

HPE Aruba Networking Fabric Composer 7.2.0 Installation Guide



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Revision	Change Description
July 31, 2026	Added section 'Accessing Fabric Composer via Public Key Authentication' to Chapter 5
October 30, 2025	Added RMA Switch from within Fabric Composer section
October 16, 2025	Removed references to 'bare metal'. Added new topic 'Nutanix VM installation'.
August 16, 2025	Updated High Availability section.
April 16, 2025	Included process for upgrading to Fabric Composer 7.2.0
April 15, 2025	Initial release of Fabric Composer 7.2.0 Install Guide.

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Safety

The 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 21CFR 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.

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>

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Chapter 2

New Features Overview

This chapter describes the new features in this release.

Most of the Fabric Composer 7.2.2 functionality is provided to support the Distributed Services Architecture and the HPE Aruba Networking AOS-CX 10000 solution. This solution enables HPE Aruba Networking Data Center Networks to combine HPE Aruba Networking switching technology with the AOS-CX 10K DSS, all centrally managed by Fabric Composer.

Some of the new features are:

- Support for AOS-CX 10.13.1120 / 10.15.1040 / 10.16.1006
- Support for AOS-CX 6300M switches
- Support for 10K Strict Firewall Mode
- Support for SNMPv3-only option
- Support for Fabric Composer VM installed on Nutanix AHV, VMware vSphere 9.0, and HPE VME

This document supports all versions of Fabric Composer beginning with release 6.1.0

Documentation

The following documentation supports the Fabric Composer 7.2.x release and are available as HTML/PDFs on the HPE Aruba Networking Support Portal:

- *Fabric Composer [7.2.0 Release Notes](#)*
- *Fabric Composer 7.2.0 Installation Guide*
- *Fabric Composer [7.2.0 Online Help](#) (also available from the Fabric Composer UI)*

This document describes how to install or deploy the Fabric Composer using either of the following methods:

- **OVA:** Deploy Fabric Composer as a Virtual Appliance.
- **ISO:** Deploy Fabric Composer through an ISO install procedure.

The Fabric Composer runs as an application in a Linux environment.

Host Requirements

To support Fabric Composer, the Virtual Machine (VM) must meet the following minimum requirements:

Fabric Composer Size	Host	CPU Cores	RAM	Disk Space
Small: 8 switches maximum (1 minimum) 2 integrations maximum (1 minimum)	VMware VM	2 CPUs	8 GB	100 GB
	Kernel-Based VM (KVM)			
Large: More than 8 switches and 2 integrations Less than 40 switches and 10 integrations	VMware VM	8 vCPUs	24 GB	100 GB
	Kernel-Based VM (KVM)			
Extra Large: Multi Fabric or up to 200 switches	VMware VM	16 vCPUs	48 GB	200 GB
	Kernel-Based VM (KVM)			

Guidelines and Restrictions

For VMware deployments only, you have a choice of installing Fabric Composer using either the OVA or ISO methods.

Note that only the ISO method allows you to choose between configuring the VM for a Small or a Large fabric size. The OVA method defaults to setting the host requirements to that of the Large fabric size. Use the ISO method if you want to configure the VM for a Small fabric size.

For details, see the following:

- [Deploying a Fabric Composer VM in VMware vSphere using OVA](#)
- [Deploying a Fabric Composer VM using ISO](#)

Supported HPE Aruba Networking Switches

SKU	Product Description	Supported Switches
R8D18AAE	Fabric Composer Device Management Service Tier 3 Switch 1 Year Subscription E-STU	6300
R8D19AAE	Fabric Composer Device Management Service Tier 3 Switch 3 Year Subscription E-STU	6300
R8D20AAE	Fabric Composer Device Management Service Tier 3 Switch 5 Year Subscription E-STU	6300
R7G99AAE	Fabric Composer Device Management Service Tier 4 Switch 1 Year Subscription E-STU	10000, 6400, 8100, 8400, 8325, 8360, 9300
R7H00AAE	Fabric Composer Device Management Service Tier 4 Switch 3 Year Subscription E-STU	10000, 6400, 8100, 8400, 8325, 8360, 9300
R7H01AAE	Fabric Composer Device Management Service Tier 4 Switch 5 Year Subscription E-STU	10000, 6400, 8100, 8400, 8325, 8360, 9300

Supported VM Hypervisors

- VMware vSphere versions 7.0 and 8.0 (6.5 and 6.7 VMware End of General Support)
- Linux KVM
- Microsoft Hyper-V

Operating System

The installation deploys a Red Hat Enterprise Linux (RHEL) 9.2 operating system.

Host Environment - Network Settings

Determine the following network settings:

- **IP Addressing Type:** The host IPv4 address can be either a static IP (default) or DHCP.
 - **Static IP:** You need to determine a static IP address, netmask, default gateway, and DNS server information.
 - **DHCP:** The installer supports DHCP. When using DHCP, ensure that the host IP address does not change. For example, on the DHCP server, you should add a DHCP reservation and/or DNS hostname entry on your DHCP/DNS server(s).
- **Hostname:** You need a hostname for your Fabric Composer VM.
- **Domain name:** You must provide a valid DNS domain name for the domain in which the Fabric Composer VM resides. If the network/deployment environment does not have a domain, you can use *localdomain* as the domain name.

- **NTP Server(s):** If your network environment includes NTP servers, it is recommended configuring your Fabric Composer VM to use these server(s) to ensure accurate time synchronization between Fabric Composer and the switches. When using a static IP address for Fabric Composer, you must specify the NTP server(s) to use. If you use DHCP, NTP servers will be automatically used, provided that your DHCP server is configured with NTP server (DHCP option 42). If you do not have a local NTP server, but your network can access the Internet, you can alternatively use NTP pool servers (for example, pool.ntp.org).
- **Name Servers:** Enter details of the DNS name servers.

Products Compatible with Fabric Composer

This section lists the products that are compatible with Fabric Composer 7.0.0



For latest information, see the online [Compatibility Matrix](#).

Table 1: Products Supported by Fabric Composer

Product	Version	Deprecated
HPE	<ul style="list-style-type: none"> ▪ HPE iLO Amplifier Pack versions 1.81/1.7.0/1.55 	<ul style="list-style-type: none"> ▪ HPE SimpliVity versions 4.1 and 4.0
HPE ANW Switch Multi-Edit Software	<ul style="list-style-type: none"> ▪ version 2.0.8 	
Pensando® PSM	<ul style="list-style-type: none"> ▪ Release 1.91.1-T-12 ▪ Cloud version 1.16.2-C-10 ▪ Cloud version 1.29.1-T-1 	
VMware	<ul style="list-style-type: none"> ▪ ESXi versions 7.0 and 8.0 ▪ vSphere®: <ul style="list-style-type: none"> ◦ Latest versions 7.0 and 8.0 ▪ vSphere® Web Client compatibility with Plugin versions 7.0 and 8.0 ▪ SDDC <ul style="list-style-type: none"> ◦ VCF/SDDC Manager 4.2 ◦ NSX-T 3.0.2 ◦ vCenter® 7.0 ▪ NSX-T versions 3.0.2 and 3.1.1 See NSX-T Build Numbers ▪ Nutanix® <ul style="list-style-type: none"> ◦ Acropolis Operating System (AOS) version 5.10.x ◦ VMware ESXi Hypervisor versions 6.5 and 6.7 	<ul style="list-style-type: none"> ▪ Previous versions 6.5 and 6.7 (VMware End of General Support) ▪ vSphere® Web Client compatibility with Plugin versions 6.5, 6.7

Security Considerations

The Fabric Composer installation enables SELinux, disables root SSH, and prompts you to enter a new admin user password on the first boot. You should also take additional measures as needed to secure the installation. See the Red Hat Enterprise Linux 9 Security Guide for more information:

https://access.redhat.com/documentation/en-us/red_hat_enterprise_linux/9/html-single/security_hardening/index

Ports required between Fabric Composer and HPE Aruba Networking CX

- SSH tcp/22 (For initial discovery of an out-of-box switch where REST interface is disabled). If REST service is enabled in VRF mgmt., the port is not required.
- HTTPS tcp/443 for all remaining communication (REST calls over HTTPS).

Ports required for Fabric Composer for Integrations

- HTTPS tcp/443 (REST over HTTPS)

Secure Passwords

When installing Fabric Composer, it is recommended doing the following:

- Configure a secure password for the Linux **admin** user.
When deploying Fabric Composer using either the OVA or ISO method, you are prompted to change this password. For details, see the following:
 - [Deploying a Fabric Composer VM in VMware vSphere using OVA](#)
 - [Deploying a Fabric Composer VM using ISO](#)
- Configure a secure password for the Fabric Composer **admin** user, which is configured using the Fabric Composer UI.

Accessing Fabric Composer via Public Key Authentication

This section explains an alternative way to access Fabric Composer via Public Key Authentication:

1. Generate a supported key pair (for example, `ssh-keygen -t ecdsa -b 521`).
2. Append the public key to `/home/admin/.ssh/authorized_keys` on the Fabric Composer application (via `ssh-copy-id admin@<afc-ip>` or by editing the file after logging in with the password).
3. Log in with the key: `ssh admin@<afc-ip>`.

Deploying a Fabric Composer VM in VMware vSphere using OVA

Fabric Composer can be installed from an OVA file designed for deployment on virtual hosts.



The OVA install file is supported ONLY with installs via vCenter. The OVA install is NOT supported via the ESXi UI. For ESXi UI installs, use the ISO image.

Downloading the OVA File

1. Determine the version of Fabric Composer software to install.
2. Go to <https://networkingsupport.hpe.com> to download the Fabric Composer software installer file: *HPE_ANW_FabricComposer-<release_number>.ova*
3. Save the downloaded OVA file to a location for the OVA deployment.

Deploying the Fabric Composer VM

This section describes how to deploy the Fabric Composer VM using the OVA file. Ensure that the OVA file to be used for the deployment has been downloaded to an accessible location (see [Downloading the OVA File](#)).

The OVA installation process configures the VM with the following default settings. The system values specified below are for a Large Fabric size. If you want to specify a smaller system, use the ISO installation method of installing Fabric Composer. For more information, see [Host Requirements](#).

- **CPUs:** 4
- **RAM:** 16 GB
- **Disk space:** 100 GB



Post-installation, the CPUs and RAM can be manually adjusted to required size from the VM settings.



The content in this procedure represent screens you should see. Your installation will contain different details, such as Fabric Composer software version, servers, configuration values, and so on. You will need to identify an ESX cluster that will be used to host the Fabric Composer software. To do this, you will need to launch VMware vSphere, select the correct datacenter, and then select the ESX cluster to host the Fabric Composer software.

1. Log into the VMware vSphere Client.



When logging into the VMware vSphere Client, you may be prompted to install the Client Integration Plug-in into your web browser. If prompted, you must install the Client Integration Plug-in to enable OVA deployment from your Web browser.

2. In the vSphere Client, select <your datacenter> and then select **Actions > Deploy OVF Template**.
3. In the Select an OVF template page, you can select from either a URL or from the Local file. In this example, the URL has been selected (the Fabric Composer name and version in this example is for illustrative purpose only).

Figure 1 *Selecting an OVF Template*

The screenshot shows the 'Deploy OVF Template' wizard in the vSphere Client. The left sidebar contains a list of steps: 1. Select an OVF template (highlighted), 2. Select a name and folder, 3. Select a compute resource, 4. Review details, 5. Select storage, and 6. Ready to complete. The main panel is titled 'Select an OVF template' and includes a close button (X). Below the title, it says 'Select an OVF template from remote URL or local file system' and 'Enter a URL to download and install the OVF package from the Internet, or browse to a location accessible from your computer, such as a local hard drive, a network share, or a CD/DVD drive.' There are two radio buttons: 'URL' (selected) and 'Local file'. Under 'URL', a text field contains 'http | https://remoteserver-address/filetoinstall.ovf | .ova'. Under 'Local file', there is an 'UPLOAD FILES' button and a text field containing 'HPE_ANW_FabricComposer-7.1.1-14369.ova'. At the bottom right, there are 'CANCEL' and 'NEXT' buttons.

4. In the Select a name and folder page, specify a unique name and then select a target location for the virtual machine. Click **Next**.

Figure 2 *Selecting a Name and Folder*

The screenshot shows the 'Deploy OVF Template' wizard in the vSphere Client, specifically the 'Select a name and folder' step. The left sidebar shows the same list of steps, with '2. Select a name and folder' highlighted. The main panel is titled 'Select a name and folder' and includes a close button (X). Below the title, it says 'Specify a unique name and target location'. There is a text field for 'Virtual machine name:' containing 'HPE_ANW_FabricComposer-7.1.1-14369'. Below this, it says 'Select a location for the virtual machine.' and shows a tree view of the vSphere hierarchy. The tree view shows a folder 'Lab Internal' expanded, with 'Lab Shared DC' selected. At the bottom right, there are 'CANCEL', 'BACK', and 'NEXT' buttons.

5. In the Select a compute resource page, select **<your cluster>** to check for compatibility. Click **Next** once the compatibility checks are successful.

