

Aruba Fabric Composer 6.3.0 User Guide



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| Revision | Change Description |
|-------------|---|
| Revision 01 | Initial release for Aruba Fabric Composer 6.3.0 |

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Safety

The Aruba Fabric Composer module system is classified as a class 1 telecommunications laser product employing embedded class 1 lasers and complies with the following:

THIS PRODUCT COMPLIES WITH FDA RULE 21 CFR SUB CHAPTER J IN EFFECT AT DATE OF MANUFACTURE.
PRODUCT COMPLIES WITH 21 CFR 1040.10 AND 1040.11.

PRODUIT CONFORME SELON LE SOUS CHAPITRE J DU DOCUMENT FDA RÈGLE 21 CFR EN VIGUEUR LORS
DE LA DATE DE FABRICATION. PRODUIT CONFORME SELON 21 CFR 1040.10 ET 1040.11.

Electrotechnical Commission (IEC) 60825-1, 60825-2

This product is classified as a: CLASS 1 LASER PRODUCT

APPAREIL À LASER DE CLASSE 1

This unit is intended to be installed in a Restricted Access Location only with access only by trained personnel.



The primary hazards of exposure to invisible laser radiation from an optical fiber communications system are:

- Damage to the eye by viewing an unterminated optical fiber or fiber optic connector.
 - Damage to the eye from invisible laser radiation from viewing a cut fiber or a broken fiber.
-

Never attempt to view optical connectors that may be emitting laser energy and always avoid possible exposure to invisible optical laser radiation. Using optical fiber scopes or magnifying lenses may increase the possibility for an eye hazard. It is recommended that you use an optical power meter to determine if there is optical laser radiation present or use a remote video display inspection tool to inspect connectors.

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Aruba Fabric Composer is an intelligent, API-based, software-defined orchestration solution that simplifies and accelerates leaf-spine network provisioning and day-to-day operations across a rack-scale compute and storage infrastructure.

Aruba Fabric Composer orchestrates a discrete set of switches as a single entity called a fabric, which significantly simplifies operations and troubleshooting. Aruba's fabric solution is built from-the-ground-up to be fully integrated with datacenter infrastructure as well as application and workload orchestration systems like VMware vSphere®, VMware NSX-T®, Nutanix Prism®, HPE SimpliVity®, Pensando® PSM, HPE ILO Amplifier, Aruba NetEdit®, and more.

Aruba Fabric Composer, in conjunction with Aruba AOS-CX Switches, and a wide range of third-party tools and products, enables zero-touch operations throughout the Aruba network fabric.

Aruba Fabric Composer UI

The Aruba Fabric Composer UI is a user interface that enables you to configure and manage multiple fabrics and fabric types.

Aruba Fabric Composer and Aruba AOS-CX switches

Aruba Fabric Composer supports the Aruba 6300, 6400, 8325, 8360, 8400, and AOS-CX 10000 switch families running on Aruba AOS-CX 10.09.x, 10.08.x, 10.07.x and 10.06.x software versions.



Aruba AOS-CX 10.4 and 10.5 can be added to the Aruba Fabric Composer. However, they must be upgraded to 10.6 before being configured to the fabric composer.

Aruba Fabric Composer now supports two types of fabrics;

- Management Fabrics
- Data Fabrics (previously called as Leaf-Spine Fabrics)

Management Fabrics provide L2 Spine-Leaf workflows with the Aruba 6300 switch family.

The Data Fabrics consists of the following:

- **Leaf switches:** Each rack contains two leaf switches. These switches contain access ports that connect to servers, firewalls, load balancers, and edge routers within the rack. Each leaf switch has high-speed connections to the spine switches for the fabric. Pairs of leaf-switches are interconnected together using Aruba VSX technology with active LACP pairing to deliver superior server connection redundancy.
- **Spine switches:** Each rack can connect to all spine switches and each fabric supports two-to-eight spine switches. The spine switches can be located inside or outside the racks. The spine switches connect the leaf and border leaf switches, forming the leaf-spine fabric. The spine layer is made up of switches that serve as the backbone of the network. The spine switches do not connect to each other: however each spine switch does connect to all leaf and border leaf switches within the fabric.
- **Border leaf switches:** Border leaf switches provide Layer 2 or Layer 3 external connectivity to networks outside the fabric and outside the rack. Additionally, border leaf switches can connect to servers within the rack. Border leaf switches support routing protocols that exchange routes with external routers. These switches apply and enforce policies for traffic between internal and external endpoints.

The leaf-spine fabric uses dynamic Layer 3 routing protocols to determine the best path. This type of network supports data center architectures with a focus on East-West network traffic where data travels inside a data center.

This chapter describes the new features in this release.

Most of the Aruba Fabric Composer 6.3.0 functionality is provided to support the Distributed Services Architecture and the Aruba AOS-CX 10000 solution. This solution enables Aruba Data Center Networks to combine Aruba switching technology with the AOS-CX 10K DSS, all centrally managed by Aruba Fabric Composer.

Some of the salient features are:

- Support for larger-scale Fabrics
- Manage multi-site deployments
- Pensando PSM/DSS Phase 2 Integration
- Enhanced telemetry engine
- Enhanced Integrations
- License management
- Support for new switch model (Aruba 8360)

To log into the Aruba Fabric Composer:

1. In a Web browser, enter the host name or IP address of the Aruba Fabric Composer host: `https://host_name/`
where `host_name` is the host name or IP address of the Aruba Fabric Composer host.
2. Log into Aruba Fabric Composer using your account credentials.

The UI opens on the Dashboard page.

First-Time Login as Admin

To log into the Aruba Fabric Composer for the first time as an admin user:

1. In a Web browser, enter the host name or IP address of the Aruba Fabric Composer host: `https://host_name/`
where `host_name` is the host name or IP address of the Aruba Fabric Composer host.
2. On the first login, the Aruba Fabric Composer UI opens a Change Password dialog which must be completed before the Dashboard is displayed. Complete the following:
 - **Current:** Enter the current default password: **aruba**
 - **New:** Enter the new password.
 - **Confirm:** Re-enter the new password.



The default credentials for the first-time admin login after software installation are:

Username = **admin**

Password = **aruba**

3. If needed, click **Password Policy** and configure the password policy as described in [Password Policy on page 125](#).
4. Click **Apply** to log in.

The UI opens on the Dashboard page.

The topics within this section provide general information on how to use the Aruba Fabric Composer UI.

- Navigating the Aruba Fabric Composer UI
- Navigation Search
- Using Wizards
- Tool Tips
- Customizing Table Columns
- Filtering Tables
- Clicking Links to Launch Pages
- Expanding and Minimizing the Left Menu Bar
- About Aruba Fabric Composer Window
- End User License Agreement
- Aruba Fabric Composer API Explorer

Navigating the Aruba Fabric Composer UI

Menu Bar

The menu bar which appears across the top of the Configuration menu contains the following menu items:

| Menu bar | Menu item | Sub-menu item |
|----------------|---------------------|-------------------------|
| Dashboard | Opens the dashboard | – |
| Configurations | Ports | Ports |
| | | Link Aggregation Groups |
| | | VLAN Groups |
| | | PVLANS |
| | | Transceivers |

| Menu bar | Menu item | Sub-menu item |
|----------------|----------------|-------------------------|
| Configurations | Routing | VRF |
| | | BGP |
| | | OSPF |
| | | EVPN |
| | | EVPN VXLAN Multi-Fabric |
| Configurations | System | Fabrics & Switches |
| | | AFC Remote Sites |
| | | Monitoring Agents |
| | | SmartNICs |
| | | System Settings |
| Configurations | Network | Resource Pools |
| | | VSX |
| | | Leaf-Spine |
| | | DNS |
| | | NTP |
| | | SNMP |
| | | VSF |
| | | sFlow |
| | | DHCP Relay |
| Configurations | Administration | User Management |
| | | Password Policy |
| | | Certificates |
| | | Device Maps |
| | | Statistics Settings |
| | | LDAP |

| Menu bar | Menu item | Sub-menu item |
|----------------|--------------|-------------------------|
| Configurations | Integrations | Aruba NetEdit |
| | | HPE iLO Amplifier |
| | | ODIM Plugin Integration |
| | | HPE SimpliVity |
| | | Nutanix Prism |
| | | Pensando PSM |
| | | VMware NSX-T |
| | | VMware vSphere |
| | | VMware SDDC |
| Configurations | Policy | Policy Groups |
| | | Policies |
| | | Rules |
| | | Endpoint Groups |
| | | Applications |
| | | Service Qualifiers |
| | | Microsegmentation |
| | | Firewall Log |
| | | Firewall Profiles |
| | | PSM Alerts |

| Menu bar | Menu item | Sub-menu item |
|----------------|--------------------|--|
| Maintenance | | Switches |
| | | Audits |
| | | Support Bundles |
| | | Device Firmware |
| | | Backups |
| | | Switch Checkpoints |
| | | Syslog |
| | | High Availability |
| | | Licenses |
| Visualizations | Networks | Hosts |
| | | Networks |
| | | Statistics |
| Menu Bar Icons | Search icon | Navigation Search (Where can I find?) |
| | System Health icon | <ul style="list-style-type: none">■ Green = healthy■ Yellow = caution■ Red = warning |
| | CLI Commands | CLI Commands Processor |
| | Hamburger icon | Guided Setup |
| | Admin icon | Appearance Theme |
| | | Change Password |
| | | Logout |
| | Help icon | About |
| | | Help Contents |
| | | License Agreement |
| | | API Explorer |
| | | Web/UI Log |

Navigation Pane

The navigation pane on the left side of the window lists the configurations available for the selected configuration category. The preceding table lists the features that appear in the navigation pane. To open the configuration page for a feature, in the navigation pane, select that feature.

Navigation Search

Entering the name of a configuration item in this navigation search window enables you to access the configuration without searching through the drop-down menu. As you begin entering the configuration or feature, one or more possible choices appear. Click a selection and you will be brought right to that configuration page. For example, to access the EVPN configuration, you can enter "evp" or "evpn" and click the selection that you want.

The search engine searches for all instances of the string as you enter it. It returns all the possible pages, configurations, and variables as well as where they appear in the UI.

Using Wizards

The Aruba Fabric Composer UI makes use of wizards to guide you through the process of adding (creating) or editing many configurations.

A wizard may be opened when you select an action such as **Add** or **Edit** from an active **Actions** drop-down.

Adding a Feature Configuration

When you are adding a configuration, the wizard guides you through the tabs, and presents the Next and Back buttons as follows:

- When you complete all required parameters on a tab, the **Next** button will become active, enabling you to continue to the next tab. When you have completed a tab, click **Next** to continue to the next tab.
- The **Back** button enables you to go back to the previous tab.
- Click **Back** and **Next** as needed to move around and access the wizard tabs.

Editing a Feature Configuration

When editing a configuration of a feature, the wizard window presents named tabs. You can select any tab in any order and edit values on each tab as needed.



When a tab's configuration is not complete, the error will be highlighted in red and a red X will appear next to the tab name indicating that it is not complete.

Rule Enforcement and Validation

As you are entering data for variables within wizards, the Aruba Fabric Composer UI enforces any rules or limits; automatically preventing you from entering data that is outside of ranges or does not comply with rules.

Conditional Tabs

In some configurations, selecting a parameter will cause a new related tab to be added to the wizard, requiring information to be provided for the selected feature or parameter.

Summary Tab

The **Summary** tab lists all configured parameters for you to verify the parameter values. If you need to make any changes, open the tabs and update as needed.

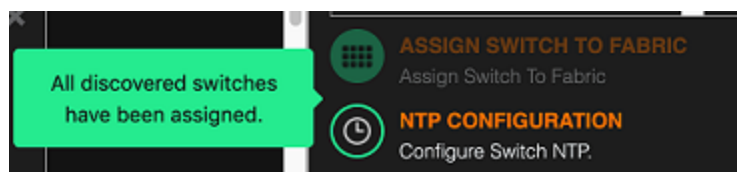
Exiting the Wizard

Once you have completed and verified all parameters, you can exit the wizard as follows:

- **Apply:** Exit the wizard and either add a new configuration or save edits made to an existing configuration. A temporary pop-up will confirm that the configuration was successful.
- **Cancel:** Exit the wizard without saving either a new configuration or edits made to an existing configuration.

Tool Tips

Throughout the UI, hovering over a selectable image or text, such as a link or an action, pops up a balloon that contains a brief description of the selection. For example, hovering over the Assign Switch to Fabric link on the Guided Setup panel provides a tool tip.



Customizing Table Columns

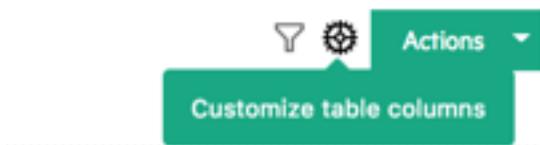
This feature enables you to select columns to display in various tables.

The Aruba Fabric Composer UI contains tables that provide information. By default, not all columns in these tables are shown. You can customize the tables, selecting columns to view or hide.



Any column changes selected are persisted as user preferences for the logged-in account and are applied anytime that account is used in the future.




To view or hide table columns, above a table, click the **Customize table columns** icon:



A list of column names appears. Checked names appear in the table and unchecked columns are hidden from view. Click the check boxes as needed to customize the table.

Filtering Tables

The Aruba Fabric Composer UI contains a number of tables that enable you to filter the contents of the table based on an entered value in one or more columns.

You enable the filter view by clicking the **Toggle table filters** icon  located above the table. Once enabled, filtering is ON for ALL tables. The icon is a toggle; clicking it again will disable filtering in all tables. The icon is black  when filtering is disabled and changes to green when filtering is enabled .

With filtering enabled, each column header in a table either contains a drop-down from which you can **select** a value, or a field in which you can **enter** a value using Regular Expressions. As you select or enter a value, the table immediately lists only the rows that match the filter.

You can filter for a single column or for several columns as needed to display a desired subset of information.

Filtering Drop-Downs

For columns that present a limited set of values such as State, Type, or Speed, with table filtering enabled, a drop-down will enable you to select one value. Only rows that contain that value will be listed.

Filtering Using Regular Expressions

All table columns that do not use drop-downs can be filtered using Regular Expressions that list table contents that match the filter value(s). For example, table columns that define QSFP port numbers (50.1, 50.2, and so on) or VLANs and VLAN ranges (30-50, 100, 101, and so on).



The filter will find a range given a single value that exists within the range. However, the filter does not allow a range (for example, '30-50') to be entered.

For information on regular expressions, refer to: https://developer.mozilla.org/en-US/docs/Web/JavaScript/Guide/Regular_Expressions

Examples of regular expression filtering

Regular Expression Example: I have VLAN groups mapped to a port so there is a range of VLANs

For example, "10-200" means that there are 190 individual VLANs mapped to this port.

Entering **4** in the table filter matches any number with a 4 in it. The VLAN range of 10-200 contains many, including: 4, 14, 24...40-49, 54...194.

To search for 4 and not include the ports with 10-200, one way to accomplish this would be to use the filter **^4\$**, where:

- **^** signifies the start of the line.
- **\$** signifies the end of the line.

This says match anything where 4 is the first, last, and only character.

Regular Expression Example: Find specific ports

The following filter: **^[0-9]\$ | 10** says to start and end with a number (0-9 in this example) or 10. Additionally, the following example: **^(1|3|7)\$** matches 1, 3, or 7 only.

Regular Expression Example: Reverse match: Find all ports without a specific VLAN

In the Ports table, you can search for all ports that do NOT have a specific VLAN configured using the following regular expression matching formula:

^(^(!X\$).+)*\$

where X is the VLAN number.

For example, to find all ports that do NOT have VLAN 100 configured, you would use the filter: **^(^(!100\$).+)*\$**.

The search will find all ports that do NOT have VLAN X configured. In the Ports table, all ports that do NOT contain the specified VLAN are listed.

Regular Expression Example: List All QSFP Port 1

To enter a search value that contains a symbol such as a decimal point, precede the symbol with a backslash '\'. For example, on the **Configuration > Ports > Ports** page, to search for all instances of port 1 in QSFP ports, in the Port column with filters enabled, enter **\.1**



The port number for any QSFP port that is configured as a single 1x100 GbE or 1x40 GbE port will not contain a decimal. For example, it would be port 20 or port 50, not port 20.1 or 50.3.

Without a backslash, the dot '.' means 'ANY single character'. Therefore, in the following Ports page example, with **.1** entered in the Port column filter, all ports that contain 'any character followed by a 1'.

Regular Expression Example: List All instances of a VLAN

In some tables, with table filtering enabled, an extra drop-down field is available in the VLAN column, enabling you to search for VLAN ranges that match the symbol you select (**=**, **>**, **>+**, **<**, **<=**) and the value you enter.



The filter does not allow a range (20-30) to be entered, only a single value that exists within the range such as 20, 25, or 30.

Clicking Links to Launch Pages

Many status and visualization pages contain links that, when clicked, bring you directly to related configuration pages. Here are two examples:

- From the Dashboard, you can immediately access the **Configuration > Maintenance > Switches** page where all switches are listed in a table or on the graphical port view depending on the most recent view used on that page. You can view switch configuration and state information as well as edit, delete, upgrade, replace switches, as well as stage switch software install images to switches. To open this page from the Dashboard, either:
 - In the Switches panel, click **Switches count**, or
 - In the Fabrics panel, click on any switch icon. Clicking the switch icon opens the switch page with the filters enabled and the selected switch entered in the switch filter.
- In the **Visualizations > Hosts** view, clicking a port icon and selecting **Ports** opens the **Configuration > Ports > Ports** page, listing only the selected port in a table. On this page, you can view port configuration and state information as well as edit, enable, disable, change the port speed, change the QSFP mode, or manage VLANs,

Expanding and Minimizing the Left Menu Bar

You can expand and minimize the left menu bar, as well as filters that appear within the primary window, by clicking the >> icon to expand or << icon to minimize. This icon appears at the bottom of the menu or filter field.

The About Aruba Fabric Composer Window

In the Aruba Fabric Composer banner, selecting the Help icon '?' and then clicking **About** opens the About Aruba Fabric Composer window. This window presents the following:

- The Aruba Fabric Composer software version.
- A link to the Aruba Support Portal.
- A link to the Aruba Fabric Composer online help contents.

Click **OK** or **X** to close the window.

End User License Agreement

The End User License Agreement (EULA) is available to read from the Aruba Fabric Composer UI.

In the Aruba Fabric Composer header, select the Help icon ? and then click **License Agreement**.

The License Agreement displays. You can scroll through the agreement. When finished, click **OK** at the end of the agreement.

Aruba Fabric Composer API Explorer

In the Aruba Fabric Composer header, selecting the Help icon ? and then clicking **API Explorer** opens a tab containing the Aruba Fabric Composer API documentation.



This feature is intended for advanced users.


After the Aruba CX-OS switching hardware and Aruba Fabric Composer software are installed, use the Aruba Fabric Composer UI to configure a new leaf-spine fabric. The Aruba Fabric Composer UI Guided Setup displays two configuration elements: Network Setup and Distributed Services Setup

NETWORK


DISTRIBUTED SERVICES

Network Setup

Perform the following steps to initialize and configure your system.

 **SWITCHES**


Discover new Switches.

 **FABRIC**


Add a Fabric to the system.

Selected Fabric:


Aruba fab

 **ASSIGN SWITCH TO FABRIC**


Assign Switch To Fabric

 **NTP CONFIGURATION**


Configure Switch NTP.

 **DNS CONFIGURATION**


Configure Switch DNS.

 **VSX CONFIGURATION**


Configure VSX Switch Pairing.

 **L3 LEAF-SPINE CONFIGURATION**

Configure L3 Leaf-Spine Connections.

 **L2 LEAF-SPINE CONFIGURATION**

Configure L2 Leaf-Spine Connections.


 **UNDERLAYS**

NETWORK


DISTRIBUTED SERVICES

Distributed Services Setup

Perform the following steps to initialize and configure distributed services.

 **PENSANDO PSM ***


Configure the Distributed Services Manager

 **CONFIGURE VRFs**


Configure VRFs to sync with PSM

Selected VRF:

Aruba fab/default


 **CONFIGURE NETWORKS**


Configure Networks for Selected VRF

 **CONFIGURE POLICY**

Configure Policies.

* = Required

 = Completed

 = Incomplete

CLOSE

In the Network Setup UI, the following steps are available:

- Switches
- Fabric
- Assign Switch to Fabric
- NTP Configuration
- DNS Configuration
- VSX Configuration
- L3 Leaf-Spine Configuration
- L2 Leaf-Spine Configuration
- Leaf Spine Configuration
- Underlays
- Overlays
- EVPN Configuration

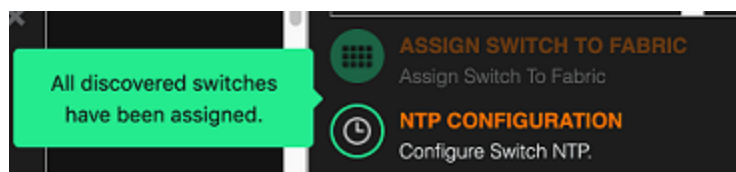
In the Distributed Services Setup UI, the following steps are available:

- Pensando PSM
- Configure VRFs
- Configure Networks
- Configure Policy
- Configure Microsegmentation

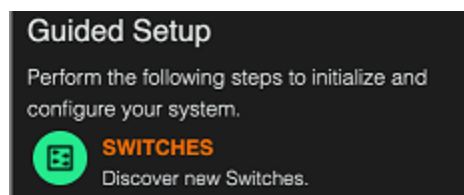
Color Codes

Configurations that cannot be repeated have a green check mark and the **Close** button becomes active after you complete the required configurations. As you complete a configuration, its status icon changes to a white on green background.

- The entire area containing the icon, header, and description text is clickable. This area is highlighted when hovered over.
- Disabled options have a tool tip to explain why it is disabled (for example, All discovered switches have been assigned).



- Completed steps that can continue to be configured (for example, Discover new Switches) have the same icons with same green color.



- Color codes for Required, Completed, and Incomplete

* = Required ● = Completed ○ = Incomplete

Using Guided Setup



To open Guided Setup, click the **Guided Setup** icon located in the Aruba Fabric Composer header menu bar. Select a setting in Guided Setup and perform the configuration as needed.

To close Guided Setup, click **Close**.

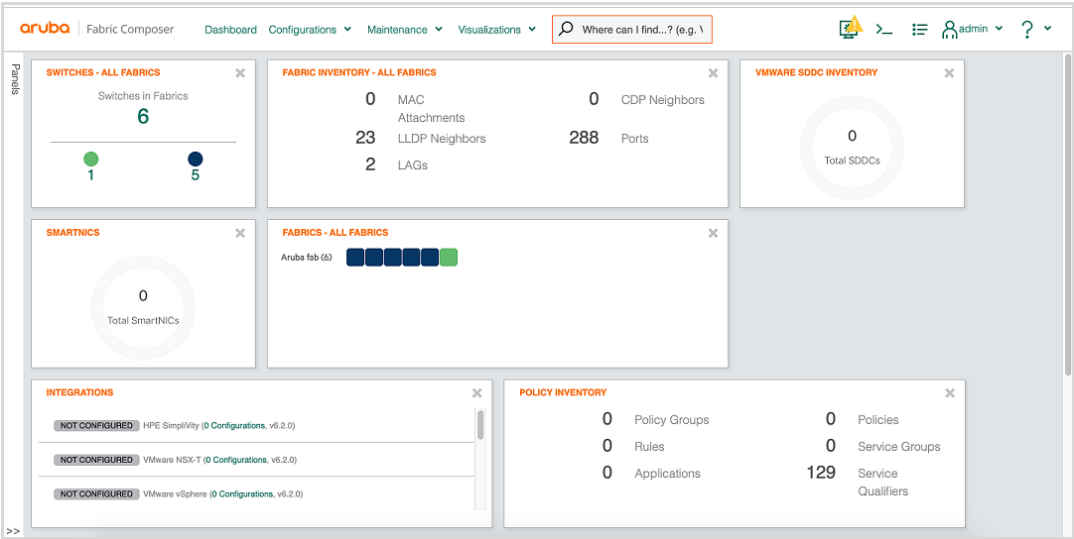
Guided Setup Configuration Options

| Action | Description | Also See |
|---------------------------------------|--|---|
| Switches | Perform manual switch discovery. | Discover Switches on page 183 |
| Fabric | Add single or multiple Leaf-Spine fabrics. | Fabrics & Switches on page 96 |
| Assign Switch To Fabric | Assign discovered switches to a fabric and assign a role (spine, leaf, or border leaf) to each switch. | |
| NTP Configuration | Configure access to an NTP server. | Adding an NTP Configuration on page 113 |
| DNS Configuration | Configure DNS settings. | DNS on page 111 |
| VSX Configuration | Configure VSX Switch Pairing. | VSX on page 105 |
| L3 Leaf-Spine Configuration | Configure L3 Leaf-Spine connections. | Leaf-Spine Configuration on page 109 |
| L2 Leaf-Spine Configuration | Configure L2 Leaf-Spine connections | Leaf-Spine Configuration on page 109 |
| Underlay/Overlay Configuration | Configure Underlay/Overlay. | Adding an Overlay on page 73 |
| EVPN Configuration | Configure EVPN instances. | EVPN on page 92 |

The Dashboard provides status and configuration information about the Aruba Fabric Composer (switches, software, fabrics, integrations, and configurations). You can monitor Aruba Fabric Composer activities on the Dashboard.


The Dashboard contains selectable panels for the following Aruba Fabric Composer information:

- **Switches - All Fabrics** indicates the number of Aruba Fabric Composer fabrics, the number of Aruba Fabric Composer switches, and the number of healthy or unhealthy Aruba Fabric Composer switches in the fabrics.
- **Fabric Inventory- All Fabrics** provides inventory quantities for the following: MAC attachments, CDP neighbors, LAGs, LLDP neighbors, and ports.
- **Fabrics - All Fabrics** provides health status of all the Fabrics.
- **VMware Inventory** provides VMware inventory quantities for the following connected elements: VMware VMs, VMKernel adapters, and ESX Hypervisors. This panel is available as soon as an integration set containing the VMware vSphere Integration is activated.
- **VMware NSX-T Inventory** provides inventory of the number of VMs connected, Transport Zones, Tier-0 Gateways, N-VDSs, Segments, Host Transport Nodes, and Tier-1 Gateways. This panel is available as soon as an integration set containing the VMware NSX-T integration is activated.
- **HPE iLO Inventory** provides HPE iLO inventory quantities for the following connected elements: the number of HPE iLO servers and health information for the servers. This panel is available as soon as an integration set containing the HPE iLO Amplifier integration is activated.
- **HPE SimpliVity Inventory** provides an inventory of HPE SimpliVity clusters.
- **Nutanix Prism Inventory** provides Nutanix Prism inventory quantities for the following connected elements: the number of Nutanix VMs, AHV Hypervisors, and CVMs. This panel is available as soon as an integration set containing the Nutanix Prism integration is activated.
- **Policy Inventory** provides information about Policy Groups, Rules, Applications, Policies, Service Groups, and Service Qualifiers.
- **Remote AFC Sites** provides information about all the remote sites managed by Aruba Fabric Composer.
- **SmartNICs Inventory** provides a view of the total SmartNICs discovered by Aruba Fabric Composer.
- **Fabrics** graphically represents the fabrics and switches in that fabric and indicates the health of each switch.
- **Integrations** lists all installed integrations and their current state. This panel is available only if an integration set has been activated.
- **Audits** lists a log of alarms and events.
- **Distributed Services Inventory and Alerts** lists a log of all distributed services.



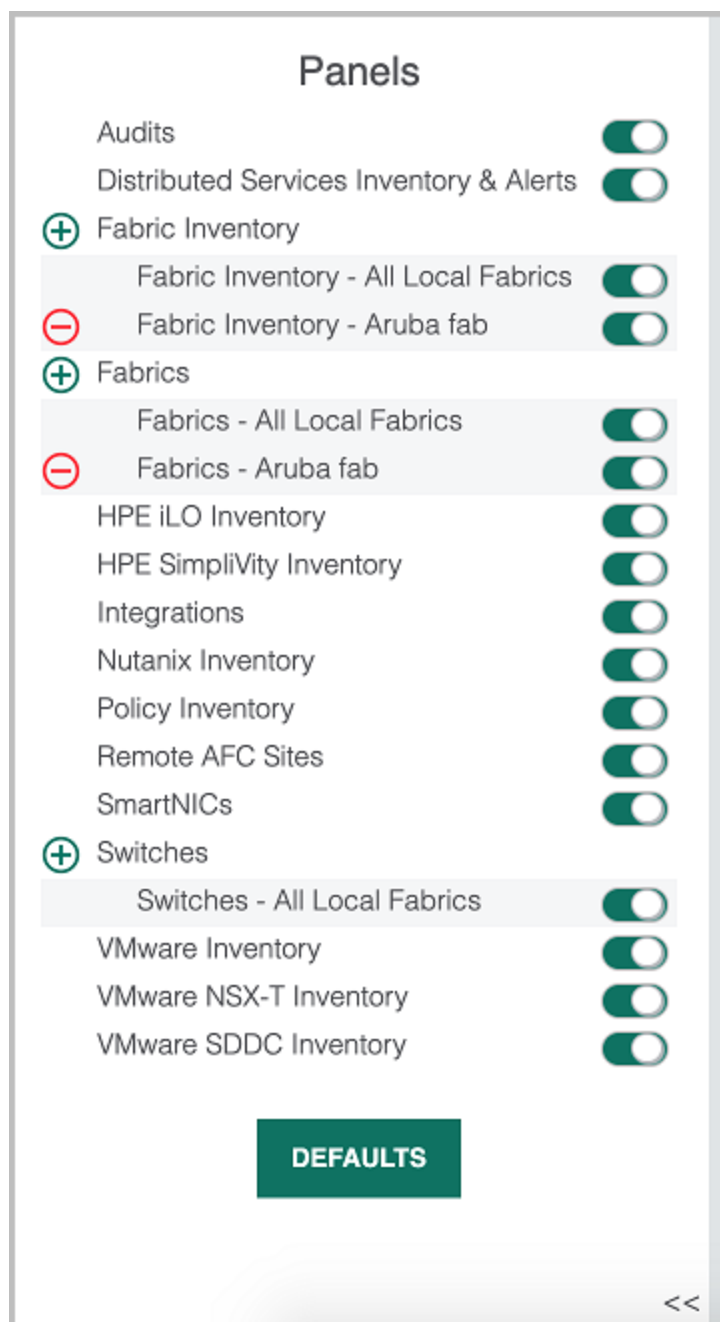
You can hide individual data panels in the Dashboard by clicking the **Hide Panel** icon in the panel. The Dashboard layout will persist after logging out of the session.

Selecting Panels in the Dashboard View

Clicking the **Customize your dashboard** icon  in the Lower Left corner of the Dashboard window opens a **Panels** window in which you can show and hide the data panels on the Dashboard tab.



The set of selected panels is persisted for the logged in user.



The Dashboard supports the following panels:

- Audits
- Distributed Services Inventory and Alerts
- Fabric Inventory-All Fabrics [Clicking the + icon next to Fabric Inventory enables additional panels for only a selected set of fabric(s).]
- Fabrics-All Fabrics [Clicking the + icon next to Fabrics enables additional panels for only a selected set of fabric(s).]
- HPE iLO Inventory
- HPE SimpliVity Inventory
- Integrations

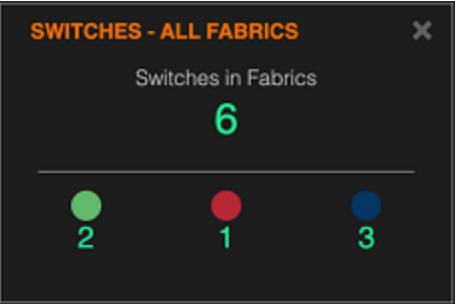
- Nutanix Inventory
- Policy Inventory
- Remote AFC Sites
- SmartNICs
- Switches-All Fabrics [Clicking the + icon next to Switches enables additional panels for only a selected set of fabric(s).]
- VMware Inventory
- VMware NSX-T Inventory
- VMware SDDC Inventory

Fabric, Switch, and Switch Health Inventory

The **Dashboard > Switches** panel provides the following Aruba Fabric Composer and switch inventory information:

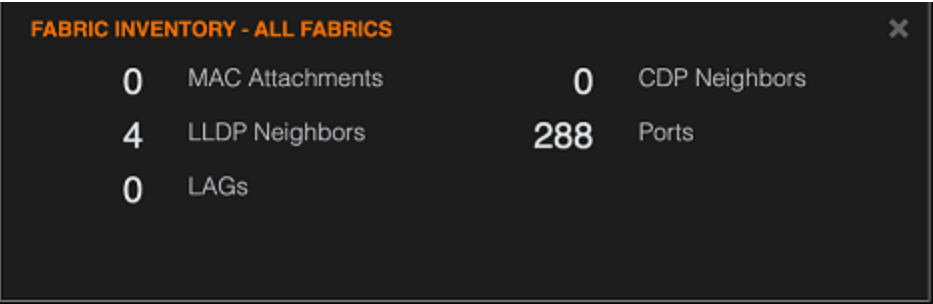
- Number of fabrics and a link to the Fabrics page.
- Total number of switches and a link to the Switches page.
- Number of switches in each health category:
 - Red: Critical, Major, Non-recoverable
 - Blue: Degraded, Healthy, But..., Minor, and Upgrading
 - Green: Healthy
 - Gray: Unknown

The health quantities are links to the Switches page with the related health category displayed. For example:



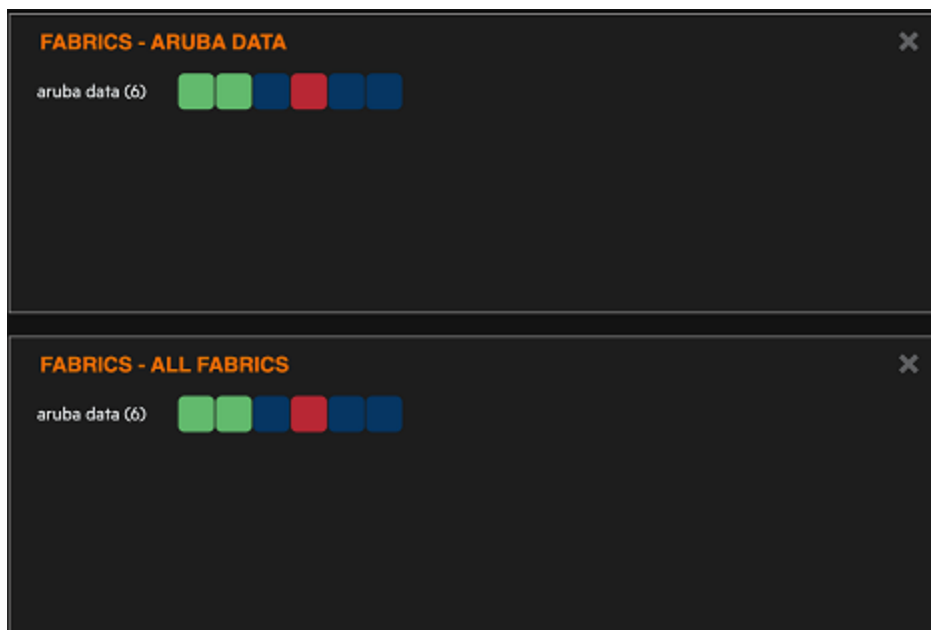
Fabric Inventory Panel

The **Dashboard > Fabric Inventory** panel provides an inventory of elements on the Aruba Fabric Composer including MAC attachments, CDP neighbors, LAGs, LLDP neighbors, and ports. For example:



Fabrics Panel

The **Dashboard > Fabrics** panel provides a visualization of the Aruba Fabric Composer and the switches on the fabric. The switches appear as color-coded squares; the color identifies the current health of each switch. For example:



Colors Indicate Switch Health

The colors in this panel indicate the health of all Aruba Fabric Composer modules in the Fabric Composer. The modules are displayed with the following colors to indicate health:



Switch is healthy.



Switch has a non-critical issue or is upgrading.



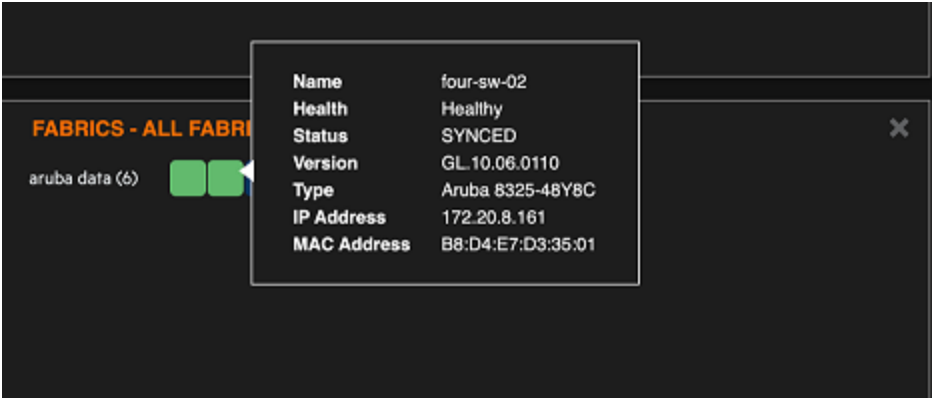
Switch has a critical issue.

For example:



Hover over a Switch

Hovering over a switch provides information about that switch. For example:



The following switch information is provided:

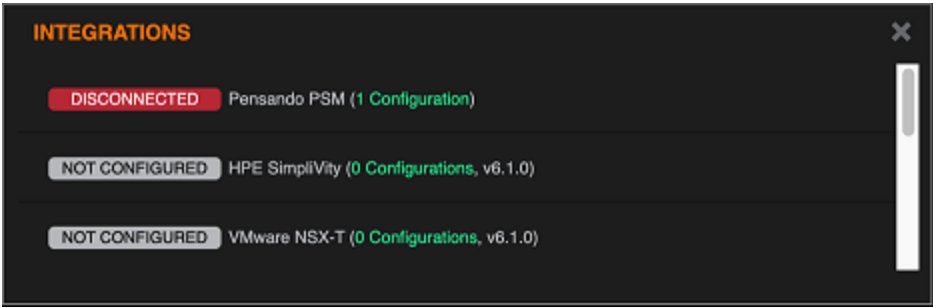
- **Name:** Name assigned to the switch.
- **Health:** Health of the switch. For example, Healthy, Upgrading, Healthy, But..., Degraded, Critical.
- **Status:** Status of the switch. For example, Synced, Syncing, or Sync Failure.
- **Version:** Switch software version.
- **Type:** Aruba Fabric Composer switch type.
- **IP Address:** Switch management IP address.
- **MAC Address:** Switch MAC address.

Click on a Switch

Clicking on any switch in the Fabrics panel opens the **Configuration > Maintenance > Switches** window, displaying only that switch.

Integrations Panel

The **Dashboard > Integrations** panel identifies the current state of the integration. For example:



Viewing Integration State

Knowing the connection states of your integrations is useful for overall management and for diagnosing issues. For integration connection state, you can view the following color-coded status banners in the **Dashboard > Integrations** panel.

The following integration statuses are reported:

- **CONNECTED** This state banner indicates that for the integration, ALL configurations are connected.
- **DISCONNECTED** This state banner indicates that for the integration, one or more configurations are disconnected.
- **UPDATING..** Integration configuration data is being updated. Some screens may not update properly. This state appears while the integration configuration is updating. The integration configuration updates after enabling or re-enabling the integration configuration, or after changing a value in the integration configuration.
- **DEGRADED** This state banner indicates that the integration is configured and connected, but is limited in functionality.
- **NOT CONFIGURED** This state banner indicates that an integration is not configured.

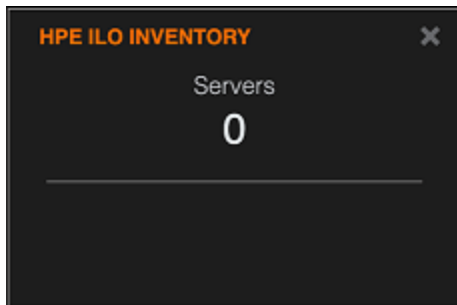
VMware Inventory Panel

The **Dashboard > VMware Inventory** panel provides an inventory of various elements of the VMware environment such as the number of VMware VMs, VMKernel Adapters, and ESX Hypervisors.



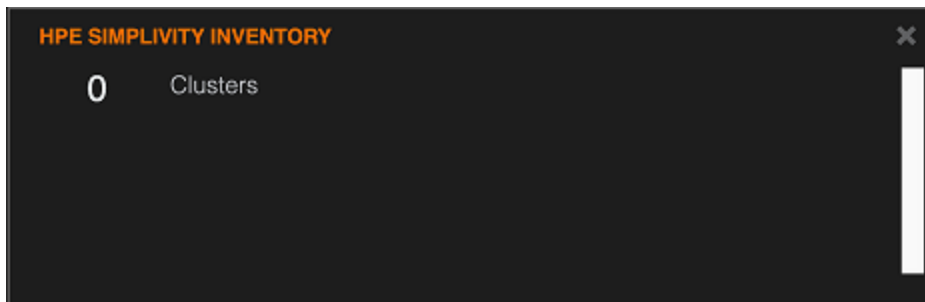
HPE iLO Inventory Panel

The **Dashboard > HPE iLO Inventory** panel provides an inventory of the HPE iLO environment, including the number of HPE iLO servers, and the server health. For example:



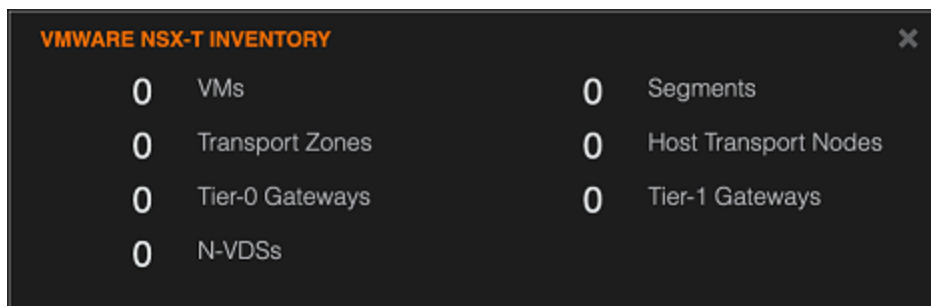
HPE SimpliVity Inventory Panel

The **Dashboard > HPE SimpliVity Inventory** panel provides an inventory of the HPE SimpliVity environment, including the number of clusters. For example:



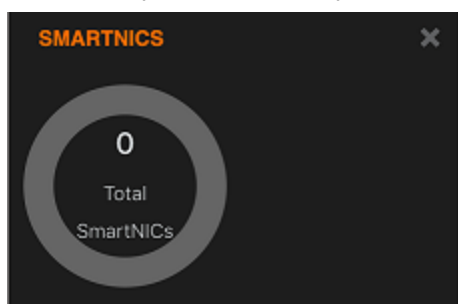
VMware NSX-T Inventory Panel

The **Dashboard > VMWARE NSX-T INVENTORY** panel provides an inventory of the number of VMs connected to NSX-T, Transport Zones, Tier-0 Gateways, N-VDSs, Segments, Host Transport Nodes, and Tier-1 Gateways. For example:



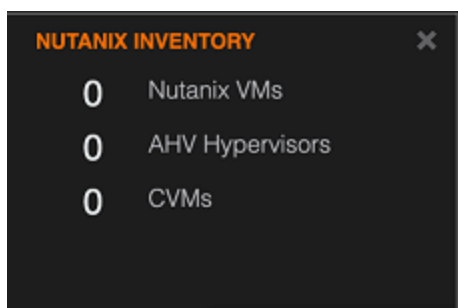
SmartNICs Inventory Panel

The **Dashboard > SmartNICs Inventory** panel provides an inventory of all the NICs discovered by Aruba Fabric Composer. For example:



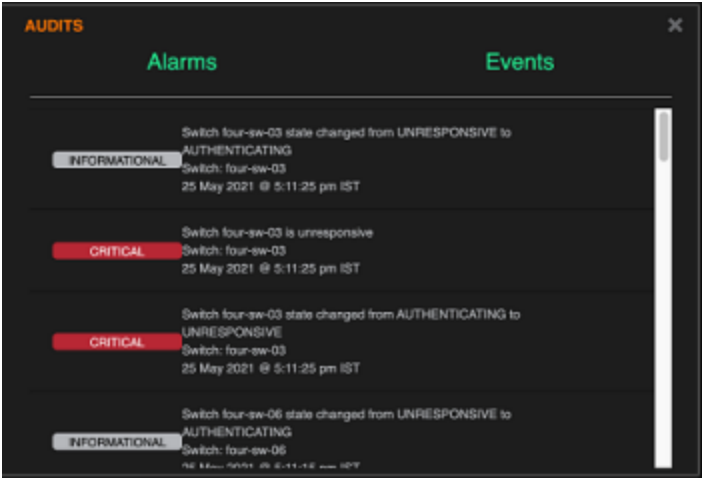
Nutanix Inventory Panel

The **Dashboard > Nutanix Inventory** panel provides an inventory of the Nutanix Prism environment, including the number of Nutanix VMs, AHV Hypervisors, and CVMs. For example:



Audits Panel

The **Dashboard > Audits** panel lists the last 25 logged Aruba Fabric Composer messages which may be informational or alarms of varying severity.



Clicking on either **Alarms** or **Events** opens the Audits page with the table filtered to show either all alarms or all events, as selected.

Audits can also be viewed on the **Maintenance > Audits** page.


The **Configurations > Ports** option provides access to configure the following Aruba Fabric Composer switch port features:

- Ports (to configure port characteristics)
- Link Aggregation Groups (LAGs)
- VLAN Groups
- PVLANS
- Transceivers

Ports

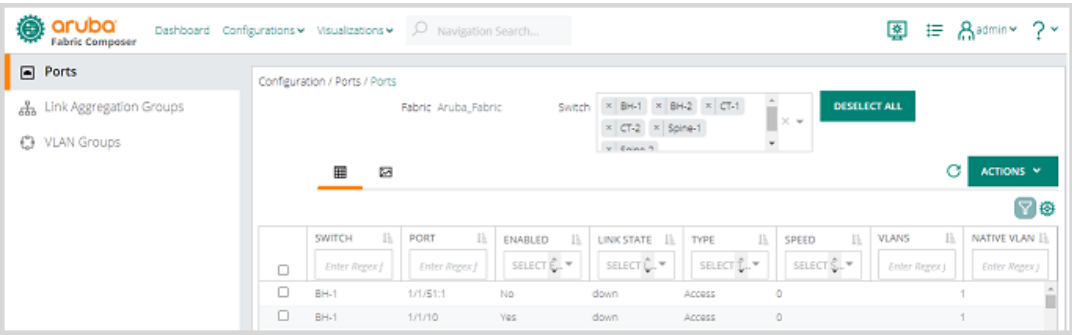
The **Configuration > Ports > Ports** page enables you to view and edit Aruba Fabric Composer switch port configurations, performing actions such as enable or disable ports and assign VLANs.

Table View

With the Table icon/tab  selected (default selection), a table such as the following lists all switch ports for the selected Fabric and Switch(es).



Your view selection, table vs graphical view, as well as the switches selected to appear in that view, will persist throughout the login session and between login sessions until you make a change in the view. You can browse anywhere in the UI, logout and login repeatedly, and when you return to the Ports page, you will see the table or graphic and switches view that you last selected. In the table, each port is a line entry. By default, the table is sorted first by switch and then by port number. You can re-sort the table by any column parameter. To return to the default sorting, click twice on the Port column then twice on the Switch column.




| SWITCH | PORT | ENABLED | LINK STATE | TYPE | SPEED | VLANs | NATIVE VLAN |
|--------|----------|---------|------------|--------|-------|-------|-------------|
| BH-1 | 1/1/S1:1 | No | down | Access | 0 | 1 | |
| BH-1 | 1/1/10 | Yes | down | Access | 0 | 1 | |



Clicking the Refresh  icon refreshes the table contents.








Graphical View




Clicking the **Graphical** icon/tab  in the Ports window opens a graphical view of selected switch(es). When you login to the UI, by default, one switch is selected. You can add switches to this view by selecting them, one at a time, in the switches drop-down field. Alternatively, you can click **Select All** to show all switches. Switches can be removed from the view by clicking the **X** next to the switch name in the Switch drop-down field. Once you have selected the switches, those switches will appear throughout the Aruba Fabric Composer login session. This applies to both the graphical and table views of the switches and ports.

This view provides extensive port information by viewing the LEDs, port colors and icons in the graphic, as well as by hovering over ports.

Port Shading, Symbols, and LED Indications in Graphical View

Port shading, symbols within ports, and the color of LEDs above ports provide the following information about that port:

| Symbol | Meaning |
|---|--|
|  | Selected: The port is selected and an Action can be performed. |
|  | Not Available: Indicates that the port is not available for the current activity. For example, if you are selecting ports for a LAG, the following are shown as Not Available: fabric ports and ports already in another LAG. |
|  | Link Aggregation Group: Specifies that the port is part of a link aggregation group. |
|  | Enabled: The port is enabled to be ready for a network connection. |
|  | Disabled: A transceiver is installed in the port, however the port is disabled. A disabled port will not operate, even if connected to the network. |
|  | Filtered: The port is filtered in the Ports table. If filtering is used in the Ports table, ports that appear in the filtered table are indicated using the green haze border |
|  | Port Health Issue: The port has a health issue. Hover over the port to open a popup that contains port info including the health state and a health issue description. |
| Each port in the graphical view has an LED located above the port that lights as follows to indicate the state of the port: | |


| Symbol | Meaning |
|---|--|
|  | Green, Link Up (Max Speed): Indicates that the port Link is Up and is operating at the maximum speed. |
|  | Amber, Link Up (< Max Speed): Indicates that the port Link is Up and that the port is running at a link speed which is lower than the maximum link speed supported by the port. For example, a 1 G link on a port supporting 1 G and 10 G, or a 1 G or 10 G link on a port that supports 1 G, 10 G, and 25 G. |
|  | Gray (off), Link Down: Indicates that the port Link is Down. This might indicate that the port is not connected or a physical error exists. |

Hovering Over a Port

Port information is provided by hovering over a port. This information includes port health.

Hovering over a QSFP port includes QSFP-specific information such as speed group and QSFP mode.

Selecting a Port and Port Actions

The graphical switch representation allows you to perform all of the actions defined below in Port Actions. To perform any action on one or more ports, you must first select the port(s). With the switch shown, to select ports, simply click on the port(s) in the image. The **Selected**  symbol indicates that the port is selected.

Port Field Descriptions

In the table, each port is a line entry.

