

# AI and ML

The ultimate solution to IT's greatest challenges

✦ Smarter, data-driven ways to master critical ITOps hurdles

# Table of contents

|   |  |    |
|---|--|----|
| ■ | Introduction   | 3  |
| ■ | Predict issues before they have an impact with ML-driven forecasting       | 4  |
| ■ | Isolate problematic devices with AI-driven, proactive ITOps                | 8  |
| ■ | Simplify insights and accelerate RCA with intelligent analytics assistants | 11 |
| ■ | Drive timely actions with AI-powered decision intelligence                 | 13 |
| ■ | Secure vulnerable devices via automated anomaly detection                  | 17 |
| ■ | Conclusion   | 20 |
| ■ | About ManageEngine Analytics Plus  | 21 |

# Introduction

**IT** leaders across the globe envision a world where their teams are not constantly scrambling to fix problems that could have been predicted or prevented—a world where downtime is reduced, security threats are caught before they escalate, and investigative work is no longer a painstaking manual process. For many IT teams, this is a distant dream. However, with the power of AI and ML, this vision is quickly becoming a reality.

Today, IT environments are more complex than ever. With sprawling networks, diverse devices, and an ever-growing flow of data, the challenges IT teams face are substantial. But AI and ML can be the guiding heroes that help IT teams overcome these obstacles, transforming reactive operations into proactive IT management. According to a **survey by SAP LeanIX<sup>[1]</sup>**, 78% of IT professionals believe AI will enable employees to get things done faster, and 47% predict improvements in the quality of employees' work through AI-driven automation.

This e-book will be a tour de force on the most significant IT challenges and how AI- and ML-driven analysis can solve them, bringing unprecedented efficiency and security to ITOps.

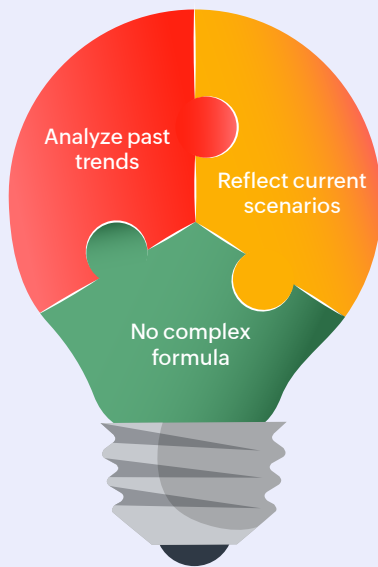
# Predict issues before impact with ML-driven forecasting

Imagine having a crystal ball for your IT infrastructure—a tool that can warn you of impending system failures before they disrupt your business. For any IT professional, the dread of unexpected system downtime is a familiar, unwelcome guest. The frantic scramble to troubleshoot, repair, and communicate with stakeholders during a critical system outage can lead to significant financial setbacks, damaged user or customer relationships, and operational chaos.

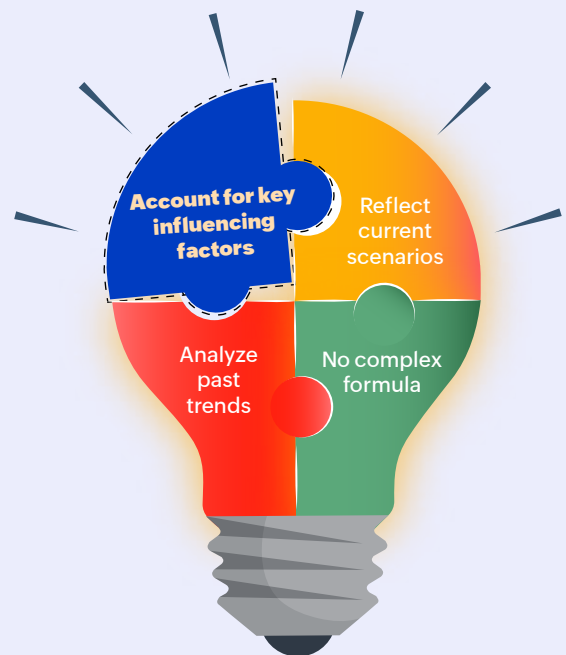
AI and ML offer IT teams a powerful ally in predicting downtime before it occurs. By meticulously analyzing historical data, system behavior, and intricate patterns, AI-driven analytics can forecast potential system failures or performance bottlenecks. Think of it as a sophisticated early warning system—a digital sentinel that anticipates the storm and enables you to take preemptive action, safeguarding your critical systems.

The advanced, AI-powered forecasting engine of Analytics Plus, ManageEngine's flagship IT analytics application, excels at predicting critical IT events, such as unplanned downtime, by identifying and interpreting trends and anomalies in system health.