Figure 3 *Selecting a Compute Resource*

The screenshot shows the 'Deploy OVF Template' wizard with the 'Select a compute resource' step selected. The left sidebar lists steps 1 through 6, with step 3 highlighted. The main panel shows a tree view under 'Lab Shared DC' with 'Cluster 1' selected. Below the tree, a 'Compatibility' section indicates 'Compatibility checks succeeded.' with a green checkmark. At the bottom right are 'CANCEL', 'BACK', and 'NEXT' buttons.

6. In the Review details page, verify the template details and then click **Next**.

Figure 4 *Reviewing Details*

The screenshot shows the 'Review details' step of the 'Deploy OVF Template' wizard. The left sidebar lists steps 1 through 9, with step 4 highlighted. The main panel has a title 'Review details' and a subtitle 'Verify the template details.' Below this is a yellow warning box: 'The OVF package contains advanced configuration options, which might pose a security risk. Review the advanced configuration options below. Click next to accept the advanced configuration options.' A table follows with details about the OVF package:

Publisher	No certificate present
Product	HPE Aruba Networking Fabric Composer
Version	7.1.1-14369
Vendor	Aruba, a Hewlett Packard Enterprise company
Description	HPE Aruba Networking Fabric Composer Virtual Appliance. The Virtual Appliance consists of a single VM called HPE Aruba Networking Fabric Composer.
Download size	927.8 MB
Size on disk	2.2 GB (thin provisioned) 100.0 GB (thick provisioned)

At the bottom right are 'CANCEL', 'BACK', and 'NEXT' buttons.

7. In the License agreements page, read through the *HPE End User License Agreement* and select the **I accept all license agreements** checkbox. Click **Next**.

Figure 5 *Accepting the License Agreement*

Deploy OVF Template

- 1 Select an OVF template
- 2 Select a name and folder
- 3 Select a compute resource
- 4 Review details
- 5 License agreements**
- 6 Select storage
- 7 Select networks
- 8 Customize template
- 9 Ready to complete

License agreements

The end-user license agreement must be accepted.
Read and accept the terms for the license agreement.

END USER LICENSE AGREEMENT

1. Applicability. This end user license agreement (the "Agreement") governs the use of accompanying software, unless it is subject to a separate agreement between you and Hewlett Packard Enterprise Company and its subsidiaries ("HPE"). By downloading, copying, or using the software you agree to this Agreement. HPE provides translations of this Agreement in certain languages other than English, which may be found at: <http://www.hpe.com/software/SWLCicensing>.

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4. Consumer Rights. If you obtained software as a consumer, nothing in this Agreement affects your statutory rights.

☒ I accept all license agreements.

CANCEL **BACK** **NEXT**

8. In the Select storage page, select the datastore in which to store the configuration and disk files. Click **Next** once the compatibility checks are successful.

Figure 6 *Selecting Storage*

Deploy OVF Template

- 1 Select an OVF template
- 2 Select a name and folder
- 3 Select a compute resource
- 4 Review details
- 5 License agreements
- 6 Select storage**
- 7 Select networks
- 8 Customize template
- 9 Ready to complete

Select storage

Select the storage for the configuration and disk files

Select virtual disk format **Thick Provision Lazy Zeroed**

VM Storage Policy **VM Storage Policy**

☐ Disable Storage DRS for this virtual machine

	Name	Storage Compatibility	Capacity	Provisioned	Free	Type
☒	LabSharedCluster	--	16 TB	13.58 TB	2.42 TB	
☐	3Par6-LabShared-Templat...	--	2 TB	683.55 GB	1.35 TB	VMFS 5
☐	labvmhost1:InternalH1	--	439.5 GB	11.82 GB	427.68 GB	VMFS 6
☐	labvmhost2:InternalH2	--	439.5 GB	11.82 GB	427.68 GB	VMFS 6
☐	labvmhost3:InternalH3	--	319 GB	1.41 GB	317.59 GB	VMFS 6

5 items

Compatibility

✓ Compatibility checks succeeded.

CANCEL **BACK** **NEXT**

- In the Select networks page, select your destination network for each source network. (The VM Network name in this example is for illustrative purpose only.) Click **Next**.

Figure 7 *Selecting Networks*

The screenshot shows the 'Select networks' page of the 'Deploy OVF Template' wizard. On the left, a sidebar lists steps 1 through 9, with '7 Select networks' highlighted. The main area is titled 'Select networks' and includes a sub-header 'Select a destination network for each source network.' Below this is a table with two columns: 'Source Network' and 'Destination Network'. The 'Source Network' column contains 'VM Network', and the 'Destination Network' column contains 'Puerto Rico' with a dropdown arrow. Below the table, there is a section for 'IP Allocation Settings' with 'IP allocation' set to 'Static - Manual' and 'IP protocol' set to 'IPv4'. At the bottom right are 'CANCEL', 'BACK', and 'NEXT' buttons.

- In the Customize template page, enter a Hostname, Domain Name, Primary NTP Server address (if required) and a Secondary NTP Server address (if required). Click **Next**.



Hostname and Domain Name shown below are for illustrative purposes only.

Figure 8 *Customizing Template*

The screenshot shows the 'Customize template' page of the 'Deploy OVF Template' wizard. On the left, a sidebar lists steps 1 through 9, with '8 Customize template' highlighted. The main area is titled 'Customize template' and includes a sub-header 'Customize the deployment properties of this software solution.' Below this is a green status bar that says 'All properties have valid values'. Underneath is a section titled '(A) Network - General settings' with '4 settings'. This section contains four properties: (1) Hostname, (2) Domain Name, (3) Primary NTP Server, and (4) Secondary NTP Server. Each property has a description and a text input field. At the bottom right are 'CANCEL', 'BACK', and 'NEXT' buttons.

11. Scroll down the Customize template page and enter an IP Address, Network Mask, Default Gateway, Primary Name Server, and Secondary Name Server. Select the **Use DHCP** checkbox only if you are using DHCP. Click **Next**.

Figure 9 Customizing Template (contd)

The screenshot shows the 'Customize template' window with a sidebar on the left titled 'Deploy OVF Template' containing steps 1 through 9. Step 8, 'Customize template', is highlighted. The main area is titled 'Customize template' and contains two sections: '(B) Network - Static IP settings' with 5 settings and '(C) Network - DHCP settings' with 1 setting. The static IP settings are as follows:

Setting	Description	Value
(1) IP Address	Static IP address to assign for this interface. (Note: For all IP address fields, specify as "0.0.0.0" to use DHCP)	0.0.0.0
(2) Network Mask	Network mask for this interface.	255.255.255.0
(3) Default Gateway	Default gateway for this interface.	0.0.0.0
(4) Primary Name Server	Primary DNS name server IP address.	0.0.0.0
(5) Secondary Name Server	Secondary DNS name server IP address.	0.0.0.0

At the bottom right, there are three buttons: 'CANCEL', 'BACK', and 'NEXT'.

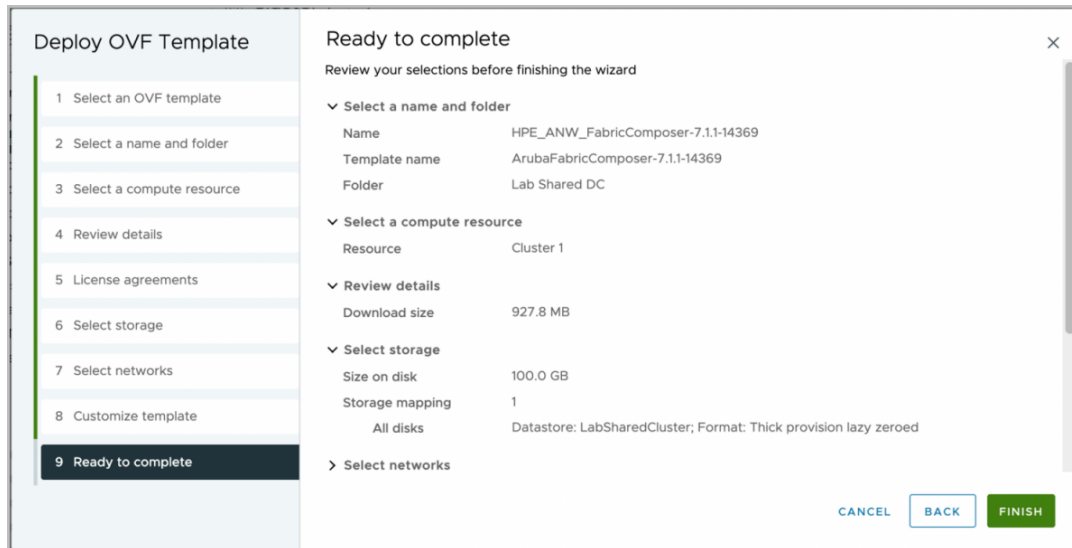
12. Scroll down In the Customize template page and set a Linux admin password. Also ensure that the High Availability Mode checkbox is unchecked. Click **Next**.

Figure 10 Customizing Template (contd)

The screenshot shows the 'Customize template' window with the same sidebar as Figure 9. The main area shows the continuation of settings from Figure 9, including the static IP settings. Below these, the '(C) Network - DHCP settings' section is expanded, showing 'Use DHCP' checked. Below that, the '(D) Linux Password' section is expanded, showing 'Linux admin Password' with two password fields: 'Password' and 'Confirm Password', both masked with dots. At the bottom right, there are three buttons: 'CANCEL', 'BACK', and 'NEXT'.

13. In the Ready to complete page, verify all the settings and click **Finish**.

Figure 11 *Completing the Installation*



14. Once the installation is finished, locate and power on the new VM.
15. Verify the Fabric Composer installation:
 - a. In a Web browser, enter the Fabric Composer URL that was displayed by the Fabric Composer installer.
The URL format is *https://host_name*, where *host_name* is the fully-qualified domain name or IP address of the Fabric Composer host.
 - b. Log into Fabric Composer as administrator using the default credentials:
Username: admin
Password: aruba
The Change Password screen is displayed.
 - c. Follow the prompts to specify a new admin user password and click **Apply**.
 - d. Verify that the Fabric Composer UI opens successfully.The Fabric Composer installation is now complete.

From the Fabric Composer UI, set up Fabric Composer and add your switches. For details, see the *Fabric Composer* [7.2.0 Online Help](#).

Deploying a Fabric Composer VM using ISO

Downloading the ISO Installer File

1. Determine the version of the Fabric Composer software to install.
2. Go to <https://networkingsupport.hpe.com> to download the ISO installer file: *HPE_ANW_FabricComposer -<release_number>.iso*
3. Depending on your deployment type, do one of the following with the ISO installer file:
 - **VMware:** Upload the file to a datastore accessible from the ESXi server and then see [Preparing to Run the ISO for a VMware Deployment](#).
 - **Linux KVM:** Upload the file to a datastore accessible from Virtual Manager and then see [Preparing to Run the ISO for Linux KVM Deployment](#).
 - **MS Hyper-V:** Upload the file to a datastore accessible from the Hyper-V server.

Preparing to Run the ISO

This section contains prerequisites that need to be followed before running the ISO for:

- VMware deployment
- Linux KVM deployment

Preparing to Run the ISO for a VMware Deployment

This section shows you how to deploy a new VMware VM to host the Fabric Composer software. Ensure that you have downloaded the compatible Fabric Composer ISO file and make it accessible from the ESXi server where the Fabric Composer will be deployed. For more information, see [Downloading the ISO Installer File](#)

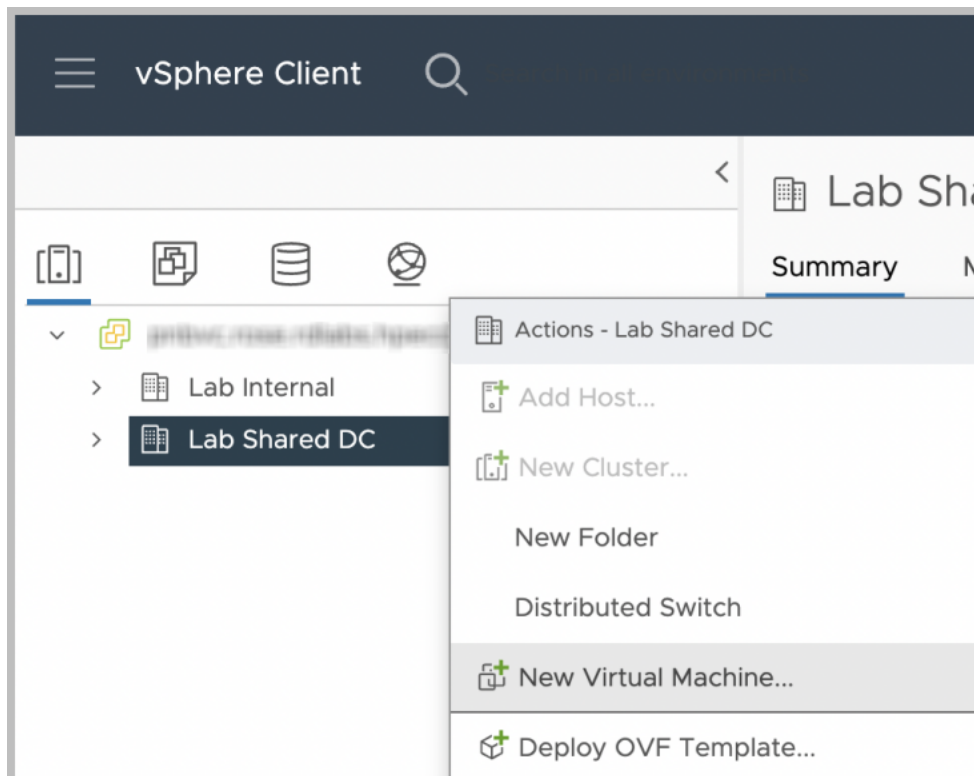
1. Log into the VMware vSphere Client.



