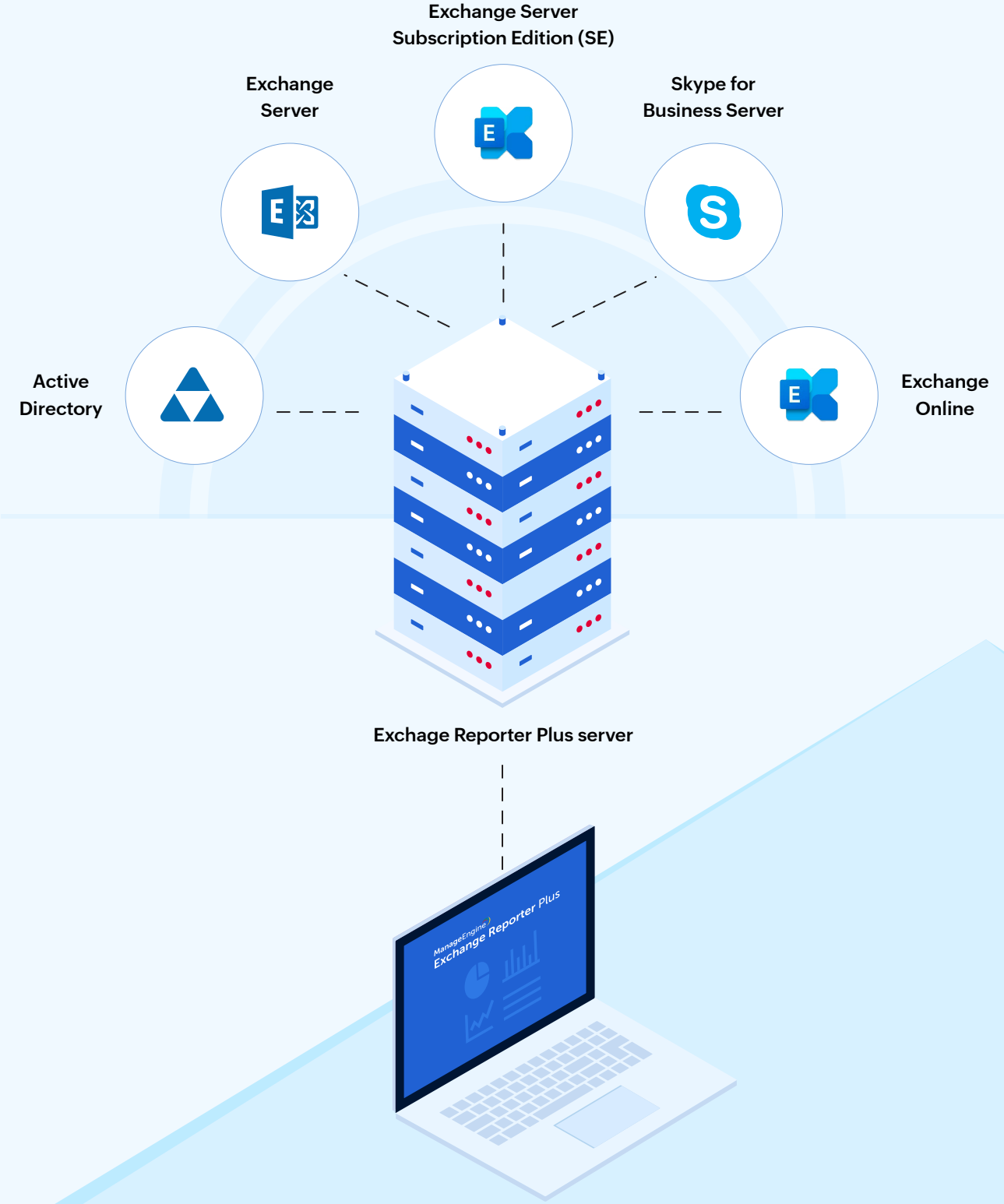


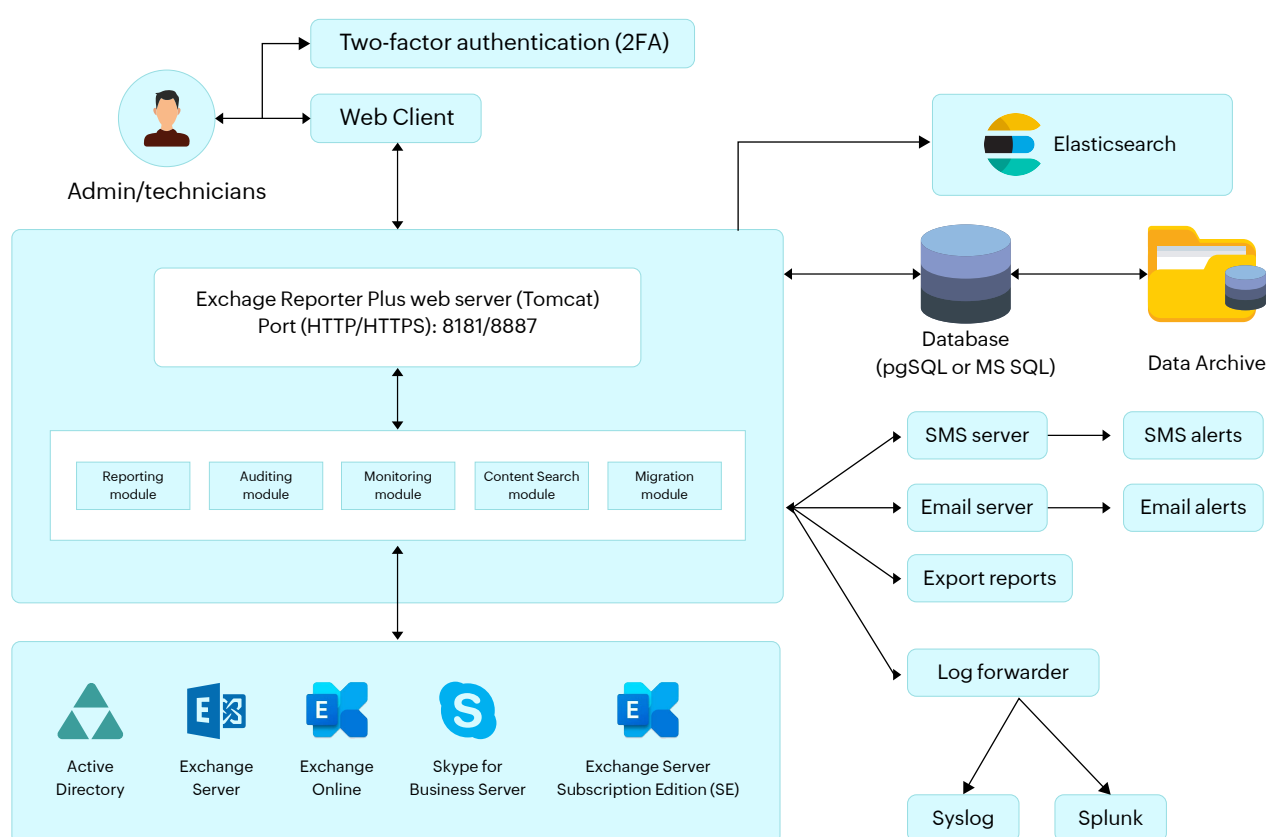
# Solution Architecture



# Document overview

Exchange Reporter Plus is a comprehensive reporting, change auditing, and monitoring solution for Exchange Server, Exchange Server Subscription Edition (SE), Exchange Online, and Skype for Business Server. This document provides a detailed look into its architecture, the purpose of each of its modules, and how these modules communicate with each other.

## Overall architecture



## Exchange Reporter Plus modules

### Web client

Exchange Reporter Plus provides a browser-based client that can be accessed by entering the IP address or host name and port number of the Exchange Reporter Plus server as the URL. The web client can be accessed from any machine that is connected to the Exchange Reporter Plus server.

E.g., <http://testserver:8181> or <http://192.45.89.71:8181>

## Server

The Exchange Reporter Plus Server module contains a Tomcat web server and other sub modules that generate the reports. This server can be accessed through the Exchange Reporter Plus web client to configure Exchange servers, Skype servers, Microsoft 365 tenants, and product-related settings. The Exchange Reporter Plus server, based on the settings enabled by the admin, collects data from the connected systems and stores it in the database. Admins can then use the reporting, auditing, and monitoring modules to generate reports and alerts from this data through the server, and view it using the web client. We recommend keeping the Exchange Reporter Plus server active at all times so that data is collected continuously and no important actions go untracked.