## Comparative analysis of univariate and multivariate forecasting

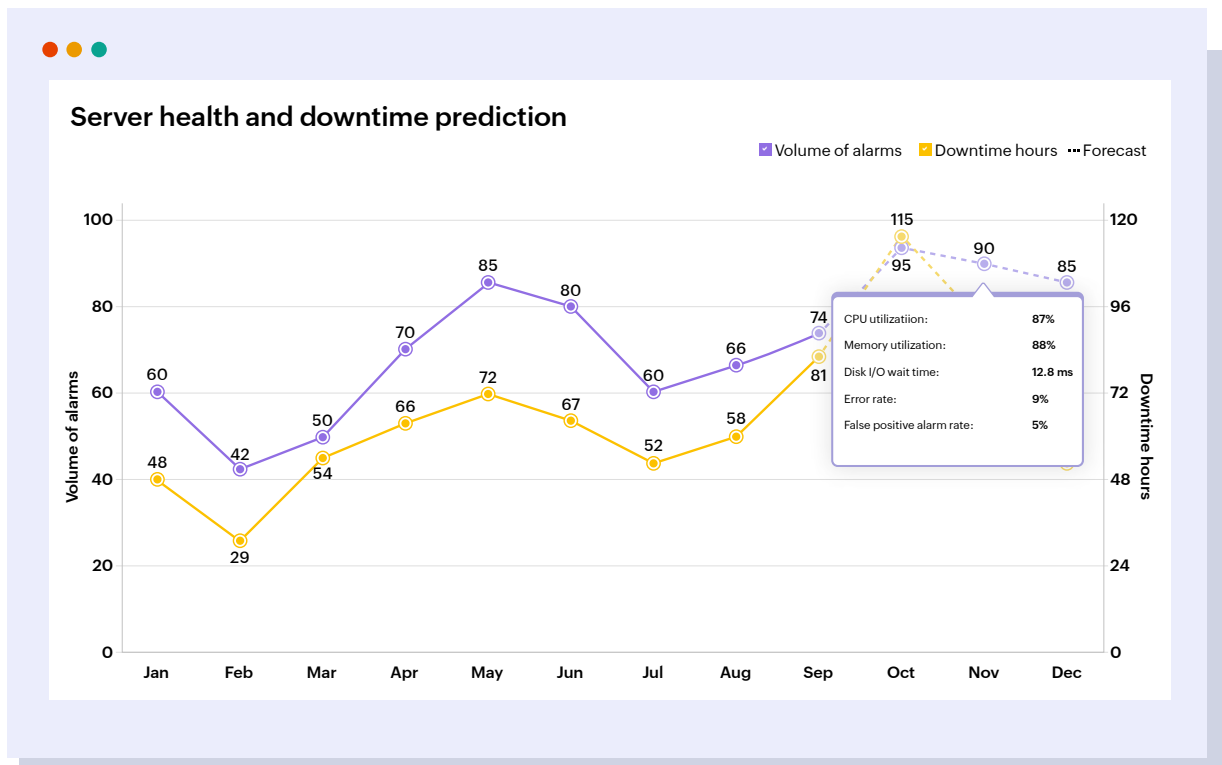


**Univariate forecasting**



**Multivariate forecasting**

By employing both univariate and multivariate forecasting, Analytics Plus delivers data-driven predictions across a spectrum of IT metrics and scenarios, including workloads, alarms, asset performance, and downtime. This comprehensive approach, which considers past trends and multiple influencing factors, facilitates proactive strategizing, informed decision-making, and effective downtime prevention.



Consider the analysis above that tracks the application server downtime risk.

By meticulously tracking historical alarm volumes and downtime occurrences over past months and by incorporating real-time data on key factors that can degrade server performance, the analysis allows NOC technicians to perform targeted preventive maintenance, addressing potential vulnerabilities before they escalate into critical failures.

By harnessing the power of AI-driven multivariate forecasting, IT teams can effectively mitigate potential issues, anticipate critical vulnerabilities, optimize resource allocation, schedule proactive maintenance, and guarantee the continuous operation of essential IT systems and resources.

# Isolate problematic devices with AI-driven, proactive ITOps

In today's tech-driven world, reliable IT devices are critical, and managing their varying performance, vulnerabilities, and life cycles in complex IT environments is a major challenge. Traditional monitoring systems often struggle to identify consistently malfunctioning devices and predict potential failures proactively.

Relying on reactive troubleshooting after failures occur leads to costly extended downtime, decreased employee productivity, and a decline in overall asset reliability. The critical challenge lies not only in identifying at-risk devices but also in efficiently prioritizing and isolating these problematic assets in a timely manner. This necessitates a fundamental shift from reactive firefighting to proactive, AI-powered ITOps—a transition that traditional systems struggle to deliver.

