



Junos Space Virtual Appliance

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Junos Space Virtual Appliance

14.1R1

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Documentation and Release Notes

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.

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Documentation Conventions

Table 1 on page x 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 x defines the text and syntax conventions used in this guide.

Table 2: Text and Syntax Conventions

Convention	Description	Examples
Bold text like this	Represents text that you type.	To enter configuration mode, type the configure command: user@host> configure
Fixed-width text like this	Represents output that appears on the terminal screen.	user@host> show chassis alarms No alarms currently active
<i>Italic text like this</i>	<ul style="list-style-type: none"> Introduces or emphasizes important new terms. Identifies guide names. Identifies RFC and Internet draft titles. 	<ul style="list-style-type: none"> A policy <i>term</i> is a named structure that defines match conditions and actions. <i>Junos OS CLI User Guide</i> RFC 1997, <i>BGP Communities Attribute</i>
<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@# set system domain-name <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">To configure a stub area, include the stub statement at the [edit protocols ospf area area-id] hierarchy level.The console port is labeled CONSOLE.
< > (angle brackets)	Encloses optional keywords or variables.	stub <default-metric <i>metric</i>>;
(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.	broadcast multicast (<i>string1</i> <i>string2</i> <i>string3</i>)
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	rsvp { # Required for dynamic MPLS only
[] (square brackets)	Encloses a variable for which you can substitute one or more values.	community name members [<i>community-ids</i>]
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">In the Logical Interfaces box, select All Interfaces.To cancel the configuration, click Cancel.
> (bold right angle bracket)	Separates levels in a hierarchy of menu selections.	In the configuration editor hierarchy, select Protocols>Ospf .

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. Include the document or topic name, URL or page number, and software version (if applicable).

Requesting Technical Support

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>.
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- Find product documentation: <http://www.juniper.net/techpubs/>
- 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://tools.juniper.net/SerialNumberEntitlementSearch/>

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>.

PART 1

Overview

- [Virtual Appliance Overview on page 3](#)

CHAPTER 1

Virtual Appliance Overview

- [Junos Space Virtual Appliance Overview on page 3](#)
- [Understanding How Nodes Are Connected in a Fabric on page 5](#)
- [Ethernet Interfaces in a Junos Space Virtual Appliance Overview on page 6](#)
- [Fabric Management Overview on page 8](#)

Junos Space Virtual Appliance Overview

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 the VMware ESX or VMWare ESXi 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.

A Junos Space fabric (cluster) can contain only hardware appliances (JA1500, JA2500, or both), only virtual appliances, or a combination of both hardware and virtual appliances.

Virtual Appliance Deployment

The Junos Space Virtual Appliance is stored in the Open Virtualization Appliance (OVA) format and is packaged as an ***ova** file, which is a single folder that contains all the files of the Junos Space Virtual Appliance. OVA is not a bootable format and you must deploy each Junos Space Virtual Appliance to a hosted ESX or ESXi server before you can run the Junos Space Virtual Appliance.

You can deploy a Junos Space Virtual Appliance on a VMware ESX server version 4.0 or later or VMware ESXi server version 4.0 or later. After the Junos Space Virtual Appliance is deployed, you can use the VMware vSphere client that is connected to the VMware ESX (or VMware ESXi) server to 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.

Recommendations for Deploying Virtual Appliances on the VMware ESX Server

The CPU, RAM, and disk space provided by the VMware ESX server must meet or exceed the documented CPU, RAM, and disk space requirements for deploying a Junos Space Virtual Appliance. In addition, we recommend that, for a multinode fabric, you deploy the first and second virtual appliances on separate VMware ESX servers to ensure failover support.

The distributed Junos Space Virtual Appliance files are created with 16 GB of disk space, and you must add at least 100 GB of disk resources when you first deploy the virtual appliance to a VMware ESX server. Also, the first and the second nodes that you deploy should have the same disk space.

Configuring an NTP Time Source for Each Appliance Overview

To ensure consistent behavior among all nodes in a multinode fabric, each node's time must be synchronized with every other node in the fabric. When you configure the first Junos Space Virtual Appliance (and JA1500 Junos Space Appliance) with an NTP server, you 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 the time as per the time zone configured in 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

- [Understanding How Nodes Are Connected in a Fabric on page 5](#)
- [Fabric Management Overview on page 8](#)
- [Deploying a Junos Space Virtual Appliance on page 19](#)
- [Configuring the Basic Settings of a Junos Space Virtual Appliance on page 29](#)

- [Changing the Network and System Settings of a Junos Space Virtual Appliance on page 56](#)
- [Adding a Node to an Existing Junos Space Fabric on page 81](#)
- [Viewing Nodes in the Fabric on page 77](#)
- *Monitoring Nodes in the Fabric*

Understanding How Nodes Are Connected in a Fabric

Each Junos Space appliance (physical or virtual) that you install and configure is represented as a single node in the fabric. You can add nodes without disrupting the services that are running on the fabric. When you install and configure the first appliance, Junos Space Network Management Platform automatically creates a fabric with one node. For each additional appliance you install and configure, you must add a node in Junos Space to logically represent the appliance in the fabric. You add nodes to the fabric from the **Administration** workspace in the Junos Space Network Management Platform user interface. Each node that you add to the fabric increases the resource pool for the node functions to meet the scalability and availability requirements of your network. By default, Junos Space Network Management Platform automatically enables the nodes in the fabric to distribute workload. The nodes in the fabric work together to provide a virtualized resource pool for each of the node functions: load balancer, database, and application logic.

In a fabric comprising two or more nodes, Junos Space Network Management Platform provides failover when a node functioning as the active server (load balancer server or database server) goes down. By default, Junos Space Network Management Platform marks a particular node down and routes failover requests to the node that Junos Space Network Management Platform designates as standby server. On the fabric, the first node acts as the active server, whereas the second node acts as the standby server. When the current active server fails, JBoss selects one of the multiple nodes on the fabric to act as the active server.

Junos Space Network Management Platform uses a heartbeat mechanism to check whether the nodes in the fabric are running. When a node functioning as the active server fails (the appliance crashes or stops sending heartbeats), the node functioning as the standby server takes over all resources that were managed by the node functioning as the active server. Because the nodes in a Junos Space fabric reply on IP multicast messages to discover each other, you should make sure that IP multicast packets are reachable among all nodes in the Junos Space fabric.

To add, manage, and monitor the nodes in a fabric, a Junos Space user connects to a single Web IP address. The IP address of first (active) node and second (standby) node, and the Web (virtual) IP address must all be in the same subnet. The Web IP address needs to work on both the first and second node in the fabric. When both nodes are in same subnet, and the first (active) node goes down, the second (standby) node becomes the active node and packets continue to be directed from the router to the Junos Space Web IP address, and then to the second node, because both nodes are in same subnet.

Related Documentation

- [Junos Space Virtual Appliance Overview on page 3](#)
- [Fabric Management Overview on page 8](#)
- [Adding a Node to an Existing Junos Space Fabric on page 81](#)
- [Viewing Nodes in the Fabric on page 77](#)
- [Monitoring Nodes in the Fabric](#)

Ethernet Interfaces in a Junos Space Virtual Appliance Overview

This topic describes the Ethernet interfaces present in a Junos Space Virtual Appliance.

A Junos Space Virtual Appliance contains four Ethernet interfaces—eth0, eth1, eth2, and eth3. You can use these interfaces 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).

Table 3 on page 8 summarizes the functions of Ethernet interfaces on the Junos Space Appliance.

Table 3: Junos Space Appliance Ethernet Interfaces

Interface	Function
eth0	SSH and device management, if only the Ethernet interface ETH0 or Ethernet interface 0 is used
eth0:0	GUI interface
eth1	SSH access to the Junos Space nodes NOTE: 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 the Basic Settings of a Junos Space Virtual Appliance on page 29](#)
- [Changing the Network and System Settings of a Junos Space Virtual Appliance on page 56](#)
- [Configuring a Junos Space Virtual Appliance as a Standalone or Primary FMPM Node on page 44](#)

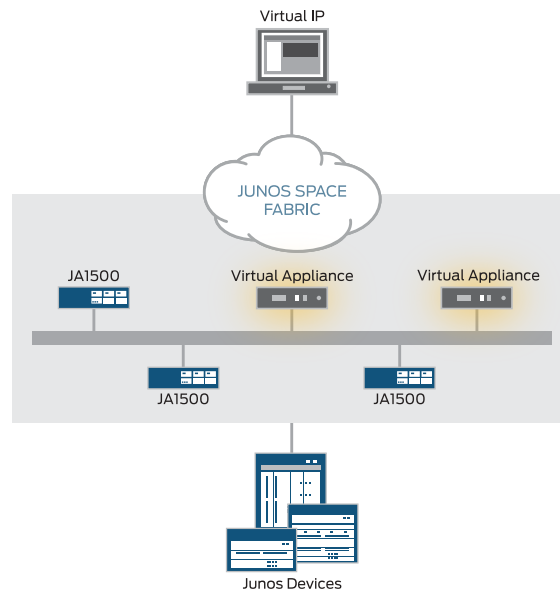
Fabric Management Overview

You can deploy a Junos Space Appliance or a Junos Space Virtual Appliance to create a fabric that provides the scalability and availability that your managed network requires as you add more devices, services, and users.

