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PART 1

Junos Space User Interface

- Getting Started on page 3
- Understanding the Junos Space User Interface on page 7

CHAPTER 1

Getting Started

- Logging In to the System on page 3
- Changing User Passwords on page 4
- Using the Getting Started Assistants on page 5
- Accessing Help on page 5
- Logging Out from the System on page 6

Logging In to the System

You connect to Junos Space from your Web browser. Internet Explorer version 7 or later and Mozilla Firefox version 3.0 through 3.6 Web browsers are supported.



NOTE: Before you can log in to the system, your browser must have the Adobe Flash Version 10 or later plug-in installed.

To access and log in to Junos Space, follow these steps:

1. In the address field of your browser window, type:

`https://<1.1.1.1>/mainui/`

Where <1.1.1.1> is the Web IP address for Web access to Junos Space.

2. Press Enter or click Search. The system login screen appears.

A screenshot of the Junos Space login interface. It features a dark blue background with two white input fields labeled 'Username:' and 'Password:'. Below these fields is a blue button with the text 'Log In' in white.

3. Type your username and password. The default username is **super**; the password is **juniper123**. See “Changing User Passwords” on page 4 for information about how to change your user password. For information about how to change your username, see the system administrator.

4. (For remote authentication with Challenge-Response configured on a server) Provide valid responses for the challenge questions you are asked to log in successfully.
5. Click **Log In**. The Junos Space Application Chooser appears. See “Application Chooser Overview” on page 7.

**Related
Documentation**

- Logging Out from the System on page 6
- Changing User Passwords on page 4
- Application Chooser Overview on page 7
- Junos Space User Interface Overview on page 12

Changing User Passwords

Any user that is logged in to Junos Space can change their account password using the User Preferences icon in the Junos Space banner. You do not have to have any user roles configured to change your password.



WARNING: If you have a local password for remote or remote-local authentication modes, changing your password does that locally only. The change does not affect any passwords which a user administrator may have configured for you on a remote authentication server.



WARNING: If a user does not have a local password set, that user will not be able to set or change it.

To change your user password, follow these steps:

1. Click the User Preferences icon in the Junos Space banner. The **User Preferences – Change Password** dialog box appears.
2. Type your old password.
3. Type your new password. The password must be 6 to 31 characters long, including 2 numbers or symbols.
4. Retype your password again to confirm it.
5. Click **Change**. You are logged out of the system. You have to log in again using your new password. Any open sessions are disabled until you log in again.

**Related
Documentation**

- Creating Users on page 327
- Logging In to the System on page 3

Using the Getting Started Assistants

The Getting Started assistants display steps and help on how to complete common tasks. Getting Started is a section in the sidebar that appears when you log in to the system if the **Show Getting Started on Startup** check box is selected. The Getting Started topics are context sensitive per application. Getting Started displays all the steps in a task. From a step in a task, you can jump that point in the user interface to actually complete it.

To use a Getting Started assistant, follow these steps:

1. In Application Chooser, select an application.
2. Click the Help icon . The sidebar appears.
3. In the sidebar, expand **Getting Started**.
A main Getting Started topic link appears in the sidebar.
4. Select the main topic. For example in the Network Activate application, click **Provision a Service**. A list of required steps appears in the sidebar. Each step contains a task link and a link to the help.
5. To perform a specific step, click that link. You jump to that point in the user interface. The assistant remains visible in the sidebar to aid navigation to subsequent tasks.
6. To access Help for a specific step, click the Help (?) icon next to that step.

Related Documentation

- Accessing Help on page 5
- Application Chooser Overview on page 7

Accessing Help

Junos Space provides complete documentation in a Help system that is context-sensitive per workspace. The Help system provides information on each element in the system, including workspaces, dashboards, tasks, inventory pages, actions, and etc. The Help system also provides frequently asked questions (FAQs) and the entire system documentation. Help topics appear as links in the sidebar.

To access online help, follow these steps:

1. Click the workspace within which you want to work.
2. Click the Help? icon. The sidebar appears, if it is not already displayed, with the Help section open listing specific topics for that workspace and tasks.
3. Click a topic link to view its contents. The Help topic appears in a separate window.
4. To hide the Help sidebar, click the >> button at the top right.

Related Documentation

- Using the Getting Started Assistants on page 5

- Application Chooser Overview on page 7
- Platform Dashboard Overview on page 20

Logging Out from the System

When you complete your administrative and tasks in the Junos Space user interface, log out to prevent unauthorized users from intruding.

To log out from the system:

1. Click the Log Out icon in the banner. The Logout page appears.

A user who is idle and has not performed any action, such as keystrokes or mouse clicks, is automatically logged out of Junos Space to the logout page. This setting conserves server resources and protects the system from unauthorized access. 60 minutes is the default setting. You can change the setting, from **Administration > Manage Applications**. In the **Manage Applications** inventory page, select the **Network Management Platform**, then select **Modify Application Settings** from the **Actions** drawer or from the right-click pop-up menu.

To log in the system again, click the **Click here to log in again** link.

Related Documentation

- Logging In to the System on page 3
- Changing User Passwords on page 4
- Modifying Application Settings on page 393
- Application Chooser Overview on page 7
- Junos Space User Interface Overview on page 12

CHAPTER 2

Understanding the Junos Space User Interface

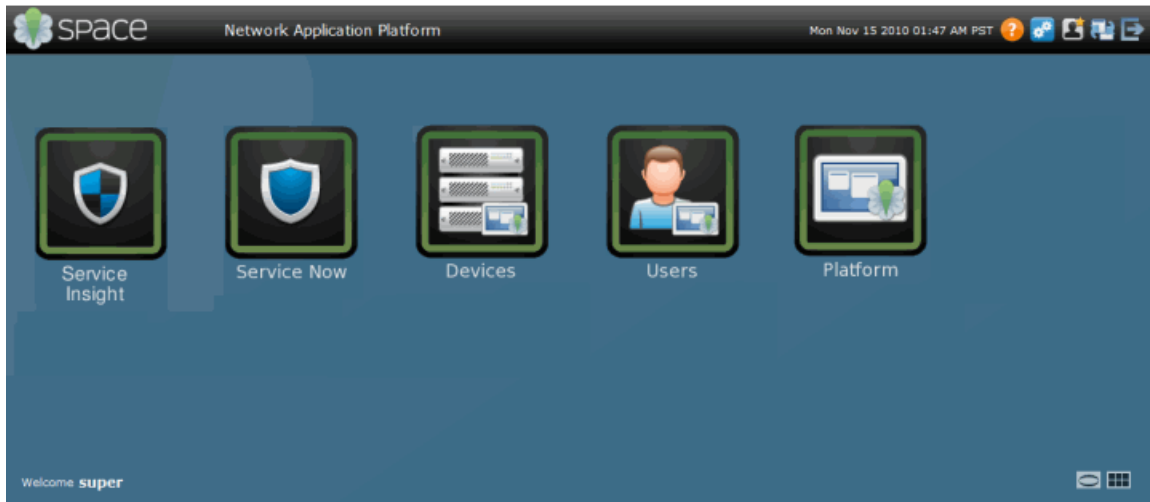
- Application Chooser Overview on page 7
- Junos Space User Interface Overview on page 12
- Navigating the Junos Space User Interface on page 16
- Network Application Platform Overview on page 18
- Platform Dashboard Overview on page 20
- Viewing Dashboard Statistics on page 23
- Workspace Statistics Pages Overview on page 26
- Inventory Pages Overview on page 29

Application Chooser Overview

The Application Chooser provides a user interface within which you can view and manage installed applications in Junos Space. Application Chooser appears when you first log in to the system.

Application Chooser also contains shortcuts to frequently used workspaces. For example from Application Chooser, you can jump directly to the devices and users workspaces without having to click the Network Application Platform icon and the Devices or Users workspace icons in the navigation ribbon.

Applications are represented as icons that display in two views: thumbnail and carousel. In the default thumbnail view, application icons are arranged in a tiled format in the workspace.



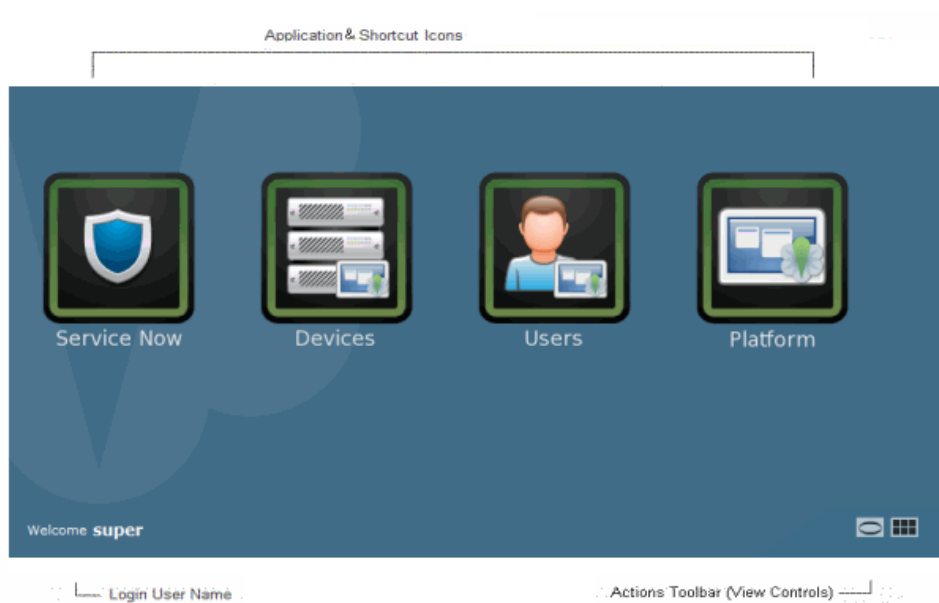
In carousel view, the icons rotate three-dimensionally in a circular manner.



New applications will be added in subsequent software releases.

Mouse over an application to view its title and description. Double-click an application icon to launch it and navigate to its dashboard.

The parts of the Application Chooser user interface in thumbnail view are shown as follows.



The following sections describe the parts of Application Chooser.

