Server web console.

- Managed Server Configuration
- Managed Server Actions
- FAQ

Note:
• To **change a Professional Edition to Managed Serve**r, go to *Global Settings*, select '**Convert standalone server into Managed Server**'. This option is available only if you have installed the full build and not for upgrades through PPM.
• You need to make the following changes in the Product_Home/conf/AMServer.properties file and restart the server to convert to the Managed Server. am.ssl.enabled=trueam.server.type=MASam.adminserver.host=Admin Server Host Nameam.adminserver.port=Admin Server SSL Port
• Visit Enterprise Edition FAQ for details on when to, how to set up Enterprise Edition.

Managed Server Configuration

The Managed Server automatically gets registered with the Admin Server when it starts up. In case you want to edit the configuration, go to Admin tab. Click on Managed Servers link. This will take you to the Managed Server page from where you can configure the Managed Servers. Alternatively, this can be done by clicking on the Managed Servers link just below the main tabs.

Steps to Add a Managed Server

- Click on the **Add New** link, it opens up the **Add New Managed Server** form
- Enter the **Host Name** of the Managed Server
- Enter the **Web Server Port** number, the port at which the web client is to be connected
- Enter the **SSL port** number, the port at which secure communication is to be made between the Admin and Managed Server.
- Enter the **Server ID**, the ID present under *Installation Information* table under *Support Tab* of the Managed Server
- Enter the **Admin Password** for the Managed Server.(**Note:** This password should be same as that of Admin role password of that managed server. If user changes that password in the Managed server, then the user has to manually update the same in admin server)
- Click on **Add Managed Server** and the Managed Server gets added. It is displayed under Managed Servers link along with the details of the number of monitors, status, load factor, etc.,

The following managed sever details are displayed in the table:

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- Monitors Status - The health status of the monitor
- Load Factor - The Load Factor of the server.
- Last Polled at - The time last polled at.
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- Download - The status of the Service pack download.
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You can select one or more Managed Servers and click the **Download Now** link at the bottom of the table to download the Service Pack and the **Upgrade Now** link to upgrade the Service Pack.

Note: In order to find if a particular Applications Manager installation is heavily loaded you can use the **Load Factor**, which is provided in the 'Support' tab under the 'Applications Manager Installation Information' category. The **load factor** follows the format x.y, where 'x' represents load on Applications Manager Server, while 'y' represents the load on the Database used by Applications Manager. A value of zero represents least loaded, while a value of nine represents most loaded. Hence Load Factor can take values from 0.0 to 9.9 (heavily loaded). The Load Factor of each of the Managed Servers is also displayed in the Admin server under the "Managed Servers" option and you can use the same to distribute load evenly among the Managed Servers.

Note:
The Load Factor can be denoted by x.y where x represents Managed server polling load factor and y represents Managed server data base load factor
The Maximum value of x,y can be configured in AMServer.properties file of Admin server:
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Managed Server Actions

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In this case, select the "*Proxy Managed Server request through Admin Server*" request option. This will result in the images/graphs being fetched to the Admin Server from the Managed Server first and then the image from the Admin Server is viewable in the Web Browser.

E.g., Admin Server is running as part of IDC and accessible via the Internet (From a machine say "ClientMachine") but the Managed Servers are not accessible (from "ClientMachine") this option should be enabled.

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Important: Visit Enterprise Edition FAQ for details on when and how to set up the Enterprise Edition.

FAQ - How is the Managed server selected by APM using load factor?

The following two things are used to select the managed server automatically.

Load Factor (x.y) where,

x represents Managed server polling load factor

y represents Managed server data base load factor

Max. value of x,y can be configured in AMServer.properties file of Admin server

x - am.mas.polling.max.loadfactor - default value 5

y - am.mas.database.max.loadfactor - default value 5

Maximum monitor allowed per Managed server

The value can be configurable in AMServer.properties. The key is am.max.monitorcount.mas and default value is 500.

The Condition for choosing managed server is,

x < maxAllowedValueOfPollingLoad (and)

y < maxAllowedValueOfDatabaseLoad (and)

n < maxMonitorAllowed

If the condition is not matched then we show the "No Managed server is available" message to the user.

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Enterprise Edition - Single Sign-On (SSO)

Applications Manager's Enterprise Edition supports Single sign-on (SSO) - a mechanism which offers a user unified access i.e users do not have to actively enter their credentials more than once in order to access multiple independent installations (your Admin Server and Managed Servers). Users gain access to all their Managed Servers with a single user authentication into the Admin Server eliminating further prompts when they switch applications during a particular session.

Benefits:

- **Security** - Capability to implement consistent authentication and authorization guidelines across your enterprise.
- **Resource savings** - Reducing time spent re-entering passwords for the same identity or profile and central access management.
- **User Experience** - Ability to move between services and portals securely and seamlessly without password prompts.

Enabling Single Sign-On

You can enable Single Sign-On in your Applications Manager Enterprise setup as follows:

- Download the **cas.war** file from this link.
- Place the downloaded .war file in the folder **webapps** folder in the following path: **AppManager/working/apache/tomcat/webapps** in your Admin Server.
- Start Applications Manager and navigate to the **Admin Tab**.
- Open **User Administration** under Applications Manager Server Settings.
- Navigate to the **SSO tab**.
- Check the **Enable SSO** checkbox.
- Restart Applications Manager. SSO is enabled.

Note:.
• Single Sign-on in Managed Servers will be enabled only after Applications Manager is restarted. Please take care to perform the restart after a few minutes to ensure that the SSO key from the Admin server is synched with the Managed Servers.
• The Admin server should be running when the Managed Server starts for SSO to work.
• Users created in the Admin server will be synced to the Managed Server.
• No user creation or modification can be performed in your managed servers

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Enterprise Edition - Performing Admin Activities from the Admin Server

The **Admin tab** in the Enterprise setup client lists all the administrative functions that can be performed with the product. The following are the group of activities performed by the system administrators **from the Admin Server** to monitor their system/ service/ application running in the network through Applications Manager:

Applications Manager Server Settings:

- New Monitor | Bulk import of Monitors
- Alarm Escalation
- Downtime Scheduler
- Credential Manager
- Managed Server
- User Administration
- Global Settings
- Configure Mail Server
- Configure Proxy
- Logging
- Personalize Web Client
- Product License
- Support
- Add-On/Product Settings
- Shutdown Applications Manager

Alarm/Action:

- Actions
- Threshold Profile
- Configure Alarms
- Event Log Rules
- Monitor Group Rules
- Server Process Templates
- Windows Service Templates

Integration with Portals

- Rest API for Admin Server
- JSON Feed
- Dashboards
- World Map View

Reporting

- Reports Settings
- Schedule Reports
- Business Hours
- SLA Management

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Enterprise Edition - Failover Support Using MSSQL as Backend DB Server

Follow the steps below to implement failover support in ManageEngine Applications Manager:

Single Database - Dual AppServer Architecture

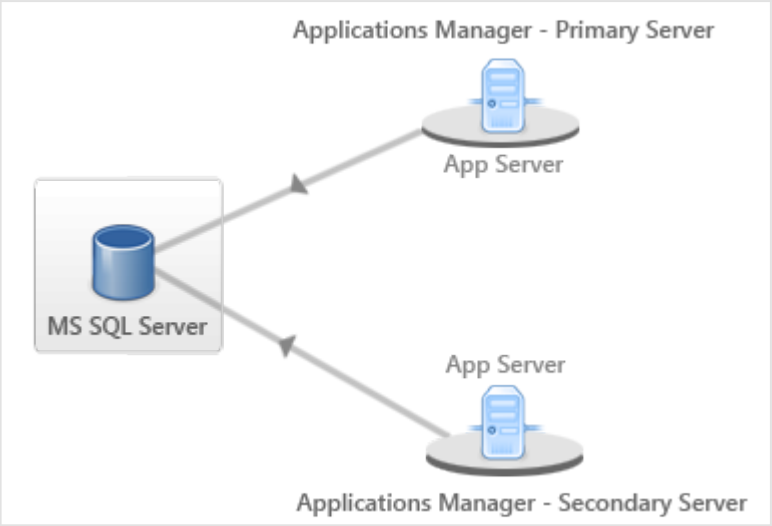
The setup involves a primary Applications Manager, a secondary Applications Manager and a common database. The primary and secondary Applications Manager refer to the common database only. While the primary Applications Manager talks with the database, the secondary Applications Manager simply listens to the database. If the primary server goes down, the secondary server takes over. Afterwards, the initial primary server is restarted and it starts functioning as a secondary server.

Before installing failover (for Managed Servers):
- Log into Applications Manager's Admin console and go to Managed servers list.
- Edit the Managed server to enable the radio button for **Failover details**.
- Enter the **Hostname, Web server** and **SSL port** information before installing the Failover setup for that Managed server.
- Once it is saved you can start the Failover server installation.

Failover Setup Details

Let us assume we are going to set up three nodes - node1, node2 and node3.

Applications Manager: node1, node2
MSSQL Database: node3



- **Step 1**: Install MSSQL database Server in node3 and make sure MSSQL Server is started in node3. Create the database with the name *AMDB* which is the database name used in Applications Manager by default.(You can change the name as you wish).
- **Step 2**: Install Applications Manager in node1. While installing, make sure you select the database as MSSQL and give the same DB name, port number as in Step1. Start the Applications Manager in node1, this will act as the primary server. Check in the wrapper.log
- **Step 3**: Install the Applications Manager in node2. While installing, make sure you select the database as MSSQL and give the same DB name, port number as in Step1. Start the Applications Manager in node2. Check in the wrapper.log

When node1Applications Manager goes down, node2Applications Manager will act as secondary server.

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Sample Nohup Output

```
INFO | jvm 1 | 2013/08/05 01:00:06 | Checking for the availablity of the Primary Server in the Database. Found an

entry.

INFO | jvm 1 | 2013/08/05 01:00:06 |

INFO | jvm 1 | 2013/08/05 01:00:06 | Trying to connect to the Primary Server at 192.168.1.3

INFO | jvm 1 | 2013/08/05 01:00:06 |

INFO | jvm 1 | 2013/08/05 01:00:07 | Please wait ...

INFO | jvm 1 | 2013/08/05 01:00:08 | ....Connected

INFO | jvm 1 | 2013/08/05 01:00:08 |

INFO | jvm 1 | 2013/08/05 01:00:08 |

INFO | jvm 1 | 2013/08/05 01:00:08 | Starting AdventNet Web NMS Standby Server. The Modules will be started

once it takes over as the Primary Server.

INFO | jvm 1 | 2013/08/05 01:00:08 |

INFO | jvm 1 | 2013/08/05 01:00:08 | Monitoring the Primary Server at 192.168.1.3

When node1Applications Manager goes down, node2Applications Manager will start up completely and will act as

secondary server. Email notifications will be triggered on occurrence of a failover where you have to correct the

issues with the node that is down. Then start it back as secondary which will now listen for another failure.

INFO | jvm 1 | 2013/08/05 01:09:47 | Monitoring the Primary Server at 192.168.1.3

INFO | jvm 1 | 2013/08/05 01:10:48 | Starting to do FailOver Tasks.

INFO | jvm 1 | 2013/08/05 01:11:08 | Process : AlertFE [ Started ]

INFO | jvm 1 | 2013/08/05 01:11:08 | Process : NmsMainFE [ Started ]

INFO | jvm 1 | 2013/08/05 01:11:08 |

INFO | jvm 1 | 2013/08/05 01:11:08 | Verifying connection with web server... verified

INFO | jvm 1 | 2013/08/05 01:11:08 |

INFO | jvm 1 | 2013/08/05 01:11:08 | Applications Manager started successfully.

INFO | jvm 1 | 2013/08/05 01:11:08 |

INFO | jvm 1 | 2013/08/05 01:11:08 | Please connect your client to the web server on port: 9095

INFO | jvm 1 | 2013/08/05 01:11:08 |

INFO | jvm 1 | 2013/08/05 01:11:09 | The new primary server is 192.168.1.4
```

Note: Above steps need to be implemented for each installation in the Enterprise setup for failover.

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Enterprise Edition - Failover Support Using PostgreSQL as Backend DB Server

Follow the steps below to implement failover support in ManageEngine Applications Manager:

Single Database - Dual AppServer Architecture

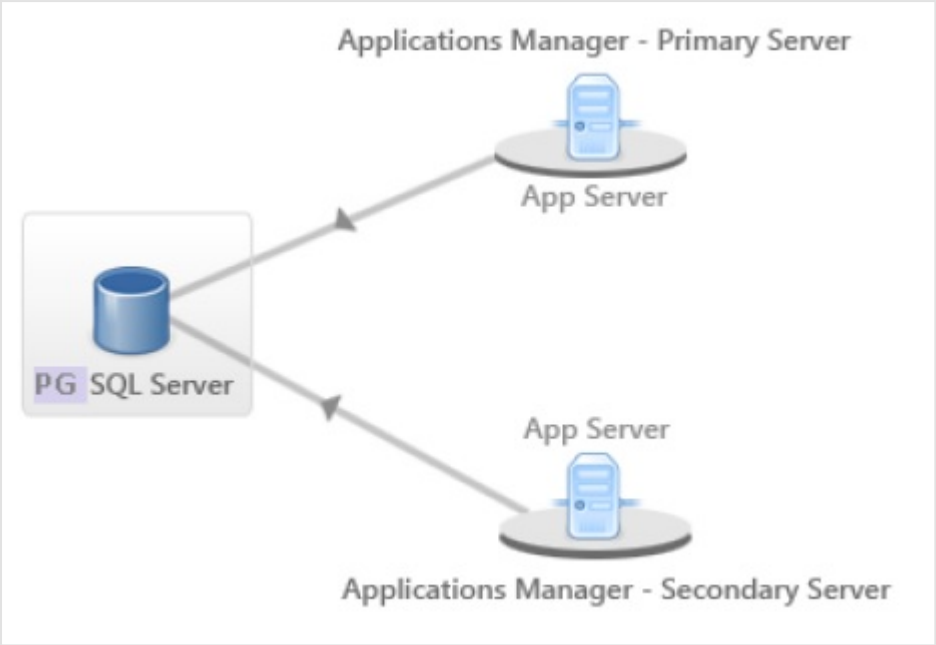
The setup involves a primary Applications Manager, a secondary Applications Manager and a common database. The primary and secondary Applications Manager refer to the common database only. While the primary Applications Manager talks with the database, the secondary Applications Manager simply listens to the database. If the primary server goes down, the secondary server takes over. Afterward, the initial primary server is restarted and it starts functioning as a secondary server.

Before installing failover (for Managed Servers):
- Log into Applications Manager's Admin console and go to Managed servers list.
- Edit the Managed server to enable the radio button for **Failover details**.
- Enter the **Hostname, Web server** and **SSL port** information before installing the Failover setup for that Managed server.
- Once it is saved you can start the Failover server installation.

Failover Setup Details

Let us assume we are going to set up three nodes - node1, node2 and node3.

Applications Manager: node1, node2
PostgreSQL Database: node3



STEP 1 - Install PGSQL database Server in node3 and make sure PGSQL Server is started in node3.
Download Applications Manager from our Website. Postgres is bundled with the product and we recommend that you use the bundled software.

Steps to setup remote Postgres DB Server:

- Install Applications Manager as you would normally do on the remote server where you need to run the DB. Install as Professional Edition as we are only going to use the DB on this installation. (In windows right click and run the installer as "Run as Administrator" Same should be followed when working with command prompt. The Label of command prompt window

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should read "Administrator")
- Start this installation once and then stop it.
- Go to windows services and make sure the ManageEngine Applications Manager service is stopped.
- From Applications Manager server open an Administrator command prompt window.Go to..Appmanager_home folder and run below command: *shutdownApplicationsManager.bat -force*
- Repeat the above command to ensure that all processes are stopped.
- In windows open a command prompt window and go to ..Appmanager_homebin folder and run uninstallservice.bat to remove the ManageEngine Applications Manager windows service. We do not need it here as it is going to be DB Server.
- **Changes in pg_hba.conf file:**
  - Open pg_hba.conf under ../Appmanager_home/working/pgsql/data/amdb folder.
  - Under # IPv4 local connections change Address 127.0.0.1/32 to 0.0.0.0/0. (This will allow connections to be made to this PGSQL DB from remote servers.)
- **Changes in postgresql.conf:**
  - Open postgresql.conf in Appmanager_home/working/pgsql/data/amdb folder:

    Uncomment the line listen_addresses and replace localhost with *
- In Windows go to Appmanager_home/working/bin folder from command prompt and run the "register_pgdbservice.bat" script. This will install PGSQL as Windows Service.
- You may now go to Windows Services and start the ApplicationsManager_Posgresql service and the PGSQL DB server should be ready for connections.
- In Linux you can go to /ManageEngine/Appmanager_home/working folder and run sh./bin/startPGSQL.sh & and the PGSQL DB server should be ready for connections.

STEP 2 - Install Applications Manager in node 1.

- Install Applications Manager as you would normally do on the remote server. Start this installation at least once and stop it as follows:
  - In windows services and make sure the ManageEngine Applications Manager service is stopped.
  - From Applications Manager server open an Administrator command prompt window.
  - Go to..Appmanager_home folder and run the following command: *shutdownApplicationsManager.bat -force*.
  - Repeat the above command to ensure that all processes are stopped.
- Open the Appmanager_home/conf/AMServer.properties file in word-pad and update below entries and save it.am.dbserver.type=pgsql

  am.db.port=15432 -->(Port number can be confirmed from the Appmanager_home/working/pgsql/data/amdb/postgres_ext.conf file of the PGSQL DB Server you installed.)

  am.dbport.check=false
- Update the database_params.conf file shown in below 2 locations.They are identical files.Only change you have to make is for the jdbc URL as shown below. Update the hostname and port of the remote server running your PGSQL DB here.
  - Url jdbc:postgresql://paulp0558:15432/amdbdontTrackOpenResources=true&useUnicode=true&characterEncoding=UTF-8 AppModules TopoDB-MapDB-EventDB-AlertDB-PollDB-PolicyDB-USERSTORAGEDB-ApplnDB

    Update the same for database_params.conf file located in below 2 locations:

    ..Appmanager_home/working/conf/PGSQL

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..Appmanager_home/working/conf

- Now you may start Applications Manager from Windows Services.It will be connected to the PGSQL running on the remote server.This will act as the primary server. Check in the Appmanager_homelogswrapper.log.

- In Linux you can start and track the startup process as follows:*nohup sh startApplicationsManager.sh &*

  Press ENTER

  tail -f nohup.out

STEP 3- Install Applications Manager in node2. This will act as Secondary server.

am.dbserver.type=pgsql

am.db.port=15432 -->(Port number can be confirmed from the

Appmanager_homeworkingpgsqldataamdbpostgres_ext.conf file of the PGSQL DB Server you installed.)

am.dbport.check=false

- Install Applications Manager as you would normally do on the remote server. Start this installation at least once and stop it as follows:
  - In windows services and make sure the ManageEngine Applications Manager service is stopped.
  - From Applications Manager server open an Administrator command prompt window.
  - Go to..Appmanager_home folder

    and run following command: *shutdownApplicationsManager.bat -force*
  - Repeat the above command to ensure that all processes are stopped.
- Open the Appmanager_home/conf/AMServer.properties file in word-pad and update below entries and save it.
- Update the database_params.conf file shown in below 2 locations.They are identical files.Only change you have to make is for the jdbc URL as shown below.

  Update the hostname and port of the remote server running your PGSQL DB here.

  Url jdbc:postgresql://paulp0558:15432/amdbdontTrackOpenResources=true&useUnicode=true&characterEncoding=UTF-8 AppModules TopoDB-MapDB-EventDB-AlertDB-PollDB-PolicyDB-USERSTORAGEDB-ApplnDB

- Update the same for database_params.conf file located in below 2 locations:..Appmanager_home/working/conf/PGSQL

  ..Appmanager_home/working/conf

Now you may start Applications Manager from Windows Services. This installation will not start completely as the Primary is already up and running. It will start and will listen to the Primary Server. The same can be confirmed from the Appmanager_homelogswrapper.log.

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Note
In Linux you can start and track the startup process as follows:
nohup sh startApplicationsManager.sh &

Press ENTER

tail -f nohup.out

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Sample Nohup Output

```
INFO | jvm 1 | 2013/08/05 01:00:06 | Checking for the availability of the Primary Server in the Database. Found an

entry.

INFO | jvm 1 | 2013/08/05 01:00:06 |

INFO | jvm 1 | 2013/08/05 01:00:06 | Trying to connect to the Primary Server at 192.168.1.3

INFO | jvm 1 | 2013/08/05 01:00:06 |

INFO | jvm 1 | 2013/08/05 01:00:07 | Please wait ...

INFO | jvm 1 | 2013/08/05 01:00:08 | ....Connected

INFO | jvm 1 | 2013/08/05 01:00:08 |

INFO | jvm 1 | 2013/08/05 01:00:08 |

INFO | jvm 1 | 2013/08/05 01:00:08 | Starting AdventNet Web NMS Standby Server. The Modules will be started

once it takes over as the Primary Server.

INFO | jvm 1 | 2013/08/05 01:00:08 |

INFO | jvm 1 | 2013/08/05 01:00:08 | Monitoring the Primary Server at 192.168.1.3

When node1Applications Manager goes down, node2Applications Manager will start up completely and will act as

secondary server. Email notifications will be triggered on occurrence of a failover where you have to correct the

issues with the node that is down. Then start it back as secondary which will now listen for another failure.

INFO | jvm 1 | 2013/08/05 01:09:47 | Monitoring the Primary Server at 192.168.1.3

INFO | jvm 1 | 2013/08/05 01:10:48 | Starting to do FailOver Tasks.

INFO | jvm 1 | 2013/08/05 01:11:08 | Process : AlertFE [ Started ]

INFO | jvm 1 | 2013/08/05 01:11:08 | Process : NmsMainFE [ Started ]

INFO | jvm 1 | 2013/08/05 01:11:08 |

INFO | jvm 1 | 2013/08/05 01:11:08 | Verifying connection with web server... verified

INFO | jvm 1 | 2013/08/05 01:11:08 |

INFO | jvm 1 | 2013/08/05 01:11:08 | Applications Manager started successfully.

INFO | jvm 1 | 2013/08/05 01:11:08 |

INFO | jvm 1 | 2013/08/05 01:11:08 | Please connect your client to the web server on port: 9095

INFO | jvm 1 | 2013/08/05 01:11:08 |

INFO | jvm 1 | 2013/08/05 01:11:09 | The new primary server is 192.168.1.4
```

Note: Above steps need to be implemented for each installation in the Enterprise setup for failover.

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Web Client Details

You can access Applications Manager Webclient via

a. Programs Menu -> ManageEngine Applications Manager -> Applications Manager Start (Applications Manager starts and the webclient opens up)

b. If you have already started Applications Manager, you can find a small icon on the Taskbar - Right click on the Applications Manager tray icon to access the webclient

c. If Applications Manager is running in host - [*Appln-Server*] -port - 9090, you can directly access the webclient through the browser URL -

http://Appln-Server:9090. You can view the monitors from an internet site or from any remote machine via this URL.

The following are the links that are common throughout all the screens in the Applications Manager:

- Quick Note: Provides a brief description about the functioning of the different parameters on which you are currently working.
- Talk Back: You can send your technical feedback about Applications Manager by filling up the form.
- About: You can see the details of Applications Manager like Build No, SP version, type of license etc., and also the credits roll of the contributors to the product.
- Personalize: Provides an option to view the Applications Manager with a different look and feel, as you prefer. For more details, refer to the Personalize section of Performing Admin Activities.
- Licensing: You can apply the registered License file that you have purchased, by clicking on this link.
- Help: Provides detailed information about working with the product. Note that the help is context sensitive and you can click on the Home link to view the main page of Applications Manager Help Docs.
- Get Quote: You can send a sales quote to Applications Manager Sales team based on your monitoring requirement..
- Logout: To log out and return to login page.
- Search: The Search Field is placed on the left side and in all pages of the web client. It provides an option for searching relevant links for some keywords in the product. The keyword-specific links are categorized as Monitors, Help Documents, Bookmarks (pre-defined), and Reports that list the links under their respective category based on the keyword. For example, searching for keywords such as Monitors provide the relevant links under Help Documents and Bookmarks and for WebLogic, the links are categorized under Help Documents, Bookmarks, and Reports.
- Alarm Summary Lists the recent critical alarms of Applications Manager. You can also click on the shades (representing the different severity) in the graph that will display the alarms based on the severity.
- Printer Friendly : This option is available in all the pages of the web client. Clicking this link provides you a printer friendly view of the current page. This comes handy for printing Alarms and Reports.

Note: By clicking on **Jump to** link, you can choose to log into ManageEngine ServiceDesk Plus / ManageEngine OpManager / ManageEngine OpStor from Applications Manager console itself. And also, in Enterprise Setup, you can choose to jump to the Managed Servers from Admin Server.

