

Aruba Fabric Composer 6.3.0 Installation Guide



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Revision	Change Description
Revision 02	Changed Upgrade Procedure home path from `/var/tmp/` to `/home/admin`
Revision 01	Initial release of Aruba Fabric Composer 6.3.0 Install Guide.

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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.

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>

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

Documentation

The following documentation supports the Aruba Fabric Composer 6.3.0 release and are available as HTML/PDFs on the Aruba Support Portal:

- *Aruba Fabric Composer [6.3.0 Release Notes](#)*
- *Aruba Fabric Composer 6.3.0 Installation Guide*
- *Aruba Fabric Composer 6.3.0 Online Help User Guide (also available from the Aruba Fabric Composer UI)*

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

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

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

Host Requirements

To support Aruba 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, or More than 2 integrations	VMware VM	4 CPUs	16 GB	100 GB
	Kernel-Based VM (KVM)			
Extra Large: Multi Fabric or up to 150 switches	VMware VM	16 vCPUs	32 GB	100 GB
	Kernel-Based VM (KVM)			

Guidelines and Restrictions

For VMware deployments only, you have a choice of installing Aruba 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 an Aruba Fabric Composer VM in VMware vSphere using OVA on page 13](#)
- [Deploying an Aruba Fabric Composer VM using ISO on page 21](#)

Supported VM Hypervisors

- VMware vSphere versions 6.7 and 7.0
- Linux KVM
- Nutanix AHV

Operating System

The installation deploys a Linux (CentOS 7) 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 Aruba Fabric Composer VM.
- **Domain name:** You must provide a valid DNS domain name for the domain in which the Aruba 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 Aruba Fabric Composer VM to use these server(s) to ensure accurate time synchronization between Aruba Fabric Composer and the switches. When using a static IP address for Aruba 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 Aruba Fabric Composer

This section lists the products that are compatible with Aruba Fabric Composer 6.3.0

Browsers

- Google Chrome
- Firefox
- Safari
- Microsoft® Internet Explorer
- Microsoft Edge

HPE

- HPE SimpliVity versions 4.1 and 4.0
- HPE iLO Amplifier Pack versions 1.81/1.7.0/1.55

Aruba NetEdit® version 2.0.8

Pensando® PSM

- Enterprise version 1.49.1-T
- Cloud version 1.16.2-C-10
- Cloud version 1.29.1-T-1

VMware

- ESXi versions 6.5, 6.7, and 7.0
- vSphere®:
 - Latest versions 6.5, 6.7, and 7.0
 - Previous versions 6.5 and 6.7
- vSphere® Web Client compatibility with Plugin versions 6.5, 6.7, and 7.0
- vCenter® versions 6.5 and 6.7
- SDDC
 - VCF/SDDC Manager 4.2
 - NSX-T 3.0.2
 - vCenter® 7.0

NSX-T versions 3.0.2 and 3.1.1

- <https://www.virtten.net/vmware/nsx/vmware-nsx-t-release-build-numbers/>

Nutanix®

- Acropolis Operating System (AOS) version 5.10.x
- Acropolis Hypervisor (AHV) version 20170830.256
- VMware ESXi Hypervisor versions 6.5 and 6.7
- Nutanix Prism versions 5.18 and 5.17

Security Considerations

The Aruba 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 7 Security Guide for more information:

https://access.redhat.com/documentation/en-us/red_hat_enterprise_linux/7/html/security_guide/index

Secure Passwords

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

- Configure a secure password for the Linux **admin** user.
When deploying Aruba Fabric Composer using either the OVA or ISO method, you are prompted to change this password. For details, see the following:
 - [Deploying an Aruba Fabric Composer VM in VMware vSphere using OVA on page 13](#)
 - [Deploying an Aruba Fabric Composer VM using ISO on page 21](#)
- Configure a secure password for the Aruba Fabric Composer **admin** user, which is configured using the Aruba Fabric Composer UI.

Chapter 5

Deploying an Aruba Fabric Composer VM in VMware vSphere using OVA

Aruba 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 Aruba Fabric Composer software to install.
2. Go to <https://asp.arubanetworks.com/downloads;fileTypes=SOFTWARE;products=Aruba%20Fabric%20Composer> to download the Aruba Fabric Composer software installer file: *ArubaFabricComposer-<release_number>.ova*
3. Save the downloaded OVA file to a location for the OVA deployment.

Deploying the Aruba Fabric Composer VM

This section describes how to deploy the Aruba 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 on page 13](#)).