The following information is provided for each switch port:

- **Health:** Indicates the current port health state.
- **Reason:** Indicates current reason assigned to a port.
- **Switch:** Identifies the switch that contains the port defined in the table row.
- **Port:** Identifies the port number.
- **Silkscreen:** The port label on the front panel which indicates the port connector number.
- **Name:** The optional name assigned to the port.
- **Description:** An optional description of the port.
- **LAG:** Identifies the LAG if the port is a member of a Link Aggregation Group (LAG).
- **Enabled:** Indicates **Yes** if the port is enabled and **No** if the port is disabled.
- **Link State:** Indicates the link state of the port: **up** or **down**.
- **Hold Down:** Indicates that a port is being held down by one or more resources. Resources or health states that can hold down a port include: admin, LACP, Loop Detected, Peering Lost, Penalty Box, Port Security or access control list actions. For example, the following ports are held down for port security:

- **Type:** Indicates the port type: **Access** or **Fabric** port.
- **Current Speed:** Indicates the configured port speed in Gbps.



Speed is not the same as QSFP mode; you cannot use Speed to change a 4 x 25 transceiver to 4 x 10.

- **Configured Speed:** The configured interface line speed in Mbps.
- **Speed Group:** Speed groups exist as part of the hardware implementation on some switches. Speed groups are not created. This field lists all of the ports that are in the speed group that includes the port being hovered over, or lists only the port being hovered over if that port is not a member of a speed group. For example, a single value such as '48' for an SFP port or '10.1' for a QSFP port indicates that port is not in a speed group.

The following graphical display hover-over excerpt shows a speed group consisting of QSFP ports 49.1 through 49.4:

| | |
|-------------|---------------------------|
| Enabled | Yes |
| Link State | Link Up |
| Speed | 25Gbps |
| Speed Group | 49.1, 49.2, 49.3, 49.4 |
| Port Type | QSFP |
| QSFP Mode | 4x25 |

- **QSFP Mode:** Indicates the QSFP mode (4 x 10, 1 x 40, and so on) of the port or 'Not Applicable'.
- **QSFP Transform:** Select between Split, Unsplit, or N/A.
- **Form Factor:** Form factor of the switch port (Internal, QSFP, OSFP28, SFP, SFP28, RJ45, or LRFSP).
- **Split Operational Status:** Operational status of the port between Active and Inactive.
- **Split Admin Status:** Admin status (Active or Inactive) of the port.
- **Number of Lanes:** Number of lanes used by the port.
- **Routed:** Route configuration of the port.
- **Forward Error Correction:** Indicates whether or not Forward Error Correction is enabled in QSFP mode on an Access port or Fabric port.
- **VLANs:** Identifies VLANs configured on the port.
- **Ungrouped VLANs:** Identifies VLANs configured on the port that are not part of a VLAN group.
- **VLAN Groups:** Identifies VLAN Groups configured on the port.
- **Native VLAN:** Identifies a native VLAN configured on the Access port. Note that Native VLAN does not apply to Fabric ports.
- **MTU:** Default Maximum Transmission Unit size for frames received and transmitted.
- **Pause Mode:** Pause mode enabled or disabled in the port.
- **QoS Policies:** Indicates status of QoS policy for outgoing network traffic in the port.
- **QoS Local Priority:** Priority of the QoS for local priority.
- **QoS Priority Code Point:** Code point status of the QoS Priority.
- **Manager:** Indicates if there is an external manager of this resource. For example, VMware vSphere may manage this resource.

Port Actions

Selecting one or more port(s) from either the Table view or the Graphical view of the switch, then selecting the **Actions** drop-down list provides the following Actions to perform for the selected port(s):

- **Edit:** This action appears for only a single selected port. For Edit settings of the selected port, see [Editing the Configuration of a Switch Port on page 46](#).
- **Enable:** If one or more ports are selected and if at least one port is disabled, this action enables the selected ports. Any ports that are already enabled will remain enabled.
- **Disable:** If one or more ports are selected and if at least one port is enabled, this action disables the selected ports. Any ports that are already disabled will remain disabled.



Disabling all fabric ports on a switch or switches will cause the fabric to become segmented. Ensure that not all fabric ports on a single switch are being disabled.

- **VLANs > Add:** Opens a window in which you can add VLAN(s) to the selected ports. See [Adding VLANs to Switch Ports on page 48](#).
- **VLANs > Remove:** Opens a window in which you can remove VLANs from the selected ports. See [Removing VLANs from Switch Ports on page 50](#).
- **VLANs > Set:** Opens a window in which you can set up and replace VLAN(s) on the selected ports. See [Setting VLANs or VLAN Groups on Switch Ports on page 49](#).
- **QSFP Transform > Split:** Opens a window in which you can set up the QSFP Transform option to Split.
- **QSFP Transform > Unsplit:** Opens a window in which you can set up the QSFP Transform option to Unsplit.

Viewing the Link State of Ports



The following is an example of viewing the Link States of the switch ports. In the following table, port 10 is up and ports 1-9 are down:


| SWITCH | PORT | ENABLED | LINK STATE | TYPE | SPEED | VLANs | NATIVE VLAN |
|--------|--------|---------|------------|--------|---------|-------|-------------|
| BH-1 | 1/1/1 | Yes | down | Access | 25Gbps | 1 | 1 |
| BH-1 | 1/1/48 | Yes | down | Access | 25Gbps | 1 | 1 |
| BH-1 | 1/1/49 | Yes | down | Access | 100Gbps | 1 | 1 |
| BH-1 | 1/1/51 | Yes | down | Access | 100Gbps | 1 | 1 |
| BH-1 | 1/1/53 | Yes | down | Access | 100Gbps | 1 | 1 |
| BH-1 | 1/1/54 | Yes | down | Access | 100Gbps | 1 | 1 |
| BH-1 | 1/1/55 | Yes | up | Access | 100Gbps | 1 | 1 |

In the graphical view, the Link State LEDs are green ■ for Link Up (Max Speed), amber ● for Link Up (< Max Speed), and gray ■ for Link State Down.

Editing the Configuration of a Switch Port

To edit the configuration of an Aruba Fabric Composer switch port:

1. In the **Configuration > Ports > Ports** page, select the switch from the **Switch** drop-down list.
2. Select either the **Table** view or the **Graphical** view:
 - a. For table view, select the **Table** icon . This view is selected by default when you open the Ports page.
 - b. For graphical view, click the **Graphical** icon .
3. Select the port to edit:
 - In the table view, find and click the port check box to select the port. To find the port(s), you can either enable and use the filters, or scroll and select table pages. Note that you can select and edit only one QSFP port.
 - In the graphical view, locate the port on the switch and click on the port. A check mark appears in the selected port.
4. Select **Actions > Edit**. A port edit window opens.
5. To edit the configuration of a port, select the following tabs and configure the port as needed:

| Tab | Parameter Name | Description | Valid Values |
|----------|--|--|---|
| Settings | Enable to allow network traffic to be passed through this port. | Select to enable network traffic on this port. A disabled port will not operate, even if connected to the network. | Checked or unchecked. |
| | MTU | Enter a number between 46 and 9198. | Between 46 and 9198. |
| Speed | Speed | Select the port speed. <div>NOTE Note: The Speed tab may not appear if no speed options are available.</div> | The available port speeds varies depending on the switch model and the port type. Speeds for SFP ports may include the following: <ul style="list-style-type: none">■ 1 Gbps■ 10 Gbps■ 25 Gbps■ Auto |

| Tab | Parameter Name | Description | Valid Values |
|----------------|---|--|-----------------------------------|
| VLANs | Native VLAN | Enter a Native VLAN ID. | Between 0 and 4000. |
| | VLANs | Enter one or more VLANs and ranges which are assigned to this switch port. | For example, 100-200,300,350-400. |
| | VLAN Group | Select any VLAN group(s) which are assigned to this switch port. | |
| Name | Name | Optional. A name for the port. | |
| | Description | Optional. A description for the port. | |
| Summary | This tab lists all configured parameters for you to verify. Verify these parameter values. If you need to make any changes, open the tabs and update as needed. | | |

- When finished, click either **Apply** to save any changes to the port configuration or **Cancel** to exit without saving.

Enabling or Disabling Switch Ports

To enable or disable selected switch ports:

1. Select the **Configuration > Ports > Ports** page.
2. If not already selected, select the fabric and the switches to edit.
3. Select the ports to configure:
 - a. In the **Table** view, scroll and select pages as needed and click on the port check box(es) to select ports to configure.



To select one or more ports to configure within a QSFP, you need to check each port to be configured.

If a port is grayed out in the graphical view, you will be unable to edit that port until both of the following are met: the port must be disabled and the port must not be a part of a configuration. If the port is part of one of the following configurations, it must be removed from the configuration: user LAG, VLAN, port mirror, port security, tunnel config, ACL.

- b. In the switch **Graphic** view, click on the ports to configure. A check mark appears for each SFP or QSFP.
4. Select **Actions > Enable/Disable** and in the drop-down list, select either **Enable** or **Disable**.
The ports are either enabled or disabled. A Success message is momentarily displayed.

Adding VLANs to Switch Ports

This feature enables you to add VLANs to ports. You can add VLANs to ports whether or not the ports currently have VLANs. For example, if a port has VLANs 5 and 6 and you add ports 7 and 8, the port will now have VLANs 5, 6, 7, and 8.

To add VLANs to switch ports:



You cannot use this feature to add VLANs that are part of a LAG; the LAG manages the VLANs.

1. Select the **Configuration > Ports > Ports** page.
2. If not already selected, select the fabric and the switches to edit.
3. Select the ports to configure:
 - a. In the **Table** view, scroll and select pages as needed and click on the port check box(es) to select ports to configure.



To select one or more ports to configure within a QSFP, you need to check each port to be configured.

- b. In the switch **Graphic** view, click on the ports to configure. A check mark appears for each selected port (SFP) or port range (QSFP).

4. Select **Actions > VLANs > Add**.

The Add VLANs window opens.

5. Complete the following fields as needed to enter VLANs and/or VLAN Groups to add to the ports:

| Parameter Name | Description | Valid Values |
|--------------------|--|--|
| Type | In this drop-down list, select the VLAN type to assign to the port(s). | VLANs, Native VLAN, or VLAN Groups. |
| VLANs | The VLANs field appears if Type = VLANs. In the VLANs field, enter one or more VLANs to assign to the selected ports. | One or more VLANs, comma-separated to assign to the port(s). For example: 100,200,300,350-400. |
| VLAN Group | The VLAN group field appears only if Type = VLAN Groups. In this VLAN Group drop-down list, select one or more VLAN Groups to assign to the port(s). | Select one or more VLAN Groups. |
| Native VLAN | The Native VLAN field appears only if Type = Native VLAN. In the Native VLANs field, select one VLAN. The default native VLAN is replaced with the new VLAN. | Select one native VLAN. |

6. When finished, click either **Apply** to add the VLANs to the port or **Cancel** to retain the pre-configured settings.

Setting VLANs or VLAN Groups on Switch Ports

You can add or remove VLANs or VLAN groups to or from ports that currently have configured VLANs using the Set action. For example, if a port has VLANs 5 and 6, and if you set the port to use VLANs 7 and 8, then the port will now have VLANs 7 and 8 only.

To set VLANs and/or VLAN groups on selected switch ports:



NOTE

You cannot use this feature to assign or change VLANs that are part of a LAG; the LAG manages the VLANs.

1. Select the **Configuration > Ports > Ports** page.
2. If not already selected, select the fabric and the switches to edit.
3. Select the ports to configure:
 - a. In the **Table** view, with the default Table icon selected, scroll and select pages as needed and click on the port check box(es) as needed to select ports to configure. Note that to select all ports within a QSFP, you need to check four ports.
 - b. In the switch **Graphic** view, click on the ports to configure. A check mark appears for each selected port (SFP) or port range (QSFP).
4. Select **Actions > VLANs > Set**. The Set VLANs window opens.
5. Complete the following fields as needed to select the VLANs and/or VLAN Groups to either add-to or

remove-from the ports:

| Parameter Name | Description | Valid Values |
|--------------------|---|---|
| Type | In this drop-down list, select the VLAN type to replace or set on the port(s). | VLANs, Native VLAN, or VLAN Groups. |
| VLANs | The VLANs field appears only if Type = VLANs. In the VLANs field, enter one or more VLANs to set on the selected ports. | One or more VLANs, comma-separated to assign to the port(s). For example: 100,200,300,350-400. |
| VLAN Group | The VLAN group field appears only if Type = VLAN Groups. In the VLAN Group drop-down list, select one or more VLAN Groups to set on the port(s). | Select one or more VLAN Groups. |
| Native VLAN | The Native VLAN field appears only if Type = Native VLAN. In the Native VLANs field, select a VLAN; the current native VLAN is replaced with the new Native VLAN. | Select one native VLAN. |

- When finished, click either **Apply** to set the VLANs or **Cancel** to retain the pre-configured settings.

Removing VLANs from Switch Ports

To remove VLANs from selected switch ports:

- Select the **Configuration > Ports > Ports** page.
- If not already selected, select the fabric and the switches to edit.
- Select the ports to configure:
 - In the **Table** view, with the default Table icon selected, scroll and select pages as needed and click on the port check box(es) as needed to select ports from which to remove VLANs. Note that to select all ports within a QSFP, you need to check four ports.
 - In the switch **Graphic** view, click on the ports for which to unassign the VLANs. A check mark appears for each selected port (SFP) or port range (QSFP).
- Select **Actions > VLANs > Remove**. The Remove VLANs window opens.
- Complete the following fields as needed to define the VLANs and/or VLAN Groups to remove/unassign from the ports:

| Parameter Name | Description | Valid Values |
|----------------|--|---|
| Type | In this drop-down list, select the VLAN type to remove from the port(s). | VLANs, Native VLAN, or VLAN Groups. |
| VLANs | The VLANs field appears only if Type = VLANs. In the VLANs field, enter one or more VLANs to remove from the selected ports. | One or more VLANs, comma-separated to assign to the port(s). For example: 100,200,300,350-400. |

| Parameter Name | Description | Valid Values |
|--------------------|---|---------------------------------|
| VLAN Group | The VLAN group field appears only if Type = VLAN Groups. In the VLAN Group drop-down list, select one or more VLAN Groups to remove from the port(s). | Select one or more VLAN Groups. |
| Native VLAN | The Native VLAN field appears only if Type = Native VLAN. In the Native VLANs field, select one VLAN value; the native VLAN is replaced with the default native VLAN. | Select one native VLAN. |

- When finished, click either **Apply** to unassign the VLANs or **Cancel** to retain the pre-configured settings.

Setting the QSFP Transform for QSFP Ports

To set the QSFP Mode for one or more QSFP ports:

- Select the **Configuration > Ports > Ports** page.
- If not already selected, select the fabric and the switches to edit.
- Select the ports to configure:
 - In the **Table** view, locate the QSFP and click on the check box for the 1st port in the QSFP. For example, port 10.1 for QSFP port 10. Do not select more than one port on a QSFP. Repeat for all QSFPs that need the mode set.
 - In the switch **Graphic** view, click on each QSFP that needs the mode set. A check mark appears in each selected QSFP.
- Select **Actions > QSFP Transform** and select the correct mode from the drop-down list. The mode is assigned and a Success message is momentarily displayed.

Link Aggregation Groups

Link aggregation is a method of combining multiple links to form a single virtual link that can carry a higher combined bandwidth. You can link multiple ports on a single connector to form a Link Aggregation Group (LAG). Additionally, you can connect multiple ports between multiple switches and configure them as a Multi-Chassis Link Aggregation Group (MLAG) so that all links in the MLAG act like a single, larger (virtual) link.

LAG and MLAG functionality is standardized in IEEE 802.3ad and is also referred to by several other terms including port trunking, link bundling, NIC bonding, or NIC teaming.

LAGs can be provisioned from hosts to adjacent Top-of-Rack (ToR) switches to provide additional bandwidth and make them highly available. When configured correctly, LAGs make optimal use of the available physical links on the host, boosting performance and preventing bottlenecks produced when all data is sent out of a single NIC. For these reasons, the use of LAGs in VMware environments is highly recommended.

Link Aggregation

- Increases link reliability (high availability and redundancy)
- Distributes traffic between multiple devices

You can either configure LAGs individually for one or more physical ports as a statically-defined LAG, or as a Link Aggregation Control Protocol (LACP) controlled LAG. The main purpose of LACP is to manage the dynamic addition and removal of links in a bundle.

For example, by bundling multiple ports between a server and a Top of Rack (ToR) Fabric Composer switch, the server can communicate at the combined speed of the bundled ports. LACP is used between the multiple devices to communicate the state of the links and their ability to be used for user traffic. Traffic between the two devices is distributed between the links, typically on a per-flow basis. Based on the IP address and UDP/TCP information in the packet, one of the links is chosen and all packets with those same IP addresses and UDP/TCP information travel across the same link. Packets within a flow arrive in sequence. Traffic across the links in a bundle is not necessarily symmetrical. It is completely normal for a flow to travel from server to switch on one link, and the return part of that flow to travel on a different link.

Link Aggregation Control Protocol

Link Aggregation Control Protocol (LACP) provides a method to control the bundling of several physical ports together to form a single logical channel. LACP lets a network device negotiate an automatic bundling of links by sending LACP packets to the peer. LACP is used to establish and maintain the channel. The link state is reported up to the user. When a port goes down, the existing traffic goes over the remaining links.

The LACP:

- Maintains configuration information to control aggregation.
- Exchanges configuration information with other peer devices.
- Attaches or detaches ports from the LAG, based on the exchanged configuration information.
- Maintains port operational link state, determining whether or not traffic is sent over a port.

Viewing LAGs

To list all Link Aggregation Groups (LAGs), select **Configuration > Ports > Link Aggregation Groups**.

The following information is provided for each LAG:

- **Name:** The LAG name.
- **Description:** The LAG description.
- **Type:** The LAG type.
- **LAG Number:** The LAG number.
- **Switch:** The switch that the LAG is configured on.
- **Ports:** The switch ports that make up the LAG.
- **Bond Status:** Indicates the bonding status of the LAG.
- **VLANs:** Lists all VLANs configured with this LAG.
- **Ungrouped VLANs:** Lists VLANs, not part of a VLAN group, that are configured with this LAG.
- **VLAN Groups:** Lists VLAN Groups configured with this LAG.
- **Native VLAN:** Native VLAN configured with this LAG.
- **Lossless Ethernet Enabled:** Supports lossless transmission.

- **Manager:** If a LAG is managed by an external resource, the manager, for example HPE OneView, is indicated in this column.

Adding a LAG

To add a LAG:

1. In Aruba Fabric Composer, in the **Configuration > Ports > Link Aggregation Groups** page, select **Actions**, and then click **Add**. The Link Aggregation Group wizard opens.
2. Configure the following parameters as needed:

| Tab | Parameter Name | Description | Valid Values | Default |
|--------------------|------------------------|--|--|---------|
| Create Mode | | Select an option to create the LAG(s). Choose to create multiple MLAGs or to configure a single LAG. | | |
| Settings | Name Prefix | Assign a name for the LAG. | Any non-empty string, example, LAG-1. | |
| | LAG Number Base | Assign a LAG Number Base. | Enter a number between 1 and 256. | |
| Ports | | <p>Select VSX Pairs from the drop-down list and define a range of Ports to be included in the LAGs. This option appears only if you selected Create multiple MLAGs for selected VSX Pairs.</p> <p>The following option appears only if you selected Create a single Link Aggregation Group.</p> <p>On the Ports page, you can select either the Table view or the Graphical view from which to select ports.</p> | <p>For a LAG, you can assign as many as 8 ports from a switch.</p> <p>For an MLAG, you can assign as many as 8 ports from any switch. You cannot exceed 64 user-defined LAGs per switch.</p> | |

| Tab | Parameter Name | Description | Valid Values | Default |
|-----|----------------|--|--------------|---------|
| | | Above the table or graphical view, the LAG Switch Member drop-down enables you to select one or more switches that will contain ports that are members of the LAG. Any selected switch(es) will appear in the table or graphical view. In either the table or graphical view, select the ports to include in the LAG. | | |

| Tab | Parameter Name | Description | Valid Values | Default |
|---------------|--|---|--|--|
| LACP Settings | The following settings have default values that can be maintained. However, these settings can be changed. | | | |
| | Enable LACP Fallback. | Enable or disable LACP Fallback and configure LACP settings. ma | | |
| | LACP Mode | Select the LACP mode from the drop-down list. | Off: LACP is disabled. | LACP is active Mode = Active by default. |
| | | | Active: Ports send LACP packets at regular intervals to the partner ports. The device immediately sends LACP messages when the port comes up and must reach an agreement with the attached port before traffic will pass. | |
| | | | Passive: Ports do not generate LACP packets until they receive them from the partner ports. If no LACP messages are received, the port aggregates as though statically configured. If LACP messages are received, an agreement must be reached with the peer before traffic will pass. | |
| | LACP Interval | Select an LACP Interval. | Slow Fast | Slow |
| | Priority | Enter a priority. | 1-32768, where 32768 is the highest priority. | 32768 |
| VLANs | Native VLAN | Enter a VLAN between 0 and 3966. | Empty or 0 disables the Native VLAN. | |
| | VLANs | Enter a VLAN. | A number, set, or range of VLANs between 1 and 3966. | |
| | VLAN Group | Select a VLAN Group. | Select a VLAN Group from the drop-down list. | |
| Summary | This tab lists all configured parameters for you to verify. If you need to make any changes, open the tabs and update as needed. | | | |

3. Once you have completed and verified all parameters, you can exit the wizard. Click **Apply** to complete and save the LAG, **Back** to go back and change a setting, or **Cancel** to exit this configuration without saving.

Editing a LAG

To edit a LAG:

1. In Aruba Fabric Composer, in the **Configuration > Ports > Link Aggregation Groups** page, select **Actions**, and then click **Edit**. The Link Aggregation Group wizard opens.
2. Once you have made the changes and verified all parameters, you can exit the wizard. Click **Apply** to complete and save the LAG, **Back** to go back and change a setting, or **Cancel** to exit this configuration without saving.

Deleting a LAG

To delete a LAG:

1. In the Aruba Fabric Composer UI, in the **Configuration > Ports > Link Aggregation Groups** page, select the LAG to delete, and then select **Actions > Delete**.
2. At the confirmation prompt, click **OK** to delete the LAG or **Cancel** to retain the LAG.

Adding VLANs to LAG(s)

To Add VLANs to LAG(s):

1. In the **Configuration > Ports > Link Aggregation Groups** page, select the LAG(s) and then select **Actions > VLANs > Add**. The Add VLANs wizard opens.
2. Complete the following fields as needed to enter VLANs and/or VLAN Groups to add to the LAG(s):
 - **Type:** In this drop-down list, select the VLAN type: **VLANs**, **Native VLAN**, or **VLAN Groups**. One of the following fields will appear for the selected type.
 - **VLANs:** The VLANs field appears only if Type = VLANs. Enter one or more VLANs, comma-separated. For example: 100,200,300,350-400.
 - **Native VLAN:** The Native VLAN field appears only if Type = Native VLAN. If you select a value here, the default native VLAN is replaced with the new native VLAN.
 - **VLAN Groups:** The VLAN Groups field appears only if Type = VLAN Groups. In this drop-down list, select one or more VLAN Groups.
3. When finished, click either **Apply** to add the VLANs to the LAG(s) or **Cancel** to retain the pre-configured settings.

Editing VLANs on LAG(s)

You can add or remove VLANs or VLAN groups to/from LAGs that currently have configured VLANs using the Set action.

To edit (set) VLANs and/or VLAN groups on selected switch LAGs:

1. In the **Configuration > Ports > Link Aggregation Groups** page, select the LAGs and then select **Actions > VLANs > Set**. The Set VLANs wizard opens.

2. Make changes to the following fields as needed:
 - **Type:** In this drop-down list, select the VLAN type: **VLANs**, **Native VLAN**, or **VLAN Groups**. One of the following fields will appear for the selected type.
 - **VLANs:** The VLANs field appears only if Type = VLANs. Enter one or more VLANs, comma-separated. For example: 100,200,300,350-400.
 - **VLAN Groups:** The VLAN Groups field appears only if Type = VLAN Groups. In this drop-down list, select one or more VLAN Groups.
 - **Native VLAN:** The Native VLAN field appears only if Type = Native VLAN. If you select a value here, the current native VLAN is replaced with the new native VLAN.
3. When finished, click either **Apply** to change the VLANs or **Cancel** to retain the pre-configured settings.

Removing VLANs from LAG(s)

To remove VLANs from selected LAG(s):

1. In the **Configuration > Ports > Link Aggregation Groups** page, select the LAG(s) and then select **Actions > VLANs > Remove**.
2. Complete the following fields as needed to select the VLANs and/or VLAN Groups to remove from the LAGs:
 - **Type:** In this drop-down list, select the VLAN type: **VLANs**, **Native VLAN**, or **VLAN Groups**. One of the following fields will appear for the selected type.
 - **VLANs:** The VLANs field appears only if Type = VLANs. Select the VLAN to remove from the LAG(s).
 - **Native VLAN:** The Native VLAN field appears only if Type = Native VLAN. Select the native VLAN to remove from the LAG(s).
 - **VLAN Groups:** The VLAN Groups field appears only if Type = VLAN Groups. In this drop-down list, select one or more VLAN Groups to remove from the LAG(s).
3. When finished, click either **Apply** to remove the VLANs or **Cancel** to retain the pre-configured settings.
4. Respond to the confirmation prompt.

Setting VLANs to LAG(s)

To set VLANs to LAGS:

1. In the **Configuration > Ports > Link Aggregation Groups** page, select the LAG(s) and then select **Actions > VLANs > Set**. The Set VLANs window opens.
2. Complete the following fields as needed to enter VLANs and/or VLAN Groups to add to the LAG(s):
 - **Type:** In this drop-down list, select the VLAN type: **VLANs**, **Native VLAN**, or **VLAN Groups**. One of the following fields will appear for the selected type.
 - **VLANs:** The VLANs field appears only if Type = VLANs. Enter one or more VLANs, comma-separated. For example: 100,200,300,350-400.
 - **Native VLAN:** The Native VLAN field appears only if Type = Native VLAN. If you select a value here, the default native VLAN is replaced with the new native VLAN.
 - **VLAN Groups:** The VLAN Groups field appears only if Type = VLAN Groups. In this drop-down list, select one or more VLAN Groups.

3. When finished, click either **Apply** to add the VLANs to the LAG(s) or **Cancel** to retain the pre-configured settings.

VLAN Groups

To view all current VLAN groups, select **Configuration > Ports > VLAN Groups**.

The following information is provided for each VLAN Group:

- **Name:** The name of the VLAN group.
- **Description:** VLAN group description.
- **VLANs:** Indicates all VLANs in this VLAN group.
- **Manager:** Indicates if there is an external manager of this resource. For example, VMware vSphere may manage this resource.

Manager Ownership

VLAN groups can be owned and managed by resources external to the Aruba Fabric Composer; for example Nutanix or VMware vSphere can own and manage some or all VLAN groups. If a VLAN group is owned by an external manager, that VLAN group should not be edited or deleted from the Aruba Fabric Composer. If you select an owned VLAN group, the following warning will appear:

 Warning: A selected item is externally managed. Modifications should only be made using VMWare vSphere

Adding a VLAN Group

To add a VLAN group:

1. In Aruba Fabric Composer, select **Configuration > Ports > VLAN Groups**.
2. Select **Actions > Add**.



VLAN groups can be owned and managed by resources external to the Aruba Fabric Composer; for example HPE OneView or VMware vSphere can own and manage some or all VLAN groups. If you are editing a VLAN group that is owned by an external manager, that VLAN group should not be edited or deleted from the Aruba Fabric Composer. If you attempt to edit an owned VLAN group, a warning such as the following for a vSphere manager will appear:

 Warning: A selected item is externally managed. Modifications should only be made using VMWare vSphere

Use caution if you must edit a VLAN group when this warning appears.

3. In the VLAN Group window, complete the following fields:

| Parameter Name | Description | Valid Values |
|--------------------|---|--------------|
| Name | Enter a name for the VLAN group. | |
| Description | Enter a description of the VLAN group. | |
| VLANs | Specify a set or range of VLANs, between 1-3966, for the VLAN group. When you begin entering the VLANs, the following text appears in red until you have entered a valid set of VLANs or range of VLANs: Error: A number, set, or range of VLANs between 1 and 3966, example, 5, 10-45, 102. 3967-4095 are reserved for internal VLANs | 1-3966 |

4. Click **Apply** to save the VLAN group or **Cancel** to exit without saving. .

Editing a VLAN Group

To edit a VLAN Group:

1. In the Aruba Fabric Composer UI, select **Configuration > Ports > VLAN Groups**.
2. Click the button next to the VLAN Group to edit and then select **Actions > Edit**.
3. In the Edit VLAN Group Configuration window, make changes to the fields as needed. Click a tab to edit the settings on that tab.
4. Click **Apply** to save your edits or **Cancel** to exit without saving. When you click **Apply**, your changes get applied to all associated fabrics and switches.

Deleting a VLAN Group

To delete a VLAN group:

1. In Aruba Fabric Composer, select **Configuration > Ports > VLAN Groups**.
2. In the row for the group to delete, click the check box to select the group, then select **Actions > Delete**.



VLAN groups can be owned and managed by resources external to the Aruba Fabric Composer; for example HPE OneView or VMware vSphere can own and manage some or all VLAN groups. If a VLAN group is owned by an external manager, that VLAN group should not be deleted from the Aruba Fabric Composer.

Warning: A selected item is externally managed. Modifications should only be made using VMWare vSphere

Do NOT delete a VLAN group when this warning appears.

3. Click **Apply**.
4. In the confirmation pop-up, click **OK** to delete the group or **Cancel** to retain the group.

PVLANS

To view all current Private VLANs (PVLANS), select **Configuration > Ports > PVLANS**.

The following information is provided for each PVLAN:

- **Name:** The name of the PVLAN.
- **Description:** PVLAN description.
- **Switch:** The name of the switch.
- **Primary VLAN:** Name of the primary VLAN.
- **Promiscuous Ports:** Untagged traffic ports.
- **Isolated VLANs:** Number of isolated VLANs in the Fabric.
- **Community VLANs:** Name of the community VLANs.
- **Secondary Ports:** Name of the secondary ports.
- **Inconsistency Reasons:** Error notification are reasons for inconsistency.

Adding a PVLAN

To add a PVLAN:

1. In Aruba Fabric Composer, in the **Configuration > Ports > PVLANS** page, select **Actions**, and then click **Add**. The PVLAN wizard opens.

2. Configure the following parameters as needed:

| Tab | Parameter Name | Description | Valid Values | Default |
|------------------------|---|--|---|---------|
| Name | Name Prefix | Assign a name for the PVLAN. | Any non-empty string, for example, PVLAN-1. | |
| | Description | Optional. Provide a description of the PVLAN. | | |
| Switches | | Select required Switches for this PVLAN to be applied to. The Primary and Secondary VLANs will be configured on these switches. Promiscuous and Secondary Ports can be chosen from these switches. | You can select individual switches or click Select All to select all the switches in the Fabric. | |
| Primary VLAN | Primary VLAN | Configure a required Primary VLAN and select optional Promiscuous Ports to be associated with the VLAN. | A VLAN between 2 and 4094. | |
| Secondary VLANs | Isolated VLANs | Enter a number, set, or range between 0 and 4094. | Empty or 0 disables the Native VLAN. | |
| | Community VLANs | Enter a number, set, or range between 0 and 4094. | A number, set, or range of VLANs between 1 and 3966. | |
| Secondary Ports | Secondary VLAN | Configure optional Secondary VLAN. | | |
| | Ports | Configure optional Port entries. | | |
| Summary | This tab lists all configured parameters for you to verify. If you need to make any changes, click Back to open the tabs and update as needed. | | | |

3. Once you have completed and verified all parameters, you can exit the wizard. Click **Apply** to complete and save the PVLAN, **Back** to go back and change a setting, or **Cancel** to exit this configuration without saving.

Editing a PVLAN.

To edit a PVLAN:

1. In Aruba Fabric Composer, in the **Configuration > Ports > PVLANS** page, select **Actions**, and then click **Edit**. The PVLAN wizard opens.

- 2. Once you have made the changes and verified all parameters, you can exit the wizard. Click **Apply** to complete and save the PVLAN, **Back** to go back and change a setting, or **Cancel** to exit this configuration without saving.

Deleting a PVLAN

To delete a PVLAN:

- 1. In the Aruba Fabric Composer UI, in the **Configuration > Ports > PVLANs** page, select the PVLAN(s) to delete, and then select **Actions > Delete**.
- 2. At the confirmation prompt, click **OK** to delete the PVLAN or **Cancel** to retain the PVLAN.
- 3. You can also delete all PVLANs in the Fabric by selecting **Actions > Delete All**.

Transceivers

The **Configuration > Ports > Transceivers** window provides information on all transceivers installed in selected fabric switches within a selected Fabric Composer. For example:



The transceiver table contains rows only for ports that contain a transceiver.

| Switch | Silkscreen | Module Type | Connector Type | Vendor Name |
|------------|------------|-------------|----------------|-----------------|
| four-sw-01 | 1 | UNKNOWN | NO_SEP_CONN | FCI Electronics |
| four-sw-01 | 2 | UNKNOWN | NO_SEP_CONN | FCI Electronics |
| four-sw-01 | 3 | UNKNOWN | NO_SEP_CONN | FCI Electronics |
| four-sw-01 | 4 | UNKNOWN | NO_SEP_CONN | FCI Electronics |
| four-sw-01 | 49 | QSFP_28 | NO_SEP_CONN | FCI Electronics |
| four-sw-01 | 50 | QSFP_28 | NO_SEP_CONN | FCI Electronics |
| four-sw-01 | 55 | QSFP_28 | NO_SEP_CONN | FCI Electronics |
| four-sw-01 | 56 | QSFP_28 | NO_SEP_CONN | FCI Electronics |

The following information is provided for each transceiver:

- **Switch:** The switch that contains the transceiver.
- **Silkscreen:** The port label printed next to the physical port on the switch chassis. For example, for a QSFP port, this might be a single number such as 50.
- **Known:** Indicates whether or not the transceiver type is known by the Aruba Fabric Composer.
- **Module Type:** Indicates the transceiver module type. For example, SFP, QSFP 28, QSFP PLUS.
- **QSFP Mode:** For QSFP transceivers, indicates the QSFP mode that has been set for the transceiver. For example, 4 x 10, 4 x 25 or 1 x 100. This is not set on this page; to set the QSFP mode, refer to the Ports page at [Port Configurations](#).
- **Connector Type:** Indicates the connector type compatible with the transceiver, for example, LC or NO_SEP_CONN.
- **Transceiver Description:** The description of the Transceiver.

- **DOM Supported:** Whether DOM is supported or not.
- **Vendor Name:** The name of the transceiver manufacturer. For example, Siemon, Yamaichi.
- **Vendor Part Number:** The manufacturer part number of the transceiver.
- **Vendor OUI:** Indicates the IEEE company ID of the vendor. For example, 00:1E:62 for Siemon.
- **Serial Number:** The serial number of that transceiver. For example, 15154029625.
- **Manufacture Date Code:** The transceiver date of manufacture. For example, Feb 5th, 2021 @ 12:50:06 pm EST.
- **Revision:** The transceiver revision.
- **Length:**
- **Wavelength:** The transceiver wavelength in nm.
- **Max Speed:** The transceiver maximum speed in Mbps.
- **SMF Length:** Single Mode Fiber (SMF) supported length.
- **OM1 Length:** OM1 multi-mode fiber-supported length.
- **OM2 Length:** OM2 multi-mode fiber-supported length.
- **OM3 Length:** OM3 multi-mode fiber-supported length.
- **OM4 Length:** OM4 multi-mode fiber-supported length.

Further information is provided for each port by clicking on that port row. For example, expanding port rows shows detailed information for the transceiver installed in that port. The following transceiver information is provided:

- For each SFP transceiver and for each of the four ports on a QSFP transceiver, the following information is provided:
 - **Channel:** Indicates the transceiver channels. An SFP transceiver has a single channel 1, while a QSFP transceiver has one, two, or four channels depending on the QSFP mode configured.
 - **Port:** Indicates the port(s) that the transceiver connects. An SFP transceiver has a single port while a QSFP transceiver has 4 ports.
 - **Name:** Name assigned to the transceiver port.
 - **Description:** Optional description of the transceiver.
 - **Link State:** Indicates the current state of the link— Up or Down.
 - **Tx Power:** Indicates the signal strength for data transmitted from that transceiver channel.
 - **Tx Quality:** Indicates the quality of transmitted data on that transceiver channel.
 - **Rx Power:** Indicates the signal strength for data received on that transceiver channel.
 - **Rx Quality:** Indicates the quality of received data on that transceiver channel.

The **Configuration > Routing** option provides access to configure the following fabric routing features:

- VRF
- BGP
- OSPF
- EVPN
- EVPN VXLAN Multi-Fabric

VRF

You use the Virtual Routing and Forwarding (VRF) page to create VRF configurations, IP Interfaces, IP Static Routes, Networks, Underlays, Overlays, ARP Tables, and IP Route Tables.

The following information is provided for each VRF configuration:

- **Name:** The name of the VRF configuration.
- **Description:** The description of the VRF configuration.
- **Type:** The type of the VRF configuration.
- **Switches:** Number of switches added to the VRF configuration.
- **Route Distinguisher:** The route distinguisher of the VRF configuration.
- **L3VNI:** The bridge domain of the VRF configuration.
- **Route Target Ext-Community:** The extended community value of the VRF configuration.
- **Route Target Mode:** The route target mode of the VRF configuration.
- **Route Target Address Family:** Address family indicator of the VRF configuration.

Adding a VRF Configuration

To add a VRF Configuration:

1. In Aruba Fabric Composer, select **Configuration > Routing > VRF**.
2. Select **Actions > Add**. The Virtual Routing and Forwarding wizard appears.
3. In the Name page, complete the following fields:
 - **Name:** Enter any non-empty string between 1 and 92 characters. For example, VRF1.
 - **Description:** Enter a description of the VRF configuration.
4. Click **Next** to go to the next page or **Cancel** to exit without saving.
5. In the Scope page, set the scope of the VRF. The VRF may be applied to the entire Fabric or to a specific set of Switches within the Fabric.
6. In the Routing page, complete the following field:
 - **L3VNI:** Enter a number between 1 and 16777214.

7. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
8. In the Route Targets page, complete the following fields:
 - **Route Target Mode:** In the drop-down list, select from Import, Export, or Both.
 - **Route Target Ext-Community:** Enter a valid Autonomous System Number. For example, 65001:101.
 - **Address Family:** In the drop-down list, select from IPv4 Unicast, IPv6 Unicast, or EVPN.
9. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
10. In the Summary page, check the fields for accuracy and click **Apply** to apply the VRF configuration or **Cancel** to exit without saving.

Editing a VRF Configuration

To edit a VRF Configuration:

1. In the Aruba Fabric Composer UI, select **Configuration > Routing > VRF**.
2. Select the radio button next to the VRF configuration to edit and then select **Actions > Edit**.
3. In the Virtual Routing and Forwarding page, make changes to the fields as needed. Click a tab to edit the settings on that tab.
4. Click **Apply** to save your edits or **Cancel** to exit without saving. When you click **Apply**, your changes get applied to all associated fabrics and switches.

Deleting a VRF Configuration

To delete a VRF Configuration:

1. In the Aruba Fabric Composer UI, select **Configuration > Routing > VRF**.
2. Click the radio button next to the VRF configuration to delete and then select **Actions > Delete**.
3. In the confirmation pop-up box, click **OK** to delete the VRF configuration or **Cancel** to retain the configuration. When you click **OK**, the deleted VRF configuration gets removed from all associated fabrics and switches.

Re-applying a VRF Configuration

To re-apply a VRF Configuration, default, to all of the switches within the fabric:

1. In Aruba Fabric Composer, select **Configuration > Routing > VRF**.
2. Click the radio button next to the VRF and select **Actions > Reapply VRF**.
3. In the confirmation pop-up box, click **OK** to re-apply the VRF to all of the switches within the fabric or **Cancel** to retain the route.

IP Interfaces

You use the IP Interfaces page to create IP Interfaces configurations.

The following information is provided for each VRF configuration:

- **Name:** The name of the VRF configuration.
- **Description:** The description of the VRF configuration.
- **Type:** The type of the VRF configuration (SVI, RPI, or Loopback).
- **Enabled:** Whether enabled (Yes or No).
- **Loopback Type:** Generic, EVPN VTEP, VSX Keep Alive, or VSX/Underlay.
- **Switch:** Name of the switch currently enabled.
- **VLAN:** Name assigned to the VLAN.
- **Local Proxy ARP Enabled:** Whether enabled (Yes or No).
- **Port/LAG:** Name of the Port/LAG assigned.
- **Active Gateway IP Address:** IP Address of the Active Gateway.
- **Active Gateway MAC Address:** MAC Address of the Active Gateway.
- **Primary IPv4 Network:** Primary IPv4 Network address.
- **Secondary IPv4 Networks:** Secondary IPv4 Network address.
- **VSX Shutdown on Split:** Whether Yes or No.
- **Operational State:** Operational state, whether Up, Down, or Unknown.
- **Admin State:** Whether Up or Down.
- **MAC Address:** MAC Address of the primary IP Interface.
- **IP MTU:** Maximum size of an IP payload allowed to be transmitted.
- **Auto Negotiation:** Whether On or Off.
- **Duplex Mode:** Whether Half Duplex or Full Duplex.
- **Error Control:** Select between Reed-Solomon FEC, Firecode FEC, or None.

Adding an IP Interface

To add an IP Interface:

1. In Aruba Fabric Composer, select **Configuration > Routing > VRF**.
2. Select the VRF configuration.
3. Select **Actions > IP Interfaces**. The IP Interfaces Configuration window appears.
4. In the IP Interfaces tab, select **Actions > Add**.
5. In the IP Interface Type page, complete the following fields:
 - Select the **Enable this IP Interface** checkbox.
 - **Type:** In this drop-down list, select an Interface type: **SVI, RPI, or Loopback**. One of the following fields will appear for the selected type.
 - If **SVI** is selected, then:
 - **VLAN:** The VLAN field appears only if Type = SVI. Enter a VLAN between 1 and 4094. (1-4094 is a generic range potential. Reserved VLANs vary by switch model and are rejected automatically.)
 - **Switch:** The switch field appears only if Type = SVI. Select one or more switches from the drop-down list.

- **IPv4 Subnetwork Address:** Enter a valid IPv4 network in the CIDR format.
 - **IPv4 Addresses:** Enter a range of IPv4 Addresses to be assigned to selected switches. The range should be sufficient for one IP per switch.
 - **Active Gateway IP Address:** The Active Gateway IP Address field appears only if Type = SVI. Enter a valid IPv4 address.
 - **Active Gateway MAC Address:** The Active Gateway MAC Address field appears only if Type = SVI. Enter a valid MAC address.
 - **Enable VSX Shutdown on Split:** Click to shut down the configured non-VSX interfaces on the VSX secondary along with VSX interfaces during a VSX split.
 - **Enable Local Proxy ARP:** Click to enable the ability of the switches to respond to ARP requests for the VLAN.
 - If **RPI** is selected, then:
 - **Switch:** The switch field appears only if Type = RPI. Select a switch from the drop-down list.
 - **Port/LAG:** The Port/LAG field appears only if Type = RPI. Select a Port/LAG from the drop-down list.
 - If **Loopback** is selected, then:
 - **Loopback Type:** The Loopback field appears only if Type = Loopback. Select Generic or EVPN VTEP from the drop-down list.
 - **Description:** The Description field appears only if Type = Loopback. This field is auto-populated with whatever was selected in the Loopback Type field.
 - **Switch:** The switch field appears only if Type = Loopback. Select a switch from the drop-down list.
6. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
 7. In the IPv4 Addresses page, complete the following fields:
 - **Primary IPv4 Network Address:** Enter a valid IPv4 Network in the CIDR format.
 - **Secondary IPv4 Network Address:** Enter a valid IPv4 Network in the CIDR format. (Optional)
 8. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
 9. In the Name page, enter an optional Name and Description.
 10. In the Summary page, check the fields for accuracy. If you need to change anything, click **Back** and make changes as needed.
 11. Click **Apply** to apply the IP Interface configuration or **Cancel** to exit without saving.

Editing an IP Interface

To edit an IP Interface:

1. In the Aruba Fabric Composer UI, select **Configuration > Routing > VRF**.
2. Click the **Expand** icon ... next to the VRF configuration to edit and then select **IP Interfaces tab > Actions > Edit**.
3. In the IP Interface page, make changes to the fields as needed. Click a tab to edit the settings on that tab.
4. Click **Apply** to save your edits or **Cancel** to exit without saving. When you click **Apply**, your changes get applied to all associated fabrics and switches.

Deleting an IP Interface

To delete an IP Interface:

1. In the Aruba Fabric Composer UI, select **Configuration > Routing > VRF**.
2. Click the button next to the VRF configuration to delete and then select **Actions > Delete**.
3. You can also delete all IP Interfaces by selecting **Actions > Delete All**.
4. In the confirmation pop-up box, click **OK** to delete the IP Interface configuration or **Cancel** to retain the configuration. When you click **OK**, the deleted IP Interface configuration gets removed from all associated fabrics and switches.

IP Static Routes

You can use the IP Static Routes tab to create configurations for IP static routes on Aruba switches.

To access the IP Static Routes tab, in Aruba Fabric Composer, select **Configuration > Routing > VRF**.

You can open the IP Static Routes tab under the VRF using either of these methods:

- Click the **Expand** icon ... next to VRF and select **IP Static Routes**, or
- Select a VRF and then select **Actions > IP Static Routes**.

The following information is provided for the IP static routes:

- **Name:** The name of the IP static route.
- **Description:** The description of the IP static route.
- **Destination Prefix:** Identifies the destination prefix for the static route as either an IP address or a MAC address.
- **Next Hop Address:** The next-hop gateway address for the static route.
- **Distance:** The administrative distance for the static route.
- **Tag:** The route tag used to filter routes and apply administrative policies.
- **Switches:** The switch configured for this IP static route.

Adding an IP Static Route

To add a new IP Static Route:

1. In Aruba Fabric Composer, select **Configuration > Routing > VRF**.
2. Click the **Expand** icon ... next to the VRF and then select the **IP Static Routes** tab. The window will expand and open on the IP Static Routes tab.
3. In the IP Static Routes tab, select **Actions > Add**. The IP Static Route wizard opens.
4. In the IP Static Route wizard, complete the following fields:
 - **Destination Prefix:** Enter the destination prefix for the static route. The destination prefix represents the target network IP address and subnet mask in CIDR notation for the route (for example: 10.0.0.0/8). The remote network you specify here will be subject to this static route.
 - **Next Hop Address:** Enter the next-hop gateway address for the static route, which would be part of a subnet that is directly attached to the fabric with a VLAN.
 - **Distance:** Enter a value for the administrative distance for the static route. Administrative distance represents the number of hops between the Fabric Composer and the next-hop gateway. It is used to establish route priority if multiple routes exist for the same destination prefix. You can configure

multiple routes to the same destination prefix and assign different distances to them. The route with the lowest distance will be selected first.

- **Tag:** Enter a value for the route tag. Route tags are used to filter routes and apply administrative policies such as redistribution to tagged routes.
 - **Switch:** From the drop-down list, select a switch.
5. Click **Next** to go to the next page or **Cancel** to exit without saving.
 6. In the Name page, complete the following fields:
 - **Name:** Enter a name for the IP Static Route.
 - **Description:** Enter a description of the IP Static Route.
 7. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
 8. In the Summary page, check the fields for accuracy. If you need to change anything, click **Back** and make changes as needed.
 9. Click **Apply** to save the IP Static Route or **Cancel** to exit without saving.

Editing an IP Static Route

To edit an IP Static Route:

1. In Aruba Fabric Composer, select **Configuration > Routing > VRF**.
2. Click the **Expand** icon ... next to the VRF and then select **IP Static Routes**. The window will expand and open on the IP Static Routes tab.
3. In the IP Static Routes tab, select an IP Static Route and then select **Actions > Edit**. The IP Static Route wizard opens.
4. In the IP Static Route wizard, make changes to the fields as needed. Click a tab to edit the settings on that tab.

Route tab

- **Destination Prefix:** This field cannot be edited; it is defined when you Add an IP Static Route, but cannot be edited after the route is added. It indicates the configured destination prefix for the static route. The destination prefix represents the target network IP address and subnet mask in CIDR notation for the route (for example: 10.0.0.0/8). The remote network specified here is subject to this static route.
- **Next Hop Address:** Enter the next-hop gateway address for the static route, which would be part of a subnet that is directly attached to the fabric with a VLAN.
- **Distance:** Enter a value for the administrative distance for the static route. Administrative distance represents the number of hops between the Fabric Composer and the next-hop gateway. It is used to establish route priority if multiple routes exist for the same destination prefix. You can configure multiple routes to the same destination prefix and assign different distances to them. The route with the lowest distance will be selected first.
- **Tag:** Enter a value for the route tag. Route tags are used to filter routes and apply administrative policies such as redistribution to tagged routes.
- **Switch:** From the drop-down list, select a switch.

Name tab

- **Name:** Enter a name for the IP Static Route.
- **Description:** Enter a description of the IP Static Route.

Summary tab

- Check the fields for accuracy.

Click **Apply** to save your edits or **Cancel** to exit without saving.

Deleting an IP Static Route

To delete an IP Static Route:

1. In Aruba Fabric Composer, select **Configuration > Routing > VRF**.
2. Click the **Expand** icon ... next to the VRF and select **IP Static Routes** to expand the fields on the IP Static Routes tab.
3. Click the button next to the IP Static Route to delete, and then select **Actions > Delete**. You can also click on the buttons next to multiple VRFs and select **Actions > Delete All**.
4. In the confirmation pop-up box, click **OK** to delete the IP Static Route or **Cancel** to retain the route.

Networks

You can use the Networks tab to create configurations for networks on Aruba switches.

To access the Networks tab, in Aruba Fabric Composer, select **Configuration > Routing > VRF**.

You can open the Networks tab under the VRF using either of these methods:

- Click the **Expand** icon ... next to VRF and select **Networks**, or
- Select a VRF and then select **Actions > Networks**.

The following information is provided for the Networks routes:

- **Name:** The name of the Network.
- **Description:** The description of the Network.
- **VLAN:** Identifies the VLAN connected to the Network.

Adding Networks

To add a new Network:

1. In Aruba Fabric Composer, select **Configuration > Routing > VRF**.
2. Click the **Expand** icon ... next to the VRF and then select the **Networks** tab. The window will expand and open on the Networks tab.
3. In the Networks tab, select **Actions > Add**. The Network wizard opens.
4. In the Name page, complete the following fields:
 - **Name:** Enter any non-empty string, for example Network-1.
 - **Description:** Enter a description for this network.
5. Click **Next** to go to the next page or **Cancel** to exit without saving.
6. In the Settings page, set the required VLAN between 1 and 4094.
7. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.

8. In the Summary page, check the fields for accuracy. If you need to change anything, click **Back** and make changes as needed.
9. Click **Apply** to save the Network or **Cancel** to exit without saving.