When logging into VMware vSphere Client, you may be prompted to install the Client Integration Plug-in into your web browser. If prompted, you must install the Client Integration Plug-in to enable OVA deployment from your Web browser.

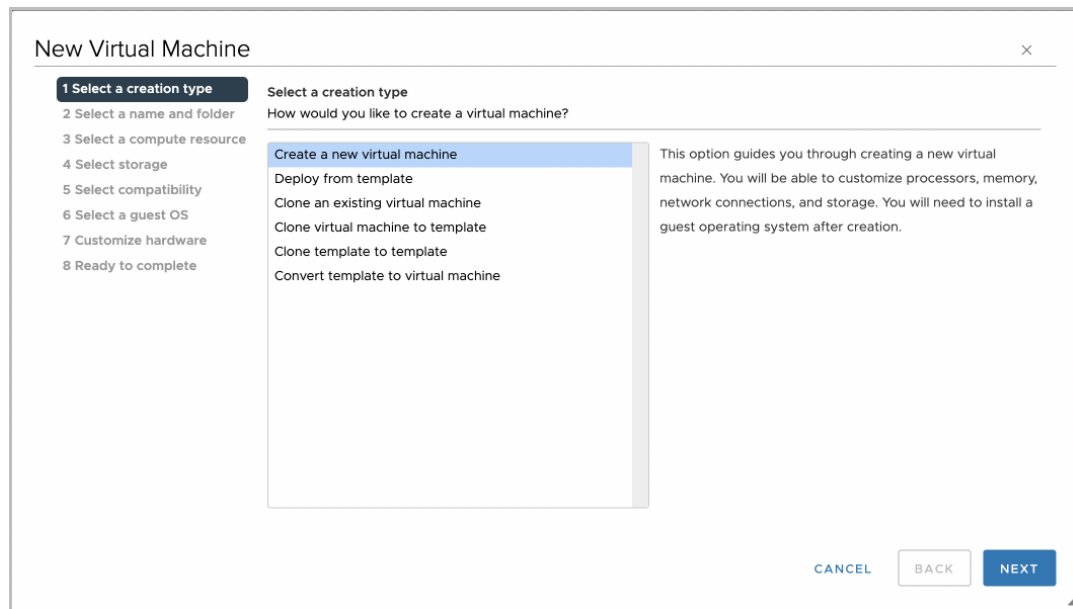
2. Right click on the datastore and select **New Virtual Machine**. The New Virtual Machine wizard is displayed.

Figure 12 *Creating a New Virtual Machine*



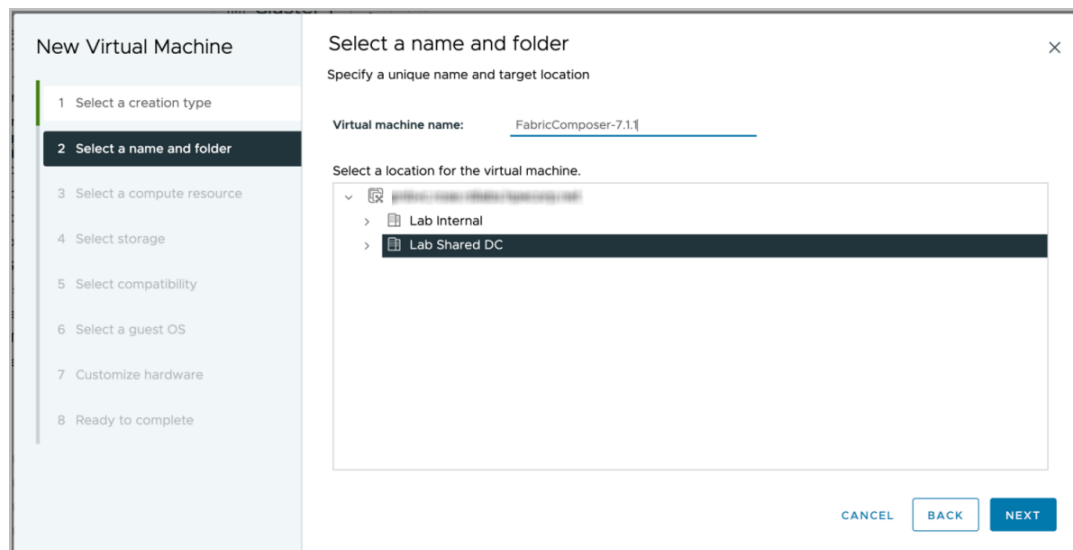
3. In the Select a creation type page, select **Create a new virtual machine** and click **Next**.

Figure 13 *Selecting a Creation Type*



4. In the Select a name and folder page, specify a unique name and select a target location. Click **Next**.

Figure 14 *Selecting a Name and Folder*



5. In the Select a compute resource page, select the destination compute resource for this operation. Click **Next**.

Figure 15 *Selecting a Compute Resource*

New Virtual Machine

1 Select a creation type
2 Select a name and folder
3 Select a compute resource
4 Select storage
5 Select compatibility
6 Select a guest OS
7 Customize hardware
8 Ready to complete

Select a compute resource
Select the destination compute resource for this operation

Lab Shared DC
Cluster 1

Compatibility
✓ Compatibility checks succeeded.

CANCEL BACK NEXT

6. In the Select storage page, select the storage for the configuration and disk files. Click **Next**.

Figure 16 *Selecting Storage*

New Virtual Machine

1 Select a creation type
2 Select a name and folder
3 Select a compute resource
4 Select storage
5 Select compatibility
6 Select a guest OS
7 Customize hardware
8 Ready to complete

Select storage
Select the storage for the configuration and disk files

VM Storage Policy
☐ Disable Storage DRS for this virtual machine

Name	Storage Compatibility	Capacity	Provisioned	Free	Type
LabSharedCluster	--	16 TB	13.58 TB	2.42 TB	
3Par6-LabShared-Templat...	--	2 TB	683.55 GB	1.35 TB	VMFS 5
labvmhost1.InternalH1	--	439.5 GB	11.82 GB	427.68 GB	VMFS 6
labvmhost2.InternalH2	--	439.5 GB	11.82 GB	427.68 GB	VMFS 6
labvmhost3.InternalH3	--	319 GB	1.41 GB	317.59 GB	VMFS 6

5 items

Compatibility
✓ Compatibility checks succeeded.

CANCEL BACK NEXT

7. In the Select compatibility page, select the compatibility for this virtual machine depending on the hosts in your environment. Click **Next**.

Figure 17 *Selecting Compatibility*

The screenshot shows the 'New Virtual Machine' wizard at step 5, 'Select compatibility'. The left sidebar lists steps 1 through 8, with step 5 highlighted. The main area contains the following text: 'Select compatibility', 'Select compatibility for this virtual machine depending on the hosts in your environment', and 'The host or cluster supports more than one VMware virtual machine version. Select a compatibility for the virtual machine.' Below this, a dropdown menu is set to 'ESXi 7.0 U2 and later' with an information icon. A note states: 'This virtual machine uses hardware version 19, which provides the best performance and latest features available in ESXi 7.0 U2.' At the bottom right are 'CANCEL', 'BACK', and 'NEXT' buttons.

8. In the Select a guest OS page, select **Linux** from the Guest OS Family drop-down list and then **Red Hat Enterprise Linux 9 (64-bit)** from the Guest OS version drop-down list. Click **Next**.

Figure 18 *Selecting a Guest OS*

The screenshot shows the 'New Virtual Machine' wizard at step 6, 'Select a guest OS'. The left sidebar lists steps 1 through 8, with step 6 highlighted. The main area contains the following text: 'Select a guest OS', 'Choose the guest OS that will be installed on the virtual machine', and 'Identifying the guest operating system here allows the wizard to provide the appropriate defaults for the operating system installation.' Below this, there are two dropdown menus: 'Guest OS Family' set to 'Linux' and 'Guest OS Version' set to 'Red Hat Enterprise Linux 9 (64-bit)'. At the bottom right, it says 'Compatibility: ESXi 7.0 U2 and later (VM version 19)' and there are 'CANCEL', 'BACK', and 'NEXT' buttons.



Selecting the OS version as RHEL 9 (64-bit) will use the UEFI boot mode. For legacy BIOS mode, select the OS Family as **Linux** and OS Version as **Other Linux (64-bit)**.

9. In the Customize hardware page, configure the virtual machine hardware depending on whether you require a Large or Small fabric size. Select the **Connect at Power On** checkbox and click **Next**.

Figure 19 Customizing Hardware

The screenshot shows the 'New Virtual Machine' wizard at the 'Customize hardware' step. On the left, a progress bar lists steps 1 through 8, with step 7 'Customize hardware' highlighted. The main area displays hardware configuration options:

- CPU: 4
- Memory: 16 GB
- New Hard disk: 100 GB
- New SCSI controller: VMware Paravirtual
- New Network: Puerto Rico (with 'Connect...' checkbox checked)
- New CD/DVD Drive: Datastore ISO File (with 'Connect At Power On' checkbox checked)
- CD/DVD Media: [3Par6-LabShared-Temp] (with 'BROWSE...' button)
- Device Mode: Passthrough CD-ROM
- Virtual Device Node: New SATA Controller (SATA(0:0) New CD/DVD Drive)
- Video card: Specify custom settings
- Security Devices: Not Configured

At the bottom right, there are 'CANCEL', 'BACK', and 'NEXT' buttons.

10. In the Ready to complete page, verify the settings and then click **Finish** to start the VM creation.

Figure 20 Finishing the Installation

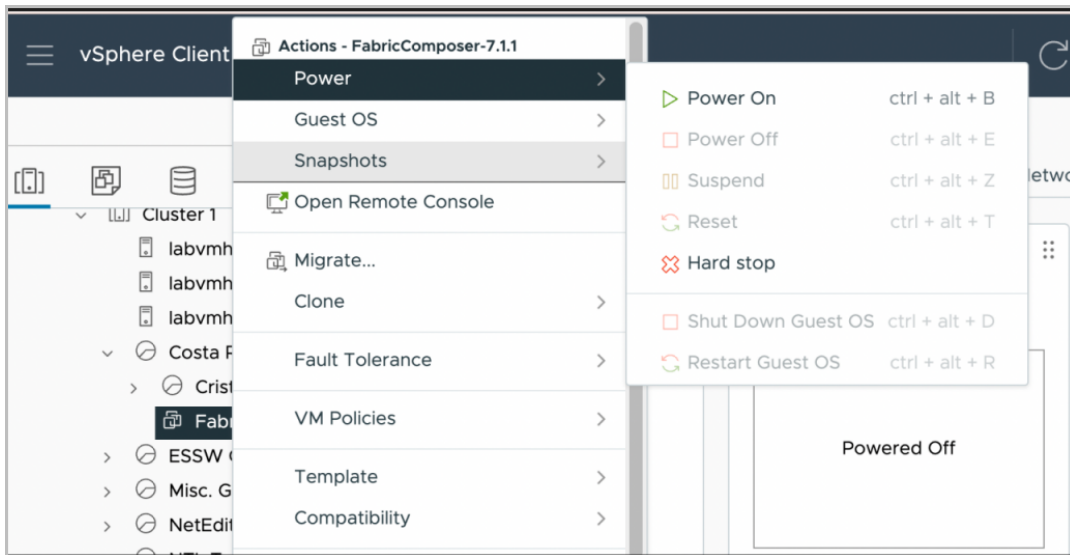
The screenshot shows the 'New Virtual Machine' wizard at the 'Ready to complete' step. On the left, the progress bar highlights step 8 'Ready to complete'. The main area displays a summary of the configuration:

- Virtual machine name: FabricComposer-7.1.1
- Folder: Lab Shared DC
- Cluster: Cluster 1
- Datastore: LabSharedCluster [3Par1-SSD-LUN-002] (Recommended) (with 'more recommendations' link)
- VM storage policy
- Compatibility: ESXi 8.0 U2 and later (VM version 21)
- Guest OS name: Red Hat Enterprise Linux 9 (64-bit)
- Virtualization Based Security: Disabled
- CPUs: 4
- Memory: 16 GB
- NICs: 1
- NIC 1 network: Puerto Rico
- NIC 1 type: VMXNET 3
- SCSI controller 1: VMware Paravirtual

At the bottom right, there are 'CANCEL', 'BACK', and 'FINISH' buttons.