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Icon Representation

The following are the icons used in Applications Manager and their significance:

Icon	Signifies
Severity	
	Health is Critical
	Health is Warning
	Health is Clear
	Health Unknown
	Availability Down
	Availability Up
	Health of Numerical Attribute is Critical
	Health of Numerical Attribute is Warning
	Health of Numerical Attribute is Clear
	Health of Numerical Attribute is Unkown
Report	
7	Report generated by monitoring the attribute of the Monitor for 7 days.
30	Report generated by monitoring the attribute of the Monitor for 30 days.
General	
	Edit icon to make changes in the configurations.
	Alarm Configuration icon where the thresholds and actions of the attributes are associated with the Monitor/ Monitor Group.
	Business View icon.
	Pop Out.
	Edit Tabs. Assign Dashboards to tabs.
	Add Annotation.
	View Alarm Summary
	Printer Friendly Page.
	View Help Documentation
Widgets	
	Show Widget Properties
	Edit Widget
	Reload Widget
	Delete Widget

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Custom Dashboards

By using Custom Dashboards feature, you can create Dashboards of your choice - like Status View of all the Databases, Status view of all Web Applications deployed in Tomcat Server. By adding the different widgets given, custom dashboards can be created.

This is in addition to the already created four Dashboards - Default Dashboard, Business View, Availability and QoS Worldwide (Quality Of Service Worldwide).

QoS Worldwide: This is done using 'embed webpage' widget . This dashboard helps you monitor your websites from outside your data center. Site24x7 is a website monitoring service that helps manage end user experience from a global point of presence. It helps monitor application and web service performance from a location closer to where your actual customers are.

Business Dashboards:

You can quickly configure your business metrics like customer wins, revenue, etc. It helps the Manager to allign IT with business needs.

Monitor Group Template Dashboards:

After configuring a dashboard, you can save the settings as monitor group template. This monitor group template can then be applied for other monitor groups, thereby it becomes easier to create dashboards for monitor groups.

Create Dashboard

- Under home tab, click on **New Dashboard** link. It opens up the Create New Dashboard page.
- Enter the Dashboard **Name** and **Description**
- You can then configure the **layout** of the dashboard by selecting the number of columns and their size.
- You can save the dashboard settings as template and apply it to monitor groups. You have the option of applying the template to specific monitor groups or apply it across all the monitor groups.
- Then from the **Widget list,** you can choose the widgets you want to add.
- Click on **Create**. The new dashboard would be created with your choice of widgets.
- When you add a widget to the Dashboard, an empty widget will be added with an option to edit it. Click on edit widget icon and change the filter criteria for the widget until you get the desired data for the widget.

Widgets

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Performance Widgets	**Top N Monitors:** This widget displays Top N monitors based on a performance metric.To view the data ,select a performance metric and select the monitors from which Top N should be listed.You have an option to view the graph for the selected time period. **Performance Metric Widget:** This widget displays the Snapshot value of a specific Monitor's performance metric.You have an option to view the graph for the selected time period. **Threshold Breakers:** This widget displays all the monitors which have exceeded the threshold for a performance metric.You have an option to view the graph for the selected performance metric. **Tabular Data:** This widget displays values in a tabular format, packs more data in a smaller area. **Topology Map View**: This widget displays the interconnection of different resources in your enterprise on a map and also associate links between them. You can use the Topology Map widget to view, say, a small number of your available devices and servers that are spread across the globe or across different locations. Know More about the Topology Map View and how to create one.

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Availability and Health Widgets	**Infrastructure Snapshot:** This widget gives you a snapshot of availability and health of monitors grouped by Monitor Type. **Availability & Health Status:** Multiple Monitors: This widget lets you view the snapshot of monitors of specific Type. **Last 24 Hours / 30 Days Availability History**: This widget displays the Availability history for last 24 hours / 30 days for all monitors of selected Type. **Last 24 Hours / 30 Days Health History**:This widget displays the Health history for last 24 hours / 30 days for all monitors of selected Type. **Availability, Health and Alarm Summary**: This widget displays Availability and Health status and Alarm status for the selected Monitor category.
Alarms	**Last N Alarms:** This widget displays the last N alarms for all the monitors.

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Monitor Group Widgets	**Availability and Health Status**: This widget displays all the Monitor Groups Availability and Health snapshot and Last 24 hours availability. **Last 24 Hours / 30 Days Availability History:** This widget displays the Availability history for last 24 hours / 30 days for all Monitor Groups. **Last 24 Hours / 30 Days Health History:** This widget displays the Health history for last 24 hours / 30 days for all Monitor Groups. **Business View Widget:** This widget displays the Business View of the Monitor Groups
Utility Widgets	**Embed Web Page:** This widget allows you to include a web page from another application into your dashboard.You can use this widget to integrate your custom dashboards. **Bookmarks:** This widget allows you to add weblinks to important documents, KBase articles. **Custom HTML or Text:** This widget allows you to add notes to your operator.

Actions

Click on **Actions tab** to perform administrative operations for dashboards.

Add Widgets	Adds new Widgets
Edit Dashboard	Edits the custom created dashboards
Delete Dashboard	Deletes the selected dashboard
New Dashboard	Creates new dashboard

Publish Dashboard: The selected dashboard can be integrated with your Web Portal by using the Javascript Code Snippet given. So, those who can access your webportal can see the dashboard also.

Set as Default: The selected dashboard is set as the default dashboard. So, whenever you access the home tab, this dashboard would be displayed by default.

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Note: By clicking on **Tabs Edit** icon you can choose the order in which the dashboard will be listed under the home tab

Topology Map View

A topology map is an effort to visualize the interconnection of different resources in an enterprise on a map. you can group a certain set of network devices and servers of your choice under a Map View and also associate links between them.
You can also create a sub map view within a map and display the same as a shortcut icon in a Map View. Background images [global maps, etc.] can be used for the Map View using the available default images or, you can also import your own background image.

- Creating a Topology Map View Widget
- Adding a new Topology Map.

Creating a Topology Map View Widget:

- In the home tab, under click the actions button and choose the **New Dashboard** link. It opens up the **Create New Dashboard** page.
- Enter the Dashboard **Name** and **Description**
- You can then configure the **layout** of the dashboard by selecting the number of columns and their size. You can also save the dashboard settings as template and apply it to monitor groups. You have the option of applying the template to specific monitor groups or apply it across all the monitor groups.
- Then from the **Widget list,** choose **Topology Map View** under the **Monitor Group Widgets**.
- Click on **Create**. A new dashboard will be created with an empty **Topology Map View** widget.
- Click on the **Edit Widget** button to add/associate a topology map. A new **Edit Widget** form pops up.
- Add a **widget name** and **description**.
- Either choose one of the existing Topology Maps from the drop down menu or click add to add a new map view.
- Click **Save Configuration.** The Topology Map will be displayed in your widget.

Adding a new Topology Map

- In the **New Map View** form, enter the **Map View Name**.
- Select the **Background** map from the drop down list [or, click on the ***Browse*** button to import a map / image of your choice; you may even keep the background blank by not selecting any image].
- Select the device **Category** from the drop-down list.
- Select the required devices from the list of available devices. Select the device and click the **>>** symbol to add them to the map. [You may select all network devices or deselect all network devices using the appropriate check box provided]
- Click **Done**. You now see the Map View with the selected network devices and background image. The Map View is now seen in the **Edit** mode. The following actions are supported from the edit mode:
  - **Add** more devices / servers to the map
  - **Add Links** between 2 devices
  - **Add Shortcut** on this map to another map.
  - **Delete** the map
  - Modify the Map Properties, i.e. the background Map image.
- After performing the desired actions, you can save the map by clicking on the **Save** button.

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Custom Fields

As you monitor your applications and servers using Applications Manager, you may come across situations where certain important server-related data is not captured by the default fields present in Applications Manager. In such situations, you may want to add extra field types to capture that information. The 'Custom Fields' option allows you to configure these extra field types as per your business requirements.

Configuring Custom Fields

Click the *Custom Fields* button in the *Monitor Information* section of the monitor details page. This will open the *Custom Fields* section immediately below, where you can modify existing fields or add new fields.

There are 3 different tabs in the 'Custom Fields' section.

1. **Custom Fields**: In this tab, there are some preset fields such as Label, Impact, etc. You can edit the fields and specify their values as necessary. Apart from the default fields, you can add custom fields of your own if required. Just click the icon in the right-hand corner of the 'Custom Fields' tab. This will open the 'Add/Remove Custom Fields' popup window where you can add new fields, edit current fields or remove unwanted fields.
2. **User/Owner**: This tab allows you to associate users to the particular monitor or monitor group. All types of user roles such as user, operator, administrator, and manager are supported.
3. **Location**: In this tab, you can specify information pertaining to the physical location of the server. The available fields include Location Name, Floor, building, city, state, country, postal code and zip code.

Note: The default values for custom fields of a monitor are inherited from the parent monitor group.

Custom Fields in Enterprise Edition

Although the custom fields option is available in both Professional and Enterprise editions of Applications Manager, there are a few minor differences in the way they can be configured in the Enterprise edition.

- From the admin server, you can add new fields, enable/disable fields, values, etc. for the monitors of the admin server. You will have full control over the monitors of the admin server.
- You cannot create or edit new fields in a managed server. You can only assign values to existing fields.

Note:
1. Custom fields cannot be configured for external device monitors (i.e. monitors from ManageEngine OpManager such as routers and switches). However, they can be assigned to a monitor group.
2. You can assign multiple values for certain fields such as label and user.

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Mobile Client, iPhone and Android App

ManageEngine Applications Manager Mobile Web, iPhone App (Download App) and Android App (Download App) allows your technicians to access the Applications Manager performance data from your smartphones. With on-the-go monitoring you can reduce the time for resolution of a fault occurring in your system, thereby increasing the overall availability of your business services.

ManageEngine Applications Manager provides two options:

1. Use the Mobile Web Client, which can be accessed using popular Mobile Web browsers.
2. Use the Applications Manager iPhone App, available in the iPhone App Store.
3. Use the Android App, available in the Google Play Store.

Optimized for most types of smart phones, Applications Manager provides a convenient method to track critical applications, perform actions, receive alerts and identify issues quickly and easily from any location.

There are seven views that are mainly available via your mobile:

- Infrastructure View
- Monitor Group View
- Dashboards
- Alarms
- Down Monitors
- Actions
- Search

Infrastructure View

Infrastructure view displays a list overview of all the monitors associated with a user classified into various categories, say Applications Servers, Database Servers etc. This view enlists the overall availability and health status and their health outages (the number of monitors in error by the total number of monitors). For usability reasons, the monitor types with critical health status are shown at top of the page. You can view the list of monitors of a particular type by clicking on any category under the list. By clicking on the monitor name will display a monitor details page where we can poll, manage/unmanage and ping the monitor.

Monitor Group View

Monitor group view lists all the configured top level monitor groups. This gives a clear view of the day's availability and health status of a monitor group or subgroup and the outages. This makes it easier to track if one of the monitors have failed. As in the Infrastructure View, you can click on a monitor group to see details like the total number of monitors associated to the group.

Dashboards

The dashboards view is for users who want a bird's eye view summarizing the dashboards alone. By clicking on any of the dashboards, you can list the widgets configured. Further, you can click on the widget names to know the widget details.

Alarms

By default, this view lists all the critical and warning alarms. You also have the option to list the clear alarms. The alarms are sorted based on the time of creation. By clicking on the health icons, you can get a summary of the alarm details. Clicking on an alarm

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opens the alarm details page where you can manage/unmanage alarm or clear the alarms. From an alarm details page you can also go the monitor or group details page by clicking on its name.

Down Monitors/ Outages

This view lists all the 'down' or unavailable monitors associated to the user. From this view you also get a summary of the down monitor details like how long the monitor has been down. Clicking on the monitor name, displays a page where you can poll, manage/unmanage and ping the monitor.

Actions

This view will list all the action types associated with each of the monitors. Clicking on the action type lists the actions. You can view action details by clicking on the action name. From this view, you can execute the action. This is useful for executing actions like Windows service actions, Amazon EC2 actions and VM actions.

Search

You can display the Search page from the drop-down menu at the top of the page or from the tab at the bottom. You can use the search bar to search for any keyword. The Search result will have the list of monitors or monitor groups related to the keyword along with their availability and health status. You can go to the monitor/group details page by clicking on the monitor/group name.

The seven monitoring views in the Mobile Client of Applications Manager are tailored to meet the end user's needs and provides you with effective portable monitoring of your environment.
Note: *Dashboards and Actions are not supported in the iPhone App.*

Push Notification for iPhone App

The iPhone App provides you with push notifications for health and availability related alerts. To set it up, use the 'Settings' option in the home page and then 'Notification Settings' to customize the various options. By default the option to notify during a Critical Health condition will be enabled.
Server Settings: To run Applications Manager's iPhone App, you have to provide Applications Manager installation details. For this, click on the link 'Server Settings' from the login page and find options to Edit or Add applications manager server details. Click on the '+' symbol and provide the Applications Manager Host Name and SSL Port. You can also use this page to add multiple installations of Applications Manager. Select the particular row to switch between the various installations and use the 'Sign In' button at the top of the screen to land in the login page.

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Applications Manager Home

<Applications Manager Home> refers to the directory in which you have installed the Applications Manager product. This directory location is specified by you when you install the product.
For example, let us assume that you have installed Applications Manager under the default <Program Files> directory of C drive in your system. In this case, <Applications Manager Home> denotes C:/Program Files/ManageEngine/AppManagerxx. In Linux, if Applications Manager is installed under home directory, then

<Applications Manager Home> denotes *~/ManageEngine/AppManager_Home*

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Data Collection for Host Resource

The important configuration details that are required while discovering host resource by Applications Manager are as follows:

Applications Manager Operating System	Monitor Operating System					
	Linux	Sun Solaris	HP-UX / Tru64	IBM AIX	FreeBSD	Windows
Linux	• Telnet mode of data collection. Default telnet port is 23. • SSH mode of data collection. Default SSH port is 22 • SNMP mode of data collection, default port is 161. HOST-RESOURCE-MIB must be implemented in the Agent.	• Telnet mode of data collection. Default telnet port is 23. • SSH mode of data collection. Default SSH port is 22 • SNMP mode of data collection, default port is 161. HOST-RESOURCE-MIB must be implemented in the Agent.	• Telnet mode of data collection. Default telnet port is 23. • SSH mode of data collection. Default SSH port is 22	• Telnet mode of data collection. Default telnet port is 23. • SSH mode of data collection. Default SSH port is 22	• Telnet mode of data collection. Default telnet port is 23. • SSH mode of data collection. Default SSH port is 22 • SNMP mode of data collection, default port is 161. HOST-RESOURCE-MIB must be implemented in the Agent.	• SNMP mode of data collection, default port is 161. HOST-RESOURCE-MIB must be implemented in the Agent.
Windows	• Telnet mode of data collection. Default telnet port is 23. • SSH mode of data collection. Default SSH port is 22 • SNMP mode of data collection, default port is 161. HOST-RESOURCE-MIB must be implemented in the Agent.	• Telnet mode of data collection. Default telnet port is 23. • SSH mode of data collection. Default SSH port is 22. • SNMP mode of data collection, default port is 161. HOST-RESOURCE-MIB must be implemented in the Agent.	• Telnet mode of data collection. Default telnet port is 23. • SSH mode of data collection. Default SSH port is 22	• Telnet mode of data collection. Default telnet port is 23. • SSH mode of data collection. Default SSH port is 22	• Telnet mode of data collection. Default telnet port is 23. • SSH mode of data collection. Default SSH port is 22 • SNMP mode of data collection, default port is 161. HOST-RESOURCE-MIB must be implemented in the Agent.	• Through WMI API (Windows Management Information) . RPC Service must be running. (Remote Procedure Call). • SNMP mode of data collection, default port is 161. HOST-RESOURCE-MIB must be implemented in the Agent.

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SNMP Agent Installation

(Adapted from Windows help)

- Installing SNMP Agent on Windows 7
- Installing SNMP Agent on Windows 2008
- Installing SNMP Agent on Windows XP/2000/2003
- Installing SNMP Agent on Windows NT
- Installing SNMP Agent in Windows 2012
- Installing SNMP Agent on Linux
- Installing SNMP Agent on Solaris

You need to know the following information before you install the Simple Network Management Protocol (SNMP) service on your computer:

- Community names in your network.
- Trap destinations for each community.
- IP addresses and computer names for SNMP management hosts.

Installing SNMP Agent on Windows 7

To install SNMP on Windows 7 follow the steps given below:
You must be logged in as an administrator or a member of the Administrators group to complete this procedure. If your computer is connected to a network, network policy settings may also prevent you from completing this procedure.

1. Click Start and go to the Control Panel, double-click Programs and Features. Alternatively you can also run **appwiz.cpl @,2** in the start menu
2. Click Turn Windows features on or off in the left-hand side of the page.
3. Select the Simple Network Management Protocol check box, and click OK.
4. Click Next.
5. Insert the respective CD or specify the complete path of the location at which the files are stored.
6. SNMP starts automatically after installation.

This completes the installation process. To configure SNMP agents respond to SNMP requests, refer to Configuring SNMP agents.

Installing SNMP Agent on Windows 2008

To install SNMP on Windows XP, 2000 and 2003, follow the steps given below:
You must be logged in as an administrator or a member of the Administrators group to complete this procedure. If your computer is connected to a network, network policy settings may also prevent you from completing this procedure.

1. Click Start and go to the Control Panel, double-click Programs and Features. Alternatively you can also run **appwiz.cpl @,2** in the start menu
2. Click Turn Windows features on or off in the left-hand side of the page.
3. Select the Simple Network Management Protocol check box, and click OK.
4. Click Next.
5. In **Server Manager** click **Add Features**
6. In **Add Features** Wizard, check the SNMP Services option checkbox and Install.

This completes the installation process. To configure SNMP agents respond to SNMP requests, refer to Configuring SNMP agents.

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Installing SNMP Agent on Windows XP, 2000 and 2003

To install SNMP on Windows XP, 2000 and 2003, follow the steps given below:
You must be logged on as an administrator or a member of the Administrators group to complete this procedure. If your computer is connected to a network, network policy settings may also prevent you from completing this procedure.

1. Click Start, point to Settings, click Control Panel, double-click Add or Remove Programs, and then click Add/Remove Windows Components.
2. In Components, click Management and Monitoring Tools (but do not select or clear its check box), and then click Details.
3. Select the Simple Network Management Protocol check box, and click OK.
4. Click Next.
5. Insert the respective CD or specify the complete path of the location at which the files are stored.
6. SNMP starts automatically after installation.

This completes the installation process. To configure SNMP agents respond to SNMP requests, refer to Configuring SNMP agents.

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Installing SNMP Agent on Windows NT

To install SNMP in Windows NT, follow the steps given below:

1. Right-click the Network Neighborhood icon on the Desktop.
2. Click Properties.
3. Click Services.
4. Click Add. The Select Network Service dialog box appears.
5. In the Network Service list, click SNMP Service, and then click OK.
6. Insert the respective CD or specify the complete path of the location at which the files are stored and click Continue.
7. After the necessary files are copied to your computer, the Microsoft SNMP Properties dialog box appears.

This completes the installation process. To configure SNMP agents respond to SNMP requests, refer to Configuring SNMP agents.

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Configuring SNMP Agent in Windows 2012

- Log into your dedicated server using Remote Desktop.
- Click on **Windows Key > Administrative Tools > Server Manager**.
- Click **Manage > Add Roles and Features**.
- Click **Next > Next > Next > Next**. Verify SNMP Services are installed. Click **Cancel**.

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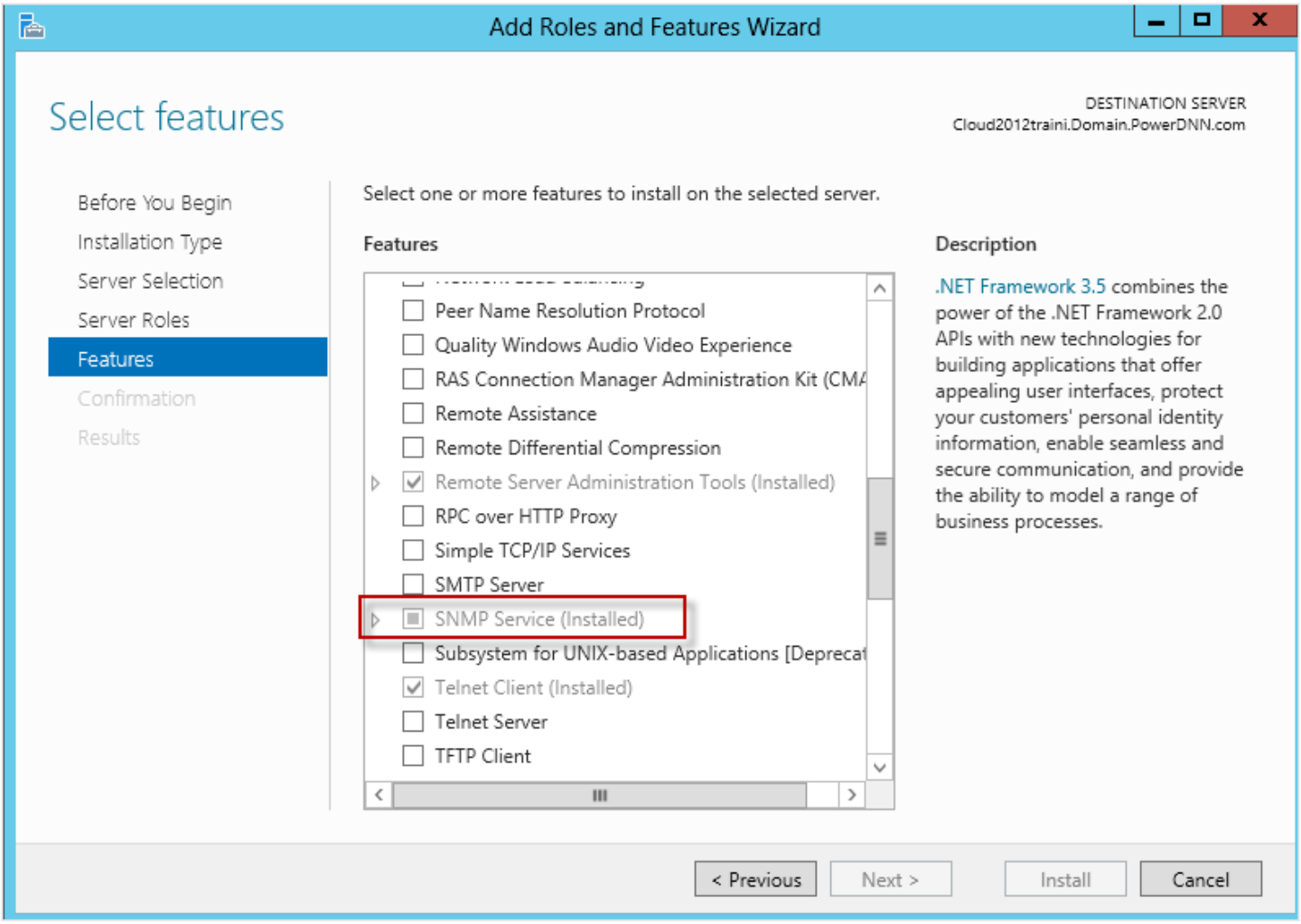

- Click on **Windows Key** > **Administrative Tools** > **Services**.
- Right click on **SNMP Service** and click on **Properties.**
- Click on the **Security** tab.
- Type your randomized 8 - 10 character connection string. Be sure to make it **Read-Only**, not Read Write.