## Tracking unified asset risk scores using tailored ML algorithms

AI- and ML-infused analytics solutions empower IT teams to elevate device reliability by implementing automated risk scoring, providing a forward-looking view of their asset health. By adopting automated risk scoring, IT teams can proactively track the likelihood of an asset failing. This mechanism goes beyond simple monitoring, automatically assigning risk scores based on various factors to identify potentially troublesome device categories.

For this, while standard risk assessment models offer a foundational approach, the true power lies in leveraging custom ML algorithms that dynamically track an asset's risk score over time, providing a far more precise evaluation. By intelligently analyzing historical data and predictively identifying trends, these models accurately gauge the probability of future asset failures.

Analytics Plus empowers IT teams to create, train, and deploy such no-code, custom ML models within minutes, eliminating the need for complex coding or specialized data expertise. These sophisticated models can be tailored to account for an organization's unique usage patterns, infrastructure complexities, market trends, and business objectives. The no-code ML models can be trained on asset data, incorporating factors that the organization's IT team deems influential to asset health.

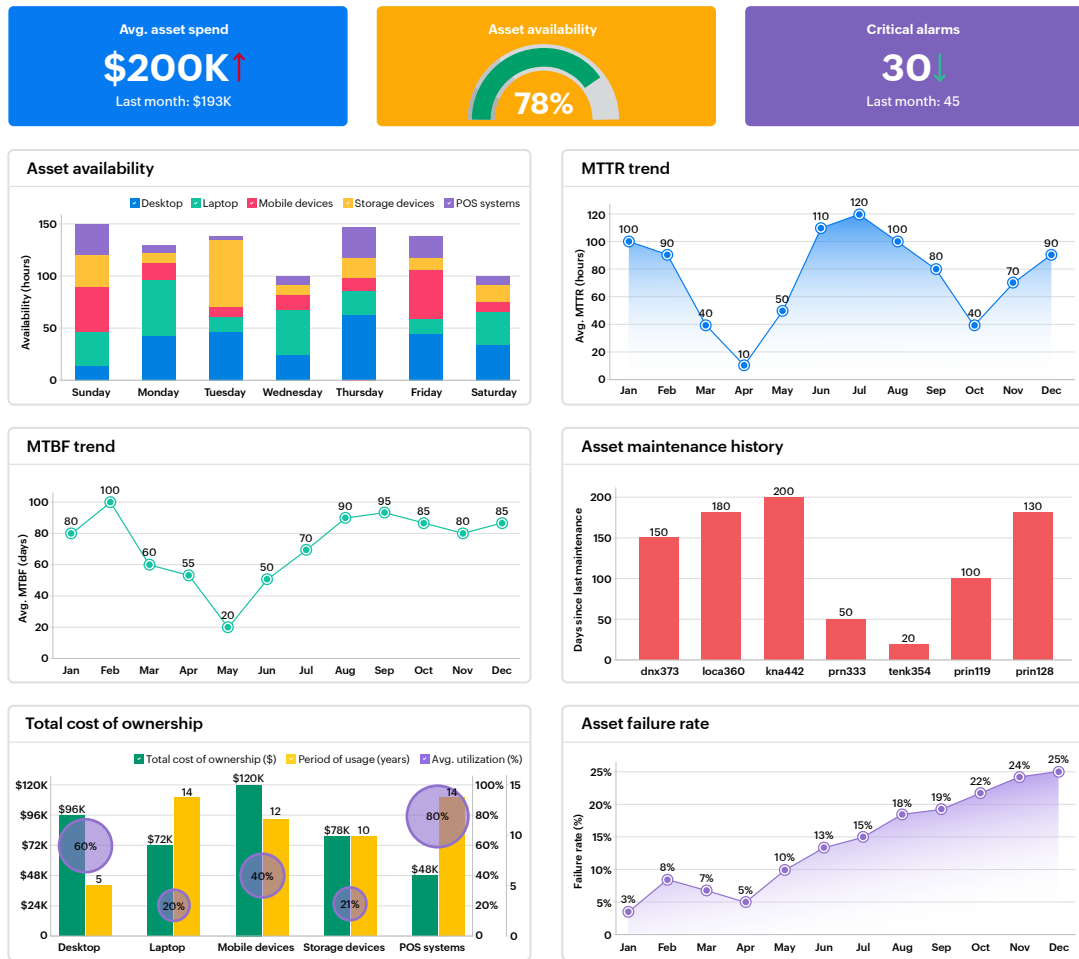




The analysis above tracks the asset risk of multiple device categories over time. Consider the case of workstations. Workstation risk scores can be generated by correlating incident and performance history data from multiple tools. The custom asset risk scoring model automatically assigns risk levels to new devices and can be retrained for continuous accuracy. This allows for targeted actions to reduce asset downtime incidents, streamline deployment and maintenance, optimize vendor selection, and refine procurement practices for problematic asset categories, thereby enhancing overall asset stability and reliability.