11. When finished, locate and power on the new VM and complete the ISO prompts.

Figure 21 Powering on the Virtual Machine



12. Verify the Fabric Composer installation:
 - a. In a Web browser, enter the Fabric Composer URL that was displayed by the Fabric Composer installer. The URL format is *https://host_name*, where *host_name* is the fully-qualified domain name or IP address of the Fabric Composer host.
 - b. Log into Fabric Composer as administrator using the default credentials:
Username: admin
Password: aruba
The Change Password screen is displayed.
 - c. Follow the prompts to specify a new admin user password and click **Apply**.
 - d. Verify that the Fabric Composer UI opens successfully. The Fabric Composer installation is now complete.

Preparing to Run the ISO for Linux KVM Deployment

This procedure shows how to use Virtual Manager to deploy a new VM to host the Fabric Composer software on a host running the Linux KVM hypervisor. Ensure that you have downloaded the compatible Fabric Composer ISO file and uploaded that file to a datastore accessible from Virtual Manager (see [Downloading the ISO Installer File](#)).

1. Use the `virt-manager` command to open Virtual Manager and click **New** to create an Fabric Composer VM. A configuration wizard is displayed.
2. In the configuration wizard, complete the following fields:
 - **Name:** Enter a name for the new Fabric Composer VM.
 - **Local install media:** Must be selected.
 - **Use ISO image:** Browse to and select the Fabric Composer ISO image.
 - **OS type:** Select **Linux**.
 - **Version:** Select either **Red Hat Enterprise Linux 9 (64-bit)** or **Other Linux (64-bit)**.
 - **Memory (RAM):** Enter **8 GB** minimum (small fabric) / **16 GB** minimum (large fabric).
 - **CPUs:** Specify **2** minimum (Small fabric) / **4** minimum (Large fabric). CPUs must be 2 GHz or greater.

- **Create a disk image on the computer's hard drive:** Specify **100 GB** minimum, thick-provisioned disk space.
 - **Allocate entire disk now:** It is recommended that you allocate the entire disk, but if you do not have enough disk space, clear this checkbox.
 - **Customize configuration before install:** Select this checkbox.
 - **Advanced options :** Expand and ensure that the following are selected:
 - **Virt type, kvm**
 - **Architecture, x86_64**
3. Click **Finish**. A window opens in which you select the VM components.
 4. In the VM window, select **Boot Options** and complete the following:
 - **Start virtual machine on host boot up.** Select this checkbox, which appears under Autostart.
 - **Boot device order.** Select **Enable boot menu, Hard Disk, and CD-ROM**.
 5. Click **Apply**.
 6. Select **Disk 1**, expand **Advanced options** and select **SATA** for **Disk bus**. Click **Apply**.
 7. Select **NIC** and then select **virtio** for Device model. Click **Apply**.
 8. Select **Display VNC** and then select **Copy local keymap** for Keymap. Click **Apply**.
 9. Click **Begin Installation**. The VM is created, gets powered on, and launches a VM console.

The Fabric Composer ISO installer starts. Immediately continue with the [Follow the ISO Installer Prompts](#) section.

Preparing to Run the ISO for a Nutanix Deployment



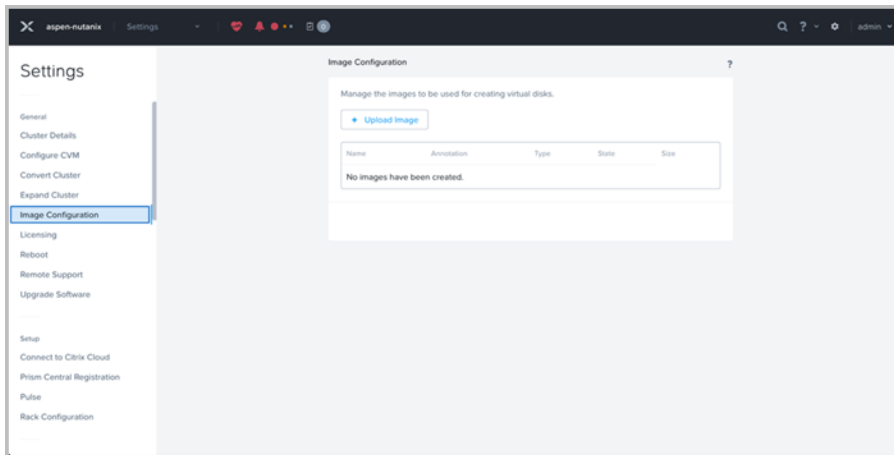
This section is applicable only to Fabric Composer 7.2.2 and later versions.

This section shows you how to deploy a new Virtual Machine (VM) on a Nutanix AHV to host the Fabric Composer software. Before proceeding, ensure that you have downloaded the appropriate Fabric Composer ISO file and make it accessible from the Nutanix environment. For more information, see [Downloading the ISO Installer File](#)

Uploading the ISO Image to the Nutanix AHV

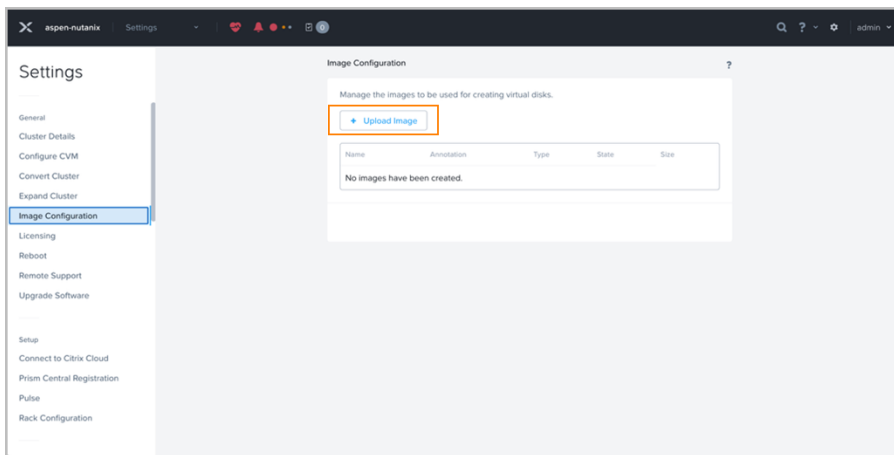
1. In the Nutanix Prism interface, navigate to **Home > Settings > Image Configuration**.

Figure 22 *Image Configuration*



1. Click **Upload Image**.

Figure 23 *Upload Image*



2. In the **Upload Dialog** window:
 - a. In **Name**, provide a name for the image.
 - b. In **Image Type**, select **ISO** from the drop-down list.
 - c. In **Storage Container**, select the default container from the drop-down list.
 - d. Click **Choose File** and select the ISO file from your local system to upload it.
 - e. Click **Save** to complete the upload.

Figure 24 *Upload Dialog*

Create Image

Name
AFC-7.2.3

Annotation

Image Type
ISO

Storage Container
default-container-83919606310818

Image Source

☐ From URL

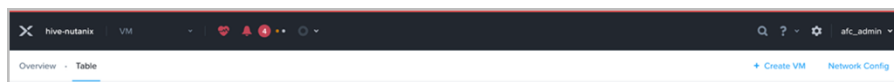
☒ Upload a file Choose file No file chosen

No file chosen

< Back Cancel Save

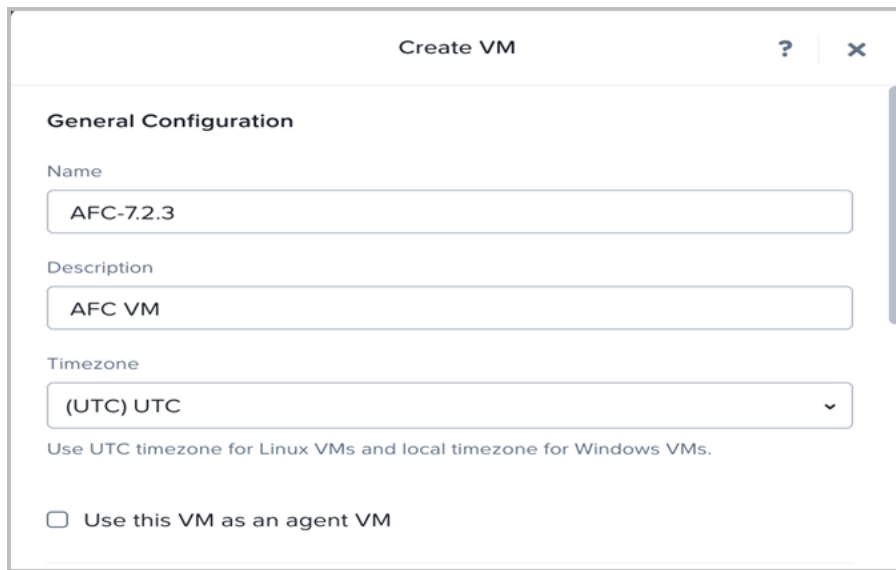
Creating a New Virtual Machine

1. In the VM, click **Create VM**.



2. In the **General Configuration** window:
 - a. In **Name** and **Description**, enter a **Name** and **Description** for the VM.
 - b. In **Timezone**, select the appropriate timezone from the drop-down list.

Figure 25 General Configuration



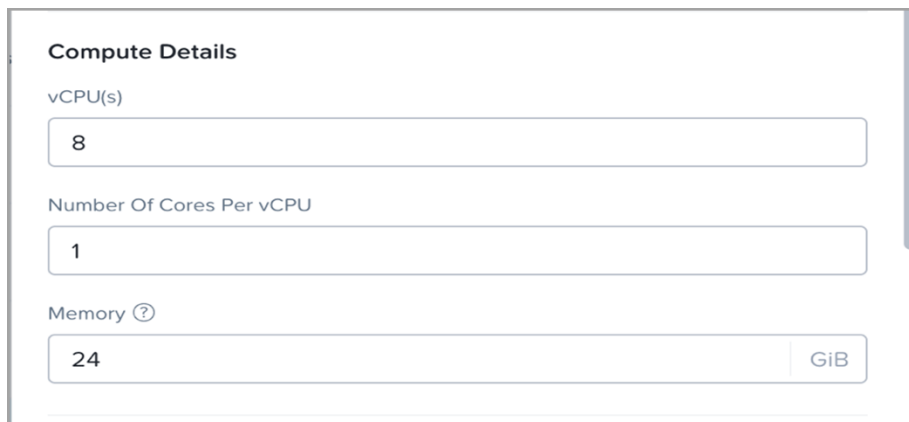
The screenshot shows the 'Create VM' window with the 'General Configuration' tab selected. The window has a title bar with a question mark and a close button. The form contains the following fields:

- Name:** AFC-7.2.3
- Description:** AFC VM
- Timezone:** (UTC) UTC (with a dropdown arrow)

Below the fields, there is a note: "Use UTC timezone for Linux VMs and local timezone for Windows VMs." At the bottom, there is a checkbox labeled "Use this VM as an agent VM" which is currently unchecked.

Configuring Compute Resources

1. In the **Compute Details** window, configure the resources based on the deployment size:
 - a. In **vCPUs**, define the total number of virtual CPUs.
 - b. In **Number of Cores Per vCPU**, specify the number of cores per vCPU.
 - c. In **Memory**, allocate the appropriate amount of memory in GiB.



The screenshot shows the 'Compute Details' window. The form contains the following fields:

- vCPU(s):** 8
- Number Of Cores Per vCPU:** 1
- Memory ?**: 24 GiB

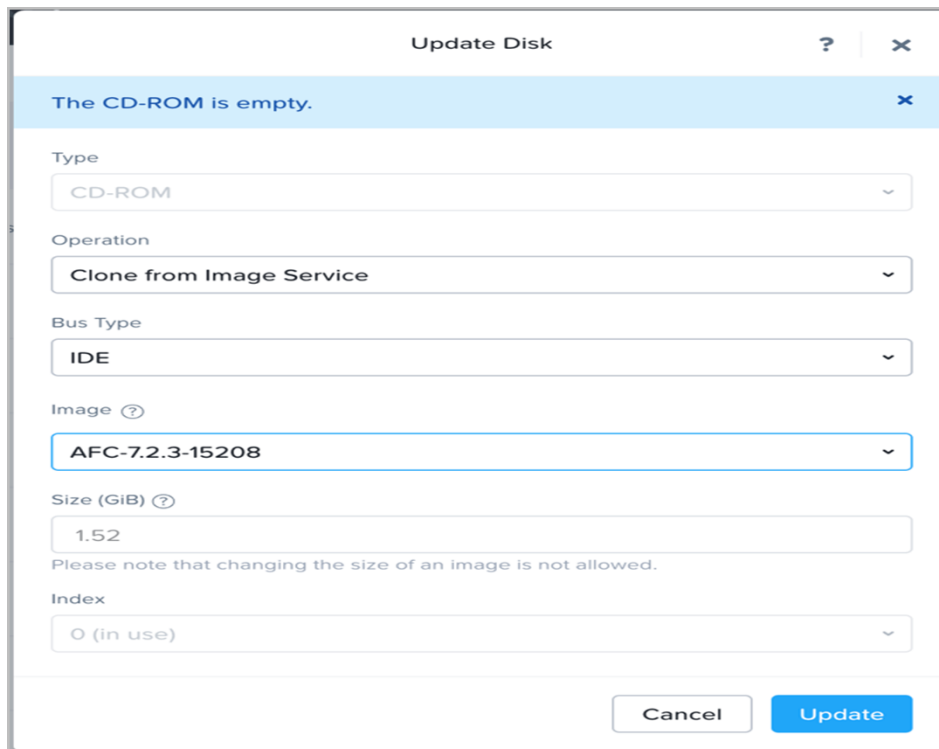
Setting Boot Configuration

1. Choose **Legacy BIOS** as the Boot Mode.
2. Set the Boot Priority to: **Default Boot Order (CD-ROM, Disk, Network)**.

Updating Disks

1. Edit the CD-ROM:
 - a. In **Operation**, choose **Clone from Image Service** from the drop-down list.
 - b. In **Bus Type**, choose **IDE** from the drop-down list.
 - c. In **Image**, navigate to the uploaded ISO image from the drop-down list.
 - d. Click **Update**.