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 Aruba Fabric Composer. For more information, see [Host Requirements on page 10](#).

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



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 Aruba 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 Aruba Fabric Composer software.

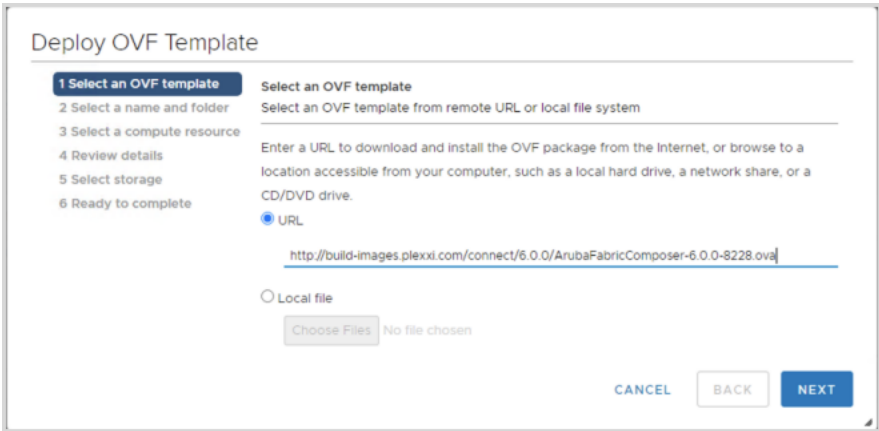
1. Log into the VMware vSphere Client.



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.

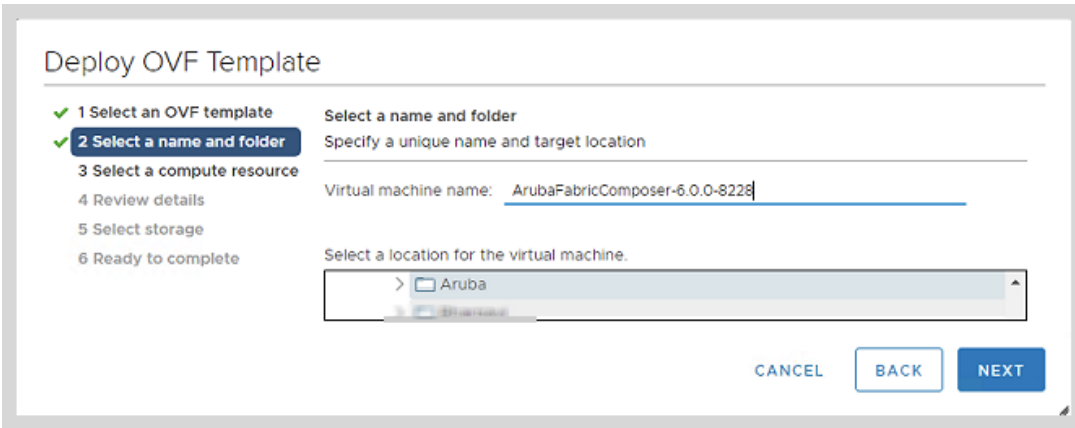
2. In the vSphere Client, select <your datacenter> and then select **Actions** > **Deploy OVF Template**.
3. In the Select an OVF template page, you can select from either a URL or from the Local file. In this example, the URL has been selected (the Aruba Fabric Composer name and version in this example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

Figure 1 *Selecting an OVF Template*



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*



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*

Deploy OVF Template

- ✓ 1 Select an OVF template
- ✓ 2 Select a name and folder
- 3 Select a compute resource**
- 4 Review details
- 5 Select storage
- 6 Ready to complete

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

- cx-aruba-dc
 - cx-aruba
 - compute-101-esxi.lab.plexxi.com
 - compute-102-esxi.lab.plexxi.com
 - cx-aruba-demo-01.lab.plexxi.com
 - cx-aruba-demo-02.lab.plexxi.com

Compatibility

✓ Compatibility checks succeeded.

CANCEL BACK NEXT

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

Figure 4 *Reviewing Details*

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

Review details
Verify the template details.