Editing a Network

To edit a Network:

1. In the Aruba Fabric Composer UI, select **Configuration > Routing > VRF**.
2. Click the **Expand** icon ... next to the VRF configuration to edit and then select **Networks > Actions > Edit**.
3. In the Network wizard page, make changes to the fields as needed. Click a tab to edit the settings on that tab.
4. Click **Apply** to save your edits or **Cancel** to exit without saving. When you click **Apply**, your changes get applied to all associated fabrics and switches.

Deleting a Network

To delete a Network:

1. In the Aruba Fabric Composer UI, select **Configuration > Routing > VRF**.
2. Click the **Expand** icon ... next to the VRF configuration to delete and then select **Networks > Actions > Delete**.
3. In the confirmation pop-up box, click **OK** to delete the network or **Cancel** to retain the network. When you click **OK**, the deleted network gets removed from all associated fabrics and switches.

Adding an Underlay

To add a new Underlay:

1. In Aruba Fabric Composer, select **Configuration > Routing > VRF**.
2. Click the **Expand** icon ... next to the VRF and then select the **Underlays** tab. The window will expand and open on the Underlays tab.
3. In the Underlays tab, select **Actions > Add**. The Underlay Configuration wizard opens.
4. In the Underlay Configuration wizard, complete the following fields:
 - **Name**: Enter a name for the Underlay.
 - **Description**: Enter a description of the Underlay.
5. Click **Next** to go to the next page or **Cancel** to exit without saving.
6. In the Underlay Type page, select an Underlay type. Only one of each Underlay configuration type may be created. Choose either **EBGP** or **OSPF**.
7. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
8. In the AS Numbers page, select an ASN Type to be used for setting ASNs on switches. Select between Dual-ASN and Multi-ASN.
 - If Dual-ASN is selected, then complete the following fields:
 - **Spine-ASN**: Enter an ASPLAIN notation between 1 and 4294967295 or an ASDOT notation between 1 and 65535.65535.
 - **Leaf-ASN**: Enter an ASPLAIN notation between 1 and 4294967295 or an ASDOT notation between 1 and 65535.65535.
 - If Multi-ASN is selected, then complete the following fields:
 - **Starting Spine-Leaf ASN**: Enter an ASPLAIN notation between 1 and 4294967295 or an ASDOT notation between 1 and 65535.65535.
 - **Starting Border ASN**: Enter an ASPLAIN notation between 1 and 4294967295 or an ASDOT notation between 1 and 65535.65535.
9. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
10. In the Settings page, complete the following fields:
 - **Transit VLAN**: Enter a VLAN between 1 and 3966.
 - **IPv4 Subnetwork Address**: Enter a valid IPv4 Subnet in CIDR Format.
 - **Keep Alive Timer**: Enter a number of seconds between 0 and 65535.
 - **Hold Down Timer**: Enter a number of seconds between 0 and 65535.
 - The following check boxes are selected by default:
 - Immediately reset BGP session if link to a directory connected external peer becomes inactive.
 - Consider routes with different AS-path but same length as ECMP for best-path selection.
 - Enable IPv4/IPv6 routes between the peers.
 - Accept routes with own AS present in the AS-Path.
 - Enable Bidirectional Forwarding Detection (BFD)
11. In the Summary page, check the fields for accuracy. If you need to change anything, click **Back** and

make changes as needed.

12. Click **Apply** to save the Underlay or **Cancel** to exit without saving.

Editing an Underlay

To edit an Underlay:

1. In Aruba Fabric Composer, select **Configuration > Routing > VRF**.
2. Click the **Expand** icon ... next to the VRF and then select **Underlays**. The window will expand and open on the Underlays tab.
3. In the Underlays tab, select an Underlay and then select **Actions > Edit**. The Underlay Configuration wizard opens.
4. In the Underlay Configuration wizard, make changes to the fields as needed. Click a tab to edit the settings on that tab.
5. In the Summary tab, check the details for accuracy and click **Apply** to save your edits or **Cancel** to exit without saving.

Deleting an Underlay

To delete an Underlay:

1. In Aruba Fabric Composer, select **Configuration > Routing > VRF**.
2. Click the **Expand** icon ... next to the VRF and select **Underlays** to expand the fields on the Underlays tab.
3. Click the button next to the Underlay to delete and then select **Actions > Delete**. You can also click on the buttons next to multiple Underlays and select **Actions > Delete All**.
4. In the confirmation pop-up box, click **OK** to delete the Underlay or **Cancel** to retain the Underlay.

Re-applying an Underlay

To re-apply an Underlay to all of the switches within the fabric:

1. In Aruba Fabric Composer, select **Configuration > Routing > VRF**.
2. Click the **Expand** icon ... next to the VRF and select **Underlays** to expand the fields on the Underlays tab.
3. Click the button next to the Underlay to which you want to re-apply and then select **Actions > Reapply Underlay**.
4. In the confirmation pop-up box, click **OK** to re-apply the Underlay to all of the switches within the fabric or **Cancel** to retain the old Underlay.

Adding an Overlay

To add a new Overlay:

1. In Aruba Fabric Composer, select **Configuration > Routing > VRF**.
2. Click the **Expand** icon ... next to the VRF and then select the **Overlays** tab. The window will expand and open on the Overlays tab.
3. In the Overlays tab, select **Actions > Add**. The Overlay Configuration wizard opens.

4. In the Overlay Configuration wizard, note that the AS Numbers tab is grayed out by default if an EBGp Underlay is created first. If only an OSPF Underlay exists, then this field is displayed.
5. In the IPv4 Network Address tab, set the required Loopback IPv4 Network Address.
 - **IPv4 Subnetwork Address:** Enter a valid IPv4 Subnet in the CIDR format.
6. Click **Next** to go to the next page or **Cancel** to exit without saving.
7. In the Settings page, complete the following fields:
 - **Keep Alive Timer:** Enter a number of seconds between 0 and 65535.
 - **Hold Down Timer:** Enter a number of seconds between 0 and 65535.
8. In the Summary page, check the fields for accuracy. If you need to change anything, click **Back** and make changes as needed.
9. Click **Apply** to save the Overlay or **Cancel** to exit without saving.

Editing an Overlay

To edit an Overlay:

1. In Aruba Fabric Composer, select **Configuration > Routing > VRF**.
2. Click the **Expand** icon ... next to the VRF and then select **Overlays**. The window will expand and open on the Overlays tab.
3. In the Overlays tab, select an Overlay and then select **Actions > Edit**. The Overlay Configuration wizard opens.
4. In the Overlay Configuration wizard, make changes to the fields as needed. Click a tab to edit the settings on that tab.
5. In the Summary tab, check the details for accuracy and click **Apply** to save your edits or **Cancel** to exit without saving.

Deleting an Overlay

To delete an Overlay:

1. In Aruba Fabric Composer, select **Configuration > Routing > VRF**.
2. Click the **Expand** icon ... next to the VRF and select **Overlays** to expand the fields on the Overlays tab.
3. Click the button next to the Overlay to delete and then select **Actions > Delete**. You can also click on the buttons next to multiple Overlays and select **Actions > Delete All**.
4. In the confirmation pop-up box, click **OK** to delete the Overlay or **Cancel** to retain the Overlay.

Re-applying an Overlay

To re-apply an Overlay to all of the switches within the fabric:

1. In Aruba Fabric Composer, select **Configuration > Routing > VRF**.
2. Click the **Expand** icon ... next to the VRF and select **Overlays** to expand the fields on the Overlay tab.
3. Click the button next to the Overlay to which you want to re-apply and then select **Actions > Reapply Overlay**.

4. In the confirmation pop-up box, click **OK** to re-apply the Overlay to all of the switches within the fabric or **Cancel** to retain the old Overlay.

ARP Tables

The Address Resolution Protocol (ARP) discovers the link layer (MAC) addresses associated with IP addresses for routes associated with all VRF interfaces. The ARP table provides ARP information for these interfaces and routes.

On the **Configuration > Routing > VRF** page, select a VRF, click the **Expand** icon ... and then select **ARP Tables** to expand the VRF and open the ARP Tables tab.

The table contains the following information:

| Parameter | Description |
|-----------------------|--|
| Switch | Specifies the switch that contains the interface. |
| Interface | Interface name this ARP is on. |
| IP Address | Identifies the IP address for an interface. |
| MAC Address | The layer-2 MAC address for the device associated with the interface IP address. |
| Address Family | Address family this ARP is on. |
| State | State of the ARP (Reachable, State, Incomplete, Failed, Permanent) |
| Last Modified | Indicates when this interface entry was last updated. |

IP Route Tables

The IP Route Tables provides IP route information for IP routes that are configured within the VRFs on a Fabric Composer.

Typical router troubleshooting involves looking at individual switch route tables via a CLI and hoping to notice what is missing. In the Aruba Fabric Composer, we present data in the IP route tables, enabling you to determine if the Fabric Composer is set up correctly. In this table, you can filter the switch column to display all routing data for that switch.

In the **Configuration > Routing > VRF** page, click the **Expand** icon ... next to the VRF and select **IP Route Tables**. A group of tabs nested under the VRF opens on the IP Route Tables tab.

The following data fields can be viewed for each route in the IP Routes table:

| Parameter | Description |
|--------------------------|---|
| Switch | Indicates the switch that contains this route. |
| Route Type | Indicates the type of route. |
| Prefix | Indicates the prefix of the route destination. |
| Next Hop Address | Indicates the IP address of the route next hop. |
| Protocol | Indicates the protocol of the interface (Local, Connected, Static, BGP, or OSPF). |
| Sub Protocol Type | Indicates the sub protocol of the interface. |

| Parameter | Description |
|---------------------------|---|
| Address Family | Indicates the Address family this IP Route is on (IPv4 or IPv6). |
| Sub Address Family | Indicates the sub address family this IP Route is on (Unicast, Multicast, or VPN). |
| Distance | Indicates the administrative distance for a route. Administrative distance enables the switches to select the best route when there are multiple routes to the same destination using different routing protocols. Administrative distance defines the reliability of the routing protocols; each routing protocol is prioritized based on reliability with the help of an administrative distance value. |
| Tag | Indicates the VLAN tag configured on the route. |
| Metric | Indicates the cost associated with using a route. The value is protocol dependent and can be in terms of hop count, link speed, or time delay. |
| Last Modified | Indicates when this interface entry was last updated. |

BGP

This topic describes the Border Gateway Protocol (BGP) page and tabs.

BGP Routing Page

To view the BGP page, in the Aruba Fabric Composer UI, select **Configuration > Routing > BGP**. The BGP page lists the selected fabric's default BGP global configuration and enables you to edit the configuration.

The following information is provided for each BGP configuration:

- **VRF Name:** The name of the VRF configuration.
- **VRF Description:** The description of the VRF configuration.
- **Enabled:** Indicates whether or not BGP is enabled on the VRF.
- **Default Keep Alive Timer:** The period of time between each keep alive message sent by a peer.
- **Default Hold Down Timer:** The period of time a BGP peer waits between the receipt of successive keep alive and/or update messages from a peer before determining that the peer is dead.
- **Redistribute Connected:** Enabled: Redistribute connected routes from each switch in the fabric to its internal and external BGP peers.
- **Redistribute OSPF:** Enabled: Redistribute OSPF routes from each switch in the fabric to its internal and external BGP peers.
- **Redistribute Static Routes:** Enabled: Redistribute static routes from each switch in the fabric to its internal and external BGP peers.

BGP Switch Configuration

Clicking the **Expand ...** icon next to a VRF and selecting **Switches** opens the Switches tab.

The following VRF switch information is provided:

- **Name:** BGP switch configuration name.
- **Description:** BGP switch configuration description.
- **Router ID:** The IPv4 router ID.
- **AS Number:** The Autonomous System number for the associated fabric.
- **Networks:** The IPv4 network address and subnet mask in CIDR notation for a network to be advertised by this switch.
- **Keep Alive Timer:** The keep alive time interval.
- **Hold Down Timer:** The hold down time interval.
- **Redistribute Connected:** Indicates if connected routes are redistributed from the switch to its internal and external BGP peers.
- **Redistribute OSPF:** Indicates if OSPF routes are redistributed from the switch to its internal and external BGP peers.
- **Redistribute Static Routes:** Indicates if static routes are redistributed from the switch to its internal and external BGP peers.

BGP Neighbors Tab

You can view the status of all BGP neighbors on a fabric.

Click the **Expand ...** icon next to a switch and select **Neighbors** to open a new page for that switch with the Neighbors tab open.

The following neighbor information is provided:

- **Name:** BGP neighbor name.
- **Description:** BGP neighbor description.
- **Type:** Indicates whether the neighbor is internal or external to the Fabric Composer.
- **Neighbor AS Number:** Indicates the neighbor AS number.
- **Local AS Number:** Indicates local AS number.
- **IP Address:** The neighbor IP address.
- **Keep Alive Timer:** The keep alive interval.
- **Hold Down Timer:** The hold down time interval.
- **Weight:** The routing weight to the neighbor.
- **Route Reflector Client:** Indicates that this is a client of the route reflector.
- **Address Family:** Address families in which this neighbor is activated.
- **EBGP Multi-hop:** Indicates the number of multicast hops to the neighbor.
- **Soft Reconfiguration:** Indicates whether or not soft reconfiguration is enabled on the neighbor.
- **Default Originate:** Indicates whether or not the switch advertises a Default Route to BGP neighbors.
- **Admin State:** Indicates whether or not Admin State is enabled on the neighbor.

- **Fall Over:** Fall over of the BGP session when the route to this peer fails.
- **Remove Private AS:** Specifies whether Private AS should be removed.

Configuring BGP

To configure BGP, follow this high-level procedure:

1. Complete and apply the default BGP global configuration. For instructions, see [Editing the BGP Global Configuration on page 80](#). When you apply the BGP global configuration, the system automatically creates BGP switch configurations for the switches that you have defined in the fabric IP network configuration.
2. To configure BGP settings, such as route redistribution and networks to be advertised by a BGP switch, edit its BGP switch configuration. For instructions, see [Editing a BGP Switch Configuration on page 81](#).
3. When you complete and apply the BGP global configuration for a fabric, the system automatically creates intra-fabric BGP neighbor configurations for the switches in the fabric. To configure settings for a BGP neighbor such as specifying IP prefix lists to use to filter inbound and outbound routes, edit its BGP neighbor configuration. To create or edit BGP neighbor configurations, see: [Adding or Editing a BGP Switch Neighbor Configuration on page 82](#).

Editing the BGP Global Configuration

To edit the BGP Global Configuration:

1. In Aruba Fabric Composer, select **Configuration > Routing > BGP**.
2. On the BGP page with VRF shown, select **Actions > Edit**. The BGP Global Configuration wizard for VRF opens.
3. In the Settings page, make changes to the fields as needed.
4. In the Summary page, verify the new settings.
5. Click **Apply** to save your changes to the BGP Global Configuration or **Cancel** to exit without saving.


Adding a BGP Switch Configuration

To add a BGP switch configuration:

1. In Aruba Fabric Composer, select **Configuration > Routing > BGP**.
2. Click the **Expand** icon ... next to the VRF and select **Switches**. The Switches tab opens.
3. Select **Actions > Add**. The BGP Switch Configuration wizard opens.
4. In the Settings page, complete the following fields:
 - **Switch:** From the drop-down list, select a switch.
 - **Router ID:** This can be left empty or set to 0.0.0.0 which means use either the address of the fabric IP network if it is set or the highest IP address. Alternatively, it can be a user defined value. For a user-defined value, enter the IPv4 router ID. This is the IP address of the switch assigned in the fabric IP network configuration for this fabric.
 - **Keep Alive Timer:** Keep alive messages are sent between BGP peers to indicate that the BGP connection between them is active. The keep alive interval is the period of time between each keep alive message sent by a peer. Enter a value in seconds for the keep alive timer for the BGP peers in the fabric. The value can be between 1 and 65535. The default value is 30 seconds.



Setting both the Keep Alive Timer and the Hold Down Timer to 0 resets both timers to their default values (30 and 90).

- **Hold Down Timer:** The hold down time interval is the period of time a BGP peer waits between the receipt of successive keep alive and/or update messages from a peer before determining that the peer is dead. Enter a value in seconds for the hold down timer for the BGP peers in the fabric. The value can be between 0 and 65535. The default value is 90 seconds. The hold down timer value should be at least three times the keep alive timer value.
 - **Redistribute Connected:** Select the check box to redistribute connected routes from the switch to its internal and external BGP peers.
 - **Redistribute OSPF:** Select the check box to redistribute OSPF routes from the switch to its internal and external BGP peers.
 - **Redistribute Static Routes:** Select the check box to redistribute static routes from the switch to its internal and external BGP peers.
 - **Redistribute Loopback:** Select the check box to redistribute loopback from the switch to its internal and external BGP peers.
 - **ECMP Best Paths:** Select the check box to consider routes with different AS-path but same length as ECMP for best-path selection.
 - **Fast External Fallover:** Select the check box to immediately reset BGP session if link to a directly connected external peer becomes inactive.
 - **Trap Enable:** Select the check box to enable BGP trap.
 - **Log Neighbor Changes:** Select the check box to log BGP neighbors session-state changes.
 - **Deterministic Multi Exit Discriminator:** Select the check box to pick the best-MED path among paths advertised from the neighboring AS.
 - **Always Compare Multi Exit Discriminator:** Select the check box to compare MED attribute for BGP best-path selection across neighbors in different AS.
5. Click **Next** to go to the next page or **Cancel** to exit without saving.
 6. In the Networks page, complete the following fields:
 - **Network:** Enter an IPv4 network address in CIDR notation for a network to be advertised by this switch.
 - **Name:** Enter a name for the network.
 - **Description:** Enter a description of the network.
 7. Click **Add** to add the network to the list of networks to advertise. To remove a network after you have added it to the list, click the **Delete** icon  to the right of the network name.
 8. Continue to add networks to the list as needed.
 9. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
 10. In the Summary page, check the fields for accuracy. If you need to change anything, click **Back** and make changes as needed.
 11. Click **Apply** to save the BGP switch configuration or **Cancel** to exit without saving.

Editing a BGP Switch Configuration

To edit a BGP switch configuration:

1. In Aruba Fabric Composer, select **Configuration > Routing > BGP**.
2. Click the Expand icon ... to the left of VRF and select **Switches**. The Switches tab opens.
3. Click the button next to the BGP switch configuration you want to edit and then select **Actions > Edit**. The BGP Switch Configuration wizard for the switch opens.
4. In the BGP Switch Configuration wizard, make changes to the fields as needed. Click a tab to edit the settings on that tab.
5. In the Summary tab, check the fields for accuracy.
6. Click **Apply** to save your changes to the BGP switch configuration or **Cancel** to exit without saving.

Deleting a BGP Switch Configuration

To delete a BGP switch configuration:

1. In Aruba Fabric Composer, select **Configuration > Routing > BGP**.
2. Click the **Expand** icon ... next to the VRF and select **Switches**. The Switches tab opens.
3. Click the button next to the BGP switch configuration you want to delete and then select **Actions > Delete**.
4. In the confirmation pop-up box, click **OK** to delete the BGP switch configuration or **Cancel** to retain the configuration.

Adding or Editing a BGP Switch Neighbor Configuration

When you initially configure and apply the BGP global configuration for a fabric, the system automatically creates intra-fabric BGP neighbor configurations for the switches in the fabric. The intra-fabric neighbors are automatically created if BGP is enabled (full mesh or route reflector). These configurations appear on the BGP Neighbors tab under each BGP switch configuration listed on the External BGP tab when you click the **Expand** icon next to a BGP switch configuration. You can also manually create configurations for exterior BGP neighbors. The settings in the BGP neighbor configuration take precedence over both switch and global settings. To add a BGP neighbor configuration for an exterior BGP neighbor:

1. In Aruba Fabric Composer, select **Configuration > Routing > BGP**.
2. Click the **Expand** icon ... to the left of the VRF and select **Switches**. The Switches tab opens.
3. For a switch, click the **Expand** icon ... to the left of the BGP switch configuration and select Neighbors. The BGP Neighbors tab opens, listing the current BGP neighbor configurations.
4. As follows, open the BGP Switch Neighbor Configuration wizard to either add or edit the configuration:
 - To add a new BGP switch neighbor configuration, select **Actions > Add**.
 - To edit a BGP switch neighbor configuration, select the configuration, and then select **Actions > Edit**.

5. In the BGP Switch Neighbor Configuration wizard, complete the following fields:



| Tab | Parameter Name | Description | Valid Values | Default |
|----------|--------------------------------|---|---------------------------------------|----------------------------------|
| Settings | Neighbor AS Number | Enter the Autonomous System (AS) number of the neighbor. | The value can be between 1 and 65535. | |
| | Local AS Number | Enter the Autonomous System number of the local system. | | |
| | IP Address | Enter the IPv4 address of the exterior BGP neighbor. | | |
| | Authentication Password | Enter an authentication password for MD5 authentication between BGP peers so that each segment sent on the TCP connection between the peers is verified. If you do not enter an authentication password, sessions between BGP neighbors are established without authentication. | | |
| | Update Source Address | For BGP peer relationship to be established, the source IP address of packets must be the same as the IP address used in the BGP neighbor command. By default, the packet's source IP address is the outgoing interface. You can change the source IP address using this variable. | | |
| | Keep Alive Timer | Keep alive messages are sent between BGP peers to indicate that the BGP connection between them is active. The keep alive interval is the period of time between each keep alive message sent by a peer. Enter a value in seconds for the keep alive timer for the BGP peers in the fabric. | The value can be between 0 and 65535. | The default value is 30 seconds. |
| | Hold Down Timer | The hold down time interval is the period of time a BGP peer waits between the receipt of successive keep alive and/or update messages from a peer before determining that the peer is dead. Enter a value in seconds for the hold down timer for the BGP peers in the fabric. The hold down timer value should be at least three times the keep alive timer value. | The value can be between 0 and 65535. | The default value is 90 seconds. |
| | EBGP Multi Hop | Select the number of hops to allow in a BGP multi-hop setting, increasing the Time-To-Live value of the eBGP routers enabling multi hops. | Range = 0-255. 0 = Not in use. | No default value. |
| | Enable EVPN | Select to enable Ethernet VPN (EVPN). | | |

| Tab | Parameter Name | Description | Valid Values | Default |
|-----------------|--|---|--------------|---------|
| Settings | Accept Incoming Soft Reconfiguration | A soft reset uses stored prefix information to reconfigure and activate BGP routing tables without tearing down existing peering sessions. Soft reconfiguration uses stored update information to allow you to apply new BGP policy without disrupting the network. | | |
| | Default Route Originate | This command artificially generates and advertises a default route only to the specific BGP peer. The default route does not need to exist in the Routing Table and it is not created in the BGP Routing Information Base (RIB). | | |
| | Enable Admin State | Disable a specific BGP neighbor. When disabled, the neighbor is configured in the switch in a shutdown state where it neither tries to connect to the neighbor nor allows a connection request from the neighbor. | | |
| | Enable VPNv4 | Select to enable VPNv4. | | |
| | Enable Fall Over | Select to enable Fall Over. | | |
| | Remove Private AS | Select to remove private AS number. | | |
| Name | Name | Enter a name for the exterior BGP neighbor. | | |
| | Description | Enter a description of the exterior BGP neighbor. | | |
| Summary | This tab lists all configured parameters for you to verify. If you need to make any changes, open the tabs and update as needed. | | | |

- When you have completed and verified all parameters, click **Apply** to save the BGP neighbor configuration or **Cancel** to exit without saving.

Deleting a BGP Neighbor Configuration

To delete a BGP neighbor configuration:

- In Aruba Fabric Composer, select **Configuration > Routing > BGP**.
- Click the **Expand** icon  next to the VRF and select **Switches**. The Switches tab opens.
- For a switch, click the **Expand** icon  to the left of the BGP switch configuration and select **Neighbors**. The BGP Neighbors tab opens, listing the current BGP neighbor configurations.
- Click the button next to the BGP neighbor configuration you want to delete, then select **Actions > Delete**.
- In the confirmation pop-up box, click **OK** to delete the BGP neighbor configuration or **Cancel** to retain the configuration.

OSPF

Open Shortest Path First (OSPF) is a standards-based dynamic routing protocol used within an Autonomous System (AS). As such, it is classified as an Interior Gateway Protocol (IGP). It uses the link-state routing algorithm when selecting paths, which calculates the shortest path through a network based on the cost of a route. OSPF routers advertise information such as cost of links to all other OSPF neighbors. OSPF routers use the received messages to build up identical databases. The routing table contains all of the destinations associated with next hops the OSPF router is knowledgeable of. The protocol recalculates routes when network changes occur.

To view the OSPF page, in Aruba Fabric Composer, select **Configuration > Routing > OSPF**.

If you click the **Expand** icon ... next to VRF, you can select from **Areas**, **Switches**, or **IP Interfaces** to expand the table on the related tab.

The following information is provided for the VRF:

- **VRF Name:** The name of the VRF for which this OSPF configuration is enabled.
- **VRF Description:** User-defined VRF description.
- **Enabled:** Indicates whether or not OSPF is enabled on the VRF.
- **Redistribute Connected:** Indicates whether or not connected routes are redistributed from each switch in the fabric to its OSPF neighbors.
- **Redistribute Static Routes:** Indicates whether or not static routes are redistributed from each switch in the fabric to its OSPF neighbors.
- **Redistribute BGP:** Indicates whether or not BGP routes are redistributed from each switch in the fabric to its OSPF neighbors.
- **Maximum Paths:** To control the maximum number of parallel routes that OSPF can support.

The **Areas** tab under the VRF provides the following OSPF area configuration information:

- **Name:** The name of the OSPF area configuration.
- **Description:** A description of this OSPF area configuration.
- **Area ID:** The ID of the OSPF area configuration.
- **Type:** The area type of the OSPF area configuration.
- **Range:** Gives a summary of route instead of many smaller routes.
- **Authentication Type:** The OSPF area authentication type.

The **Switches** tab under VRF provides the following OSPF switch information:

- **Name:** The name of the OSPF switch configuration.
- **Description:** A description of this OSPF switch configuration.
- **Router ID:** The router ID of the OSPF switch configuration.
- **Networks:** The network address of the OSPF switch configuration.
- **Default Information:** The configured state of default routes to be advertised: Disabled, Enabled, or Always.

The **IP Interfaces** tab under VRF provides the following OSPF IP Interface information:

- **Name:** The name of the IP Interface configuration.
- **Description:** A description of this OSPF IP Interface configuration.
- **Type:** The type of IP Interface configuration.

- **Switch Name:** The selected switch in the IP Interface configuration.
- **VLAN:** The name of the VLAN in the IP Interface configuration.
- **Port/LAG:** The name of the Port/LAG in the IP Interface configuration.
- **IPv4 Addresses:** The IPv4 addresses in the IP Interface configuration.
- **Network Type:** The network type of the IP Interface configuration.
- **Hello Interval:** The value in seconds between hello packets on the IP Interface.
- **Dead Interval:** The value in seconds for the dead interval for hello messages.
- **Priority:** The router priority used in designated router selection on this interface.
- **Cost:** The interface cost, which is based on the link speed.
- **MTU Size:** The Maximum Transmission Unit (MTU) size in bytes for the interface.
- **Ignore MTU Mismatch:** Indicates whether or not any OSPF MTU mismatch will be ignored for this IP Interface. This option is enabled or disabled in the OSPF IP Interface configuration wizard.
- **Passive Mode:** Indicates whether or not OSPF passive mode is enabled on the IP Interface.
- **BFD Enabled:** Indicates whether Bidirectional Forwarding Detection (BFD) is enabled or not.
- **Authentication Type:** The authentication type for the interface.

Editing the OSPF Global Configuration

In this release, each fabric has a default VRF that contains an OSPF global configuration. The OSPF global configuration can be edited but not deleted. When initially setting up OSPF for a fabric, you need to edit the default OSPF global configuration to complete and apply it.

To edit the OSPF global configuration:

1. In Aruba Fabric Composer, select **Configuration > Routing > OSPF**.
2. Select **Actions > Edit**. The OSPF Global Configuration wizard opens.
3. In the OSPF Global Configuration wizard, edit the following fields as needed:
 - **Enable OSPF on default:** Select the check box to enable OSPF on default.
 - **Redistribute Connected:** Select the check box to redistribute connected routes from each switch in the fabric to its OSPF neighbors.
 - **Redistribute Static Routes:** Select the check box to redistribute static routes from each switch in the fabric to its OSPF neighbors.
 - **Redistribute BGP:** Select the check box to redistribute BGP routes from each switch in the fabric to its OSPF neighbors.
 - **Maximum Paths:** Enter a number between 1 and 8.
4. Click **Apply** to save the OSPF global configuration or **Cancel** to exit without saving.

Adding an OSPF Area Configuration

In this release, each fabric has a default VRF that contains a configuration for OSPF Area 0. The configuration for Area 0 can be edited but not deleted. Area 0 can function alone or act as the OSPF backbone for additional areas.

To add an OSPF area configuration:

1. In Aruba Fabric Composer, select **Configuration > Routing > OSPF**.
2. Click the **Expand** icon ... next to the VRF and select **Areas** from the drop-down list. The Areas, Switches, and IP Interfaces tabs appear. The table expands with the Areas tab selected, listing the OSPF area configurations.
3. Select **Actions > Add**. The OSPF Area Configuration wizard appears.
4. In the Name page, complete the following fields:
 - **Name:** Enter a name for the OSPF area.
 - **Description:** Enter a description of the OSPF area.
5. Click **Next** to go to the next page or **Cancel** to exit without saving.
6. In the Settings page, complete the following fields:
 - **Area ID:** The area ID can be an integer or an identifier in dotted-decimal notation.
 - **Type:** The area type can be Standard (the area carries all route types), NSSA (Not So Stubby Area, which can import external routes), or Stub (which does not receive routes from other autonomous systems).
 - **Authentication Type:** The authentication type can be Plain Text (the authentication password goes over the network in clear text), None (no authentication), or MD5 (does not send the password over the network and is the most secure authentication type).
7. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
8. In the Summary page, check the fields for accuracy. If you need to change anything, click **Back** and make changes as needed.
9. Click **Apply** to save the OSPF area configuration or **Cancel** to exit without saving.

Editing an OSPF Area Configuration

To edit an OSPF area configuration:

1. In the Aruba Fabric Composer, select **Configuration > Routing > OSPF**.
2. Click the **Expand** icon ... next to the VRF and select **Areas**. The Areas tab opens, listing the OSPF area configurations.
3. Select the OSPF area configuration to edit.
4. Select **Actions > Edit**. The OSPF Area Configuration window appears.
5. In the OSPF Area Configuration window, make changes to the fields as needed. Click a tab to edit the settings on that tab.
6. Click **Apply** to save your edits or **Cancel** to exit without saving.

Deleting an OSPF Area Configuration

To delete an OSPF area configuration:

1. In Aruba Fabric Composer, select **Configuration > Routing > OSPF**.
2. Click the **Expand** icon ... next to the VRF Pair and select **Areas** from the drop-down menu. The Areas, Switches, and IP Interfaces tabs appear. The table expands with the Areas tab selected, listing the OSPF area configurations.

3. Select the OSPF area configuration to delete. Note that you cannot delete the default OSPF area configuration for Area 0.
4. Select **Actions > Delete**.
5. In the confirmation pop-up box, click **OK** to delete the OSPF area configuration or **Cancel** to retain the configuration.


Adding an OSPF Switch Configuration

To add an OSPF switch configuration:

1. In Aruba Fabric Composer, select **Configuration > Routing > OSPF**.
2. Click the **Expand** icon ... next to the VRF and select **Switches**. The Switches tab opens, listing the OSPF switch configurations.
3. Select **Actions > Add**. The OSPF Switch Configuration window opens.
4. In the Settings tab, configure the following fields:
 - **Switch:** Select a switch from the drop-down list.
 - **Router ID:** Enter the IPv4 router ID. You must enter a value in this field. Leaving it empty will result in an error. If you specify 0.0.0.0 in this field, the router ID will be selected by the system. If a fabric IP network is configured, the system will select the IP address that is specified in the fabric IP network configuration on the Switch Addresses tab. If a fabric IP network is not configured, the system will select the highest IP address in the fabric.
 - **Default Information:** Allows default routes to be advertised from this switch. From the drop-down list, select a setting, which can be Disabled, Enabled, or Always. When Enabled is selected, OSPF advertises default routes, if available. When Always is select, OSPF advertises routes even when there are no default routes in the routing tables. The default setting is Disabled.
5. Click **Next** to go to the next page or **Cancel** to exit without saving.
6. In the Networks page, complete the following fields:
 - **Area:** From the drop-down list, select an OSPF area configuration. You configure OSPF area configurations on the OSPF Area tab.
 - **Network:** Enter an IPv4 network address in CIDR notation for a network to be included in the OSPF area.
7. Click **Add** to add the area and the network to the list of OSPF areas. To remove an area after you have added it to the list, click the Delete icon  to the right of the name of the area.
8. Continue to add OSPF areas and associated networks to the list as needed.
9. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
10. In the Summary page, check the fields for accuracy. If you need to change anything, click **Back** and make changes as needed.
11. Click **Apply** to save the OSPF switch configuration or **Cancel** to exit without saving.


Editing an OSPF Switch Configuration

To edit an OSPF switch configuration:

1. In Aruba Fabric Composer, select **Configuration > Routing > OSPF**.
2. Click the **Expand** icon ... next to the VRF and select **Switches**. The Switches tab opens, listing the OSPF switch configurations.
3. Select the OSPF switch configuration to edit.
4. Select **Actions > Edit**. The OSPF Switch Configuration window opens.
5. In the OSPF Switch Configuration window, make changes to the fields as needed. Click a tab to edit the settings on that tab. On the Settings tab, to modify an IPv4 network address for an area, click the **Delete** icon  to the right of the name of the area in the list, and then add a new area and network to the list.
6. Click **Apply** to save your edits or **Cancel** to exit without saving.

Disabling an OSPF Switch Configuration

An OSPF switch configuration specifies the area(s) where the switch resides and all associated network statement(s). You can add and edit OSPF switch configurations, but you cannot delete them. Instead, you can disable an OSPF switch configuration by removing all of the areas and associated network statements in the configuration. To disable an OSPF switch configuration:


1. In Aruba Fabric Composer, select **Configuration > Routing > OSPF**.
2. Click the **Expand** icon ... next to the VRF and select **Switches**. The Switches tab opens, listing the OSPF switch configurations.
3. Select the OSPF switch configuration that you want to disable.
4. Select **Actions > Edit**. The OSPF Switch Configuration window for the switch appears.
5. Click the **Networks** tab.
6. In the list of OSPF areas and associated network statements, click the **Delete** icon  to the right of each of the areas in the list to remove them.
7. Click **Apply** to save your edits or **Cancel** to exit without saving.

Editing an OSPF IP Interface Configuration

You can edit default values in an OSPF IP interface configuration and apply your changes.

To edit an OSPF IP interface configuration:

1. In Aruba Fabric Composer, select **Configuration > Routing > OSPF**.
2. Click the **Expand** icon ... next to the VRF and select **IP Interfaces**. The IP Interfaces tab opens, listing the OSPF IP Interface configurations.
3. Select the **OSPF IP interface configuration** to edit.
4. Select **Actions > Edit**. The OSPF IP Interface Configuration window appears.
5. In the Settings tab, complete the following fields:
 - **Network Type**: Select a network type from the drop-down list.

- **Hello Interval:** Enter a value in seconds between hello packets on the IP interface. The hello interval is advertised in the hello packets. The value can be between 1 and 65535 seconds. The default value is 10 seconds.
 - **Dead Interval:** Enter a value in seconds for the dead interval for hello messages. The dead interval is the duration of time that a router waits to receive a hello packet from a neighbor before declaring the neighbor down. The value can be between 1 and 65535 seconds. The default value is 40 seconds.
 - **Priority:** Enter a value for the router priority used in designated router selection on this interface. The default value is 1.
 - **Cost:** Enter a value for the interface cost, which is based on the link speed. The default value is 1.
 - **MTU Size** - Enter a value for the Maximum Transmission Unit (MTU) size in bytes for the interface. The MTU size is the maximum size of a single data unit that can be transmitted over a network. The default value is 1500 bytes.
 - **Ignore MTU Mismatch:** Select the check box to ignore an MTU mismatch on the interface.
 - **Passive Mode:** Select the check box to set OSPF passive mode on the interface. The interface is part of the OSPF routing, but does not have OSPF neighbors on it.
 - **Enable Bidirectional Forwarding Detection (BFD):** Select the check box to enable bidirectional forwarding detection.
6. Select the **Authentication** tab.
 7. In the Authentication tab, complete the following fields:
 - **Clear all authentication:** Select this check box to clear all existing authentications.
 - **Authentication Value:** Enter an authentication value for the interface. This field is used when the authentication type selected in the associated OSPF area configuration is Plain Text.
 - **MD5 Key:** Enter an MD5 key for authentication on the interface. This field and the MD5 value field below is used when the authentication type selected in the associated area configuration is MD5.
 - **MD5 Value:** Enter an MD5 value for authentication on the interface. This field and the MD5 key field above is used when the authentication type selected in the associated area configuration is MD5.
 8. Click **Add** to add the MD5 key and value to the list of MD5 key-value pairs. To remove an MD5 key-value pair after you have added it to the list, click the **Delete** icon  to the right of the entry.
 9. Continue to add MD5 keys and associated values to the list as needed.
 10. Select the **Summary** tab.
 11. On the Summary tab, check the fields for accuracy. If you need to change anything, select a tab and make changes as needed.
 12. Click **Apply** to save the OSPF IP interface configuration or **Cancel** to exit without saving.

Resetting an OSPF IP Interface

You can reset an OSPF IP interface as follows:

1. In Aruba Fabric Composer, select **Configuration > Routing > OSPF**.
2. Click the **Expand** icon ... next to the VRF and select **IP Interfaces**. The IP Interfaces tab opens, listing the OSPF IP Interface configurations.
3. Select the OSPF IP interface to reset.

4. Select **Actions > Reset**.

The interface is immediately reset. A momentary Success message will be returned.

EVPN

You use the Ethernet VPN (EVPN) page to create configurations for Aruba switches to communicate with the EVPN servers in the network. You can apply a EVPN configuration to one or more switches or to entire fabrics. The EVPN page enables you to generate multiple EVPN instances, one for each VLAN included in the VNI Mapping step. The EVPN EVIs will not be active until after an Underlay and Overlay has been configured on the default VRF.

The following information is provided for each EVPN configuration:

- **Name:** The name of the EVPN configuration.
- **Description:** The description of the EVPN configuration.
- **VLAN:** The name of the VLAN associated with the switch.
- **L2VNI:** The bridge domain of the EVPN configuration.
- **Route Distinguisher:** The route distinguisher of the EVPN configuration.
- **Import Route Targets:** Import route targets of the EVPN configuration.
- **Export Route Targets:** Export route targets of the EVPN configuration.
- **Redistribute Host Route:** The redistribute host route of the EVPN configuration.
- **ARP Suppression:** ARP Suppression status of the EVPN configuration.

Adding an EVPN Configuration

To add an EVPN configuration:



The EVPN Configuration wizard can also be accessed from the Guided Setup menu.

1. In Aruba Fabric Composer, select **Configuration > Routing > EVPN**.
2. Select **Actions > Add**. The EVPN Configuration wizard opens.
3. In the Introduction page, read the instructions and click **Next**.
4. In the Switches page, create EVPN instances across the entire Fabric and all Switches contained within it or select specific Switches. Click **Next**.
5. In the Name page, complete the following fields:
 - **Name Prefix:** Enter any non-empty string. For example, evpn-mapping
 - **Description:** Enter a description of the EVPN configuration.
6. Click **Next** to go to the next page or **Cancel** to exit without saving.
7. In the VNI Mapping page, complete the following fields:
 - **VLANs:** Enter a number, set, or range of VLANs between 1-3966. For example, 5, 10~45, 102, and so on.
 - **Base L2VNI:** Enter a number between 1 and 15000000. For example, 5, 15000000, and so on.
8. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
9. In the Settings page, complete the following fields:
 - **Route Target ASN Prefix:** Enter a number between 1 and 65535. For example, 15, 65535, and so on.

on.

- **System MAC Address Range:** Enter a hyphen-separated range of valid MAC Addresses.
10. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
 11. In the Summary page, check the fields for accuracy. If you need to change anything, click **Back** and make changes as needed.
 12. Click **Apply** to apply the EVPN configuration or **Cancel** to exit without saving.

Editing an EVPN Configuration

To edit an EVPN configuration:

1. In Aruba Fabric Composer, select **Configuration > Routing > EVPN**.
2. Select the check box next to the EVPN to be edited and select **Actions > Edit**. The EVPN configuration wizard opens.
3. In the EVPN Switch Configuration window, make changes to the fields as needed. Click a tab to edit the settings on that tab.
4. Click **Apply** to save your edits or **Cancel** to exit without saving.

Deleting an EVPN Configuration

To delete an EVPN configuration:

1. In Aruba Fabric Composer, select **Configuration > Routing > EVPN**.
2. Select the check box next to the EVPN you want to delete and then click **Actions > Delete**.
3. In the confirmation pop-up box, click **OK** to delete the OSPF area configuration or **Cancel** to retain the configuration.

EVPN Settings

To apply EVPN settings to all EVPN configurations within the fabric:

1. In Aruba Fabric Composer, select **Configuration > Routing > EVPN**.
2. Select **Actions > Settings**. The EVPN Settings window opens.
3. De-select the **Enable ARP Suppression** check box and then click **Apply** to apply the settings to all EVPN configurations within the fabric or **Cancel** to exit without applying the settings.

EVPN VXLAN Multi-Fabric

You use the EVPN VXLAN Multi-Fabric page to create configurations for Aruba switches.

To open the EVPN VXLAN Multi-Fabric page, in Aruba Fabric Composer, select **Configuration > Routing > EVPN VXLAN Multi-Fabric**.

The EVPN VXLAN Multi-Fabric table provides the following information for each configuration:

- **Name:** User-defined name for the EVPN VXLAN Multi-Fabric configuration.
- **Description:** User-defined description of the EVPN VXLAN Multi-Fabric configuration.

- **Border Leader:**
- **L3 eBGP Borders:**

Adding an EVPN VXLAN Multi-Fabric

To add a new EVPN VXLAN Multi-Fabric configuration:

1. In Aruba Fabric Composer, select **Configuration > Routing > EVPN VXLAN Multi-Fabric**.
2. Select **Actions > Add**. The EVPN VXLAN Multi-Fabric Configuration window appears.
3. In the Name page, complete the following fields:
 - **Name:** Enter a name for the EVPN VXLAN Multi-Fabric configuration.
 - **Description:** Enter a description of the EVPN VXLAN Multi-Fabric configuration.
4. Click **Next** to go to the next page or **Cancel** to exit without saving.
5. In the Settings page, complete the following fields to select a required Border Leader and optional L3 eBGP Borders and BGP Authentication Password:
 - **Border Leader:** Select switch(es) from the drop-down list.
 - **L3 eBGP Borders:** This is an optional field. Select switch(es) from the drop-down field or alternatively click **Select All** to select all the switches in the Fabric.
 - **BGP Auth Password:** This is an optional field. Enter any non empty string as a password.
6. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
7. In the Remote Fabrics page, complete the following fields to add optional Remote Fabrics:
 - **AS Number:** Enter any ASPLAIN notation.
 - **Remote Border Leader Address:** Enter any valid IPv4 Address.
 - **Secondary Remote Border Leader Address:** Enter any valid IPv4 Address.
8. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
9. In the Summary page, check the fields for accuracy. If you need to change anything, click **Back** and make changes as needed.
10. Click **Apply** to apply the EVPN VXLAN Multi-Fabric configuration or **Cancel** to exit without saving.

Editing an EVPN VXLAN Multi-Fabric Configuration

To edit an EVPN VXLAN Multi-Fabric configuration:

1. In the Aruba Fabric Composer UI, select **Configuration > Routing > EVPN VXLAN Multi-Fabric**.
2. Click the button next to the EVPN VXLAN Multi-Fabric configuration to edit and then select **Actions > Edit**.
3. In the EVPN VXLAN Multi-Fabric Configuration window, make changes to the fields as needed. Click a tab to edit the settings on that tab.
4. Click **Apply** to save your edits or **Cancel** to exit without saving. When you click **Apply**, your changes get applied to all associated fabrics and switches.

Re-applying an EVPN VXLAN Multi-Fabric Configuration

To re-apply an EVPN VXLAN Multi-Fabric configuration, default, to all of the switches within the fabric:

1. In Aruba Fabric Composer, select **Configuration > Routing > EVPN VXLAN Multi-Fabric**.
2. Click the radio button next to an EVPN VXLAN Multi-Fabric configuration and select **Actions > Reapply EVPN VXLAN Multi-Fabric**.
3. In the confirmation pop-up box, click **OK** to re-apply the EVPN VXLAN Multi-Fabric to all of the switches within the fabric or **Cancel** to retain the earlier configuration.

The **Configuration > System** page, provides access to configure the following system-level features:

- Fabrics & Switches
- AFC Remote Sites
- Monitoring Agents
- SmartNICs
- System Settings

Fabrics & Switches

You can display the Aruba Fabric Composer or leaf-spine fabric status by selecting **Configuration > System > Fabrics & Switches**. This page also enables you to perform Fabric maintenance tasks.

Fabric Information

The Fabrics page displays the following information, which applies to both fabric classes (Fabric Composer and Leaf-Spine Fabric) except where noted:

| Column Head | Description |
|-------------|---|
| Name* | Fabric name. |
| Health* | Fabric health, where the possible states are as follows: <ul style="list-style-type: none">■ Healthy: Fabric is healthy.■ Unknown: Fabric health is unknown.■ Healthy, But...: Fabric is operating; however, it might not be fully operational.■ Degraded: Fabric has an issue and is not operating optimally.■ Minor: Minor issue exists.■ Major: Major issue exists.■ Critical: Critical issue exists.■ Non-recoverable: Non-recoverable issue exists. |
| Switches* | Switches configured within the fabric. |
| Type | Whether Management of Data. |
| Description | Fabric description. |
| Time Zone | Time zone for the fabric and switches in the fabric. |

| Column Head | Description |
|--------------------|---|
| Auto Save Interval | Auto save the running configuration in seconds. |
| Manager | Aruba Fabric Composer |

*Default displayed columns. To manage which columns display, use the Customize table contents tool.

Fabric Maintenance Actions

You can perform the following maintenance activities on fabrics using the options available from the **Actions** button.

| Action | Description |
|--------------------|--|
| Add | Add a Fabric. |
| Edit | Edit a Fabric. |
| Delete | Delete a Fabric. |
| Discover Switches | Discover new switches. |
| Save Configuration | Save the running configuration to the startup configuration for all switches in the selected fabric. |
| Switches | Open switches. |

Editing a Fabric Configuration

To edit a fabric configuration:

1. Select **Configuration > System > Fabrics & Switches**. The Fabrics page displays.
2. Click the radio button of the Fabric to be edited.
3. From the **Actions** drop-down menu, select **Edit**. The Fabric configuration wizard opens.
4. In the Fabric configuration window, make changes to the fields as needed.
5. Click **Apply** to change the password or **Cancel** to exit without making a change.

Deleting a Fabric Configuration

To delete a Fabric configuration:

1. In Aruba Fabric Composer, select **Configuration > System > Fabrics & Switches**.
2. Click the button next to the fabric configuration to delete and then select **Actions > Delete**.
3. In the confirmation pop-up box, click **OK** to delete the fabric configuration or **Cancel** to retain the configuration. When you click **OK**, the deleted fabric configuration gets removed from all associated switches.

AFC Remote Sites

You use the AFC Remote Sites page to create configurations for remote sites.

To open the AFC Remote Sites page, in Aruba Fabric Composer, select **Configuration > System > AFC Remote Sites**.

The AFC Remote Sites page lists the current AFC Remote Sites and enables you to add, edit, and delete them.

The AFC Remote Sites table provides the following information for each remote site configuration:

- **Status:** Select from Disabled, Disconnected, Degraded, Connected, and Updating.
- **Host:** The name of the remote host.
- **User Name:** User name associated with the remote site.
- **Enabled:** Whether enabled (Yes) or Disabled (No).
- **Verify SSL:** Whether SSL is verified (Yes) or not verified (No).
- **Name:** The name of the remote site.
- **Description:** Description of the remote site.
- **Fault Message:** Fault message, if any.
- **Last Successful Connection:** The date and time stamp of the last successful connection to the remote site.
- **Last Update Time:** The date and time stamp of the last update made to the remote site.

Adding a Remote Site

To add and configure a new remote site for this Aruba Fabric Composer:

1. In Aruba Fabric Composer, select **Configuration > System > AFC Remote Sites**.
2. Select **Actions > Add**. The Remote AFC Site Configuration window appears.
3. In the Host tab, complete the following fields
 - **Name:** Enter any non empty string. For example, Remote AFC Site 1.
 - **Description:** Enter a description of the remote site.
 - **Host:** Enter a valid Hostname of at least two characters long or an IPv4 Address.
 - **Username:** Enter any non empty string. For example, SiteUser1.
 - **Password:** Enter a password for the remote site.
 - Select, if needed, the checkboxes to Validate SSL/TLS server certificates.
 - Select **Enable this configuration** and then click **Validate**.
4. Click **Next** to go to the next page or **Cancel** to exit without saving.
5. In the Summary page, check the fields for accuracy. If you need to change anything, click **Back** and make changes as needed.
6. Click **Apply** to apply the remote site configuration or **Cancel** to exit without saving.

Editing a Remote Site Configuration

To edit a remote site configuration:

1. In the Aruba Fabric Composer UI, select **Configuration > System > AFC Remote Sites**.
2. Click the button next to the remote site to edit and then select **Actions > Edit**.

3. In the Remote AFC Site Configuration window, make changes to the fields as needed. Click a tab to edit the settings on that tab.
4. Click **Apply** to save your edits or **Cancel** to exit without saving. When you click **Apply**, your changes get applied to the remote site.

Deleting a Remote Site

To delete a remote site configuration:

1. In Aruba Fabric Composer, select **Configuration > System > AFC Remote Sites**.
2. Click the button next to the remote site to delete and then select **Actions > Delete**.
3. In the confirmation pop-up box, click **OK** to delete the remote site or **Cancel** to retain the configuration. When you click **OK**, the deleted remote site gets removed from all associated fabrics and switches.

Refreshing a Remote Site Configuration

If a connection error or other error causes you to suspect that a remote site configuration is not synchronized with Aruba Fabric Composer, you can refresh the configuration. A refresh re-fetches all data for a selected configuration and updates the cache for that configuration.

1. In Aruba Fabric Composer, select **Configuration > System > AFC Remote Sites**.
2. Select a remote site configuration and then select **Actions > Refresh AFC Site Configuration**.
3. At the Refresh AFC Site Configuration confirmation prompt, select either **OK** to refresh the remote site cache or select **Cancel** to exit without refreshing the cache.