Parts of Application Chooser




- Application Icons on page 9
- Shortcut Icons on page 10
- Login User Name on page 11
- Actions Toolbar on page 11

Application Icons

Junos Space applications appear as icons in the Application Chooser in thumbnail or carousel views. Mouse over an application to view its name. Double-click an application to navigate to it and open its workspace. Switch to a different application using the Application Switcher global action in the application banner. The Application Switcher displays the last five applications you use.


The Application Chooser includes the Junos Space base applications, as listed in Table 1 on page 10. You can install other applications using the Administration > Manage Applications workspace (see “Application Management Overview” on page 405).

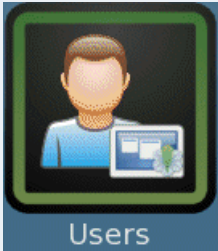
Table 1: Junos Space Applications

Application Icon/Name	For more information
 Service Now	See Service Now Overview.
 Platform	See "Platform Dashboard Overview" on page 20.
 Service Insight	See Service Insight Overview

Shortcut Icons

The shortcuts appear as icons in the Application Chooser. Shortcuts allow you to jump directly to a workspace without user interface navigation. For example, use the Devices shortcut to jump directly to the Devices workspace, see .

Shortcut Icon/Name	For more information
 Devices	See "Viewing Managed Devices" on page 66.

Shortcut Icon/Name	For more information
 Users	See “Viewing Users” on page 330.



Login User Name

Displays the username of the person currently logged into the system.

Actions Toolbar

(Bottom-Right) Use the toolbar at the bottom right of the workspace to change the application icons from thumbnail to carousel views. Table 2 on page 11 defines the toolbar buttons.

Table 2: Application Chooser Toolbar Buttons

Application Toolbar Button	Name	Description
	Carousel View	Displays the application icons so that they rotate in a circular manner in the workspace
	Thumbnail View	Displays the application icons tiled in the workspace as thumbnails.

Application Chooser Actions

The Application Chooser provides the following user actions:

- Change Application Chooser Views—To change the Application Chooser view, click either Thumbnail or Carousel icons in the bottom-right actions toolbar.
- Open Applications—To open an application, double-click its icon. You can also use the Application Switcher global action at the right in the banner to navigate to up to the last applications five you used.
- Switch to Other Applications—To switch to other applications from Application Chooser, select an application name in the Application Switcher drop-down menu. The Application Switcher is a global action to the right in the banner. The Application Switcher drop-down menu displays up to the last five applications you used. You must confirm whether you want to switch to that application.

Related Documentation

- Junos Space User Interface Overview on page 12
- Platform Dashboard Overview on page 20
- Platform Dashboard Overview on page 20

Junos Space User Interface Overview

The Junos Space application design allows multiple users concurrent access to its user interface. Each user accesses the system using a Web browser.

Each user has access to the same system-wide database, which ensures that each user sees current information. User access to tasks and objects is controlled by permissions assigned to the user. For example, a service provisioner will have full access to the tasks in the Service Provisioning workspace, but might not have access to Service Design tasks.

The Junos Space user interface is consistent across the Network Application Platform and other installed applications. The examples shown in this topic are from the Network Application Platform user interface. Other applications may have certain user interface design variations to fit the workflow.

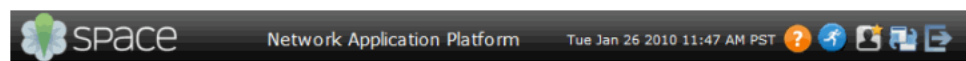
Parts of the System User Interface

The sections that follow describe the major parts of the system user interface.

- Banner on page 12
- Application Chooser on page 13
- Application Dashboard on page 13
- Workspace Statistics on page 14
- Inventory Page on page 14

Banner

The banner displays the Junos Space application logo and name, the date and server time in the active time zone, and the global actions icons.



The Junos Space application banner appears throughout each user interface page in the system. Table 3 on page 12 describes the global action icons at the right in the banner.

Table 3: Banner Global Actions






Banner Global Action Icon	Description
	Displays the application Help. To access workspace context-sensitive help, click the Help icon after navigating to that workspace. See "Accessing Help" on page 5.
	Displays the My Jobs dialog box from which you can view the progress and status of current managed jobs. See "Viewing Your Jobs" on page 291.
	Displays the User Preferences dialog box from which you can change user preferences, such as the password. See "Changing User Passwords" on page 4.
	Displays the Application Switcher drop-down menu to switch between up to the last five applications used. See "Application Chooser Overview" on page 7.

Table 3: Banner Global Actions (*continued*)

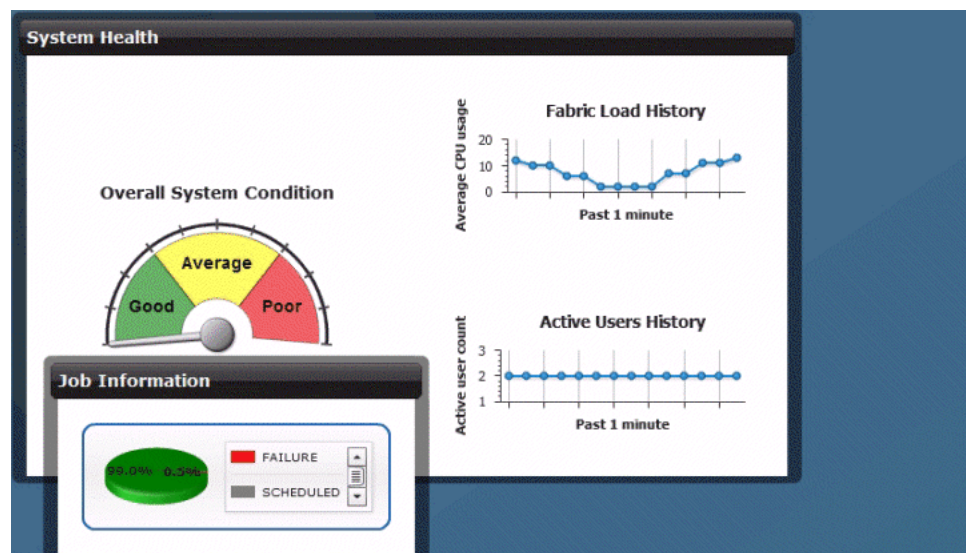
Banner Global Action Icon	Description
	Logs you out of the system. See “Logging Out from the System” on page 6.

Application Chooser

When you log in to the system, you see the Application Chooser that displays the available applications and shortcuts as shown here. For more information about the Application chooser, see “Application Chooser Overview” on page 7.

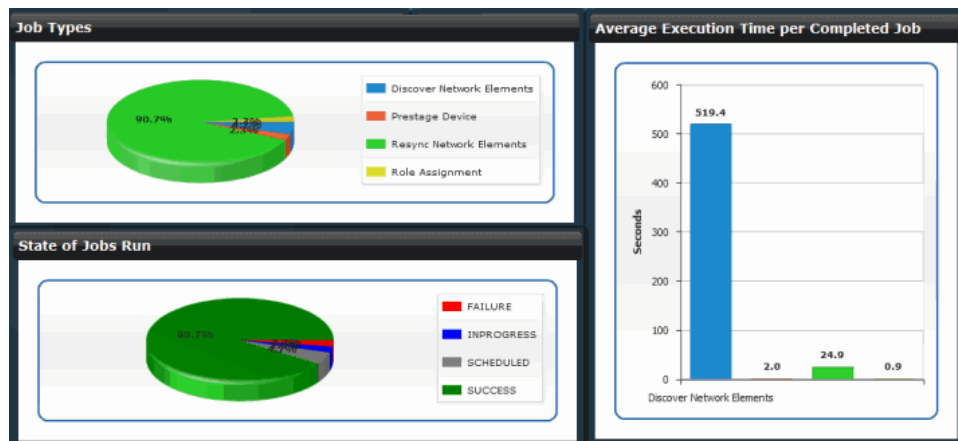
**Application Dashboard**

In Application Chooser, click an application icon to view its dashboard which displays graphical data about devices, jobs, users, administration, and so on. For example, the Platform dashboard is shown here. For more information about the application dashboard, see “Platform Dashboard Overview” on page 20.



Workspace Statistics

In the application dashboard, click a workspace icon in the task ribbon to view its statistics page. For example, the Job Management statistics page is shown here. The statistics view displays charts, graphics, and subtasks. For more information about the workspace statistics page, see “Workspace Statistics Pages Overview” on page 26.



Inventory Page

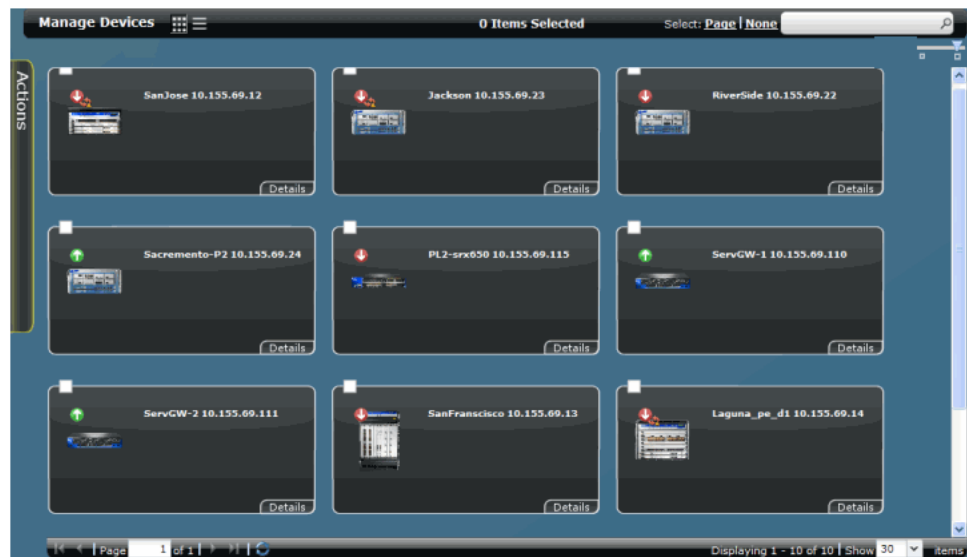
Click a subtask in the workspace task ribbon to view its inventory page. For more information about inventory pages, see “Inventory Pages Overview” on page 29. Inventory pages display managed items in two views: thumbnail and tabular.

For more information about inventory thumbnail and tabular views, see “Inventory Pages Overview” on page 29.