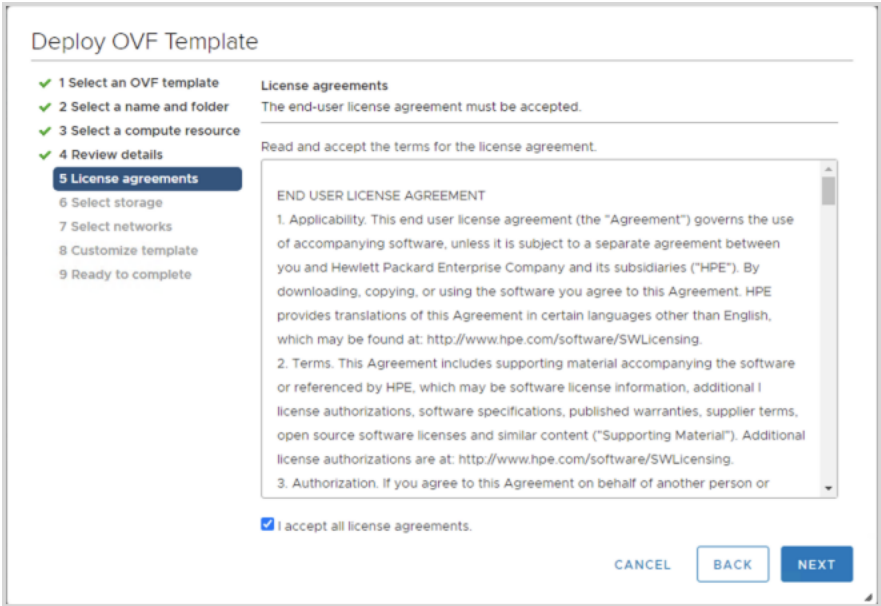
⚠ The OVF package contains advanced configuration options, which might pose a security risk. Review the advanced configuration options below. Click next to accept the advanced configuration options.

Publisher	No certificate present
Product	Aruba Fabric Composer
Version	6.0.0-8228
Vendor	Aruba, a Hewlett Packard Enterprise company
Description	Aruba Fabric Composer Virtual Appliance. The Virtual Appliance consists of a single VM called Aruba Fabric Composer.
Download size	1.0 GB
Size on disk	2.7 GB (thin provisioned) 100.0 GB (thick provisioned)
Extra configuration	virtualhw.productcompatibility = hosted

CANCEL BACK NEXT

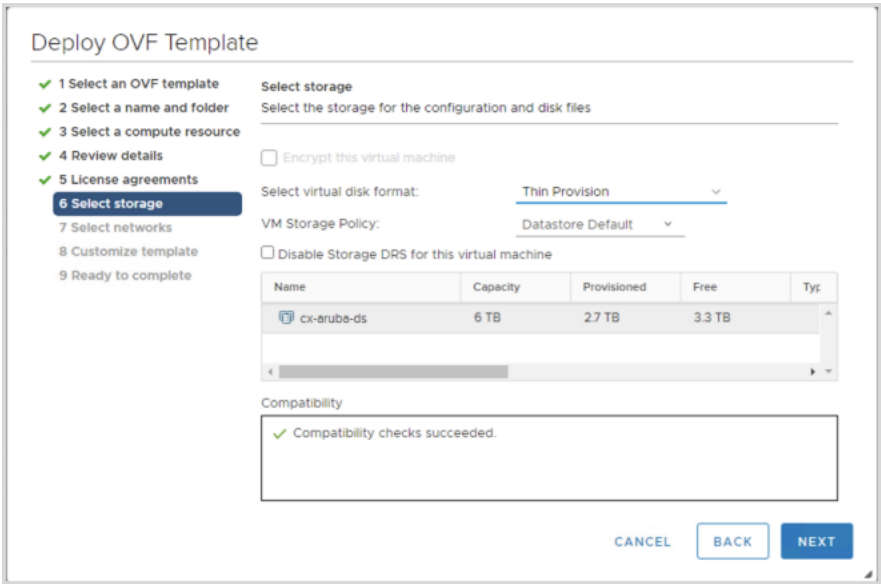
7. In the License agreements page, read through the *HPE End User License Agreement* and select the **I accept all license agreements** check box. Click **Next**.

Figure 5 Accepting the License Agreement



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



9. 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*

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 networks
Select a destination network for each source network.

Source Network	Destination Network
VM Network	lab-devops-only

1 Items

IP Allocation Settings

IP allocation: Static - Manual

IP protocol: IPv4

CANCEL BACK NEXT

10. 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*

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

Customize template
Customize the deployment properties of this software solution.

✓ All properties have valid values

(A) Network - General 4 settings

settings

(1) Hostname (Short) host name to assign to this VM. For static IP addresses, this name must resolve to the IP address on your DNS server.
aruba-fabric-composer

(2) Domain Name Domain name to assign to this VM. For static IP addresses, this domain must resolve on your DNS server.
lab.plexxi.com

(3) Primary NTP Server Hostname or IP address of primary NTP server. Leave blank if not using or if NTP servers are provided by DHCP.

