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# Junos Space Virtual Appliance Installation and Configuration Guide

Release

15.1



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*Junos Space Virtual Appliance Installation and Configuration Guide*

15.1

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- Documentation Feedback on page ix
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## Documentation and Release Notes

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To obtain the most current version of all Juniper Networks® technical documentation, see the product documentation page on the Juniper Networks website at <http://www.juniper.net/techpubs/>.

If the information in the latest release notes differs from the information in the documentation, follow the product Release Notes.

Juniper Networks Books publishes books by Juniper Networks engineers and subject matter experts. These books go beyond the technical documentation to explore the nuances of network architecture, deployment, and administration. The current list can be viewed at <http://www.juniper.net/books>.

## Supported Platforms

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For the features described in this document, the following platforms are supported:

- Junos Space Virtual Appliance

## Documentation Conventions

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Table 1 on page viii defines notice icons used in this guide.

Table 1: Notice Icons

Icon	Meaning	Description
	Informational note	Indicates important features or instructions.
	Caution	Indicates a situation that might result in loss of data or hardware damage.
	Warning	Alerts you to the risk of personal injury or death.
	Laser warning	Alerts you to the risk of personal injury from a laser.
	Tip	Indicates helpful information.
	Best practice	Alerts you to a recommended use or implementation.

Table 2 on page viii defines the text and syntax conventions used in this guide.

Table 2: Text and Syntax Conventions

Convention	Description	Examples
<b>Bold text like this</b>	Represents text that you type.	To enter configuration mode, type the <b>configure</b> command:  user@host> <b>configure</b>
Fixed-width text like this	Represents output that appears on the terminal screen.	user@host> <b>show chassis alarms</b>  No alarms currently active
<i>Italic text like this</i>	<ul style="list-style-type: none"> <li>Introduces or emphasizes important new terms.</li> <li>Identifies guide names.</li> <li>Identifies RFC and Internet draft titles.</li> </ul>	<ul style="list-style-type: none"> <li>A policy <i>term</i> is a named structure that defines match conditions and actions.</li> <li><i>Junos OS CLI User Guide</i></li> <li>RFC 1997, <i>BGP Communities Attribute</i></li> </ul>
<i>Italic text like this</i>	Represents variables (options for which you substitute a value) in commands or configuration statements.	Configure the machine's domain name:  [edit] root@# <b>set system domain-name</b> <i>domain-name</i>



Table 2: Text and Syntax Conventions (*continued*)

Convention	Description	Examples
Text like this	Represents names of configuration statements, commands, files, and directories; configuration hierarchy levels; or labels on routing platform components.	<ul style="list-style-type: none"><li>To configure a stub area, include the <b>stub</b> statement at the <b>[edit protocols ospf area area-id]</b> hierarchy level.</li><li>The console port is labeled <b>CONSOLE</b>.</li></ul>
< > (angle brackets)	Encloses optional keywords or variables.	<b>stub &lt;default-metric <i>metric</i>&gt;;</b>
(pipe symbol)	Indicates a choice between the mutually exclusive keywords or variables on either side of the symbol. The set of choices is often enclosed in parentheses for clarity.	<b>broadcast   multicast</b>  <b>(<i>string1</i>   <i>string2</i>   <i>string3</i>)</b>
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	<b>rsvp { # Required for dynamic MPLS only</b>
[ ] (square brackets)	Encloses a variable for which you can substitute one or more values.	<b>community name members [ <i>community-ids</i> ]</b>
Indentation and braces ( { } )	Identifies a level in the configuration hierarchy.	<pre>[edit] routing-options {   static {     route default {       nexthop <i>address</i>;       retain;     }   } }</pre>
;(semicolon)	Identifies a leaf statement at a configuration hierarchy level.	
GUI Conventions		
Bold text like this	Represents graphical user interface (GUI) items you click or select.	<ul style="list-style-type: none"><li>In the Logical Interfaces box, select <b>All Interfaces</b>.</li><li>To cancel the configuration, click <b>Cancel</b>.</li></ul>
> (bold right angle bracket)	Separates levels in a hierarchy of menu selections.	In the configuration editor hierarchy, select <b>Protocols&gt;Ospf</b> .

## Documentation Feedback

We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation. You can provide feedback by using either of the following methods:

- Online feedback rating system—On any page of the Juniper Networks TechLibrary site at <http://www.juniper.net/techpubs/index.html>, simply click the stars to rate the content, and use the pop-up form to provide us with information about your experience. Alternately, you can use the online feedback form at <http://www.juniper.net/techpubs/feedback/>.

- E-mail—Send your comments to [techpubs-comments@juniper.net](mailto:techpubs-comments@juniper.net). Include the document or topic name, URL or page number, and software version (if applicable).

## Requesting Technical Support

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Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active J-Care or Partner Support Service support contract, or are covered under warranty, and need post-sales technical support, you can access our tools and resources online or open a case with JTAC.

- JTAC policies—For a complete understanding of our JTAC procedures and policies, review the *JTAC User Guide* located at <http://www.juniper.net/us/en/local/pdf/resource-guides/7100059-en.pdf>.
- Product warranties—For product warranty information, visit <http://www.juniper.net/support/warranty/>.
- JTAC hours of operation—The JTAC centers have resources available 24 hours a day, 7 days a week, 365 days a year.

## Self-Help Online Tools and Resources

For quick and easy problem resolution, Juniper Networks has designed an online self-service portal called the Customer Support Center (CSC) that provides you with the following features:

- Find CSC offerings: <http://www.juniper.net/customers/support/>
- Search for known bugs: <https://prsearch.juniper.net/>
- Find product documentation: <http://www.juniper.net/documentation/>
- Find solutions and answer questions using our Knowledge Base: <http://kb.juniper.net/>
- Download the latest versions of software and review release notes: <http://www.juniper.net/customers/csc/software/>
- Search technical bulletins for relevant hardware and software notifications: <http://kb.juniper.net/InfoCenter/>
- Join and participate in the Juniper Networks Community Forum: <http://www.juniper.net/company/communities/>
- Open a case online in the CSC Case Management tool: <http://www.juniper.net/cm/>

To verify service entitlement by product serial number, use our Serial Number Entitlement (SNE) Tool: <https://entitlementsearch.juniper.net/entitlementsearch/>

## Opening a Case with JTAC

You can open a case with JTAC on the Web or by telephone.

- Use the Case Management tool in the CSC at <http://www.juniper.net/cm/>.
- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the USA, Canada, and Mexico).

For international or direct-dial options in countries without toll-free numbers, see <http://www.juniper.net/support/requesting-support.html>.



## CHAPTER 1

# Virtual Appliance Overview

- [Junos Space Virtual Appliance Overview on page 13](#)
- [Ethernet Interfaces in a Junos Space Virtual Appliance Overview on page 14](#)

## Junos Space Virtual Appliance Overview

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The Junos Space Virtual Appliance consists of preconfigured Junos Space Network Management Platform software with a built-in operating system and application stack that is easy to deploy, manage, and maintain.

A Junos Space Virtual Appliance includes the same software and all the functionality available in a Junos Space physical appliance. However, you must deploy the virtual appliance on a VMware ESX, VMWare ESXi or KVM server, which provides a CPU, hard disk, RAM, and a network controller, but requires installation of an operating system and applications to become fully functional.

Just as you can install additional physical appliances to create a fabric to provide scalability and availability, you can deploy multiple virtual appliances to create a fabric that provides the same scalability and high availability as a fabric of physical appliances.

Though it is possible to create a fabric using a combination of JA1500 Junos Space appliance, JA2500 Junos Space appliance, and Junos Space Virtual Appliance, we do not recommend a fabric that includes both physical and virtual appliances.

## Configuring an NTP Time Source for Each Appliance Overview

To ensure consistent behavior among all nodes in a multinode fabric, the time on each node must be synchronized with every other node in the fabric. When you configure the first Junos Space Virtual Appliance (and JA1500 Junos Space Appliance or JA2500 Junos Space Appliance) with an NTP server, you must ensure that, if the first node (which is used to synchronize time for all nodes in the fabric) goes down, all the other nodes in the fabric remain synchronized. Additional nodes installed in the same fabric automatically get their time setting from the first node in the fabric without any additional NTP server configuration.



**NOTE:** By default, Junos Space Network Management Platform synchronizes the local time zone of the client computer with the time zone of the server so that the Web user interface displays the Junos Space server time in the local time zone. However, the CLI server displays time as per the time zone configured on the Junos Space server.

To ensure that time remains synchronized across all nodes in a fabric, we strongly recommend that you add an NTP server to the first appliance (physical or virtual) during the initial setup.



**NOTE:** You must add the NTP server before you add the appliance or node to the fabric from the Junos Space user interface.

#### Related Documentation

- [Fabric Management Overview](#)
- [Deploying a Junos Space Virtual Appliance on a VMware ESX or VMware ESXi Server on page 20](#)
- [Deploying a Junos Space Virtual Appliance on a KVM Server on page 25](#)
- [Configuring a Junos Space Virtual Appliance as a Junos Space Node on page 33](#)
- [Changing the Network and System Settings of a Junos Space Virtual Appliance on page 63](#)
- [Adding a Node to an Existing Junos Space Fabric on page 97](#)
- [Viewing Nodes in the Fabric on page 103](#)
- [Monitoring Nodes in the Fabric](#)

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## Ethernet Interfaces in a Junos Space Virtual Appliance Overview

A Junos Space Virtual Appliance contains four Ethernet interfaces—eth0, eth1, eth2, and eth3. The Ethernet interfaces eth0 and eth3 support both IPv4 and IPv6 addresses. As a separate IP address is available for each IP stack, for any connection initiated by Junos Space, the source IP address (that is, the IPv4 or IPv6 address) of the connection is bound by the IP address type of a managed device. For a connection initiated by a managed device, Junos Space listens on both IPv4 and IPv6 addresses of the device management interface (eth3). Therefore, a managed device can communicate with Junos Space by using its IPv4 or IPv6 address.



**NOTE:** From Junos Space Network Management Platform Release 14.1R2 onward, you can configure Junos Space Ethernet interfaces with only IPv4 addresses, or both IPv4 and IPv6 addresses.

Junos Space supports managed devices based on the IP address type (that is, the IPv4 or IPv6 address) configured for the device management interface. You can configure an IPv4 or IPv6 address for the device management interface. If the device management interface is not configured, the IP address type of the node management interface (eth0) is considered for communication with managed devices. [Table 3 on page 15](#) details the support matrix for IPv4 and IPv6 address configurations on the device management interface.

**Table 3: Matrix for IP Address Versions Supported on Devices**

eth0		eth3		IP Address of Managed Devices Supported by Junos Space
IPv4 Address	IPv6 Address	IPv4 Address	IPv6 Address	
Configured	Not Configured	Not Configured	Not Configured	IPv4
Configured	Configured	Not Configured	Not Configured	IPv4 and IPv6
Configured	Not Configured	Configured	Not Configured	IPv4
Configured	Not Configured	Configured	Configured	IPv4 and IPv6
Configured	Not Configured	Not Configured	Configured	IPv6
Configured	Configured	Configured	Configured	IPv4 and IPv6

You can use the Ethernet interfaces of Junos Space as follows:

- **eth0**—Use the eth0 interface to configure the virtual IP (VIP) address of a fabric and the IP address of the node as well as to access the managed devices. The VIP address and the IP address of the node should be on the same subnet.

The eth0:0 subinterface provides access to the Junos Space Network Management Platform GUI. You can access the GUI by using the VIP address of the fabric.

- **eth1**—Use the eth1 interface as an administrative interface of a Junos Space node. Use SSH to access a Junos Space node through this interface. The eth0 interface and the eth1 interface can be on different subnets.

If you configure eth1, SSH stops running on the eth0 and the eth3 interfaces. You can access the CLI of the Junos Space virtual appliance only through the eth1 interface.



**NOTE:** From Junos Space Network Management Platform Release 14.1R1 onward, you can configure the eth1 Ethernet interface as an administrative interface.

- eth2—The eth2 interface is reserved for future use.
- eth3—Use the eth3 interface for SSH access to managed devices when the managed devices are on an out-of-band management subnet or on a subnet not accessible through the eth0 interface.



**NOTE:** If the managed devices are not accessible through the default gateway, you must configure static routes. Any static route configured manually is populated in the main routing table, which is used to route traffic through the eth0 interface.



**NOTE:** When you configure a node as an FMPM node, you can use only the eth0 and eth1 interfaces.

- When you configure an appliance as a Junos Space node, you can configure the Ethernet interfaces as follows:

- Configure only the eth0 interface.

When only Ethernet interface (eth0) is used, the Junos Space nodes in the fabric, virtual IP (VIP) address of the fabric, and the devices being managed by Junos Space are on the same subnet.

- Configure the eth0 and eth3 interfaces.

When Ethernet interfaces eth0 and eth3 are used, the Junos Space nodes in the fabric and VIP address of the fabric are on the same subnet and are reachable through Ethernet interface eth0. The devices being managed by Junos Space are on the same subnet, which is different from the one reachable through Ethernet interface eth0, and are reachable through Ethernet interface eth3.

- Configure the eth0 and eth1 interfaces.

When Ethernet interfaces eth0 and eth1 are used, the Junos Space nodes in the fabric and the VIP address of the fabric may or may not be on the same subnet. The eth1 interface provides SSH access to the Junos Space nodes.

The VIP address and the devices being managed by Junos Space are on the same subnet.

- Configure the eth0, eth1, and eth3 interfaces.

When Ethernet interfaces eth0, eth1, and eth3 are used, the Junos Space nodes in the fabric and the VIP address of the fabric may or may not be on the same subnet. The Junos Space nodes are reachable (SSH access) only through the eth1 interface.

The managed devices can be reached through the eth0 interface if they are configured on the same subnet as the VIP address; on any other subnet, the managed devices can be reached through the eth3 interface.





**NOTE:** If the managed devices are not reachable through the default gateway configured for the eth3 interface, you must configure static routes for the eth3 interface. The eth3 interface refers to the devint routing table.

Any static route configured manually is populated in the main routing table, which is used to route traffic through the eth0 interface.

- When you configure an appliance as a specialized node used for fault monitoring and performance monitoring (FMPM), you can use only the Ethernet interfaces eth0 and eth1.

Ethernet interface eth1 provides SSH access to FMPM nodes.



**NOTE:** For more information about the Junos Space fabric, refer to the *Fabric Management* chapter in the *Junos Space Network Management Platform User Guide* (available at [http://www.juniper.net/techpubs/en\\_US/release-independent/junos-space/index.html](http://www.juniper.net/techpubs/en_US/release-independent/junos-space/index.html)).

Table 4 on page 17 summarizes the functions of Ethernet interfaces on the Junos Space Appliance.

**Table 4: Junos Space Appliance Ethernet Interfaces**

Interface	Function
eth0	SSH and device management, if only the Ethernet interface <b>ETH0</b> or Ethernet interface <b>0</b> is used
eth0:0	GUI interface
eth1	SSH access to the Junos Space nodes  <b>NOTE:</b> SSH is disabled on the eth0 and eth3 interfaces when eth1 is configured.
eth2	Reserved for future use
eth3	Device management when managed devices are on an out-of-band management subnet and not reachable by the Ethernet interface eth0

**Related Documentation**

- Configuring a Junos Space Virtual Appliance as a Junos Space Node on page 33
- Configuring a Junos Space Virtual Appliance as a Standalone or Primary FMPM Node on page 47
- Changing the Network and System Settings of a Junos Space Virtual Appliance on page 63



## CHAPTER 2

# Deploying the Junos Space Virtual Appliance

- [Junos Space Virtual Appliance Deployment Overview on page 19](#)
- [Deploying a Junos Space Virtual Appliance on a VMware ESX or VMware ESXi Server on page 20](#)
- [Deploying a Junos Space Virtual Appliance on a KVM Server on page 25](#)
- [Adding Disk Resources for a Junos Space Virtual Appliance on page 29](#)
- [Starting Open VM Tools in Junos Space Platform on page 31](#)

## Junos Space Virtual Appliance Deployment Overview

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The Junos Space Virtual Appliance is distributed in the Open Virtualization Appliance (OVA) and qcow2 formats.

You can deploy the Junos Space Virtual Appliance \*.ova file on a VMware ESX server version 4.0 or later or VMware ESXi server version 4.0 or later and the \*.qcow2 on a Kernel-based Virtual Machine (KVM) server. The Junos Space Virtual Appliance Release 14.1R2.0 and later can be deployed on qemu-kvm (KVM) Release 0.12.1.2-2/448.el6 or later which runs on CentOS Release 6.5 or later.



**NOTE:** Though a KVM server on other Linux distributions is supported, we recommend that you use KVM on CentOS.

After the Junos Space Virtual Appliance is deployed, you can use the VMware vSphere client or Virtual Machine Manager (VMM) to connect to the VMware ESX (or VMware ESXi) server or KVM server and configure the Junos Space Virtual Appliance.



**NOTE:** Where the Junos Space Virtual Appliance documentation references “ESX server,” you can use either the VMware ESX server version 4.0 or later or VMware ESXi server Version 4.0 or later.

The minimum hardware requirements for deploying a Junos Space Virtual Appliance are as follows:

- 64-bit quad processor with a clock speed of at least 2.66 GHz
- Four virtual CPUs
- 1-Gbps Network
- 32-GB RAM to configure the virtual appliance as a Junos Space node or fault monitoring and performance monitoring (FMPM) node



**NOTE:** 64-GB RAM is required if the number of rules per firewall (SRX) cluster is more than 6000 and if firewall policies of similar sizes are being concurrently published.

- 500-GB hard disk
- Configure Open VM tools (see [“Starting Open VM Tools in Junos Space Platform”](#) on [page 31](#) for details.)



**NOTE:**

- We recommend that you use disks with I/O speed of 200 Mbps or above. For information about determining I/O speed of a disk used in the node of a Junos Space cluster, see *How do I Determine the Disk I/O Speed of a Node in the Junos Space Fabric?* in *Junos Space Hardware and Virtual Appliances FAQ*.
- We recommend against cloning a deployed Junos Space Image and using it as another instance of a Junos Space Virtual Appliance.
- VMware VMotion is not supported for moving Junos Space Virtual Appliances from one VMware ESX server to another VMware ESX server.

**Related Documentation**

- [Deploying a Junos Space Virtual Appliance on a VMware ESX or VMware ESXi Server on page 20](#)
- [Deploying a Junos Space Virtual Appliance on a KVM Server on page 25](#)
- [Adding Disk Resources for a Junos Space Virtual Appliance on page 29](#)

## Deploying a Junos Space Virtual Appliance on a VMware ESX or VMware ESXi Server

The Junos Space Virtual Appliance can be deployed on a VMware ESX server. This topic discusses about deploying the Junos Space server on a VMware ESX or VMware ESXi server.