- Inventory Page Thumbnail View on page 14
- Inventory Page Tabular View on page 15

Inventory Page Thumbnail View

The **Platform > Job Management > Manage Jobs** inventory page in thumbnail view is shown here.



Inventory Page Tabular View

The **Platform > Job Management > Manage Jobs** inventory page in tabular view is shown here.

Name	Interfaces	OS Version	Platform	IP Address	Connection Status	Managed Status
SanJose	View	10.1R1.8	MX240	10.155.69.12	down	Sync Failed
Jackson	View	10.2R1.6	M10I	10.155.69.23	down	Sync Failed
RiverSide	View	10.2R1.6	M10I	10.155.69.22	down	Connecting
Sacramento-P2	View	10.1R1.8	M10I	10.155.69.24	up	In Sync
PL2-srx650	View	10.2R1.2	SRX650	10.155.69.115	down	Connecting
ServGW-1	View	10.0R1.8	SRX240-HM	10.155.69.110	up	In Sync
ServGW-2	View	10.0R1.8	SRX240-HM	10.155.69.111	up	In Sync
SanFrancisco	View	10.1R1.8	MX960	10.155.69.13	down	Out Of Sync
Laguna_pe_d1	View	10.1R1.8	MX480	10.155.69.14	down	Sync Failed
PL2-SRX100	View	10.0R1.8	SRX100-HM	10.155.77.153	up	In Sync

Related Documentation

- Application Chooser Overview on page 7
- Platform Dashboard Overview on page 20
- Workspace Statistics Pages Overview on page 26
- Inventory Pages Overview on page 29

Navigating the Junos Space User Interface

The Junos Space software consists of applications that you can start from within Application Chooser.

The Application Switcher global icon at the top right in the Junos Space banner displays a menu that lets you navigate to the last five applications you started, including the Application Chooser from another application. You can also navigate to workspace shortcuts.

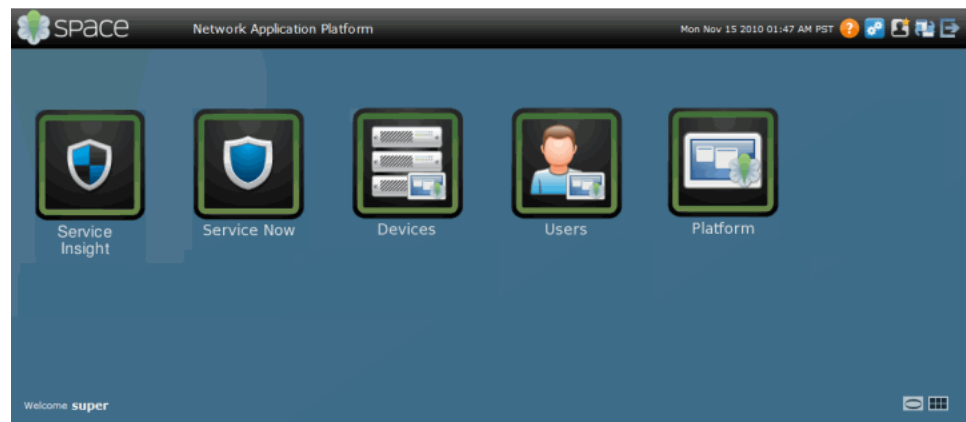
Applications consist of one or more workspaces that include one or more tasks. The application navigation ribbon lets you navigate between workspaces, tasks, and subtasks.

The following topics describe how to navigate the Junos Space user interface:

- Navigating Applications Using Application Chooser on page 16
- Navigating Applications Using Application Switcher on page 17
- Navigating Application Workspaces and Tasks Using the Navigation Ribbon on page 17
- Navigating to the Dashboard of an Application on page 18
- Navigating to a Workspace from a Task on page 18

Navigating Applications Using Application Chooser

When you log in to Junos Space, the Application Chooser appears. The Application Chooser displays all of the installed applications and workspace shortcuts, such as Devices and Users.



To navigate to an application in Application Chooser:

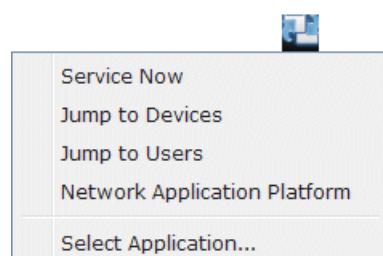
- Click an application icon. The application dashboard appears. For more information about using Application Chooser, see “Application Chooser Overview” on page 7.

Navigating Applications Using Application Switcher

The Application Switcher global icon in the top-right of the Junos Space banner lets you navigate to the last five applications you started and to workspace shortcuts. For more information about the Application Switcher, see “Junos Space User Interface Overview” on page 12.

To navigate to an application or workspace shortcut using Application Switcher:

1. In the Junos Space banner, click the Application Switcher global icon. The Application Switcher menu appears.



2. Select an application or workspace shortcut. The application dashboard or workspace statistics page appears.

Navigating Application Workspaces and Tasks Using the Navigation Ribbon

Use the navigation ribbon to navigate application workspaces and tasks. When you start an application, all of the workspaces are displayed at the workspace level of the navigation ribbon.

To navigate using the application navigation ribbon:

1. In Application Chooser, click an application icon. You can also start an application by selecting its name in the Application Switcher global icon menu. The application dashboard appears. All of the application workspaces are displayed in the navigation ribbon.



2. In the navigation ribbon, click a workspace. All of the tasks are displayed in the navigation ribbon. The workspaces bank to the left in the navigation ribbon. The selected workspace is highlighted and appears to the right of the banked workspaces. The workspace tasks are displayed to the right of the workspace. Home appears

rightmost in the navigation ribbon. Clicking Home takes you to the top level of the navigation ribbon where all workspaces are displayed.



3. In the navigation ribbon, click a task. The inventory page containing objects on which to perform tasks appears. If a task has subtasks, the selected task is circled, and an arrow points to that task. The subtasks appear to right of the selected task.



4. In the navigation ribbon, click a subtask. The page for that subtask appears. An arrow points to the selected subtask.

Navigating to the Dashboard of an Application

To quickly navigate to the dashboard of an application where all workspaces appear:

- Click Home at the right in the navigation ribbon.

Navigating to a Workspace from a Task

To navigate to a workspace from a task or subtask:

- Click the workspace icon banked at the left in the navigation ribbon. The workspace statistics page is displayed.

Related Documentation

- Application Chooser Overview on page 7
- Junos Space User Interface Overview on page 12

Network Application Platform Overview

The Junos Space Network Application Platform (Platform) provides effective tools the network administrator needs to automate network operations, including device discovery and management, job operation management, audit logging, and network administration. Network administration includes the following physical components:

- **Devices**—Simplifies management of the devices running Junos OS software on your network, including discovery, deployment, connection, and adapter management.
- **Device Templates**—Provides the tools to create custom Juniper Networks DMI schema device template definitions and templates deployable to devices on your network.

- Topology Visualization—Discovers network topology elements based on a device or subnet. and view look at information about the devices and links in the discovered network
- Device Templates—Manages Junos OS images for Juniper Networks devices so you can upload device images from your local file system to Junos Space and deploy these images onto a device or onto multiple devices of the same device family at once.
- Scripts—Uses configuration and diagnostic automation tools— commit, op, and event scripts—provided by the Junos OS to reduce network downtime and configuration complexity, automate common tasks, and decrease the time to problem resolution.
- Configuration Files—Maintains copies of device running, candidate, and backup configuration files within Junos Space providing for device configuration recovery and maintaining configuration consistency across multiple devices.
- Jobs—Monitors the status of all jobs—user-initiated actions performed on Junos Space objects, such as devices, services, or customers, etc.— run in all Junos Space applications.
- Audit Logs—Monitors user login/logout activity, track device management tasks, view services that were provisioned on devices, and etc. Junos Space audit logging does not record non-user initiated activities, such as device driven activities, and is not designed for debugging purposes.
- Administration—Perform Junos Space system management tasks, including:
 - Manage Fabric
 - Manage Databases
 - Manage Licenses
 - Manage Applications
 - Troubleshoot Junos Space
 - Manage Tags
 - Manage DMI Schemas

The Platform application icon appears in Application Chooser.



Mousing over the Platform application icon displays a brief description. Clicking the icon displays the Platform dashboard that displays the available workspaces from which the

administrator can perform tasks. For more information about the Platform Dashboard, see “Platform Dashboard Overview” on page 20.

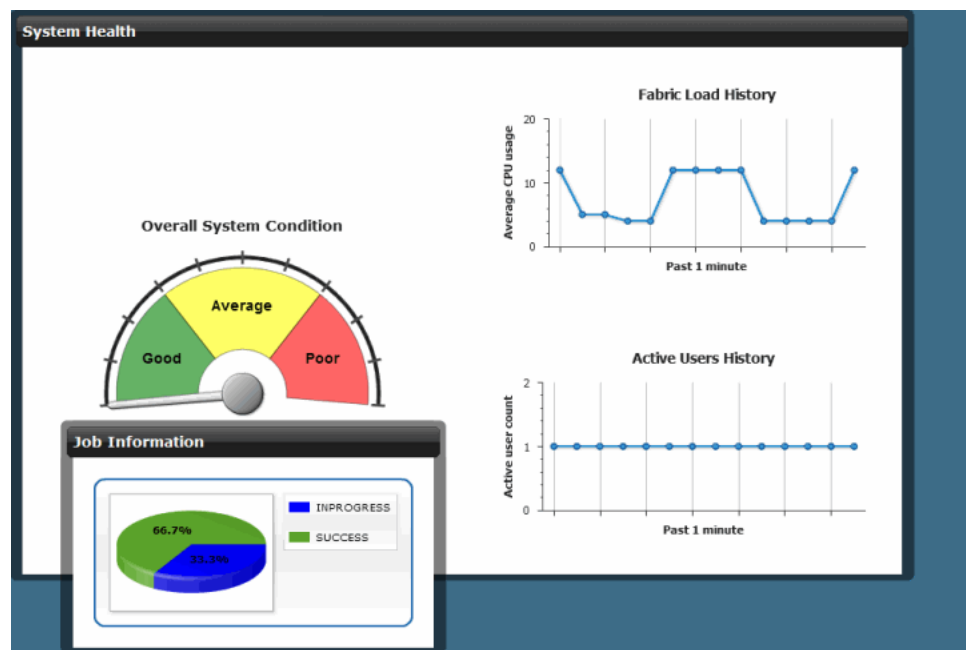
You can upload and install Junos Space applications in to the platform using the

Related Documentation

- Application Chooser Overview on page 7
- Platform Dashboard Overview on page 20
- Network Activate Dashboard Overview
- Service Now Overview
- Ethernet Design Overview

Platform Dashboard Overview

The dashboard provides a snapshot of the current status of objects managed and operations performed within a Junos Space application. For example the Platform dashboard displays the system health of your network and the percentage of jobs run successfully and in progress. The Service Now dashboard displays the number of platforms and devices with the most incidents. The dashboard appears when you click an application icon from Application Chooser or switch to it from the Application Switcher global icon menu. An example of the Platform dashboard is shown here.