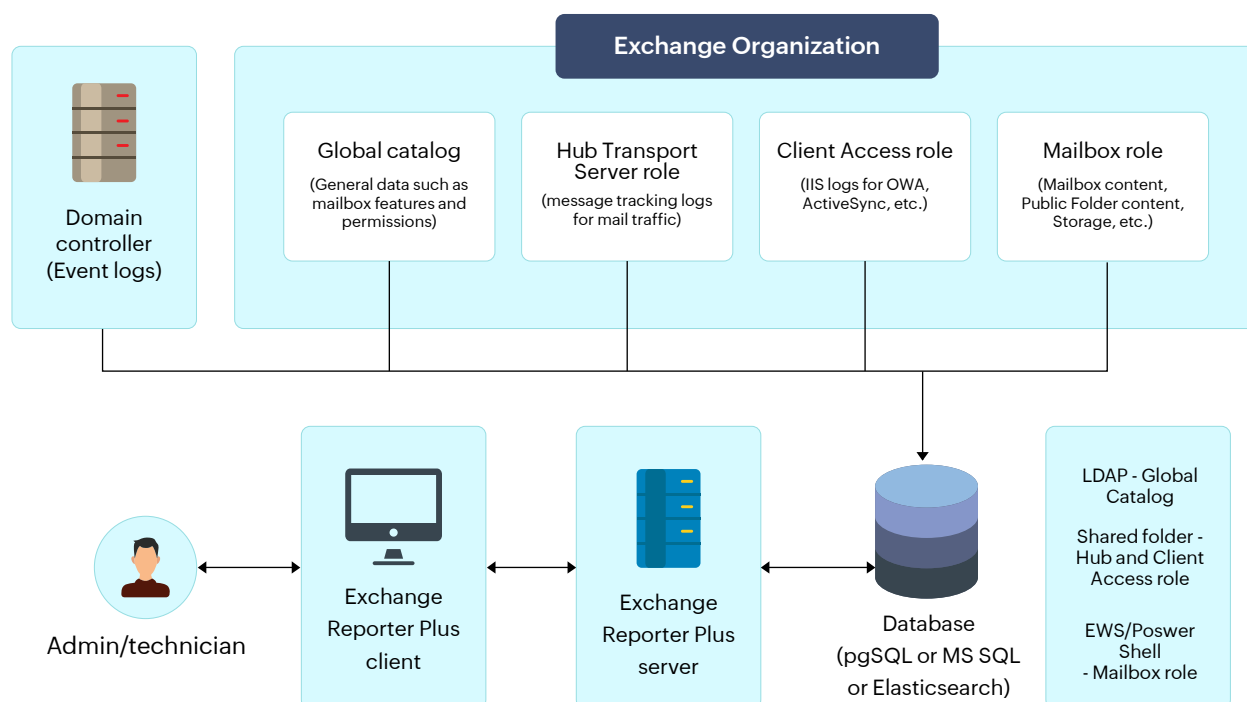
## Database

Exchange Reporter Plus comes bundled with PostgreSQL and Elasticsearch. You can also configure an external Microsoft SQL or PostgreSQL with the product. The PostgreSQL database stores all the product configuration details such as audit profiles, report profiles, technician details, and more. To ensure security, the database is password protected and sensitive information of the users, such as the default admin account password, is encrypted using the bcrypt algorithm. Elasticsearch is used to store and retrieve data for the Email Traffic Reports.

## Communication between the client, server, and database

- To access the web client, users need to be successfully authenticated. Exchange Reporter Plus supports two forms of authentication: Exchange Reporter Plus authentication for accounts that are created in the product and Active Directory (AD) authentication for users imported from AD. In both the cases, users need to enter their respective username and password to log in to the web client.
- Exchange Reporter Plus supports two-factor authentication (2FA) to secure logins. It supports the following 5 modes of 2FA:
  - Email verification
  - SMS verification
  - Google Authenticator
  - Duo Security
  - RADIUS authentication
- Whenever a user executes an action, such as generating a report, the client sends the request to the Exchange Reporter Plus server. The communication between the client and the server can be secured by enabling HTTPS after applying an SSL certificate.
- Based on what the user has requested, the various modules in the server—reporting, auditing, and monitoring—swing into action and fetch the data from the product database, then send it back to the client.
- All the actions carried out by users in Exchange Reporter Plus are recorded in an audit report and stored in the product database.

