



# **Network Monitoring using Avaya Fabric Orchestrator**

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# Contents

<b>Chapter 1: Introduction</b> .....	11
Purpose.....	11
Documentation.....	11
Training.....	12
Viewing Avaya Mentor videos.....	12
Subscribing to e-notifications.....	13
Support.....	15
<b>Chapter 2: New in this document</b> .....	16
<b>Chapter 3: Network Monitoring overview</b> .....	17
Managed objects.....	17
Discovery licensing restrictions.....	17
Supported devices .....	18
Network Discovery.....	18
General controls.....	19
Default discovery policy.....	20
Domain, pods, campuses, and seeds.....	21
Media application discovery.....	23
Manual device discovery.....	23
Network Topology.....	24
General controls.....	24
Tree browser.....	26
Central browser.....	31
Properties table.....	47
Event browser pane.....	49
Integrated dashboards.....	49
Network Overview dashboard.....	50
Device health.....	50
Navigation between dashboards.....	51
Top-N Reports.....	52
Power Savings dashboard.....	53
Dashboard configuration.....	53
Events tab.....	54
Fault correlation.....	56
Message detail.....	57
Message properties.....	57
Message filters.....	59
Event History .....	60
Action Console.....	61
Traps and syslogs.....	61

General controls.....	62
Monitoring Details .....	65
MIT.....	66
Scopes.....	68
Actions.....	70
Monitoring overrides.....	78
Event responses.....	80
Schedules.....	81
Device Menu Choices.....	82
Monitoring reports.....	84
MIB Browser.....	84
SNMP MIB Query.....	85
<b>Chapter 4: Dashboard configuration.....</b>	<b>87</b>
Adding a dashboard.....	87
Dashboard wizards.....	89
Configuring the Event Listing dashlet.....	90
Configuring the Event Summary dashlet.....	91
Configuring the Availability Report dashlet.....	92
Configuring the Element Status Summary dashlet.....	93
Configuring the Top-N Report dashlet.....	94
Configuring the Dial Gauge dashlet.....	95
Configuring the Trend Chart dashlet.....	97
Configuring the Pie Chart dashlet.....	98
Configuring the Element Property Table dashlet.....	100
Configuring the Schematic dashlet.....	100
Viewing the dashboard for a device.....	101
Deleting a dashboard.....	101
Editing a dashlet.....	102
Renaming a dashboard.....	102
Updating a dashlet.....	103
Configuring auto refresh for a dashlet.....	103
<b>Chapter 5: Network Discovery configuration.....</b>	<b>104</b>
Network Discovery page.....	104
Adding discovery domains.....	105
Deleting the data for a selected domain.....	105
Cloning discovery domains.....	106
Deleting discovery domains.....	106
Adding seeds.....	107
Adding a seed group.....	107
Editing seeds.....	108
Deleting seeds.....	109
Adding limits to subnets.....	109
Editing limits to subnets.....	110

Deleting limits to subnets.....	110
Adding exclusions.....	111
Editing exclusions.....	113
Deleting exclusions.....	115
Setting the network discovery options.....	116
Renaming a campus.....	117
Saving custom views.....	118
<b>Chapter 6: Network Discovery management.....</b>	<b>121</b>
Shortest Path Bridging.....	121
Shortest Path Bridging MAC.....	121
SPBM workflows.....	122
SPBM monitoring.....	123
Virtual Routing and Forwarding.....	123
Layer 3 subnet partitioning.....	123
Device discovery.....	123
IEEE 802.1ab.....	124
Enabling discovery with 802.1ab.....	125
Performing an initial discovery.....	126
Refreshing discovery status.....	127
Viewing discovery status summary.....	127
Viewing a discovery problem report.....	129
Performing a rediscovery.....	129
<b>Chapter 7: Manual device discovery.....</b>	<b>131</b>
Adding a device to an existing discovery.....	131
Editing a manual device discovery.....	131
Starting the manual device discovery again.....	132
Deleting a manual device discovery.....	132
Cancelling a manual device discovery.....	133
<b>Chapter 8: Viewing discovery results.....</b>	<b>134</b>
Viewing discovery results in the Tree Browser.....	134
Viewing discovery results in the Topology Viewer.....	135
Moving icons in the topology view.....	142
Viewing discovery results in the Properties Table.....	142
Selecting a layout.....	143
Moving an icon.....	143
Clearing the background setting.....	144
Performing a multicolumn sorting.....	144
Undoing a multicolumn sorting.....	145
<b>Chapter 9: Scope configuration.....</b>	<b>146</b>
Adding constraint based scopes.....	146
Adding union based scopes.....	148
Adding enumerated member scopes.....	149
Editing scopes.....	150

Renaming scopes.....	150
Cloning scopes.....	151
Deleting scopes.....	151
<b>Chapter 10: Monitoring configuration.....</b>	<b>153</b>
Starting and stopping monitoring.....	153
Viewing active monitoring configurations.....	154
Defining a parameter override.....	154
Configuring overrides for a device from the Network Topology.....	156
Viewing overrides.....	157
Editing an override.....	158
Renaming an override.....	158
Cloning an override.....	158
Deleting an override.....	159
Adding custom monitoring for a device from the Network Topology.....	159
Modifying custom monitoring.....	160
Disabling device availability.....	161
<b>Chapter 11: Monitoring Reports configuration.....</b>	<b>162</b>
Viewing monitoring reports.....	162
Adding a new monitoring report.....	162
Monitoring Reports wizards.....	164
Configuring the Text reportlet.....	165
Configuring the Image reportlet.....	165
Configuring the Availability Report reportlet.....	165
Configuring the Top-N Report reportlet.....	166
Configuring the Event Listing reportlet.....	167
Configuring the Pie Chart reportlet.....	168
Configuring the Element Status reportlet.....	169
Configuring the Event Summary reportlet.....	170
Configuring the Dial Gauge reportlet.....	171
Configuring the Trend Chart reportlet.....	172
Configuring the Hypercube Table reportlet.....	173
Configuring the Event History reportlet.....	174
Editing a monitoring report.....	175
Exporting a monitoring report.....	175
Deleting a monitoring report.....	176
<b>Chapter 12: Viewing Events.....</b>	<b>177</b>
Adding a message board.....	177
Deleting a message board.....	177
Renaming a message board.....	178
Sorting messages.....	178
Filtering messages.....	178
Filtering messages by priority.....	179
Filtering messages by scope or event type.....	179



Filtering messages by acknowledged status.....	180
Filtering messages by IP.....	180
Suppressing PoE Under-Current warnings.....	181
Viewing OTM error codes.....	181
Exporting a message board.....	182
<b>Chapter 13: Viewing Event History.....</b>	<b>183</b>
Viewing the Event History.....	183
Adding a filter in Event History.....	183
Creating a filter from selection in the Event History.....	184
Cloning a filter in the Event History.....	184
Renaming a filter in the Event History.....	185
Deleting a filter in the Event History.....	185
Editing a filter in the Event History.....	185
Configuring purge settings.....	186
Refreshing the Event History .....	186
<b>Chapter 14: Trap and Syslog configuration.....</b>	<b>187</b>
Configuring Trap settings.....	187
Viewing traps.....	187
Configuring Syslog settings.....	188
<b>Chapter 15: Viewing Reports.....</b>	<b>190</b>
Viewing discovery reports.....	190
<b>Chapter 16: Diagnostic tools.....</b>	<b>192</b>
Pinging a device.....	192
Tracing a route.....	193
SNMP Get.....	193
Remote pinging between phones.....	193
Remote trace route between phones.....	194
Remote path tracing between phones.....	194
Managing hardware inventory.....	194
Exporting an inventory.....	195
AFO Monitoring device level trends.....	195
Performance trending.....	196
Viewing network paths.....	196
<b>Chapter 17: MIB query tools.....</b>	<b>198</b>
MIB Browser.....	198
Modifying SNMP version authentication.....	198
Viewing SNMP MIB data.....	199
MIB queries.....	199
Performing an SNMP MIB Query .....	200
Adding a query.....	200
Deleting a query.....	201
Editing a query.....	201

<b>Chapter 18: MIT configuration</b> .....	202
Configuring Monitored Information Types.....	202
Viewing Monitored Information Types.....	203
<b>Chapter 19: Automating configuration tasks</b> .....	204
Creating an action.....	204
Renaming an action.....	205
Cloning an action.....	205
Deleting an action.....	206
Performing a selected action.....	206
Creating a response.....	206
Renaming a response.....	207
Cloning a response.....	207
Deleting a response.....	208
Creating an action schedule.....	208
Creating a report schedule.....	209
Renaming a schedule.....	209
Cloning a schedule.....	210
Deleting a schedule.....	210
Creating a domain rediscovery schedule.....	210
Viewing action schedules.....	211
Viewing active actions.....	211
Viewing the action history.....	211
Adding device menu choices.....	212
Adding web browser action as a device menu choice.....	213
Configuring a customized web browser action.....	213

# Chapter 1: Introduction

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## Purpose

This document provides information on configuring and managing your Avaya Fabric Orchestrator Monitoring (AFO Monitoring) system.

This document is intended to provide administrators with a management tool that offers solutions within a highly dynamic virtualized data center environment. AFO Monitoring reduces troubleshooting issues because of a more complete view of the network. With AFO Monitoring, efficiency in your IT department is increased by the time you save in regards to deploying new applications as well as adding or modifying applications or services.

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## Documentation

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Document title	Use this document for:	Audience
<i>Avaya Fabric Orchestrator Solution Description</i> , NN48100–100	Description of each verified reference configuration.	System administrator
<i>Deploying Avaya Fabric Orchestrator</i> , NN48100–101	Installing, configuring, initial administration, and basic maintenance checklist and procedures.	System administrator
<i>Getting Started and Locating the latest software and Release Notes for Avaya Fabric Orchestrator</i> , NN48100–102	Locating the latest software and product release notes.	System administrator
<i>Network Monitoring using Avaya Fabric Orchestrator</i> , NN48100–500	Monitoring the managed objects in AFO.	System administrator
<i>Network Configuration using Avaya Fabric Orchestrator</i> , NN48100–501	Configuring and managing Avaya Enterprise family of devices from discovered network.	System administrator

*Table continues...*

Document title	Use this document for:	Audience
<i>Bulk Device Configuration Management using Avaya Fabric Orchestrator</i> , NN48100–502	Performing a variety of management tasks across multiple device types using a web-based interface.	System administrator
<i>Virtualization Configuration using Avaya Fabric Orchestrator</i> , NN48100–503	Connecting the vCenter server to AFO, to help the data center administrator to configure the network changes that apply to the data center.	System administrator
<i>IP Flow Configuration using Avaya Fabric Orchestrator</i> , NN48100–504	Collecting and analyzing IP flows from IPFIX-, NetFlow v5-, and NetFlow v9- enabled devices.	System administrator
<i>Administration using Avaya Fabric Orchestrator</i> , NN48100–600	AFO System administration procedures.	System administrator
<i>Avaya Fabric Orchestrator Traps and Trends Reference</i> , NN48100–700	Viewing a list of supported traps and trends.	System administrator
<i>Avaya Fabric Orchestrator Supported Devices, Device MIBs, and Legacy Devices Reference</i> , NN48100–701	Confirming support for devices and MIBs.	System administrator

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  - In **Search**, type `Avaya Mentor Videos` to see a list of the available videos.

- In **Search**, type the product name. On the Search Results page, select **Video** in the **Content Type** column on the left.
- To find the Avaya Mentor videos on YouTube, go to [www.youtube.com/AvayaMentor](http://www.youtube.com/AvayaMentor) and perform one of the following actions:
  - Enter a key word or key words in the **Search Channel** to search for a specific product or topic.
  - Scroll down Playlists, and click the name of a topic to see the available list of videos posted on the website.

 **Note:**

Videos are not available for all products.

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## Subscribing to e-notifications

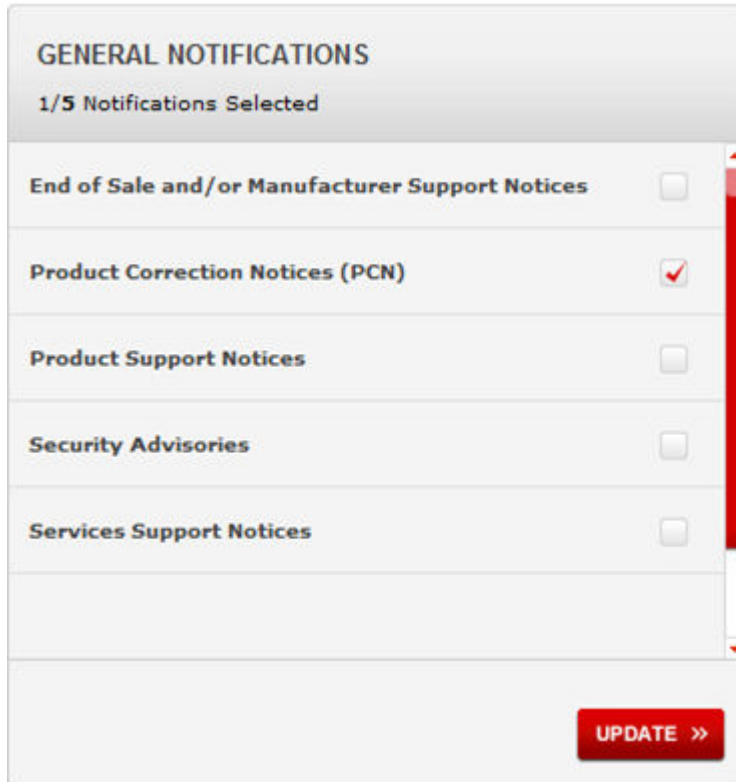
Subscribe to e-notifications to receive an email notification when documents are added to or changed on the Avaya Support website.

### About this task

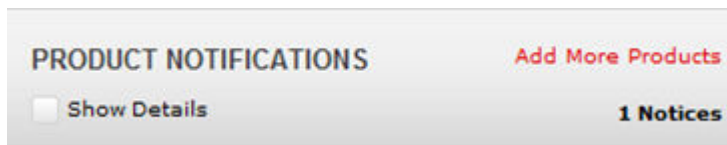
You can subscribe to different types of general notifications, for example, Product Correction Notices (PCN), which apply to any product or a specific product. You can also subscribe to specific types of documentation for a specific product, for example, Application & Technical Notes for Virtual Services Platform 7000.

### Procedure

1. In an Internet browser, go to <https://support.avaya.com>.
2. Type your username and password, and then click **Login**.
3. Under **My Information**, select **SSO login Profile**.
4. Click **E-NOTIFICATIONS**.
5. In the GENERAL NOTIFICATIONS area, select the required documentation types, and then click **UPDATE**.



6. Click **OK**.
7. In the **PRODUCT NOTIFICATIONS** area, click **Add More Products**.



8. Scroll through the list, and then select the product name.
9. Select a release version.
10. Select the check box next to the required documentation types.

PRODUCTS	My Notifications												
Virtual Services Platform 7000	<b>VIRTUAL SERVICES PLATFORM 7000</b> Select a Release Version All and Future <table border="1"> <tr> <td>Administration and System Programming</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Application Developer Information</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Application Notes</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Application and Technical Notes</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Declarations of Conformity</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Documentation Library</td> <td><input checked="" type="checkbox"/></td> </tr> </table>	Administration and System Programming	<input type="checkbox"/>	Application Developer Information	<input type="checkbox"/>	Application Notes	<input type="checkbox"/>	Application and Technical Notes	<input checked="" type="checkbox"/>	Declarations of Conformity	<input type="checkbox"/>	Documentation Library	<input checked="" type="checkbox"/>
Administration and System Programming		<input type="checkbox"/>											
Application Developer Information		<input type="checkbox"/>											
Application Notes		<input type="checkbox"/>											
Application and Technical Notes		<input checked="" type="checkbox"/>											
Declarations of Conformity		<input type="checkbox"/>											
Documentation Library		<input checked="" type="checkbox"/>											
Virtualization Provisioning Service													
Visual Messenger™ for OCTEL® 250/350													
Visual Vectors													
Visualization Performance and Fault Manager													
Voice Portal													
Voice over IP Monitoring													
W310 Wireless LAN Gateway													
WLAN 2200 Series													
WLAN Handset 2200 Series													

11. Click **Submit**.

---

## Support

Go to the Avaya Support website at <http://support.avaya.com> for the most up-to-date documentation, product notices, and knowledge articles. You can also search for release notes, downloads, and resolutions to issues. Use the online service request system to create a service request. Chat with live agents to get answers to questions, or request an agent to connect you to a support team if an issue requires additional expertise.

# Chapter 2: New in this document

*Network Monitoring using Avaya Fabric Orchestrator, NN48100–500* is a new document for Release 1.0 so all the features are new in this release. See *Avaya Fabric Orchestrator Release Notes* for a list of supported features.



# Chapter 3: Network Monitoring overview

The following information is an overview of the Avaya Fabric Orchestrator Monitoring (AFO Monitoring) system.

---

## Managed objects

A managed object (MO) is a device that AFO Monitoring actively processes information about to reflect the current status and condition of the object in real-time. The data that AFO Monitoring gathers about the MO includes status propagation, fault, and performance information.

Every object that is an MO counts towards the license count. The license number decreases each time you add a new MO. When the maximum MO license count is reached, AFO Monitoring no longer discovers new objects until you reduce the number of MOs to match the number of available licenses, or you apply a new license that is greater than the current MO count.

An unmanaged object (UMO) is an object that AFO Monitoring has discovered, and which can appear on the interface as a gray icon, but does not process any information on the device, including status information, faults, and performance management. A UMO does not count towards the MO license count of AFO Monitoring.

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## Discovery licensing restrictions

There are discovery restrictions because of licensing.

The following discovery restrictions apply:

- The license you purchase determines the number of managed devices you have permission to discover and monitor. If, during discovery, you reach the maximum limit for the number of managed devices that can be discovered as defined by your license, you receive a message indicating that you have met this limit. Although there is a limit to the number of managed devices that can be discovered, there is no limit on the domains. For example, if you have a license for 1000 managed devices, you can create and discover as many domains as you would like, but the sum of all managed devices across the domains you manage cannot exceed 1000.

- The license count does not take into consideration the uniqueness of a managed device being discovered under multiple domains. For example, if the same managed device gets discovered in two different domains the license count will increment twice. Once for being discovered in each domain.
- Your license restricts the managed device count. This restriction is based on managed device count, not on the total count of all devices.
- You can have different functions or actions associated with a managed device if it is discovered in multiple domains.

---

## Supported devices

For more information about supported devices for Avaya Fabric Orchestrator Monitoring (AFO Monitoring), see *Deploying Avaya Fabric Orchestrator*, NN48100–101.

---

## Network Discovery

You must configure Network Discovery to run network auto-discoveries. A discovery is a snapshot taken of a part or a complete network. Select **Network > Discovery** to access the Network Discovery options.

You must complete the following steps after you log on to AFO Monitoring for the first time, and before you can browse your network.

- Configure device credentials using the Device and Server Credentials Editor available from **Administration > Credentials**.
- Add a new discovery domain.
- Configure the discovery options for the discovery domain.
- Discover the domain.

 **Important:**

The only configuration required to manage a device is for it to respond to SNMP and to have the SNMP credentials for this device added to the Device and Server Credentials Editor. If a device is changed from Unmanaged to Managed by either adding credentials for it or by enabling SNMP on it after the discovery is completed, you must run rediscovery on the domain or create a new domain and discover it.

On the Network Discovery page, you can work with discovery domains, configure discovery options, perform discoveries, and view discovery status.

## General controls


The following general controls are available on the Network Discovery page, under **Network > Discovery**.

**\* Note:**

Monitoring supports two types of licenses, Basic and Advanced, in addition to different license tiers: 250-Node, 1500-Node, and 5000-Node. The options and sub-menu may be disabled or hidden depending on the type of license you install.

Name	Description
Apply your changes	Saves the edits to the server. All edits you make to domain configuration are client-side only. Click <b>Apply</b> to save the edits to the server.
Discard changes, reverting to the previous values	Discards any unapplied edits you have made to a discovery configuration. You are not asked to confirm a revert action, any unapplied edits are immediately lost after you click <b>Revert</b> .
Add a new domain	After you click this button, a dialog box appears for the discovery domain name. Each discovery domain must have a unique name that may include numbers, letters with spaces, underscores ( _ ) or hyphens (-) but not special characters.
Delete selected domain	Deletes the selected discovery domain. You are prompted to confirm the deletion prior to it taking effect. After you delete a discovery domain you permanently delete the domain configuration, all discoveries and logs made from it, and any persistent history metric, and the persistent form of currently posted events. Delete operations cannot be undone.
Erase selected domain data	Deletes the domain data such as custom views, trends, events, traps, event history, and monitoring data while keeping the seed definition and device custom names. After you erase the data for the selected domain, perform a network discovery to start a new discovery.
Clone selected domain	Clones the selected discovery domain. When you clone an existing discovery domain, you create a new domain using the existing domain's discovery configuration. No other information is cloned. After you clone a domain, a discovery must be performed before the new domain can be browsed or monitored. The same rules for domain names apply for cloned domains as for those created using the create operation.
Discover selected domain	Initiates the discovery of the domain.
Manual Discovery	Initiates the manual discovery of the domain.
Discovery Problem Report	Takes you to the Discovery Problem Report screen where you can choose to view the discovery report for one or all domains.
Save Domain	Saves the domain. Larger domains require longer save times.

*Table continues...*

Name	Description
	 <b>Important:</b> If you specify a custom name for a device, you must go to the Network Discovery page and click <b>Save</b> to save the domain. If you do not save the domain, the custom name is not saved after a restore or restart.
Auto-refresh	Turns on or off servlet refresh or changes the refresh interval. The default is auto refresh every 15 seconds.
Refresh	Refreshes the servlet once. The refresh is performed immediately.
Start/Stop Monitoring	Starts or stops monitoring of the discovery domain. By default when the domain is discovered only Start Monitoring is available.

---

## Default discovery policy

Avaya Fabric Orchestrator (AFO) ships with a default AFO domain. You cannot remove the domain or tab from Monitoring, but you can delete the content, seeds, and discovery data from this domain, and refine a new seed, and then run discovery. To access the options, go to **Network > Discovery**, and go to the options on the bottom left. The **Configuration** tab uses the domain information for network elements.

By default, the discovery has the following policy:

- Wide Area Network (WAN) Crawl (not selected)—AFO Monitoring discovers devices on the far side of every router interface, regardless of the interface type. If the WAN Crawl option is not selected then AFO Monitoring Discovery does not go beyond any interface that is considered to be a WAN interface.
- VPN Crawl (not selected)—AFO Monitoring discovers VPN clients even if this option is not selected. If this option is checked, then the discovery algorithm augments the discovered data with the information from vendor-specific VPN Tables.
- DNS Lookup (not selected)—AFO Monitoring performs DNS lookup on all devices.
- Service by Port Scan—AFO Monitoring discovery scans for well known service ports on servers. The option looks for services running on a server at the time of discovery.
- For All Devices—AFO Monitoring performs a service by PortScan for all devices.
- Avaya Only Discovery—AFO Monitoring ignores any devices that are not on the approved Avaya list.
- Storage Discovery—AFO Monitoring discovers file systems based on Linux log-in and scan of file systems on a server.

The Options above exist at the bottom left of the screen for **Network > Discovery**.

---

## Domain, pods, campuses, and seeds

After you go to **Network > Discovery**, the following are part of the discovery:

- Domains
- Pods
- Campuses
- Seeds

### Domains

With Avaya AFO Monitoring, you manage discovery domains. A discovery domain is a virtual container of network objects or applications. A discovery domain can be a part of your network or the entire network, depending on how you want to manage it. It can be a device or an application. AFO Monitoring supports multiple discovery domains. You can manage and browse each discovery domain independently of the others.

#### **Important:**

You can have multiple domains if your enterprise has disjointed networks. For example, if your site has an internal production network and a DMZ. Each would be their own separate domain that you can discover and monitor.

#### **Important:**

An object can appear as a managed object (MO) in more than one discovery domain. The object is counted as an MO in each discovery domain in which it appears because you can apply a different action to each instance of the MO in each AFO Monitoring discovery domain.

### Pods

A pod contains Avaya networking components such as applications, servers, and disk units in a single enclosure. You can view details of these components such as corresponding status and serial numbers.

### Campuses

A campus is a location at which devices reside, such as an office, a building, or a set of buildings. Campuses are defined by devices separated by wide area links (for auto-discovered campuses). Subnet discovery might collapse several campuses together. AFO Monitoring discovery automatically determines what constitutes a campus. The campus name is based on:

- Best router (The best router is usually the seed by which the campus was discovered. This is usually the edge router, unless the seed is explicitly specified.)
- First discovered switch
- First subnet

After AFO Monitoring performs a discovery, you can navigate between network layers to view your network topology. If you selected WAN Crawl, you start with a domain view of all campuses. Selecting a campus gives you a view of all discovered devices within that campus, which you can then select individually to view the device details. If you did not select WAN Crawl, the Network browser defaults to the campus view.

## Router, subnet, and generated router seeds

A seed is the starting point of a discovery. There are three types of seeds:

- A router seed, which is specified by the IP address or DNS name of the router
- A subnet seed, which is specified by a subnet's IP address and subnet mask
- A generated router seed, which the AFO Monitoring identifies from a large set of possible addresses that have been detected by AFO Monitoring when the subnet partitioning option is selected

For example: a.b.c.d/n IP address 134.68.1.1 DNS name nmos\_dns.avaya.us.com  
255.255.123.1/134 The same seed can be used for multiple domains. Both IP v4 and v6 standard syntax is supported for seeds.

### Important:

For v6, AFO Monitoring does not support subnet discovery seeds larger than Class B or 16-bit address spaces.

The discovery begins with the seed(s) you provide and follows all leads from them, such as ARP cache entries and contiguous IP addresses, to discover the domain circumscribed by the configuration data you supply. Routers are the preferred type of discovery seed, enabling the simplest discovery. Once the router specified by the seed is discovered, the discovery proceeds with every device listed in the router's ARP cache, within the bounds defined by the discovery configuration.

Subnets are useful as discovery seeds also, but the resulting discoveries may be slower than those performed using routers. This is because the discovery probes all addresses in the subnet range, even if most are not in use, and addresses without corresponding devices are probed until timeout. Use subnets as discovery seeds if your network has no router or if important devices are missed when a router is used as the discovery seed.

For example, if you want to discover a network with two subnets and nothing beyond it: Add the IP Address of Router/Routers as a seed and then add the two subnets within the Limit to Subnets.

If you have a large subnet (larger than Class C), you can use a partitioning subnet seed instead of a regular subnet seed. A partitioning subnet seed partitions large subnets to find reachable devices and determines which ones are routers. For subnets that are between Class C and Class B in size, you can use either:

- A regular subnet seed, in which case every address in the range will be probed during discovery
- A partitioning seed, in which case a subnet will be probed and AFO Monitoring will use a set of routers within the subnet as seeds

You have the following options to configure your discovery:

- Seeds and seed groups—The starting point of a discovery (router or DNS name). You can group router seeds and subnet seeds, and merge results of subnet seeds into one campus.
- Limit to subnets—You can limit the extent of a discovery by specifying subnets to which the discovery should be restricted. Restricting the discovery to one or more specific subnets is useful for narrowing the scope of a discovery to a specific portion of your network, and devices that are not members of those subnets are not discovered.
- Exclusions—You can limit the extent of a discovery by specifying filters that exclude parts of your network that match the filter's conditions.

- Options—You can specify the manner in which the discovery crawls your network (Wide Area Crawl, VPN Crawl, DNS Lookup, Service by Port Scan, For All Devices, Avaya Only Discovery, and Storage Discovery).

**!** **Important:**

To discover a device properly, the device must respond to SNMP v1 queries.

---

## Media application discovery

If your discovery domain includes a media application server, the AFO Monitoring automatically discovers the following Avaya applications as part of its discovery process:

- Avaya Multimedia Conferencing
- Avaya NES Interactive Communications Portal (Avaya NES ICP)

For more information on supported releases, see *Deploying Avaya Fabric Orchestrator*, NN48100–101.

To have AFO Monitoring automatically discover these applications, you must include the media application server in the discovery recipe. You must also configure the device credentials for the media application server in the Device and Server Credentials Editor available from **Administration > Credentials**.

The applications discovered are displayed on the Network Topology page; select the Applications perspective to view them. To select the Applications perspective, go to **Network > Topology**, and then use the drop-down menu on the tree to the left. Select **Applications** from the drop-down menu.

---

## Manual device discovery

You can add a single device or the set of devices (within a subnet) to an existing domain with the Network Discovery. You can add devices by address or subnet range to an existing discovery without doing a complete rediscovery.

Go to **Network > Discovery**. The **Manual Discovery** bar button is under the main toolbar on the top left. The **Manual Discovery** bar button is enabled when a completed discovery is currently selected, and no other discovery is currently ongoing for the domain. If a manual discovery is ongoing for the selected domain the manual device discovery button is disabled.

You can use manual discovery when you want to add one or more devices to the discovery, without performing a complete rediscovery. You cannot use manual discovery to add a campus to an existing discovery, or to add a device located in an undiscovered LAN. The manual discovery does not update the element type counters in the summary table of the main discovery page. This device(s) to add was not in the completed discovery because of the following reasons:

- Devices added to network after most recent discovery.
- Devices previously not configured to allow their auto discovery by AFO Monitoring.

- Network previously not configured to allow auto discovery of new device(s) by AFO Monitoring.
- Problematic device(s) or network access cause for simple retry.

The following are the requirements for successful discovery of a device:

- Device must have an existing pre-discovered domain containing a pre-discovered LAN (routed subnet) to which the new device can be added.
- Subnets must not be larger than 256 addresses.

## Network Topology

The Network Topology enables you to view detailed information about the status of the managed objects in your network. Go to **Network > Topology**. The Network Topology provides the following tools for viewing network information:

- Toolbar (top of the screen)
- Tree browser
- Central browser
- Property table (If the table is not visible, click **Show property table**, in the toolbar.)
- Event browser pane

You can also use the Network Topology to access diagnostic tools, such as a ping utility, and to view inventory information. For more information, see [Diagnostic tools](#) on page 192.

### Network Topology handling of device errors

If an error occurs on a network device that is nested within a multi-layer design in the Network Topology, the color coding for that error is replicated on all layers above.

## General controls

The following general controls are available at the top of the **Network > Topology** page.

Tool	Description
<b>Top left Topology toolbar</b>	
Hide tree or Show tree	Hides or shows the navigation panel on the left hand side of the Network Topology page.
Hide property table or Show property table	Toggle to show or hide the Property Table panel. The Property table appears on the right hand side of the Network Topology page.
Hide events or Show events	Closes the Default Message Board and the Events by Concern : AFO Monitoring tabs that appear at the bottom of the Network Topology page.

*Table continues...*



Tool	Description
Auto Refresh	Controls auto-refresh on/off and interval of refresh if on.
Refresh	Refreshes the Network Topology contents.
Save Domain	Saves the domain.
<b>Drop-down menu</b>	
Perspective—located on the toolbar of the navigation tree	<p>The navigation tree changes and provides a different way to navigate the central browser view for each of the following options:</p> <ul style="list-style-type: none"> <li>• <b>Layer 2 Hierarchy:</b> In the central browser, you can navigate on the Layer 2 view of the network. The Layer 2 campus detail view, which is the existing view, displays a pod as one icon. You can view the details about the applications, servers, storage and network by double-clicking on the pod. The tree view lists campus, routers, switches, and border devices.</li> <li>• <b>VLAN Hierarchy:</b> The tree view lists all the VLANs configured for each campus. The right-click menu on the VLAN lists the details of the VLAN in the central browser.</li> <li>• <b>SPBM view:</b> The tree view displays SPBM components listed for an SPBM area. SPBM components include Backbone Core Bridges, Backbone Edge Bridges including backbone VLANs, Custom VLANs, and VRFs.</li> <li>• <b>Layer 3 Hierarchy:</b> Lists all the subnets in the navigation tree. Expand the items on the tree to view members; right-click to view details in the central browser.</li> <li>• <b>Custom Views:</b> Creates a custom view of the topology. The available icons permit you to perform the following actions. <ul style="list-style-type: none"> <li>- Create new sub-folder</li> <li>- Add custom view</li> <li>- Delete custom view</li> </ul> </li> <li>• <b>Device Types:</b> Lists the campus, devices, and interfaces in the navigation tree. Expand the items on the tree view to view details of the devices or interfaces; right-click the leaves of the tree to view details in the central browser.</li> <li>• <b>Applications:</b> This perspective in the tree lists the voice applications and the operating systems in the network. Right-click the leaf item in the tree to view details in the central browser.</li> <li>• <b>Scopes:</b> This perspective lists all predefined and user defined scopes. Select a leaf to view a table containing all the members in the scope. This option is very useful when a graphical view is too congested.</li> </ul>
<b>Middle content pane middle right toolbar</b>	
Export data	Exports data as image or SVG.

*Table continues...*

Tool	Description
Go To	Allows you to view or search the schematic details of a device or element using its IP Address, DNS Name, interface MAC address, or Management Name.
Up-pointing arrow	Moves the topology to a higher level.
Left-pointing arrow	Returns you to the previous layout.
Right-pointing arrow	Returns you to the next layout.
<b>Middle content pane middle left toolbar</b>	
Enter edit mode	Permits you to move icons on the topology.
save changes	Saves changes you have made to the topology.
discard changes	Discards changes you have made to the topology.
Add elements	Permits you to add a device to the topology. The Add button is enabled in the custom view.
Hide elements	Permits you to hide a device to the topology. The Add button is enabled in the custom view.
Edit	Permits you to edit the topology.
Set background image	Configures a background image onto the topology.
Show SMP link labels	Shows slot, module, and port label for links.
Hide name labels or show name labels	Hides name labels or shows them depending on what you select.
Zoom—percentage value box and slider	Adjusts the level of zoom in the topology viewer so as to fit more or less of the topology in the window. Two different controls are provided—a slider and a percentage value box.
Zoom to fit	Adjusts the level of zoom in the topology viewer to fit the window visible on your screen.
Layout	The global layout policies in the central browser are: hierarchical, symmetric, circular, horizontal grid, and compact.

---

## Tree browser

This section provides an overview of the tree browser or navigation tree, located in the left panel of the **Network > Topology** page.

The tree browser enables you to browse the contents of your network as a hierarchical tree with several perspectives to choose from.

The tree browser displays a tree that lists the entities within a domain. Left-clicking on '+' and '-' icons expands and contracts the tree folders. Expansion and selection of entities within the tree browser does not refresh the information displayed in the central browser, therefore the information displayed in the central browser may not reflect the node to which you navigate in the tree browser. To access the tree browser for a domain, the domain must be discovered by the server. If the domain of interest has not yet been discovered, you must discover (load) the domain. The

information that displays in the tree browser depends on the perspective you select. The available perspectives are:

- Layer 2 Hierarchy—Lists domain elements according to their OSI layer 2 functions.
- VLAN Hierarchy—Lists the logical nodes that constitute a virtual LAN in each campus.
- SPBM view—Lists the supported components in the SPBM area, including Backbone Core Bridges, Backbone Edge Bridges, Backbone VLANs, Custom VLANs, and VRFs.
- Layer 3 Hierarchy—Lists domain elements according to their OSI layer 3 organization, that is, by their IP addresses.
- Custom Views—Creates a custom view of the topology.
- Device Types—List items as being campuses, devices (managed or unmanaged), or interfaces (including AAL5, ATM, Ethernet, PPP, and a number of others).
- Applications—Lists the supported applications that are visible to the AFO Monitoring Server. Applications are listed under the following categories: Operating System and Voice.
- Scopes—List all scopes defined for the domain enabling you to list domain elements according to a scope to which they belong. Left-clicking on a tree node causes the central browser panel to show the requested node in its network context and shows members of the scope in tabular form.

