



# SD-WAN Orchestrator MEA - Administration Guide

Version 6.4.0 Beta 2

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SD-WAN Orchestrator MEA 6.4.0 Beta 2 Administration Guide

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## Change Log

| Date       | Change Description                           |
|------------|----------------------------------------------|
| 2020-04-09 | Initial release of 6.4.0 Beta 2.             |
| 2020-05-29 | Updated port number information in profiles. |
|            |                                              |
|            |                                              |

# Introduction

When enabled, SD-WAN Orchestrator MEA is installed on FortiManager. SD-WAN Orchestrator MEA is a management extension application (MEA) that is released and signed by Fortinet to run on FortiManager.

You can use SD-WAN Orchestrator MEA to configure and monitor SD-WAN networks on FortiGate devices that are managed by FortiManager. SD-WAN Orchestrator MEA is available only with FortiManager, and it supports several FortiGate models. For a list of supported FortiGate models, see the SD-WAN Orchestrator MEA Release Notes on the [Docs Library](#).

This section contains the following topics:

- [Key concepts](#)
- [How SD-WAN Orchestrator MEA works with FortiManager](#)

## Key concepts

This section contains information about the following key concepts and features of SD-WAN Orchestrator MEA:

- [FortiGate devices on page 6](#)
- [Regions and links on page 7](#)
- [Underlay and overlay links on page 8](#)
- [Profiles on page 8](#)
- [Configuration installation on page 8](#)
- [Global routing on page 8](#)
- [Global analysis and visibility on page 8](#)
- [Device analysis and visibility on page 8](#)
- [Business rules on page 9](#)

## FortiGate devices

SD-WAN Orchestrator MEA supports FortiGate devices. For SD-WAN Orchestrator MEA to configure and manage SD-WAN networks on FortiGate devices, the devices must be added to both FortiManager and SD-WAN Orchestrator MEA.

After the FortiGate devices are added to both products, SD-WAN Orchestrator MEA works with FortiManager to configure and monitor SD-WAN networks on the devices. See also [How SD-WAN Orchestrator MEA works with FortiManager on page 9](#).

In general, you should add devices to both products in the following order:

1. FortiManager
2. SD-WAN Orchestrator MEA

However, in some cases you can add FortiGate devices to SD-WAN Orchestrator MEA first. For example, see [Adding model devices on page 23](#) and [Importing devices on page 26](#).

## Regions and links

A region refers to a cluster of devices in one geographical location. Each region consists of exactly one hub device and one or more edge devices.

SD-WAN Orchestrator MEA automatically creates links between devices based on settings in the assigned profiles.

### Links between hubs

SD-WAN Orchestrator MEA automatically builds full-mesh overlay links between all hub devices.

### Links between hub and edge devices in the same region

In the same region, the connection between a hub device and its edge devices depends on the VPN mode. The VPN mode is configured in profiles, and a profile is assigned to each hub and edge device when you add it to SD-WAN Orchestrator MEA. The following VPN modes are available:

- Site-to-site VPN
- Dialup VPN

The following table summarizes how the VPN modes affect the connection between hub and edge devices:

| VPN Mode         | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Site-to-site VPN | <p>Overlay links are full-mesh between the hub device and its edge devices in the same region.</p> <p>Edge devices from the same region communicate with each other by forwarding packets through their region's hub.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Dialup VPN       | <p>Overlay links are one-to-one between the hub device and its edge devices in the same region. In other words, one WAN port on each edge device establishes an IPsec tunnel only with one WAN port on its hub device.</p> <p>In DialUP VPN mode, ADVPN is supported to create shortcut tunnels between edge devices.</p> <p>On hub devices, select one of the following options:</p> <ul style="list-style-type: none"> <li>• <i>NONE</i> - ADVPN is disabled. Edge devices from the same region will communicate with each other by forwarding packets through their region's hub.</li> <li>• <i>INSIDE_REGION</i> - Shortcut tunnels are triggered by traffic and established only inside a region.</li> </ul> <p>On edge devices, toggle <i>ADVPN</i> on to enable ADVPN. Toggle off to disable ADVPN.</p> |

### Edge device communication between regions

When site-to-site VPN mode is enabled, edge devices in one region can communicate with devices in another region by using the following method:

1. Edge devices send packets to their region's hub.
2. The hub forwards the packet to the hub of the destination region.
3. The hub from the destination region forwards the packet to the final destination.

## Underlay and overlay links

Underlay links are data links rented or bought from an ISP. These links consist of Internet, MPLS, and 3G/LTE links.

Overlay links are virtual tunnels built on top of underlay links. These links form an IPsec secured connection between two FortiGate devices.

You specify underlay and overlay links when you configure profiles.

## Profiles

Profiles are templates that you can use to define settings for hub and edge devices. After creating a profile, you can apply it to multiple FortiGate devices. In a profile, you can configure settings for VPN mode, system resources, network settings, and business rules.



You can override profile settings for individual devices.

---

## Configuration installation

You can configure profiles of configuration settings on SD-WAN Orchestrator MEA before setting up a device. Once the device is set up, you can install the profile of configuration settings via FortiManager to the device.

## Global routing

SD-WAN Orchestrator MEA automatically maintains the LAN and static subnet routes for all the devices it manages.

## Global analysis and visibility

SD-WAN Orchestrator MEA collects and aggregates information from connected FortiGate devices to provide a global traffic and health status view for the SD-WAN network.

## Device analysis and visibility

SD-WAN Orchestrator MEA provides you with information on device resource usage, underlay and overlay traffic, network health status, as well as traffic statistics based on source IP, destination IP, applications, and event logs.



## Business rules

Business rules define routing policies between subnets in SD-WAN networks or how traffic from SD-WAN subnets accesses the Internet. SD-WAN Orchestrator MEA includes predefined business rules in profiles. You can also create business rules.

## How SD-WAN Orchestrator MEA works with FortiManager

SD-WAN Orchestrator MEA works with FortiManager to configure and monitor SD-WAN networks on FortiGates.

You use SD-WAN Orchestrator MEA to configure SD-WAN networks and assign configurations to FortiGate devices. When you use SD-WAN Orchestrator MEA to apply the configuration to FortiGates, SD-WAN Orchestrator MEA uses the following method to work with FortiManager to install the configurations to FortiGates:

1. SD-WAN Orchestrator MEA automatically generates CLI scripts of the configuration.  
You can view the scripts in FortiManager on the *Device Manager > Scripts* pane.
2. SD-WAN Orchestrator MEA installs the CLI scripts to the *Device Manager* database in FortiManager.
3. FortiManager receives the CLI scripts, and FortiManager installs the configurations to the FortiGates.  
When the configuration is installed to FortiGates, the overlay and underlay links between all devices in the SD-WAN network are automatically created.

SD-WAN Orchestrator MEA creates the dynamic interfaces for generated tunnel interfaces. The dynamic interfaces use per-device interface mappings, and you can use them in FortiManager when you create policies. SD-WAN Orchestrator MEA also creates two policy blocks in FortiManager: one for hub devices and one for edge devices. The policy blocks include the necessary firewall policies to allow health check traffic through the VPN tunnels. You can view the policy blocks in FortiManager by going to *Policy & Objects > Policy Packages*.

You should use SD-WAN Orchestrator MEA for all configuration and monitoring of SD-WAN networks. You should not use FortiManager to configure SD-WAN networks on FortiGates when SD-WAN Orchestrator MEA is enabled.

However you can use FortiManager to configure firewall policies and objects for the FortiGate units in the SD-WAN network after SD-WAN is configured.

# Quick start



SD-WAN Orchestrator MEA is a flexible application. Although you must add FortiGate devices to both SD-WAN Orchestrator MEA and FortiManager, you can add the devices using several different methods, depending on need. This section describes one method, which is to add the FortiGate device to FortiManager first, and then add the device to SD-WAN Orchestrator MEA second. See also [FortiGate devices on page 6](#).

This section provides a summary of how to get started with SD-WAN Orchestrator MEA:

1. Enable SD-WAN Orchestrator MEA. See [Enabling SD-WAN Orchestrator MEA on page 10](#).
2. Plan your SD-WAN network. See [Planning your network on page 11](#).
3. Create shared resources. See [Creating shared resources on page 11](#).
4. Create profiles for hub and edge devices. See [Creating profiles for all roles on page 12](#).
5. Add FortiGate devices to FortiManager. See [Adding devices to FortiManager on page 12](#).
6. Add devices to SD-WAN Orchestrator MEA and install SD-WAN configurations. See [Adding devices to FortiManager on page 12](#).
7. Install firewall policies to FortiGate devices in SD-WAN networks. See [Installing firewall policies on page 12](#).
8. Monitor the SD-WAN network. See [Monitoring devices and network traffic on page 13](#).

## Enabling SD-WAN Orchestrator MEA

FortiManager provides access to the SD-WAN Orchestrator MEA application that is released and signed by Fortinet.



Only administrators with a *Super\_User* profile can enable management extensions. A CA certificate is required to install management extensions on FortiManager.

### To enable SD-WAN Orchestrator MEA:

1. If using ADOMs, ensure that you are in the correct ADOM.
2. Go to *Management Extensions*.
3. Click the grayed out tile for SD-WAN Orchestrator MEA to enable the application.  
Grayed out tiles represent management extensions. In the following example, *SD-WAN Orchestrator MEA* is enabled, and *Wireless Manager* is disabled.



4. Click **OK** in the dialog that appears. It may take some time to install the application.

## Planning your network

While individual network requirements might vary, you should consider the following principles when planning your network topology:

- **Regions** - Depending on how your network is structured geographically, you might need multiple regions.
- **Devices** - Each FortiGate device should be added to its corresponding region. In addition, each FortiGate device must be able to connect to FortiManager.
- **Hub and edges** - You can identify one FortiGate device from each region to act as a hub. Each region can have only one hub device, but multiple edge devices are allowed in each region.  
SD-WAN Orchestrator MEA automatically establishes overlays between all hubs. Each hub also establishes tunnels to every edge device in the same region.

If you choose not to identify a hub device, SD-WAN Orchestrator MEA does not set up an overlay network for the region.

## Creating shared resources

Before you create profiles, you can create a number of shared resources that you can select in profiles. You can create the following shared resources:

- **Network resources**, such as DHCP servers, DHCP relays, DNS servers, intranet IP pools, SNMP hosts, VPN address pools, and ISP links.  
It is recommended to create intranet IP pools that SD-WAN Orchestrator MEA can use when it creates the SD-WAN network for selected devices.  
It is also recommended to create ISP links for selection in profiles.
- **Service level agreements (SLA)**, such as quality levels and servers.
- **Servers**, such as NTP, FortiGuard, and email, that SD-WAN Orchestrator MEA can use.
- **Health threshold settings**

For more details, see [Shared resources on page 42](#).