Figure 26 *Updating Disks*



The CD-ROM is empty.

Type
CD-ROM

Operation
Clone from Image Service

Bus Type
IDE

Image ?
AFC-7.2.3-15208

Size (GiB) ?
1.52
Please note that changing the size of an image is not allowed.

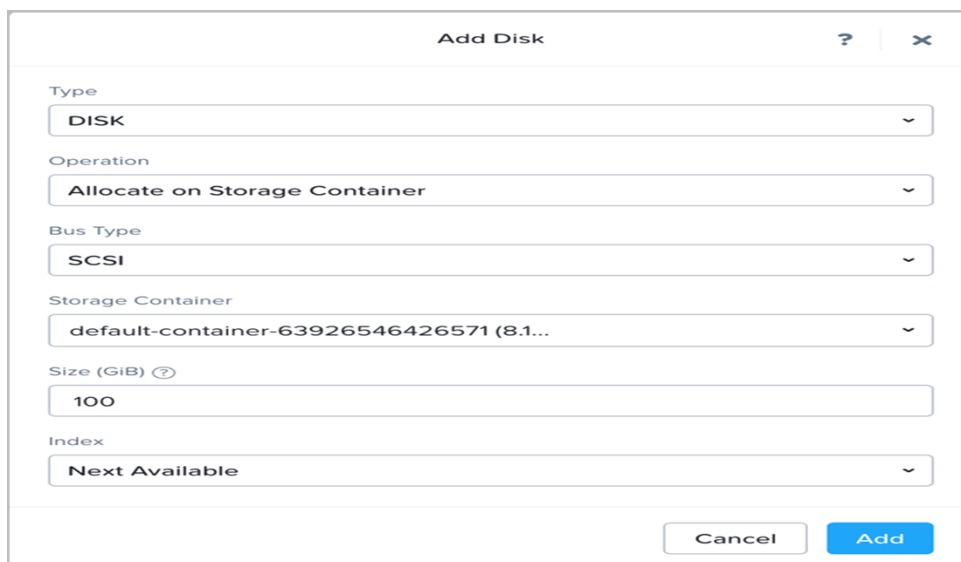
Index
0 (in use)

Cancel Update

Adding a New Disk

1. In **Type**, select **DISK** from the drop-down list.
2. In **Operation**, select **Allocate on Storage Container** from the drop-down list.
3. In **Bus Type**, select **SCSI** from the drop-down list.
4. In **Storage Container**, select **default** from the drop-down list.
5. In **Size**, enter **100** in GiB.
6. In **Index**, select **Next Available** from the drop-down list.
7. Click **Add**.

Figure 27 *Adding a new disk*



Add Disk

Type
DISK

Operation
Allocate on Storage Container

Bus Type
SCSI

Storage Container
default-container-63926546426571 (8.1...

Size (GiB) ?
100

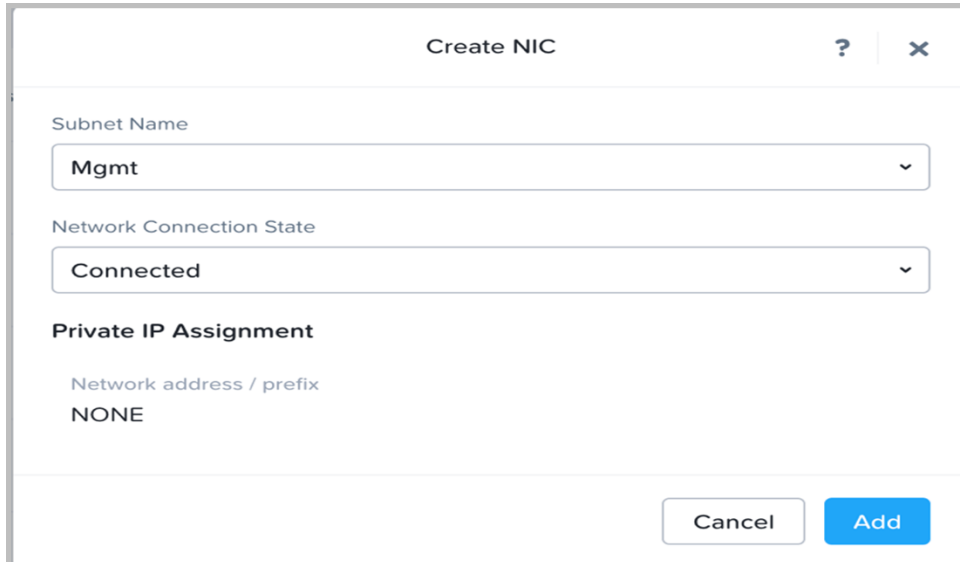
Index
Next Available

Cancel Add

Adding a Network Interface Card

1. Click **Create NIC**.
2. In **Subnet Name**, select the appropriate name.
3. In **Network Connection State**, select **Connected** from the drop-down list.
4. Click **Add** to attach the NIC.

Figure 28 *Creating NIC*

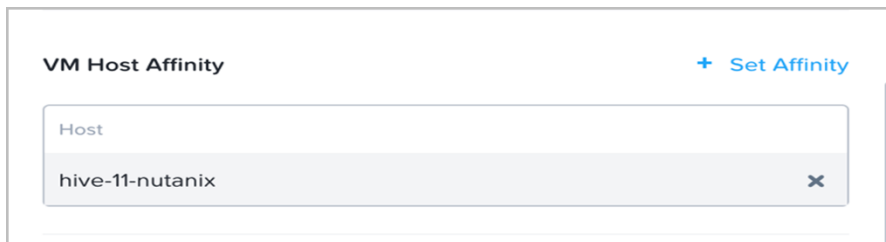


The 'Create NIC' dialog box is shown. It has a title bar with a question mark and a close button. The main content area contains three sections: 'Subnet Name' with a dropdown menu showing 'Mgmt', 'Network Connection State' with a dropdown menu showing 'Connected', and 'Private IP Assignment' with a label 'Network address / prefix' and the value 'NONE'. At the bottom right, there are two buttons: 'Cancel' and 'Add'.

Setting Host Affinity

Configure the VM Host Affinity to bind the VM to a specific host.

Figure 29 *Setting Host Affinity*

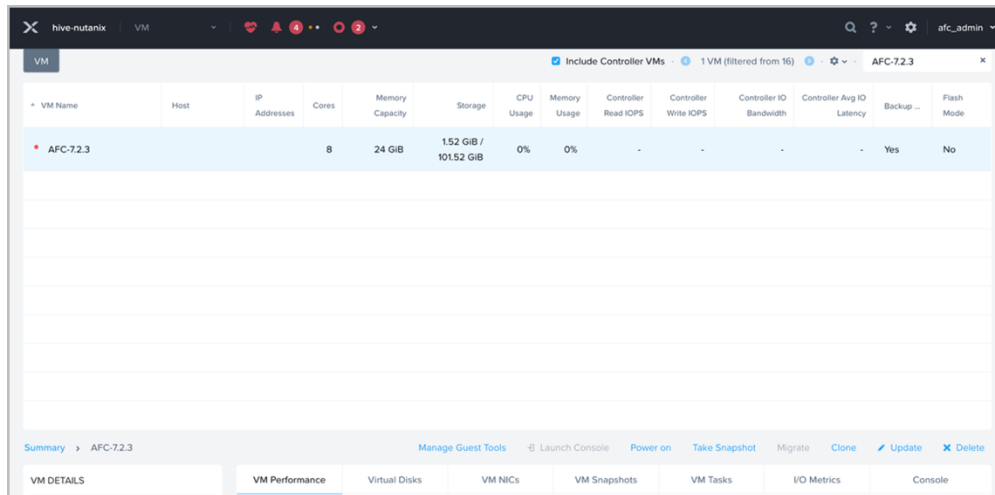


The 'VM Host Affinity' dialog box is shown. It has a title bar with a plus sign and the text 'Set Affinity'. The main content area contains a section labeled 'Host' with a dropdown menu showing 'hive-11-nutanix'. At the bottom right, there is a close button.

Finalizing and Deploying the Setup

1. Review all configurations.
2. Click **Save** to create and deploy the VM.
3. Once the configuration is complete, power on the newly created VM and then proceed with the ISO installation prompts to finalize the setup.

Figure 30 ISO Prompts



The screenshot shows a web interface for managing virtual machines. At the top, there's a header with 'hive-nutanix' and 'VM'. Below it, a table lists VMs. The first VM is 'AFC-72.3'. The table has columns for VM Name, Host, IP Addresses, Cores, Memory Capacity, Storage, CPU Usage, Memory Usage, Controller Read IOPS, Controller Write IOPS, Controller IO Bandwidth, Controller Avg IO Latency, Backup, and Flash Mode. The row for 'AFC-72.3' shows 8 Cores, 24 GiB Memory Capacity, 152 GiB / 10152 GiB Storage, 0% CPU Usage, 0% Memory Usage, and other metrics. Below the table, there's a 'Summary' section for 'AFC-72.3' with tabs for 'VM DETAILS', 'VM Performance', 'Virtual Disks', 'VM NICs', 'VM Snapshots', 'VM Tasks', 'I/O Metrics', and 'Console'. The 'VM Performance' tab is currently selected.

VM Name	Host	IP Addresses	Cores	Memory Capacity	Storage	CPU Usage	Memory Usage	Controller Read IOPS	Controller Write IOPS	Controller IO Bandwidth	Controller Avg IO Latency	Backup	Flash Mode
AFC-72.3			8	24 GiB	152 GiB / 10152 GiB	0%	0%	-	-	-	-	Yes	No

Follow the ISO Installer Prompts

This procedure shows how to use the ISO installer to install Fabric Composer and set the administrator password for a Linux operating system. Before beginning, ensure that the host meets the minimum requirements as described in [Host Requirements](#).

1. In a virtual machine (VM), launch a VM console.
The Linux installer automatically launches and the installer start page opens. The *release_number* is the Fabric Composer release that you are installing.
2. In the Installer start page, select **Install Fabric Composer**.
3. In the Deployment Options page, select the required deployment size.
4. In the Network Options page, select **DHCP** or **Static** as the method for assigning an IP address to the VM.
The host system verification process runs and if the host does not meet the minimal requirements as described in [Host Requirements](#), an error message is displayed and the installation process is stopped. Configure the host with the required resources and begin the ISO installation process again.
5. In the User License page, read the licensing agreement and click **Accept**.
6. In the Password Update page, specify the password for the Linux **admin** user and click **OK**.
7. In the Network Settings page, configure the static IP or DHCP settings and click **OK**. Refer to the following sections for more information on Static IP and DHCP configurations.

Static IP Configuration

Configure the following parameters:

- **Hostname:** Enter the host name for the VM.
- **Domain Name:** Enter the domain name for the domain in which the host resides. Enter the domain name only, not a fully qualified domain name. If the network/deployment environment does not have a domain, you can specify something such as *localdomain* as the domain name.
- **NTP Servers:** Enter NTP server(s) names or IP addresses.



Specifying NTP server(s) is required to ensure that all elements of the Fabric Composer have the most accurate time and date settings.

- **IPv4 Address:** Enter a valid IPv4 address for this Fabric Composer host.
- **IPv4 Netmask:** Enter the network mask using either dot-decimal or CIDR (omit the slash) notation.
- **IPv4 Gateway:** Enter a valid gateway IPv4 address.
- **VLAN ID:** (optional) Enter a VLAN ID (1-4095) or '0' (default) if not using a VLAN.
The VLAN ID field should only be used when management traffic must be sent over a tagged VLAN.
- **Name Servers:** Enter the IP addresses for DNS name servers, separated by spaces.

DHCP Configuration

Configure the following parameters:

- **Hostname:** Enter the hostname for the VM.
- **Domain name:** Enter the domain name for the domain in which the host resides. Enter the domain name only, not a fully qualified domain name. If the network/deployment environment does not have a domain, you can specify something like *localdomain* as the domain name.
- **NTP Servers:** (optional) Enter NTP server names or IP addresses.



If you use DHCP, you must reserve an IP address on the DHCP server.

- a. Click **OK**. The DHCPv6 screen is displayed.
- b. Click either **Yes** or **No**.

The installation process begins. When the installation completes successfully, the host reboots and opens at the Linux login prompt.

8. From the Linux login prompt, log in as administrator using username **admin** and the password that you specified in Step 6.
9. Eject the installation media (disk or ISO image). Note that If you do not eject the installation media and/or set the startup device to another drive, the host (VM) could boot back into the ISO installer menu again.
10. Verify the Fabric Composer installation:
 - a. In a Web browser, enter the Fabric Composer URL that was displayed by the Fabric Composer installer. The URL format is *https://host_name* where *host_name* is the fully-qualified domain name or IP address of the Fabric Composer host.