The tree browser also provides menu options. When you right-click a node in the tree browser, a menu displays enabling you to access information about the selected item. The options that are available for a given node vary based on its context. The possible options are:

- Tables:
  - Interfaces
  - Physical Port Modules
  - Processors
  - Physical Elements
  - Show Bonded Channels
  - Connected Devices (All)
  - Connected Devices (Network)
  - Connected Devices (MLT)
  - Connected Devices (VoIP)
  - MLT Details Table
  - Devices
  - Network devices
- Schematics:
  - Layer 2 Details
  - MLT Schematic

## Network Monitoring overview

- Network Neighbors
- Show Campus
- Show Paths
- Details
- Subnet Details
- Physical Datacenter
- Configure:
  - Mark for Removal
  - Supervisor Settings
  - Overrides
- Tools:
  - Rediscover Campus
- Monitoring:
  - Add custom monitoring
- Diagnose:
  - MIB Query
  - MIB Browse
  - ICMP Ping
  - Trace Route
  - SNMP Get
  - Remote Ping
  - Remote Trace Route
- Tools:
  - Launch EM
  - Launch Secure EM
  - Rediscover Device
- Trends:
  - Other variables
  - Bridge Num VLANs
  - Bridge VLAN delete count
  - CPU busy
  - CPU busy – rolling average
  - Controlled port count

- ICMP Response Time
- ISIS System Authentication Key Failures
- ISIS System Type Mismatches
- ISIS System LSP Database Overloads
- ISIS System LSP Errors
- ISIS System Manual Address Drops
- ISIS System Max Sequence Exceeds
- ISIS System Own LSP Purges
- ISIS System Partition Changes
- ISIS System SPF Runs
- ISIS System Sequence Skips
- ISIS System
- MST CIST new root bridge count
- MST CIST top change count
- MST region config change count
- Percent IO Memory Free Low Watermark
- Percent Processor Memory Free Low Watermark
- Percent Processor Memory Used
- Processor Memory Free
- Processor Memory Used
- SNMP Response Time
- STP topology changes count
- TCP Out Segs
- TCP Retrans Segs
- TCP Segment Retransmit Percent
- Temperature State
- Temperature value
- rcKhiPerformanceCurrentOutError
- Show VM Host
- Show Events
- Show Dashboard
- Properties
- VoIP Devices

- Details
- Subnet Details
- Physical Data Center
- Mark for Removal
- Supervisor Settings
- Connections — Displays connections of the selected node.
- VLAN view — Displays the VLAN view of the selected node.
- MLT (Multi-Link Trunking) connections
- MLT interfaces
- MLT view
- Network connections.
- VoIP connections
- VoIP devices
- Details (All)
- Physical children
- WAN connections
- Subnet map
- Layer 7 All Dependencies
- Layer 7 Client Dependencies
- Layer 2 All Dependencies
- Layer 2 Client Dependencies
- Layer 2 Server Dependencies
- Layer 7 Server Dependencies
- Applications
- Services

 **Note:**

Applications and services are similar because they refer to software running in a server or any computer platform. Software that serves only one purpose is an application. An application serving other applications is known as a service. For AFO Monitoring, http is a service on the CM; and a phone has a phone application. Another explanation is that services are detected by a port scan, meaning that software listening on a well known port is a service.

Depending on the item you select, the double-click action on a tree browser item has a default behavior. If the item is a folder or any icon with a + in front of it, then the item or folder is expanded to show sub folders or sub items. If the item or folder is expanded with a - in front of it, then it is

collapsed. If the icon has no + or - in front of it, then the double-click action takes the central pane view to that item. If you double-click on an icon, then there is a right-click menu associated with the item.

You can see if there are faults on sub items in the tree view without expanding it. Tree view color propagation is available in the Layer 2, Layer 3 and VLAN perspectives only. A partial color spot on one edge of the folder or icon in the collapsed state indicates that there is a fault on some element inside that is partially impairing functionality. The color of the spot indicates the severity of the impairment. A full color spot outside of the icon indicates that there is a full impairment inside one of the items in the icon. The color of the spot indicates the highest severity.

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## Central browser

This section provides an overview of the central browser, located in the middle panel of the Network Topology page. Go to **Network > Topology** to access these options. The central browser panel acts as a Topology Viewer or Table Viewer based on the perspective being used.

The central browser provides a graphical display of the network topology, which enables you to visualize a network as a schematic of icons connected by lines.

The central browser permits you to move icons, save the new layout, and share it for other users to see. You can enter the edit mode to change a view, save after editing a view, or revert to the previous view. To move icons, click the enter edit mode button and then select the icons to move. After you move the icons, you can save the view, and then you can make the view visible to other users by checking Share with other users, or you can keep the view private. You can enable a shared view for other users to edit, or enable the shared view as read only for other users to view.

The table view in the central browser displays groups of network elements in row/column form and provides information that is best shown in tabular format, such as processes running on a server, the databases running on a server, scope members, and listings the interfaces of a device.

### VLAN

Select the VLAN Hierarchy in the perspective menu, which is the top left drop-down menu for **Network > Topology** to list the VLANs in a campus. Right-click on a VLAN to show the VLAN view in the central browser.

### Scopes

When viewing scopes, the tree browser shows the scopes, and the central browser shows a table of all members of the scope. To view scopes, in the **Network > Topology** section, select scopes from the drop-down menu on the top left above the tree browser.

#### Note:

When viewing scope members for ESXi devices, it is normal for negative values to appear in the Index column.

The following table describes the menu options when you right-click on an icon in the central browser. Not all options are available for all icons.

Menu option	Device Group	Description
Tables	Avaya POD	Provides the following details about the Avaya POD in a table format: <ul style="list-style-type: none"> <li>• Show Devices—Displays a table with information about the devices that are connected to the pod.</li> </ul>
	Campus	Provides the following details about the campus in a table format: <ul style="list-style-type: none"> <li>• Devices—Displays a table with information about the devices that are connected to a campus.</li> <li>• Network Devices—Displays a table with information about the network devices connected to a campus.</li> <li>• MLT Details Table—Displays a table with information about the MLT details associated to devices connected to a campus.</li> <li>• campusVoIPDevices—Displays a table with information about VoIP devices associated with a campus.</li> </ul>
	Device	Provides the following details about the device in a table format: <ul style="list-style-type: none"> <li>• Interfaces—Displays a table with information about the interfaces associated with the selected device</li> <li>• Interface Groups—Displays a table with information about the interface groups associated with the selected device.</li> <li>• Physical Elements—Displays a table with information about the physical elements associated with the selected device.</li> <li>• Show Bonded Channels—Displays a table with information about the bonded channels associated with the selected device.</li> <li>• Connected Devices (All)—Displays a table with information about all connected devices associated with the selected device.</li> <li>• Connected Devices (Network)—Displays a table with information about network connected devices associated with the selected device.</li> <li>• Connected Devices (MLT)—Displays a table with information about MLT connected devices associated with the selected device.</li> <li>• Connected Devices (VoIP)—Displays a table with information about VoIP connected devices associated with the selected device.</li> <li>• MLT Details Table—Displays a table with MLT details for the selected device.</li> </ul>

*Table continues...*



Menu option	Device Group	Description
		<ul style="list-style-type: none"> <li>Stack Units—Displays a table with the devices connected to the stacked unit.</li> </ul> <p><b>* Note:</b> After you select a table, you can select another table for the same device from the drop-down list available at the top of the central browser.</p>
	ESXi	<p>Provides the following details about the ESXi device in a table format:</p> <ul style="list-style-type: none"> <li>Interfaces—Displays a table with information about the interfaces associated with the selected device</li> </ul> <p><b>* Note:</b> When viewing scope members for ESXi devices, it is normal for negative values to appear in the Index column.</p> <ul style="list-style-type: none"> <li>Processors—Displays a table with information about the processors associated with the selected device.</li> <li>Physical Elements—Displays a table with information about the physical elements associated with the selected device.</li> <li>Show File Systems—Displays a table with information about the file systems associated with the selected device.</li> <li>Show Applications—Displays a table with information about the applications associated with the selected device.</li> <li>Show Services—Displays a table with information about the services associated with the selected device.</li> </ul>
Schematics	Avaya POD	<p>Provides the following schematic information about the Avaya POD:</p> <ul style="list-style-type: none"> <li>Show Devices—Displays the schematic for the devices associated with Redrack.</li> </ul>
	Campus	<p>Provides the following schematic information about the campus:</p> <ul style="list-style-type: none"> <li>Details</li> <li>Subnet Details</li> <li>Physical Datacenter</li> </ul>
	Device	<p>Provides the following schematic information about the device:</p> <ul style="list-style-type: none"> <li>Layer 2 Details—Displays the domain element details according to their OSI layer 2 functions.</li> </ul>



*Table continues...*

Menu option	Device Group	Description
		<ul style="list-style-type: none"> <li>• MLT Schematic—Displays the MLT schematic for the selected device.</li> <li>• Network Neighbors—Provides access to the backbone neighborhood schematic view for a selected domain element. This view, intended for improved viewing of domain elements in very large domains, expands the view to show domain elements that are connected by one hop to the selected domain element.</li> <li>• Show Campus—Shifts view to the campus for the selected device.</li> <li>• Show Paths...—Enables you to view the shortest network path between any two points in the network. Show Paths is not a live path trace. Although interfaces may be end-points, intermediate interfaces are not shown along paths. Only intermediate devices are shown.</li> </ul>
	ESXi	<p>Provides the following schematic information about the ESXi device:</p> <ul style="list-style-type: none"> <li>• Layer 2 Details—Displays the domain element details according to their OSI layer 2 functions.</li> <li>• Show Paths...—Enables you to view the shortest network path between any two points in the network. Show Paths is not a live path trace. Although interfaces may be end-points, intermediate interfaces are not shown along paths. Only intermediate devices are shown.</li> </ul>
	G450	<p>Provides the following schematic information about the G450 device:</p> <ul style="list-style-type: none"> <li>• Layer 2 Details—Displays the domain element details according to their OSI layer 2 functions.</li> <li>• Network Neighbors—Provides access to the backbone neighborhood schematic view for a selected domain element. This view, intended for improved viewing of domain elements in very large domains, expands the view to show domain elements that are connected by one hop to the selected domain element.</li> <li>• Show Campus—Shifts view to the campus for the selected device.</li> <li>• Show Paths—Enables you to view the shortest network path between any two points in the network. Show Paths is not a live path trace. Although interfaces may be end-points, intermediate interfaces are not shown along paths. Only intermediate devices are shown.</li> </ul>

*Table continues...*

Menu option	Device Group	Description
Configure	Avaya POD Campus Device ESXi G450	Enables you to perform the following configuration actions for the Avaya POD, a campus, or a device: <ul style="list-style-type: none"> <li>• Mark for Removal—Marks the device for removal from the next discovery.</li> <li>• Supervision Settings—Enables you to define the supervision settings for the selected device. The values include the following: inherit, supervise, unsupervise.</li> <li>• Overrides...—Displays a table with configuration, scope, override, and value of the selected device or campus. You can add, delete or edit an override.</li> </ul>
Monitoring	Device	Enables you to perform the following configuration actions: <ul style="list-style-type: none"> <li>• Add custom monitoring</li> </ul>
Diagnose	Device ESXi G450	Enables you to perform the following diagnostic actions for the device: <ul style="list-style-type: none"> <li>• MIB Query</li> <li>• MIB Browse</li> <li>• ICMP Ping</li> <li>• Trace Route</li> <li>• SNMP Get</li> <li>• Remote Ping</li> <li>• Remote Traceroute</li> </ul>
Tools	Avaya POD	Provides a launch point for Pod Visualization Manager (PVM). The following tool is available for the Avaya POD: <ul style="list-style-type: none"> <li>• Launch PVM</li> </ul>
	Campus	Provides a launch point for commonly used device element management tools. The following tool is available for the campus: <ul style="list-style-type: none"> <li>• Rediscover Campus</li> </ul>
	Device	The following tools are available for the device: <ul style="list-style-type: none"> <li>• EM-Launch</li> <li>• HTTP-connection</li> <li>• Legacy-JDM-Launch</li> <li>• Rediscover Device</li> <li>• JDM-Launch</li> <li>• Launch EMC Unisphere</li> </ul>








*Table continues...*

Menu option	Device Group	Description
		<p> <b>Note:</b> JDM-Launch as a tool appears only for the devices that are capable of JDMRediscover Device.</p> <p> <b>Note:</b> Launch EMC Unisphere as a tool appears only for storage devices.</p>
	ESXi	<p>The following tools are available for the ESXi device:</p> <ul style="list-style-type: none"> <li>• HTTP Connect</li> <li>• Rediscover Device</li> <li>• VMware vCenter</li> </ul>
	G450	<p>The following tools are available for the G450 device:</p> <ul style="list-style-type: none"> <li>• EM Launch</li> <li>• Launch Secure EM</li> <li>• Rediscover Device</li> </ul>
Trends	Avaya POD Campus Device ESXi G450	Trends are performance graphs for devices or interfaces. The trends menu lists a collection of MITs that are configured and can be trended. For example, device CPU usage is a configured Monitored Information Type (MIT) that you can trend.
Show Events	Avaya POD Campus Device ESXi G450	Opens a tab in the in the bottom pane of the events browser, that displays all events for the selected element. The tab remains open until you manually delete the tab.
Show Dashboard	Avaya POD Campus Device ESXi G450	Opens the dashboard view with details of the selected Avaya POD, campus, or device.
Properties	Avaya POD Campus Device ESXi	Displays the Properties window for the selected device which shows the device properties and associated values.

*Table continues...*

Menu option	Device Group	Description
	G450	
Color-Coding of Domain Elements	Avaya POD Campus Device	Domain elements displayed in the schematic diagram are colored based on the messages that relate to them.

The following table lists the symbols used on the AFO Monitoring interface. Symbols in blue denote an Avaya device, and symbols in grey denote a non-Avaya device.

Device Type		Icon
Avaya Generic Router	Avaya Xylogics 5399	
	Avaya Nautica RAS 4000	
	Avaya VPN Branch Access Device	
Host		
Non-Avaya Router		
Non-Avaya L3 switch		
Non-Avaya L2 switch		
Secure Routers	Secure Router 1001/1001S	
	Secure Router 1002/1002E	
	Secure Router 1004/1004E	
	Secure Router 4134	
	Secure Router 3120	
	Business Secure Router 252/222	
	Avaya VPN Router 1500	
Ethernet Switches	ES 325 Series	
	ES 425 Series	
	ES 450	
	ES 460 Series	

*Table continues...*


Device Type		Icon
	ES 470 Series	
	ERS 2500 Series	
	ERS 3500	
	ERS 3510-24T	
	ERS 4500 Series (4526, 4548, 4550)	
	ERS 1424T	
	VSP 4000 series	
	VSP 9000	
Avaya Legacy Ethernet Switches	Alteon 180e	
	Alteon 184	
	Alteon AD4	
	Alteon AD3	
	BayStack 28104	
	BayStack 28200	
	BayStack Orion	
	BayStack 350-12T	
	BayStack 3410 100BASE-T	
	BayStack 302T/F Ethernet Workgroup Switch	
	OPTeraMetro ESU 1800 DC	
	OPTeraMetro ESU 8003	
	Avaya OPTeraMetro Packet Edge	
	Avaya BayStack 100	
	Avaya 58000	
	Avaya BayStack 350	
	Avaya BayStack 303	
	Avaya BayStack 310	
	Avaya BayStack 410	
	Avaya Accelar 8132TX	
	Avaya BayStack 420	
	Avaya OPTeraMetro ESU 1200	
	Avaya BayStack 380	
	Avaya OPTeraMetro ESU 1450	
	Avaya OPTeraMetro ESU 1400	
	Avaya Centillion 100	

Table continues...






Device Type		Icon
	Avaya Centillion 301 Avaya Centillion 5000BH Avaya Centillion 50 Ethernet Avaya Centillion 50 Token Ring Avaya Centillion 5005BH	
Avaya Legacy Ethernet Switches	Avaya Accelar 1100 Avaya Accelar 1250 Avaya Accelar 1150 Avaya Accelar 1200 Avaya Accelar 1050 Avaya OPTeraMetro ESU 1800 AC Avaya ESU 1850AC Avaya ESU 1850DC	
Ethernet Routing Switches	ERS 8300 Series (8306, 8310) ERS 8600 Series (8603, 8606, 8610) ERS 5500 series (5510, 5520, 5530) ERS 1612G/1624F,1648T	
Avaya Legacy Switches	Avaya Passport 8100 Avaya OPTeraMetro ESU 8010 Avaya OPTeraMetro ESU 8010co Avaya OPTeraMetro ESU 8003 Avaya OPTeraMetro ESU 8006	
Server		
Single element monitoring		
Avaya Wireless end nodes		
Non-Avaya wireless end nodes		

Table continues...








Device Type		Icon
Wired end nodes		
Communications servers	CS 1000 Signaling Server	
	CS 1000 Call Server	
	Communication Server 2100	
	MCS 5100 System	
Generic Server		
Firewall		
VPN Routers (Contivity)	VPN Router 221	
	VPN Router 251	
	VPN Router 600	
	VPN Router 1010/1050	
	VPN Router 1100	
	VPN Router 1600	
	VPN Router 1700/1740/1750	
	VPN Router 2600	
	VPN Router 2700/2750	
	VPN Router 4600	
	VPN Router 5000	
	VPN Gateway 3050/3070	
Wireless LAN AP 2330/2330A, AP8120		
Wireless switches and gateways	Avaya Advanced Gateway AG2330MCR	
	Media Gateway (Gxx0 Gateways)	
	Wireless Security Switch 2350	
	Wireless Security Switch 2380	
	Wireless Security Switch 2360	
	Wireless Security Switch 2361	
	Wireless Gateway 7240/7250	

Table continues...









Device Type		Icon
Avaya Switched Firewall (NSF)		
Secure Network Access Switch 4050 Secure Wireless Controller Switch WLAN 8180		
Avaya Legacy hubs	Avaya MX 200	
	Avaya Synoptics Baystack 3000	
	Avaya Synoptics Baystack 3030	
	Avaya LattisNet 2310 Ethernet	
	Avaya LattisNet 2810 Ethernet	
	Avaya Synoptics Token Ring 271x	
	Avaya Synoptics BayStack 291X FDDI	
	Avaya Synoptics BayStack 281X enet	
	Avaya Synoptics 5000 / 5050	
	Avaya 281xSA	
	Avaya Synoptics 810M	
	Avaya 271xSA	
	Avaya 5DN00x	
	Avaya BayStack Ethernet (Hub)	
	Avaya BayStack Token Ring (Hub)	
	Avaya BayStack 150	
	Avaya BayStack 200	
	BayStack 3410 100BASE-T	
BayStack Ethernet NMM 810M		
BayStack 100BASE-T Advanced NMM Agent		
Stacks		
Invisible device (can occur in path trace views)		
Alteon Application switch (2208/2216/2216-E/2224/2424/2424-E/2424-SSL/2424-SSL-E/3408/3408-E)		

Table continues...

































Device Type		Icon
Hub		
Avaya IP Deskphone	SIP and H.323 IP Phones	
	1600 Series IP Phones	
	4800 Series IP Phones	
	9600 Series IP Phones	
Printer		
Business Communications Manager (BCM, BCM50, BCM200/400, BCM450) Multiprotocol Router Session Manager (ASM) System Manager (SMGR)		
Belden router		
Belden switch		
Wireless Access Point (7220/7220Duo/7215/7215Duo/8120)		
WLAN Application Gateway 2246 WLAN IP Telephony Manager 2245		
Wireless Bridge 7230/7230 Ext		
Unspecified IP device/Unmanaged device		
Workstation		
PC behind phone		
Ethernet Circuit		

Table continues...

Device Type	Icon
Ethernet Interface	
VLAN	
Subnet/LAN	
Domain	
VMs	
VM hosts	
VM interfaces	
Uninterrupted power supplies (UPS) devices	
Redrack	
AVSTOR	
Third party multitenant application	
Avaya management application	
Third party management application	

*Table continues...*

Device Type		Icon
Storage system		
Building/Campus		
metro_dwdm switch	Avaya Optical Metro 5000	
Fault on device: the background color indicates the fault		
Unsupervised device		
Device marked for removal		

## Layout options

The layout options enable you to choose a schematic display of the network topology. You access the network topology through **Network > Topology**. The following global layout options are available in the central browser toolbar, under Layout:

- Hierarchical—The hierarchical layout lays out the icons hierarchically.
- Symmetric—The symmetric layout lays out the icons with a tendency towards symmetry.
- Circular—The circular layout lays out the icons in a circle.
- Horizontal Grid—The horizontal grid layout lays out the icons in a horizontal line.
- Compact—The compact layout lays out the icons in an efficiently compressed manner.

### Important:

You can move icons in the custom views only, after you click **Enter edit mode**.

For each type of schematic, the AFO Monitoring chooses a layout algorithm by default as follows:

Type of schematic	Layout algorithm
WAN view	Symmetric
Campus view	Hierarchical
Subnet view	Symmetric

*Table continues...*

Type of schematic	Layout algorithm
Backbone Neighborhood	Hierarchical
Layer-2 Details	Hierarchical
Path Trace	Hierarchical
Application Dependency	Hierarchical

When a user modifies the layout algorithm for a particular schematic, the chosen algorithm becomes the default for that specific view. Other views within the same domain or other domains remain unaffected. View selections are shared by all users, so that a change by one user applies to all users.

Users share all predefined view selections. You can share custom view layouts only if you share the layout by checking Share with other users. After you change and share a layout, other users can view the layout.

After you select a layout option, global or AFO Monitoring defined, the selection you make overrides the settings that are described in the preceding table.

The predefined layout changes remain in effect until the AFO Monitoring restarts. If any two users choose different layouts for the same view at the same time, then the change made by the last user is saved.

After you enable editing through the central browser toolbar in **Network > Topology**, and make changes, you can save the changes.

You can use the following icons to modify the layout of the topology map:

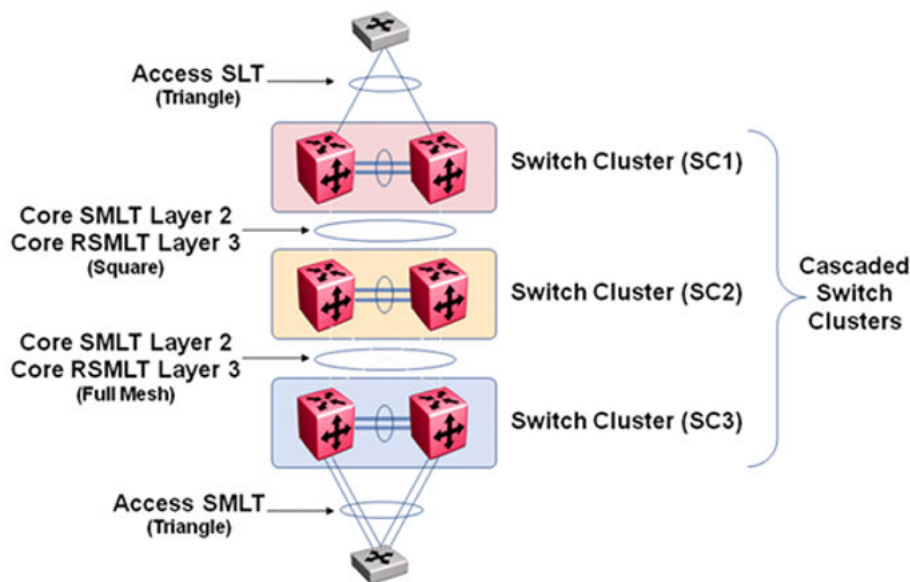
- Zoom to fit—Adjusts the view to fit the contents pane.
- Global layouts—Lists of available global topology layouts. Global layouts are disabled in all custom views.
- Show/Hide SMP link labels—Toggles to display or hide the slot/module/port on links.
- Panning—Shifts the view from one area of the contents pane to another area. You can pan in the following two ways:
  - By right-clicking in the central area; the pointer turns to a hand grab gesture that you hold and move.
  - By using the horizontal and vertical scroll bars.
- Magnification—Magnifies an area on the topology. To magnify an area, press and hold down the shift key, right-click and drag the mouse over an area; the pointer turns to a magnification glass and magnifies an area of the topology.
- Schematic zoom level—Adjusts the zoom level in the contents pane. You can use the percentage field or the zoom bar to adjust the schematic zoom level.
- Go to—Shift the current topology view to another view.
- Enter edit mode—Add link, Add icon, Public or private settings.
- Add links—Add a link to the current topology map. Solid lines show actual physical connections. Dotted lines show logical connections or data path between elements.

- Add—Add an icon to the current topology map.
- Discard changes—In the custom view, discards all changes and reverts to the previous view.
- Download background image—Downloads a background image.
- SMP—Show slot/module/port label for links.

## MLT/SMLT schematic layout

The topology map is enhanced to keep the groups of devices participating in an MLT/SMLT together on the campus detail view so that the SMLT configuration (triangle, square, or mesh) is evident. The possible layouts are grouped at the core for 2, 4, or 6 switches showing the MLT/SMLT and IST links.

The following diagram illustrates the network topologies.



**Figure 1: Network topology**

A number of edge switches connect to the core switches by simple or SMLT links. The layout does not make an attempt to keep the entire range of edge switches close, because the number of edge switches in a real network can be large and the topology map becomes congested if all edge switches are kept close. However, the user has the move icons feature to make customizations or adjustments to the automatic layout provided by AFO Monitoring.

## Map background controls

After you enter the edit mode, in the central browser for **Network > Topology**, you can import a background image by clicking the following button.



To set a background image, click the download background image button, and browse to the required file. You can set background images with JPEG, GIFF, and PNG files. To save the

background image, click **save schematic** in the central browser toolbar, and enter information in the Save schematic dialog box. The schematic is saved in the Custom views perspective under the public or private folder.

---

## Properties table

This section provides an overview of the properties table, located on the right side of the Network Topology page. Access Network Topology by clicking **Network > Topology**.

To view the properties table, on the Network Topology menu bar on the top left, click **Show property table**, or in the contents pane, right-click on a device or campus. To remove the properties table from view, click **Hide property table**.

The properties table displays the variables, or properties, and corresponding values for a selected domain element and enables you to edit settings for some of those variables. Properties are grouped in different categories that you can expand or collapse. Each category includes various types of information about the element, and vary based on the class or element. The name or value that appears in a collapsed property is the most common property in that group.

The standard properties that are shared by almost all network elements include:

- Name
- Description
- Network Configuration
- Management State
- Management Config


You can change the name of a network device by editing the .xml file located at /knowledge/product/model/nameChoosers under the AFO Monitoring directory. The name values are represented by the following string in the xml file:

```
<propertyNames>
<string-list>
<string>managementName</string>
<string>dnsName</string>
<string>winsName</string>
<string>hostAddress</string>
</string-list>
</propertyNames>
```

This means that AFO Monitoring will first look for a non-null management name (sysName for SNMP devices), then a non-null dns name, then a non-null wins name, and lastly, it will use the host address of the device if no other name is defined. You can modify or create new files in this directory to customize the best name property. You can even create a separate xml file for each device type – Host, Router, Switch, and so on.


## Variable definitions

The following table describes information in the properties table that displays on the right with **Network > Topology**.

Variable	Definition
Name	<p>Displays the following name information about the device.</p> <ul style="list-style-type: none"> <li>• Name—The name is determined via an algorithm that searches a series of names for a device. It first looks to any custom name defined by the user (see below) and then continues to search for a DNS name, SNMP management name, WIN name, and IP address and selects the first of those names it finds a result for as the name.</li> <li>• Host Address—The device IP address. Click the drop down arrow to select another IP address associated to the device.</li> <li>• Custom Name—Enables users to override the Name by specifying their own name for the element via this property. Note: When users do a discovery for the first time, no devices have a custom name and therefore it goes through the basic algorithm to find a name.</li> </ul> <p> <b>Important:</b></p> <p style="padding-left: 40px;">After you create a custom name, you must go to the Network Discovery page and click <b>Save</b> to save the domain. If you do not save the domain, the custom name is not saved after an AFO Monitoring restore or restart.</p> <ul style="list-style-type: none"> <li>• DNS Name—The DNS name of the device.</li> <li>• Management Name—The management name of the device, which may be the same as the name of the device.</li> <li>• Qualified Name—The qualified name of the device, which may be the same as the name of the device.</li> <li>• ID—The ID number for the device.</li> <li>• WINS Name—The WINS name for the device.</li> </ul>
Description	<p>Displays the following information that describes the element.</p> <ul style="list-style-type: none"> <li>• Description</li> <li>• Device Type</li> <li>• External Classification</li> <li>• Hardware Version</li> <li>• Location</li> <li>• Manufacturer</li> <li>• OEM Model Name</li> <li>• Product ID</li> <li>• Serial Number</li> </ul>
Network Configuration	<p>Displays the following network information.</p> <ul style="list-style-type: none"> <li>• Host Address</li> <li>• Interface Info</li> </ul>

*Table continues...*



Variable	Definition
	<ul style="list-style-type: none"> <li>Layer3 Vlan Interface Info</li> </ul>
Management State	<p>Displays the following information about the management of the element.</p> <ul style="list-style-type: none"> <li>Alarm State</li> <li>Subelement Alarm State</li> <li>Supervised—Like invisibility, only governs whether or not element will be monitored for events.</li> <li>Marked for Removal—This is referenced during the merge step of rediscoveries. Set this to true if the element is no longer in the network and you want to override the discovery engine's "keep missing equipment" policy.</li> </ul> <p> <b>Note:</b></p> <p>If an element is still on the network, discovery will not remove it from the model.</p> <ul style="list-style-type: none"> <li>Invisible—Yes/No/Inherit. Inherit by default except for campus element which have value false. The invisibility property inherits downwards by containment. So, set a campus invisible and all elements within will be invisible. Containment hierarchy is campus - device - interface.</li> <li>First Discovered</li> <li>Last Discovered</li> </ul>

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## Event browser pane

The event browser pane appears at the bottom of the Network Topology page and permits you to view messages for events in the network that you manage.

---

## Integrated dashboards

Avaya Fabric Orchestrator Monitoring (AFO Monitoring) offers multiple levels of dashboards to monitor Avaya Aura system health. You can monitor network health, application and server health, device health, trunk utilization, and power savings.

## Network Overview dashboard

The Network Overview dashboard displays dashlets containing information about the Avaya Aura network health. The dashlets are:

- Events by Element—Event summary dashlet showing the current event count, based on severity, for Aura servers.
- Events by Concern—Clicking on a specific Aura Server opens a transient dashboard page for that server.
- Router Availability—Availability dashlet showing current and historical availability for all discovered Routers.
- Router Status—Element Status Summary dashlet showing alerts status for all discovered Routers.
- Avaya Server and Gateway Availability—Availability dashlet showing current and historical availability for Avaya servers and gateways.
- Avaya Servers and Gateway Status—Server and gateway status dashlet showing alerts status for Avaya servers and gateways.
- IP Phone Availability—Availability dashlet showing current and historical availability for endpoints.
- L3 Switch Availability—Availability dashlet showing current and historical availability for all discovered Layer-3 switches.
- L3 Switch Status—Element Status Summary dashlet showing alerts status for all discovered Layer-3 switches.

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## Device health

You can open a transient dashboard page for a server by clicking on a specific Aura server located on the Network Overview page. Details about the server are visible on various dashlets on the dashboard.

The common dashlets that appear on transient dashboards include the following:

- Properties—Displays the properties of a specific server.
- Node Events—Displays node events of a specific server.
- Availability Report—Displays the Availability Report for a specific server.
- Node Performance—Displays KPI gauges for a specific server. The KPI gauges are: % CPU, % Memory, % TCP Retransmit.
- Interface Status Summary—Displays the interface status summary for a specific device.
- Top Interfaces by Total Usage—Displays the top interfaces by total usage for a specific device.
- Event Summary—Displays the current event count for Aura servers based on severity.

You can delve deeper into the device health from the dashboard by clicking on an interface item in the Availability, or Status. The AFO Monitoring opens a transient dashboard for the specific interface.

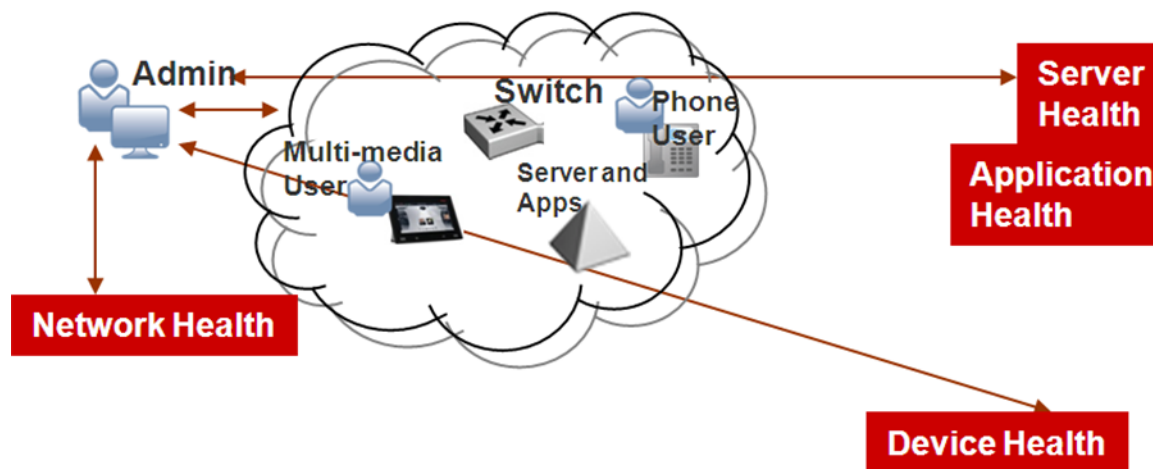
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## Navigation between dashboards

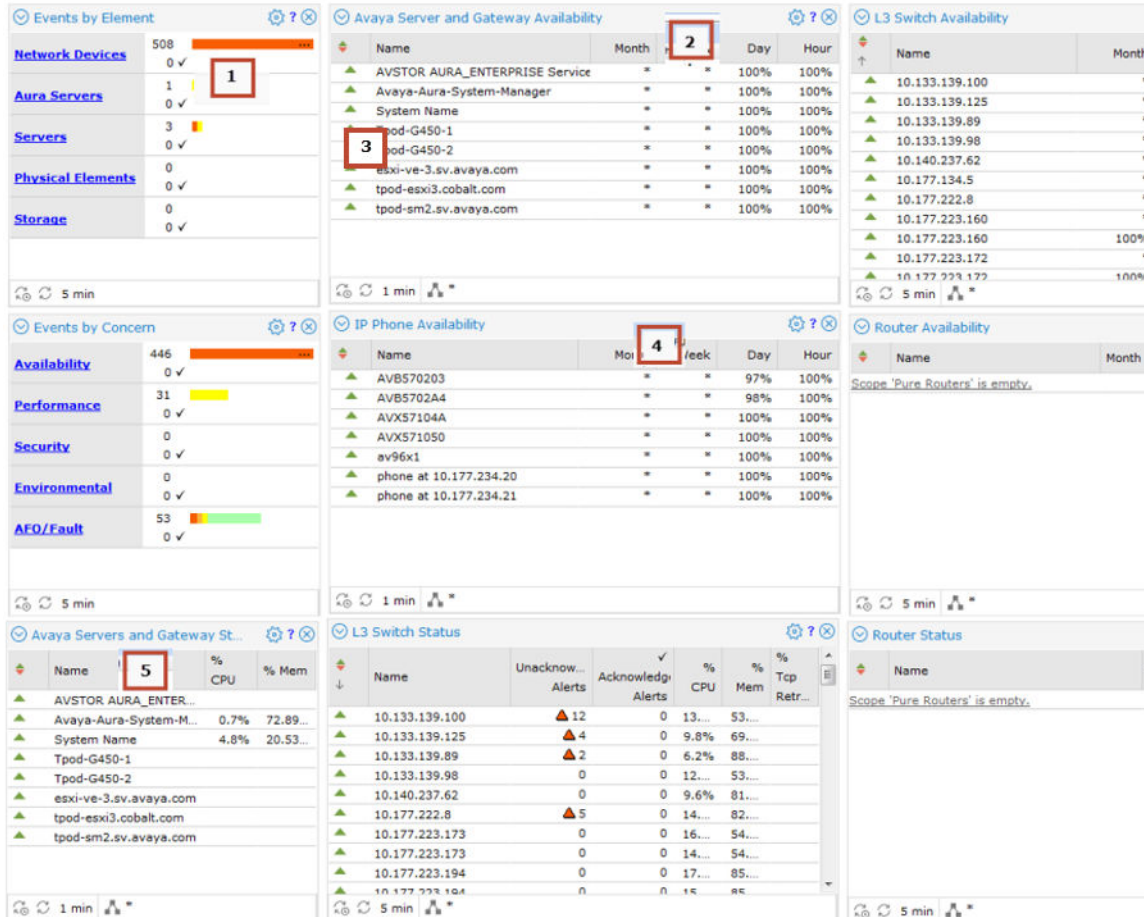
The following figures demonstrate how you can navigate between dashboards to delve deeper into device or system health.