## Creating profiles for all roles

Profiles are templates that define general, system, network, and business policies for devices in SD-WAN networks. It is recommended to create the following profiles at a minimum:

- Profile for hub devices - see [Creating profiles for hub devices on page 30](#)
- Profile for edge devices - see [Creating profiles for edge devices on page 31](#)

See also [Profile on page 30](#).

## Adding devices to FortiManager

Devices must be added to FortiManager and SD-WAN Orchestrator MEA. For details about adding devices to FortiManager, see the *FortiManager Administration Guide*.

## Adding devices to SD-WAN Orchestrator MEA and installing configurations

After you have planned the network, created shared resources, created profiles, and added FortiGate devices to FortiManager, you are ready to add the FortiGate devices to SD-WAN Orchestrator MEA. When you add FortiGate devices to SD-WAN Orchestrator MEA, you select profiles and install configurations to the devices to automatically create the SD-WAN network. This step executes your network plan.

Following is a summary of the process:

1. Ensure that you have created profiles for hub and edge devices.  
You should create a profile for the hub role and a profile for the edge role.
2. Ensure that you have added FortiGate devices to FortiManager.
3. Add the FortiGate devices to SD-WAN Orchestrator MEA by adding a region.  
When you add a region to SD-WAN Orchestrator MEA, you can specify a region name, and select the devices for hub and edge roles. You can also select profiles for each device in the region.  
When you finish adding a region, SD-WAN Orchestrator MEA works with FortiManager to automatically install the configurations to the devices and create the SD-WAN network. For more information, see [How SD-WAN Orchestrator MEA works with FortiManager on page 9](#).  
For more details about adding devices, see [Device on page 22](#).
4. After the configurations are installed, the SD-WAN network is configured between the devices, and you can monitor the global network as well as individual devices. For details, see [Monitor on page 14](#).

## Installing firewall policies

Although SD-WAN Orchestrator MEA is used to configure SD-WAN networks, you use FortiManager to define and install firewall policies to the FortiGates in an SD-WAN network. It is recommended to configure the SD-WAN network before

you install firewall policies to FortiGate devices.

Before installing firewall policies, it is recommended to insert the policy block *SDWAN\_Overlay\_PB* to the policy package, and move the policy package to the top. The policy block is automatically maintained by SD-WAN Orchestrator MEA, and it allows the health-check packets.

For details about using FortiManager to install firewall policies, see the *FortiManager Administration Guide*.

## Monitoring devices and network traffic

After the configurations are installed, the SD-WAN network is configured between the devices, and you can monitor the global network and individual devices:

- For global analysis and visibility, see [Dashboard on page 14](#), [Traffic on page 16](#) and [SLA on page 18](#).
- For device analysis and visibility, see [Devices on page 18](#).

# Monitor

After you have configured an SD-WAN network, you can monitor the global network as well as individual devices in the network by using the *Monitor* tree menu.

From the *Monitor* tree menu, you can access the following panes:

- [Dashboard on page 14](#)
- [Traffic on page 16](#)
- [SLA on page 18](#)
- [Devices on page 18](#)
- [Logs on page 21](#)

## Dashboard

The *Dashboard* pane provides global analysis and visibility into all connected devices in the SD-WAN network. From the *Dashboard* pane, you can switch between the *Topology View*, *Map View* and *HubView*.

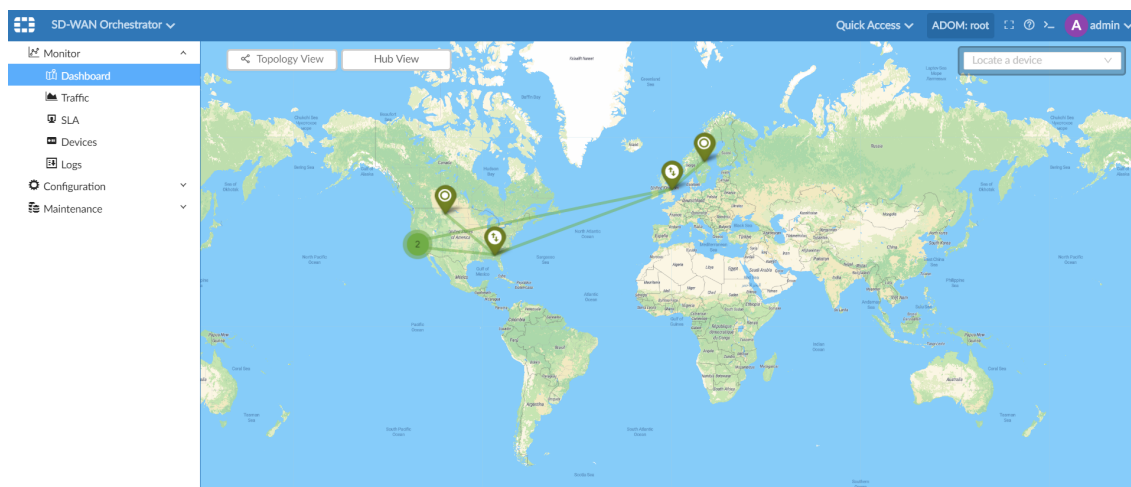
This section contains the following topics:

- [Viewing devices on the world map on page 14](#)
- [Viewing device topology on page 15](#)
- [Viewing hub devices on page 15](#)

If you want to view details about individual devices in the SD-WAN network, see [Devices on page 18](#).

## Viewing devices on the world map

*Map View* is the default, global view when you open SD-WAN Orchestrator MEA. Map view displays connected devices across the globe. You can move device icons by clicking and dragging them across the map.



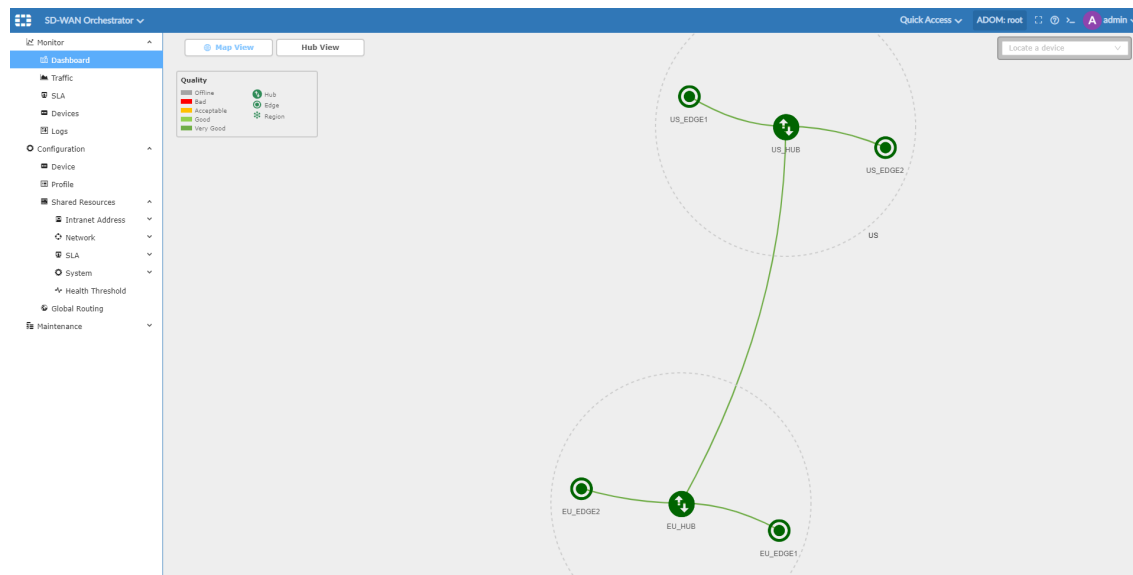
## Viewing device topology

The *Topology View* displays all connected devices across the globe in the SD-WAN network, regardless of geographical distance.

### To view device topology:

1. Go to *Monitor > Dashboard*, and click *Topology View* at the top of the map.

The following example shows the topology view of two regions and two hubs. The color shows the quality, and the lines show the VPN tunnels between the devices. The width of the lines indicates the amount of traffic passing through the tunnel.



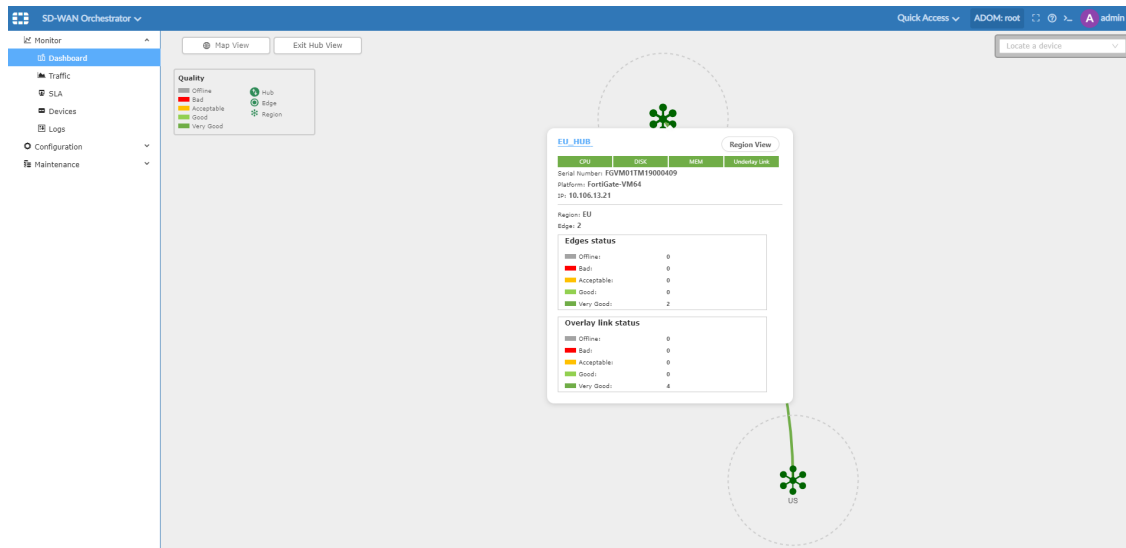
2. Click the lines to view link information, including the inbound and outbound bandwidth.

## Viewing hub devices

You can view all hub devices across the globe in the SD-WAN network on the *Hub View* pane.

**To view hub devices:**

1. Go to *Monitor > Dashboard*, and click *Hub View*.
2. Click a hub to view status information, including *Edges status* and *Overlay link status*.