(4) Secondary NTP Server Hostname or IP address of secondary NTP

CANCEL BACK NEXT

- 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** check box only if you are using DHCP. Click **Next**.

Figure 9 Customizing Template (contd)

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

▼ (B) Network - Static IP settings5 settings

(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

▼ (C) Network - DHCP settings1 settings

Use DHCP

Check to use DHCP to obtain an IP address.

☐

CANCEL

BACK

NEXT

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

Figure 10 Customizing Template (contd)

Deploy OVF Template

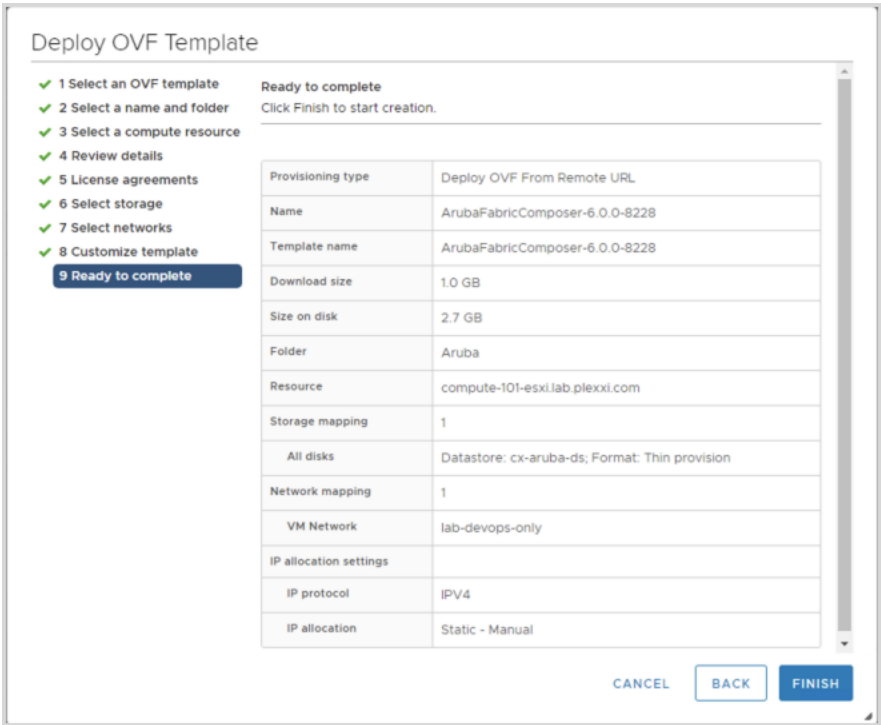
- ✓ 1 Select an OVF template
- ✓ 2 Select a name and folder
- ✓ 3 Select a compute resource
- ✓ 4 Review details
- ✓ 5 License agreements
- ✓ 6 Select storage
- ✓ 7 Select networks
- 8 Customize template**
- 9 Ready to complete

(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
▼ (C) Network - DHCP settings 1 settings		
Use DHCP	Check to use DHCP to obtain an IP address.	<input type="checkbox"/>
▼ (D) Linux Password 1 settings		
Linux admin Password	Set the Linux admin user account password.	
	Password	*****
	Confirm Password	*****
▼ (E) Deployment Options 1 settings		
High Availability Mode	Check to use this Aruba Fabric Composer instance as part of a High Availability Cluster	<input type="checkbox"/>

CANCEL BACK 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 Aruba Fabric Composer installation:

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

From the Aruba Fabric Composer UI, set up Aruba Fabric Composer and add your switches. For details, see the *Aruba Fabric Composer 6.1.0 Online Help*.

Downloading the ISO Installer File

1. Determine the version of the Aruba Fabric Composer software to install.
2. Go to <https://asp.arubanetworks.com/downloads;fileTypes=SOFTWARE;products=Aruba%20Fabric%20Composer> to download the ISO installer file: *ArubaFabricComposer-<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 on page 21](#).
 - **Linux KVM:** Upload the file to a datastore accessible from Virtual Manager and then see [Preparing to Run the ISO for Linux KVM Deployment on page 26](#).