Complementing this dynamic asset risk scoring, a consolidated asset management dashboard offers a unified view for smarter IT asset management. By bringing together critical metrics and KPIs from an organization's entire IT asset inventory, the dashboard fosters proactive monitoring, early failure detection, timely maintenance, and swift isolation of problematic assets, ultimately helping resolve recurring issues. This unified view correlates data from various IT solutions, providing a holistic understanding of asset health, performance, and security.

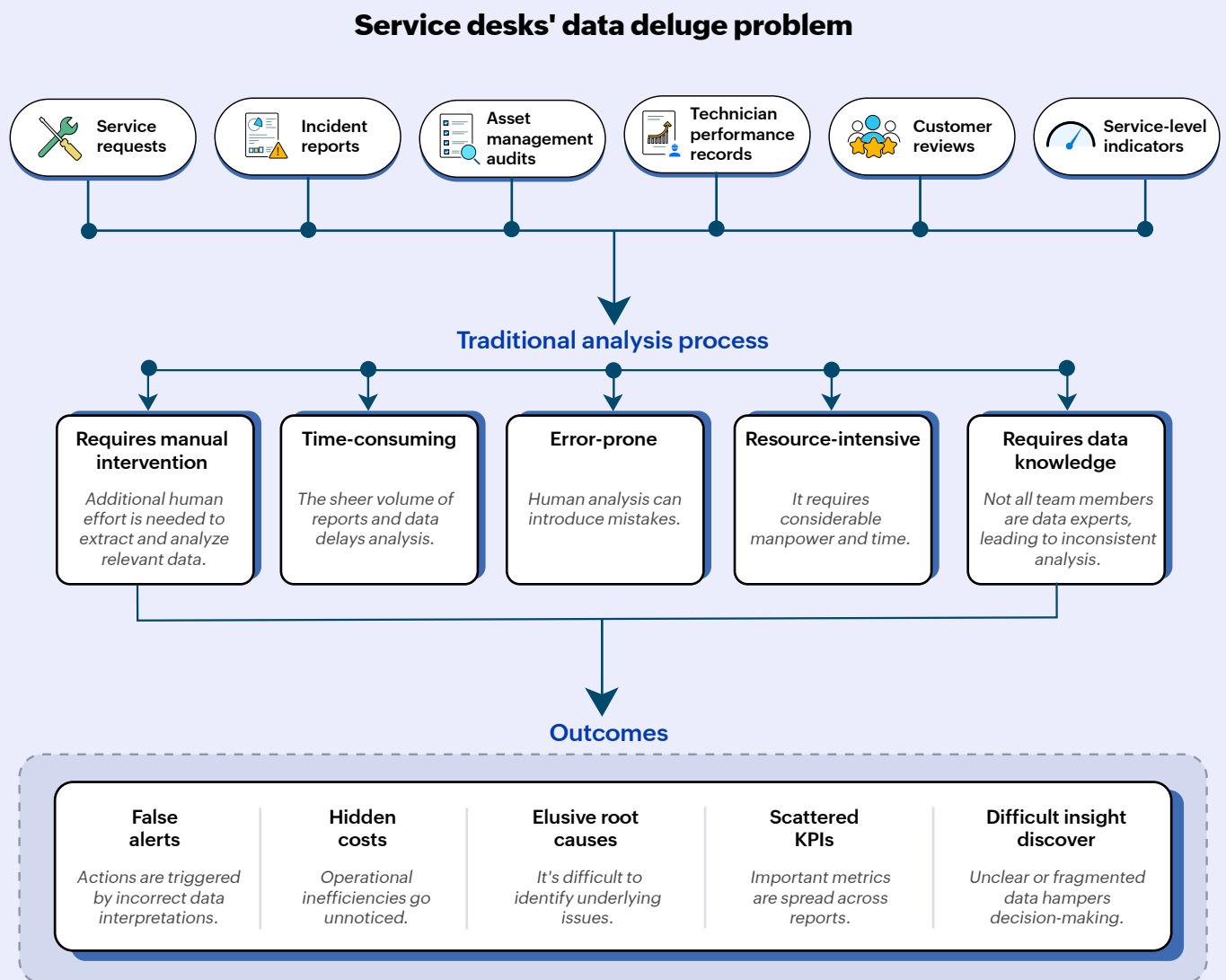
## 360-degree asset management dashboard



# 03 Simplify insights and accelerate RCA with intelligent analytics assistants

In sophisticated operational environments, IT teams often grapple with an overwhelming deluge of data from diverse sources. Traditional analysis methods, which rely on manual intervention to extract relevant metrics and interpret visualizations, are not only time-consuming but also prone to human error, leading to potentially flawed insights.