3. Click the lines to view link information.

## Traffic

You can view global traffic reports for all devices in the SD-WAN network by using the *Traffic* tree menu. You can also export traffic reports to PDF.

This section includes the following topics:

- [Viewing global network traffic reports on page 16](#)
- [Exporting global traffic reports on page 17](#)

## Viewing global network traffic reports

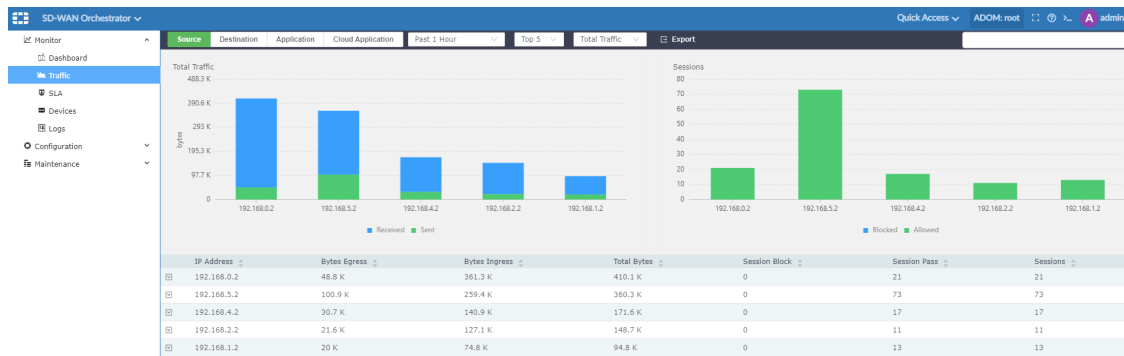
You can view several types of reports and filter data for all traffic in the network. You can also search global traffic for specific values.

After navigating and filtering the desired traffic statistics, you can export the report to PDF. See [Exporting global traffic reports on page 17](#).

**To view network traffic reports:**

1. Go to *Monitor > Traffic*.
2. Click each of the following tabs to display information about the different types of traffic: *Source*, *Destination*, *Application*, *Cloud Application*. Each tab contains charts and tables.





## Report

## Description

### Source

The statistics generated in the report are based on the source IP of the traffic. The report contains two statistical charts (*Total Traffic* and *Session*), and a statistical table.

Click **Source** in the table to view drill-down information.

You can filter the report by time frame, top sources, and total traffic.

### Destination

The *Destination* pane reports the destination traffic information for all the devices deployed on the SD-WAN network.

The pane contains two statistical charts (*Total Traffic* and *Sessions*), and a statistical table.

Click a destination in the table to view drill-down information.

You can filter the report by time frame and top destinations, and sort the report by total traffic or sessions.

### Application

The statistics generated in the report are based on application traffic. The pane contains two statistical charts (*Total Traffic* and *Sessions*), and a statistical table.

Click an application name in the table to view drill down information.

You can filter the report by time frame and top sources, and sort the report by total traffic or sessions.

### Cloud Application

The statistics generated in the report are based on application traffic. The report contains four statistical charts (*File size*, *File number*, *Sessions*, and *Videos Number*), as well as a statistical table.

Click an application name in the table to view drill down information.

You can filter the statistics by time frame and top applications, and sort the report by total traffic or sessions.

3. Hover over the charts to display additional details.
4. Expand the rows for each application to display additional details.
5. Click the predefined values in the toolbar to filter the charts based on time, priority, and all traffic or sessions.
6. Click the search box to select a filter, and type a value to search for.

## Exporting global traffic reports

After you display the desired traffic details on the *Traffic* pane, you can export the traffic report to PDF.

**To export traffic reports:**

1. Go to *Monitor > Traffic*.
2. Display the desired traffic report. See [Viewing global network traffic reports on page 16](#).
3. In the toolbar, click *Export*.  
A PDF of the traffic report is exported to your computer.

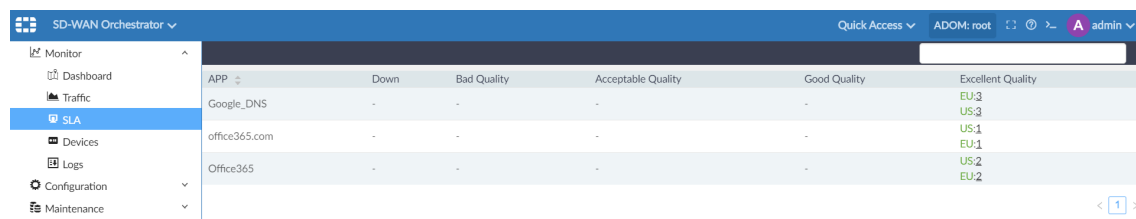
## SLA

You can view information about service level agreements for all regions in the SD-WAN network by using the *SLA* tree menu.

**To view SLA:**

1. Go to *Monitor > SLA*.

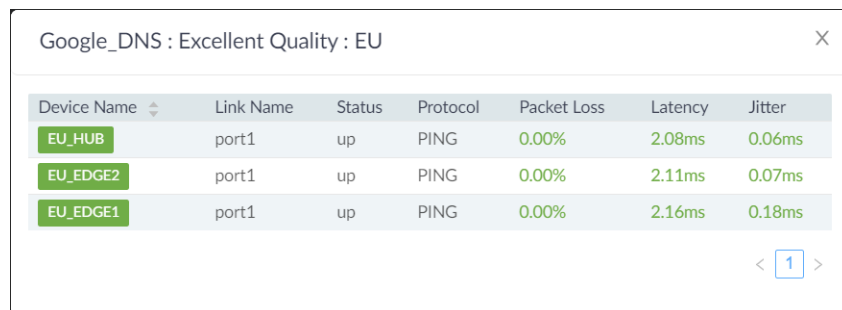
The quality rating for the devices in each region is displayed by application. The number of devices in each region is displayed as <region name>:<number of devices>, for example *EU:3*.



| APP           | Down | Bad Quality | Acceptable Quality | Good Quality | Excellent Quality |
|---------------|------|-------------|--------------------|--------------|-------------------|
| Google_DNS    | -    | -           | -                  | -            | EU:3<br>US:3      |
| office365.com | -    | -           | -                  | -            | US:1<br>EU:1      |
| Office365     | -    | -           | -                  | -            | US:2<br>EU:2      |

2. Click the <number of devices> to view details.

A dialog box with information about *Link Name*, *Status*, *Protocol*, *Packet Loss*, *Latency*, and *Jitter* is displayed.



| Device Name | Link Name | Status | Protocol | Packet Loss | Latency | Jitter |
|-------------|-----------|--------|----------|-------------|---------|--------|
| EU_HUB      | port1     | up     | PING     | 0.00%       | 2.08ms  | 0.06ms |
| EU_EDGE2    | port1     | up     | PING     | 0.00%       | 2.11ms  | 0.07ms |
| EU_EDGE1    | port1     | up     | PING     | 0.00%       | 2.16ms  | 0.18ms |

3. Click X to close the dialog box.

## Devices

You can view information about each device in the SD-WAN network by using the *Devices* tree menu.

This section contains the following topics:

- [Viewing device overviews on page 19](#)
- [Viewing device link reports on page 19](#)

- [Viewing device traffic reports on page 20](#)
- [Viewing device SLA on page 20](#)

If you want to view information about all devices in the SD-WAN network, see [Dashboard on page 14](#).

## Viewing device overviews

You can use the *Devices > Overview* tab to monitor disk utilization, traffic, and more for each device in the SD-WAN network.

### To view device overviews:

1. Go to *Monitor > Devices > Overview*.  
You can switch between devices by using the dropdown menu in the toolbar at the top of the page.
2. Hover over each chart to display additional detail.
3. You can also filter data in some charts by selecting a filter from the drop-down menu.

## Viewing device link reports

The *Devices > Link* tab contains information about the underlay, static overlay, and shortcut overlay links.

### To view device link reports:

1. Go to *Monitor > Devices > Link*.  
The *Static Overlay* tab displays for the selected device. You can also click the *Underlay* or *Shortcut Overlay* tabs.  
You can switch between devices by using the dropdown menu in the toolbar at the top of the page.

| Report                  |                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Static Overlay</b>   | <p>The <i>Static Overlay</i> pane is the default view of the <i>Link</i> page.</p> <p>You can switch the view between two categories:</p> <ul style="list-style-type: none"> <li>• <b>Quality</b> (default): Contains reports of quality evaluation, jitter, latency, and packet loss in the device overlay links.</li> <li>• <b>Traffic</b>: Contains reports about the total inbound/outbound throughput and session.</li> </ul> |
| <b>Underlay</b>         | <p>The charts monitor the total inbound and outbound throughput, and session ramp-up of the SD-WAN underlay links.</p> <p>The table features information about the device's status, inbound/outbound bytes, and session of the underlay links.</p>                                                                                                                                                                                 |
| <b>Shortcut Overlay</b> | <p>Available when ADVPN is enabled on devices, and shortcut links are established.</p> <p>The charts monitor the total inbound and outbound throughput of the shortcut overlay links.</p> <p>The table features information about peer devices, inbound/outbound bytes, and bandwidth.</p>                                                                                                                                         |

2. Select the time frame to filter data by time.  
On the *Static Overlay* tab, you can also display data by traffic or quality.
3. Click the *Export* button to export the report to PDF.

## Viewing device traffic reports

The *Devices > Traffic* tab displays traffic reports for the selected device in the SD-WAN network.

For more information about traffic reports, see [Viewing global network traffic reports on page 16](#).