Monitoring Agents

You use the Monitoring Agents page to configure metric collectors that monitor the health of Aruba Fabric Composer.

To open the Monitoring Agents page, in Aruba Fabric Composer, select **Configuration > System > Monitoring Agents**.

The Monitoring page lists the current metric collectors and enables you to add, edit, and delete them.

The Monitoring Agents table provides the following information for each metric collector:

- **Name:** User-defined name of the metric collector.
- **Description:** Description of the metric collector.
- **Type:** The type of metric collector, whether NAE or Prometheus Exporter.
- **Status:** Whether Starting, Running, Failed, or Stopped.
- **Metric Collector:** The actual name of the metric collector.
- **Last Update Time:** Date and time stamp of the last update.

Adding a Monitoring Agent

To add a new Monitoring Agent:

1. In Aruba Fabric Composer, select **Configuration > System > Monitoring Agents**.
2. Select **Actions > Add**. The Monitor Agents Configuration window appears.

3. In the Name page, complete the following fields:
 - **Name Prefix:** Enter any non empty string as a name prefix for the monitoring agent, for example, MonitorAgent1.
 - **Description:** Enter a description of the Monitoring Agent.
4. Click **Next** to go to the next page or **Cancel** to exit without saving.
5. In the Settings page, complete the following fields:
 - **Metric Collector:** From the drop-down list, select one or more Monitoring Agents on selected supported switches for the selected Metric Collector.
 - **Switches:** Select a single switch from the drop-down list or click **Select All** to select all the switches in the Fabric.
 - Select the Auto-start Monitor Agent(s) checkbox to auto start the monitoring agent(s).
6. In the Summary page, check the fields for accuracy. If you need to change anything, click **Back** and make changes as needed.
7. Click **Apply** to apply the configuration or **Cancel** to exit without saving.

Deleting a Monitoring Agent

To delete a monitoring agent:

1. In Aruba Fabric Composer, select **Configuration > System > Monitoring Agents**.
2. Click the button next to the monitoring agent to delete and then select **Actions > Delete**.
3. In the confirmation pop-up box, click **OK** to delete the monitoring agent or **Cancel** to retain the monitoring agent. When you click **OK**, the deleted monitoring agent gets removed from all associated fabrics and switches.

SmartNICs

SmartNICs are Network Interface Cards that provide additional functionality beyond network connectivity. For example, the Pensando DSC SmartNIC provides distributed firewall capabilities. Aruba Fabric Composer 6.1.0 supports the Pensando DSC SmartNIC.

The SmartNICs table provides the following information:

- **Name:** User-defined name for the SmartNIC.
- **MAC Address:** The MAC Address of the SmartNIC.
- **Admit:** Admit status of the SmartNIC (Yes or No).
- **Phase:** One of Unknown, Registering, Rejected, Pending, Admitted, and Decommissioned.
- **Status:** Status of the SmartNIC (Healthy, Unhealthy, or Unknown).
- **Version:** Version of the SmartNIC.

System Settings

The System Settings page enables you to configure the following:

- Appearance Theme
- Neighbor Retention Timeout

- Remote Device Access
- Session Inactivity Timeout
- Switch Poll Interval

Appearance Theme

You can change the appearance theme of Aruba Fabric Composer between dark and light.

To change the appearance theme:

1. In Aruba Fabric Composer, select **Configuration > System > System Settings**.
2. To edit the settings, click the radio button next to **Appearance Theme** and then select **Actions > Edit**. In the edit pop-up, you can select between Light and Dark themes.
3. When finished with edits, click **Apply** to save the edits or **Cancel** to exit without saving.

Neighbor Retention Timeout

Stale neighbors are devices that stop providing timely neighbor advertisements. The neighbor data used by the Aruba Fabric Composer becomes stale and after a period of time is discarded. Neighbor Retention Timeout retains the neighbor data for an extended period of time in Aruba Fabric Composer.

Neighbor Retention Timeout enables services such as automatic VLAN provisioning to continue to operate for an extended period of time when neighbor advertisements from the host environment are temporarily suspended. For example, with an adequate timeout setting, automatic VLAN provisioning remains stable when an ESXi host is rebooted.

In the Host Visualization, you can view the connection status for a host physical network interface connected to an intermediate switch by hovering over the physical network interface. Refer to [Hovering Over Host Visualization Elements for Detailed Information on page 211](#).

Setting the Neighbor Retention Timeout

To set the neighbor retention timeout:

1. In Aruba Fabric Composer 6.3.0, select **Configuration > System > System Settings**.
2. To edit the settings, click the radio button next to **Neighbor Retention Timeout** and then select **Actions > Edit**.
3. In the edit pop-up, make any changes as needed. The default neighbor retention timeout period is set to one day when Aruba Fabric Composer is initially installed. To enter another timeout period, enter the number in minutes. For example, for a 2-hour timeout, enter 120. The range is 0 minutes and 10080 minutes. This allows as much as 168 hours or 7 days. A value of 0 (zero) means that there is no extended neighbor retention in Aruba Fabric Composer.

When finished with edits, click **Apply** to save the edits or **Cancel** to exit without saving.

Remote Device Access

You can allow remote access to managed switches using this feature.

To change the remove device access settings:

1. In Aruba Fabric Composer, select **Configuration > System > System Settings**.

2. To edit the settings, click the check box next to **Remote Device Access** and then select **Actions > Edit**. In the edit pop-up, select the **Enable Interactive Access** check box to allow remote access to the managed switches.
3. When finished with edits, click **Apply** to save the edits or **Cancel** to exit without saving.

Session Inactivity Timeout

You can change the default Session Inactivity Timeout that is used for new users when an administrator creates a new user.

To change the default timeout value:

1. In Aruba Fabric Composer, select **Configuration > System > System Settings**.
2. To edit the settings, click the radio button next to **Session Inactivity Timeout** and then select **Actions > Edit**. In the edit pop-up, make any changes as needed. The default new user session inactivity timeout period is 30 minutes of inactivity.
3. To enter another timeout period, enter the number in minutes.
For example, for a 2-hour timeout, enter 120. The range is 0 minutes to 10080 minutes. This amounts to as much as 168 hours or 7 days. A value of 0 (zero) disables the session inactivity timeout so that the session is unlimited.
4. When finished with edits, click **Apply** to save the edits or **Cancel** to exit without saving.

Switch Poll Interval

You can specify how often Aruba Fabric Composer should poll the switches for configuration changes.

To specify the switch poll interval:

1. In Aruba Fabric Composer, select **Configuration > System > System Settings**.
2. To edit the settings, click the radio button next to **Switch Poll Interval** and then select **Actions > Edit**. In the edit pop-up, specify any number between 0 and 60000 in seconds. The default is 90 seconds and 0 seconds disables polling.
3. When finished with edits, click **Apply** to save the edits or **Cancel** to exit without saving.

The **Configuration > Network** page, provides access to configure the following network-level features:

- Resource Pools
- VSX
- Leaf-Spine
- DNS
- NTP
- SNMP
- VSF
- sFlow
- DHCP Relay

Resource Pools

Resource Pools are logical abstraction for flexible management of resources. They can be grouped into hierarchies and used to hierarchically partition available CPU and memory resources.

The Resource Pools table provides the following information:

- **Name:** User-defined name for the Resource Pool.
- **Description:** Description of the Resource Pool.
- **Type:** Select between IPv4 or MAC Address.
- **Complete Range:** Entire range of available IP Addresses.
- **Available Range:** Available range of IP Addresses.
- **Used Range:** Total used range of IP Addresses.
- **Usage:** Select from VSX, EVPN, L3 Leaf-Spine, Underlay, or Overlay.

Adding a Resource Pool

To add a Resource Pool:

1. In Aruba Fabric Composer, in the **Configuration > Network > Resource Pools** page, select **Actions**, and then click **Add**. The Resource Pool Configuration wizard opens.

2. Configure the following parameters as needed:

| Tab | Parameter Name | Description | Valid Values | Default |
|-----------------|---|---|--|---------|
| Name | Name | Assign a name for the Resource Pool. | Any non-empty string, for example, ResourcePool-1. | |
| | Description | Enter a description for the Resource Pool. Click Next . | | |
| Settings | Resource Type | Select from either IPv4 or MAC Address from the drop-down list. | | |
| | Resource Pool | Enter a set and/or ranges of IPv4 up to 65535. | | |
| | Resource Count | Set to 0 by default. Click Next . | | 0 |
| Summary | This tab lists all configured parameters for you to verify. If you need to make any changes, click Back to open the tabs and update as needed. | | | |

3. Once you have completed and verified all parameters, you can exit the wizard. Click **Apply** to complete and save the Resource Pool, **Back** to go back and change a setting, or **Cancel** to exit this configuration without saving.

Editing a Resource Pool

To edit a Resource Pool:

1. In Aruba Fabric Composer, in the **Configuration > Network > Resource Pool** page, select **Actions**, and then click **Edit**. The Resource Pool Configuration wizard opens.
2. Once you have made the changes and verified all parameters, you can exit the wizard. Click **Apply** to complete and save the Firewall Log, **Back** to go back and change a setting, or **Cancel** to exit this configuration without saving.

Deleting a Resource Pool

To delete a Resource Pool:

1. In the Aruba Fabric Composer UI, in the **Configuration > Network > Resource Pool** page, select the Resource Pool(s) to delete, and then select **Actions > Delete**.
2. At the confirmation prompt, click **OK** to delete the Resource Pool or **Cancel** to retain the Resource Pool.
3. You can also delete all Resource Pools in the Fabric by selecting **Actions > Delete All**.

VSX

The Virtual Switching Extension (VSX) creation workflow is a configuration workflow that automatically creates all necessary configurations to pair two switches up in a fully functional VSX configuration. You use the VSX page to create the VSX pair(s). Choose to automatically generate the VSX Pairs based on discovered connection data or manually configure a single VSX Pair.

The VSX table provides the following information for each VSX configuration:

- **Fabric:** Currently selected fabric.
- **Name:** User-defined name of the VSX configuration.
- **Description:** User-defined description of the VSX configuration.
- **Primary Switch:** Primary switch allocated to the VSX Pair configuration.
- **Primary Switch ISL LAG:** Inter-Switch Link LAG allocated to the primary switch.
- **Primary Switch Keep Alive Interface:** The Keep Alive interval interface of the primary switch.
- **Primary Switch Overall State:** Working status of the primary switch.
- **Primary Switch ISL State:** Inter-Switch Link status of the Primary switch.
- **Primary Switch Device State:** Status of the primary switch device.
- **Primary Switch Config Sync State:** Synchronized state of the primary switch.
- **Primary Switch Peer Status Ready:** Operational status of the VSX Pair with the secondary switch.
- **Primary Switch Keep Alive Status Protocol State:** On or Off status of the Keep Alive timer between peers.
- **Secondary Switch:** Secondary switch allocated to the VSX Pair.
- **Secondary Switch ISL LAG:** Inter-Switch Link LAG allocated to the secondary switch.
- **Secondary Switch Keep Alive Interface:** The Keep Alive interval interface of the secondary switch.
- **Secondary Switch Overall State:** Working status of the secondary switch.
- **Secondary Switch ISL State:** Inter-Switch Link status of the secondary switch.
- **Secondary Switch Device State:** Status of the secondary switch device.
- **Secondary Switch Config Sync State:** Synchronized state of the secondary switch.
- **Secondary Switch Peer Status Ready:** Operational status of the VSX Pair with the primary switch.
- **Secondary Switch Keep Alive Status Protocol State:** On or Off status of the Keep Alive timer between peers.
- **ISL Timeout:** Inter-Switch Link timeout in number of seconds.
- **ISL Hello Interval:** Inter-Switch Link Hello Interval in seconds between hello packets on the VSX configuration.
- **ISL Hold Time:** The period of time an Inter-Switch Link waits between the receipt of successive Keep Alive and/or update messages from a peer before determining that the peer is dead.
- **Keep Alive Dead Interval:** Interval in seconds when the peer is still alive but the network channel between the VSX Pair has gone down.
- **Keep Alive Hello Interval:** Interval in seconds to determine how often hello packets are sent between the VSX Pair.
- **Keep Alive UDP Port:** Interval in seconds to determine how often Keep Alive packets are sent to the UDP Port.

- **Linkup Delay Timer:** Timer delay set for linkup between the primary and secondary VSX configurations.
- **QOS Trust:** Whether QOS Trust is enabled or not for the VSX Pair.
- **System MAC Address:** System's MAC Address.

Configuring VSX (automatic)

Use the VSX wizard to automatically generate the VSX pairs based on discovered connection data.

To configure VSX automatically:



You can also select VSX Configuration from the Guided Setup to access this configuration wizard.

1. In Aruba Fabric Composer, select **Configuration > System > VSX**.
2. Select **Actions > Add**. The VSX Configuration wizard opens.
3. In the Create Mode page, select **Automatically generate VSX Pairs** and click **Next**.
4. In the Name page, complete the following fields:
 - **Name Prefix:** Enter any non-empty string. For example, MyVsxPair.
 - **Description:** Enter a description of the VSX pair configuration.
5. Click **Next** to go to the next page or **Cancel** to exit without saving.
6. In the Inter-Switch Link Settings page, complete the following fields:
 - **Hello Interval:** Enter a number of seconds between 1 and 5.
 - **Peer Detect Interval:** Enter a number of seconds between 60 and 600.
 - **Hold Timer:** Enter a number of seconds between 0 and 3.
 - **Timeout:** Enter a number of seconds between 2 and 20.
7. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
8. In the Keep Alive Interfaces page, complete the following fields:
 - **Interface Mode:** In the drop-down list, select either Loopback or Point-to-Point.
 - **IPv4 Subnetwork Address:** Enter a valid IPv4 Subnet in CIDR format. For example, 192.168.1.0/24
9. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
10. In the Keep Alive Settings page, complete the following fields:
 - **Hello Interval:** Enter a number of seconds between 1 and 5.
 - **Dead Interval:** Enter a number of seconds between 2 and 20.
 - **UDP Port:** Enter a number between 1024 and 65535.
11. In the Options page, complete the following fields:
 - **Linkup Delay Timer:** Enter a number of seconds between 0 and 600.
 - **System MAC Address Range:** Enter a hyphen-separated range of valid MAC addresses.
12. In the Summary page, check the fields for accuracy. If you need to change anything, click **Back** and make changes as needed.
13. Click **Apply** to apply the VSX configuration or **Cancel** to exit without saving.

Configuring VSX (manual)

You use the VSX page to manually configure a single VSX Pair.

To configure VSX manually:



You can also select VSX Configuration from the Guided Setup to access this configuration wizard.

1. In Aruba Fabric Composer, select **Configuration > System > VSX**.
2. Select **Actions > Add**. The VSX Configuration wizard opens.
3. In the Create Mode page, select **Manually configure a VSX Pair** and click **Next**.
4. In the Name page, complete the following fields:
 - **NamePrefix**: Enter any non-empty string. For example, MyVsxPair.
 - **Description**: Enter a description of the VSX pair configuration.
5. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
6. In the Switches page, complete the following fields:
 - **Discovered Switch Pair**: In the drop-down list, select a Discovered Switch Pair to set the Primary and Secondary Switches or None to manually define a pair.
 - **Primary Switch**: Select a Primary Switch in the VSX pair. The Primary and Secondary switches must be unique.
 - **Secondary Switch**: Select a Secondary Switch in the VSX pair. The Primary and Secondary switches must be unique.
7. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
8. In the Inter-Switch Links page, specify the Primary and Secondary ISL LAGs from the list of existing LAGs or click **Add** to create a new ISL LAG:
 - **Primary Switch ISL LAG**: Select a Primary Switch LAG from the drop-down list.
 - **Secondary Switch ISL LAG**: Select a Secondary Switch LAG from the drop-down list.
9. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
10. In the Inter-Switch Link Settings page, complete the following fields:
 - **Hello Interval**: Enter a number of seconds between 1 and 5.
 - **Peer Detect Interval**: Enter a number of seconds between 60 and 600.
 - **Hold Time**: Enter a number between 0 and 3.
11. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
12. In the Keep Alive Interfaces page, complete the following fields:
 - **Interface Mode**: In the drop-down list, select either Loopback for Point-to-Point. If Loopback is selected, then click **Add** for the Primary and Secondary Switch Interfaces.
 - **Primary Switch Interface**: Select a Primary Switch RPI from the drop-down list.
 - **Secondary Switch Interface**: Select a Secondary Switch RPI from the drop-down list.

13. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
14. In the Keep Alive Interfaces page, complete the following fields:
 - **Hello Interval:** Enter a number of seconds between 1 and 5.
 - **Dead Interval:** Enter a number of seconds between 2 and 20.
 - **UDP Port:** Enter a number between 1024 and 65535.
15. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
16. In the Options page, complete the following fields:
 - **Linkup Delay Timer:** Enter a number of seconds between 0 and 600.
 - **System MAC Address Range:** Enter a hyphen-separated range of valid MAC addresses.
17. In the Summary page, check the fields for accuracy. If you need to change anything, click **Back** and make changes as needed.
18. Click **Apply** to apply the manually created VSX configuration or **Cancel** to exit without saving.

Editing a VSX Configuration

To edit a VSX configuration:

1. In the Aruba Fabric Composer UI, select **Configuration > System > VSX**.
2. Click the button next to the VSX configuration to edit and then select **Actions > Edit**.
3. In the VSX Configuration window, make changes to the fields as needed. Click a tab to edit the settings on that tab.
4. Click **Apply** to save your edits or **Cancel** to exit without saving. When you click **Apply**, your changes get applied to all associated fabrics and switches.

Deleting a VSX Configuration

To delete a VSX configuration:

1. In Aruba Fabric Composer, select **Configuration > System > VSX**.
2. Click the button next to the VSX configuration to delete and then select **Actions > Delete**.
3. In the confirmation pop-up box, click **OK** to delete the VSX Pair or **Cancel** to retain the configuration. When you click **OK**, the deleted VSX configuration gets removed from all associated fabrics and switches. To delete all active VSX configurations, click the buttons next to the VSX configurations you need to delete and then select **Actions > Delete All**.
4. In the confirmation pop-up box, click **OK** to delete the VSX configuration or **Cancel** to retain the configuration. When you click **OK**, the deleted VSX configuration gets removed from all associated fabrics and switches.

Leaf-Spine Configuration

The Leaf-Spine creation workflow is a configuration workflow that creates RPI interfaces between spines and leafs and configures them with IP addresses from a user-provided range with QoS enabled. You use the Leaf-Spine page to create the Leaf-Spine pair(s). Choose to automatically generate the Leaf-Spine Pairs based on discovered connection data or manually configure a single Leaf-Spine Pair.

The Leaf-Spine table provides the following information for each Leaf-Spine configuration:

- **Name:** User-defined name for the Leaf-Spine configuration.
- **Description:** User-defined description of the Leaf-Spine configuration.
- **Spine Switch:** Primary switch allocated to the Spine in the Leaf-Spine configuration.
- **Spine Interface:** Operational status of the Interface between Spine and Leaf switches in the Leaf-Spine configuration.
- **Spine Status:** Operational status of the Spine in the Leaf-Spine configuration.
- **Leaf Switch:** Primary switch allocated to the Leaf in the Leaf-Spine configuration.
- **Leaf Interface:** Operational status of the interface between Leaf and Spine switches in the Leaf-Spine configuration.
- **Leaf Status:** Operational status of the Leaf in the Leaf-Spine configuration.
- **QoS Trust:** Whether QoS Trust is enabled in the Leaf-Spine configuration.

Configuring a Leaf-Spine (automatic)

To configure a Leaf-Spine automatically:



You can also select Leaf Spine Configuration from the Guided Setup to access this configuration wizard.

1. In Aruba Fabric Composer, select **Configuration > System > Leaf-Spine**.
2. Select the **Fabric** from the Fabric drop-down list.
3. Select either the L3 Leaf-Spine or the L2 Leaf-Spine tabs, as required.
4. Select **Actions > Add**. The Leaf-Spine Configuration wizard opens.
5. In the Create Mode page, select **Automatically generate L3 (or L2) Leaf-Spine Pairs** and click **Next**.
6. In the Name page, complete the following fields:
 - **Name Prefix:** Enter any non-empty string. For example, MyLeafSpinePair.
 - **Description:** Enter a description of the Leaf-Spine configuration.
7. Click **Next** to go to the next page or **Cancel** to exit without saving.
8. In the Settings page, complete the following fields:
 - **IPv4 Subnetwork Address:** Enter a valid IPv4 Subnet in CIDR format. The IPv4 Subnet Address will be utilized to automatically assign IPv4 Addresses to the generated IP Interfaces which will be assigned to the Leaf-Spine members.
9. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.

10. In the Summary page, check the fields for accuracy. If you need to change anything, click **Back** and make changes as needed.
11. Click **Apply** to apply the Leaf-Spine configuration or **Cancel** to exit without saving.

Configuring a Leaf-Spine (manual)

To configure a Leaf-Spine manually:



You can also select Leaf Spine Configuration from the Guided Setup to access this configuration wizard.

1. In Aruba Fabric Composer, select **Configuration > System > Leaf-Spine**.
2. Select **Actions > Add**. The VSX Configuration wizard opens.
3. In the Create Mode page, select **Manually configure an L3 (or L2) Leaf-Spine Pair** and click **Next**.
4. In the Name page, complete the following fields:
 - **NamePrefix**: Enter any non-empty string. For example, MyLeafSpinePair.
 - **Description**: Enter a description of the Leaf-Spine Pair configuration.
5. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
6. In the Switches page, complete the following fields:
 - **Discovered Switch Pair**: In the drop-down list, select a Discovered Switch Pair to set the Leaf-Spine Switches or None to manually define a pair.
 - **Spine Switch**: The Spine Switch is auto-populated if you selected an already Discovered Switch Pair in the previous field.
 - **Leaf Switch**: This field is grayed out if you selected an already Discovered Switch Pair. If you selected None in the first field, then choose a Leaf Switch from the drop-down list.
7. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
8. In the Interfaces page, specify the Spine and Leaf Interfaces from the list of existing interfaces or create a new interface.
 - **Spine Interface**: Select a Spine Interface from the drop-down list.
 - **Leaf Interface**: Select a Leaf Interface from the drop-down list.
9. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
10. In the Summary page, check the fields for accuracy. If you need to change anything, click **Back** and make changes as needed.
11. Click **Apply** to apply the manually created Leaf-Spine configuration or **Cancel** to exit without saving.

Editing a Leaf-Spine Pair

To edit a Leaf-Spine Pair:

1. In the Aruba Fabric Composer UI, select **Configuration > System > Leaf-Spine**.
2. Click the button next to the Leaf-Spine Pair to edit and then select **Actions > Edit**.

3. In the Leaf-Spine Configuration window, the only change you can make is to the Name and Description fields. Make changes to the fields as needed and click on the Summary tab to verify the details.
4. Click **Apply** to save your edits or **Cancel** to exit without saving. When you click **Apply**, your changes get applied to all associated fabrics and switches.

Deleting a Leaf-Spine Pair

To delete a Leaf-Spine Pair:

1. In Aruba Fabric Composer, select **Configuration > System > Leaf-Spine**.
2. Click the button next to the Leaf-Spine pair to delete and then select **Actions > Delete**.
3. In the confirmation pop-up box, click **OK** to delete the Leaf-Spine pair or **Cancel** to retain the configuration. When you click **OK**, the deleted Leaf-Spine Pair gets removed from all associated fabrics and switches. To delete all active Leaf-Spine pairs, select **Actions > Delete All**.
4. In the confirmation pop-up box, click **OK** to delete the Leaf-Spine Pair or **Cancel** to retain the configuration. When you click **OK**, the deleted Leaf-Spine Pairs get removed from all associated fabrics and switches.

DNS

You use the DNS page to create configurations for Aruba switches to communicate with the DNS servers in the network for DNS resolution. You can apply a DNS configuration to one or more switches or to entire fabrics.

To open the DNS page, in Aruba Fabric Composer, select **Configuration > System > DNS**.

The DNS page lists the current DNS configurations and enables you to add, edit, and delete them.



If switch IP addresses were previously configured via a DHCP server and if DNS is enabled, the DHCP settings will automatically apply to all switches in the fabric. The Aruba Fabric Composer UI will display this configuration information in the DNS configuration table.

The DNS table provides the following information for each DNS configuration:

- **Name:** User-defined name for the DNS configuration.
- **Description:** User-defined description of the DNS configuration.
- **Domain Name:** Domain name of the DNS server.
- **Domain List:** List of domains associated with the DNS servers.
- **Name Servers:** IPv4 addresses of the DNS servers.
- **Applies To:** The fabric or switches that the DNS configuration applies to.
- **Set by DHCP:** Indicates whether or not the DNS configuration parameters were set by DHCP.

Adding a DNS Configuration

To add a new DNS configuration:



If DNS is configured by DHCP for a fabric, you cannot add a DNS configuration to the fabric or edit an existing DNS configuration.

1. In Aruba Fabric Composer, select **Configuration > System > DNS**.
2. Select **Actions > Add**. The DNS Configuration window appears.
3. In the Name page, complete the following fields:
 - **Name**: Enter a name for the DNS configuration.
 - **Description**: Enter a description of the DNS configuration.
4. Click **Next** to go to the next page or **Cancel** to exit without saving.
5. In the Settings page, complete the following fields:
 - **Domain Name**: Enter a domain name for the DNS server.
 - **Domain List**: Enter a list of domains.
 - **Name Servers**: Enter the IPv4 or IPv6 addresses of the DNS servers. You can enter the addresses of active and standby DNS servers.
6. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
7. In the Application page, complete the following fields:
 - **Fabrics**: Select the fabric that will use this DNS configuration. To remove a fabric, click the **X** next to the fabric name. When you select a fabric, all of the switches within the fabric are automatically selected. If you later add a switch to a fabric, the configuration settings are automatically applied to the new switch.
 - **Switches**: When you select a fabric, all switches on that fabric are automatically selected to use this DNS configuration. If this DNS configuration is NOT used on ALL switches in the selected fabric(s), in this drop-down list, select the switch(es) that will use this DNS configuration. If ALL switches use this DNS configuration, ignore this field; do not select any switches. To remove a selected switch, click the **X** next to the switch name.
8. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
9. In the Summary page, check the fields for accuracy. If you need to change anything, click **Back** and make changes as needed.
10. Click **Apply** to apply the DNS configuration or **Cancel** to exit without saving.

Editing a DNS Configuration

To edit a DNS configuration:



If DNS is configured by DHCP, any changes made using the Aruba Fabric Composer UI will be overwritten by DHCP.

1. In the Aruba Fabric Composer UI, select **Configuration > System > DNS**.
2. Click the button next to the DNS configuration to edit and then select **Actions > Edit**.
3. In the DNS Configuration window, make changes to the fields as needed. Click a tab to edit the settings on that tab.
4. Click **Apply** to save your edits or **Cancel** to exit without saving. When you click **Apply**, your changes get applied to all associated fabrics and switches.

Deleting a DNS Configuration

To delete a DNS configuration:

1. In Aruba Fabric Composer, select **Configuration > System > DNS**.
2. Click the button next to the DNS configuration to delete and then select **Actions > Delete**.
3. In the confirmation pop-up box, click **OK** to delete the DNS configuration or **Cancel** to retain the configuration. When you click **OK**, the deleted DNS configuration gets removed from all associated fabrics and switches.

NTP

In the NTP page, you can create configurations for NTP (Network Time Protocol) clients on Aruba switches to communicate with NTP servers in the network, thereby maintaining accurate and synchronized system time. The NTP configuration specifies the IP addresses of the NTP servers that the NTP clients synchronize with. You can apply an NTP configuration to entire fabric(s), which includes all switches in the fabric(s), or to a selection of switches.

To open the NTP page which lists all current NTP configurations, in the Aruba Fabric Composer UI, select **Configuration > System > NTP**.

The NTP table lists the current NTP configurations and enables you to add, edit, and delete them.



If switch IP addresses were previously configured via a DHCP server and if NTP is enabled, the DHCP settings will automatically apply to all switches in the fabric. The Aruba Fabric Composer UI will display this configuration information in the NTP configuration table.

The NTP table provides the following information for each NTP configuration:

- **Name:** The name of the NTP configuration.
- **Description:** The description of the NTP configuration.
- **Servers:** The IPv4 addresses or host names of the NTP servers.
- **NTP Authentication Enabled:** Whether NTP Authentication is enabled or not.
- **Key ID:** The key ID of the NTP configuration.
- **Key Type:** The key type of the NTP configuration.
- **Trust Enabled:** Whether trust is enabled in the NTP configuration.
- **Applies To:** The fabric or switches that the NTP configuration applies to.
- **Set by DHCP:** Indicates whether or not the NTP configuration parameters were set by DHCP.

Adding an NTP Configuration

To add a new NTP configuration:



If NTP is configured by DHCP for a fabric, you cannot add an NTP configuration to the fabric or edit an existing NTP configuration.

1. In Aruba Fabric Composer, select **Configuration > System > NTP**.
2. Select **Actions > Add**. The NTP Configuration window opens.

3. In the Name page, complete the following fields:
 - **Name:** Enter a name for the NTP configuration.
 - **Description:** Enter a description of the NTP configuration.
4. Click **Next** to go to the next page or **Cancel** to exit without saving.
5. In the Entries page, complete the following fields:
 - **Servers:** Enter the IPv4, IPv6 addresses, or host names of the NTP servers that you want the Aruba switches to synchronize with. To remove an address or host name after you have entered it, click the **X** next to the address or host name.
 - **Enable NTP Authentication:** Click the check box to enable NTP Authentication.
 - **Key ID:** Enter a number between 1 and 65534.
 - **Key Password:** Enter a valid password.
 - **Fabrics:** Select the fabric that will use this NTP configuration. To remove a fabric, click the **X** next to the fabric name. When you select a fabric, all of the switches within the fabric are automatically selected. If you later add a switch to a fabric, the configuration settings are automatically applied to the new switch. Note that an already used Fabric would be removed from the Fabric list.
 - **Switches:** When you select a fabric, all switches on that fabric are automatically selected to use this NTP configuration. If this NTP configuration is NOT used on ALL switches in the selected fabric(s), in this drop-down list, select the switch(es) that will use this NTP configuration. If ALL switches use this NTP configuration, ignore this field; do not select any switches. To remove a selected switch, click the **X** next to the switch name.
6. Click **Next** to go to the next page, **Cancel** to exit without saving, or **Back** to edit a previous page.
7. In the Application page, complete the following fields:
 - **Fabrics:** In this drop-down list, select the fabric(s) that will use this NTP configuration. To remove a fabric, click the **X** next to the fabric name. When you select a fabric, all of the switches within the fabric are automatically selected. If you later add a switch to a fabric, the configuration settings are automatically applied to the new switch.
 - **Switches:** When you select a fabric, all switches on that fabric are automatically selected to use this NTP configuration. If this NTP configuration is NOT used on ALL switches in the selected fabric(s), in this drop-down list, select the switch(es) that will use this NTP configuration. If ALL switches use this NTP configuration, ignore this field; do not select any switches. To remove a selected switch, click the **X** next to the switch name.
8. In the Summary page, check the fields for accuracy. If needed, click **Back** and make changes.
9. Click **Apply** to apply the NTP configuration or **Cancel** to exit without saving.

Editing an NTP Configuration

To edit an NTP configuration:



If NTP is configured by DHCP, any changes made using the Aruba Fabric Composer UI will be overwritten by DHCP.

1. In Aruba Fabric Composer, select **Configuration > System > NTP**.
2. Click the button next to the NTP configuration to edit and then select **Actions > Edit**.

3. In the NTP Configuration window, make changes to the fields as needed. Click a tab to edit the settings on that tab.
4. Click **Apply** to save your edits or **Cancel** to exit without saving. When you click **Apply**, your changes get applied to all associated fabrics and switches.

Deleting an NTP Configuration

To delete an NTP configuration:

1. In Aruba Fabric Composer, select **Configuration > System > NTP**.
2. Click the button next to the NTP configuration to delete and then select **Actions > Delete**.
3. In the confirmation pop-up box, click **OK** to delete the NTP configuration or **Cancel** to retain the configuration. When you click **OK**, the deleted NTP configuration gets removed from all associated fabrics and switches.

SNMP

You use the SNMP page to create SNMP configurations for the SNMP clients on Aruba switches to communicate with a third-party SNMP manager. This enables the SNMP manager to monitor the Aruba switches.

You can apply an SNMP configuration to one or more switches or to entire fabrics.

To open the SNMP page, in Aruba Fabric Composer, select **Configuration > System > SNMP**. The SNMP page lists the current SNMP configurations and enables you to add, edit, and delete them.



The SNMP table provides the following information for each SNMP configuration:

- **Name:** SNMP configuration name.
- **Description:** SNMP configuration description.
- **Enabled:** Indicates if this SNMP configuration is enabled — Yes or No.
- **Location:** SNMP server location.
- **Contact:** SNMP server contact information.
- **Community:** Community name for basic authentication for SNMPv1 and SNMPv2c access from the SNMP agents to the SNMP manager.
- **Agent Port:** The SNMP agent switch port used to listen for SNMP messages from the SNMP manager.
- **Trap Port:** The port number of the SNMP trap receiver used to receive SNMP traps from the SNMP agents on the switches.
- **Trap Sinks:** Lists configured trap sinks — IPv4 address and community for each.
- **Users:** Configured SNMP users.
- **Applies To:** Switches that this configuration applies to.

Adding an SNMP Configuration

To add a new SNMP configuration:

1. In Aruba Fabric Composer, select **Configuration > System > SNMP**.
2. Select **Actions > Add**. The SNMP Configuration window appears.

3. In the Settings page, complete the following fields:
 - **Name:** Enter a name for the SNMP configuration.
 - **Description:** Enter a description of the SNMP configuration.
 - **Enable:** Select the check box to enable this SNMP configuration.
 - **Contact:** Enter the SNMP server contact information such as an email address.
 - **Location:** Enter the SNMP server location.
 - **Community:** Enter the community name for basic authentication for SNMPv1 and SNMPv2c access from the SNMP agents to the SNMP manager.
4. Click **Next** to go to the next page or **Cancel** to exit without saving.
5. In the SNMP Users page, SNMPv3 introduces a User-based Security Model (USM) that includes options for user authentication and encryption of information in requests and responses. In the SNMP Users page, complete the following fields. You can create multiple users. For each user, complete the following fields, then click **Add** to add the SNMP user to the list of users. To delete a user, click the **Delete** icon  on the same row as the user.
 - **Level:** From the drop-down list, select an authentication level for the SNMP user, which can be Not Authorized (communication without authentication and privacy), Authorized (communication with authentication but without privacy), or Privileged (communication with authentication and privacy).
 - **Name:** Enter a name for the SNMP user.
 - **Context:** Enter any string between 1 and 32 characters.
 - **Auth Type:** From the drop-down list, select the SHA or MD5 hash algorithm to use for the authentication password.
 - **Auth Password:** Enter an authentication password for the user. The password must be a minimum of 8 characters and a maximum of 16 characters. Valid characters include A-Z, a-z, 0-9 and the following special characters: ~ ! # \$ % & - + : / . ?
 - **Priv Type:** From the drop-down list, select AES or DES encryption to use for the privacy (encryption) password.
 - **Priv Password:** Enter a privacy (encryption) password for the user. The password must be a minimum of 8 characters and a maximum of 16 characters. Valid characters include A-Z, a-z, 0-9 and the following special characters: ~ ! # \$ % & - + : / . ?
6. In the Ports page, complete the following fields:
 - **Agent Port:** Enter the SNMP agent port number on the switches used to listen for SNMP messages from the SNMP manager, which can be between 1 and 65535.
 - **Trap Port:** Enter the port number of the SNMP trap receiver (typically on the SNMP manager) used to receive SNMP traps from the SNMP agents on the switches, which can be between 1 and 65535.
 - **Trap Sinks:** Specify the trap sinks. This is a required step if Trap Port is specified in the earlier step. You can specify multiple trap sinks. For each trap sink, enter the following Address and Community, then click **Add** to add the entry to the Trap Sink list. To remove an entry from the list, click the **Delete** icon  to the right of the entry.
 - **Address:** Enter an IPv4 or IPv6 address of the SNMP trap sink.
 - **Community:** Enter the SNMP trap sink community string.
7. Click **Next** to go to the next page, **Cancel** to exit without saving, or **Back** to return to the previous page.

8. In the Application page, complete the following fields:
 - **Fabrics:** Select the fabric that will use this SNMP configuration. To remove a fabric, click the **X** next to the fabric name. When you select a fabric, all of the switches within the fabric are automatically selected. If you later add a switch to a fabric, the configuration settings are automatically applied to the new switch.
 - **Switches:** When you select a fabric, all switches on that fabric are automatically selected to use this SNMP configuration. If this SNMP configuration is NOT used on ALL switches in the selected fabric(s), in this drop-down list, select the switch(es) that will use this SNMP configuration. If ALL switches use this SNMP configuration, ignore this field; do not select any switches. To remove a selected switch, click the **X** next to the switch name.
9. Click **Next** to go to the next page, **Cancel** to exit without saving, or **Back** to return to the previous page.
10. In the Summary page, check the fields for accuracy. If you need to change anything, click **Back** and make changes as needed.
11. Click **Apply** to apply the SNMP configuration or **Cancel** to exit without saving.

Editing an SNMP Configuration

To edit an SNMP configuration:

1. In Aruba Fabric Composer, select **Configuration > System > SNMP**.
2. Click the button next to the SNMP configuration to edit and then select **Actions > Edit**.
3. In the SNMP Configuration window, make changes to the fields as needed. Click a tab to edit the settings on that tab.
4. Click **Apply** to save your edits or **Cancel** to exit without saving. When you click **Apply**, your changes get applied to all associated fabrics and switches.

Deleting an SNMP Configuration

To delete an SNMP configuration:

1. In Aruba Fabric Composer, select **Configuration > System > SNMP**.
2. Click the button next to the SNMP configuration to delete and then select **Actions > Delete**.
3. In the confirmation pop-up box, click **OK** to delete the SNMP configuration or **Cancel** to retain the configuration. When you click **OK**, the deleted SNMP configuration gets removed from all associated fabrics and switches.

VSF

The HPE Virtual Switching Framework (VSF) technology virtualizes two physical devices in the same layer into one Virtual Fabric which provides high availability and scalability. A Virtual Fabric is therefore two physical devices in the same layer that utilize VSF technology. VSF allows supported switches connected to each other through normal Ethernet connections (Copper or Fiber) to behave like a single switch.

In Aruba Fabric Composer, you use the VSF page to configure supported switches connected to each other.

The VSF table provides the following information for each VSF configuration:

- **Fabric:** Select a Fabric from the drop-down list.
- **Health:** In the drop-down list, select from Healthy, Healthy, But..., Upgrading, Degraded, Minor, Major, Critical, Unknown, or Non Recoverable.
- **Name:** The VSF configuration name.
- **Type:** The type of VSF configuration.
- **Switch:** The switch ID.
- **Conductor Model:** The model number of the Conductor.
- **Conductor Status:** The status of the Conductor.
- **Conductor MAC Address:** The MAC Address of the Conductor.
- **Conductor Serial Number:** The serial number of the Conductor.
- **Conductor Switch Version:** The version number of the Conductor.
- **Conductor HW Revision:** The revision number of the Conductor hardware.
- **Conductor Ports:** The port numbers of the Conductor.
- **Conductor Operational Status:** The operational status of the Conductor.

sFlow

sFlow (sampled Flow) is an industry-standard sampling technology used to sample application-level packet flows and gather interface statistics from network devices such as high-speed switches and routers. sFlow provides visibility into network activity, which helps in network management and control of network resources.

sFlow has two main components: the sFlow agent and the sFlow collector. In an Aruba Fabric Composer environment, an sFlow agent runs on each Aruba switch and monitors network traffic, collects interface counters and packet flow samples from the switch, generates sFlow data, and sends the data in sFlow datagrams to a third-party sFlow collector residing in an existing network management infrastructure. The sFlow agent captures interface counters and packet flow samples in both directions for access ports and fabric ports. The sFlow collector receives and analyzes the traffic data.

Each datagram sent by an sFlow agent includes one or more sFlow samples. There are two types of sFlow samples: interface counter samples, which include sampled interface counter values, and flow samples of the packets moving through the agent device, which include the header of the sampled packet, the input interface upon which the packet was received, the output interface determined by the switching/routing decision, sampling process parameters, and source and destination information.

You create an sFlow configuration to specify:

- The IPv4 or IPv6 address of the sFlow agent on the Aruba switch. If you do not specify an IP address for the sFlow agent, the sFlow agent uses the IP address of the management interface on the switch.
- The IPv4 or IPv6 address and port number of the sFlow collector.
- The polling interval, which is the time period between successive interface counter samples. The polling interval can be between 5 and 300 seconds, with a default value of 20 seconds.
- The sampling rate, which specifies the ratio of packets observed at the data source to the samples generated. The sampling rate can be between 1 and 1,000,000, with a default value of one sample packet every 20,000 packets.

You can apply an sFlow configuration to one or more switches or to entire fabrics.

To open the sFlow page, in Aruba Fabric Composer, select **Configuration > System > sFlow**.

The sFlow page lists the current sFlow configurations and enables you to add, edit, and delete them.

The **Configuration > System > sFlow** page contains the following table and are defined as follows:

- **Name:** SNMP configuration name.
- **Description:** SNMP configuration description.
- **Enable sFlow:** Whether sFlow is enabled or not.
- **Agent IP Address:** IPv4 or IPv6 address of the sFlow agent on the Aruba switch.
- **Collectors:** IPv4 or IPv6 address of the sFlow collector.
- **Polling Interval:** Polling interval (the time period between successive interface counter samples) in seconds.
- **Sampling Rate:** Sampling rate, which specifies the ratio of packets observed at the data source to the samples generated. The range is 1-1,000,000. The default is 20,000 (one sample packet every 20,000 packets).
- **Applies To:** Indicates what the sFlow configuration applies to and specifies the fabric or switch.

Adding an sFlow Configuration

Guidelines

- If you specify an sFlow Agent or sFlow Collector IP address, both must be of the same type: IPv4 or IPv6.
- If you do not specify an sFlow Agent address but specify an sFlow Collector, then the Collector address type must be the same as the IP Address of the management interface on the switch.
- If you specify an sFlow Agent IP address, the address will be a unique IP address for the sFlow agent on a specific switch, and therefore you should not apply this sFlow configuration to multiple switches or to entire fabrics.
- If you do not specify an sFlow Agent IP address, the sFlow agent will use the IP address of the management interface on the switch.

To add an sFlow configuration:

1. Aruba Fabric Composer, select **Configuration > System > sFlow**.
2. Select **Actions > Add**. The sFlow Configuration window opens.
3. In the Name page, complete the following fields:
 - **Name:** Enter a name for the sFlow configuration.
 - **Description:** Enter a description of the sFlow configuration.
4. Click **Next** to go to the next page or **Cancel** to exit without saving.
5. In the Settings page, complete the following fields:
 - **Enable sFlow:** Select the check box to enable sFlow.
 - **Agent IP Address:** Specify the IPv4 or IPv6 address of the sFlow agent on the Aruba switch.
 - **Collector IP Address:** Enter the IPv4 or IPv6 address of the sFlow collector.
 - **Collector Port Number:** Enter the port number for the IPv4 or IPv6 address of the sFlow collector, which can be between 1024 and 65535. The default port number is 6343.
 - **Polling Interval:** Specify the polling interval, which is the time period between successive interface counter samples. The polling interval can be between 5 and 300 seconds, with a default value of 20 seconds.

- **Sampling Rate:** Specify the sampling rate, which specifies the ratio of packets observed at the data source to the samples generated. The sampling rate can be between 1 and 1,000,000. The default is 20,000 (one sample packet every 20,000 packets).
6. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
 7. In the Fabrics and Switches page, complete the following fields:
 - **Fabrics:** Select the fabric that will use this sFlow configuration. To remove a fabric, click the **X** next to the fabric name. When you select a fabric, all of the switches within the fabric are automatically selected. If you later add a switch to a fabric, the configuration settings are automatically applied to the new switch.
 - **Switches:** When you select a fabric, all switches on that fabric are automatically selected to use this sFlow configuration. If this sFlow configuration is NOT used on ALL switches in the selected fabric(s), in this drop-down list, select the switch(es) that will use this sFlow configuration. If ALL switches use this sFlow configuration, ignore this field; do not select any switches. To remove a selected switch, click the **X** next to the switch name. An sFlow configuration applied to a specific switch takes precedence over an sFlow configuration applied to the fabric where the switch resides. If you delete an sFlow configuration that had been applied to a specific switch, the switch will begin using the sFlow configuration applied to the fabric where the switch resides, if any.
 8. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
 9. In the Summary page, check the fields for accuracy. If you need to change anything, click **Back** and make changes as needed.
 10. Click **Apply** to apply the sFlow configuration or **Cancel** to exit without saving.

Editing an sFlow Configuration

Guidelines

- If you specify an sFlow Agent or sFlow Collector IP address, both must be of the same type: IPv4 or IPv6.
- If you do not specify an sFlow Agent address, but specify an sFlow Collector, then the Collector address type must be the same as the IP Address of the management interface on the switch.
- If you specify an sFlow Agent IP address, the address will be a unique IP address for the sFlow agent on a specific switch, and therefore you should not apply this sFlow configuration to multiple switches or to entire fabrics.
- If you do not specify an sFlow Agent IP address, the sFlow agent will use the IP address of the management interface on the switch.

To edit an sFlow configuration:

1. In Aruba Fabric Composer, select **Configuration > System > sFlow**.
2. Click the button next to the sFlow configuration to edit, and then select **Actions > Edit**.
3. In the sFlow Configuration window, make changes to the fields as needed. Click a tab to edit the settings on that tab.
4. Click **Apply** to save your edits or **Cancel** to exit without saving. When you click **Apply**, your changes get applied to all associated fabrics and switches.

Deleting an sFlow Configuration

To delete an sFlow configuration:

1. In Aruba Fabric Composer, select **Configuration > System > sFlow**.
2. Click the button next to the sFlow configuration to delete, then select **Actions > Delete**.
3. In the confirmation pop-up box, click **OK** to delete the sFlow configuration or **Cancel** to retain the configuration. When you click **OK**, the deleted sFlow configuration gets removed from all associated fabrics and switches.

DHCP Relay

Dynamic Host Configuration Protocol (DHCP) enables each DHCP client to automatically obtain an IP address from a DHCP server as needed. When a client connects to a network, it sends an IP broadcast packet, visible only within the subnet on which the requester resides, to find the DHCP server. Typically, DHCP servers are centralized and are not present on every subnet.

DHCP Relay provides a way for DHCP clients to communicate with DHCP servers when none are available on its local subnet. A Relay Agent uses IP routing to forward discover messages to a provisioned DHCP server. The relay agent then relays the DHCP offer back to the client network.

In Aruba Fabric Composer, you can configure per VLAN or for selected VLANs, the IP address(es) of DHCP server(s) that service those VLANs. Multiple configurations can be created to support many DHCP server-to-VLAN client relationships. The DHCP Relay feature is available in the Aruba Fabric Composer UI by selecting **Configuration > System > DHCP Relay**. The DHCP Relay page opens, listing all DHCP Relay configurations.

The DHCP relay table provides the following information for each DHCP relay configuration:

- **VLANs:** Identifies the VLANs supported by a DHCP relay configuration.
- **Gateway Address:** Identifies Gateway Address of the DHCP relay configuration.
- **Multicast IPv6 DHCP Relay Servers:** Identifies Multicast IPv6 DHCP relay configurations.
- **IPv4 DHCP Server Addresses:** Indicates the IPv4 IP addresses of DHCP server(s) that dynamically provide IP addresses to clients located on the VLANs that are part of this configuration.
- **IPv6 DHCP Server Addresses:** Indicates the IPv6 IP addresses of DHCP server(s) that dynamically provide IP addresses to clients located on the VLANs that are part of this configuration.

Using the Aruba Fabric Composer UI, you can create and edit DHCP Relay configurations.

Adding a DHCP Relay Configuration


This procedure assumes that DHCP is set up on the customer network and that the DHCP server(s) support the nodes on the VLANs to be configured within this DHCP Relay configuration.

To create a DHCP relay configuration that ties one or more VLANs to one or more DHCP servers that reside outside the VLAN(s) subnet(s):



Make sure that all VLAN subnets being used have access to one or more DHCP servers.

1. In the Aruba Fabric Composer UI, select **Configuration > System > DHCP Relay**.
2. Select **Actions > Add**. The DHCP Relay wizard opens.

3. In the Settings page, complete the following fields:
 - **Name:** Enter any non-empty string. For example, Dhcp Relay.
 - **VLANs:** Enter the VLANs for the devices that will use the DHCP server(s) to be configured in this DHCP relay configuration. You can enter one or more VLANs and VLAN ranges.
 - **Gateway Address:** Enter any valid Gateway address.
 - **Multicast IPv6 DHCP Relay Servers:** Enter a valid IPv6 address.
4. In the IPv4 Addresses page, define the IPv4 addresses for DHCP server(s) as follows:
 - **DHCP Server Address:** For each DHCP server that supports the VLANs within this configuration:
 1. Enter the IPv4 address (for example, 192.168.4.3) of the DHCP server that supports the nodes within the configured VLAN(s).
 2. Click **Add** to add it to the list of available DHCP servers for these VLANs.
 3. If you need to delete a server IP address from the list of available DHCP servers, click the **Delete** icon  located on the row to be deleted.
 4. Repeat these sub-steps as needed to enter or delete DHCP servers from this DHCP Relay configuration.
 5. Click **Next** once done.
5. In the IPv6 Addresses page, follow the same steps as outlined in Step 4 above and click **Next**.
6. In the Application page, select a Fabric for this configuration to be applied to. A Fabric implies all switches contained within it.
7. In the Summary page, verify the configuration, then click **Apply** to save the configuration or click **Cancel** to exit without creating the configuration.

Editing a DHCP Relay Configuration

To edit an existing DHCP Relay configuration in the Aruba Fabric Composer UI:

1. In the Aruba Fabric Composer UI, select **Configuration > System > DHCP Relay**.
2. Select the configuration to edit and then select **Actions > Edit**. The DHCP Relay window opens.
3. Select tab(s) and make edits as needed.
4. In the Summary tab, verify the configuration, and then click **Apply** to save the configuration or click **Cancel** to exit without creating the configuration.

Deleting a DHCP Relay Configuration

To delete a DHCP Relay configuration:

1. In Aruba Fabric Composer, select **Configuration > System > DHCP Relay**.
2. Click the button next to the DHCP Relay to delete and then select **Actions > Delete**.
3. In the confirmation pop-up box, click **OK** to delete the DHCP Relay configuration or **Cancel** to retain the configuration. When you click **OK**, the deleted DHCP Relay configuration gets removed from all associated fabrics and switches.

The **Configuration > Administration** page provides access to configure the following Fabric Composer administration features:

- User Management
- Password Policy
- Certificates
- Device Maps
- Statistics Settings
- LDAP

User Management

You can configure and view configured Aruba Fabric Composer UI users by selecting **Configuration > Administration > User Management**.