The Junos Space Virtual Appliance requires a VMware ESX server 4.0 or later or VMware ESXi server 4.0, 5.0, 5.1, or 5.5 that can support a virtual machine with the following configuration:



NOTE:

- The ESX or ESXi host server must include a Standard or Enterprise edition license, which may not be installed on the host server by default.
- Where the Junos Space Virtual Appliance documentation references *ESX server*, you can use either ESX server 4.0 or later or ESXi server 4.0, 5.0, 5.1 or 5.5.
- VMware VMotion is not supported for moving Junos Space Virtual Appliances from one VMware ESX server to another VMware ESX server.



NOTE:

For information about the minimum hardware requirements for deploying a Junos Space Virtual Appliance, see “Junos Space Virtual Appliance Deployment Overview” on page 19.

The deployment of a Junos Space Virtual Appliance includes the following tasks:

1. Installing the VMware ESX Server on page 21
2. Installing a Junos Space Virtual Appliance on a VMware ESX or VMware ESXi Server on page 22
3. Adding Virtual Processors (CPU) and Modifying RAM Settings for a Junos Space Virtual Appliance on page 24
4. Adding Disk Resources for a Junos Space Virtual Appliance on page 25

## Installing the VMware ESX Server

To install the VMware ESX server:

1. Download the VMware ESX server installation package from <http://www.vmware.com/download/vi/>.
2. Install the VMware ESX server.

For instructions to install the VMware ESX server, go to [http://www.vmware.com/support/pubs/vi\\_pubs.html](http://www.vmware.com/support/pubs/vi_pubs.html).



NOTE: You can install the VMware vSphere Client when you install the VMware ESX server 4.0 or later or ESXi server 4.0, 5.0, 5.1, or 5.5. ESX server 3.5 and earlier versions support the VMware Infrastructure client. Contact VMware for support with installing VMware ESX server or ESXi server.



**NOTE:** Junos Space Network Management Platform is not certified to be used with VMware tools.

## Installing a Junos Space Virtual Appliance on a VMware ESX or VMware ESXi Server

You can use vSphere Client 4.0 or later or OVF Tool 2.01 or later to deploy the Junos Space Virtual Appliance image on a VMware ESX server.

- [Installing a Junos Space Virtual Appliance by Using vSphere Client on page 22](#)
- [Installing a Junos Space Virtual Appliance by Using the OVF Tool on page 23](#)

### Installing a Junos Space Virtual Appliance by Using vSphere Client

---

To create a Junos Space Virtual Appliance by using vSphere Client 4.0:

1. Download the Junos Space Virtual Appliance image from <http://www.juniper.net/support/downloads/?p=space#sw> to your local system.



**NOTE:** Do not change the name of the Junos Space Virtual Appliance image file that you download from the Juniper Networks support site. If you change the name of the image file, the creation of the Junos Space Virtual Appliance can fail.

2. Launch the vSphere Client that is connected to the ESX server where the Junos Space Virtual Appliance is to be deployed.

3. Select **File > Deploy OVF Template** from the menu bar.

The Deploy OVF Template page appears.

4. Click the **Deploy from file** option and click **Browse**, and then upload the OVA file from your storage location.



**NOTE:** You can use the same image to deploy both Junos Space and fault monitoring and performance monitoring (FMPM) nodes.

5. Click **Next**.
6. Verify the OVF Template details and then click **Next**.
7. Specify a name and location for the deployed template and then click **Next**.

A template name can contain a maximum of 80 characters. Template names are not case-sensitive.

8. Verify your settings and then click **Finish** to create the Junos Space Virtual Appliance.

### Installing a Junos Space Virtual Appliance by Using the OVF Tool



**NOTE:** This topic provides only the steps for deploying the Junos Space Virtual Appliance by using the OVF Tool.

Before you use the OVF Tool to create a Junos Space Virtual Appliance, ensure that the OVF Tool is installed on the system where you saved the Junos Space Virtual Appliance image file (\*.ova).

To create a Junos Space Virtual Appliance by using the OVF Tool:

1. Download the Junos Space Virtual Appliance image from <http://www.juniper.net/support/downloads/?p=space#sw> to your local system.



**NOTE:** Do not change the name of the Junos Space Virtual Appliance image file that you download from the Juniper Networks support site. If you change the name of the image file, the creation of the Junos Space Virtual Appliance can fail.

2. Log in to the local system and navigate to the location where the Junos Space Virtual Appliance image file is saved.
3. Run the following command:

```
/usr/bin/ovftool/ovftool --name=virtual-appliance image-file
vi://username:password@host-id
```

where:

- *virtual-appliance* is the name you assign to the Junos Space Virtual Appliance.
- *image-file* is the name of the Junos Space Virtual Appliance image file.
- *username* is the username of the host machine where you deploy the Junos Space Virtual Appliance.
- *password* is the password of the host machine where you deploy the Junos Space Virtual Appliance.
- *host-id* is the IP address of the host machine where you deploy the Junos Space Virtual Appliance.

```
/usr/bin/ovftool/ovftool -name=space1vm space-13.3R1.0.ova
vi://username:password@10.157.10.1
```

The Junos Space Virtual Appliance is deployed on the host machine.

4. Log in to the host machine and edit the settings (number of processors, memory) of the Junos Space Virtual Appliance. For information about editing the settings of a Junos Space Virtual Appliance by using the OVF Tool, see the OVF Tool documentation at <http://www.vmware.com/support/developer/ovf/>.

## Adding Virtual Processors (CPU) and Modifying RAM Settings for a Junos Space Virtual Appliance

The Junos Space Virtual Appliance files are distributed with 8 GB of RAM and four virtual processors (CPU). If required, you can add virtual processors for the Junos Space Virtual Appliance.

To add RAM for the Junos Space Virtual Appliance:

1. Launch the VMware vSphere Client and log in to the ESX server where the Junos Space Virtual Appliance is deployed.
2. Select the Junos Space Virtual Appliance from the inventory view.
3. If the Junos Space Virtual Appliance is powered on, you must power off the appliance to configure RAM and increase the number of virtual processors (CPUs).

To power off the Junos Space Virtual Appliance, right-click the Junos Space Virtual Appliance icon and select **Power > Power Off**.

4. Select the **Summary** tab to view the Junos Space virtual machine settings for CPU and memory.

The default CPU setting is **4**. The default memory setting is **8 GB**.

5. Update the RAM to 32 GB to operate the Junos Space Virtual Appliance as a Junos Space node or as an FMPM node.

6. Right-click the Junos Space Virtual Appliance icon and select **Edit Settings**.

The Virtual Machine Properties dialog box appears.

7. Select the **Hardware** tab and then select **CPUs**.
8. Enter the number of processors you want to add in the **Number of virtual processors** field.
9. Click **OK**.

Virtual processors are added to the Junos Space Virtual Appliance.



## Adding Disk Resources for a Junos Space Virtual Appliance

For information about adding disk resources for Junos Space Virtual Appliance, see “Adding Disk Resources for a Junos Space Virtual Appliance” on page 29.

### Related Documentation

- [Configuring a Junos Space Virtual Appliance as a Junos Space Node on page 33](#)
- [Configuring a Junos Space Virtual Appliance as a Standalone or Primary FMPM Node on page 47](#)
- [Configuring a Junos Space Virtual Appliance as a Backup or Secondary FMPM Node for High Availability on page 55](#)
- [Adding Disk Resources for a Junos Space Virtual Appliance on page 29](#)
- [Fabric Management Overview](#)
- [Adding a Node to an Existing Junos Space Fabric on page 97](#)
- [Viewing Nodes in the Fabric on page 103](#)
- [Monitoring Nodes in the Fabric](#)

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## Deploying a Junos Space Virtual Appliance on a KVM Server

The Junos Space Virtual Appliance Release 14.1R2.0 and later can be deployed on qemu-kvm (KVM) Release 0.12.1.2-2/448.el6 or later which is on CentOS Release 6.5.



**NOTE:** Juniper Networks does not provide any support for installing and configuring the KVM server. You must install the virtual appliance image and configure it as per the recommended specifications for the virtual appliance. Juniper Networks will provide support only after the Junos Space Virtual Appliance has booted successfully.

The prerequisites to deploy a Junos Space Virtual Appliance on a KVM server are as follows:

- Knowledge about configuring and installing a KVM server.
- The KVM server and supported packages must be installed on a CentOS machine with the required kernels and packages. For information about installing a KVM server and supported packages on CentOS, refer to <http://wiki.centos.org/HowTos/KVM>.
- The Virtual Machine Manager (VMM) client must be installed on your local system.



**NOTE:** Though deploying the Junos Space Virtual Appliance on the KVM server by using virtual machine clients other than VMM is possible, Juniper Networks does not provide support for installing the Junos Space Virtual Appliance using clients other than VMM.

- Bridge Interface configured according to your environment and at least two free static IP addresses.

For information about the minimum hardware requirements for deploying a Junos Space Virtual Appliance, see “[Junos Space Virtual Appliance Deployment Overview](#)” on page 19.

The following tasks that must be performed for deploying a Junos Space Virtual Appliance on a KVM server are explained in this topic:

- [Installing a Junos Space Virtual Appliance on the KVM Server by Using VMM on page 26](#)
- [Modifying the Type of Virtual Disk Interface on page 27](#)
- [Modifying RAM for a Junos Space Virtual Appliance on page 28](#)
- [Adding Disk Resources for a Junos Space Virtual Appliance on page 28](#)

## Installing a Junos Space Virtual Appliance on the KVM Server by Using VMM

Use the VMM virtual machine client to install the Junos Space Virtual Appliance on a KVM server.

To install the Junos Space Virtual Appliance on a KVM server by using VMM:

1. Download the Junos Space Virtual Appliance image from <http://www.juniper.net/support/downloads/?p=space#sw> to your local system.



**NOTE:** Do not change the name of the Junos Space Virtual Appliance image file that you download from the Juniper Networks support site. If you change the name of the image file, the creation of the Junos Space Virtual Appliance can fail.

2. Launch the VMM client.
3. Select **File > New** on the menu bar of VMM to install a new virtual machine on a KVM server.

The New VM dialog box appears and displays Step 1 of 4 of the New VM installation.

4. Under Enter your virtual machine details, in the **Name** field, enter a name for the Junos Space Virtual Appliance.
5. Under Choose how you would like to install the operating system, click **import existing disk image**.

6. Click **Forward** to go to the next step.  
Step 2 of 4 is displayed.
7. Under Provide the existing storage path, click **Browse** to locate and select the Junos Space Virtual Appliance image file (**.qcow2**) on your local system.
8. Under Choose an operating system type and version, select Linux for **OS type** and Red Hat Enterprise Linux 5.4 or later for **Version**.
9. Click **Forward** to go to the next step.  
Step 3 of 4 is displayed.
10. Under Choose Memory and CPU settings, ensure that 4 is set for **CPUs** and select or enter the following value for **Memory (RAM)**:
  - 32768 MB—For the Junos Space Virtual Appliance to be deployed as a Junos Space node or as an FMPM node
11. Click **Forward** to go to the next step.  
Step 4 of 4 is displayed.
12. Click **Finish**.  
  
The New VM dialog box closes. The Junos Space Virtual Appliance is created and listed with the name that you entered in the VMM.

## Modifying the Type of Virtual Disk Interface

After the Junos Space Virtual Appliance is created, you must change the hard disk interface type to Integrated Drive Electronics (IDE) to avoid any issues with the booting up of the Junos Space Virtual Appliance due to kernel panic.

To change the hard disk interface type to IDE:

1. Select the Junos Space Virtual Appliance just created and click the **Show Virtual Hardware Details** button to edit the hardware settings.
2. In the Add New Virtual Hardware dialog box, click **Virtual Disk (VirtIO Disk1)** on the left of the dialog box to change the type of the disk interface to IDE.  
  
The details of the Virtual disk is displayed on the right of the dialog box.
3. Under Advanced Options, select IDE for **Disk Bus** and qcow2 for **Storage format**.

4. Click **Apply**.
5. (Optional) If the Junos Space Virtual Appliance is already powered on, shut down and restart the Virtual appliance.

To shut down the Junos Space Virtual Appliance, right-click the Junos Space Virtual Appliance icon and select **Shutdown > Power Off**.

## Modifying RAM for a Junos Space Virtual Appliance

The Junos Space Virtual Appliance file is distributed with 8 GB of RAM and four virtual CPUs. You need 32-GB RAM to configure the Junos Space Virtual Appliance as a Junos Space node or as an FMPM node.

To modify RAM for the Junos Space Virtual Appliance:

1. Launch VMM and select the Junos Space Virtual Appliance for which you want to modify RAM.
2. (Optional) If the Junos Space Virtual Appliance is running, you must shut down the appliance to modify RAM.

To shut down the Junos Space Virtual Appliance, right-click the Junos Space Virtual Appliance icon and select **Shutdown > Power Off**.

3. To view and change RAM allocated to the Junos Space Virtual Appliance, click the **Show Virtual Hardware Details** button below the menu bar of the VMM.

The hardware profile, which includes the RAM settings of the Junos Space Virtual Appliance, appears in a dialog box.

4. Select **Memory** from the hardware profile list on the left side of the dialog box and on the right side of the dialog box, under Memory Management, click **Static** and select the required memory from the list box provided under Static.

## Adding Disk Resources for a Junos Space Virtual Appliance

For information about adding disk resources for Junos Space Virtual Appliance, see [“Adding Disk Resources for a Junos Space Virtual Appliance” on page 29](#).

### Related Documentation

- [Configuring a Junos Space Virtual Appliance as a Junos Space Node on page 33](#)
- [Configuring a Junos Space Virtual Appliance as a Standalone or Primary FMPM Node on page 47](#)
- [Configuring a Junos Space Virtual Appliance as a Backup or Secondary FMPM Node for High Availability on page 55](#)
- [Adding Disk Resources for a Junos Space Virtual Appliance on page 29](#)
- [Fabric Management Overview](#)

- [Adding a Node to an Existing Junos Space Fabric on page 97](#)
- [Viewing Nodes in the Fabric on page 103](#)
- *Monitoring Nodes in the Fabric*

## Adding Disk Resources for a Junos Space Virtual Appliance

The Junos Space Virtual Appliance files are distributed with 133-GB of disk space.



### NOTE:

- The free space available in all the partitions should be monitored periodically and the available free disk space increased if required. The `/var` and `/var/log` partitions should be monitored more frequently as most of the data are stored in these partitions and space utilization is high.

For information about disk space needed for installing a Junos Space application, refer to the respective application documentation available at *Junos Space Software, Release 15.1*.

- If you are expanding the disk space of nodes in a Junos Space fabric (cluster) comprising virtual appliances, you must first expand the disk space of the virtual IP (VIP) node and ensure that the VIP node has come up, that is, JBoss and MySQL services are up before expanding the disk space of other nodes in the fabric; otherwise, the fabric may become unstable and the Junos Space GUI inaccessible.
- While configuring a Junos Space Virtual Appliance as a Junos Space node or an FMPM node, it is recommended that you allocate disk space partitions as per the disk space allocations for a JA2500 Junos Space Appliance. However, you can allocate less or more space to disk partitions as per your requirement. For more information about disk space allocation in Junos Space Appliances (JA1500 and JA2500), see [Configuring a Junos Space Appliance as a Junos Space Node](#).

To allocate additional disk space for partitions, add a disk resource and expand a partition one at a time. The free space available on the disk resource can be shared among the different partitions. For example, to expand the `/var` and `/var/log` partitions by 20 GB each, add a disk resource of minimum 40 GB. Expand the drive size of the `/var` partition by 20 GB and then expand the `/var/log` partition by 20 GB.

[Table 5 on page 30](#) specifies the data stored in the partitions of a Junos Space Node and an FMPM node.

Table 5: Data Stored in the Partitions of a Junos Space Node and an FMPM Node

Partition	Junos Space Node	FMPM Node
<code>/var</code>	MySQL database, PostgreSQL database, database backup file, and disaster recovery data files  <i>NOTE:</i> For Junos Space Network Management Platform Release 13.1 and earlier, the disaster recovery data files are stored in <code>/</code> .	FMPM data, MySQL database, PostgreSQL database
<code>/var/log</code>	All system log files	All system log files
<code>/tmp</code>	Temporary files	Temporary files
<code>/</code>	Worldwide adapters, JBoss configuration files	OpenNMS installation

To add disk resources for the Junos Space Virtual Appliance:

1. In the VMware vSphere Client, right-click the Junos Space Virtual Appliance icon and select **Power > Power On**. The Junos Space Virtual Appliance must be powered on to add disk resources.
2. Right-click the Junos Space Virtual Appliance icon and select **Edit Settings**.  
The Virtual Machine Properties page is displayed.
3. Select the Hardware tab and click **Add**.  
The Device Type page is displayed.
4. Under Choose the type of disk you wish to add, select **Hard Disk**.
5. Click **Next**.  
The Select a Disk page appears.
6. Under Disk, select **Create a new Virtual disk**.
7. Click **Next**.  
The Create a Disk page appears.
8. Under Capacity, set the Disk Size field to the recommended size for the partition that you want to expand.  
  
Under Location, retain the default setting—that is, leave the **Store with the virtual machine** selected.
9. Click **Next**.

The Advanced Options page is displayed.

10. Leave the default settings unchanged and click **Next**.

The Ready to Complete page is displayed.

11. Review your selected options and click **Finish**.

The Virtual Machine Properties page displays the new virtual disk on the Hardware list.

12. Click **OK** to create the new virtual disk.

A status bar shows the progress at the bottom of the page.



**NOTE:** After the new virtual disk is created, the Junos Space Virtual Appliance must be scanned to detect the additional disk space that you added. To start the scan for additional disk space, select the **Expand VM Drive Size** option from the Junos Space Settings Menu immediately after you configure the basic settings for your Junos Space Virtual Appliance.

The next step is to configure the basic settings for your deployed Junos Space Virtual Appliance. To configure basic settings for the appliance, access the console in the VMware vSphere Client.

To deploy another Junos Space Virtual Appliance, complete all the preceding steps (and configure the basic settings) for each Junos Space Virtual Appliance that you want to create.

**Related  
Documentation**

- [Changing the Network and System Settings of a Junos Space Virtual Appliance on page 63](#)
- [Configuring a Junos Space Virtual Appliance as a Junos Space Node on page 33](#)
- [Configuring a Junos Space Virtual Appliance as a Standalone or Primary FMPM Node on page 47](#)
- [Configuring a Junos Space Virtual Appliance as a Backup or Secondary FMPM Node for High Availability on page 55](#)

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## Starting Open VM Tools in Junos Space Platform

Junos Space Network Management Platform Release 16.1R1 supports the use of Open VM Tools to facilitate better management and the seamless interaction of the VMware ESXi 6.0 server with the Junos Space Virtual Appliance.