### To view device traffic reports:

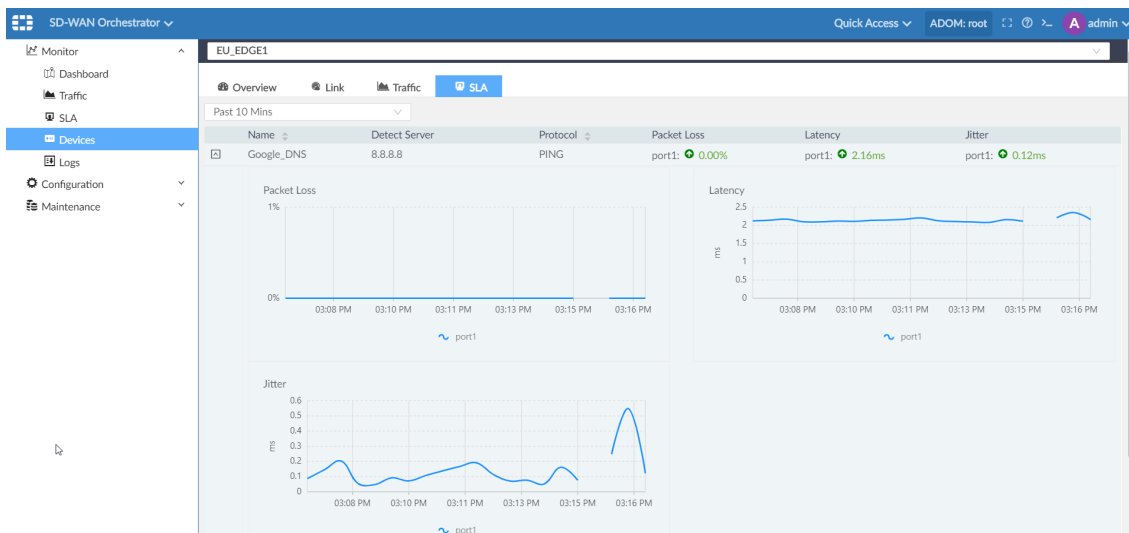
1. Go to *Monitor > Devices > Traffic*.  
The *Source* tab displays for the selected device. You can also click the *Destination*, *Application*, and *Cloud Application* tabs to display additional reports for the selected device.  
You can switch between devices by using the dropdown menu in the toolbar at the top of the page.
2. After you display the desired traffic details, you can export the report to PDF by clicking *Export*.  
A PDF of the traffic report is exported to your computer.

## Viewing device SLA

The *Devices > SLA* tab displays information about service level agreements for the selected device in the SD-WAN network.

### To view device SLA:

1. Go to *Monitor > Devices > SLA*.  
The *SLA* tab displays for the selected device.  
You can switch between devices by using the dropdown menu in the toolbar at the top of the page.  
You can select a different history range from the dropdown menu in the *SLA* content pane. The default is *Past 10 Mins*.



## Logs

---



Some logs are visible only in the root ADOM.

---

You can view event logs for SD-WAN Orchestrator MEA by using the *Logs* tree menu. The log displays the time, type, sub type, and message for events.

### To view logs:

1. Go to *Monitor > Logs*.
2. Select a *Start* and *End* date to filter the logs.
3. (Optional) From the *Type* dropdown, select the log type to filter the results.  
You can select multiple log types. A checkmark displays beside the selected log types.  
Click the checkmark to remove a filter.
4. (Optional) From the *Device* dropdown, select a device.

# Configuration

You can configure SD-WAN networks by using the *Configuration* tree menu. From the *Configuration* tree menu, you can access the following panes:

- [Device on page 22](#)
- [Profile on page 30](#)
- [Shared resources on page 42](#)
- [Global routing on page 48](#)

## Device

You can add devices and regions to an SD-WAN network by using the *Device* tree menu. When you add a device to SD-WAN Orchestrator MEA, you assign a profile of configuration settings to it, and then install the configuration.

You can use several different methods to add devices to SD-WAN Orchestrator MEA.



Before you can add a device to SD-WAN Orchestrator MEA, you must add the device to FortiManager by using the *Device Manager* module. You should also configure profiles before you add devices to SD-WAN Orchestrator MEA. See [Profile on page 30](#).

---

This section contains the following topics:

- [Adding devices on page 22](#)
- [Adding model devices on page 23](#)
- [Adding regions on page 24](#)
- [Adding unauthorized devices on page 25](#)
- [Installing configuration changes on page 25](#)
- [Importing devices on page 26](#)
- [Viewing configuration status on page 27](#)
- [Overriding device settings on page 27](#)
- [Adding static routes on page 28](#)
- [Updating regions on page 29](#)
- [Deleting regions on page 29](#)
- [Monitoring devices on page 30](#)

## Adding devices

When you add a device to SD-WAN Orchestrator MEA, you also define the configuration and control when to install the configuration to the device.



Before you add devices to SD-WAN Orchestrator MEA, you must add them to FortiManager.

After you add the device, you can change the settings by editing the assigned profile or by overriding settings for each device.

#### To add a device:

1. Ensure that you have created profiles for hub and edge devices. See [Profile on page 30](#).
2. Go to *Configuration > Device*.
3. In the toolbar, click + *Device*.  
The *Device* dialog box opens.
4. On the *General* tab, configure the following settings:

| Option                     | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Device Name</b>         | Enter the name of the device.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Host Name</b>           | Enter the host name.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Profile Name</b>        | Select a profile from the dropdown, or click <i>Create</i> to create a new profile.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>First Online Action</b> | Specify how to manage device configuration when the device comes online for the first time. Choose from: <ul style="list-style-type: none"> <li>• <i>NONE</i>: Select to disable automatic configuration action. Instead you can manually initiate configuration installation after adding the device to SD-WAN Orchestrator MEA.</li> <li>• <i>RETRIEVE_CONFIG</i>: Select to import some of the configuration settings from the device when the device comes online for the first time. Settings such as host name, WAN port, LAN/DMZ port, and static route are imported. WAN and LAN settings from the imported configuration automatically override the assigned WAN and LAN settings from the SD-WAN Orchestrator MEA profile. You should use the profile to assign additional settings.</li> <li>• <i>SYNC_CONFIG</i>: Select to install the SD-WAN Orchestrator MEA configuration associated with the profile when the device comes online for the first time.</li> </ul> |
| <b>Serial Number</b>       | Enter the device serial number.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Type</b>                | Enter the device type.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Region</b>              | Select a region from the dropdown, or click <i>Create Region</i> to create a new region.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

5. Click *OK*.

## Adding model devices

You can add an offline FortiGate device to SD-WAN Orchestrator MEA by using its serial number. This is called adding a model device.

When you add a model device to SD-WAN Orchestrator MEA, the model device is added to FortiManager too.

**To add devices by serial number:**

1. Ensure that you have created profiles for hub and edge devices. See [Profile on page 30](#).
2. Go to *Configuration > Device*.
3. In the *Device* menu, select **+ Model Device**.  
The **+ Model Device** dialog box opens.
4. Configure the following settings:

| Option                          | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Serial Number</b>            | Enter the serial number for the device.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Host Name</b>                | Enter the host name.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Profile Name</b>             | Select a profile from the dropdown, or click <i>Create</i> to create a new profile.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>First Online Action</b>      | Specify how to manage device configuration when the device comes online for the first time. Choose from: <ul style="list-style-type: none"> <li>• <b>NONE</b>: Select to disable automatic configuration action. Instead you can manually initiate configuration installation after adding the device to SD-WAN Orchestrator MEA.</li> <li>• <b>RETRIEVE_CONFIG</b>: Select to import some of the configuration settings from the device when the device comes online for the first time. Settings such as host name, WAN port, LAN/DMZ port, and static route are imported. WAN and LAN settings from the imported configuration automatically override the assigned WAN and LAN settings from the SD-WAN Orchestrator MEA profile. You should use the profile to assign additional settings.</li> <li>• <b>SYNC_CONFIG</b>: Select to install the SD-WAN Orchestrator MEA configuration associated with the profile when the device comes online for the first time.</li> </ul> |
| <b>Device Name</b>              | Enter a name for the device.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Type</b>                     | Enter the device type.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Region</b>                   | Select a region from the dropdown, or click <i>Create Region</i> to create a new region.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Enforce Firmware Version</b> | (Optional) Select the required FortiOS version for the device when it comes online.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

5. Click **OK**.

## Adding regions

A region refers to a cluster of devices in one geographical location. Each region has one hub device that is connected to one or more edge devices.

When you create a region, you select the devices, assign the profiles of configuration settings, and install configurations to all devices in the region.

**To create a region:**

1. Ensure that you have created profiles for hub and edge devices. See [Profile on page 30](#).
2. Go to *Configuration > Device*.



3. In the toolbar, click + *Region*.
4. In the *Name* field, type a name for the region.
5. In the *Hub* table, select a device from the list.
6. In the *Edges* table, select one or more devices to connect to the hub.
7. (Optional) In the *Description* field, enter a description of the region.
8. Click *OK*.

It may take a while to complete the configuration.

## Adding unauthorized devices

When unauthorized devices have been added to FortiManager, you can add them to SD-WAN Orchestrator MEA. Unauthorized devices are devices that have been added to *Device Manager* in FortiManager, but not yet authorized for management by FortiManager.



The + *Add Unauthorized Device* option is hidden in SD-WAN Orchestrator MEA when no unauthorized devices are available in FortiManager.

### To add unauthorized devices:

1. Go to *Configuration > Device*.
2. In the toolbar, click + *Unauthorized Device*.  
The *Add Unauthorized Devices* dialog box opens.
3. Configure the following settings:

| Option              | Description                                            |
|---------------------|--------------------------------------------------------|
| <b>ADOM</b>         | Select the ADOM that contains the unauthorized device. |
| <b>Unauthorized</b> | Click the box, and select the device.                  |
| <b>New Name</b>     | (Optional) Type a name for the device.                 |

4. Click *OK*.

## Installing configuration changes

You can install configuration changes to all regions, to all devices in each region, or to individual devices.

### To install configuration changes:

1. Go to *Configuration > Device*.
2. Perform one of the following actions:

| Goal                              | Method                                                   |
|-----------------------------------|----------------------------------------------------------|
| Install all configuration updates | In the toolbar, click <i>Install all configuration</i> . |

| Goal                                                           | Method                                                                   |
|----------------------------------------------------------------|--------------------------------------------------------------------------|
| for all regions and devices.                                   |                                                                          |
| Install all configuration changes for all devices in a region. | For a region name, click the <i>Install Region Configuration</i> button. |
| Install configuration changes to a device.                     | For a device, click the <i>Install Configuration</i> button.             |

## Importing devices

You can import one or more devices to SD-WAN Orchestrator MEA by using a comma-separated values (CSV) file. The CSV file uses the following fields:

|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Region Name</b>            | If regions are used, specify the name of the region defined in SD-WAN Orchestrator MEA.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Serial Number</b>          | Specify the serial number for the FortiGate.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Device Name</b>            | Specify the FortiGate model, such as FortiGate-100E.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Profile Name</b>           | Specify the name of the SD-WAN Orchestrator MEA profile to assign to the device.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Sync First Time Online</b> | Specify how to manage device configuration when the device comes online for the first time. Choose from: <ul style="list-style-type: none"> <li><b>NONE:</b> Select to disable automatic configuration action. Instead you can manually initiate configuration installation after adding the device to SD-WAN Orchestrator MEA.</li> <li><b>RETRIEVE_CONFIG:</b> Select to import some of the configuration settings from the device when the device comes online for the first time. Settings such as host name, WAN port, LAN/DMZ port, and static route are imported. WAN and LAN settings from the imported configuration automatically override the assigned WAN and LAN settings from the SD-WAN Orchestrator MEA profile. You should use the profile to assign additional settings.</li> <li><b>SYNC_CONFIG:</b> Select to install the SD-WAN Orchestrator MEA configuration associated with the profile when the device comes online for the first time.</li> </ul> |
| <b>Host Name</b>              | Specify the host name for the FortiGate.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

Each row in the CSV file identifies one device. Add a row of fields to the CSV file for each device that you want to import. Before you can import devices, you must add the devices to FortiManager, and the devices must be online.