The following information is provided for each configured Aruba Fabric Composer UI user:

- **Username:** The user name.
- **Role:** The user role: Administrator, Operator, Viewer.
- **Authentication Service:** Indicates the service that authenticates that user: local or LDAP.
- **Session Inactivity Timeout:** Indicates the amount of time that needs to elapse before the user is automatically logged out of the session.

Adding a User Account

To add an Aruba Fabric Composer user account:



To configure user accounts, you must have Administrator privileges.

Before adding users mapped to LDAP authentication sources, ensure that the users exist on the LDAP server.

1. In Aruba Fabric Composer, select **Configuration > Administration > User Management**.
2. Select **Actions > Add**. The User wizard opens.
3. Configure the **Identification** as follows and then click **Next**:
 - **Authentication Service:** In this drop-down list, select the authentication service where **local** is the local authentication service.
 - **Username:** Enter the name of the Aruba Fabric Composer user.
 - **Password:** Enter the password for the user.
 - **Confirm Password:** Re-enter the password to confirm.

4. Configure the **Role** as follows and then click **Next**:
 - **Role**: Select the user role:
 - **Administrator**: A user with Administrator privileges has full read/write privileges. Administrator privilege is needed for any management operation, such as, to manage users, support bundles, integration configuration, and device mapping.
 - **Operator**: A user with Operator privileges can perform most operations that an administrator can perform, except that an operator cannot manage users, password policies, switch passwords, system settings, backups, or certificates.
 - **Viewer**: A user with Viewer privileges has read-only access. Viewers can change their own password, however they cannot make any other changes.
5. In the **Session** tab, configure the session inactivity timeout in minutes for this user. The default timeout for an inactive session is 30 minutes. To enter another timeout period, enter the number in minutes or **0** for unlimited. For example, for a two-hour timeout, enter 120. When finished, click **Next**.
6. In the **Summary** tab, verify the settings and then click **Apply** to complete and save the user account, or **Back** to go back and change a setting, or **Cancel** to exit this configuration without saving.

Editing a User Account

To edit an Aruba Fabric Composer user account:



To edit user accounts, you must have Administrator privileges.

1. In Aruba Fabric Composer, select **Configuration > Administration > User Management**.
2. Select the user to edit and then select **Action > Edit**.
3. Select tab(s) and make edits as needed.
4. Select the **Summary** tab to view and verify all settings for this user.
5. Click **Apply** to save the edits or **Cancel** to exit without saving.

Deleting a User Account

To delete an Aruba Fabric Composer user account:



You must have Administrator privileges to delete an Aruba Fabric Composer user account.
You cannot delete an administrator account if it is the only administrator account.

1. In Aruba Fabric Composer, select **Configuration > Administration > User Management**.
2. Select the user to delete and then select **Action > Delete**.
3. In the confirmation window, click **OK** to delete the user account or **Cancel** to retain the user account.

Changing the Password for any User Account

To change the password for any Aruba Fabric Composer user:




You must have Administrator access to change passwords for other users.

1. In Aruba Fabric Composer, select **Configuration > Administration > User Management**.
2. Select the user to edit and then select **Action > Edit**.
3. In the **Identification** tab, in the Password and Confirm Password fields, enter a new, secure, and private password.
4. Click **Apply** to save the edits or **Cancel** to exit without saving.

Changing Your Password

A user, while logged into the Aruba Fabric Composer, can change the password as follows:

1. In the Aruba Fabric Composer header, select the  icon and then **Change Password**.
2. In the Change Password window, enter the current password, and then enter a new password twice to confirm.
3. Click **Apply** to save the new password or **Cancel** to exit without saving.

Password Policy

Password Policy enables you to define Aruba Fabric Composer UI password requirements. Set up the password policy to meet password requirements for your network and compute environment.

Editing Password Policy

In the Aruba Fabric Composer UI, to edit password policy, select **Configuration > Administration > Password Policy** and then select **Actions > Edit**. In the Password Policy window, configure the following password requirements and then click either **Apply** to implement the policies or **Cancel** to exit without changing the policies.

| Policy Parameter | Purpose | Valid Values | Default |
|---------------------------|---|---|-----------------------------------|
| Minimum Length | Minimum password length. | 1-15 | 1 |
| Maximum Length | Maximum password length. | 0-64, where 0 disables this password requirement. | 0 = password requirement disabled |
| Minimum Lower Case | Minimum number of lower case characters that a password must contain. | 0-64, where 0 disables this password requirement. | 0 = minimum length value |
| Minimum Upper Case | Minimum number of upper case characters that a password must contain. | 0-64, where 0 disables this password requirement. | 0 = minimum length value |

| Policy Parameter | Purpose | Valid Values | Default |
|-----------------------------------|--|---|--------------------------|
| Minimum Numbers | Minimum number of numbers (0-9) that a password must contain. | 0-64, where 0 disables this password requirement. | 0 = minimum length value |
| Minimum Special Characters | Minimum number of special characters that a password must contain. | 0-64, where 0 disables this password requirement. | 0 = minimum length value |
| Special Characters | Allowed special characters. | !"#\$%&" ()*+,-./:;<=>?@ []^_`{ }~ | Empty by default. |

Certificates

This feature enables you to replace the current, installed certificate with a new PEM-encoded certificate and Private Key file.

In Aruba Fabric Composer, select **Configuration > Administration > Certificates** to show currently installed certificates.

The following information is provided for each certificate:

- **Issuer:** Issuer of the certificate.
- **Common Name:** Automatically generated file name of the certificate.
- **Self Signed:** Indicates if the certificate was self-signed: Yes or No.
- **Subject Alternative Name(s):** Lists any SANs assigned to the certificate.
- **Valid Until:** Date and time that the certificate expires.

Replacing the Certificate

To replace the Aruba Fabric Composer certificate:



Before performing this procedure, you need both the PEM-encoded certificate and the private key file.

1. Download the PEM-encoded certificate and the private key to a local drive.
2. In Aruba Fabric Composer, select **Configuration > Administration > Certificates**.
3. Select **Actions > Replace**.
4. **Browse** for the downloaded certificate.
5. **Browse** for the downloaded private key file.
6. Click **Apply** to save the certificate or **Cancel** to exit without saving.

Regenerating the Aruba Fabric Composer Server Certificate

This procedure shows how to generate a self-signed certificate for Aruba Fabric Composer that is valid for 27 months (825 days).



Do NOT regenerate the certificate if you have installed an environment-specific certificate that is signed by a certificate authority.

1. In Aruba Fabric Composer, select **Configuration > Administration > Certificates**.
2. Select **Actions > Regenerate**.
3. In the Regenerate Certificate confirmation pop-up, select **OK** to regenerate the certificate or **Cancel** to quit without regenerating.

Device Maps

For Virtual Machines in environments where host port information is unavailable from CDP or LLDP, new or changed hosts and host interfaces must be mapped to their associated Aruba Fabric Composer switch access port through the Device Map.

The Device Maps table provides the following information for each Device Map configuration:

- **Fabric:** The currently selected fabric.
- **Switch:** Name of the selected switch.
- **Port:** Port assigned to the switch.
- **Host:** Fully qualified host name or IP address.
- **Host Interfaces:** Host interface of the switch.

Adding a Host Interface Connection to the Device Map

If an ESX host does not use CDP or LLDP, you need to manually add the host and interface information to the device map. To add a host interface connection to the device map:

1. In Aruba Fabric Composer, select **Configuration > Administration > Device Maps**.
2. Select **Actions > Add**.
3. Complete the following fields for the host connection to an Aruba switch port:
 - **Switch:** In this drop-down list, select the Aruba switch connected to the host.
 - **Port:** In this drop-down list, select the switch port connected to the host.
 - **Host:** Enter either the fully qualified host name or the IP address of the host connected to the Aruba Fabric Composer switch port. Enter an IP address only if the host was added to vSphere by IP address (instead of by host name).
 - **Host Interface:** Enter the name of the host's physical adapter (for example, vmnic1) connected to the Aruba Fabric Composer switch port.
4. Click **Apply** to save the connection or **Cancel** to exit without saving.

Editing a Host Interface Connection in the Device Map

To edit a host interface connection entry in the device map:

1. In Aruba Fabric Composer, select **Configuration > Administration > Device Maps**.
2. Select the connection to edit and then select **Actions > Edit**.
3. Edit the fields as needed for the host connection to an Aruba switch port.
4. Click **Apply** to save the edits or **Cancel** to exit without saving.

Deleting a Host Interface Connection Entry from the Device Map

To delete a host interface connection entry from the device map:

1. In Aruba Fabric Composer, select **Configuration > Administration > Device Maps**.
2. Select the connection to delete and then select **Actions > Delete**.
3. At the confirmation prompt, click **OK** to delete the entry or **Cancel** to retain the host connection entry.

Statistics Settings

The Statistics Settings page enables configuring the frequency of collecting data from the switches.

To edit the statistics settings:

1. In Aruba Fabric Composer, select **Configuration > Administration > Statistics Settings**.
2. Select **Actions > Edit**.
3. In the Sampling Rate field, enter a number of seconds between 10 and 300.
4. Click **Apply** to save the edits or **Cancel** to exit without saving.

LDAP

You can set up LDAP authentication to be performed by one or more Microsoft Active Directory or OpenLDAP servers. LDAP allows switch users to be authenticated using LDAP and using the standard Linux Pluggable Authentication Modules (PAM).

Two types of LDAP authentication configurations are supported. Depending on the options selected, they can be in a single, shared LDAP configuration or separate LDAP configurations.

- The Aruba Fabric Composer uses LDAP Authentication for logins via Microsoft Active Directory or OpenLDAP.
- Switch(es) use LDAP Authentication for logins via OpenLDAP.

LDAP authentication can be configured for an entire Fabric Composer or for selected switches in the fabric.

With LDAP enabled, users that log in to the Aruba Fabric Composer or to any switch are authenticated using an external LDAP server and placed in an Administrator, Operator, or Viewer group as defined in the LDAP server configuration.

The table columns are defined as follows:

- **Name:** Name for the LDAP configuration.
- **Description:** Description of the LDAP configuration.
- **DN Template:** The Distinguished Name (DN) Template.
- **TLS Private Key File Path:** The path to the TLS private key file.

- **TLS Certificate File Path:** The path to the TLS certificate file.
- **SSL:** The SSL mode: Off, On, Start TLS.
- **Distinguished Name Bind:** The Distinguished Name which binds the LDAP server for lookups.
- **Distinguished Name Base:** The base Distinguished Name used as a search base.
- **NS Switch:** Indicates if the NS switch is enabled.
- **TLS Require Cert:** The level of checks to perform on certs: Demand, Hard, Never, Try.
- **LDAP Server(s):** List of LDAP server URLs.
- **X.509 Certificate File Path:** The path to the X.509 certificate.
- **PAM Enable:** Indicates if the Pluggable Authentication Module (PAM) is enabled (Yes or No).
- **Validate SSL/TLS:** Indicates if Validate SSL/TLS certificates for Aruba Fabric Composer is enabled (Yes or No). If Aruba Fabric Composer is enabled, this should be enabled.
- **Applies To:** Identifies the switches that this configuration applies to.

Adding an LDAP Authentication Configuration

This feature enables you to set up LDAP authentication to be performed by one or more Microsoft Active Directory or OpenLDAP servers.

Guidelines

Before adding users mapped to LDAP authentication sources, ensure that the following is completed on the LDAP server:

- LDAP users are configured.
- You know the LDAP user's login name for each user you plan to configure.
- If the LDAP server supports LDAP over SSL (LDAPS), you need to ensure that a properly formatted certificate is trusted before enabling LDAP authentication.
- If you need to configure LDAP over SSL and your LDAP or Active Directory server does not have an officially signed certificate, you need to import the certificate into Aruba Fabric Composer.

To configure authentication to be performed by a specific LDAP server:

1. Select **Configuration > System > LDAP**.
2. Select **Actions > Add**. The LDAP Authentication wizard opens.
3. In the Settings page, specify a name and description for this LDAP configuration:
 - **Name:** Enter a name for this LDAP configuration.
 - **Description:** Enter a description of this LDAP configuration.
 - **LDAP Server(s):** Enter a valid LDAP Server(s) with optional protocol and port.
4. Click **Next**.
5. In the Aruba Fabric Composer page, complete the following fields as needed:
 - **Aruba Fabric Composer:** Enables the Aruba Fabric Composer to use the LDAP server for API or UI authentication. Selecting Aruba Fabric Composer activates the Validate SSL/TLS certificates for the Aruba Fabric Composer option and also enables the Validate button which enables you to run a validation.

- **Validate SSL/TLS Certificates for Aruba Fabric Composer:** Check this field to enable validation of SSL/TLS (Secure Socket Layer/Transport Layer Security) certificate chains when connecting to the LDAP server.
6. Click **Validate** to validate the configuration and its connection. A **Validation Successful** pop-up should be returned.
 7. In the **Aruba Fabric Composer** page again, specify a **DN (Distinguished Name) Template** for this LDAP configuration as follows:
 - Microsoft **Active Directory** format: {{username}}
 - SSL: Only applicable if Aruba Fabric Composer is enabled.
 8. Click **Next**.
 9. In the Summary page, verify the configuration, and then click **Apply** to save and apply the configuration, or click **Back** to go back and change a value, or click **Cancel** to cancel the entire LDAP wizard session.
 10. A confirmation appears and then the new LDAP configuration appears in the LDAP Authentication table.



Authentications for currently logged-in LDAP users are not affected.

Editing LDAP Authentication

The LDAP authentication configuration can be edited as follows:

1. In Aruba Fabric Composer, select **Configuration > System > LDAP**.
2. Select a row, then select **Actions > Edit**. The LDAP Authentication window opens.
3. As needed, select the tabs and make changes.
4. In the Summary tab, verify the configuration, and then click **Apply** to save and apply the configuration, or click **Cancel** to cancel the LDAP wizard session without applying changes.
5. A confirmation appears and then the new LDAP configuration appears in the LDAP Authentication table.



Authentications for currently logged-in LDAP users are not affected.

Deleting an LDAP Authentication Configuration

To delete an LDAP configuration:

1. In Aruba Fabric Composer, select **Configuration > System > LDAP**.
2. Select the LDAP configuration to delete and then select **Action > Delete**.
3. In the confirmation window, click **OK** to delete the LDAP configuration or **Cancel** to retain the LDAP configuration.

The **Configuration > Integrations** page provides access to configure the following Fabric Composer Integrations features:

- Aruba NetEdit®
- HPE iLO Amplifier
- ODIM™ Plugin Integration
- HPE SimpliVity®
- Nutanix Prism®
- Pensando™ PSM
- VMware NSX-T™
- VMware vSphere®
- VMware SDDC

Viewing Integrations, Integration Configurations, and Connection Status

Viewing Installed Integrations

On the **Dashboard**, in the **Integrations** panel, you can view:

- Installed integrations.
- The number of configurations added for each integration.
- Integration connection status.

Integration Connection Status

Knowing the connection status of your integration configurations is useful for overall management and for diagnosing issues. You can view the connection status in the following:

- **Dashboard > Integrations** panel
- **Configuration > Integrations** pages

The following integration configuration statuses are reported:


- **CONNECTED** The integration configuration is connected.
- **DISABLED** The integration configuration is disabled.
- **DISCONNECTED** The integration configuration is not connected.
- **UPDATING..** Integration configuration data is being updated. Some screens may not update properly. This message appears after changing a value in the integration configuration or after enabling the

integration.

- **DEGRADED** The integration is degraded and not operating optimally.

Integration Status Messages

You can view Integration status messages if you either:

- Customize the table and display the **Fault Message** column. The **Fault Message** column is hidden by default. Displaying this column enables you to view multiple configuration messages without needing to hover over each Status banner.
- To view the **Fault Message** column in an Integration table, click the **Customize table columns** icon , and then in the list select the **Fault Message** check box and click outside the window. The **Fault Message** column appears in the Integration table.

Open Distributed Infrastructure Management

Aruba Fabric Composer’s integration with ODIM Plugin allows the HPE Resource Aggregator for Open Distributed Infrastructure Management (ODIM) to manage Aruba CX switch-based fabrics that are typically deployed across data centers as spine-leaf architectures. This capability enables the logical centralization of network address resource pool management, along with fabric-wide configuration parameters and back-end host-to-host communication.

For more details refer to: <https://hpe.com/dsp/infrastructure>

Adding or Editing an ODIM Plugin Integration

The Kafka host must be set up and the Kafka SSL certificates must be available for download. The certificate files include the Kafka SSL certificate file, the Kafka root CA cert file, and the Kafka SSL key file.

Configure an integration between Aruba Fabric Composer and ODIM as follows:



Only one ODIM Plugin Integration configuration instance can be configured.

1. In Aruba Fabric Composer, select **Configuration > Integrations > ODIM Plugin Integration**, and then select **Actions** and either **Add** or **Edit**. The ODIM Plugin Integration wizard opens.
2. In the ODIM Plugin Integration wizard, configure the following integration parameters:

| Tab | Parameter Name | Description | Valid Values | Default |
|------|----------------|---|--------------|---------|
| Host | Name | Enter a name for this integration. | | |
| | Description | (Optional) Enter a description for this integration. | | |

| Tab | Parameter Name | Description | Valid Values | Default |
|----------------|--|---|---|---|
| Host | Host | Enter the fully qualified host name or IPv4 address of the ODIM host. | | |
| | Port | Enter the port number of the ODIM host. | | Default port number: 30080 |
| | Username | Enter the username for Aruba Fabric Composer to connect to the ODIM host. | | Refer to the ODIM User Guide for the default user ID/password, Kafka default port, and the certificate details. |
| Host | Password | Enter the password for Aruba Fabric Composer to connect to the HPE ODIM host. | | |
| | Enable this configuration | To enable this ODIM Plugin Integration configuration, check this box. | Checked = enabled Cleared = disabled | Checked (enabled) |
| Kafka Settings | Enter the Apache Kafka host configuration settings for this ODIM Plugin Integration configuration. | | | |
| | Kafka Host | The host name or IPv4 address of the Kafka host. | | |
| | Kafka Port | The Kafka port number. | 0 - 65535 | |
| Kafka Settings | Specify the Kafka SSL Certs: The following Kafka SSL searches enable you to specify and download the Kafka SSL certificates. The certificates provide trust and enable the ODIM Plugin Integration to connect to the Kafka host. | | | |

| Tab | Parameter Name | Description | Valid Values | Default |
|----------------|---|--|--------------|---------|
| | Kafka SSL Cert | Click Browse and search for the Kafka SSL Certificate file. | | |
| | Kafka SSL Root CA Cert | Click Browse and search for the Kafka root CA Certificate file. | | |
| | Kafka SSL Key | Click Browse and search for the Kafka SSL key file. | | |
| Summary | All configured parameters are listed for you to verify. Verify these parameter values. To make changes, open tabs and update as needed. | | | |

- After completing and verifying all parameters, click **Apply** to save the configuration or **Cancel** to exit the wizard without saving the configuration.
- Verify that the integration appears on the **Integrations > ODIM Plugin Integration** page.

Aruba NetEdit

The **Configuration > Integrations > Aruba NetEdit** page is used to create configurations for Aruba switches.

The Aruba NetEdit page lists the current Aruba NetEdit configurations and enables you to add, edit, and delete them.

The table provides the following information for each Aruba NetEdit configuration:

- **Status:** Status of the Aruba NetEdit configuration.
- **Host:** Fully qualified host name or IP address of the Aruba NetEdit host.
- **Username:** Username associated with each Aruba NetEdit configuration.
- **Enabled:** Whether Aruba NetEdit Integration is enabled or disabled.
- **Verify SSL:** Validation of SSL/TLS certificate chains for Aruba Fabric Composer when connecting to Aruba NetEdit.
- **Name:** User-defined name for the Aruba NetEdit Integration.
- **Description:** User-defined description of the Aruba NetEdit Integration.
- **Fault Message:** Fault message or alert in case of a connection failure.
- **Last Successful Connection:** Time of last successful connection.
- **Last Update Time:** Time of the last update of Aruba NetEdit.

Adding an Aruba NetEdit Integration

Configure access between Aruba Fabric Composer and an Aruba NetEdit host by adding one or more Aruba NetEdit integrations as follows:

1. In Aruba Fabric Composer, select **Configuration > Integrations > Aruba NetEdit** and then select **Actions > Add**. The Aruba NetEdit wizard opens.
2. Configure the following Aruba NetEdit Integration parameters:

| Tab | Parameter Name | Description | Valid Values | Default |
|----------------|---|---|----------------------|-----------|
| Host | Name | Enter a name for this integration. | | None |
| | Description | Enter a description for this integration. | | None |
| | Host | Enter the fully qualified host name or IP address of the Aruba NetEdit host. | | None |
| | Username | Enter the username to enable the Aruba Fabric Composer to connect to the Aruba NetEdit host. Without DNS, everything needs to be configured consistently with regards to using hostname or IP address. This includes configuring Aruba NetEdit Manager with the right type of hostname for communicating with the host. | | None |
| | Password | Enter the password to enable the Aruba Fabric Composer to connect to the Aruba NetEdit host as the configured user. | | None |
| | Validate SSL/TLS certificates for Aruba Fabric Composer | Check this box to enable validation of SSL/TLS certificate chains for Aruba Fabric Composer when connecting to Aruba NetEdit. | Checked or unchecked | Unchecked |
| | Enable this configuration | Check this box to enable this Aruba NetEdit integration. The field is checked by default to enable the integration. | Checked or unchecked | Checked |
| | Validate | (Recommended) Click Validate to validate the configuration and its connection. A Validation Successful pop-up should be returned. | N/A | N/A |
| Summary | This tab lists all configured parameters for you to verify. Verify these parameter values. If you need to make any changes, open the tabs and update as needed. | | | |

3. When you have completed and verified all parameters, click **Apply** to complete and save the configuration or **Cancel** to exit the wizard without saving.
4. Repeat the steps above to add additional Aruba NetEdit configurations.

Editing an Aruba NetEdit Integration

To edit an Aruba NetEdit Integration:

1. In Aruba Fabric Composer, select **Configuration > Integrations > Aruba NetEdit**.
2. Click the button next to the Aruba NetEdit Integration to edit and then select **Actions > Edit**.
3. In the Aruba NetEdit Configuration window, make changes to the fields as needed. Click a tab to edit the settings on that tab.
4. Click **Apply** to save your edits or **Cancel** to exit without saving. When you click **Apply**, your changes get applied to all associated fabrics and switches.

Launching an Aruba NetEdit User Interface Window

You can launch an Aruba NetEdit User Interface (UI) window directly from the Aruba Fabric Composer UI.

To launch an Aruba NetEdit UI window:

1. In Aruba Fabric Composer, select **Configuration > Integrations > Aruba NetEdit**.
2. Select an Aruba NetEdit Integration and then select **Actions > Launch**.
3. A new browser window launches and opens the Aruba NetEdit UI. You must provide login credentials in order to log in to the UI.

Refreshing an Aruba NetEdit Configuration

If a connection error or other error causes you to suspect that an Aruba NetEdit configuration is not synchronized with the Aruba Fabric Composer, you can refresh the Aruba NetEdit configuration. A refresh re-fetches all data for a selected configuration and updates the cache for that configuration.

1. In Aruba Fabric Composer, select **Configuration > Integrations > Aruba NetEdit**.
2. Select an Aruba NetEdit configuration and then select **Actions > Refresh NetEdit Configuration**.
3. At the Refresh NetEdit Configuration confirmation prompt, select either **OK** to refresh the Aruba NetEdit Integration cache or select **Cancel** to exit without refreshing the cache.

HPE iLO Amplifier Integration

HPE iLO Amplifier Pack (Integrated Lights-Out) is the Hewlett Packard Enterprise deployment engine for updating firmware, drivers, agents and configuration tools for HPE ProLiant servers, HPE Blade servers and HPE Apollo servers. It can discover and inventory up to 10,000 servers, providing detailed server inventory and downloadable reports. iLO Amplifier Pack enables you to view your complete inventory and keep your servers up to date from a single dashboard.

iLO Amplifier Pack discovers supported servers and gets detailed inventory from the iLO management processor. The inventory include firmware, software and hardware details which can be viewed and downloaded from the GUI.

iLO Amplifier Pack has an integrated hardware and software discovery engine that finds the installed hardware and current versions of firmware and software in use on target servers. iLO Amplifier Pack installs updates in the correct order and ensures that all dependencies are met before deploying an update. It also minimizes downtime by deploying all updates while the target servers are online, limiting the downtime to a single reboot in most cases.

The HPE iLO Amplifier page is used to create configurations for Aruba switches.

To open the HPE iLO Amplifier page, in Aruba Fabric Composer, select **Configuration > Integrations > HPE iLO Amplifier**.

The HPE iLO Amplifier page lists the current HPE iLO Amplifier configurations and enables you to add, edit, and delete them.

The table provides the following information for each HPE iLO Amplifier configuration:

- **Status:** Status of the HPE iLO Amplifier configuration.
- **Host:** Fully qualified host name or IP address of the HPE iLO Amplifier host.
- **Username:** Username associated with each HPE iLO Amplifier configuration.
- **Enabled:** Whether HPE iLO Amplifier Integration is enabled or disabled.
- **Verify SSL:** Validation of SSL/TLS certificate chains for Aruba Fabric Composer when connecting to HPE iLO Amplifier.
- **Name:** User-defined name for the HPE iLO Amplifier Integration.
- **Description:** User-defined description of the HPE iLO Amplifier Integration.
- **Fault Message:** Fault message or alert in case of a connection failure.
- **Last Successful Connection:** Time of last successful connection.
- **Last Update Time:** Time of the last update of HPE iLO Amplifier.

Adding an HPE iLO Amplifier Integration

With an HPE iLO Amplifier Integration configured and enabled, integration between Aruba Fabric Composer and HPE iLO Amplifier is activated.



As many as 10 HPE iLO Amplifier Integrations can be configured.



The HPE iLO Amplifier Integration is included as a part of the Fabric Composer and SimpliVity Integration sets. Only HPE servers can be discovered and managed via HPE iLO Amplifier.

Configure an integration between Aruba Fabric Composer and HPE iLO Amplifier by adding an iLO Amplifier Integration as follows:

1. In Aruba Fabric Composer, select **Configuration > Integrations > HPE iLO Amplifier** and then select **Actions > Add**. The HPE iLO Amplifier wizard opens.

2. Configure the following integration parameters:

| Tab | Parameter Name | Description | Valid Values | Default |
|----------------|---|--|--|-----------|
| Host | Name | Enter a name for this integration. | | None |
| | Description | Enter a description for this integration. | | None |
| | Host | Enter the fully qualified host name or IP address of the HPE iLO Amplifier host. | | None |
| | Username | Enter the username to enable the Aruba Fabric Composer to connect to the HPE iLO Amplifier host. This needs to be a user with appropriate permissions to perform configuration or administrative tasks within HPE iLO Amplifier. | | None |
| Host | Password | Enter the password to enable the Aruba Fabric Composer to connect to the HPE iLO Amplifier host as the configured user. | | None |
| | Validate SSL/TLS certificates for Aruba Fabric Composer | Check this box to enable validation of SSL/TLS certificate chains when connecting to HPE iLO Amplifier. | Checked or unchecked | Unchecked |
| | Enable this configuration | Check this box to enable this iLO Amplifier Integration. The field is checked by default to enable the integration. | Checked or unchecked | Checked |
| | Validate | Click Validate to validate the configuration and its connection. A Validation Successful pop-up should be returned. | Button is disabled until the Name, Host, Username and Password fields have been completed. | N/A |
| Summary | This tab lists all configured parameters for you to verify. Verify these parameter values. If you need to make any changes, open the tabs and update as needed. | | | |

- When you have completed and verified all parameters, click **Apply** to complete and save the configuration or **Cancel** to exit the wizard without saving.
- Repeat the steps above to add additional HPE iLO Amplifier Integrations.

Editing an HPE iLO Amplifier Integration

To edit an HPE iLO Amplifier Integration:

- In Aruba Fabric Composer, select **Configuration > Integrations > HPE iLO Amplifier**.
- Click the button next to the HPE iLO Amplifier Integration to edit and then select **Actions > Edit**.

3. In the HPE iLO Amplifier Configuration window, make changes to the fields as needed. Click a tab to edit the settings on that tab.
4. Click **Apply** to save your edits or **Cancel** to exit without saving. When you click **Apply**, your changes get applied to all associated fabrics and switches.

Launching an HPE iLO Amplifier User Interface Window

You can launch an iLO Amplifier User Interface (UI) window directly from the Aruba Fabric Composer UI.

To launch an iLO Amplifier UI window:

1. In Aruba Fabric Composer, select **Configuration > Integrations > HPE iLO Amplifier**.
2. Select an HPE iLO Amplifier Integration and then select **Actions > Launch**.
3. A new browser window launches and opens the HPE iLO Amplifier UI. You must provide login credentials in order to log in to the HPE iLO Amplifier UI.

HPE SimpliVity Integration

The HPE SimpliVity integration integrates Aruba Fabric Composer with the HPE SimpliVity hyperconverged infrastructure for VMware vSphere. The HPE SimpliVity integration supports as many as ten integration configurations. Each integration configuration supports a federation, that is, a related group of clusters, with each cluster containing any number of HPE SimpliVity Nodes. HPE SimpliVity runs on top of VMware ESXi; therefore the required VMware vSphere integration gathers much of the infrastructure data and performs much of the Aruba Fabric Composer configuration (VLAN provisioning, and so on).

The HPE SimpliVity Integration discovers and creates an inventory of SimpliVity Cluster-specific information that cannot be retrieved from vSphere. This enables the isolation of VLANs that, although provisioned by vSphere, are used by SimpliVity for storage isolation.

Most of the host and VM data is obtained from the VMware environment by the VMware vSphere integration. Data gathered by the HPE SimpliVity integration is used to identify which clusters, hosts, and VMs are part of the SimpliVity environment. The following information is discovered by the HPE SimpliVity integration:

- SimpliVity Cluster information
- SimpliVity Host information
- SimpliVity VM information

Also, ESX LLDP or CDP harvests node locations for presentation in the Aruba Fabric Composer UI.

Using information gathered by both the VMware vSphere Integration and the HPE SimpliVity Integration, the Aruba Fabric Composer UI Host Visualization presents SimpliVity OmniStack ESX host environment objects and details. The Aruba Fabric Composer visualizations provide an overall view of the SimpliVity <> Aruba Fabric Composer environment, showing the virtualized infrastructure.

The HPE SimpliVity page is used to create configurations for Aruba switches.

To open the HPE SimpliVity page, in Aruba Fabric Composer, select **Configuration > Integrations > HPE SimpliVity**.

The HPE SimpliVity page lists the current HPE SimpliVity configurations and enables you to add, edit, and delete them.

The table provides the following information for each HPE SimpliVity configuration:

- **Status:** Status of the HPE SimpliVity configuration.
- **Host:** Fully qualified host name or IP address of the HPE SimpliVity host.
- **Username:** VMware vSphere credentials.
- **Enabled:** Whether HPE SimpliVity Integration is enabled or disabled.
- **Verify SSL:** Validation of SSL/TLS certificate chains for Aruba Fabric Composer when connecting to HPE SimpliVity.
- **Name:** User-defined name for the HPE SimpliVity Integration.
- **Description:** User-defined description of the HPE SimpliVity Integration.
- **Automated Optimization of Storage and Federation Traffic:** Whether enabled (Yes) or not (No).
- **Fault Message:** Fault message or alert in case of a connection failure.
- **Last Successful Connection:** Time of last successful connection.
- **Last Update Time:** Time of last update of HPE SimpliVity.

Adding an HPE SimpliVity Integration

With an HPE SimpliVity integration configured, Aruba Fabric Composer becomes aware of the HPE SimpliVity environment data.



Before you configure the HPE SimpliVity integration, in the Aruba Fabric Composer UI, make sure that at least one VMware vSphere integration configuration has been configured and enabled.

Configure access between Aruba Fabric Composer and HPE SimpliVity by adding one or more SimpliVity Integrations as follows:

1. In Aruba Fabric Composer, select **Configuration > Integrations > HPE SimpliVity**, then select **Actions > Add** or **Edit**. The HPE SimpliVity wizard opens.
2. Configure the integration, completing the following parameters:

| Tab | Parameter Name | Description | Valid Values | Default |
|------|--------------------|---|--------------|---------|
| Host | Name | Enter a name for this integration. | | None |
| | Description | Enter a description for this integration. | | None |
| | Host | Enter the fully qualified host name or IP address of one of the HPE SimpliVity OmniStack Virtual Controller (OVC) VMs. | | None |
| | Username | Enter the username to enable Aruba Fabric Composer to connect to the VMware vSphere instance that the HPE SimpliVity Host is a part of. | | None |

| Tab | Parameter Name | Description | Valid Values | Default |
|----------------|---|---|----------------------|-----------|
| Host | Password | Enter the password to enable Aruba Fabric Composer to connect to the VMware vSphere host as the configured user. | | None |
| | Validate SSL/TLS certificates | Check this box to enable validation of SSL/TLS certificate chains when connecting to VMware vSphere. | Checked or unchecked | Unchecked |
| | Enable this configuration | Check this box to enable this HPE SimpliVity Integration. | Checked or unchecked | Checked |
| | Validate | (Recommended) Click Validate to validate the configuration and its connection. A Validation Successful pop-up should be returned. | N/A | N/A |
| HPE SimpliVity | Optimize SimpliVity Storage and Federation Traffic | Selecting this field will trigger an automatic optimization of the HPE SimpliVity Storage and Federation Traffic. This ensures that QoS profile for the Storage and Federation Traffic is applied, which minimizes interference from other workload traffic. QoS profile HPE SimpliVity Storage and Federation Traffic is applied automatically and across the fabric. This field is unchecked (disabled) by default. | | Unchecked |
| Summary | This tab lists all configured parameters for you to verify. Verify these parameter values. If you need to make any changes, open the tabs and update as needed. | | | |

- When you have completed and verified all parameters, click **Apply** to complete and save the configuration or **Cancel** to exit the wizard without saving.
- Repeat the steps above to add or edit additional HPE SimpliVity integrations.

Editing an HPE SimpliVity Integration

To edit an HPE SimpliVity Integration:

1. In Aruba Fabric Composer, select **Configuration > Integrations > HPE SimpliVity**.
2. Click the button next to the HPE SimpliVity configuration to edit and then select **Actions > Edit**.
3. In the HPE SimpliVity Configuration window, make changes to the fields as needed. Click a tab to edit the settings on that tab.
4. Click **Apply** to save your edits or **Cancel** to exit without saving. When you click **Apply**, your changes get applied to all associated fabrics and switches.

Refreshing an HPE SimpliVity Integration

If a connection error or other error causes you to suspect that an Aruba Fabric Composer HPE SimpliVity Integration is not synchronized with HPE SimpliVity, you can refresh the integration. A refresh re-fetches all data for a selected integration and updates the cache for that integration.

1. In Aruba Fabric Composer, select **Configuration > Integrations > HPE SimpliVity**.
2. Select a Prism Integration and then select **Actions > Refresh HPE SimpliVity Integration**.
3. At the Refresh HPE SimpliVity Integration confirmation prompt, select either **OK** to refresh the SimpliVity Integration cache or select **Cancel** to exit without refreshing the cache.

Nutanix Prism

The Nutanix Prism page is used to create configurations for Aruba switches.

To open the Nutanix Prism page, in Aruba Fabric Composer, select **Configuration > Integrations > Nutanix Prism**.

The Nutanix Prism page lists the current Nutanix Prism configurations and enables you to add, edit, and delete them.

The table provides the following information for each Nutanix Prism configuration:

- **Status:** Status of the Nutanix Prism configuration.
- **Host:** Fully qualified host name or IP address of the Nutanix Prism host.
- **Username:** Username associated with each Nutanix Prism configuration.
- **Enabled:** Whether Nutanix Prism Integration is enabled or disabled.
- **Verify SSL:** Validation of SSL/TLS certificate chains for Aruba Fabric Composer when connecting to the Nutanix Prism Integration.
- **Name:** User-defined name for the Nutanix Prism Integration.
- **Description:** User-defined description of the Nutanix Prism Integration.
- **Visualization:** A consolidated graphical representation of the Nutanix Prism configuration.
- **Provisioning:** Indicates provisioning status of the Nutanix Prism configuration.
- **VLAN Range:** Select between VLAN Range Base and Length.
- **Automated Optimization of CVM Traffic:** Enable automatic optimization of the Nutanix Controller VM (CVM).
- **Fault Message:** Fault message or alert in case of a connection failure.

- **Last Successful Connection:** Time of last successful connection.
- **Last Update Time:** Time of the last update of Nutanix Prism.

Adding a Nutanix Prism Integration





SNMP must be configured on all Fabric Composer switches that use a Nutanix Prism Integration for AHV before you can configure the integration. Refer to [SNMP on page 115](#) and [Adding an SNMP Configuration on page 115](#).

As many as 10 Nutanix Prism Integrations can be configured.

Configure access between Aruba Fabric Composer and Nutanix Prism by adding one or more Nutanix Prism Integrations as follows:

1. In Aruba Fabric Composer, select **Configuration > Integrations > Nutanix Prism**.
2. To add a new integration, select **Actions > Add**. The Nutanix Prism wizard opens.
3. Configure the integration by completing the following parameters:

| Tab | Parameter Name | Description | Valid Values | Default |
|------|--|--|----------------------|-----------|
| Host | Name | Enter a name for this integration. | | None |
| | Description | Enter a description for this integration. | | None |
| | Host | Enter the fully qualified host name or cluster virtual IP address of Nutanix Prism. | | None |
| | Username | Enter the username to enable the Aruba Fabric Composer to connect to Nutanix Prism. This needs to be a user with appropriate permissions to perform configuration or administrative tasks within Nutanix Prism. | | None |
| Host | Password | Enter the password to enable the Aruba Fabric Composer to connect to Nutanix Prism as the configured user. | | None |
| | Validate SSL/TLS certificates for Aruba Fabric Composer | <p>Check this box to enable the validation of SSL/TLS certificate chains of trust for Aruba Fabric Composer when connecting to Nutanix Prism.</p> <div>  <p>For this to work, the Prism SSL certificate must be added to Aruba Fabric Composer through a manual procedure.</p> </div> | Checked or unchecked | Unchecked |

| Tab | Parameter Name | Description | Valid Values | Default |
|--------------|--|---|---|--|
| Host | Enable this configuration | Check this box to enable this Nutanix Prism Integration. | Checked or unchecked | Checked |
| | Validate | <p>Click Validate to validate the configuration and its connection. A Validation Successful pop-up should be returned.</p> <div>  <p>NOTE Nutanix supports only SHA authorization.</p> </div> | N/A | N/A |
| Aruba Fabric | Automated VLAN configuration on Physical Switches for AHV | Checking this field enables Aruba Fabric Composer to automatically provision VLAN Groups in Aruba Fabric Composer based on the VLAN's used by Virtual Machines running on AHV. This needs to be checked (enabled) for automation of this function to occur. This field is disabled by default. | | Disabled by default. |
| | VLAN Range | To enable automated provisioning of specific VLANs for Nutanix hosts directly connected to the Fabric Composer, enter the VLANs or VLAN ranges. | You can enter individual VLANs and ranges, separated by commas; for example: 5,10-45,102. | The default range is the entire VLAN range 1-4094. |
| | Automated Optimization of CVM network traffic | Selecting this field will trigger an automatic optimization of CVM network traffic, by applying a QoS profile for CVM traffic. This minimizes interference on CVM traffic from other workload traffic. QoS profile for CVM is applied automatically and across the fabric. This field is unchecked (disabled) by default. | | This field is disabled by default. |
| | Enable Auto LAG Support | Enable automated LAG provisioning for certain Nutanix AFV integrations. | | This field is disabled by default. |
| Nutanix | Validate SNMP | Verify that SNMP has been configured on all Fabric Composers that use the Nutanix Integration. Click Validate SNMP ; if all fabrics are configured, a Success message will be returned. | | |

| Tab | Parameter Name | Description | Valid Values | Default |
|----------------|---|---|--------------|------------------------------------|
| | | Note: You will not be able to continue to the next wizard page or complete the integration until SNMP has been configured on all Fabric Composers that use this integration, and SNMP has been successfully validated. If necessary, refer to SNMP on page 115 and Adding an SNMP Configuration on page 115 . | | |
| | Populate Network Visualization | Checking this field enables visualization of the related Aruba Fabric Composer from Nutanix Prism when AHV is used. If enabled, Nutanix Prism harvests network information via LLDP and SNMP from Aruba Fabric Composer switches in the Fabric. Prism uses this data to populate the Network view, showing the network from VMs/Hosts to Aruba Fabric Composer switches. This needs to be checked (enabled) for automation of this function to occur. | | This field is disabled by default. |
| Summary | This tab lists all configured parameters for you to verify. Verify these parameter values. If you need to make any changes, open the tabs and update as needed. | | | |

- When you have completed and verified all parameters, click **Apply** to complete and save the configuration or **Cancel** to exit the wizard without saving.
- Repeat the steps above as needed to add or edit Nutanix Prism integrations.

Editing a Nutanix Prism Integration

To edit a Nutanix Prism Integration:

- In Aruba Fabric Composer, select **Configuration > Integrations > Nutanix Prism**.
- Click the button next to the Nutanix Prism configuration to edit and then select **Actions > Edit**.
- In the Nutanix Prism Configuration window, make changes to the fields as needed. Click a tab to edit the settings on that tab.
- Click **Apply** to save your edits or **Cancel** to exit without saving. When you click **Apply**, your changes get applied to all associated fabrics and switches.

Refreshing a Nutanix Prism Integration

If a connection error or other error causes you to suspect that an Aruba Fabric Composer Nutanix Prism Integration is not synchronized with Nutanix Prism, you can refresh the Prism Integration. A refresh re-fetches all data for a selected integration and updates the cache for that integration.

- In Aruba Fabric Composer, select **Configuration > Integrations > Nutanix Prism**.
- Select a Prism Integration and then select **Actions > Refresh Prism Integration**.
- At the Refresh Prism Integration confirmation prompt, select either **OK** to refresh the Prism Integration cache or select **Cancel** to exit without refreshing the cache.

Pensando PSM Integration

The **Configuration > Integrations > Pensando PSM** page is used to create configurations for Aruba switches.

The Pensando PSM page lists the current Pensando PSM configurations and enables you to add, edit, launch, and refresh them.

The table provides the following information for each Pensando PSM configuration:

- **Status:** Status of the Pensando PSM configuration.
- **Host:** Fully qualified host name or IP address of the Pensando PSM host.
- **Username:** Username associated with each Pensando PSM configuration.
- **Enabled:** Whether Pensando PSM Integration is enabled or disabled.
- **Verify SSL:** Validation of SSL/TLS certificate chains for Aruba Fabric Composer when connecting to Pensando PSM.
- **Name:** User-defined name for the Pensando PSM Integration.
- **Description:** User-defined description of the Pensando PSM Integration.
- **Fabric:** Name of the Fabric associated with this PSM.
- **Auto Decommission:** Automatically decommission PSM.
- **Auto VLAN Placement:** Automatically assign VLAN placement.
- **Fault Message:** Fault message or alert in case of a connection failure.
- **Last Successful Connection:** Time of last successful connection.
- **Last Update Time:** Time of last update of Pensando PSM.

Adding a Pensando PSM Integration

Configure access between Aruba Fabric Composer and a Pensando PSM host by adding one or more Pensando PSM integrations as follows:

1. In Aruba Fabric Composer, select **Configuration > Integrations > Pensando PSM** and then select **Actions > Add or Edit**. The Pensando PSM wizard opens.
2. Configure the following Pensando PSM Integration parameters:

| Tab | Parameter Name | Description | Valid Values | Default |
|------|--------------------|---|--------------|---------|
| Host | Name | Enter a name for this integration. | | None |
| | Description | Enter a description for this integration. | | None |
| | Host | Enter the fully qualified host name or IP address of the Pensando PSM host. | | None |
| Host | Username | Enter the username to enable the Aruba Fabric Composer to connect to the Pensando PSM host. | | None |

| Tab | Parameter Name | Description | Valid Values | Default |
|-----------------|---|---|----------------------|-----------|
| | | Without DNS, everything needs to be configured consistently with regards to using hostname or IP address. This includes configuring Pensando PSM Manager with the right type of hostname for communicating with the host. | | |
| | Password | Enter the password to enable the Aruba Fabric Composer to connect to the Pensando PSM host as the configured user. | | None |
| | Validate SSL/TLS certificates for Aruba Fabric Composer | Check this box to enable validation of SSL/TLS certificate chains for Aruba Fabric Composer when connecting to Pensando PSM. | Checked or unchecked | Unchecked |
| | Enable this configuration | Check this box to enable this Pensando PSM integration. The field is checked by default to enable the integration. | Checked or unchecked | Checked |
| | Validate | (Recommended) Click Validate to validate the configuration and its connection. A Validation Successful pop-up should be returned. | N/A | N/A |
| Settings | Fabric | All distributed Services operations with the specified Fabric will be applied to this PSM instance. Do not specify a Fabric if this PSM instance does not support Distributed Services Switches. | | |
| | Enable auto decommissioning for switches deleted from the system. | | Checked or unchecked | Unchecked |
| | Enable auto VLAN placement on all switches when creating a Network. | | Checked or unchecked | Checked |
| Summary | This tab lists all configured parameters for you to verify. Verify these parameter values. If you need to make any changes, open the tabs and update as needed. | | | |

- When you have completed and verified all parameters, click **Apply** to complete and save the configuration or **Cancel** to exit the wizard without saving.
- Repeat the steps above to add additional Pensando PSM configurations.

Editing a Pensando PSM Integration

To edit a Pensando PSM Integration:

1. In Aruba Fabric Composer, select **Configuration > Integrations > Pensando PSM**.
2. Click the button next to the Pensando PSM Integration to edit and then select **Actions > Edit**.
3. In the Pensando PSM Configuration window, make changes to the fields as needed. Click a tab to edit the settings on that tab.
4. Click **Apply** to save your edits or **Cancel** to exit without saving. When you click **Apply**, your changes get applied to all associated fabrics and switches.

Launching a Pensando PSM User Interface Window

You can launch a Pensando PSM User Interface (UI) window directly from the Aruba Fabric Composer UI.

To launch a Pensando PSM UI window:

1. In Aruba Fabric Composer, select **Configuration > Integrations > Pensando PSM**.
2. Select a Pensando PSM Integration and then select **Actions > Launch**.
3. A new browser window launches and opens the Pensando PSM UI. You must provide login credentials in order to log in to the UI.

Refreshing a Pensando PSM Configuration

If a connection error, or any other error, causes you to suspect that a Pensando PSM configuration is not synchronized with the Aruba Fabric Composer, you can refresh the Pensando PSM configuration. A refresh re-fetches all data for a selected configuration and updates the cache for that configuration.

1. In Aruba Fabric Composer, select **Configuration > Integrations > Pensando PSM**.
2. Select a Pensando PSM configuration and then select **Actions > Refresh Pensando PSM Configuration**.
3. At the Refresh Pensando PSM Configuration confirmation prompt, select either **OK** to refresh the Pensando PSM Integration cache or select **Cancel** to exit without refreshing the cache.

VMware NSX-T

The VMware NSX-T page is used to create configurations for Aruba switches.

To open the VMware NSX-T page, in Aruba Fabric Composer, select **Configuration > Integrations > VMware NSX-T**.

The VMware NSX-T page lists the current VMware NSX-T configurations and enables you to add, edit, and delete them.

The table provides the following information for each VMware NSX-T configuration:

- **Status:** Status of the VMware NSX-T configuration.
- **Host:** Fully qualified host name or IP address of the VMware NSX-T host.
- **Username:** Username associated with each VMware NSX-T configuration.
- **Enabled:** Whether VMware NSX-T Integration is enabled or disabled.
- **Verify SSL:** Validation of SSL/TLS certificate chains for Aruba Fabric Composer when connecting to VMware NSX-T.
- **Name:** User-defined name for the VMware NSX-T Integration.
- **Description:** User-defined description of the VMware NSX-T Integration.

- **Auto Discovery:** Select between auto discovery (Yes or No).
- **Provisioning:** Indicates provisioning status of the VMware NSX-T configuration.
- **VLAN Range:** Select between VLAN Range Base and Length.
- **Fault Message:** Fault message or alert in case of a connection failure.
- **Last Successful Connection:** Time of last successful connection.
- **Last Update Time:** Time of the last update of VMware NSX-T.

Adding a VMware NSX-T Integration

Configure access between Aruba Fabric Composer and VMware NSX-T by adding one or more VMware NSX-T Integrations as follows:



Before you can add the first VMware NSX-T Integration, in the Aruba Fabric Composer UI, make sure that at least one VMware vSphere Integration has been configured and enabled.
As many as 10 VMware NSX-T Integrations can be configured.

1. In Aruba Fabric Composer, select **Configuration > Integrations > VMware NSX-T** and then select **Actions > Add or Edit**. The VMware NSX-T wizard opens.
2. Configure the following VMware NSX-T Integration parameters:

| Tab | Parameter Name | Description | Valid Values | Default |
|------|--------------------|--|--------------|---------|
| Host | Name | Enter a name for this integration. | | None |
| | Description | Enter a description for this integration. | | None |
| | Host | Enter the fully qualified host name or IP address of the VMware NSX-T host. | | None |
| | Username | Enter the username to enable the Aruba Fabric Composer to connect to the VMware NSX-T host. Without DNS, everything needs to be configured consistently with regards to using hostname or IP address. This includes configuring NSX-T Manager with the right type of hostname for communicating with VMware vSphere. | | None |
| | Password | Enter the password to enable the Aruba Fabric Composer to connect to the VMware NSX-T host as the configured user. | | None |

| Tab | Parameter Name | Description | Valid Values | Default |
|----------------|---|---|----------------------|--|
| Host | Validate SSL/TLS certificates for Aruba Fabric Composer | Check this box to enable validation of SSL/TLS certificate chains for Aruba Fabric Composer when connecting to VMware NSX-T. | Checked or unchecked | Unchecked |
| | Enable this configuration | Check this box to enable this VMware NSX-T Integration. The field is checked by default to enable the integration. | Checked or unchecked | Checked |
| | Validate | Click Validate to validate the configuration and its connection. A Validation Successful pop-up should be returned. | N/A | N/A |
| Aruba Fabric | Automated VLAN Configuration on Physical Switches for NSX-T | Click the check box to automate the configuration. | | Unchecked |
| | VLAN Range | Enter the VLAN range Aruba Fabric Composer is allowed to modify as part of an integration. | Between 1 and 4094 | Enabled only when Automated VLAN configuration check box is checked. |
| NSX-T | Discovery protocols | Enable or disable discovery settings for this VMware NSX-T configuration. | | Unchecked |
| Summary | This tab lists all configured parameters for you to verify. Verify these parameter values. If you need to make any changes, open the tabs and update as needed. | | | |

- When you have completed and verified all parameters, click **Apply** to complete and save the configuration or **Cancel** to exit the wizard without saving.
- Repeat the steps above to add additional VMware NSX-T configurations.