A Junos Space fabric comprises one or more IP-connected nodes. A *node* is a logical object that represents a single Junos Space Appliance (JA1500 or JA2500) or Junos Space Virtual Appliance, its operating system, and the Junos Space Network Management Platform software that runs on the operating system. Each Junos Space Appliance or Junos Space Virtual Appliance that you install and configure is represented as a single node in the fabric. You can add nodes without disrupting the services that are running on the fabric. When you add nodes to the fabric, you can manage and monitor the nodes from the Administration workspace of the Junos Space Network Management Platform GUI. To add, manage, and monitor nodes in the fabric, a fabric administrator (that is, a

user with the System Administrator privileges) connects to the virtual IP address configured for the fabric, as shown in [Figure 1 on page 9](#).

Figure 1: Fabric Nodes



NOTE: All Junos Space nodes that are part of a fabric must have the same version of Junos Space Network Management Platform installed on every node.

Single-Node Functionality

When the fabric comprises a single Junos Space node, all devices in the managed network connect to that Junos Space node. When you install and configure the Junos Space node, Junos Space Network Management Platform automatically creates a fabric with one node. By default, a fabric that consists of a single node provides complete Junos Space Network Management Platform management functionality, with the following *node functions* enabled for the node:

- **Load Balancer**—For processing HTTP requests from remote browsers and North Bound Interface (NBI) clients
- **Database**—For processing database requests (for create, read, update, and delete operations)
- **Application Logic**—For processing back-end business logic (Junos Space Network Management Platform service requests) and Device Mediation Layer (DML) workload (that is, any interaction between Junos Space and any device, such as device connectivity, device events, and logging events)



NOTE: A fabric that comprises a single node provides no workload balancing and no backup if the Junos Space node goes down.

Multinode Functionality

As your network expands with new devices, services, and users, you can add Junos Space nodes to handle the increased workload. When you install and configure the first Junos Space node, Junos Space Network Management Platform automatically creates a fabric with one node. For each additional Junos Space node that you configure, you must add the node to the fabric using the Junos Space Network Management Platform Web GUI. Each node that you add to the fabric increases the resource pool for the node functions to meet the scalability and high availability requirements of your network. By default, Junos Space Network Management Platform automatically enables node functionality across the nodes in the fabric to distribute workload. The nodes in the fabric work together to provide a virtualized resource pool for each of the node functions: load balancer, database, and application logic.

The Junos Space Network Management Platform node functions distribute the workload across operating nodes according to the following load-distribution rules:

- **Load Balancer**—When a node that functions as the active load-balancer server is down, all HTTP requests are automatically routed to the standby load-balancer server that is running on a separate node.
- **Database**—When a node that functions as the active database server is down, all database requests (for create, read, update, and delete operations) are routed to the node that functions as the standby database server.
- **Application Logic (DML and business logic)**—Device connections and user requests are distributed among the nodes, and device-related operations are routed to the node to which the device is connected.

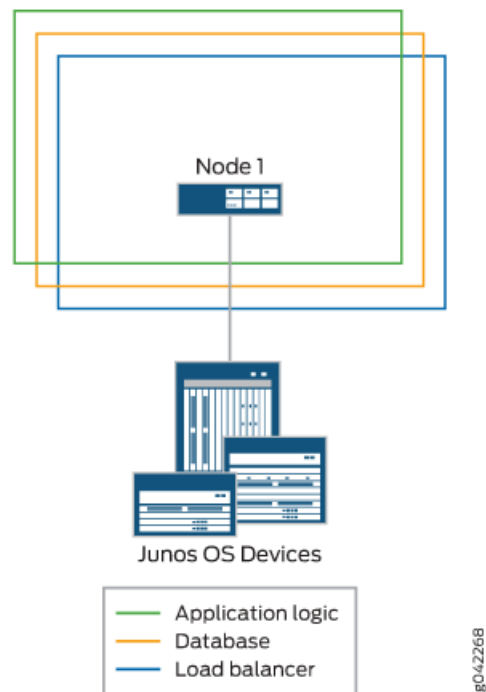
Junos Space Network Management Platform uses the following algorithm to ensure that the number of devices connected to a node does not exceed the threshold limit for each node:

$$\text{Threshold Limit} = \left[\frac{(\text{Number of Devices in Database})}{(\text{Number of Nodes Running})} \right] + 2$$

The following workflow describes how the node functions are enabled across the fabric as nodes are added:

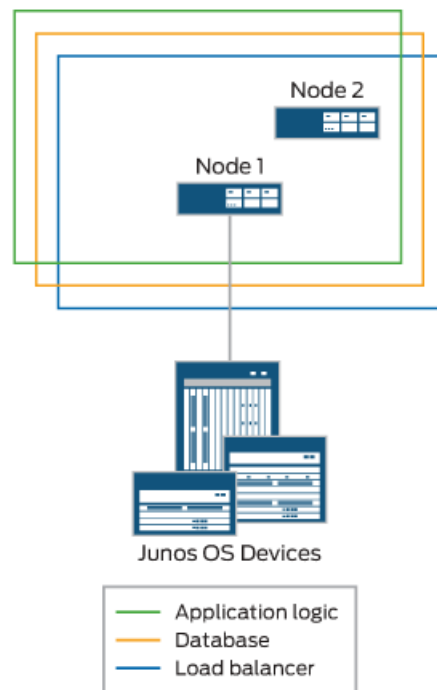
- **Adding the first node**—The load balancer, database, and application logic functions are enabled on the node. Each node function provides both scalability and high availability. [Figure 2 on page 11](#) shows all functions enabled on a fabric comprising one node.

Figure 2: Fabric with One Node



- Adding the second node—When a second node is added to the fabric, the first node functions as the active load-balancer server and active database server, and the second node functions as the standby load-balancer server and standby database server. The load-balancer and application logic node functions provide scalability and high availability. The database node function on the second node provides high availability only. [Figure 3 on page 12](#) shows the functions enabled on a fabric comprising two nodes.

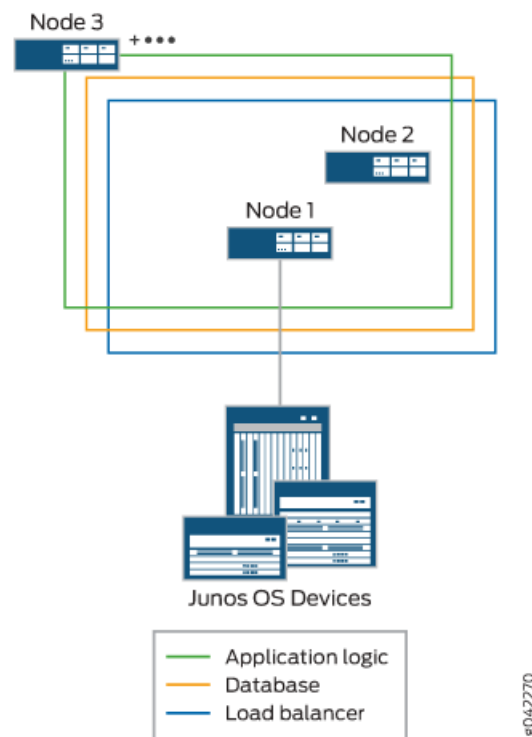
Figure 3: Fabric with Two Nodes



- Adding the third node—Only the application logic functionality is enabled on the third node to provide equal distribution of device connections and user requests across all nodes, and route device-related operations to the node to which the device is connected. The application logic functionality provides both scalability and high availability. However, high availability for application logic is not available if both the nodes added previously are down. For high availability of application logic, at least one of the two previously added nodes should be up.

The following illustration shows the functions enabled on a fabric comprising three nodes.

Figure 4: Fabric with Three Nodes



NOTE: For the third node and each subsequent node added to the fabric, only the application logic functionality is enabled.

FMPM Node Functionality

Junos Space nodes have network monitoring (fault monitoring and performance monitoring) capabilities enabled by default. For improved performance, you can configure a dedicated Fault Monitoring and Performance Monitoring (FMPM) node that is used exclusively for network monitoring.

When you add the FMPM node to the fabric, the network monitoring functionality is disabled on the Junos Space nodes and is enabled on the FMPM node. All the devices and nodes now send their traps to the newly added FMPM node. This feature provides you with a high performance network monitoring solution for networks with more than 15,000 small devices or a few devices with thousands of interfaces.