### To import a device:

1. Ensure that you have created profiles for hub and edge devices. See [Profile on page 30](#).
2. Go to *Configuration > Device*.
3. In the *Device* menu, select *Import Devices*.  
The *Import Devices* dialog box opens.

- Click *Import Device*, select the `.csv` file, and click *Open*.

## Viewing configuration status

You can view the SD-WAN configuration status for each region and each device in the SD-WAN network.

When a configuration is synchronizing, status information also displays in the SD-WAN Orchestrator MEA banner.

### To view configuration status:

- Go to *Configuration > Device*.  
The list of regions is displayed as well as the synchronization status.
- Click **+** to view the devices in each region.  
The *Config Status* column displays the status for each device.

## Overriding device settings

When you add a device to SD-WAN Orchestrator MEA, you assign a profile to the device. After the device is added to SD-WAN Orchestrator MEA, you can override profile settings for each device.

This topic describes how to override the NTP setting. You can also override network settings.

Any changes you make apply only to the device.

See also [Adding static routes on page 28](#) and [Creating business rules on page 35](#).

### To override device settings:

- Go to *Configuration > Device*.
- Expand the region.  
The devices in the region are displayed.
- Double-click the device to open it for editing.  
The *Device / <name>* dialog box is displayed.

- Click the *System* tab.  
The *System* settings are displayed.

The screenshot shows the 'Device / EU\_HUB' configuration window with the 'System' tab selected. The 'NTP Setting' section is expanded, showing a toggle for 'Synchronize with NTP Server' which is turned on. Below it, 'Server Type' is set to 'FORTIGUARD' and 'Interval' is set to '60 minute'. An 'OVERRIDE' toggle is visible in the top right corner of the NTP section. At the bottom of the dialog are 'OK' and 'Cancel' buttons.

5. Expand the setting that you want to override, such as *NTP Setting*, and toggle on the *Override* button. A confirmation dialog box displays.
6. Click *OK* to confirm the desire to enable an override, and select the settings you want to override.
7. Click *OK* to save the changes.
8. Install the configuration changes. See [Installing configuration changes on page 25](#).

## Adding static routes

After the device is added to SD-WAN Orchestrator MEA, you can override profile settings for each device. For example, you can add a static route. The static route applies only to the device.

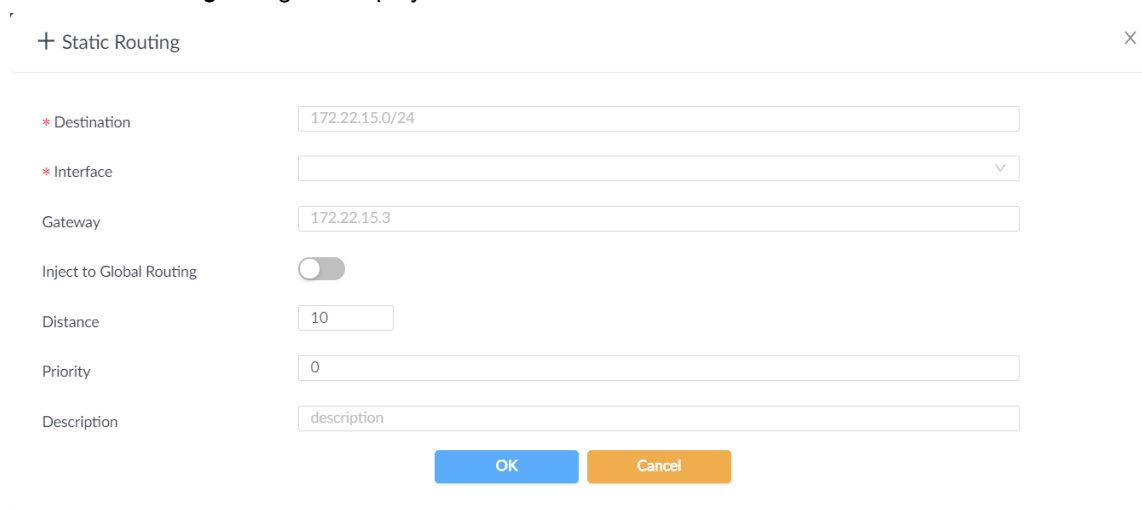
### To add static routes:

1. Go to *Configuration > Device*.
2. Expand the region.  
The devices in the region are displayed.
3. Double-click the device to open it for editing.  
The *Device / <name>* dialog box is displayed.

The screenshot shows the 'Device / EU\_HUB' configuration window with the 'General' tab selected. Fields include: 'Device Name' (EU\_HUB), 'Host Name' (EU\_HUB), 'Profile Name' (Hub\_Dialup), 'Serial Number' (FGVM01TM20000593), 'Type' (FortiGate-VM64), and 'Region' (EU). There is a 'Sync first time online' toggle which is turned on. 'OK' and 'Cancel' buttons are at the bottom.

4. Click the *Network* tab, and expand the *Static Routing* section.

- Click *Create New*.  
A + *Static Routing* dialog box displays.



- Configure the options, and click *OK*.  
The static route is created.
- Click *OK* to save the changes.
- Install the configuration changes. See [Installing configuration changes on page 25](#).

## Updating regions

After you create regions, you can delete devices from the region, change profile assignments, and specify whether to synchronize profile settings when the device comes online for the first time.

### To update a region:

- Go to *Configuration > Device*.
- Beside the region name, click the *Update* button.
- Select a device, and click *Delete* to remove the device from the region.
- Select a device, and click *Assign Profile* to change the profile.
- Select a device, and click *Sync First Time Online* to change the setting.
- Click *OK*.  
The configuration changes are saved to the region.
- Install the configuration changes. See [Installing configuration changes on page 25](#).

## Deleting regions

You can delete a region and all its devices from SD-WAN Orchestrator MEA.

### To delete a region:

- Go to *Configuration > Device*.
- Beside the region name, click *Delete*.

## Monitoring devices

You can access the device monitoring panes from the *Device* tree.

### To monitor a device:

1. Go to *Configuration > Device*.
2. Expand the region, and click the *monitor* button beside the device you want to monitor.  
The *Devices > Overview* tab is displayed. For more information, see [Viewing device overviews on page 19](#).

## Profile

You can create and edit profiles by using the *Profile* tree menu. Profiles are templates that define general, system, network, and business policies for devices in SD-WAN networks. You can create one profile and assign it to multiple devices.

This section contains the following topics:

- [Creating profiles for hub devices on page 30](#)
- [Creating profiles for edge devices on page 31](#)
- [Creating new WAN settings on page 32](#)
- [Creating new LAN settings on page 33](#)
- [Creating new DMZ settings on page 34](#)
- [Creating business rules on page 35](#)
- [Cloning profiles on page 35](#)
- [Updating profiles on page 36](#)
- [Deleting profiles on page 36](#)
- [Creating new WAN settings on page 32](#)
- [Creating business rules on page 35](#)
- [Profile options described on page 37](#)

## Creating profiles for hub devices

Before you create a profile, you should create all of the needed shared resources, so you can select them in the profile. See [Shared resources on page 42](#).

### To create profiles for hub devices:

1. Go to *Configuration > Profile*.
2. In the toolbar, click *+Create New*.
3. Configure the profile settings.

| Option | Description             |
|--------|-------------------------|
| Name   | Enter the profile name. |

| Option                    | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Platform</b>           | Select the platform that matches the device you intend to add.                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Hub</b>                | Toggle on to designate the device as a hub.                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>VPN Mode with Edge</b> | Select one of the following options to connect the hub device with edge devices: <ul style="list-style-type: none"> <li>Select <i>SITE_TO_SITE</i> to create full-mesh overlay links between the hub device and its edge devices in the same region.</li> <li>Select <i>DIAL_UP</i> to create one-to-one overlay links between the hub device and its edge devices. When you select <i>DIAL_UP</i>, you can enable ADVPN on the <i>Network</i> tab in the <i>WAN</i> settings.</li> </ul> |
| <b>Max Edge Count</b>     | Available when <i>VPN Mode with Edge</i> is set to <i>DIAL_UP</i> .<br>Specify the maximum number of edge devices allowed to connect with the hub device.                                                                                                                                                                                                                                                                                                                                 |
| <b>Port Number</b>        | Specify the number of ports on the FortiGate.                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Comments</b>           | (Optional) Type a comment about the profile.                                                                                                                                                                                                                                                                                                                                                                                                                                              |

- Click *OK*.  
The profile is created, and the *System* tab opens.
- Configure the *System* settings.  
For a description of the options on the *System*, *Network*, and *Business* tabs, see [Profile options described on page 37](#).
- Click the *Network* tab to configure the network settings.
- Click the *Business* tab to create business rules.
- Click *OK*.

## Creating profiles for edge devices

Before you create a profile, you should create all of the needed shared resources, so you can select them in the profile. See [Shared resources on page 42](#).

### To create profiles:

- Go to *Configuration > Profile*.
- In the toolbar, click *+Create New*.
- Configure the profile settings.

| Option                   | Description                                                                                                                                                                                                                                                              |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>              | Type a name for the profile.                                                                                                                                                                                                                                             |
| <b>Platform</b>          | Select the platform that matches the device you intend to add.                                                                                                                                                                                                           |
| <b>Hub</b>               | Toggle off to designate the device as an edge.                                                                                                                                                                                                                           |
| <b>VPN Mode with Hub</b> | Select one of the following options to connect the edge devices to the hub in the region: <ul style="list-style-type: none"> <li>Select <i>SITE_TO_SITE</i> to create full-mesh overlay links between the hub device and its edge devices in the same region.</li> </ul> |

| Option             | Description                                                                                                                                                                                                                                                        |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    | <ul style="list-style-type: none"> <li>Select <i>DIAL_UP</i> to create one-to-one overlay links between the hub device and its edge devices. When you select <i>DIAL_UP</i>, you can enable ADVPN on the <i>Network</i> tab in the <i>WAN</i> settings.</li> </ul> |
| <b>Port Number</b> | Specify the number of ports on the FortiGate.                                                                                                                                                                                                                      |
| <b>Comments</b>    | (Optional) Type a comment about the profile.                                                                                                                                                                                                                       |

- Click **OK**.  
The profile is created, and the *System* tab opens.
- Configure the *System* settings.  
For a description of the options on the *System*, *Network*, and *Business* tabs, see [Profile options described on page 37](#).
- Click the *Network* tab to configure the network settings.
- Click the *Business* tab to create business rules.
- Click **OK**.