Editing a VMware NSX-T Integration

To edit a VMware NSX-T Integration:

- In Aruba Fabric Composer, select **Configuration > Integrations > VMware NSX-T**.
- Click the button next to the VMware NSX-T configuration to edit and then select **Actions > Edit**.
- In the VMware NSX-T Configuration window, make changes to the fields as needed. Click a tab to edit the settings on that tab.
- Click **Apply** to save your edits or **Cancel** to exit without saving. When you click **Apply**, your changes get applied to all associated fabrics and switches.

Refreshing a VMware NSX-T Integration

If a connection error or other error causes you to suspect that an Aruba Fabric Composer VMware NSX-T integration is not synchronized with VMware NSX-T, you can refresh the integration. A refresh re-fetches all data for a selected integration and updates the cache for that integration.

1. In Aruba Fabric Composer, select **Configuration > Integrations > VMware NSX-T**.
2. Select a VMware NSX-T Integration and then select **Actions > Refresh NSX-T Integration**.
3. At the Refresh NSX-T Integration confirmation prompt, select either **OK** to refresh the NSX-T Integration cache or select **Cancel** to exit without refreshing the cache.

VMware vSphere

The VMware vSphere page is used to create configurations for Aruba switches.

To open the VMware vSphere page, in Aruba Fabric Composer, select **Configuration > Integrations > VMware vSphere**.

The VMware vSphere page lists the current VMware vSphere configurations and enables you to add, edit, and delete them.

The table provides the following information for each VMware vSphere configuration:

- **Status:** Status of the VMware vSphere Integration.
- **Host:** Fully qualified host name or IP address of the VMware vSphere host.
- **Username:** Username associated with each VMware vSphere configuration.
- **Enabled:** Whether VMware vSphere Integration is enabled or disabled.
- **Verify SSL:** Validation of SSL/TLS certificate chains for Aruba Fabric Composer when connecting to the VMware vSphere Integration.
- **Name:** User-defined name for the VMware vSphere Integration.
- **Description:** User-defined description of the VMware vSphere Integration.
- **Auto Discovery:** Select between auto discovery (Yes or No).
- **Use CDP:** Enables selecting between Yes and No for using Cisco Discovery Protocol (CDP) in the vSphere configuration.
- **Provisioning:** Indicates provisioning status of the VMware vSphere configuration.
- **Intermediate PVLAN Range:** The PVLAN range Aruba Fabric Composer is allowed to modify.
- **Automated Endpoint Group Provisioning:** Indicates whether or not to automatically create Endpoint Groups based on VM Tags.
- **Fault Message:** Fault message or alert in case of a connection failure.
- **Last Successful Connection:** Time of last successful connection.
- **Last Update Time:** Time of the last update of VMware vSphere.

Adding a VMware vSphere Integration

Configure access between Aruba Fabric Composer and VMware vSphere by adding one or more VMware vSphere configurations as follows:



VMware vSphere Plugin requires administrator privileges. Refer to the [Specific Privileges](#) table below for specific privileges as applicable to specific requirements in Aruba Fabric Composer.



As many as 10 VMware vSphere Integrations can be configured.

1. In Aruba Fabric Composer, select **Configuration > Integrations > VMware vSphere**.
2. Select **Actions > Add or Edit**. The VMware vSphere wizard opens.
3. Configure the following integration parameters:

| Tab | Parameter Name | Description | Valid Values | Default |
|------|--|---|----------------------|-----------|
| Host | Name | Enter a name for this integration. | | |
| | Description | Enter a description for this integration. | | |
| | Host | Enter the fully qualified host name or IP address of the VMware vSphere host. | | |
| | Username | Enter the username to enable the Aruba Fabric Composer to connect to the VMware vSphere host. This needs to be a user with appropriate permissions to perform configuration or administrative tasks within VMware vSphere. If the vSphere Plug-in is going to be registered, ensure that the user configured here has enough permissions to perform plug-in registrations within vSphere. Click the following links for further information: <ul style="list-style-type: none"> ■ Using Roles to Assign Privileges ■ Required Privileges for Common Tasks ■ Defined Privileges | | |
| Host | Password | Enter the password to enable the Aruba Fabric Composer to connect to the VMware vSphere host as the configured user. | | |
| | Validate SSL/TLS certificates for Aruba Fabric Composer | Check this box to enable validation of SSL/TLS certificate chains for Aruba Fabric Composer when connecting to VMware vSphere. | Checked or unchecked | Unchecked |
| | Enable this configuration | Check this box to enable this VMware vSphere Integration. The field is checked by default to enable the integration. | Checked or unchecked | Checked |
| | Validate | Click Validate to validate the configuration and its connection. A Validation Successful pop-up should be returned. | N/A | |

| Tab | Parameter Name | Description | Valid Values | Default |
|--------------|--|---|--|---------------------|
| Aruba Fabric | Automated VLAN provisioning for ESX Hosts directly connected to the fabric | Checking this field enables Aruba Fabric Composer to automatically provision VLAN Groups in Aruba Fabric Composer based on the VLANs used by Virtual Machines and VMKernel Adapters running on VMware ESX. This field must be checked (enabled) for automation of this function to occur. This field is unchecked (disabled) by default. | Checked or unchecked | Unchecked |
| | VLAN Range | Enter the VLAN range that Aruba Fabric Composer is allowed to modify as part of an integration. An empty VLAN Range will prevent Aruba Fabric Composer from modifying VLANs. | Individual VLANs and ranges, separated by commas; for example: 5,10-45,102. The range of valid VLANs is 1-4094. | VLAN range 1-4094. |
| Aruba Fabric | Automated VLAN provisioning for ESX Hosts connected through intermediate switches | In an environment where intermediate switches appear between the Fabric Composer and the host environment, this feature enables Aruba Fabric Composer to automatically provision VLAN Groups for ESX hosts connected through the intermediate switches based on the VLANs used by Virtual Machines and VMKernel Adapters running on VMware ESX. For example, with VMware vSphere integrated with HPE Synergy systems, checking this field automates the provisioning of VLAN groups in the Fabric Composer based on VLANs and VMs within the HPE Synergy environment. This needs to be checked (enabled) for automation of this function to occur. This field is unchecked(disabled) by default. NOTE: The intermediate switch also requires LLDP Transmit to be configured, advertising to the Fabric Composer switches and to the ESXi vSwitches. | Checked or unchecked | Unchecked |
| | Intermediate VLAN Range | Automated PVLAN provisioning for ESX hosts directly connected to the Fabric. Checking this field enables automatic provisioning of PVLANS based on the PVLANS configured on a distributed port group of a distributed switch. This field must be checked (enabled) for automation of this function to occur. This field is unchecked (disabled) by default. | Enter the PVLAN range that Aruba Fabric Composer is allowed to modify as part of an integration. An empty | PVLAN range 1-4094. |

| Tab | Parameter Name | Description | Valid Values | Default |
|----------------|---|--|--|-----------|
| | | | PVLAN range will prevent Aruba Fabric Composer from modifying PVLANS. Individual PVLANS and ranges, separated by commas; for example: 5,10-45,102. The range of valid VLANs is 1-4094. | |
| | Automated Optimization of vSAN Traffic | Automated Endpoint Group Provisioning. Selecting this field will trigger an automatic provisioning of Endpoint Groups based on tags assigned to VMs. This will assist in creating rules for network policies. This field is unchecked (disabled) by default. | Checked or unchecked | Unchecked |
| vSphere | Discovery protocols | Checking this field enables discovery protocols (LLDP and CDP) on vSphere switches. This must be enabled for Host visualization to fully function. This field is unchecked (disabled) by default. LLDP is not supported by VMware on standard vSwitches. | Checked or unchecked | Unchecked |
| | Use CDP when configuring distributed vSwitches | If automatic discovery is enabled, checking this field automatically enables CDP on vSwitches and Distributed vSwitches. Leaving this field unchecked enables LLDP. This field is unchecked (disabled) by default. | Checked or unchecked | Unchecked |
| Summary | This tab lists all configured parameters for you to verify. Verify these parameter values. If you need to make any changes, open the tabs and update as needed. | | | |

- When you have completed and verified all parameters, click **Apply** to complete and save the configuration or **Cancel** to exit the wizard without saving.
- Repeat the steps above to add additional VMware vSphere integrations.

Specific Privileges

Refer to the table below for specific administrator privileges as applicable to specific requirements in Aruba Fabric Composer.

| Privilege | Resource | Use Case | Source |
|--|----------------------|---|---|
| All dvPort group privileges | DVportGroups | Creating DVPortGroups/Micro-segmentation workflows. | dvPort Group Privileges |
| All Distributed Switch Privileges | DVswitches | <ul style="list-style-type: none"> ■ VLAN provisioning (LLDP settings) ■ Micro-segmentation workflows | Distributed Switch Privileges |
| System.View Privilege | Many | General Integration | |
| Administrative Privileges | VMware Plugin | Registration of Aruba Fabric Composer VMware Plugin. | Extension Privileges |

Editing a VMware vSphere Integration

To edit a VMware vSphere Integration:

1. In Aruba Fabric Composer, select **Configuration > Integrations > VMware vSphere**.
2. Click the button next to the VMware vSphere configuration to edit and then select **Actions > Edit**.
3. In the VMware vSphere Configuration window, make changes to the fields as needed. Click a tab to edit the settings on that tab.
4. Click **Apply** to save your edits or **Cancel** to exit without saving. When you click **Apply**, your changes get applied to all associated fabrics and switches.

Registering the vSphere Plug-in with VMware

Before you can use the vSphere Plug-in, in the Aruba Fabric Composer UI, you must:

- Have already created one vSphere configuration as described in [Adding a VMware vSphere Integration on page 151](#).
- Register the vSphere Plug-in with VMware as described in this section.



When the vSphere plug-in is registered, bi-directional communication must be available between Aruba Fabric Composer and VMware vSphere (that is, Aruba Fabric Composer must be able to reach vSphere, and vSphere must be able to reach Aruba Fabric Composer). If this communication is not available, the plug-in registration will fail. However, it will be reported as successfully registered.

Ensure that the user configured in the vSphere integration configuration has appropriate permissions to perform plug-in registrations within vSphere.

To register the vSphere Plug-in with VMware:

1. In Aruba Fabric Composer, select **Configuration > Integrations > VMware vSphere**.
2. Select a vSphere Integration that needs the plug-in registered and then select **Actions > Register Plug-in**.
3. At the Register Plug-in confirmation prompt, click **OK** to register the plug-in with VMware or **Cancel** to exit. When the registration completes, a success notification momentarily appears.



After registering the vSphere Web Client Plug-in from the Aruba Fabric Composer UI, and when you open the vSphere Plug-in UI, you must first configure Aruba Fabric Composer authentication. Once configured, the full Aruba Fabric Composer UI can be run within vSphere.

Refreshing a VMware vSphere Integration

If a connection error or other vSphere error causes you to suspect that an Aruba Fabric Composer VMware vSphere Integration is not synchronized with vSphere, you can refresh the VMware vSphere Integration. A refresh re-fetches all data for a selected integration and updates the cache for that integration.

1. In Aruba Fabric Composer, select **Configuration > Integrations > VMware vSphere**.
2. Select a VMware vSphere Integration and then select **Actions > Refresh vSphere Integration**.
3. At the Refresh vSphere Integration confirmation prompt, select either **OK** to refresh the VMware vSphere Integration cache or select **Cancel** to exit without refreshing the cache.

Running Aruba Fabric Composer in the VMware vSphere Client

Aruba Fabric Composer can be run as a window in the VMware vSphere Client UI. Once in the VMware vSphere Client UI, after configuring the Aruba Fabric Composer for the first time, you will have all of the viewing and configuration features available in the Aruba Fabric Composer.

Updating Aruba Fabric Composer Certificate and Authentication in vSphere

Before you can run Aruba Fabric Composer from a vSphere window, from the VMware vSphere UI, you need to configure Aruba Fabric Composer Certificates and Authentication as described in the below procedure.



This procedure assumes that you have already created a VMware vSphere configuration as described in [Adding a VMware vSphere Integration on page 151](#) and registered the VMware vSphere plug-in as described in [Registering the vSphere Plug-in with VMware on page 156](#).

1. In the VMware vSphere UI, select **Administration > Aruba Fabric Composer > Settings**.
2. In the **Certificates** tab, create a certificate by entering in the Aruba Fabric Composer URL and clicking **+ADD CERTIFICATE**.
3. In the **Authentication** tab, verify the Hostname and Username used to connect to Aruba Fabric Composer.
4. If this is an initial configuration or if an update is needed, click **Update Settings**.
5. Enter the login credentials that have been previously configured to log in to Aruba Fabric Composer. These credentials only enable the Aruba Fabric Composer Plug-in to log in to Aruba Fabric Composer; they do not change the actual credentials. These settings are:
 - **Hostname:** Enter the fully qualified host name or IP address of Aruba Fabric Composer.
 - **Username:** Enter the username to connect to Aruba Fabric Composer. The user of an Aruba Fabric Composer account must be an administrator; the default administrator account is admin.
 - **Password:** Enter the password to connect to Aruba Fabric Composer.
6. Save the settings.
7. You can now open the Aruba Fabric Composer vSphere plug-in as described in the next section.

Opening the Aruba Fabric Composer vSphere Plug-in



The Aruba Fabric Composer plug-in places no browser restrictions beyond browsers approved by VMware.

In the VMware vSphere UI, open the Aruba Fabric Composer plug-in. For example:

- In the VMware vSphere Client, select **Menu > Aruba Fabric Composer**, or
- In the VMware vSphere Client, click **vSphere Client** and in the left-hand menu bar click **Aruba Fabric Composer**.

The Aruba Fabric Composer Home page opens in the vSphere Workspace (content area).



Leaving the Aruba Fabric Composer window will terminate the Aruba Fabric Composer session without retaining unsaved changes; you will lose unsaved changes.

The following message in VMware vSphere indicates that the certificate and credential are not configured, or Aruba Fabric Composer is not reachable. Verify the Aruba Fabric Composer certificate and authentication as described above.

Aruba Fabric Composer settings are not valid or not configured. Navigate to the Administration option and then select **Aruba Fabric Composer > Settings**.

VMware SDDC Integration

The **Configuration > Integrations > VMware SDDC** page is used to create configurations for Aruba switches.

The VMware SDDC page lists the current VMware SDDC configurations and enables you to add, edit, and delete them.

The table provides the following information for each VMware SDDC configuration:

- **Status:** Status of the VMware SDDC configuration.
- **Host:** Fully qualified host name or IP address of the VMware SDDC host.
- **Username:** Username associated with each VMware SDDC configuration.
- **Enabled:** Whether VMware SDDC Integration is enabled or disabled.
- **Verify SSL:** Validation of SSL/TLS certificate chains for Aruba Fabric Composer when connecting to VMware SDDC.
- **Name:** User-defined name for the VMware SDDC Integration.
- **Description:** User-defined description of the VMware SDDC Integration.
- **Fault Message:** Fault message or alert in case of a connection failure.
- **Last Successful Connection:** Time of last successful connection.
- **Last Update Time:** Time of the last update of VMware SDDC.

Adding a VMware SDDC Integration

Configure access between Aruba Fabric Composer and a VMware SDDC host by adding one or more VMware SDDC integrations as follows:

1. In Aruba Fabric Composer, select **Configuration > Integrations > VMware SDDC** and then select **Actions > Add**. The VMware SDDC wizard opens.

2. Configure the following VMware SDDC Integration parameters:

| Tab | Parameter Name | Description | Valid Values | Default |
|----------------|---|---|----------------------|-----------|
| Host | Name | Enter a name for this integration. | | None |
| | Description | Enter a description for this integration. | | None |
| | Host | Enter the fully qualified host name or IP address of the VMware SDDC host. | | None |
| | Username | Enter the username to enable the Aruba Fabric Composer to connect to the VMware SDDC host. Without DNS, everything needs to be configured consistently with regards to using hostname or IP address. This includes configuring VMware SDDC Manager with the right type of hostname for communicating with the host. | | None |
| | Password | Enter the password to enable the Aruba Fabric Composer to connect to the VMware SDDC host as the configured user. | | None |
| | Validate SSL/TLS certificates for Aruba Fabric Composer | Check this box to enable validation of SSL/TLS certificate chains for Aruba Fabric Composer when connecting to VMware SDDC. | Checked or unchecked | Unchecked |
| | Enable this configuration | Check this box to enable this VMware SDDC integration. The field is checked by default to enable the integration. | Checked or unchecked | Checked |
| | Validate | (Recommended) Click Validate to validate the configuration and its connection. A Validation Successful pop-up should be returned. | N/A | N/A |
| Summary | This tab lists all configured parameters for you to verify. Verify these parameter values. If you need to make any changes, open the tabs and update as needed. | | | |

3. When you have completed and verified all parameters, click **Apply** to complete and save the configuration or **Cancel** to exit the wizard without saving.
4. Repeat the steps above to add additional VMware SDDC configurations.

Editing a VMware SDDC Integration

To edit a VMware SDDC Integration:

1. In Aruba Fabric Composer, select **Configuration > Integrations > VMware SDDC**.
2. Click the button next to the VMware SDDC Integration to edit and then select **Actions > Edit**.
3. In the VMware SDDC Configuration window, make changes to the fields as needed. Click a tab to edit the settings on that tab.

4. Click **Apply** to save your edits or **Cancel** to exit without saving. When you click **Apply**, your changes get applied to all associated fabrics and switches.

Deleting an Integration Configuration

To delete an integration, select the check box for the integration to delete and then select **Actions > Delete**.

At the confirmation prompt, click either **OK** to continue deleting the integration configuration or **Cancel** to retain the configuration.

The **Configurations > Policy** page provides access to configure the following Aruba Fabric Composer policy features:

- Policy Groups
- Policies
- Rules
- Endpoint Groups
- Applications
- Service Qualifiers
- Microsegmentation
- Firewall Log
- Firewall Profiles
- PSM Alerts

Policy Groups

You use the Policy Groups page to create logical collection of stateful and stateless policies for a given Fabric. To open the Policy Groups page, in Aruba Fabric Composer, select **Configuration > Policy > Policy Groups**.

The Policy Groups page lists the current configurations and enables you to add, edit, or delete them.

The Policy Groups table provides the following information for each configuration:

- **Health:** In the drop-down list, select from Healthy, Healthy, But, Upgrading, Degraded, Minor, Major, Critical, Unknown, and Non Recoverable.
- **Name:** User-defined name for the Policy Groups configuration.
- **Description:** User-defined description of the Policy Groups configuration.

Adding a Policy Group

To add a new Policy Group:

1. In Aruba Fabric Composer, select **Configuration > Policy > Policy Groups**.
2. Select **Actions > Add**. The Policy Group window appears.
3. In the Name page, complete the following fields:
 - **Name:** Enter any non-empty string, for example, My Policy Group, as a name for the Policy Group.
 - **Description:** Enter a description of the Policy Group.
4. Click **Next** to go to the next page or **Cancel** to exit without saving.
5. In the Policies page, set the Policies to include in this group. Select **Actions > Add >** and choose either **New** (to create a new policy group) or **Existing** (to choose an existing policy group). If you choose to create a new policy group:

- **Name:** Enter any non-empty string, example, Policy-1.
 - **Description:** Enter a description of Policy-1.
6. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
 7. In the Settings page, select a required type.
 - **Type:** In the drop-down list, select from the options, Distributed Firewall, L2 ACL, or L3 ACL.
 8. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
 9. In the Rules page, set one or more Rules on the Policy. Click **Actions > Add > New** to create a new Rule. You can also select **Existing** to choose an existing Rule.

| Tab | Parameter Name | Description | Valid Values | Default |
|--|---|---|--|---------|
| Name | Name | Assign a name for the Rule. | Any non-empty string, for example, Rule-1. | |
| | Description | Enter a description for the Resource Pool. Click Next . | | |
| Action | Action | Select from either Allow or Drop from the drop-down list. Click Next . | | |
| Endpoint Groups | Source Endpoint Group | Select from an existing endpoint group or click Add to add a new endpoint group. | | |
| | Destination Endpoint Group | Select from an existing destination endpoint group or click Add to add a new destination endpoint group. | | |
| Applications and Service Qualifiers | Applications | Select or Add Application. | | |
| | Service Qualifiers | Select or Add Service Qualifiers. | | |
| 10. Summary | This tab lists all configured parameters for you to verify. If you need to make any changes, click Back to open the tabs and update as needed. Click Next to go apply the Rules and go back to the Policy Group page. | | | |

11. In the Enforcers page, select a Fabric, Direction, VRF, and a Network from their respective drop-down lists.
12. In the Summary page, check the fields for accuracy. If you need to change anything, click **Back** and make changes as needed.
13. Click **Apply** to apply the policy or **Cancel** to exit without saving.

Editing a Policy Group

To edit a Policy Group:

1. In the Aruba Fabric Composer UI, select **Configuration > Policy > Policy Groups**.
2. Click the button next to the Policy Group to edit and then select **Actions > Edit**.
3. In the Edit Policy Group Configuration window, make changes to the fields as needed. Click a tab to edit the settings on that tab.
4. Click **Apply** to save your edits or **Cancel** to exit without saving. When you click **Apply**, your changes get applied to all associated fabrics and switches.

Deleting a Policy Group

To delete a Policy group:

1. In Aruba Fabric Composer, select **Configuration > Policy > Policy Groups**.
2. In the row for the group to delete, click the checkbox to select the group, and then select **Actions > Delete**.
3. In the confirmation pop-up, click **OK** to delete the group or **Cancel** to retain the group.

Policies

You use the Policies page to create policies that contain rules and define which enforcement point is used.

To open the Policies page, in Aruba Fabric Composer, select **Configuration > Policy > Policies**.

The Policies page lists the current Policies and enables you to add, edit, or delete them.

The Policies table provides the following information for each Policy configuration:

- **Health:** The health of the switch (Healthy, Health, But, Upgrading, Degraded, Minor, Major, Critical, Unknown, and Non Recoverable).
- **Name:** User-defined name for the Policy configuration.
- **Type:** Type of the Policy (Distributed Firewall, L2 ACL, or L3 ACL).
- **Enforcer Direction:** Ingress or Egress.
- **Enforcer Type:** Port, LAG, or Network.
- **Enforcer:** Name of the Enforcer rule.
- **Policy Groups:** Name of the Policy Group.

Adding a Policy

To add a new Policy:

1. In Aruba Fabric Composer, select **Configuration > Policy > Policies**.
2. Select **Actions > Add**. The Policy configuration window appears.
3. In the Name page, complete the following fields:
 - **Name:** Enter any non-empty string, for example, Policy1, as a name for the Policy.
 - **Description:** Enter a description of the Policy.
4. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.

5. In the Settings page, select a required type.
 - **Type:** In the drop-down list, select from the options, Distributed Firewall, L2 ACL, or L3 ACL.
6. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
7. In the Rules page, set one or more Rules on the Policy. Click **Actions** > **Add** > **New** to create a new Rule. You can also select **Existing** to choose an existing Rule.

| Tab | Parameter Name | Description | Valid Values | Default |
|--|---|---|--|---------|
| Name | Name | Assign a name for the Rule. | Any non-empty string, for example, Rule-1. | |
| | Description | Enter a description for the Resource Pool. Click Next . | | |
| Action | Action | Select from either Allow or Drop from the drop-down list. Click Next . | | |
| Endpoint Groups | Source Endpoint Group | Select from an existing endpoint group or click Add to add a new endpoint group. | | |
| | Destination Endpoint Group | Select from an existing destination endpoint group or click Add to add a new destination endpoint group. | | |
| Applications and Service Qualifiers | Applications | Select or Add Application. | | |
| | Service Qualifiers | Select or Add Service Qualifiers. | | |
| Summary | This tab lists all configured parameters for you to verify. If you need to make any changes, click Back to open the tabs and update as needed. Click Next to go apply the Rules and go back to the Policy Group page. | | | |

- 8.
9. In the Enforcers page, select a Fabric, Direction, VRF, and a Network from their respective drop-down lists.
10. In the Summary page, check the fields for accuracy. If you need to change anything, click **Back** and make changes as needed.
11. Click **Apply** to apply the policy or **Cancel** to exit without saving.

Editing a Policy

To edit a Policy:

1. In the Aruba Fabric Composer UI, select **Configuration > Policy > Policies**.
2. Click the button next to the Policy to edit and then select **Actions > Edit**.
3. In the Edit Policy Configuration window, make changes to the fields as needed. Click a tab to edit the settings on that tab.
4. Click **Apply** to save your edits or **Cancel** to exit without saving. When you click **Apply**, your changes get applied to all associated fabrics and switches.

Deleting a Policy

To delete a Policy:

1. In Aruba Fabric Composer, select **Configuration > Policy > Policies**.
2. In the row for the policies to delete, click the checkbox to select the policy and then select **Actions > Delete**.
3. In the confirmation pop-up, click **OK** to delete the group or **Cancel** to retain the group.

Cloning a Policy

To clone a Policy:

1. In Aruba Fabric Composer, select **Configuration > Policy > Policies**.
2. In the row for the policies to clone, click the checkbox to select the policy and then click **Actions > Clone**.

Rules

You use the Rules page to create rules that consist of Source/Destination Endpoint Groups, Application/Qualifiers, and Actions.

To open the Rules page, in Aruba Fabric Composer, select **Configuration > Policy > Rules**.

The Rules page lists the current rules and enables you to add, edit, or delete them.

The Rules table provides the following information for each rule:

- **Name:** User-defined name for the rule.
- **Description:** User-defined description of the rule.
- **Type:** Type of rule (Layer 2 or Layer 3).
- **Action:** Indicates the action of the rule (Allow or Drop).
- **Source Endpoint Groups:** Name of the source endpoint groups.
- **Source Endpoint Group IPv4 Addresses:** IPv4 addresses of the source endpoint group.
- **Destination Endpoint Groups:** Name of the destination endpoint groups.
- **Destination Endpoint Group IPv4 Addresses:** IPv4 addresses of the destination endpoint group.
- **Applications:** Name of the application using the rule.
- **Service Qualifiers:** Name of the Service Qualifiers.
- **Service Qualifier Source Ports:** Name of the source ports of the service qualifier.
- **Service Qualifier Dest Ports:** Name of the destination port of the service qualifier.
- **Service Qualifier IP Protocols:** Protocols being used by the service qualifier (TCP, ICMP, or Any).
- **Policies:** Names of the policies governing the rule.

Adding a Rule

To add a new Rule:

1. In Aruba Fabric Composer, select **Configuration > Policy > Rules**.
2. Select **Actions > Add**. The Rule configuration window appears.
3. In the Name page, complete the following fields:
 - **Name**: Enter any non-empty string, for example, Rule-1, as a name for the Rule.
 - **Description**: Enter a description of the Rule.
4. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
5. In the Settings page, select a required type and action.
 - **Type**: In the drop-down list, select from the options (Layer 2 or Layer 3).
 - **Action**: In the drop-down list, select from the options (Allow and Drop).
6. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
7. In the Endpoint Groups page, select one or more Source and Destination Endpoint Groups. You can also click **Add** to create new Source or Destination Endpoint Groups.
8. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
9. In the Applications and Service Qualifiers page, select or add either Application or Service Qualifiers.
10. In the Summary page, check the fields for accuracy. If you need to change anything, click **Back** and make changes as needed.
11. Click **Apply** to apply the rule or **Cancel** to exit without saving.

Editing a Rule

To edit a Rule:

1. In the Aruba Fabric Composer UI, select **Configuration > Policy > Rules**.
2. Click the checkbox next to the Rule to edit and then select **Actions > Edit**.
3. In the Edit Rule Configuration window, make changes to the fields as needed. Click a tab to edit the settings on that tab.
4. Click **Apply** to save your edits or **Cancel** to exit without saving. When you click **Apply**, your changes get applied to all associated fabrics and switches.

Deleting a Rule

To delete a Rule:

1. In Aruba Fabric Composer, select **Configuration > Policy > Rules**.
2. In the row for the rules to delete, click the checkbox to select the rule and then select **Actions > Delete**.
3. In the confirmation pop-up, click **OK** to delete the rule or **Cancel** to retain the rule.

Cloning a Rule

To clone a rule:

1. In Aruba Fabric Composer, select **Configuration > Policy > Rules**.
2. In the row for the rules to clone, click the checkbox to select the rule and then click **Actions > Clone**.

Endpoint Groups

You use the Endpoint Groups page to create collection of endpoints that can be defined by IPv4 or VMname/Tag.

To open the Endpoint Groups page, in Aruba Fabric Composer, select **Configuration > Policy > Endpoint Groups**.

The Endpoint Groups page lists the current configurations and enables you to add, edit, or delete them.

The Endpoint Groups table provides the following information for each configuration:

- **Name:** Indicates the name of the endpoint group.
- **Description:** Indicates the description of the endpoint group.
- **Type:** Indicates the type of the endpoint group (Layer 2 or Layer 3).
- **IPv4 Addresses:** Indicates the IP address of the endpoint group.
- **MAC Addresses:** Indicates the MAC address of the endpoint group.
- **Rules:** Indicates the name of the rule governing this endpoint group.

Adding an Endpoint Group

To add an Endpoint Group:

1. In Aruba Fabric Composer, select **Configuration > Policy > Endpoint Groups**.
2. Select **Actions > Add**. The Endpoint Groups Configuration window appears.
3. In the Name page, complete the following fields:
 - **Name:** Enter any non-empty string. For example, EndpointGroup1.
 - **Description:** Enter a description of the Endpoint Group.
4. Click **Next** to go to the next page or **Cancel** to exit without saving.
5. In the Type page, select the required Type from the drop-down list: Choose either Layer 2 or Layer 3.
6. Click **Next** to go to the next page or **Cancel** to exit without saving.
7. In the Endpoints page, add one or more IPv4 Address endpoints. Select between **VM/VNIC/VMKernel Endpoint** or **Manual Endpoint entry** to manually enter the IPv4 Address.
8. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
9. In the Summary page, check the fields for accuracy and click **Apply** to create the Endpoint Group or **Cancel** to exit without saving.

Editing an Endpoint Group

To edit an Endpoint Group:

1. In the Aruba Fabric Composer UI, select **Configuration > Policy > Endpoint Groups**.
2. Select the checkbox next to the Endpoint Group to edit and then select **Actions > Edit**.

3. In the Endpoint Groups wizard page, make changes to the fields as needed. Click a tab to edit the settings on that tab.
4. Click **Apply** to save your edits or **Cancel** to exit without saving. When you click **Apply**, your changes get applied to all associated fabrics and switches.

Deleting an Endpoint Group

To delete an Endpoint Group:

1. In the Aruba Fabric Composer UI, select **Configuration > Policy > Endpoint Groups**.
2. Select the checkbox next to the Endpoint Group to delete and then select **Actions > Delete**.
3. In the confirmation pop-up box, click **OK** to delete the endpoint group or **Cancel** to retain the endpoint group. When you click **OK**, the deleted endpoint group gets removed from all associated fabrics and switches.

Applications

You use the Applications page to create collection of Service Qualifiers that are mostly used for ACLs.

To open the Applications page, in Aruba Fabric Composer, select **Configuration > Policies > Applications**.

The Applications table provides the following information for each configuration:

- **Name:** User-defined name for the application configuration.
- **Description:** User-defined description of the application configuration.
- **Service Qualifiers:** Name of the Service Qualifiers.
- **Service Qualifier Source Ports:** Source ports of the Service Qualifier.
- **Service Qualifier Dest Ports:** Destination ports of the Service Qualifier.
- **Service Qualifier IP Protocols:** Protocols of the Service Qualifier, for example, TCP, ICMP, or Any.
- **Rules:** Name of the Rules governing the application.

Adding an Application

To add an Application:

1. In Aruba Fabric Composer, in the **Configuration > Policies > Applications** page, select **Actions**, and then click **Add**. The Application Configuration wizard opens.
2. Configure the following parameters as needed:

| Tab | Parameter Name | Description | Valid Values | Default |
|--------------------|---|--|---|---------|
| Name | Name | Assign a name for the Service Qualifier. | Any non-empty string, for example, Application-1. | |
| | Description | Enter a description for the Service Qualifier. Click Next . | | |
| Service Qualifiers | Qualifiers | Select from the drop-down list or click Add to create a new Service Qualifier. See Adding a Service Qualifier for detailed information. Click Next . | | |
| Summary | This tab lists all configured parameters for you to verify. If you need to make any changes, click Back to open the tabs and update as needed. | | | |

3. Once you have completed and verified all parameters, you can exit the wizard. Click **Apply** to complete and save the Application, **Back** to go back and change a setting, or **Cancel** to exit this configuration without saving.

Editing an Application

To edit an Application:

1. In Aruba Fabric Composer, in the **Configuration > Policies > Application** page, select the Application you need to edit and then select **Actions > Edit**. The Application Configuration wizard opens.
2. Once you have made the changes and verified all parameters, you can exit the wizard. Click **Apply** to complete and save the Application, **Back** to go back and change a setting, or **Cancel** to exit this configuration without saving.

Deleting an Application

To delete an Application:

1. In the Aruba Fabric Composer UI, in the **Configuration > Policies > Applications** page, select the Application(s) to delete, and then select **Actions > Delete**.
2. At the confirmation prompt, click **OK** to delete the Application(s) or **Cancel** to retain the Application(s).

Service Qualifiers

You use the Service Qualifiers page to create Service Qualifiers that contain a list of ports/protocols.

To open the Service Qualifiers page, in Aruba Fabric Composer, select **Configuration > Policy > Service Qualifiers**.

The Service Qualifiers page lists the current configurations and enables you to add, edit, or delete them.

The Service Qualifiers table provides the following information for each configuration:

- **Name:** User-defined name for the configuration.
- **Description:** User-defined description of the configuration.
- **Type:** Type of Service Qualifier (Layer 2 or Layer 3).
- **VLANs:** Names of the VLANs associated with the Service Qualifiers.
- **Ethertype:** Ethertype of the Service Qualifier.
- **IP Protocol:** Protocol associated with the Service Qualifier (TCP, UDP, ICMP, and so on).
- **Source Ports:** Source Ports of the Service Qualifiers.
- **Destinations Ports:** Destination Ports of the Service Qualifiers.
- **Rules:** Name of the Rule associated with the Service Qualifiers.
- **Applications:** Name of the Application associated the Service Qualifiers.

Adding a Service Qualifier

To add a Service Qualifier:

1. In Aruba Fabric Composer, in the **Configuration > Policies > Service Qualifiers** page, select **Actions**, and then click **Add**. The Service Qualifier Configuration wizard opens.

2. Configure the following parameters as needed:

| Tab | Parameter Name | Description | Valid Values | Default |
|-----------------|---|---|---|---------|
| Name | Name | Assign a name for the Service Qualifier. | Any non-empty string, for example, Service-Qualifier-1. | |
| | Description | Enter a description for the Service Qualifier. Click Next . | | |
| Settings | Type | Select from either Layer 2 or Layer 3 from the drop-down list. | | |
| | IP Protocol | Enter a number between 0 and 255, or 'tcp' 'icmp', or 'any'. For example: tcp | | |
| | Source Port | Enter 'any', a number, set, or range between 1-65535. | | |
| | Destination Port | Enter 'any', a number, set, or range between 1-65535. Click Add to add the settings or Clear to clear the entries and start over again. Click Next if you wish to proceed. | | |
| Summary | This tab lists all configured parameters for you to verify. If you need to make any changes, click Back to open the tabs and update as needed. | | | |

3. Once you have completed and verified all parameters, you can exit the wizard. Click **Apply** to complete and save the Service Qualifier, **Back** to go back and change a setting, or **Cancel** to exit this configuration without saving.

Editing a Service Qualifier

To edit a Service Qualifier:

1. In Aruba Fabric Composer, in the **Configuration > Policies > Service Qualifiers** page, select **Actions**, and then click **Edit**. The Service Qualifiers Configuration wizard opens.
2. Once you have made the changes and verified all parameters, you can exit the wizard. Click **Apply** to complete and save the Service Qualifier, **Back** to go back and change a setting, or **Cancel** to exit this configuration without saving.

Deleting a Service Qualifier

To delete a Service Qualifier:

1. In the Aruba Fabric Composer UI, in the **Configuration > Policies > Service Qualifiers** page, select the Service Qualifier(s) to delete, and then select **Actions > Delete**.

2. At the confirmation prompt, click **OK** to delete the Service Qualifier or **Cancel** to retain the Service Qualifier.

Microsegmentation

As an orchestrator of the Data Center infrastructure, Aruba Fabric Composer manages and automates network and compute/storage infrastructure and can use API-based, third-party integrations. These integrations can be used to create microsegmentation on the compute host and the network from a single UI.

Aruba Fabric Composer orchestrates end-to-end microsegmentation functionality in conjunction with:

- A hypervisor, to create PVLAN-based segmentation. For example, vSphere.
- Aruba CX switches, to match network-level PVLAN-based segmentation.
- Pensando components, to allow Aruba Fabric Composer append the segmentation with firewall policies and rules.

Therefore, when orchestrating a microsegmentation solution, Aruba Fabric Composer focuses on two main concepts: Segmentation and Policies.

- Segmentation, which is responsible for isolation of endpoints. This is done by PVLAN implementation.
- Policies, which consist of rules that execute actions for endpoints. This is done by permit/deny/log and so on.



In Aruba Fabric Composer 6.3.0, policies must be enforced by the Stateful Distributed Firewall.

Creating a Microsegmentation

To create a new Microsegmentation:

1. In Aruba Fabric Composer, select **Configuration > Policy > Microsegmentation**
2. Click **Action > Add**. The Distributed Virtual Switch (DVS) Configuration window appears.
3. In the Settings page, enter a required name and NICs from the selected host:
 - **Name**: Enter a name for the DVS configuration.
 - **Host**: Select a Host from the drop-down list that is populated from the vSphere integration.
 - **NICs**: Select NICs from the drop-down list that will serve as your uplinks from the host to the switch Fabric. Click **Add** once all your NICs have been selected or click **Clear** if you need to start over. Repeat for any new Host selection.
4. Click **Next** to go to the next page or **Cancel** to exit without saving.
5. In the PVLAN page, configure optional Primary and Isolated VLANs:
 - **Port Group Name Prefix**: Enter a prefix name for the port groups to be created.
 - **Primary VLAN**: Enter a VLAN between 2 and 4094.
 - **Isolated VLAN**: Enter a VLAN between 2 and 4094.
 - Click **Add** to add the Primary VLAN and Isolated VLAN to the list or click **Clear** to clear the list and start over again.

6. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
7. In the VRF page, configure optional Network and SVI:
 - **Fabric:** Select a Fabric from the drop-down list.
 - **VRF:** Select a VRF from the drop-down list or click **Add** to open the VRF Configuration window. Then, proceed to configure the VRF as in [VRF](#). Once the VRF configuration is applied, the VRF will be automatically selected.



VRF configuration is already applied to the system even if you cancel out the microsegmentation configuration at this point.

- **Network:** Select a network from the drop-down list or click **Add** to open the Network Configuration window. Then, proceed to configure a Network as in [Networks](#). Once the Network configuration is applied, the Network will be automatically selected.



Most of the fields are pre-populated and editable except for VLAN.

PSM Integration is required for Network configuration.



Network configuration is already applied to the system even if you cancel out of the microsegmentation configuration at this point.

- **SVI:** Select an SVI from the drop-down list or click **Add** to open the IP Interface Configuration window. Then, proceed to configure an SVI as in [Adding an IP Interface](#). Once the SVI configuration is applied, the SVI will be automatically selected.



Some of the fields are pre-populated and most of the fields are editable except for Name.

8. Disable ICMP Redirect on all switches within the selected Fabric. Select to disable ICMP Redirects as switches have this feature enabled by default.
9. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
10. In the Policy page, select a policy from the drop-down list or click **Add** to open the Policy Configuration window. Then, proceed to configure the policy as in [Adding a Policy](#). Once the policy configuration is applied, the Policy will be automatically selected.
11. In the Summary page, check the fields for accuracy. If you need to change anything, click **Back** and make changes as needed.
12. Click **Apply** to apply the DVS configuration or **Cancel** to exit without saving.

Updating a Microsegmentation

To update a Microsegmentation:

1. In Aruba Fabric Composer, select **Visualizations > Hosts**.
2. Right click on a Host and then click **Update Microsegmentation**. The Update Microsegmentation window appears.

3. Select, from the drop-down lists, a required DVS and NICs from the selected host.
4. Once you have completed and verified all parameters, you can exit the wizard. Click **Apply** to complete and save the Microsegmentation or **Cancel** to exit this configuration without saving.

Firewall Log

The Firewall Log provides the following information:

- **Name:** User-defined name for the Firewall Log.
- **Facility:** Choose a transport facility from the drop-down list.
- **Severity:** Choose between All, ALLOW, and DENY.
- **Format:** Choose between Syslog-BSD and Syslog-RFC5424.
- **Logging Enabled:** Enable or Disable logging.
- **Host:** Host name.
- **Port:** Name of the port.
- **Transport:** Transport protocol (for example, UDP).
- **Applies to:** Name of the Fabric to which this log applies.

Adding a Firewall Log

To add a Firewall Log:

1. In Aruba Fabric Composer, in the **Configuration > System > Firewall Log** page, select **Actions**, and then click **Add**. The Firewall Log Configuration wizard opens.
2. Configure the following parameters as needed:

| Tab | Parameter Name | Description | Valid Values | Default |
|--------------------|--------------------|---|--|---------|
| Name | Name Prefix | Assign a name for the Firewall Log. | Any non-empty string, for example, firewall log-1. | |
| Application | Fabrics | Select the Fabric in which to apply this configuration. A Fabric implies that all Switches contained within it. | | |
| | Switches | Select the Switch in which to apply this configuration. Note that this is not applicable when a Fabric is selected. | | |
| Settings | Facility | Select a facility from the drop-down list. | | |

| Tab | Parameter Name | Description | Valid Values | Default |
|-----------------|---|---|---------------------------------|---------|
| | Severity | Select between All, Allow, and Deny from the drop-down list. | | |
| | Format | Select between Syslog-BSD and Syslog-RFC5424 | | |
| | Enable PSM Target | Click the checkbox to enable PSM Target. | | |
| | | | | |
| Entries | Host | Enter a valid Hostname, IPv4, or IPV6 address. | | |
| | Port | Enter a number between 1 and 65535. | Any number between 1 and 65535. | |
| | Transport | Select UDP from the drop-down list. Click Add to add the configuration or Clear to clear the configuration. | | |
| Networks | Networks | Select the network. | | |
| | Enable Logging | Select to enable or disable logging. | | |
| Summary | This tab lists all configured parameters for you to verify. If you need to make any changes, click Back to open the tabs and update as needed. | | | |

- Once you have completed and verified all parameters, you can exit the wizard. Click **Apply** to complete and save the Firewall Log, **Back** to go back and change a setting, or **Cancel** to exit this configuration without saving.

Editing a Firewall Log.

To edit a Firewall Log:

- In Aruba Fabric Composer, in the **Configuration > System > Firewall Log** page, select **Actions**, and then click **Edit**. The Firewall Log Configuration wizard opens.
- Once you have made the changes and verified all parameters, you can exit the wizard. Click **Apply** to complete and save the Firewall Log, **Back** to go back and change a setting, or **Cancel** to exit this configuration without saving.

Deleting a Firewall Log

To delete a Firewall Log:

- In the Aruba Fabric Composer UI, in the **Configuration > System > Firewall Log** page, select the Firewall Log(s) to delete, and then select **Actions > Delete**.
- At the confirmation prompt, click **OK** to delete the Firewall Log or **Cancel** to retain the Firewall Log.

Firewall Profiles

Firewall Profiles allows you to view the current settings for the firewall aspect of any Pensando PSM instances being managed through the Pensando PSM Integration.

The Firewall Profiles table provides the following information:

- **Name**
- **Connection Tracking**
- **Session Idle Timeout**
- **TCP Timeout**
- **Detect App**
- **UDP Timeout**
- **Drop Timeout**
- **ICMP Timeout**
- **TCP Drop Timeout**
- **UDP Drop Timeout**
- **ICMP Drop Timeout**
- **TCP Close Timeout**
- **TCP Half-Closed Timeout**
- **UDP Active Session Limit**
- **ICPM Active Session Limit**
- **TCP Half-Open Session Limit**
- **TCP Connection Setup Timeout**

Editing a Firewall Profile.

To edit a Firewall Profile:

1. In Aruba Fabric Composer, in the **Configuration > System > Firewall Profiles** page, select **Actions**, and then click **Edit**. The Firewall Profiles Configuration wizard opens.
2. Once you have made the changes and verified all parameters, you can exit the wizard. Click **Apply** to complete and save the Firewall Log, **Back** to go back and change a setting, or **Cancel** to exit this configuration without saving.

PSM Alerts

The **Configuration > Policy > PSM Alerts** page lists the below details of each Pensando PSM integration in Aruba Fabric Composer.

- **Message:** System-generated error message.
- **State:** State of the PSM (Acknowledged, Open, or Resolved).
- **Tenant:** The manufacturer's product name of the switch.
- **Severity:** Severity of the error.
- **PSM Link:**
- **PSM Events Link:**
- **Source:**
- **Created:** Date and time stamp of when the error was created.
- **Modified:** Date and time stamp of when the error was modified.
- **Total Hits:**

The **Maintenance** option provides access to the following features to maintain the fabric and switches:

- Switches
- Audits
- Support Bundles
- Device Firmware
- Backups
- Switch Checkpoints
- Syslog
- High Availability
- Licenses

Switches

You can display the status of the leaf-spine fabric switches by selecting **Configuration > Maintenance > Switches**, which displays the Switches page. This page also enables you to perform switch maintenance tasks.

Switch Information

The Switches page displays the following information:

| Column | Description |
|---------|--|
| Health* | Switch health state. Possible values: <ul style="list-style-type: none">■ Healthy■ Healthy, But...■ Upgrading■ Degraded■ Minor■ Major■ Critical■ Unknown■ Non Recoverable |
| Status* | Switch status. Possible values: <ul style="list-style-type: none">■ Synced■ Syncing■ Authenticate■ Sync Failure■ Connected■ Uninitialized■ Out of Fabric |

| Column | Description |
|-----------------------------|---|
| | <ul style="list-style-type: none"> ■ Unresponsive |
| NAE Status | Network Analytics Engine (NAE) status (CRITICAL, MAJOR, MINOR, NORMAL, DISABLED, UNKNOWN) |
| Name* | Unique switch name. |
| Description | Standard or user-friendly description of the switch. |
| Hostname | Fully qualified host name or IP address. |
| Fabric | Fabric on which the switch resides. |
| Valid Password* | Switch password fulfills the password policy and the default password has been changed. Possible values: Yes or No . |
| Password Scope* | Scope of the password for the Linux admin user on a switch. Possible values: <ul style="list-style-type: none"> ■ Fabric ■ Switch |
| IPv4 Mode | IPv4 mode. Possible values: <ul style="list-style-type: none"> ■ DHCP ■ Static |
| IPv4 Address* | Switch IPv4 address. |
| IPv4 Mask | Switch IPv4 mask. |
| IPv4 Gateway | Switch IPv4 gateway address. |
| IPv6 Mode | Switch IPv6 Mode. |
| IPv6 Address | Switch IPv6 address. |
| IPv6 Mask | Switch IPv6 mask. |
| IPv6 Gateway | Switch IPv6 gateway address. |
| MAC Address | Switch MAC address. |
| Model* | Switch model. |
| Hardware Revision | Revision number of the hardware. |
| Serial Number | Switch serial number. |
| Software Version* | Switch software version installed on the switch. |
| Non-Active Software Version | Non-active software version installed on the switch. |
| Staged Software Version* | Not used with leaf-spine fabric. |


| Column | Description |
|---------------------|---|
| Software State | Select from STAGING PENDING, STAGING, STAGING COMPLETE, STAGING FAILED, UPGRADE PENDING, UPGRADING, UPGRADE COMPLETED, AND UPGRADE FAILED. |
| Platform Name | Platform name assigned to the switch. |
| Available Firmware | Firmware version available for upgrade. |
| Product Code | Aruba model of each switch. |
| Fan Direction | Not used with leaf-spine fabric. |
| TAA Compliant | Indicator that the switch meets, or does not meet, Trade Agreements Act (TAA) compliance. Possible values: Yes or No . |
| Role* | Switches assigned role in the leaf-spine fabric. Possible values: Spine , Leaf , or Border Leaf . |
| Reserved VLAN Range | Reserved VLAN range between 1 to 4095 |
| Stats Enabled | Whether statistics enabled or not for each switch. |
| VSX Peer | Name of the switch's VSX Peer. |
| VSX Capabilities | Switch's VSX capabilities: Live, if VSX Switch, AOS-CX Version 10.07 or later installed and configured for VSX. Sequenced, if VSX Switch, AOS-CX Version 10.06 installed and configured for VSX. None, if no VSX switch or not configured for VSX. |
| VSX Update Status | VSX Live Update status of switch during VSX Live update. |
| VSX Protocol Status | VSX protocol status readiness for shutdown during VSX live update. |

*Default displayed columns. To manage which columns display, use the Customize table contents tool.

Switch Maintenance Actions

You can perform the following maintenance activities on switches using the options available from the **Actions** button:

| Action | Description |
|-------------------------|---|
| Discover Switches | Discover a switch, which you can then assign to a Leaf-Spine Fabric. |
| Edit | Edit the configuration of one or more switches. |
| Delete | Delete a switch from the fabric after physically powering off and disconnecting the switch from the fabric. |
| Assign Switch to Fabric | Assign a switch to a fabric. |
| Stage firmware | Stage a firmware from a saved configuration. |

| Action | Description |
|---|--|
| Reboot | Reboot the selected switches. |
| Reconcile | Synchronize the selected switches with the Aruba Fabric Composer configuration data. |
| Save Configuration | Save the running configuration to the startup configuration for all selected switches. |
| Stage Firmware | Stage a Firmware to the switch. |
| Update | Update switch software. |
| DSM | Only Distributed Services-capable switches are supported. |
| Statistics | Enable or Disable. |
| Change Password | Change a switch password. |
| Launch NetEdit ■ Topology View ■ Details View | <p>Launch Aruba NetEdit from the UI console.</p> <p>Launch into the Aruba NetEdit topology view with switches selected.</p> <p>Launch into Aruba NetEdit details view for a single selected switch.</p> <hr/> <div>  <p>The Launch NetEdit option is available only if the Aruba NetEdit Integration is configured and is managing the switch(es).</p> </div> |

Editing a Switch Configuration

Editing a switch configuration enables you to define whether the switch uses DHCP or static IP for switch access through the management port.

To edit a switch configuration:

1. In the Aruba Fabric Composer UI, select **Configuration > Maintenance > Switches**.
2. Select the switch to edit and then select **Actions > Edit**.
3. In the Switch window, make changes to the switch configuration as needed. Click a tab to edit the settings on that tab.
4. Click **Apply** to save the edits or **Cancel** to exit without saving.