- b. Log into Fabric Composer as administrator using the default credentials:

Username: admin

Password: aruba

The Change Password screen is displayed.

- c. Follow the prompts to specify a new admin user password and click **Apply**.
- d. Verify that the Fabric Composer UI opens successfully. The Fabric Composer installation is now complete.

From the Fabric Composer UI, set up Fabric Composer and add your Fabric Composer. For details, see the *Fabric Composer* [7.2.0 Online Help](#).

Testing Remote Access to the Linux Host

Before testing the remote access to the Linux Host, you must know the host server's IP address or FQDN. If you do not know either item, then from the console connection, run the `ifconfig` command to determine the Linux host IP address. The device name is hardware dependent. If you are using a VM, it will be `eth0`.

1. From another system, attempt an SSH connection to the host server's IP address or FQDN.
2. The Linux login screen appears when access to the host server is successful.

Troubleshooting Menu (BIOS-mode only)

Selecting Troubleshooting from the main menu opens the Troubleshooting menu.

The troubleshooting menu options are:

- **Rescue an existing system:** Rescue a previously installed Linux system.
- **Run a memory test:** Use this utility to test the system memory and verify that it is working correctly.
- **Boot from local drive:** Attempt to boot the system from the local drive, using the boot order as defined in the system BIOS.
- **[Back]:** Return to the main installer menu.

Deploying High Availability for Fabric Composer

High Availability (HA) provides users the ability to run Fabric Composer in a configuration that is tolerant to hardware and software failures. HA for Fabric Composer uses three, large-capacity nodes. The HA cluster will tolerate the loss of one HA node and continue to operate, but in a degraded state.

Installing High Availability for Fabric Composer using ISO

This section shows how to set up and deploy a High Availability configuration.

Guidelines

- The ISO installation process configures the VM with the following default settings:
 - **CPU:** 4
 - **RAM:** 16 GB
 - **Disk space:** 100 GB
 - **NTP:** Mandatory

Prerequisites

- The ISO file to be used for the deployment has been downloaded to an accessible location. See [Downloading the ISO Installer File](#)
- The HA cluster requires the installation of three nodes (node0, node1, and node2) from the ISO.
- Ensure that all nodes use the same software revision level.
- The HA clusters are required to be installed through the ISO procedure and require network connectivity between all nodes prior to running the HA script.



Procedure

1. Initiate the ISO installation. See [Preparing to Run the ISO](#)
2. In the installer screen, select **Install Fabric Composer (High Availability)**.
3. Select the High Availability Options as per the Host requirements. See [Host Requirements](#)



4. Follow the ISO installer prompts on each node installation and select **High Availability** for each node. During the installation process, configure the appropriate IP Addresses and DNS to all the nodes (node0, node1, and node2) in the Network Options. See [Follow the ISO Installer Prompts](#) for Static/DHCP IP Address assignments.



The HTML/GUI will not be available until after running the HA cluster script on node0.



Retain the default Username and Password until all post-installation configurations are completed.

The HA installation is complete and you can now boot into the VMs.

Post-Installation Configurations

After the ISO installation is complete, the nodes will boot and you are required to log into *one* of them using either SSH or the ESXi console. Enter the following commands:

```
[admin@fc] sudo su
[root@fc] /usr/sbin/configure-high-availability
```

The *configure-high-availability* script will then prompt for three inputs:

```
-----
Begin configuring HPE Aruba Networking Fabric Composer High Availability. Start: Wed Oct 30 02:43:03 PM UTC 2024
-----

Please enter both high availability peer IP addresses. IPv4 host format only. e.g: 10.10.10.1
First peer IP address: 10.156.185.59
Second peer IP address: 10.156.177.3

Please enter virtual IP address (optional). Hit return to skip. IPv4 address in CIDR format. e.g: 172.20.1.10/16
Virtual IP address: 100.156.190.20/20
```

The node where the *configure-high-availability* script is executed is considered as **node0**. As part of the script input, provide the IP addresses of the first and second peer nodes, which will be assigned as **node1** and **node2** respectively. Enter a Virtual IP Address (VIP) in *ip_address/prefix_length* format.

The HA cluster will have one Virtual IP and each node will have its own private IP. The private IP is used for out-of-band connectivity. The Virtual IP will remain the same for the cluster and will be used to access the cluster even when there are node failures.

The script will set up all three nodes in the cluster and will reboot automatically on completion of pre-run checks.

```
-----
Begin configuring HPE Aruba Networking Fabric Composer High Availability. Start: Wed Oct 30 02:43:03 PM UTC 2024
-----

Please enter both high availability peer IP addresses. IPv4 host format only. e.g: 10.10.10.1
First peer IP address: 10.156.185.59
Second peer IP address: 10.156.177.3

Please enter virtual IP address (optional). Hit return to skip. IPv4 address in CIDR format. e.g: 172.20.1.10/16
Virtual IP address: 100.156.190.20/20

pre-run checks
-> Verifying 100.156.190.20/20 address format: █
-> Verifying 10.156.185.59 address format: █
-> Verifying 10.156.185.59 is reachable: █
-> Verifying 10.156.177.3 address format: █
-> Verifying 10.156.177.3 is reachable: █
```

Internode Communication

Many services that run on each node need to communicate with each other. Some of them communicate over SSH tunnels. To verify that the SSH tunnels are open, enter the following command:

```
# /opt/plexxi/scripts/tunnel-status
```

If successful, the output would indicate good health. For example:

```
remote_application_up : true
```

Verify DCS (Etcd)

The etcd service is one of the backbones of the HA solution. Enter the following command to verify the cluster health:

```
# etcdctl cluster-health
```

If successful, the output would indicate good health. For example:

```
# etcdctl cluster-health

member 4666a0726df83ae7 is healthy: got healthy result from http://node2:2379
member 532f3e223be61257 is healthy: got healthy result from http://node0:2379
member cb297307a4311716 is healthy: got healthy result from http://node1:2379
```

Check Member List

Enter the following command to check the member list:

```
# etcdctl member list
```

If successful, the output displays the list of members. For example:

```
# etcdctl member list
4666a0726df83ae7: name=node2 peerURLs=http://node2:2380
clientURLs=http://node2:2379 isLeader=false
532f3e223be61257: name=node0 peerURLs=http://node0:2380
clientURLs=http://node0:2379 isLeader=true
cb297307a4311716: name=node1 peerURLs=http://node1:2380
clientURLs=http://node1:2379 isLeader=false
```

Verify Postgres

Without Postgres, the connectapi and other services will not function properly. To verify Postgres, enter the following command:

```
# /opt/plexxi/patroni/virtualenv/bin/patronictl -c /etc/patroni.yml list
```

An example of the output is:

```
# /opt/plexxi/patroni/virtualenv/bin/patronictl -c /etc/patroni.yml list
+ Cluster: postgres (6869774090681887273) -----+
| Member | Host | Role | State | TL | Lag in MB |
+-----+-----+-----+-----+-----+-----+
| node0   | node0 | Leader | running | 1 |          |
| node1   | node1 |        | running | 1 |      0.0 |
| node2   | node2 |        | running | 1 |      0.0 |
+-----+-----+-----+-----+-----+-----+

```



The Leader node might be different than the one shown in the above example.

The High Availability setup is complete and you can log in to the Fabric Composer using the Virtual IP Address (VIP) as you would in a standalone installation. Go to **Configuration > Maintenance > High Availability** to configure and confirm the health of the HA cluster.

Upgrading High Availability Nodes

This section shows you how to upgrade a High Availability node.



This section is not applicable when upgrading from Fabric Composer 6.x. to Fabric Composer 7.x. Please refer to the section [Migration Path for High Availability](#).

As part of the High Availability upgrade process, individual nodes (node0, node1, and node2) must be sequentially upgraded node-by-node. Once an upgrade of one node is completed, select the next node for the upgrade.

Selecting nodes

When upgrading from an older version of Fabric Composer to the latest Fabric Composer 6.6.0 release, follow these steps to select the sequence of nodes to be upgraded:

1. Log in to shell of any node and enter this command to get the node where database is the leader: `# /opt/plexxi/patroni/virtualenv/bin/patronictl -c /etc/patroni.yml list`
2. Follow the steps outlined in [Upgrading Fabric Composer](#) to upgrade the leader node first.
3. After the upgrade is complete on the leader node, select the next leader by entering the same command as in Step 1 on any of the other two nodes.
4. Follow the steps outlined in Step 2.
5. After a successful upgrade on the 2nd leader node, repeat the same process on the 3rd node.

Example: In the below case, the database leader is on node0. Therefore, perform the upgrade on node0 first.

```
# /opt/plexxi/patroni/virtualenv/bin/patronictl -c /etc/patroni.yml list
+ Cluster: postgres (6869774090681887273) -----+
| Member | Host | Role | State | TL | Lag in MB |
+-----+-----+-----+-----+---+-----+
| node0   | node0 | Leader | running | 1 |          |
| node1   | node1 |        | running | 1 |        0.0 |
| node2   | node2 |        | running | 1 |        0.0 |
+-----+-----+-----+-----+---+-----+
```



The Leader node might be different than the one shown in the above example.

Replacing a High Availability Node

This section shows you how to replace a High Availability (HA) node with a new node and add it to the existing High Availability cluster.



This section is not applicable when upgrading from Fabric Composer 6.x. to Fabric Composer 7.x. Please refer to the section [Migration Path for High Availability](#).

The High Availability cluster requires the installation of three nodes (node0, node1, and node2) from the ISO. In case of a corruption in any node, the cluster will run in a degraded mode.

Node Replacement Process

When the HA cluster is healthy, the command `etcdctl cluster-health` will show that all the nodes in the cluster are healthy.

```
[root@ridge-connect-node0 admin]# etcdctl cluster-health
member 4666a0726df83ae7 is healthy: got healthy result from http://node2:2379
member 532f3e223be61257 is healthy: got healthy result from http://node0:2379
member cb297307a4311716 is healthy: got healthy result from http://node1:2379
cluster is healthy
```

When any node is corrupted or degraded, the `etcdctl cluster-health` command will show the node which is unhealthy. In this example, node2 is unhealthy.

```
[root@ridge-connect-node0 admin]# etcdctl cluster-health
failed to check the health of member 4666a0726df83ae7 on http://node2:2379: Get
"http://node2:2379/health": dial tcp 127.0.0.4:2379: connect: connection refused
member 4666a0726df83ae7 is unreachable: [http://node2:2379] are all unreachable
member 532f3e223be61257 is healthy: got healthy result from http://node0:2379
member cb297307a4311716 is healthy: got healthy result from http://node1:2379
cluster is degraded
```

Steps to replace the node

1. Shut down and delete the failed node which needs to be replaced.
2. Install a new HA node with the **same** IP Address as the failed node.
3. After the ISO installation is complete, perform the below steps to add the new node to the existing cluster:
 - a. Log in to one of the active nodes using SSH.
 - b. Enter the command `sudo su` to log in as root user.
 - c. Run the node replacement script using the command `"/opt/plexxi/scripts/replace-ha-node.sh"`

- d. The script will ask for the node name to be replaced. Please provide the node name and password for the other nodes.
- e. The script will complete the replacement process and add the node to the cluster.
- f. Running "`etcdctl cluster-status`" on the node will show that the cluster is now healthy.

