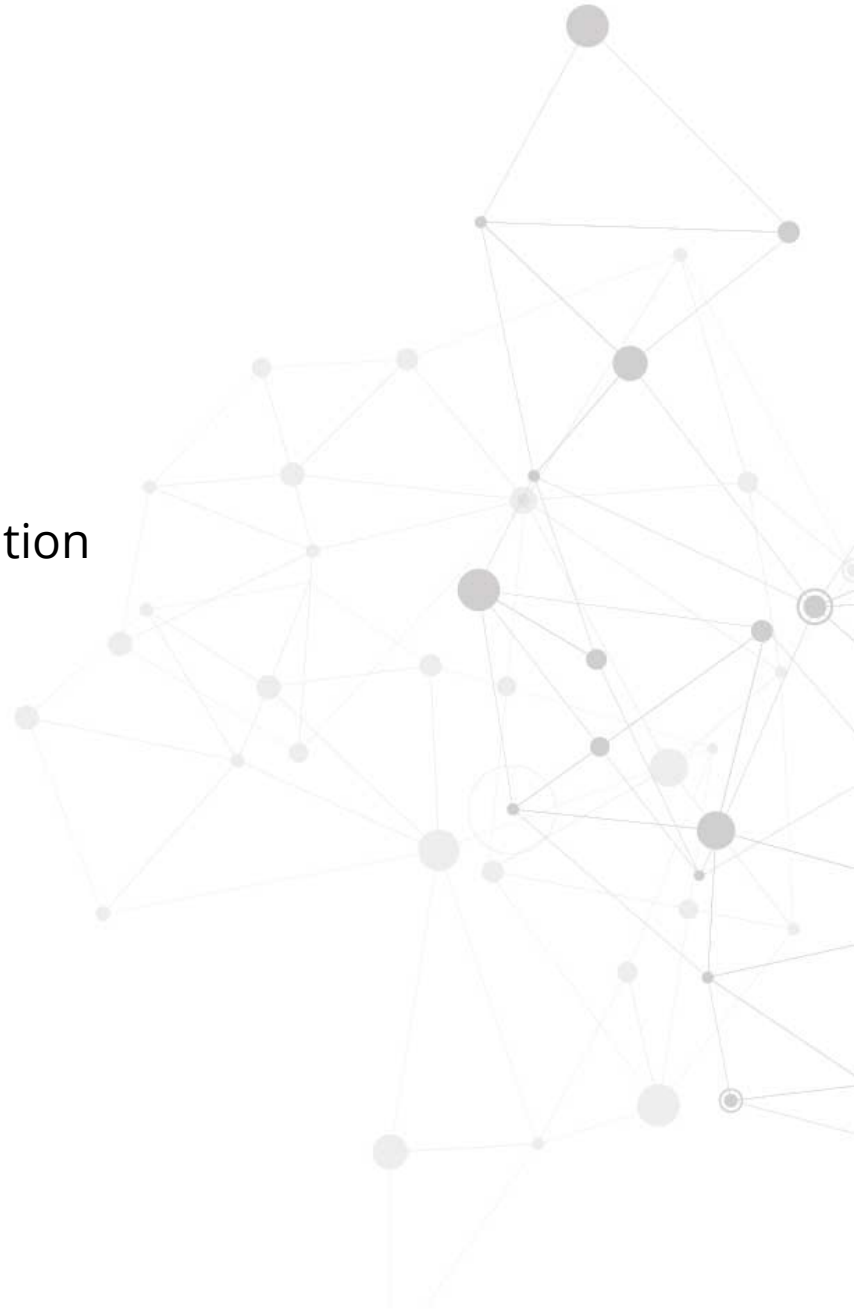
ManageEngine

USER GUIDE

OpManager Enterprise Edition



www.manageengine.com/opmanager

Important Note:

This User Guide is specific to OpManager Enterprise Edition and provides information on architecture, installation, and important admin configurations. However, if you need detailed information on discovery, notification profiles, user management, dashboards, monitors, configurations, and more, please go through our OpManager Professional Edition User Guide.

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OpManager Enterprise Edition

Organizations expand over time, acquiring new businesses and multiplying their resources based on need. They expand to new locations for better serving clients. Organizations evolve and so do their networks. Keeping this in mind, OpManager Enterprise Edition is engineered for networks that are dynamic and geographically distributed, so they can be managed by a unified console.