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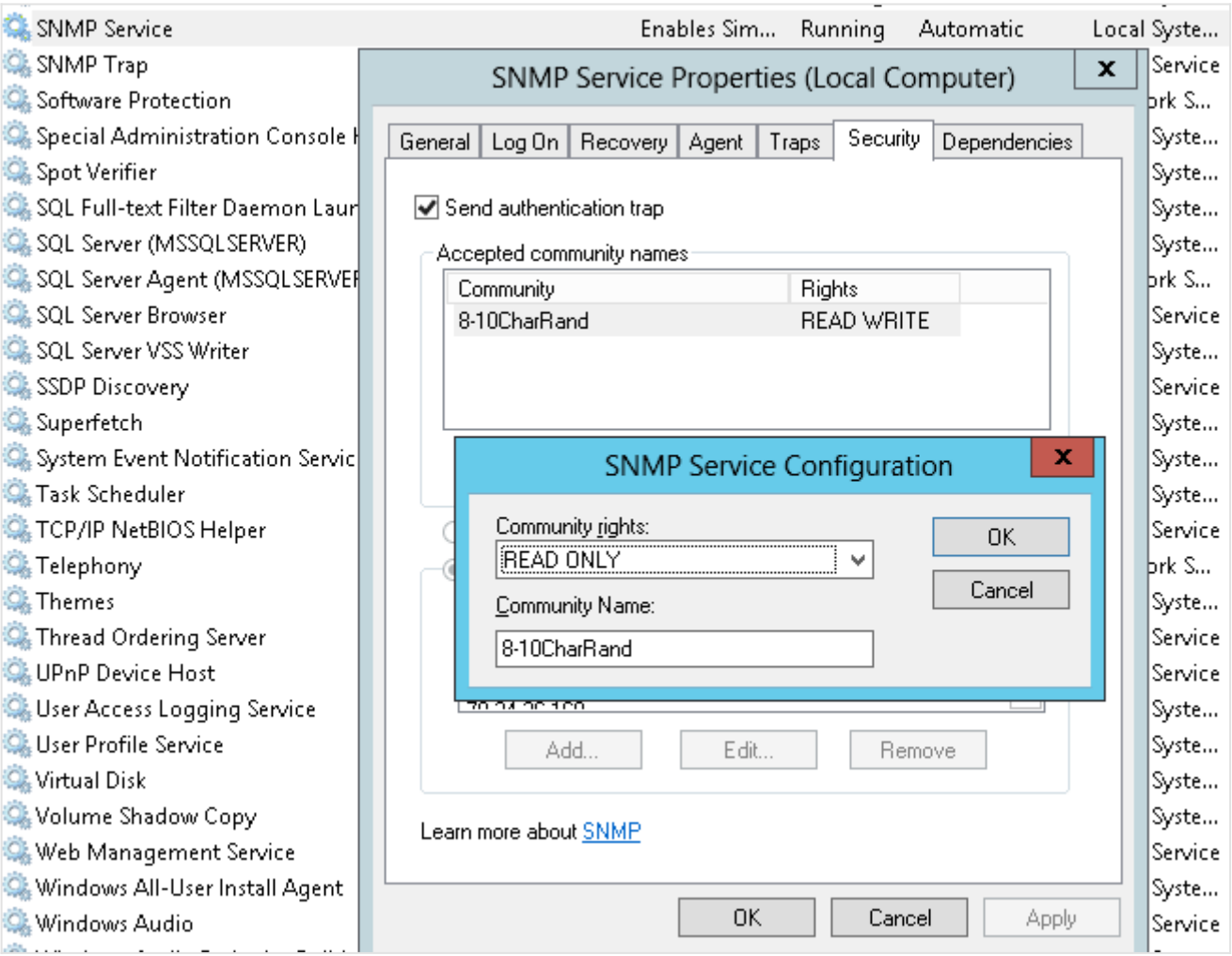

- Click on **Add**.

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Installing SNMP Agent on Linux systems

The installation of new version of SNMP is required only for versions prior to 8.

Download the latest rpm version of SNMP using the following URL:

http://prdownloads.sourceforge.net/net-snmp/net-snmp-5.1.1-1.rh9.i686.rpm?download

Download the zip version of SNMP using the following URL:

http://heanet.dl.sourceforge.net/sourceforge/net-snmp/ucd-snmp-4.2.6.tar.gz

To **install using the rpm**, follow the steps given below:

1. Login as "root" user.
2. Before installing the new version of net-snmp, you need to remove the earlier versions of net-snmp in your machine. To list the versions of net-snmp installed in your machine, execute the following command:
   rpm -qa | grep "net-snmp"
3. If there are already installed version in your machine, remove them using the command:
   rpm -e <version of net-snmp listed as the output for previous command> --nodeps
4. If there are no previously installed versions in your machine, then execute the following command to install the new version:
   rpm -i <new downloaded version of SNMP agent> --nodeps

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To **install using the zip**, follow the steps given below:

Extract the file using following command:

tar -zxvf ucd-snmp-4.2.6.tar.gz

To install SNMP, follow the steps given below:

1. Login as *root* user.
2. Execute the command to set the path of the C compiler:
   export PATH=<gcc path>:$PATH
3. Execute the following four commands from the directory where you have extracted the ucd-snmp:
   1. *./configure --prefix=<**directory_name**> --with-mib-modules="host"*
      directory_name is the directory to install SNMP agent. Preferably choose a directory under /root. The directories /usr and /local might contain the files of an older version of SNMP and so do not choose these directories to ensure proper installation.
   2. make
   3. umask 022
   4. make install

This completes the installation process. To configure SNMP agents respond to SNMP requests, refer to Configuring SNMP agents.

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Installing SNMP Agent on Solaris Systems

Download the latest version of SNMP using the following URL:

http://heanet.dl.sourceforge.net/sourceforge/net-snmp/ucd-snmp-4.2.6.tar.gz

Extract the file using following command:

tar -zxvf ucd-snmp-4.2.6.tar.gz

To install SNMP, follow the steps given below:

Note: To Install in **Solaris 8**, Follow the given steps:

This completes the installation process. For configuring SNMP agents to respond to SNMP requests, refer to Configuring SNMP agents.

1. Login as *root* user.
2. Execute the command to set the path of the C compiler:
   export PATH=<gcc path>:$PATH
3. Execute the following four commands from the directory where you have extracted the ucd-snmp:
   1. *./configure --prefix=<**directory_name**> --with-mib-modules="host"*
      directory_name is the directory to install SNMP agent. Preferably choose a directory under /root. The directories /usr and /local might contain the files of an older version of SNMP and so do not choose these directories to ensure proper installation.
   2. make
   3. umask 022
   4. make install
4. The package would be installed. The package is configured with the compile option of " ./configure --with-mib-modules=host ". The agent would have support for host-resource-mib.
   1. netsnmp-5.1.1 package is available in the following url ftp://ftp.sunfreeware.com/pub/freeware/sparc/8/netsnmp-5.1.1-sol8-sparc-local.gz. This package is for solaris8 on sparc.
   2. gunzip netsnmp-5.1.1-sol8-sparc-local.gz.
   3. pkgadd -d netsnmp-5.1.1-sol8-sparc-local.
   4. To start netsnmp agent: Execute - # /usr/local/sbin/snmpd.

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5. To stop this daemon: Execute - # pkill -9 -x -u 0 snmpd

6.

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SNMP Agent Configuration

- Configuring SNMP agent in Windows XP/2000/2003
- Configuring SNMP agent in Windows NT
- Configuring SNMP Agent in Windows 2012
- Configuring the SNMP Agent in Linux versions prior to 8
- Configuring the SNMP Agent in Linux versions 8 and above
- Configuring the SNMP Agent in Solaris Systems

Configuring SNMP Agent in Windows 7, XP, 2008 and 2003 Systems

For details about installing SNMP agents in Windows systems, refer to Installing SNMP Agent on Windows Systems.

To configure SNMP agent, follow the steps given below:

1. Click Start, point to Settings, and then click Control Panel. Double-click Administrative Tools and then double-click Computer Management.
2. In the console tree, click Services and Applications and then click Services.
3. In the details pane, scroll down and click SNMP Service.
4. On the Action menu, click Properties.
5. On the Security tab, select Send authentication trap if you want a trap message to be sent whenever authentication fails.
6. Under Accepted community names, click Add.
7. Under Community Rights, select a permission level for this host to process SNMP requests from the selected community.
8. In Community Name, type a case-sensitive community name, and then click Add.
9. Specify whether or not to accept SNMP packets from a host:

- To accept SNMP requests from any host on the network, regardless of identity, click Accept SNMP packets from any host.
- To limit acceptance of SNMP packets, click Accept SNMP packets from these hosts, click Add, type the appropriate host name and IP or IPX address, and then click Add again.
- Click Apply to apply the changes.

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Configuring SNMP Agent in Windows NT Systems

For details about installing SNMP agents in Windows systems, refer to Installing SNMP Agent on Windows Systems.

To configure SNMP agent in Windows NT systems, follow the steps given below:

1. Click Start, point to Settings, and then click Control Panel. Double-click Administrative Tools, and then double-click Services.
2. In the details pane, click SNMP Service and then click Properties.
3. Click the Security tab.
4. If you want to send a trap for failed authentications, select the Send Authentication Trap check box.
5. Under Accepted Community Names, click Add.
6. In the Community Names box, type a community name from which you will accept requests.
7. To move the name to the Accepted Community Names list, click Add.
8. Repeat step 7 for any additional community name.
9. To specify whether to accept SNMP packets from any host or from only specified hosts, click one of two options:

- Accept SNMP Packets From Any Host, if no SNMP packets are to be rejected on the basis of source computer ID.

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- Only Accept SNMP Packets From These Hosts, if SNMP packets are to be accepted only from the computers listed. To designate specific hosts, click Add, type the names or addresses of the hosts from which you will accept requests in the IP Host or IPX Address box, and then click Add to move the name to the Only Accept SNMP Packets From These Hosts list.
- Repeat step 9 for any additional hosts.
- On the Agent tab, specify the appropriate information (such as comments about the user, location, and services).
- Click OK to apply the changes.

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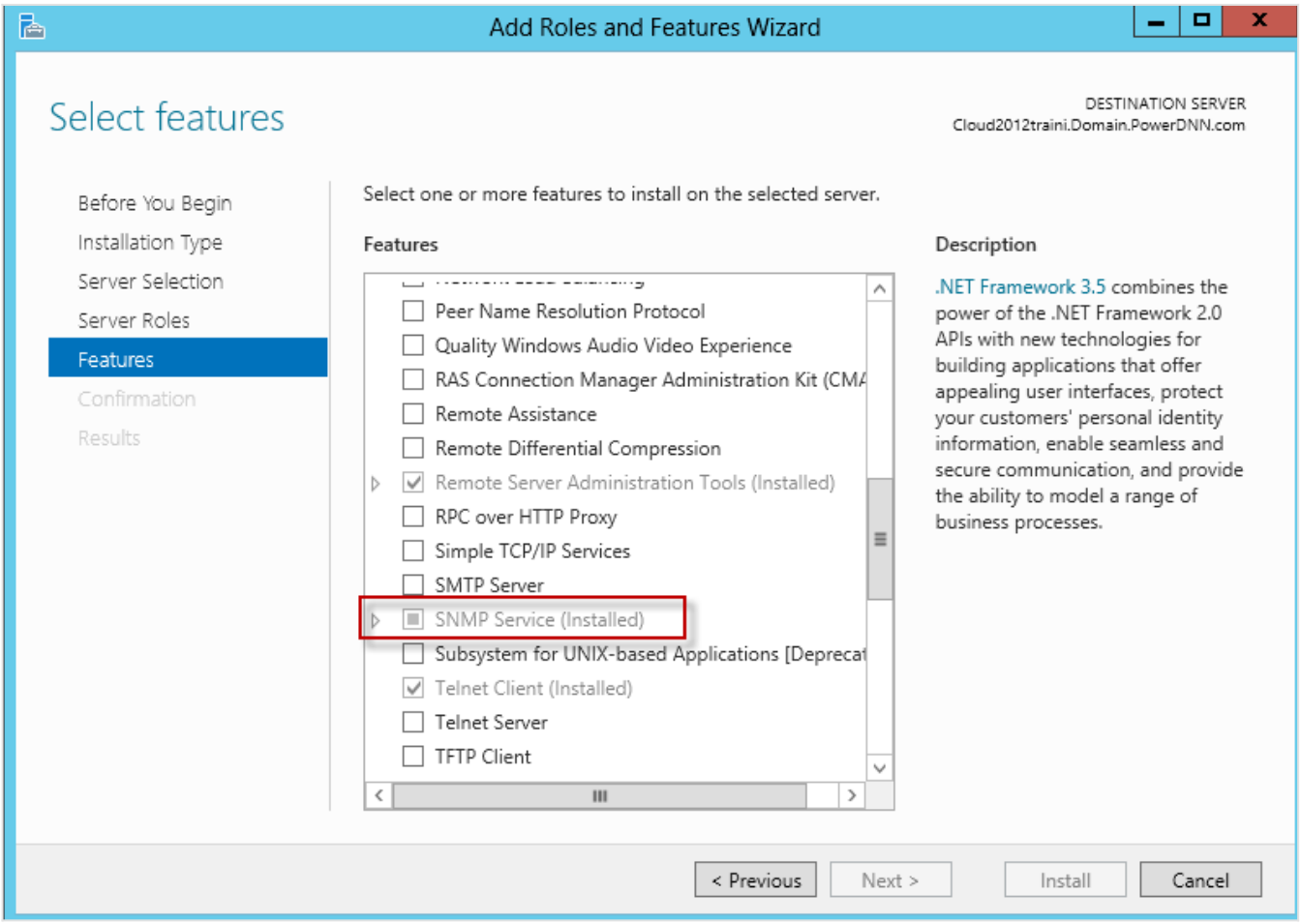
Configuring SNMP Agent in Windows 2012

- Log into your dedicated server using Remote Desktop.
- Click on **Windows Key > Administrative Tools > Server Manager**.
- Click **Manage > Add Roles and Features**.
- Click **Next > Next > Next > Next**. Verify SNMP Services are installed. Click **Cancel**.



- Click on **Windows Key** > **Administrative Tools** > **Services**.
- Right click on **SNMP Service** and click on **Properties.**
- Click on the **Security** tab.
- Type your randomized 8 - 10 character connection string. Be sure to make it **Read-Only**, not Read Write.

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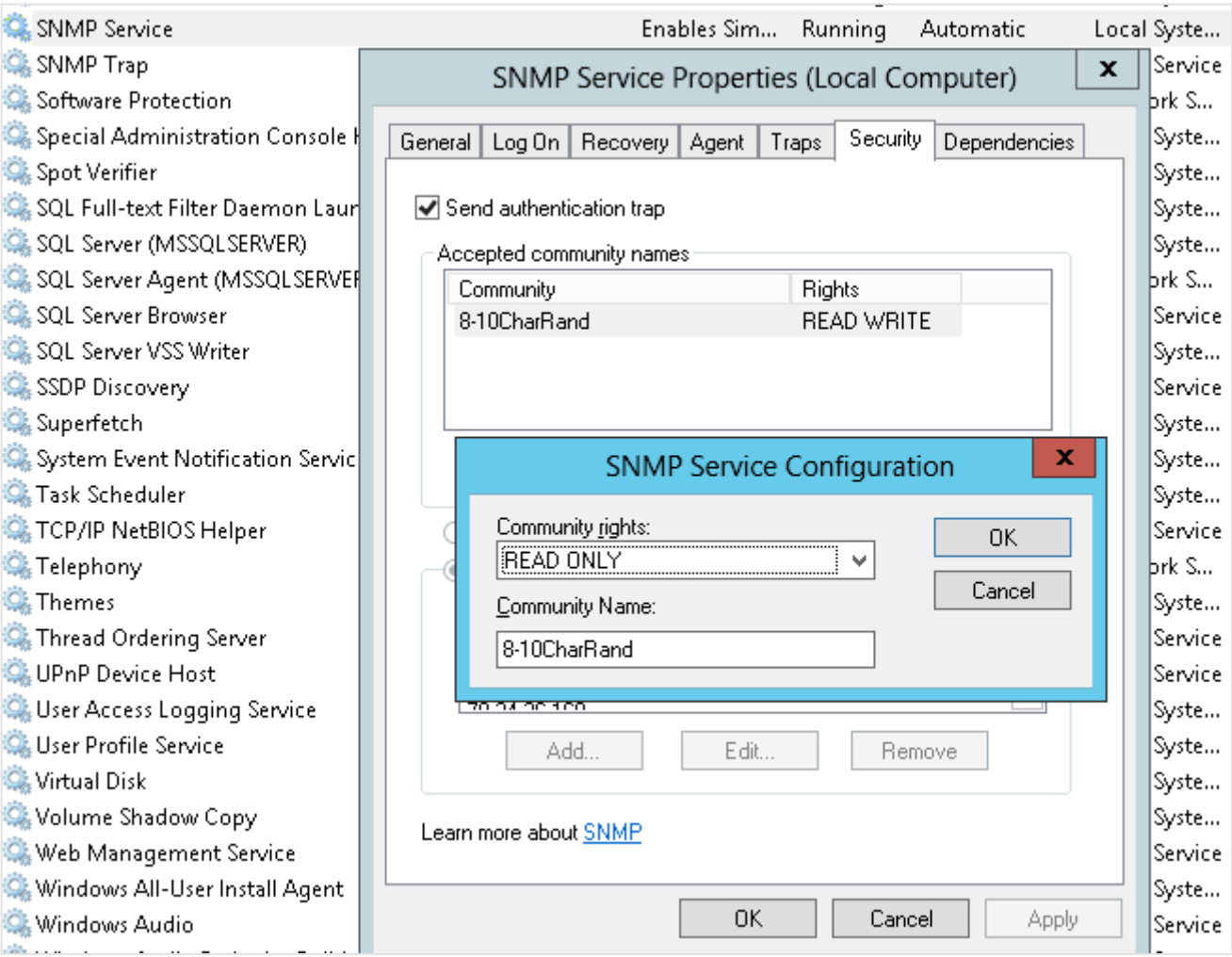

- Click on **Add**.

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Configuring the SNMP Agent in Linux versions prior to 8

For details about installing SNMP agents in Linux systems, refer to Installing SNMP Agent on Linux Systems.

1. Stop the agent if it is running already, using the command:

   ./etc/rc.d/init.d/snmpd stop

2. Make the following changes in **/etc/rc.d/init.d/snmpd** file

- Replace the line

  daemon /usr/sbin/snmpd $OPTIONS

  with

  daemon /root/ucd_agent/sbin/snmpd $OPTIONS

- Replace the line

  killproc /usr/sbin/snmpd

  with

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killproc /root/ucd_agent/sbin/snmpd

This is to choose the current installed version while starting and stopping the SNMP agent.

- Start the agent using the command */etc/rc.d/init.d/snmpd start*.

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Configuring the SNMP Agent in Linux versions 8 and above

On Linux versions 8 and above, the latest version of SNMP will already be available. You need to just make the following changes in **snmpd.conf file**:

1. Insert the line

   view allview included .1.3.6

   next to the line

   # name incl/excl subtree mask(optional)
2. Change the line

   access notConfigGroup "" any noauth exact systemview none none

   next to the line

   # group context sec.modelsec.level prefix read write notif

   as

   access notConfigGroup "" any noauth exact allview none none
3. Then restart the snmp agent using the following command:

   /etc/rc.d/init.d/snmpd restart

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Configuring the SNMP Agent in Solaris Systems

For details about installing SNMP agents in Solaris systems, refer to Installing SNMP Agent on Solaris Systems.

1. Stop the agent if it is running already using the following command:

   /etc/init.d/init.snmpdx stop
2. Make the following changes in **/etc/init.d/init.snmpdx** file

- Replace the lines

if [-f /etc/snmp/conf/snmpdx.rsrc -a -x /usr/lib/snmp/snmpdx]; then

/usr/lib/snmp/snmpdx -y -c /etc/snmp/conf -d 3 -f 0

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fi

with

<Installation Directory>/sbin/snmpd

- Replace the line

  /usr/bin/pkill -9 -x -u 0 '(snmpdx|snmpv2d|mibiisa)'

  with

  /usr/bin/pkill -9 -x -u 0 '(snmpd)'

- Restart the agent using the following command:

  /etc/init.d/init.snmpdx start.

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Security/Firewall Requirements

This section explains how the Applications Manager can be accessed behind a firewall. Fire walls act as barriers preventing unauthorized access to a network. They act as entrance through which authorized people may pass and others not. You need to configure the firewall so that the host on which Applications Manager runs, can access the monitor at the relevant port.

Ports to be opened when Monitors are behind the firewall:

Monitors	Port Details
APPLICATION SERVERS	
Glassfish	Glassfish JMX port (default : 8686)
JBoss	Two-way communication between JBoss web server port (default : 8080) and Applications Manager web server port (default : 9090). Applications Manager hostname should be accessible from JBoss server. JBoss RMI object port (default : 4444).
Microsoft .Net	Windows Management Instrumentation (WMI) -- Port: 445 Remote Procedure Call (RPC) (default : 135) Know more about the ports required for **WMI Mode of monitoring.**
Oracle Application Server	Oracle Application Server port (default : 7200)
Tomcat	Tomcat web server port (default : 8080)
VMware vFabric tc Server	JMX port of VMware vFabric tc Server (default : 6969)
WebLogic	Two-way communication between WebLogic listening port (default : 7001) and Applications Manager web server port (default : 9090)
WebSphere	WebSphere application port (default : 9080)
Jetty	Enable JMX for monitoring. The JMX **Port** for default installations of Jetty is 9999.
CUSTOM MONITORS	
Database Query monitor	Corresponding database server port
File/Directory, Script (Telnet/SSH mode)	Telnet Port: 23 (if mode of monitoring is Telnet) SSH Port: 22 (if mode of monitoring is SSH)
File/Directory, WMI Performance counter (WMI mode)	Windows Management Instrumentation (WMI) -- Port: 445 Remote Procedure Call (RPC) -- Port: 135 Know more about the ports required for **WMI Mode of monitoring.**
DATABASE SERVERS	
DB2	The port in which DB2 is running (default: 50000)
Memcached	The port in which Memcached server is running (default : 11211)
MySQL	The port in which MySQL is running (default : 3306)
Oracle	The port in which Oracle is running (default : 1521)
PostgreSQL	The port in which PostgreSQL is running (default : 5432)
Microsoft SQL Server	The port in which SQL Server is running (default : 1433). UDP port 1434 might be required for the SQL Server Browser Service when you are using named instances.
Sybase	The port in which Sybase is running (default : 5000)
SAP HANA	SAP HANA's IndexServer port (default: 30015)
Apache HBase	The port in which Hbase is running. For default installations of HBase, the JMX port number is **10101** for Master and **10102** for RegionServer.
NoSQL	
Cassandra	Enable JMX for monitoring. The JMX Port for default installations of Cassandra is 7199.
ERP	
Oracle EBS	Oracle EBS webserver port (default:7200)
Microsoft Dynamic CRM	To monitor a Microsoft Dynamics CRM application, use Administrator user account which has the permission to excute WMI queries on 'rootCIMV2' namespace of the CRM Server. **Firewall access for monitoring:** Ports required for monitoring via WMI. • Windows Management Instrumentation (WMI) (default : TCP 445) • Remote Procedure Call (RPC) (default :TCP 135) • Target server uses random port above 1024 by default to respond back for remote communication (DCOM) (default : TCP 1025 to 1030)
MAIL SERVERS	
Exchange Server	The port in which Exchange Server is running (default : 25) Windows Management Instrumentation (WMI) (default : 445) Remote Procedure Call (RPC) (default : 135) Know more about the ports required for **WMI Mode of monitoring.**
Mail Server	SMTP server port (default : 25) to send mails from Applications Manager. POP port (default : 110) to fetch mails using the POP server.
MIDDLEWARE/PORTAL	
IBM WebSphere MQ	The MQ Listener Port (default:1414)
Microsoft MSMQ/SharePoint Server	Windows Management Instrumentation (WMI) -- Port: 445 Remote Procedure Call (RPC) -- Port: 135 Know more about the ports required for **WMI Mode of monitoring.**
VMware vFabric RabbitMQ Server	The Port ID where the management plugin is configured (default : 55672)
WebLogic Integration Server	WebLogic Integration port (default : 7001)
Oracle Tuxedo	The SNMP port number , on which the Tuxedo SNMP agent is running. The default port number is 161.
Apache ActiveMQ	The port in which ActiveMQ is running.
Apache Kafka	The default JMX port: 9999. Reference link.
SERVERS	
AS400/iSeries	To connect AS400/iSeries server from Applications Manager it uses JTOpen package. The JTOpen package uses the following Non-SSL ports 449, 446, 8470, 8471, 8472, 8473, 8474, 8475, 8476. Ensure that the ports mentioned under "**Port Non-SSL**" column in the link are not blocked in firewall. https://www-01.ibm.com/support/docview.wss?uid=nas8N1019667
Linux / Solaris / AIX / HPUnix /Tru64 Unix	Telnet Port (default : 23), if mode of monitoring is Telnet. SSH Port (default : 22), if mode of monitoring is SSH SNMP Agent Port (default : 161), if mode of monitoring is SNMP

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Windows	**For WMI Mode of Monitoring:** To monitor a Windows Server the user must have "Administrator" privileges Ports required **-** Windows Management Instrumentation (WMI) (default : 445) Remote Procedure Call (RPC) (default : 135) WMI uses DCOM for remote communication.The server to be monitored by applications manager uses a random port number above 1024 by default to respond back. You have to connect to this target server and configure it to use a port within a specified range of ports. You can follow the steps mentioned in this link : http://support.microsoft.com/kb/300083 for restricting the ports in the target server. Note that you must specify at least 5 ports in this range for target server (you are normally recommended to open at least a 100 ports - http://support.microsoft.com/kb/217351/EN-US/). This same range of ports must also be opened in the firewall. In Windows Server 2008 and later versions, and in Windows Vista and later versions, use the following dynamic port range: Start port: 49152 End port: 65535 If your computer network environment uses only Windows Server 2012, Windows Server 2008 R2, Windows Server 2008, Windows 8, Windows 7, or Windows Vista, you must enable connectivity over the high port range of 49152 through 65535. Windows 2000, Windows XP, and Windows Server 2003 use the following dynamic port range: Start port: 1025 End port: 5000 If your computer network environment uses Windows Server 2012, Windows Server 2008 R2, Windows Server 2008, Windows 8, Windows 7, or Windows Vista together with versions of Windows earlier than Windows Server 2008 and Windows Vista, you must enable connectivity over both the following port ranges: High port range 49152 through 65535 Low port range 1025 through 5000 **SNMP Mode of monitoring:** Ports required - SNMP Agent Port: 161
SERVICES	
Active Directory	Windows Management Instrumentation (WMI) -- Port: 445 Remote Procedure Call (RPC) -- Port: 135 Also refer to ports required for **WMI Mode of monitoring** under **Servers**
FTP/SFTP	Port in which FTP or SFTP is running (default:21 for FTP, 22 for SFTP)
JMX [MX4J / JDK 1.5]	Port of JMX agent (default:1099) To monitor JMX behind firewall the following changes have to be done. • Edit *startApplicationsManager.bat/sh* file. Add *-Dmonitor.jmx.rmi.port=*<port number for RMI socket communication> to the Java runtime options. • Restart Applications Manager server • Ensure that you have the RMI Socket port (step1) and JNDI Port (step4) are opened up in the firewall • Add the JMX Applications monitor after providing the relevant details. • The monitor should be added successfully
LDAP	LDAP server port
Service Monitoring	The service port that you need to monitor
SNMP	SNMP Agent port (default:161)
Telnet	Port which you need to telnet
Apache Zookeeper	Port of JMX agent (default:1099) If Authentication is enabled, enter the Username and password for connecting to the JMX agent. To know more about monitoring a JMX Application if your application is behind a firewall, check out this blog post.
Oracle Coherence	Enable JMX for monitoring. The JMX Port for default installations of Coherence is 1099.
Hadoop	Enable JMX for monitoring. The JMX port of the NameNode.
TRANSACTION	
APM Insight	Applications Manager's Web Server port should be accessible from the APM Insight agent server (default:9090).
VIRTUALIZATION	
Hyper-V	Windows Management Instrumentation (WMI) -- Port: 445 Remote Procedure Call (RPC) -- Port: 135 Also refer to the ports required for **WMI Mode of monitoring** under **Servers**
VMWare ESX/ESXi	VMWare Web Service port (default:443)
Citrix Xenserver	The https **Port** where the XenServer web service runs. The default port is 443.
Docker	The Docker socket port. (default port: 4243).
WEB SERVER/SERVICES	
Real Browser Monitor (Qengine port)	The qeport (default:5001) mentioned in the **AppManager_Homeworkingconfqeruntime.properties** file should be accessible from the machine where you want to Record RBM webscripts
SSL Certificate Monitor	SSL port in which the web server is running (default:443).
Web Server - Apache / IIS / PHP	HTTP Port of Web Server (default:80).
Elasticsearch	The port on which the ElasticSearch is running (default: 9200).
Apache Solr	The port on which the ApacheSolr is running (default: 8983)
Miscellaneous	
Trap Listeners	Trap Listener port (default:1620) in Applications Manager server should be accessible from the server where you want to send traps. More on receiving SNMP Traps.
Web User Experience Monitoring	Make sure you are connected to the internet and can access Site 24X7.