### Integrated dashboards for Aura System Health

The following figure demonstrates the multiple levels of dashboards used to monitor Aura System Health.



The following figure demonstrates a general overview of an integrated dashboard for Aura System Health.



1. Event summary dashlet showing current event count (based on severity) for Aura servers
2. Availability dashlet showing current and historical availability for the servers and gateways
3. Click on a specific server or gateway to open a transient dashboard page for that server or gateway
4. Availability dashlet showing current and historical availability for endpoints
5. Servers and gateway status dashlet showing alerts status for servers and gateways

## Top-N Reports

You can access Top-N availability and Inventory reports through the AFO menu bar. Click the **Network** tab to display the overview. The Top-N Reports display the top ten dashlets for CPU and memory utilization, and for interface statistics such as utilization, traffic, errors and discards.

The Top-N Reports include the following:

- Top 10 Devices by CPU Utilization
- Top 10 Devices by Processor Memory Used
- Top 10 Interfaces by In Util

- Top 10 Interfaces by Out Util
- Top 10 Interfaces by Traffic In
- Top 10 Interfaces by Traffic Out
- Top 10 Interfaces by Errors In
- Top 10 Interfaces by Errors Out
- Top 10 Interfaces by Discards In
- Top 10 Interfaces by Discards Out

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## Power Savings dashboard

The Power Savings dashboard displays dashlets containing information about total network power savings and top switch watt reduction. The Power Savings dashboard includes the following dashlets:

- Average daily energy savings (kWh) vs. Total real-time savings
- Top Switches by Total Watt Reduction
- Top Switches by PoE Watt Reduction
- Top Switches by Slowdown Watt Reduction

### \* Note:

The Power Savings dashboard only displays information for devices that support PoE.

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## Dashboard configuration

A dashboard displays information about the system health, and consists of different dashlets that delve deeper into the network health. You can configure the dashboard by adding, deleting, or cloning a dashlet.

The dashboard configuration buttons refer to the different dashlets that you can add to the dashboard. You can drag and drop a dashlet onto the dashboard canvas, and use the dashlet wizard to configure each dashlet.

You can access the dashboard information by clicking **Network**, and the Overview window appears. To access the dashboard configuration buttons, click the grey down arrow in the top middle of the browser screen.

The following figure displays the dashboard configuration buttons.



The following list describes the dashboard configuration buttons.

1. Event Listing
2. Event Summary
3. Availability Report
4. Element Status Summary
5. Top-N Report
6. Dial Gauge
7. Trend Chart
8. Pie Chart
9. Element Property Table
10. Schematic

To view the dashboard configuration buttons, click the following icon.



To hide the dashboard configuration button, click the following icon.



To configure a dashboard, use the icons on the dashboard menu bar to perform the following tasks.

- Add a dashboard
- Delete a dashboard
- Save a dashboard
- Clone a dashboard
- Edit a dashboard

When you add a dashboard, the system asks if you want to save as public or private.

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## Events tab

You can view messages for events in the network that you manage using the Events tab.

The Events tab interprets the faults across the network and displays the interpretation. The interpretation is refined, diagnosed, analyzed, and researched on the basis of every event.

To access the Events tab, select **Network > Events**.

For information about the Events tab procedures, see [Viewing Events](#) on page 177.

The Events tab displays message boards, one message board per tab. A tab represents an automatic grouping of an event. Each message board can show messages for events taking place

in the domains managed by the product. The Events tab contains a single message board by default, but you can create additional message boards as needed. You can configure individual message boards to provide different views of message activity by changing the filters applied, or by sorting or hiding columns.

By default, a message board displays messages for all domains loaded on the server. However, you can filter message boards to achieve various display results that, for example, correspond to a specific scope, set of event types, or match specific criteria such as priority or event type.

**! Important:**

Taking an action against a message affects the message in all the message boards in which it appears (for example, clearing a message clears it from all message boards). Event persistence depends on the event type and associated MITs. Some events do not persist on a server restart or monitoring restart, primarily Self Event, IP AvailabilityFailure, and SNMPAgentFailure. The engine will re-evaluate and post these events if required.

You can control the messages on the message board by using the controls provided on the menu bar of the Event Browser page.

The following table describes the controls available to manage the messages on the Event Browser page:

Controls	Description
Add a new message board	Adds a message board.
Delete selected message board	Deletes the current board (second icon from the left).
Rename selected message board	Renames the current board.
Configure filter for selected message board	Displays message board filter options. Each message board can have its own filter.
Auto refresh	Allows you to specify the time interval at which message board information is refreshed. After you click Auto refresh, a window appears that allows you to select the appropriate refresh interval. If the auto refresh settings are different from the message board settings then they affect the entire Event Browser.
Refresh	Refreshes the message board. Refresh is not only for a single message board, it affects the entire Event Browser.
Export selected message board	Allows you to export the contents of the current message board as an XML file (with the applied filter). Exports the current message board and not the entire Event Browser content.
Message board operation	Allows you to acknowledge, unacknowledge, annotate, or clear all information on the message board.
Dispose transient message boards	Disposes of transient message boards.

*Table continues...*

Controls	Description
Group by:	Specifies how to group events. You can select the following: <ul style="list-style-type: none"> <li>• None</li> <li>• Ack.</li> <li>• Priv.</li> <li>• Source Address</li> <li>• Target Address</li> <li>• Annotated</li> <li>• Device</li> <li>• Correlation</li> <li>• Event Name</li> <li>• Information Available</li> <li>• Sub.</li> <li>• Domain</li> <li>• Subject</li> <li>• Received</li> <li>• Rep. Count</li> <li>• Summary</li> <li>• Last Updated</li> </ul>

---

## Fault correlation

AFO Monitoring correlates network faults to events in the Events tab and displays a color-coded priority of the faults. If an error occurs on a network device that is nested within a multi-layer design in the Network Topology, the color coding for that error is replicated on all layers.

The following diagnostic tools are available on the client browser for troubleshooting:

- Traps, syslogs and the polling of MIBs to monitor faults
- Monitoring with defaults you can use out of the box
- Tools to troubleshoot are available on the client browser
- CLI and special scripts if you have an Advance License
- Availability events on all devices and applications
- POS diagnostics



## Message detail

The Message Detail window shows the complete set of information pertaining to a received message.

First go to **Network > Events**. You can view the Message Detail window by performing either one of the following:

- Double-clicking on a message
- Right-clicking on the message row, and then selecting the Message Detail

The following table describes the Message Detail window tabs.

Feature	Description
Messages tab	Displays information about the basic event message, the event type description, and the annotations for any actions or responses that are executed. The Messages tab provides the message text, the date when the message was last updated, the event name, the event ID associated with the message, event description, and advice.
Attributes tab	Displays the attributes of the event along with the ipAddress, which is the IP Address of the device where the event occurred.  The Attributes tab includes information that may vary from one event to another.
Annotations tab	Displays annotations that are associated with the message. You can add an annotation by clicking <b>Add</b> .
Related Messages tab	Displays a list of downstream events (subsequent messages related to the message of interest) and upstream events (preceding messages related to the message of interest). These lists identify the priority, correlation, event type, and other relevant information about the related messages. There are two mini-message boards that show the associated events.

## Message properties

A message board, in the **Network > Events** tab, lists messages in rows with the columns representing the properties of the messages.

The following are the various properties for each message as shown in the message board.

Message Properties	Description
Ack (Acknowledged)	A check mark indicates that the message has been acknowledged. No check mark indicates the message has not been acknowledged.

*Table continues...*

Message Properties	Description
Pri (Priority)	<p>The integer corresponding to the priority of the event. All priorities are selected by default. The Initial event priority is configured in the monitored information types Configuration Editor. Valid priorities include the following:</p> <ul style="list-style-type: none"> <li>• Red (critical)</li> <li>• Dark Orange (high)</li> <li>• Orange (medium)</li> <li>• Yellow (low)</li> <li>• Turquoise (warning) and</li> <li>• Green (information)</li> </ul>
Annotations (pencil icon)	<p>The presence of an annotation is indicated by a pencil icon in this column. Click the pencil icon and the Message Detail box appears. Browse to the annotation tab. Click Annotation to add annotation to the message.</p> <p>The product annotates a message when it executes an action in response to an event, when a message is acknowledged, or when a message is unacknowledged.</p> <p>You can add notes to the messages by right-clicking a row, and then selecting Annotate.</p> <p>You can also add an annotation from the Annotation tab.</p>
Related messages (I icon)	<p>The I icon indicates if another message is associated with the current one. For example, two messages that are correlated are considered to be related. Related messages are listed in the Message Detail window.</p>
Correlation	<p>The name of message correlation definition applied to a message. A plus sign (+) appears in this column when there are related events for the message. When the plus sign (+) sign is clicked it shows related events (which are also shown in the message detail dialog box). This only appears while a fault is active.</p>
Event Type	The name of the event type.
Sub. (Sub-message count)	An integer count of other events in (correlated under) the line item.
Subject	The subject associated with the event.

*Table continues...*

Message Properties	Description
Device	The name of the device from which the event originates if you select a device in the topology view and select Show events from the menu. The device is always listed as AFO Monitoring for events about AFO Monitoring.
Summary	A summary of the event.
Received	The date and time of the first repetition of this event (to see the time of most recent repetition, you can view the details of the message).
Rep. (Repetition) Count	The number of times the message is posted. Messages are not received directly from source devices but are inferred by the Knowledge Base Manager engine from a variety of sources and situations.

## Message filters

You access the filters panel by clicking the Filters icon in the top right toolbar of the **Network > Events** tab.

You can configure each message board in the Events tab to show different message information. By default, a message board displays messages for all domains that are loaded on the server. Using this panel, you can filter each message board so that, among other things, it shows only those messages that correspond to a specific scope, set of event types, or by criteria such as priority or network.

The AFO Monitoring retains your changes with other preferences you have set for your user account.

The following table describes the various types of filters you can apply to the messages on the message board.

Message Properties	Description
Priorities	Allows you to turn on or off viewing of each priority by selecting or deselecting the appropriate check boxes. The colors correspond to the following priority levels: <ul style="list-style-type: none"> <li>• Red (critical)</li> <li>• Dark Orange (high)</li> <li>• Orange (medium)</li> <li>• Yellow (low)</li> <li>• Turquoise (warning)</li> </ul>

*Table continues...*

Message Properties	Description
	• Green (information)
Updated after	Allows you to only show events updated after a specified time.
Updated before	Allows you to only show events updated before a specified time.
Hide acknowledged	Allows you to show or hide acknowledged events (check box).
Do not apply to subsuming (e.g. causing) events	Allows you to not apply the filter to subsuming events.
IP filter pattern	Allows you to specify a filter pattern based on the IP address.
Scopes	Allows you to show only events whose subject is a member of the selected scope.
Events	Allows you to show only events that are one of the set of checked events.

---

## Event History

To access the Event History, select **Network > Event History**. On the Event History page, you can view one or more tabs with each tab corresponding to a filter.

The Event History keeps track of every event that occurs, based on the notifications received from the network. Since these events may have been cleared from the Event Browser, you can use the Event History to view cleared events. The Event History displays individual events; therefore, multiple events that are correlated into a single event on the Event Browser are displayed as individual events on the Event History page.

The following general controls are available on the Event History page:

- **New Filter**—Creates a new tab with a new filter.
- **Create filter from selection**—Creates a new tab with a new filter that is preset from current row values.
- **Clone Filter**—Creates a copy of the currently selected filter.
- **Rename Filter**—You can rename the currently selected filter.
- **Edit Filter**—Edits the currently selected filter.
- **Delete Filter**—Deletes the currently selected filter.
- **Purge Configuration**—To save disk space and remove event history records automatically, use the purge configuration settings. You can specify the maximum age in hours, days, or weeks. Alternately, you can specify the maximum number of records to keep. The most recent event history set by these configurations are retained, and the rest are purged.
- **Refresh**—Refreshes the data on the current or active filter.

---

## Action Console

The Action Console displays the action schedules as well as the logs for server-based and web client-based actions. AFO Monitoring records and displays the output and error logs from the actions in the bottom pane.

To view the Action Console, select **Network > Action Console**.

The Action Schedules pane includes the following fields:

- Schedule Name—Schedule name
- Next Occurrence—Next occurrence of the schedule
- Schedule Type—Type of schedule

The Active Actions and Action History panes includes the following fields:

- Action—Action name
- Subject—Name of the network element that the action is for
- User —User who performed the action
- Start Time—Action start time
- End Time—Action end time
- Status—Final status of the action: complete, aborted, or started
- Event Type—Event triggering the action
- Event ID—Unique ID of the event triggering the action
- Related Event Type—Related event that is correlated to trigger this action
- Related Event ID—Related event that is correlated to trigger this action

The Agents pane includes the following fields:

- Name
- Location
- Domain
- Execution Groups

You can rearrange the table view on the Action Console by hovering over a column header, clicking on the down arrow and selecting Sort Ascending or Sort Descending, or Columns to select the column headers for the table view.

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## Traps and syslogs

AFO Monitoring supports the use of SNMP traps and syslogs to monitor AFO Monitoring managed devices in your network. Traps and syslogs are unsolicited, automatic notifications sent by a

network object after being triggered by a network event, based on the SNMP MIB-II standard. Traps and syslogs can be viewed in the Trap Viewer and Syslog Viewer. Generate traps internally by AFO Monitoring or externally by network objects. If you have defined an MIT for a trap, it will become an event to be displayed in the Events tab. If an event already exists for a given trap, the event count will be incremented by one every time a trap is received by AFO Monitoring.

Traps are turned into events and displayed in the Event Browser to be used in debugging and troubleshooting. This is done only if you turn on monitoring for the domain and device family.

**+ Tip:**

If you see traps in the traps and syslogs browsers but no corresponding event, go to the Network Monitoring Details and check if monitoring is turned on. If certain traps are not being seen as events, go to Monitored Information Types and check if the event MIT corresponding to the trap exists. For certain toggle kind of traps, one trap clears another. Therefore, for such traps, only one event MIT exists while the other trap is not correlated into an event, but instead, is used to clear another event.

You must configure network objects individually to send traps and syslogs. Do this on the devices themselves. Devices must have SNMP enabled, they must have the IP address of the AFO Monitoring server, and the listening port of the AFO Monitoring configured (the default is 162 for traps, and 512 for syslogs). For information on configuring your network devices to send traps, consult the documentation for your device.

**+ Tip:**

If you do not see any traps coming from a device and you know that the device is sending traps, go to the device icon on the Network browser and from the Applications menu select Tools, and launch JDM or HTTP connection. Next, from the JDM or HTTP window, check that the AFO Monitoring server IP address is registered as a trap receiver.

Certain events, such as IP Availability Failure will disappear from the Event Browser if you restart the server or Monitoring. AFO Monitoring automatically evaluates and re-posts these as required.

Certain other events, such as a MLT/SMLT configuration warning, can appear the first time you run the discovery. These are warning messages alerting the operator about possible MLT/SMLT configuration problems. This can be, for example, that a port is configured as an SMLT port, but it is not connected to anything. Check if this is a real problem, and if it is not, delete it from the event browser.

To view traps and syslogs, from the menu bar, select **Network > Traps** and **Network > Syslogs**.

---

## General controls

On the Trap Viewer and Syslog Viewer pages, you can view information SNMP traps and syslog reports. You can also configure how you view the traps and syslogs.

You can access the Trap Viewer from the AFO menu bar by clicking **Network > Traps**. You can access Syslog Viewer from the AFO menu bar by clicking **Network > Syslogs**.

The following general controls are available on the Trap Viewer and Syslog Viewer pages.

- Filter—Filters the traps based on the time traps in the system.
- Autorefresh—Enables you to specify the time interval at which trap information is refreshed. Click Autorefresh to display a popup window to select the appropriate refresh interval.
- Refresh—Refreshes the table.
- Export records—Enables you to export traps records as an .xml document.
- Settings—Enables you to specify traps configuration that control how trap information is stored in and removed from the AFO Monitoring database as well as what view filters and forwarding destinations are in effect.
- Show/Hide Stats—Displays statistics including the date and time of the last server restart, packets per second, packets received, and status.

A filter is also available to create filters for viewing traps and syslogs based on selected criteria. The following filters are available for traps:

- IP—Filters traps based on the IP address of the device from which it was sent. Wildcards are accepted.
- OID—Filters traps based on the object ID of the trap.
- Time—Filters the displayed traps based on the time received. (For example, last day or last minute)
- Version—Filters traps based on the SNMP version of the trap.
- Generic—Filters traps based on a predefined, generic trap class (for example, coldStart, warmStart, linkUp, linkDown).
- Specific—Filters displayed traps based on the specific trap.
- Acked—Filters the displayed traps based on their Acknowledgement Status (Acked or Not Acked).
- Trap Name—Filters based on the trap name.
- Bindings—Filters based on bindings. The number of object IDs (OID) associated with the trap.
- Error Code—Filters based on the error code such as the error code for commonMIBAlarm from Avaya CS 1000. The error code is mapped to the error description. To display the error description, click on the error code value. A window appears with a description of the error code.

The following filters are available for syslogs:

- Server Time—Filters based on server time, which is the time the AFO Monitoring server received the syslog.
- Device Time—Filters out the displayed syslogs based on the Server Time column: Last Day, Last Minute, or Last Hour. This shows the time on the device when it sent the syslog to AFO Monitoring. The device time can be different than the server time if your network devices are in different time zones than your AFO Monitoring server.
- Address—Filters syslogs based on the IP address of the device from which it was sent.

- Facility—Filters syslogs based on the facility that generated the syslog: kernel, user, mail, uucp, or clock.
- Severity—Filters syslogs based on severity: emergency, alert, critical, error, warning, notice informational, or debug.
- Text—Filters syslogs based on specified text contained within the syslog.
- Acked—Filters the displayed syslogs based on their Acknowledgement Status (Acked or Not Acked).

You can configure Syslog and Traps settings in the Preferences section. Click on the icon in the upper right corner of the AFO menu bar to select **Preferences > Monitoring**, and a window displays for Syslog Settings and Traps Settings.

In the Syslog Settings and Traps Settings, you can configure maximum age, maximum number, configure a limit to discovered devices, configure the listener port, archive depth, archive directory and forwarding.

## Traps tab

The Trap Viewer table under **Network > Traps** displays a list of traps that have been issued in the network. The following columns display in the trap table:

- Address—Port on which to listen for traps and notifications (default is 162)
- OID—ID of the SNMP object for which you want to send a notification
- Time—Date and time the trap was generated
- Version—Trap version
- Generic—Indicates a number of generic trap types
- Specific—Indicates a number of specific trap types
- Acked—Indicates if the trap is acknowledged
- Trap name—Name of the trap
- Bindings—Number of object IDs (OID) associated with the trap
- Error Code—Error code for commonMIBAlarm from Avaya CS 1000. The error code is mapped to the error description. To display the error description, click on the error code value. A window appears with a description of the error code.

The following image is an example of an error code description.





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## Syslogs tab

The communication protocol for traps supports specification of original source address. This is not true for Syslogs. The subject address cannot be reliably parsed from a syslog message because of the different formats in use.

The Syslog tab, under **Network > Syslogs**, displays a table of syslogs for your network. The following columns display in the syslogs table:

- Server Time—Time the AFO Monitoring server received the syslog
- Device Time—Time on the device when it sent the syslog to AFO Monitoring. (The device time can be different than the server time if your network devices are in different time zones than your AFO Monitoring server.)
- Address—IP address associated with the syslog
- Facility—Facility associated with the syslog
- Severity—Severity of the syslog
- Text—Syslog text
- Acked—Indicates whether or not the syslog has been acknowledged

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## Monitoring Details

You can use the Network Monitoring Details page to start and stop availability monitoring agents and SNMP monitoring agents for your AFO Monitoring system. To access Network Monitoring Details, go to **Network > Monitoring Details**.

After you set up your monitoring configurations, you access the monitoring details to enable the monitoring configurations on specific discovered domains.

The monitoring details display information about which monitoring agents have connected with the server, where monitoring agents are running, the state of monitoring agents, the amount of data monitoring agents are handling, what domain elements are being monitored, and the latest value gathered for each piece of data being polled.

The left panel of the Network Monitoring Details page displays a tree structure of domains, agents, monitoring requests, and domain elements. The right panel displays a list of domains and their monitoring status. You can expand items within the left panel tree to locate specific items of interest. When you select a monitoring request in the list, the following information displays in the right panel of the page:

- Monitoring scope—(read-only) the set of domain elements at which the monitoring request is targeted explicitly.
- Information type scopes—(read-only) the set of domain elements encompassed by the information types specified.

- Parameter override scopes—lists the parameter overrides specified in the definition of the current monitoring operation.
- Information types tab—An SNMP object for which the monitoring process queries.
- Details tab—lists the variables (SNMP objects for which the monitoring process queries), notifications (notification actions for which the monitoring operation looks) and parameter overrides (parameter overrides specified in the definition of the current monitoring operation) associated with the monitoring request.
- Domain element tab—lists the specific domain elements affected by the monitoring request. This list comprises the intersection of the monitoring scope with the event type scopes.

When you select a domain element in the list, the variables for that domain element and associated values display in the right panel of the page.

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## MIT

A Monitored Information Type (MIT) is any data that AFO Monitoring is capable of monitoring and using to assist in the process of managing your network environment. You must have an Advanced License to use MIT. Most MITs are events, but MITs could also include statistics and raw data. The MITs Configuration Editor is an administrative tool that provides access to the network data that AFO Monitoring is capable of monitoring and using to assist in the process of managing your network. You can configure MITs to control event behavior and message board behavior.

To configure MIT, select **Network > MIT**.

The following general controls are available on the Monitoring Information Types page:

- Enable/Disable alphabetical mode—Toggles between hierarchical and alphabetical views of MITs
- Refresh—Refreshes the list of MITs.
- Search—Enables you to perform a search of MITs.

The monitored information type (MIT) list is a set of event types built into AFO Monitoring that characterizes most typical events and statistics encountered by administrators and other users. The MIT hierarchy view is organized as a tree. An information type that has sub-types can be expanded by clicking on the "+" to the left of its name to show the sub-types. The AFO Monitoring MIT hierarchy supports multiple inheritance so you will often see the same MIT in several places within the tree. Occurrences of MITs are listed in three ways:

- Monitored Information by Form—Organizes the MITs according to what they are (such as data, event, and statistic).
- Monitored Information by Management Standard—Organizes MITs according to a specific management standard such as SNMP. For example, the MITs that are specific to SNMP have further subtypes based on different MIBs and the events are grouped depending on which MIB they are derived.
- Monitored Information by Subject—Organizes MITs according to what they affect (such as device). For example, you will find InterfaceUtilizationProblem under both

OverUtilizationProblem (which is a sub-event type of PerformanceProblem) and under InterfaceEvent.

- Monitored Information by Deprecated—Organizes MITs according to deprecated events or statistics.

AFO Monitoring provides self events that includes information about changes to the server configuration and other state changes in server processing. Self events are implemented using a new domain element type, SelfElement, and a new set of monitoring variables, Self Events. For a complete list of Self Events expand the tree view to a category named “Self Event” (located under Monitored Information By Subject > Self Information > Self Event). Expand the items under “Self Event” to see all of the events that are provided. You can modify parameters for these events and create overrides just like any other monitored information type item. You can use Self Elements for message board filtering to only display self events. You can also configure responses to self events. You must create Actions that are connected to self events as server based actions.

Each monitored information type has a description and a set of configurable parameters associated with it. An MIT sub-type inherits its parameters and the default value for each from its parent event types (taking the value from the first if there is more than one parent with the same parameter).

Often, an MIT will have a predefined override value for a parameter that it inherited from a parent information type. For example, Event defines the initialPriority parameter to have a value of 6 (least important) but AvailabilityProblem contains a built-in override for initialPriority to be 4.

---

## MIT search

You can quickly locate MIT definitions using the search functionality. Go to **Network > MIT**.

The MIT search box is located in the upper left corner of the MIT panel. To use the search box, type the term you are searching for in the Search box. As you type, the list of MIT definitions is dynamically refreshed to show only those MIT definitions that match the search term you have typed.

Note the following when performing MIT searches:

- Searches are not case sensitive.
- The MIT definitions that are displayed are those that start with the search term you type.
- To find definitions that contain a search term, type the wildcard character (\*) before or within the search text.

The following examples illustrate the search behavior:

Search 1

Search term: Act

Search Results: Action Failure and Active Availability Monitoring Change

Search 2

Search term: softw

Search Results: Software Availability Failure, Software Event, Software Information, Software Performance Problem, Software Statistic, and Software Terminated Event

Search 3

Search term: act\*fa

Search Results: Action Failure

---

## Scopes

A scope (device classification) defines a set of discovery domain elements and or events based on several criteria. Use scopes in defining monitoring configurations, defining subscriptions, filtering message boards, initiating responses to events, filtering event monitoring, actions, and defining the processes for launching external applications. A scope specifies the elements in a monitoring operation. You must have an Advanced License to use scopes. Go to **Network > Scopes**.

### Important:

Built-in scopes delivered with the product are read only and cannot be edited or deleted. If you are a UCM or network administrator, you can define your own scopes by using the add or clone control in the Scopes page.

The following general controls are available on the Scopes page:

- Apply your changes—All edits to scopes are client-side only. Clicking the Apply button saves the edits to the server.
- Discard changes, reverting to the previous values—Unapplied edits to a scope can be undone by clicking the Revert button.
- Add—You create a new domain element scope.
  - Select Constraint Based Scope to create a scope defined by a set of domain elements that meet specified criteria.
  - Select Union-Based Scope to create a scope defined by a union of at least two existing scopes.
  - Select Enumerated Member Scope to create a scope defined by an explicit list of individual domain elements.
- Delete selected scope—Remove a scope. You cannot delete built-in scopes. A prompt appears to confirm deletion of the scope.
- Rename selected scope—Change the name of a selected scope.
- Clone selected scope—Create a duplicate of an existing scope to facilitate the creation of a new, similar scope.
- Enable/Disable Alphabetical mode—Toggle the way in which scopes are listed. The Alphabetical view shows a flat list of scopes sorted alphabetically by name.

- Disable/Enable text view mode—Toggle the way a scope definition displays. Design View displays the scope definition using drop-down menus and links to construct valid scope constraints. Text View displays the scope definition text directly.
- Show/Hide private scopes—Choose if you want to view or hide private scopes. When you create a scope you can select the Keep Private check box and the scope does not appear in the list until you click the Show private scopes button.
- Refresh—Refreshes the scope list.

You can configure scopes for domain elements and events. The Scope Configuration page has two tabs: Elements tab and Events tab. Each tab has two panels that show the following basic groups of information and options:

- The Scopes Management List provides a list of the scopes defined for your system. The tabs allow you to select the type of scopes to appear in the management list (Element scopes or event scopes).
- The Scope Definition and Comments Form provides a set of options and fields that enable you to create and edit scopes.

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## Types of scopes

There are three types of scopes:

- Constraint-based scopes are defined by a set of elements that meet specified criteria. Both domain element scopes and event scopes may be of the constraint-based scope type.
- Union-based scopes are the union of at least two existing scopes. Both domain element scopes and event scopes may be of the union-based scope type.
- Enumerated member scopes are defined by an explicit list of individual elements. Only domain element scopes can be of the enumerated member scope type. An enumerated member scope is used when you want to define a set of related objects where the relationship is not obvious from the metrics available from the operating system.

To configure scopes, go to **Network > Scopes**, and select **Add a new scope**, which is the plus sign on the toolbar at the top left.

You should create a constraint-based scope if you have a set of constraints for which you want to define a scope. Create enumerated scopes when you want to define a scope by selecting some discovered elements that might not share any common attributes apart from the domain. Create a union-based scope when you want a new scope based on a combination of two or more existing scopes.

### Example

For example, you want to create a scope for all devices in floor one of your building. If the device name ends with the floor number, then for this example, you can define a constraint based scope; that is, all elements are in scope **“Devices”**, the subject is a Device, and subject.subjectName ends with Floor1.

## Legacy devices monitoring scopes

Monitoring support is accomplished in part by the addition of at least one new monitoring configuration and at least one new scope for legacy devices. Additional availability reports for legacy devices are available in the Nortel Legacy Devices scope.

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## Actions

Actions are commands that you can execute through the user interface interactively by selecting a domain element and initiating the command or automatically using a predefined response or action schedule. Avaya Fabric Orchestrator Monitoring (AFO Monitoring) supports a number of different action types. The only action available with a Base License is email; all other actions require an Advanced License.

AFO Monitoring provides actions triggered by the following events:

- Generate email to network administrator.
- Generate text / SMS messages using email.
- Run rediscovery based on events.
- Run server side scripts.
- Launch EM / JDM tools.
- Run Remote Monitoring Script as plug in on KHI threshold.

AFO Monitoring provides the following templates for scripting and mail:

- RMS scripts that are wizard driven for ease of use.
- Email templates with variable building blocks.

For more information about writing custom scripts for AFO Monitoring actions, or obtaining a development kit for AFO Monitoring API, contact Avaya Global Services at <http://www.avaya.com>.

The following controls are available in the top left toolbar under **Network > Actions**.

- Apply your changes—All edits to actions are client-side only. Select Apply to save the edits to the server.
- Discard changes, reverting back to the previous values—Unapplied edits to an action can be undone by selecting Revert. No confirmation is offered and unapplied edits are immediately lost.
- Add a new action—Create a new action. The available actions depend on the selected group.
- Delete selected action—Deletes an existing action.
- Rename selected action—Enables you to rename an existing action.
- Clone selected action—Duplicates an existing action.

- Execute now selected action—Executes the action.
- Refresh—Refreshes the actions list.

---

## Action types

The following actions are available in AFO Monitoring if you have an Advanced License:

- Command Action - executes a command script using languages such as DOS Batch, SH, BASH, CSH or TCSH.
- Email Action sends an email message from a specified user account to one or more recipients.
- SNMPv1 Trap initiates an SNMPv1 trap.
- SNMPv2 Notification initiates an SNMPv2 notification.
- Custom Action permits advanced customizing of action.
- Rediscovery Action initiates a domain rediscovery.
- Config Control Action generates a configuration control response.
- Campus Rediscovery Action enables you to automate a campus rediscovery. Use this action in Responses to rediscover a campus triggered by a user-specified event.
- Web Browser Action enables you to establish a connection to a specified URL using a web browser.

There are two types of actions: Server-based Actions and Web Browser Actions.

Server-based actions are actions that are executed from the AFO Monitoring server. You must configure these actions to be triggered by a response or a schedule.

Web browser actions are actions that are executed from the client browser and are therefore affected by the browser settings. These actions are triggered by a menu that displays when you right-click a device in the Network Topology.

---

## Command Action

A command action executes command scripts using scripting languages such as SH or DOS batch files.

1. Go to **Network > Actions**.
2. Click **Add a new action** from the top left toolbar.
3. Select **Command Action** from the menu to access the following options.
4. Enter the name of the action.
5. Fill in other information as required.
6. Select **Apply your changes** in the top left toolbar.

You can configure the following options when you create a command action:

- **Subject Type**—Displays the subject type for the action. When editing an action, this option enables you to select from a drop-down list of the types of domain elements against which the action can be executed.
- **Event Type**—Displays the event type for the action. When editing an action, this option enables you to select from a drop-down list of the event types for which the action can be executed.
- **Related Event Type**—Displays a related event type for the action. When editing an action, this option enables you to select from a drop-down list of the related event types for which the you can execute the action.
- **Add Script Definition**—Displays the script definitions available for the command action. When editing a command action, this option enables you to select from a drop-down list of options that enable you to create a new script definition (DOS Batch, SH, BASH, CSH or TCSH). A new tab is added for each script definition. Tabs may be ordered using the raise and lower script in selection order buttons, causing the script to be executed in a specified order with respect to other script definitions.
- **Up**—Enables you to move the current script to a higher position in the selection order.
- **Down**—Enables you to move the current script to a lower position in the selection order.
- **Delete**—Deletes the selected script definition.

---

## Email Action

A command action executes command scripts using scripting languages such as SH or DOS batch files.

1. Go to **Network > Actions**.
2. Click **Add a new action** from the top left toolbar.
3. Select **Email Action** from the menu to access the following options.
4. Enter the name of the action.
5. Fill in other information as required.
6. Select **Apply your changes** in the top left toolbar.

The following options apply to the creation of email actions:

- **Subject Type**—Displays the subject type for the action. When editing an action, this option enables you to select from a drop-down list of the types of domain elements against which the action can be executed.
- **Event Type**—Displays the event type for the action. When editing an action, this option enables you to select from a drop-down list of the event types for which the action can be executed.
- **Related Event Type**—Displays a related event type for the action. When editing an action, this option enables you to select from a drop-down list of the related event types for which you can execute the action.



- **To**—(Required) The email address(es) of the user(s) to whom the notification is sent.
- **From**—(Required) The proper name shown in the recipient's inbox as the sender of the message.
- **Cc**—The email address(es) of any recipients who are copied on the message, but to whom the message is not addressed explicitly.
- **Bcc**—The email address(es) of any recipients who are copied on the message, but whose names are not made visible to other recipients.
- **Subject**—(Required) The topic that the message covers.
- **File Attachment**—The file name and path of an optional attachment that is to be sent with the email.
- **Message**—(Required) The text of the message.

---

## SNMPv2 Notification

A command action executes command scripts using scripting languages such as SH or DOS batch files.

1. Go to **Network > Actions**.
2. Click **Add a new action** from the top left toolbar.
3. Select **SNMPv2 Notification** from the menu to access the following options.
4. Enter the name of the action.
5. Fill in other information as required.
6. Select **Apply your changes** in the top left toolbar.

The following options apply to the creation of SNMPv1 trap actions:

- **Subject Type**—Displays the subject type for the action. When editing an action, this option enables you to select from a drop-down list of the types of domain elements against which the action can be executed.
- **Event Type**—Displays the event type for the action. When editing an action, this option enables you to select from a drop-down list of the event types for which the action can be executed.
- **Related Event Type**—Displays a related event type for the action. When editing an action, this option enables you to select from a drop-down list of the related event types for which you can execute the action.
- **Target Host**—(Required) The IP address or DNS name of the host to which the traps are to be sent.
- **Target Port**—(Required) The UDP port on which the target host listens for traps.
- **Enterprise OID**—(Required) The trap's text-based object ID.

- Variable Bindings—A list of object IDs (OID, the ID of an SNMP object for which you want to send a notification) and associated values (the value to which the SNMP object is set).
  - Add—Displays the Select Node(s) window that enables you to expand a tree of MIB modules and select a variable binding to which the SNMPv2 trap applies, verify the object ID, Numeric OID, and specify a value for the node.
  - Remove—Enables you to remove a variable binding from the SNMPv2 trap action definition.

---

## Custom action

A command action executes command scripts using scripting languages such as sh or DOS batch files.

1. Go to **Network > Actions**.
2. Click **Add a new action** from the top left toolbar.
3. Select **Custom Action** from the menu to access the following options.
4. Enter the name of the action.
5. Fill in other information as required.
6. Select **Apply your changes** in the top left toolbar.

If you have advanced knowledge of AFO Monitoring, you can customize actions. If you require assistance, contact Avaya Support at <http://support.avaya.com>.