Example: Screenshots below show the `replace-ha-node.sh` script execution and completion.

```
[root@ridge-connect-node0 admin]# /opt/plexxi/scripts/replace-ha-node.sh

-----

Begin HPE Aruba Networking Fabric Composer High Availability node replacement.
Start: Thu Aug 29 03:22:11 AM UTC 2024
-----

Please enter the node name you wish to replace.
Node name: node2
-> Verifying node name

pre-run checks
-> Verifying 10.156.176.42 is reachable: ✓
/var/tmp/salt-ssh /home/admin

Executing salt states
-> Salt SSH ping operational: ✓
-> Verifying remote peer is a uninitialized Fabric Composer instance.✓
Please provide admin password for node0:
-> Verifying password for 10.156.176.207: Warning: Permanently added
'10.156.176.207' (ECDSA) to the list of known hosts.
✓
Please provide admin password for node1:
-> Verifying password for 10.156.188.184: ✓
-> Removing old node from cluster.

2024-08-29 03:23:13,100 etcd_manager.py::get_cluster_members:102 [INFO]: ETCD
member list: 4666a0726df83ae7: name=node2 peerURLs=http://node2:2380
clientURLs=http://node2:2379 isLeader=false
532f3e223be61257: name=node0 peerURLs=http://node0:2380
clientURLs=http://node0:2379 isLeader=true
cb297307a4311716: name=node1 peerURLs=http://node1:2380
clientURLs=http://node1:2379 isLeader=false

2024-08-29 03:23:55,256 copy-keys-and-certs.py::install_key:132 [INFO]: Attempting
to install SSH key /home/salt/.ssh/id_ecdsa.pub for HA peer: 10.156.176.207 using
```

```

default credentials
2024-08-29 03:23:55,752 copy-keys-and-certs.py::install_key:153 [INFO]: SSH key
/home/salt/.ssh/id_ecdsa.pub installed at: 2024-08-29 03:23:55.752439 port for
peer: 10.156.176.207
2024-08-29 03:23:55,753 copy-keys-and-certs.py::install_key:132 [INFO]: Attempting
to install SSH key /home/salt/.ssh/id_ecdsa.pub for HA peer: 10.156.188.184 using
default credentials
2024-08-29 03:23:56,160 copy-keys-and-certs.py::install_key:153 [INFO]: SSH key
/home/salt/.ssh/id_ecdsa.pub installed at: 2024-08-29 03:23:56.160768 port for
peer: 10.156.188.184
2024-08-29 03:23:56,161 copy-keys-and-certs.py::_install_ssh_keys:222 [INFO]:
Successfully installed SSH keys on all nodes: 10.156.176.207, 10.156.188.184
2024-08-29 03:23:56,161 copy-keys-and-certs.py::copy_stunnel_and_rabbitmq_
certificates:342 [INFO]: No need to copy stunnel cert and key from node: node2
2024-08-29 03:23:56,161 copy-keys-and-certs.py::copy_client_certificates:308
[INFO]: No need to copy client certificates from node: node2
-> Enabling first boot on new node.
node2:
node2:
True
-> Scheduling reboot of new node.
node2:
Reboot scheduled for Thu 2024-08-29 03:25:03 UTC, use 'shutdown -c' to cancel.

All steps completed successfully

-----
--
Finished configuring new HA node . Completed: Thu Aug 29 03:24:04 AM UTC 2024
-----
--

```

Finally, the cluster will show the status as healthy.

```

[root@ridge-connect-node0 admin]# etcdctl cluster-health
member 532f3e223be61257 is healthy: got healthy result from http://node0:2379
member cb297307a4311716 is healthy: got healthy result from http://node1:2379
member e259697e447cc2bc is healthy: got healthy result from http://node2:2379
cluster is healthy

```

This section deals with:

- Managing the Fabric Composer IP Address
- Changing a new VM's Linux Admin User Password

Managing the Fabric Composer IP Address

This procedure shows how to manage the Fabric Composer IP address, including how to change its static IP address in IPv4 or configure it to use DHCP.



IP addresses shown here are for illustrative purposes only.

1. Ensure that the network is connected to the Fabric Composer VM.
2. Log in to the Fabric Composer console as admin (use the password that you specified for this user).
3. Make the following changes depending on the address type:



Fabric Composer 7.x VM configured network parameters are stored in the file:
/etc/NetworkManager/system-connections/eth0.nmconnection

Static IP address

- a. Run the following command (sudo password is **aruba**):

```
sudo /opt/plexxi/scripts/configure-network.py --ip 10.0.1.100 --netmask 255.255.255.0 --gateway 10.0.1.1
```

Dynamic/DHCP addressing

- a. Run the following command (sudo password is **aruba**)

```
sudo /opt/plexxi/scripts/configure-network.py --dhcp
```

4. Wait for two or three minutes before logging in. Use a console connection to verify the IP address change using the following command:

```
# ifconfig
```

Changing a New VM's Linux Admin User Password



Ensure that you record the new password for future access. HPE Aruba Networking Support will be unable to assist with access to your Fabric Composer host if all administrator passwords are lost.

1. Log into the default Linux (SSH, console) **admin** account:

Username: admin

Password: <admin_password>

where admin_password is the current password that you specified for this user.

2. Enter the `passwd` command and type the new password twice as prompted.

This section shows how to prepare for upgrading the Fabric Composer and then perform the upgrade.



Also see [Upgrading High Availability Nodes](#)

Preparing to Upgrade Fabric Composer

1. Verify the current version of your Fabric Composer by using either of the following methods:
 - **Login screen:** Launch the Fabric Composer UI login screen, which displays the software version number.
 - **About window:** From within the Fabric Composer UI, open the About window (? > About).
 - If any Fabric Composer Integration Pack is in a *Disabled* state, then ensure to either enable the pack or remove the pack (if not required anymore) before you start the Fabric Composer upgrade process.
2. Follow the recommended Fabric Composer Release Upgrade Migration paths as given in the Fabric Composer [7.2.0 Compatibility Matrix](#) and refer to [RHEL Migration](#).

Pensando PSM Upgrade sequence

The recommended release for new deployments is **1.72.1-T**.

The recommended upgrade process for Pensando PSM is **Fabric Composer 7.1.0 > PSM 1.91.1-T-12 > Switches**

For the latest and recommended Pensando PSM Upgrade sequence, see Fabric Composer [7.2.0 Compatibility Matrix](#).

Minimum required AOS-CX and Fabric Composer releases for each PSM release

The recommended upgrade path to this release is from **1.62.2-T > 1.91.1-T-12** with the following upgrade sequence:

1. Fabric Composer
2. Pensando PSM upgrade
3. Single-switch upgrade or VSX live upgrade of the switches (for a VSX pair)

Upgrading Fabric Composer



This section is not applicable when upgrading from Fabric Composer 6.x. to 7.x. See [Chapter 11](#)

1. On the local machine, open a command shell or terminal window.
2. Use the scp command to copy the upgrade files from your local machine to the Fabric Composer. Provide the admin password when prompted.

```
scp <Upgrade file name> admin@<IP or Hostname>:~/
```

3. Use SSH to log in to Fabric Composer being upgraded. Provide the admin password when prompted.

```
ssh admin@<IP or Hostname>
```

4. Create a directory for the upgrade files:

```
mkdir /home/admin/fcupgrade
```

5. Move the upgrade files into the upgrade directory:

```
mv ./<Upgrade file name> /home/admin/fcupgrade
```

6. Change your present working directory to the directory just created:

```
cd /home/admin/fcupgrade
```

7. Expand the upgrade files:

```
tar -xzf <Upgrade file name>
```

8. Run the upgrade installer script:

```
sudo ./upgrade.sh *.rpm
```

9. Enter the admin user password when prompted.
10. When the Upgrade Fabric Composer screen displays, tab over to **Accept** and press **Enter**.
11. When the Accept HPE Aruba Networking End User License screen displays, tab over to **Accept** and press **Enter**.
12. When the Continue to upgrade Fabric Composer and reboot at the end of this upgrade screen displays, tab over to **OK** and press **Enter**.
The services are shut down and the upgrade process begins.
13. When the Password Update Required screen displays, do the following to specify the Linux admin user password:

- Enter a new password, tab over to **OK**, and press **Enter**.
- When the re-enter password screen displays, re-enter the password to confirm, tab over to **OK** and press **Enter**.
- When the Success screen is displayed, tab over to **OK** and then press **Enter**.

The upgrade process continues and all services are started. When the process is complete, the *Upgrade of Fabric Composer RPM(s) complete* message displays and the system reboots.



Before you proceed to the next step, allow the system five minutes after the restart to complete the upgrade process.

14. Clear your browser cache and log into the Fabric Composer UI as admin.
From the login screen, verify that the software version that is displayed has changed to the new version.
15. After you have verified that the upgrade was successful, remove the temporary directory that you created:

```
rm -r /home/admin/fcupgrade
```



Removing this directory and its contents ensures that you will use the latest upgrade file the next time you upgrade Fabric Composer.

The following section is for VMware vSphere Plugin users only.



This plugin is no longer supported for VMware vSphere v8.0 and above.

1. From VMware vSphere, un-register the previously installed Fabric Composer plugins as follows:
 - a. Log in to your vSphere machine using the /mob url.
 - b. From the Managed Object Type page, click the **content** link associated with the ServiceContent type.
 - c. From the Data Object Type page, click the **ExtensionManager** link associated with the ManagedObjectReferencer:ExtensionManager type.
 - d. Verify that the plugins *com.plexxi.plexxi_connect* and *com.plexxi.connect* are displayed in the Properties table and then click the **UnregisterExtension** link in the Methods table.
 - e. Enter each plugin name, one at a time, into the Value field and then click **Invoke Method**.
The existing plugins are now removed. It may take a log out and log in and/or a vSphere reboot for the plugins to disappear from the vSphere UI.
2. From the Fabric Composer UI, register the new plugins as follows:
 - a. Select **Configuration > Integrations > VMware vSphere**.
 - b. Select a vSphere integration that needs the plug-in registered and then select **Actions > Register Plug-in**.
 - c. 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, open the vSphere Plug-in UI and configure Fabric Composer authentication. Once configured, the full Fabric Composer UI can be run within VMware vSphere.

Installing Fabric Composer on a VM managed by Hyper-V

This section shows you how to install Fabric Composer on a Virtual Machine (VM) managed by Microsoft Hyper-V.

Preparation

1. Ensure that you have downloaded the Fabric Composer ISO and saved it in a local destination.
2. Ensure that Microsoft Hyper-V is installed with the appropriate networks configured.

Procedure

Create a new VM in Hyper-V and set the VM as below:

1. **Name:** qa-fc (name used for representational purposes only)
2. **Generation:** Generation 1
3. **Startup Memory:** 8 GB
4. **Connection:** Select your already configured connection
5. **Virtual Hard Disk**
 - a. **Name:** qa-fc.vhdx
 - b. **Location:** C:\Users\Public\Documents\Hyper-V\Virtual Hard Disks\
 - c. **Size:** 127 GB
6. **Installation Options:** Select 'Install an operating system from a bootable CD/DVD-ROM'
7. Select **Image File** and navigate to the Fabric Composer ISO image from the local destination.
8. Connect to the newly created VM and you will be directed to the Fabric Composer installation prompts.
9. Configure Fabric Composer as required.

Fabric Composer is now successfully installed on the VM managed by Microsoft Hyper-V.

Installation Notes

The following values were used:

- **Installation Options:** Install Fabric Composer (Standalone)
- **Standalone Deployment Options:** Small scale Deployment
- **Network Options:** DHCP

Migration from CentOS to Red Hat Enterprise 9.2

This section shows you how to migrate from the older CentOS to the newer Red Hat Enterprise (RHEL) 9.2 OS.

Introduction

Currently, Fabric Composer runs on CentOS 7 as the back-end operating system. Since CentOS 7 is going end-of-support on June 30, 2024, Fabric Composer 7.0.0 will be released with Red Hat Enterprise Linux (RHEL) version 9.2 and all future releases with Fabric Composer 7.0.x and above will be released with RHEL 9.2 or later versions only.

Migration Paths

The migration steps depend on the currently installed version of Fabric Composer.

- To upgrade from Fabric Composer versions prior to 6.4.0 (6.4.0 not included), follow the steps in [Migrate from Fabric Composer below 6.4.0](#).
- To upgrade from Fabric Composer versions between 6.4.0 (including 6.4.0) and 6.6.2 to 7.x, follow the steps in [Migrate from Fabric Composer above 6.4.0](#).



Migration from older Fabric Composer (below 6.4.0) involves upgrading the Fabric Composer to 6.4.0 where license is supported. Install the Fabric Composer license in 6.4.0 and then perform the migration to 7.0.0.

Migrate from Fabric Composer below 6.4.0

1. Upgrade to Fabric Composer 6.4.0 using the steps in [Upgrading Fabric Composer](#). In case of High Availability, refer to [Upgrading High Availability](#)
2. Add the switch licenses as appropriate (Tier-3 or Tier-4) based on the switch count.
3. Upgrade Fabric Composer to 7.0.0 by following the steps outlined in the section below [Migrate from Fabric Composer above 6.4.0](#)

Migrate from Fabric Composer above 6.4.0 (including 6.4.0)

1. Log in to the current Fabric Composer UI using admin username and password.
2. Navigate to the Backups page:

Maintenance > Backups

3. Create a backup by running the backup workflow:

4. Select the created backup and download the backup file to the local system.

The screenshot shows the 'BACKUPS' section of the Fabric Composer UI. A table lists a backup file: 'upgrade_Backup-backup-2023-12-15-163350585292.tar.gz' created on '15 December 2023 at 22:03:50 GMT+5:30'. The 'ACTIONS' dropdown menu is open, showing options: Add, Edit, Delete, Restore from Backup, Upload Backup, and Download. The 'Download' option is highlighted. A green callout box says 'Download the selected backup.'

5. Install Fabric Composer 7.0.0 using the ISO/OVA and create a new standalone instance. This will have the new RHEL 9.2 OS.

6. Log in to the Fabric Composer 7.0.0 UI and navigate to the Backups page. For High Availability, log in to the Fabric Composer UI using the VIP node IP Address or hostname.

7. Upload the Backup file by selecting **Actions > Upload Backup**.

8. Select the backup file and perform the **Restore** operation.

The screenshot shows the 'BACKUPS' section of the Fabric Composer UI. A table lists a backup file: 'upgrade_Backup-backup-2023-12-15-163350585292.tar.gz' created on '15 December 2023 at 22:03:50 GMT+5:30'. The 'ACTIONS' dropdown menu is open, showing options: Add, Edit, Delete, Restore from Backup, Upload Backup, and Download. The 'Restore from Backup' option is highlighted. A green callout box says 'Restore using the selected backup.'

9. Accept the confirmation page to start the restoration process.



The Fabric Composer UI will not be accessible when the restore is being performed.