You can have a cluster of FMPM nodes hosting only the network monitoring functionality. An FMPM cluster can consist of a maximum of two FMPM nodes. The network monitoring service present in an FMPM cluster is considered as a part of the Junos Space Network Management Platform and can be used by one or more applications. Having more than one FMPM node in a cluster provides high availability (HA).



NOTE:

- When you configure a Junos Space Appliance or a Junos Space Virtual Appliance, you can choose whether to configure the appliance as a Junos Space node or as an FMPM node. If you want to change an existing Junos Space node to an FMPM node or vice-versa, you must re-image the appliance and reconfigure it as an FMPM node or a Junos Space node. For more information, refer to the Junos Space Appliance and Junos Space Virtual Appliance documentation at http://www.juniper.net/techpubs/en_US/release-independent/junos-space/index.html.
- Before you add an FMPM node to the fabric, ensure that the fabric contains at least one Junos Space node.

After configuring an FMPM node, you must add an FMPM node to the Junos Space fabric for Junos Space Network Management Platform and other Junos Space applications to use the services provided by this node. The FMPM nodes that are added to the fabric are deployed into a Junos Space cluster in a fashion similar to a Junos Space node.



NOTE:

- You can add up to a maximum of two FMPM nodes to an FMPM cluster.
- The network monitoring service runs on the primary FMPM node. The network monitoring database (PostgreSQL database) is replicated from the primary FMPM node to the secondary FMPM node.

Each node that you add to the fabric increases the resource pool for the node functions to meet the scalability and availability requirements of your network. When the primary FMPM node is down or being rebooted, the secondary (backup) node automatically assumes charge.



NOTE: The functions of the FMPM node:

- When the first FMPM node is up, the network monitoring functionality is enabled on this node and the PostgreSQL database runs on this node.
- When you add a second FMPM node to the fabric, the first node functions as the primary node, and the second node functions as the standby. The second node assumes charge when the primary node (first node) is down.

After an FMPM node is added to the fabric, you can perform most of the actions that are permitted on a Junos Space node, such as:

- Monitor the FMPM node
- Configure the IP address of the FMPM node (from **Network Management Platform > Fabric > Space Node Settings**)

- Delete the FMPM node

Node Function Availability

In a fabric comprising two or more nodes, Junos Space Platform provides failover when a node functioning as the active server (load-balancer server or database server) goes down. By default, Junos Space Network Management Platform marks a particular node down and routes failover requests to the node that Junos Space Network Management Platform designates as the standby server. Junos Space Network Management Platform uses a heartbeat mechanism to check whether the nodes in the fabric are running. When a node functioning as the active server fails (that is, the Junos Space Appliance physically crashes or stops sending heartbeats), the node functioning as the standby server takes over all resources that were managed by the node functioning as the active server.

Related Documentation

- [Viewing Nodes in the Fabric on page 77](#)
- [Adding a Node to an Existing Junos Space Fabric on page 81](#)
- *Monitoring Nodes in the Fabric*

PART 2

Deploying

- [Deploying the Junos Space Virtual Appliance on page 19](#)

CHAPTER 2

Deploying the Junos Space Virtual Appliance

- [Deploying a Junos Space Virtual Appliance on page 19](#)

Deploying a Junos Space Virtual Appliance

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:

- 64-bit quad processor with at least 2.66 GHz
- Four virtual CPUs
- 32-GB RAM to configure the virtual appliance as a Junos Space node or fault monitoring and performance monitoring (FMPM) node
- One RJ-45 10/100/1000 Network Interface Connector
- 100-GB hard disk

For information about adding disk resources, refer to [“Adding Disk Resources for a Junos Space Virtual Appliance” on page 23](#).



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 Junos Space Virtual Appliance, see *Junos® Space Frequently Asked Questions* at [Junos Space Network Management Platform Documentation](#).



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.



NOTE: 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.



NOTE: VMware VMotion is not supported for moving Junos Space Virtual Appliances from one VMware ESX server to another VMware ESX server.

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

1. [Installing the VMware ESX Server on page 20](#)
2. [Creating a Junos Space Virtual Appliance on page 20](#)
3. [Adding Virtual Processors \(CPU\) and Modifying RAM Settings for a Junos Space Virtual Appliance on page 22](#)
4. [Adding Disk Resources for a Junos Space Virtual Appliance on page 23](#)

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.



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.

Creating a Junos Space Virtual Appliance

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.

- [Creating a Junos Space Virtual Appliance by Using vSphere Client on page 21](#)
- [Creating a Junos Space Virtual Appliance by Using the OVF Tool on page 21](#)

Creating 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.

Creating 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 virtual processors 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 if you want to operate the Junos Space Virtual Appliance as a Junos Space node or 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

The Junos Space Virtual Appliance files are distributed with 100-GB of disk space.

When configuring the virtual appliance as a Junos Space node, expand the partitions as follows:

- 40 GB for **/var**
- 25 GB for **/var/log**
- 15 GB for **/tmp**
- 20 GB for **/**

When configuring the virtual appliance as a specialized or FMPM node, add another 100 GB of disk resources and expand the partitions as follows:

- 120 GB for **/var**
- 40 GB for **/var/log**
- 20 GB for **/tmp**
- 20 GB for **/**

**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 14.1*.

- 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.

Table 4: 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 NOTE: 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

You need to add a disk resource and expand a partition one at a time. Space available on a disk resource cannot be shared among the partitions. For example, you cannot share a disk resource of 80 GB among the `/var`, `/var/log`, and `/tmp` partitions. You must add a disk resource of minimum 40 GB and then expand the drive size of the `/var` partition; again add a disk resource of 25 GB and then expand the drive size of the `/var/log` partition; and so on.

For information about expanding the drive size, refer to [“Configuring the Basic Settings of a Junos Space Virtual Appliance” on page 29](#).

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

- [Configuring the Basic Settings of a Junos Space Virtual Appliance on page 29](#)
- [Junos Space Virtual Appliance Overview on page 3](#)

- [Understanding How Nodes Are Connected in a Fabric on page 5](#)
- [Adding a Node to an Existing Junos Space Fabric on page 81](#)
- [Viewing Nodes in the Fabric on page 77](#)
- *Monitoring Nodes in the Fabric*

PART 3

Configuring

- [Configuring the Junos Space Virtual Appliance on page 29](#)

CHAPTER 3

Configuring the Junos Space Virtual Appliance

- [Configuring the Basic Settings of a Junos Space Virtual Appliance on page 29](#)
- [Configuring a Junos Space Virtual Appliance as a Standalone or Primary FMPM Node on page 44](#)
- [Configuring a Junos Space Virtual Appliance as a Backup or Secondary FMPM Node for High Availability on page 50](#)
- [Changing the Network and System Settings of a Junos Space Virtual Appliance on page 56](#)
- [Viewing Nodes in the Fabric on page 77](#)
- [Adding a Node to an Existing Junos Space Fabric on page 81](#)

Configuring the Basic Settings of a Junos Space Virtual Appliance

After you deploy a Junos Space Virtual Appliance on a VMware ESX or VMware ESXi server, you must enter basic network and machine information to make your Junos Space Virtual Appliance accessible on the network. You must also increase the virtual machine (VM) drive size.

To configure a deployed Junos Space Virtual Appliance, the VMware vSphere Client must be connected to the VMware ESX or VMware ESXi server on which the virtual appliance is running.

Before you begin, ensure that you have the following:

- IP address and subnet mask for the eth0 Ethernet interface.
- IP address of the default gateway.
- IP address of the name server.
- (Optional) IP address and subnet mask for the eth3 Ethernet 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) IP address of the default gateway for the eth3 Ethernet interface.
- Virtual IP (VIP) of the Junos Space fabric.
- 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 as the First Node in a Cluster or as a Standalone Node on page 30](#)
- [Adding a Junos Space Virtual Appliance to an Existing Cluster on page 37](#)
- [Configuring the eth1 Ethernet Interface on page 43](#)

Configuring a Junos Space Virtual Appliance as the First Node in a Cluster or as a Standalone Node

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

To configure a Junos Space Virtual Appliance as the first node in a cluster or as a standalone node:

1. Using vSphere Client, log in to the server on which the Junos Space Virtual Appliance is deployed.
2. Power on the Junos Space Virtual Appliance:
 - a. From the VMware vSphere Client, right-click Junos Space Virtual Appliance and select **Power > Power On**.

3. Select the **Console** tab.

The VMware vSphere Client console screen displays the Junos Space login prompt.

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

```
Space release 13.3R1.284061 (284760)
```

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

You are prompted to enter the administrator password.