## Creating new WAN settings

When creating a profile, you can also create new WAN settings.

### To create new WAN settings:

- Go to *Configuration > Profile*.  
The list of profiles is displayed.
- Create a new profile, or open a profile for updating.  
The *Profile <name>* dialog box is displayed.
- Click the *Network* tab.  
The *Network* pane is displayed. For a description of the options, see [Network tab on page 39](#).
- Expand the *WAN* section, and click **+Create New**.  
The *WAN* dialog box is displayed.

| Option        | Description                                                                                                                                                                     |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name          | Type a name for the interface.                                                                                                                                                  |
| Port Type     | Select the type of port.                                                                                                                                                        |
| Physical Port | Select the port number.                                                                                                                                                         |
| VLAN ID       | Type an ID for the VLAN.                                                                                                                                                        |
| Enable        | Toggle on to enable the interface. Toggle off to disable the interface.                                                                                                         |
| ISP Link      | Select an ISP link.                                                                                                                                                             |
| ADVPN         | <p>Available for edge devices when <i>VPN Mode with Hub</i> is set to <i>DIAL_UP</i> on the <i>General</i> tab.</p> <p>On hub devices, select one of the following options:</p> |



| Option                         | Description                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                | <ul style="list-style-type: none"> <li><b>NONE</b> - ADVPN is disabled. Edge devices from the same region will communicate with each other by forwarding packets through their region's hub.</li> <li><b>INSIDE_REGION</b> - Shortcut tunnels are triggered by traffic and established only inside a region.</li> </ul> <p>On edge devices, toggle <b>ADVPN</b> on to enable ADVPN. Toggle off to disable ADVPN.</p> |
| ISP Link                       | Available for edge devices when <i>VPN Mode with Hub</i> is set to <b>SITE_TO_SITE</b> on the <i>General</i> tab.                                                                                                                                                                                                                                                                                                    |
| VPN Connect to Hub ISP Link    | Available for edge devices when <i>VPN Mode with Hub</i> is set to <b>SITE_TO_SITE</b> on the <i>General</i> tab.                                                                                                                                                                                                                                                                                                    |
| Mode                           | Select a mode.                                                                                                                                                                                                                                                                                                                                                                                                       |
| Estimated Upstream Bandwidth   | Leave the default value, or specify an estimated value.                                                                                                                                                                                                                                                                                                                                                              |
| Estimated Downstream Bandwidth | Leave the default value, or specify an estimated value.                                                                                                                                                                                                                                                                                                                                                              |
| Access Types                   | Select one or more types of access.                                                                                                                                                                                                                                                                                                                                                                                  |

- Complete the options, and click **OK**.  
The WAN settings are created.

## Creating new LAN settings

When creating a profile, you can also create new LAN settings.

### To create new LAN settings:

- Go to *Configuration > Profile*.  
The list of profiles is displayed.
- Create a new profile, or open a profile for updating.  
The *Profile <name>* dialog box is displayed.
- Click the *Network* tab.  
The *Network* pane is displayed. For a description of the options, see [Network tab on page 39](#).
- Expand the *LAN* section, and click **+Create New**.  
The *LAN* dialog box is displayed.

| Option                        | Description                                                                     |
|-------------------------------|---------------------------------------------------------------------------------|
| Name                          | Type a name for the interface.                                                  |
| Port Type                     | Select the type of port.                                                        |
| Physical Port                 | Select the port number.                                                         |
| Allow Overlap Between Devices | Toggle on to allow overlap between devices. Toggle off to disable this feature. |

| Option             | Description                                                                                                                                             |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| IP Address         | Available when <i>Allow Overlap Between Devices</i> is enabled.                                                                                         |
| IP Auto Assign     | Available when <i>Allow Overlap Between Devices</i> is disabled.<br>Toggle on to automatically assign IP addresses. Toggle off to disable this feature. |
| VLAN ID            | Available when <i>Allow Overlap Between Devices</i> is enabled.                                                                                         |
| IP Pool            | Available when <i>IP Auto Assign</i> is enabled.<br>Specify a pool of IP addresses to be used for SD-WAN Orchestrator MEA to automatically assign.      |
| Subnet Mask Length | Available when <i>IP Auto Assign</i> is enabled.<br>Specify the length of the subnet mask.                                                              |
| DHCP Mode          | Choose from: <ul style="list-style-type: none"> <li>• None</li> <li>• Server</li> <li>• Relay</li> </ul>                                                |
| Access Types       | Select the types of access to allow on the interface.                                                                                                   |

5. Complete the options, and click **OK**.  
The WAN settings are created.

## Creating new DMZ settings

When creating a profile, you can also create new DMZ settings.

### To create new DMZ settings:

1. Go to *Configuration > Profile*.  
The list of profiles is displayed.
2. Create a new profile, or open a profile for updating.  
The *Profile <name>* dialog box is displayed.
3. Click the *Network* tab.  
The *Network* pane is displayed. For a description of the options, see [Network tab on page 39](#).
4. Expand the *DMZ* section, and click **+Create New**.  
The *DMZ* dialog box is displayed.

| Option        | Description                                           |
|---------------|-------------------------------------------------------|
| Name          | Type a name for the interface.                        |
| Port Type     | Select the type of port.                              |
| Physical Port | Select the port number.                               |
| VLAN ID       | Type an ID for the VLAN.                              |
| Access Types  | Select the types of access to allow on the interface. |

5. Complete the options, and click **OK**.  
The DMZ setting is created.

## Creating business rules

You can create or update a business rule in a profile from the *Business* tab.

### To create a business rule:

1. Go to *Configuration > Profile*.  
The list of profiles is displayed.
2. Create a new profile, or open a profile for updating.  
The *Profile <name>* dialog box is displayed.
3. Click the *Business* tab.  
The *Business* pane is displayed.
4. Click **+Create New**.  
The *Business Rule* dialog box is displayed.
5. Complete the options, and click **OK**.  
The business rule is created.

## Cloning profiles

You can clone profiles, and then edit the settings to save time.

### To clone profiles:

1. Go to *Configuration > Profile*.  
The list of profiles is displayed.
2. Click the *Clone* icon for the profile.

| + Create New    ○ Reload |                |     |          |          |       |  | Input search text |   | 🔍       |
|--------------------------|----------------|-----|----------|----------|-------|--|-------------------|---|---------|
| Profile Name             | Platform       | Hub | VPN Mode | Comments | Refer |  |                   |   |         |
| Edge_dialup              | FortiGate-VM64 | NO  | DIAL_UP  |          | 4     |  | ✎                 | 🗑 | 🔗       |
| Edge_dialup_clone        | FortiGate-VM64 | NO  | DIAL_UP  |          | 0     |  | ✎                 | 🗑 | 🔗 clone |

The *Profile <name>* dialog box is displayed.

Profile Hub\_Dialup

\* Source Name ⓘ

Hub\_Dialup

\* Name ⓘ

Hub\_Dialup\_clone

\* Platform

FortiGate-VM64

Comments

OK

Cancel

3. Set the following options, and click **OK**.
  - a. In the *Name* box, type a unique name.
  - b. In the *Platform* list, select the platform.
 The cloned profile opens for editing.

4. Set the options on the *System*, *Network*, and *Business* tabs, and click **OK**.

## Updating profiles

You can update profiles after you create them. Updated profile settings are synchronized to associated devices.

### To update profiles:

1. Go to *Configuration > Profile*.  
The list of profiles is displayed.
2. Click the *Update* icon for the profile.  
Alternately, you can double-click the profile to open it for updating.

| + Create New    ○ Reload |                | Input search text |          |          |       |
|--------------------------|----------------|-------------------|----------|----------|-------|
| Profile Name             | Platform       | Hub               | VPN Mode | Comments | Refer |
| Edge_dialup              | FortiGate-VM64 | NO                | DIAL_UP  |          | 4     |
| Edge_dialup_clone        | FortiGate-VM64 | NO                | DIAL_UP  |          | 0     |

The *Profile <name>* dialog box opens.

3. Edit the settings, and click **OK**.
4. Install profile changes. See [Installing configuration changes on page 25](#).

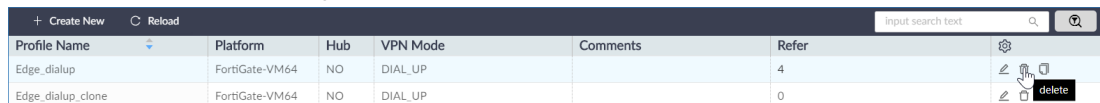
## Deleting profiles

You can delete profiles when they are no longer used by devices or regions.

### To delete profiles:

1. Go to *Configuration > Profile*.  
The list of profiles is displayed.

2. Click the *Delete* icon for the profile.



| Profile Name      | Platform       | Hub | VPN Mode | Comments | Refer |
|-------------------|----------------|-----|----------|----------|-------|
| Edge_dialup       | FortiGate-VM64 | NO  | DIAL_UP  |          | 4     |
| Edge_dialup_clone | FortiGate-VM64 | NO  | DIAL_UP  |          | 0     |

A confirmation dialog box is displayed.

3. Click *OK*.

The profile is deleted.