The following options apply to create custom actions:

- Subject Type—(Required) Displays a subject type from a pull down menu. For example, if the subject of this action is a network device, choose Device.
- Event Type—(Required) Displays an event type from the drop down menu.
- Related Event Type - Displays a related event type for the action. When editing an action, this option enables you to select from a drop-down list of the related event types for which the you can execute the action.
- Action Class Name—(Required) Action classes are defined in the AFO Monitoring knowledge base. There are many action classes listed in the AFO Monitoring knowledge base such as DiscoveryLogMaintenance, which scans the discovery log folder of a domain and keeps a certain number of logs.
- Reload Action class—(Optional) If checked, the action class is reloaded every time the action is executed. Bindings is used to input name value bindings for the action; for example, in DiscoveryLogMaintenance action class, the name is maxLogsToRetain and the value is an integer greater than 0.
- Bindings
- Comments

---

## Rediscovery Action

A command action executes command scripts using scripting languages such as SH or DOS batch files.

1. Go to **Network > Actions**.
2. Click **Add a new action** from the top left toolbar.
3. Select **Rediscovery Action** from the menu to access the following options.
4. Enter the name of the action.
5. Fill in other information as required.
6. Select **Apply your changes** in the top left toolbar.

If a rediscovery action is selected, the following field displays in the right panel of the Monitoring Actions page:

- Rediscovery Policy - Drop-down selection list of available rediscovery policies to use when the rediscovery action is executed. Rediscovery actions can be used in action schedules to rediscover a domain according to a user-specified schedule.

---

## Config Control Action

A command action executes command scripts using scripting languages such as sh or DOS batch files.

1. Go to **Network > Actions**.
2. Click **Add a new action** from the top left toolbar.
3. Select **Config Control Action** from the menu to access the following options.
4. Enter the name of the action.
5. Fill in other information as required.
6. Select **Apply your changes** in the top left toolbar.

The following options apply to the creation of workflow actions:

- Changes to Make—Add - Displays a drop-down selection list of available configuration changes which include Monitoring Configuration (displays Enable/Disable window where you can enable or disable individual monitoring configurations), Response (displays Enable/Disable window where you can enable or disable individual responses), Action Schedule (displays Enable/Disable window where you can enable or disable individual action schedules), and Override Configuration (displays Enable/Disable window where you can enable or disable individual override configurations).
- Changes to Make—Delete - Delete selected configuration control actions.

## Campus Rediscovery Action

A command action executes command scripts using scripting languages such as SH or DOS batch files.

1. Go to **Network > Actions**.
2. Click **Add a new action** from the top left toolbar.
3. Select **Campus Rediscovery Action** from the menu to access the following options.
4. Enter the name of the action.
5. Fill in other information as required.
6. Select **Apply your changes** in the top left toolbar.

The following options apply to the creation of campus rediscovery actions:

- **Subject Type**—Displays the subject type for the action. When editing an action, this option enables you to select from a drop-down list of the types of domain elements against which the action can be executed.
- **Event Type**—Displays the event type for the action. When editing an action, this option enables you to select from a drop-down list of the event types for which the action can be executed.
- **Rediscovery Policy**—Drop-down selection list of available rediscovery policies to be used when the rediscovery action is executed. Rediscovery actions can be used in action schedules to rediscover a domain according to a user-specified schedule.

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## Web Browser Action

A command action executes command scripts using scripting languages such as SH or DOS batch files.

1. Go to **Network > Actions**.
2. Click **Add a new action** from the top left toolbar.
3. Select **Web Browser Action** from the menu to access the following options.
4. Enter the name of the action.
5. Fill in other information as required.
6. Select **Apply your changes** in the top left toolbar.

You can configure the following options when you create a web browser action:

- **Subject Type**—Displays the subject type for the action. When editing an action, this option enables you to select from a drop-down list of the types of domain elements against which the action can be executed.
- **Event Type**—Displays the event type for the action. When editing an action, this option enables you to select from a drop-down list of the event types for which the action can be executed.

- **Related Event Type**—Displays a related event type for the action. When editing an action, this option enables you to select from a drop-down list of the related event types for which the you can execute the action.
- **Protocol**—Specifies the connections you can establish using the web browser, with the following protocols: HTTP, HTTPS, Telnet FTP, embedded.
- **Location**—Specifies the location.
- **Timeout**—Specifies the timeout value.

Web browser actions are actions that are executed from the client browser, and are therefore affected by the browser settings. The Web Browser is available with the Advanced License.

You can trigger web browser actions from the menu that displays when you right-click on a device in the network browser. There are two ways to configure web browser actions:

- Use the Device Menu Choice link on the navigation panel to establish a connection through a web browser
- Use the Actions link on the navigation panel to establish a connection to a specified address through a web browser

Web browser actions can establish connections using the following protocols:

- **FTP Connect**—Opens an FTP connection.
- **HTTP Connect**—Opens an HTTP connection.
- **HTTPS Connect**—Opens an HTTPS connection.
- **Launch EM**—Opens an HTTP connection to the device which launches the Business Element Manager on the device.
- **Launch JDM**—Downloads and launches Avaya JDM from the AFO Monitoring server.
- **Launch Legacy JDM**—Downloads and launches Legacy JDM from the AFO Monitoring server.
- **Launch Telnet**—Opens a Telnet connection.

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## Server-Based Actions

Server-based actions are always dispatched for execution to the server process. The following built-in server-based actions are included:

- **Rediscover Campus**—Automates the rediscovery of a campus.
- **Rediscover Device**—Automates the rediscovery of a device.
- **Rediscover Domain**—Automates the rediscovery of a domain.
- **SampleEmailAction**—Provides a sample email action.
- **Supervision Off**—Initiates an action to turn off monitoring for a domain element, and stops all trend data collection and event correlation. You can schedule the Supervision Off action to turn off supervision of network elements during a planned shutdown.

- Supervision On—Initiates an action to turn on monitoring for a domain element, and starts all trend data collection and event correlation. You can schedule the Supervision On action to turn the supervision of network elements back on after a planned shutdown.
- Supervision Restore—Reverts to monitoring in the original state.
- Supervision Inherit—Inherits supervision settings from a higher level in the domain element class hierarchy.
- SampleCS1000EmailAction—Provides a sample email action for Avaya CS 1000. This is similar to SampleEmailAction but customized for Avaya CS 1000 and required for the OTM replacement feature.

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## Contextual Information in Action Configurations

By specifying contextual information in your action configurations, you can make your action behavior and content automatically adapt at execution time to the event and or domain element associated with the particular execution of the action.

You can specify this kind of contextual information in your action configurations by inserting expressions as follows:

A `${event.type}` has been `${trigger}` on `${device.address}`

This might appear in a user's inbox as:

A FanWarning has been acknowledged on 172.16.67.23

You can sometimes just use an identifier directly when it has a simple value such as `${trigger}`, and at other times when the identifier is an object, you must specify a property such as `${event.type}`. Sometimes the property of an object is another object in which case you must chain your dot notation as in `${device.campus.location}`.

The properties defined for an identifier (if any) vary depending on the type of the identifier.

For ease of adding contextual variable information, AFO Monitoring prompts the completion of the valid variables in the context. For example, after typing "`${device.}`", AFO Monitoring displays a menu of available property variables.

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## Monitoring overrides

Monitoring overrides enable you to define an exception for a monitored event type for the domain elements in a particular scope. The override definition consists of one or more event type parameter values and one or more scopes. The event type parameters can be from one or more event types. To access Monitoring overrides, go to **Network > Monitoring Overrides**.

The following controls are available at the top of the Overrides window:

- Apply your changes—All edits to overrides are client-side only. Click Apply to save the edits to the server.

- Discard changes, reverting to the previous values—Unapplied edits to an override can be undone by clicking the Revert button. No confirmation is offered, and unapplied edits are immediately lost.
- Add a new override—Add a new override.
- Remove selected override—Deletes an existing override.
- Rename selected override—Allows you to rename an existing override.
- Clone selected override—Duplicates an existing override.
- Refresh—Refreshes an existing override.

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## Monitoring Overrides tab

The Monitoring Overrides tab provides a list of monitoring parameter overrides. Monitoring overrides take effect before an event occurs. The definition of a monitoring override includes the selection of a domain element scope and the specification of the appropriate parameter override (event types, monitoring parameters, and values) that are to be applied to specified domains. To access the Monitoring Overrides tab, go to **Network > Monitoring Overrides > Monitoring Overrides** tab.

The following controls are available on the monitoring overrides tab:

- Enabledback—Indicates whether or not the monitoring override parameter is active (default is on).
- Parameter overrides—Provides a list of the existing parameter overrides and allows you to edit existing override values.
- Override applies to—Allows you to select the domain to which the override parameters are to apply. Valid values are All Domains (the override parameters are to apply to all domains) and These Domains (the override parameters are to apply only to the selected domains).

---

## Event Processing Overrides Tab

The Event Processing Overrides tab provides a list of event processing overrides. Event processing overrides take effect after an event has occurred. Event processing overrides define whether the override applies to an event scope or an event type, the parameter override (event processing parameters and values), and the domains to which the override applies. To access the Event Processing Overrides tab, go to **Network > Monitoring Overrides > Event Processing Overrides** tab.

### Important:

When you define an event processing override (either global or scoped), the override does not take effect for a domain element if there are existing events of the same type posted against that domain element. You should manually clear all events of a particular type after defining an override for that type.

The following controls are available on the event processing overrides tab:

- **Enabled**—(Default is on) Indicates whether or not the event processing override is active (enabled).
- **Override applies to**—Drop-down that enables you to select whether the override applies to an event scope or event type. Once an option is selected, you can then use the tree selection list to specify the appropriate event scope or event type.
- **Parameter overrides**—Provides a list of the existing parameter overrides. Includes links that enable users to edit existing override values.

---

## Event responses

An event response is an action or set of actions that executes automatically as a result of one or more events occurring. To access event responses, go to: **Network > Responses**.

The following controls are available at the top of the Responses window:

- **Apply your changes**—All edits to responses are client-side only. Select Apply to save the edits to the server.
- **Discard changes, reverting to the previous values**—Unapplied edits to a response can be undone by selecting the Revert button. No confirmation is offered, and unapplied edits are immediately lost.
- **Add a new response**—Adds a new response.
- **Delete selected response**—Deletes an existing response.
- **Rename selected response**—Enables you to rename an existing response.
- **Clone selected response**—Duplicates an existing response.
- **Refresh**—Refreshes the responses list.

---

## Domain Elements and Event Types Tab

The Domain Elements and Event Types Tab enables you to specify the event types to which to respond for a particular scope.

1. To access event responses, go to: **Network > Responses**.
2. Select **Domain Elements & Event Types**.

The Domain Elements and Event Types Tab displays the following options when a response is selected or edited:

- **Enabled**—Toggles the response to on or off (default is on).
- **Response Applies to Events on These Domain Elements**—Combo-box that enables you to select the domain elements for which the response is to apply.



- **Response Applies To**—Drop-down that enables you to specify whether the response applies to event types or event scopes. After you specify event types or event scopes, a tree structure displays that enables you to select the specific event types (or event scope) for which the response is to be executed.

---

## Actions to Execute Tab

The Actions to Execute Tab enables you to specify the actions that are to be executed for the response being viewed (or edited).

1. To access event responses, go to: **Network > Responses**.
2. Select **Actions to Execute**.

The Actions to Execute Tab displays the following options when a response is selected or edited:

- **Response is Triggered When** – Displays a list of properties that can be used to trigger responses which include:
  - An event is posted (triggers a response when an event has been posted to the message board)
  - An event is acknowledged (triggers a response when an event is acknowledged by a user)
  - An acknowledged event is unacknowledged (triggers a response when an event that was previously acknowledged by a user is unacknowledged)
  - An event is cleared (triggers a response when an event is removed from the message board)
  - The priority of an event changes (triggers a response when the priority level assigned to an event is altered)
  - The repetition count of an event increments (triggers a response when the event has taken place again, and the number of times the event has occurred is incremented)
  - The alert status of an element has changed (triggers a response when the alert status of an element is raised or lowered)
  - An event is restored (triggers a response when an event is restored to the message board)
  - An event is correlated (triggers a response when the event is correlated)
- **Execute the Following Actions** - Displays a list of existing actions that are valid for the currently specified scope.

---

## Schedules

You can define a schedule that AFO Monitoring follows to perform one or more actions at a specified time or interval. To access the Action Scheduler, select **Network > Schedules**.

Only the Campus Rediscovery action is available from the scheduler view, with an Event type of "none".

The following general controls are available on the Schedules page:

- Apply your changes—All edits to schedules are client-side only. Pressing the Apply button saves the edits to the server.
- Discard changes, reverting to the previous values—Unapplied edits to an action schedule can be undone by pressing the Revert button. No confirmation is offered, and unapplied edits are immediately lost.
- Add a new action schedule—Add a new action schedule.
- Delete selected action schedule—Deletes an existing action schedule.
- Rename selected action schedule—Enables you to rename a selected action schedule.
- Clone selected action schedule—Duplicates an existing action schedule.
- Refresh—Refreshes the responses list.

The following fields display on the right-side panel of the Action Scheduler page when editing or viewing an action schedule:

- Enabled—Enables you to toggle the action schedule on or off (default is on).
- Execute Actions on these Domain Elements—Combo-box that enables you to select the domain elements for which the scheduled action is to apply.
- Actions to Execute—List that enables you to select one or more previously defined actions to execute.
- Schedule—Enables you to define the timetable that determines when the selected actions are executed.
- Add—Enables you to specify a new interval when the action must be executed. Interval options are:
  - One Time (executes the action only once at the date and time specified)
  - Everyday (executes the action at the specified time every 24 hours)
  - Every week (executes the action at the specified time on the same day each week)
  - Every month (executes the action at the specified time on the same day each month)
  - End of Month (executes the action at the specified time on the last day of each month).
  - Every hour (executes the action every 60 minutes at the specified number of minutes past the hour)
- Schedule applies to - Enables you to specify the domain that the schedule applies to.

---

## Device Menu Choices

With the Device Menu Choices configuration, you can associate an action such as launching an external application, sending a trap, launching an embedded web management interface (HTTP), or executing a shell command with the domain elements in a particular scope. The action is associated

with the domain elements in the scope so that if you right-click on an associated domain element, you can choose the action from the menu.

For example, you can configure a device menu choice so you can select a device and launch its manufacturer's proprietary management application, making it easier to modify the device configuration. You can configure these menu choices to appear only for a subset of domain elements through a scope, and you can configure the choices to trigger any action. Most actions apply to specific domain element types, such as to data sets, or to logical volumes, so the set of actions that is available for launching typically varies with the scope that is selected.

To configure Device Menu Choices, select **Network > Device Menu Choice**. The following general controls are available on the Device Menu Choice page:

- Apply your changes—All edits to device menu choices are client-side only. Clicking the Apply button saves the edits to the server.
- Discard changes, reverting to the previous values—Unapplied edits to a device menu choice are undone by clicking the Revert button. No confirmation is offered and unapplied edits are immediately lost.
- Add a new custom launch—Add a new device menu choice.
- Delete selected custom launch—Remove a selected device menu choice.
- Rename selected custom launch—Rename a selected device menu choice.
- Clone selected custom launch—Clone a selected device menu choice.
- Refresh—Refresh the list of device menu choices.

You can specify parameters for the device menu choice with the definitions. The device menu choice definition panel displays the following options when you select or edit a device menu choice:

- Enabled—Toggle the device menu choice on or off. You must select this check box to make the device menu choice active.
- Show Output—Displays information regarding the action that is executed. Show Output is for diagnostic purposes.
- Obtain user confirmation before executing—You can require user confirmation prior to performing the device menu choice.
- Minimum user privilege required—Specifies the minimum privilege level you need to access the device.
- Attach actions to these domain elements—You select the domain elements for which the device menu choice is to apply.
- Make these actions available—Identifies the actions that are to be performed for the device menu choice. You can select multiple actions for a device menu choice. Some actions do not appear until you select the appropriate scope.
- Comments—Descriptive text associated with the device menu choice.

## Monitoring reports

AFO Monitoring offers multiple built-in monitoring reports and, if you have an advance license, the ability to create or customize monitoring reports.

To view the Monitoring Reports, from the menu bar, select **Reports > Monitoring Reports**.

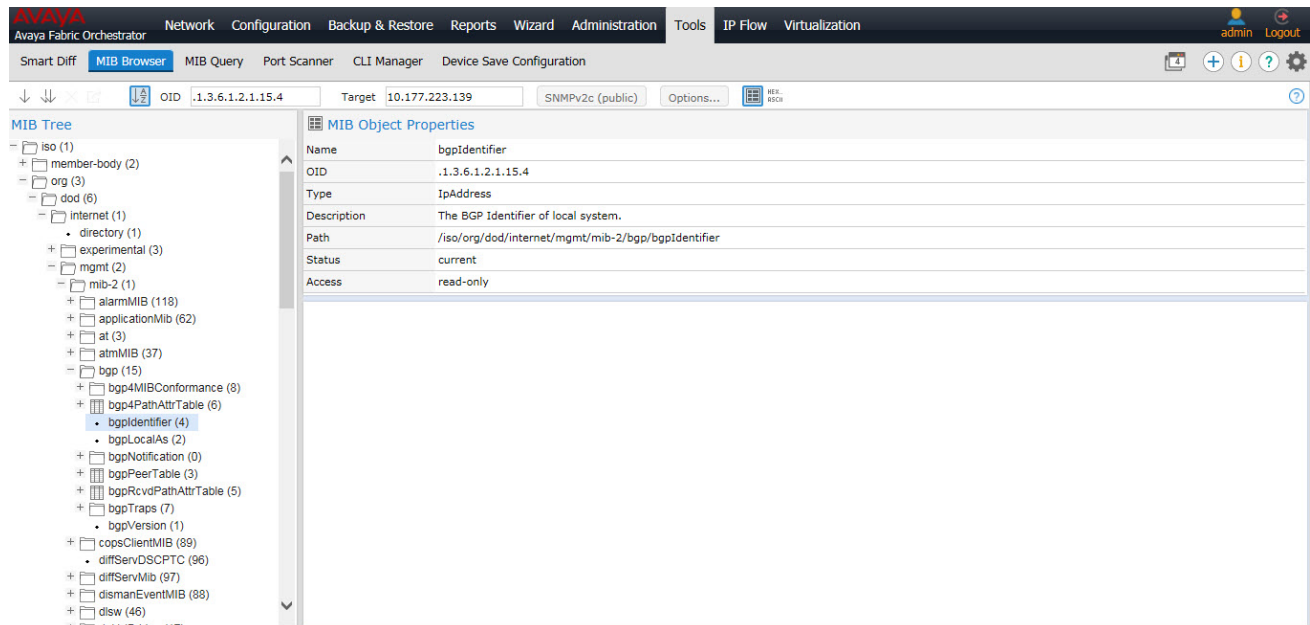
## MIB Browser

To access the MIB Browser, from the AFO menu bar, select **Tools > MIB Browser**.

You can view information about MIBs in two ways.

- You can expand the tree structure on the left side of the MIB Browser window and select a MIB.
- In the OID field, you can enter the OID of a MIB.

The SNMP MIB information appears in the right panel of the window.



**Figure 2: MIB Browser**

The following controls are available on the MIB Browser page:

- **Get**—retrieves the output for a selected MIB. To select the Get action, from the navigation tree, right-click on a node, and click **Get**.
- **Get Next**—retrieves the output for the next MIB.
- **Clear results area**—clears the results of any present queries.
- **Save last query results**—saves the results of the query as an XML file.

- Enable alphabetical mode or Enable ID mode—expands the navigation tree in alphabetical mode or ID mode.
- OID—object text-based identifier for the MIB.
- Target—view an SNMP MIB based on an IP address.
- SNMP Version—Set the SNMP authentication.
- Options—adjusts the timeout value and retries.
- Show Properties—view the properties table for the MIB.



**Figure 3: MIB Browser toolbar**

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## SNMP MIB Query

To access SNMP MIB query, select **Tools > MIB Query**.

You can view information about SNMP MIB queries by expanding the tree structure on the left side of the MIB Query page and selecting a query.

The MIB query information appears in the Results panel.

The following controls are available on the MIB Query page:

- Clear—Clears the query results.
- Execute—Starts the SNMP MIB query. Click the checkbox.
- Period—The time period for the SNMP MIB query.
- Target—View an SNMP MIB based on an IP address.
- SNMP Version—Set the SNMP authentication.
- Options—Adjusts the timeout value and retries.
- Switch to columns—Displays the results using columns.

From the queries panel, you can perform the following actions:

- Add—Adds a query.
- Delete—Deletes a query.
- Edit—Edits a query.

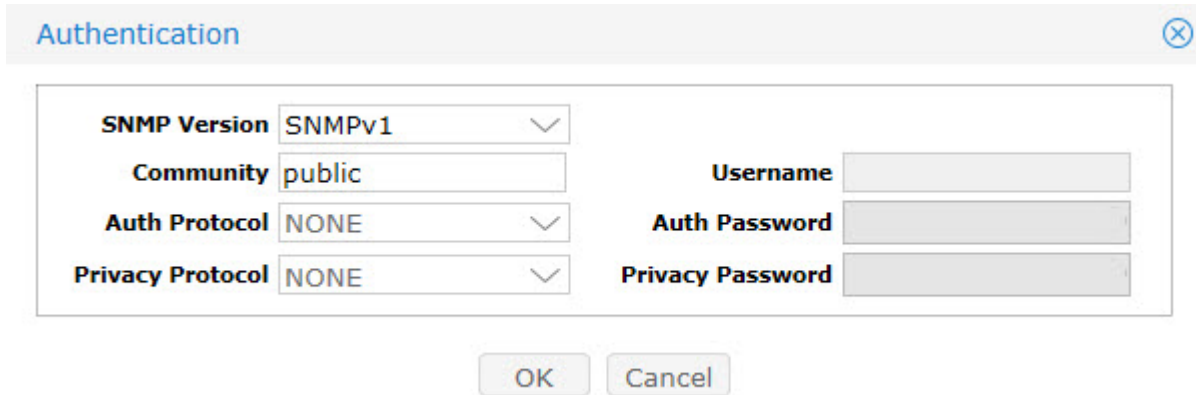
---

## SNMPv3 authentication

The SNMPv3 authentication permits the user to enter MD5 or SHA as protocols for authentication, and then select the privacy encryption keys of DES, 3DES, or AES128. The user also enters the

authentication and privacy passwords. The MIB Query uses these credentials to query the target machine.

1. To access SNMPv3 authentication, go to **Tools > MIB Query**.
2. Select **Authentication** button along the toolbar that displays the current SNMP version.



The image shows a dialog box titled "Authentication" with a close button (X) in the top right corner. The dialog contains several input fields and dropdown menus:

<b>SNMP Version</b>	SNMPv1	▼		
<b>Community</b>	public		<b>Username</b>	
<b>Auth Protocol</b>	NONE	▼	<b>Auth Password</b>	
<b>Privacy Protocol</b>	NONE	▼	<b>Privacy Password</b>	

At the bottom of the dialog, there are two buttons: "OK" and "Cancel".

Figure 4: SNMPv3 Authentication screen

# Chapter 4: Dashboard configuration

Avaya Fabric Orchestrator Monitoring (AFO Monitoring) offers multiple levels of dashboards to monitor Avaya Aura system health. You can configure a dashboard to monitor network health, application and server health, and device health. You can create a different dashboard for every model of equipment on the system, and you can modify a dashboard to make it a default dashboard for a device.

1. To access dashboards, select **Network**, and the overview appears.
2. If you cannot see the dashboard toolbar, click on the grey drop-down arrow above the content panel.

There are three types of dashboards:

- **Preconfigured** — Includes the Network Overview which displays information about network health; the Power Savings dashboard which displays dashlets containing information about total network power savings and top switch watt reduction; and the Top-N Dashboard which displays the top ten dashlets for CPU and memory utilization, and for interface statistics such as utilization, traffic, errors and discards.
- **Transient** — Displays information about a specific network element.
- **Customized** — You can configure the dashboard by adding, deleting, or cloning a dashlet to delve deeper into the network health.

---

## Adding a dashboard

### About this task

Use this procedure to add a new dashboard.

You can also clone an existing or transient dashboard using the **Save dashboard as** option.

### Procedure

1. Select the **Network** tab, and the overview appears.
2. To view the dashboard configuration buttons and menu icons, click the down arrow located at the top of the content pane.
3. Click **New dashboard**, which is the plus sign on the right of the toolbar.
4. In the Prompt dialog box, enter the new dashboard name.
5. To permit other users to view your changes, select **Public**.

You must have administrator privileges to save a dashboard in the public folder.

6. Click **OK**.
7. Drag and drop a dashboard configuration button onto the square that appears in the work area.

A configuration dialog box specific to the dashlet you selected appears. This is the beginning of the dashlet wizard.

8. Enter information in the configuration dialog box.
9. If you do not edit dashlet items, or other variables, click **Finish**.

If you edit dashlet items or other variables, select one of the following actions:

- Add
- Delete
- Edit

Another configuration screen appears. After you complete each configuration screen, click **Next**.

10. After you complete the edits to the dashlet, click **Finish**.
11. To add another dashlet, repeat step 6 to step 10.
12. Click **Save dashboard**.

For more information about configuring dashlets, see [Dashboard wizards](#) on page 89.

## Variable definitions

The following table lists the dashboard configuration buttons.

Variable	Definition
Event Listing	Provides you with the events information of devices or interfaces, and can contain a maximum of 100 events. You can select the events for any specific domain, or all domains. To open another transient dashboard, on the Event Listing dashlet, select Ack and click on the subject of the event.
Event Summary	Displays the summary of events by either domain classification or by concern. To open an event browser tab with the filter automatically applied for that classification, on the Event Summary dashlet, click on an entry.
Availability Report	Displays the average availability for a class of elements as percentages over intervals of hour, day, month, or year. To view a transient dashlet for the element, on the Availability Report dashlet, click on the element name.
Element Status Summary	Displays the KHI status of the element, including %CPU, %Memory, and number of alerts on the element. To open a transient dashboard for the

*Table continues...*



Variable	Definition
	element, on the Element Status Summary dashlet, click on the element name.
Top-N Report	Top-N Reports are based on Scope and Time, and show histograms of devices and interface statistics. Top-N Reports are available for a current time or for a past time period, and can be exported to PDF, CSV or XML.
Dial Gauge	Provides a set of one or more dial gauges, each displaying the value of a domain element variable on an analog dial. All of the dial gauges in one set must display variables from the same domain element.
Trend Chart	Provides performance trend improvements and trending of device resource usage, and key health indicators. Reporting is made easy by selecting trends and exporting information to PDF.
Pie Chart	Provides a set of one or more percentage pie charts displaying the following information: <ul style="list-style-type: none"> <li>• Disk Usage — used space and free space</li> <li>• Host Memory — allocated space and available space</li> </ul>
Element Property Table	Provides the properties of the device or interface on the dashboard.
Schematic	Displays the custom views on the dashboard.

---

## Dashboard wizards

Each dashlet contains different elements that you must configure. After you drag and drop a dashlet onto the dashboard, a dialog box appears to help you configure the dashlet.

The following list outlines the dashlets that you can add to the dashboard.

- Event Listing
- Event Summary
- Availability Report
- Element Status Summary
- Top-N Report
- Dial Gauge
- Trend Chart
- Pie Chart
- Element Property Table
- Schematic

---

## Configuring the Event Listing dashlet

### Before you begin

You must create a dashboard or edit an existing dashboard.

### About this task

Perform the following procedure to configure the Event Listing dashlet.

### Procedure

1. Select the **Network** tab, and the overview appears.
2. To view the dashboard configuration buttons and menu icons, click the down arrow located at the top of the content pane.
3. Drag and drop the **Event Listing** icon onto the canvas outlined on the Dashboard work area.  
The Configure dialog box appears.
4. In the Name field, enter a name for the event listing.
5. In the Domain field, click the down arrow to select a domain.
6. Click **Choose a Scope**.  
The Choose a Scope page appears.
7. Select one or more scopes from the available list, and click **OK**.

 **Note:**

You can use the Search field to search for a scope.

8. From the Configure dialog box, in the Rows / page field, enter the number of rows to appear in the dashlet.
9. The Columns sections displays the columns headers to appear in the dashlet.
  - To add a new column, click **Add**, and from the list, select an item to appear in the dashlet.
  - To delete a column from the dashlet, highlight the item, and click **Delete**.

 **Note:**

Use the up or down arrows to move up or down the list of available column headers.

10. Click **OK**.

### Result

AFO Monitoring adds the Event Listing dashlet to the dashboard. To edit the Event Listing dashlet, click the **Configure** icon on the top right corner of each dashlet.

---

## Configuring the Event Summary dashlet

### Before you begin

You must create a dashboard or edit an existing dashboard.

### About this task

Perform the following procedure to configure the Event Summary dashlet.

### Procedure

1. Select the **Network** tab, and the overview appears.
2. To view the dashboard configuration buttons and menu icons, click the down arrow located at the top of the content pane.
3. Drag and drop the **Event Summary** icon onto the canvas outlined on the Dashboard work area.

The Configure dialog box appears.

4. In the Name field, enter a name.
5. In the Event bar scale field, enter a number between 1 and 10000.

 **Note:**

The Event bar scale is for the histogram bar. For example, if you enter 100 as scale and there are 10 events, then the bar is 1/10 of the available length. If you choose 1000 then the bar shrinks.

6. In the Items section, click **Add**.
7. In the Domains section, select a domain.
8. Click **Next**.
9. Click **Choose a Scope**

The Choose a Scope page appears.

10. Select the one or more scopes from the available list, and click **OK**.

 **Note:**

You can use the Search field to search for a scope.

11. From the Configure dialog box, select one or more Events.
12. In the Item Title field, enter the item title.
13. To accept your changes and go to the next step of the configuration wizard, click **Next** .
  - Or, to discard your changes and return to the previous step of the dashboard wizard, click **Previous**.

14. To add another dashlet item, repeat step 4 to step 11.
  - Or, click **Finish**.

## Result

AFO Monitoring adds the Event Summary dashlet to the dashboard. To edit the Event Summary dashlet, click the dashlet tool icon on the top right corner of each dashlet.

---

## Configuring the Availability Report dashlet

### Before you begin

You must create a dashboard or edit an existing dashboard.

### About this task

Perform the following procedure to configure the Availability Report dashlet.

### Procedure

1. Select the **Network** tab, and the overview appears.
2. To view the dashboard configuration buttons and menu icons, click the down arrow located at the top of the content pane.
3. Drag and drop the **Availability Report** icon onto the canvas outlined on the Dashboard work area.

The Dashlet items configurator dialog box appears.

4. In the Name field, enter a name.
5. In the Domain field, click the down arrow to select a Domain.
6. In the Items section, click **Add**.
7. In the Select element dialog box, select an element.
8. Check single elements, or scope name to include all elements within a scope.
9. Click **Next**.
10. From the Dashlet items configurator dialog box, in the Graph column field, click the down arrow and select a time frame for the report.
11. The Secondary columns section displays additional columns to appear on the dashlet.
  - To remove a column, click **Delete**.
  - To add a column, click **Add**.

#### **Note:**

Use the up or down arrows to move up or down the list of available column headers.

12. To continue configuring the dashlet, click **Next**.
  - Or, if the configurations are complete, click **Finish**.

## Result

AFO Monitoring adds the Availability Report dashlet to the dashboard. To edit the Availability Report dashlet, click the dashlet tool icon on the top right corner of each dashlet

---

## Configuring the Element Status Summary dashlet

### Before you begin

You must create a dashboard or edit an existing dashboard.

### About this task

Perform the following procedure to configure the Element Status Summary dashlet.

### Procedure

1. Select the **Network** tab, and the overview appears.
2. To view the dashboard configuration buttons and menu icons, click the down arrow located at the top of the content pane.
3. Drag and drop the **Element Status Summary** icon onto the canvas outlined on the Dashboard work area.

The Configure dialog box appears.

4. In the **Dashlet** title field, enter a name.
5. In the **Domain** field, click the down arrow to select a domain.
6. In the Dashlet **Items** section, click **Add**.
7. In the Perspective field, click the down arrow to select a perspective, and then select an element.
  - If you select the perspective Scopes, select an element, and then check individual elements, or scope name to include all scopes. Only the first 100 scopes are shown.
8. To add the show reachability status icon to the dashlet, select **Show reachability**.
9. To add the unacknowledged status icon to the dashlet, select **Show unacknowledged alerts**.
10. To add the acknowledged alerts status icon to the dashlet, select **Show acknowledged alerts**.
11. Click **Next**.
12. If the dashlet items are correct, click **Finish**.
  - To add another dashlet item, click **Add**.
  - To delete a dashlet item, click **Delete**.
  - To edit a dashlet item, click **Edit**.

**\* Note:**

Use the up or down arrows to move up or down the list of available column headers.

13. To view variables, in the Show variables section, click **Add**, and select a variable.
  - To include variables with no value, check **Include variables with no value**.
14. Click **Next**.
15. If the dashlet items are correct, click **Finish**.
  - To add another dashlet item, click **Add**.
  - To delete a dashlet item, click **Delete**.
  - To edit a dashlet item, click **Edit**.

**\* Note:**

Use the up or down arrows to move up or down the list of available column headers.

## Result

AFO Monitoring adds the Element Status Summary dashlet to the dashboard. To edit the Element Summary dashlet, click the dashlet tool icon on the top right corner of each dashlet.

---

## Configuring the Top-N Report dashlet

### Before you begin

You must create a dashboard or edit an existing dashboard.

### About this task

Perform the following procedure to configure the Top-N Report dashlet.

### Procedure

1. Select the **Network** tab, and the overview appears.
2. To view the dashboard configuration buttons and menu icons, click the down arrow located at the top of the content pane.
3. Drag and drop the **Top-N Report** icon onto the canvas outlined on the Dashboard work area. The Dashlet items configurator dialog box appears.
4. In the **Dashlet** title field, enter a name.
5. In the **Domain** field, click the down arrow to select a Domain.
6. Click **Choose a Scope**. The Choose a Scope page appears.
7. Select one or more scopes from the available list, and click **OK**.

**\* Note:**

You can use the Search field to search for a scope.

8. From the Dashlet items configurator dialog box **Variable** field, select a variable.

9. In the **Top-N number** field, enter the number of items to appear in the Top-N Report dashlet.
10. In the Sort Order field, click **Bottom report** if you want to see the bottom first.
11. Select **Show reachability status** if you want to see this.
12. In the **Identification columns**, click **Add**, and add the information you want to add.
13. In the Secondary value columns section, click **Add**, and select the optional secondary columns to appear in the Top-N Report dashlet.
  - To remove a secondary column, highlight a column header and click **Delete**.

**\* Note:**

Use the up or down arrows to move up or down the list of available column headers.

14. Click **OK**.

## Result

AFO Monitoring adds the Top-N Report dashlet to the dashboard. To edit the Top-N Report dashlet, click the dashlet tool icon on the top right corner of each dashlet.

---

## Configuring the Dial Gauge dashlet

### Before you begin

You must create a dashboard or edit an existing dashboard.

### About this task

Perform the following procedure to configure the Dial Gauge dashlet.

**\* Note:**

Dial gauges support scope-based configuration. Only the first six elements of scope appear on the dial gauge dashlet.

### Procedure

1. Select the **Network** tab, and the overview appears.
2. To view the dashboard configuration buttons and menu icons, click the down arrow located at the top of the content pane.
3. Drag and drop the **Dial Gauge** icon onto the canvas outlined on the Dashboard work area. The Select an element dialog box appears.
4. In the **Domain** field, click the down arrow to select a domain.
5. In the **Perspective** field, click the down arrow and select a perspective from the available list.
6. From the folders or icons that appear in the box, navigate to the element you require. Click the plus signs at the left to expand the folders.

7. To input item parameters, click **Next**.
8. Click the **Choose a variable** field, and select a variable.

You can use the Search variable field to locate a variable.

- To view all variables, select **Include variables with no value**. If there is no data available, the dial gauge does not display any value.
- To show thresholds, select **Show thresholds**.

9. Enter the Variable label.
10. In the Select units field, click on the down arrow to select a units field.
11. In the **Minimum** field, enter a value.

The minimum value shows the lowest label in the dial gauge scale.

12. In the **Maximum** field, enter a value.

The maximum value shows the highest label in the dial gauge scale.