5. Type **abc123** as the default administrator password and press Enter.

Junos Space prompts you to change your default password.

```
Welcome to Junos Space
.... Changing admin password
Changing password for user admin
(current) UNIX password:
```

6. Type the default password again and press Enter.

You are prompted to enter a new password.

You can now choose the new password or passphrase.
Enter new password:

7. Type a 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.

You are prompted to retype the password.

Re-type new password:

8. Retype the new password and press Enter.

You are prompted to enter the new password again.

passwd: all authentication tokens updated successfully.
Enter current password

9. Enter the current administrator password.

The current administrator password is the one that you entered in step 6.

You are prompted to specify whether you want to install the virtual appliance as a Space platform or an FMPM 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]

10. Type **S** to install the virtual appliance as a Junos Space node.

You are prompted to enter the IP address for the eth0 interface.

Please enter new IP address for interface eth0:

11. Type an IP address for the eth0 interface in the dotted decimal notation and press Enter.

You are prompted to enter the subnet mask for the eth0 interface.

Please enter new subnet mask for interface eth0:



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

To understand how Junos Space uses eth0 and eth3 Ethernet interfaces, see [“Ethernet Interfaces in a Junos Space Virtual Appliance Overview” on page 6](#).

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

You are prompted to enter the default gateway for the eth0 interface.

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

13. Type the default gateway as a dotted decimal IP address and press Enter.

You are prompted to enter the name server address in dotted decimal notation.

Please type the nameserver address in dotted decimal notation:

14. Type the name server address in dotted decimal notation for the eth0 interface and press Enter.

You are prompted to specify whether you want to configure the device management IP interface (eth3).

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.

15. Enter Device Management IP interface information:

- If you want to configure a separate interface for device management:

- a. Type **y** and press Enter.

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

Please enter new IP address for interface eth3:

- b. Type a new IP address for the eth3 interface and press Enter.

You are prompted to enter the subnet mask for the eth3 interface.

Please enter new subnet mask for interface eth3:

- c. Type a new subnet mask for the eth3 interface and press Enter.

You are prompted to specify whether you want the node to be added to an existing cluster.

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

- If you do not want to configure a separate interface for device management, type **n** and press Enter.

You are prompted to specify whether you want the node to be added to an existing cluster.

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

16. Type **n** and press Enter.

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

17. Type the IP address for Web access and press Enter.



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.

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

Add NTP Server? [y/n]

18. • To skip configuring the NTP server and configure time for the Space node:

- a. Type **n** and press Enter.

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:

- 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.

Please type the new NTP server:

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

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

Added device1.example.com

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

Please enter display name for this node:

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

This is the name that Junos Space displays for the first node in a Junos Space cluster. You are prompted to enter the password for cluster maintenance mode.

Enter password for cluster maintenance mode:

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



NOTE:

- The username for cluster maintenance mode is maintenance.
- A maintenance mode administrator must specify this password to access maintenance mode and shut down all nodes in the fabric.

You are prompted to retype the password.

Re-enter password:

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

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

Settings Summary:

```
> IP Change: eth0 is 10.204.97.165 / 255.255.240.0
> Default Gateway - 10.204.111.254 on eth0
> DNS add: 10.209.194.50
> Create as first node or standalone
> Web IP address is 10.204.98.59
> 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]:

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

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

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 and press Enter.

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

23. Expand the VM drive size.

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



NOTE: Before expanding the VM drive size, you must add a disk resource and then expand the drive size of a partition one at a time. For information about adding disk resources, refer to [“Deploying a Junos Space Virtual Appliance” on page 19](#).

The minimum disk resource required for each partition is as follows:

- For a space node, add 40 GB for /var, 25 GB for /var/log, 15 GB for /tmp, and 20 GB for / partition.
- For an FMPM node, add 120 GB for /var, 40 GB for /var/log, 20 GB for /tmp, and 20 GB for / partition.

Space available in a disk resource cannot be shared among the partitions. For example, you cannot share a disk resource of 80 GB among /var, /var/log, and /tmp partitions. You must add a disk resource of minimum 40 GB and then expand the drive size of the /var partition; again add a disk resource of 25 GB and then expand the drive size of the /var/log partition and so on.

The following caution appears:

-----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]

- b. Type **y** and press Enter to continue expanding the drive size.
- c. Type the administrator password.

You are prompted to expand a partition.

```
Begin to stop Jboss and MySQL...
Service Jboss and MySQL stopped
```

Which partition do you want to expand?

Warning: As part of expanding disk partition, all disk space allocated for

Junos Space instance will completely be allocated to the chosen partition. To add more disk space to other partitions, additional disk space needs to be allocated to the Virtual Machine, prior to doing so in Junos Space.

```
1> /
2> /var
3> /var/log
4> /tmp
```

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

Choice [1-4,AMR]:

- d. Type the number displayed against the partition that you want to expand. For example, type 2 if you want to expand the **/var** partition.
- e. Retype the administrator password.

Log details are displayed, as shown in the following example:

```
Extending partition "/var"
Partition "/var" is vg "jmpvgnocf" lv "/dev/jmpvgnocf/lvvar"
Added 0 drives
Found new drive /dev/sdb
Creating pv on /dev/sdb
  Writing physical volume data on disk 'dev/sdb'
  Physical volume "dev/sdb" successfully created
Extending vg jmpvgnocf onto pv /dev/sdb
  Volume group "jmpvgnocf" successfully extended
Extending size of lv /dev/jmpvgnocf/lvvar
  Extending logical volume lvvar to size 25.78 GB
  Logical volume lvvar successfully resized
Resizing /var onto new space, this will take a few minutes
resizezfs 1.39 (29-May-2006)
Filesystem at /dev/jmpvgnocf/lvvar is mounted on /var: on-line resizing
required
Performing an on-line resize of /dev/jmpvgnocf/lvvar to 6758400 (4k) blocks.
The file system on /dev/jmpvgnocf/lvvar is now 6758400 blocks long.
```

Do you want to expand more disks? [y/n]

The following appears if additional drives are not detected:

```
Extending partition "/var"
Partition "/var" is vg "jmpvgnocf" lv "/dev/jmpvgnocf/lvvar"
Added 0 drives
ERROR: Did not find any drives to add!
```

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.

24. 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.

Adding a Junos Space Virtual Appliance to an Existing Cluster

You can add a Junos Space Virtual Appliance to an existing cluster to provide high availability and better performance.

To add a Junos Space Virtual Appliance to an existing cluster:

1. Using vSphere Client, log in to the server on which the Junos Space Virtual Appliance is deployed.
2. Power on the Junos Space Virtual Appliance:
 - a. From the VMware vSphere Client, right-click Junos Space Virtual Appliance and select **Power > Power On**.

3. Select the **Console** tab.

The VMware vSphere Client console screen displays the Junos Space login prompt.

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

You are prompted to enter the administrator password.

```
Space release 13.3R1.284061 (284760)
```

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

```
Password:
```

5. Type **abc123** as the default administrator password and press Enter.

Junos Space prompts you to change your default password.

```
Welcome to Junos Space
```

```
.... Changing admin password
```

```
Changing password for user admin
```

```
(current) UNIX password:
```

6. Type the default password again and press Enter.

You are prompted to enter a new password.

You can now choose the new password or passphrase.

```
Enter new password:
```

7. Type a 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.

You are prompted to retype the password.

Re-type new password:

8. Retype the new password and press Enter.

You are prompted to enter the password again.

passwd: all authentication tokens updated successfully.
Enter current password

9. Enter the current password.

The current administrator password is the one that you entered in steps 7 and 8. You are prompted to specify whether you want to install the virtual appliance as a Space platform or an FMPM 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]

10. Type **S** to install the virtual appliance as a Junos Space node.

You are prompted to enter the IP address for the eth0 interface.

Please enter new IP address for interface eth0:

11. Type an IP address for the eth0 interface in the dotted decimal notation and press Enter.



NOTE: The first and second appliances or virtual appliances that you configure in a cluster (fabric) must be in the same subnet.

You are prompted to enter the subnet mask for the eth0 interface.

Please enter new subnet mask for interface eth0:

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

You are prompted to enter the default gateway for the Space node.

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

13. Type the default gateway in the dotted decimal notation and press Enter.

You are prompted to enter the name server address in dotted decimal notation.

Please type the nameserver address in dotted decimal notation:

14. Type the name server address in the dotted decimal notation for the eth0 interface and press Enter.

You are prompted to specify whether you want to configure a separate interface for device management.

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

15. Enter the Device Management IP interface information:
 - If you want to configure a separate interface for device management, type **y** when prompted to configure a separate interface for device management and press Enter.



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.

- a. Type **y** and press Enter.

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

Please enter new IP address for interface eth3:

- b. Type a new IP address for the eth3 interface and press Enter.

You are prompted to enter the subnet mask for the eth3 interface.

Please enter new subnet mask for interface eth3:

- c. Type a new subnet mask for the eth3 interface and press Enter.

You are prompted to specify whether you want the node to be added to an existing cluster.

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

- If you do not want to configure a separate interface for device management, type **n** and press Enter.

You are prompted to specify whether you want the node to be added to an existing cluster.

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

16. Type **y** to add this node to an existing cluster.

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

Settings Summary