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 Aruba Fabric Composer software. Ensure that you have downloaded the compatible Aruba Fabric Composer ISO file and make it accessible from the ESXi server where the Aruba Fabric Composer will be deployed. For more information, see [Downloading the ISO Installer File on page 21](#)

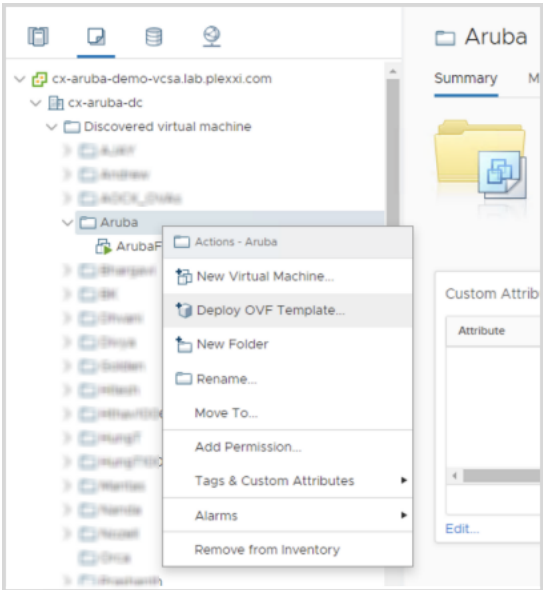
1. Log into the VMware vSphere Client.



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.

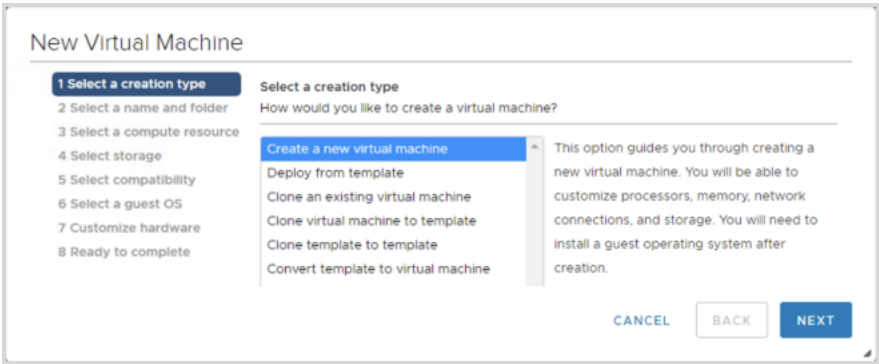
2. Right click on the datastore and select **New Virtual Machine**. The New Virtual Machine wizard is displayed.

Figure 12 *Creating a New Virtual Machine*



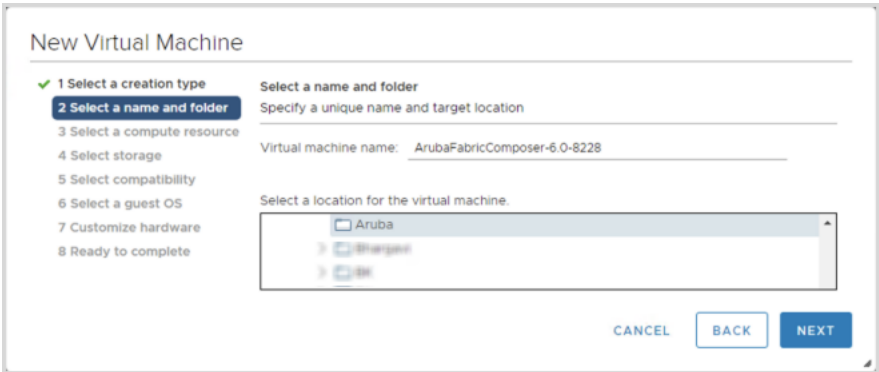
3. In the Select a creation type page, select **Create a new virtual machine** and click **Next**.

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

- cx-aruba-dc
 - cx-aruba
 - compute-101-esxi.lab.plexxi.com**
 - compute-102-esxi.lab.plexxi.com
 - cx-aruba-demo-01.lab.plexxi.com
 - cx-aruba-demo-02.lab.plexxi.com

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

☐ Encrypt this virtual machine

VM Storage Policy: Datastore Default

☐ Disable Storage DRS for this virtual machine

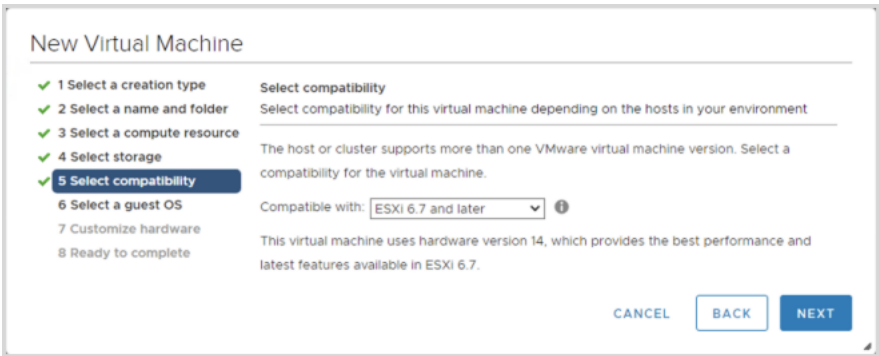
Name	Capacity	Provisioned	Free	Typ.
cx-aruba-ds	6 TB	2.7 TB	3.3 TB	

Compatibility
✓ Compatibility checks succeeded.