**! Important:**

The system displays the values for intermediate labels based on the values you enter for minimum and maximum labels. Intermediate labels are at fifth values between minimum and maximum. Ensure you configure minimum and maximum values to have integer intermediate labels.

13. In the Color zones field, click on the down arrow to select a value.

The colors green, yellow, and red appear on the dial gauge based on the following configurations.

- none — indicates no color zones.
- 1 — indicates one color zone. You can select a color. The from and to fields are preselected from start to end.
- 2 — indicates two color zones. You can select a color for zone 1 and zone 2, and select the end location for zone 1 or the start location for zone 2.
- 3 — indicates three color zones. You can select a color for zone 1, 2 and 3, and then enter a value in an available from or to field.

**! Important:**

The zone to value must be more than the minimum range value. The zone from value must be less than the maximum value. If you enter incorrect zone values, the system displays a message indicating the value requirements.

14. To add another variable, click **Next**, and repeat step 7 to step 12.
15. Click **Finish**.

## Result

AFO Monitoring adds the Dial Gauge dashlet to the dashboard. To edit the Dial Gauge dashlet, click the dashlet tool icon on the top right corner of each dashlet.



---

## Configuring the Trend Chart dashlet

### Before you begin

You must create a dashboard or edit an existing dashboard.

### About this task

Perform the following procedure to configure the Trend Chart dashlet.

### Procedure

1. Select the **Network** tab, and the overview appears.
2. To view the dashboard configuration buttons and menu icons, click the down arrow located at the top of the content pane.
3. Drag and drop the **Trend Chart** icon onto the canvas outlined on the Dashboard work area. The Select an element dialog box appears.
4. In the **Domain** field, click the down arrow to select a domain.
5. In the **Perspective** field, click the down arrow to select a perspective.
6. From the folders that appear in the box, navigate to the element you require.
  - If you select the Scope perspective, select an element and then check single elements or scope name to include all elements. The system displays the first 100 elements only.
7. Click **Next**.
8. In the Choose elements dialog box, select an element from the list.
  - To add an element, click **Add**.
  - To delete an element, highlight an element, and click **Delete**.
9. Click **Next**.
10. From the Choose time interval dialog box, click the down arrow and select a time interval from the list.
11. Use Current time draws the trend up to the current time. To show trends to another time range, remove the check from the **Use Current time** check box , and select a fixed time.
12. Click **Next**.
13. In the Configure variables dialog box, click **\*No variable selected\***, to view all variables for which sufficient data has been collected to display in the dashlet.
  - Check the box for **Include variables with no value** to view all variables, including variables with no data collected.
  - To show thresholds, select **Show thresholds**.
14. Select a variable.
15. In the Left axis variable (optional) field, select a variable if required.

16. To change the y-axis scale for the graph to show the trend plotting over a larger y-axis, check **Autorange**.
17. To view averages of the trend over an x-axis, check **Averaging Mode**.
18. In the Number of averaging intervals field, enter a value.

The Number of averaging intervals calculates the averages for the x-axis. The number of the average intervals must be a minimum of 2. For example, if 6 is selected as the number of average intervals and if 10 minutes is the polling period, then the values is averaged over one hour.

19. In the Dashlet Title field, enter the name of the dashlet.
20. Click **Next**, or **Finish**.

### Result

AFO Monitoring adds the Trend Chart dashlet to the dashboard. To edit the Trend Chart dashlet, click the dashlet tool icon on the top right corner of each dashlet.

---

## Configuring the Pie Chart dashlet

### Before you begin

You must create a dashboard or edit an existing dashboard.

### About this task

Perform the following procedure to configure the Pie Chart dashlet.

### Procedure

1. Select the **Network** tab, and the overview appears.
2. To view the dashboard configuration buttons and menu icons, click the down arrow located at the top of the content pane.
3. Drag and drop the Pie Chart icon onto the canvas outlined on the Dashboard work area.

The Configure dialog box appears.

4. In the Dashlet **Name** field, enter a name.
5. In the **Domain** field, click the down arrow to select a domain.
6. In the Dashlet items section, click **Add**.
7. Select a perspective.
8. From perspective list, select an element.

If you select Scopes, from the available list, select a scope name, and then check individual elements or check the scope name to include all elements. Scopes that exceed undefined elements are not shown.

9. Click **Next**.

10. To add another dashlet item, repeat steps 6 to 9.
  - To delete a dashlet item, highlight the item, and click **Delete**.
  - To edit a dashlet item, highlight the item, and click **Edit**.
  - To move up the list of dashlet items, click the up arrow.
  - To move down the list of dashlet items, click the down arrow.
11. In the Pie variables section, click **Add**.
12. Select variables that are supported by dashlet items.
  - You can use the Search variable field to search for a specific variable.
  - To include all variables, check **Include all variables for this type of element**.

After you select a variable, the system displays the variable name in the Variable or remainder title field.
13. (Optional) To view free, used, and total properties for variables, select **Calculate remainder from total**.
14. To leave any slice in the pie chart colorless, select **Leave slice transparent**.
15. To exclude the slice value from the display total, select **Exclude slice value from the displayed total**.
16. To merge the value into the other slice, select **Merge value into 'Other' slice**.
17. (Optional) In the Variable title field, rename the title of the variable.
18. Click **Next**.
19. To add another pie variable, repeat steps 11 to 18.

**\* Note:**

- To complete the Pie Chart dashlet, you must select a minimum of two variables.
- To delete a pie variable, highlight the item, and click **Delete**.
  - To edit a pie variable, highlight the item, and click **Edit**.
  - To move up the list of pie variables, click the up arrow.
  - To move down the list of pie variables, click the down arrow.
20. Click **Finish**.

## Result

AFO Monitoring adds the Pie Chart dashlet to the dashboard. To edit the Pie Chart dashlet, click the dashlet tool icon on the top right corner of each dashlettest.

---

## Configuring the Element Property Table dashlet

### Before you begin

You must create a dashboard or edit an existing dashboard.

### About this task

Perform the following procedure to configure the Element Property Table dashlet.

### Procedure

1. Select the **Network** tab, and the overview appears.
2. To view the dashboard configuration buttons and menu icons, click the down arrow located at the top of the content pane.
3. Drag and drop the **Element Property Table** icon onto the canvas outlined on the Dashboard work area.  
The Select an domain dialog box appears.
4. In the Domain field, click the down arrow to select a domain.
5. Click **Next**.
6. From the Select an element dialog box, select a Perspective from the drop-down menu.
7. From the folders that appear in the box, navigate to the element you require.
8. Click **Finish**.

### Result

AFO Monitoring adds the Element Property Table dashlet to the dashboard. To edit the Element Property Table dashlet, click the dashlet tool icon on the top right corner of each dashlet.

---

## Configuring the Schematic dashlet

Perform the following procedure to configure the Schematic dashlet.

### Before you begin

- You must create a dashboard or edit an existing dashboard.
- You must create at least one custom view in the Custom Views perspective of the Network Topology. For information about creating custom views, see [Saving custom views](#) on page 118.

### Procedure

1. Select the **Network** tab, and the overview appears.
2. To view the dashboard configuration buttons and menu icons, click the down arrow located at the top of the content pane.
3. Drag and drop the **Schematic** icon onto the canvas outlined on the Dashboard work area.

The Select a schematic dialog box appears.

4. In the **Domain** field, click the down arrow to select a domain.
5. In the **Perspective** field, click the down arrow to select a perspective.
6. From the folders that appear in the box, navigate to the element you require.
7. Click **OK**.
8. Click **Save dashboard**.

### Result

AFO Monitoring adds the Schematic dashlet to the dashboard. To edit the Schematic dashlet, click the dashlet tool icon on the top right corner of each dashlet.

---

## Viewing the dashboard for a device

### About this task

Perform the following procedure to view the dashboard for a device.

### Procedure

1. Select **Network > Topology**.
2. From the Network Topology center pane, right-click on a device.
3. From the application menu, select **Show Dashboard**.

---

## Deleting a dashboard

### About this task

Perform the following procedure to delete a dashboard.

### Procedure

1. Select the **Network** tab, and the overview appears.
2. To view the dashboard configuration buttons and menu icons, click the down arrow located at the top of the content pane.
3. From the Network Overview page, select a dashboard from the left of the screen.
4. From the menu bar, click **Delete dashboard**.
5. In the Confirm dialog box, click **OK**.

---

## Editing a dashlet

### About this task

Perform the following procedure to edit an existing dashlet on the AFO Monitoring dashboard.

### Procedure

1. Select the **Network** tab, and the overview appears.
2. To view the dashboard configuration buttons and menu icons, click the down arrow located at the top of the content pane.
3. From the Network Overview page, select a dashboard from the left of the screen.
4. Select a dashlet to edit, and click on the Configure icon on the top right corner of the dashlet.

A configuration dialog box specific to the dashlet you selected appears. This is the beginning of the dashlet wizard.

5. Enter information in the configuration dialog box.
6. If you do not edit dashlet items, or other variables, click **Finish**.

If you edit dashlet items or other variables, select one of the following actions:

- Add
- Delete
- Edit

Another configuration screen appears. After you complete each configuration screen, click **Next**.

7. After you complete the edits to the dashlet, click **Finish**.

---

## Renaming a dashboard

### About this task

Perform the following procedure to rename a dashboard.

### Procedure

1. Select the **Network** tab, and the overview appears.
2. To view the dashboard configuration buttons and menu icons, click the down arrow located at the top of the dashboard.
3. Click **Configure** on the top right of the dashlet.
4. In the Prompt dialog box, enter a new dashboard name.
5. Click **Finish**.

---

## Updating a dashlet

### About this task

Perform the following procedure to immediately update a dashlet.

### Procedure

1. Select the **Network** tab, and the overview appears.
2. Select a dashboard on the left.
3. Select a dashlet in the content pane on the right.
4. On the selected dashlet, click **Update** on the bottom left of the dashlet.

---

## Configuring auto refresh for a dashlet

### About this task

Perform the following procedure to specify the time interval for AFO Monitoring to update the dashlet.

The time intervals are:

- 20 minutes
- 5 minutes
- 1 minute
- 30 seconds
- 15 seconds
- Off

### Procedure

1. Select the **Network** tab, and the overview appears.
2. Select a dashboard on the left.
3. Select a dashlet on the right.
4. Click **Update interval** on the bottom left of the dashlet.

A list of update time intervals appears.

5. Select a time interval.
  - Or, to turn the update interval off, select **Off**.

# Chapter 5: Network Discovery configuration

Use the following information to configure network discoveries on your Avaya Fabric Orchestrator Monitoring (AFO Monitoring).

For information about performing a network discovery, see [Performing an initial discovery](#) on page 126.

---

## Network Discovery page

To access the Network Discovery, go to **Network > Discovery**. On the Network Discovery page, you can perform the following discoveries:

- VMs
- Avaya Aura components, and Layer 7 association of Aura components
- SPBM
- VRF discovery and visualization
- Windows and Linux
- Visualization of slot port module
- RSMLT
- Stackable elements and visualization of stacks
- Pod components
- Additional phone properties

AFO Monitoring key features include the following:

- Router and subnet seed for discovery
- Campus or branch office discovery
- Port scan during discovery detects services on servers
- Storage and file-system discovery
- Discovery of both managed and unmanaged devices



Avaya Aura discovery features include the following:

- Discovery of CM, SM, SMGR and Gateways
- Application level discovery
- Port scan during discovery detects services and process
- Aura file-system discovery
- Discovery of IP phones – H.323 and SIP
- Discovery of gateways and trunks
- Discovery of Fiber Channel over Ethernet (FCoE) or iSCSI
- Discovery of ToR VSP 7000

---

## Adding discovery domains

You must add a discovery domain before you can view your network. A discovery domain is the generic term for what you manage with AFO Monitoring. A discovery domain is a virtual representation of part or all of a network.

### Procedure

1. Select **Network > Discovery**.
2. On the Network Discovery page, click **Add a new domain**.
3. Enter a domain name for the domain that you are creating.

Each domain must have a unique name. Names can include numbers, letters with spaces, underscores (\_) or hyphens (-) but not special characters.

4. Click **OK**.

The system adds a tab to the Network Discovery page for your newly created domain. The name of your domain appears in the tab area.

---

## Deleting the data for a selected domain

### About this task

Use the **Erase selected domain** data button to delete domain data such as custom views, trends, events, traps, event history, and monitoring data while keeping the seed definition and device custom names.

### Procedure

1. Select **Network > Discovery**.
2. On the Network Discovery page, select the domain for which you want to erase the data.

3. Click **Erase selected domain data**.

A confirmation warning displays that all acquired and generated information including model, data, events, notifications, and logs for this domain will be deleted.

4. Click **OK** to erase the domain data.
5. Click **Discover selected domain** to start a new discovery.

---

## Cloning discovery domains

Clone a domain to create a new domain using the existing discovery of the domain.

### **Important:**

Cloning domains does not copy the discovered data. Cloning domains copies the discovery configuration. For example, the seed, limit to subnet, or exclusions. You cannot clone any other information and a discovery must still be performed before the new domain can be browsed or monitored.

### **Procedure**

1. Select **Network > Discovery**.
2. On the Network Discovery page, select the domain that you want to clone.
3. Click **Clone selected domain**.
4. Enter the new domain name.
5. Click **OK**.

The tab of the cloned domain appears.

---

## Deleting discovery domains

Delete the discovery domain configuration to remove it from the list of domains.

### **Procedure**

1. Select **Network > Discovery**.
2. On the Network Discovery page, select the domain that you want to delete.
3. Click **Delete selected domain**.
4. In the confirmation dialog box, click **OK**.

---

## Adding seeds

After you add a new network discovery domain, you must configure a discovery recipe, which begins with adding a seed. Seeds are the starting point in a discovery. The discovery begins with the seed(s) you provide and follows all leads from them, such as ARP cache entries and contiguous IP addresses, to discover the domain. Routers are the preferred type of discovery seed, enabling the most straight forward discovery, but you can also use subnets as seeds.

If you have a large subnet (larger than Class C), you can use a partitioning subnet seed instead of a regular subnet seed. A partitioning subnet seed partitions large subnets to find reachable devices and determines which ones are routers.

### Before you begin

- Add a network discovery domain; see [Adding discovery domains](#) on page 105.

### Procedure

1. Select **Network > Discovery**.
2. From the Network Discovery page, select the domain tab to which you want to add a seed.
3. In the **Seeds** box, click **Add**.
4. Select **Seed**.
5. In the Add a new seed dialog box, select either **Router** or **IP Subnet** to indicate the type of seed you want to add.
6. Type a discovery seed in the box. If the seed is a subnet, select the subnet mask from the drop-down list.

Discovery seeds can be a router IP address, a name, or a subnet address. This seed address facilitates the discovery of other elements in the campus. Both IP v4 and IP v6 standard syntax is supported.

7. Select the **Enabled** check box.
8. If you want AFO Monitoring to partition the selected subnet to find router-based seeds, select the **Partition** checkbox.
9. Click **OK**.

The system adds a list of router-based seeds to the seed list.

10. To save the changes, click **Apply your changes** in the top left toolbar.

---

## Adding a seed group

### Before you begin

- Add a network discovery domain. For more information, see [Adding discovery domains](#) on page 105.

## About this task

Perform the following procedure to add a seed group to your discovery.

### Procedure

1. Select **Network > Discovery**.
2. From the Network Discovery page, select the domain tab to which you want to add a seed.
3. In the **Seeds** box, click the **Add** button.
4. Select **Seed Group**.
5. In the Add a new seed group dialog box, enter the name of the seed group.
6. In the Seeds field, click **Add**.
7. Select either **Router** or **IP Subnet** to indicate the type of seed you want to add.
8. Type a discovery seed in the box. If the seed is a subnet, select the subnet mask from the drop-down list.  
  
Discovery seeds can be a router IP address, a name, or a subnet address. This seed address facilitates the discovery of other elements in the campus. Both IP v4 and IP v6 standard syntax is supported.
9. Select the **Enabled** check box.
10. If you want AFO Monitoring to partition the selected subnet to find router-based seeds, select the **Partition** check box.
11. Click **OK**.  
  
The system adds a list of router-based seeds to the seed list.
12. To add another seed to the seed group, repeat step 4 to step 10.
13. To save the changes, click **Apply your changes**.

---

## Editing seeds

Edit a seed to modify the value of the seed.

### Before you begin

- Add a discovery domain and a seed. For more information, see [Adding discovery domains](#) on page 105.

### Procedure

1. Select **Network > Discovery**.
2. On the Network Discovery page, click the domain tab corresponding to the domain for which you want to edit a seed.
3. From the **Seeds** box, select the seed you want to edit.

4. In the **Seeds** box, click **Edit**.
5. In the Edit the selected seed dialog box, modify the seed as needed.
6. Click **OK**.
7. To save the changes, click **Apply your changes** in the top left toolbar.

---

## Deleting seeds

Delete a seed to end the discovery process associated with a seed.

### Procedure

1. Select **Network > Discovery**.
2. On the Network Discovery page, click the domain tab that corresponds to the domain for which you want to delete a seed.
3. In the **Seeds** box, select the seed to be deleted from the list of seeds.
4. In the **Seeds** box, click **Delete**.  
There is no delete confirmation, the seed is deleted immediately.
5. To save the change, click **Apply your changes**.

---

## Adding limits to subnets

You can limit the extent of a discovery by specifying subnets to which the discovery should be restricted. Restricting the discovery process to one or more specific subnets is useful for narrowing the scope of a discovery to a specific portion of your network. Devices that are not members of the subnets are not discovered.

### Before you begin

#### Important:

All seeds must be in the scope of the subnet constrain to form a valid discovery option.

### Procedure

1. Select **Network > Discovery**.
2. On the Network Discovery page, click the domain tab corresponding to the domain for which you want to add a limit to subnets.
3. In the **Limit to Subnets** box, click the **Add** button.
4. Enter a value. You can enter more than one value.

Examples of values are: 10.127.240.0/24, 10.127.231.0/24, and 10.126.0.0/16.

5. After you finish entering values, click **OK**.

The new limit appears in the Limit to Subnets box.

6. To save the change, click **Apply your changes**.

---

## Editing limits to subnets

After you limit the extent of the discovery by specifying subnets, you can modify your entry. If you set discovery constraints by specifying certain options like subnets, the domain discovery is limited to fewer devices, is faster, and provides more flexibility to control the view of network devices that you want to manage.

### Before you begin

#### Important:

All seeds must be in the scope of the subnet constrain to form a valid discovery option.

### Procedure

1. Select **Network > Discovery**.
2. On the Network Discovery page, select the domain tab corresponding to the domain for which you want to edit the limits to subnets.
3. In the **Limit to Subnets** box, select the limit that you want to edit and click **Edit**.
4. Edit the limit as needed.
5. Click **OK**.
6. To save the changes, click **Apply your changes**.

---

## Deleting limits to subnets

After you limit the extent of the discovery by specifying subnets, you can delete your entry.

### Before you begin

#### Important:

All seeds must be in the scope of the subnet constrain to form a valid discovery option.

### Procedure

1. Select **Network > Discovery**.

2. On the Network Discovery page, click the domain tab corresponding to the domain for which you want to delete a limit to subnets.
3. From the **Limit to Subnets** box, select the limit that you want to delete.
4. Click **Delete**.  
There is no delete confirmation, the limit is deleted immediately.
5. To save the changes, click **Apply your changes**.

---

## Adding exclusions

You can limit the extent of a discovery by specifying filters that exclude the parts of your network that match the filter conditions.

### Procedure

1. Select **Network > Discovery**.
2. On the Network Discovery page, click the domain tab corresponding to the domain for which you want to add an exclusion.
3. In the **Exclusion** box, click **Add**.
4. In the Enter an exclude filter definition dialog box, select a **Filter Type** from the list.
5. For the Filter type selected, choose a **Value**.

The values that are valid for the exclude filter definition depend on which Filter Type you select in step 4.

If you select IP Address/Subnet, MAC Address, or SNMP OID as a Filter Type, then specify the appropriate value. Wildcards are accepted.

6. Click **OK**.

The exclusion is added to the list in the Exclusions box.

7. To save changes, click **Apply your changes**.

---

## Variable definitions

Variable	Value
Filter type	Select a Device Type to exclude all devices of a certain type. Choose from the following: <ul style="list-style-type: none"> <li>• IP Address—Exclude all devices with addresses within the range specified. You can specify subnet</li> </ul>

*Table continues...*

Variable	Value
	<p>syntax or use wildcards. For example, 172.16.67.0/24 or 172.16.67.*.</p> <ul style="list-style-type: none"> <li>• IP Subnet—Exclude all devices with addresses within the range specified. You can specify subnet syntax or use wildcards. For example, 172.16.67.0/24 or 172.16.67.*.</li> <li>• IP Range—Excludes all devices with addresses within the range specified.</li> <li>• DNS Name—Excludes all devices whose domain name matches the range specified.</li> <li>• MAC Address—Exclude all devices whose MAC addresses match the range specified using wildcards. Note: Use MAC address syntax and replace any or all octets with asterisks, for example: 00:0D:60:*.:*</li> <li>• SNMP OID—Exclude all devices whose SNMP OID match the range specified using wildcards. For example, to exclude all Microsoft devices, use the exclusion string: .1.3.6.1.4.1.311.* (Note that the period at the beginning of the string is required.).</li> </ul>
Value	<p>The Access Router sits at the periphery of a network, in contrast with a core router that is in the middle of a network. Also called an edge router. Choose from one of the following:</p> <ul style="list-style-type: none"> <li>• Access Router—A router that sits at the periphery of a network, in contrast with a core router that is in the middle of a network. Also called an edge router.</li> <li>• DSLAM—Digital Subscriber Line Access Multiplexer (enables telephone lines to make faster connections to the Internet).</li> <li>• DSU/CSU—Digital (or Data) Service Unit - Channel Service Unit.</li> <li>• Firewall—Device that is configured to permit, deny, or proxy data through a computer network which has different levels of trust.</li> <li>• Hub—Device for connecting multiple twisted pair or fiber optic Ethernet devices together, making them act as a single segment.</li> <li>• IP Phone—Specifies a VoIP phone.</li> <li>• PLC—Specifies a Programmable Logic Controller.</li> </ul>

*Table continues...*



Variable	Value
	<ul style="list-style-type: none"> <li>• Printer—Specifies a printer.</li> <li>• Printer Server—Device to which one or more printers are connected, which can accept print jobs from external client computers connected to the print server over a network.</li> <li>• SAN Bridge—Specifies the Storage Area Network bridge.</li> <li>• SAN Switch—Specifies the Storage Area Network switch.</li> <li>• Server—Network-connected computer hardware that provides specific services onto the network.</li> <li>• Layer 2 Switch—Networking device which performs pure switching.</li> <li>• Terminal Server—Computer that aggregates multiple communication channels into one.</li> <li>• Unmanageable—Any device that can be pinged but does not respond to any known management protocol</li> <li>• WAP—Specifies a Wireless Access Point.</li> <li>• Uninterruptible Power Supplies—Devices and equipment that provide emergency power when the input power source fails. AFO Monitoring supports the APC UPS devices.</li> <li>• VM Hosts—A physical server which hosts the virtual machines.</li> </ul>

---

## Editing exclusions

Edit an exclusion to modify the discovery of your network.

### Procedure

1. Select **Network > Discovery**.
2. On the Network Discovery page, click the domain tab corresponding to the domain for which you want to edit an exclusion.
3. In the **Exclusions** box, click the **Edit** button.
4. From the **Filter Type** list, select a filter.
5. From the **Value Type** list, select a value.
6. Click **OK**.

The exclusion is updated.

- To save the changes, click **Apply your changes**.

## Variable definitions

Variable	Value
Filter type	<p>Select a Device Type to exclude all devices of a certain type. Choose from the following:</p> <ul style="list-style-type: none"> <li>• IP Address—Exclude all devices with addresses within the range specified. You can specify subnet syntax or use wildcards. For example, 172.16.67.0/24 or 172.16.67.*.</li> <li>• IP Subnet—Exclude all devices with addresses within the range specified. You can specify subnet syntax or use wildcards. For example, 172.16.67.0/24 or 172.16.67.*.</li> <li>• IP Range—Excludes all devices with addresses within the range specified.</li> <li>• DNS Name—Excludes all devices whose domain name matches the range specified.</li> <li>• MAC Address—Exclude all devices whose MAC addresses match the range specified using wildcards. Note: Use MAC address syntax and replace any or all octets with asterisks, for example: 00:0D:60:*:*.*</li> <li>• SNMP OID—Exclude all devices whose SNMP OID match the range specified using wildcards. For example, to exclude all Microsoft devices, use the exclusion string: .1.3.6.1.4.1.311.* (Note that the period at the beginning of the string is required.).</li> </ul>
Value	<p>The Access Router sits at the periphery of a network, in contrast with a core router that is in the middle of a network. Also called an edge router. Choose from one of the following:</p> <ul style="list-style-type: none"> <li>• Access Router—A router that sits at the periphery of a network, in contrast with a core router that is in the middle of a network. Also called an edge router.</li> <li>• DSLAM—Digital Subscriber Line Access Multiplexer (enables telephone lines to make faster connections to the Internet).</li> </ul>

*Table continues...*

Variable	Value
	<ul style="list-style-type: none"> <li>• DSU/CSU—Digital (or Data) Service Unit - Channel Service Unit.</li> <li>• Firewall—Device that is configured to permit, deny, or proxy data through a computer network which has different levels of trust.</li> <li>• Hub—Device for connecting multiple twisted pair or fiber optic Ethernet devices together, making them act as a single segment.</li> <li>• IP Phone—Specifies a VoIP phone.</li> <li>• PLC—Specifies a Programmable Logic Controller.</li> <li>• Printer—Specifies a printer.</li> <li>• Printer Server—Device to which one or more printers are connected, which can accept print jobs from external client computers connected to the print server over a network.</li> <li>• SAN Bridge—Specifies the Storage Area Network bridge.</li> <li>• SAN Switch—Specifies the Storage Area Network switch.</li> <li>• Server—Network-connected computer hardware that provides specific services onto the network.</li> <li>• Layer 2 Switch—Networking device which performs pure switching.</li> <li>• Terminal Server—Computer that aggregates multiple communication channels into one.</li> <li>• Unmanageable—Any device that can be pinged but does not respond to any known management protocol</li> <li>• WAP—Specifies a Wireless Access Point.</li> <li>• Uninterruptible Power Supplies—Devices and equipment that provide emergency power when the input power source fails. AFO Monitoring supports the APC UPS devices.</li> <li>• VM Hosts—A physical server which hosts the virtual machines.</li> </ul>

---

## Deleting exclusions

You can delete an exclusion if it is not required.

**Procedure**

1. Select **Network > Discovery**.
2. On the Network Discovery page, click the domain tab corresponding to the domain for which you want to delete an exclusion.
3. From the **Exclusion** box, select the exclusion to be deleted from the list of exclusions.
4. Click **Delete**, located at the top of the Exclusions box.  
 There is no delete confirmation, the exclusion is deleted immediately.
5. To save the changes, click **Apply your changes**.

## Setting the network discovery options

Set the discovery options to control the extent of your discovery.

**Procedure**

1. Select **Network > Discovery**.
  2. On the Network Discovery page, click the domain tab corresponding to the domain for which you want to select an option.
  3. From the **Options** box, select the discovery option(s).
- \* Note:**  
 You can click **Discard changes, reverting to the previous values** to restore the values to the default settings.
4. Click **OK**.
  5. To save the changes, click **Apply your changes**.

## Variable definitions

Variable	Value
Wide Area Crawl	AFO Monitoring discovers devices on the far side of every router interface, regardless of the interface type. Supported WAN interfaces: PossibleWideAreaInterface, ATMInterface, MultiProtocolEncapOverAAL5Interface, ATMSubinterface, WideAreaInterface, BasicISDNInterface, DS0Interface, FrameRelayInterface, HDLCInterface, IPTunnelInterface, ISDNInterface, MPLSInterface,

*Table continues...*

Variable	Value
	PacketOverSonetInterface , PPPInterface, PPPMultilinkBundellInterface, ProprietaryPPPInterface, SonetInterface, T1DS1Interface, T3DS3Interface.  If the WAN Crawl option is not selected then AFO Monitoring Discovery does not go beyond any interface which is considered to be WAN interface.
VPN Crawl	Usually not needed to discover VPN client campuses. This option causes AFO Monitoring to augment discovery with information from vendor-specific VPN tables. Initiates AFO Monitoring to detect for remote sites through VPN connections.
DNS Lookup	AFO Monitoring performs DNS lookup on all devices.
Service By PortScan	Determines services running on a server by scanning for well known ports.
For All Devices	The port scan is run on all devices, not just for devices classified as servers.
Avaya Only Discovery	Ignores any devices that are not on the approved Avaya list. Includes devices with IDs that begin with one of the following: 15 (Xylogics), 18 (Wellflee), 45 (Synoptics), 335 (Micom), 562 (Avaya), 569 (Armon), 930 (Centillion), 1424 (Performance Technology), 1872 (Alteon), 2272 (Rapid City), 2505 (New Oak), 2865 (Opteron)
Storage Discovery	Discovers the disks, nodes, files systems, and disk capacity of Windows and Linux servers. For Linux servers, SSH must be enabled and added to the credentials Editor. For Windows, SNMP must be enabled on the server.

---

## Renaming a campus

You can customize the name of the campus for the domain.

### Before you begin

- Add a discovery domain.
- Configure domain network discovery options including Seeds, Limit to Subnets, Exclusions, and Options.

### Procedure

1. Select **Network > Discovery**.

2. On the Network Discovery page, select the campus you would like to rename, and then click **Rename Campus**.
3. Enter a new name for the campus.
4. Click **OK**.

---

## Saving custom views

There are three ways you can save a custom view.

- From a default schematic
- From scratch
- From an existing custom view

After you create a custom view, you can edit the view, import a background image, and enable or disable links. Because the layout button is unavailable, to change the layout, you must manually move the objects.

---

## Saving a custom view from a default schematic

### About this task

Perform the following procedure to save a custom view from the existing default schematic. Use an existing schematic from the Layer 2 Hierarchy or Layer 3 Hierarchy perspectives.

### Procedure

1. Select **Network > Topology**.
2. On the Network Typology page, use the drop-down menu on the left, to select one of the following perspectives, Layer 2 Hierarchy, Layer 3 Hierarchy, or Scopes.

The default schematic appears in the center pane.

3. Click **enter edit mode** above the middle content pane.
4. Make changes to the schematic.
5. Click **save changes**.

The Save schematic dialog box appears.

6. Enter a name for the schematic.
7. Select the public folder or private folder.
8. Click **OK**.

The custom view is saved, and is located in the folder you selected in the Custom Views perspective.

---

## Saving a custom view from scratch

### About this task

Perform the following procedure to save a custom view from scratch from the Custom Views perspective.

### Procedure

1. Select **Network > Topology**.
2. From the tree browser, select the **Custom Views** perspective from the drop down menu on the left.
3. From the Custom Views perspective, select a custom view from the public folder or the private folder.
4. Click **Add**.

The Add new custom view dialog box appears.

5. Enter a name for the schematic.
6. Click **From Scratch**.
7. Select a perspective.
8. From the perspective navigation tree, select devices, and click the right-pointing arrow to view the devices in the Elements to Display in New Layout pane.
9. To select links automatically, check the **Auto-link new elements** check box.

To select links manually, uncheck the **Auto-link new elements** check box.

10. Click **OK**.

The system creates a custom schematic with links drawn in.

#### **Note:**

If links do not appear in the schematic, there is no path to the device.

11. Click **save changes**.

The Save schematic dialog box appears.

12. Enter the name for the schematic.
13. Select a folder; public or private.
14. Click **OK**.

## Saving a custom view from an existing schematic

### About this task

Perform the following procedure to create a custom view from an existing schematic in the Custom Views perspective.

### Procedure

1. Select **Network > Topology**.
2. From the tree browser, select the **Custom Views** perspective in the drop-down menu on the left.
3. Select a custom view from the public folder or the private folder.
4. Click **Add**.

The Add new custom view dialog box appears.

5. Enter a name for the schematic.
6. Click **From Existing**.

If the schematic view contains non-device icons, a Confirm dialog box appears to warn you that the current view may contain non-device icons that are not supported in custom views. If you proceed, the system removes the non-device icons from the custom view.

To proceed, click **OK**.

7. Click **enter edit mode** to make changes to the topology.
  8. Click **save changes**.
- The Save schematic dialog box appears.
9. Enter the name for the schematic.
  10. Select a folder; public or private.
  11. Click **OK**.



# Chapter 6: Network Discovery management

This section provides information and procedures for using the Network Discovery feature.

---

## Shortest Path Bridging

Shortest Path Bridging (IEEE 802.1aq) provides logical Ethernet networks on native Ethernet infrastructure using a link state protocol to advertise both topology and logical network membership.

Packets are encapsulated at the edge either q-in-q IEEE 802.1ad (SPBV) or in MAC-in-MAC IEEE 802.1ah (SPBM) frames and transported only to other members of the logical network.

The link state protocol (IS-IS) is used to discover and advertise the network topology and compute shortest path trees from all bridges in the SPB Region.

Unicast and multicast is supported and all routing is on symmetric shortest paths. Many equal cost shortest paths are supported.

---

## Shortest Path Bridging MAC

Shortest Path Bridging MAC (SPBM) is a standard Ethernet control plane that combines the positive attributes of routing with switching for all paths active, and rapid failure restoration and scalability. SPBM enables both campus and data center solutions by enabling server consolidation and virtualization for data centers, and provides campus benefits such as plug and play deployments and simplification of internet protocol. SPBM maintains differentiation for Avaya only technologies by providing IP shortcuts to simplify routing and IP VPFN, and providing resilient access and coexistence with SMLT and MSTP.

Shortest Path Bridging Mac provides the following solutions:

- Scalability such as Mac address explosion
- Loop prevention and suppression
- Uses all links to prevent blocking and wasting link resources
- Uses shortest path for unicast and multicast traffic
- More flexible core topologies compared to SMLT
- Ease of provisioning

- Service virtualization (L2, L3 VPNs)
- Simple encapsulation

---

## SPBM workflows

The following sections describe various SPBM workflows.

### SPBM discovery

The following list outlines the workflow for a SPBM discover.

- Discover Customer VLANs (C-VLAN).
- Discover backbone VLANs (B-VLAN).
- Discover IS-IS interfaces, their admin state and adjacencies for each SPBM enabled node.

### SPBM Visualization

The following list outlines the workflow for SPBM visualization.

- Create a scope to get a list of SPBM enabled devices on the network.
- Provide a SPBM perspective that displays the SPBM schematic of the discovered SPBM areas in the campus.

On the left navigation pane, display the SPBM areas discovered and for each SPBM area, and display the following:

- Devices
- B-VLANs
- C-VLANs
- L3 VPN (VRF)
- To display the schematic for the SPBM, click on a SPBM area in the navigation pane.
- To display details of the VLAN or VRF in a tabular format, click on a SPBM area in the navigation pane. You can right-click on an element to highlight an element of the VLAN or VRF on the schematic.
- If you click on a device in the left navigation pane, a tabular view of the SPBM configuration on the device appears with the following information:
  - I-SIDs configured
  - B-VLANs configured
  - C-VLANs configured
  - L3 VPNs (VRFs) configured
- After you select a device on a SPBM schematic, add the following properties and display in the properties pane.
  - SPBM area
  - I-SIDs configured

---

## SPBM monitoring

There are various monitoring aspects for Shortest Path Bridging MAC (SPBM). Any change in the network creates a change in the network topology. Therefore the network participants, or the nodes, must quickly become aware changes and adjust their shortest path algorithm to each destination as soon and efficiently as possible through SPBM. Each node maintains a list of adjacencies and creates a list of shortest path computations that you must monitor.

---

## Virtual Routing and Forwarding

In IP-based computer networks, Virtual Routing and Forwarding (VRF) is a technology that allows multiple instances of a routing table to coexist within the same router at the same time. Because the routing instances are independent, the same or overlapping IP addresses can be used without conflicting with each other.

For information on Avaya devices that support VRF, see *Deploying Avaya Fabric Orchestrator*, NN48100–101.