```
1> IP Change: eth0 is 10.157.59.221 / 255.255.224.0
2> Default Gateway = 10.157.32.1 on eth0
3> DNS add: 10.155.191.252
4> Node to be added to existing cluster
```

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

Choice [ACQR]:

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

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

When you enter **A** to apply the settings, Junos Space displays the Settings Menu as shown in the following example:

Junos Space Settings Menu

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

```
Q> Quit
R> Redraw Menu
```

Choice [1-7,QR]:

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

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

18. Expand the VM drive size.

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



NOTE: Before expanding the VM drive size, you must add a disk resource and then expand the drive size of a partition one at a time. For information about adding disk resources, refer to [“Deploying a Junos Space Virtual Appliance” on page 19](#).

The minimum disk resource required for each partition is as follows:

- For a space node, add 40 GB for /var, 25 GB for /var/log, 15 GB for /tmp, and 20 GB for / partition.
- For a specialized for FMPM node, add 120 GB for /var, 40 GB for /var/log, 20 GB for /tmp, and 20 GB for / partition.

You need to add a disk resource, then expand the VM drive size and again add a disk resource to expand the next VM drive size. Space available in a disk resource cannot be shared among the partitions. For example, you cannot share a disk resource of 80 GB among /var, /var/log and /tmp partitions. You must add a disk resource of minimum 40 GB and then expand the drive size of the /var partition; again add a disk resource of 25 GB and then expand the drive size of the /var/log partition and so on.

The following caution appears:

-----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]

- b. Type **y** and press Enter to continue expanding the drive size.
- c. Type the administrator password.

You are prompted to expand a partition.

Begin to stop Jboss and MySQL...

Service Jboss and MySQL stopped

Which partition do you want to expand?

Warning: As part of expanding disk partition, all disk space allocated for Junos Space instance will completely be allocated to the chosen partition. To add more disk space to other partitions, additional disk space needs to be allocated to the Virtual Machine, prior to doing so in Junos Space.

```
1> /
2> /var
3> /var/log
4> /tmp
```

A> Apply changes

M> Return to Main Menu

R> Redraw Menu

Choice [1-4,AMR]:

- d. Type the number displayed against the partition that you want to expand. For example, type 2 if you want to expand the **/var** partition.
- e. Retype the administrator password.

Log details are displayed, as shown in the following example:

```
Extending partition "/var"
Partition "/var" is vg "jmpvgnocf" lv "/dev/jmpvgnocf/lvvar"
Added 0 drives
Found new drive /dev/sdb
Creating pv on /dev/sdb
  Writing physical volume data on disk 'dev/sdb'
  Physical volume "dev/sdb" successfully created
Extending vg jmpvgnocf onto pv /dev/sdb
  Volume group "jmppvnocf" successfully extended
Extending size of lv /dev/jmpvgnocf/lvvar
  Extending logical volume lvvar to size 25.78 GB
  Logical volume lvvar successfully resized
Resizing /var onto new space, this will take a few minutes
resizezfs 1.39 (29-May-2006)
Filesystem at /dev/jmpvgnocf/lvvar is mounted on /var: on-line resizing
required
Performing an on-line resize of /dev/jmpvgnocf/lvvar to 6758400 (4k) blocks.
The file system on /dev/jmpvgnocf/lvvar is now 6758400 blocks long.
```

Do you want to expand more disks? [y/n]

The following appears if additional drives are not detected:

```
Extending partition "/var"
Partition "/var" is vg "jmpvgnocf" lv "/dev/jmpvgnocf/lvvar"
Added 0 drives
ERROR: Did not find any drives to add!
```

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.

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

The basic configuration of the Junos Space Virtual Appliance is now complete. You can now access the Junos Space Network Management Platform by using a Web browser. Use **super** as the default username and **juniper123** as the password.

To use the eth1 interface for performing administrative tasks on the Junos Space node, configure the eth1 interface after the Junos Space node starts up. The eth1 interface must be configured separately for each node in a multinode fabric.

For each appliance that you add to an existing fabric, you must add a node in the Junos Space user interface, as described in [“Adding a Node to an Existing Junos Space Fabric” on page 81](#).

Configuring the eth1 Ethernet Interface

You use the eth1 Ethernet interface as the administrative interface for the Junos Space node. When the Junos Space 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 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. Enter the IP address of the eth1 interface in dotted decimal notation.

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) Enter the subnet mask for the eth1 interface in dotted decimal notation.

6. (Optional) Enter the default gateway in dotted decimal notation.

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 6](#)
- [Changing the Network and System Settings of a Junos Space Virtual Appliance on page 56](#)
- [Junos Space Virtual Appliance Overview on page 3](#)
- [Configuring a Junos Space Virtual Appliance as a Standalone or Primary FMPM Node on page 44](#)
- [Configuring a Junos Space Virtual Appliance as a Backup or Secondary FMPM Node for High Availability on page 50](#)
- [Deploying a Junos Space Virtual Appliance on page 19](#)

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.

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

- IP address and subnet mask for the eth0 Ethernet interface.
- IP address of the default gateway.
- IP address of the name server.
- Virtual IP (VIP) address of the FMPM nodes that 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.
- IP address or URI of NTP source to synchronize time.
- (optional) IP 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. Power on the Junos Space Virtual Appliance:
 - From the VMware vSphere client, right-click on the Junos Space Virtual Appliance and select **Power > Power On** from the drop-down menu.
 - Select the Console tab.

The VMware vSphere Client console screen displays the Junos Space login prompt.

2. At the Junos Space login prompt, type **admin** as your default login name and press Enter.
3. Type **abc123** as your default password and press Enter.
Junos Space prompts you to change your default password.
4. Type the default password again and press Enter.
5. 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.

6. Retype your new password.
If the password is changed successfully, the message **passwd: all authentication tokens updated successfully.** is displayed.
7. 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.
8. Type the IP address of the eth0 Ethernet interface in dotted decimal notation and press Enter.

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

9. Type the new subnet mask of the eth0 Ethernet interface in dotted decimal notation and press Enter.
10. Type the IP address of the default gateway for the eth0 Ethernet interface in dotted decimal notation and press Enter.
11. Type the IP address of the name server in dotted decimal notation for the eth0 Ethernet interface and press Enter.
12. Type **P** when prompted Choose the role for this FMPM specialized node [P/B].

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. Type 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.

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:

```
1> IP Change: eth0 is 10.205.56.36 / 255.255.0.0
2> Default Gateway = 10.205.255.254 on eth0
3> DNS add: 10.209.194.14
4> Create as first node or standalone
5> FMPM service IP address is 10.205.57.36
6> NTP add: device1.example.com
7> Node display name will be set when it is added.
8> 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]:

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.

a. Type **6** and press Enter to expand the VM drive size.



NOTE: Before expanding the VM drive size for an FMPM node, you need to add a disk resource for a partition one at a time. For information about adding disk resources, refer to [“Deploying a Junos Space Virtual Appliance” on page 19](#).

The minimum disk resource required for each partition is as follows:

- 120 GB for /var
- 40 GB for /var/log
- 20 GB for /tmp
- 20 GB for /

Space available in a disk resource cannot be shared among the partitions. For example, you cannot share a disk resource of 80 GB among /var/log, /tmp and / partitions. You must add a disk resource of minimum 40 GB and then expand the drive size of the /var/log partition; again add a disk resource of 20 GB and then expand the drive size of the /tmp partition and so on.

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.

Do you want to continue? [y/n]

b. Type **y** and press Enter to continue expanding the drive size.

c. Type the administrator password.

You are prompted to expand a partition.

Begin to stop Jboss ...

Service Jboss stopped

Which partition do you want to expand?

Warning: As part of expanding disk partition, all disk space allocated for Junos Space instance will completely be allocated to the chosen partition. To add more disk space to other partitions, additional disk space needs to be allocated to the Virtual Machine, prior to doing so in Junos Space.

```
1> /
2> /var
3> /var/log
4> /tmp
```

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

Choice [1-4,AMR]:

- d. Type the number displayed against the partition that you want to expand. For example, type **2** if you want to expand the **/var** partition.
- e. Retype the administrator password.