The sections that follow describe the parts of the Platform Dashboard.

Parts of Platform Dashboard

- Workspace Navigation Ribbon on page 21
- Dashboard Gadgets on page 22

Workspace Navigation Ribbon

Each Junos Space application has a navigation ribbon allowing you to visually navigate to the workspaces, tasks, and sub-tasks. To view a workspace, click its icon in the navigation ribbon. The tasks for that workspace appear in the task ribbon, and the statistics page for that workspace appears. For more information about using the navigation ribbon, see “Navigating the Junos Space User Interface” on page 16.

When you want to leave a workspace, click Home to navigate you to all of the top level navigation ribbon for that application. When you want to leave the application, click the global Application Switcher pop-up menu navigates you to that application.

Table 4 on page 21 describes the Platform navigation ribbon workspaces.

Table 4: Workspace Icons

Icon	Workspace Name	Task
	Devices	Manage devices, including adding, discovering, importing, and updating them. See “Device Management Overview” on page 59.
	Device Templates	Create configuration definitions and templates used to deploy configuration changes on multiple Juniper Networks devices. See “Device Templates Overview” on page 146.
	Topology Visualization	Discover information about network elements and their interconnections based on the hostname or IP addresses of both Juniper-managed and non Juniper-managed devices. See “Topology Visualization Overview” on page 213.
	Device Images	Download a device image from the Juniper Networks Software download site to your local file system, upload it into Junos Space, and deploy it on one or more devices at once. See “Device Images Overview” on page 229.
	Scripts	Use Junos scripts (configuration and diagnostic automation tools) to deploy, verify, enable, disable, remove, and execute scripts deployed to devices.
	Job Management	Monitor the progress of ongoing jobs. See “Job Management Overview” on page 287.
	Users	Add, manage, and delete users. See “Understanding How to Configure Users to Manage Objects in Junos Space” on page 318.
	Audit Logs	View and filter system audit logs. See “Junos Space Audit Logs Overview” on page 303.
	Administration	Add network nodes, backup your database, or troubleshoot. See Adding a Fabric Node, “Database Backup and Restore Overview” on page 371, “Downloading the Troubleshooting Log File from the UI” on page 410, “Downloading the Troubleshooting Log File In Maintenance Mode” on page 412, “Application Management Overview” on page 405, “Viewing Tags” on page 433.

Dashboard Gadgets

The Platform dashboard contains gadgets, such as graphs and charts, that display statistics that depict the overall health and functionality of that application. For example, the Platform dashboard gadgets provide an at-a-glance view of the system health, which includes the a gauge for the overall system condition and graphs that display the fabric load and active user history. For an explanation of the data shown in these gadgets, see “Understanding Overall System Condition and Fabric Load” on page 364.

All dashboard gadgets are visible for all users.

Gadget information is updated automatically and immediately.

You can move gadgets on the dashboard or change the size of them. Changes in location or size of dashboard gadgets persist on returning to the dashboard, even after logging back into the system.

Click a gadget or gadget elements to drill down to more detailed information. Typically, clicking a gadget element takes you either to the statistics page of the associated workspace, or to an inventory page. Some gadgets let you filter information by selecting a specific segment or bar from a chart, or a specific line of a table. For example, if you select the red segment on the Status of Tasks run gadget, you navigate to the manage tasks inventory page that displays only failed tasks.



NOTE: If you do not have user privileges to view certain application data, you will not be able to view more detailed information if you double-click a gadget.

Table 5 on page 22 describes the mouse-over and double-click operations you can perform on dashboard gadgets.

Table 5: Gadget Mouse-Over and Double-Click Operations

Gadget	Mouse-Over Information	Double-Click Navigation
Overall System Condition guage	N/A	Double-click a graph data point to display the Administration workspace Manage Fabric > Fabric Monitoring page. Click Home to return to the Platform dashboard. For more information about fabric monitoring, see “Understanding Overall System Condition and Fabric Load” on page 364.
Fabric Load History graph	Mouse over a graph data point to view the CPU Usage (average usage percentage)	Double-click a graph data point to display the Administration workspace Manage Fabric > Fabric Monitoring page. Click Home to return to the Platform dashboard. For more information about fabric monitoring, see “Viewing Nodes in the Fabric” on page 354.

Table 5: Gadget Mouse-Over and Double-Click Operations (*continued*)

Gadget	Mouse-Over Information	Double-Click Navigation
Active User History graph	Mouse over a graph data point to view the Active user (total count)	Double-click the graph data point display the Users workspace statistics page used to view the Number of Users by Assigned Role bar chart. Click Home to return to the Platform dashboard. For more information about the Users workspace, see "Viewing User Statistics" on page 335.
Job information pie chart	Mouse over the pie chart to view the number of successful jobs.	Double-click the pie chart to display the Job Management Manage Jobs inventory page. Click Home to return to the Platform dashboard. For more information about the Job Management Manage Users inventory page, see "Viewing Scheduled Jobs" on page 293.

Related Documentation

- Viewing Dashboard Statistics on page 23
- Application Chooser Overview on page 7
- Junos Space User Interface Overview on page 12
- Understanding Overall System Condition and Fabric Load on page 364
- Viewing Nodes in the Fabric on page 354
- Viewing User Statistics on page 335
- Viewing Scheduled Jobs on page 293

Viewing Dashboard Statistics

The dashboard appears when you select an application from Application Chooser. It contains graphs and charts known as gadgets that provide high-level monitoring information for the system.

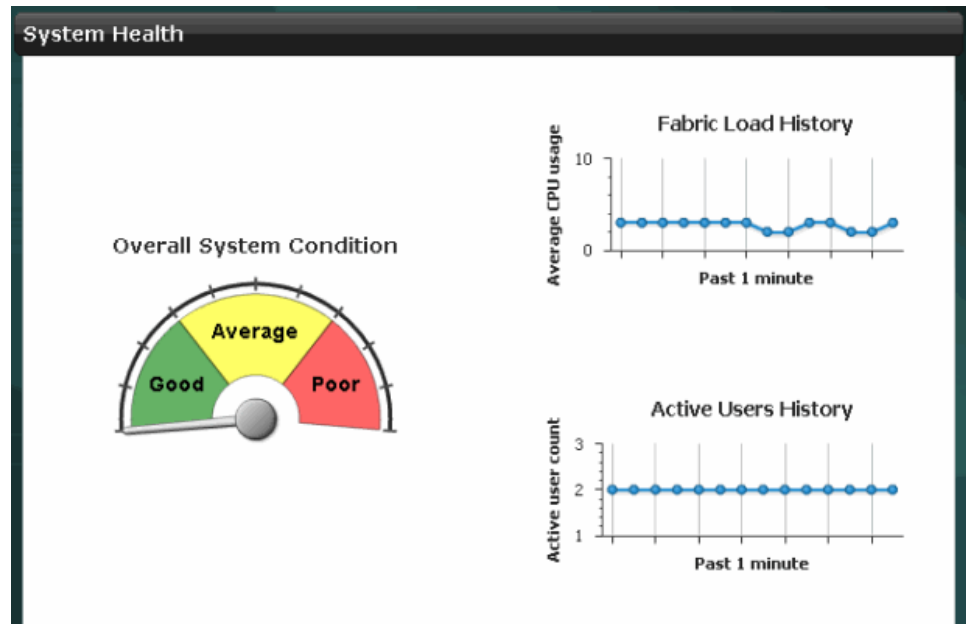
The following topics describe how to use and interpret dashboard gadgets:

- Viewing System Health Statistics on page 23
- Viewing the Job Information on page 26

Viewing System Health Statistics

The Network Application Platform dashboard system Health gadget displays real-time information about the overall health of the Junos Space system. It includes an overall

system condition gauge, and graphs that report the system load and number of users as shown.

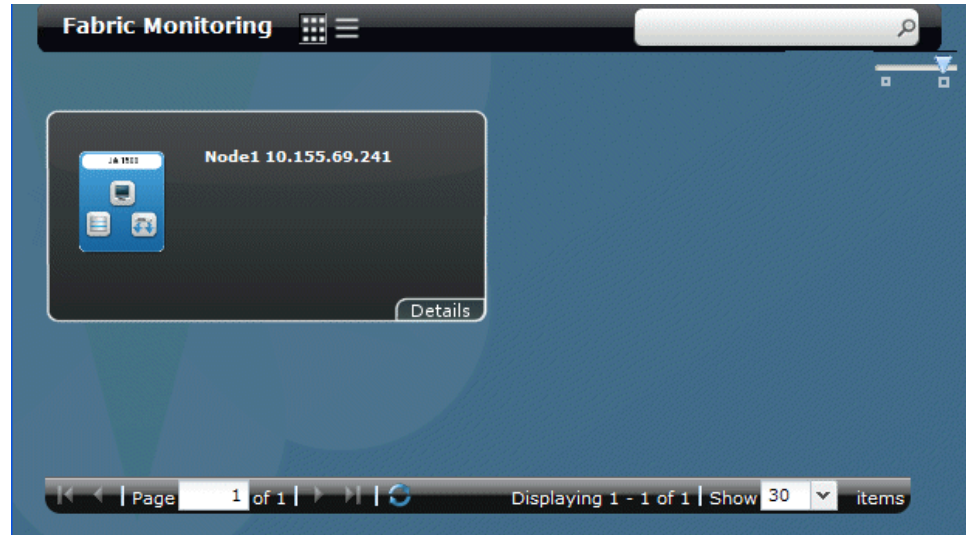


The Overall System Condition gauge represents a combination of the health of the database, the application, and load balancing software. If all these components are functional on all processors in the fabric, then the overall system condition is reported as good.