**NOTE:** Before you start Open VM Tools in Junos Space Platform, ensure that you have installed Open VM Tools 10.0.5 on the Junos Space Virtual Appliance.

To download utilities and drivers necessary to build Open VM Tools, see <http://sourceforge.net/projects/open-vm-tools/files/open-vm-tools/stable-10.0.x/open-vm-tools-10.0.5-3227872.tar.gz/download>. For more information about building Open VM Tools, see <https://github.com/vmware/open-vm-tools#building-open-vm-tools>.

To start Open VM Tools in Junos Space Platform:

1. Log in to the Junos Space Virtual Appliance as the admin user.

The Junos Space Settings menu is displayed.

2. Type **7** to access the shell.

You are prompted to enter the administrator password.

3. Type the administrator password and press Enter.

The shell prompt appears, as shown in the following example:

```
[user@host ~]#
```

4. Type the `/usr/bin/vmtoolsd &` command at the shell prompt and press Enter:

```
[user@host ~]# /usr/bin/vmtoolsd &
```

The Open VM Tools service is started on the node.



**NOTE:** To start Open VM Tools each time the Junos Space node is rebooted, add the `/usr/bin/vmtoolsd &` command to the `/etc/rc.local` file.

Release History Table

Release	Description
16.1R1	Junos Space Network Management Platform Release 16.1R1 supports the use of Open VM Tools to facilitate better management and the seamless interaction of the VMware ESXi 6.0 server with the Junos Space Virtual Appliance

#### Related Documentation

- [Junos Space Virtual Appliance Deployment Overview on page 19](#)



## CHAPTER 3

# Configuring the Junos Space Virtual Appliance

- [Configuring a Junos Space Virtual Appliance as a Junos Space Node on page 33](#)
- [Configuring a Junos Space Virtual Appliance as a Standalone or Primary FMPM Node on page 47](#)
- [Configuring a Junos Space Virtual Appliance as a Backup or Secondary FMPM Node for High Availability on page 55](#)
- [Changing the Network and System Settings of a Junos Space Virtual Appliance on page 63](#)

## Configuring a Junos Space Virtual Appliance as a Junos Space Node

---

After you deploy a Junos Space Virtual Appliance on a VMware ESX, VMware ESXi, or Kernel-based Virtual Machine (KVM) server, you must enter basic network and machine information to make your Junos Space Virtual Appliance accessible on the network. You must also add disk space to the partitions of the Junos Space Virtual Appliance.



**NOTE:** From Junos Space Network Management Platform Release 14.1R2 onward, you can configure Junos Space Ethernet interfaces with only IPv4 addresses, or both IPv4 and IPv6 addresses.

Before you begin, ensure that you have the following information available:

- IPv4 address and subnet mask for the node management (eth0) Ethernet interface
- (Optional) IPv6 address and prefix for the eth0 Ethernet interface
- IPv4 address of the default gateway for the eth0 Ethernet interface
- (Optional) IPv6 address of the default gateway for the eth0 Ethernet interface
- IPv4 address of the name server
- (Optional) IPv6 address of the name server
- (Optional) IPv4 address and subnet mask for the Ethernet interface eth3, if you are configuring a device management interface.



**NOTE:** When you configure the eth3 interface as the device management interface, the IP addresses of the eth0 and eth3 Ethernet interfaces must be in different subnets.

- (Optional) IPv4 address of the default gateway for the eth3 Ethernet interface



**NOTE:** If you configure the IPv4 address for the eth3 Ethernet interface, you must configure the IPv4 address of the default gateway.

- (Optional) IPv6 address and prefix for the eth3 Ethernet interface
- (Optional) IPv6 address of the default gateway for the eth3 Ethernet interface



**NOTE:** If you configure the IPv6 address for the eth3 Ethernet interface, you must configure the IPv6 address of the default gateway for the eth3 interface.

- Virtual IP (VIP) address in IPv4 and IPv6 formats

The IPv4 format of the VIP address is used for accessing the Junos Space Network Management Platform GUI through a Web browser. This IP address must be in the same subnet as the IP address assigned to the eth0 Ethernet interface

The IPv6 format of the VIP address is used for receiving SNMP traps from managed devices.

- IPv4 address or URI of the NTP source to synchronize time
- (Optional) IPv4 address of the eth1 Ethernet interface

If the IP address of the eth1 interface is not in the same subnet as the VIP address, ensure that you have the subnet mask and the default gateway for the eth1 interface.

This topic discusses the following tasks:

- [Configuring a Junos Space Virtual Appliance on page 34](#)
- [Configuring the eth1 Ethernet Interface on page 45](#)

## Configuring a Junos Space Virtual Appliance

You can configure a Junos Space Virtual Appliance as the first or standalone node in a cluster or add the node to an existing cluster.

To configure a Junos Space Virtual Appliance:

1. Using a virtual machine client (such as VMware vSphere Client or Virtual Machine Manager [VMM]), log in and power on the Junos Space Virtual Appliance.
2. Access the console on the virtual machine client to view the Junos Space login prompt.

- At the Junos Space login prompt, type **admin** as your default login name and press Enter.

```
space-NEWNODE login:admin
Password:
```

You are prompted to enter the administrator password.

- Type **abc123** as the default administrator password and press Enter.  
Junos Space prompts you to change your default password.

- To change the default password, do the following:

- Type the default password and press Enter.
- Type your new password and press Enter.
- Retype your new password and press Enter.

If the password is changed successfully, the following message is displayed.

```
passwd: all authentication tokens updated successfully
```



**NOTE:** You can choose a password that is at least eight characters long and contains characters from at least three of the following four character classes: uppercase letters, lowercase letters, numbers (0 through 9), and special characters.

However, if a password satisfies the preceding criteria but contains only a single uppercase letter at the beginning or only a single number at the end, then that password is considered invalid. For example, Abcdwip9, Qc9rdiwt, and bRfjvin9 are invalid passwords, but AAbcdwip99, Qc9rdiwtQ, and bRfjvin99 are valid passwords.

Alternatively, instead of using a string of characters, you can choose a passphrase that is between 16 and 40 characters long and contains at least three dictionary words separated by at least one special character. For example, big#three;fork (14 characters long) and circlefaceglass (no special characters) are invalid passphrases, but @big#three;fork& and circle;face;glass are valid passphrases.

Passwords and passphrases are case-sensitive.

- Enter the new password to log in to Junos Space.
- Type **S** to install the virtual appliance as a Junos Space node.

This Junos Space node can be installed as one of the following:  
(S)pace Platform

Full functionality. Every Junos Space Installation requires at least one Space node.

(F)MPM

Specialized to fault and performance monitoring only. This requires at least one Space node.

Choose the type of node to be installed [S/F] S

#### 8. Configure the IP address for the eth0 interface.

Configuring Eth0:

1> Configure IPv4

2> Configure Both IPv4 and IPv6

R> Redraw Menu

Choice [1-2,R]:

- To configure the IPv4 address of the eth0 interface:

a. Type 1.

b. Type the IPv4 address for eth0 interface in dotted-decimal notation and press Enter.

Please enter new IPv4 address for interface eth0:  
192.0.2.50



**NOTE:** All nodes that you configure in a cluster (fabric) must be in the same subnet.

c. Type the subnet mask for the IPv4 address and press Enter.

Please enter new IPv4 subnet mask for interface eth0:  
255.255.0.0

d. Type the IPv4 address of the default gateway for the eth0 Ethernet interface in dotted-decimal notation and press Enter.

Enter the default IPv4 gateway as a dotted-decimal IP Address:  
192.0.2.150

- To configure both IPv4 and IPv6 addresses:

a. Type 2.

b. Type the IPv4 address for the eth0 interface in dotted-decimal notation and press Enter.

Please enter new IPv4 address for interface eth0  
192.0.2.50

- c. Type a subnet mask for the IPv4 address in dotted-decimal notation and press Enter.

```
Please enter new IPv4 subnet mask for interface eth0:
255.255.0.0
```

- d. Type the IPv4 address of the default gateway for the eth0 interface in dotted-decimal notation and press Enter.

```
Enter the default IPv4 gateway as a dotted decimal IP Address:
192.0.2.150
```

- e. Type the IPv6 address and prefix for the eth0 interface and press Enter.

```
Please enter new IPv6 address with prefix (IPv6 Address/prefix) for
interface eth0:
2001:db8:0:1:192:0:2:50/64
```



**NOTE:** If you configure an IPv6 address for the eth0 interface, you must configure an IPv6 address for the name server.

- f. Type the IPv6 address of the default gateway for the eth0 interface and press Enter.

```
Enter the IPv6 gateway:
2001:db8:0:1:192:0:2:150
```

9. Type the IPv4 address of the name server for the eth0 interface and press Enter.

```
Please type the IPv4 nameserver address in dotted decimal notation:
192.0.2.10
```

10. Type the IPv6 address of the name server for the eth0 interface and press Enter.

```
Please type the IPv6 nameserver address:
2001:db8:0:1:192:0:2:10
```

11. Specify whether you want to configure the eth3 Ethernet interface.

```
Configure a separate interface for device management? [y/n]
```



---

**NOTE:**

- On a Junos Space fabric with two or more Junos Space nodes, if you configure the eth3 interface as the device management interface on one Junos Space node, then you must also configure the eth3 interface as the device management interface on all the other Junos Space nodes in that fabric.
  - When you configure the eth3 interface as the device management interface, the IP addresses of the eth0 and eth3 Ethernet interfaces must be in different subnets.
- 

- Type Y if you want to use a different Ethernet interface (eth3) to manage devices.

Configuring device management interface eth3:

```
1> Configure IPv4
2> Configure IPv6
3> Configure Both IPv4 and IPv6
```

```
R> Redraw Menu
```

Choice [1-3,R]:

- To configure the IPv4 address of the eth3 interface:
  - a. Type 1.
  - b. Type the IPv4 address for eth3 interface in dotted-decimal notation and press Enter.

```
Please enter new IPv4 address for interface eth3:
192.0.2.25
```

- c. Type the new subnet mask of the IPv4 address in dotted-decimal notation and press Enter.

```
Please enter new IPv4 subnet mask for interface eth3:
255.255.0.0
```

- d. Type the IPv4 address of the default gateway for the eth3 Ethernet interface in dotted-decimal notation and press Enter.

```
Enter the default IPv4 gateway for this interface:
192.0.2.155
```

- e. Type the IPv4 address of the name server for the eth3 interface and press Enter.

```
Please type the IPv4 nameserver address in dotted decimal notation:
192.0.2.22
```

- To configure the IPv6 address of the eth3 interface:

- a. Type **2**.

- b. Type the IPv6 address with prefix for the eth3 interface.

Please enter new IPv6 address with prefix (IPv6 Address/prefix) for interface eth3:  
2001:db8:20:1:192:20:2:50/64

- c. Type the IPv6 address of the default gateway for the eth3 interface.

Enter the default IPv6 gateway for this interface:  
2001:db8:20:1:192:20:2:150

- d. Type the IPv6 address of the name server for the eth3 interface and press Enter.

Please type the IPv6 nameserver address:  
2001:db8:20:1:192:0:2:10

- To configure both IPv4 and IPv6 addresses:

- a. Type **3**.

- b. Type the IPv4 address for the eth3 interface in dotted-decimal notation and press Enter.

Please enter new IPv4 address for interface eth3:  
192.0.2.25

- c. Type a subnet mask for the IPv4 address in dotted-decimal notation and press Enter.

Please enter new IPv4 subnet mask for interface eth3:  
255.255.0.0

- d. Type the IPv4 address of the default gateway for the eth3 interface in dotted-decimal notation and press Enter.

Enter the default IPv4 gateway for this interface:  
192.0.2.155

- e. Type the IPv6 address and prefix for the eth3 interface and press Enter.

Please enter new IPv6 address with prefix (IPv6 Address/prefix) for interface eth3:  
2001:db8:20:1:192:20:2:50/64



**NOTE:** You must provide an IPv6 address for the name server if you configure an IPv6 address for the eth3 interface.

- f. Type the IPv6 address of the default gateway for the eth3 interface and press Enter.

Enter the default IPv6 gateway for this interface:  
2001:db8:20:1:192:20:2:150

- g. Type the IPv4 address of the name server for the eth3 interface and press Enter.

Please type the IPv4 nameserver address in dotted decimal notation:  
192.0.2.22

- h. Type the IPv6 address of the name server for the eth3 interface and press Enter.

Please type the IPv6 nameserver address:  
2001:db8:20:1:192:0:2:10

- Type **N** if you want to use only the Ethernet interface eth0 to manage devices and the Junos Space Web clients.
12. Specify whether you want to configure the node as a standalone node or you want to add it to an existing cluster.

Will this Junos Space system be added to an existing cluster? [y/n]

- To add the node to an existing cluster, type **y**.

A summary of the configured settings is displayed.

#### Settings Summary

```
> IPv4 Change: eth0 is 192.0.2.50 / 255.255.0.0
> Default IPv4 Gateway = 192.0.2.150 on eth0
> IPV6 Change: eth0 is 2001:db8:0:1:192:0:2:50 / 64
> Default IPv6 Gateway = 2001:db8:0:1:192:0:2:150 on eth0
> IPv4 DNS add: 192.0.2.10
> DNS add: 2001:db8:0:1:192:0:2:10
> Node to be added to existing cluster
.
```

```
A> Apply settings
C> Change settings
Q> Quit and set up later
R> Redraw menu
```

Choice [ACQR]:

Go to step [20](#).

- To configure the node as a standalone node, type **n**.

You are prompted to enter the IP address for Web access.

Configuring IP address for web GUI:

1> Configure Both IPv4 and IPv6



R> Redraw Menu

Choice [1,R]: 1



**NOTE:** If you configure only an IPv4 address for the eth0 interface, you are provided with an option to configure only the IPv4 address for Web access.

13. Type 1 to configure the IPv4 and IPv6 addresses that will be used to access Junos Space Network Management Platform through a browser.



**NOTE:** The IP address for Web access must be in the same subnet as the IP address for the eth0 interface, but must be a different IP address.

14. Type the IPv4 address in dotted-decimal notation and press Enter.

Please enter IPv4 address for web GUI:  
192.0.2.75

15. Type the IPv6 address and press Enter.

Please enter new IPv6 address for web GUI:  
2001:db8:0:1:192:0:3:50

You are prompted to specify whether you want to configure the NTP server.

16. • Configure the NTP server and time for the Junos Space node:

Add NTP Server? [y/n]

- a. To skip configuring the NTP server, type **n**.

The current time of the Space node is displayed. You can edit the time or leave it as is.

- b. Press Enter.

You are prompted to enter a display name for the node.

Please enter display name for this node:

Go to step 17.

- To configure the NTP server:

- a. Type **y** to synchronize the node with an external NTP server and press Enter.

You are prompted to enter the new NTP server.

- b. Enter the IP address or the URI of the NTP server.

Please type the new NTP server: device1.example.com

On successful addition of the NTP server, a message appears as shown in the following sample:

Added device1.example.com

You are prompted to enter a display name for the node.

17. Type a display name for this node and press Enter.

Please enter display name for this node: jsnode1

This is the name that Junos Space displays for the first node in a Junos Space cluster.

18. Type the password for cluster maintenance mode and press Enter.

Enter password for cluster maintenance mode:



NOTE:

- You can choose a password that is at least eight characters long and contains characters from at least three of the following four character classes: uppercase letters, lowercase letters, numbers (0 through 9), and special characters. Ab(3)def, o0\*wwrty, and 9Rtsgukj are some examples of valid password for maintenance mode.
- When you configure the other nodes in a cluster (fabric), you are not prompted to enter a maintenance-mode password. The maintenance-mode password that you specify when you configure the first node of the cluster is applicable to all other nodes in that cluster (fabric); in other words, the entire cluster of nodes has the same maintenance-mode password.

You are prompted to retype the password.

Re-enter password:

19. Retype the password for cluster maintenance mode and press Enter.

The Settings Summary is displayed, as shown in the following example:

Settings Summary:

```
> IPv4 Change: eth0 is 192.0.2.50 / 255.255.0.0
> Default IPv4 Gateway = 192.0.2.150 on eth0
> IPV6 Change: eth0 is 2001:db8:0:1:192:0:2:50 / 64
> Default IPv6 Gateway = 2001:db8:0:1:192:0:2:150 on eth0
> IPv4 DNS add: 192.0.2.10
> DNS add: 2001:db8:0:1:192:0:2:10
> IPv4 Change: eth3 is 192.0.2.25 / 255.255.0.0
> Default IPv4 Gateway = 192.0.2.155 on eth0
```

```

> IPV6 Change: eth3 is 2001:db8:20:1:192:0:2:50 / 64
> Default IPv6 Gateway = 2001:db8:20:1:192:0:2:150 on eth3
> IPv4 DNS add: 192.0.2.75
> DNS add: 2001:db8:20:1:192:0:2:10
> Create as first node or standalone
> Web IPv4 address 192.0.2.75
> Web IPv6 address is 2001:db8:0:1:192:0:3:50/64
> NTP add: device1.example.com
> Node display name is "jsnode1"
> Password for Junos Space maintenance mode is set.

```

```

A> Apply settings
C> Change settings
Q> Quit and set up later
R> Redraw Menu

```

Choice [ACQR]:

20. Check whether the information in the Settings Summary is correct:

- If the summary information is correct, type **A** to apply the settings.

The Junos Space Settings Menu is displayed, as shown in the following example:

Junos Space Settings Menu

```

1> Change Password
2> Change Network Settings
3> Change Time Options
4> Retrieve Logs
5> Security
6> Expand VM Drive Size
7> (Debug) run shell

```

```

A> Apply Settings
Q> Quit
R> Redraw Menu

```

Choice [1-7,QR]:

- If the summary information is not correct, type **C** to change the settings.

You are prompted to reenter all the basic configuration information that you have configured up to this point.

21. (Optional) Expand the VM drive size.



**NOTE:** Before expanding the VM drive size, ensure enough disk space is available on the host for allocation to the partitions of the virtual appliance. If no free space is available on the host for allocation, the **No free disk space** message appears and the Junos Space Settings Menu is displayed.

- Type **6** to expand the VM drive size.
- Enter the admin password.

The following caution appears:

-----Caution-----

Expanding Disk drives would restart Jboss processes, all the GUI users would be logged out automatically

Note: This will cause Space Fabric to failover to other node.

- c. Type **y** to continue expanding the drive size or type **n** to return to the Junos Space Settings Menu.

Do you want to continue? [y/n]

y

If you type y, you are prompted to specify the partition that you want to expand.

- d. Enter the number present against the partition that you want to expand; for example, type **1** to expand the / partition or **5** to quit expanding disks and return to the Junos Space Settings Menu.

Begin to stop Jboss and MySQL...

Service Jboss and MySQL stopped

Which partition do you want to expand?