With OpManager Enterprise Edition, you can deploy

- Probes in multiple locations for monitoring remote sites
- Multiple Probes in one location for scalability and distributing load across servers

I. Architecture

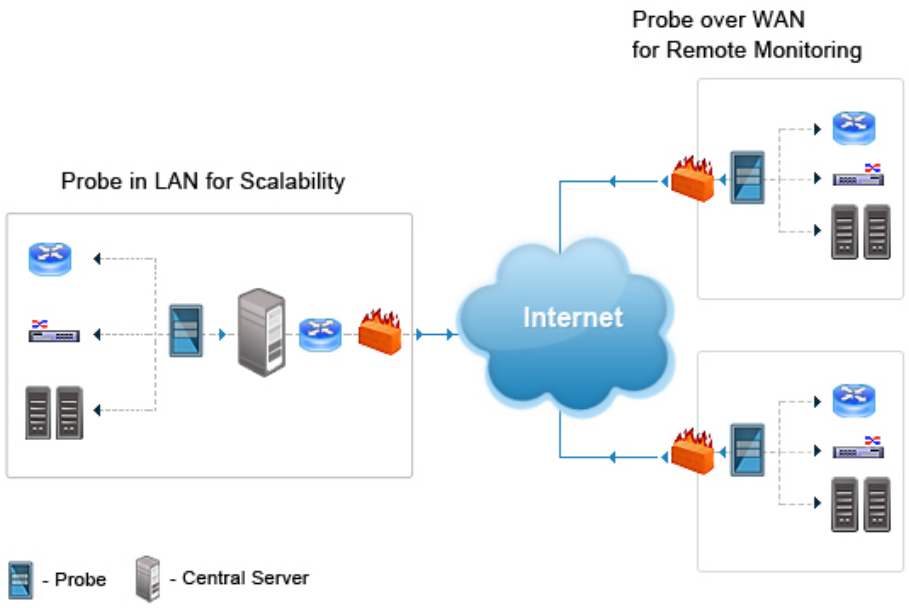
OpManager Enterprise Edition has a Probe - Central architecture.

Central server

The Central server acts as a unified console which synchronizes data with multiple Probe servers. The central server is designed to provide network visibility across locations, consolidate, and report the health of multiple remote networks.

Probe server

The Probe server acts as a polling engine. It monitors the routers, switches, firewalls, servers, and other networking devices for faults and performance. It generates availability, health, and performance reports. The Probe server periodically synchronizes data with the Central server.



OpManager Enterprise Edition Architecture

Click here to know more about OpManager Enterprise Edition architecture.

II. Installation Guide

◎ System Requirements

Central Server

Processor	Memory	Disk
Intel Xeon 3.5 GHz 4 cores/ 8 threads or higher CPUs with a total combined PassMark score of 7,000 or higher	16 GB or higher	100 GB minimum

Probe Server

Processor	Memory	Disk
Intel Xeon 3.5 GHz 4 cores/ 8 threads or higher	16 GB	40 GB minimum

◎ Port Requirements

The following table summarizes the ports and protocols that OpManager uses for communication.

Ports used by the application

Port	Protocol	Port Type	Usage	Remarks
Central - 13307	TCP	Static (PostgreSQL)	Database Port	Can be changed in conf/database_params.conf file.
Probe - 13308	TCP	Static (PostgreSQL)	Database Port	Can be changed in conf/database_params.conf file.
1433	TCP	Static (MS SQL)	Database Port	Can be changed in conf/database_params.conf file/ DBConfiguration.bat file.

23	TCP	Static	SSH Port	
8060	TCP	Static	Web Server Port	Can be configured using ChangeWebServerPort.bat.
7275	TCP	Static	Remote Desktop Port (RDP)	Can be configured using gateway.conf (Under <opmanager_home>\conf folder)

Ports used for monitoring

Port	Protocol	Port Type	Usage	Remarks
161	UDP	Static	SNMP	
135	TCP	Static	WMI	
445	TCP	Static	WMI	
5000 to 6000	TCP	Dynamic	WMI	
49152 to 65535	TCP	Dynamic	WMI	Windows 2008R2 and higher
2000	TCP	Static	Internal Communication Port	
56328	TCP	Dynamic	ShutDown Listener Port	
162	UDP	Static	SNMP Trap Receiver Port	

514	UDP	Static	SYSLOG Receiver Port	SYSLOG Receiver Port can be changed via WebClient

Ports used by add-ons

Port	Protocol	Port Type	Usage	Remarks
69	UDP	Static	TFTP Port [NCM]	TFTP Port is used for transferring the configuration files
1514	UDP	Static	Firewall Log Receiver [FWA]	Firewall Receiver Port can be changed via WebClient
9996	TCP		NetFlow Listener Port [NFA]	NetFlow Listener Port can be changed via WebClient

◎ Scalability

OpManager Enterprise edition can monitor upto 10,000 devices and 50,000 interfaces out-of-the-box.