Deleting a Switch Configuration

You can delete the configuration for a switch that is being permanently removed from the Aruba Fabric Composer.



This is a destructive procedure and must not be performed if the switch is being replaced. Also, you cannot delete a switch configuration for a switch that is currently in the fabric; this action will not be allowed.

To delete the configuration for a switch that has been removed from the Aruba Fabric Composer:

1. In the Aruba Fabric Composer UI, select **Configuration > Maintenance > Switches**.
2. Select the switch to remove from the fabric and then select **Actions > Delete**.
3. In the Delete confirmation window, click **OK** to delete the switch configuration or **Cancel** to exit without any action.

Rebooting Switches

1. Select **Configuration > Maintenance > Switches**.
2. Check the box next to each switch that needs to be rebooted.



When issuing a reboot request to multiple fabric modules, do not include more than 10 modules in the reboot request. Including more than 10 modules in the reboot request may cause fabric communication instability, resulting in a failed reboot request for some modules.

3. Select **Actions > Reboot**.
4. At the confirmation prompt, click **OK** to reboot the switch(es) or **Cancel** to exit without rebooting.

Reconciling Switches

1. Select **Configuration > Maintenance > Switches**.
2. Check the box next to each switch that needs to be reconciled.



Issuing a reconcile may cause the selected switch(es) to experience changes in status as the reconcile is performed. This may occur even if the switch is currently in the Synced state.

3. At the confirmation prompt, click **OK** to reconcile the switch(es) or **Cancel** to exit without rebooting.

Discover Switches

You use the Discover Switches wizard in Guided Setup to discover new switches.

You can also go to **Configuration > Maintenance > Switches > Discover Switches**

In Guided Setup, click **Switches** to open the wizard and enter the details of the switches to be discovered:

| Parameter Name | Description |
|---|---|
| Switches | An IPv4 address, IPv6 address, Hostname and/or and IPv4 hyphenated range not to exceed 256 switches. |
| admin Switch Password | The switches admin account password for switch access. If the switches have no password, this password will be set on them. |
| Confirm admin Switch Password | Must match the admin Switch Password. |
| afc_admin Account Password | A password to be used for the afc_admin creation for switch access. |
| Confirm afc_admin Account Password | Must match the afc_admin Account Password. |

Click **Apply** to complete the process and exit or click **Cancel** to exit without making any changes.

After a switch is discovered, you can verify that it was discovered and displayed in the Switches page (**Configuration > Maintenance > Switches**). See [Switches on page 178](#).

Managing a Switch Password

When you add a fabric to Aruba Fabric Composer, you assign a password to the fabric, which sets the password of the Linux **admin** user for all switches in the fabric. This procedure shows how to set unique passwords for each switch if needed and how to revert a switch password back to the fabric password. The process of configuring a switch password can be performed on more than one switch at a time.

To set a unique password for each switch:

1. In the Aruba Fabric Composer UI, select **Configuration > Maintenance > Switches**.
The Switches page is displayed.
2. Select the switch requiring a new password and then select **Actions > Change Password**.
The Change Password dialog box is displayed.
3. Do one of the following:
 - To configure a switch password, complete the following fields:

| Parameter | Description |
|----------------------------|--|
| Current | Enter the current switch password, which can be the fabric password or a switch-specific password. |
| Use Fabric Password | Deselect this option if it is selected. The New and Confirm fields become active. |
| New | Enter the new password. |
| Confirm | Enter the new password to confirm. The Apply button becomes active. |

- To revert a switch password back to the fabric password, enter the current password and select **Use Fabric Password**. The Apply button becomes active.
4. Click **Apply** to complete the process and exit or click **Cancel** to exit without making any changes.

Upgrading Switches

If a newer switch software install image is staged for switches, upgrading the switches as described below will reboot the switches using the staged image.

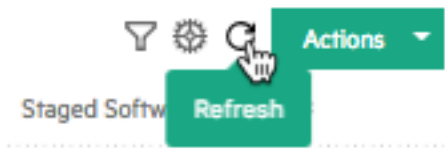


If you are upgrading to a new switch software version, before you perform the upgrade as described below, you must first upload the new switch install image to the Aruba Fabric Composer and then stage the install image to all switches to be upgraded. Uploading is performed from the window: **Configuration > Maintenance > Switch Images**. Staging is performed from the window: **Configuration > Maintenance > Switches**.

If you try to use this feature to revert the switch to an older software image, you may encounter issues if the older image does not support features available in the current newer image.

To upgrade the switch software image for one or more switches:

1. In the Aruba Fabric Composer UI, select **Configuration > Maintenance > Switches**.
2. In the Switches page, click the **Refresh** icon and make sure that the recently-staged switch image appears in the 'Staged Software Version' column for the switch(es) to be upgraded.



3. Select the switches to upgrade and then select **Actions > Upgrade**.



Any switch being upgraded will reboot to complete the upgrade.

4. In the Upgrade Switch confirmation window:
 - a. You must check **Accept the license agreement**. You can view the license agreement and click either the **X** or the **OK** button. Clicking **OK** does not accept the agreement; you must select the check box.
 - b. You can optionally check the **Perform the switch upgrades in parallel** to upgrade all selected switches at the same time.

Selecting **Perform the switch upgrades in parallel** upgrades ALL selected switches at the same time. Depending on the number and distribution of switches in the fabric selected to upgrade, there could be a significant impact on production traffic.

- c. Click either **Apply** to upgrade the switches or **Cancel** to exit without upgrading.



Each switch upgrade takes several minutes.

If you upgrade multiple switches and did not check **Perform the switch upgrades in parallel**, the switches will upgrade one at a time.

As each switch upgrades, the **UPGRADING** status is reported on the following UI pages:

- In the Health column on the **Configuration > Maintenance > Switches** page.
- On the Dashboard in the Fabrics panel by hovering over the yellow status indicator for that switch. A window opens and indicates the Health as Upgrading.

5. To verify that the switch(es) have been successfully upgraded, refer to the Software Version column on the **Configuration > Maintenance > Switches** page.

Onboarding a Replacement Switch

This section explains the steps necessary to add or onboard a replacement switch to Aruba Fabric Composer.

Guidelines

A successful switch replacement requires an up-to-date copy of the startup configuration from the switch to be replaced. Therefore, it is recommended that, during the operation of an Aruba Fabric, the startup configuration from each and every switch in the Fabric be periodically saved and made available in the event of a total switch failure.

Aruba Fabric Composer-powered configuration changes that are not reflected in the most recent copy of the startup configuration will not be present on the replacement switch and therefore will need to be restored manually.

Process

To replace the switch software image for one or more switches:

1. Power off the switch, or otherwise isolate the defective switch from the network.
2. Assign a temporary IP address (one not known previously by Aruba Fabric Composer) to the replacement switch management interface.
3. Install the switch firmware version that matches the switch to be replaced.
4. Using the CLI command, transfer the backup startup-configuration file to the replaced switch. Ensure that this file is on a server accessible through the management interface using TFTP or SFTP protocols.
5. Using the *show startup-config* command, verify that the startup configuration is correct,
6. If using a static IP address for the management interface, just rebooting the switch is sufficient. However, if using DHCP to assign IP addresses, then the DHCP server must be updated to assign the correct IP address to a request matching the new switch's MAC address.

After the switch reboots, the replacement switch will assume the IP address of the switch that was replaced. Aruba Fabric Composer will then contact the new switch and start a configuration-reconciliation process. The resulting Aruba Fabric Composer configuration will then match the restored startup configuration.

Audits

In Aruba Fabric Composer, by selecting **Configuration > Maintenance > Audits**, you can view logged audit messages which may be Events (informational) or Alarms.

Also, you can access this Audits page from the Dashboard Audits panel by clicking on either **Alarms** or **Events**. This opens the Audits page with the table filtered to show either all alarms or all events, as selected.

The following information is provided with event time and description:

- **Severity:** Color-coded alarms that indicate the severity of the alarm. Severities include:
 - **ALERT:** Red. An alert that urgently needs to be addressed.
 - **EMERGENCY:** Red. An alert that urgently needs to be addressed.
 - **ERROR:** Red. An alert that urgently needs to be addressed.
 - **CRITICAL:** Red. A critical message that urgently needs to be addressed.
 - **WARNING:** Yellow. A cautionary message.
 - **INFORMATIONAL:** Gray. A message that provides non-alarm information about a component.
 - **UNSPECIFIED:** Gray. A message that provides non-alarm information about a component.
 - **DEBUG:** Gray. A message that provides non-alarm information about a component.
 - **NOTICE:** Gray. A message that provides non-alarm information about a component.
- **Type:** The type of message; an event or alarm.
 - **EVENT:** Indicates a non-alarm message such as updating a configuration parameter.
 - **ALARM:** Indicates that the message is an alarm that needs to be addressed.
- **Time:** The time that the message occurred.
- **Description:** A descriptive message of what occurred on the system.
- **Component:** Provides the configured description of the component generating the event.
- **Component Type:** Indicates the type of component generating the event. For example, LAG, Fabric, Port, Switch, Neighbor Discovery, Audit Notification, Port Security, Access Control Lists, Reconcile Notification, MAC Attachment, Alarm, Upgrade Notification, Resource Audit Notification or Integration Pack Status.
- **Event Type:** Indicates the type of type of error being generated by the component. For example, Created, Deleted, Modified, Notify, Replaced, and Alarm Received.

Support Bundles

The Support Bundles feature enables you to generate a compressed archive of configuration and log files to be used for troubleshooting and support. You can:

- Collect Aruba Fabric Composer logs.
- Collect switch logs for a selected switches or for all switches in the fabric.
- Specify a time period for which to collect the logs.
- Specify a name for the support bundle.
- Download an entire bundle, a specific switch log bundle, or the Aruba Fabric Composer bundle.



You must have Administrator or Operator access to manage support bundles.

To access and view support bundles, select **Configuration > Maintenance > Support Bundles**.

The following information is provided for each support bundle:

- **Name:** User-defined or automatically generated file name of the support bundle.
- **Status:** The current status of the support bundle which may include Updating, Completed, or Completed with Errors.
- **Created:** Date and time that the support bundle was created.
- **History** (hidden by default): Indicates the length of time that the support bundle data was collected and covers.
- **Aruba Fabric Composer:** Indicates if Aruba Fabric Composer logs are included in the support bundle.
- **Size:** The size of the support bundle.
- **Checksum (SHA256)** (hidden by default): SHA256 checksum value for the support bundle.
- **Applies To:** Indicates which fabric, switches, or software components, are represented in the support bundle data that was captured. For example, Fabric0, Switch1, Switch2 or Aruba Fabric Composer Data.

Support Bundle Files

Each support bundle contains files for individual components such as the Aruba Fabric Composer or each switch. To expand a bundle and view its contents, either:

- Click the **Expand** icon ... and then select **Bundle Files**, or
- Select the bundle to expand and then select **Actions > Bundle Files**.

You can download either the entire bundle or a bundle file for a specific component. For example, you can download either the Aruba Fabric Composer bundle file which is, for example, 36 MB or the bundle file for switch xenon1 which is, for example, 17 MB. These and the other listed files are part of the full, approximately 300 MB bundle.

The following information is provided for each component bundle file:

- **Status:** The current status of the component bundle file — Requested, Transferring, Failed, Available, and Recovered.
- **Name:** User-defined or automatically generated file name of the component bundle.
- **Created:** Date and time that the component bundle was created.
- **Size:** The size of the component bundle.

- **Source:** Indicates which fabric, switches, or software, are represented in the component bundle data that was captured. For example, Fabric0, Switch1, Switch2 or Aruba Fabric Composer Data.
- **Checksum (SHA256)**(hidden by default): SHA256 checksum value for the component bundle.
- **Status Reason** (hidden by default): Indicates the reason for the status condition.


Creating a Support Bundle

To create a support bundle:



You must have Administrator or Operator access to create a support bundle.

1. In the Aruba Fabric Composer UI, select **Configuration > Maintenance > Support Bundles**.
2. Select **Actions > Add**.
3. In the Support Bundles window, complete the following fields:
 - **Include Aruba Fabric Composer data:** This option is selected by default. If you do not want Aruba Fabric Composer log data to appear in this support bundle, unselect this option.
 - **Name Prefix:** Optionally, enter a user-friendly name for this support bundle.
 - **Fabrics:** If you want a support bundle to contain information for all switches in a fabric, in this drop-down list, select the fabric.
 - **Switches:** This field is enabled only if No fabric is selected. This enables you to select any switches managed by this Aruba Fabric Composer to appear in the support bundle.
 - **History:** Enter either the number of days (1-7) to include in this bundle, or 0 (zero) to bundle all available logs.
4. When finished, click either **Apply** to create the support bundle or **Cancel** to exit without creating a bundle.

The bundle is created in the background. To update the status as it progresses, click the **Refresh** button .

Downloading a Full Support Bundle

This procedure shows how to download a full support bundle containing all component-specific bundle files.



The support bundle size is estimated as the sum of all the support bundle files until the support bundle is downloaded. The support bundle compressed file is not created until you download it. After download, the actual size of the support bundle is known and updated in the UI. Because file compression is used to create the support bundle, the actual and estimated sizes may differ.

To download the support file for a specific switch or for the Aruba Fabric Composer, refer to [Downloading a Support Bundle File for a Component on page 188](#).

1. In the Aruba Fabric Composer UI, select **Configuration > Maintenance > Support Bundles**.
2. Select the support bundle radio button and then select **Actions > Download**.

The support bundle is downloaded to your local Download directory.

Downloading a Support Bundle File for a Component

To download a generated support bundle file for a specific component such as the Aruba Fabric Composer or a specific switch:

1. In the Aruba Fabric Composer UI, select **Configuration > Maintenance > Support Bundles**.
2. Expand the bundle to list the component files.
 - Click the **Expand** icon ... and then select **Bundle Files**, or
 - Select the bundle to expand and then select **Actions > Bundle Files**.
The individual component bundle files are listed.
3. Select the file to download from the expanded list and then select **Actions > Download**.
The support bundle is automatically downloaded to your local Download directory.

Deleting a Support Bundle

To delete a specific support bundle:



You must have Administrator or Operator access to delete a support bundle.

1. In the Aruba Fabric Composer UI, select **Configuration > Maintenance > Support Bundles**.
2. Check the box for that bundle and then select **Actions > Delete**.
3. At the confirmation prompt, click either **OK** to delete the support bundle or **Cancel** to exit without deleting the bundle.

Deleting All Support Bundles

To delete all support bundles:



You must have Administrator or Operator access to delete all support bundles.

1. In the Aruba Fabric Composer UI, select **Configuration > Maintenance > Support Bundles**.
2. Select **Actions > Delete All**.
3. At the confirmation prompt, click either **OK** to delete all support bundles or **Cancel** to exit without deleting the bundles.

Device Firmware

Device Firmware allows a new image to be uploaded to the system.

The Device Firmware table provides the following information:

- **Name:** User-defined name for the system.
- **Checksum (SHA256):** SHA256 checksum value.
- **Version:** Version of the firmware.
- **Created:** Date of firmware creation.
- **Platform Name:** Platform associated with the firmware.
- **Size:** Size of the firmware file.

Using the Device Firmware page, you can upload a new image to the system.

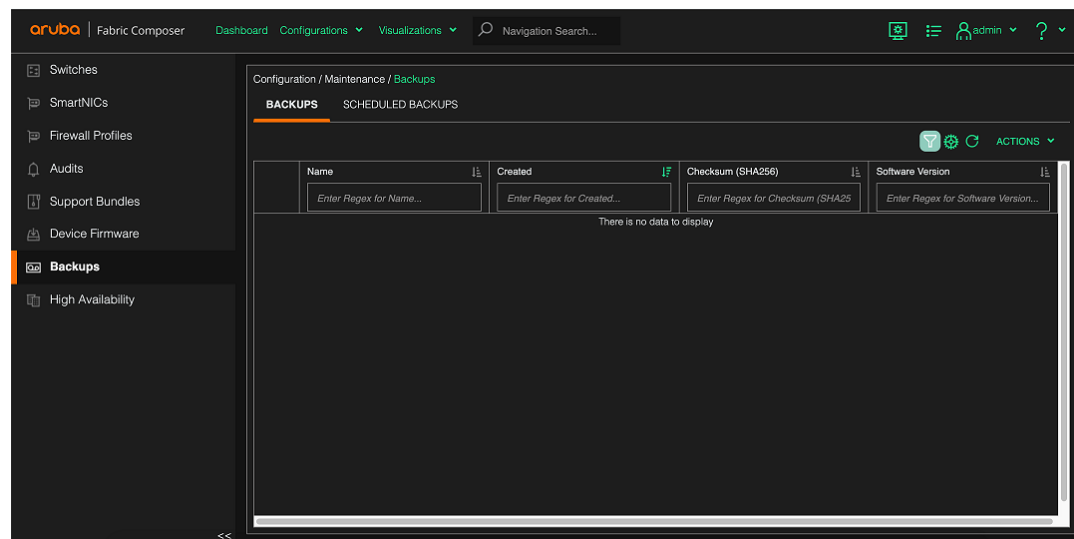
1. In Aruba Fabric Composer, select **Configuration > Maintenance > Device Firmware**.
2. Select **Actions > Add To System**. The Device Firmware window opens.
3. Click **Browse** to choose an image file from your local drive.
4. Click **Apply** to apply the new image or **Cancel** to exit without saving.

Backups

You can create multiple backup instances of the Aruba Fabric Composer configuration, saving known states of the fabric configuration. These backups contain all of the Fabric Composer configuration information available at the moment that the backup(s) are created. The Aruba Fabric Composer Backup file also contains the running and startup configurations from each switch at the time the backup was taken. The switch configurations are not automatically applied on a restore of a backup, but the switch configuration snapshots are taken to facilitate manual disaster.

This information is stored as a backup instance that can be used in the future to restore the Fabric Composer configuration to a known saved state.

For example:



Backups

This tab lists all created backups, scheduled or unscheduled. The fields under the Backups tab are defined as follows:

- **Name:** The file name of the backup.
- **Created:** The backup creation time stamp.
- **Checksum (SHA256):** The SHA256 checksum of the backup.
- **Status:** Indicates the status of the backup.
- **Retention:** Indicates how long the backup is retained.
- **Software Version:** Identifies the Aruba Fabric Composer software version of the backup.
- **Supported:** Indicates whether or not the backup is supported on this software version of the Aruba Fabric Composer. You cannot restore a backup that was created from an Aruba Fabric Composer version that was newer than the current installed version.

Scheduled Backups

This tab identifies the configured scheduled backups. It lists the schedules, not the actual generated backups. The fields under the Scheduled Backups tab are defined as follows:

- **Name:** The name of the backup schedule.
- **Repeat:** Identifies how often the backup is generated.
- **Next Backup Date:** Identifies when the next scheduled backup will occur.
- **Retention:** Identifies how long the backup is retained.

Creating a Backup Instance of the Aruba Fabric Composer Configuration

To create a backup instance of the current Aruba Fabric Composer configuration:

1. In Aruba Fabric Composer, select **Configuration > Maintenance > Backups**. The window opens the Scheduled Backups tab.
2. Select the **Backups** tab.
3. Select **Actions** and click **Create Backup**.
4. In the Backups wizard, complete the following as needed:

| Parameter Name | Description | Valid Values | Default |
|-----------------------------------|---|--|-----------|
| Name Prefix | Enter any non-empty string. For example, My Backup. | | |
| Set Backup Retention Limit | Check this box to activate the Retention fields that follow, enabling you to define a period of time for which to retain the backup. | Checked or unchecked | Unchecked |
| Retention Unit | Active only if Set Backup Retention Limit is selected. In this drop-down list, select the type of period (hour(s), days, weeks, and so on) that you want the backup to be retained. | Hour(s) Day(s) Week(s) Months | |

| Parameter Name | Description | Valid Values | Default |
|------------------------|---|---|---------|
| Retention Value | Active only if Set Backup Retention Limit is selected. For the selected retention period type, enter a number to specify the exact retention period. | For Hours: 1-8760 For Days: 1-365 For Weeks: 1-52 For Months: 1-12 | |

- When finished setting up the backup, click **Apply** to create the backup schedule or **Cancel** to exit without creating the schedule.

Adding or Editing a Schedule to Create Aruba Fabric Composer Configuration Backups

To add or edit a schedule to create Aruba Fabric Composer configuration backups:

- In Aruba Fabric Composer, select **Configuration > Maintenance > Backups**. The window opens the Scheduled Backups tab.
- Select the **Scheduled Backups** tab.
- Select **Actions** and either **Add** or **Edit**.
- In the Scheduled Backups wizard, complete the following as needed:

| Parameter Name | Description | Valid Values | Default |
|-----------------------------------|--|--|-----------|
| Name | Enter a name for this backup schedule. | | |
| Repeat | In this drop-down list, select how often the backup repeats. NOTE: Your selection determines which fields are active to complete and which are grayed out as being inapplicable. | Never Every Hour Every Day | |
| Time | In the Time field, enter the time in hours and minutes, using the 12-hour format, for the backup to occur. Next, enter either AM or PM. Click Next to go to the Retention tab. | Example = 03:30 AM | |
| Set Backup Retention Limit | Check this box to activate the Retention fields that follow, enabling you to define a period of time for which to retain the backup. | Checked or unchecked | Unchecked |
| Retention Unit | Active only if Set Backup Retention Limit is selected. In this drop-down list, select the type of period (hour(s), days, weeks, and so on) that you want the scheduled backup to be retained. | Hour(s) Day(s) Week(s) Months | |

| Parameter Name | Description | Valid Values | Default |
|------------------------|---|---|---------|
| Retention Value | Active only if Set Backup Retention Limit is selected. For the selected retention period type, enter a number to specify the exact retention period. | For Hours: 1-8760 For Days: 1-365 For Weeks: 1-52 For Months: 1-12 | |

- When finished setting up the scheduled backup, verify the Summary and then click **Apply** to create the backup schedule or **Cancel** to exit without creating the schedule.

Restoring the Composable Fabric Configuration From a Backup Instance

This procedure show how to restore the fabric configuration to a known state from a saved fabric configuration backup.



If you are re-deploying the Aruba Fabric Composer and restoring the Composable Fabric configuration from a backup, you must restore the backup before adding a fabric. If you add a fabric and then restore from an old database, the restore will not work.

- In Aruba Fabric Composer, select **Configuration > Maintenance > Backups**.
- Select a backup instance to use, then select **Actions > Restore from Backup**.
- At the confirmation prompt, click **OK** to restore the fabric configuration using the selected backup instance or **Cancel** to exit without restoring.



You will lose connectivity with the Aruba Fabric Composer UI. After a number of minutes, allowing the fabric to restore from the backup, log back into the Aruba Fabric Composer UI.

Deleting a Backup Instance

To delete a backup instance:

- In Aruba Fabric Composer, select **Configuration > Maintenance > Backups**.
- Select the backup instance to delete and then select **Actions > Delete**.
- At the confirmation prompt, click **OK** to delete the backup instance or **Cancel** to exit without deleting the backup.

Deleting a Backup Schedule

To delete a backup schedule:

1. In Aruba Fabric Composer, select **Configuration > Maintenance > Backups**. The window opens on the Backups tab,
2. Select the **Scheduled Backups** tab
3. Select the backup schedule to delete and then select **Actions > Delete**.
4. At the confirmation prompt, click **OK** to delete the backup schedule or **Cancel** to exit without deleting the schedule.

Uploading a Backup

To upload a fabric configuration backup to the Aruba Fabric Composer from a local system:

1. In Aruba Fabric Composer, select **Configuration > Maintenance > Backups**. The window opens on the Backups tab.
2. Select **Actions > Upload Backup**.
3. In the Upload Backup window, browse for the backup file, click **Open** to select the file, then click **Apply** to upload the file to the Aruba Fabric Composer or **Cancel** to exit without uploading.

Switch Checkpoints

To open the Switch Checkpoints page, in Aruba Fabric Composer, select **Maintenance > Switch Checkpoints**.

The Switch Checkpoints dashboard displays information on Checkpoints, Snapshots, and Scheduled Checkpoints.

The Switch Checkpoints table provides the following information for each configuration:

- **Name:** User-defined name for the switch configuration.
- **Description:** User-defined description of the switch configuration.
- **Checkpoint Type:** Type of checkpoints (One Time, System, Periodic).
- **Applies To:** Source ports of the Service Qualifier.
- **Creation Time:** Time of creating the checkpoint.
- **Checkpoint Status:** Status of the checkpoint.
- **Last Rollback Time:** Time of the last rollback.
- **Rollback Status:** Status of the rollback.

Adding a Switch Checkpoint

To add a Switch Checkpoint:

1. In Aruba Fabric Composer, in the **Maintenance > Switch Checkpoint** page, select **Actions**, and then click **Add**. The Checkpoints Configuration wizard opens.

2. Configure the following parameters as needed:

| Tab | Parameter Name | Description | Valid Values | Default |
|------|----------------|---|---|---------|
| Name | Name | Assign a name for the Switch Checkpoint. | Any non-empty string, for example, Application-1. | |
| | Description | Enter a description for the Service Qualifier. Click Next . | | |
| | Fabrics | Select a Fabric from the drop-down list. | | |
| | Switches | Select switches from the drop-down list. Note that you can choose only Fabric or Switches and not both. | | |

3. Once you have completed and verified all parameters, you can exit the wizard. Click **Apply** to complete and save the Application, **Back** to go back and change a setting, or **Cancel** to exit this configuration without saving.

Deleting a Switch Checkpoint

To delete a Switch Checkpoint:

1. In the Aruba Fabric Composer UI, in the **Maintenance > Switch Checkpoint** page, select the Switch Checkpoint to delete, and then select **Actions > Delete**.
2. At the confirmation prompt, click **OK** to delete the Switch Checkpoint or **Cancel** to retain the Switch Checkpoint.

Switch Checkpoint Rollback

To rollback a Switch Checkpoint:

1. In the Aruba Fabric Composer UI, in the **Maintenance > Switch Checkpoint** page, select the Switch Checkpoint to rollback, and then select **Actions > Rollback**.
2. At the confirmation prompt, click **Apply** to apply the rollback or **Cancel** to abort the rollback.



It is recommended to generate a checkpoint for the selected switches prior to performing the rollback.

Switch Checkpoints Snapshots

To open the Switch Checkpoints Snapshots page, in Aruba Fabric Composer, select **Maintenance > Switch Checkpoints > Snapshots**.

The Switch Checkpoints Snapshots table provides the following information for each configuration:

- **Checkpoint:** Name of the switch checkpoint.
- **Fabric:** Name of the Fabric.
- **Switch:** Name of the switch.

- **Switch Checkpoint Name:** Name of the switch checkpoint.
- **Checkpoint Type:** Select from One Time, System, or Periodic.
- **Switch Firmware Version:** The version of the switch firmware.
- **Creation Time:** The time of first creating the switch checkpoint.
- **Last Rollback Time:** Time of the last rollback.
- **Rollback Status:** Status of the rollback.

Further actions that can be carried out in this page are Rollback and Diff. Click **Rollback** to rollback selected snapshot on to the corresponding switch. Click **Diff** to compare the differences between the switch configuration and the selected snapshot.

Scheduled Checkpoints

You use the Scheduled Checkpoints page to create scheduled checkpoints.

To open the Scheduled Checkpoints page, in Aruba Fabric Composer, select **Maintenance > Switch Checkpoints > Scheduled Checkpoints**.

The Scheduled Checkpoints table provides the following information for each configuration:

- **Name Prefix:** Name of the switch checkpoint.
- **Description:** Description of the Scheduled Checkpoint.
- **Enabled:** Whether Enabled or Disabled.
- **Repeat:** How often the backup should be repeated.
- **Next Checkpoint Date:** Date of the next scheduled checkpoint.

Adding a Scheduled Checkpoint

To add a Scheduled Checkpoint:

1. In Aruba Fabric Composer, in the **Maintenance > Switch Checkpoint > Scheduled Checkpoints** page, select **Actions**, and then click **Add**. The Scheduled Checkpoints Configuration wizard opens.
2. Specify a required name prefix and set a schedule for when the checkpoint should be created. Time and Date must set later than the current time and date where applicable. The checkpoints generated will be for all switches within all Fabrics.

| Tab | Parameter Name | Description | Valid Values | Default |
|------------------------------------|----------------|---|--------------|------------|
| Enable Checkpoint schedule. | | Select the checkbox if you want to enable. Only one schedule may be enabled at a time. | | Unchecked. |

| Tab | Parameter Name | Description | Valid Values | Default |
|----------|--------------------|--|---|---------|
| Schedule | Name Prefix | Enter any non-empty string. For example, checkpoint-1 | Any non-empty string, for example, Application-1. | |
| | Description | Enter a description for the Service Qualifier. Click Next . | | |
| | Repeat | Select how often the backup should be repeated. ' Never ' will run the backup once at the scheduled time and date. | | |
| | Day of Week | Select one or more days from the drop-down list. | | |
| Summary | | Once you have completed and verified all parameters, you can exit the wizard. Click Apply to complete and save the Scheduled Checkpoint, Back to go back and change a setting, or Cancel to exit this configuration without saving. | | |

Editing a Scheduled Checkpoint

To edit a Scheduled Checkpoint:

1. In Aruba Fabric Composer, in the **Maintenance > Switch Checkpoints** page, select the Scheduled Checkpoint you need to edit and then select **Actions > Edit**. The Scheduled Checkpoints Configuration wizard opens.
2. Once you have made the changes and verified all parameters, you can exit the wizard. Click **Apply** to complete and save the Application, **Back** to go back and change a setting, or **Cancel** to exit this configuration without saving.

Deleting a Scheduled Checkpoint

To delete a Scheduled Checkpoint:

1. In the Aruba Fabric Composer UI, in the **Maintenance > Switch Checkpoint** page, select the Scheduled Checkpoint to delete, and then select **Actions > Delete**.
2. At the confirmation prompt, click **OK** to delete the Scheduled Checkpoint or **Cancel** to retain the Scheduled Checkpoint.
3. You can also select all the Scheduled Checkpoints and click **Delete All** to delete all the Scheduled Checkpoints in one go.

Syslog

You can create Syslog configurations that enable the Aruba Fabric Composer and some or all Fabric Composer modules (switches) to forward event messages to a Syslog server. Syslog messages include information to identify where, when, and why the log was sent — IP address, time stamp, and the actual log message.



You can create only one configuration that uses the Aruba Fabric Composer audit log feature.

You can define many Syslog configurations to generate custom Syslogs.

The **Configuration > System > Syslog** page lists Syslog configurations and enables you to add, edit, or delete Syslog configurations.

The Syslog page contains the following columns:

- **Name:** Name for the Syslog configuration.
- **Description:** Description of the Syslog configuration.
- **Facility:** Facility selection from a drop-down list of all nodes.
- **Persistent Storage Logs Enabled:** Status of log enabled (Yes or No).
- **Persist with Severity:** Select persistence of severity (All, EMERG, ALERT, CRIT, ERROR, WARNING, NOTICE, INFO, DEBUG).
- **Host:** Fully qualified host name or IP address of the connected host.
- **Port:** Port number.
- **Severity:** Select severity of all logs (All, EMERG, ALERT, CRIT, ERROR, WARNING, NOTICE, INFO, DEBUG).
- **Include Auditable Events:** Select events that can be audited (Yes or No).
- **Unsecure TLS Renegotiation:** Enable or disable unsecure TLS renegotiation.
- **TLS Auth Mode:** Indicates mode of TLS authorization between Certificate and Subject Name.
- **Transport:** Select between transport modes between UDP, TCP, or TLS.
- **Applies To:** Identifies the switches that this configuration applies to.

Adding a Syslog Configuration

To add a new Syslog configuration:

1. In Aruba Fabric Composer, select **Configuration > System > Syslog**.
2. Select **Actions > Add**.
3. In the Name page, complete the following fields:
 - **Name:** Enter a name for the Syslog configuration.
 - **Description:** Enter a description of the Syslog configuration.
4. Click **Next** to go to the next page or **Cancel** to exit without saving.
5. In the Application page, complete the following fields:
 - **Fabrics:** Select the fabric that will use this Syslog configuration. To remove a fabric, click the **X** next to the fabric name. When you select a fabric, all of the switches within the fabric are automatically selected. If you later add a switch to a fabric, the configuration settings are automatically applied to the new switch.
 - **Switches:** When you select a fabric, all switches on that fabric are automatically selected to use this Syslog configuration. If this Syslog configuration is NOT used on ALL switches in the selected fabric(s), in this drop-down list, select the switch(es) that will use this Syslog configuration. If ALL switches use this Syslog configuration, ignore this field; do not select any switches. To remove a selected switch, click the **X** next to the switch name.
 - **Aruba Fabric Composer:** Selecting Aruba Fabric Composer enables the forwarding of Aruba Fabric Composer audit logs to a remote Syslog server. The audit logs, which provide events for all severities

except Informational and Debug, are the events that appear on the Dashboard in the Audits panel. The actual filters configured in this Syslog configuration have no effect on the logs sent to the Syslog server. Deselecting Aruba Fabric Composer disables the forwarding of audit logs to the remote Syslog server. You would select Aruba Fabric Composer when you want see the audit logs on a remote Syslog server. You would deselect Aruba Fabric Composer when you are interested in log messages from only switches. This option is unchecked/deselected by default.

The resulting Syslog log can be used to analyze the system health or trigger automation.



You can create only one configuration that uses the Aruba Fabric Composer feature.

6. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
7. In the Local Storage page, complete the following fields:
 - **Persist with Severity:** This field is grayed out by default.
 - **Facility:** Select a Local from the drop-down list.
8. In the Entries page, complete the following fields for each entry:
 - **Host:** Enter the IPv4 or IPv6 address or hostname of the host to which the Syslog will be sent.
 - **Port:** Enter the port of the host to which the Syslog will be sent.
 - **Severity:** Select from the drop-down list. Options are All, EMERG, ALERT, CRIT, ERROR, WARNING, NOTICE, and INFO.
 - **TLS Auth Mode:** Select Certificate or Subject Name from the drop-down list.
 - **Transport:** Select from UDP, TCP, or TLS from the drop-down list.
 - **Unsecure TLS Renegotiation:** Select this check box if you wish to unsecure the TLS renegotiation.
 - **Include Auditable Events:** Select this check box if you wish to include auditable events.
9. Click **Add** to add the host-port entry to the Entries table.



To remove an entry from the table, click the **Delete**  icon to the right of the entry.

10. Repeat steps 7 and 8 to add all hosts and ports to which this Syslog should be sent.
11. Click **Next** to go to the next page or **Cancel** to exit without saving. You can also click **Back** to edit the previous page.
12. In the Summary page, check the fields for accuracy.



To change any settings, click **Back** or select the page, make changes as needed, and click **Next** to return to the Summary page.

13. Click **Apply** to apply the Syslog configuration or **Cancel** to exit without saving.

Editing a Syslog Configuration

To edit a Syslog configuration:

1. In Aruba Fabric Composer, select **Configuration > System > Syslog**.
2. In the row for the Syslog configuration to edit, click the button next to the configuration and then select **Actions > Edit**.
3. In the Syslog Configuration window, make changes to the fields as needed. Click a tab to edit the settings on that tab.
4. Click **Apply** to save your edits or **Cancel** to exit without saving. When you click **Apply**, your changes are applied to all associated fabrics and switches.

Deleting a Syslog Configuration

To delete a Syslog configuration:

1. In Aruba Fabric Composer, select **Configuration > System > Syslog**.
2. Select the Syslog configuration to delete and then select **Actions > Delete**.
3. Click **Apply**.
4. In the confirmation pop-up, click **OK** to delete the Syslog configuration or **Cancel** to retain the entry. When you click **OK**, the deleted Syslog configuration gets removed from all associated fabrics and switches.

High Availability for Aruba Fabric Composer

The High Availability tables shows the health of the High Availability cluster and the Virtual IP Address (VIP). The following information is provided for each node:



Refer to the Aruba Fabric Composer 6.0 Installation Guide for detailed installation steps as well as post-installation configuration checks.

1. The sub-table contains each node in the cluster with its Name, Status, Management IP Address, and the Active Services.

| Cluster Health | | Virtual IP Address | |
|----------------|-------------|-----------------------|----------------------|
| HEALTHY | | 10.10.10.10/24 | |
| Name | Node Status | Management IP Address | Active Services |
| node1 | ONLINE | 10.10.10.1/24 | Filing Database |
| node0 | ONLINE | 10.10.10.2/24 | API/UI Statistics |
| node2 | OFFLINE | 10.10.10.3/24 | |

2. Click **Actions > Change VIP** to change the existing VIP. The Add option screen opens.
3. The VIP is set up during installation. But, in case that has not been set up, you are provided with the option to Add the VIP. Click **Add**.

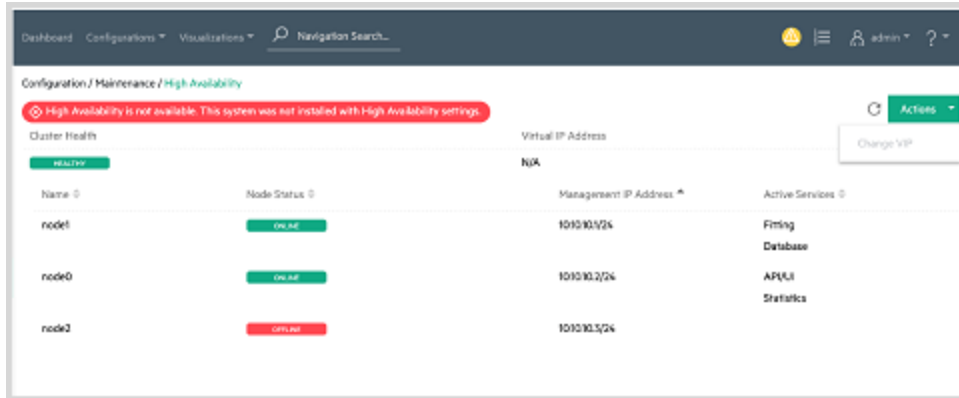
Note: The VIP is required for a High Availability setup, so there is no Delete option in the User Interface.

4. Changing, or creating, a VIP requires an IPv4 or IPv6 network address. Enter the VIP address in the Virtual IP Address field and click **Apply**.



The VIP must be within the same subnet and have the same prefix length as the nodes in the cluster. The nodes are displayed in the dialog box to provide context for the validation.

5. If the user is in a standalone mode (High Availability has not been configured), then a message is displayed that the High Availability is not set up and a VIP cannot be added.



6. The VIP must be within the same subnet and have the same prefix length as the nodes in the cluster. The nodes are displayed in the dialog box to provide context for the validation.
7. Click **Apply** to complete the process and exit or click **Cancel** to exit without making any changes.

Licenses

You can view the status of the switch licenses.

The **Maintenance > Licenses** page lists the below details of each switch license in Aruba Fabric Composer.

- **Status:** The status of the switch.
- **License Key:** The license key of the switch.
- **Product:** The manufacturer's product name of the switch.
- **Start Date:** The start date of the license key.
- **End Date:** The end date of the license key.
- **Duration:** The duration of the license key.
- **Quantity:** The number of switches in the Fabric.
- **Tier:** Tier level of the switch (Tier 3 or Tier 4).
- **Type:** Whether Paid or Evaluation.
- **Serial Number:** Serial number of the switch.

Adding a License

To add a new License:

1. In Aruba Fabric Composer, select **Maintenance > Licenses**.
2. Select **Actions > Add**.

3. In the License page, enter a JSON string in the License field.
4. Click **Apply** to apply the License or **Cancel** to exit without saving.

Deleting Licenses

To delete a License:

1. In Aruba Fabric Composer, select **Maintenance > Licenses**.
2. Select the License to delete and then select **Actions > Delete**.
3. Click **Apply**.
4. You can also delete all the licenses at once by selecting the **Delete All** option and clicking **OK**.

The Aruba Fabric Composer UI contains the following visualizations that provide views and detailed information on the Aruba Fabric Composer environment as well as attached host environments:

- **Host:** Presents information about the host environments attached to Aruba Fabric Composer and the paths and connections between the Aruba Fabric Composer switches and the attached host environments.
- **Network:** Presents views of the Aruba Fabric Composer switches, paths between the fabric switches, as-selected-through filters, details table, any selected hosts, attachments, or neighbors, and their connections to the switches.
- **Statistics:** Presents statistics of the Aruba Fabric Composer switches, ports, paths between fabric switches, filters, details tables, and so on.

These visualizations are described and illustrated in the topics that follow.

Host Visualization

Host Visualization enables you to view and obtain information about the host environment, as well as paths and port connections to Aruba Fabric Composer.

Host Visualization provides a graphical representation of one or more hosts and their respective virtual elements (VMs, VMKernels, vSwitches, port groups, bridges, bonds) as well as the physical elements (NICs) that provide connections to the Fabric Composer. The information regarding the host elements is harvested by Aruba Fabric Composer through configured host integrations such as the VMware vSphere Integration or the Nutanix Prism Integration. This feature enables you to view connectivity within a host as well as between the host and Aruba Fabric Composer.

A host environment such as VMware ESX, Nutanix AHV, or HPE iLO is presented in a shaded area. Depending on the host, this environment might contain NICs, VMs, VMKernels, vSwitches, port groups, bridges, bonds, and so on. The visualization also shows connections from the host environment to the Fabric Composer switches. State information such as the current state of links and elements is also provided to assist in troubleshooting.

The following sections provide examples for VMware ESX, Nutanix AHV, and HPE iLO Amplifier.













The Host Visualization can be used to:

- Troubleshoot issues within a host.
- Determine if a host is connected correctly.
- Present users with a way to visualize if the hosts, VMs, or VMKernel Adapters can pass traffic.

Icons Used in the Host Visualization

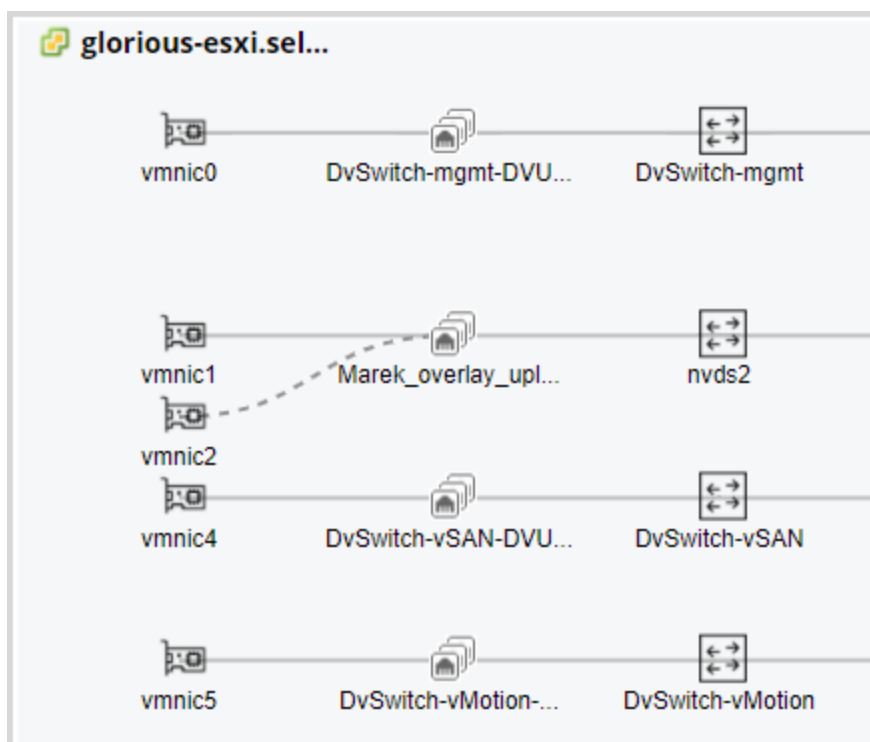
The Host Visualizations use the following icons to present elements (components), paths, and states:

| Icon | Use |
|--|-----|
| Elements: The following icons depict various host elements or components. | |

| Icon | Use |
|--|--|
|  | Element: HPE switch or host. |
|  | Element: Aruba Fabric Composer switch port |
|  | Element: This is used to represent a bond or a port group. |
|  | Element: NIC (PNIC or VNIC) |
|  | Element: vSwitch or Bridge |
|  | Element: Virtual Machine. Virtual machines within a host are listed at the far right and contain a count unless a specific VM is selected through the filter. The VM field can be expanded to see all VMs. |
|  | Element: VMKernel Adapter |
| Paths: The following icons depict active and backup paths which connect the elements. | |
|  | Active Path: This path is a solid dark gray line from Port or Element to the next port or element. |
|  | Stale Path: This path, shown as short dashes, indicates that the path is stale. This is related to LLDP/CDP neighbor aging, which is controlled by Configuration > System > System Settings > Neighbor Retention Timeout . |
|  | Backup Path: Indicates that the path is a backup path. Note that this enables you to determine which PNICs are used for backup paths and which PNICs are used for active paths. |
| State: The following state symbols attached to element symbols provide further quick information as to the state of the elements: | |
|  | State: Link Down - Indicates that the associated link is down. |
|  | State: Warning - Indicates that a warning exists. |

Example: VMware ESX Host Environment

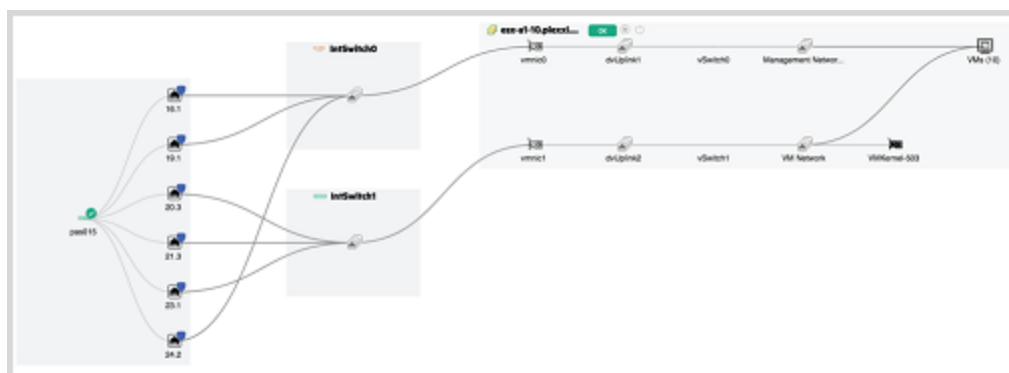
The following example illustrates an ESX host environment where eight VMs are connected to Fabric Composer switches.



For detailed information on any element within the visualization, hover over the element instance (VM, vSwitch, NIC, port group, and so on) as described in the topic: [Hovering Over Host Visualization Elements for Detailed Information on page 211](#).

Example: VMware ESX Host Environment with Intermediate Switches

The following example illustrates one ESX host containing 10 VMs and host network components connected to a Fabric Composer named PlexxiFabric0 through a set of intermediate switches (IntSwitch0 and 1). Also demonstrated, port security is enabled on all Fabric Composer switch ports as indicated by the blue shield on the switch access ports.



You can visualize specific VMs by selecting the VM table from the Filters and then selecting VMs to show in the visualizer.

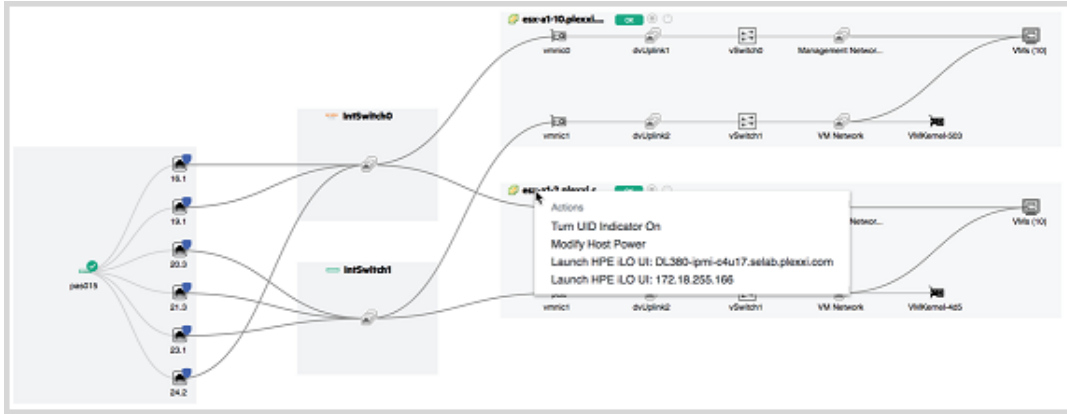


Where an intermediate switch is installed, LLDP transmit must be configured on the intermediate switch, advertising to the Fabric Composer switches and to the ESXi vSwitches.

For detailed information on any element within the visualization, hover over the element instance (VM, vSwitch, NIC, port group, and so on) as described in the topic: [Hovering Over Host Visualization Elements for Detailed Information on page 211](#).

Example: HPE iLO Environment

The following example illustrates an HPE iLO environment with three hosts, each connected to the Fabric Composer through PNICs connected to switch ports.



In iLO host visualization, you can do the following: Refer to [HPE iLO Actions on page 208](#).

- Turn the UID Indicator on or off.
- Control the host power.
- Launch the HPE iLO UI for the host.

For detailed information on any element within the visualization, hover over the element instance (switch, switch port, and NIC) as described in the topic: [Hovering Over Host Visualization Elements for Detailed Information on page 211](#).

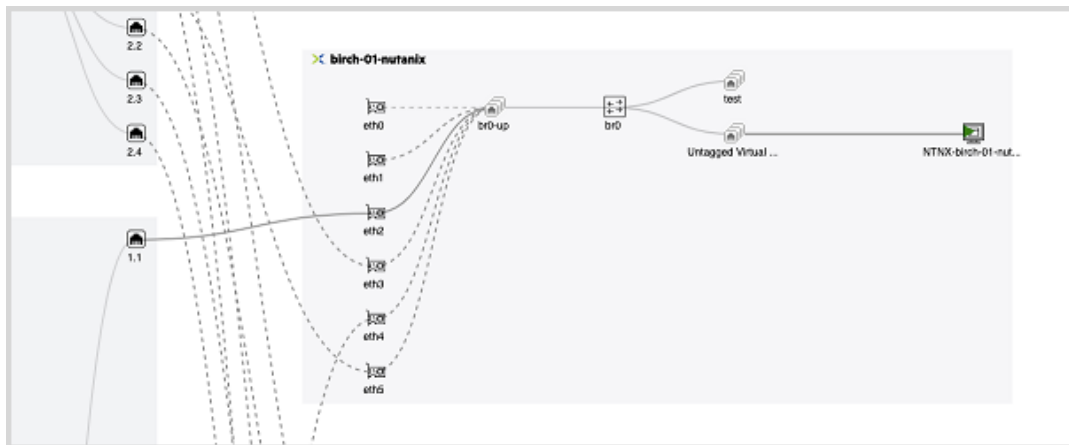
Hovering over host environment elements displays data gathered by the VMware vSphere Integration and available through the Host Visualization. In the example above, you can hover over any element. For example, in the host environment from left to right, you can hover over NIC ports, vSwitch, Port Groups, VMKernel Adapters, and VMs. For hover-over examples, see the topic: [Hovering Over Host Visualization Elements for Detailed Information on page 211](#).