Applications Manager makes sure that data is secure. The internal PGSQL database allows only the localhost to access the database through authenticated users. User Names and Passwords are stored in the PGSQL database that is bundled along with the product. The passwords are encrypted to maintain security.

Privileges required for different monitor types:

Monitors	Privileges
Active Directory	Administrator username/password [WMI mode]
Amazon	• The AWS Access Key Id for accessing the AWS through the API. The access key has 20 alpha-numeric characters. • The Secret Access Key of the AWS. The secret key should be 40 alpha-numeric characters long.
Apache Server	Credentials for accessing the server status url for Apache
AS400/iSeries	• To retrieve data for all modules in AS400/iSeries monitor except 'Disk', an user with *USER user profile is required. • To retrieve data for 'Disk' and to perform Admin actions from Applications Manager, an user with *SECOFR user profile is required. • If using the *SECOFR user profile is not possible, then for retrieving disk data and to perform the admin actions such as viewing spooled file, job log and performing actions in JOBS, SPOOL, SUBSYSTEM a user profile with special authorities such as *ALLOBJ, *SAVSYS, *JOBCTL, *SPLCTL is required. • The user should have permission to access QMPGDATA/QPFRDATA library because Applications Manager uses performance collection service for retrieving disk details from AS400/iSeries server. **Note:** If the performance data collection is not enabled in AS400/iSeries, you need to start it by using the command STRPFRCOL or GO PERFORM-->COLLECT PERFORMANCE DATA-->START PERFORMANCE COLLECTION. You will also be able to execute the STRPFRCOL command from AS400/iSeries server monitor page in Admin-->Non-Interactive command option.
Database Query Monitor	User with privileges for accessing a particular database and execute the query

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DB2	User with atleast SYSMON instance level authority
Exchange Server	Administrator username/password [WMI mode]
File/Directory	User with privileges for accessing the File or Directory to monitor
FTP/SFTP	If Authentication is enabled, enter the Username and Password for connecting to the FTP/SFTP server & move to required directory
Glassfish	Username and password for connecting to Glassfish Admin console
HP-UX	Guest user privilege
HTTP URL	If basic authentication is required enter the same in monitor
Hyper-V	Administrator privileges to the root OS (Windows 2008 R2 and other supported Hyper-V versions)
IBM AIX	Guest user privileges are sufficient but "root" privileges are required for collecting Memory related details. Hence, it is preferable to use a "root" account to view all the details
IBM WebSphere MQ	A Channel name with type of "Server Connection Channel"
JBoss	Use the JBoss username/password (if Jboss is authenticated). User should be able to access the JBoss JMX console. If not, no username/password is required
JMX/Java Runtime	If Authentication is enabled, enter the Username and password for connecting to the JMX agent. To know more about monitoring a JMX Application if your application is behind a firewall, check out this blog post.
LDAP	If Authentication is enabled, enter the Username and Password. If no username and password is provided, then it will connect to LDAP server as an anonymous login.
Linux	Guest user privilege
Mail Server	If Authentication is enabled, enter the Username and password for connecting to the SMTP and POP
Microsoft .Net	Administrator username/password [WMI mode]
Microsoft Office SharePoint Server	Administrator username/password [WMI mode]
MS SQL	System Administrator/Owner for the "master" database
MSMQ	Administrator username/password [WMI mode]
MySQL	The User-name specified should have access to the databases to be monitored. MySQL should also be configured. This allows the host on which App Manager is running to access the MySQL database.
Oracle	User with CONNECT and SELECT_CATALOG_ROLE roles
SAP/SAP CCMS	You need a SAP user profile with the following authorization objects: S_RFC, S_XMI_LOG and S_XMI_PROD which are the minimum prerequisities for adding a SAP monitor. We use the SAP Java Connector to connect to the SAP ABAP server. The SAP JCo will communicate from APM to SAP using the SAP Dispatcher. The SAP Dispatcher port to be used is 3200 with the SAP System number.
Script monitor	User with privileges for executing the script and accessing the output file.
Server with SNMP mode	SNMP Community string with read privileges.
SNMP/Network device	**For SNMP Version V1/V2c:** • SNMP Community string with read only privileges. **For SNMP Version V3:** Select one of the three Security Levels in the drop-down list: • **NoAuthNoPriv** - Messages can be sent unauthenticated and unencrypted. Enter a UserName and Context Name. • **AuthNoPriv** - Messages can be sent authenticated but unencrypted. Enter a UserName, Context Name and an Authentication Password. You can select an Authentication Protocol like MD5 or SHA from the drop-down list. • **AuthPriv** - Messages can be sent authenticated and encrypted. Enter a UserName, Context Name,an Authentication Password and a Privacy Password. You can select an Authentication Protocol like MD5 or SHA from the drop-down list. By default 'DES' encryption technique will be used.
Solaris	Guest user privilege.
Sybase	The user should have admin privileges or the DB owner for master database.
Tomcat	• For 5.x and above, a username and password is required to connect to Tomcat Manager Application. If not, no username/password is required. • For 5.x the user specified should have a 'manager' role. • For 6.x and above, the user specified should have "manager-gui", "manager-script", "manager-jmx" and "manager-status" roles.
VMWare ESX/ESXi	When adding VMWare ESX/ESXi servers for monitoring, we recommend that you use the root account. However, if you are unable to use the root account, you can use a 'view-only' profile to add the servers. This profile has all the privileges required for monitoring. The user you create must be: • a member of the group user. • based on the profile 'read only'.
VMware vFabric RabbitMQ Server	User Name and Password of RabbitMQ server.
WebLogic	Use the WebLogic username/password, if WebLogic is authenticated. The user should be an administrator. Otherwise, no username/password is required.
WebLogic Integration Server	Use the WebLogic username/password, if WebLogic is authenticated. User should be an administrator. Else no username/password is required.
Webservices	Give the User Name and Password, if it is required to invoke the webservice operation.
WebSphere	If Global Security is enabled, use the same username/password . If not, no username/password is required.
Windows	Administrator username/password [WMI mode].

Enterprise Edition

Path	Ports
Admin to Managed Server	SSL Port (default 8443) - for database syncing Webserver (default 9090).
Managed Server to Admin	SSL Port (default 8443).

Note: Production Environment gives you the configuration details that you need to take care of, when moving Applications Manager into Production.

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User Management Security Policy

Applications Manager supports user management security policy for password validation.

Validation:

- Password should not be same/part of your Login name
- Password length should not be less than 8 characters
- Password length should not be greater than 255 characters
- Password should contain atleast 1 numeric character
- Password should contain atleast 1 special character
- Password should contain both uppercase and lowercase characters
- Password should not be the same as your last 4 passwords
- Password validation should be done in both server and client side.

Client side validation:

- Check for password length - should not be less than 8 characters
- Check for password length - should not be greater than 255 characters
- Check for password - should contain atleast 1 numeric character
- Check for password - should contain atleast 1 special character
- Check for password - should contain both uppercase and lowercase characters
- Check for password - should not be same/part of your Login name

Server side validation:

Above, the validation was given for client side. It is also done in server side. When Client validation has failed due to some malicious action (like truncating password) then server side validation should happen before changes happen to password.

- Check for password - should not be the same as your last 4 passwords
- Check for password - should contain atleast 1 numeric character
- Check for password - should contain atleast 1 special character
- Check for password - should contain both uppercase and lowercase character
- Check for password - should not be same/part of your Login name
- Password should not have more than three consecutive characters from the previous password

Account Lock-out Feature:

- User can try a maximum of 5 times with unsuccessful login, afterwards account automatically gets locked out.
- After 30 minutes of time, it gets locked out automatically.
- It will show the error message once it gets locked.

Single session per user:

- Application will allow the user to have only one session per user id at any point of time.
- Same user can not be connected to server from different machines/webclient at the same time.
- It will show the error message that “User Already logged in”

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Forums and Blogs

Here are links to some interesting Forums and Blog posts:

Post	Description
Application-Aware Network Performance Management	5 Reasons why you should consider application-aware network performance management
EUM Monitoring	[Presentation]: An overview of Synthetic End User Experience Monitoring with Applications Manager
Set Dashboard as a Tab	Have the KPIs of multiple apps in a single page
Cassandra Database Monitoring	Monitoring Cassandra Cluster Databases with Applications Manager
MongoDB Monitoring	What does Applications Manager have to offer for MongoDB Monitoring?
Scipt Monitoring Functionality	Monitor custom jobs and track uptime with Script Monitoring functionality
Migrate your database from MySQL to MS SQL	Migrating your Applications Manager database from MySQL to MS SQL for storing performance data and configuration information of the monitors
Bulk Alarm Configuration	Setting up alarms across multiple monitors in one go
Monitor vFabric tc Server	Monitoring the critical components of the vFabric tc Server to detect performance problems
IBM Tivoli integration	Integrate Applications Manager alerts into IBM Tivoli Console
SSL certificate monitoring	Track Your Website’s SSL Certificate Expiry Date Using Applications Manager
Recognition in Gartner's Magic Quadrant	ManageEngine included in Gartner's Magic Quadrant for Application Performance Monitoring
Manage Virtual Machine Sprawl	Virtual Machine Sprawls: How can you keep them in check?
Manage Virtual Resources	Automate Virtual Machine Management with Applications Manager
Identify Problematic Java Code	Identify Java code consuming high CPU in Linux (linking JVM thread and Linux PID)
Multi-vendor Virtualization support	Now Monitor Hyper-V and VMware Servers from the Same Console
Server Troubleshooting	Reduce one step from your usual Server Troubleshooting Handbook
Flexible Alarm Management	Flexible Alarm Management for Performance Counters
Improve Operations Productivity	Improve Operations Productivity by Integrating Contextual Information using New Widgets for Custom Dashboards
Application Dependency Mapping	Application Dependency Mapping for better alarm management
Anomaly Detection	Proactively detect application performance problems with Anomaly Detection
Linux Startup	How to start Applications Manager when Linux boots (like starting Applications Manager as service in Windows) ?
Am I configuring properly?	Tips on easy configuration
Root Cause Analysis	Information on how best you can use Root Cause Analysis
Alarm Configuration made easy - 1 Alarm Configuration made easy - 2	Tips on easy alarm configuration
Custom Reports	Access Applications Manager Database and Generate Custom Reports / Dashboards
Migrating/Changing Applications Manager	How to migrate Applications Manager from machine to another?
HP-UX monitoring	Monitoring all the disk volumes in HP-UX machine
Script Monitor - Example1	How to monitor database tables of your choice using script monitor feature?
Script Monitoring - Example2	Script Monitoring - Monitor data from a particular row in the table
Script Monitor - Example3	How to monitor Sybase using scripts?
Builds	Advantages of Windows build over Linux build
SMS Alarms	Easy way to send SMS Alarms
Want a sound Alarm	Steps to configure sound Alarm from a remote machine
OpManager or Applications Manager	Helps you decide between OpManager and Applications Manager
Dell's OpManage	How to integrate Dell's OpManage with Applications Manager
GlassFish Application Server	How to monitor GlassFish Application Server
Response Time across Multiple Locations	Get to know how Enterprise Edition aids in comparing response time across multiple locations
Creating a proper threshold	Tips on easy Threshold Configuration
RCA Messages & Polls	Insight into RCA Messages
Create New Monitor Type	Create your own custom monitor types
Monitor Log Files and System Events	Log files and System Events monitoring
Intranet & Applications Manager	How to integrate Applications Manager in your Intranet
AppManager as a Linux Service	Steps to install AppManager as a service on a Linux system.

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Add-Ons Pricing

Applications Manager offers add-on features which are optional to use. These add-ons need to be purchased along with the base product.

Pricing Structure of Add-ons:

All the add-ons are typically priced as a flat fee. You can monitor any number of resources as long as you are within the overall 'monitors' count.

For example, if you buy a 25 monitors license with SAP add-on, you can add any number of SAP monitors as long as the monitor count does not exceed 25.

For more information about add-on pricing structure, please refer our online store.

Note: All the add-ons are included as part of the product. You can use them for free during your evaluation period. Once the evaluation period is over, you can use only those add-ons that you have purchased.

If you want to evaluate add-ons after your trial period has expired, you can request for a trial license by filling up this form in our website.

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Third Party Packages used in Applications Manager

This page has details about the third party packages used in Applications Manager. The license files for the corresponding third parties is also included with the product. If license file is not available in product, the link for it can be found in this document.

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JAVA-CAS-SERVER	Jasig Cas	3.5.2		

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Azure SDK for Java working/classes/adal4j-1.1.3.jar working/classes/adapter-rxjava-2.0.2.jar working/classes/asm-1.0.2.jar working/classes/azure-1.0.0-beta3.jar working/classes/azure-client-authentication-1.0.0-beta3.jar working/classes/azure-client-runtime-1.0.0-beta3.jar working/classes/azure-core-0.9.6.jar working/classes/azure-mgmt-batch-1.0.0-beta3.jar working/classes/azure-mgmt-compute-1.0.0-beta3.jar working/classes/azure-mgmt-graph-rbac-1.0.0-beta3.jar working/classes/azure-mgmt-keyvault-1.0.0-beta3.jar working/classes/azure-mgmt-network-1.0.0-beta3.jar working/classes/azure-mgmt-resources-1.0.0-beta3.jar working/classes/azure-mgmt-storage-1.0.0-beta3.jar working/classes/azure-storage-4.4.0.jar working/classes/client-runtime-1.0.0-beta3.jar working/classes/guava-19.0.jar working/classes/jackson-annotations-2.8.4.jar working/classes/jackson-core-2.8.4.jar working/classes/jackson-databind-2.8.4.jar working/classes/jackson-datatype-joda-2.8.4.jar working/classes/joda-time-2.1.jar working/classes/json-smart-2.2.1.jar working/classes/nimbus-jose-jwt-4.27.jar working/classes/oauth2-oidc-sdk-4.8.5.jar working/classes/okhttp-3.4.1.jar working/classes/okhttp-urlconnection-3.4.1.jar working/classes/okio-1.9.0.jar working/classes/retrofit-2.1.0.jar working/classes/rxjava-core-0.20.0-RC2.jar working/classes/api-annotations-0.0.1.jar	Microsoft	1.0.0-beta3	MIT License	https://github.com/Azure/azure-sdk-for-java/blob/master/LICENSE.txt

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working/classes/xmlunit-1.6.jar working/classes/XMLUNIT_1_6_LICENSE.txt	XML Unit	1.6	BSD License	
BadInputFilterValve (working/apache/tomcat/lib/servlets-advent.jar) working/classes/LICENSE_BADINPUTFILTERVALVE.txt	BadInputFilterValve		The Apache Software License, Version 1.1	
working/classes/jboss/401/dom4j.jar working/classes/jboss/401/jbossall-client.jar working/classes/jboss/402/dom4j.jar working/classes/jboss/402/jbossall-client.jar working/classes/jboss/common/jboss-management.jar working/classes/jboss/jbossall-client.jar working/classes/LICENSE_JBOSS.txt	JBoss		GNU Lesser General Public License, version 2.1	
working/template/calendar.js working/template/calendar-en.js working/template/calendar-setup.js	Dynarch	0.9.6	GNU Lesser General Public License	http://www.gnu.org/licenses/lgpl.html
workin/classes/postgresql_jdbc3.jar	PostgreSQL Global Development Group		BSD license	http://www.postgresql.org/about/licence/
working/classes/SMSLib.jar working/classes/SMSServer.jar working/classes/LICENSE_SMSLIB.txt	SMSLIB	1.2.1	GNU Lesser General Public License, Version 2.1	
working/classes/RXTXcomm.jar	RXTX	2.2	GNU Lesser General Public License, Version 2.1	http://users.frii.com/jarvi/rxtx/license.html
dropdown.js	Dynamic Drive		Dynamic Drive DHTML Scripts - Terms of use	http://www.dynamicdrive.com/notice.htm
working/wrapper.exe working/classes/wrapper.jar working/classes/wrapper.dll working/conf/wrapper-license.conf	Tanuki Software		Commercial	

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Easy Upgrade

Applications Manager's **Easy Upgrade** feature ensures users have access to the latest Applications Manager versions and can automatically upgrade to the latest service packs easily. The complexity of upgrading managed servers with the latest software upgrades can also become tedious as the number of **managed servers** in your system grow. The **Easy Upgrade** option helps you upgrade your managed servers from a centralized dashboard. **Easy Upgrade is available only in Enterprise Edition.**

Note: Before upgrade to the latest service pack, please make sure to take a complete backup of the of 'AppManager Home' folder and the Applications Manager database.

To use Easy Upgrade features in your Applications Manager setup, you need to first enable the option in the Admin Tab, under Global Settings.

Easy Upgrade in the Enterprise Edition

In the Enterprise Edition, users can upgrade their managed servers once the admin server is upgraded. You can see the running version of each of your Managed Servers from the Admin Server.

Note: While performing upgrades in the Enterprise Edition, remember to upgrade all instances at once.

- **Upgrading the Admin Server -**
  - A link to download the latest version of the product will be displayed in the **About** page along with the latest compatible version.
  - Click Download and the latest Applications Manager PPM will be downloaded into your machine.
  - Once the download is completed, an Upgrade now link appears in the **About** page near the latest compatible version.
  - Click Upgrade now to upgrade your setup. Applications Manager displays the message "**Software Patch Upgrade is initiated. Service will be shutdown shortly. Please reconnect this web console after 15 mins.**" and begins upgrade.**Note:** In a Failover setup, Easy Upgrade will be performed on secondary server first. Once the secondary server is upgraded to the latest version, the primary server will perform self-upgrade to the latest version.
- **Upgrading your Managed Servers -** You can initiate upgrade action for all managed servers in bulk from the Admin Server, once the admin server is upgraded.
  - Click on Managed Servers link. This will take you to the Managed Server page from where you can configure the Managed Servers. The **Managed Servers** table displays running version of each of the managed servers. The table also displays the syncing , download and upgrade status of the managed servers.
  - If the latest complatible version has not been downloaded, you can select the managed server and click **Download Now** to download the latest compatible version.

    Note: If the required version patch is already downloaded, then the **Upgrade** Link will appear. If not, go to AppManager Home/working/patches/ folder where you can find a folder with the latest build number inside which you can find the latest PPM.
- Once the download is completed, Select the checkboxes of the managed servers that you wish to upgrade and an click the **Upgrade Now** link. This upgrades the selected managed servers to their latest version. The icons used to display the download and upgrade statuses are as follows: - Download / Upgrade Completed - Download completed and ready for Upgrade. - Download / Upgrade in Progress.

How to take a backup before upgrade?

- Stop the Manage Engine Applications Manager service from Start-> Run -> services.msc *(For Linux servers execute < sh*

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shutdownApplicationsManager.sh > command from 'AppManager Home' location).

- Via command prompt, execute the < shutdownApplicationsManager.bat -force > command from the 'AppManager Home' folder. *(For Linux servers execute < sh shutdownApplicationsManager.sh -force > command from 'AppManager Home' location)*.
- Go to the 'AppManager Home/support folder and delete all old support files (files with extension as .gz or .zip).
- Go to the 'AppManager Home/working/webclient and delete the 'temp' directory.
- Go to the 'AppManager Home' and delete the old logs folders (example: logs_old or logs_date or logs.zip). Also delete logs folder under 'AppManager Home/working' location. *(Do not delete the 'logs' folder as it may be useful if any issues occur post upgrade, delete only old logs folders if present)*
- Go to the 'AppManager Home/working and delete hs_err_pid<xxxx>.log files & java_pid<xxxx>.hprof files if present (where xxxx can be any process id).
- Go to the 'AppManager Home/working/heapdump and delete the contents in that directory.
- Go to the 'AppManager Home/working/backup and delete the backups which are older than last one month. *(If there is no backup then proceed to next step).*
- **Take a complete backup of 'AppManager Home' folder. After that close all the explorer & command prompt windows.**
- If you are using Microsoft SQL server backend then connect to the corresponding SQL server & take the backup of Applications Manager database.

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Anomaly Detection

Anomaly detection helps you know if there is gradual performance degradation by defining *Anomaly Profiles* on performance metrics. By creating Anomaly profiles, you can define rules wherein the current data is compared with previously reported best data.

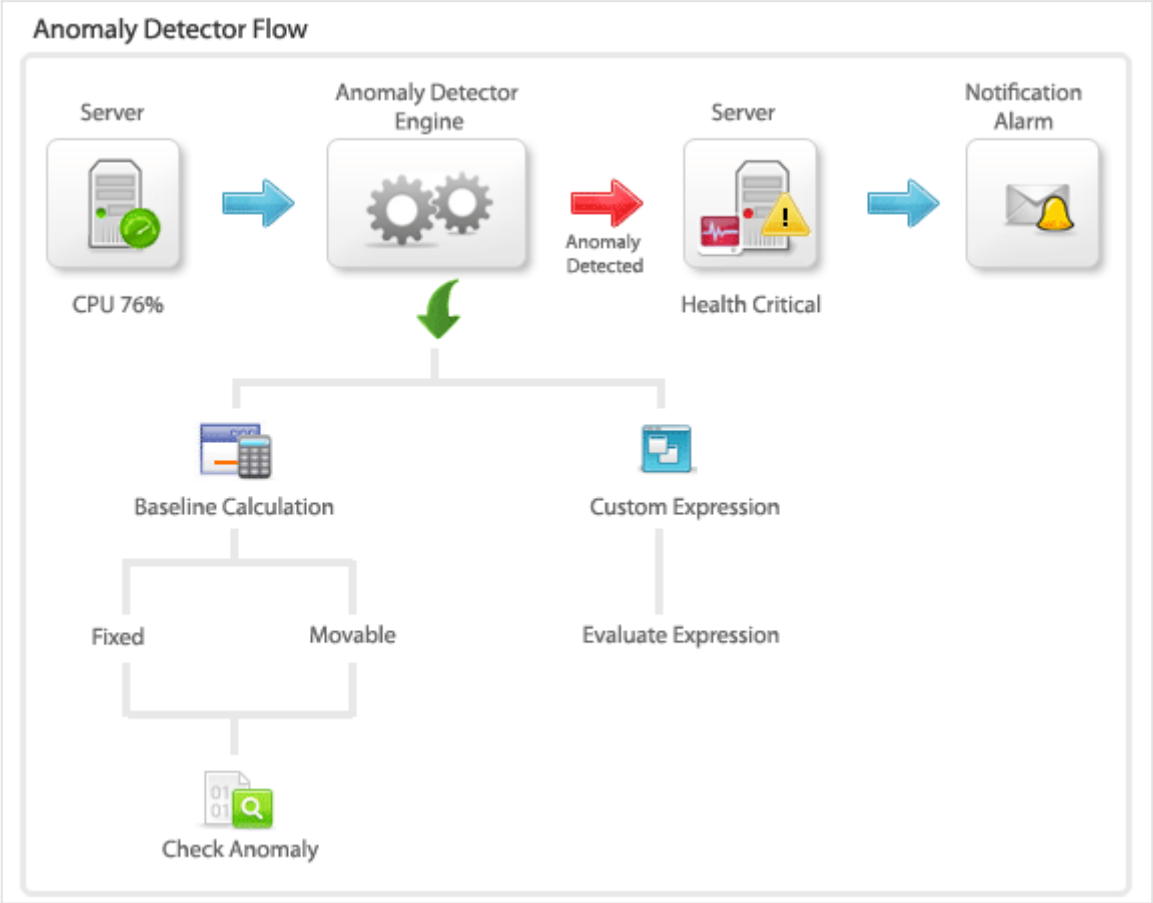
For eg., if the load on the server increases over a period of time, response time will gradually be affected. By using Anomaly detection, you would be able to detect this performance problem.