Log details are displayed, as shown in the following example:

```
Extending partition "/var"
Partition "/var" is vg "jmpvgnocf" lv "/dev/jmpvgnocf/lvvar"
Added 0 drives
Found new drive /dev/sdb
Creating pv on /dev/sdb
  Writing physical volume data on disk 'dev/sdb'
  Physical volume "dev/sdb" successfully created
Extending vg jmpvgnocf onto pv /dev/sdb
  Volume group "jmplvgnocf" successfully extended
Extending size of lv /dev/jmpvgnocf/lvvar
  Extending logical volume lvvar to size 25.78 GB
  Logical volume lvvar successfully resized
Resizing /var onto new space, this will take a few minutes
resizefs 1.39 (29-May-2006)
Filesystem at /dev/jmpvgnocf/lvvar is mounted on /var: on-line resizing
required
Performing an on-line resize of /dev/jmpvgnocf/lvvar to 6758400 (4k) blocks.
The file system on /dev/jmpvgnocf/lvvar is now 6758400 blocks long.
```

Do you want to expand more disks? [y/n]

The following appears if additional drives are not detected:

```
Extending partition "/var"
Partition "/var" is vg "jmpvgnocf" lv "/dev/jmpvgnocf/lvvar"
Added 0 drives
ERROR: Did not find any drives to add!
```

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 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** and press Enter 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 81](#) 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. Enter the IP address of the eth1 interface in dotted decimal notation.

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) Enter the subnet mask for the eth1 interface in dotted decimal notation.

6. (Optional) Enter the default gateway in dotted decimal notation.

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 the Basic Settings of a Junos Space Virtual Appliance on page 29](#)
- [Configuring a Junos Space Virtual Appliance as a Backup or Secondary FMPM Node for High Availability on page 50](#)
- [Ethernet Interfaces in a Junos Space Virtual Appliance Overview on page 6](#)

- [Changing the Network and System Settings of a Junos Space Virtual Appliance on page 56](#)

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.

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

- IP address and subnet mask for the eth0 Ethernet interface.
- IP address of the default gateway.
- IP address of the name server.
- Virtual IP (VIP) address of the FMPM nodes that 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) IP 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. Power on the Junos Space Virtual Appliance:

From the VMware vSphere client, right-click on the Junos Space Virtual Appliance and select **Power** > **Power On** from the drop-down menu.

2. Select the **Console** tab.

The VMware vSphere Client console screen displays 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.
9. Type the IP address of the eth0 Ethernet interface in dotted decimal notation and press Enter.

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

10. Type the new subnet mask of the eth0 Ethernet interface in dotted decimal notation and press Enter.
11. Type the IP address of the default gateway for the eth0 Ethernet interface in dotted decimal notation and press Enter.



NOTE: The default gateway address must be the same as the one that you configured for the primary FMPM node.

12. Type the IP address of the name server in dotted decimal notation for the eth0 Ethernet interface and press Enter.



NOTE: The IP address of the name server must be the same as the one that you configured for the primary FMPM node.

13. 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.
```

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

Choice [ACQR]:

14. 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.

15. Expand the VM drive size.

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



NOTE: Before expanding the VM drive size, you must add a disk resource and then expand the drive size of a partition one at a time. For information about adding disk resources, refer to [“Deploying a Junos Space Virtual Appliance” on page 19](#).

The minimum disk resource required for each partition is as follows:

- 120 GB for /var
- 40 GB for /var/log
- 20 GB for /tmp
- 20 GB for /

Space available in a disk resource cannot be shared among the partitions. For example, you cannot share a disk resource of 80 GB among /var/log, /tmp and / partitions. You must add a disk resource of minimum 40 GB and then expand the drive size of the /var/log partition; again add a disk resource of 20 GB and then expand the drive size of the /tmp partition and so on.

The following caution appears:

-----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]

- b. Type **y** and press Enter to continue expanding the drive size.
- c. Type the administrator password.

You are prompted to expand a partition.

Begin to stop Jboss and MySQL...

Service Jboss and MySQL stopped

Which partition do you want to expand?

Warning: As part of expanding disk partition, all disk space allocated for Junos Space instance will completely be allocated to the chosen partition. To add more disk space to other partitions, additional disk space needs to be allocated to the Virtual Machine, prior to doing so in Junos Space.

```
1> /
2> /var
3> /var/log
4> /tmp
```

A> Apply changes

M> Return to Main Menu

R> Redraw Menu

Choice [1-4,AMR]:

- d. Type the number displayed against the partition that you want to expand. For example, type 2 if you want to expand the `/var` partition.
- e. Retype the administrator password.

Log details are displayed, as shown in the following example:

```
Extending partition "/var"
Partition "/var" is vg "jmpvgnocf" lv "/dev/jmpvgnocf/lvvar"
Added 0 drives
Found new drive /dev/sdb
Creating pv on /dev/sdb
  Writing physical volume data on disk 'dev/sdb'
  Physical volume "dev/sdb" successfully created
Extending vg jmpvgnocf onto pv /dev/sdb
  Volume group "jmppvgnocf" successfully extended
Extending size of lv /dev/jmpvgnocf/lvvar
  Extending logical volume lvvar to size 25.78 GB
  Logical volume lvvar successfully resized
Resizing /var onto new space, this will take a few minutes
resizezfs 1.39 (29-May-2006)
Filesystem at /dev/jmpvgnocf/lvvar is mounted on /var: on-line resizing
required
Performing an on-line resize of /dev/jmpvgnocf/lvvar to 6758400 (4k) blocks.
The file system on /dev/jmpvgnocf/lvvar is now 6758400 blocks long.
```

Do you want to expand more disks? [y/n]

The following appears if additional drives are not detected:

```
Extending partition "/var"
Partition "/var" is vg "jmpvgnocf" lv "/dev/jmpvgnocf/lvvar"
Added 0 drives
ERROR: Did not find any drives to add!
```

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 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.

16. Type **Q** and press Enter 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 81](#) 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. Enter the IP address of the eth1 interface in dotted decimal notation.

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) Enter the subnet mask for the eth1 interface in dotted decimal notation.
6. (Optional) Enter the default gateway in dotted decimal notation.

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 the Basic Settings of a Junos Space Virtual Appliance on page 29](#)
- [Configuring a Junos Space Virtual Appliance as a Standalone or Primary FMPM Node on page 44](#)
- [Ethernet Interfaces in a Junos Space Virtual Appliance Overview on page 6](#)
- [Changing the Network and System Settings of a Junos Space Virtual Appliance on page 56](#)

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.

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 56](#)
- [Changing the Network Settings of a Junos Space Virtual Appliance on page 58](#)
- [Changing Time Options of a Junos Space Virtual Appliance on page 68](#)
- [Retrieving System Log Files from a Junos Space Virtual Appliance on page 70](#)
- [Expanding the Virtual Machine Drive Size on a Junos Space Virtual Appliance on page 72](#)
- [Setting Security Options on a Junos Space Virtual Appliance on page 74](#)
- [Running Shell in a Junos Space Virtual Appliance on page 77](#)

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: On 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 58](#)
- [Deleting a DNS Server on page 59](#)
- [Modifying the Virtual IP Address on page 60](#)
- [Modifying the IP Address of the eth0 Interface on page 61](#)
- [Modifying the IP Address of the eth1 Interface on page 63](#)
- [Modifying the IP Address of the eth3 Interface on page 64](#)
- [Adding Static Routes to a Junos Space Virtual Appliance on page 66](#)
- [Deleting Static Routes from a Junos Space Virtual Appliance on page 67](#)

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]:

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

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

```
DNS name server options:
1> Add a nameserver
2> Delete 10.209.194.14
```

```
A> Apply changes
```



```
M> Return to Main Menu
R> Redraw Menu
```

Choice [1-2,AMR]:

3. Type **1** at the prompt to add a DNS server.

You are prompted to enter the IP address of the DNS server that you want to add.

4. Type the IP address of the DNS server in dotted decimal notation.

Junos Space pings the DNS server. If it is unable to reach the server, it displays a message as shown in the following example:

```
Cannot ping 10.209.194.15
Use this address? [y/n]
```

5. Type **y** to continue adding the DNS server or **n** to enter another IP address.

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:

```
DNS name server options:
1> Add a nameserver
2> Delete 10.209.194.14
```

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

Choice [1-2,AMR]:

The DNS name server options lists all the configured DNS servers, as shown in the following example:

```
1> Add a nameserver
2> Delete 10.209.194.14
3> Delete 10.209.194.15
```

```
4> Delete 10.209.194.16
```

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

```
Choice [1-4,AMR]:
```

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

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

```
Delete nameserver 10.209.194.15? [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 10.209.194.15
```

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.



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 current VIP address is displayed and you are prompted to confirm that you want to change it, as shown in the following example:

```
Current VIP: 10.205.57.146
Change the current VIP:10.205.57.146? [y/N]
```

4. 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 in dotted decimal notation:

5. Type the VIP address in dotted decimal notation.

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

6. 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 eth0 interface IP address 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]: 1
```

3. Type **2** to change the eth0 settings.

The current IP address, mask, and gateway configured for the eth0 interface are displayed and you are prompted to confirm that you want to change the current settings, as shown in the following example:

```
Current Node Management Interface:
  IP: 10.205.56.146
Netmask: 255.255.0.0
Gateway: 10.205.255.254
```

```
Change Current Node Management Interface ? [y/N]
```

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

If you type **y**, you are prompted to enter a new IP address for the eth0 interface, as shown in the following example:

```
Current IP: 10.205.56.146, please enter new IP address:
```

5. Type the IP address for the eth0 interface in dotted decimal notation.

You are prompted to enter the network mask, as shown in the following example:

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

6. Type the network mask for the eth0 interface in dotted decimal notation.

You are prompted to enter the gateway for the eth0 interface, as shown in the following example:

```
Current Gateway: 10.205.255.254, please enter new Gateway:
```

7. Enter the IP address of the gateway in dotted decimal notation.

The eth0 configuration change is queued and the Change IP Address of Space Node menu appears.