The Fabric Load History graph shows the trend of the average load of all CPUs in the fabric over the last minute. The Y axis shows the percentage of CPU use and scales dynamically so that useful information can be obtained at low loads. A new reading appears every five seconds.

To view the average CPU use at a specific data point, drag the mouse over the data point of interest. The fabric load is shown in parentheses in a tooltip.

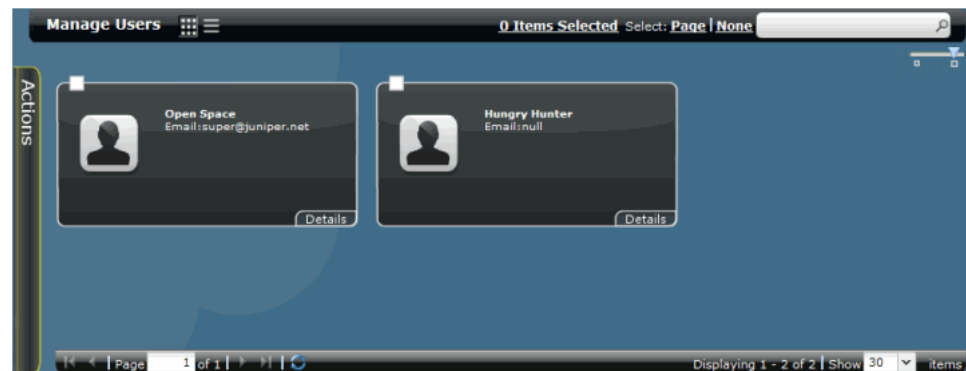
To obtain more details about the status of the fabric, click any data point in the graph. The Fabric Monitoring page appears and shows detailed status of each node in the fabric as shown. (See “Viewing Nodes in the Fabric” on page 354.



The Active Users History graph shows a history of the number of active users on the system for the previous minute.

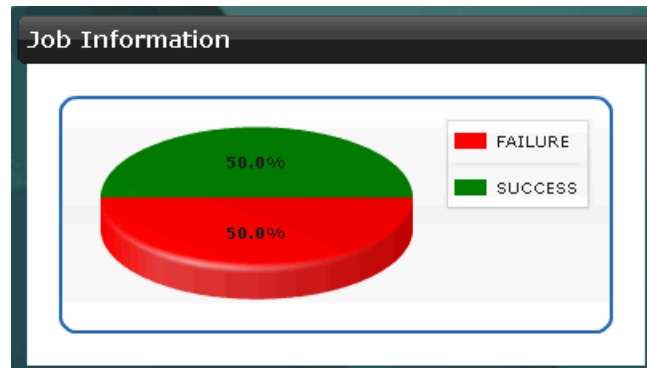
To view the number of active users at a specific data point, drag the mouse over the data point of interest. The fabric load is shown in parentheses in a tooltip.

To obtain more details about active users, click any data point in the graph. The Manage Users inventory page appears filtered by the active users. (See “Viewing Users” on page 330



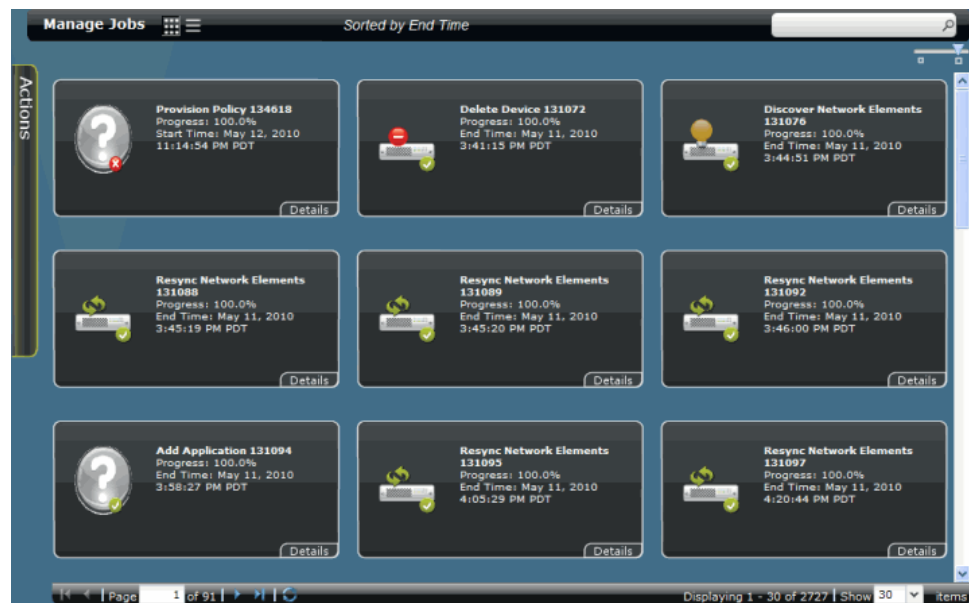
Viewing the Job Information

The Job Information gadget on the system dashboard provides real-time information about the proportion of tasks successfully completed, failed, or in some other state during in the logged-on user's current work session as shown.



To view the number of jobs in a specific state rather than the percentage, drag the mouse over the segment in the chart. The number of jobs appears in parentheses in a tooltip.

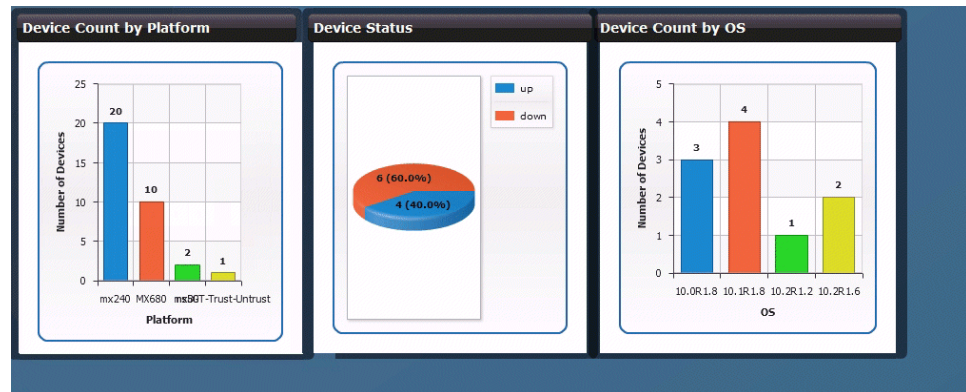
To view details about the jobs represented in the chart, click on the segment of interest. For example, click on the red segment to view details about failed jobs. The Manage Jobs page appears filtered by the job types selected. (See “Viewing Scheduled Jobs” on page 293)



Workspace Statistics Pages Overview

When you select a workspace from the application dashboard task ribbon, Junos Space typically displays high-level statistics representing the status of managed objects in that

workspace. The example shows the Platform > Devices workspace statistics page showing the Device Count by Platform, Device Status, Device Count by Junos OS.



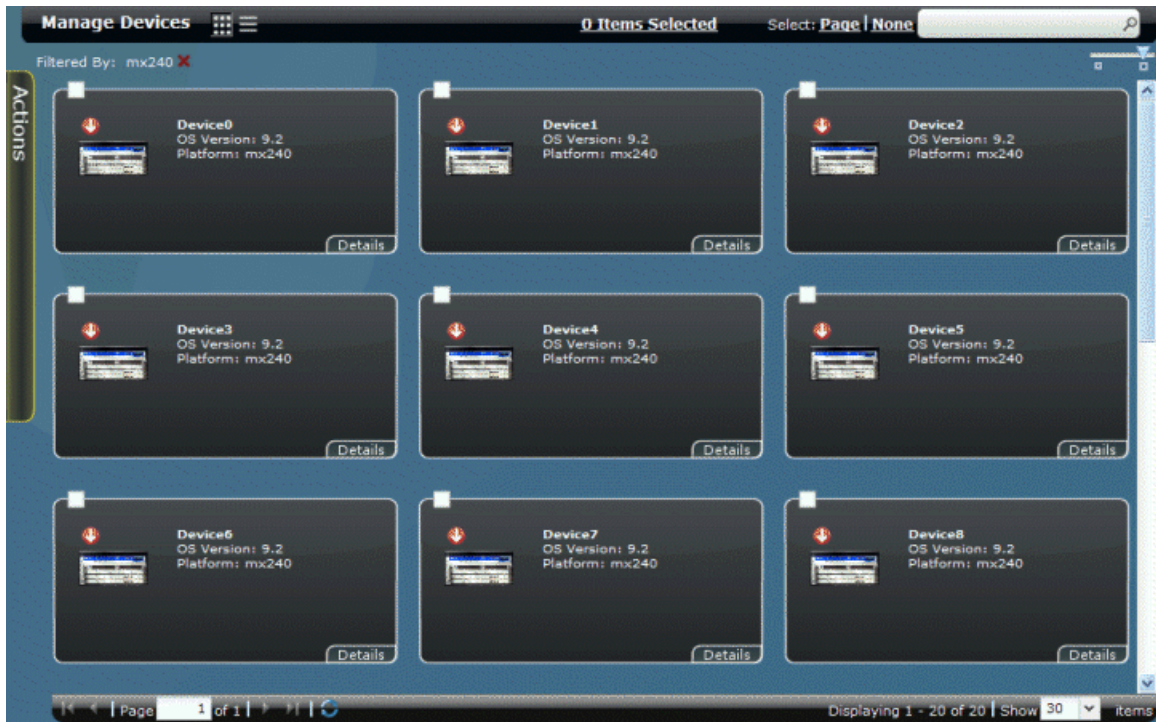
The devices administrator can right click each statistics gadget (bar chart or pie chart) to print or save the statistics as an image in PNG file format.

You can move charts and graphs on the screen or resize them. Changes in location or size of charts and graphs persist on returning to the statistics page, even after logging back into the system.