How does Anomaly Detection Work?

Anomaly profiles can be created based on:

- Baseline Values
- Custom Expressions

Anomaly Dashboard: This dashboard facilitates viewing through all the performance metrics and helps in easy troubleshooting.



Baseline Values:

Anomaly happens when the current set of values don't conform to the baseline range values. Current Attribute values are compared against the reported data in a particular week [baseline week].

- **Define baseline** - Baseline week can be calculated based on
  - **Fixed Value**: The week where the system has performed very well [there has been less number of alarms] will be chosen as reference/ baseline data range. After choosing the week for baseline comparison, then each day's value will be compared

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with the corresponding day of the baseline week. For eg. If you choose week 1 of August as baseline week, then every Monday's data will be compared with August week1's Monday values. Another usecase can be for festive time load. Anomaly profiles can be created for Christmas Holiday weekend and the performance metrics can be compared to know how effectively the system has performed.
- **Moving Value**: Instead of fixing a baseline week, **Previous week's reported data** can be selected for comparison. Here, the baseline value will be changing according to the previous week's data.

- **Specify the anomaly criteria** - Set the upper limit and lower limit range to compare the current data with the baseline values.

  Baseline data range will be formed based on the upper limit and lower limit values .These values can be used as % or as hard coded values. Eg, if the baseline value is 70 and if you had provided 10% as criteria for both upper and lower limits then the base line range will be between 64 to 77. Likewise if you had provided the criteria as 10 then the range will be between 60 to 80.
- **Working** - After comparing with the baseline data, if the current hour value does not come between the upper limit and lower limit configured, then alarms will be generated.
  - Lets set Aug 1st week of 2009 as the baseline data range.
  - Anomaly range is defined as 10% upper limit and 10% lower limit.
  - The deviation is calculated based on hourly values. So at 11 A.M, Tuesday of the Second Week, the Memory Utilization value will be compared with the values present at 11 AM, Tuesday of the Ist week. If the value deviates from the upper limit or lower limit, then an alarm will be generated.
  - After creating Anomaly profile, you have to associate the anomaly profile to the concerned attributes.

To create Anomaly Profile based on baseline values:

- Click on Anomaly Profile link. Click on New Profile
- In the Anomaly profile page, Give the Name for the new Anomaly profile you want to create.
- For baseline calculation, select the Baseline data range: You can choose between fixed baseline value [the appropriate week] or moving baseline value which is based on previous week's data.
- Define the allowed deviation from baseline. Alarms can be generated either based on percentage of upper limit, lower limit value or straightaway on hard coded comparison values. The generated Alarm will be cleared if the value falls in the baseline range [that is checked every hour]. Alarm can be critical or warning.
- Select the comparison method.
  - The recommended method would be to **Compare last hour value directly with baseline value**. Here, While comparing, hourly value will be taken into consideration and compared with the baseline value directly.For eg: Say if current time is 10:00 AM , Monday and if baseline date range is week 2. Then week 2 , Monday 10:00 AM value will be taken for comparison and upper and lower limits will be applied as per the user configuration.
  - The other method would be to **Compare values based on the corresponding difference with the previous hour**. While comparing, the corresponding difference in hourly values would be taken into consideration.

    For eg: If current time is 10:00 AM, we will take the difference between the values at 10:00 AM and 9:00 AM for comparison. A similar approach will be used for getting the baseline values.
- Finally click 'Create Anomaly profile'.

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Custom Expressions

Anomaly is detected when current data doesn't conform to the user defined rules [based on system variables]. For eg., you can create a rule like Anomaly is to be detected when the current Last Hour Average Value is greater than twice the Six Hours Moving Average Value. Critical and Warning alarms can be set accordingly.
The system variables that can be used for forming custom expressions are

Expressions	Meaning
$10D_MVA	Ten Days Moving Average
$LastHourValue	Last Hour Average
$6H_MVA	Six Hours Moving Average
$30D_MVA	Thirty Days Moving Average
$10H_MVA	Ten Hours Moving Average
$7D_MVA	Seven Days Moving Average

To Create Anomaly Profile based on Custom Expressions:

- After choosing to create anomaly profile based on Custom Expressions, enter the profile name for the new anomaly profile.
- Critical Alarm : Create an expression like **$LastHourValue > 10*$7D_MVA+(5+$30D_MVA)**. Then select the critical alarm from dropdown .
- Warning Alarm : Create an expression like **$LastHourValue <= 25*$6H_MVA+(5+$10D_MVA)**. Then select the warning alarm from dropdown
- Save the Anomaly Profile.

To Associate Anomaly Profile:

- Go to the respective monitor details page. Choose the attributes for which you want to configure alarms. Click on *Configure Alarms* link.
- Threshold Details and Anomaly Details will be listed. Click on ***Anomaly Details*** tab.
- From the drop down box, Choose the appropriate attributes and associate them to the corresponding anomaly profiles.
- Save the alarm configuration

Note: A particular monitor's health will be made critical and EMail notification will be sent only if the user had associated EMail action to the health of the dependant attribute

Anomaly Dashboard

This dashboard facilitates viewing through all the performance metrics. It helps the user to intuitively scan through the hundreds of performance metrics with ease.

- If the health of any attribute / Monitor Group / Monitor has turned critical or if the availability is down, click on the icon for seeing the root cause analysis.
- Click on ***Use Anomaly Dashboard for troubleshooting*** to access the Anomaly Dashboard. You can access Anomaly Dashboard from Alarms tab too. In Alarms tab, all alarms whose health have turned critical are listed. Click on alarm message, it goes to Alarm Details page. In Alarm history table, you can find the Anomaly Dashboard icon
- In Anomaly Dashboard, You can choose to list only critical monitors or all monitors. **Note:** Critical state is based on the Anomaly profile associated to the attribute of the monitor.
- Base Metrics shows response time details and all other metrics by using current time but you can customize it using the *change* link. You can change the attribute and time. **Note:** The chosen time is used in all other calculation such as last hour

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value, 12 hour average etc.

- Graphs: **Last polled** is last hour value. **12 hour** is last 12 hour average values in graphical format [SparkSeries]. **7day segmented hour** is shown as bar graph [Sparkline]. You can click through the columns to view the detailed reports.
- After associating anomaly profile to an attribute of a monitor, if the profile rule is violated, the monitor becomes critical and background of 12 hour graph will be red in color. By clicking on the column, you can see the detailed report like when anomaly value was reached, etc.

See Also

Associating Threshold and Action with Attributes

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SLA Management Console For Managers

SLA Management Console would essentially help the Manager to have an integrated high-level view of the Business Infrastructure. Here, monitor groups form Business Application units. The manager can create service level agreements (SLAs), the violation of which can be escalated by Email. By default, if the Manager is not explicitly associated to a Monitor Group, the Manager will be able to access all the Monitor Groups in the Manager Console. If the Manager is associated to a certain Monitor Groups, only those Monitor Groups will be shown in Manager Console - More

SLA Management Console gives the overall status of the various Business Applications that are associated with the system. You can view the availability statistics graph of the Business Applications for various time periods like 'Today', 'Yesterday', 'Last Week', 'This month', etc.,

The **Service Level Agreement (SLA)** statistics table lists all the Business Applications & their SLAs and indicates whether the SLAs have been met or not. You can view the **Availability %** (clicking on the availability value will help you view the overall availability report of the Monitor Group and also the availability reports of the individual Monitors in the Monitor Group), **Mean Time To Repair (MTTR)**, **MTBF (Mean Time Between Failures)**.

Mean Time To Repair (MTTR):

The average time to repair a device or a system back to acceptable operating conditions. The term can also mean, the time spent to restore a machine to operating condition after failure. This must be as low as possible.

Mean Time Between Failures (MTBF):

The average time that a device or a system worked without failure. The term can also mean the length of time a user may reasonably expect a device or system to work before an incapacitating fault occurs. This must be as high as possible.

Server SLA:

Upon clicking the Server SLA tab, you can view the SLA details for all the servers associated. Server Availability statistics is shown as a pie chart. By default, the least availability statistics for 'Today' is shown. A maximum of availability details of 12 servers would be shown as pie chart. You have an option to view the availability statistics for other time periods like 'Yesterday', 'Last Week', 'Last month', etc.,

The server availability statistics - uptime % table, clearly lists down all the Servers associated with the different types of SLAs and it indicates whether the Servers have met the SLAs or not. If there is a SLA violation, the corresponding statistics is highlighted in red. The other details that can be viewed are Total Downtime, Availability %, MTBR, MTBF along with the trouble tickets associated with it. You can view the Server availability report for the past seven days by clicking on the 7 Icon.

Events:

Upon clicking the Events tab, you can view the SLA details for all the Events associated. Events Volume statistics is shown as a bar graph. By default, the volume statistics for 'Today' is shown. A maximum of Events volume details of 12 business applications would be shown as bar graph. You have an option to view the Events volume statistics for other time periods like 'Yesterday', 'Last Week', 'Last month', etc.,

The Events Volume table, clearly lists down all the Business Applications associated with the different types of SLAs and it indicates whether events volume has met the SLAs or not. If there is a SLA violation, the corresponding statistics is highlighted in red. Across the various time periods, you can compare the trends in the volume of Events

Creation of New Service Level Agreements:

- Click on the **New SLA** link
- Enter the **SLA Name**

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- Enter the **SLA Description**
- Choose whether to use the SLA for **Business Application** or for **Server**
- Then you go on to define the SLA Rules
- The Service Level Objectives provided are **Availability** and **Events**
- To meet the SLA, Availability can be set as equal to, greater than, or greater than equal to a percentage value. By default it is 99.9 %
- To meet the SLA, the Events Volume can be set as less than, equal to or less than equal to a particular number of Events per month.
- The next step is to **associate the SLA to the Business Applications or the servers** as per the initial choice. From the available list, Select the Business Applications / Servers that you want to monitor using the SLAs.
- You have an option to escalate **SLA violation through Email**. Enter the From address, to address, subject, and message of the escalation Email. The mail will be sent to the recipient(s) with the root cause message of the SLA violation.
- Click on 'save' to create a new SLA.

Note
E-Mail escalation of SLA violation is always calculated for last 30 days. You can go to SLA reports and select period as last 30 days and see the SLA violations.

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Applications Manager Plugin for OPM

Contents

- Applications Manager Plugin - An Overview
- Editions Availble for Installation
- OpManager Versions (based on the user interface)
- Software Requirements for the APM Plug-in
- Instructions to apply APM plug-in
- Using the Applications Manager Plugin

Applications Manager Plugin - An Overview

With Applications Performance Management plug-in for OpManager, you can proactively monitor business applications and help businesses ensure their revenue-critical applications meet end user expectations. This plug-in offers out-of-the-box monitoring support for 50+ applications and servers.

Monitoring Highlights:

- Automatic discovery of application servers, databases, services, systems, transactions, custom applications, virtual resources and cloud apps in your heterogeneous data center.
- Experience comprehensive performance management of over 100 key performance indicators of your applications - including response time, resource availability, CPU/memory utilization and more.
- Get a holistic view of your IT resources including a wide range of business applications and network services.
- Perform end-user experience monitoring of enterprise Internet Services and hosted Web Services from your branch offices; and measure the end-user experience of business-critical network services such as DNS, LDAP, Ping and Mail server from customer locations.
- Effective, timely fault management with notification of problems through e-mail and SMS alerts.
- Powerful reporting capability with extensive coverage to help administrators in application troubleshooting & capacity planning.

Editions Availble for Installation

- **Professional Edition** - To install the Professional edition, the OpManager Standalone should be installed before installing Applications Manager Plugin.
- **Enterprise Edition -** To install the Enterprise Edition, the Opmanager central and Opmanager Probe should be installed before Plugin Enterprise Edition installation.

OpManager Versions (based on the user interface)

- The latest version with the Old User Interface is 11600.
- The latest version with the New User Interface is 12200

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Software Requirements for the APM Plug-in

The recommended software requirements for installing and running APM Plug-in are as follows:

Supported Operating Systems	Supported Browsers
• Windows 7, Windows Server 2003,2008,2012 • RedHat Linux 8.0 and above • Enterprise Linux 2.1 and above • Debian/Suse/Ubuntu/Mandriva/CentOS/Fedora Core	• Internet Explorer 8.0 and above • FireFox 7.x and above • Google Chrome v22.0 and above

Instructions to apply APM plug-in

- Download OpManager's APM plug-in file to OpManager server
- Shutdown the OpManager Service and execute the file.
- You have to install APM plug-in in OpManager server.
- Follow the on-screen instructions to complete the installation process. Once the installation wizard completed, the Applications Manager Plugin will be installed under **OpManager_HOME/AppManager** directory
- Start the OpManager Service.

Using the Applications Manager Plugin

In Version 11600 of OpManager - Applications Manager can be accessible under “Apps” tab in OpManager.

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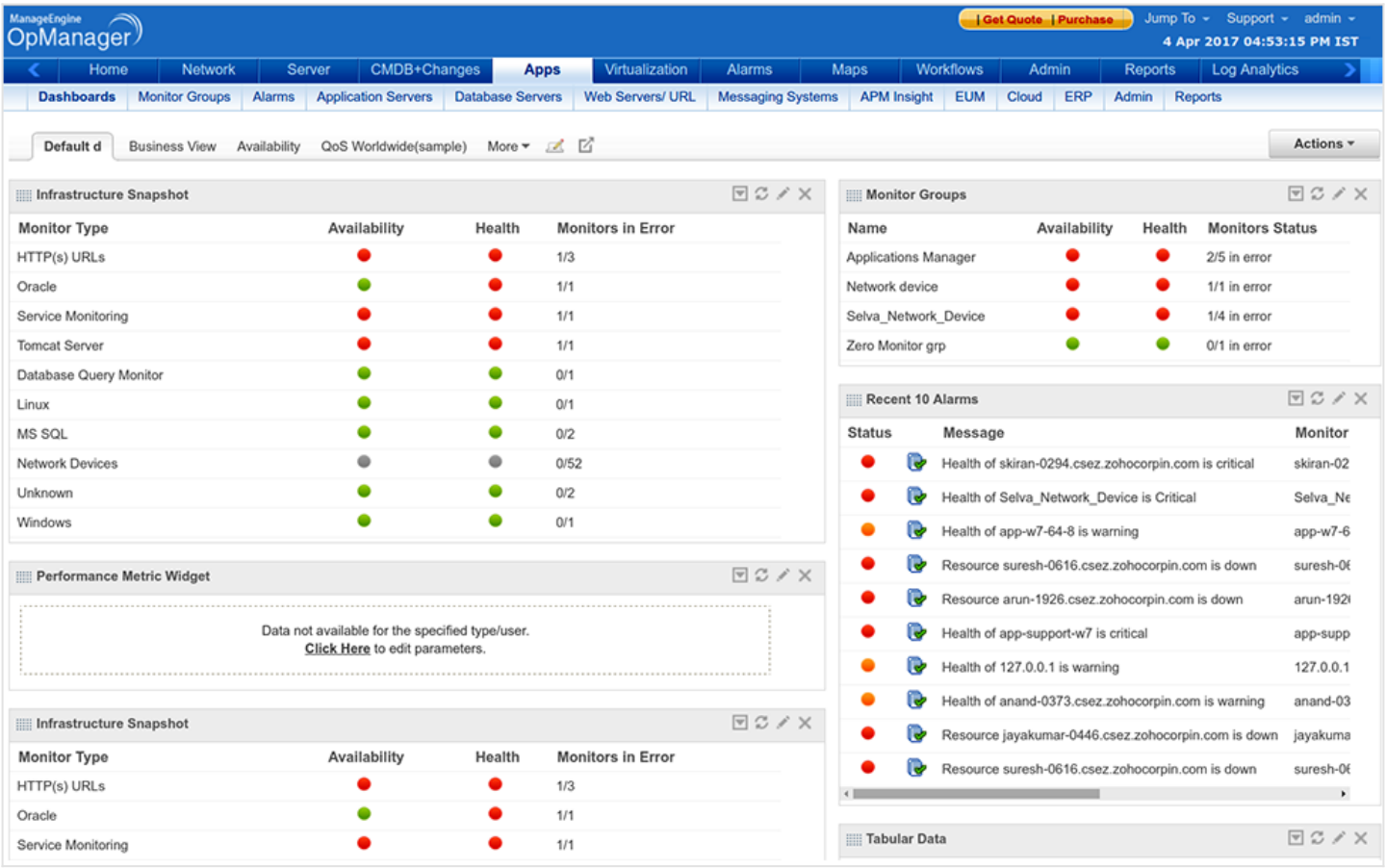
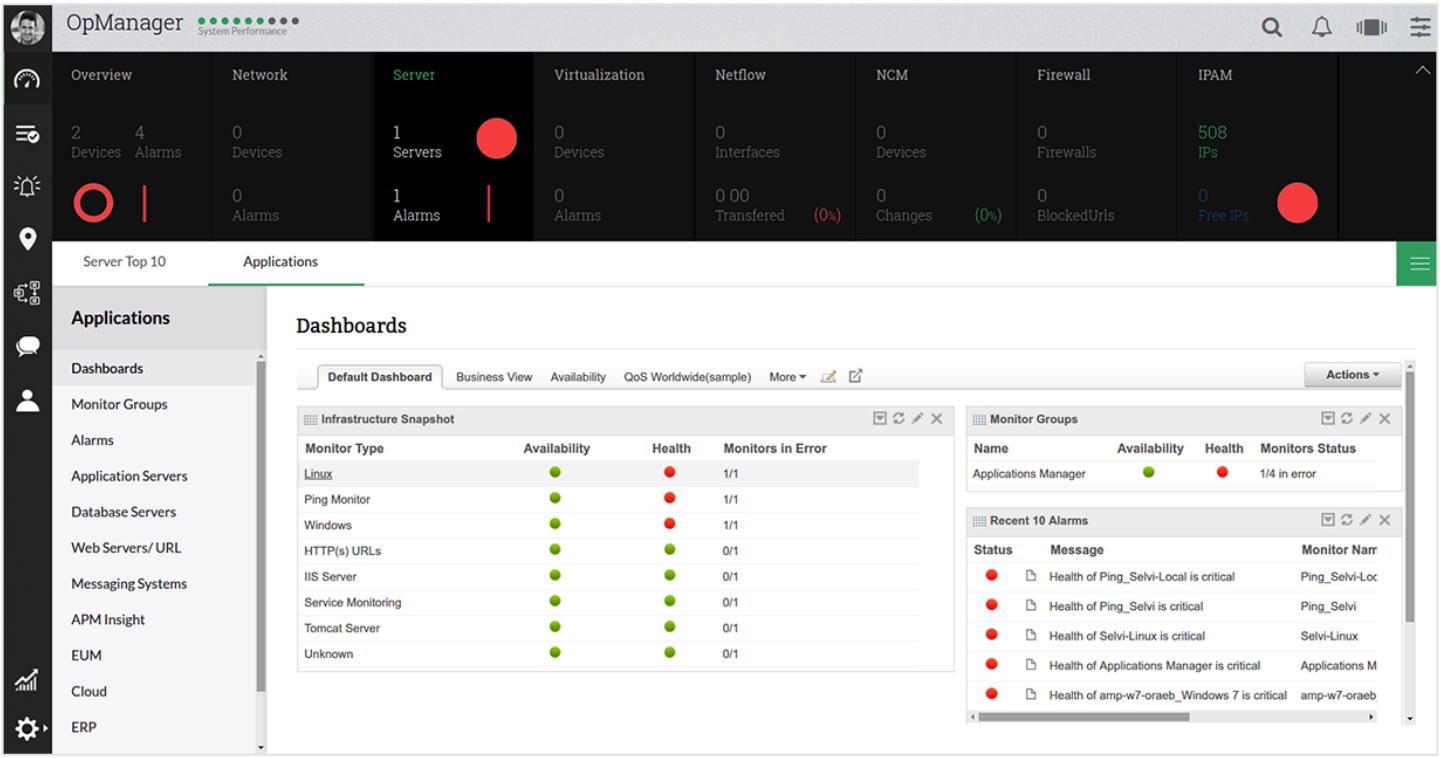


In Version 12200 of OpManager - Applications Manager can be accessible under “Dashboards -> Servers -> Applications”.



Note

There is no need to apply a separate license file for AppManager Plugin. It is included within the OpManager license.

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Technical Support and Product Information

Clicking 'Support' tab in the web client provides you the following information.

- Applications Manager Support
- User Forum Discussions
- Applications Manager Team Blog
- Testimonials
- Product Information
- Applications Manager Installation Information
- JVM Memory Information
- Database Connection Time
- Database Request Statistics
- System CPU Utilization
- System Response Time

Applications Manager Support

Request Technical Support

Clicking this link takes you to an online support form. Describe the problem, specify your name, e-mail ID, telephone number, and additional information if any and click Submit.

Alternatively, you can simply send an e-mail to appmanager-support@manageengine.com.

Support Information File

For the Applications Manager Technical Center to resolve problems quickly, you need to send the log files that are being generated. To do so, click Support Information File link. The log files are zipped in a file and placed under <Applications Manager Home>/support directory. File creation takes some time based on the log file size.

To create Support Information File via command prompt, execute the following command:

<C:ProgramFilesManageEngineAppManager11bin>createSupportFile

After generating the support information file, e-mail it to appmanager-support@manageengine.com

If the support information file is large in size and our mail server blocks the same, then you can upload the file in our FTP site.

You will be provided details of the FTP service usage when you connect to our FTP server using "ftp ftp.zohocorp.com"

Server Name = ftp.zohocorp.com

user account = anonymous

password = "your email address"

Mail us the location of the file and the folder in which it is placed in case you are using ftp to upload the file.

Troubleshooting Tips

Clicking this link takes you to the online Troubleshooting page which is a quick stop to get your problems resolved by yourself. This page quotes the common problems faced by users and provides a quick solution.

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Toll Free Number

You can call the Toll Free Number +1-925-924-9500 and ask for assistance from the Applications Manager Technical Center.

Need Features?

If you would like to see more new features in Applications Manager, click the Need Features link. This takes you to an online form where you can specify the feature and its description.

User Forums

Clicking this link will take you to the Online user forums where you can discuss about Applications Manager with other users. Five latest discussion topics will be displayed.

Applications Manager Team Blog

Clicking this link will take you to the Online Applications Manager Team Blog where you can view interesting information about the team, tips on handling Applications Manager and many more. Five latest blogs will be displayed.

Testimonials

Clicking this link will take you to the online Testimonial form, wherein you can leave your feedback about Applications Manager.

Product Information

This sections provides the following information.

- Product: Name of the product.
- Build Number: Build number of the product currently installed in your machine.
- Service Pack: The service pack that has been currently installed over the product.
- License Type: Type of license that you are currently using (Free, Evaluation, Paid) and the number of days remaining if it is an evaluation edition.
- Buy/Evaluate: 'Buy' option is available if you are using an Evaluation edition. Click 'Buy' to go to the online store and purchase Applications Manager product license. 'Evaluate' option is available if you are using a Free Edition. Click 'Evaluate' to switch from Free edition to Evaluation edition (30 days).

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Applications Manager Installation Information

This section provides information about the system where you have installed the product.

Load Factor: The load factor follows the format 'x.y', where 'x' represents load on Applications Manager Server, while 'y' represents the load on the Database used by Applications Manager. A value of zero represents least loaded, while a value of nine represents the most loaded.