- 1) /
- 2) /var
- 3) /var/log
- 4) /tmp
- 5) Quit

Select a partition: 1

The free space that can be allocated is displayed and you are prompted to enter the space that you want to allocate to the partition.

Current disk partition size of / is 22G

Total 4.97G free disk space can be allocated

- e. Enter the additional disk space that you want to allocate.

You can enter the disk space in megabytes (M), gigabytes (G), or terabytes (T).

Do not add a space between the number and the unit; for example, enter 50M and not 50 M, 10G and not 10 G, and so on.

How much additional disk space is to be added(Acceptable suffixes: M|G|T):

1M

You are prompted whether you want to expand more drives.

Increasing size of LV /dev/jmpvgnocf/lvroot

Extending logical volume lvroot to 22.59 GB

Logical volume lvroot successfully resized

Resizing / onto new space, this will take a few minutes

resize4fs 1.41.12 (17-May-2010)

```
Filesystem at /dev/jmpvgnocf/lvroot is mounted on /; on-line resizing
required
old desc_blocks = 2, new_desc_blocks = 2
Performing an on-line resize of /dev/jmpvgnocf/lvroot to 5922816 (4k) blocks.
The filesystem on /dev/jmpvgnocf/lvroot is now 5922816 blocks long.
```

```
4.94G free disk space available
Do you want to expand more disks? [y/N]
```

- f. Type **y** to continue adding disk space or **n** to return to the Junos Space Settings Menu.

When you type **n**, the JBoss and MySQL processes that were stopped are resumed. If the VM drive size was expanded on a primary node, the node becomes secondary when it comes up.

22. Type **Q** and press Enter to exit the Junos Space Settings Menu.

The configuration of the Junos Space Virtual Appliance is now complete. It takes approximately 20 to 30 minutes after the configuration for the Junos Space Network Management Platform GUI to be up. You can access the Junos Space Network Management Platform by using a Web browser. Use **super** as the default username and **juniper123** as the password.



#### NOTE:

- If you have specified that the Junos Space node is the first node in the fabric or a standalone node, you can access Junos Space Network Management Platform by typing the IP address configured for the Web GUI in a browser.
- If you have specified that the Junos Space node is part of an existing cluster (fabric), then you must add the Junos Space node to the Junos Space fabric using the Junos Space Network Management Web GUI. For more information, see the *Adding a Node to an Existing Junos Space Fabric* topic in the *Junos Space Network Management Platform User Guide* (available at <http://www.juniper.net/techpubs>).

## Configuring the eth1 Ethernet Interface

You use the eth1 Ethernet interface as the administrative interface for a Junos Space node. Configure the eth1 interface after the Junos Space node reboots after completing the basic configuration.



#### NOTE:

- The eth1 interface must be configured separately for each node in a multinode fabric.
- If you configure the eth1 interface, SSH is disabled on the eth0 and the eth3 interfaces. You can then access the CLI of the Junos Space Virtual Appliance only through the eth1 interface.

To configure the eth1 interface:

1. On the Junos Space Settings Menu, type **7** to access the shell.  
You are prompted to enter your password.
2. Type your password and press Enter.  
The shell prompt appears.
3. At the shell prompt, type **jmp\_config** and press Enter.  
You are prompted to enter the IP address of the eth1 interface.
4. Type the IP address of the eth1 interface in dotted-decimal notation and press Enter.  
The IP address can be in the same subnet as the virtual IP (VIP) address or in a different subnet. If the IP address is not in the same subnet as the VIP address, you are prompted to enter the subnet mask and then the default gateway for the eth1 interface.
5. (Optional) Type the subnet mask for the eth1 interface in dotted-decimal notation and press Enter.
6. (Optional) Type the default gateway in dotted-decimal notation and press Enter.  
The eth1 interface is configured.
7. To verify that the eth1 address is configured, run the **ifconfig eth1** command and check that the IP address displayed for eth1 is the same as the one that you configured.  
You can now access the Junos Space node through the eth1 interface to perform administrative tasks.

To troubleshoot issues in configuring the eth1 interface, refer to the `/var/log/changeEth1.log` file.

#### Related Documentation

- [Logging In to Junos Space](#)
- [Ethernet Interfaces in a Junos Space Virtual Appliance Overview on page 14](#)
- [Changing the Network and System Settings of a Junos Space Virtual Appliance on page 63](#)
- [Junos Space Virtual Appliance Overview on page 13](#)
- [Configuring a Junos Space Virtual Appliance as a Standalone or Primary FMPM Node on page 47](#)
- [Configuring a Junos Space Virtual Appliance as a Backup or Secondary FMPM Node for High Availability on page 55](#)
- [Deploying a Junos Space Virtual Appliance on a VMware ESX or VMware ESXi Server on page 20](#)

## Configuring a Junos Space Virtual Appliance as a Standalone or Primary FMPM Node

You can configure a Junos Space Appliance as a Junos Space node or as a specialized network monitoring node used for fault monitoring and performance monitoring (FMPM). An FMPM node can be configured as a standalone or primary FMPM node, or as a secondary or backup FMPM node. The first FMPM node that you configure is always the standalone or primary node; this node performs fault and performance monitoring of the devices and nodes, and any events or alarms are stored in a PostgreSQL database on this node. This topic explains how you can configure a Junos Space Virtual appliance as a primary FMPM node.



**NOTE:** You must have at least one Junos Space node already configured to add an FMPM node in a cluster.

To configure a Junos Space Virtual Appliance as a standalone or primary FMPM node, you must configure basic network and system settings to make the node accessible on the network.



**NOTE:** From Junos Space Network Management Platform Release 14.1R2 onward, you can configure Junos Space Ethernet interfaces with only IPv4 addresses, or both IPv4 and IPv6 addresses.

Before you begin, ensure that you have the following information available:

- IPv4 address and subnet mask for the eth0 Ethernet interface
- (Optional) IPv6 address and prefix for the eth0 Ethernet interface
- IPv4 address of the default gateway
- (Optional) IPv6 address of the default gateway
- IPv4 address of the name server
- (Optional) IPv6 address of the name server
- Virtual IP (VIP) address of the FMPM nodes in IPv4 and IPv6 formats

The VIP address is used for communications between Junos Space nodes and FMPM nodes. This IP address must be in the same subnet as the IP address assigned to the eth0 Ethernet interface, and the VIP address must be different from the VIP address used to access the Web GUI.

- IPv4 address or URI of NTP source to synchronize time
- (Optional) IPv4 address of the eth1 Ethernet interface.

If the IP address of the eth1 interface is not in the same subnet as the VIP address, ensure that you have the subnet mask and the default gateway for the eth1 interface.

To configure the virtual appliance as the first or primary FMPM node, do the following:

1. Using a virtual machine client (such as VMware vSphere Client or Virtual Machine Manager [VMM]), log in and power on the Junos Space Virtual Appliance.
2. Access the console on the virtual machine client to view the Junos Space login prompt.
3. At the Junos Space login prompt, type **admin** as your default login name and press Enter.
4. Type **abc123** as your default password and press Enter.  
Junos Space prompts you to change your default password.
5. Type the default password again and press Enter.
6. Type the new password and press Enter.



**NOTE:** You can choose a password that is at least eight characters long and contains characters from at least three of the following four character classes: uppercase letters, lowercase letters, numbers (0 through 9), and special characters.

However, if a password satisfies the preceding criteria but contains only a single uppercase letter at the beginning or only a single number at the end, then that password is considered invalid. For example, Abcdwip9, Qc9rdiwt, and bRfjvin9 are invalid passwords, but AAbcdwip99, Qc9rdiwtQ, and bRfjvin99 are valid passwords.

Alternatively, instead of using a string of characters, you can choose a passphrase that is between 16 and 40 characters long and contains at least three dictionary words separated by at least one special character. For example, big#three;fork (14 characters long) and circlefaceglass (no special characters) are invalid passphrases, but @big#three;fork& and circle;face;glass are valid passphrases.

Passwords and passphrases are case-sensitive.

7. Retype your new password.

If the password is changed successfully, the message **passwd: all authentication tokens updated successfully.** is displayed.

8. Type **F** to configure the virtual appliance as a standalone or primary FMPM node and press Enter when prompted Choose the type of node to be installed.

Choose the type of node to be installed [S/F] F



## 9. Configure the IP address of the eth0 Ethernet interface.

This IP address will be used as the IP address of the FMPM node.

Configuring Eth0 :

```
1> Configure IPv4
2> Configure Both IPv4 and IPv6
```

```
R> Redraw Menu
```

Choice [1-2,R]:

- To configure the IPv4 address of the eth0 interface:
  - a. Type 1.
  - b. Type the IPv4 address for the eth0 interface in dotted-decimal notation and press Enter.

```
Please enter new IPv4 address for interface eth0:
192.0.2.25
```



**NOTE:** All nodes that you configure in a cluster (fabric) must be in the same subnet.

- c. Type the new subnet mask for the IPv4 address and press Enter.

```
Please enter new IPv4 subnet mask for interface eth0:
255.255.0.0
```

- d. Type the IP address of the default gateway for the eth0 Ethernet interface in dotted-decimal notation and press Enter.

```
Enter the default IPv4 gateway as a dotted-decimal IP address:
192.0.2.155
```

- To configure both IPv4 and IPv6 addresses:
  - a. Type 2.
  - b. Type the IPv4 address for the eth0 interface in dotted-decimal notation and press Enter.
 

```
Please enter new IPv4 address for interface eth0
192.0.2.25
```
  - c. Type a subnet mask for the eth0 interface in dotted-decimal notation and press Enter.
 

```
Please enter new IPv4 subnet mask for interface eth0:
```

255.255.0.0

- d. Type the IPv4 address of the default gateway for the eth0 interface in dotted-decimal notation and press Enter.

Enter the default IPv4 gateway as a dotted-decimal IP address:  
192.0.2.155

- e. Type the IPv6 address and prefix for the eth0 interface and press Enter.

Please enter new IPv6 address with prefix (IPv6 Address/prefix) for interface eth0:  
2001:db8:10:1:192:10:2:50/64

- f. Type the IPv6 address of the default gateway for the eth0 interface and press Enter.

Enter the IPv6 gateway:  
2001:db8:0:1:192:10:2:150

10. Type the IPv4 address of the name server and press Enter.

Please type the IPv4 nameserver address in dotted decimal notation:  
192.0.2.15

11. Type the IPv6 address of the name server and press Enter.

Please type the IPv6 nameserver address:  
2001:db8:0:1:192:10:2:10

12. Type **P** when prompted Choose the role for this FMPM specialized node [P/B].

The FMPM node can be configured as follows:

- (P)rimary - Standalone or first FMPM node in an FMPM high availability pair
- (B)ackup - Backup FMPM node in an FMPM high availability pair

Choosing P installs the node as a standalone FMPM node or the primary node in an FMPM HA setup. This node performs fault and performance monitoring of the devices and nodes, and any events or alarms is stored in a PostgreSQL database on this node.

13. Configure the IP address for the FMPM service.

This IP address is the VIP address of the FMPM nodes and is used for communication between the Junos Space nodes and the FMPM nodes.



**NOTE:** The FMPM service IP address and the FMPM node IP address should be in the same subnet.

---

Configuring IP address for FMPM service:

1> Configure Both IPv4 and IPv6

R> Redraw Menu

Choice [1,R]:



**NOTE:** If you configure only an IPv4 address for the eth0 interface, you are provided with an option to configure only the IPv4 address for the FMPM service.

a. Type **1** to configure the IPv4 and IPv6 addresses for the FMPM service.

b. Type the IPv4 address for the FMPM service and press Enter.

Please enter IPv4 address for FMPM service:  
192.0.2.75

c. Type the IPv6 address for the FMPM service and press Enter.

Please enter new IPv6 address for FMPM service  
2001:db8:0:1:192:10:3:50

14. Add an NTP server to synchronize the node with an external NTP source or specify the current time for the FMPM node.

- To add an NTP server, type **y**, enter the hostname of the NTP server when prompted, and press Enter.
- To specify the current time (UTC), type **n**, enter the time, and press Enter.

The settings summary is displayed, as shown in the following example:

```
> IPv4 Change: eth0 is 192.0.2.25 / 255.255.0.0
> Default IPv4 Gateway = 192.0.2.155 on eth0
> IPv6 Change: eth0 is 2001:db8:0:1:192:10:2:50 / 64
> Default IPv6 Gateway = 2001:db8:0:1:192:10:2:150 on eth0
> IPv4 DNS add: 192.0.2.15
> DNS add: 2001:db8:0:1:192:10:2:10
> Create as first node or standalone
> FMPM service IPv4 address is 192.0.2.75
> Web IPv6 address is 2001:db8:0:1:192:10:3:50/64
> NTP add: device1.example.com
> Node display name will be set when it is added.
> This node will be the primary FMPM specialized node.
```

```
A> Apply settings
C> Change settings
Q> Quit and set up later
R> Redraw Menu
```

Choice [ACQR]:4

15. Confirm that the information in the Settings Summary is correct:

- If all summary information is correct, enter **A** to apply the settings.

- If any summary information is incorrect, enter **C** to change the settings.

If you enter **C**, you are prompted to retype all the basic configuration information that you have configured up to this point.

16. Expand the VM drive size.

Expand the /var partition by 120 GB.



**NOTE:** Before expanding the VM drive size for an FMPM node, ensure that enough disk space is available on the host for allocation to the partitions. If no free space is available for allocation, the **No free disk space** message appears and the Junos Space Settings Menu is displayed.

The minimum disk space required for the /var partition is 120 GB.

- a. Type **6** to expand the VM drive size.

- b. Enter the admin password.

The following caution appears:

-----Caution-----

Expanding Disk drives would restart Jboss processes, all the GUI users would be logged out automatically

Note: This will cause Space Fabric to failover to other node.

- c. Type **y** to continue expanding the drive size or type **n** to return to the Junos Space Settings Menu.

Do you want to continue? [y/n]

y

If you type **y**, you are prompted to specify the partition that you want to expand.

- d. Enter the number present against the partition that you want to expand; for example, type **2** to expand the **/var** partition or **5** to quit expanding disks and return to the Junos Space Settings Menu.

The free space that can be allocated is displayed and you are prompted to enter the space that you want to allocate to the partition.

Begin to stop Jboss ...

Service Jboss stopped

Which partition do you want to expand?

- 1) /
- 2) /var
- 3) /var/log
- 4) /tmp
- 5) Quit

Select a partition: 1

- e. Type the additional disk space that you want to allocate and press Enter.

You can enter the disk space in megabytes (M), gigabytes (G), or terabytes (T). Do not add a space between the number and the unit; for example, 50M and not 50 M, 10G and not 10 G, and so on.

```
Current disk partition size of / is 22G
Total 4.97G free disk space can be allocated
```

```
How much additional disk space is to be added(Acceptable suffixes: M|G|T):
1M
```

You are prompted whether you want to expand more drives.

```
Increasing size of LV /dev/jmpvgnocf/lvroot
  Extending logical volume lvroot to 22.59 GB
  Logical volume lvroot successfully resized
Resizing / onto new space, this will take a few minutes
resize4fs 1.41.12 (17-May-2010)
Filesystem at /dev/jmpvgnocf/lvroot is mounted on /; on-line resizing
required
old desc_blocks = 2, new_desc_blocks = 2
Performing an on-line resize of /dev/jmpvgnocf/lvroot to 5922816 (4k) blocks.
The filesystem on /dev/jmpvgnocf/lvroot is now 5922816 blocks long.

4.94G free disk space available
Do you want to expand more disks? [y/N]
N
```

- f. Type **y** to continue adding disk space or **N** to return to the Junos Space Settings Menu.

When you type **N**, the JBoss processes that were stopped are resumed. If the VM drive size was expanded on a primary node, the node becomes secondary when it comes up.

17. Type **Q** to exit the Junos Space Settings Menu.

The FMPM node is ready to be added to the space cluster. See [“Adding a Node to an Existing Junos Space Fabric” on page 97](#) for information about adding a node to the Junos Space cluster.

### Configuring the eth1 Ethernet Interface

You use the eth1 Ethernet interface as the administrative interface for the FMPM node. When the FMPM node reboots after the basic configuration, configure the eth1 interface.



---

**NOTE:**

- From Junos Space Network Management Platform Release 14.1R1 onward, you can configure the eth1 Ethernet interface as an administrative interface.
  - The eth1 interface must be configured separately for each node in a multinode fabric.
  - If you configure the eth1 interface, SSH is disabled on the eth0 interface. You can then access the CLI of the Junos Space Virtual Appliance only through the eth1 interface.
- 

To configure the eth1 interface:

1. On the Junos Space Settings Menu, type **7** to access the shell.  
You are prompted to enter your password.
2. Type your password and press Enter.  
The shell prompt appears.
3. At the shell prompt, type **jmp\_config** and press Enter.  
You are prompted to enter the IP address of the eth1 interface.
4. Type the IP address of the eth1 interface in dotted-decimal notation and press Enter.  
The IP address can be in the same subnet as the virtual IP (VIP) address or in a different subnet. If the IP address is not in the same subnet as the VIP address, you are prompted to enter the subnet mask and then the default gateway for the eth1 interface.
5. (Optional) Type the subnet mask for the eth1 interface in dotted-decimal notation and press Enter.
6. (Optional) Type the default gateway in dotted-decimal notation and press Enter.  
The eth1 interface is configured.
7. To verify that the eth1 address is configured, run the **ifconfig eth1** command and check that the IP address displayed for eth1 is the same as the one that you configured.  
You can now access the FMPM node through the eth1 interface to perform administrative tasks.

To troubleshoot issues in configuring the eth1 interface, refer to the `/var/log/changeEth1.log` file.

**Related Documentation**

- [Configuring a Junos Space Virtual Appliance as a Junos Space Node on page 33](#)

- [Configuring a Junos Space Virtual Appliance as a Backup or Secondary FMPM Node for High Availability on page 55](#)
- [Ethernet Interfaces in a Junos Space Virtual Appliance Overview on page 14](#)
- [Changing the Network and System Settings of a Junos Space Virtual Appliance on page 63](#)

## Configuring a Junos Space Virtual Appliance as a Backup or Secondary FMPM Node for High Availability

You can configure a Junos Space Appliance as a Junos Space node or as a specialized network monitoring node used for fault monitoring and performance monitoring (FMPM).

An FMPM node can be configured as a standalone or primary FMPM node, or as a secondary or backup FMPM node. The first FMPM node that you configure is always the standalone or primary node; this node performs fault and performance monitoring of the devices and nodes, and any events or alarms are stored in a PostgreSQL database on this node. The second FMPM node that you configure is the backup or secondary FMPM node. The PostgreSQL database containing the fault and performance monitoring data is replicated from the primary FMPM node to the secondary FMPM node. When the primary node is down or being rebooted, the secondary node automatically assumes charge.