## Profile options described

This section describes the options available when you configure a profile. The options are organized into the following tabs:

- [General tab on page 37](#)
- [System tab on page 38](#)
- [Network tab on page 39](#)
- [Business tab on page 41](#)

### General tab

The *General* tab contains the following sections:

| Option             | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name               | Type a name for the profile. You can use lowercase and uppercase letters, numbers 0 to 9, underscores, and dashes.                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Platform           | Select a platform for the profile settings.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Hub                | Toggle on to designate the device as a hub.<br>Toggle off to designate the device as an edge.                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| VPN Mode with Hub  | Available with <i>Hub</i> is toggled off. Select one of the following options to connect the edge devices to the hub in the region: <ul style="list-style-type: none"> <li>• Select <i>SITE_TO_SITE</i> to create full-mesh overlay links between the hub device and its edge devices in the same region.</li> <li>• Select <i>DIAL_UP</i> to create one-to-one overlay links between the hub device and its edge devices. When you select <i>DIAL_UP</i>, you can enable ADVPN on the <i>Network</i> tab in the <i>WAN</i> settings.</li> </ul> |
| VPN Mode with Edge | Available with <i>Hub</i> is toggled on. Select one of the following options to connect the hub device with edge devices: <ul style="list-style-type: none"> <li>• Select <i>SITE_TO_SITE</i> to create full-mesh overlay links between the hub device and its edge devices in the same region.</li> <li>• Select <i>DIAL_UP</i> to create one-to-one overlay links between the hub device and its edge devices. When you select <i>DIAL_UP</i>, you can enable ADVPN on the <i>Network</i> tab in the <i>WAN</i> settings.</li> </ul>           |
| Max Edge Count     | Available with <i>Hub</i> is toggled on and <i>VPN Mode with Edge</i> is set to <i>DIAL_UP</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

| Option      | Description                                                                        |
|-------------|------------------------------------------------------------------------------------|
|             | Specify the maximum number of edge devices allowed to connect with the hub device. |
| Port Number | Specify the number of ports on the FortiGate.                                      |
| Comments    | (Optional) Type a comment about the profile.                                       |

## System tab

The *System* tab contains the following sections:

- [NTP on page 38](#)
- [FortiGuard on page 38](#)
- [Email on page 39](#)
- [Log on page 39](#)

## NTP

Expand *NTP Setting* to view the following options:

| Option                      | Description                                                                                                                                                                                             |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Synchronize with NTP Server | Toggle on to enable synchronization with an NTP server, and then specify the server. Toggle off to disable this feature.                                                                                |
| Server Type                 | Choose between the following options: <ul style="list-style-type: none"><li>• <i>FortiGuard</i></li><li>• <i>Specify</i></li></ul> When you select <i>Specify</i> , you must also select an NTP server. |
| NTP Servers                 | Available when <i>Server Type</i> is set to <i>Specify</i> . Select an NTP server that you added to SD-WAN Orchestrator MEA.                                                                            |
| Interval                    | Specify how often in minutes to synchronize time with the NTP server.                                                                                                                                   |

## FortiGuard

Expand *FortiGuard Setting* to view the following options:

| Option                               | Description                                                                                        |
|--------------------------------------|----------------------------------------------------------------------------------------------------|
| Enable FortiGuard Security Updates   | Toggle on to enable security updates from FortiGuard. Toggle off to disable this feature.          |
| Servers                              | Select a FortiGuard server that you added to SD-WAN Orchestrator MEA.                              |
| Include Worldwide FortiGuard servers | Toggle on to include FortiGuard servers from around the world. Toggle off to disable this feature. |

## Email

Expand *Email Setting* to view the following options:

| Option      | Description                                                                                                                  |
|-------------|------------------------------------------------------------------------------------------------------------------------------|
| Server name | Select the server to use for email notifications. You must add a server to SD-WAN Orchestrator MEA before you can select it. |

## Log

Expand *Log Setting* to view the following logging options:

- Send Logs to FortiAnalyzer / FortiManager
- Send logs to Syslog

You can configure devices to send logs to FortiAnalyzer/FortiManager or a syslog server.

| Option                                    | Description                                                                                                                                          |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Send logs to FortiAnalyzer / FortiManager | Toggle on to enable logging to FortiAnalyzer or FortiManager. Toggle off to disable this feature.                                                    |
| Server Type                               | Select <i>This FortiManager or managed FortiAnalyzer</i> .                                                                                           |
| Upload option                             | Specify how often to upload logs from devices to FortiManager or FortiAnalyzer.                                                                      |
| Encrypt Log Transmission                  | Specify the level of encryption for log transmission.                                                                                                |
| Reliable logging to FortiAnalyzer         | Toggle on to enable reliable logging to FortiAnalyzer. Toggle off to disable this feature.                                                           |
| Send Logs to Syslog                       | Toggle on to enable logging to a syslog server. Toggle off to disable this feature.                                                                  |
| Server IP/Name                            | Type the IP address or FQDN of the syslog server that you added to SD-WAN Orchestrator MEA.                                                          |
| Mode                                      | Select a mode for transmitting logs. Choose from: <ul style="list-style-type: none"><li>• UDP</li><li>• Legacy reliable</li><li>• Reliable</li></ul> |
| Port                                      | Specify which port to use.                                                                                                                           |
| Minimum Log Level                         | Specify the minimum level of logs to include.                                                                                                        |
| Format                                    | Specify the log format.                                                                                                                              |

## Network tab

### WAN

Expand *WAN* to view the following options:

| Option       | Description                                                |
|--------------|------------------------------------------------------------|
| Create New   | Click <i>Create New</i> to define a new WAN interface.     |
| Interface    | Displays the interface name.                               |
| Vlan         | Displays whether VLAN is used.                             |
| ISP Link     | Displays the name of the ISP link.                         |
| WAN Type     | Displays the type of WAN used.                             |
| Private Wire | Displays whether a private wire is used.                   |
| Mode         | Displays the mode used by the interface.                   |
| Enable       | Indicates whether the interface is enabled.                |
| Access       | Displays the types of access to allowed for the interface. |
| Update       | Click the <i>Update</i> icon to edit the settings.         |

## LAN

Expand *LAN* to view the following options:

| Option            | Description                                                             |
|-------------------|-------------------------------------------------------------------------|
| Create New        | Click <i>Create New</i> to define a new LAN interface.                  |
| Switch/AP         | Click Switch/AP to define settings for FortiSwitch and FortiAP devices. |
| Interface         | Displays the interface name.                                            |
| Vlan              | Displays whether VLAN is used.                                          |
| Interface Members | Displays interface members.                                             |
| Subnet Type       | Displays the type of subnet.                                            |
| IP Address        | Displays the IP address.                                                |
| DHCP Server/Relay | Displays the DHCP mode                                                  |
| DHCP Pool Size    | Displays the DHCP pool size.                                            |
| Access            | Displays the types of access to allowed for the interface.              |
| Update            | Click the <i>Update</i> icon to edit the settings.                      |

## DMZ

Expand *DMZ* to view the following options:

| Option     | Description                                            |
|------------|--------------------------------------------------------|
| Create New | Click <i>Create New</i> to define a new DMZ interface. |
| Interface  | Displays the interface name.                           |



| Option | Description                                                |
|--------|------------------------------------------------------------|
| Vlan   | Displays whether VLAN is used.                             |
| Enable | Indicates whether the interface is enabled.                |
| Access | Displays the types of access to allowed for the interface. |
| Update | Click the <i>Update</i> icon to edit the settings.         |

## BGP

Expand *BGP* to view the following options:

| Option     | Description                                            |
|------------|--------------------------------------------------------|
| Create New | Click <i>Create New</i> to define a new DMZ interface. |
| Type       | Displays the type of BGP network.                      |
| Subnet     | Displays the physical port.                            |
| Update     | Click the <i>Update</i> icon to edit the settings.     |

## DNS Server

Expand *DNS Server* to view the following options:

| Option      | Description                                                    |
|-------------|----------------------------------------------------------------|
| Server Name | Select a DNS server that you added to SD-WAN Orchestrator MEA. |

## SNMP

Expand *SNMP* to view the following options:

| Option     | Description                                                            |
|------------|------------------------------------------------------------------------|
| SNMP Agent | Toggle on to enable an SNMP agent. Toggle off to disable this feature. |
| Hosts      |                                                                        |

## Business tab

The *Business* tab contains the following options:

| Option     | Description                                                             |
|------------|-------------------------------------------------------------------------|
| Create New | Click <i>Create New</i> to create a new business rule.                  |
| Name       | Displays the name of the business rule.                                 |
| Valid      | Displays whether the rule is valid. A checkmark indicates a valid rule. |

| Option            | Description                                           |
|-------------------|-------------------------------------------------------|
| Source            | Displays the source address or address group.         |
| Destination       | Displays the type of destination for the traffic.     |
| Service           | Displays the Internet service.                        |
| Policy            | Displays the load policy.                             |
| Group Type        | Displays the group type as UNDERLAY, OVERLAY, or ALL. |
| Path              | Displays the path.                                    |
| SLA Quality Level | Displays the minimum quality level.                   |

## Shared resources

You can define resources once, and then select them in multiple profiles by using the *Shared Resources* tree menu. You can create the following shared resources:

- Intranet addresses
- Network resources, such as DHCP servers
- SLA quality levels and servers
- Servers used by SD-WAN Orchestrator MEA, such as NTP servers, FortiGuard servers, and email servers
- Health thresholds

## Intranet Addresses

You can view the internal addresses and address groups that SD-WAN Orchestrator MEA automatically generates for your network.

You can use these auto-generated addresses and address groups to implement business rules to manage the traffic between different devices and groups.

If you want to create your own addresses and add them to an address group, you must add them by using the *Policy & Objects* module in FortiManager.

### To view intranet addresses:

1. Go to *Configuration > Shared Resources > Intranet Address*.
2. Click *IPv4 Address* or *IPv4 Address Group*.
3. In the toolbar click *Reload*.

## Network

From the *Network* tree menu, you can create and manage servers, relays, hosts, and IP Pools.

This section contains the following topics:

- [Creating DHCP servers on page 43](#)
- [Creating DHCP relays on page 43](#)
- [Creating DNS servers on page 44](#)
- [Creating intranet IP pools on page 44](#)
- [Creating SNMP hosts on page 44](#)
- [Changing VPN address pools on page 45](#)
- [Creating ISP links on page 45](#)

## Creating DHCP servers

### To create DHCP servers:

1. Go to *Configuration > Shared Resources > Network > DHCP Server*.
2. In the toolbar, click **+Create New**.  
The *DHCP Server* dialog box is displayed.
3. Configure the settings, and click **OK**.

| Option                     | Description                                              |
|----------------------------|----------------------------------------------------------|
| <b>Name</b>                | Enter a name for the DHCP server.                        |
| <b>TFTP Server</b>         | Enter the IP address for the TFTP server.                |
| <b>DNS Server Res Type</b> | Select <i>Default</i> or <i>Local</i> from the dropdown. |

## Creating DHCP relays

### To create DHCP relays:

1. Go to *Configuration > Shared Resources > Network > DHCP Relay*.
2. In the toolbar, click **Create New**.  
The *DHCP Relay* dialog box is displayed.
3. Configure the settings, and click **OK**.

| Option                    | Description                           |
|---------------------------|---------------------------------------|
| <b>Name</b>               | Enter a name for the DHCP server.     |
| <b>Primary Relay IP</b>   | Enter the primary relay IP address.   |
| <b>Secondary Relay IP</b> | Enter the secondary relay IP address. |

## Creating DNS servers

### To create DNS servers:

1. Go to *Configuration > Shared Resources > Network > DNS*.
2. In the toolbar, click *+Create New*.  
The *DNS Server* dialog box is displayed.
3. Configure the settings, and click *OK*.

| Option                  | Description                                    |
|-------------------------|------------------------------------------------|
| <b>Name</b>             | Enter a name for the DHCP server.              |
| <b>Primary Server</b>   | Enter the IP address for the primary server.   |
| <b>Secondary Server</b> | Enter the IP address for the secondary server. |

## Creating intranet IP pools

### To create intranet IP pools:

1. Go to *Configuration > Shared Resources > Network > Intranet IP Pool*.
2. In the toolbar, click *+Create New*.  
The *IP Pool* dialog box is displayed.
3. Configure the settings, and click *OK*.

| Option      | Description                            |
|-------------|----------------------------------------|
| <b>Name</b> | Enter a name for the Intranet IP Pool. |
| <b>Pool</b> | Enter the IP address for the pool.     |

## Creating SNMP hosts

You must create an SNMP host before you can add it to SD-WAN Orchestrator MEA.