This data overload becomes particularly acute when service desk teams face a surge in tickets. The ensuing chaos can squander valuable time as teams sift through data, hindering their ability to extract actionable insights. The challenges of navigating complex information are vividly illustrated in the following diagram.

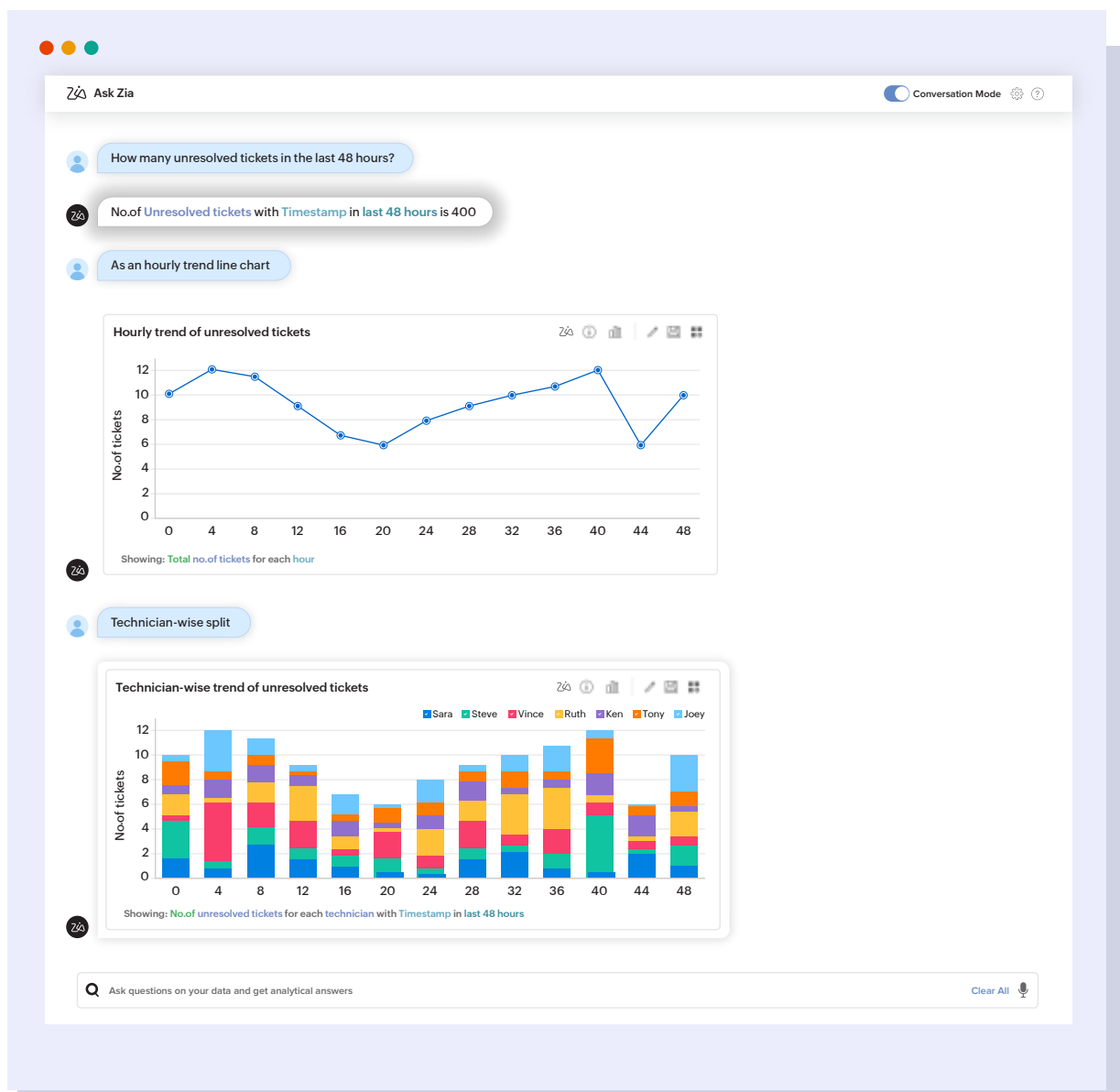


To address this, IT teams need an intelligent, interactive approach to data analysis that transcends manual static report creation and offers dynamic, actionable insights.

## Generate intuitive visualizations through a simple conversation

Enter Zia, the AI assistant within Analytics Plus and a game-changer in interactive data analysis. Zia transforms how IT teams engage with their data, automatically uncovering key trends, providing insightful recommendations, and answering complex queries in real time.

Zia can effortlessly sift through vast datasets, identify intricate patterns, and summarize them for rapid decision-making. This eliminates the need for IT professionals to spend countless hours manually analyzing logs or performance data. By simply asking Zia, IT managers can obtain the necessary insights with remarkable speed and precision.