Applications Manager Server Load (x) :

Once in every 30 minutes Applications Manager will select 50 random monitors (mostly Servers / SQLs) and find their corresponding Polling Intervals, their last Data Collection time and the number of times data collection has happened in the last 1 hour for that monitor. Then it will calculate the expected number of Polls that should have occurred in one hour for that monitor. Using these values it will calculate the polling delay % (100 * Number of Times Acutally Polled / Number of Times it should have Polled) for each monitor. Then it will find the average polling delay for these 50 monitors and server load factor value (x) will be calculated based on the information below :

Poll Delay %	Load Factor
Less than 97%	0
Greater than 97% and less than 93%	1
Greater than 93% and less than 90%	2
Greater than 90% and less than 86%	4
Greater than 86% and less than 82%	6
Greater than 82% and less than 70%	8
Greater than 70%	9

Applications Manager Database Load (Y) :

This value is calculated based on the number of Transactions/Min (commitsPerMin + rollbacksPerMin happening in PgSQL / Transactions/sec for Microsoft SQL) happening in the Applications Manager's Database based on the information below :

Transactions/Min*	Load Factor
Less than 600	0
Greater than 600 and less than 1200	1
Greater than 1200 and less than 1800	2
Greater than 1800 and less than 2400	3
Greater than 2400 and less than 3000	4
Greater than 3000 and less than 3600	5
Greater than 3600 and less than 4200	6
Greater than 4200 and less than 4800	7
Greater than 4800 and less than 5400	8
Greater than 5400	9

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JVM Memory Information

This section provides information on the JVM Memory usage.

- Total JVM Heap Size: Total heap size occupied by JVM.
- Used JVM Heap Size: Heap size used by JVM.
- Free JVM Heap Size: Heap size that is free without JVM usage.
- View Thread Dump Information: Thread status in the JVM can be viewed here.
- View Monitor Errors: Error messages of monitors can be viewed here. You can see, if data collection has happened successfully or not at one go.

Database Connection Time

This graph provides information on the Applications Manager database connection time for the last one hour.

Database Request Statistics

This graph provides information on the Applications Manager database request statistics for the last one hour.

System CPU Utilization

This graph provides information on the system's (where Applications Manager is installed) CPU Utilization pattern for the last one hour.

System Response Time

This graph provides information on the system's (where Applications Manager is installed) Response Time pattern for the last one hour.

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Glossary

Terms	Definition
Action	These are tasks to be performed to notify the user, when alarms are generated by Applications Manager. For example, while monitoring WebLogic server, if the user wants to be intimated when the server response time is greater than 1000ms, then an alarm is generated when the condition is met. The users are notified of the alarms through Actions such as sending e-mail, SMS, trap, and executing a command.
Admin Activities	Activities allowing IT administrators to configure any operation in Applications Manager with ease. Only the 'Admin' user can perform these activities. For more information on user access, refer to the User Administration section.
Alarms	Alarms are notifications generated based on Threshold / Health values . They are generated when the value of a numerical attribute exceeds the pre-defined threshold limit. Additionally, the status of health and availability of an application can also be determined through Alarms.
Alarm Configuration	This activity enables the user to associate a threshold profile with an attribute so that alarms are generated. It includes associating the action to be executed when an alarm is generated. Additionally, the dependencies for the 'Health' attribute of a Monitor can also be configured.
Attribute	Attributes are parameters/objects of a Monitor and they provide information about them. These are parameters whose values are set to threshold to generate alarms.
Availability	An attribute that determines whether a system or application is available for use (Up or Down). **For example,** If a Web server is running, then the availability is up. Consider a situation where the Web server may be running fine but its response time is high. This is indicated by Availability as Up and Health as critical if the response time is a dependent parameter for health.
Monitor Groups	Refers to the logical grouping of one or more Monitors such as application servers, network services, databases, web applications etc. This provides a holistic view of the business environment.
Custom Monitor	Custom Monitors provide a way to monitor your Java applications or other applications that expose management information through SNMP (Simple Network Management Protocol) and JMX (Java Management Extensions). Say, you have a Java application with built-in manageability using JMX and any application that has an SNMP interface, then they are managed by building Custom Monitors.
Dependencies	Dependencies determine • health of Monitor or Monitor Group • health or availability of Monitor Group They consist of the dependent parameters of the Monitor based on which the severity of the health and availability is determined. For example, Health of a Tomcat Server may depend on the overall response time of the server or on the response time of each of the web applications deployed on the server etc. By configuring dependencies, you can determine the attribute, based on which the severity of health changes.
Discover Network	Locating all Monitors running within a network range.
Enterprise OID in SNMP Trap	OID that uniquely distinguishes traps of different organizations, i.e. they vary for different vendors. This field applies only to SNMPv1 traps.
Generic Type in SNMP Trap	These are types that are mapped to specific OID to generate SNMP traps and provide additional information about the functioning of the Monitor Group. **They** are applicable only to SNMPv1 traps. The different types of Generic traps are c**oldStart**, w**armStart**, l**inkDown**, l**inkUp**, a**uthenticationFailure**, and e**gpNeighborLoss.**
Health	An attribute that indicates the quality of Monitors, based on their dependencies. For example, If a Web server takes 10 mins to respond, its response time is high but the server is still available. Hence it is indicated by Health as critical (If response time is a dependent parameter of health) and Availability as up.
Monitoring	It is a continuous process that uses methodical collection and analysis of data to provide business management.
Monitor	Application on which monitoring is performed. Monitor is an instance of a Monitor Type that is running in a port of a host. For example, Application Servers such as WebLogic servers or Tomcat servers etc, Database servers such as Oracle or MySQL servers are some of the Monitor Types while a WebLogic server running on a particular port of a host is a Monitor.
Monitor Type	Refers to application such as WebLogic server, JBoss server, System server, URL Monitor, Oracle Database server, MySQL Database server, etc. that are monitored by Applications Manager. Different instances of these applications are Monitor.
Mean Time To Repair (MTTR)	The average time to repair a device or a system back to acceptable operating conditions. The term can also means, the time spent to restore a machine to operating condition after failure. This must be as low as possible. MTTR thresholds can be set to trigger root cause.
Mean Time Between Failures (MTBF)	The average time that a device or a system worked without failure. The term also stands for the length of time a user may reasonably expect a device or system to work before an incapacitating fault occurs. This must be as high as possible. MTBF thresholds can be set to trigger root cause.
Polling Interval	The time interval to monitor the different parameters configured for a Monitor.

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RCA	Root Cause Analysis helps to point the actual cause of a problem. You can view the '**Root Cause Analysis**' by clicking on the status icon of the attributes. **For example,** Health of System Health of mapi-solaris1 Physical Memory Utilization of mapi-solaris1 Health of app-solaris1 Swap Memory Utilization of app-solaris1 Expand the nodes to view the actual cause of the problem. Here, WebLogic Health is critical as Availability and Response Time (dependencies of Health) are also critical.
Reports	They provide organized presentation of data that depicts the behavior of Monitor Types over a specified period of time.
Response Time	The **time** taken by a Monitor to react to a given input.
Severity	Indicates how serious the problems are. There are three levels of severities: Critical, Warning, and Clear. These are controlled by the threshold set by the user or administrator.
SMTP Server	An outgoing e-mail server using Simple Mail Transfer Protocol (SMTP) that sends your outgoing messages to the appropriate recipients. Most e-mail systems that send mail over the Internet use SMTP to send messages. The messages can be retrieved using POP server.
SNMP OID	*Object identifier* (OID) that is used to uniquely identify each object variable of a MIB (Management Information Base).
Specific Type in SNMP Trap	When generic is set to Enterprise, a specific trap ID is identified.
SubNetMask	The subnet mask determines the maximum number of hosts on a subnetwork.
Threshold	Threshold is the value that determines the severity of the alarm based on the pre-defined conditions. For example, if the user wants to be intimated when the server response time is greater than 1000ms, then a threshold can be created based on this condition and assigned to the attribute.
URL Monitors	Continuous URL monitoring service that monitors web pages. They verify the availability of specified, addressable, standard HTTP and HTTPS URLs of web pages.

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Database Migrations

Three types of DB Migration can be done in Applications Manager:

- MySQL to PostgreSQL (Supported Both in Windows and Linux)
- MySQL / PostgreSQL to Microsoft SQL (Supported only in Windows)
- PGSQL to SQL Server migration for Applications Manager Plug-in (Supported only in Windows)

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MySQL to PostgreSQL Migration

Note

You need to be on Version 13210 of Applications Manager or above to do migration, so please check the build number in the Support tab.

Prerequisites

1. Before starting Migration check the Database port number in following files (and make sure it's the same in all the files):
   - AMServer.properties in "AppManager_Home/conf"
   - database_params.conf in "AppManager_Home/working/conf"
   - startMySQL.bat (before export in MySQL build) / startPGSQL.bat (before import in PGSQL build) in "AppManager_Home/working/bin"
2. Install the PostgreSQL build which is same as MySQL. Start and stop the new PostgreSQL build.
3. Take backup of the MySQL Database before starting Migration.

Steps for Migration:

Step 1 - Stop MySQL build “ManageEngine Applications Manager” service and via command prompt (make sure you *run as administrator*) , go to <AppManager Home> directory and execute the below commands.

shutdownApplicationsManager.bat

shutdownApplicationsManager.bat -force

Via command prompt, go to <AppManager Home> directory and execute the below command in Linux.

sh shutdownApplicationsManager.sh

sh shutdownApplicationsManager.sh -force

Step 2 - In MySQL AppManager, open a command prompt using administrator privileges, run the <AppManagerHome>/bin/Migration/MigrateToPGSQL.bat script, data export process will start. You can view progressin <AppManager Home>/logs/Migration/.

Example:

MigrateToPGSQL.bat Export

sh MigrateToPGSQL.sh Export (in case of Linux)

Step 3 - From the MySQL AppManager copy <AppManager Home>/working/Migration.zip file to the same location in the PGSQL AppManager and unzip it (All the *.txt files should be in <AppManagerHome>/working/Migration/)

Step 4 - In MySQL AppManager run the <AppManager Home>binBackupConfig.bat (or sh) script and copy the <AppManager Home>workingbackupbackupconfzip_Type_Build_Date_HH_MM_SS.zip file to the same location in the PGSQL AppManager.

Step 5 - Take a backup of AMServer.properties under AppManager_HOME/conf folder in **PGSQL** build.

Step 6 - Run the <AppManager Home>binRestoreConfig.bat (or sh) script with the backupconfzip_Type_Build_Date_HH_MM_SS.zip file that was copied in step 4.

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Step 7 - In PGSQL AppManager go to <AppManager Home>/working/pgsql/data and remove or rename "amdb" folder.

Step 8 - In PGSQL AppManager, open a command prompt using administrator privileges, run the <AppManager Home>/bin/Migration/MigrateToPGSQL.bat script, data import process will start. You can view progress in <AppManager Home>/logs/Migration/.

Example:

MigrateToPGSQL.bat Import

sh MigrateToPGSQL.sh Import (in case of Linux)

Step 8 - Replace the host details of PGSQL build in AMServer.properties with the details in backup file taken in **step 5.**

Step 9 - Start the PGSQL Applications Manager & check your data.

Note: After Migration, it is mandatory to copy and paste all the Prerequisites files needed for monitoring from MYSQL to the PGSQL build. **Once database migration is completed, please confirm that there are no failed tables. Once this is done, start the migrated build.**

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MySQL/PGSQL to MSSQL Migration

Note

The Migration is now possible only in a Windows version of Applications Manager.

You need to be on Version 13210 of Applications Manager or above to do migration, so please check the build number in the Support tab.

Prerequisites

1. Take backup of the PGSQL/MySQL Database before starting Migration.
2. Install the Applications Manager with same build number by selecting MS SQL Backend, start & stop it once.
3. The MSSQL Build should not be running during Migration. But MySQL/PGSQL build should be running, so please make sure that it is.
4. Open **Migration.properties** file in **AppManagerHomeconf** folder in PGSQL/MySQL AppManager and enter details of the Microsoft SQL Server like hostname, port, database name, username & password same as you have provided in step 2.

```
# ------------------------------------
# Target Database Details for migration
# ------------------------------------
am.importdb.type=mssql
am.importdb.host=APP-WIN7-64-1
# we don’t need to mention port if the target server is a SQLServer instance
am.importdb.port=1433
am.importdb.instance=-
am.importdb.name=AMDB_MSSQL
# For Domain authentication should be given as DomainName\Username
am.importdb.user=sa
am.importdb.password=password
```

Steps for Migration

1.) In the PGSQL/MySQL AppManager execute the below under AppManagerHomebinMigration folder in command window (make sure you *run as administrator*).

MigrateToMSSQL.bat Export

A specific Migration.zip file will be created in AppManagerHome/working/ location.

AppManagerMigration.zip (Professional Edition)

AdminServerMigration.zip (Admin Server)

ManagedServer_X0000000.zip (Managed Server With ServerID X)

2.) Copy your specific zip file & unzip it under the C: drive of the Windows server where your MSSQL database is running.

3.) Now in PGSQL AppManager, execute the below under AppManagerHomebinMigration folder in cmd window.

MigrateToMSSQL.bat Import

This will import your data from PGSQL/MySQL DB and insert into target DB (example: AMDB_MSSQL) in the SQL Server.

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4.) Copy the below information the existing PGSQL AppManager to MSSQL AppManager installation

AppManagerHome/working/mibs

AppManagerHome/working/adventnet_ssh_privateKey_file.txt_*

5.) Stop the PGSQL/MySQL AppManager and start the MS SQL AppManager. You will have all your existing monitors/configurations and reports in that with data stored in MS SQL server now.

NOTE

Currently we have the following options while migrating

a. Can exclude any table without migrating

b. Can specify row limit for tables which have more rows count.

(Event or AM_Disk_MinMaxAvgData or similar tables can have million of rows, so we can set a limit if a need arises). These options can be given in migration.conf under AppManagerHomeworkingconfPGSQL for PGSQL build and AppManagerHomeworkingconfMySQL for MySQL build.

Note:

1. This step is not mandatory and may be required while very large database migration only.

2. After Migration, it is mandatory to copy and paste all the Prerequisites files needed for monitoring from MYSQLPGSQL to the MSSQL build.

3. Once database migration is completed, please confirm that there are no failed tables. Once this is done, start the migrated build.

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PGSQL to SQL Server migration for Applications Manager Plug-in

Note

The Migration is now possible only in a Windows version of Applications Manager.

You need to be on Version 13210 of Applications Manager or above to do migration, so please check the build number in the Support tab.

Prerequisites

1. Take backup of the PGSQL Database before starting Migration.
2. Install the Applications Manager with same build number by selecting MS SQL Backend, start & stop it once.
3. The MSSQL Build should not be running during Migration. But PGSQL build should be running, so please make sure that it is.
4. Open **Migration.properties** file in **OpManagerAppManagerconf** folder in PGSQL AppManager and enter details of the Microsoft SQL Server like hostname, port, database name, username & password same as you have provided in step 2.

```
# -------------------------------------
# Target Database Details for migration
# -------------------------------------
am.importdb.type=mssql
am.importdb.host=APP-WIN7-64-1
# we don’t need to mention port if the target server is a SQLServer instance
am.importdb.port=1433
am.importdb.instance=-
am.importdb.name=AMDB_MSSQL
# For Domain authentication should be given as DomainName\Username
am.importdb.user=sa
am.importdb.password=password
```

Steps for Migration

1.) In the PGSQL AppManager execute the below under OpManagerAppManagerbinMigration folder in command window (make sure you *run as administrator*).

MigrateToMSSQL.bat Export

A specific Migration.zip file will be created in OpManagerAppManagerworking location.

AppManagerMigration.zip (Professional Edition)

AdminServerMigration.zip (Admin Server)

ManagedServer_X0000000.zip (Managed Server With ServerID X)

2.) Copy your specific zip file & unzip it under the C: drive of the Windows server where your MSSQL database is running.

3.) Now perform the Migration steps given by OpManager and restart your OpManager.

4.) Now in PGSQL AppManager, execute the below under OpManagerAppManagerbinMigration folder in cmd window.

MigrateToMSSQL.bat Import

This will import your data from PGSQL DB and insert into target DB (example: AMDB_MSSQL) in the SQL Server.

5.) Copy the below information the existing PGSQL AppManager to MSSQL AppManager installation

OpManager/AppManager/working/mibs

OpManager/AppManager/working/adventnet_ssh_privateKey_file.txt_*

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6.) Stop the PGSQL AppManager and start the MS SQL AppManager. You will have all your existing monitors/configurations and reports in that with data stored in MS SQL server now.

NOTE

Currently we have the following options while migrating

a. Can exclude any table without migrating

b. Can specify row limit for tables which have more rows count.

(Event or AM_Disk_MinMaxAvgData or similar tables can have million of rows, so we can set a limit if a need arises). These options can be given in migration.conf under OpManagerAppManagerworkingconfPGSQL for PGSQL build.

Note

- This step is not mandatory and may be required while very large database migration only.
- After Migration, it is mandatory to copy and paste all the Prerequisites files needed for monitoring from PGSQL to the MSSQL build.

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Supported Modems for SMS Notifications

Following is a list of the modems supported in Applications Manager for SMS Notifications.

S No.	Modem Version	Baud Rate	Manufacturer
1	iTegno 3000	115200	Wavecom
2	iTegno WM1080A	115200	Wavecom
3	Wavecom M1306B		Wavecom
4	iTegno 3800		Wavecom
5	MultiTech MultiModem MTCBA-G-F1		
6	Wavecom Fastrack M1206B	115200	Wavecom
7	VISIONTEK 81GC		Linkwell Telesystems
8	TELTONIKA ModemCOM/G10	115200	Teltonika
9	DIGICOM Pocket GPRS Micro (Version 1.47)	9600	Digicom
10	DIGICOM Pokcet GPRS Pico (Version 1.47)	9600	Digicom

Mobiles Supported

S.No	Mobile Model	Baud Rate	Manufacturer
1	Motorola E398	9600	Motorola
2	Nokia 6210		Nokia
3	Nokia 6310		Nokia
4	Nokia 6230i		Nokia
5	Nokia 8250		Nokia
6	Nokia 6610	115200	Nokia
7	Nokia 7210	115200	Nokia
8	Sony Ericsson T610	19200	Sony Ericsson
9	Sony Ericsson W800i	115200	Sony Ericsson
10	samsung sgh-c100	9600	Samsung
11	Sharp GX30	115200	Sharp
12	Sony Ericsson k700	115200	Sony Ericsson
13	Motorola RAZR V3	115200	Motorola
14	Nokia 7610	115200	Nokia
15	Nokia 3310/3315	19200	Nokia
16	Siemens M35	19200	Siemens
17	Siemens M50	19200	Siemens
18	Siemens C45	19200	Siemens

Can't find the modem that you're looking for?
Just check whether the device you have meets the following configuration:
• Your modem must have GSM/GprsCapability with the provision to insert the SIM card.
• Application Manager uses AT commands to send SMS, so the device should support AT commands.
• Application Manager uses AT commands to send SMS, so the device should respond to AT commands. [If needed, you can test it using HyperTerminal].
If the device criteria meets, AppManager will support your modem phone.

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Regular Expressions

Applications Manager supports usage of Regular Expressions (Regex) while searching for data. A regular expression is a special sequence of characters defines a search pattern for strings.

Regular Expression Syntax:

Here is the table listing down all the regular expression metacharacter syntax available in Java:

Subexpression	Matches
^	Matches beginning of line.
$	Matches end of line.
.	Matches any single character except newline. Using m option allows it to match newline as well.
[...]	Matches any single character in brackets.
[^...]	Matches any single character not in brackets
A	Beginning of entire string
z	End of entire string
Z	End of entire string except allowable final line terminator.
re*	Matches 0 or more occurrences of preceding expression.
re+	Matches 1 or more of the previous thing
re?	Matches 0 or 1 occurrence of preceding expression.
re{ n}	Matches exactly n number of occurrences of preceding expression.
re{ n,}	Matches n or more occurrences of preceding expression.
re{ n, m}	Matches at least n and at most m occurrences of preceding expression.
a| b	Matches either a or b.
(re)	Groups regular expressions and remembers matched text.
(?: re)	Groups regular expressions without remembering matched text.
(?> re)	Matches independent pattern without backtracking.
w	Matches word characters.
W	Matches nonword characters.
s	Matches whitespace. Equivalent to [tnrf].
S	Matches nonwhitespace.
d	Matches digits. Equivalent to [0-9].
D	Matches nondigits.
A	Matches beginning of string.
Z	Matches end of string. If a newline exists, it matches just before newline.
z	Matches end of string.
G	Matches point where last match finished.
n	Back-reference to capture group number "n"
b	Matches word boundaries when outside brackets. Matches backspace (0x08) when inside brackets.
B	Matches nonword boundaries.
n, t, etc.	Matches newlines, carriage returns, tabs, etc.
Q	Escape (quote) all characters up to E
E	Ends quoting begun with Q

See Also

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Monitor Information - File / Directory Monitor | Create Other New Monitors

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Enable and Use Remote Commands in Windows PowerShell

For using PowerShell in Applications Manager, you need Windows Management Framework (Windows PowerShell 2.0 and WinRM 2.0) on both Applications Manager server and the remote Windows server. For more details refer http://support.microsoft.com/kb/968929.

Also, ensure that Windows PowerShell is enabled in both servers:

- Open **Control Panel**.
- Select **Programs and Features**.
- In the Tasks list, click **Turn Windows features on or off**.
- When the Server Manager console opens, check if **Windows PowerShell** is enabled

You can verify the availability of Windows Remote Management (WinRM) service and configure PowerShell for remoting by following these steps:

- Start Windows PowerShell as an administrator by right-clicking the Windows PowerShell shortcut and selecting Run As Administrator.
- To configure Windows PowerShell for remoting, type the following command: **Enable-PSRemoting -force**
- Configure the TrustedHosts setting on both computers, so that computers will trust each other:**On Remote Monitored Server:***Set-Item wsman:localhostclienttrustedhosts <Applications Manager hostname>***On Applications Manager Sever:***Set-Item wsman:localhostclienttrustedhosts **
- Include the below cmdlets to be execute on remote Windows server when enabling powershell remoting (It's not required to be run on the Applications Manager server):"*Set-Item WSMan:localhostShellMaxShellsPerUser -value 25 -WarningAction SilentlyContinue*" (To increase the maximum number of concurrent shells that a user can remotely open)

  "*Set-Item WSMan:localhostShellIdleTimeout -value 60000 -WarningAction SilentlyContinue*" (Determines how long the session stays open if the remote computer does not receive any communication from the local computer, including the heartbeat signal. When the interval expires, the session closes.)
- On both computers, restart the Windows Remote Management (WinRM) so the new settings will take effect: **Restart-Service WinRM.**

You can test the configuration and connection from Applications Manager by following these steps:

1. Open PowerShell Console with administrator privileges.
2. **Run :** $testSession= New-PSSession -ComputerName <REMOTE-HOSTNAME> -Credential Get-Credential
3. A popup will appear, give the remote server credentials.
4. If any error is thrown, do the required configuration/setup to resolve it.
5. If step 3 executes without error, remove the testSession by **executing :** Get-PSSession | Remove-PSSession

The steps above will test whether the WinRM service is running on the remote computer and if Applications Manager can communicate with the remote server.

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Tomcat Server.xml

```
<!-- Example Server Configuration File -->
<!-- Note that component elements are nested corresponding to their
     parent-child relationships with each other
--><!-- A "Server" is a singleton element that represents the entire JVM,
     which may contain one or more "Service" instances.  The Server
     listens for a shutdown command on the indicated port.
     Note:  A "Server" is not itself a "Container", so you may not
     define subcomponents such as "Valves" or "Loggers" at this level.

--><Server port="8005" shutdown="SHUTDOWN" debug="0"><GlobalNamingResources><Resource
name="jdbc/AMDS" auth="Container" type="javax.sql.DataSource"/><ResourceParams
name="jdbc/AMDS"><parameter><name>factory</name><value>org.apache.commons.dbcp.BasicDataSourceFacto
ry</value></parameter><!-- Maximum number of dB connections in pool. Make sure you
         configure your mysqld max_connections large enough to handle
         all of your db connections. Set to 0 for no limit.

--><parameter><name>maxActive</name><value>100</value></parameter><!-- Maximum number of idle dB
connections to retain in pool.
         Set to 0 for no limit.

--><parameter><name>maxIdle</name><value>30</value></parameter><!-- Maximum time to wait for a dB
connection to become available
         in ms, in this example 10 seconds. An Exception is thrown if
         this timeout is exceeded.  Set to -1 to wait indefinitely.

--><parameter><name>maxWait</name><value>10000</value></parameter><!-- MySQL dB username and
password for dB connections
--
><parameter><name>username</name><value>root</value></parameter><parameter><name>password</name><va
lue/></parameter><!-- Class name for mm.mysql JDBC driver -->
<parameter><name>driverClassName</name><value>org.gjt.mm.mysql.Driver</value></parameter><!-- The
JDBC connection url for connecting to your MySQL dB.
         The autoReconnect=true argument to the url makes sure that the
         mm.mysql JDBC Driver will automatically reconnect if mysqld closed the
         connection.  mysqld by default closes idle connections after 8 hours.

--
><parameter><name>url</name><value>jdbc:mysql://localhost:13326/AMDB?autoReconnect=true</value></pa
rameter></ResourceParams></GlobalNamingResources><!-- A "Service" is a collection of one or more
"Connectors" that share
       a single "Container" (and therefore the web applications visible
```

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```
       within that Container).  Normally, that Container is an "Engine",
       but this is not required.
       Note:  A "Service" is not itself a "Container", so you may not
       define subcomponents such as "Valves" or "Loggers" at this level.