### To create SNMP hosts:

1. Go to *Configuration > Shared Resources > Network > SNMP Host*.
2. In the toolbar, click *+Create New*.  
The *SNMP* dialog box is displayed.
3. Configure the settings, and click *OK*.

| Option         | Description                           |
|----------------|---------------------------------------|
| <b>Name</b>    | Enter a name for the SNMP Host.       |
| <b>Version</b> | Select the version from the dropdown. |

| Option                  | Description                             |
|-------------------------|-----------------------------------------|
| <b>Host Type</b>        | Select the host type from the dropdown. |
| <b>IP</b>               | Enter the IP address for the SNMP host. |
| <b>Query Port</b>       | Enter the query port number.            |
| <b>Trap Remote Port</b> | Enter the trap remote port number.      |
| <b>Community Name</b>   | Enter a name for SNMP community.        |

## Changing VPN address pools

To change the VPN address pools:

1. Go to *Configuration > Shared Resources > Network > Network Settings*.  
The VPN address pool information is displayed.
2. Configure the settings, and click *OK*.

| Option                            | Description                                         |
|-----------------------------------|-----------------------------------------------------|
| <b>VPN Addr Pool</b>              | Enter the IP address for the address pool.          |
| <b>Loopback Address Pool</b>      | Enter the IP address for the loopback address pool. |
| <b>Auth After Location Change</b> | Toggle <i>On</i> to authorize the address change.   |

## Creating ISP links

To create ISP links:

1. Go to *Configuration > Shared Resources > Network > ISP Link*.
2. In the toolbar, click *+Create New*.  
A dialog box is displayed.
3. Configure the settings, and click *OK*.

| Option           | Description                                                               |
|------------------|---------------------------------------------------------------------------|
| <b>Name</b>      | Enter a name for the ISP link.                                            |
| <b>Type</b>      | From the dropdown, select <i>Internet</i> , <i>MPLS</i> , or <i>LTE</i> . |
| <b>Cost</b>      | From the dropdown, select <i>Low</i> , <i>Medium</i> , or <i>High</i> .   |
| <b>Public IP</b> | Toggle <i>On</i> if the IP is public.                                     |

## SLA

The service level agreements in SD-WAN Orchestrator MEA help you monitor SD-WAN performance.

This section contains the following topics:

- [Adding SLA quality levels on page 46](#)
- [Adding SLA servers on page 46](#)

## Adding SLA quality levels

To add SLA quality levels:

1. Go to *Configuration > Shared Resources > SLA > SLA Quality*.
2. In the toolbar, click **+Create New**.  
The *SLA Quality Level* dialog box is displayed.
3. Configure the following settings, and click **OK**.

| Option             | Description                                    |
|--------------------|------------------------------------------------|
| <b>Name</b>        | Enter a name for the quality level.            |
| <b>Latency</b>     | Enter the latency threshold (in milliseconds). |
| <b>Jitter</b>      | Enter the jitter threshold (in milliseconds).  |
| <b>Packet Loss</b> | Enter the packet loss threshold (in percent).  |

## Adding SLA servers

You must create an SLA server before you can add it to SD-WAN Orchestrator MEA.

To add SLA servers:

1. Go to *Configuration > Shared Resources > SLA > SLA Server*.
2. In the toolbar, click **Create New**.
3. Configure the SLA server settings, and click **OK**.

| Option          | Description                                                                   |
|-----------------|-------------------------------------------------------------------------------|
| <b>Name</b>     | Enter a name for the SLA server.                                              |
| <b>Protocol</b> | From the dropdown select the detection method ( <i>Ping</i> or <i>HTTP</i> ). |
| <b>Servers</b>  | Select an available server.                                                   |

## System

The *System Settings* tree menu lets you add servers for SD-WAN Orchestrator MEA to use. SD-WAN Orchestrator MEA supports the following servers: NTP, FortiGuard, and email. See:

- [Adding NTP servers on page 47](#)
- [Adding FortiGuard servers on page 47](#)
- [Adding email servers on page 47](#)

## Adding NTP servers

You can add an NTP server to SD-WAN Orchestrator MEA, and then select the server in profiles and devices.

### To add NTP servers:

1. Go to *Configuration > Shared Resources > System > NTP Server*.
2. In the toolbar, click *Create New*.
3. Configure the NTP server settings, and click *OK*.

| Option                | Description                                          |
|-----------------------|------------------------------------------------------|
| <b>Name</b>           | Enter a name for the NTP server.                     |
| <b>Address Type</b>   | From the dropdown, select <i>IP</i> or <i>FQDN</i> . |
| <b>Address</b>        | Enter the server's IP address or host name.          |
| <b>NTP v3</b>         | Toggle <i>On</i> to enable NTP v3.                   |
| <b>Authentication</b> | Toggle <i>On</i> to enable authentication.           |
| <b>Key</b>            | Available when <i>Authentication</i> is enabled.     |
| <b>Key ID</b>         | Available when <i>Authentication</i> is enabled.     |

## Adding FortiGuard servers

You can add a FortiGuard server to SD-WAN Orchestrator MEA, and then select the server in profiles and devices.

### To add FortiGuard servers:

1. Go to *Configuration > Shared Resources > System > FortiGuard Server*.
2. In the toolbar, click *Create New*.
3. Configure the FortiGaurd server settings, and click *OK*.

| Option              | Description                                                          |
|---------------------|----------------------------------------------------------------------|
| <b>Name</b>         | Enter a name for the NTP server.                                     |
| <b>Server Type</b>  | From the dropdown, select <i>Update</i> or <i>Rating</i> .           |
| <b>Address Type</b> | From the dropdown, select <i>IP4</i> , <i>IP6</i> , or <i>FQDN</i> . |
| <b>Address</b>      | Enter the device's IP address or host name.                          |

## Adding email servers

You can add an email server to SD-WAN Orchestrator MEA, and then select the server in profiles and devices.

**To add email servers:**

1. Go to *Configuration > Shared Resources > System > Email Server*.
2. In the toolbar, click *Create New*.
3. Configure the email server settings and click *OK*.

| Option                 | Description                                                                                     |
|------------------------|-------------------------------------------------------------------------------------------------|
| <b>Name</b>            | Enter a name for the email server.                                                              |
| <b>Address Type</b>    | From the dropdown, select <i>IPv4</i> or <i>FQDN</i> .                                          |
| <b>Address</b>         | Enter the email server's IP address or host name.                                               |
| <b>Authentication</b>  | Toggle <i>On</i> to enable authentication, then enter the <i>Username</i> and <i>Password</i> . |
| <b>Username</b>        | Available when <i>Authentication</i> is enabled.                                                |
| <b>Password</b>        | Available when <i>Authentication</i> is enabled.                                                |
| <b>Port</b>            | Enter the port number.                                                                          |
| <b>Reply To</b>        | Enter the email address users can reply to.                                                     |
| <b>Security</b>        | From the dropdown, select <i>None</i> , <i>STARTTLS</i> , or <i>SMTPS</i> .                     |
| <b>SSL Version</b>     | From the dropdown, select the SSL version.                                                      |
| <b>Validate Server</b> | Toggle <i>On</i> to enable validation.                                                          |

## Health Threshold

Quality of devices (indicated by color in *Monitor > Dashboard and Monitor > Devices*) in the SD-WAN network are valued according to the defined health threshold.

**To update health thresholds:**

1. Go to *Configuration > Shared Resources > Health Threshold*.
2. In the *Tools* column, click the *Update* icon for the health threshold.  
The *Health Threshold* dialog box is displayed.
3. Update the settings, and click *OK*.

## Global routing

You can view the subnet, next hop, and type information for global routing.

**To view global routing:**

1. Go to *Configuration > Global Routing*.  
The subnet, next hop, and type information is displayed for global routing.



# Maintenance



The *Maintenance* tree menu is available only in the root ADOM.

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You can maintain SD-WAN Orchestrator MEA by using the *Maintenance* tree menu. You can perform the following tasks:

- Upgrade firmware for SD-WAN Orchestrator MEA. See [Upgrade on page 49](#).
- Back up and restore configurations for SD-WAN Orchestrator MEA. See [Configuration on page 49](#).
- Export a zip file of debug information for SD-WAN Orchestrator MEA. See [Debug on page 50](#).

## Upgrade

You can upgrade firmware for SD-WAN Orchestrator MEA when updates are available.

### To upgrade firmware:

1. Go to *Maintenance > Upgrade*.
2. Click *Check for updates*.

## Configuration

You can back up all configurations from SD-WAN Orchestrator MEA, and then store them for safe keeping. You can also restore the configurations by uploading a backup file.

### To back up configurations:

1. Go to *Maintenance > Configuration*.
2. Click *Backup*.  
A `controller-store.config` file is downloaded to your computer.
3. Store the backup file in a safe location.

### To restore configurations:

1. Go to *Maintenance > Configuration*.
2. Click *Restore*.  
The *Upload* window opens.

3. Click *Select File*.
4. Select your backup file, and click *Open*.

## Debug

You can export debug information about SD-WAN Orchestrator MEA. The export process produces a zip file that contains the following folders of information that you can use:

- etc
- logs
- stat

### To export debug information:

1. Go to *Maintenance > Debug*.
2. Click *Export Debug Info Zip File*.  
A `debug-info.zip` file is downloaded to your computer.

## More information

SD-WAN Orchestrator MEA is available as a management extension application with FortiManager. For information about SD-WAN Orchestrator MEA, see the [FortiManager](#) page on the [Document Library](#).



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