---

## Layer 3 subnet partitioning

The Layer 3 subnet partitioning feature is a discovery phase that you can execute prior to performing a normal network discovery. When you use the Layer 3 partitioning feature, the Avaya Fabric Orchestrator Monitoring (AFO Monitoring) executes a discovery phase that takes as its starting input one or more large subnet seeds. From these seeds, the AFO Monitoring analyzes the network and produces generated router IP address seeds that you can use in the place of input subnets for the main discovery.

---

## Device discovery

AFO Monitoring can discover devices that support the following protocols:

- 802.1ab (Link Layer Data Protocol, or LLDP)

**\* Note:**

ERS 8000, VSP 4000, VSP 8000, and VSP 9000 devices do not support LLDP.

- Avaya Discovery Protocol (NDP), formerly known as Bay Networks Autotopology Discovery Protocol, or SynOptics Network Manager Protocol (SONMP)

One of these protocols must be enabled on the device for AFO Monitoring to discover it.

For more information on configuring device credentials for network discovery, see *Administration using Avaya Fabric Orchestrator*, NN48100–600.

---

## IEEE 802.1ab

Network Discovery supports the discovery of devices using IEEE 802.1ab, Station and Media Access Control Connectivity Protocol, or Link Layer Discovery Protocol (LLDP). Network Discovery uses both 802.1ab and the Avaya Discovery Protocol (NDP), formerly Bay Networks Autotopology Discovery Protocol, to discover the devices on the network.

With 802.1ab, stations connected to a LAN can advertise their capabilities to each other, enabling the discovery of physical topology information for network management. The 802.1ab-compatible stations can consist of any interconnection device including PCs, IP Phones, switches, Access Points, and routers. Each station stores 802.1ab information in a standard Management Information Base (MIB), making it possible for AFO Monitoring to access the information.

With 802.1ab, AFO Monitoring can discover certain configuration inconsistencies or malfunctions that can result in impaired communications at higher layers, such as duplex mismatches.

Each 802.1ab station:

- advertises connectivity and management information about the local station to adjacent stations on the same 802 LAN.
- receives network management information from adjacent stations on the same LAN.

The following Avaya devices support 802.1ab:

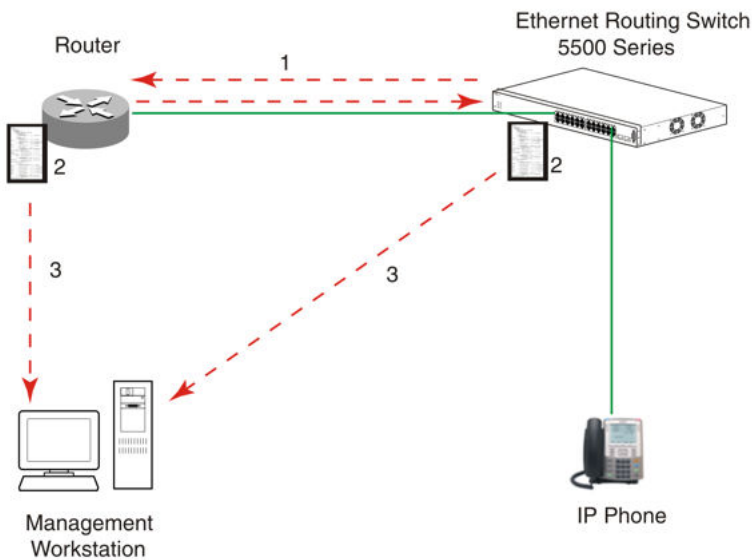
- Ethernet Routing Switch 55xx Release 5.x and above
- Ethernet Routing Switch 8300 Release 3.x and above
- Ethernet Routing Switch 45xx Release 5.x and above
- Ethernet Routing Switch 25xx Release 4.x and above
- Ethernet Switch 325/425 Release 3.x and above
- Ethernet Switch 470/460 Release 3.x and above
- Avaya IP Phones

With 802.1ab support, AFO Monitoring is not restricted to the discovery of Avaya devices, and can discover any 802.1ab-enabled devices on the network, including third-party switches, routers, and IP Phones.

### Important:

AFO Monitoring can discover third-party 802.1ab-enabled devices on the network but cannot provide management for these devices.

The following figure shows an example of how 802.1ab works in a network.



**Figure 5: How 802.1ab works**

1. The Ethernet Routing Switch and 802.1ab-enabled router advertise chassis/port IDs and system descriptions to each other.
2. The devices store the information about each other in local MIB databases, accessible by using SNMP.
3. A management workstation running Avaya Fabric Orchestrator (AFO) retrieves the data stored by each device and builds a network topology map.

Both Avaya and third-party devices are displayed.

---

## Enabling discovery with 802.1ab

To enable discovery of a device through 802.1ab, you must enable the following TLVs on the device:

- System Name TLV
- System Capabilities TLV
- Management Address TLV

To enable discovery of MED endpoints, you must also enable the MED TLVs on those endpoints.

For more information about configuring 802.1ab on your device, refer to the documentation for your device.

---

## Performing an initial discovery

You can perform a discovery for the chosen domain. A discovery is a snapshot taken of part or all of a network. A single domain will usually have many discoveries made of it over time.

### **Important:**

The default discovery policy only discovers Avaya devices. This default must be edited for full discovery.

### **Before you begin**

- Configure domain discovery options including Seeds, Limit to Subnets, Exclusions, and Options. For information about how to configure a discovery, see [Network Discovery configuration](#) on page 104.

### **Procedure**

1. Select **Network > Discovery**.
2. Select the domain you want to discover.
3. Click **Discover selected domain** from the top menu bar.

A confirmation dialog box appears to confirm the discovery.

### **Note:**

Select the appropriate merge policy that applies to your needs only at the end of rediscovery.

4. Click **OK** to start the discovery.

### **Result**

If discovery results seem incomplete or incorrect, check the following:

- Check to see if the credentials are added for the devices which are not discovered. Go to **Administration > Credentials**.

### **Important:**

You must add the credentials for the router seed for the discovery, and the credentials for all the devices in the network.

- Check to see if the SNMP (V1 or v3) is enabled on the undiscovered device or devices.
- On some devices (for example Avaya VPN Routers), the IP address of the AFO Monitoring server must be configured in order for them to respond back to SNMP queries sent by AFO Monitoring.
- Ensure that a proper seed is used. An improper seed can occur if the device used as seed is not reachable from the AFO Monitoring server. If there are some devices separated by firewall, then you should provide a minimum of two seeds, as seeds for the routers from both sides of the firewall.
- Ensure correct discovery options are used. Make sure that WAN Crawl, VPN Crawl, DNS Lookup and Avaya Discovery are set correctly.

- Ensure that the License Node Count cap is not reached. If is reached, discovery stops before it completes and a corresponding error message is displayed.
- If a switch or AP is not discovered correctly and it is hanging off of an undiscovered core switch, troubleshoot undiscovered core switch before the edge.
- Check the discovery logs by clicking the **Discovery problem Report** button on the discovery browser tool bar. You can optionally access the discovery logs by navigating to **Reports > Discovery Reports**. Take corrective action indicated by the logs. For example, if you see a SNMP time out, check the device using the MIB browser.

---

## Refreshing discovery status

You can configure the discovery status of a domain to refresh or auto-refresh.

### Before you begin

- Add a domain.
- Configure domain discovery options including Seeds, Limit to Subnets, Exclusions, and Options.
- Perform an initial discovery.

### Procedure

1. Select **Network > Discovery**.
2. On the Network Discovery page, click the **Refresh** button in the top menu bar.  
The discovery status is refreshed.

---

## Viewing discovery status summary

You can view the statistics about the discoveries you performed in the Discovery Status Summary box.

### Procedure

1. Select **Network > Discovery**.
2. On the Domains page, click the domain tab corresponding to the domain for which you want to select an option.
3. View the discovery statistics for the selected domain in the Discovery Status Summary pane.

## Variable definitions

Variable	Value
As of	Read-only. The time (of client machine) at which the discovery status was refreshed.
Discovery State	Read-only. The latest status of the discovery process. Valid values are In Progress (the discovery process is still in progress), New Domain (the domain is not discovered) and Completed (the discovery process has finished).
Discovery Level	Read-only. The type of discovery that was performed. Valid values are Initial Discovery (the discovery was the first discovery of the network), Undiscovered (the discovery wasn't performed), and Full Rediscovery (the discovery was a rediscovery).
Start Time	Read-only. The server time at which the most recent discovery process initiated. This timestamp includes the time zone (GMT offset) of where the server is located.
End Time	Read-only. The server time at which the most recent discovery process completed. This timestamp includes the time zone (GMT offset) of where the server is located.
Last Device Discovered	Read-only. The device that the server last discovered.
Campuses	Read-only. A list of the campuses within your network that were included in the discovery. Individual campuses can be selected to display statistics for only that campus or All Campuses can be selected to display combined statistics (sum of all individual campuses) for all campuses within your network. For example, the values displayed in the Prev., Last, and Merged columns reflect values for either a single campus (if you select one campus) or the sum of all campuses if you select All Campuses. A campus is a location at which devices reside, such as an office, a building, or a set of buildings within a reasonably short distance of each other
Element Type	Read-only. The type of element that was discovered. Element types include: Access Router, Device, DSLAM, DSUCSU, Firewall, Interface, Manageable, Other, Phone, PLC, Printer/Server, Printer, Router, SAN Bridge, SAN Switch, Server, Switch (L2),

*Table continues...*



Variable	Value
	Switch (L3), Switch/Router, Terminal Server, Unmanageable, VM Image, VPN Server, WAP
Prev. (Preview)	Read-only. The number of each type of element that was discovered in the prior discovery.
Last	Read-only. The number of each type of element that was discovered in the most recent discovery.
Merged	Read-only. The sum of each type of element discovered in all discoveries taking into account the rediscovery policies used. The number of each type of element (the counts in each row) after the merge will differ based on the rediscovery policy used.

---

## Viewing a discovery problem report

### About this task

Use this procedure to view the logs related to a discovery.

### Procedure

1. Select **Network > Discovery**.
2. Click **Discovery Problem Report** to open the Discovery Reports page and view the logs related to the discovery.

---

## Performing a rediscovery

Perform a rediscovery of a chosen domain when you wish to have an updated snapshot. There are four different options available to perform a rediscovery.

### Important:

The default discovery policy only discovers Avaya devices. This default must be edited for full discovery.

### Procedure

1. Select **Network > Discovery**.
2. On the Network Discovery page, click **Rediscover selected campus** icon from the toolbar.

3. From the Confirm dialog box, select the appropriate merge policy that applies to your needs. The following options are available:
  - **Rediscover from scratch retaining states** —Retains information about equipment found in past discoveries and also finds all equipment from scratch.
  - **Retain equipment unless marked to remove** —Retains information about equipment found in a past discovery unless marked to remove.
  - **Rediscover from scratch**—Does not retain information about equipment found in past discoveries and instead finds all equipment from scratch.
  - **Retain missing equipment if possible**—Retains information about equipment found in a past discovery that is not found upon rediscovery. This information is retained over three rediscoveries. If the equipment is missing three times it is automatically removed.
4. Click **OK** to start the rediscovery.

# Chapter 7: Manual device discovery

---

## Adding a device to an existing discovery

Add a device to an existing discovered domain.

### Before you begin

- You must configure the device to respond to SNMP queries from Avaya Fabric Orchestrator Monitoring (AFO Monitoring).
- AFO Monitoring must have an existing pre-discovered domain containing a pre-discovered LAN, or routed subnet, to which you can add the new device.

### Procedure

1. Select **Network > Discovery**.
2. On the Network Discovery page, click **Manual Discovery**.
3. In the **New Requests** panel, click the **Add** button.
4. Enter the IP address of the device that you want to discover.
5. Click **OK**.
6. Click **Discover** to begin the discovery of the device.

---

## Editing a manual device discovery

Perform the following procedure to edit a manual discovery.

### Before you begin

- You must configure the device to respond to SNMP queries from AFO Monitoring.

### About this task

#### Procedure

1. Select **Network > Discovery**.
2. On the Network Discovery page, click **Manual Discovery**.
3. In the **Previous Requests** panel, select the device to be modified.
4. In the **Previous Requests** panel, click **Edit**.

5. Modify the value as required.
6. Click **OK** to save the changes.

---

## Starting the manual device discovery again

Perform the following procedure to start the manual discovery again.

### Before you begin

- You must configure the device to respond to SNMP queries from AFO Monitoring.

### Procedure

1. Select **Network > Discovery**.
2. On the Network Discovery page, click **Manual Discovery**.
3. In the **New Requests** panel, click **Add**.
4. Enter the IP address of the device that you want to discover.
5. Click **OK**.
6. Click **Discover** to begin the discovery of the device.
7. After the manual discovery completes, click on any device.
8. In the **Previous Requests** panel, click the **Discover again** button to add the entry to the New Requests panel.
9. The manual discovery starts again.

---

## Deleting a manual device discovery

Perform the following procedure to delete a device from the manual discovery panel.

### Before you begin

- You must configure the device to respond to SNMP queries from AFO Monitoring.

### Procedure

1. Select **Network > Discovery**.
2. On the Network Discovery page, click **Manual Discovery**.
3. In the **New Requests** panel, select the device to be deleted.
4. Click **Delete**, located at the top of the **New Requests** panel.

There is no delete confirmation, the device is deleted immediately.

---

## Cancelling a manual device discovery

Perform the following procedure to cancel a manual device discovery when the discovery is in progress.

### Procedure

1. Select **Network > Discovery**.
2. If you want to cancel a manual discovery, after selecting to do a discovery, click the **Discovery in Progress - Click to cancel** icon, from the top menu, to cancel a discovery that is in progress.

# Chapter 8: Viewing discovery results

This section provides procedures for viewing the results of a network discovery.

---

## Viewing discovery results in the Tree Browser

Use the following procedure to view the results of a network discovery in the Tree Browser.

### Procedure

1. Select **Network > Topology**.
2. On the Network Topology page, view the network elements in the Tree Browser, located on the left side of the page.
3. To view specific device types only, select a filter from the Perspectives drop-down menu.
4. Click the + and - icons to expand and contract the tree folders.
5. Left-click twice on a node to display it on the central panel, in its network context. Scopes and SPBMs are displayed in tabular form.
6. Click the **Refresh** icon to update the information displayed in the Details panel.
7. Right-click on a device, and select the type of information you want to view.

---

## Variable definitions

The following table describes the options on the drop-down menu in the **Network > Topology** toolbar.

Perspective	Description
Layer 2 Hierarchy	Lists domain elements according to their OSI layer 2 functions.
VLAN Hierarchy	Lists the logical nodes that constitute a virtual LAN in each campus.
SPBM view	Lists the supported applications in the SPBm area, including Backbone Core Bridges, Backbone Edge

*Table continues...*

Perspective	Description
	Bridges, Backbone VLANs, Custom VLANs, and VRFs.
Layer 3 Hierarchy	Lists domain elements according to their OSI layer 3 organization, that is, by their IP addresses.
Custom Views	Lists user-defined public and private views of the network topology.
Device Types	List items as being campuses, devices (managed or unmanaged), or interfaces (including AAL5, ATM, Ethernet, PPP, and a number of others).
Applications	Lists the supported applications that are visible to the AFO Monitoring Server. Applications are listed under the following categories: Operating System, VoIP, and Voice.
Scopes	List all scopes defined for the domain enabling you to list domain elements according to a scope to which they belong.

---

## Viewing discovery results in the Topology Viewer

The Topology Viewer allows you to view the discovery results in graphical format in the middle of the Network Topology page. After the system completes a discovery, the Topology Viewer shows discovered campus/campuses and WAN Links between them. Double-click on any campus icon to view its details. Double-click on a device within the campus details to show the L2 view for that device. Double-click on an interface or an element which does not have further detailed views displays the properties associated with that element in a pop-up window.

The double-click function on an icon in the Topology Viewer or the Tree Browser has a default behavior that depends on the context of the icon. Double-click on an icon or item on the tree browser provides more details about what is inside the domain element. If the icon is an aggregation of other domain elements, then double-clicking the icon displays more details about the domain element. For example, double-clicking on a campus icon displays further details about the campus, and double-clicking on a device icon provides further details about the interfaces in the device. If the icon is an aggregation of links, which is a thick line, then double-clicking expands the links. If the icon is already expanded to member links, the icon collapses. If the icon is an interface, then the icon provides the properties of the interface.

**\* Note:**

If the number of elements in a domain is more than 1000, the schematic cannot be zoomed in or out. Avaya recommends that you split such large domains into multiple domains to manage and view the discovery results.

The following navigation controls are available from the Topology Viewer:

- Up arrow — Moves the view up a level. For example, from campus view, the up button moves the view to WAN/Campuses.
- Back — Moves to the previous view.
- Forward — Moves to the next view.
- Enter edit mode — Movement of icons are frozen.
- Save — Saves unsaved icon moves.
- Discard changes — Discards changes to a layout and reverts to the previous layout.

View the results of a network discovery in graphical format using the Topology Viewer.

### Procedure

1. Select **Network > Topology**.
2. On the Network Topology page, view the network elements in the Topology Viewer, located in the middle of the page. Use the arrows to move the view of the topology to the left or right.
3. To view specific device types only, select a filter from the Perspectives drop-down menu.
4. Select a device for which you want to view detailed information.
5. Right-click on the selected device and select an option from the drop-down menu.

---


## Variable definitions

The following table describes the menu options for pods, a device, or campus in the non-edit mode. The following table displays the options available when you are in **Network > Topology**, and you right-click on a router, switch, SPBM area, or other option in the tree browser on the left.


Menu option	Device Group	Description
Tables	Avaya POD	Provides the following details about the Avaya POD in a table format: <ul style="list-style-type: none"> <li>• Show Devices—Displays a table with information about the devices that are connected to the pod.</li> </ul>
	Campus	Provides the following details about the campus in a table format: <ul style="list-style-type: none"> <li>• Devices—Displays a table with information about the devices that are connected to a campus.</li> <li>• Network Devices—Displays a table with information about the network devices connected to a campus.</li> <li>• MLT Details Table—Displays a table with information about the MLT details associated to devices connected to a campus.</li> </ul>

*Table continues...*



Menu option	Device Group	Description
		<ul style="list-style-type: none"> <li>• campusVoIPDevices—Displays a table with information about VoIP devices associated with a campus.</li> </ul>
	Device	<p>Provides the following details about the device in a table format:</p> <ul style="list-style-type: none"> <li>• Interfaces—Displays a table with information about the interfaces associated with the selected device</li> <li>• Interface Groups—Displays a table with information about the interface groups associated with the selected device.</li> <li>• Physical Elements—Displays a table with information about the physical elements associated with the selected device.</li> <li>• Show Bonded Channels—Displays a table with information about the bonded channels associated with the selected device.</li> <li>• Connected Devices (All)—Displays a table with information about all connected devices associated with the selected device.</li> <li>• Connected Devices (Network)—Displays a table with information about network connected devices associated with the selected device.</li> <li>• Connected Devices (MLT)—Displays a table with information about MLT connected devices associated with the selected device.</li> <li>• Connected Devices (VoIP)—Displays a table with information about VoIP connected devices associated with the selected device.</li> <li>• MLT Details Table—Displays a table with MLT details for the selected device.</li> <li>• Stack Units—Displays a table with the devices connected to the stacked unit.</li> </ul> <p> <b>Note:</b></p> <p>After you select a table, you can select another table for the same device from the drop-down list available at the top of the central browser.</p>
	ESXi	<p>Provides the following details about the ESXi device in a table format:</p> <ul style="list-style-type: none"> <li>• Interfaces—Displays a table with information about the interfaces associated with the selected device</li> </ul>

*Table continues...*

Menu option	Device Group	Description
		<p> <b>Note:</b></p> <p>When viewing scope members for ESXi devices, it is normal for negative values to appear in the Index column.</p> <ul style="list-style-type: none"> <li>Processors—Displays a table with information about the processors associated with the selected device.</li> <li>Physical Elements—Displays a table with information about the physical elements associated with the selected device.</li> <li>Show File Systems—Displays a table with information about the file systems associated with the selected device.</li> <li>Show Applications—Displays a table with information about the applications associated with the selected device.</li> <li>Show Services—Displays a table with information about the services associated with the selected device.</li> </ul>
Schematics	Avaya POD	<p>Provides the following schematic information about the Avaya POD:</p> <ul style="list-style-type: none"> <li>Show Devices—Displays the schematic for the devices associated with Redrack.</li> </ul>
	Campus	<p>Provides the following schematic information about the campus:</p> <ul style="list-style-type: none"> <li>Details</li> <li>Subnet Details</li> <li>Physical Datacenter</li> </ul>
	Device	<p>Provides the following schematic information about the device:</p> <ul style="list-style-type: none"> <li>Layer 2 Details—Displays the domain element details according to their OSI layer 2 functions.</li> <li>MLT Schematic—Displays the MLT schematic for the selected device.</li> <li>Network Neighbors—Provides access to the backbone neighborhood schematic view for a selected domain element. This view, intended for improved viewing of domain elements in very large domains, expands the view to show domain elements that are connected by one hop to the selected domain element.</li> <li>Show Campus—Shifts view to the campus for the selected device.</li> <li>Show Paths...—Enables you to view the shortest network path between any two points in the network. Show Paths is not a live path trace. Although interfaces may be end-</li> </ul>

*Table continues...*

Menu option	Device Group	Description
		points, intermediate interfaces are not shown along paths. Only intermediate devices are shown.
	ESXi	Provides the following schematic information about the ESXi device: <ul style="list-style-type: none"> <li>• Layer 2 Details—Displays the domain element details according to their OSI layer 2 functions.</li> <li>• Show Paths...—Enables you to view the shortest network path between any two points in the network. Show Paths is not a live path trace. Although interfaces may be end-points, intermediate interfaces are not shown along paths. Only intermediate devices are shown.</li> </ul>
	G450	Provides the following schematic information about the G450 device: <ul style="list-style-type: none"> <li>• Layer 2 Details—Displays the domain element details according to their OSI layer 2 functions.</li> <li>• Network Neighbors—Provides access to the backbone neighborhood schematic view for a selected domain element. This view, intended for improved viewing of domain elements in very large domains, expands the view to show domain elements that are connected by one hop to the selected domain element.</li> <li>• Show Campus—Shifts view to the campus for the selected device.</li> <li>• Show Paths—Enables you to view the shortest network path between any two points in the network. Show Paths is not a live path trace. Although interfaces may be end-points, intermediate interfaces are not shown along paths. Only intermediate devices are shown.</li> </ul>
Configure	Avaya POD Campus Device ESXi G450	Enables you to perform the following configuration actions for the Avaya POD, a campus, or a device: <ul style="list-style-type: none"> <li>• Mark for Removal—Marks the device for removal from the next discovery.</li> <li>• Supervision Settings—Enables you to define the supervision settings for the selected device. The values include the following: inherit, supervise, unsupervise.</li> <li>• Overrides...—Displays a table with configuration, scope, override, and value of the selected device or campus. You can add, delete or edit an override.</li> </ul>
Monitoring	Device	Enables you to perform the following configuration actions: <ul style="list-style-type: none"> <li>• Add custom monitoring</li> </ul>

*Table continues...*

Menu option	Device Group	Description
Diagnose	Device ESXi G450	Enables you to perform the following diagnostic actions for the device: <ul style="list-style-type: none"> <li>• MIB Query</li> <li>• MIB Browse</li> <li>• ICMP Ping</li> <li>• Trace Route</li> <li>• SNMP Get</li> <li>• Remote Ping</li> <li>• Remote Traceroute</li> </ul>
Tools	Avaya POD	Provides a launch point for Pod Visualization Manager (PVM). The following tool is available for the Avaya POD: <ul style="list-style-type: none"> <li>• Launch PVM</li> </ul>
	Campus	Provides a launch point for commonly used device element management tools. The following tool is available for the campus: <ul style="list-style-type: none"> <li>• Rediscover Campus</li> </ul>
	Device	The following tools are available for the device: <ul style="list-style-type: none"> <li>• EM-Launch</li> <li>• HTTP-connection</li> <li>• Legacy-JDM-Launch</li> <li>• Rediscover Device</li> <li>• JDM-Launch</li> <li>• Launch EMC Unisphere</li> </ul> <p><b>* Note:</b> JDM-Launch as a tool appears only for the devices that are capable of JDMRediscover Device.</p> <p><b>* Note:</b> Launch EMC Unisphere as a tool appears only for storage devices.</p>
	ESXi	The following tools are available for the ESXi device: <ul style="list-style-type: none"> <li>• HTTP Connect</li> <li>• Rediscover Device</li> <li>• VMware vCenter</li> </ul>

*Table continues...*

Menu option	Device Group	Description
	G450	The following tools are available for the G450 device: <ul style="list-style-type: none"> <li>• EM Launch</li> <li>• Launch Secure EM</li> <li>• Rediscover Device</li> </ul>
Trends	Avaya POD Campus Device ESXi G450	Trends are performance graphs for devices or interfaces. The trends menu lists a collection of MITs that are configured and can be trended. For example, device CPU usage is a configured Monitored Information Type (MIT) that you can trend.
Show Events	Avaya POD Campus Device ESXi G450	Opens a tab in the in the bottom pane of the events browser, that displays all events for the selected element. The tab remains open until you manually delete the tab.
Show Dashboard	Avaya POD Campus Device ESXi G450	Opens the dashboard view with details of the selected Avaya POD, campus, or device.
Properties	Avaya POD Campus Device ESXi G450	Displays the Properties window for the selected device which shows the device properties and associated values.
Color-Coding of Domain Elements	Avaya POD Campus Device	Domain elements displayed in the schematic diagram are colored based on the messages that relate to them.

The following table describes the menu options for a pod, device, or campus in the edit mode.

Menu option	Description
Hide	Hides the device or campus from view.
Show all	Displays all end nodes such as phones, printers, and servers that are connected to the selected devices.

*Table continues...*

Menu option	Description
Show VoIP Devices	Displays all VoIP components such as phones, VoIP servers, and media gateways. Properties.
Properties	Displays the Properties window for the selected device which shows the device properties and associated values.

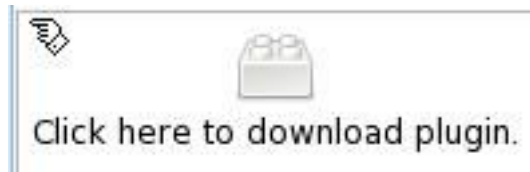
---

## Moving icons in the topology view

The topology browser permits you to move icons, save the new layout, and share it for other users to see. Before you can move an icon, in the Network Topology work pane, you must click enter edit mode. To create a custom view, you can enter the edit mode to save a layout view, or you can delete a layout view. After you save a view, you can save the view in the public or private Custom Views folder.

Before you can use the Network Topology in AFO Monitoring, you must install the Adobe™ Flash browser plug-in. If you do not have the Adobe Flash browser plug-in installed, the Network Topology displays a plug-in icon instead of the network map.

The following figure is the icon you click to download a plugin.



**Figure 6: Download plug-in**

**\* Note:**

If a security warning appears asking you if you want to view only the webpage content that was delivered securely, click **No**. The Install Flash Player prompt appears.

If you select Yes, then the Install Flash Player prompt does not appear and the Network Topology page appears without the Flash Player.

---

## Viewing discovery results in the Properties Table

Use the following procedure to view discovery results using the Properties Table.

**Procedure**

1. Select **Network > Topology**.
2. On the Network Topology page, select a network element.

3. Right-click on a device.
4. Click **Properties**.

The Properties Table displays details for the selected network element.

---

## Selecting a layout

Perform the following procedure to select the layout algorithm in the Topology Viewer tool bar.

### Procedure

1. Select **Network > Topology**.
2. On the Network Topology page, view the network elements in the Topology Viewer, located in the middle of the page.
3. Select any one of the layout algorithm from the Layout box to draw the schematic from the middle toolbar.

The predefined global layout options are: Hierarchical, Symmetric, Circular, Horizontal Grid, and Compact. You or others can create custom view layouts.

---

## Variable definitions

Variable	Value
Hierarchical	Enables the user to view the schematic or perspective hierarchically when selected.
Symmetric	Enables the user to view the schematic or perspective symmetrically when selected.
Circular	Enables the user to view the schematic or perspective circularly when selected.
Horizontal Grid	Enables the user to view the schematic or perspective in a horizontal line.
Compact	Enables the user to view the schematic or perspective in a compact format.

---

## Moving an icon

### Procedure

1. Select **Network > Topology**.
2. Select a layout that you can edit.

3. Click **enter edit mode**.
4. Select the icon you want to move.
5. Point over the icon, and then click and hold down the right mouse button.
6. Move the icon.  
The animation of the icon and attached links move.
7. Release the icon on the spot where you want the icon to be moved to.
8. To save the layout, click **save changes**.
9. In the **Enter a name for schematic** field, enter a layout name.
10. Select the private folder or public folder to save the layout in.
11. Click **OK**.

The layout is saved in the Custom Views perspectives under the public or private folder.

---

## Clearing the background setting

Use the following procedure to clear the background setting.

### Procedure

1. Select **Network > Topology**.
2. Open a view that has the background setting.
3. Click **enter edit mode**.
4. Click the background image button in the middle toolbar.
5. Click **save changes**.
6. In the Enter a name for schematic field, enter a layout name.
7. Select a folder to save the layout in, private or public.
8. Click **OK**.

---

## Performing a multicolumn sorting

Use the following procedure to perform a multicolumn sorting for a table.

### Procedure

1. Press the Shift key while you click the column headers in the table.
2. Hover the mouse over a column header, and click the down arrow.



3. Select **Sort Ascending** or **Sort Descending**.

---

## Undoing a multicolumn sorting

Perform the following procedure to undo a multicolumn sorting.

### Procedure

Click on any column header.

 **Note:**

After you click on the column header, you also enable the sorting for that column.

# Chapter 9: Scope configuration

You use scopes to define monitoring configurations, define subscriptions, filter message boards, initiate responses to events, filter event monitoring, and define the processes for launching external applications. A scope might specify which elements are included in a monitoring operation. Alternatively a scope could specify the set of elements for which a particular response is used.

---

## Adding constraint based scopes

Create a constraint based scope to have a scope defined by a set of elements that meet a specified criteria.

### Procedure

1. Select **Network > Scopes**.
2. From the Monitoring Scopes page, click the **Elements** tab to select the Elements domain.  
Or  
Click the **Events** tab.
3. Click **Add a new scope**.
4. Select **Constraint Based Scope**.  
A Prompt dialog box appears.
5. Enter the name of the scope.  
The name must be unique and may include numbers, letters with spaces, underscores ( \_ ) or hyphens ( - ) but not special characters.
6. Click **OK**.  
The scope definition and the comments appear in the right panel of the Scope window.
7. Edit the default Scope and subject values. Different options are available depending on how you create the scope. See the variable definitions table below for available options.
8. Select the **Keep private** option to create the scope as a private scope. A private scope does not show in the list of public scopes and is not seen in the network browser scope perspective.
9. In the **Comments** box, type a comment to describe the scope.

10. To save changes, click **Apply your changes**, which is the check mark in the top left toolbar.

## Variable definitions

The following table describes the options in the Scope content panel window.

Variable	Value
AND Link	<p>Displays a menu of options.</p> <p>Select AND &lt;new&gt; to include a new element in the constraint definition.</p> <p>Select Copy to copy an existing element in the constraint definition.</p> <p>Select And &lt;paste&gt; to paste a copied element in the constraint definition.</p> <p>Select Simplify to remove all hierarchical nesting conventions from the selected block of constraints.</p> <p>The Scope Constraint dialog box displays to guide you through the process of creating each constraint. Constraints you define are added to the scope definition and comments field displayed in the right panel of the Configuration Browser window. The set of properties and relations available to you when writing a constraint depends upon what subjects are defined by earlier constraints. For example, the address property applies (and is available) when the subject is a device but does not apply (and is therefore not available) when the subject is an interface.</p>
Keep Private	Indicates whether or not the scope is to be hidden. A private scope does not show in the list of public scopes and is not seen in the network browser scope perspective.
Comments	Specify a description of the scope. Comment text is not part of the scope definition. (Optional)
Additionally, you can click on a line that is a Boolean operator or constraint within the scope definition. A drop-down menu displays with the some or all of following options enabled:	
Cut	Cut the selected constraint from the scope definition.
Edit	Edit the selected constraint.
Copy	Copy the selected constraint.
Remove	Delete the selected constraint definition from the scope definition.
Not	Changes the BOOLEAN logic for selected constraint to be FALSE (not equal to the constraint string specified).
AND <new>	Create a new constraint that is to be ANDed to the selected constraint. The new constraint is placed at the level of the selected constraint so you can nest constraints in the scope definition.
AND <next>	ANDs the selected constraint with the constraint that follows it.
AND <paste>	Paste a copied constraint as an AND statement related to the selected constraint.

*Table continues...*

Variable	Value
OR <new>	Create a new constraint that is to be ORed to the selected constraint. The new constraint is placed at the level of the selected constraint so you can nest constraints in the scope definition.
OR <next>	ORs the selected constraint with the constraint that follows it.
OR <paste>	Paste a copied constraint as an OR statement related to the selected constraint.
Raise	Move the selected constraint up one level in its current block.
Lower	Move the selected constraint down one level in its current block.
Promote	Promote to the next highest block level in the scope definition.

---

## Adding union based scopes

Define a union based scope to create a union of at least two existing scopes.

### Procedure

1. Select **Network > Scopes**.
2. From the Monitoring Scopes page, click the **Elements** tab to select the Elements domain.  
Or  
Click the **Events** tab.
3. Click **Add a new scope**.
4. Select **Union Based Scope**.  
A Prompt dialog box appears.
5. Enter the name of the new scope. The name must be unique and may include numbers, letters with spaces, underscores (\_) or hyphens (-) but not special characters.
6. Click **OK**.  
The Creating New Scope section and the comments appear in the right panel of the Scope window.
7. Select the individual scopes that you want to include in the Union Scope from the tree structure.
8. Select the **Keep private** option to create the scope as a private scope. A private scope does not show in the list of public scopes and is not seen in the network browser scope perspective.
9. In the **Comments** box, type a comment to describe the scope.
10. To save the change, click **Apply your changes**.

---

## Variable definitions

Variable	Value
Scopes tree	Displays a hierarchical list of existing scopes with a check box for each scope that enables you to select at least two scopes on which to base the union scope.
Keep Private	Indicates whether or not the scope is to be hidden. A private scope does not show in the list of public scopes and is not seen in the network browser scope perspective.
Comments	Specify a description of the scope. Comment text is not part of the scope definition. (Optional)

---

## Adding enumerated member scopes

Create an Enumerated Member Scope to specify the individual elements that the scope comprises.

### Procedure

1. Select **Network > Scopes**.
2. From the Monitoring Scopes page, click the **Elements** tab to select the Elements domain.  
Or  
Click the **Events** tab.
3. Click **Add a new scope**.
4. Select **Enumerated Member Scope**.  
A Prompt dialog box appears.
5. Enter the name of the new scope.  
The name must be unique and may include numbers, letters with spaces, underscores (\_) or hyphens (-) but not special characters.
6. Click **OK**.
7. From the Domain menu, choose the domain for which you want the scope to apply.
8. On the right panel, in the Creating New Scope section, click **Add** to specify domain elements to include in the scope.  
The scopes dialog box appears.
9. Select a perspective to view domain elements organized in a way that is useful to you.
10. Select the individual domain elements that you want to include in the scope.
11. Click **OK**.

12. Select the **Keep private** option to create the scope as a private scope. A private scope does not show in the list of public scopes and is not seen in the network browser scope perspective.
13. In the **Comments** box, type a comment to describe the scope.
14. To save the scope definition, click **Apply your changes** in the top left toolbar.

---

## Variable definitions

Variable	Value
Scope Members	Specify the domain elements to include in the scope.
Keep Private	Indicates whether or not the scope is to be hidden. A private scope does not show in the list of public scopes and is not seen in the network browser scope perspective.
Comments	Specify a description of the scope. Comment text is not part of the scope definition. (Optional)

---

## Editing scopes

You can edit a scope after you create it.