--><!-- Define the Tomcat Stand-Alone Service -->
<Service name="Tomcat-Standalone"><!-- A "Connector" represents an endpoint by which requests are
received
         and responses are returned.  Each Connector passes requests on to the
         associated "Container" (normally an Engine) for processing.
         By default, a non-SSL HTTP/1.1 Connector is established on port 8080.
         You can also enable an SSL HTTP/1.1 Connector on port 8443 by
         following the instructions below and uncommenting the second Connector
         entry.  SSL support requires the following steps (see the SSL Config
         HOWTO in the Tomcat 4.0 documentation bundle for more detailed
         instructions):
         * Download and install JSSE 1.0.2 or later, and put the JAR files
           into "$JAVA_HOME/jre/lib/ext".
         * Execute:
             %JAVA_HOME%binkeytool -genkey -alias tomcat -keyalg RSA (Windows)
             $JAVA_HOME/bin/keytool -genkey -alias tomcat -keyalg RSA  (Unix)
           with a password value of "changeit" for both the certificate and
           the keystore itself.
         By default, DNS lookups are enabled when a web application calls
         request.getRemoteHost().  This can have an adverse impact on
         performance, so you can disable it by setting the
         "enableLookups" attribute to "false".  When DNS lookups are disabled,
         request.getRemoteHost() will return the String version of the
         IP address of the remote client.

--><!-- Define a non-SSL HTTP/1.1 Connector on port 8080 -->
<!-- NMS  Commenting out the default HTTP Connector
    <Connector className="org.apache.catalina.connector.http.HttpConnector"
               port="8080" minProcessors="5" maxProcessors="75"
               enableLookups="true" redirectPort="8443"
               acceptCount="10" debug="0" connectionTimeout="60000"/>
--><!-- Note : To disable connection timeouts, set connectionTimeout value
     to -1
--><!-- Define a non-SSL Coyote HTTP/1.1 Connector on port 8081
--><!--
    <Connector className="org.apache.coyote.tomcat4.CoyoteConnector"
               port="8081" minProcessors="5" maxProcessors="75"
               enableLookups="true" redirectPort="8443"
               acceptCount="10" debug="0" connectionTimeout="20000"/>
```

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```
--><!-- Define an SSL HTTP/1.1 Connector on port 8443 -->
<!--
    <Connector className="org.apache.catalina.connector.http.HttpConnector"
               port="8443" minProcessors="5" maxProcessors="75"
               enableLookups="true"
           acceptCount="10" debug="0" scheme="https" secure="true">
      <Factory className="org.apache.catalina.net.SSLServerSocketFactory"
               clientAuth="false" protocol="TLS"/>
    </Connector>

--><!-- Define an AJP 1.3 Connector on port 8009 -->
<Connector className="org.apache.ajp.tomcat4.Ajp13Connector" port="18009" minProcessors="5"
maxProcessors="75" acceptCount="10" debug="0"/><!-- Define a Proxied HTTP/1.1 Connector on port
8081 -->
<!-- See proxy documentation for more information about using this.
--><!--
    <Connector className="org.apache.catalina.connector.http.HttpConnector"
               port="8082" minProcessors="5" maxProcessors="75"
               enableLookups="true"
               acceptCount="10" debug="0" connectionTimeout="60000"
               proxyPort="80"/>

--><!-- Define a non-SSL HTTP/1.0 Test Connector on port 8082
--><!--
    <Connector className="org.apache.catalina.connector.http10.HttpConnector"
               port="8083" minProcessors="5" maxProcessors="75"
               enableLookups="true" redirectPort="8443"
               acceptCount="10" debug="0"/>

--><!-- An Engine represents the entry point (within Catalina) that processes
         every request.  The Engine implementation for Tomcat stand alone
         analyzes the HTTP headers included with the request, and passes them
         on to the appropriate Host (virtual host).
--><!-- Define the top level container in our container hierarchy
--><Engine name="Standalone" defaultHost="localhost" debug="0"><Valve
className="com.adventnet.appmanager.tomcatagent.ver4.valve.AdventNetHostValve"/><!-- The request
dumper valve dumps useful debugging information about
           the request headers and cookies that were received, and the response
           headers and cookies that were sent, for all requests received by
           this instance of Tomcat.  If you care only about requests to a
           particular virtual host, or a particular application, nest this
           element inside the corresponding <Host> or <Context> entry instead.
           For a similar mechanism that is portable to all Servlet 2.3
           containers, check out the "RequestDumperFilter" Filter in the
           example application (the source for this filter may be found in
```

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```
           "$CATALINA_HOME/webapps/examples/WEB-INF/classes/filters").
           Request dumping is disabled by default.  Uncomment the following
           element to enable it.
--><!--
      <Valve className="org.apache.catalina.valves.RequestDumperValve"/>

--><!-- Global logger unless overridden at lower levels -->
<Logger className="org.apache.catalina.logger.FileLogger" prefix="catalina_log." suffix=".txt"
timestamp="true"/><!-- Because this Realm is here, an instance will be shared globally
--><!-- NMS  Commenting out MemoryRealm
      <Realm className="org.apache.catalina.realm.MemoryRealm" />
--><!-- Replace the above Realm with one of the following to get a Realm
           stored in a database and accessed via JDBC
--><!--
      <Realm  className="org.apache.catalina.realm.JDBCRealm" debug="99"
             driverName="org.gjt.mm.mysql.Driver"
          connectionURL="jdbc:mysql://localhost/authority?user=test;password=test"
              userTable="users" userNameCol="user_name" userCredCol="user_pass"
          userRoleTable="user_roles" roleNameCol="role_name" />

--><!--
      <Realm  className="org.apache.catalina.realm.JDBCRealm" debug="99"
             driverName="oracle.jdbc.driver.OracleDriver"
          connectionURL="jdbc:oracle:thin:@ntserver:1521:ORCL?user=scott;password=tiger"
              userTable="users" userNameCol="user_name" userCredCol="user_pass"
          userRoleTable="user_roles" roleNameCol="role_name" />

--><!--
      <Realm  className="org.apache.catalina.realm.JDBCRealm" debug="99"
             driverName="sun.jdbc.odbc.JdbcOdbcDriver"
          connectionURL="jdbc:odbc:CATALINA"
              userTable="users" userNameCol="user_name" userCredCol="user_pass"
          userRoleTable="user_roles" roleNameCol="role_name" />

--><!-- Define the default virtual host -->
<Host name="localhost" debug="0" appBase="webapps" unpackWARs="true"><!-- Normally, users must
authenticate themselves to each web app
             individually.  Uncomment the following entry if you would like
             a user to be authenticated the first time they encounter a
             resource protected by a security constraint, and then have that
             user identity maintained across *all* web applications contained
             in this virtual host.
--><!--
        <Valve className="org.apache.catalina.authenticator.SingleSignOn"
                   debug="0"/>
```

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```
--><!-- Access log processes all requests for this virtual host.  By
             default, log files are created in the "logs" directory relative to
             $CATALINA_HOME.  If you wish, you can specify a different
             directory with the "directory" attribute.  Specify either a relative
             (to $CATALINA_HOME) or absolute path to the desired directory.

--><Valve className="org.apache.catalina.valves.AccessLogValve" directory="../../../logs/tomcat"
prefix="localhost_access_log." suffix=".txt" pattern="common"/><!-- Logger shared by all Contexts
related to this virtual host.  By
             default (when using FileLogger), log files are created in the "logs"
             directory relative to $CATALINA_HOME.  If you wish, you can specify
             a different directory with the "directory" attribute.  Specify either a
             relative (to $CATALINA_HOME) or absolute path to the desired
             directory.
--><Logger className="org.apache.catalina.logger.FileLogger" directory="../../../logs/tomcat"
prefix="localhost_log." suffix=".txt" timestamp="true"/><!-- Define properties for each web
application.  This is only needed
             if you want to set non-default properties, or have web application
             document roots in places other than the virtual host's appBase
             directory.
--><!-- Tomcat Root Context -->
<!--
          <Context path="" docBase="ROOT" debug="0"/>

--><!-- Tomcat Manager Context -->
<!-- NMS  Commenting out the manager context
        <Context path="/manager" docBase="manager"
         debug="0" privileged="true"/>
--><Context path="" docBase="D:/AdventNet/ME/AppManager6/working" debug="0"
privileged="true"><Realm className="org.apache.catalina.realm.DataSourceRealm"
dataSourceName="jdbc/AMDS" debug="99" digest="MD5" userTable="AM_UserPasswordTable"
userNameCol="USERNAME" userCredCol="PASSWORD" userRoleTable="AM_UserGroupTable"
roleNameCol="GROUPNAME"/></Context><!-- NMS  Removed the example context entries --></
Host></Engine></Service><!-- The MOD_WEBAPP connector is used to connect Apache 1.3 with Tomcat 4.0
       as its servlet container. Please read the README.txt file coming with
       the WebApp Module distribution on how to build it.
       (Or check out the "jakarta-tomcat-connectors/webapp" CVS repository)
       To configure the Apache side, you must ensure that you have the
       "ServerName" and "Port" directives defined in "httpd.conf".  Then,
       lines like these to the bottom of your "httpd.conf" file:
         LoadModule webapp_module libexec/mod_webapp.so
         WebAppConnection warpConnection warp localhost:8008
         WebAppDeploy examples warpConnection /examples/
       The next time you restart Apache (after restarting Tomcat, if needed)
```

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```
       the connection will be established, and all applications you make
       visible via "WebAppDeploy" directives can be accessed through Apache.

--><!-- Define an Apache-Connector Service -->
<!-- NMS  Commenting out WarpConnector
  <Service name="Tomcat-Apache">
    <Connector className="org.apache.catalina.connector.warp.WarpConnector"
     port="8008" minProcessors="5" maxProcessors="75"
     enableLookups="true" appBase="webapps"
     acceptCount="10" debug="0"/>
--><!-- Replace "localhost" with what your Apache "ServerName" is set to
--><!--
    <Engine className="org.apache.catalina.connector.warp.WarpEngine"
     name="Apache" debug="0">
--><!-- Global logger unless overridden at lower levels -->
<!--
      <Logger className="org.apache.catalina.logger.FileLogger"
              prefix="apache_log." suffix=".txt"
              timestamp="true"/>
--><!-- Because this Realm is here, an instance will be shared globally
--><!--
      <Realm className="org.apache.catalina.realm.MemoryRealm" />
    </Engine>
  </Service>
--></Server>
```

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Tomcat Users.xml

```
<tomcat-users>
<user name="tomcat" password="tomcat" roles="admin-gui,manager-gui,manager-jmx"/>
<user name="tomcat1" password="tomcat1" roles="manager-gui,manager-jmx"/>
</tomcat-users>
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#10.Values with embedded commas can be given inside "".
#11.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#12.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.


#Header:DisplayName,HostName,UserName,Password,MonitorGroupID,PollInterval
TestActiveDirectory,demo-host,test,test,10000095,5
Test ActiveDir,localhost,admin,admin,10000095,10
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
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#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#10.Values with embedded commas can be given inside "".
#11.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#12.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.


#Header:DisplayName,Access Key ID,Secret Access Key,MonitorGroupID,PollInterval
TestAmazon,AKVYK4JSQYDKTLB4EAW,F+uh4gnZhVutxuxtGYYgGDlb1iVkMLlgpv94G7eU,10000095,5
MonitorAmazon,BKIHI6KSEYPLPS8ZSSX,FQuh4gnZhVutx/xtGKKgGDlb1iVMKLigpv94G7eU,10000095,10
```

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```
#This is a sample .csv file for bulk import of Apache Solr Server monitor.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#10.Values with embedded commas can be given inside "".

#Header: DisplayName,Host Name / IP Address,Port,SSL is enabled,MonitorGroupID,PollInterval
Solrcsv1,AMP-W2012S-64-1,8983,false,10000095,5
```

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```
#This is a sample .csv file for bulk import of Apache Solr Server monitor.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#10.Values with embedded commas can be given inside "".

#Header:DisplayName,credentialID,HostName,UserName,Password,Use Powershell,Use CredSSP Authentication,Database Server,Database Name,MonitorGroupID,PollInterval
BizTalk2010,,app-w2k8-64-1,appbtkadministrator,Biztalk123,True,Yes,,BizTalkmgmtdb,,6
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information).
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes.
#9. PollInterval should be given in Minutes.
#10. Field Credential ID :Enter the credentialID, if the credentials given in the Applications Manager's Credential Manager is used.
#11.Values with embedded commas can be given inside "".
#12.ManagedServerID and ManagedServerGroupName must be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.


#Header:DisplayName,HostName/IP
Address,Prompt,UserName,Password,credentialID,MonitorGroupID,PollInterval
TestCeph,app-cluster,$,admin,admin,,10000095,5
CephMonitoring,ctl-cephadmin,$,appmgr,appmgr3,,,10
```

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```
#   This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#11.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#12.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.


#Header: DisplayName,HostName,Port,MonitorGroupID,PollInterval
Couchbase Monitoring,vijay-0596.csez.zohocorpin.com,8091,10000020,11
App-win7-64-2 monitor,app-win7-64-2,8091,10000020,18
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#10.Run on server: The value has to be 'yes' if the added resource is to be associated to Applications Manager,otherwise 'no'
#11 Run on agent : Agent location names(machine name where the agent runs)should be given separated by '|' symbol
#12.Values with embedded commas can be given inside "".
#11.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#12.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.


#Header:DisplayName,Target Address,Lookup Address,Timeout,Record Type,Search Field,Search Value,MonitorGroupID,PollInterval,Run on server,Run on agent
DNS Monitor,192.168.14.121,appmanager.com,50,A,Record Name,,10000095,5,yes,no
TestDNS,192.168.15.121,manageengine.com,50,A,Record Name,,10000095,5,no,localhost|app-xp1|app-xp3
TestDNS1,192.168.16.121,appmanager.com,50,A,Record Name,,10000095,5,yes,localhost
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information).
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes.
#9. PollInterval should be given in Minutes.
#10.Values with embedded commas can be given inside " ".
#11.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#12.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.


#Header:DisplayName,HostName/IP Address,Port,Username,Password,SSL is enabled,credentialID,MonitorGroupID,PollInterval
TestDocker,apm-u12-temp,4243,,,false,,,5
SecuredDocker,102.198.12.4,2376,User,User123,true,,10000095,10
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading click Next. The entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified the default value will be 5 minutes.
#9. PollInterval should be given in Minutes.
#10.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#11.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.



#Header: DisplayName,HostName,SubNetMask,UserName,password,credentialID,MonitorGroupID,PollInterval
bankingapp,dotnethost,255.255.255.0,admin,adminpassword,,10000095,5
bankingapp1,dotnethost1,255.255.255.0,,,2,10000095,5
bankingapp2,192.168.25.242,255.255.255.0,admin,adminpassword,,,5
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information).
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes.
#9. PollInterval should be given in Minutes.
#10.Values with embedded commas can be given inside " ".
#11.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#12.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.
#13.The possible VM Discovery values are: 0 - Do not discover VMs,1 - Discover VM but do not monitor metrics,2 - Discover and monitor VM metrics.


#Header:DisplayName,HostName/IP Address,Port,UserName,Password,VM Discovery,MonitorGroupID,PollInterval
TestESX,idc-demo1,443,admin,User,0,10000095,5
TestVms,102.198.12.4,445,User,User123,1,10000095,10
ESXPro,102.198.12.34,443,root,User123,2,10000095,10
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
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#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#10.Values with embedded commas can be given inside "".
#11.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#12.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.
#13.For Mode Of Monitoring : Provide value as Yes if Powershell is to be used & No if not.


#Header:DisplayName,Host Name / IP Address,Version,Exchange 2013 Role,Exchange 2010 Role,Exchange 2007 Role,Exchange 2013 Mailbox Services,Exchange 2013 Client Access Services,Exchange 2013 Edge Services,Exchange 2010 Mailbox Services,Exchange 2010 Client Access Services,Exchange 2010 Hub Transport Services,Exchange 2010 Edge Services,Exchange 2010 Unified Services,Exchange 2007 Mailbox Services,Exchange 2007 Client Access Services,Exchange 2007 Hub Transport Services,Exchange 2007 Edge Transport Services,Exchange 2007 Unified Messaging Services,Exchange 2003/below Services,User Name,Password,credentialID,Mode Of Monitoring,Customize ConnectionURI,Connection URI,MonitorGroupID,PollInterval
Mbx2013,amp-2k8r2-1,2013,mbxserver2013,False,False,"MSExchangeADTopology,MSExchangeIS",False,False,False,False,False,False,False,False,False,False,False,False,False,appmantest.comadministrator,Exchange@123,,Yes,,,10000095,5
Cas2010,amp-2k8r2-1,2010,False,casserver2010,False,False,False,False,False,False,False,False,False,False,False,False,False,False,False,appmantest.comadministrator,Exchange@123,,No,,,10000095,5
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#10.Values with embedded commas can be given inside "".
#11.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#12.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.



#Header:DisplayName,Target Address,User Name,Password,Port No,Timeout,Is Secured,Download File,Show availability down when download fails,Remote Source File Name,Local Destination File Name,Upload File,Show availability down when upload fails ,Local Source File Name,Remote Destination File Name,MonitorGroupID,PollInterval
TestFTP,app-linux2,guest,guest,21,5,no,no,no,,,no,no,,,10000095,10
TestFTP/SFTP,app-ap2,admin,admin,21,50,no,no,no,,,no,no,,,10000095,5
TesFTP1,app-linux4,User,Test,21,40,no,no,yes,,,no,yes,,,10000095,10
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information).
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes.
#9. PollInterval should be given in Minutes.
#10. Field Credential ID :Enter the credentialID, if the credentials given in the Applications Manager's Credential Manager is used.
#11.Values with embedded commas can be given inside "".
#12.ManagedServerID and ManagedServerGroupName must be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.

#Header:DisplayName,HostName,Port,UserName,Password,credentialID,JNDIPath,MonitorGroupID,PollInterval
TestApplicationServer,GlassFishHost,8686,,,,/jmxrmi,10000095,5
TestglassFish,GlassHostName,8686,admin,admin,,/jmxrmi,10000095,10
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information).
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes.
#9. PollInterval should be given in Minutes.

#Header:DisplayName,Mode Of Monitoring,Version,NameNode Host,NameNode JMX Port,NameNode Web Port,is SSL Enabled,Authentication Type,UserName,Password,NameNode JNDIPath,JobTracker/ResourceManager Host,JobTracker/ResourceManager JMX Port,JobTracker/ResourceManager Web Port,is SSL Enabled,Authentication Type,UserName,Password,JobTracker/ResourceManager JNDIPath,MonitorGroupID,PollInterval

Hadoop_monitor_rest,RESTAPI,2.x,app-centos5-64-2,,50070,no,SimpleAuth,hduser,,,app-centos5-64-2,,8088,no,SimpleAuth,hduser,,,,5
Hadoop_monitor_jmx,JMX,1.x,Apm-u14-64-3,8004,,,,,,/jmxrmi,Apm-u14-64-3,8005,,,,,,/jmxrmi,,5
```

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```
#This is a sample .csv file for bulk import of HBase monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information).
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Values with embedded commas can be given inside "".
#9. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes.
#10. PollInterval should be given in Minutes.
#11. typeOfNode field should always be empty.
#12. Field Credential ID :Enter the credentialID, if the credentials given in the Applications Manager's Credential Manager is used.
#13. Specify Is Authentication required as true or false depending on whether UserName and Password are needed or not. If using Credential Manager, specify it as true.
#14. ManagedServerID and ManagedServerGroupName must be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.

#Header:DisplayName,Host Name / IP Address,JMX Port,typeOfNode,credentialID,Is Authentication required,UserName,Password,JNDI Path,PollInterval,MonitorGroupID
HBase Master,app-test-64-2,10101,,,false,,,/jmxrmi,,
HBase Region1,app-test-64-2,10102,,1,true,,,/jmxrmi,,
HBase Region2,app-test-64-1,10102,,1,true,,,/jmxrmi,,
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information).
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes.
#9. PollInterval should be given in Minutes.
#10.Values with embedded commas can be given inside " ".
#11.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#12.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.


#Header:DisplayName,Connection Broker Hostname / IP,User Name,Password,MonitorGroupID,PollInterval
TestView1,172.100.100.51,vmwarehzviewuser1-test,Zoho@1,10000095,5
TestView2,172.100.100.52,vmwarehzviewuser2-test,Zoho@2,10000095,5
TestView3,172.100.100.53,vmwarehzviewuser3-test,Zoho@3,10000095,5
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#10.Values with embedded commas can be given inside "".
#11.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#12.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.


#Header:DisplayName,Host Name / IP Address,User Name,Password,Monitor Performance Metrics of Virtual Machines,Version,MonitorGroupID,PollInterval
TestHyper,idc-demo1,admin,User,,2008,10000095,5
TestVms,102.198.12.4,User,User123,Yes,2012,10000095,10
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#10.Values with embedded commas can be given inside "".
#11. CCSID is an optional parameter. '0' is the default value.
#11.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#12.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.



#Header:DisplayName,Queue Manager,Host Name,Listener Port,CCSID,Server Connection Channel,MonitorGroupID,PollInterval
TestIBMSeries,QM_app_xp4,app-xp4,1414,0,c1,10000095,10
TestIBM,QM_demo_machine,demo-machine,1414,1381,c1,10000095,5
```

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```
#   This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#11.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#12.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.


#Header:
DisplayName,HostName,SubNetMask,Port,Username,Password,credentialID,DatabaseName,MonitorGroupID,PollInterval
dbserverapp,db2server,255.255.255.0,50000,db2admin,db2admin,,SAMPLE,10000095,5
dbserverapp2,db2server2,255.255.255.0,60000,,,2,SAMPLE,10000095,5
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information).
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value will be 5 minutes.
#9. PollInterval should be given in Minutes.
#10.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#11.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.

#Header:
DisplayName,HostName,Port,JNDIName,JMXUrl,UserName,Password,credentialID,MonitorGroupID,PollInterval
javaruntimetest1,app-centos32-1,1999,/jmxrmi,service:jmx:rmi://app-centos32-1/jndi/rmi://app-centos32-1.csez.zohocorpin.com:1199/jmxrmi,,,1,10000095,5
javaruntimetest2,app-centos32-1,8686,/jmxrmi,,admin,adminadmin,1,10000095,5
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#10.Run on server: The value has to be 'yes' if the added resource is to be associated to Applications Manager,otherwise 'no'
#11 Run on agent : Agent location names(machine name where the agent runs)should be given separated by '|' symbol
#12.Values with embedded commas can be given inside "".
#13.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#14.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.



#Header:DisplayName,LDAP Server,LDAP Server Port,UserName,Password,Search Base,Search Filter,Matching Attribute,Filter Condition,Search Result,Timeout,Is Secured,MonitorGroupID,PollInterval,Run on server,Run on agent
LDAP1,pmp-appxp1,389,administrator,password,"dc=pmp,dc=com",(ObjectClass=*),cn,equals,,45,no,10000095,5,yes,no
TestLDAP,demo-w2k8,389,administrator,testPwd,dc=com,ObjectClass,displayname,contains,,45,no,10000095,5,no,agent1|agent2
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID, credentialID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#11.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#12.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.

#Header:DisplayName,Host Name / IP Address,Port,Database Server,UserName,Password,credentialID,MonitorGroupID,PollInterval
labserver,localhost,1526,ol_informix1210,informix,informix,,10000095,5
prodserver,172.21.145.2,1526,ol_informix1210,,,10000001,10000055,10
```

Copyright © 2017 Zoho Corp.

```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#10.Values with embedded commas can be given inside "".
#11.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#12.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.



#Header:DisplayName,HostName / IP Address,Port,Enable transaction test,MonitorGroupID,PollInterval
DbMemCache,DB-linux2,11211,yes,10000095,5
TestMemcache,app-linux2,11211,no,10000095,5
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#12.Values with embedded commas can be given inside "".
#11.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#12.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.



#Header:DisplayName,HostName,UserName,Password,credentialID,MonitorGroupID,PollInterval
TestMSMQ,demo-machine,user,password,,10000095,10
TestMSMQ1,demo-machine2,,,1,10000095,5
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#10.Run on server: The value has to be 'yes' if the added resource is to be associated to Applications Manager,otherwise 'no'
#11 Run on agent : Agent location names(machine name where the agent runs)should be given separated by '|' symbol
#12.Values with embedded commas can be given inside "".
#13.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#14.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.


#Header:DisplayName,HostName / IP Address,Is Secure Connection(SSL),Enable TLS,SMTP Port,Email ID,SMTP Server requires Authentication,SMTP UserName,SMTP Password,Enable POP/IMAP Monitoring,Select Mail Fetching Server,POP/IMAP Host,Is Secure Connection(SSL),Enable TLS,Port,UserName,Password,Mail Subject,Timeout,MonitorGroupID,PollInterval,Run on server,Run on agent
SMTP,smtp.test.com,Yes,true,465,testdummy@zoho.com,Yes,testdummy,test,Yes,1,mailpop.test.com,Yes,true,995,testdummy,test,1,25,10000095,5,yes,no
TestSMTP,smtp.test.com,Yes,false,465,test@zoho.com,Yes,testdummy,testdummy,Yes,2,imap.test.com,Yes,false,995,testdummy,test,Test Mail Server,50,10000095,5,no,agent
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information).
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes.
#9. PollInterval should be given in Minutes.
#11.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#12.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.


#Header:
DisplayName,HostName,SubNetMask,Port,UserName,Password,credentialID,InstanceName,MonitorGroupID,PollInterval
backendserver1,msdbhost,255.255.255.0,1433,ADVENTNETsa,root,,,10000095,5
backendserver3,192.168.25.242,255.255.255.0,1433,,,1,,10000095,5

# If you want to connect to MSSQL server using Named Instance than specify the Instance Name or else please leave this field empty like the above example.
backendserver2,msdbhost2,255.255.255.0,1433,ADVENTNETsa,root,,SQLINSTANCE,10000095,5
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information).
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes.
#9. PollInterval should be given in Minutes.
#10.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#11.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.


#Header: DisplayName,Host Name / IP Address,JBoss Version,Port,Is Domain,Host Controller Name,Server Name,SSL is enabled,User Name,Password,credentialID,MonitorGroupID,PollInterval
jboss4444,app-centos32-1,4.0.2,18080,FALSE,,,FALSE,,,2,10000095,5
jboss6666,app-centos5-64-2,6.x,1090,FALSE,,,FALSE,admin,admin,,10000095,5
jboss7777,app-xp1,7.x,9990,FALSE,,,FALSE,,,2,10000095,5
jboss7777_domain,app-win7-64-2,7.x,9990,Domain,master,server-one,FALSE,domain,appman,,10000095,5
jboss8888,it360-win8-64,Wildfly_8.x,9990,Domain,master,server-one,FALSE,admin,pass,,,5
```

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#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information).
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes.
#9. PollInterval should be given in Minutes.
#10. Field Credential ID :Enter the credentialID, if the credentials given in the Applications Manager's Credential Manager is used.
#11.Values with embedded commas can be given inside "".
#12.ManagedServerID and ManagedServerGroupName must be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.