For scaling more devices, contact *opmanager-support@manageengine.com*

◎ Installation

To install OpManager Enterprise Edition, follow the instructions in this page.

◎ Configure HTTP to HTTPS mode of communication

By default, the communication between the Probe servers and the Central server is through HTTP. OpManager also supports secure HTTP communication across remote sites.

To enable HTTPS mode of communication, follow the instructions in this page.

◎ Update Guide

Please follow the below steps to update OpManager Enterprise Edition:

Step 1: OpManager Database Backup

1. Stop the OpManager Central and all probe services.
2. Backup the OpManager database in one of the following methods:
    a. If the backend database is installed on an MSSQL server, take an SQL backup of OpManager database and all the dependent plug-in databases.
    b. If OpManager is installed on a Windows machine, go to the *bin > backup* folder under OpManager installation directory and execute the BackupDB.bat as administrator for the Central server and all probe servers.
    c. If OpManager is installed on a Linux machine, go to the *bin > backup* folder under OpManager installation directory and execute the BackupDB.sh as root user for the Central server and all probe servers.
    d. If OpManager is installed on a virtual machine, take a VM snapshot of the Central and all probes.

Step 2: Upgrading the Central Server

1. Start all Probe services for Smart Update to take effect.
2. Go to the bin folder under OpManagerCentral installation directory.
    a. *Windows OS*: Run the *UpdateManager.bat* file as administrator.
    b. *Linux OS*: Run the *UpdateManager.sh* file as root user.
3. The Update Manager launcher appears on the screen.
4. Browse the required Update Pack file and click on Install.
5. Follow the on-screen instructions to apply the Update Pack.
6. Once the update is complete, start the OpManagerCentral Service for the update to take effect.

Step 3: Smart Update (Automatic upgrading of Probe servers)

1. The Probe will automatically contact the Central server.
2. Once the Probe server detects a build number mismatch with the Central server, all the Probe services will be stopped.
3. The Probe server downloads the Update Pack from the Central server and starts upgrading.
4. Once the update process is complete, restart all Probe services.

Note: Browser cache might cause issues with the updated OpManager client view, so clear the browser cache after the update.

III. Administrator Guide

◎ Synchronization across the Central & Probe servers

While monitoring multiple, remote locations, the pooled data presented in the Central server should be accurate. OpManager provides real time, accurate information over multiple, remote sites by synchronizing the data between the Central and the Probe servers.

Data Synchronization

When a custom device in the IT infrastructure needs to be monitored, a suitable device template can be created in OpManager. Instead of creating a new device template in every Probe server, OpManager allows you to create a suitable template once in the Central server. This data will be synchronized with the Probe servers and you can start monitoring the devices right away in all the Probe servers.

For e.g, Addition of device templates, Deletion of an alarm, etc.,

* Points to note:

- Any data that is created or deleted in Probe servers will be synchronized with the Central server and vice versa.

Configuration Synchronization

The changes made to the configurations in the Central server and probe servers will be synchronized as mentioned in the table below.

✓ - Synchronized
✗ - Will not be synchronized

Configuration Changes	Central to Probe	Probe to Central
Device Template	✓	✓
Device Categories	✓	✗
Custom Fields	✓	✗

Rule Engine	✗	✗
Vendor Template	✗	✗
Interface Template	✗	✗
URL Template	✓	✓
Device Downtime schedule	✗	✗
Groups	✗	✗
Alarm Escalation Rules	✗	✗
Quick Configuration Wizard	✗	✗
Performance Monitors	✓	✓
Application Monitors	✓	✓
Windows Services	✓	✓
VMware Events	✗	✗
Processes	✓	✓
Files	✓	✓
Folders	✓	✓
Agents	✗	✗
Service Monitors	✓	✓

URLs	✓	✓
EventLog Rules	✓	✓
SNMP Trap Processors	✓	✓
Syslog Rules	✓	✓
Script Templates	✓	✓
IP SLA	✓	✓
Notification Profiles	✗	✗
Workflow	✗	✗

◎ Discovery process in OpManager Enterprise Edition

Discovery is the process of identifying physical and virtual resources such as routers, switches, servers, firewalls, virtual machines, and interfaces in your networking environment and collecting information about them.