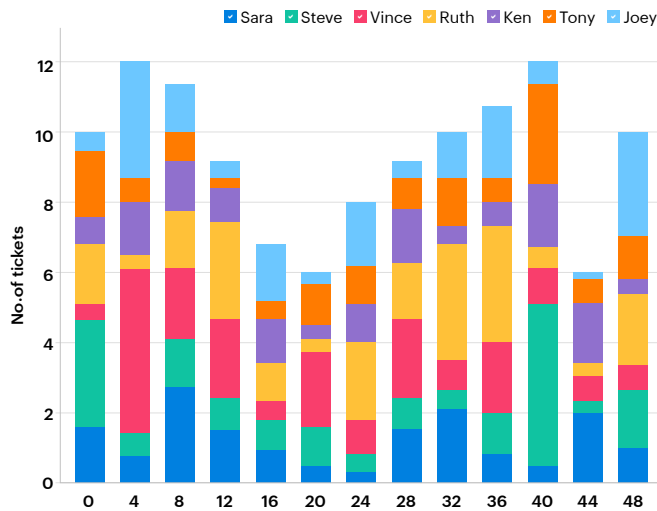
This visualization demonstrates how Zia simplifies the identification and classification of unresolved tickets over two days. Using natural language queries, Zia generates instant reports and dashboards. It leverages its NLP engine to quickly deliver relevant visualizations, allowing for deeper insight exploration and advanced actions.

### **Visualize key drivers for faster RCA**

Beyond generating intuitive visualizations from natural language requests, Zia enhances the analysis journey by facilitating instant RCA of complex reports and dashboards, revealing hidden correlations without manual effort. RCA, a critical component of an IT technician's workflow, is often time-consuming, particularly for organizations with fragmented departments and data storage systems. The longer this process takes, the greater the impact is on the organization. Zia delivers quick, narrative, visual insights into large, complex analyses and datasets within seconds, enabling IT teams to identify the root cause of any IT outcome or event and accelerate decision-making.

With these real-time, AI-driven insights into complex analyses, Zia empowers users to conduct in-depth diagnostic investigations into critical IT events, trends, and incidents, pinpointing the key contributing factors. By revealing the underlying drivers behind issues like resolution delays, incident spikes, and ticket backlogs and by illustrating how these metrics interact, Zia clarifies the origins of problems. This enables IT teams to expedite RCA, deploy targeted incident responses, and implement preventive measures, thereby enhancing operational stability and service efficiency.

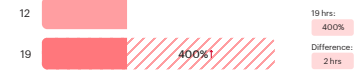
### Technician-wise trend of unresolved tickets



#### Zia Insights

##### Insights for the number of unresolved tickets

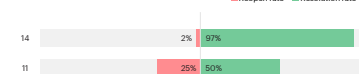
Time to acknowledge (TTA): Change in recent period



##### Maximum and minimum technician availability



##### Reopen rate vs. resolution rate



The visualization above demonstrates how Zia breaks down the technician-wise unresolved tickets report to identify the top three driving factors: technician unavailability, an acknowledgment delay, and a high reopen rate. This analysis reveals how these factors contribute to the high number of unresolved tickets. What once required hours of meticulous analysis can now be accomplished in a fraction of the time, thanks to advancements in AI-driven analysis.

AI-driven analytics assistants, like Zia, provide a comprehensive solution to the data analysis challenges that IT teams face. They enable rapid access to relevant insights through simple, natural language queries while also offering in-depth visual analysis and accelerated RCA. This streamlines troubleshooting and enhances proactive problem resolution, equipping IT teams to identify and resolve inefficiencies faster.