10. Once the restore is complete, Fabric Composer will be accessible and the event will be shown in the Audits page.

The screenshot shows the 'AUDITS' section of the Fabric Composer UI. An 'INFORMATIONAL' message states: 'Restore operation succeeded using /var/aruba/backups/d77ba143-d399-491f-9dad-5c0d1d2cdd09/upgrade_backup-backup-2023-12-15-163350585292.tar.gz. Backup Event: 15 December 2023 at 22:11:34 GMT+5:30'.

Fabric Composer Upgrade Process Above 6.4.0 to 7.2.0

This section outlines the steps for upgrading Fabric Composer in setups that include switches with firmware version 10.12 or earlier.

Upgrade from Fabric Composer 7.x

- Upgrade switch firmware to version 10.13 or higher using Fabric Composer UI.
 - Upload the new switch firmware to Fabric Composer via the Device Firmware page (**Maintenance > Device Firmware**).
 - Perform staging of the updated firmware for the switches on the Switches page.
 - Select the switches needing the upgrade and choose the **Sequenced Upgrade** option to start the process without service disruption.
- Once the switch firmware upgrade is complete, proceed to upgrade Fabric Composer to 7.2.0 as detailed in [Upgrading Fabric Composer](#)

Upgrade from Fabric Composer 6.x

Since AOS-CX firmware versions (10.10/10.11/10.12) supported by Fabric Composer 6.x are all deprecated in Fabric Composer 7.2.0, there are two methods which can be followed to upgrade Fabric Composer from 6.x to 7.2.0, as well as upgrade switch firmware from unsupported version to a supported version.

Method 1:

- Upgrade Fabric Composer from 6.4 to 7.2 as outlined in the section [Migrate from Fabric Composer above 6.4.0 \(including 6.4.0\)](#)
- Switches will appear in a *Critical* health state with the status *Unsupported Software Version*.
- Upload the updated switch firmware to Fabric Composer via the Device Firmware page (**Maintenance > Device Firmware**).
- On the Switches page, perform staging of the updated firmware for the switches. User can choose one of the upgrade procedures below:
 - **Intermediate Upgrade:** Select the switches requiring the upgrade and initiate the **Immediate Upgrade** option to start the process.



NOTE

Immediate Upgrade may disrupt services temporarily.

- **Manually Sequence Upgrade:** Select a subset of switches in each upgrade iteration to minimize service disruption across the network.



NOTE

Automatically Sequence Upgrade is not available with unsupported firmware running on switch.

Method 2:

- Upgrade Fabric Composer from version 6.4 to 7.1.3 as outlined in the section [Migrate from Fabric Composer above 6.4.0 \(including 6.4.0\)](#)
- After completing the Fabric Composer upgrade, the switches will show a *Healthy* status.
- Upgrade switch firmware to version 10.13 or higher using Fabric Composer UI:

- Upload the updated switch firmware to Fabric Composer via the Device Firmware page (**Maintenance > Device Firmware**).
- Perform staging of the updated firmware for the switches on the Switches page.
- Select the switches needing the upgrade and choose the **Sequenced Upgrade** option to start the process without service disruption.
- Once the switch firmware upgrade is complete, proceed to upgrade Fabric Composer to version 7.2.0 as detailed in [Upgrading Fabric Composer](#).

Migration Path for High Availability

1. Create a new Fabric Composer 7.0 High Availability cluster following the steps outlined in [Installing High Availability for Fabric Composer using ISO](#)
2. If the Fabric Composer version is $\geq 6.4.0$, then follow the steps mentioned in section [Migrate from Fabric Composer above 6.4.0](#)
3. If Fabric Composer version is $< 6.4.0$, then follow the steps mentioned in section [Migrate from Fabric Composer below 6.4.0](#)

Additional Migration Items

Certificates added by the user to Fabric Composer 6.x needs to be manually copied to the new Fabric Composer 7.x.

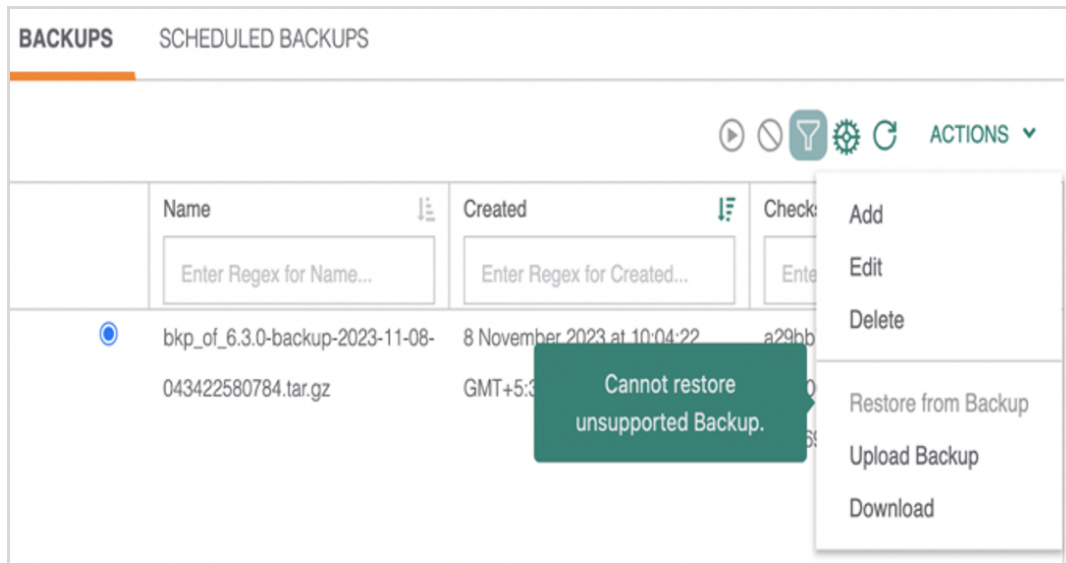


Any switch firmware uploaded to an Fabric Composer 6.x would not be restored and it will need to be manually uploaded to Fabric Composer 7.x.

Failure Conditions

Restoring backup from Fabric Composer 6.3.0 or below directly to 7.0.0

- Restore of a backup file from Fabric Composer 6.3.0 or below to Fabric Composer 7.0.0 is not supported.
- The below error message will be seen in the UI while performing this function:



Restoring backup from Fabric Composer 6.4.0 to 7.0.0 and the license is unavailable.

- When restoring the backup from Fabric Composer 6.4.0 to 6.7.0, the license count is checked to confirm that all switches are licensed.
- The count of Tier-3 switches is compared with the Tier-3 license count and respectively for Tier-4 switches and licenses.
- Specific error messages are shown in case of errors with respect to the license:
 - Restore request rejected as 5 tier-3 switches does not have license installed. Please install license and perform a new backup and restore.
 - Restore request rejected as 2 tier-4 switches does not have license installed. Please install license and perform a new backup and restore.
 - Restore request rejected as 5 tier-3 and 2 tier-4 switches does not have license installed. Please install license and perform a new backup and restore.

Fabric Composer CentOS to RHEL Migration Script

A migration script is added in Fabric Composer 7.0.0 to help users to migrate from the older 6.x.x (CentOS) to 7.x.x (RHEL).

Prerequisites

- Fabric Composer 7.x.x installed using an ISO or OVA image.
- Fabric Composer UI is logged in and the init password is updated.

The script takes the inputs as below:

- CentOS system credentials:
 - Hostname/IP Address
 - Fabric Composer UI Admin user password
- RHEL system credentials:
 - Hostname/IP Address
 - Fabric Composer UI Admin user password

Using the above inputs, the script would perform the migration activity of first generating a backup file in CentOS and uploading to RHEL and then performing the restore in the RHEL system.

Steps to run the script

Use the following steps to run the migration script:

1. Log in to an SSH session on the RHEL (7.0.0) system on which the migration needs to be performed.

```
Command: ssh admin@[setup_name]-connect@lab.plexxi.com
```

2. Change user to root:

```
Command: sudo su
```

3. Run the script and provide the requested inputs:

```
Command: /opt/plexxi/scripts/afc-migrate.sh
```



In case of High Availability, perform the above operation on the VIP node. For example: *four-vip.lab.plexxi.com*

Example of a console log

Here is an example of the migration script functionality:

```
[root@duck-connect admin]# /opt/plexxi/scripts/afc-migrate.sh

-----
Begin HPE Aruba Networking Fabric Composer migration process from CentOS to RHEL OS.
-----

Please enter the CentOS system credentials.

Hostname / IP Address: mesa-connect.lab.plexxi.com
-> Verifying mesa-connect.lab.plexxi.com is reachable...  ✓

Please provide admin password for mesa-connect.lab.plexxi.com:
-> Verifying admin login on mesa-connect.lab.plexxi.com...  ✓

Please enter the RHEL system credentials.

Hostname / IP Address: duck-connect.lab.plexxi.com
-> Verifying duck-connect.lab.plexxi.com is reachable...  ✓

Please provide admin password for duck-connect.lab.plexxi.com:
-> Verifying admin login on duck-connect.lab.plexxi.com...  ✓

HPE Aruba Networking Fabric Composer Version of mesa-connect.lab.plexxi.com is : 6.5.3
-> Verifying HPE Aruba Networking Fabric Composer license in mesa-connect.lab.plexxi.com...  Skipped
-> Generating backup file in mesa-connect.lab.plexxi.com...  ✓
-> Downloading backup file from mesa-connect.lab.plexxi.com...  ✓
-> Uploading backup file in duck-connect.lab.plexxi.com...  ✓
-> Restore backup file in duck-connect.lab.plexxi.com...  ✓
-> Waiting for restore to complete...  ✓
-> Waiting for HPE Aruba Networking Fabric Composer to be up...  ✓

-----
HPE Aruba Networking Fabric Composer migration process from CentOS to RHEL OS Passed.
-----
```

Onboarding a Replacement Switch

This section explains the steps necessary to add or onboard a replacement switch:

- [Without Using Fabric Composer](#)
- [Using 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 HPE Aruba Networking 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.

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.

Important

If the switch is an HPE Aruba Networking CX10K with Pensando, then you must first decommission and remove it from PSM. This decommission can be done in Fabric Composer by selecting the switch in the switches table and then selecting **Actions > DSM > Remove**

If the switch is unreachable at this stage, you may get an error message that states: *Switch: <switch name> DSS was decommissioned from PSM, but the PSM configuration could not be removed from the switch.* This message can be safely ignored.

Updating the switch IP after a switch has been added to Fabric Composer should be avoided. The Fabric Composer UI will allow for the switch IP to be changed, but any future reference to the old IP address could result in conflicts and errors that would require Services to resolve. If an IP address change is unavoidable, remove the device with the old IP address from Fabric Composer. This action will clean up all references in the database and will also avoid unexplained errors. Adding the old device with the new IP address will now produce normal operations in managing the device.

Without Using Fabric Composer

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 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.
7. Wait for the switch to return to the **Synced** value in the Status column under **Maintenance > Switches**.



If the switch is an HPE Aruba Networking CX10K switch with Pensando, the switch must be reconfigured with the PSM IP address(es) and re-admitted to PSM. This can be done in Fabric Composer by selecting the switch in the switches table and then selecting **Actions > DSM > Add**

After the switch reboots, the replacement switch will assume the IP address of the switch that was replaced. Fabric Composer will then contact the new switch and start a configuration-reconciliation process. The resulting Fabric Composer configuration will then match the restored startup configuration.

Using Fabric Composer

Process

Follow the steps below to replace a switch using the Return Material Authorization (RMA) workflow in Fabric Composer.

Prerequisite

Before initiating the RMA workflow from Fabric Composer, ensure that Fabric Composer has a checkpoint taken from the working switch. This checkpoint will be used to restore the configuration on the replacement switch.

1. **Isolate the faulty switch:**
 - a. Power off the switch to be replaced.
 - b. Disconnect or otherwise network isolate it from the environment.
2. **Prepare the replacement switch:**
 - a. Assign a temporary IP address to the replacement switch's management interface. This IP should not be known to Fabric Composer.
 - b. Install the same firmware version as the switch being replaced.
3. **Configure network settings:**
 - a. Update the replacement switch's IP address with the replaced switch IP address using either:
 - Static IP assignment, or
 - DHCP flow (as per your network configuration).



Do not delete the switch from Fabric Composer. Since it is the same IP Address/Hostname, Fabric Composer will connect to the replaced switch.

4. **Run the RMA workflow from Fabric Composer:**
 - a. In Fabric Composer, go to the switches page and select the replacement switch.
 - b. Click **Action > Launch the Configure RMA Switch** workflow.
5. **Provide the required inputs:**
 - a. Enter the admin password for the switch when prompted.
 - b. From the drop-down list, select a checkpoint. This list includes both checkpoints taken by Fabric Composer and checkpoints uploaded manually.
6. **Apply configuration:**

Once the workflow is executed:

 - a. The snapshot from the selected checkpoint will be loaded onto the switch.
 - b. The configuration will also be copied to the startup configuration to ensure persistence across reboots.

After the switch reboots, the replacement switch will assume the IP address of the switch that was replaced. Fabric Composer will then contact the new switch and start a configuration-reconciliation process. The resulting Fabric Composer configuration will then match the restored startup configuration.