8. 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> NodeIP:10.205.56.141
2> NodeMask:255.255.0.0
3> NodeGateway:10.205.255.254
```

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

Choice [1-3,AMCR]: A

9. Type **A** to apply the changes or type **C** to cancel modifying the IP address settings of the eth0 interface. Type a number from the menu to cancel the change. For example, type **2** to discard the new network mask 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. Enter the IP address of the eth1 interface in dotted decimal notation.

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) Enter the subnet mask for the eth1 interface in dotted decimal notation.

6. (Optional) Enter the default gateway in dotted decimal notation.

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 eth3 interface settings.

The current IP address, mask, and gateway configured for the eth3 interface are displayed and you are prompted to confirm that you want to change the current settings.

Current Device Management Interface:

IP: null
Netmask: null
Gateway: null

Enable Device Interface? [y/N]

4. 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 IP address for the eth3 interface.

Current IP: null, please enter new IP address:

5. Type the IP address for the eth3 interface.

You are prompted to enter the network mask.

Current Netmask: null, please enter new Netmask:

6. Type the network mask.

You are prompted to enter the gateway for the eth3 interface.

Current Gateway: null, please enter new Gateway:

7. Enter the IP address of the gateway for the eth3 interface.

The eth3 configuration change is queued and the Change IP Address of Space Node menu appears.

8. 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:10.205.56.144
2> DEVMask:255.255.0.0
3> DEVGateway:10.205.255.254

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

Choice [1-3,AMCR]:

9. Type **A** to apply the changes or type **C** to cancel modifying the IP address settings of the eth3 interface. Type a number from the menu to cancel the change. For example, type **2** to discard the new network mask for 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 options to modify static routes appear, as shown in the following example:

- 1> Add new static route
- 2> Remove->10.204.96.0/255.255.240.0->eth0:0.0.0.0
- 3> Remove->10.205.56.46/255.255.0.0->eth0:0.0.0.0
- 4> Remove->0.0.0.0/0.0.0.0->eth0:10.204.111.254

A> Apply changes

M> Return to Main Menu

R> Redraw Menu

Choice [1-4,AMR]:

3. Type **1** at the prompt to add a static route.

You are prompted to type the IP address of the destination network.

Please enter the destination network:

4. Type the IP address of the destination network in dotted decimal notation.

You are prompted to enter the mask of the destination network.

Please enter the subnet mask in dotted decimal notation:

5. Type the network mask in dotted decimal notation.

You are prompted to enter the gateway to access the destination network.

Please enter the gateway for this route:

6. Type the gateway to access the destination network.

You are prompted to enter the administrator password.

password:

7. Enter the administrator password.

Your change is queued and the options to add or remove static routes appear.

You can either continue adding static routes or type **A** to apply the changes.

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

```
1> Add new static route
2> Remove->10.204.96.0/255.255.240.0->eth0:0.0.0.0
3> Remove->10.205.56.46/255.255.0.0->eth0:0.0.0.0
4> Remove->0.0.0.0/0.0.0.0->eth0:10.204.111.254
```

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

Choice [1-4,AMR]:

3. 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-->10.204.96.0/255.255.240.0-->eth0:0.0.0.0
```

```
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 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 68](#)
- [Changing NTP Settings on page 69](#)

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. Enter the administrator password of this Junos Space installation.

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.

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.

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.

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.

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 Virtual Machine Drive Size on 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**.

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]

2. Type **y** to continue with the procedure or **n** to return to the Junos Space Settings Menu.

If you type **y**, you are prompted for the administrator password.

3. Enter the current administrator password.

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?

Warning: As part of expanding disk partition, all disk space allocated for Junos Space instance will completely be allocated to the chosen partition. To add more disk space to other partitions, additional disk space needs to be allocated to the Virtual Machine, prior to doing so in Junos Space.

1> /

2> /var

3> /var/log

4> /tmp

A> Apply changes

M> Return to Main Menu

R> Redraw Menu

Choice [1-4,AMR]:2

4. Type the number present against the partition that you want to expand at the prompt.



NOTE: Before expanding the VM drive size, you must add a disk resource and then expand the drive size of a partition one at a time. For example, you cannot share a disk resource of 80 GB among /var, /var/log, and /tmp partitions. You must add a disk resource of minimum 40 GB and then expand the drive size of the /var partition; again add a disk resource of 25 GB and then expand the drive size of the /var/log partition and so on.

For information about adding disk resources, data stored in each partition, and the disk resource required for each partition, refer to [“Deploying a Junos Space Virtual Appliance” on page 19](#).

You are prompted for the administrator password again.

5. Reenter the administrator password.

The logs appear when the `/var` partition is expanded, followed by a prompt to expand more disks.

```
Extending partition "/var"
Partition "/var" is vg "jmpvgnocf" lv "/dev/jmpvgnocf/lvvar"
Added 0 drives
Found new drive /dev/sdb
Creating pv on /dev/sdb
  Writing physical volume data on disk 'dev/sdb'
  Physical volume "dev/sdb" successfully created
Extending vg jmpvgnocf onto pv /dev/sdb
  Volume group "jmpvgnocf" successfully extended
Extending size of lv /dev/jmpvgnocf/lvvar
  Extending logical volume lvvar to size 25.78 GB
  Logical volume lvvar successfully resized
Resizing /var onto new space, this will take a few minutes
resizezfs 1.39 (29-May-2006)
Filesystem at /dev/jmpvgnocf/lvvar is mounted on /var: on-line resizing required
Performing an on-line resize of /dev/jmpvgnocf/lvvar to 6758400 (4k) blocks.
The filesystem on /dev/jmpvgnocf/lvvar is now 6758400 blocks long.
```

Do you want to expand more disks? [y/n]

The following appears if additional drives are not detected after expanding `/var`:

```
Extending partition "/var"
Partition "/var" is vg "jmpvgnocf" lv "/dev/jmpvgnocf/lvvar"
Added 0 drives
ERROR: Did not find any drives to add!
```

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 74](#)
- [Disabling the Firewall on a Junos Space Virtual Appliance on page 75](#)
- [Disabling SSH on a Junos Space Virtual Appliance on page 76](#)
- [Enabling SSH on a Junos Space Virtual Appliance on page 76](#)

Enabling the Firewall on a Junos Space Virtual Appliance

You can disable the firewall if you want and then reenable 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. Enter the administrator password.

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. Enter the administrator password.

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. Enter the administrator password.

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. Enter the administrator password.

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. Enter the current administrator password.

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 CLI](#)
- [Ethernet Interfaces in a Junos Space Virtual Appliance Overview on page 6](#)
- [Configuring the Basic Settings of a Junos Space Virtual Appliance on page 29](#)
- [Configuring a Junos Space Virtual Appliance as a Backup or Secondary FMPM Node for High Availability on page 50](#)
- [Configuring a Junos Space Virtual Appliance as a Standalone or Primary FMPM Node on page 44](#)
- [Deploying a Junos Space Virtual Appliance on page 19](#)

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, and identify nodes that are overloaded or down. The Fabric inventory page refreshes every 10 seconds, by default.

- [Changing Views on page 77](#)
- [Viewing Fabric Node Details on page 78](#)
- [Performing Fabric Node Actions on page 80](#)

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:

- Double-click a node in tabular view. The **View Node Detail** page appears.

Table 5 on page 78 describes the node information displayed in each column in the table and from the detailed view.

Table 5: Fields for the Fabric Monitoring Inventory Page

Field	Description
Node name	Logical name assigned to the node NOTE: 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.
Management IP	IP address for the node
Device Connection IP	IP address for connecting to the device
Status	Connection status for the node <ul style="list-style-type: none"> • UP—Node is connected to the fabric • DOWN—Node is disconnected from the fabric
% CPU	Percentage of CPU resource utilized by the node; from 0 to 100% <ul style="list-style-type: none"> • Unknown—Percentage of CPU utilized is unknown, for example, because the node is not connected
% Memory	Percentage of memory resource utilized by the node; from 0 to 100% <ul style="list-style-type: none"> • Unknown—Percentage of memory utilized is unknown, for example, because the node is not connected
% SWAP	Percentage of swap memory used <ul style="list-style-type: none"> • Unknown—Percentage of SWAP memory utilized is unknown, for example, because the node is not connected
% DISK	Percentage of the /var directory utilized by the node; from 0 to 100% <ul style="list-style-type: none"> • Unknown—Percentage of the /var directory utilized by the node is unknown, for example, because the node is not connected

Table 5: Fields for the Fabric Monitoring Inventory Page (*continued*)

Field	Description
App Logic	<p>Application logic function status for the node</p> <ul style="list-style-type: none"> • UP—Application logic function is running on the node • DOWN—Application logic function enabled on the node but is not running • Unknown—Status for the application logic function is unknown; for example, because the node is not connected • N/A—Application logic function is not configured to run on the node • (Master)—Configured primary Junos Space node in the fabric • FMPM (Master)—The configured primary Fault Monitoring and Performance Monitoring (FMPM) node in the fabric • FMPM—The configured secondary FMPM node in the fabric • Deploying—Junos Space Platform and its applications are initializing after a recent JBoss restart • Parsing Schema—Device schema files are being parsed after a recent JBoss restart
Database	<p>Database function status for the node</p> <ul style="list-style-type: none"> • UP—Database function is running on the node • DOWN—Database function is enabled on the node but is not running • Standby—Database function is on standby and could potentially transition to the UP state on failover • Unknown—Status for the database function is unknown, for example, because the node is not connected • N/A—Database function is not configured to run on the node <p>NOTE: By default, the database function is enabled on no more than two nodes in the fabric.</p>
Load balancer	<p>Load balancer function for the node</p> <ul style="list-style-type: none"> • UP—Load balancer function is running on the node • DOWN—Load balancer function is enabled on the node is not running • Standby—Load balancer function is on standby and could potentially transition to the UP state on failover • Unknown—Status for the Load balancer function is unknown, for example, because the node might not be connected • N/A—Load balancer function is not running because it is not configured to run on the node <p>NOTE: By default, the Load balancer function is enabled on no more than two nodes in the fabric.</p> <ul style="list-style-type: none"> • (VIP)—Configured virtual IP node in the fabric
Hardware model	<p>Model of the Junos Space Appliance</p> <p>NOTE: 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.</p>

Table 5: Fields for the Fabric Monitoring Inventory Page (*continued*)

Field	Description
Software version	Junos Space Network Management Platform release version <i>NOTE:</i> Software version appears when you double-click a table row for a detailed view of the node.
Serial number	The serial number for the Junos Space Appliance <i>NOTE:</i> Serial number appears when you double-click a table row for a detailed view of the node.
Cluster Member IPs	IP addresses of the nodes in the fabric
Is Master Node	Indicates whether the node is a master node: <ul style="list-style-type: none"> TRUE—The node is a master node FALSE—The node is not a master node
Is VIP Node	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"> TRUE—The node is a VIP node. FALSE—The node is not a VIP node.
Virtual Machine(s)	Lists the virtual machine IPs hosted by the node.
Host IP	IP address of the hosted virtual machine. This field is not applicable to Junos Space nodes and Fault Monitoring and Performance Monitoring (FMPM) nodes.

For more information about manipulating data on the Fabric inventory page, see *Junos Space User Interface Overview* in the *Junos Space User Interface Guide*.

Performing Fabric Node Actions

To perform an action on a fabric node,

1. Select a node by clicking the check box adjacent to the node on the Fabric page.
2. Select an action from the Actions menu or the toolbar icons.

From the Fabric inventory page, you can perform the following actions:

- **ESX Configuration**—Perform ESX server configuration.

If you want to take a snapshot of a Junos Space server running on a VM within an ESX server, then it is necessary that you provide the ESX server information.

- **Shutdown Node**—Shut down or reboot a fabric node (appliances or virtual machine hosts) when you move it or reconfigure its network settings. See *Shutting Down or Rebooting Junos Space Appliance Node From Junos Space*.

- **Delete Fabric Node**—Remove a node from the Junos Space fabric directly, if there is a physical or virtual appliance failure. See *Deleting a Node from the Junos Space Fabric*.
- **SNMP Configuration**—Perform SNMP configuration. Junos Space Network Management Platform supports SNMP monitoring by an SNMP manager for SNMP v1, v2c, and v3.
- **SNMP Start**—Start monitoring a node.
- **SNMP Stop**—Stop monitoring a node.
- **SNMP Restart**—Restart monitoring a node.
- **Delete Private Tags**—Delete private tags (that is, the tags you created).
- **Tag It**—Apply a tag to a fabric node. See *Tagging an Object*.
- **Untag It**—Remove a tag from a fabric node. See *Untagging Objects*.
- **View Tags**—View tags applied to a fabric node. See *Viewing Tags for a Managed Object*.
- **Clear All Selections**—Clear the selection from all objects selected on the inventory page.

**Related
Documentation**

- *Overall System Condition and Fabric Load History Overview*
- [Fabric Management Overview on page 8](#)
- *Monitoring Nodes in the Fabric*
- *Load-Balancing Devices Across Junos Space Nodes*

Adding a Node to an Existing Junos Space Fabric

By default, the Junos Space fabric contains a single node that provides complete Junos Space Network Management Platform management functionality. When you configure a Junos Space Appliance (JA1500 or JA2500) or a Junos Space Virtual Appliance as a Junos Space node using the Junos Space CLI, Junos Space Network Management Platform automatically adds the first node to the fabric. For each additional node that you install and configure, you must add the node in Junos Space Network Management Platform to represent the node in the fabric. You can add a maximum of six Junos Space nodes and two Fault Monitoring and Performance Monitoring (FMPM) nodes to the fabric.

Before you begin, the following prerequisites must be in place:

- Multicast needs to 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 of the switches.
- All Junos Space nodes must be interconnected using a high-speed (1Gbps or 100Mbps) network with a maximum latency not to exceed 300 milliseconds.

To add a node to the Junos Space fabric:

1. On the Junos Space Network Management Platform user interface, select **Administration > Fabric** and then click the **Add Fabric Node** icon.

The Add Node to Fabric dialog box appears.



NOTE:

Before you add a node to the Junos Space fabric, verify the following:

- The version of Junos Space Network Management Platform installed on the node is the same as the version installed on other nodes in the existing fabric.
- Ensure that no jobs are pending.
- In addition, if a Junos Space node (whether it is a Junos Space Platform node or an FMPM node) that is part of an existing fabric is deleted, then you need to re-image 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.

2. In the **Name** text box, enter a name for the node.

The name of the fabric node cannot exceed 32 characters and cannot contain spaces.

3. In the **IP address** field, enter the IP address of the node.



NOTE: This is the IP address for the eth0 interface that you specified during the basic configuration of the appliance.

4. To add the node as an FMPM node, select the **Add as a specialized node** check box.

Enter the login credentials (SSH username and password) of the FMPM node. The credentials should be the same as that you specified when you configured the node initially from the Junos Space CLI.

If the credentials do not match, the add node operation (job) fails and Junos Space Network Management Platform displays the following error message on the Job Management workspace:

Please check network credentials

For an FMPM node, the add node operation might fail when:

- You provide the VIP address in the **IP address** field instead of the IP address for the eth0 interface
 - You enter the wrong credentials
 - The IP address of the FMPM node is not reachable
 - You add a non-FMPM node as a specialized node
 - You provide a duplicate IP address (that is, you provide an IP address of a Junos Space node or a previously added FMPM node)
5. (Optional) Schedule when you want to add the fabric node:
- Clear the **Schedule at a later time** check box (the default) to initiate the add operation when you complete step 6 of this procedure.
 - Select the **Schedule at a later time** check box to specify a later start date and time for the add operation.



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 node is added to the fabric and appears on the Junos Space user interface and database. When you add a node, the node functions are automatically assigned by Junos Space Network Management Platform.

By default, the first and second Junos Space nodes added to a fabric perform all the following functions:

- Database—For processing database requests (create, read, update, and delete operations)
- Load Balancer—For processing HTTP requests from remote browsers and NBI clients
- Application Logic—For processing back-end business logic (Junos Space Network Management Platform service requests), and DML workload (device connectivity, device events, and logging)

By default, the third Junos Space node, and all subsequent Junos Space nodes, added to a fabric perform only the Application Logic function. You can add a maximum of six Junos Space nodes to a fabric.

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 on page 8](#)
- [Viewing Nodes in the Fabric on page 77](#)
- *Overall System Condition and Fabric Load History Overview*

PART 4

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