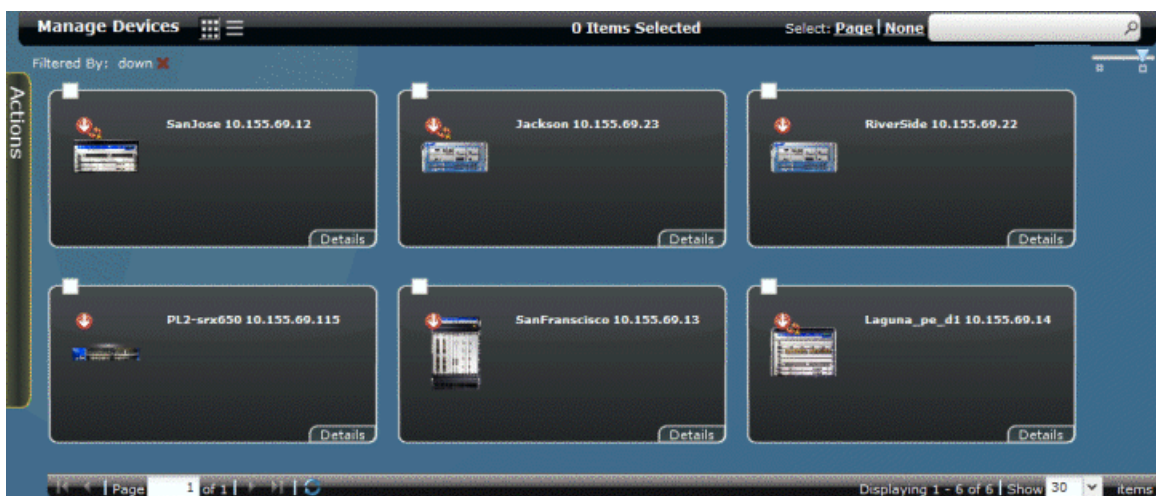
If a chart has more data points than can be viewed clearly at once, a scroll bar appears at the bottom of the chart for access to the remaining data.

Active links within the graphs and charts provide access to more details. For example, if you click on a bar or pie-chart segment, you navigate to the corresponding inventory page filtered according to the bar or segment you selected. For example, if the you click the MX240 devices bar in the Device Count by Juniper Networks device platform bar chart,

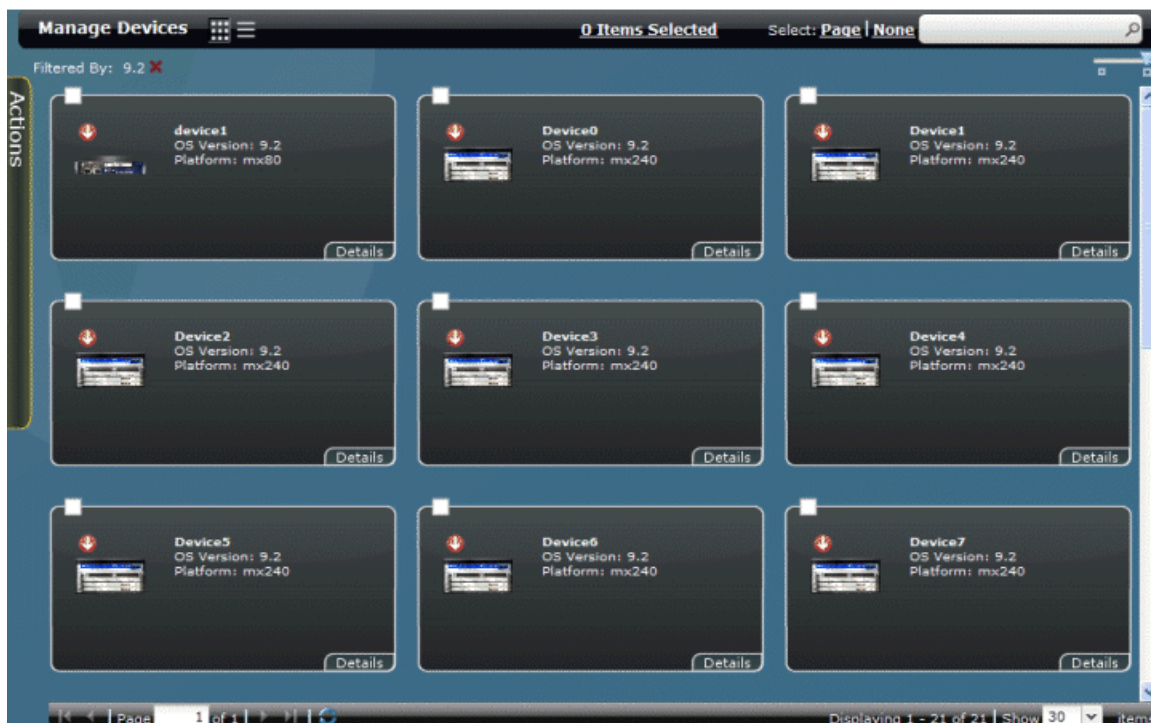
you navigate to the **Platform > Devices > Manage Devices** inventory page that displays all the MX240 devices on the network that are discovered and managed by Junos Space.



For example, if you click the slice in the Device Status pie chart that represents the number of devices that are down. You navigate to the Manage Devices inventory page that displays all of the devices on the network that are down.



For example, if you click a bar in the Device by OS Count, you navigate to the Manage Devices inventory page that displays all of the devices that are running the Junos OS release that you selected.



For more information about using the Devices workspace, see “Device Management Overview” on page 59.

Related Documentation

- Junos Space User Interface Overview on page 12

Inventory Pages Overview

Application workspace inventory pages allow you to view and manipulate managed objects individually or collectively, including devices, logs, users, jobs, clients, software, licenses, and so forth. You can browse, zoom, filter, tag, and sort objects. You can select one, several, or all objects and perform actions on them using the actions in the Actions drawer or by right-mouse-clicking actions.

Throughout the Junos Space user interface, you navigate to an inventory page by selecting an application from Application Chooser, selecting an application workspace in the navigation ribbon, then selecting a managing task, such as Manage Devices, Manage Users, or Manage Jobs. For example, to view the Manage Devices inventory page, select Platform > Devices > Manage Devices.

On the inventory page, managed objects are represented by unique icons. Object status is represented by superimposed icons with colors. You can mouse over objects to view the name.

Each managed object stored in the Junos Space database includes specific data. For example, devices are stored in the database according to device name, interfaces, OS version, platform, IP address, connection, managed status, and serial number.

By default, inventory pages appear in thumbnail view. You can also display them in tabular.



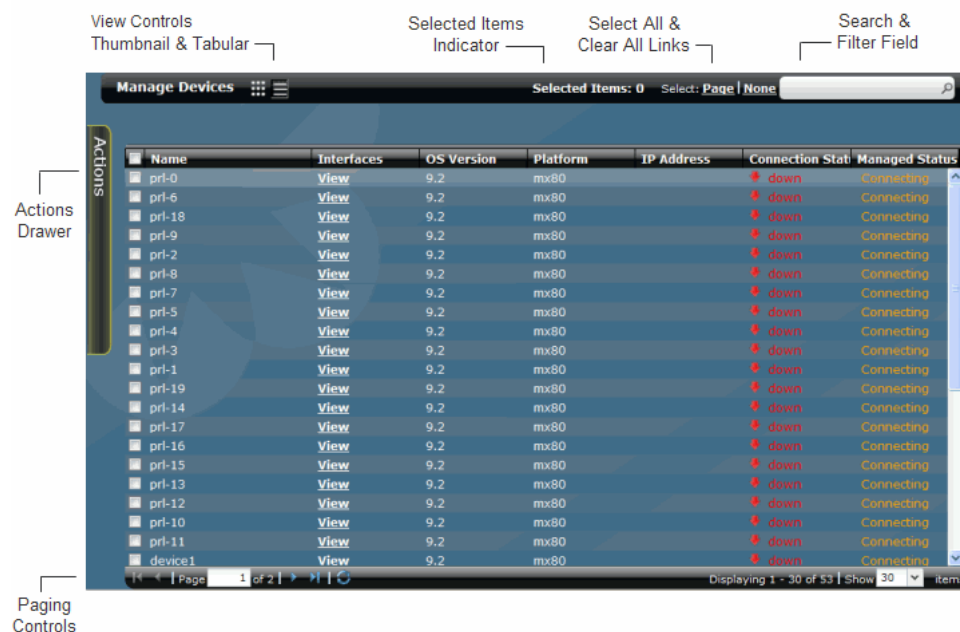
NOTE: The function and implementation of individual inventory pages in both thumbnail and tabular views depend on the Junos Space application design.

Parts of the Inventory Page

The following example shows the parts of the Manage Devices inventory page user interface in thumbnail view.



The following example shows the parts of the Manage Devices inventory page user interface in tabular view.



The sections that follow describe the parts of the inventory page user interface in more detail.

- View Controls (Thumbnail and Tabular) on page 31
- Sorted By Indicator on page 32
- Show or Hide Columns on page 33
- Zoom Slider on page 33
- Search and Filter Field on page 33
- Actions Drawer and Right-Mouse Clicking Objects on page 34
- Paging Controls on page 34

View Controls (Thumbnail and Tabular)

The view controls in the inventory page banner display managed items in either thumbnail (default) or tabular view. The inventory view controls are located in the inventory page banner to the right of the title.

- Thumbnail View on page 31
- Tabular View on page 32

Thumbnail View

The default inventory page view—thumbnail view—displays icons of managed objects. Icons also include visual elements that display item status, type, operation, and so forth. For example in the **Platform > Devices > Manage Devices** inventory page, the green up arrow indicates the device is up; a red arrow indicates the device is down. In the Manage

Service Definitions inventory page, a visual element in the object icon indicates whether a service definition is standard or custom.

Each object includes a title. You can also mouse over an object to see its title.

You must select an object to perform an action on it. Select objects by clicking the selection check box. You can select objects in a sequence or randomly. The Use the Select Page or None links to select all or clear the selection of all objects at once.

Double-clicking an object in thumbnail view provides more detailed information. You can use the zoom slider to the right most position to see more detailed information. The zoom slider provides three levels of information.

Tabular View

Tabular view displays managed objects on and inventory page as rows in a table. Data about each managed object is displayed in the table columns.

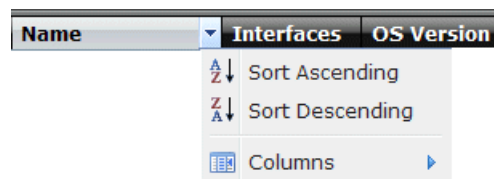
You must select an object to perform an action on it. Select objects by clicking the row check box. You can select objects in a sequence or randomly. The Use the Select Page or None links to select all or clear the selection of all objects at once.