A primary and a secondary FMPM node are referred to as a cluster or a team; therefore, an FMPM team can consist of a maximum of two nodes.



**NOTE:** You must have at least one Junos Space node, and a primary FMPM node, before you configure a secondary FMPM node.

To configure a Junos Space Virtual Appliance as a backup or secondary FMPM node, you must configure basic network and system settings to make the node accessible on the network.



**NOTE:** From Junos Space Network Management Platform Release 14.1R2 onward, you can configure Junos Space Ethernet interfaces with only IPv4 addresses, or both IPv4 and IPv6 addresses.

Before you begin, ensure that you have the following information available:

- IPv4 address and subnet mask for the eth0 Ethernet interface
- (Optional) IPv6 address and prefix for the eth0 Ethernet interface
- IPv4 address of the default gateway
- (Optional) IPv6 address of the default gateway
- IPv4 address of the name server

- (Optional) IPv6 address of the name server
- Virtual IP (VIP) address of the FMPM nodes in IPv4 and IPv6 formats

The VIP address is used for communications between Junos Space nodes and FMPM nodes. This IP address must be in the same subnet as the IP address assigned to the eth0 Ethernet interface, and the VIP address must be different from the VIP address used to access the Web GUI.

- (Optional) IPv4 address of the eth1 Ethernet interface

If the IP address of the eth1 interface is not in the same subnet as the VIP address, ensure that you have the subnet mask and the default gateway for the eth1 interface.

To add a second or backup FMPM node to the Junos Space cluster, follow these steps:

1. Using a virtual machine client (such as VMware vSphere Client or Virtual Machine Manager [VMM]), log in and power on the Junos Space Virtual Appliance.
2. Access the console on the virtual machine client to view the Junos Space login prompt.
3. At the Junos Space login prompt, type **admin** as your default login name and press Enter.
4. Type **abc123** as your default password and press Enter.  
Junos Space prompts you to change your default password.
5. Type the default password again and press Enter.
6. Type the new password and press Enter.





**NOTE:** You can choose a password that is at least eight characters long and contains characters from at least three of the following four character classes: uppercase letters, lowercase letters, numbers (0 through 9), and special characters.

However, if a password satisfies the preceding criteria but contains only a single uppercase letter at the beginning or only a single number at the end, then that password is considered invalid. For example, Abcdwip9, Qc9rdiwt, and bRfjvin9 are invalid passwords, but AAbcdwip99, Qc9rdiwtQ, and bRfjvin99 are valid passwords.

Alternatively, instead of using a string of characters, you can choose a passphrase that is between 16 and 40 characters long and contains at least three dictionary words separated by at least one special character. For example, big#three;fork (14 characters long) and circlefaceglass (no special characters) are invalid passphrases, but @big#three;fork& and circle;face;glass are valid passphrases.

Passwords and passphrases are case-sensitive.

#### 7. Retype your new password.

If the password is changed successfully, the message **passwd: all authentication tokens updated successfully.** is displayed.

#### 8. Type **F** to configure the virtual appliance as a standalone or primary FMPM node and press Enter when prompted Choose the type of node to be installed.

Choose the type of node to be installed [S/F] F

#### 9. Configure the IP address of the eth0 Ethernet interface.

This IP address is used as the IP address of the FMPM node.

Configuring Eth0 :

```
1> Configure IPv4
2> Configure Both IPv4 and IPv6
```

```
R> Redraw Menu
```

```
Choice [1-2,R]:
```

- To configure the IPv4 address of the eth0 interface:
  - a. Type 1.
  - b. Type the IPv4 address for the eth0 interface in dotted-decimal notation and press Enter.

Please enter new IPv4 address for interface eth0:  
192.0.2.53



**NOTE:** All nodes that you configure in a cluster (fabric) must be in the same subnet.

- c. Type the new subnet mask for the IPv4 address and press Enter.

Please enter new IPv4 subnet mask for interface eth0:  
255.255.0.0

- d. Type the IP address of the default gateway for the eth0 Ethernet interface in dotted-decimal notation and press Enter.

Enter the default IPv4 gateway as a dotted-decimal IP address:  
192.0.2.155

- To configure both IPv4 and IPv6 addresses:

- a. Type 2.

- b. Type the IPv4 address for the eth0 interface in dotted-decimal notation and press Enter.

Please enter new IPv4 address for interface eth0  
192.0.2.53

- c. Type a subnet mask for the eth0 interface in dotted-decimal notation and press Enter.

Please enter new IPv4 subnet mask for interface eth0:  
255.255.0.0

- d. Type the IPv4 address of the default gateway for the eth0 interface in dotted-decimal notation and press Enter.

Enter the default IPv4 gateway as a dotted-decimal IP address:  
192.0.2.155

- e. Type the IPv6 address and prefix for the eth0 interface and press Enter.

Please enter new IPv6 address with prefix (IPv6 Address/prefix) for interface eth0:  
2001:db8:0:1:192:10:2:51/64

- f. Type the IPv6 address of the default gateway for the eth0 interface and press Enter.

Enter the IPv6 gateway:  
2001:db8:0:1:192:10:2:150

10. Type the IPv4 address of the name server and press Enter.

Please type the IPv4 nameserver address in dotted decimal notation:  
192.0.2.15

11. Type the IPv6 address of the name server and press Enter.

Please type the IPv6 nameserver address:  
2001:db8:0:1:192:10:2:10

12. Enter **B** when prompted Choose the role for this FMPM specialized node [P/B].

Choosing B installs the node as the secondary or backup node in an FMPM HA setup. The PostgreSQL database containing the fault and performance monitoring data is replicated from the master node to this node. When the master node is down or being rebooted, the backup node automatically assumes charge.

The settings summary is displayed, as shown in the following example:

```
1> IP Change: eth0 is 10.205.56.136 / 255.255.0.0
2> Default Gateway = 10.205.255.254 on eth0
3> DNS add: 10.209.194.14
4> This node will be the backup FMPM specialized node.

1> IPv4 Change: eth0 is 192.0.2.53 / 255.255.0.0
2> Default IPv4 Gateway = 192.0.2.155 on eth0
3> IPv6 Change: eth0 is 2001:db8:0:1:192:10:2:51 / 64
4> Default IPv6 Gateway = 2001:db8:0:1:192:10:2:150 on eth0
5> IPv4 DNS add: 192.0.2.15
6> DNS add: 2001:db8:0:1:192:10:2:10
8> This node will be the backup FMPM specialized node.
```

```
A> Apply settings
C> Change settings
Q> Quit and set up later
R> Redraw Menu
```

Choice [ACQR]:

13. Confirm that the information in the settings summary is correct:

- If all summary information is correct, enter **A** to apply the settings
- If any summary information is incorrect, enter **C** to change the settings

If you enter C, you are prompted to reenter all the basic configuration information that you have configured up to this point.

14. Expand the VM drive size.

Expand the /var partition by 120 GB.

- a. Type **6** to expand the VM drive size.



**NOTE:** Before expanding the VM drive size, ensure free disk space is available for allocation to the partitions. For information about adding disk resources, refer to [“Deploying a Junos Space Virtual Appliance on a VMware ESX or VMware ESXi Server”](#) on page 20.

The minimum disk space required for the /var partition is 120 GB.

- b. Enter the administrator password.

The following caution appears:

-----Caution-----

Expanding Disk drives would restart Jboss processes, all the GUI users would be logged out automatically

Note: This will cause Space Fabric to failover to other node.

- c. Type **y** to continue expanding the drive size or type **n** to return to the Junos Space Settings Menu.

Do you want to continue? [y/n]

y

If you type **y**, you are prompted to specify the partition that you want to expand.

- d. Enter the number present against the partition that you want to expand; for example, type **2** to expand the /var partition or **5** to quit expanding disks and return to the Junos Space Settings Menu.

The free space that can be allocated is displayed and you are prompted to enter the space that you want to allocate to the partition.

Begin to stop Jboss ...

Service Jboss stopped

Which partition do you want to expand?

- 1) /
- 2) /var
- 3) /var/log
- 4) /tmp
- 5) Quit

Select a partition: 1

- e. Enter the additional disk space that you want to allocate.

You can enter the disk space in megabytes (M), gigabytes (G), or terabytes (T).

Do not add a space between the number and the unit; for example, 50M and not 50 M, 10G and not 10 G, and so on.

```
Current disk partition size of / is 22G
Total 4.97G free disk space can be allocated
```

```
How much additional disk space is to be added(Acceptable suffixes: M|G|T):
1M
```

You are prompted whether you want to expand more drives.

```
Increasing size of LV /dev/jmpvgnocf/lvroot
  Extending logical volume lvroot to 22.59 GB
  Logical volume lvroot successfully resized
Resizing / onto new space, this will take a few minutes
resize4fs 1.41.12 (17-May-2010)
Filesystem at /dev/jmpvgnocf/lvroot is mounted on /; on-line resizing
required
old desc_blocks = 2, new_desc_blocks = 2
Performing an on-line resize of /dev/jmpvgnocf/lvroot to 5922816 (4k) blocks.
The filesystem on /dev/jmpvgnocf/lvroot is now 5922816 blocks long.

4.94G free disk space available
Do you want to expand more disks? [y/N]
N
```

- f. Type **y** to continue adding disk space or **n** to return to the Junos Space Settings Menu.

When you type **n**, the JBoss processes that were stopped are resumed. If the VM drive size was expanded on a primary node, the node becomes secondary when it comes up.

15. Type **Q** to exit the Junos Space Settings Menu.

The FMPM node is ready to be added to the Junos Space cluster. See [“Adding a Node to an Existing Junos Space Fabric” on page 97](#) for information about adding a node to the Junos Space cluster.

### Configuring the eth1 Interface

You use the eth1 Ethernet interface as the administrative interface for the FMPM node. When the FMPM node reboots after the basic configuration, configure the eth1 interface.



#### NOTE:

- From Junos Space Network Management Platform Release 14.1R1 onward, you can configure the eth1 Ethernet interface as an administrative interface.
- The eth1 interface must be configured separately for each node in a multinode fabric.
- If you configure the eth1 interface, SSH is disabled on the eth0 interface. You can then access the CLI of the Junos Space Virtual Appliance only through the eth1 interface.

To configure the eth1 interface:

1. On the Junos Space Settings Menu, type **7** to access the shell.

You are prompted to enter your password.

2. Type your password and press Enter.

The shell prompt appears.

3. At the shell prompt, type **jmp\_config** and press Enter.

You are prompted to enter the IP address of the eth1 interface.

4. Type the IP address of the eth1 interface in dotted-decimal notation and press Enter.

The IP address can be in the same subnet as the virtual IP (VIP) address or in a different subnet. If the IP address is not in the same subnet as the VIP address, you are prompted to enter the subnet mask and then the default gateway for the eth1 interface.

5. (Optional) Type the subnet mask for the eth1 interface in dotted-decimal notation and press Enter.

6. (Optional) Type the default gateway in dotted-decimal notation and press Enter.

The eth1 interface is configured.

7. To verify that the eth1 address is configured, run the **ifconfig eth1** command and check that the IP address displayed for eth1 is the same as the one that you configured.

You can now access the FMPM node through the eth1 interface to perform administrative tasks.

To troubleshoot issues in configuring the eth1 interface, refer to the **/var/log/changeEth1.log** file.

#### **Related Documentation**

- [Configuring a Junos Space Virtual Appliance as a Junos Space Node on page 33](#)
- [Configuring a Junos Space Virtual Appliance as a Standalone or Primary FMPM Node on page 47](#)
- [Ethernet Interfaces in a Junos Space Virtual Appliance Overview on page 14](#)
- [Changing the Network and System Settings of a Junos Space Virtual Appliance on page 63](#)

## Changing the Network and System Settings of a Junos Space Virtual Appliance

You can change some basic options that you configured when you first installed and set up your Junos Space Virtual Appliance. You can also change the default system time and retrieve system log files from your Junos Space Virtual Appliance.

Each time you log in from the Junos Space system console, the Junos Space Settings Menu is displayed as follows:

```
1> Change Password
2> Change Network Settings
3> Change Time Options
4> Retrieve Logs
5> Security
6> Expand VM Drive Size
7> (Debug) run shell
```

```
A> Apply changes
Q> Quit
R> Redraw Menu
```

Choice [1-7,AQR]:

Follow the system prompts from the menu to set or modify menu options. Password changes take effect immediately. Other configuration changes you make do not take effect until you apply the changes.



**NOTE:** An openNMS user does not have permission to modify the Junos Space Settings.

To change a Junos Space Virtual Appliance configuration, you must be a user with administrative privileges and already logged in to the Junos Space Virtual Appliance. You can perform the following tasks from the Junos Space Settings Menu:

- [Changing the admin User Password of a Junos Space Virtual Appliance on page 63](#)
- [Changing the Network Settings of a Junos Space Virtual Appliance on page 65](#)
- [Changing Time Options of a Junos Space Virtual Appliance on page 85](#)
- [Retrieving System Log Files from a Junos Space Virtual Appliance on page 88](#)
- [Expanding the Drive Size of a Junos Space Virtual Appliance on page 90](#)
- [Setting Security Options on a Junos Space Virtual Appliance on page 92](#)
- [Running Shell in a Junos Space Virtual Appliance on page 94](#)

### Changing the admin User Password of a Junos Space Virtual Appliance

You can change the admin user password used to log in to the Junos Space Network Management Platform.

To change the administrator password:

1. At the Junos Space Settings Menu prompt, type **1**.

The Change Password menu appears:

```
Change Password:
1> Change password for user admin
```

```
A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

Choice [1,AMR]:

2. Type **1** at the command prompt.

You are prompted for confirmation.

```
Password changes will take effect immediately
Change password for user admin? [y/N]
```

3. Type **y**.

You are prompted for the current administrator password.

```
Changing password for user admin.
Changing password for admin
(current) UNIX password:
```

4. Enter the current administrator password.

You are prompted to enter the new administrator password.

```
New UNIX password:
```

5. Enter the new password.

You can choose a password that is at least eight characters long and contains characters from at least three of the following four character classes: uppercase letters, lowercase letters, numbers (0 through 9), and special characters.

However, if a password satisfies the preceding criteria but contains only a single uppercase letter at the beginning or only a single number at the end, then that password is considered invalid. For example, Abcdwip9, Qc9rdiwt, and bRfjvin9 are invalid passwords, but AAbcdwip99, Qc9rdiwtQ, and bRfjvin99 are valid passwords.

Alternatively, instead of using a string of characters, you can choose a passphrase that is between 16 and 40 characters long and contains at least three dictionary words separated by at least one special character. For example, big#three;fork (14 characters long) and circlefaceglass (no special characters) are invalid passphrases, but @big#three;fork& and circle;face;glass are valid passphrases.

Passwords and passphrases are case-sensitive.

You are prompted to reenter the new password.



Retype new UNIX password:

6. Retype the new password.

The administrator password is updated and a confirmation message appears followed by the Junos Space Settings Menu.

passwd: all authentication tokens updated successfully.

## Changing the Network Settings of a Junos Space Virtual Appliance



NOTE:

- From Junos Space Network Management Platform Release 14.1R2 onward, you can configure Junos Space Ethernet interfaces with only IPv4 addresses, or both IPv4 and IPv6 addresses.
- For a multi-node fabric, we recommend that you modify the network settings by using the Junos Space Network Management Platform GUI.

From the Change Network Settings option of the Junos Space Settings Menu, you can perform the following tasks on a Junos Space Virtual Appliance:

- [Adding a DNS Server on page 66](#)
- [Deleting a DNS Server on page 67](#)
- [Modifying the Virtual IP Address on page 68](#)
- [Modifying the IP Address of the eth0 Interface on page 71](#)
- [Modifying the IP Address of the eth1 Interface on page 74](#)
- [Modifying the IP Address of the eth3 Interface on page 76](#)
- [Adding Static Routes to a Junos Space Virtual Appliance on page 80](#)
- [Deleting Static Routes from a Junos Space Virtual Appliance on page 83](#)

### Adding a DNS Server

---

You can add up to three DNS servers for a Junos Space installation. After each addition, you are redirected to the Junos Space Settings Menu.

To add a DNS server:

1. At the Junos Space Settings Menu prompt, type **2**.

The Change Network Settings menu appears.

```
Change Network Settings:
1> Set DNS Servers
2> Change IP Address of Space node
3> Change Static Routes
```

```
A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

Choice [1-3,AMR]:



**NOTE:** The Change IP Address of Space node option is not provided on the Change Network Settings menu for a standalone node.

2. Type **1** at the prompt.

The DNS name server options menu appears, as shown in the following sample:

```
DNS name server options:

1> Add an IPv4 nameserver
2> Add an IPv6 nameserver
3> Delete 192.0.2.10
4> Delete 2001:db8:0:1:192:0:2:10
```

```
A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

Choice [1-3,AMR]:

3. Type **1** to add the DNS server by entering the IP address in IPv4 format or type **2** to add the DNS server by entering the IP address in IPv6 format.
4. Type the IP address of the DNS server and press Enter.

Junos Space pings the DNS server. If it is unable to reach the server, it displays a message **Cannot ping ip address:**

```
Cannot ping 192.0.2.11
Use this address? [y/n]
```

5. Type **y** to continue adding the DNS server or **n** to return to the Junos Space Settings Menu.

If you type **y**, the change is queued and the Junos Space Settings Menu appears.

### Deleting a DNS Server

You can delete a DNS server if you no longer need it. Use the Set DNS Servers option of the Change Network Settings menu to delete the DNS server.

To delete a DNS server:

1. At the Junos Space Settings Menu prompt, type **2**.

The Change Network Settings menu appears.

```
Change Network Settings:
1> Set DNS Servers
2> Change IP Address of Space node
3> Change Static Routes
```

```
A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

Choice [1-3,AMR]:

2. Type **1** at the prompt.

The DNS name server options menu appears, as shown in the following example:

```
1> Add an IPv4 nameserver
2> Add an IPv6 nameserver
3> Delete 192.0.2.10
4> Delete 2001:db8:0:1:192:0:2:10
A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

Choice [1-2,AMR]:

3. Type the number present against the DNS server that you want to delete at the prompt; for example, **2**.

You are prompted to confirm that you want to delete the DNS server, as shown in the following sample:

```
Delete nameserver 192.0.2.11? [y/N]
```

4. Type **y** to delete the DNS server or **N** to cancel the operation and return to the Junos Space Settings Menu.

If you type **y**, the DNS server is removed and the Junos Space Settings Menu appears:

```
Removing nameserver 192.0.2.10
```

## Modifying the Virtual IP Address

---

You may need to modify the virtual IP (VIP) address of a Junos Space Virtual Appliance when you move it from one network to another. The virtual appliance reboots after the virtual IP address is modified. For nodes in a Junos Space fabric, you can modify a VIP address from any node in the fabric.



**NOTE:** The VIP address should be in the same subnet as the eth0 interface.

---

To modify the virtual IP (VIP) address of a Junos Space Virtual Appliance:

1. At the Junos Space Settings Menu prompt, type **2**.

The Change Network Settings menu appears:

```
Change Network Settings:
1> Set DNS Servers
2> Change IP Address of Space node
3> Change Static Routes
```

```
A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

Choice [1-3,AMR]: 2

2. Type **2** at the prompt.

The Change IP Address of Space Node menu appears.

```
Change IP Address of Space Node:
1> Change VIP
2> Change Node Management Interface
3> Change Device Management Interface
```

```
A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

Choice [1-3,AMR]: 1

3. Type **1** to change the VIP address.

The Change VIP menu appears:

```
Change VIP:
1> Configure IPv4
2> Configure IPv6
```

```
A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

Choice [1-2,AMR]:



**NOTE:** The Change Device Management Interface option is available only if a device management interface (eth3) was specified during the initial configuration of the appliance.