You can also refer to VMware documentation for information on values presented in Host Visualization details in host environments that use the ESXi Hypervisor.

Example: Nutanix AHV Host Environment

The following example illustrates one Nutanix AHV host containing 10 VMs and host network components connected to a Fabric Composer named PlexxiFabric0.



For detailed information on any element within the visualization, hover over the element instance (VM, vSwitch, NIC, port group, and so on) as described in the topic: [Hovering Over Host Visualization Elements for Detailed Information on page 211](#).

Customizing the Host Visualization

You can customize the Host Visualization using filters as described in [Filtering the Host Visualization on page 209](#).

General Host Visualizer Actions

From the Host Visualizations, you can do the following by hovering over the icon and left-clicking to open a menu of actions:

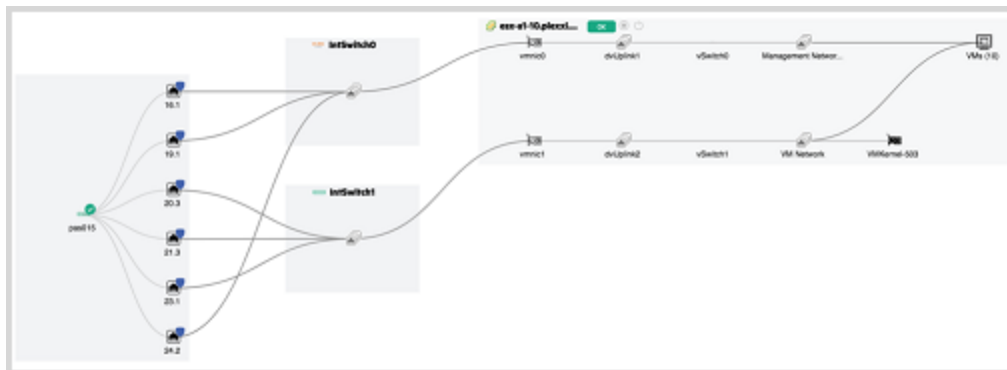
- For Ports, you can navigate directly to either the Port configuration page or the Port Security configuration page for that port.
- For VMs or VMKernel adapters, if there is more than one, you can expand the visualization to show all VMs or VMKernel adapters in the group.
- For one VM at a time, you can expand the visualization to show the virtual network interfaces (VNICS) for that VM.

Visualizing an ESX Host Environment Through Intermediate Switches

In some VMware ESX environments, the ESX servers connect to the Fabric Composer indirectly through intermediate switches. These environments can be visualized in the Host Visualizer, presenting the intermediate switch as well as the ESX host environment. For this to occur, in the VMware vSphere Integration, the selection, *Automated VLAN provisioning for ESX Hosts connected through intermediate switches* must be enabled (refer to [Adding a VMware vSphere Integration on page 151](#)). In this environment, the ESX servers connect to an intermediate top-of-rack switch which is uplinked to the Fabric Composer; the intermediate switches connect to the ESX host environments and the Fabric Composer is used for rack-to-rack connectivity. The VMware vSphere Integration pack harvests data to determine that an intermediate switch is located between the Fabric Composer and the ESX server.

Example: VMware ESX Host Environment With Intermediate Switches

The Aruba Fabric Composer Host Visualization displays intermediate switches; IntSwitch0-IntSwitch2 in the following example:



VLAN Automation

The Aruba Fabric Composer integration pack treats ESX servers as if the servers were directly connected to the access port. VLAN automation is applied to any port that is associated with an intermediate switch connected to an ESX host. The VLAN range is used as configured in the VMware vSphere pack.

Neighbor Retention Timeout

Neighbor Retention Timeout enables services such as automatic VLAN provisioning to continue to operate for a defined period of time when neighbor advertisements from the host environment are temporarily suspended. For example, with an adequate timeout setting, automatic VLAN provisioning remains stable when an ESXi host is rebooted.

For ESXi hosts connected to the Fabric Composer through intermediate switches, we do not support the display of the inactive state. Connected vmnics will only be Disconnected or Connected. If an intermediate switch is detected, the vmnic will always be Connected.

Refer to [Neighbor Retention Timeout on page 101](#).

HPE iLO Actions

In the HPE iLO host visualization, you can perform the following actions which are described in greater detail in the subsections below:

- Turn the UID Indicator on or off.
- Control the host power.
- Launch the HPE iLO UI for the host.

Turn the UID Indicator On or Off

You can turn the UID indicator On or Off as follows:

Left-click on the iLO host icon and select **Turn UID Indicator On** or **Turn UID Indicator Off**, depending on whether it is currently off or on. A Success message will momentarily appear indicating the successful action.

Control the Host Power

You can turn the host power On or Off as follows:

Left-click on the iLO host icon and select **Modify Host Power**. The Modify Host Power window opens. This window contains a **Current host power state** field that indicates the current host power state. You can then, in the **Set Power** drop-down list, select one of the following actions:

- **On:** For a host that is currently off, turn the host power On.
- **Force Off:** For a host that is currently on, force the power to turn off.

- **Force Restart:** For a host that is currently on, force a power restart.
- **Push Power Button:** Simulates the action of pushing the power button, either turning the host On or Off.

After selecting the action, click either **Apply** to perform the action or **Cancel** to exit the window without making the power change.

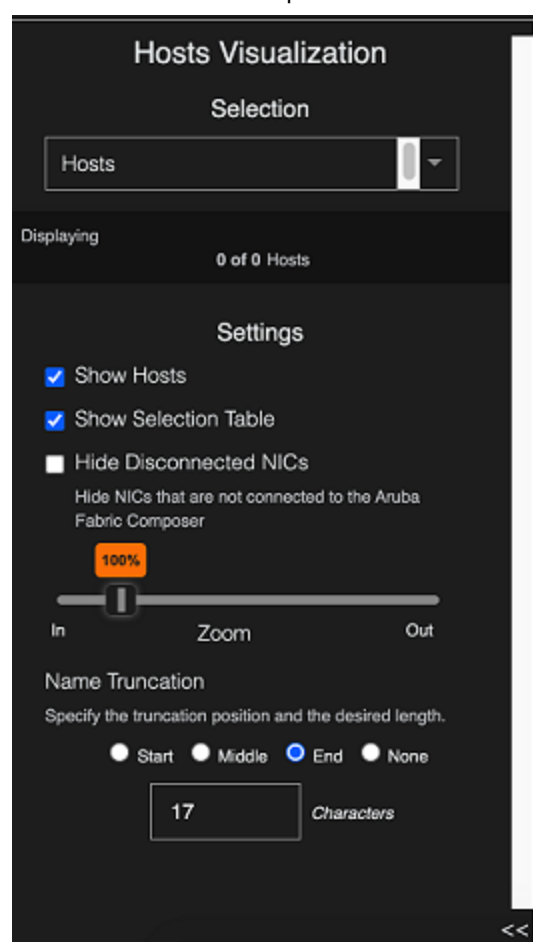
Launch the HPE iLO UI

You can launch the HPE iLO UI for the host in a new browser tab using either the IP address or the hostname, as follows:

Left-click on the iLO host icon and select either **Launch HPE iLO UI: *HostName*** or **Launch HPE iLO UI: *IPAddress***. The HPE iLO UI will open in a new browser tab.

Filtering the Host Visualization

The left side of the Host Visualization window contains a set of filters and a scaling bar for the host visualization. For example:



Clicking << at the bottom of the Filters sidebar pane collapses the sidebar, allowing the visualization to take up the entire window. Clicking >> expands the Filters sidebar pane.

Filters

The following filters enable you to select fabrics, environment types and hosts, as well as VMs to display in the Host Visualization. Possible filters include:

- **Selection:** This field populates the table with objects that you can select to visualize. For example, you can select Hosts to select host environments to visualize, or you can select VMs to list VMs in the table to select and visualize. The Host Visualization will show information and connections for the selected hosts or VMs. Displaying multiple hosts may increase the complexity of the Host Visualization.

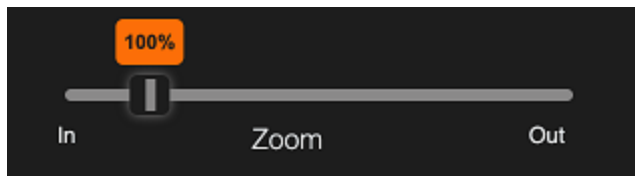
Settings

This filter contains the following selections to show or hide features:

- **Show Hosts:** Select this check box to display the visualizer populated with all hosts or VMs that are selected in the Selection Table.
- **Show Selection Table:** Select this check box to show the table from which you will select hosts or VMs to visualize. To expand the visualizer, you can uncheck **Show Selection Table** which removes the table and expands the visualizer. Likewise, to expand the table you can uncheck **Show Hosts** which removes the visualization and expands the table.
- **Hide Disconnected NICs:** Select this check box to hide host-side NICs that are not attached to any host or virtual elements.
- **Zoom:** Enables you to scale the Host Visualization spacing so that the view is expanded or compressed. Zoom does not change graphics or text size, only spacing between components.
- **Name Truncation:** Enables you, for very long names/identifiers, to determine how many and which characters in each name appear with the component icons in the host view. This helps reduce clutter and enables you to more easily find specific components, especially in large environments. To truncate, select the characters to remove (remove Start, Middle, End, or None characters) and specify the number of characters to display.

Zooming the Host Visualization

You can zoom the host visualization spacing in and out using the zoom control in the Settings side bar. Zoom changes the spacing within the view; it does not change the size of the icons or text. You can zoom out to 50% of the original size, or to zoom in to 150% of the original size. The current zoom in percent is shown.



Depending on your browser, tick marks may appear on top of the slider to help visualize the current zoom.

Summary

To visualize the host environment:

1. Select **Visualization > Hosts** to open the Hosts Visualization page.
2. Under Filters, select the Fabric to visualize.
3. In the Selection drop-down list, select the host element types to visualize. For example, Hosts or VMs.
4. By default, the Selection table should be shown. If it is not shown, click the **Show Selection Table** checkbox.
5. In the table, select the hosts or VMs to view. They will appear in the visualizer.
6. To expand the visualizer, you can uncheck **Show Selection Table** which removes the table and expands the visualizer.

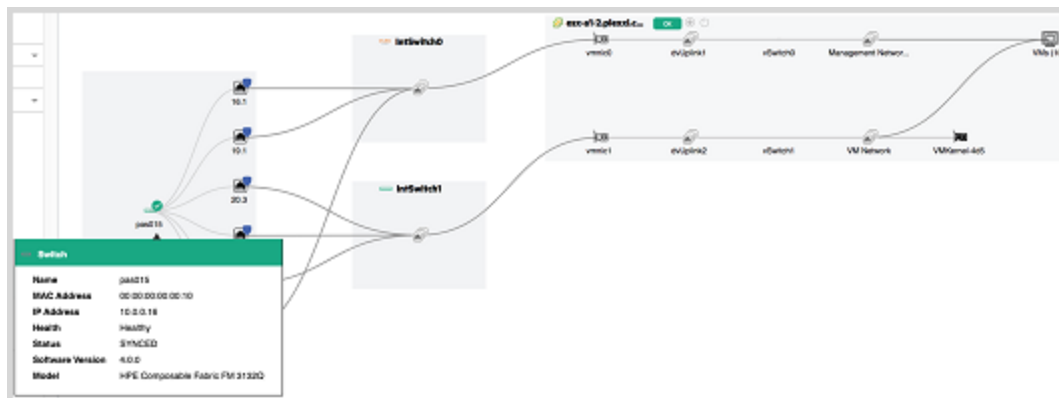
Hovering Over Host Visualization Elements for Detailed Information

Hovering over icons for the various elements depicted in the Host Visualization provides detailed information about that element.

The following sections provide examples of information provided while hovering over some Fabric Composer and host environment icons.

Aruba Fabric Composer Switch Information

Hovering over a Fabric Composer switch icon displays information about that switch.

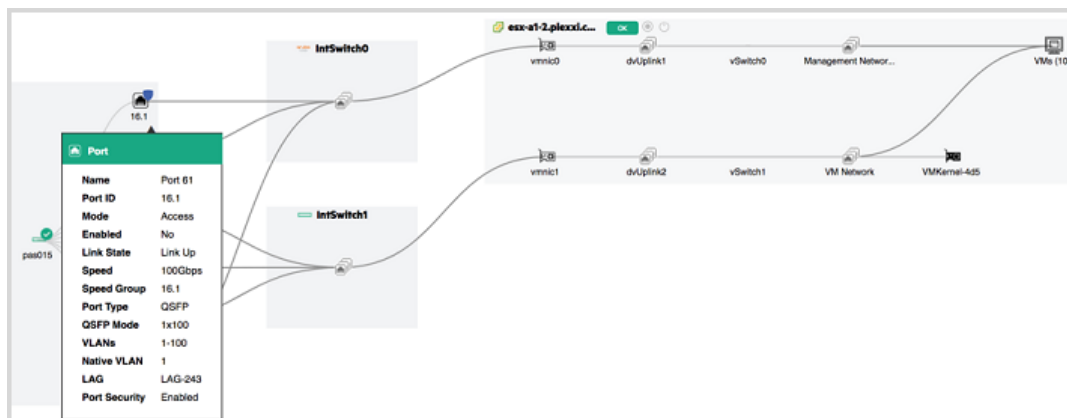


Aruba Fabric Composer switch information includes:

- **Name:** Aruba Fabric Composer switch name.
- **MAC Address:** Aruba Fabric Composer switch MAC address.
- **IP Address** IP address of the Aruba Fabric Composer switch for switch management.
- **Health:** Health of the switch. For example, Healthy, Upgrading, Healthy, But..., Degraded, Critical.
- **Status:** Status of the switch. For example, Synced, Syncing, or Sync Failure.
- **Software Version:** Version of switch software installed on the switch.
- **Model:** Aruba Fabric Composer switch model.

Aruba Fabric Composer Switch Port Information

Hovering over an Aruba Fabric Composer switch port icon displays information about that switch port.

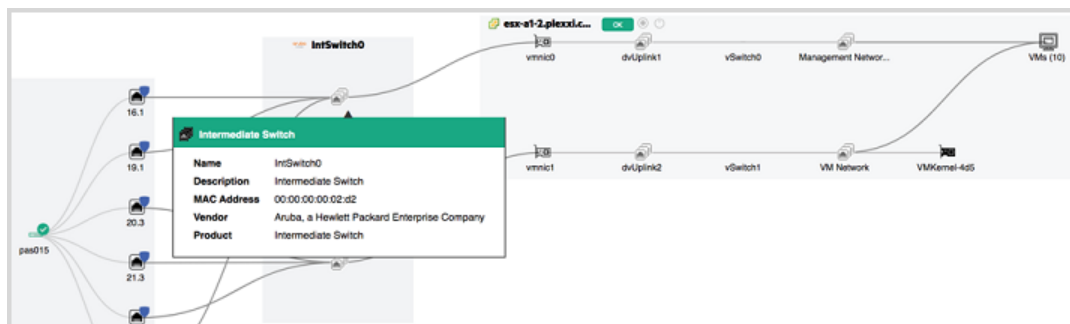


Aruba Fabric Composer switch port information includes:

- **Name:** Port name.
- **Port ID:** Port number.
- **Mode:** Indicates whether the port is a Fabric port or an Access port.
- **Enabled:** Indicates if the port is enabled.
- **Link State:** Current link state of the Aruba Fabric Composer switch port. If a port's link state is down, a Link Down symbol ● overlays the port symbol.
- **Speed:** Configured speed for that port. Possible speeds, depending on the switch model and the port, are 1, 10, and 25 Gbps.
- **Speed Group:** Ports in the speed group if the port is part of a speed group. If only the single port is listed, the port is not part of a speed group.
- **Port Type:** Indicates if the port is SFP or QSFP.
- **QSFP Mode:** For switches with QSFP ports, indicates if the port is a QSFP port and, if it is, indicates the configured speed and type.
- **VLANs:** VLANs associated with the port.
- **Native VLAN:** Untagged VLAN.
- **LAG:** If the port is part of a LAG, indicates the LAG.
- **L2VPNs:** If the port is assigned to any layer 2 VPNs, lists the assigned layer 2 VPNs.

Intermediate Switch Information

Hovering over an intermediate switch icon displays information about that switch.

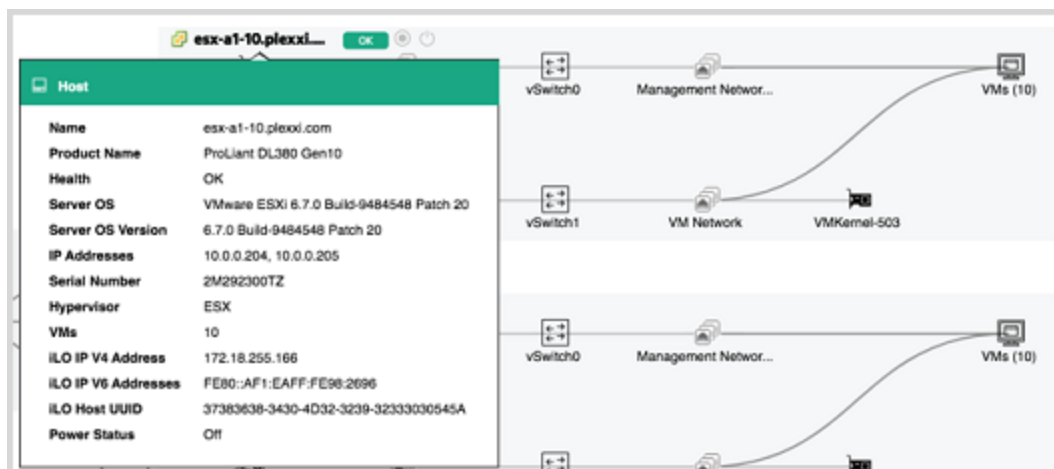


Intermediate switch information includes:

- **Name:** Name of the intermediate switch.
- **Description:** Description of the intermediate switch.
- **MAC Address:** MAC address of the intermediate switch.
- **Vendor:** Vendor of the intermediate switch.
- **Product:** Indicates the product as an intermediate switch.

Host Information

Hovering over a Host displays information about that host.



Host information includes:

- **Name:** The name of the host.
- **Product Name:** The product on which the host resides.
- **Health:** The health of the host.
- **Server OS:** The operating system.
- **Server OS Version:** The version of the server operating system.
- **IP Addresses:** The IP addresses for the connections to the host environment
- **Serial Number:** The serial number of the server that hosts this host.
- **Hypervisor:** The Hypervisor type that hosts this host.
- **VMs:** The number of Virtual Machines (VMs) on this host.
- **iLO IPv4 Address:** The IPv4 address that connects the iLO manager to this host.
- **iLO IPv6 Address:** The IPv6 address that connects the iLO manager to this host.
- **iLO Host UUID:** The Universally Unique Identifier that software (for example, HP SIM) uses to uniquely identify this host.
- **iLO Power State (iLO):** The current power state of the server that hosts this host.
- **Cluster:** The cluster that contains this host.

Physical Network Interface Information

Hovering over a Physical Network Interface icon displays information about that interface.



Physical Network Interface information includes:

- **Name:** Physical Network Interface port name.
- **VLAN:** Indicates the interface VLAN.

- **MAC Address:** Physical Network Interface MAC address.
- **IP Address:** Indicates an IP address associated with this interface.
- **Speed:** Indicates the speed that the port is operating at. Possible speeds are 1, 10, or 25 Gbps.
- **iLO IPv4 Addresses:** Indicates IPv4 addresses associated with the interface.
- **iLO IPv6 Addresses:** Indicates IPv6 addresses associated with the interface.
- **Health:** Indicates the health of the interface.
- **Network Adapter:** Network adapter information.
- **Network Adapter Slot:** Indicates the slot that the Physical Network Interface is plugged into.
- **Admin Status:** Admin state of the Physical Network Interface port. For example, Up.
- **Neighbor Status:** State of the connection to the neighbor. For example, Connected.
- **Firmware Version:** Firmware version installed on the Physical Network Interface.
- **Port ID:** Port ID of the interface.
- **Prefix Length:** Indicates the prefix length (subnet mask) if an IP prefix list is configured on this interface.
- **VNIs:** Indicates a Virtual Network Identifier (VNI) for a VXLAN on the interface.
- **Link State:** Indicates the link state of the interface.

There are a number of additional properties that might display here depending on how the NIC is configured and discovered:



- For non-iLO NICs, you might also see the following items if they are configured or available: VLAN, IP address, prefix length, VNIs, intermediate switch port, neighbor status.
- If discovered through iLO, you may also see: iLO IPv4 and/or IPv6 IP address, iLO health, network adapter name (on which this NIC is found), network adapter slot ID in the server, network adapter firmware version, port number of this NIC on the network adapter.

Virtual Switch Information

Hovering over a host vSwitch or network bridge icon displays information about that bridge. For example:



Virtual switch information includes:

- **Name:** Bridge name.
- **Type:** The type of switch.
- **Hypervisor:** Virtualized environment Hypervisor. In this example, VMware ESXi.
- **Vendor:** vSwitch vendor. In this example, VMware.
- **Override VLANs:** Indicates whether or not VLANs are overridden.
- **Override Teaming:** Indicates Yes if network adapter teaming is overridden or No if not overridden.
- **Uplink:** Indicates the number of uplink ports.
- **VLANs:** Indicates VLANs, tagged or untagged, associated with the vSwitch.

Port Group (Virtual Network) Information

The virtual network environment is also referred to as a port group. Hovering over a port group icon displays information about that port group. For example:



Port group information includes:

- **Name:** Virtual network name.
- **Override VLANs:** Indicates whether or not VLANs are overridden.
- **Override Teaming:** Indicates Yes if network adapter teaming is overridden or No if not overridden.
- **Uplink:** Number of uplink ports.
- **VLANs:** Any VLANs configured on the port group.
- **Uplink Teaming Policy:** Identifies the port group teaming policy for an ESXi host.
- **Bond Status (Nutanix):** Indicates the Nutanix bond status.
- **Bond Mode (Nutanix):** Indicates the Nutanix bond mode.

Virtual Machine Information

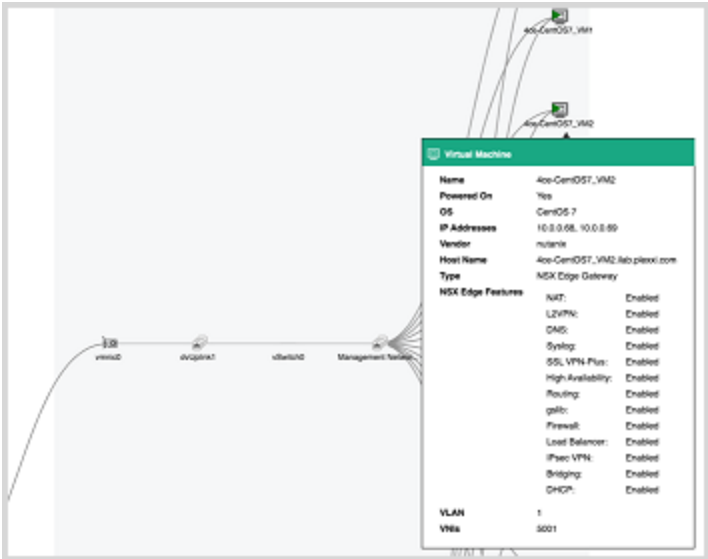
Hovering over a VM icon displays information as follows:

- If all of the VMs for a host are visually grouped together within a single icon in the Host Visualization, hovering over the VMs icon lists all VMs that are configured on that host.
- If the VMs are individually represented in the host visualizer, hovering over a VM icon displays information about that VM.

If all VMs are grouped into one icon, left-click the icon and select **Expand**. All VMs will appear as independent icons with names.

Also, you can list all network interfaces (adapters) that are associated with a VM. To do this, for a single VM, left-click the VM icon and select **Expand**. The network interfaces/ports will be listed as separate icons with port names, for example eth0 and eth1. These icons replace the VM icon.

The following is an example of information provided when you hover over the icon for a single VM:



Virtual Machine (VM) information includes:

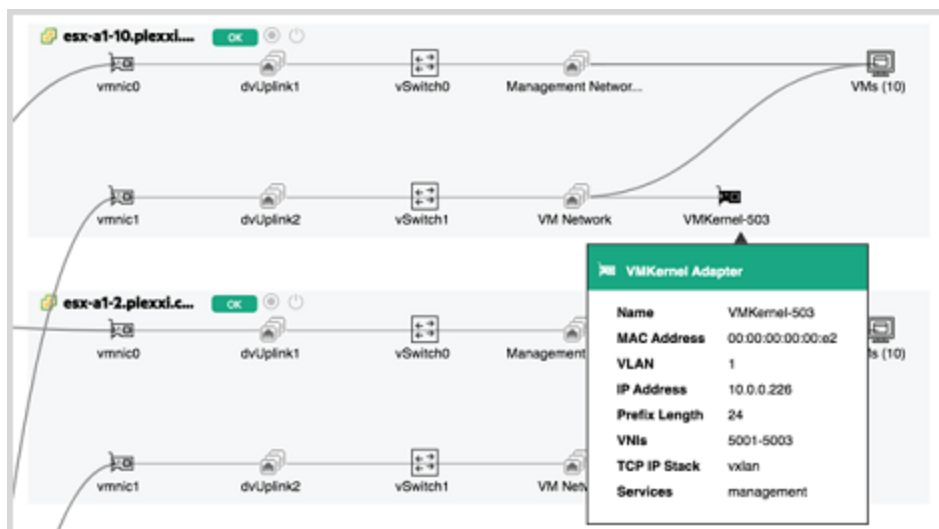
- **Name:** Name of the VM.
- **Powered On:** Indicates whether or not the VM is powered On.
- **OS:** Guest operating system.
- **IP Addresses:** IP addresses used by the VM.
- **Vendor:** Host vendor.
- **Host Name:** Name of the host that this VM is on.
- **Type:** VM type. Possible types include SimpliVity Controller, NSX Controller, NSX Distributed Router, NSX Edge Gateway, Nutanix Controller, and User.
- **NSX Edge Features:** Where applicable for NSX Edge gateway, this field lists the NSX Edge features and indicates the current state of each feature, For example, NAT: Enabled.
- **VLAN:** Tagged or untagged VLANs associated with the VM.
- **VNI:** Virtual Network Instances.

VMKernel Adapter Information

Hovering over a VMKernel icon displays information as follows:

- If all of the VMKernels for a host are visually grouped together within a single icon in the Host Visualization, hovering over the VMKernel icon lists all VMKernels that are configured on that host.
- If the VMKernels are individually represented in the host visualizer, hovering over a VMKernel icon displays information about that VMKernel.

The following is an example of information provided when you hover over the icon for a single VMKernel:



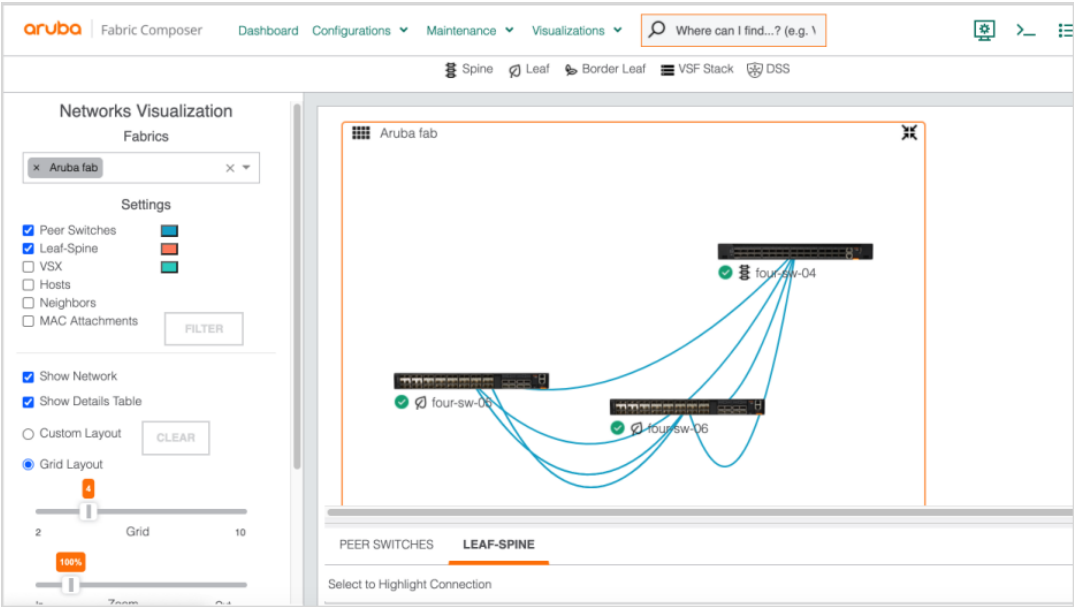
VMKernel adapter information includes:

- **Name:** The name of the VMKernel adapter.
- **MAC Address:** The MAC address of the VMKernel adapter.
- **VLAN:** A VLAN associated with the VMKernel adapter.
- **IP Address:** The IP address of the VMKernel adapter.
- **Prefix Length:** Indicates the prefix length (subnet mask) on this VMKernel address.
- **VNIs:** The Virtual Network Identifiers (VNI) on the VMKernel.
- **TCP IP Stack:** Indicates the VMKernel TCP/IP stack name. For example, VXLAN.
- **Services:** The services provided by the VMKernel.

Network Visualization: Viewing a Leaf-Spine Fabric

The Network Visualization enables you to view and obtain information about components and paths from the Aruba leaf-spine fabric switches.

To access this view, in Aruba Fabric Composer, select **Visualizations > Networks**. The leaf-spine fabric is visualized such as the following:



In the example:



- The top two switches with the icon are spine switches. You can see the spine symbol in the switch icon. These switches are in the top row as specified in the Spine Location selection in the Filters pane.



- Switches with the icon are leaf switches. The icon contains a single leaf symbol.



- Switches with the icon are border leaf switches. The icon contains a double leaf symbol.

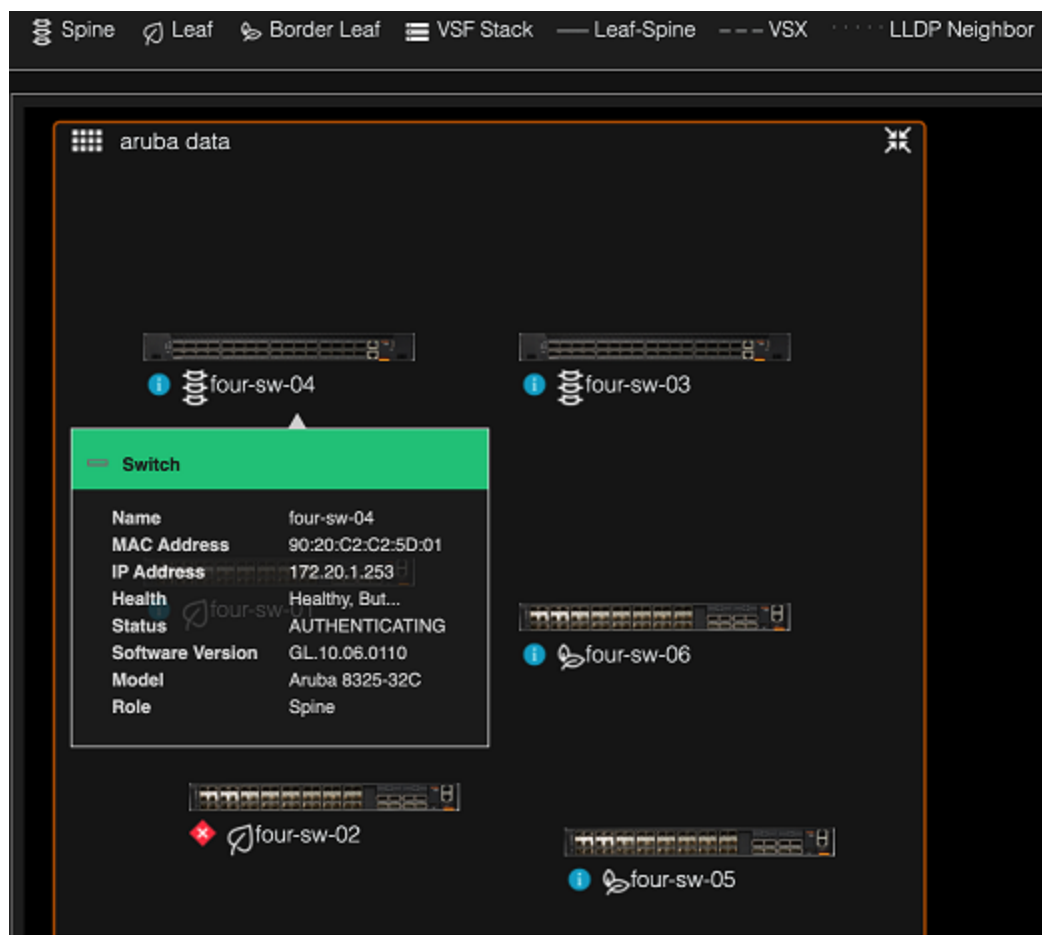
Switch Health

A colored icon on each switch symbol indicates the switch health:

- Green indicates Healthy.
- Yellow indicates Degraded.
- Red indicates Critical.

Hovering over switches

Hovering over any switch in the fabric visualization provides information about that switch. For example:



This information includes:

- **Name:** Switch name.
- **MAC Address:** Switch MAC address.
- **IP Address:** IP address of the switch for switch management.
- **Health:** Health of the switch. For example, Healthy, Upgrading, Healthy, But..., Degraded, Critical.
- **Status:** Status of the switch. For example, Synced, Syncing, or Sync Failure.
- **Software Version:** Version of software installed on the switch.
- **Model:** Switch model.
- **Type:** The type of switch: Spine, Leaf, or Border Leaf.

Neighbor Information and Visualization

You can display neighbor information and select neighbors to visualize within the Network visualizer. To display the details table, in the Filters panel, select **Overlays > Neighbors** and then select **Show Network** and **Show Details Table**.

The table provides the following fabric switch and neighbor information:

- **System Name:** The system name of the BGP neighbor.
- **Chassis ID:** The chassis ID of the BGP neighbor.
- **Switch:** The fabric switch.
- **Port/LAG:** The fabric switch port or LAG of that BGP neighbor connection.

- **Time to Live:** The time-to live for that BGP neighbor.
- **Stale:** The state of the routes associated with the BGP neighbor: No = not stale, Yes = stale.
- **Switch MAC Address:** Not used by leaf-spine.
- **Source MAC Address:** Not used by leaf-spine.

In the table, using the check boxes, you can select all neighbors or specific neighbors to appear in the visualization.

Filtering the Network View

In Aruba Fabric Composer, selecting **Visualizations > Networks** opens the Network Visualization that shows the Aruba fabric switches and the links between the switches. Neighbors are not automatically displayed.

Using the details table, you can select neighbors, then in the table, select neighbors to appear in the visualizer. Note that the Hosts and Attachments selections are not supported with a leaf-spine fabric.

Using the Filters Panel

The left side of the Network Visualization window contains a set of filters and a scaling bar for the network visualization.



Clicking << at the bottom of the Filters sidebar pane collapses the sidebar, allowing the visualization to take up the entire window. Clicking >> expands the Filters sidebar pane.

The following filters enable you to customize the Network visualization:

- **Fabric:** Select one fabric to display in this visualizer. This drop-down lists all connected fabrics.
- **Overlays:** From this drop-down list, select one of the following:
 - **Attachments:** Not supported with a leaf-spine fabric.
 - **Hosts:** Not supported with a leaf-spine fabric.
 - **Leaf-Spine:**
 - **Neighbors:** Lists neighbors in the network table. Selecting neighbors in the table displays the selected neighbors in the network visualization.
 - **VSX:**
- **Filter:** Not supported with a leaf-spine fabric.

Settings

- **Show Network:** If checked, the fabric visualization is displayed.
- **Show Details Table:** If checked, the network details table appears below the visualizer.
- **Custom Layout:** This can be activated only if the Grid Layout is unchecked.
- **Grid Layout:** Displays the visualization in a grid layout. Use the slider bar to scale the grid.
- **Zoom:** Sliding the Zoom bar scales the visualization.

Name Truncation

Enables you, for very long names/identifiers, to determine how many and which characters in each name appear with the component icons in the host view. This helps reduce clutter and enables you to more easily find specific components, especially in large environments. To truncate, select the characters to remove (remove Start, Middle, End, or None characters) and specify the number of characters to display.

Spine Location

Select where spine switches are located in the visualization: Top or Bottom.

Selecting Neighbors from the Table

You can select one or more neighbors from the details table. Table filters enable you to easily locate desired neighbors. You can use regular expressions in the table column filters to list a set of desired attachments. Refer to [Filtering Using Regular Expressions on page 24](#).

Statistics Visualization

The Statistics Visualization enables you to view and obtain information about components and paths from the Aruba leaf-spine fabric switches.

To access this view, in Aruba Fabric Composer, select **Visualizations > Statistics Visualization**. The leaf-spine fabric is visualized such as the following:

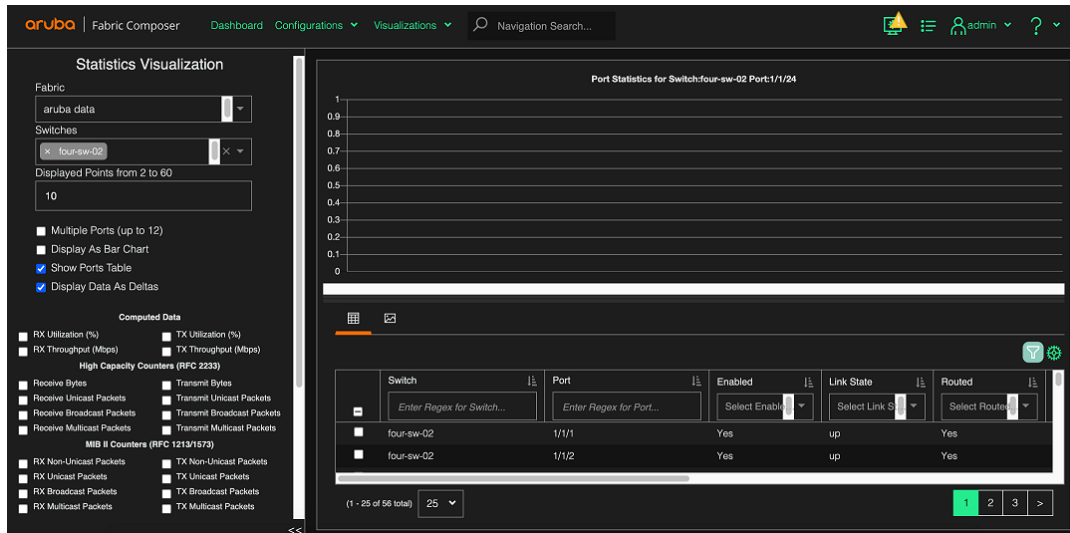



Table View


With the Table icon/tab  selected (default selection), a table such as the following lists all switch ports for the selected Fabric and Switch(es).

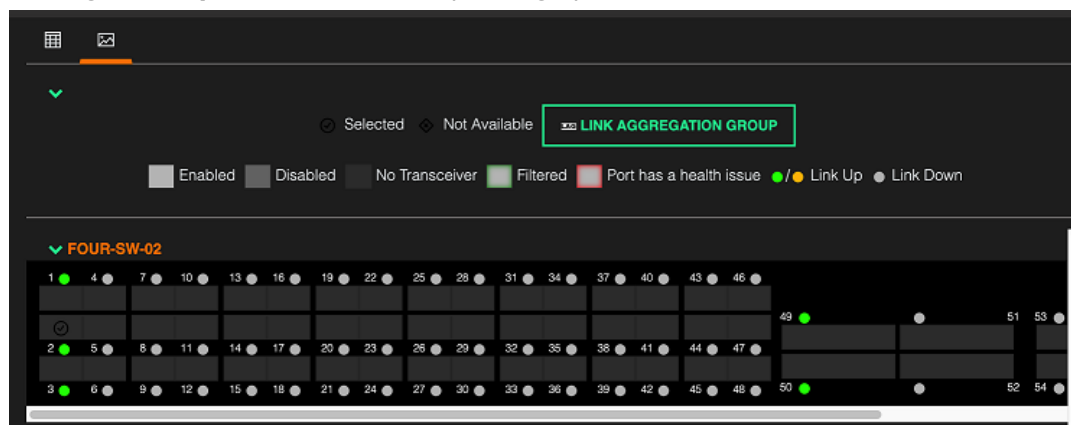
- **Health:** Displays the health of the selected switch (Healthy, Healthy, But..., Degraded, Minor, Major, Critical, Unknown, Non Recoverable).
- **Reason:** The system name of the BGP neighbor.
- **Switch:** The fabric switch.
- **Port:** The fabric port.
- **Silkscreen:** The port label on the front panel which indicates the port connector number.
- **Name:** Port name.
- **Description:** An optional description of the port.
- **LAG:** Identifies the LAG if the port is a member of a Link Aggregation Group (LAG).
- **Enabled:** Indicates Yes if the port is enabled and No if the port is disabled.
- **Link State:** Indicates the link state of the port: up or down.
- **Hold Down:** Indicates that a port is being held down by one or more resources.
- **Routed:** Route configuration of the port.
- **Uplink:** The port is an Uplink port connected to another network device such as a switch or router. Indicates Yes if the port is an Uplink port or No if the port is not an Uplink port.
- **Current Speed:** Indicates the current port speed in Gbps.
- **Configured Speed:** The configured interface line speed in Mbps.
- **Speed Group:** Speed groups exist as part of the hardware implementation on some switches. Speed groups are not created. This field lists all of the ports that are in the speed group that includes the port being hovered over, or lists only the port being hovered over if that port is not a member of a speed group. For

example, a single value such as '48' for an SFP port or '10.1' for a QSFP port indicates that port is not in a speed group.

- **QSFP Mode:** Indicates the QSFP mode (4 x 10, 1 x 40, and so on) of the port or Not Applicable.
- **QSFP Transform:** Select between Split, Unsplit, or N/A.
- **Form Factor:** Form factor of the switch port (Internal, QSFP, OSFP28, SFP, SFP28, RJ45, or LRFSP).
- **Split Operational Status:** Operational status of the port between Active and Inactive.
- **Split Admin Status:** Admin status of the port (Active or Inactive).
- **Number of Lanes:** Number of lanes used by the port.
- **Forward Error Correction:** Indicates whether or not Forward Error Correction is enabled in QSFP mode on an Access port or Fabric port.
- **LLDP Mode:** Indicates whether the port is in Disabled, RX Only, TX Only, or RX & TX modes.
- **CDP Mode:** Indicates whether the port is in Disabled, RX Only, TX Only, or RX & TX modes.
- **VLANs:** Identifies VLANs configured on the port.
- **Ungrouped VLANs:** Identifies VLANs configured on the port that are not part of a VLAN group.
- **VLAN Groups:** Identifies VLAN Groups configured on the port.
- **Native VLAN:** Identifies a native VLAN configured on the Access port. Note that Native VLAN does not apply to Fabric ports.
- **MTU:** Default Maximum Transmission Unit size for frames received and transmitted.
- **Lossless Ethernet Enabled:** Enabled (Yes or No) for the port.
- **Pause Mode:** Pause mode enabled or disabled in the port.
- **Manager:** Aruba Fabric Composer

Graphical View

Clicking the **Graphical** icon/tab  opens a graphical view of the selected switch(es).



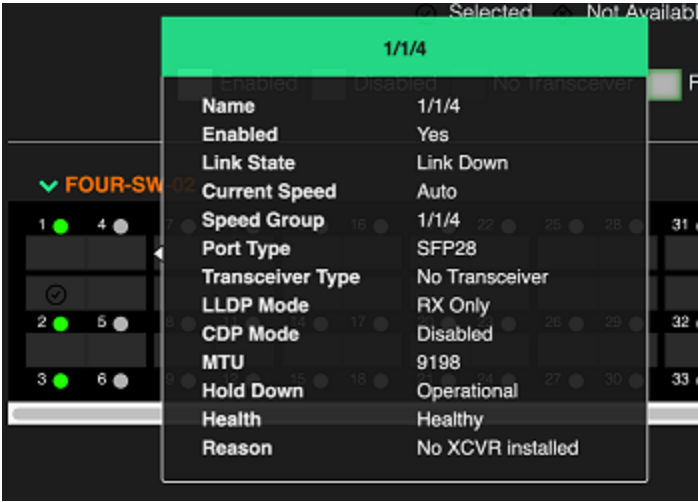
Switch Health

A colored icon on each switch symbol indicates the switch health:

- Green indicates Healthy.
- Yellow indicates Degraded.
- Red indicates Critical.

Hovering over switches

Hovering over any switch in the fabric visualization provides information about that switch. For example:



This information includes:

- **Name:** Switch name.
- **Enabled:** Whether enabled or not.
- **Link State:** Link state, whether Up or Down.
- **Current Speed:** Indicates the current port speed in Gbps.
- **Port Type:** Indicates if the port is SFP or QSFP.
- **Transceiver Type:** Whether a transceiver is connected or not.
- **LLDP Mode:** Tx or Rx.
- **CDP Mode:** Whether enabled or disabled.
- **MTU:** Maximum Transmission Unit (MTU) size for frames received and transmitted.
- **Hold Down:** Indicates that a port is being held down by one or more resources.
- **Health:** Health of the switch. For example, Healthy, Upgrading, Healthy, But..., Degraded, Critical.
- **Reason:** Status of the switch. For example, Synced, Syncing, or Sync Failure.

Filtering the Statistic Visualization View

In Aruba Fabric Composer, selecting **Visualizations > Statistics Visualization** opens the Visualization that shows the Aruba fabric switches and the links between the switches.

Using the Filters Panel

The left side of the Statistics Visualization window contains a set of filters for the Statistics Visualization.

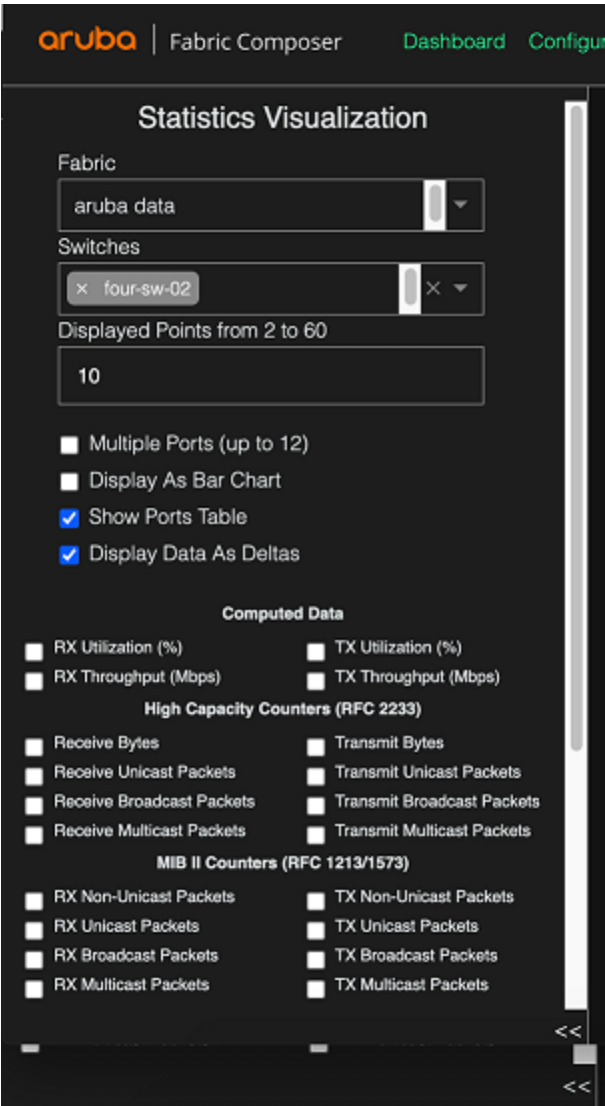


Clicking << at the bottom of the Filters sidebar pane collapses the sidebar, allowing the visualization to take up the entire window. Clicking >> expands the Filters sidebar pane.

The following filters enable you to customize the Statistics Visualization:

- **Fabric:** Select a fabric to display in this visualizer. This drop-down lists all connected fabrics.
- **Switches:** Select a switch from this drop-down list,
- **Displayed Points from 2 to 60:** Enter any number between 2 to 60.
- The following check boxes are also available:
 - Multiple Points (up to 12)
 - Display As Bar Chart
 - Show Ports Table
 - Display Data As Deltas

The following check boxes allow customized data to be displayed.



- Accessing Hewlett Packard Enterprise Support
- Accessing updates
- Regulatory Information
- Documentation Feedback

Accessing Hewlett Packard Enterprise Support

- For live assistance, go to the Contact Hewlett Packard Enterprise Worldwide website: <https://www.hpe.com/info/assistance>
- To access documentation and support services, go to the Hewlett Packard Enterprise Support Center website: <https://www.hpe.com/support/hpesc>

Information to collect

- Technical support registration number (if applicable)
- Product name, model or version, and serial number.
- Operating system name and version
- Firmware version
- Error messages
- Product-specific reports and logs
- Add-on products or components
- Third-party products or components.

Accessing Updates

- Some software products provide a mechanism for accessing software updates through the product interface. Review your product documentation to identify the recommended software update method.
- To download product updates:
Hewlett Packard Enterprise Support Center
www.hpe.com/support/hpesc
Hewlett Packard Enterprise Support Center: Software downloads
www.hpe.com/support/downloads
- To subscribe to eNewsletters and alerts:
www.hpe.com/support/e-updates

- To view and update your entitlements, and to link your contracts and warranties with your profile, go to the Hewlett Packard Enterprise Support Center **More Information on Access to Support Materials** page: www.hpe.com/support/AccessToSupportMaterials



Access to some updates might require product entitlement when accessed through the Hewlett Packard Enterprise Support Center. You must have an HPE Passport set up with relevant entitlements.

Regulatory Information

To view the regulatory information for your product, view the *Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products*, available at the Hewlett Packard Enterprise Support Center:

<https://www.hpe.com/support/Safety-Compliance-EnterpriseProducts>

Additional Regulatory Information

Hewlett Packard Enterprise is committed to providing our customers with information about the chemical substances in our products as needed to comply with legal requirements such as REACH (Regulation EC No 1907/2006 of the European Parliament and the Council). A chemical information report for this product can be found at:

<https://www.hpe.com/info/reach>

For Hewlett Packard Enterprise product environmental and safety information and compliance data, including RoHS and REACH, see:

<https://www.hpe.com/info/ecodata>

For Hewlett Packard Enterprise environmental information, including company programs, product recycling, and energy efficiency, see:

<https://www.hpe.com/info/environment>

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