### Procedure

1. Select **Network > Scopes**.
2. From the Monitoring Scopes page, click the **Elements** tab to select the Elements domain.  
Or  
Click the **Events** tab.
3. Select the scope you want to edit.  
The settings for the selected scope display on the right panel.
4. Edit the settings as needed.
5. To save the change, click **Apply your changes**.

---

## Renaming scopes

You can change the name of scope after you create it.

## Procedure

1. Select **Network > Scopes**.
2. From the Monitoring Scopes page, click the **Elements** tab to select the Elements domain.  
Or  
Click the **Events** tab.
3. Select the scope you want to rename.
4. Click the **Rename selected scope** button from the top left toolbar.  
A Prompt dialog box appears.
5. Enter the new name.
6. Click **OK**.

---

## Cloning scopes

You can clone an existing scope.

### Procedure

1. Select **Network > Scopes**.
2. From the Monitoring Scopes page, click the **Elements** tab to select the Elements domain.  
Or  
Click the **Events** tab.
3. Select the scope you want to clone.
4. Click **Clone selected scope** from the top left toolbar.  
A Prompt dialog box appears.
5. Enter a new name for the cloned scope.
6. Click **OK**.

---

## Deleting scopes

You can delete an existing scope.

### Procedure

1. Select **Network > Scopes**.
2. From the Monitoring Scopes page, click the **Elements** tab to select the Elements domain.

## Scope configuration

Or

Click the **Events** tab.

3. Select the scope you want to delete.
4. Click **Delete selected scope** in the top left toolbar.  
A Confirmation dialog box appears.
5. Click **OK** to confirm the deletion.



# Chapter 10: Monitoring configuration

Monitoring configurations define what events are received for which domain elements and with what alternative event processing options. The Avaya Fabric Orchestrator Monitoring (AFO Monitoring) application has built-in monitoring configurations. You can also customize monitoring configurations.

---

## Starting and stopping monitoring

You can start and stop availability monitoring agents and SNMP monitoring agents for your system.

### Procedure

1. Select **Network > Monitoring Details**.

The Network Monitoring Details page appears.

2. Select the domain for which you want to start monitoring from the list of domains and agents in the left panel.

3. Click **Start Monitoring**.

Monitoring begins for the selected domain. When monitoring starts for a selected domain, the expandable list of domains and agents is refreshed.

---

## Variable definitions

The following table describes the options in the **Network > Monitoring Details** tree on the left.

Variable	Value
Domains	A container element for the list of domains for your system.
Availability Monitoring Agent	Displays the monitoring requests and domain elements defined for the availability monitoring agent.
CIM Monitoring Agent	Displays the monitoring requests and domain elements defined for the CIM monitoring agent.

*Table continues...*

Variable	Value
SNMP Monitoring Agent	Displays the monitoring requests and domain elements defined for the SNMP monitoring agent.
SOAP Monitoring Agent	Displays the monitoring requests and domain elements defined for the SOAP monitoring agent.
Syslog Monitoring Agent	Displays the monitoring requests and domain elements defined for the syslog monitoring agent.
System Management Agent	Displays the monitoring requests and domain elements defined for the system management agent.

---

## Viewing active monitoring configurations

### Procedure

1. Select **Network > Monitoring Details**.
2. Expand the domain for which you want to view the set of active monitoring configurations.  
You must be monitoring the domain to view the active monitoring configurations.
3. Expand the agent you want to view.
4. Select the Monitoring Requests you want to view.

You may need to expand the Monitoring Requests (if there are multiple Monitoring Requests for the agent). Then select the Monitoring Request of interest to display the details in the right panel of the Monitoring Details.

5. Select the domain element for which you want to view the variables and associated values.

---

## Defining a parameter override

Overrides are parameters that enable you to define an exception for a monitored event type for the domain elements in a particular scope.

The override definition consists of one or more event type parameter values, and one or more scopes. Each override value that you specify is an exception to the usual behavior for which you expect to monitor. By defining an override, you tell AFO Monitoring that, for the domain elements encompassed by the indicated scope(s), you want to monitor for this value specified in the override, not the value that is set in the MIT definition.

### Procedure

1. Select **Network > Monitoring Overrides**.

You can select either the Monitoring Overrides tab or the Event Processing Override tab. Some of the options are different for each tab.

2. Click **Add a new override**.

3. In the Prompt dialog box, type a name for the parameter override.

The name must be unique and must start with an alphanumeric, and can contain alphanumerics, spaces, underscores (\_) or hyphens (-) but not special characters.

4. Click **OK**.

The parameter overrides settings display in the right panel of the Parameter Overrides window. For a description of the variables on this screen, see the variable definitions table below.

5. Enable or disable the override by selecting or clearing the **Enabled** box.

6. Click the **Add domain element scope** link. The Choose a scope window appears.

7. Expand the tree structure and select the scope to which you want the monitoring override to apply.

8. Click **OK**.

The Parameter Override window appears.

9. Select the MIT for which you want to define an override. The parameters for the selected MIT appear on the right side of the pane.

10. Select the parameter for which you want to define the override. The parameter description and value appear in the bottom right box.

11. Specify the desired override value for the parameter. Depending on the parameter this might include typing a new value, selecting new units from a drop-down menu, or a combination of actions.

12. After you select the desired override value click **OK**.

- If you want to add another parameter override, click **Apply**.

13. Click on the drop down menu in front of **Override applies to** and select **All Domains** or **These Domains**. If you choose the option These Domains, then select the domains on which you want this override to apply.

14. To save your changes, click **Apply your changes**.

---

## Variable definitions

The following table describes the **Monitoring > Overrides** options.

Variable	Value
Enabled	Indicates whether or not the event processing override is active (enabled).
Add domain element scope	Click the Add domain element scope link to select the domain element scopes to which you want the override to apply.

*Table continues...*

Variable	Value
Override Applies to	<p>The Override Applies to menu appears twice for the event processing overrides and once for the monitoring overrides. For the event processing overrides, you select whether the override applies to an event scope or event type. Once an option is selected, you can then use the tree selection list to specify the appropriate event scope or event type.</p> <p>For the monitoring overrides and the event processing overrides you can also select the domain to which the override parameters are to apply. Valid values are All Domains (the override parameters are to apply to all domains) and These Domains (the override parameters are to apply only to the selected domains).</p>
Parameter Overrides	Provides a list of the existing parameter overrides. Includes links that enable users to edit existing override values.

## Configuring overrides for a device from the Network Topology

Perform the following procedure to configure overrides for a device from the Network Browser.

### Procedure

1. Select **Network > Topology**.
2. Select a perspective in the drop-down menu above the left tree browser, and select an element.

**\* Note:**

You can use any of the network topology views except the scope view. Override navigation is not permitted from scope views.

3. From the Network Topology center pane, right click on a device, and select **Configure > Overrides**.

The Overrides window for the device appears.

4. To add an override configuration, click **Add**.
  - To edit an override configuration, select the configuration, click **Edit**, and enter the required information.
  - To delete an override configuration, select the configuration, and click **Delete**.
5. In the Specify Scope of Override dialog box, select a scope.

**\* Note:**

You can use the search field to find the scope you require for the device.

6. If the scope to applies to one device only, select **Apply new override only to <device name>**.
7. Click **Next**.
8. In the Parameter Override dialog box, select a parameter override.
9. Configure your value in the parameter value respective field.

 **Note:**

Set the appropriate values related to the parameter fields.

10. Click **Next**.

The Define additional overrides and save to configuration dialog box appears that contains configured overrides and configuration tables.

11. To add another override, click **Add**, select a parameter override and configure your value in the parameter value respective field.
12. Select or create a configuration in which to save the new overrides table in, and enter the override name.
13. Click **OK**.  
The override configuration window appears with overrides for the device.
14. Click **Close**.

---

## Viewing overrides

### About this task

Perform the following procedure to view overrides for a device. The most specific overrides appear at the top of the list. AFO Monitoring crosses out overrides if another override takes precedence.

### Procedure

1. Select **Network > Topology**.
2. Select a perspective from the drop-down menu above the tree browser at the left, and select an element.

 **Note:**

You can use any of the network topology views except the scope view. Override navigation is not permitted from scope views.

3. From the Network Topology center pane, right click on a device, and select **Configure > Overrides**.

The Overrides window for the device appears.

## Editing an override

You can change the parameters of the override after you create it.

### Procedure

1. Select **Network > Monitoring Overrides**.

The configuration settings for the selected monitoring configuration display on the right panel of the page.

2. Select the override you want to edit.

The settings for the selected override display on the right panel.

3. Edit the settings as needed.
4. To save the change, click **Apply your changes**.

---

## Renaming an override

After you create an override you can change the name.

### Procedure

1. Select **Network > Monitoring Overrides**.
2. Select the override you want to rename.
3. Click **Rename selected override**.

A Prompt dialog box appears.

4. In the Prompt dialog box, enter the new name.
5. Click **OK**.

---

## Cloning an override

You can clone an existing override if you want the same override parameters for different scenarios.

### Procedure

1. Select **Network > Monitoring Overrides**.
2. Select the override you want to clone.
3. Click **Clone selected override**.
4. In the Prompt dialog box, enter a new name for the cloned override.

5. Click **OK**.

---

## Deleting an override

You can delete an existing override if you do not need it.

### Procedure

1. Select **Network > Monitoring Overrides**.
2. Select the override you want to delete.
3. Click **Delete**.
4. In the Confirm dialog box, click **OK**.

---

## Adding custom monitoring for a device from the Network Topology

### About this task

Add a custom monitoring configuration to specify a new set of constraints to monitor your network.

#### **Important:**

If a device is already being monitored by a built-in monitoring configuration and you add a custom monitoring configuration for the device, the device is excluded from the built-in monitoring configurations.

### Procedure

1. Select **Network > Topology**.
2. Select a perspective from the drop-down menu in the tree browser on the left, and select an element.
3. From the Network Topology center pane, right click on a device, and select **Monitoring > Add custom monitoring**.

A notice appears if the device is already being monitored warning that if you define custom monitoring for the device, the device will be excluded from the current built-in monitoring configurations. Click **OK**.

4. If you have the Advanced Monitoring license, click **Advanced** to select the advanced options for custom monitoring configuration.
5. Make the appropriate changes to the monitoring configuration.
6. Click **Confirm**.

---

## Variable definitions

Use the following information to configure custom monitoring.

**\* Note:**

Not all of the parameters below are available for every device on AFO.

Variable	Definition
Networking Device Availability	Monitors any type of event regarding the availability of the device. Typically the option displays the IP availability from the perspective of the management station.
Device Poll Response Statistics	Monitors the response statistics pertaining to availability polls.
KHI Information	Monitors Key Health Indicators (KHI) information.
PoE Information	Monitors any information relating to Power over Ethernet (PoE), and pertaining to PoE hardware.
Interface Information	Monitors any network interface information.
Bridge Statistics	Monitors any statistic related to a network bridge or spanning tree protocol.
ISIS Information	Monitors any information relating to the Intermediate-System-to-Intermediate-System (IS-IS) networking protocol.
Transceiver Information	Monitors the transceiver information in any kind of event or statistic pertaining to a transceiver. Typically this will be an optical transceiver such as an SFP or mini-GBIC conforming to the SFF-8472 industry standard.
Additional SNMP Traps	Monitors the Simple Network Management Protocol (SNMP) traps, which gather information about device activities, alarms, and other information on management stations.

---

## Modifying custom monitoring

### Procedure

1. Select **Network > Topology**.
2. Select a Perspective, and select an element.
3. From the Network Topology center pane, right click on a device, and select **Monitoring > Modify custom monitoring**.



4. A notice appears warning that the device is already being monitored and if you define custom monitoring for the device, the device will be excluded from the current monitoring configurations. Click **OK**.
5. Make the appropriate changes to the monitoring configuration.
6. Click **Confirm**.

---

## Disabling device availability

Use this procedure to disable device availability to stop ICMP polling. SNMP polling continues even with device availability disabled.

### Procedure

1. Select **Network > Topology**.
2. Select a perspective from the drop-down menu in the tree browser on the left, and select an element.
3. Perform one of the following two steps:
  - a. If no custom monitoring exists for the device, from the Network Topology center pane, right click on a device, and select **Monitoring > Add custom monitoring**.
  - b. If custom monitoring already exists for the device, from the Network Topology center pane, right click on a device, and select **Monitoring > Modify custom monitoring**.

A notice appears if the device is already being monitored warning that if you define custom monitoring for the device, the device will be excluded from the current built-in monitoring configurations. Click **OK**.

4. Clear the **Networking Device Availability** and **Device Poll Response Statistics** check boxes.
5. Click **Confirm**.

# Chapter 11: Monitoring Reports configuration

AFO Monitoring offers multiple built-in monitoring reports and the ability to create or customize monitoring reports. You cannot edit or delete built-in monitoring reports but you can use a built-in monitoring report as the basis for a new monitoring report.

**!** **Important:**

You must have the Advance license to create custom reports.

**!** **Important:**

Users with the operator role can save reports as private only.

---

## Viewing monitoring reports

### Before you begin

Monitoring must be enabled.

### Procedure

1. Select **Reports > Monitoring Reports**.
2. From the left navigation pane, select the report that you want to view from All reports (built-in, public, and private), Most recently viewed, or Favorites.

The report displays on the right of the page.

---

## Adding a new monitoring report

### Procedure

1. Select **Reports > Monitoring Reports**.
2. To view the monitoring reports configuration reportlets, click the down arrow located at the top of the Monitoring Reports page.
3. Click **New report**.

You can also use an existing report as the basis for a new report. Open the existing report and click **Save report as**.

4. In the dialog box, enter the report name.
5. To permit other users to view your changes, select **Public**.
6. Click **OK**.
7. Drag and drop a reportlet on to the work area.

A configuration dialog box specific to reportlet you selected appears. This is the beginning of the monitoring report wizard.

8. Enter information in the configuration dialog box.
9. If you do not edit reportlet items or other variables, click **Finish**.

If you edit reportlet items or other variables, select one of the following actions:

- Add
- Delete
- Edit

Another configuration screen appears. After you complete each configuration screen, click **Next**.

10. After you complete the edits to the dashlet, click **Finish**.
11. To add another reportlet, repeat step 6 to step 9.
12. Click **Save report**.

---

## Variable definitions

The following table lists the Monitoring Reports configuration buttons.

Variable	Definition
Monitoring report configuration button	Provides a series of steps to configure the report. The steps are wizard-like and present you with choices that you can select to customize a report.
Text	Lets you configure the text to add to a custom monitoring report.
Image	Lets you add and configure an image for a custom monitoring report.
Availability Report	Displays the average availability for a class of elements as percentages over intervals of hour, day, month, or year. To view a transient report for the element, on the Availability Report, click on the element name.
Top-N Report	Top-N Reports are based on Scope and Time, and show histograms of devices and interface statistics. Top-N Reports are available for a current time or for a past time period.

*Table continues...*

Variable	Definition
Event Listing	Provides you with the events information of devices or interfaces, and can contain a maximum of 100 events. You can select the events for any specific domain, or all domains. To open another transient report, on the Event Listing report, select Ack and click on the subject of the event.
Pie Chart	Provides a set of one or more percentage pie charts. Pie charts need at least two variables and all variables must be of the same type.
Element Status	Displays the KHI status of the element, including %CPU, %Memory, and number of alerts on the element. To open a transient report for the element, on the Element Status report, click on the element name.
Event Summary	Displays the summary of events by either domain classification or by concern.
Dial Gauge	Provides a set of one or more dial gauges, each displaying the value of a domain element variable on an analog dial. All of the dial gauges in one set must display variables from the same domain element.
Trend Chart	Provides performance trend improvements and trending of device resource usage, and key health indicators. Reporting is made easy by selecting trends and exporting information to PDF.
Hypercube table	To create complex reports with multi-dimension grouping. Because of the complexity of the Hypercube table, contact Avaya Support at <a href="http://support.avaya.com">http://support.avaya.com</a> for additional information.
Event History	To create event history reports for specific events.

---

## Monitoring Reports wizards

Each Monitoring Report reportlet contains different elements that you must configure. After you drag and drop a reportlet icon onto the monitoring report, a dialog appears to help you configure the reportlet.

The following lists the reportlets that you can add to a custom monitoring report:

- Text
- Image
- Availability Report
- Top-N Report
- Event Listing
- Pie Chart
- Element Status
- Event Summary
- Dial Gauge
- Trend Chart

- Hypercube Table
- Event History

---

## Configuring the Text reportlet

### Before you begin

You must create a new monitoring report or edit an existing customized monitoring report.

### Procedure

1. Drag and drop the **Text** icon onto the canvas outlined in the report work area.  
The Configure Text dialog box appears.
2. In the **Preview** area, enter the text that you want to appear on the report.
3. Select a font and color.
4. In the **Area Adjustment**, select where you want the text to appear on the report.
5. Click **Finish**.

---

## Configuring the Image reportlet

### Before you begin

You must create a new monitoring report or edit an existing customized monitoring report.

### Procedure

1. Drag and drop the **Image** icon onto the canvas outlined in the report work area.  
The Configure Image dialog box appears.
2. Click the **Select an image to upload** link to search for and select the image.
3. In the **Preview** area, review the image.
4. Scale the image as required.
5. In the **Area Adjustment**, select where you want the image to appear on the report.
6. Click **Finish**.

---

## Configuring the Availability Report reportlet

### Before you begin

You must create a new monitoring report or edit an existing customized monitoring report.

## Procedure

1. Drag and drop the **Availability Report** icon onto the canvas outlined on the report work area.

The Configure Availability Report dialog box appears.

2. In the Name field, enter a name.
3. In the Domain field, click the down arrow to select a Domain.
4. In the Items section, click **Add**.
5. Check single elements, or scope name to include all elements within a scope.
6. Click **Next**.
7. To include a graph, select the **Graph column** check box and click the down arrow to select a time frame for the report.
8. The Secondary columns section displays additional columns to appear on the report.
  - To remove a column, click **Delete**.
  - To add a column, click **Add**.

**\* Note:**

Use the up or down arrows to move up or down the list of available column headers.

9. To continue configuring, click **Next**.
  - Or, if the configurations are complete, click **Finish**.

---

## Configuring the Top-N Report reportlet

### Before you begin

You must create a new monitoring report or edit an existing customized monitoring report.

### Procedure

1. Drag and drop the **Top-N Report** icon onto the canvas outlined in the report work area.

The Configure Top-N Report dialog box appears.

2. In the **Name** field, enter a name.
3. Click **Choose a Scope**. The Choose a Scope page appears.
4. Select one or more scopes from the available list, and click **OK**.

**\* Note:**

You can use the Search field to search for a scope.

5. Click the **Variable** field, and select a variable.
6. In the **Top-N number** field, enter the number of items to appear in the Top-N Report.

7. Select **Bottom report** if you want to see the bottom first.
8. Select **Show reachability status** if you want to see the reachability status.
9. In the **Identification columns**, click **Add**, and select the information you want to add.
10. In the Secondary value columns section, click **Add**, and select the optional secondary columns to appear in the Top-N Report.
  - To remove a secondary column, highlight a column header and click **Delete**.
- \* Note:**

Use the up or down arrows to move up or down the list of available column headers.
11. Click **Finish**.

---

## Configuring the Event Listing reportlet

### Before you begin

You must create a new monitoring report or edit an existing customized monitoring report.

### Procedure

1. Drag and drop the **Event Listing** icon onto the canvas outlined on the report work area.  
The Configure Event Listing dialog box appears.
2. In the Name field, enter a name for the event listing.
3. Click **Choose a Scope**.  
The Choose a Scope page appears.
4. Select one or more scopes from the available list, and click **OK**.

**\* Note:**

You can use the Search field to search for a scope.

5. The Columns sections displays the columns headers to appear in the report.
  - To add a new column, click **Add**, and from the list, select an item to appear in the report.
  - To delete a column, highlight the item, and click **Delete**.

**\* Note:**

Use the up or down arrows to move up or down the list of available column headers.

6. Click **Finish**.

---

## Configuring the Pie Chart reportlet

### Before you begin

You must create a new monitoring report or edit an existing customized monitoring report.

### Procedure

1. Drag and drop the Pie Chart icon onto the canvas outlined on the report work area.

The Configure Pie Chart dialog box appears.

2. In the **Name** field, enter a name.
3. In the Items section, click **Add**.
4. Select a perspective.
5. From perspective list, select an element.

If you select Scopes, from the available list, select a scope name, and then check individual elements or check the scope name to include all elements. Scopes that exceed undefined elements are not shown.

6. Click **Next**.
7. To add another item, repeat steps 4 to 6.
  - To delete an item, highlight the item, and click **Delete**.
  - To edit an item, highlight the item, and click **Edit**.
  - To move up the list of items, click the up arrow.
  - To move down the list of items, click the down arrow.
8. In the Pie variables section, click **Add**.
9. Select variables that are supported by the items.
  - You can use the Search variable field to search for a specific variable.
  - To see all variables, check **Include variables for this type of element**.

After you select a variable, the system displays the variable name in the Variable title field.

10. (Optional) To view free, used, and total properties for variables, select **Calculate remainder from total**.
11. To leave any slice in the pie chart colorless, select **Leave slice transparent**.
12. To exclude the slice value from the display total, select **Exclude slice value from the displayed total**.
13. To merge the value into the other slice, select **Merge value into 'Other' slice**.
14. (Optional) In the Variable title field, rename the title of the variable.
15. Click **Next**.
16. To add another pie variable, repeat steps 9 to 15.



**\* Note:**

To complete the Pie Chart, you must select a minimum of two variables and the variables must be of the same type.

- To delete a pie variable, highlight the item, and click **Delete**.
- To edit a pie variable, highlight the item, and click **Edit**.
- To move up the list of pie variables, click the up arrow.
- To move down the list of pie variables, click the down arrow.

17. Click **Finish**.

## Configuring the Element Status reportlet

### Before you begin

You must create a new monitoring report or edit an existing customized monitoring report.

### Procedure

1. Drag and drop the **Element Status** icon onto the canvas outlined on the report work area.  
The Configure Element Status dialog box appears.
2. In the **Name** field, enter a name.
3. In the Items section, click **Add**.
4. In the Perspective field, click the down arrow to select a perspective, and then select an element.
  - If you select the perspective Scopes, select an element, and then check individual elements, or scope name to include all scopes. Only the first 100 scopes are shown.
5. Click **Next**.
6. To add the show reachability status column to the report, select **Show reachability status column**.
7. The Secondary columns section displays additional columns to appear on the report.
  - To remove a column, click **Delete**.
  - To add a column, click **Add**.

**\* Note:**

Use the up or down arrows to move up or down the list of available column headers.

8. To view variables, in the Show variables section, click **Add**, and search for a variable.
  - To search all variables for this type of element, check **Include variables for this type of element**.
9. Select a variable. You can edit the name in the Variable title field.

10. Click **Next**.
11. Repeat steps 8 to 10 to add additional variables.
12. If the items are correct, click **Finish**.
  - To add another item, click **Add**.
  - To delete an item, click **Delete**.
  - To edit an item, click **Edit**.

---

## Configuring the Event Summary reportlet

### Before you begin

You must create a new monitoring report or edit an existing customized monitoring report.

### Procedure

1. Drag and drop the **Event Summary** icon onto the canvas outlined on the report work area.  
The Configure Event Summary dialog box appears.
2. In the Name field, enter a name.
3. In the Event bar scale field, enter a number between 1 and 10000.

**\* Note:**

The Event bar scale is for the histogram bar. For example, if you enter 100 as scale and there are 10 events, then the bar is 1/10 of the available length. If you choose 1000 then the bar shrinks.

4. In the Items section, click **Add**.
5. Click **Choose a Scope**  
The Choose a Scope page appears.
6. Select the one or more scopes from the available list, and click **OK**.

**\* Note:**

You can use the Search field to search for a scope.

7. From the Configure Event Summary dialog box, select one or more Events.
8. In the Item Title field, enter the item title.
9. To accept your changes and go to the next step of the configuration wizard, click **Next**.
  - Or, to discard your changes and return to the previous step of the dashboard wizard, click **Prev**.
10. To add another item, repeat step 4 to step 9.
11. Click **Finish**.

---

## Configuring the Dial Gauge reportlet

### Before you begin

You must create a new monitoring report or edit an existing customized monitoring report.

### Procedure

1. Drag and drop the **Dial Gauge** icon onto the canvas outlined on the report work area.

The Configure Dial Gauge dialog box appears.

2. In the **Perspective** field, click the down arrow and select a perspective from the available list.

3. From the folders or icons that appear in the box, navigate to the element you require. Click the plus signs at the left to expand the folders.

4. Click **Next**.

5. Click the **Choose a variable** field, and select a variable.

You can use the Search variable field to locate a variable.

- To view all variables, select **Include all variables for this type of element**. If there is no data available, the dial gauge does not display any value.
- To show thresholds, select **Show thresholds**.

6. Edit the Variable label.

7. In the Select units field, click on the down arrow to select a units field.

8. In the **Minimum** field, enter a value.

The minimum value shows the lowest label in the dial gauge scale.

9. In the **Maximum** field, enter a value.

The maximum value shows the highest label in the dial gauge scale.

#### **Important:**

The system displays the values for intermediate labels based on the values you enter for minimum and maximum labels. Intermediate labels are at fifth values between minimum and maximum. Ensure you configure minimum and maximum values to have integer intermediate labels.

10. In the Color zones field, click on the down arrow to select a value.

The colors green, yellow, and red appear on the dial gauge based on the following configurations.

- none — indicates no color zones.
- 1 — indicates one color zone. You can select a color. The from and to fields are preselected from start to end.

- 2 — indicates two color zones. You can select a color for zone 1 and zone 2, and select the end location for zone 1 or the start location for zone 2.
- 3 — indicates three color zones. You can select a color for zone 1, 2 and 3, and then enter a value in an available from or to field.

**!** **Important:**

The zone to value must be more than the minimum range value. The zone from value must be less than the maximum value. If you enter incorrect zone values, the system displays a message indicating the value requirements.

11. To add another variable, click **Next**, and repeat step 7 to step 11.
12. Click **Finish**.

---

## Configuring the Trend Chart reportlet

### Before you begin

You must create a new monitoring report or edit an existing customized monitoring report.

### Procedure

1. Drag and drop the **Trend Chart** icon onto the canvas outlined on the report work area.  
The Configure Trend Chart dialog box appears.
2. In the **Perspective** field, click the down arrow to select a perspective.
3. From the folders that appear in the box, navigate to the element you require.
  - If you select the Scope perspective, select an element and then check single elements or scope name to include all elements. The system displays the first 100 elements only.
4. Click **Next**.
5. To select an additional perspective, click **Add** and repeat steps 2 to 4.
6. Click **Next**.
7. In the **Time Selection Mode** field, select
  - **Interval** to configure a span of time without restrictions. Select an **End Time** (current or a time in the past) and **Period** (how long the interval should be).
  - **Calendar Unit** to configure a specific unit that always begins and ends at the boundary of the unit. Select a **Period** for the calendar unit.
8. Check the blue text at the bottom of the dialog box to make sure you entered the correct time range.
9. Click **Next**.

10. In the Right axis variable field, click **\*No variable selected\*** to view all variables for which sufficient data has been collected to display in the report.

- Check the box for **Include all variables for this type of element** to view all variables, including variables with no data collected.
- To show thresholds, select **Show thresholds**.

11. Select a variable.

12. In the Left axis variable (optional) field, select a variable if required.

13. To change the y-axis scale for the graph to show the trend plotting over a larger y-axis, check **Autorange**.

14. To view averages of the trend over an x-axis, check **Averaging Mode**.

15. In the Number of averaging intervals field, enter a value.

The Number of averaging intervals calculates the averages for the x-axis. The number of the average intervals must be a minimum of 2. For example, if 6 is selected as the number of average intervals and if 10 minutes is the polling period, then the values is averaged over one hour.

16. Enter a name for the report.

17. Click **Finish**.

---

## Configuring the Hypercube Table reportlet

### About this task

For assistance on configuring the Hypercube Table reportlet, contact Avaya Support at <http://support.avaya.com>.

### Before you begin

You must create a new monitoring report or edit an existing customized monitoring report.

### Procedure

1. Drag and drop the **Hypercube Table** icon onto the canvas outlined in the report work area.

The Configure Hypercube Table dialog box appears.

2. Select a query:

- Acquisition History Query
- JDBC Database Query

3. Click **Next**.

The Elements configuration section appears.

4. In the **Perspective** field, click the down arrow to select a perspective, and then select an element.

5. Click **Next**.

The Time Range configuration section appears.

6. In the **Time Selection Mode** field, select
  - **Interval** to configure a span of time without restrictions. Select an **End Time** (current or a time in the past) and **Period** (how long the interval should be).
  - **Calendar Unit** to configure a specific unit that always begins and ends at the boundary of the unit. Select a **Period** for the calendar unit.
7. Check the blue text at the bottom of the dialog box to make sure you entered the correct time range.
8. Click **Next**.

The Query configuration section appears.

9. In the **Dimensions** area, add and configure one or more dimensions to be analyzed.
10. In the **Measures** area, add and configure one or more measures.
11. Click **Finish**.

---

## Configuring the Event History reportlet

### Before you begin

You must create a new monitoring report or edit an existing customized monitoring report.

### Procedure

1. Drag and drop the **Event History** icon onto the canvas outlined in the report work area.

The Configure Event History dialog box appears.
2. Enter a name for the filter.
3. Select:
  - **Last** to specify an interval integer and the units: seconds, minutes, hours, days, or weeks
  - **Between** to filter records between two specific timestamps. Select the timestamps.
4. To filter records by the event name, click **Select value** and select an event name. Click **OK**.
5. To filter records by the subject name, click **Select value** and select a subject name. Click **OK**.
6. To filter records by an event trigger, click **Triggers** and select a trigger. Click **OK**.
7. To filter records by Product ID, enter the product ID.
8. Click **Next**.

The Columns configuration section appears.

9. The Columns sections displays the columns headers to appear in the report.
  - To add a new column, click **Add**, and from the list, select an item to appear in the report.

- To delete a column, highlight the item, and click **Delete**.

**\* Note:**

Use the up or down arrows to move up or down the list of available column headers.

10. Click **Finish**.

---

## Editing a monitoring report

### About this task

You cannot edit built-in reports.

### Procedure

1. Select **Reports > Monitoring Reports**.
2. From the left navigation pane, select the monitoring report that you want to edit.  
The monitoring report displays on the right side of the page.
3. Click **Edit report** to open the Edit report dialog box where you can change the report name, subfolder, and the privacy settings. Click **OK**.
4. To edit the report's configuration, click the Configuration icon on the top right corner of the reportlet.
5. Edit the settings as required and click **Finish**.
6. Repeat for any other reportlets that you want to edit on the monitoring report.
7. Click **Save report**.

---

## Exporting a monitoring report

### Procedure

1. Select **Reports > Monitoring Reports**.
2. From the left navigation pane, select the monitoring report that you want to export to PDF.
3. Click **Export to PDF**.
4. Configure the print settings.
5. Click **Export to PDF**.

## Deleting a monitoring report

### About this task

You cannot delete built-in monitoring reports.

### Procedure

1. Select **Reports > Monitoring Reports**.
2. From the left navigation pane, select the monitoring report that you want to delete.
3. Click **Delete Report**.
4. In the confirmation dialog box, click **OK**.



# Chapter 12: Viewing Events

When traps are received from network devices, they can be turned into events. The Event Browser allows you to monitor, acknowledge, and filter network events. Use the following procedures to customize the information displayed in the Event Browser.

---

## Adding a message board

By default the Event Browser contains a single message board. You can create multiple message boards.

Add multiple message boards, by performing this procedure.

### Procedure

1. Select **Network > Events**.
2. On the Event Browser page, click **Add a new message board** by clicking the plus sign on the top left toolbar.
3. Enter a name for the new message board in the **Enter a name for the new board** field.
4. Select if it is Public or Private.
5. Click **OK**. The new message board appears as a new tab in the **Event Browser**.

---

## Deleting a message board

### About this task

Perform the following procedure to delete a message board.

### Procedure

1. Select **Network > Events**.
2. Select a message board.
3. Click **Delete selected message board**.
4. In the Confirm dialog box, click **OK**.

---

## Renaming a message board

### Procedure

1. Select **Network > Events**.
2. Select a message board.
3. Click **Rename selected message board**.
4. In the Prompt dialog box, a new name for the selected message board.
5. Click **OK**.

---

## Sorting messages

Sort messages on the message board by performing this procedure.

### Procedure

1. Select **Network > Events**.
2. On the Event Browser message board, click the arrow on one of the column headings.
3. The system displays a list showing the Sort Ascending, Sort Descending, and Columns options.
4. Select **Sort Ascending** or **Sort Descending** to sort the messages in ascending or descending order.

---

## Filtering messages

By default, a message board does not use filters, and displays all messages (regardless of attributes such as priority, scope, or context) for all domains that are loaded on the server.

Filter allows you to customize the display of the messages for a message board. You can filter individual message boards to show the messages that corresponds to a specific scope, set of event types, priority, network, or other criteria.

### Important:

Filtering messages does not delete the messages that are not displayed. Filtering only omits messages not matching filter criteria from the set of messages appearing in the current message board.

Avaya provides a variety of methods for controlling message board content that allow you to configure powerful filters that allow only events meeting specific criteria. These include:

- Filtering by message priority

- Filtering by acknowledgement status
- Filtering by scope or event type
- Filtering by time event gets updated
- Filtering by IP

---

## Filtering messages by priority

Use the following procedure to filter messages by priority.

### Procedure

1. Select **Network > Events**.
2. On the Event Browser page, click **Configure filter for selected message board**, located at the top of the message board.
3. From the Msgs Board Filters window, select or clear the Priorities check box to display or filter the messages.
4. Click **OK**.

## Variable definitions

Variable	Definition
Red	Displays the critical priority messages.
Dark Orange	Displays the high priority messages.
Orange	Displays the medium priority messages.
Yellow	Displays the low priority messages.
Turquoise	Displays the warning messages.
Green	Displays the information messages.

---

## Filtering messages by scope or event type

Use the following procedure to filter messages by scope or event type.

### Procedure

1. Select **Network > Events**.
2. On the Event Browser page, click **Configure filter for selected message board**, located at the top of the message board.
3. Click the **Scopes** box and expand the scopes tree to locate the scopes you want to include in display.
4. Select the nodes you want to include in message display.

5. Expand the Event Types tree to locate the event types you want to include in display. Toggle the selection to include the event type or exclude the event type from display.
6. Click **OK**.
7. Click **OK** again.

### Result

The Event Selection Tree is a tree that consists of items that can be expanded or closed. Each item also has a box next to it which can display one of three control states and can display one of many informational states. To cycle through the three control states, left-click three times on box or label. The control states are explicit inclusion, explicit exclusion, or inherit from parent. The control state is visually indicated by the border of the box: thick green for explicit inclusion; thick red for explicit exclusion; thin of varying color for inherit from parent.

---

## Filtering messages by acknowledged status

Use the following procedure to filter messages by acknowledged status.

### Procedure

1. Select **Network > Events**.
2. On the Event Browser page, click **Configure filter for selected message board**, located at the top of the message board.
3. Select the **Hide Acknowledged** box to hide acknowledged events.
4. Click **OK**.

---

## Filtering messages by IP

### Procedure

1. Select **Network > Events**.
2. On the Event Browser page, click **Configure filter for selected message board**, located at the top of the message board.
3. Select the **IP filter pattern** check box.
4. In the field directly below the **IP filter pattern** box, enter the IP address or range of IP addresses to filter for.
5. Click **OK**.

---

## Suppressing PoE Under-Current warnings

If AFO Monitoring detects a particular value after you poll a MIB value on a device, a PoE Under-Current warning appears on the Event Browser. After the value returns to an acceptable value, AFO Monitoring automatically clears the PoE Under-Current warning.

To prevent the PoE Under-Current warning from appearing on the Event Browser, you can configure the filter on your Event Browser.

### About this task

Perform the following procedure to suppress the PoE Under-Current Warning.