4. Modify the IP address:

- To modify the IPv4 address:

a. Type **1**.

A confirmation message appears.

Change the current VIP(ipv4):192.0.2.53? [y/N]

b. Type **y** to continue or **n** to return to the Junos Space Settings Menu.

If you type **y**, you are prompted to enter the new VIP address in dotted-decimal notation.

Please type VIP (IPv4) in dotted decimal notation:

c. Type the new VIP address in dotted-decimal notation and press Enter.

The VIP configuration change is queued and the Change IP Address of Space Node menu appears.

- To modify the IPv6 address:

a. Type **2**.

The Configuring IPv6 menu and the current IPv6 address configured for VIP are displayed.

```
Configuring IPv6 VIP:
Current VIP(ipv6): 2001:db8:0:1:192:0:3:50
```

```
1> Configure
2> Disable
```

```
A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

- i. Type **1** to enter the IPv6 address.
- ii. Type the new IPv6 address for the VIP and press Enter.

```
Please type new VIP(ipv6):
2001:db8:0:1:192:0:3:51
```

The following message appears.

```
VIP configuration change queued. When finished quit (A) to apply
changes, then the system will reboot automatically.
```

- i. Type **2** to disable the IPv6 address of the VIP.

A confirmation message appears:

```
All previously queued changes will be removed immediately. A change
to disable IPv6 VIP will be queued
```

```
Do you want to proceed? [y/N]
```



**WARNING:** If you disable the IPv6 address, the changes queued so far for the IPv6 configuration of VIP are discarded.

- ii. Type **y** to proceed or **N** to return to the Change IP Address of the Space Node menu.

If you type **y**, the following message is displayed followed by the Change IP Address of Space Node menu:

```
VIP configuration change queued. When finished quit (A) to apply
changes, then the system will reboot automatically.
```

- 5. Type **A** to apply the changes or type **M** to return to the Junos Space Settings Menu.

If you type **A**, the Junos Space Virtual Appliance reboots for the VIP address change to take effect.



**NOTE:** The reboot process can take about 20 minutes to complete.

### Modifying the IP Address of the eth0 Interface

You may need to modify the IP address of the node management interface (eth0) of a Junos Space Virtual Appliance when you move it from one network to another. The virtual appliance reboots after the eth0 interface IP address is modified.

To modify the node management interface (eth0) settings of a Junos Space Virtual Appliance:

1. At the Junos Space Settings Menu prompt, type 2.

The Change Network Settings menu appears:

```
Change Network Settings:
1> Set DNS Servers
2> Change IP Address of Space node
3> Change Static Routes
```

```
A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

Choice [1-3,AMR]: 2

2. Type 2 to change the IP address of the Junos Space Virtual Appliance.

The Change IP Address of Space Node menu appears.

```
Change IP Address of Space Node:
1> Change VIP
2> Change Node Management Interface
3> Change Device Management Interface
```

```
A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

Choice [1-3,AMR]: 2

3. Type 2 to change the eth0 settings.

The Change Node Management Interface menu appears:

```
Change Node Management Interface:
1> Configure IPv4
2> Configure IPv6
```

```
A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

Choice [1-2,AMR]: 2

4. Modify the IP address of the node management interface:

- To modify the IPv4 address:

- a. Type 1.

The current IPv4 address, network mask, and gateway configured for the eth0 interface and the option to configure the IPv4 address are displayed.

```
Current Node Management Interface IPv4:
      IP: 192.0.2.50
Netmask: 255.255.0.0
Gateway: 192.0.2.150
```

```
1> Configure
```

```
A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

```
Choice [1,AMR]: 1
```

- b. Type 1 to modify the IPv4 address of the eth0 interface.
- c. Type the new IPv4 address for the eth0 interface in dotted-decimal notation and press Enter.

```
Current IP: 192.0.2.50, please enter new IPv4 address:
192.0.2.100
```

- d. Type the netmask for the eth0 interface in dotted-decimal notation and press Enter.

```
Current Netmask: 255.255.0.0, please enter new Netmask:
255.255.0.0
```

- e. Type the IP address of the gateway in dotted-decimal notation and press Enter.

```
Current Gateway: 192.0.2.150, please enter new IPv4 Gateway:
192.0.2.150
```

You are prompted to enter the admin password.

- f. Type the admin password and press Enter.

The change for the IPv4 address of the eth0 interface is queued and the following confirmation message appears:

```
Node Management Interface IPv4 configuration change queued.
When finished quit (A) to apply changes, then the system will reboot
automatically.
```

- To modify the IPv6 address:



## a. Type 2.

The current IPv6 address, prefix, and gateway configured for the eth0 interface and the options to configure or disable the IPv6 address are displayed.

```
Current Node Management Interface IPv6 :
    IP: 2001:db8:0:1:192:0:2:50
    Prefix: 64
    Gateway: 2001:db8:0:1:192:0:2:150
```

```
1> Configure
2> Disable
```

```
A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

Choice [1-2,AMR]:

- i. Type 1 to configure the IPv6 address of the eth0 interface.
- ii. Type the new IPv6 address and prefix for the eth0 interface and press Enter.

```
Current IPv6: 2001:db8:0:1:192:0:2:50/64, please enter new IPv6
address with new Prefix (IPv6 address/prefix):
2001:db8:0:1:10:192:0:2:100/64
```

- iii. Type the IPv6 address of the gateway for the eth0 interface and press Enter.

```
Current IP: 2001:db8:0:1:192:0:2:150, please enter new IPv6 address:
2001:db8:0:1:192:0:2:150
```

The change to the IPv6 address of the eth0 interface is queued and the following confirmation message appears:

```
Node Management Interface IPv6 configuration change queued.
When finished quit (A) to apply changes, then the system will reboot
automatically
```

- i. Type 2 to disable the IPv6 address on the eth0 interface.

A confirmation message appears:

All previously queued changes will be removed immediately. A change to disable IPv6 on Node Management interface will be queued

Do you want to proceed? [y/N]



**WARNING:** If you disable the IPv6 address, the changes queued so far for the IPv6 address configuration of the eth0 interface are discarded.

- ii. Type **y** to proceed or **N** to return to the Change Node Management Interface menu.

If you type **y**, the following message is displayed followed by the Change IP Address of Space Node menu:

```
IPv6 address disabling on Node Management Interface is queued
When finished quit (A) to apply changes, then the system will reboot
automatically.
```

5. Type **A** to apply the changes or type **M** to return to the Junos Space Settings Menu.

If you type **A**, the Select a change to cancel it menu appears, as shown in the following sample:

```
Select a change to cancel it:
```

```
1> NodeIP:192.0.2.100, NodeMask: 255.255.0.0, NodeGateway: 192.0.2.150
2> NodeIP(v6): 2001:db8:0:1:192:0:2:100, NodePrefix(v6): 64, NodeGateway(v6):
    2001:db8:0:1:192:0:2:150
```

```
A> Apply all changes
M> Make more changes
C> Cancel all changes and quit
R> Redraw Menu
```

```
Choice [1-3,AMCR]: A
```

6. Type **A** to apply all the changes or type **C** to cancel modifying the IP address of the eth0 interface, or type a number from the menu to cancel the change. For example, type **2** to discard the IPv6 changes for the eth0 interface.

If you type **A**, the Junos Space Virtual Appliance reboots for the new eth0 interface settings to take effect.



**NOTE:** The reboot process can take about 20 minutes to complete.

---

### Modifying the IP Address of the eth1 Interface

---

You may need to modify the IP address of the eth1 interface of a Junos Space or an FMPM node when you move the Junos Space or FMPM node from one network to another.



**NOTE:**

- From Junos Space Network Management Platform Release 14.1R1 onward, you can configure the eth1 Ethernet interface as an administrative interface.
  - If you configure the eth1 interface, SSH is disabled on the eth0 and the eth3 interfaces. You can then access the CLI of the Junos Space virtual appliance only through the eth1 interface.
-

To modify the eth1 interface settings:

1. On the Junos Space Settings Menu, type **7** to access shell.  
You are prompted to enter your password.
2. Type your password and press Enter.  
The shell prompt appears.
3. At the shell prompt, type **jmp\_config** and press Enter.  
You are prompted to enter the IP address of the eth1 interface.
4. Type the IP address of the eth1 interface in dotted-decimal notation and press Enter.  
The IP address can be in the same subnet as virtual IP (VIP) address or in a different subnet. If the IP address is not in the same subnet as the VIP address, you are prompted to enter the subnet mask and then the default gateway for the eth1 interface.
5. (Optional) Type the subnet mask for the eth1 interface in dotted-decimal notation and press Enter.
6. (Optional) Type the default gateway in dotted-decimal notation and press Enter.  
The eth1 interface is configured.
7. To verify the modified IP address of the eth1 interface, run the **ifconfig eth1** command and check that the IP address displayed for eth1 is the same as that you modified.

### Modifying the IP Address of the eth3 Interface

---

You may need to modify the eth3 interface IP address of a Junos Space Virtual Appliance when you move it from one network to another. The virtual appliance reboots after the eth3 interface IP address is modified.



NOTE:

- On a Junos Space fabric with two or more Junos Space nodes, if you configure the eth3 interface as the device management interface on one Junos Space node, then you must also configure the eth3 interface as the device management interface on all the other Junos Space nodes in that fabric.
- When you configure the eth3 interface as the device management interface, the IP addresses of the eth0 and eth3 Ethernet interfaces must be in different subnets.

To modify the device management interface (eth3) settings of a Junos Space Virtual Appliance:

1. At the Junos Space Settings Menu prompt, type **2**.

The Change Network Settings menu appears:

```
Change Network Settings:
1> Set DNS Servers
2> Change IP Address of Space node
3> Change Static Routes

A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

Choice [1-3,AMR]: 2

2. Type **2** to change the IP address of the Junos Space Virtual Appliance.

The Change IP Address of Space node appears.

```
Change IP Address of Space node:
1> Change VIP
2> Change Node Management Interface
3> Change Device Management Interface

A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

Choice [1-3,AMR]: 3

3. Type **3** to change the Device Management Interface (eth3) settings.

The Change Device Management Interface menu appears.

Change Device Management Interface:

1> Configure IPv4  
2> Configure IPv6

A> Apply changes  
M> Return to Main Menu  
R> Redraw Menu

Choice [1-2,AMR]: 1

4. Modify the IP address of the device management interface:

- To modify the IPv4 address of the eth3 interface
  - a. Type 1.

The current IPv4 address, network mask, and gateway configured for the eth3 interface and the options to configure or disable the IPv4 address of the eth3 interface are displayed.

Current Device Management Interface IPv4 :  
IP: 192.0.2.60  
Netmask: 255.255.0.0  
Gateway: 192.0.2.158

1> Configure  
2> Disable

A> Apply changes  
M> Return to Main Menu  
R> Redraw Menu

Choice [1,AMR]:

- b. • i. Type 1 to modify the IPv4 address of the eth3 interface.
  - ii. Type the IPv4 address for the eth3 interface in dotted-decimal notation and press Enter.
 

Current IP: 192.0.2.60 please enter new IPv4 address:  
192.0.2.55
  - iii. Type the network mask for the eth3 interface in dotted-decimal notation and press Enter.
 

Current Netmask: 255.255.0.0, please enter new Netmask:  
255.255.0.0
  - iv. Type the IP address of the gateway in dotted-decimal notation and press Enter.
 

Current Gateway: 192.0.2.158, please enter new IPv4 Gateway:  
192.0.2.160
  - v. Type the admin password and press Enter.

The change for the IPv4 address of the eth3 interface is queued and the following confirmation message appears:

```
Device Management Interface IPv4 configuration change queued.
When finished quit (A) to apply changes, then the system will reboot
automatically.
```

- i. Type **2** to disable the IPv4 address on the eth3 interface.

A confirmation message appears:

```
All previously queued changes will be removed immediately.
Do you want to proceed? [y/n]
```



**WARNING:** If you choose to disable the IPv4 address on the eth3 interface, the changes queued so far for the IPv4 address configuration of the eth3 interface are discarded.

- ii. Type **y** to proceed or **n** to return to the Change Device Management Interface menu.

If you type **y**, the following message is displayed followed by the Change Device Management Interface menu:

```
IPv4 address disabling on Device Management Interface is queued
When finished quit (A) to apply changes, then the system will reboot
automatically.
```

- To modify the IPv6 address:

## a. Type 1.

The current IPv6 address configured for the eth3 interface is displayed followed by the options to configure and disable the IPv6 address.

```
Current Device Management Interface IPv6:
  IP: 2001:db8:20:192:0:2:50
  Prefix: 64
  Gateway: 2001:db8:20:1:192:0:2:150
```

```
1> Configure
2> Disable
```

```
A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

Choice [1-2,AMR]:

- i. Type 1 to configure the IPv6 address of the eth3 interface.

You are prompted to enter the IPv6 address for the eth3 interface.

- ii. Type the new IPv6 address and prefix for the eth3 interface and press Enter.

```
Current IP: 2001:db8:20:1:192:0:2:50/64, please enter new IPv6 address
with new Prefix (IPv6 Address/prefix):
2001:db8:20:1:192:0:2:55/64
```

- iii. Type the IPv6 address of the gateway for the eth3 interface and press Enter.

```
Current Gateway: 2001:db8:20:192:0:2:150, please enter new IPv6
Gateway:
2001:db8:20:192:0:2:150
```

The following message appears:

```
Device Management Interface IPv6 configuration change queued.
When finished quit (A) to apply changes, then the system will reboot
automatically
```

- i. Type 2 to disable the IPv6 address on the eth3 interface.

A confirmation message appears:

```
All previously queued changes will be removed immediately.
Do you want to proceed? [y/n]
```



**WARNING:** If you disable IPv6 address, the changes queued so far for the IPv6 address configuration of the eth3 interface are discarded.

- ii. Type **y** to proceed or **n** to return to the Change Device Management Interface menu.

If you type **y**, the following message is displayed followed by the Change Device Management Interface menu.

IPv6 address disabling on Device Management Interface is queued.  
When finished quit (A) to apply changes, then the system will reboot automatically.

Change Device Management Interface:

1> Configure IPv4  
2> Configure IPv6

A> Apply changes  
M> Return to Main Menu  
R> Redraw Menu

Choice [1-2,AMR]:

5. Type **A** to apply the changes or type **M** to return to the Junos Space Settings Menu.

If you type **A**, the Select a change to cancel it menu appears, as shown in the following example:

Select a change to cancel it:

1> DEVIP:192.0.2.55, DEVMask:255.255.0.0, DEVGateway:192.0.2.160  
2> DEVIP(v6): 2001:db8:20:1:192:0:2:55, DEVPrefix(v6): 64, DEVGateway(v6):  
2001:db8:20:1:192:0:2:150

A> Apply all changes  
M> Make more changes  
C> Cancel all changes and quit  
R> Redraw Menu

Choice [1,AMCR]:

6. Type **A** to apply the changes, or type **C** to cancel modifying the IP address settings of the eth3 interface, or type a number from the menu to cancel the change. For example, type **1** to discard the changes to the IPv4 address, the network mask, and the gateway IP address of the eth3 interface.

If you type **A**, the Junos Space Virtual Appliance reboots for the new eth3 interface settings to take effect.



**NOTE:** The reboot process can take about 20 minutes to complete.

---

### Adding Static Routes to a Junos Space Virtual Appliance

Before you add a static route to a Junos Space Virtual Appliance, ensure that the gateway that you want to configure is accessible.



To add a static route to a Junos Space Virtual Appliance:

1. At the Junos Space Settings Menu prompt, type **2**.

The Change Network Settings menu appears.

```
Change Network Settings:
1> Set DNS Servers
2> Change IP Address of Space node
3> Change Static Routes

A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

Choice [1-3,AMR]:

2. Type **3** at the prompt.

The Change Static Routes menu appears.

```
Change Static Routes:
1> IPv4 Routes
2> IPv6 Routes

A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

Choice [1-2,AMR]:

3. Modify static routes.

- a. To change IPv4 static routes, type **1**.

The option to add a new static route appears.

```
1> Add new static route

A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

Choice [1,AMR]: 1

- b. Type **1**.

You are prompted to enter the IPv4 address of the new static route.

- c. Type the IP address of the static route in dotted-decimal notation and press Enter.

```
Adding static route:
Please enter the destination network:
192.0.2.40
```

- d. Type the network mask for the route in dotted-decimal notation and press Enter.

Please enter the subnet mask in dotted decimal notation:  
255.255.0.0

- e. Type the gateway for the route in dotted-decimal notation and press Enter.

Please enter the gateway for this route:  
192.0.2.151

- f. Type the password for the admin user and press Enter.

The change is queued and you get a confirmation message.

Static Route configuration change queued. When finished quit (A) to apply changes

Change queued:  
Add->192.0.2.40/255.255.0.0->eth0:192.0.2.151

1> Add new static route

A> Apply changes  
M> Return to Main Menu  
R> Redraw Menu

- a. To change IPv6 static routes, type 2.

The option to enter a new IPv6 static route appears.

1> Add new static route

A> Apply changes  
M> Return to Main Menu  
R> Redraw Menu

Choice [1,AMR]: 1

- b. Type 1.

- c. Type the IPv6 address of destination network without prefix and press Enter.

Adding IPv6 static route:  
Please enter the destination network (without prefix):  
2001:db8:40:1:0:0:0:0

- d. Type the prefix for the route and press Enter.

Please enter the prefix:  
64

- e. Type the gateway for the route in dotted-decimal notation and press Enter.

Please enter the gateway for this route:  
2001:db8:40:1:192:0:2:151

Junos Space pings the IP address that you entered. If Junos Space is unable to reach the gateway, it reports the following:

```
Cannot ping 2001:db8:0:1:192.0.2.151
Use this address? [y/N]
```

Type **y** to continue or **n** to return to Junos Space settings menu.