# Exchange Server reporting, auditing, and monitoring architecture

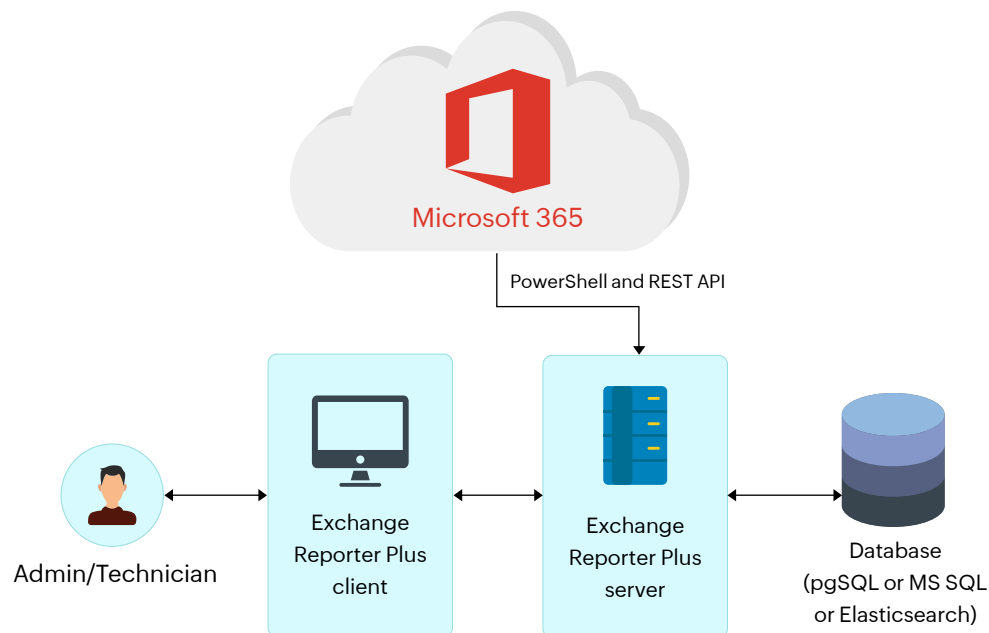


For Exchange Server reporting, auditing, and monitoring, Exchange Reporter Plus collects information from the following entities.

- From the **AD domain controller**, event logs are collected for auditing reports based on the audit profiles created by the admin.
- From the **Global Catalog server**, data such as mailbox features, permissions, etc., are collected using LDAP.
- From the server that holds the **Hub Transport** and **Client Access** roles, Exchange Reporter Plus collects message tracking logs (for mail traffic reports) and IIS logs (for OWA and ActiveSync reports), respectively. This data is then stored in a shared folder.
- From the server that holds the **Mailbox Server role**, data related to mailbox and public folder content reports, mailbox storage size, advanced auditing, and monitoring reports are collected using Exchange Web Services and PowerShell.