CANCEL BACK NEXT

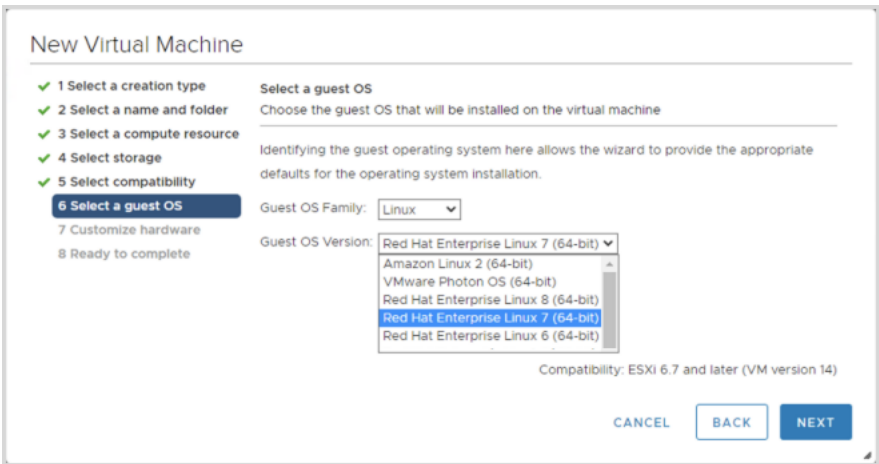
7. In the Select compatibility page, select the compatibility for this virtual machine depending on the hosts in your environment. Click **Next**.

Figure 17 Selecting Compatibility



8. In the Select a guest OS page, select **Linux** from the Guest OS Family drop-down list and then **Red Hat Enterprise Linux 7 (64-bit)** from the Guest OS version drop-down list. Click **Next**.

Figure 18 Selecting a Guest OS



- 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** check box and click **Next**.

Figure 19 Customizing Hardware

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

Customize hardware
Configure the virtual machine hardware

Virtual Hardware VM Options

ADD NEW DEVICE

CPU *	2
Memory *	8 GB
New Hard disk *	100 GB
New SCSI controller *	VMware Paravirtual
New Network *	lab-devops-only <input checked="" type="checkbox"/> Connect...
New CD/DVD Drive *	Datastore ISO File
Status	<input checked="" type="checkbox"/> Connect At Power On
CD/DVD Media	[cx-aruba-3par-iscsi-ds] BROWSE...
Device Mode	Passthrough CD-ROM

Compatibility: ESXi 6.7 and later (VM version 14)

CANCEL BACK NEXT

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

Figure 20 Finishing the Installation

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**

Ready to complete
Click Finish to start creation.

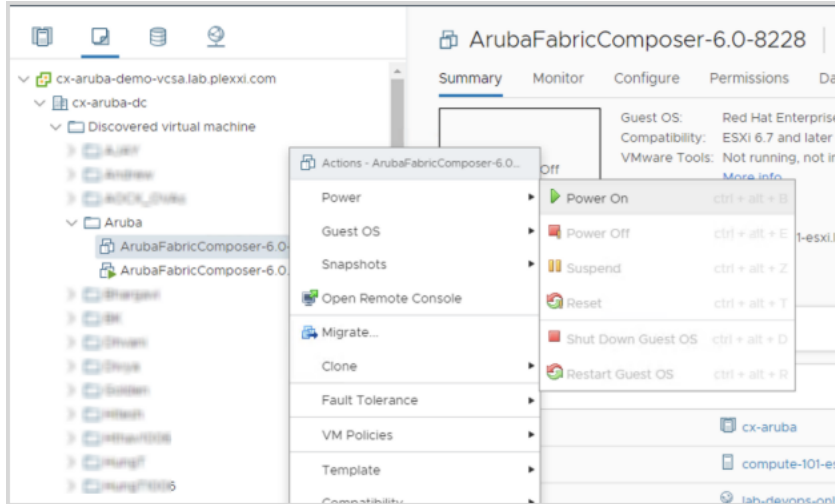
Provisioning type	Create a new virtual machine
Virtual machine name	ArubaFabricComposer-6.0-8228
Folder	Aruba
Host	compute-101-esxi.lab.plexxi.com
Datastore	cx-aruba-ds [cx-aruba-3par-iscsi-ds] (Recommended) more recommendations
Guest OS name	Red Hat Enterprise Linux 7 (64-bit)
Virtualization Based Security	Disabled
CPUs	2
Memory	8 GB
NICs	1
NIC 1 network	lab-devops-only
NIC 1 type	VMXNET 3