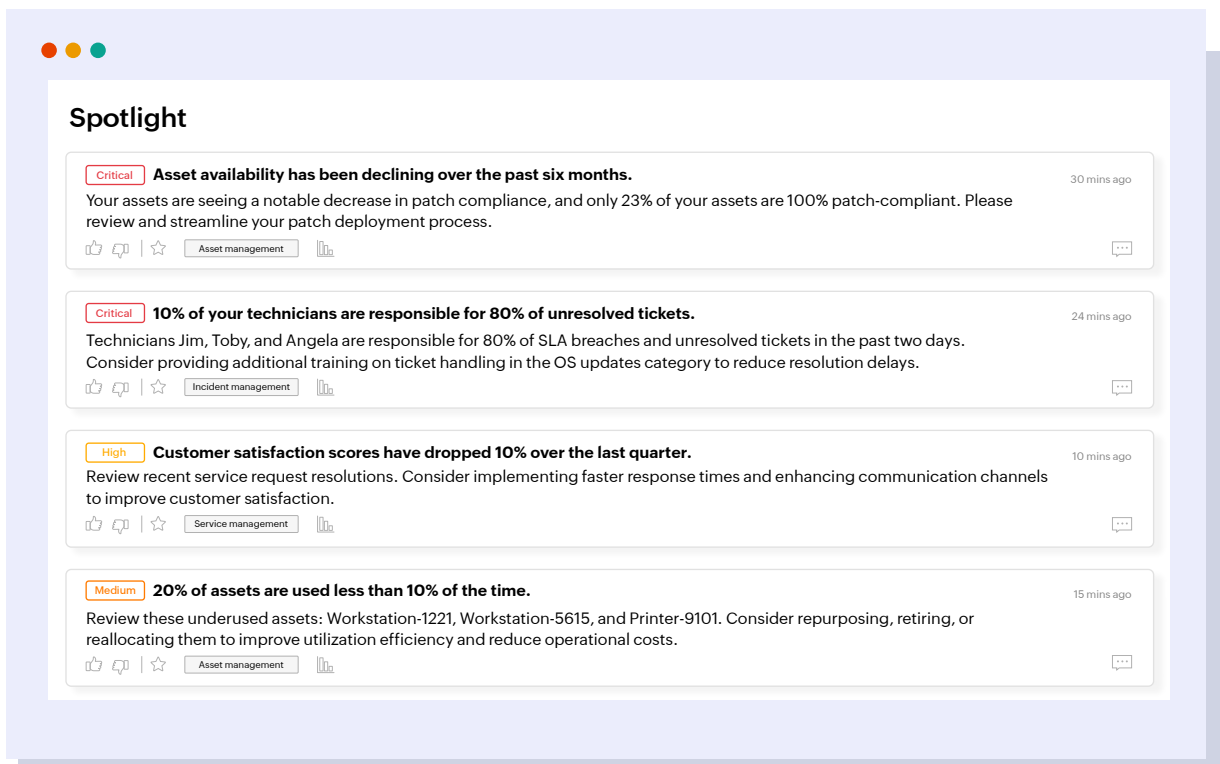
# Drive timely actions with AI-powered decision intelligence

**W**hile AI-driven analytics assistants like Zia simplify complex data analysis, another significant challenge persists: efficient decision-making. Though insights from AI-fueled analysis can prompt immediate, preliminary actions, a gap remains between these insights and the execution of strategic business decisions. Strategic decisions often require in-depth discussions, analysis, and ROI and impact calculations, delaying action and impacting operational efficiency.

However, AIOps advancements have paved the way for AI-driven decision intelligence that streamlines, automates, and democratizes contextual decision-making. A contextual decision intelligence engine can enable rapid contextual recommendations for IT events and scenarios. By meticulously monitoring IT data, it provides remediation strategies to address the discovered inefficiencies.

Consider ITSM issues like resolution delays, unresolved tickets, and high volumes of problematic assets. Traditionally, addressing these inefficiencies requires service desk managers to spend hours analyzing metrics and trends to formulate effective strategies.

However, Spotlight, Analytics Plus' decision intelligence engine, continuously and automatically monitors and analyzes service desk data, identifies hidden bottlenecks, and provides data-driven recommendations, as shown below.



From the visualization, it's evident that this context-aware platform also classifies recommendations by their criticality, enabling IT teams to prioritize urgent actions. Spotlight's automated recommendations reduce troubleshooting times and ensure optimal IT service performance without manual intervention. By leveraging decision intelligence, IT managers and leadership can make timely decisions to expedite incident resolution and proactively address IT issues.

## 05 Secure vulnerable devices via automated anomaly detection

In today's interconnected, digital-first business environment, asset and device security is paramount. With a vast network of endpoints and software assets spread across the globe, any vulnerable device can serve as a gateway for threat actors. Brute-force attacks and malware deployment on any of these assets can compromise entire systems, highlighting the critical need for robust security measures.