If you enter y, you are prompted to enter password for the admin user.

- f. Type the password for the admin user and press Enter.

The change is queued and you get a confirmation message.

Static Route configuration change queued. When finished quit (A) to apply changes

```
Change queued:
Add->2001:db8:40:1:0:0:0:0/64->eth0-2001:db8:0:1:192:0:2:151
1> Add new static route

A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

4. Type **A** to apply changes or **M** to return to the Junos Space Settings menu.

---

### Deleting Static Routes from a Junos Space Virtual Appliance

You can delete static routes from the Junos Space Virtual Appliance when you no longer need them.

To delete a static route from a Junos Space Virtual Appliance:

1. At the Junos Space Settings Menu prompt, type **2**.

The Change Network Settings menu appears.

```
Change Network Settings:
1> Set DNS Servers
2> Change IP Address of Space node
3> Change Static Routes

A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

Choice [1-3,AMR]:

2. Type **3** at the prompt.

The Change Static Routes menu appears.

```
Change Static Routes:
```

```
1> IPv4 Routes
2> IPv6 Routes

A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

The options to modify static routes appear, as shown in the following example:

3. • Delete the static routes.

a. To delete IPv4 routes, type 1.

A menu appears with options to add and remove IPv4 static routes similar to the following sample:

```
1> Add new static route
2> Remove-->192.0.2.40/255.255.0.0->eth0:192.0.2.151
```

```
A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

Choice [1-4,AMR]:

b. At the prompt, type the number provided against the static route you want to delete. For example, 2.

You are prompted to apply or cancel deleting the static route, as shown in the following sample:

```
1> Remove-->192.0.2.40/255.255.0.0->eth0:192.0.2.151
```

```
A> Apply all changes
M> Make more changes
C> Cancel all changes and quit
R> Redraw Menu
```

Choice [1,AMCR]: A

• Delete the IPv6 routes.

a. To delete IPv6 routes, type 2.

A menu appears with options to add and remove IPv6 static routes similar to the following:

```
1> Add new static route
2> Remove-->2001:db8:40:1:0:0:0:0/64->eth0-2001:db8:0:1:192:0:2:151
```

```
A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

Choice [1-4,AMR]:

- b. At the prompt, type the number provided against the static route you want to delete. For example, **2**.

You are prompted to apply or cancel deleting the static route, as shown in the following example:

```
1> Remove->2001:db8:40:1:0:0:0/64->eth0-2001:db8:0:1:192:0:2:151
```

```
A> Apply all changes
M> Make more changes
C> Cancel all changes and quit
R> Redraw Menu
```

```
Choice [1,AMCR]: A
```

4. Type **A** to delete the static route or **M** to make more changes.

If you type **A**, you are prompted to enter the administrator password and then the static route is deleted.

## Changing Time Options of a Junos Space Virtual Appliance

Change Time Options enables you to change the time zone and NTP server settings of a Junos Space Virtual Appliance. When you configure each Junos Space Virtual Appliance with an NTP server, you must ensure that, if the first node (which is used to synchronize time for all nodes in the fabric) goes down, all other nodes in the fabric remain synchronized. To ensure this behavior, all nodes in the fabric should be configured with the same external NTP source that you configured for the first appliance.

- [Changing the Time Zone on page 85](#)
- [Changing NTP Settings on page 86](#)

---

### Changing the Time Zone

Use the Change Timezone option of the Change Time Options menu to change the time zone of the Junos Space Virtual Appliance.

To change the time zone of a Junos Space Virtual Appliance:

1. At the Junos Space Settings Menu prompt, type **3**.

The Change Time Options menu appears:

```
Change Time Options:
1> Change Timezone
2> Change NTP options

A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

2. Type **1** at the prompt.

The current time zone configured on the Junos Space Virtual Appliance is displayed and you are prompted to choose the time zone that you want to set, as shown in the following example:

Current Time Zone is: "Etc/UTC"

```
1> GMT
2> Africa
3> America
4> Antarctica
5> Arctic
6> Asia
7> Atlantic
8> Australia
9> Europe
10> Indian
11> Pacific
```

```
A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

Choice [1-11,AMR]:

3. Type the number against the time zone that you want to set; for example, type **1** for GMT. If the time zone has associated locations, you are prompted to enter the location. For example, the Atlantic time zone has the following locations:

```
1> Antananarivo
2> Chagos
3> Christmas
4> Cocos
5> Comoro
6> Kerguelen
7> Mahe
8> Maldives
9> Mauritius
10> Mayotte
11> Reunion
```

4. Type the number against the location that you want to set.

You are prompted to confirm the time zone that you want to set.

Set TimeZone to Indian/Maldives? [y/N]

5. Type **y** to confirm or **N** to return to the Junos Space Settings Menu.

---

### Changing NTP Settings

Changing Network Time Protocol (NTP) settings involves disabling or enabling NTP on a Junos Space Virtual Appliance, adding NTP servers to a Junos Space Virtual Appliance, or deleting NTP servers configured on the Junos Space Virtual Appliance.

To change NTP settings of a Junos Space Virtual Appliance:

1. At the Junos Space Settings Menu prompt, type **3**.

The Change Time Options menu appears:

```
Change Time Options:
1> Change Timezone
2> Change NTP options

A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

2. Type **2** to change NTP options.

The NTP options menu appears.

```
NTP options:
1> Disable NTP
2> Add an NTP server

A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

Choice [1-2,AMR]:

If there are NTP servers already configured on the Junos Space Virtual Appliance, they are listed on the NTP options menu.

```
NTP options:
1> Disable NTP
2> Add an NTP server
3> Delete device1.example.com

A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

Choice [1-3,AMR]:

3. Perform one of the following tasks:

- Type **1** to disable NTP on the Junos Space Virtual Appliance.

The Junos Space Settings Menu appears.

NTP is enabled by default on the Junos Space Virtual Appliance. If NTP is disabled, typing **1** enables it.

- Type **2** to add an NTP server to the Junos Space Virtual Appliance.

You are prompted to enter the IP address or hostname of the NTP server.

- a. Type the IP address or hostname of the NTP server at the prompt.

A message confirming the addition of the NTP server appears followed by the Junos Space Settings Menu.

- b. Type **A** to apply the settings.

- Type the number against a configured NTP server to delete it from the Junos Space Virtual Appliance.

You are prompted to confirm that you want to delete the NTP server.

```
3> Delete NTP server device1.example.com? [y/N]
```

Type **y** to delete or **N** to return to the Junos Space Settings Menu.

## Retrieving System Log Files from a Junos Space Virtual Appliance

To retrieve system log files from a Junos Space Virtual Appliance, you can use Secure Copy Protocol (SCP) if the network is functional or a USB device if the network is down.



**NOTE:** To save the system log files of a device in a USB device, the device must be connected to the Junos Space Virtual Appliance.

To retrieve system log files from a Junos Space Virtual Appliance:

1. At the Junos Space Settings Menu prompt, type **4**.

The following appears:

```
1> Save to USB Device
2> Send Using SCP

A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

Choice [1-2,AMR]:

2. Choose a method for retrieving system log files—using a USB device or SCP:

- Retrieving log files using a USB device

To save system log files to a USB device:

- a. Type **1** at the prompt.

You are prompted to confirm that you want to copy the files onto a USB device.

```
This process will retrieve the log files on all cluster members
and combine them into a .tar file. Once the file is created, you
can copy the files onto a USB drive.
Continue? [y/n]
```

- b. Type **y** to continue with retrieving the logs or **n** to return to the Junos Space Settings Menu.

If you type **y**, you are prompted for the administrator password.

```
Local admin password:
```



- c. Type the administrator password of this Junos Space installation and press Enter.  
You are prompted to confirm that the logs can be saved on the USB device.

Log collection complete  
If USB key is ready, press "Y". To abort, press "N".

- d. Type **Y** to save the log files to your USB device or **N** to abort collecting logs and return to the Junos Space Settings Menu.

The Junos Space Network Management Platform retrieves the log files from all cluster members as a single tar file.

- Retrieving system log files using SCP

To save system log files using SCP:

- a. Type **2** at the prompt.

You are prompted to confirm that you want to use SCP to save the system log files.

This process will retrieve the log files on all cluster members and combine them into a .tar file. Once the file is created, you will be asked for a remote scp server to transfer the file to.  
Continue? [y/n]

- b. Type **y** to continue with retrieving the system log files or **n** to abort and return to the Junos Space Settings Menu.

You are prompted to enter the administrator password.

Local admin password:

- c. Type the administrator password of this Junos Space installation and press Enter.

You are prompted for the credentials of the SCP server where you want to save the system log files, starting with the IP address.

Please enter remote scp server IP address:

- d. Type the SCP server IP address and press Enter.

You are prompted to enter the username to log in to the SCP server.

Please enter remote scp user:

- e. Type the SCP server username and press Enter.

You are prompted to enter the location in the SCP server where you want to store the system log files.

Please enter remote scp file location:

- f. Type the path in the SCP server where you want to save the system log files and press Enter.

You are prompted to confirm the credentials of the SCP server that you have entered so far, as shown in the following example:

```
Remote scp IP: 192.168.1.2
Remote scp user: admin
Remote scp path: C:Users/admin/desktopi
Is this correct? [y/n]
```

- g. Type **y** to confirm or **n** to reenter the credentials of the SCP server.

If you type **y**, the log files are saved in the specified location of the SCP server as a single tar file.

## Expanding the Drive Size of a Junos Space Virtual Appliance

To increase the virtual machine (VM) drive size on a Junos Space Virtual Appliance, you must first add a disk resource to the VMware Infrastructure client to create a virtual disk. You must then initiate a scan of the new virtual disk. The Expand VM Drive Size option does not expand the drive size if you increase the size of any disk on the Virtual Appliance (for example, using the Edit menu of the vSphere Client). To expand the drive size, you must add disk resources to the host system.

The free space available in all the partitions should be monitored periodically and the available disk space should be increased if required. The `/var` and `/var/log` partitions should be monitored more frequently as most of the data are stored in these partitions and the space utilization is high.



**NOTE:** You can expand the VM drive size of a Junos Space Virtual Appliance only when the Junos Space Virtual Appliance is powered on.

To expand the VM drive size of a Junos Space Virtual Appliance:

1. At the Junos Space Settings Menu prompt, type **6**.

You are prompted to enter the password for the admin user.



**NOTE:** If no free space is available on the host for allocation, the **No free disk space** message appears and the Junos Space Settings Menu is displayed.

2. Type the password for the admin user and press Enter.

The following caution appears and you are prompted to confirm that you want to continue expanding the VM drive size.

-----Caution-----

Expanding Disk drives would restart Jboss and MySQL processes, all the GUI users would be logged out automatically.

Note: This will cause Space Fabric to failover to other node.  
Do you want to continue? [y/n]

3. Type **y** to continue with the procedure or **n** to return to the Junos Space Settings Menu.

If you type **y**, you are prompted to specify the partition that you want to expand.

```
Begin to stop Jboss and MySQL...
Service Jboss and MySQL stopped
```

Which partition do you want to expand?

- 1) /
- 2) /var
- 3) /var/log
- 4) /tmp
- 5) Quit

Select a partition: 1

4. Type the number present against the partition that you want to expand; for example, type **1** to expand the **/** partition or **5** to quit expanding disks and return to the Junos Space Settings Menu.

The free space that can be allocated is displayed and you are prompted to enter the space that you want to allocate to the partition.

```
Current disk partition size of / is 22G
Total 4.97G free disk space can be allocated
```

How much additional disk space is to be added(Acceptable suffixes: M|G|T): 1M

5. Type the additional disk space that you want to allocate and press Enter.

You can enter the disk space in megabytes (M), gigabytes (G), or terabytes (T). Do not add a space between the number and the unit; for example, 50M and not 50 M, 10G and not 10 G, and so on.

You are prompted whether you want to expand more drives.

```
Increasing size of LV /dev/jmpvgnocf/lvroot
  Extending logical volume lvroot to 22.59 GB
  Logical volume lvroot successfully resized
Resizing / onto new space, this will take a few minutes
resize4fs 1.41.12 (17-May-2010)
Filesystem at /dev/jmpvgnocf/lvroot is mounted on /; on-line resizing required
old desc_blocks = 2, new_desc_blocks = 2
Performing an on-line resize of /dev/jmpvgnocf/lvroot to 5922816 (4k) blocks.
The filesystem on /dev/jmpvgnocf/lvroot is now 5922816 blocks long.
```

```
4.94G free disk space available
Do you want to expand more disks? [y/N]
```

6. Type **y** to continue adding disk space or **n** to return to the Junos Space Settings Menu.

When you type **n**, the JBoss and MySQL processes that were stopped are resumed. If the VM drive size was expanded on a primary node, the node becomes secondary when it comes up.

## Setting Security Options on a Junos Space Virtual Appliance

Junos Space provides firewall and SSH security options. By default, the firewall and SSH are enabled on a Junos Space Virtual Appliance.

- [Enabling the Firewall on a Junos Space Virtual Appliance on page 92](#)
- [Disabling the Firewall on a Junos Space Virtual Appliance on page 92](#)
- [Disabling SSH on a Junos Space Virtual Appliance on page 93](#)
- [Enabling SSH on a Junos Space Virtual Appliance on page 94](#)

---

### Enabling the Firewall on a Junos Space Virtual Appliance

You can disable the firewall if you want and then reenabling it.

To enable the firewall on a Junos Space Virtual Appliance:

1. At the Junos Space Settings Menu prompt, type **5**.

The following appears if the firewall is disabled and SSH is enabled:

```
1> Enable Firewall
2> Disable SSH

A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

Choice [1-2,AMR]:

2. Type **1**.

You are prompted to enter the administrator password.

Password:

3. Type the administrator password and press Enter.

The following appears and the firewall is enabled on the Junos Space Virtual Appliance:

```
Starting jmp-firewall: [ OK ]
```

---

### Disabling the Firewall on a Junos Space Virtual Appliance

By default, the firewall is enabled on a Junos Space Virtual Appliance. You can disable the firewall if you want.

To disable the firewall on a Junos Space Virtual Appliance:

1. At the Junos Space Settings Menu prompt, type **5**.

The following appears if both the firewall and SSH are enabled:

```
1> Disable Firewall
2> Disable SSH
```

```
A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

Choice [1-2,AMR]:

2. Type 1.

You are prompted to enter the administrator password.

Password:

3. Type the administrator password and press Enter.

The following appears and the firewall is disabled on the Junos Space Virtual Appliance:

```
Stopping jmp-firewall:
Flushing firewall rules:           [ OK ]
Setting chains to policy ACCEPT: filter [ OK ]
Unloading iptables modules:       [ OK ]
```

### Disabling SSH on a Junos Space Virtual Appliance

By default, SSH is enabled on a Junos Space Virtual Appliance. You can disable SSH if you want.

To disable SSH on a Junos Space Virtual Appliance:

1. At the Junos Space Settings Menu prompt, type 5.

The following appears if both the firewall and SSH are enabled:

```
1> Disable Firewall
2> Disable SSH

A> Apply changes
M> Return to Main Menu
R> Redraw Menu
```

Choice [1-2,AMR]:

2. Type 2.

You are prompted for the administrator password.

Password:

3. Type the administrator password and press Enter.

The following appears and SSH is disabled on the Junos Space Virtual Appliance.

```
Stopping sshd: [ OK ]
```

## Enabling SSH on a Junos Space Virtual Appliance

---

By default, SSH is enabled on a Junos Space Virtual Appliance. You can disable SSH if you want and then enable it again.

To enable SSH on a Junos Space Virtual Appliance:

1. At the Junos Space Settings Menu prompt, type **5**.

The following appears when the firewall is enabled and SSH is disabled::

```
1> Disable Firewall
2> Enable SSH

A> Apply changes
M> Return to Main Menu
R> Redraw Menu

Choice [1-2,AMR]:
```

2. Type **2**.

You are prompted for the administrator password.

Password:

3. Type the administrator password and press Enter.

The following appears and SSH is enabled on the Junos Space Virtual Appliance.