#Header:DisplayName,HostName,JMX Port,credentialID,PollInterval,UserName,Password,JNDIPath,MonitorGroupID
TestKafka,172.20.6.201,9999,,5,,,/jmxrmi,
Kafka1,APP-W8-AIO-5,6000,1,5,admin,admin,/jmxrmi,
Kafka2,it360-m4600-1,1095,1,5,admin,pass,/jmxrmi,10000014

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#11.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#12.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.


#Header:
DisplayName,HostName,SubNetMask,Port,Username,Password,credentialID,DatabaseName,MonitorGroupID,PollInterval
backendserver,mysqlhost,255.255.255.0,50000,root,pass,,MYSQL,10000095,5
backendserver1,mysqlhost1,255.255.255.0,50000,,,1,MYSQL,,5
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Field 'SSL is enabled' should be 'Yes' if enabled, otherwise the value should be 'False'.
#9. Field 'Is Authentication required' should be 'Yes' if authentication avaialble, otherwise the value should be 'False'.
#10. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes.
#11.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#12.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.

#Header:DisplayName,Hostname,Port,SSL is enabled,Is Authentication required,UserName,Password,Server Status URL,MonitorGroupID,PollInterval
bulknginx1,hostname1,1888,False,False,,,/nginx_status,10000095,5

bulknginx2,hostname2,8080,Yes,Yes,username,password,/nginx_status,10000095,4
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#10.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#11.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.


#Header: DisplayName,HostName,SubNetMask,Port,MonitorGroupID,PollInterval,OracleASVersion
bankingapp1,OracleAS_prodserver,255.255.255.0,7200,10000095,5,10.1.2
bankingapp2,OracleAS_prodserver2,255.255.255.0,7200,10000095,5,10.1.3
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#10.Values with embedded commas can be given inside "".
#11.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#12.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.


#Header:DisplayName,HostName,Port,EBS Version,User Name,Password,credentialID,SSL Enabled,MonitorGroupID,PollInterval
OracleEBS11,app-centos32-1,8081,r11,,,,no,10000095,5
OracleEBS12.0,ebs-12,7200,r12.0,,,,no,10000095,5
OracleEBS12.2.0,ebs-1.server,7001,r12.2.0,weblogicuser,weblogic33,,no,10000095,5
OracleEBS12.2.0 2,ebs-2.server,7001,r12.2.0,,,1,no,10000031,5
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#11.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#12.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.

#Header:DisplayName,Host Name / IP Address,Subnet Mask,Do not resolve DNS name,Port,User Name,Password,credentialID,Instance Name(Service Name),MonitorGroupID,PollInterval
backendserver,primaryHost,255.255.255.0,,1521,system,manager,,orcl,10000095,5
backendserver1,oracleServer,255.255.255.0,,1521,,,2,orcl,10000095,5
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information).
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes.
#9. PollInterval should be given in Minutes.
#10. Field Credential ID :Enter the credentialID, if the credentials given in the Applications Manager's Credential Manager is used.
#11.Values with embedded commas can be given inside "".
#12.ManagedServerID and ManagedServerGroupName must be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.
#13 Field Additional JMX Port :If the total number of port is more than one in then Enter the Port numbers within double quote.


#Header:DisplayName,HostName,JMX Port,Additional JMX Port,credentialID,PollInterval,UserName,Password,JNDIPath,MonitorGroupID
TestApplicationServer,amp-w7-oraeb,1099,"1095,1097",,5,,,/jmxrmi,
Coherence1,localhost,1099,,1,5,admin,admin,/jmxrmi,10000012
Coherence2,it360-m4600-1,1095,1078,1,5,admin,pass,/jmxrmi,10000014
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information).
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes.
#9. PollInterval should be given in Minutes.
#10. Field Credential ID :Enter the credentialID, if the credentials given in the Applications Manager's Credential Manager is used.
#11.Values with embedded commas can be given inside "".
#12.ManagedServerID and ManagedServerGroupName must be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.


#Header:DisplayName,HostName,Port,credentialID,PollInterval,UserName,Password,JNDIPath,MonitorGroupID
TestApplicationServer,amp-w7-oraeb,1099,,5,,,/jmxrmi,
NoSQL1,APP-W8-AIO-5,6000,1,5,admin,admin,/jmxrmi,
NoSQL2,it360-m4600-1,1095,1,5,admin,pass,/jmxrmi,10000014
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#10.Run on server: The value has to be 'yes' if the added resource is to be associated to Applications Manager,otherwise 'no'
#11 Run on agent : Agent location names(machine name where the agent runs)should be given separated by '|' symbol
#12.Values with embedded commas can be given inside "".
#13.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#14.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition. If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.


#Header:DisplayName,HostName / IP Address,Timeout,MonitorGroupID,PollInterval,Run on server,Run on agent
TestPing1,app-xp1,5,10000095,5,yes,No
TestPing2,app-linux1,50,10000095,10,No,idc-demo3
TestPing3,idc-demo3,45,10000095,15,yes,idc-agent1|app-linux2|localhost
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#10.Values with embedded commas can be given inside "".
#11.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#12.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.


#Header:
DisplayName,HostName,Port,UserName,Password,credentialID,DBname,MonitorDatabase,MonitorGroupID,PollInterval
backendServer,localhost,15446,,,1,postgres,true,10000095,10
PostgresMonitor,app-xp2,5431,admin,admin,,postgres,true,10000095,5
backendPostgres,app-linux1,5430,,,1,postgres,false,,5
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#10.Values with embedded commas can be given inside "".
#11.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#12.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.


#Header:DisplayName,Host Name,Port,User Name,Password,credentialID,MonitorGroupID,PollInterval
testRabbit,demoMachine,55672,,,1,10000095,5
rabbit-servre,test-server,55672,admin,admin,,10000095,5
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information).
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes.
#9. PollInterval should be given in Minutes.
#10. Field Credential ID :Enter the credentialID, if the credentials given in the Applications Manager's Credential Manager is used.
#11.Values with embedded commas can be given inside "".
#12.ManagedServerID and ManagedServerGroupName must be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.


#Header:DisplayName,HostName,Port,UserName,Password,JNDIPath,credentialID,MonitorGroupID,PollInterval
TestApplicationServer,localhost,9999,,,/jmxrmi,,10000095,5
TestResin,user-0173,9999,admin,admin,/jmxrmi,,10000095,10
```

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```
#Header:DisplayName,Rest API URL,Timeout,Form Submission Method,Pay
Load,credentialID,UserName,Password,Custom HTTP(s) Headers,Response Type,Add content check for
response,Should contain,Should not contain,is Case Sensitive,is Regular
Expression,MonitorGroupID,PollInterval
RESTAPI1,http://www.google.co.in/,10,GET,,,,,,Text,,,,,,,5
RESTAPI2,http://www.google.com/,10,GET,,,,,,Text,true,google,,false,,,5
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information).
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes.
#9. PollInterval should be given in Minutes.
#10. Field Credential ID :Enter the credentialID, if the credentials given in the Applications Manager's Credential Manager is used.
#11.Values with embedded commas can be given inside "".
#12.ManagedServerID and ManagedServerGroupName must be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.
#13.Default Port is 30015. If SAP HANA Cloud Platform is used, need to specify Port as 30015.



#Header: DisplayName,Host Name / IP Address,SAP HANA Cloud Platform,Port,Account Name,User Name,Password,credentialID,DB User Name,DB Password,Instance Name,MonitorGroupID,PollInterval

hanaBulk,hanatrial.ondemand.com,true,30015,s0004447540trial,s0004447540,account@123,,SYSTEM,db@321,customerdb,,10
hanaOnpremise,app-saphana-w7,false,30015,,,,,SYSTEM,Zoho@1234,mdchana,,10
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Field 'SSL is enabled' should be 'Yes' if enabled, otherwise the value should be 'False'.
#9. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes.
#11.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.

#Header:DisplayName,Hostname,Port,SSL is enabled,REST API Key,MonitorGroupID,PollInterval
bulksdp1,172.21.187.87,8081,True,09B0C7E2-A7E5-4408-BF30-3BD81E196DBA,10000095,5
bulksdp2,satyavani-0618,8083,True,0D622CC6-883A-4C5C-96C0-DDCEC0EE28A8,10000096,4
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroup and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.

#10. Field Credential ID :Enter the credentialID, if the credentials given in the Applications Manager's Credential Manager is used.

#11.EnableEventLogMonitoring: By default it will be disabled. If you want to monitor Windows Events provide yes. It is supported only in WMI mode.

#Header:
DisplayName,HostName,OperatingSystem,SubNetMask,ModeofMonitoring,UserName,Password,credentialID,SSHKeyAlgorithm,SSHPublicKey,passphrase,SNMPCommunityString,TelnetSSHCommandPrompt,MonitorGroup,PollInterval,EnableEventLogMonitoring
#Example for WMI mode of monitoring
testserver1,testserver,Windows 2003,255.255.255.0,WMI,administrator,pass1,,,,,,ServerGroup,5,yes
testserver2,productionhost2,Windows 2003,255.255.255.0,WMI,administrator,pass1,,,,,,ServerGroup,5,no
testserver3,productionhost3,Windows 2003,255.255.255.0,WMI,administrator,pass1,,,,,,ServerGroup,5
#Example for SNMP mode of monitoring
testserver3,hostxp1,Windows XP,255.255.255.0,SNMP,,,,,,public,,ServerGroup,5
#Example for Telnet mode of monitoring
testserver4,linux1,Linux,255.255.255.0,TELNET,test,Test123,,,,,$,ServerGroup,5
#Example for SSH password based authentication
testserver4,QAhost,Linux,255.255.255.0,SSH,admin,password,,,,,$,ServerGroup,5
#Example for SSH key based authentication
testserver5,testserver5,Linux,255.255.255.0,SSH,test,,DSA,MIIBugIBAAKBgQCoak7jkoZLa+C5fln2j3ltK8P01
```

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rU0TKMX8NhpFv/fvz52yR+IKXq+cRbcA7z3g78DRJsZs0svTG5qROQZVOToVSTxW1N9EAuiGeW55OnXwva1L7l0hhHDfv6pwGyn
uROH78ttOdwN4Hg9erzYvzwMNjzSEt4V19xgCOf0wjmLqwIVAK8HagX8eZmKfnfZ3ljR58tRljxHAoGARaGBAxeOnjq7Wsu4eeO
RhC31ofE4gJ4NMeygy1gxN2oGO1OQjkIXbmVGe+qCZwd0Yi8f8JqamKLKzbgxNVP6AfQOpQaFkrnLI8VVhU6hBLuaCRpKNPHFa3
pjKtqUi532JE6+NZZ7ubZA2RKIX0JQ2Blb/XDTj4MYN5PiboMmwwACgYB/9lWRU8UBSrSP9QVLWuiN2BYGy78Mv5iy08v7wUOVk
l//d8xTNWZme2+nyiweMyM2brG+IbfBpd3oXdP4s0H/ksgbXzI6pvVdS00Nygg9dB4DS8h9X5qJNpNOctjxWRdyouSBkgQsOnC9
jg1y7trv7XLi8SExzdte13Bu9wCqaAIUccmcdDj1Tcn6iBEJ796dxDc2NWI=,,,$,,5,,

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#10.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#11.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.

#Header: DisplayName,HostName,SubNetMask,Port,CommandtoExecute,MatchContent,PollInterval
testservice1,sevice1,255.255.255.0,8080,,,5
testservice2,service2,255.255.255.0,8000,GET / HTTP1.0,IIS,5
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
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#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#10. Field Mode Of Monitoring : If the value is 'True', mode of data collection will be Powershell, if 'False' then WMI is used.
#11. Field Installation Type : SPServer - parameter value if server has Farm setup, Farm - parameter value if server has Stand Alone setup.
#12. Field Features : Select one or more features according to version selected - 2007 : ExcelServices,DocumentConversions,OfficeSearchGatherer & 2010/2013 : SharepointServices,ContentDB,WebApplication, TimerJobs,AccessServices,InfoPathServices, VisioWebAccess Services,ExcelServices,OfficeSearchGatherer
#13.Values with embedded commas can be given inside "".
#14.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#15.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.

#Header:DisplayName,HostName,UserName,Password,credentialID,Version,Mode Of Monitoring,Installation Type,Features,MonitorGroupID,PollInterval
TestSharePoint,demo-host,test,test,,2010,True,SPServer,"SharepointServices,ContentDB,WebApplication,TimerJobs",10000095,5
TestSharePoint1,localhost,,,2,2007,False,SPServer,"ExcelServices,DocumentConversions,OfficeSearchGatherer",10000095,5
```

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```
#   This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
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#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#10.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#11.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.
#12. For the field, Operating System use the following values 1 for Windows, 2 for Linux, 3 for Solaris, 4 for AIX and 5 for HP-UX.

#Header:  DisplayName,HostName/IP Address,Operating System,Prompt,UserName,Password,Gateway Server,Enterprise Server,Siebel Administrator,Siebel Admin Password,Installation Directory,MonitorGroupID,PollInterval
SiebelMonitor,TestServer,3,#,test,test,gatewayserver,entServer,sadmin,spassword,/home/siebel,10000095,5
SiebelMonitor2,TestServer,2,$,test,test,gatewayserver,entServer,sadmin,spassword,/home/siebel,10000095,5
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
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#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#10.Values with embedded commas can be given inside "".
#11.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#12.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.


#Header:DisplayName,HostName,Port,MonitorGroupID,PollInterval
TestSilver,localhost,8080,10000095,10
TestSilver1,app-xp6,8080,10000095,10
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
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#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes.
#9. PollInterval should be given in Minutes.
#10.Values with embedded commas can be given inside "".
#11.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#12.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.


#Header:DisplayName,Domain,Port,Need proxy to connect the domain,Ignore SSL Certificate name mismatch error,Timeout,MonitorGroupID,PollInterval
SITE24x7,www.site24x7.com,443,Yes,,60,10000095,5
ZOHO,www.zoho.com,443,No,,60,10000095,5
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#10.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#11.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.


#Header:
DisplayName,HostName,SubNetMask,Port,Username,Password,credentialID,DatabaseName,MonitorGroupID,PollInterval
backendsevrer,sybasehostname,255.255.255.0,50000,sybaseadmin,sybaseadmin,,TESTDB,10000095,5
backendsevrer1,sybasehostname1,255.255.255.0,50000,,,1,TESTDB,10000095,5
```

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```
#   This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#10.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#11.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.


#Header: DisplayName,Host Name / IP Address,Port,Timeout(in Seconds),MonitorGroupID,PollInterval
Production,productionhost,23,10,10000095,5
Testing,testinghost,23,15,10000095,5
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#10.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#11.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.


#Header: DisplayName,Host Name / IP Address,Port,SSL is enabled,Tomcat Version,User Name,Password,credentialID,Tomcat Manager Application URI,MonitorGroupID,PollInterval
tomcatcsv1,192.168.27.144,11520,false,4.x,,,1,,10000095,5
tomcatcsv2,192.168.27.144,8080,false,7.x,jmx,pass,,/manager,10000095,5
tomcatcsv3,sprasadh,9090,false,5.x,admin,pass,,/manager,10000095,5
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#10.Values with embedded commas can be given inside "".
#11.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.


#Header:DisplayName,HostName/IP Address,Port,Community String,Timeout,credentialID,MonitorGroupID,PollInterval
OracleTuxedo,172.21.113.161,8001,public,60,,,5
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
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#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#10.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#11.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.


#Header:
DisplayName,URLAddress,CheckForContent,ErrorIfMatch,TimeoutInSeconds,FormSubmissionMethod,httpcondition,httpvalue,MonitorGroupID,PollInterval
testurl1, http://www.zohocorp.com,ZohoCorp,Internal Error,120,get,GT,200,10000095,5
testurl2, http://www.zoho.com,zoho,Internal Error,120,get,GT,400,10000095,5
testurl3, http://www.appmanager.com,ZohoCorp,Internal Error,120,get,GT,200,10000095,5
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
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#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#10.Values with embedded commas can be given inside "".
#11.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#12.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.


#Header:DisplayName,Host Name,Port,User Name,Password,credentialID,JNDIPath,MonitorGroupID,PollInterval
TestApplicationServer,vFabricHost,8686,admin,admin,,/jmxrmi,10000095,5
TestvFabric,vFabricHostName,8686,,,2,/jmxrmi,10000095,10
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
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#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#10.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#11.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.

#Header:
DisplayName,HostName,SubNetMask,Port,WeblogicVersion,Username,Password,credentialID,MonitorGroup,PollInterval
InsuranceApp1,WeblogicHost1,255.255.255.0,7001,8.1,weblogic,weblogic,1,10000095,5
InsuranceApp2,WeblogicHost2,255.255.255.0,7001,8.1,,,2,10000095,5
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
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#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#10.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#11.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.


#Header: DisplayName,URLAddress,TimeoutInSeconds,MonitorGroupID,PollInterval,Username,Password
wservice1,http://www.dataaccess.com/webservicesserver/numberconversion.wso?WSDL,120,10000095,5,,
wservice2,http://webservices.daehosting.com/services/TemperatureConversions.wso?WSDL,120,10000095,10,admin,pass
wservice3,http://webservices.oorsprong.org/websamples.countryinfo/CountryInfoService.wso?WSDL,120,10000095,6,,
wservice4,http://webservices.daehosting.com/services/TemperatureConversions.wso?WSDL,,10000095,,,
wservice5,http://webservices.daehosting.com/services/TemperatureConversions.wso?WSDL,,10000095,,,
wservice6,http://www.dataaccess.com/webservicesserver/numberconversion.wso?WSDL,,10000095,5,,
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
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#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes.
#9. PollInterval should be given in Minutes.
#10.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#11.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.

#Header: DisplayName,Host Name / IP Address,Subnet Mask,Port,WebSphere Version,SOAP Connector Port,User Name,Password,credentialID,Deployment Mode,Network Deployer Host,Network Deployer SOAP Port,MonitorGroupID,Do not resolve DNS name,SSL is enabled,Global Security is enabled,Enable Filter,Filter Condition,App Servers to Monitor,nodeName,serverName,allowEdit,isDmgr,PollInterval
BankingApp,app-w2k8r2-64ee,255.255.255.0,9444,8,8880,,,1,ND,app-w2k8r2-64ee,8880,10000095,,TRUE,,,,,,,,,5
Consumer Application,172.18.94.57,255.255.255.0,9080,6,8880,,,2,BASE,,,10000095,,,,,,,,,,,5
Store Application,app-w2k8r2-64ee,255.255.255.0,9082,8,8880,wasadmin,adminpwd,,BASE,,,10000095,,,TRUE,,,,,,,,5
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
#3. You can remove the example entries in this file from the second line onwards and add your own monitor input information. You can add comments by including # symbol in the beginning of the line.
#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
#5. After uploading, click on Next, the entire monitor input information will be shown in a table format for your reference.
#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information)
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#10. Values with embedded commas can be given inside "".
#11. Before adding the Windows Azure monitor using bulkimport, kindly execute the script <APM_HOME>bin/exportCertificateToAppManager.sh/bat to import the certificates in Applications Manager.
#11.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#12.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.

#Header: DisplayName,Subscription Id,Account Name,Account Key,https,Timeout,MonitorGroupID,PollInterval
Azure1,9e07414c-0e16-4be1-9694-ea2de40bf2c,apmstorage,LmNUr1wY6Y8wU7umw6bJ8SaTlm7rYh/ZVT8VUfgd16nTBVcRrNUoAI3pcDR/hSoHQ/6MGHMIijzxJpxmAIrLQ==,Yes,20,10000095,5
Azure2,9e07414c-0e16-4be1-9694-ea2de40bfc8,appstorage,2KJTxsbKgNz67lZVFe8zSjQUKnfzdMHfC6q04H12FV8sj8/xkM5vQiD6KBCulozavhQKKPhPhZnwgcDR1IH7A==,Yes,20,10000095,5
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
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#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes
#9. PollInterval should be given in Minutes.
#11.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#12.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.


#Header:
DisplayName,HostName,SubNetMask,Port,WeblogicIntegrationVersion,Username,Password,MonitorGroup,Poll
Interval
Insurance Application1,WLIHost1,255.255.255.0,7001,8.x,weblogic,weblogic,10000095,5
Insurance Application2,WLIHost2,255.255.255.0,7001,8.x,weblogic,weblogic,10000095,5
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
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#6. If everything is OK, click on Start Discovery. The monitors will be scheduled for discovery. It would take few minutes to complete the process. When the monitors are scheduled for discovery, simultaneously the uploaded file will be deleted from Applications Manager (as this file contains security information).
#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes.
#9. PollInterval should be given in Minutes.
#10.Values with embedded commas can be given inside " ".
#11.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#12.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.
#13.The possible VM Discovery values are: 0 - Do not discover VMs,1 - Discover VM but do not monitor metrics,2 - Discover and monitor VM metrics.


#Header:DisplayName,HostName/IP Address,Https Port,UserName,Password,VM Discovery,MonitorGroupID,PollInterval
TestXen,192.180.3.75,443,User,Pass1,0,10000095,5
TestXen1,xen-dl123,445,User2,Admin123,1,10000095,10
TestXen4,192.18.75.135,443,root,Pass123,2,10000095,10
```

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```
#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
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#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields  MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes.
#9. PollInterval should be given in Minutes.
#10.Values with embedded commas can be given inside " ".
#11.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#12.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.



#Header:DisplayName,HostName,Version,UserName,Password,credentialID,Enable Event Log Monitoring,MonitorGroupID,PollInterval
XenApp,apm-w2k12-temp3,7.6,apmcluster2012administrator,Vembu009,,yes,,5
```

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#This is a sample .csv file for bulk import of monitors.
#1. Header should start with #Header: followed by the Input Field names. It is already coded for you. Note: Do not modify the header.
#2. From the second line onwards, give the input values according to the column names in the header.
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#4. Save the file in any computer but upload it to the Applications Manager webclient using bulk import monitor form.
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#7. If you want to cancel the process in midway, delete the uploaded file from Applications Manager machine.
#8. Fields MonitorGroupID and PollInterval are Optional.If PollInterval is not specified, the default value for it will be 5 minutes.
#9. PollInterval should be given in Minutes.
#10.Values with embedded commas can be given inside " ".
#11.Enter the credentialID, if you wish to use preconfigured credentials details from Credentials Manager.
#12.ManagedServerID and ManagedServerGroupName can be specified only if bulk import is being performed from the Admin Server in the Enterprise Edition.If these field values are not specified, then the new monitor will be added in the in least loaded Managed Server.

#Header:DisplayName,Base Authentication URL,Tenant Name,Username,Password,Need Proxy,credentialID,MonitorGroupID,PollInterval
OpenStackBulk,http://controller:5000,Venuz,deepak,Abcd@123,false,,10000013,5

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