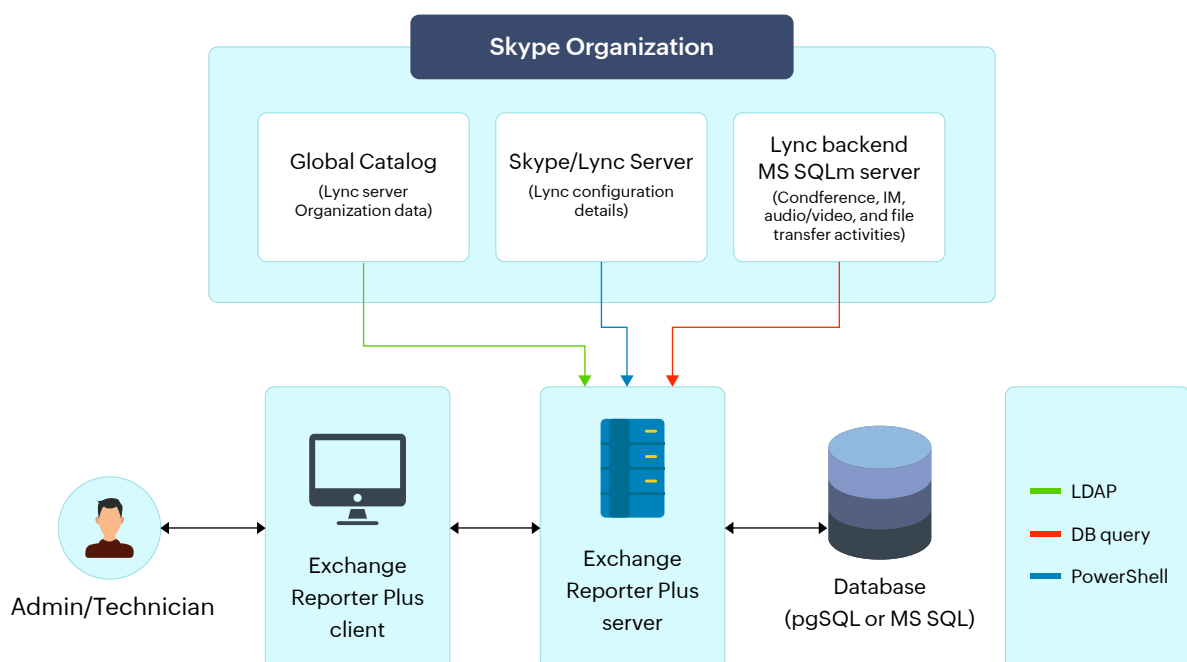
The collected data is then stored in the product database for further processing and analysis, and can be retrieved anytime.

## Exchange Online reporting and auditing architecture



For Exchange Online reporting and auditing, Exchange Reporter Plus collects information directly from the Microsoft 365 tenant using PowerShell. The collected information is then stored in the database for further processing and analysis. It can be retrieved at any time.

## Skype for Business Server reporting architecture

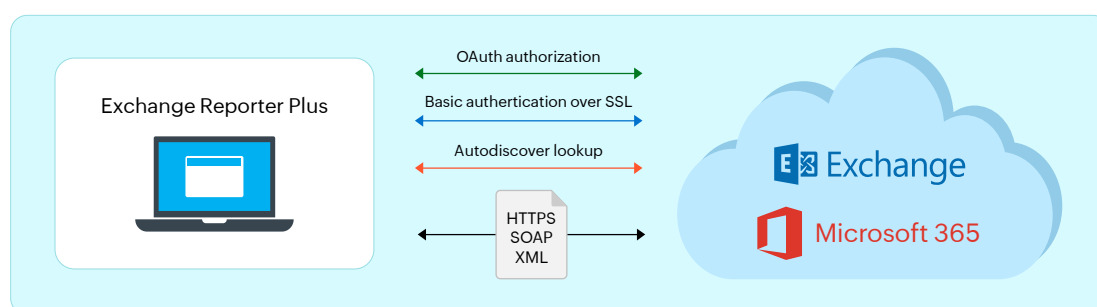


For Skype for Business Server reporting, Exchange Reporter Plus collects information from the following entities:

- From the **global catalog server**, Skype for Business organization data is collected using LDAP.
- From the **Skype for Business Server**, configuration details of the server are collected using PowerShell.
- From the **Microsoft SQL server connected to the Skype for Business Server**, various user activities such as conference details, instant messaging (IM) details, audio/video calls, and file transfer details are collected using database queries.

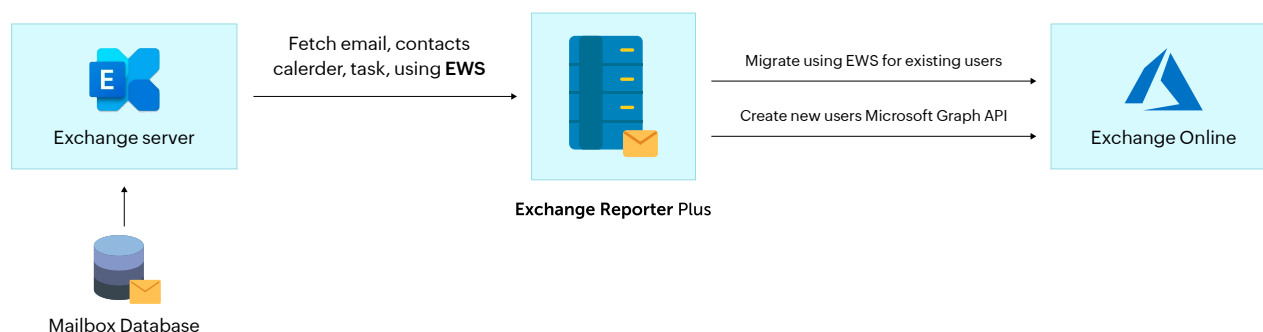
The collected data is then stored in the product database for further processing and analysis and can be retrieved anytime.