Compatibility: ESXi 6.7 and later (VM version 14)

CANCEL BACK FINISH

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 Aruba Fabric Composer installation:
 - a. In a Web browser, enter the Aruba Fabric Composer URL that was displayed by the Aruba Fabric Composer installer. The URL format is `https://host_name`, where `host_name` is the fully-qualified domain name or IP address of the Aruba Fabric Composer host.
 - b. Log into Aruba 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 Aruba Fabric Composer UI opens successfully. The Aruba 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 Aruba Fabric Composer software on a host running the Linux KVM hypervisor. Ensure that you have downloaded the compatible Aruba Fabric Composer ISO file and uploaded that file to a datastore accessible from Virtual Manager (see [Downloading the ISO Installer File on page 21](#)).

1. Use the `virt-manager` command to open Virtual Manager and click **New** to create an Aruba Fabric Composer VM. A configuration wizard is displayed.
2. In the configuration wizard, complete the following fields:
 - **Name:** Enter a name for the new Aruba Fabric Composer VM.
 - **Local install media:** Must be selected.
 - **Use ISO image:** Browse to and select the Aruba Fabric Composer ISO image.
 - **OS type:** Select **Linux**.
 - **Version:** Select either **Red Hat Enterprise Linux 7** or **CentOS 7 (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 check box.
 - **Customize configuration before install:** Select this check box.
 - **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 check box, 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 Aruba Fabric Composer ISO installer starts. Immediately continue with the [Follow the ISO Installer Prompts on page 27](#) section.

Follow the ISO Installer Prompts

This procedure shows how to use the ISO installer to install Aruba 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 on page 10](#).

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 Aruba Fabric Composer release that you are installing.
2. In the Installer start page, select **Install Aruba 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 on page 10](#), 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 Aruba Fabric Composer have the most accurate time and date settings.

- **IPv4 Address:** Enter a valid IPv4 address for this Aruba 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:
 - Software is being installed on bare-metal (non-Hypervisor) servers.
 - 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 Aruba Fabric Composer installation:

- a. In a Web browser, enter the Aruba Fabric Composer URL that was displayed by the Aruba Fabric Composer installer. The URL format is `https://host_name` where `host_name` is the fully-qualified domain name or IP address of the Aruba Fabric Composer host.
- b. Log into Aruba 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 Aruba Fabric Composer UI opens successfully. The Aruba Fabric Composer installation is now complete.

From the Aruba Fabric Composer UI, set up Aruba Fabric Composer and add your Fabric Composer. For details, see the *Aruba Fabric Composer 6.1.0 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`; however, on a bare-metal server it may be different (though is usually either `eth0` or `em1`).

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

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.

High Availability (HA) provides users the ability to run Aruba Fabric Composer in a configuration that is tolerant to hardware and software failures. HA for Aruba 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 Aruba 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:
 - **CPUs:** 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.
- 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.
2. In the installer screen, select **Install Aruba Fabric Composer (High Availability)**.
3. Follow the ISO installer prompts on each node installation and select **High Availability** for each node. Pay attention to the desired IP addressing and DNS names for nodes 0, 1, and 2 during the installation process.



The HTML/GUI will not be available until after running the HA cluster script on Node 0.

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

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

```
-----
Begin configuring Aruba Fabric Composer High Availability. Start: Thu Nov 19 13:06:58 UTC 2020
-----

Please enter both high availability peer IP addresses. IPv4 host format only. e.g: 10.10.10.1
First peer IP address: 172.20.4.142
Second peer IP address: 172.20.7.75

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: 172.20.253.50/16
```

The first and second peer IP addresses will become node1 and node2 respectively. Enter a Virtual IP Address (VIP) in *ip_address/prefix_length* format.