Since Probe servers act as polling engines, the discovery process should be initiated in the Probe servers only. In the Central server, a unified view of all the discovered devices is displayed.

Device discovery

- Adding Device Credentials
- Discovering Networks
- Discovering Individual Devices
- Adding devices using SSH
- Configuring Discovery Rule Engine
- Layer 2 Discovery

Handling Errors

- Error messages & solutions
- Device Discovery - 'General Failure'

* Points to note:

- To monitor devices in the location where Central is installed, install a dedicated probe server to discover and monitor devices.
- Data of discovery in probe servers such as device name, IP address, vendor, etc., will be synchronized with the Central server.
- Credential data of discovered devices in Probe servers will not be synchronized with the Central server.

◎ Alert & Notification mechanism

Alerts

Alerts/Alarms are messages representing failure or fault in your networking environment. Alerts are triggered due to threshold violations, SNMP traps, and device failures. Alerts will be generated for all devices, processes, and services monitored by OpManager.

Alert Categories in OpManager

Alerts	Color Representation
Clear	*Green*
Attention	*Yellow*
Trouble	*Orange*
Critical	*Red*
Service Down	*Purple*

◎ Monitoring devices & services in OpManager

To monitor and manage network resources such as devices, follow the instructions in this page.

* Points to note:

- Alerts will be generated by Probe servers only based on threshold violations, SNMP traps received, etc.,

- Alerts generated by Probe servers will be synchronized with the Central server. A unified view of all the alerts is provided in the Central server.

◎ Notification Profiles

Notification profile in OpManager is used to notify a network administrator of faults in the network, and for hierarchical escalation. It is also used to perform actions such as logging trouble tickets, running a system command, and much more when an alert is generated.

Since multiple IT teams are employed to monitor remote locations, the alerts generated for a particular remote network should be notified to the respective team. This aids in faster troubleshooting and avoiding unwanted alerts. Similarly, if any Probe server stops communicating with the Central server, the central server loses visibility into that particular network. This needs to be notified to the admin/technician monitoring the Central server.

OpManager lets network admins configure dedicated Notification Profiles in the Central server as well as in the Probe servers.
For configuring notification profiles, follow the instructions in this page.

* Point to note:

- For email notification to function, Mail Server Settings has to be configured.
- For SMS notification to function, SMS server settings has to be configured.
- TheNotification Profiles that are configured in the Central server will not be synchronized with Probe servers and vice versa.

◎ User Management

Enterprise networks span over multiple locations. For monitoring these remote locations, dedicated IT teams are employed. OpManager Enterprise Edition makes it easier to manage user access, and roles for multiple IT teams with User Management. Since remote locations are handled by different teams, the required access/roles can be created in the respective Probe servers, making it easier for managing users. Without using an external third party identity management tool, users can be managed within OpManager. User Management in OpManager involves;

- Restricting access to users
- Providing role-based access to users
- Providing scope-based access to users

For adding users in OpManager, follow the instructions in this page.

* Points to note:

- User profiles created in the Central server will not be synchronized with probe servers.
- Similarly, user profiles created in probe servers will not be synchronized with the Central server.

◎ Dashboards & Reports

Dashboard

Dashboard provides a graphical summary of your entire IT infrastructure in one place. It displays real-time information of Key Performance Indicators (KPI) in the form of populated graphs, summary of various devices, monitors, and much more.

Dashboards can be easily customized in the Central and probe servers.

Site SnapShot widget in the Central server provides an at-a-glance view of the remote sites being monitored. It lists the probes along with the number of devices and active alarms. You can also embed the widget in your website by clicking on the '*Embed Widget*' icon. This helps in monitoring remote sites without logging into OpManager.

To customize a dashboard, follow the instructions in this page.

Report

Report is a record of all the alerts in OpManager over a predefined time frame. Reports are generated for devices, interfaces, business views and much more. With reports, performance of networking devices can be tracked. OpManager has 100+ pre-built reports. Reports are highly customizable and can be created/scheduled as per requirement.

Central - Consolidated reports for all Probe servers and Probe specific-reports can be generated in Central.

Probe - Reports of all networking devices in the monitored location can be generated in Probe servers.

Click the links below to know more about:

- Types of Reports
- Creating New Reports
- Editing Reports
- Scheduling Reports

◎ Probe Details page

Probe Details page provides an overview of the number of probes under the Central Server and the status of each probe. It displays information such as Probe Name, IP Address of server in which the probe is installed, Probe status, Number of managed devices & Last contact time. Email notification can be configured for Probe Down alert in this page.