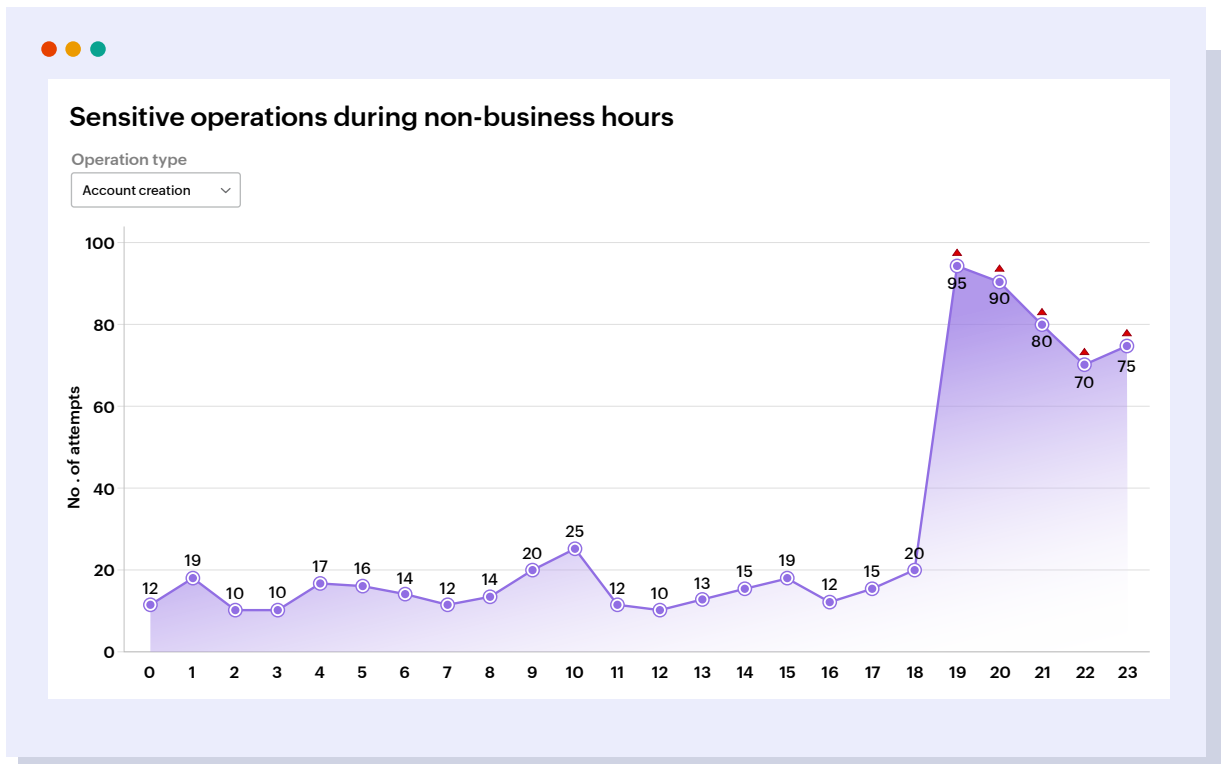


Suspicious device or user behavior often signals an impending breach. Therefore, real-time user behavior tracking and the identification of malicious deviations from normal activities are essential and the simplest forms of defense. This proactive approach allows security teams to intercept threats before they infiltrate critical systems.

However, relying on manual anomaly detection, especially given the sheer volume of devices and the dynamic nature of IT environments, is impractical. It's time-consuming, prone to false positives, and can overlook crucial hidden threats.

Fortunately, ML-driven, automated anomaly detection provides a solution. By continuously analyzing user and device behavior patterns, it identifies outliers that deviate from the observed behavioral patterns.

From an unusual login to a sudden surge in network traffic, automated anomaly detection models can detect these irregularities, trigger immediate alerts, and facilitate the isolation of affected systems. This minimizes your reliance on manual, threshold-based monitoring and reduces your window of exposure to potential attacks, significantly enhancing your overall security posture.



Consider this analysis of hourly sensitive operation volumes. This analysis is invaluable for identifying and isolating devices engaged in high volumes of sensitive activities, such as password requests, login failures, account creations, failed sessions, and unauthorized access, particularly during non-business hours. Anomalous counts of sensitive operations during off-hours are a major red flag.

By implementing meticulous monitoring and ML-driven anomaly detection across all sensitive operations, organizations can identify potential vulnerabilities and thwart breaches early on. This proactive approach safeguards sensitive data, prevents security-related downtime, mitigates breach-associated costs, and enhances customer and employee trust, security, and productivity.

# Conclusion

Advancements in AI and ML technologies empower IT teams to transition from reactive management to proactive decision intelligence. From predicting system downtime to automating critical corrective actions, AIOps is revolutionizing ITOps. By integrating AI-driven analytics into their ITSM and ITOps management practices, organizations can maximize uptime, strengthen security, cultivate service excellence, and optimize IT efficiency, fueling both operational effectiveness and innovation.

# About

**ManageEngine Analytics Plus** is an IT analytics and decision intelligence solution designed to provide organizations with a unified view of their IT operations, correlate interdependencies and derive meaningful insights. It breaks down data silos by consolidating both on-premises and cloud infrastructure KPIs. Analytics Plus measures the efficiency of network operations, tracks the responsiveness and availability of business applications, evaluates technician performance, assesses the progress of processes and flags security anomalies. This comprehensive analysis is achieved by connecting to all IT software that forms the backbone of an IT infrastructure. These consolidated insights enable organizations to make data-driven decisions that enhance operational efficiency and drive business success.

For more information about Analytics Plus,  
visit: [www.manageengine.com/analytics-plus/](http://www.manageengine.com/analytics-plus/)



## Reference

1. <https://www.leanix.net/en/ty/sap-leanix-ai-survey-results-2024?submissionGuid=ed2f7c1d-d42c-4871-b590-c087844618e7>



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