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

```
-----
Begin configuring Aruba Fabric Composer High Availability. Start: Thu Nov 19 13:06:58 UTC 2020
-----

Please enter both high availability peer IP addresses. IPv4 host format only. e.g: 10.10.10.1
First peer IP address: 172.20.4.142
Second peer IP address: 172.20.7.75

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: 172.20.253.50/16

pre-run checks
-> Verifying 172.20.253.50/16 address format: ✓
-> Verifying 172.20.4.142 address format: ✓
-> Verifying 172.20.4.142 is reachable: ✓
-> Verifying 172.20.7.75 address format: ✓
-> Verifying 172.20.7.75 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 | 0.0 |
| 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 Aruba 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.

This section deals with:

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

Managing the Aruba Fabric Composer IP Address

This procedure shows how to manage the Aruba Fabric Composer IP address, including how to change its static IP address in IPv4 or configure it to use DHCPv6.

1. Ensure that the network is connected to the Aruba Fabric Composer VM.
2. Log in to the Aruba Fabric Composer console as admin (use the password that you specified for this user).
3. Open the `/etc/sysconfig/network-scripts/ifcfg-eth0` file in an edit utility with `sudo`. For example, if using VI:

```
# sudo vi /etc/sysconfig/network-scripts/ifcfg-eth0
```

4. Make the following changes depending on the address type:

Static IP address

- a. Remove the following lines:

```
DEFROUTE="yes"
IPV4_FAILURE_FATAL="no"
```

- b. Change `BOOTPROTO` to:

```
BOOTPROTO="static"
```

- c. Specify the address family to use (IPv4) as follows:



IP addresses shown here are for illustrative purposes only.

To add *static IPv4*, add or amend the following lines:

```
IPADDR=10.0.1.100
```

```
NETMASK=255.255.255.0
GATEWAY=10.0.1.1
```

Dynamic/DHCP addressing

- a. Change `BOOTPROTO` to:

```
BOOTPROTO="dhcp"
```

- b. Specify the address family to use (IPv4).



IP addresses shown here are for illustrative purposes only.

If using *IPv4 DHCP*, remove the following lines if present:

```
IPADDR=10.0.1.100
NETMASK=255.255.255.0
GATEWAY=10.0.1.1
```

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

```
# sudo /opt/plexxi/scripts/enable-network.sh
```

6. 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. Aruba Support will be unable to assist with access to your Aruba 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 password command and type the new password twice as prompted.

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

Preparing to Upgrade Aruba Fabric Composer

1. Verify the current version of your Aruba Fabric Composer by using either of the following methods:
 - **Login screen:** Launch the Aruba Fabric Composer UI login screen, which displays the software version number.
 - **About window:** From within the Aruba Fabric Composer UI, open the About window (? > **About**).
2. Download the supported upgrade file from the Support portal (**Support portal > local mgmt. system > AFC host VM**) to your local machine: *ArubaFabricComposer_Upgrade-version-xxxx.tar.gz* where *version-xxxx* is the software version (example: 6.1.0-6530).
3. Confirm that your local machine has both the *ssh* and *scp* commands installed.

Pensando PSM Upgrade sequence

The recommended upgrade process for Pensando PSM is **AFC 6.3.0 > PSM 1.49.1-T > Switches**

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

PSM Release	Minimum AOS-CX Release	Minimum Aruba Fabric Composer Release	Platforms
1.49.1-T	10.10.0002	6.3.0	Aruba CX 10000
1.29.4-T	10.09.1010	6.2.0	
1.29.3-T	10.09.1001		
1.29.2-T	10.09.0010		

The recommended release for a new deployment is 1.49.1-T and the preferred upgrade path to this release is from **1.29.4-T > 1.49.1-T** with the following upgrade sequence:

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

Upgrading Aruba Fabric Composer

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 Aruba Fabric Composer. Provide the admin password when prompted.

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

3. Use SSH to log in to Aruba 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/afcupgrade
```

5. Move the upgrade files into the upgrade directory:

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

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

```
cd /home/admin/afcupgrade
```

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 Aruba Fabric Composer screen displays, tab over to **Accept** and press **Enter**.
11. When the Accept Aruba End User License screen displays, tab over to **Accept** and press **Enter**.
12. When the Continue to upgrade Aruba 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 Aruba 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 Aruba 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/afcupgrade
```



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

The following section is for VMware vSphere Plugin users only.

1. From VMware vSphere, un-register the previously installed Aruba 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 Aruba 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 Aruba Fabric Composer authentication. Once configured, the full Aruba Fabric Composer UI can be run within VMware vSphere.

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.