Probe Status

Running	- Probe is up and communicating with the Central server
Server Down	- Probe is down
Connection Lost	- Probe is not communicating with the Central server

If the probes are configured for *High Availability* (Failover Mechanism)

Running as Primary	- Probe is up and running in the primary server
In Stand-by mode	- Probe is running in secondary server. Primary server is down.

Accessing Probe Details page

- Go to *OpManagerCentral* > *Settings* > *Configuration* > *Probe Details.*
- The Probe Details page is displayed with the list of all probes.

Editing Probe Information

- Go to *Settings* > *Configuration* > *Probe Details.*
- Click on the required Probe from the list of Probes.
- Edit Probe Details pop up window appears.
- By default, the details such as *NAT Protocol*, *NAT Name*, *NAT Port* are entered in their respective fields.
- These details can be edited by clicking on them.

Adding recipient for Probe Down notification

- Go to *Settings* > *Configuration* > *Probe Details.*
- Click on the required Probe from the list of Probes.
- Edit Probe Details pop up window appears.
- Enter the name and the email address of the individual to be notified in the *Contact Name* and *Contact Email* fields respectively.

* Point to note:

For email notification to work, Mail Server Settings has to be configured.

IV. Migration Guide

◎ Migrating OpManager to a different server

Migration in OpManager is based on user preferences/requirements. You can migrate OpManager application and database to a different server in the following scenarios:

- The system requirements have changed.
- The performance has to be optimized (by moving OpManager to a new server).
- A dedicated server is allocated for OpManager.

Follow the instructions in the below pages to migrate the OpManager setup and database.

- For PostgresSQL
- For MSSQL

◎ Migrating from OpManager Standard/Professional to OpManager Enterprise Edition

When your organization expands to cater to an increasing number of clients, it needs a monitoring solution that has enterprise-grade scalability and support like the OpManager Enterprise Edition. OpManager makes it easier to upgrade from Standard/Professional to Enterprise edition without any data loss including historical data and configuration data. This helps you easily upgrade from OpManager Standard/Professional to OpManager Enterprise Edition and start monitoring right away.

Upon migration, the existing OpManager installation (Standard/Professional Edition) will function as a Probe server. The Central server has to be installed in a new machine.

To migrate to OpManager Enterprise Edition, follow the steps given below:

Step 1: Installing OpManager Central

Install the version of OpManagerCentral corresponding to the version of OpManager Standard/Professional Edition in a new machine. OpManagerCentral can be downloaded here.

Step 2: Database Backup

Backup the existing OpManager Standard/Professional Edition database. To backup the database, follow the steps in this page.

Step 3: Migration

Migrating to OpManager Enterprise Edition can be done in two ways:

1. **User Interface** - Migrating with a step by step wizard

2. **Console Mode** - Migrating with Command Prompt. Console mode is chosen as default migration method if the UI is not supported.

1. Migration using User Interface:

a. Go to the bin folder under OpManager installation directory.
   i. For *Windows OS*, run the *MigrateToEnterprise.bat* file as administrator.
   ii. For *Linux OS*, run the *MigrateToEnterprise.sh* file as root user.
b. The Migration Tool wizard appears.
c. In the wizard, enter the corresponding < *Central Server Name* >, < Protocol >, < *Port* > and the < *Probe Installation Key* >.
d. Enter the required < *Probe Name* >, < *Contact Name* > and < *Contact E-mail id* >.
e. Click on MIGRATE.

2. Migration using Console mode:

a. Go to the bin folder under OpManager installation directory.
b. Run the *MigrateToEnterprise.bat* file using *-c* as parameter.
c. Enter the details in the below order.
   < *Central Protocol* >
   < *Central Name* >
   < *Central Port* >
   < *Probe Name* >
   < *Contact Name* >
   < *Email* >
   < *Probe Installation Key* >.

Historical data from probe servers can be sent to the Central server based on user preferences. However, the historical data will still be available in probe server. The migration process is complete. Now the OpManager installation functions as a probe server and synchronizes data with the Central server.

* Points to note:

- The OpManager Central version (to be downloaded) has to match with the existing OpManager version (Standard/Professional Edition) for successful migration.
- The OpManager version can be found by clicking on the User icon on the top right hand side of the existing OpManager installation.
- The *Probe Installation Key* can be found under OpManagerCentral > Settings > Configuration > Probe Details.
- Historical data - The past performance data collected by OpManager. Historical data is used for populating graphs, charts and generating reports.