You can manipulate objects in tables by changing the width of columns, sorting columns, and hiding columns.

Sorted By Indicator

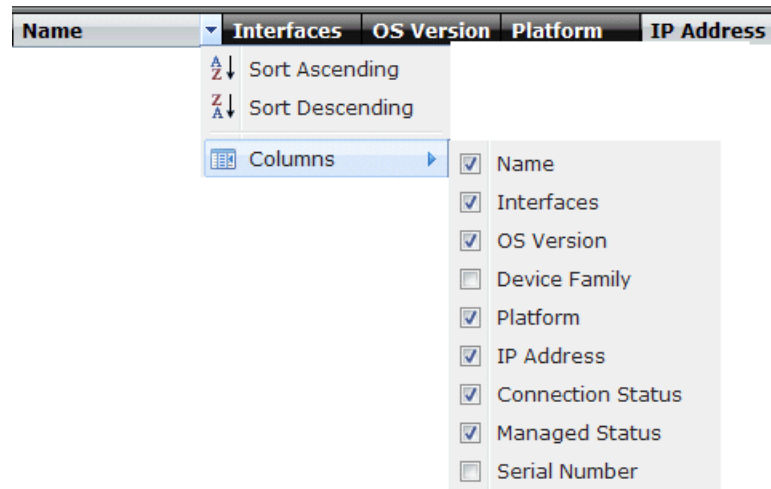
The Sorted by indicator in the inventory page banner displays how the objects are sorted in the tabular view. The Sorted by indicator is displayed in both the thumbnail and tabular views after you have sorted a column.

In tabular view, you can sort inventory data using the Sort Ascending and Sort Descending commands in the column header drop-down menu. Click the down arrow on a table header to view the sort menu. In the following example, the device inventory is currently sorted by the Name column.



Show or Hide Columns

Hide table columns by deselecting the column name in the Columns Cascading menu, as shown. Only selected column names appear in the inventory table.



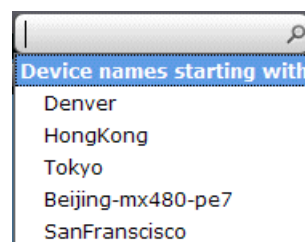
Zoom Slider

The zoom slider determines the size of the icons displayed on the screen and the amount of detailed information that appears. The zoom slider is displayed only in thumbnail view. The zoom slider provides two levels of zoom. The left level of zoom displays objects smaller on the inventory page and reduces the amount of paging. The right level of zoom provides detailed information about an object. The size of objects is persistent between work sessions.

Search and Filter Field

Use the Search and Filter text field on the right of the inventory page banner enables you to search for specific objects to display on the inventory page. Typing the first letter of an object displays the available names that start with that letter.

Clicking the magnifying glass at the right in the search field displays a drop-down list with the names of inventory objects. When you select a search option in the drop-down list, inventory items specific to that search option only are displayed on the page.



You can create tags to categorize objects. For more information about tagging objects to select similar objects, see “Tagging an Object” on page 432.

Clearing the contents in the Search field and pressing Enter, displays all the inventory objects on the page again.

Actions Drawer and Right-Mouse Clicking Objects

You can perform actions on one or more selected items on an inventory page by using the Actions drawer or right-clicking items. To use the actions in the Actions drawer, select one or more objects, mouse over the Actions drawer to open it, select an action. The drawer opens and the actions that can be performed are displayed as shown. For example, to delete a device from the inventory, select that device in the Manage Devices inventory page, mouse over the Actions drawer, then click the Delete link. Move the cursor from the drawer to close it.

You can also select one or more items, then right click. The right-click menu appears, which has the same action as the Actions drawer.



NOTE: If you are using Mozilla Firefox, the Advanced JavaScript Settings may prevent the right-mouse menu from being displayed.

To ensure that the right-mouse menu appears, the **Disable or replace context menus** option must be turned on by following these steps:

1. In Mozilla Firefox, choose **Tools > Options**. The **Options** dialog box appears.
2. In the **Options** dialog box, click the **Content** tab.
3. Click **Advanced**. The **Advanced JavaScript Settings** dialog box appears.
4. Click the **Disable or replace context menus** option.
5. Click **OK** in the **Advanced JavaScript Settings** dialog box.
6. Click **OK** in the **Options** dialog box.

Paging Controls

Paging controls at the bottom of the inventory panel allow you to navigate the inventory when the inventory is too large to fit on one page. Using these controls, you can go to a specific page, navigate to the next or previous page, navigate to the first or last page of the inventory, or refresh the inventory view.

The Page field lets you jump to a specific page of managed objects. Type the page number in the Page field and press Enter to jump to that field.

Other table controls are described in Table 6 on page 34.

Table 6: Table Paging and Refreshing Controls






Table Control	Operation
	Advances to the next page of the table.
	Returns to the previous page of the table.
	Displays the last page of the table.

Table 6: Table Paging and Refreshing Controls (*continued*)

Table Control	Operation
	Displays the first page of the table.
	Refreshes the table content.

The displaying information field identifies how many objects are being managed and how many appear on one page.



- Related Documentation
- Junos Space User Interface Overview on page 12
 - Tagging an Object on page 432

PART 2

Devices

- [Discovering Devices on page 39](#)
- [Adding Deployed Devices on page 51](#)
- [Managing Devices on page 59](#)
- [Adding Devices and Connection Profiles on page 103](#)
- [Secure Console on page 125](#)
- [Device Adapters on page 131](#)

CHAPTER 3

Discovering Devices

- Device Discovery Overview on page 39
- Discovering Devices on page 40
- Specifying Device Targets on page 48
- Specifying SNMP probes on page 49

Device Discovery Overview

You use device discovery to add devices to Junos Space. *Discovery* is the process of finding a device and then synchronizing the device's inventory and configuration with the Junos Space database. To use device discovery, Junos Space must be able to connect to the device.

To discover network devices, Junos Space uses the SSH and SNMP protocols. Device authentication is handled through administrator login SSH v2 credentials and SNMP v1/v2c or v3 settings, which are part of the device discovery configuration. You can specify a single IP address, a DNS hostname, an IP range, or an IP subnet to discover devices on a network. During discovery, Junos Space connects to the physical device and retrieves running configuration and status information of the device. To connect with and configure devices, Junos Space uses Juniper Network's Device Management Interface (DMI), which is an extension to the NETCONF network management protocol.

When discovery succeeds, Junos Space creates an object in the Junos Space database to represent the physical device and maintains a connection between the object and the physical device so their information is linked.

When configuration changes are made in Junos Space, for example, when you deploy service orders to activate a service on your network devices, the configuration is pushed to the physical device.

When configuration changes are made on the physical device, (out-of-band CLI commits and change-request updates), Junos Space automatically resynchronizes with the device, so that the device inventory information in the Junos Space database matches the current device inventory and configuration information.

The following device inventory and configuration data is captured and stored in relational tables in the Junos Space database:

- Devices: hostname, IP address, credentials
- Physical Inventory: chassis, FPM board, PEM, Routing Engine, CB, FPCs, CPU, PICs, Xcvrs, fan trays

Junos Space displays the model number, part number, serial number, and description for each inventory component, when applicable.

- Logical Inventory: sub-interfaces, encapsulation (link-level), type, speed, MTU, VLAN ID
- Loopback interface

Other device configuration data is stored in the Junos Space database as Binary Large Objects, and is only available to NBI users.

**Related
Documentation**

- [Discovering Devices on page 40](#)
- [Viewing Managed Devices on page 66](#)
- [Understanding How Junos Space Automatically Resynchronizes Managed Devices on page 85](#)
- [Resynchronizing Managed Devices on page 87](#)
- [Device Management Overview on page 59](#)
- [Device Inventory Management Overview on page 65](#)
- [Managing DMI Schemas Overview on page 438](#)

Discovering Devices

You use device discovery to automatically discover and synchronize Junos devices in Junos Space. Device discovery is a three-step process in which you specify target devices, a probe method (Ping or SNMP or both), and credentials to connect to each device.



NOTE: The values that you enter to specify the targets, probe method, and credentials are persistent from one discovery operation to the next, so you do not have to reenter information that is the same from one operation to the next.

To add a device using device discovery, the following conditions must be met:

- The device is configured with a static management IP address that is reachable from the Junos Space server.
- A user with full administrative privileges is created on the device for the Junos Space administrator.

- If you plan to use SNMP to probe devices as part of device discovery, SNMP is enabled on the device with appropriate read-only V1/V2C/V3 credentials.



NOTE: To perform discovery on a device with dual Routing Engines, always specify the IP address of the current master RE. When the current master IP address is specified, Junos Space manages the device and the redundancy. If the master RE fails, the backup RE takes over and Junos Space manages the transition automatically without bringing down the device.



NOTE: When you initiate discovery on a device, Junos Space automatically enables SSH and the NETCONF protocol over SSH by pushing the following commands to the device:

```
set system services ssh protocol-version v2
set system services netconf ssh
```

To discover and synchronize devices, complete the following tasks:

1. Specifying Device Targets on page 41
2. Specifying Probes on page 42
3. Specifying Credentials on page 45

Specifying Device Targets

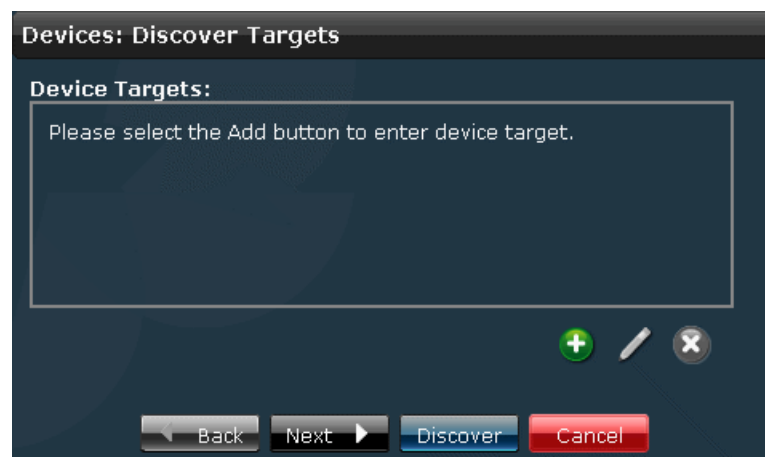
To specify the device targets that you want Junos Space to discover:

1. From the task ribbon, select the **Devices** workspace.
2. From the task ribbon, click the **Discover Devices** icon.

Junos Space displays discovery status for discovery targets that are already processed.