## Exchange Server content search architecture



For Exchange Server content search, the solution requests information from the Exchange store to collect real-time data from mailboxes using the Exchange Web Services (EWS) Managed API. The collected information is then stored in the product database for further processing and analysis.

## Exchange Migration architecture



When migrating mailboxes from on-premises Exchange to Exchange Online, Exchange Reporter Plus uses Exchange Web Services (EWS) to fetch emails, contacts, calendars, and tasks from the Exchange servers. If Exchange Reporter Plus creates a new user in Exchange Online, Microsoft Graph API is used to create the user while EWS is used for the migration process.

## Ports used by Exchange Reporter Plus

| Source                 | Destination                                       | Port | Description                                     |
|------------------------|---|------|---|
| Exchange Reporter Plus | Exchange Server                                   | 135  | RPC   |
| Exchange Reporter Plus | Active Directory                                  | 389  | LDAP  |
| Exchange Reporter Plus | Active Directory                                  | 636  | LDAP SSL  |
| Exchange Reporter Plus | Active Directory                                  | 3268 | LDAP Global Catalog                             |
| Exchange Reporter Plus | Active Directory                                  | 3269 | LDAP Global Catalog (SSL)                       |
| Exchange Reporter Plus | Active Directory                                  | 53   | DNS   |
| Exchange Reporter Plus | Active Directory                                  | 88   | Kerberos  |
| Exchange Reporter Plus | Active Directory                                  | 139  | NetBIOS   |
| Exchange Reporter Plus | Exchange Server                                   | 5985 | Windows PowerShell default psSession port       |
| Exchange Reporter Plus | Exchange Server                                   | 53   | Windows PowerShell default psSession port (SSL) |
| Exchange Reporter Plus | Exchange Server                                   | 80   | PowerShell                                      |
| Exchange Reporter Plus | Exchange Server                                   | 443  | PowerShell (SSL)                                |
| Exchange Reporter Plus | Exchange Server                                   | 445  | Log collection                                  |
| Exchange Reporter Plus | MS SQL connected to the Skype for Business Server | 1443 | DB query  |
| Exchange Reporter Plus | MS SQL connected to the Skype for Business Server | 1434 | To find SQL instances                           |
| Exchange Reporter Plus | Elasticsearch engine                              | 9475 | Elasticsearch                                   |
| Exchange Reporter Plus | Exchange Online                                   | 443  | Exchange Online                                 |

## Related documents

The table below lists some resources related to Exchange Reporter Plus that you may find useful.

| Resource   | What is it about?  |
|--|--|
| <a href="#">Admin guide</a>  | This is an all-inclusive guide that covers all the aspects of the product and provides step-by-step instructions on how to configure and use the various settings it provides.                 |
| <a href="#">SSL configuration guide</a>                                | This guide provides step-by-step instructions on how to apply an SSL certificate in the product, and enable a secure connection (HTTPS) between the browser and Exchange Reporter Plus server. |
| <a href="#">Database maintenance guide</a>                             | This guide contains frequently asked questions about database maintenance in Exchange Reporter Plus.   |
| <a href="#">[E-book] Securing Exchange with Exchange Reporter Plus</a> | This e-book lists the best practices for securing your Exchange environment.   |
| <a href="#">Reverse proxy guide</a>                                    | This guide provides step-by-step instructions on how to enable a reverse proxy for Exchange Reporter Plus.   |

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## About Exchange Reporter Plus

Exchange Reporter Plus is a reporting, change auditing, monitoring, and content search tool for hybrid Exchange and Skype for Business. It features over 450 comprehensive reports on various Exchange objects such as mailboxes, public folders, and distribution lists, and also on Outlook Web Access and ActiveSync. Configure alerts in Exchange Reporter Plus for instant notifications on critical changes that require your immediate attention.

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