### Procedure

1. Select **Network > Events**.
2. On the Event Browser page, click **Configure filter for selected message board**, located at the top of the message board.
3. From the Msgs Board Filters dialog box, select **Event > Physical Event > Environmental Event > Power Event > Power Ethernet Event > Power Ethernet Port Event**.
4. Deselect **Power Ethernet Port Under-Current Warning**.
5. Click **OK**.

 **Note:**

The system continues to monitor the device and posts the PoE Under-Current event. However, the PoE Under-Current Warning does not appear on the Event Browser.

---

## Viewing OTM error codes

OTM error codes are error codes from Avaya CS 1000. Error codes are made up of alphabets and numbers (for example, ERR0017) that map to a description of the error.

### About this task

You can view error code details and descriptions from the Avaya CS 1000 by performing the following procedure.

### Procedure

1. Select **Network > Traps**.
2. In the **Error Code** column, click on the required error code.

A window appears with the details of the error code.

## Exporting a message board

You can export a message board and save the contents.

### Procedure

1. Select **Network > Events**.
2. From the Event Browser page, select the tab corresponding to the message board you want to export.
3. Click the **Export selected message board** button. An xml file opens in your browser with the contents of your exported message board.
4. Save this file to an appropriate location on your hard drive.

# Chapter 13: Viewing Event History

---

## Viewing the Event History

### Procedure

1. Select **Network > Event History**.
2. On the Event History page, view the toolbar, located on the top of the page.  
The page has seven buttons: New Filter, Create Filter from selection, Clone Filter, Rename Filter, Edit Filter, Delete Filter, and Refresh.
3. Click the **Refresh** icon to refresh the data on the active tab.
4. The table displays the rows matching the filter. The columns correspond to the user-friendly columns in the events table.

---

## Adding a filter in Event History

### Procedure

1. Select **Network > Event History**.
2. On the Event History page, click the **New Filter** icon.  
The New Filter dialog box appears.
3. Enter a name for the filter that appears as the label for the tab.
4. Select the Last option to filter by age of the record.  
The interval integer and the units specified can be seconds, hours, days, or weeks.
5. Select the Between option to filter the records between two specific timestamps.
6. Select the Event name to filter by the event name.
7. Select the Subject name (event subject) to filter by the subject name.
8. Select the Domain name to filter by the domain name.
9. Select Triggers to filter by the event trigger.
10. Enter a product ID to filter by product ID.
11. Select **Search only** to specify a number of records to search.

- Click **OK**.

The new Filter appears as a new tab in the Event History.

---

## Variable definitions

The following table describes the information in the New filter window for **Network > Event History**.

Variable	Value
Filter	Specifies the name of the filter that appears as the label for the tab.
Last	Specifies an interval integer and the units: Seconds, Minutes, Hours, Days, or Weeks.
Between	Enables the user to filter records between two specific timestamps.
Event Name	Enables the user to filter records by the event name.
Subject Name	Enables the user to filter records by the subject name.
Domain name	Enables the user to filter records by the domain name.
Triggers	Enables the user to filter records by the event triggers.
Product ID	Enables the user to filter records by product ID.
Search Only	Enables the user to configure the number of records to search.

---

## Creating a filter from selection in the Event History

Perform the following procedure to create a filter from selection in the Event History Browser.

### Procedure

- Select **Network > Event History**.
- On the Event History page, click on the row which you want to be the selection for the new tab.
- Click on the **Create Filter from selection** icon from the left toolbar.
- Click **OK**.

---

## Cloning a filter in the Event History

### Procedure

- Select **Network > Event History**.
- On the Event History page, select the filter you want to clone.



3. From the Event History menu bar, click on the **Clone Filter** icon from the top left toolbar.
4. In the Filter field, enter a new name for the cloned filter.
  - If required, you can edit the other fields in the New Filter dialog box.
5. Click **OK**.

---

## Renaming a filter in the Event History

### Procedure

1. Select **Network > Event History**.
2. On the On the Event History page, select the filter you want to rename.
3. From the Event History menu bar, click on the **Rename Filter** icon from the top left toolbar.  
Prompt dialog box appears.
4. Enter the new name.
5. Click **OK**.

---

## Deleting a filter in the Event History

### Procedure

1. Select **Network > Event History**.
2. On the Event History page, select the filter you want to delete.
3. From the Event History menu bar, click the **Delete Filter** icon from the top left toolbar.  
A dialog box appears to confirm deletion.
4. Click **OK** to confirm the deletion.

---

## Editing a filter in the Event History

### Procedure

1. Select **Network > Event History**.
2. On the Event History page, select the filter you want to edit.
3. Click the **Edit Filter** icon from the top left toolbar.  
The Filter Editor dialog box appears.

4. Edit the settings as required.
5. Click **OK** to save the changes.

---

## Configuring purge settings

Configure purge settings for the event history. Avaya Fabric Orchestrator Monitoring (AFO Monitoring) automatically purges the event history according to these settings. For example, the event history can be purged at regular time intervals, by the number of records, or by the age of records.

### Procedure

1. Select **Network > Event History**.
2. Click the **Purge** icon from the top left toolbar.

The Purge Configuration dialog box appears.

3. Set the values for maximum age and maximum records for the purge to execute.

Purging occurs at a fixed period by either or both maximum number of records and maximum age of records.

4. To perform an immediate purge, select **Purge Now**.
5. Click **OK**.

AFO Monitoring executes purge periodically. Purge records are not retrievable by AFO Monitoring.

---

## Refreshing the Event History

### Procedure

1. Select **Network > Event History**.
2. On the Event History page, click the **Refresh** icon.

The Event History page is refreshed. Also when the user changes from one tab to another, the filter is refreshed automatically.

# Chapter 14: Trap and Syslog configuration

---

## Configuring Trap settings

You can configure how trap information is organized and displayed. Use the following procedure to configure the Trap Viewer.

You can also configure the trap settings through the Settings icon on the Traps page.

### Procedure

1. From the quick access toolbar on the top right, select **Preferences**.
2. Click **Monitoring** from the left hand navigation pane.  
The Monitoring preference page is displayed.
3. On the Monitoring Preferences page, in the Trap Configuration section, do the following:
  - Set the **Maximum age**. Entries that are older than the maximum age defined in this field are purged from the AFO Monitoring database.
  - Enter the **Maximum number**. After the maximum number of entries are in the AFO Monitoring database, the oldest entries are deleted as new entries are added.
  - Set the **Limit to disc. devices** to true or false. This determines whether the trap data is limited to discovered devices
  - Set the **Limit to auth. devices** to true or false. This determines whether the trap data is limited to authenticated devices.
  - Enter the **Listener port** (default is 162).
  - Enter the **Archive depth**. Older files beyond this number are deleted.
  - In the **Archive directory** field, enter the file path for the directory where you want archive files to be stored.
  - In the **Forwarding** field, click **Add Forwarder** to enter the destination IP address for trap information.
4. Click **Apply** to save the changes.

---

## Viewing traps

Configure the Trap Viewer filters.

## Procedure

1. Select **Network > Traps**.
2. From the Traps page, select **Filter**.  
The Traps Viewer Filters dialog box appears.
3. Configure the filters you want to use to display the trap information.
4. Click **Update**.

---

## Variable definitions

The following table displays the options in the Traps Viewer Filters menu.

Variable	Value
IP	Filters based on IP address.
OID	Filters based on Object Identifier of the trap.
Interval	Filters the displayed traps based on the time received.
Generic	Filters traps based on predefined, generic trap class (for example, coldStart,28 warmStart, linkUp, linkDown)
Specific	Filters based on the specific trap.
SNMP Version	Filters based on the SNMP version of the trap.
Ack	Filters based on the acknowledged status of the trap (acknowledged or not acknowledged).

---

## Configuring Syslog settings

You can configure how syslog information is organized and displayed. Use the following procedure to configure the Syslog Viewer.

You can also configure the syslog settings through the Settings icon on the Syslogs page.

### Procedure

1. From the quick access toolbar on the top right, select **Preferences**.
2. Click **Monitoring** from the left hand navigation pane.  
The Monitoring preference page is displayed.
3. On the Monitoring Preferences page, in the Syslog Configuration section, do the following:
  - Set the **Maximum age**. Entries that are older than the maximum age defined in this field are purged from the AFO Monitoring database.

- Enter the **Maximum number**. After the maximum number of entries are in the AFO Monitoring database, the oldest entries are deleted as new entries are added.
  - Set the **Limit to disc. devices** to true or false. This determines whether the trap data is limited to discovered devices.
  - Enter the **Listener port** (default is 162).
  - Enter the **Archive depth**. Older files beyond this number are deleted.
  - In the **Archive directory** field, enter the file path for the directory where you want archive files to be stored.
  - In the **Forwarding** section, click **Add Forwarder** to enter the Host Address, and port number for syslog information.
4. Click **Apply** to save the changes.

# Chapter 15: Viewing Reports

---

## Viewing discovery reports

### About this task

View the logs related to a discovery.

### Procedure

1. On the tool bar of the Network Discovery page, click the **Discovery Problem Report** icon, or select **Reports > Monitoring Reports**.
2. Select a node from the navigation panel.  
  
The left hand navigation pane on the Discovery Reports page organizes log messages based on category, severity, and IP address.
3. To troubleshoot why a particular IP address is not discovered or is discovered as unmanaged, locate the IP address in the left navigation pane.
4. One common reason for not discovering a device is the lack of response from the device from ping or SNMP requests sent from AFO Monitoring. In this case, check the UCM device credentials to make sure they are correct.
5. If the credentials are correct, then check for SNMP access using the SNMP MIB browser.

### Result

Some of the common messages that you encounter in the logs are as follows:

- Device did not respond to SNMP or ICMP

If the device does not respond to SNMP or ICMP, then perform the following procedures:

- Check if the device responds to ping.
  - Check if the device responds to SNMP from the AFO Monitoring MIB browser.
  - Check with Wireshark to determine if the device is sending back a response.
  - If all of the above is occurring, check UCM credentials and rerun the discovery
- Potential managed device was excluded from discovery

If the potential managed device is excluded from discovery, then perform the following procedures:

- Check discovery constraints to ensure that the device IP is not excluded by subnet limits or other constraints
- You may also see this message, or a similar message, if the topology table of one device includes this device, but this device is not found in the ARP table of any of the routers in that

subnet. In this case, check the ARP table of the routers and fix any related issues. AFO Monitoring discovers a device only if the device is found in the ARP table.

- There is no log entry for an undiscovered device
  - Make sure that UCM credentials exist for that IP and that they are correct
  - Make sure that the device's IP address is present in the ARP tables of one or more discovered layer-3 devices in your network.

# Chapter 16: Diagnostic tools

You can use the Network Topology to access diagnostic tools such as ping and route trace. To access the diagnostic tools, go to **Network > Topology**, right-click on a device in the Topology Viewer and select **Diagnose**.

The diagnostic tools are:

- MIB Query—Opens a new page to query MIBs.
- MIB Browse—Opens the MIB Browser page and displays the MIB Object properties.
- ICMP Ping—After you select a device icon, the IP address appears in the target; if required, you can change the IP address to another IP address. The responses appear in the top area of the window.
- Trace Route—Prompts you for the Destination device, and computes all static routes between Target and Destination.
- SNMP Get—The target IP is queried with the selected SNMP version, community string, Auth Protocol and Privacy Protocol; if required, you can change the information in these fields.
- Remote Ping — Permits you to remote ping between devices.
- Remote Traceroute — Permits you to trace route between two devices.

---

## Pinging a device

Use this procedure to test connectivity to a device.

### Procedure

1. Select **Network > Topology**.

The Network Topology page displays.

2. In the Topology Viewer in the middle of the panel, select a device. If your network diagram is large, you may wish to filter the devices shown by selecting a perspective from the Perspective drop-down menu.
3. Right-click on the device, and select **Diagnose**.
4. Select **ICMP Ping**.



---

## Tracing a route

Use the following procedure to perform a route trace.

### Procedure

1. Select **Network > Topology**.

The Network Topology page displays.

2. In the Topology Viewer in the middle of the panel, select a device. If your network diagram is large, you may wish to filter the devices shown by selecting a perspective from the Perspective drop-down menu.
3. Right-click on the device, and select **Diagnose**.
4. Select **Trace Route**.

---

## SNMP Get

The Diagnostic tools window provides multiple diagnostic functions, including SNMP Get. To view the SNMP Get window, from the Network Topology, right-click on the required device icon from the contents pane, and select **Diagnose > SNMP Get**.

---

## Remote pinging between phones

Use the following procedure to remote ping between phones.

This option is available for Avaya CS 1000 phones only.

### Procedure

1. Select **Network > Topology**.
2. In Perspective field, select **Device Types**, and then expand the tree to locate **Phones**.
3. In the tree, expand the **Phones** list, and then click twice on the required phone to view details of the selected phone in the topology view.
4. In the topology view, right-click on the phone, and then select **Diagnose > Remote Ping**.

A window appears requesting that you select the remote device to ping from the phone.

5. Select the device to ping.

The system displays the results of the ping in a new window.

6. Click **OK**.

---

## Remote trace route between phones

Remote trace route between phones is an extension of the trace route feature. You can trace route between two phones by selecting, on the phone, Diagnose and Remote trace route. After you make your selection, a window appears prompting you to enter the required information on the device or phone to which you want to trace route.

---

## Remote path tracing between phones

Use the following procedure to perform a remote path trace between phones.

This option is available for Avaya CS 1000 phones only.

### Procedure

1. Select **Network > Topology**.
2. In Perspective field, select **Device Types**, and expand the tree to locate **Phones**.
3. In the tree, expand the **Phones** list and right click on the required phone to view details of the selected phone.

The selected phone and connected network devices appear in the topology view.

4. In the topology view, right click on the phone and select **Diagnose > Remote Traceroute**.  
A window appears requesting that you select the remote device to ping from the phone.
5. Select the device to ping.  
The results of the ping appear in a new window.
6. Click **OK**.

---

## Managing hardware inventory

You can view and manage the inventory for campus devices, interfaces, and physical elements.

Use the following procedure to manage the hardware assets in your network.

### Procedure

1. Select **Network > Topology**.  
The Network Topology page displays.
2. In the Topology Viewer in the middle of the panel, select a device. If your network diagram is large, you may wish to filter the devices shown by selecting a perspective from the Perspective drop-down menu.

3. Right-click on a device, and select **Tables > Physical Elements** to view information about the physical elements, such as fans and chassis, associated with the selected device.

---

## Exporting an inventory

Perform the following procedure to export an inventory as a CSV or PDF file.

### Before you begin

Select an inventory by performing [Managing hardware inventory](#) on page 194.

### Procedure

1. Select **Network > Topology**.
2. In the content panel in the middle, select **Export** from the toolbar in the middle.
3. In the Export to format section, select **CSV** or **PDF**.
4. In the Scope section, select **Export current page** or **Export all data**.
5. Click **OK**.
6. Save to your chosen location.

---

## AFO Monitoring device level trends

AFO Monitoring provides trending of device resource usage and key health indicators and allows you to view performance trends of network objects. You can view multi-graph trends in a single chart for comparisons, and add a second variable. Charts show auto-ranging on both axis, popup plot values, and average, minimum and maximum bars. You can select time and date ranges, and view a trend in real time from the last hour to up to one year. AFO Monitoring remembers the last time scale and auto ranging changes. Available trends are context sensitive, depending on the selected device.

### Important:

- Trends are shown for only those variables for which sufficient data has been collected.
- For the trends menu to be visible, monitoring must be turned on for the domain and device.
- Trends of routers, switches, servers and other managed objects are available based on MIB instrumentation.

Trend charts have the following controls available:

- Interval—The interval (number and unit) displayed on the x-axis of the chart.
- Past/Current Time—If this option is selected, the user can then select from a drop down of either past or current time.

- Export—Exports the trend data to PDF or XML.
- Refresh—Refreshes the current trend chart.
- Add—Adds a graph in a plot.
- Delete—Deletes a graph in a plot.
- Autorange—Changes the y-axis scale for the graph so that the trend plotting shows over a larger y-axis scale.
- Averaging Mode—Displays averages of the trend over an x-axis.
- Number of averaging intervals—The value used to calculate the averages for the x-axis. The number of average intervals must be a minimum of 2. For example, if you select 6 as the number of average intervals and if 10 minutes is the polling period, then the values are averaged over one hour. You can enter a value only after you enable Averaging mode.

---

## Performance trending

Use the following procedure to view a performance trending chart.

### Before you begin

- You must configure a monitoring agent and enable monitoring. For more information, [Monitoring configuration](#) on page 153.
- Trending information is only available after MITs are created.

### Procedure

1. Select **Network > Topology**.  
The Network Topology page appears.
2. In the Topology Viewer in the middle of the panel, select a device. If your network diagram is large, you may wish to filter the devices shown by selecting a perspective from the Perspective drop-down menu.
3. Right-click on the device, and select **Trends**.
4. Select the Trend Chart that you want to view.

---

## Viewing network paths

Perform this procedure to view the network paths between any two points in the network.

### Procedure

1. Select **Network > Topology**.  
The Network Topology page appears.

2. Locate the device or interface you want to find the path between two points.
3. Right-click the device or interface icon, and select **Schematics > Show Paths**.  
The Select path endpoint dialog box appears.
4. From the Select path endpoint dialog box, find and select the other end-point (device or interface).
5. Click **OK**.  
A schematic showing all the paths between the two end-points is displayed.

# Chapter 17: MIB query tools

AFO Monitoring offers the following tools to query MIB IOD:

- MIB Browser
- MIB Query

The following sections provide information about using the MIB query tools.

---

## MIB Browser

The following sections provide information about using MIB Browser.

---

## Modifying SNMP version authentication

You can customize SNMP authentication for MIBs.

### Procedure

1. Select **Tools > MIB Browser**.
2. From the list of MIBs in the left pane, select the MIB for which you want to view the information.
3. Click the SNMP version button next to the Target field.
4. In the Authentication dialog box, modify the appropriate fields based on the SNMP version.
5. Click **OK**.

## Variable definitions

The following table describes the fields in the Authentication window for SNMP.

Variable	Value
SNMP Version	The SNMP version for the authentication.
Community	The SNMP community for the authentication: SNMPv1, SNMPv2c, or SNMPv3. If SNMPv1 or SNMPv2c, then only the community string needs to

*Table continues...*

Variable	Value
	be specified. If SNMPv3, then authorization and privacy can be used for additional security.
Auth Protocol	The encryption algorithm to be used: none, MD5, or SHA. (SNMPv3 only)
Privacy Protocol	The encryption algorithm to be used: none, DES 3DES, or AES128. (SNMPv3 only)
Username	The user name for the authentication. (SNMPv3 only)
Auth Password	An encrypted password for gaining access to the device. (SNMPv3 only)
Privacy Password	A password used to decrypt data sent to and returned from the device. (SNMPv3 only)

---

## Viewing SNMP MIB data

You can do an SNMP MIB query on the MIBs in your system using the MIB Browser.

### Procedure

1. Select **Tools > MIB Browser**.
2. In the **Target** field, type the IP address for the MIB you want to view.
3. From the list of MIBs in left pane, select the MIB for which you want to view the information.

OR

In the **OID** field, type the object identifier for the MIB you want to view.

4. Select SNMP version v1, v2c, or v3. If you choose v3, enter the authentication variables as shown in the preceding variable definitions table.
5. Click the **Get** button to retrieve the output for the MIB.  
The information appears in the right panel.
6. If you want to see the next MIB in the list, click the **Get next** button.
7. If you want to clear the MIB information from the results area, click the **Clear results area** button.
8. If you want to save the MIB information, click the **Save last query results** button.

---

## MIB queries

This section provides information about using the MIB query tools.

---

## Performing an SNMP MIB Query

You can use the MIB Query menu option to query MIB OID.

The MIB Query has predefined queries for commonly used tables such as Arp Cache, Cisco CDP, Interface Entries, Interface Status, and Join of IP Address and Interface. You can add your own commonly used queries by clicking on + or cloning a predefined query and changing it.

### Procedure

1. Select **Tools > MIB Query**.
2. Enter the IP address of the device in the **Target** field.
3. To receive periodic query responses, enter an amount (in seconds) in the **Period** box. To do so, first check the check box before **Period**.
4. Click **SNMPv1(public)**, and select the SNMP version.
5. From the left hand pane, select a predefined or user defined query, and click the **Execute** button (arrow button) to collect data from the target.

The results of the query appear in tabular form in the right hand pane.

Use the **Switch to columns/rows** button, along the top tool bar, to change the display of the results to columns or rows.

### \* Note:

You can use the Queries tool bar, on the left, to add a query, delete a query, or edit a query.

- Add— add user defined queries
- Delete—delete a user defined query
- Edit—edit a query

Use the **Options** button, along the top tool bar, to adjust the timeout value and retries.

---

## Adding a query

Perform the following procedure to add a query.

### Procedure

1. Select **Tools > MIB Query**.
2. From the Queries tool bar on the left, click **Add**.  
The SNMP MIB Query Editor appears.
3. In the Query Name field, enter a name.



4. Click **Apply**.

---

## Deleting a query

Perform the following procedure to delete a query.

### Procedure

1. Select **Tools > MIB Query**.
2. In the Queries pane, select a query.
3. From the Queries tool bar, click **Delete**.
4. Click **OK**.

---

## Editing a query

Perform the following procedure to edit a query.

### Procedure

1. Select **Tools > MIB Query**.
2. From the Queries pane, select a query.
3. From the Queries tool bar, click **Edit**.  
The SNMP MIB Query Editor appears.
4. Edit the query.
5. Click **Apply**.

## Variable definitions

Variable	Definition
Query Name	The name assigned to the query.
Binding Source	The field to use for joining two MIB tables.
Joined to	Joins two MIB tables
Prefix	The SNMP OID prefix to a table.
Field	The individual variables in a MIB table. For example, ipNetToMediaNetAddress or ipNetToMediaPhyAddress in the ipNetToMedia table.

# Chapter 18: MIT configuration

---

## Configuring Monitored Information Types

You can modify the parameters of the Monitored Information Types (MIT).

### Procedure

1. Select **Network > MIT**.
2. To view the information in the navigation tree in alphabetical order, click **Enable alphabetical mode**. To view the information in the navigation tree in the hierarchical mode, click **Disable alphabetical mode**.
3. Expand the monitored information type tree if in hierarchical view or scan the list of entries if in alphabetical view to locate the MIT you want to view.

4. Select the MIT.

The description and parameters for the MIT display in the right panel.

5. Click the link in the underlined word to change the parameters.

An Enter value window appears.

6. Change the required parameters.

You can also use the default values.

7. Click **Apply** to save the values.

OR

Click **Revert** to close the window without applying the changes.

---

## Variable definitions

The following table describes the options under **Network > MIT**.

Parameters	Description
Description	A brief explanation of the monitored information type.
Parameters	A text-based description of the monitored information type parameter settings. Clicking on a value link displays a window enabling you to configure the parameter.

---

## Viewing Monitored Information Types

You can view the descriptions and parameters associated with Monitored Information Types (MIT).

### Procedure

1. Select **Network > MIT**.
2. To view the information in the navigation tree in alphabetical order, click **Enable alphabetical mode**. To view the information in the hierarchical mode, click **Disable alphabetical mode**.
3. Expand the monitored information type tree if in hierarchical view or scan the list of entries if in alphabetical view to locate the MIT you want to view.
4. Select the MIT.

The description and parameters for the MIT display in the right panel of the MITs Configuration window.

---

## Variable definitions

The following table describes the options under **Network > MIT**.

Parameters	Description
Description	A brief explanation of the monitored information type.
Parameters	A text-based description of the monitored information type parameter settings. Clicking on a value link displays a window enabling you to configure the parameter.

# Chapter 19: Automating configuration tasks

With Avaya Fabric Orchestrator Monitoring (AFO Monitoring) you can automate actions, responses, and schedules.

---

## Creating an action

An action is an instance of an action type. Automatic execution is initiated as a result of a response configuration or an action schedule. Use the following procedure to create an automatically executed action.

### Procedure

1. Select **Network > Actions**.
2. On the Monitoring Actions page, select the action group to which you want to add an action by highlighting the folder in the left panel.
3. Click **Add a new action**.  
A drop-down menu displays the available action types.
4. Select the appropriate action type.
5. In the Prompt dialog box, type a name for the action you are creating, and then click **OK**.  
The right panel of the Monitoring Actions page displays the parameters for defining the new action.
6. Specify values for all mandatory parameters and for any optional parameters that you want to use.
7. Click **Apply your changes**.

---

## Variable definitions

The following table describes the options under **Network > Actions**, when you select **Add a new action**.

Variable	Definition
Command Action	Executes a command script using languages such as DOS Batch, SH, BASH, CSH, or TCSH.
Email Action	Sends an email message from a specified user account to one or more recipients.
SNMPv2 Notification	Initiates an SNMPv2 notification.
Custom Action	Permits advanced customizing of action.
Rediscovery Action	Initiates a domain rediscovery.
Config Control Action	Generates a configuration control response.
Campus Rediscovery Action	Enables you to automate a campus rediscovery. This action can be used in Responses to rediscover a campus triggered by a user-specified event.
Web Browser Action	Enables you to establish a connection to a specified URL using a web browser.

---

## Renaming an action

After you create an action you can change the name.

### Procedure

1. Select **Network > Actions**.
2. Select the action you want to rename.
3. Click the **Rename selected action** button.
4. In the Prompt dialog box, enter the new name.
5. Click **OK**.

---

## Cloning an action

After you create an action you can clone it.

### Procedure

1. Select **Network > Actions**.
2. Select the action you want to clone.
3. Click **Clone selected action**.
4. In the Prompt dialog box, enter a new name for the cloned action.
5. Click **OK**.

## Deleting an action

Perform the following procedure to delete an action if you do not need it.

### Procedure

1. Select **Network > Actions**.
2. Select the action you want to delete.
3. Click **Delete selected action**.
4. Click **OK** to confirm the deletion.

---

## Performing a selected action

### About this task

Perform an action immediately to verify the action settings. An email is sent according to the configuration.

### Before you begin

Make sure that the Email SMTP preferences are configured. Click the **Preferences** icon on the quick access toolbar to open the Global Preferences page. For information on how to configure the preferences, see *Administration using Avaya Fabric Orchestrator*, NN48100–600.

### Procedure

1. Select **Network > Actions**.
2. Select the action you want to perform immediately.
3. Click the **Execute now selected action** button.

---

## Creating a response

Responses define the ways in which AFO Monitoring addresses certain events automatically. The definition of a response requires you to first select a scope and an event that affects that scope, then select an action that addresses that event for that scope.

Only those actions that are guaranteed to apply to every element encompassed by the scope/event combination are shown, even though other actions may have been defined. In addition, you must define how the response handles messages relative to the triggering event.

### Procedure

1. Select **Network > Responses**.
2. On the Actions By Event Response page, click **Add a new response**.

3. In the Prompt dialog box, enter a name for the response, and then click **OK**.  
The Domain Elements and Event Types and Actions to Execute tabs appear.
4. Select the **Domain Elements & Event Types** tab.
5. Enable or disable the Response by selecting or clearing the **Enabled** check box.
6. Click the combo-box button under the **Response applies to event on these Domain Elements** heading and select the scope for which you want the response to apply, and then click **OK**.
7. From the **Response applies to** menu, select **Event Types** or **Event Scopes**.
8. Use the tree to locate the event type (or event scope) for which you want the response to apply.
9. Click the **Actions to Execute** tab.
10. Select the appropriate options in the **Response is triggered when** field.
11. Select the appropriate options in the **Execute the following actions** section.
12. Click **Apply your changes** from the top left toolbar.

---

## Renaming a response

After you create a response you can change the name.

### Procedure

1. Select **Network > Responses**.
2. Select the response you want to rename.
3. Click **Rename selected response**.
4. In the Prompt dialog box, enter the new name.
5. Click **OK**.

---

## Cloning a response

After you create a response you can clone it.

### Procedure

1. Select **Network > Responses**.
2. Select the response you want to clone.
3. Click **Clone selected response**.

4. In the Prompt dialog box, enter a new name for the cloned response.
5. Click **OK**.

---

## Deleting a response

You can delete a response if you do not need it.

### Procedure

1. Select **Network > Responses**.
2. Select the response you want to delete.
3. Click **Delete selected response**.
4. Click **OK** to confirm the deletion.

---

## Creating an action schedule

An action schedule is a tool for initiating one or more actions at a predetermined time or interval. The action schedule consists of a set of domain elements encompassed by a particular scope within one or more domains, the actions that it implements, and the time table by which those actions are performed on those domain elements.

### Procedure

1. Select **Network > Schedules**.
2. Click **Add a new schedule > Action schedule**.
3. In the Prompt dialog box, type the name of the new action schedule in the field.
4. Click **OK**.

The action schedule definition options appear.

5. If you want to execute actions on specific domains, select the **Execute Actions on these Domain Elements** box and use the combo-box to select the appropriate domain elements.
6. Specify the **Actions to Execute** by checking the boxes corresponding to the desired action(s).
7. In the **Schedules** section, to select the interval for the schedule to execute the defined actions, click **Add**, and select a time interval.

The time is shown as the UTC and GMT offset. It is the time zone of where the server is located.

8. Enter the interval information, and click **OK**.



9. In the **Schedule applies to** section, specify the applicable domains.
10. Click **Apply your changes** (check mark icon on the left).

---

## Creating a report schedule

### Before you begin

Make sure that the Email SMTP preferences are configured. Click the **Preferences** icon on the quick access toolbar to open the Global Preferences page. For information on how to configure the preferences, see *Administration using Avaya Fabric Orchestrator*, NN48100–600.

### Procedure

1. Select **Network > Schedules**.
2. Click **Add a new schedule > Report schedule**.
3. In the Prompt dialog box, type the name of the new report schedule in the field.
4. Click **OK**.

The report schedule definition options appear.

5. In the Reports to Attach section, click **Add**.
6. In the Add new report dialog box, select an available report and click **OK**.
7. Repeat steps 5 and 6 to add additional reports as required.
8. In the **Schedules** section, to select the interval for the schedule to execute the defined actions, click **Add**, and select a time interval.

The time is shown as the UTC and GMT offset. It is the time zone of where the server is located.

9. Enter the interval information, and click **OK**.
10. Enter the required information for the email to be sent to one or more recipients.
11. In the **Schedule applies to** section, specify the applicable domains.
12. Click **Apply your changes** (check mark icon on the left).

---

## Renaming a schedule

You can rename an action schedule after you create it.

### Procedure

1. Select **Network > Schedules**.

2. Select the schedule you want to rename.
3. Click **Rename selected action schedule**.
4. In the Prompt dialog box, enter the new name.
5. Click **OK**.

---

## Cloning a schedule

After you create a schedule you can clone it.

### Procedure

1. Select **Network > Schedules**.
2. Select the schedule you want to clone.
3. Click **Clone selected action schedule**.
4. In the Prompt dialog box, enter a new name for the cloned schedule.
5. Click **OK**.

---

## Deleting a schedule

You can delete a schedule if it is not required.

### Procedure

1. Select **Network > Schedules**.
2. Select the schedule you want to delete.
3. Click **Delete selected action schedule**.
4. Click **OK** to confirm the deletion.

---

## Creating a domain rediscovery schedule

A domain rediscovery schedule enables you to automate the rediscovery of your domain. Perform the following procedure to create a domain rediscovery schedule.

### Procedure

1. Select **Network > Schedules**.
2. Click **Add a new schedule > Action schedule**.

3. In the Prompt dialog box, type the name of the new action schedule in the box.
4. Click **OK**.

The system displays the action schedule definition options.
5. Select the **Schedule applies to** check box and select or clear the applicable domains.
6. Clear the **Execute Actions on these Domain Elements** check box.
7. In the **Actions to Execute** field, select **Rediscover Domain**.
8. In the **Schedule** field, click **Add**.
9. Select the appropriate scheduling option.
10. Specify a time of day for the action to occur.
11. Click **Apply your changes**.

---

## Viewing action schedules

### Procedure

1. Select **Network > Action Console**.
2. Select Action Schedules and the interval to view the scheduled actions for that interval.

---

## Viewing active actions

### Procedure

1. Select **Network > Action Console**.
2. Select **Active Actions** to view currently active actions and related logs.

---

## Viewing the action history

### Procedure

1. Select **Network > Action Console**.
2. Select **Action History** to view the action history and related logs.
3. Click **Select records to purge** to open the Purge dialog box and configure the records to purge.

## Adding device menu choices

You can associate an action such as launching an external application, sending a trap, or executing a shell command with the discovery domain elements in a particular scope by adding a device menu choice and setting the parameters.

### Procedure

1. Select **Network > Device Menu Choice**.
2. Click **Add a new custom launch**.
3. In the Prompt dialog box, type a name for the device menu choice in the dialog box.
4. Click **OK**.

The available options appear in the right panel of the Device Menu Choices window.

5. Select the appropriate options.
6. Click **Apply your changes**.

## Variable definitions

The following table describes the options when you select Add a new custom launch, under **Network > Device Menu Choice**.

Variable	Value
Enabled	Toggle the device menu choice on or off. You must select this check box to make the device menu choice active.
Show Output	Displays information regarding the action that is executed. Show Output is for diagnostic purposes.
Obtain user confirmation before executing	Select this check box to obtain user confirmation prior to performing the device menu choice.
Minimum user privilege required	Select the user privilege (none, operator, supervisor) required to perform the device menu choice.
Attach actions to these Domain Elements	Select the domain elements for which the device menu choice is to apply.
Make these Actions Available	Identifies the actions that are to be performed for the device menu choice. You can select multiple actions for a device menu choice. Some actions will not appear until you select the appropriate scope.
Comments	Descriptive text associated with the device menu choice.

---

## Adding web browser action as a device menu choice

You can add a web browser action as a device menu choice. AFO Monitoring can launch the following connection types:

- FTP connection
- HTTP connection
- HTTPS connection
- telnet connection

When you create an action as a device menu choice, you can launch an FTP, HTTP/S, or telnet session by selecting the option from a right-click menu on a device.

### Procedure

1. Select **Network > Device Menu Choice**.
2. Click **Add a new custom launch**.
3. In the Prompt dialog box, type a name for the device menu choice in the dialog box.  
For example, `telnet_https`.
4. Click **OK**.
5. Select the **Enabled** check box.
6. Select the **Obtain user confirmation before executing** check box.
7. From the **Make these actions available** list, select the actions you want to launch.
8. Click **Apply your changes** in the top left toolbar.
9. From the AFO menu bar, select **Network > Topology**.
10. Select the perspective you want in the drop-down menu above the tree browser.
11. Right-click on any device for which you want to launch a Telnet/Http/Https/Ftp session.
12. From the list, select **Tools** and click the option you want to launch.

---

## Configuring a customized web browser action

Use the following procedure to create a customized web browser action. A customized web browser action establishes a connection to a configured address. AFO Monitoring can launch the following connection types:

- FTP connection
- HTTP connection
- HTTPS connection
- telnet connection

When you create a customized web browser action, you can launch the connection by selecting the option from a right-click menu on a device.

### Procedure

1. Select **Network > Actions**.
2. On the Monitoring Actions page, select the **Web Browser Actions** folder.
3. Click the **Add a new action** button.  
A drop-down menu displays the available action types.
4. Select **Web Browser Action**.
5. In the Prompt dialog box, type a name for the action you are creating in the box, and then click **OK**.
6. Specify values for all mandatory parameters and for any optional parameters you want to use.
7. Click **Apply your changes**.

---

## Variable definitions

Variable	Value
Subject Type	The scope to which the web browser action will apply.
Event Type	Displays the event type for the action. When editing an action, this option enables you to select from a drop-down list of the event types for which you can execute the action.  After you define any customized Web browser action, the event type drop down box is disabled because Web Browser actions are related to Custom Launch on the device.
Related Event Type	Displays a related event type for the action. When editing an action, this option enables you to select from a drop-down list of the related event types for which you can execute the action.  After you define any customized Web browser action, the related event type drop down box is disabled because Web Browser actions are related to Custom Launch on the device.
Protocol	Specify the protocol to use when establishing the connection: FTP, HTTP, HTTPS, or Telnet.
Location	The URL to establish the connection with.
Default	Read-only. The device on which the action is invoked.
Timeout	The length of time to wait for the server to respond to the connection request before timing out.