```
Starting sshd: [ OK ]
```

## Running Shell in a Junos Space Virtual Appliance

You must initialize shell to access the CLI and run commands to debug a Junos Space Virtual Appliance.

To run shell in the Junos Space Virtual Appliance:

1. At the Junos Space Settings Menu prompt, type **7**.

You are prompted for the administrator password.

2. Type the current administrator password and press Enter.

The CLI prompt of the Junos Space Virtual Appliance appears, as shown in the following example:

```
[user1@host1 ~]#
```

**Related  
Documentation**

- *Downloading Troubleshooting System Log Files Through the Junos Space CLI*
- [Ethernet Interfaces in a Junos Space Virtual Appliance Overview on page 14](#)
- [Configuring a Junos Space Virtual Appliance as a Junos Space Node on page 33](#)
- [Configuring a Junos Space Virtual Appliance as a Backup or Secondary FMPM Node for High Availability on page 55](#)
- [Configuring a Junos Space Virtual Appliance as a Standalone or Primary FMPM Node on page 47](#)
- [Deploying a Junos Space Virtual Appliance on a VMware ESX or VMware ESXi Server on page 20](#)





## CHAPTER 4

# Viewing and Adding Nodes to a Fabric

- [Adding a Node to an Existing Junos Space Fabric on page 97](#)
- [Viewing Nodes in the Fabric on page 103](#)

### Adding a Node to an Existing Junos Space Fabric

When you configure a Junos Space Appliance (JA1500 or JA2500) or a Junos Space Virtual Appliance as a Junos Space node by using the Junos Space CLI, Junos Space Network Management Platform automatically adds the first node to the fabric. By default, the Junos Space fabric contains this single node that provides complete Junos Space Platform functionality. For each additional node that you install and configure, you must add the node in Junos Space Platform to represent the node in the fabric.

Before you begin, the following prerequisites must be in place:

- Multicast must be enabled on the switches to which Junos Space nodes are connected.
- IGMP-snooping needs to be disabled on the switches to which Junos Space nodes are connected. By default, IGMP-snooping is enabled on most switches.
- All Junos Space nodes must be interconnected using a high-speed (1-Gbps or 100-Mbps) network with a maximum latency not exceeding 300 milliseconds.

Using the Junos Space CLI, you can configure a Junos Space Appliance or a Junos Space Virtual Appliance either as a Junos Space node or an FMPP node. If you want to add a node to the fabric as a dedicated database node, it must be configured as a Junos Space node.



---

**NOTE:**

Before you add a node to the Junos Space fabric, verify the following:

- The version of Junos Space Platform installed on the node is the same as the version installed on other nodes in the fabric.
  - Ensure that no jobs are pending.
  - If a Junos Space node, a database node, or an FMPM node that is part of an existing fabric is deleted, then you need to reimage the node before the node can be readded to the fabric. Junos Space displays the following message when you try to add such nodes to an existing fabric:  
The node you are trying to add was part of another fabric, please re-image the node before adding to this fabric.
  - Ensure that you are not adding a non-FMPM node as an FMPM node. Junos Space Platform displays the following message when you try to add such a node to the fabric:  
Node agent is not running on {0}. Please make sure the node being added is not a specialized node.
- 

From the Junos Space Platform UI, you can add a node to the Junos Space fabric by executing one of the following procedures, based on whether you have configured the node as a Junos Space node or as an FMPM node.

- [Adding a Junos Space node to the Junos Space fabric on page 98](#)
- [Adding an FMPM node on page 101](#)

## Adding a Junos Space node to the Junos Space fabric

1. On the Junos Space Platform UI, select **Administration > Fabric**.

The **Fabric** page appears.

2. Click the **Add Fabric Node** icon.

The **Add Node to Fabric** page appears.

3. Click the appropriate option button in the **Node Type** field to select the type of node you want to add.

The options that are displayed depend on the number and type of nodes that are already part of the fabric. [Table 6 on page 99](#) lists the options that you can select while adding Junos Space nodes.

Table 6: Number of Nodes and Permitted Node Types

Number of Nodes in the Fabric	Permitted Node Types	Description
One	<b>JBoss and DB Node</b>  <b>DB Node</b>	When you add the second Junos Space node to the default single-node Junos Space fabric, you can add the new node as a JBoss and database node (standby load balancer server), or the second and third nodes together as database nodes. In the case of database nodes, one node is designated the primary database node, and the other the secondary database node. The database VIP address must also be configured to enable database high availability.
Two	<b>JBoss Node</b>  <b>DB Node</b>	When you add nodes to a two-node Junos Space fabric, Junos Space Platform allows you to add either a JBoss node or two nodes as database nodes. In the case of database nodes, one node is designated the primary database node, and the other the secondary database node. The database VIP address must also be configured to enable database high availability. If the Junos Space fabric already has one database node added, then you can add either a JBoss-only node or one database node as the secondary database node. The database node already existing in the fabric is the primary database node.
Three or more—With one or no database node configured	<b>JBoss Node</b>  <b>DB Node</b>	When you add nodes to a Junos Space fabric with three or more nodes, with no database nodes added, Junos Space Platform allows you to add either a JBoss node or two nodes as database nodes. If the Junos Space fabric already has one database node added, then you can add either a JBoss-only node or one database node as the secondary database node. The database node already existing in the fabric is the primary database node.
Three or more—With two database nodes configured	<b>JBoss Node</b>	When you add nodes to a Junos Space fabric with three or more nodes, with two database nodes already configured, Junos Space Platform allows you to add only a JBoss node. You cannot add more than two database nodes to the fabric.

4. Perform one of the following procedures, based on the type of node you selected:
  - For the **JBoss and DB Node** and **JBoss Node** options, perform the following steps:
    - a. Enter a name for the node in the **Name** text box.  
 The name of the fabric node cannot exceed 32 characters and cannot contain spaces.
    - b. Enter the IP address of the node in the **IP address** field.  
 This is the IP address for the eth0 interface that you specified during the basic configuration of the appliance.
  - For the **DB Node** option, perform the following steps:
    - In the **Primary database** section:



**NOTE:** If you already have a database node as part of the fabric, the **Primary database** section does not appear. The existing database node is the primary database node and you can add only a secondary database node to the fabric.

- a. Enter a name for the primary database node in the **Name** text box.

The name of the fabric node cannot exceed 32 characters and cannot contain spaces.

- b. Enter the IP address of the primary database node in the **IP address** field.

This is the IP address for the eth0 interface that you specified during the basic configuration of the appliance.

- c. Enter the VIP address for the database nodes in the **VIP** field.

The VIP address is used for communication between Junos Space nodes and database nodes. This IP address must be in the same subnet as the IP address assigned to the eth0 Ethernet interface, and the database VIP address must be different from the VIP address used to access the Web GUI and the FMPM nodes.

- In the **Secondary database** section:

- a. Enter a name for the secondary database node in the **Name** text box.

The name of the fabric node cannot exceed 32 characters and cannot contain spaces.

- b. Enter the IP address of the secondary database node in the **IP address** field.

This is the IP address for the eth0 interface that you specified during the basic configuration of the appliance.

5. (Optional) Select the **Schedule at a later time** check box to specify a later date and time when you want the node to be added.

If you do not specify a date and time for adding the node, the node is added to the fabric when you complete this procedure and you click **Add** on the **Add Node to Fabric** page.

- a. Click the calendar icon and select the date.

- b. Click the arrow beside the time list and select the time.



**NOTE:** The selected time in the scheduler corresponds to the Junos Space server time but is mapped to the local time zone of the client computer.

6. Click **Add** to add the node to the fabric.

The **Job Information** dialog box appears, with a message indicating that the job to add the node is successfully scheduled. You can click the job ID link that is displayed in the dialog box to view the job details. You can also navigate to the Job Management page to view the job details.

7. Click **OK**.

You are returned to the **Fabric** page.

The node is added to the fabric and appears on the **Fabric** page. When you add a node, the node functions are automatically assigned by Junos Space Platform.

## Adding an FMPM node

1. On the Junos Space Platform UI, select **Administration > Fabric**.

The **Fabric** page appears.

2. Click the **Add Fabric Node** icon.

The **Add Node to Fabric** page appears.

3. Click the **Specialized Node** option button in the **Node Type** field to add an FMPM node.

4. Enter a name for the node in the **Name** text box.

The name of the fabric node cannot exceed 32 characters and cannot contain spaces.

5. Enter the IP address of the node in the **IP address** field.



**NOTE:** This is the IP address for the eth0 interface that you specified during the basic configuration of the appliance.

6. Enter the SSH username for the FMPM node in the **User** field.

7. Enter the password in the **Password** field.

The login credentials (SSH username and password) of the FMPM node that you specify in the **User** and **Password** fields must be the same username and password that you specified when you initially configured the node from the Junos Space CLI. If the credentials do not match, the node is not added.

8. (Optional) Select the **Schedule at a later time** check box to specify a later date and time when you want the node to be added.

If you do not specify a date and time for the node to be added, the node is added to the fabric when you complete this procedure and you click **Add** on the **Add Node to Fabric** page.

- a. Click the calendar icon and select the date.
- b. Click the arrow beside the time list and select the time.



**NOTE:** The selected time in the scheduler corresponds to the Junos Space server time but is mapped to the local time zone of the client computer.

9. Click **Add** to add the node to the fabric.

The **Job Information** dialog box appears, with a message indicating that the job to add the node is successfully scheduled. You can click the job ID link that is displayed in the dialog box to view the job details. You can also navigate to the Job Management page to view the job details.

10. Click **OK**.

You are returned to the **Fabric** page.

The node is added to the fabric and appears on the **Fabric** page. When you add a node, the node functions are automatically assigned by Junos Space Platform.

If you added an FMPM node, the first FMPM node performs the fault and performance monitoring of all the devices and nodes. You can add a maximum of two FMPM nodes. An FMPM team can monitor the nodes that have been added to the Junos Space fabric and also the devices that have been discovered from Junos Space Network Management Platform.

When the first FMPM node is added, Junos Space backs up the network monitoring data from the VIP node and restores it on the FMPM node. The network monitoring functionality is disabled on the Junos Space node and is enabled on the FMPM node. When a second FMPM node is added, the first FMPM node acts as the active PostgreSQL database server and the second node acts as the secondary database server. Only the PostgreSQL database content is continuously replicated from the active server to the standby server. The configuration files that are stored outside of the PostgreSQL database are backed up everyday only at midnight. If you reboot the first node or if the first node is down, the second node automatically takes over the network monitoring functions.

#### Related Documentation

- *Fabric Management Overview*
- [Viewing Nodes in the Fabric on page 103](#)
- *Overall System Condition and Fabric Load History Overview*

## Viewing Nodes in the Fabric

The Fabric Monitoring inventory page allows the administrator to monitor each node in the Junos Space fabric. You can also monitor the status of the database, load balancer, and application logic functions running on each node, identify nodes that are overloaded or down, and view when the node was rebooted. The Fabric inventory page refreshes every 10 seconds, by default.

- [Changing Views on page 103](#)
- [Viewing Fabric Node Details on page 103](#)

### Changing Views

You can display fabric monitoring in tabular view. The fabric nodes appear in a table sorted by node name. Each fabric is a row in the Fabric Monitoring table.

To change views:

1. Select **Administration > Fabric**. The **Fabric** page appears.
2. Click a view indicator at the left of the title bar of the Fabric page.

### Viewing Fabric Node Details

To view detailed runtime and status information for a node:

1. On the Junos Space Network Management Platform user interface, select **Administration > Fabric**.

The Fabric page that appears displays all the nodes in the Junos Space Platform fabric.

2. Right-click a node and select **View Fabric Node Details** or double-click inside a row corresponding to a node.

The **View Node Detail** pop-up window that appears displays three tabs: **Node Detail**, **Reboot Detail**, and **Process Detail**.

3. To view the node details, click the **Node Detail** tab.

[Table 7 on page 103](#) describes the details of the node.

**Table 7: Information on the Node Detail Tab**

Information	Description
<b>Node name</b>	Logical name assigned to the node
	<b>NOTE:</b> For the first node, Junos Space uses the node name that the user specifies during the initial configuration of the Junos Space Appliance (physical or virtual). For each subsequent node, the user must specify a node name when adding the node to the fabric.

Table 7: Information on the Node Detail Tab (*continued*)

Information	Description
<b>Management IP (IPv4)</b>	IPv4 address for the node
<b>Management IP (IPv6)</b>	IPv6 address for the node
<b>Device Connection IP (IPv4)</b>	IPv4 address for connecting to the device
<b>Device Connection IP (IPv6)</b>	IPv6 address for connecting to the device
<b>Status</b>	<p>Connection status for the node</p> <ul style="list-style-type: none"> <li>UP—Node is connected to the fabric</li> <li>DOWN—Node is disconnected from the fabric</li> </ul>
<b>% CPU</b>	<p>Percentage of CPU resource utilized by the node; from 0 to 100%</p> <ul style="list-style-type: none"> <li>Unknown—Percentage of CPU utilized is unknown, for example, because the node is not connected</li> </ul>
<b>% Memory</b>	<p>Percentage of memory resource utilized by the node; from 0 to 100%</p> <ul style="list-style-type: none"> <li>Unknown—Percentage of memory utilized is unknown, for example, because the node is not connected</li> </ul>
<b>% SWAP</b>	<p>Percentage of swap memory used</p> <ul style="list-style-type: none"> <li>Unknown—Percentage of SWAP memory utilized is unknown, for example, because the node is not connected</li> </ul>
<b>% DISK</b>	<p>Percentage of the <code>/var</code> directory utilized by the node; from 0 to 100%</p> <ul style="list-style-type: none"> <li>Unknown—Percentage of the <code>/var</code> directory utilized by the node is unknown, for example, because the node is not connected</li> </ul>



Table 7: Information on the Node Detail Tab (*continued*)

Information	Description
<b>App Logic</b>	<p>Application logic function status for the node</p> <ul style="list-style-type: none"> <li>• UP—Application logic function is running on the node</li> <li>• DOWN—Application logic function enabled on the node but is not running</li> <li>• Unknown—Status for the application logic function is unknown, for example, because the node is not connected</li> <li>• N/A— Application logic function is not configured to run on the node</li> <li>• (Master)—Configured primary Junos Space node in the fabric</li> <li>• FMPM (Master)—The configured primary Fault Monitoring and Performance Monitoring (FMPM) node in the fabric</li> <li>• FMPM—The configured secondary FMPM node in the fabric</li> <li>• <b>Deploying</b>—Junos Space Platform and its applications are initializing after a recent JBoss restart</li> <li>• <b>Parsing Schema</b>—Device schema files are being parsed after a recent JBoss restart</li> </ul>
<b>Database</b>	<p>Database function status for the node</p> <ul style="list-style-type: none"> <li>• UP(Master)—Database function is running on the node and the node is the primary database node</li> <li>• UP—Database function is running on the node In the case of dedicated database nodes, the secondary database node is always UP.</li> <li>• DOWN—Database function that is enabled on the node but is not running</li> <li>• <b>Standby</b>—Database function is on standby and could potentially transition to the UP state on failover</li> <li>• Unknown—Status for the database function is unknown, for example, because the node is not connected</li> <li>• N/A—Database function is not configured to run on the node</li> </ul> <p><b>NOTE:</b> By default, the database function is enabled on no more than two nodes in the fabric.</p>
<b>Load balancer</b>	<p>Load balancer function for the node</p> <ul style="list-style-type: none"> <li>• UP—Load balancer function is running on the node</li> <li>• DOWN—Load balancer function that is enabled on the node is not running</li> <li>• <b>Standby</b>—Load balancer function is on standby and could potentially transition to the UP state on failover</li> <li>• Unknown—Status for the Load balancer function is unknown, for example, because the node might not be connected</li> <li>• N/A—Load balancer function is not running because it is not configured to run on the node</li> </ul> <p><b>NOTE:</b> By default, the Load balancer function is enabled on no more than two nodes in the fabric.</p> <ul style="list-style-type: none"> <li>• (VIP)—Configured virtual IP node in the fabric</li> </ul>

Table 7: Information on the Node Detail Tab (*continued*)

Information	Description
<b>Hardware model</b>	Model of the Junos Space Appliance  <b>NOTE:</b> The hardware model, which is applicable only to the hardware appliance, appears when you double-click a table row for a detailed view of the node.
<b>Software version</b>	Junos Space Network Management Platform release version  <b>NOTE:</b> Software version appears when you double-click a table row for a detailed view of the node.
<b>Serial number</b>	The serial number for the Junos Space Appliance  <b>NOTE:</b> Serial number appears when you double-click a table row for a detailed view of the node.
<b>Cluster Member IPs</b>	IP addresses of the nodes in the fabric
<b>Is Master Node</b>	Indicates whether the node is a master node: <ul style="list-style-type: none"> <li>• TRUE—The node is a master node</li> <li>• FALSE—The node is not a master node</li> </ul>
<b>Is VIP Node</b>	Indicates whether the node is a virtual IP (VIP) node. The first (active) node and second (standby) node are VIP nodes. <ul style="list-style-type: none"> <li>• TRUE—The node is a VIP node.</li> <li>• FALSE—The node is not a VIP node.</li> </ul>
<b>Virtual Machine(s)</b>	Lists the virtual machine IPs hosted by the node.
<b>Host IP</b>	IP address of the hosted virtual machine. This field is not applicable to Junos Space nodes and Fault Monitoring and Performance Monitoring (FMPM) nodes.

4. To view the details of the last reboot performed, select the **Reboot Detail** tab.

[Table 8 on page 106](#) lists the information related to the last reboot performed on this node.

Table 8: Information on the Reboot Detail Tab

Information	Description
Last Boot Time	Time at which the node was rebooted
Last Boot Reason	Reason why the node was rebooted
Last Rebooted By	Username of the user who rebooted the node



**NOTE:** If the node was rebooted from the CLI, or as a result of an upgrade or a fresh installation, the Last Rebooted By column displays **#system**.

Table 9 on page 107 lists the default messages displayed to the user for different types of reboot actions.

**Table 9: Default Messages for Different Reboot Actions**

Reboot Action	Default Message
Rebooting after changing the network settings of the node from the Junos Space user interface	Reboot after Space Network Settings change
Upgrading Junos Space Platform	Space reboot after Software Upgrade
Rebooting from the CLI	Reboot from Shell/Other
Starting up Junos Space Platform for the first time	Junos Space startup after Installation/Software Upgrade

- To view the details of the processes on this node, select the **Process Detail** tab.

Table 10 on page 107 lists the columns that specify the details of the following processes: JBoss, Apache Web Proxy, MySQL, OpenNMS, and PostgreSQL.

**Table 10: Columns on the Process Detail Tab**

Column Name	Description
Process	Name of the process
Status	Status of the process: UP, DOWN, STANDBY, or N/A
%CPU	Percentage of CPU resources used by the process on the node
%MEMORY	Percentage of memory used by the process on the node
Start Time	Time at which the process is initiated



**NOTE:** The status of the process and the percentage of CPU resources used by the process is queried once every 30 seconds.

Table 11 on page 108 lists the different statuses of the following processes: JBoss, Apache Web Proxy, MySQL, OpenNMS, and PostgreSQL.

Table 11: Process Status

Process Status	Description
UP	The process is up and active.
DOWN	The process is down and inactive.
STANDBY	The process is in standby mode and could potentially transition to the UP state on failover.
N/A	The process is never expected to be active on the node.



**NOTE:** If the MySQL database replication between nodes is broken, the MySQL process displays the status **OUT OF SYNC**. If the secondary database is in the process of receiving data and the primary database is still executing transactions then the status is **Syncing**. If the MySQL transactions are up-to-date between nodes, the MySQL process displays the status **UP**.

Table 12 on page 108 describes the behavior and the expected status of the processes when OpenNMS is running on the Junos Space node.

Table 12: Status of the Processes When OpenNMS Is Running on the Junos Space Node

Process	Junos Space Node with OpenNMS		
	VIP Node	Secondary Node	Other Nodes
Apache Web Proxy	UP/DOWN	STANDBY	N/A
JBoss	UP/DOWN	UP/DOWN	UP/DOWN
MySQL	UP/DOWN	UP/DOWN	N/A
OpenNMS	UP/DOWN	STANDBY	N/A
PostgreSQL	UP/DOWN	UP/DOWN	N/A

Table 13 on page 109 describes the behavior and the expected status of the processes when OpenNMS is running on the FMPM node.

Table 13: Status of the Processes When OpenNMS Is Running on the FMPM Node

Process	Junos Space Node			FMPM Node	
	VIP Node	Secondary Node	Other Nodes	OpenNMS VIP Node	OpenNMS Secondary Node
Apache Web Proxy	UP/DOWN	STANDBY	N/A	N/A	N/A
JBoss	UP/DOWN	UP/DOWN	UP/DOWN	N/A	N/A
MySQL	UP/DOWN	UP/DOWN	N/A	N/A	N/A
OpenNMS	N/A	N/A	N/A	UP/DOWN	STANDBY
PostgreSQL	N/A	N/A	N/A	UP/DOWN	UP/DOWN



**NOTE:** If an unexpected process is running on a node, the status of the process is shown as UP. If a node fails, the status of all processes on the node is shown as UNKNOWN.

For more information about modifying data on the Fabric inventory page, see *Junos Space User Interface Overview*.

#### Related Documentation

- *Overall System Condition and Fabric Load History Overview*
- *Fabric Management Overview*
- *Monitoring Nodes in the Fabric*
- *Load-Balancing Devices Across Junos Space Nodes*
- *Modifying the Network Settings of a Node in the Junos Space Fabric*