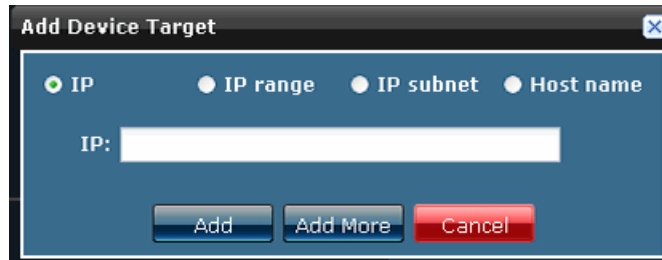
3. From the task ribbon, click the **Discover Targets** icon.

Junos Space displays the Discover Targets window.



- Click the Add icon.

The Add Device Target dialog box is displayed.



The 'Add Device Target' dialog box is shown with a title bar and a close button. It contains four radio buttons: 'IP' (selected), 'IP range', 'IP subnet', and 'Host name'. Below the radio buttons is a text input field labeled 'IP:'. At the bottom are three buttons: 'Add', 'Add More', and 'Cancel'.

- Choose one of the following options to specify device targets:

- Select the **IP** radio button and enter the IP address of the device.
- Select the **IP Range** radio button and enter a range of IP addresses for the devices.



NOTE: The maximum number of IP addresses for an IP range target is 1024.

- Select the **IP Subnet** radio button and enter an IP subnet for the devices.
- Select the **Host Name** radio button and enter the host name of the device.

- Click **Add** to save the target devices that you specified, or click **Add More** to add additional device targets. When you have added all device targets that you want Junos Space to discover, click **Add**.

The Discover Targets window displays the addresses of the configured device targets.

- Click **Discover** from the Discover Targets window.

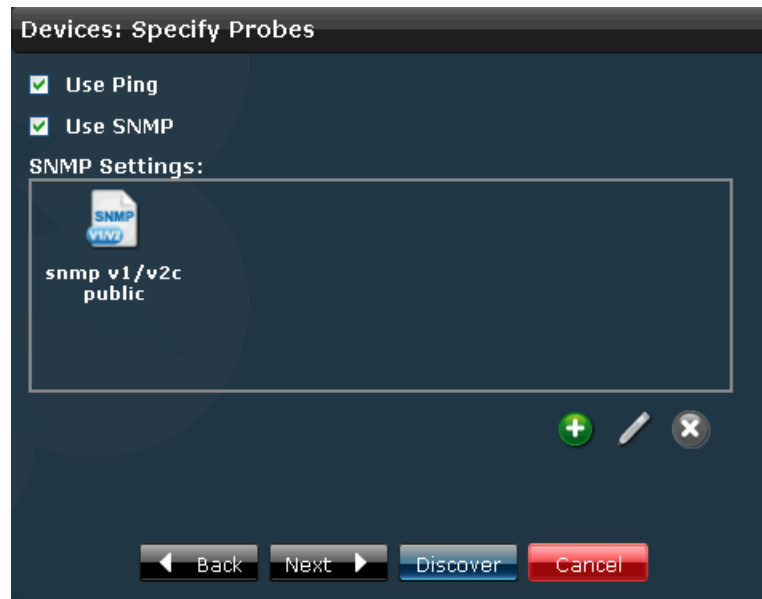
In the next task, you specify a probe method to connect to and discover the device targets.

Specifying Probes

To configure the method Junos Space uses to discover the device targets:

- From the task ribbon, select the **Devices** workspace, and then click the **Discover Devices** icon.
- From the task ribbon, click the **Specify Probes** icon.

The Specify Probes window is displayed.



3. Select a probe method (or SSH) to discover target devices:

- If SNMP is configured for the device, select **Use SNMP** , and clear the check box **Use Ping**.

Junos Space will use the SNMP GET command to discover target devices.

- If SNMP is not configured for the device, select the check box **Use Ping** , and clear the check box **Use SNMP**.

Junos Space will use Juniper Network's Device Management Interface (DMI) to directly connect to and discover devices. DMI is an extension to the NETCONF network management protocol.

- When both the **Use Ping** and **Use SNMP** check boxes are selected (the default), Junos Space can more quickly discover the target device, if the device is pingable and SNMP is enabled on the device.

4. Click the Add icon (+).

The Add SNMP Settings dialog box is displayed.



The dialog box titled "Add SNMP Settings" has a close button (X) in the top right corner. It contains two radio buttons: "SNMP V1/V2C" (selected) and "SNMP V3". Below the radio buttons is a text field labeled "Community:". At the bottom are three buttons: "Add", "Add More", and "Cancel".

5. For SNMPv1 or SNMPv2:

- a. Select **SNMP V1/V2C** (the default).
- b. In the community field, specify the community string, which can be **public**, **private**, or a predefined string.
- c. Click **Add** to save the SNMP settings, or click **Add More** to specify another community string. When you have finished adding community strings, click **Add**.

The Specify Probes window displays the configured SNMP settings.

6. For SNMPv3:

- a. Select **SNMP V3**.

The SNMP V3 dialog box is displayed.



The dialog box titled "Add SNMP Settings" has a close button (X) in the top right corner. It contains two radio buttons: "SNMP V1/V2C" and "SNMP V3" (selected). Below the radio buttons are five fields: "Username:" (text field), "Privacy type:" (dropdown menu with "Please select ..." selected), "Privacy password:" (text field), "Authentication type:" (dropdown menu with "Please select ..." selected), and "Authentication password:" (text field). At the bottom are three buttons: "Add", "Add More", and "Cancel".

- b. Enter the username.
- c. Select the privacy type (**AES 128**, **DES**, or **none**)
- d. Enter the privacy password (if **AES 128** or **DES**). If you specify **none** for the privacy type, the privacy function is disabled.
- e. Select the authentication type (**MD5**, **SHA**, or **none**).

- f. Enter the authentication password (if **MD5** or **SHA**). If you specify **none** for the authentication type, the authentication function is disabled.
- g. Click **Add** to save the SNMP V3 settings, or click **Add More** to specify additional SNMP settings. When you have finished adding SNMP settings, click **Add**.

The Specify Probes window displays the configured SNMP settings.

7. Click **Discover** in the Specify Probes window.

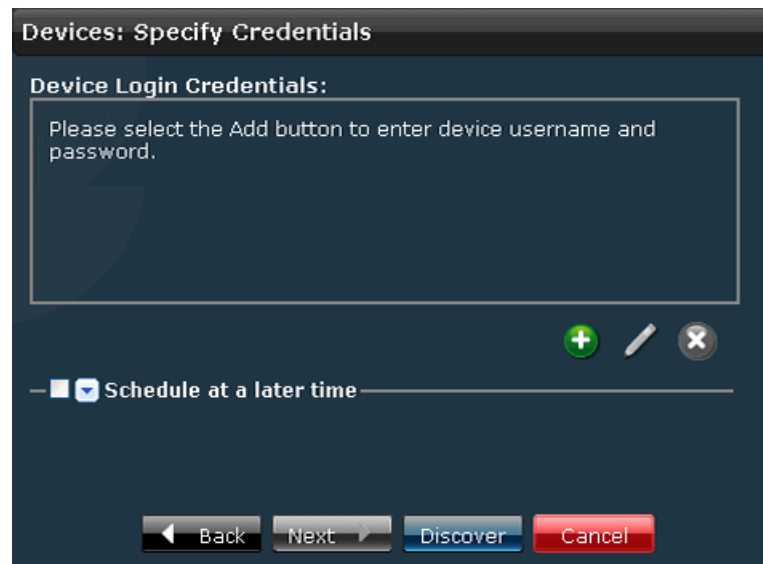
In the next task, you specify credentials to establish the SSH connection for the target devices.

Specifying Credentials

Specify an administrator name and password to establish the SSH connection for each target device that you configured:


1. From the task ribbon, select the **Devices** workspace, and then click the **Discover Devices** icon.
2. From the task ribbon, select the **Specify Credentials** icon.

The Specify Credentials window appears.



3. Click the Add icon.

The Add Device Login Credential dialog box is displayed.

A dialog box titled "Add Device Login Credential" with a close button (X) in the top right corner. It contains three input fields: "Username:", "Password:", and "Confirm password:". Below the fields are three buttons: "Add" (blue), "Add More" (blue), and "Cancel" (red).

4. Specify the administrator user name and password, and confirm the password. The name and password must match the name and password configured on the device
5. To save the user name and password that you specified, click **Add** or click **Add More** to add another user name and password. When you have finished adding login credentials, click **Add**.

The Credential window displays the administrator user names that you configured.

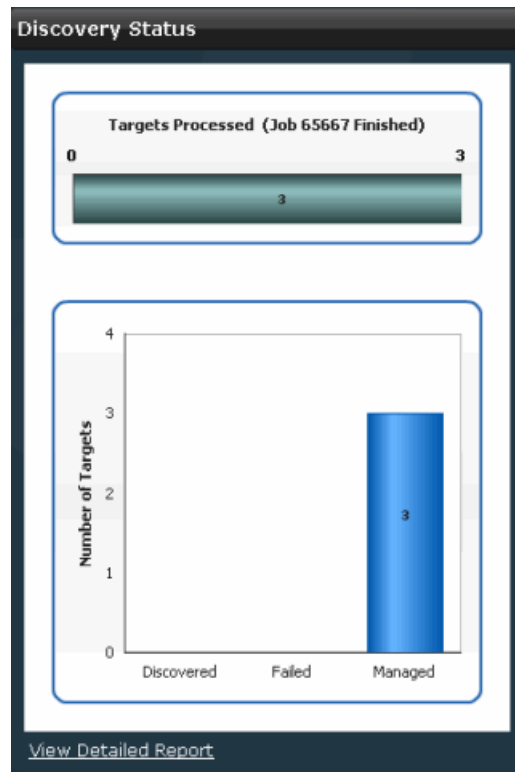
6. Schedule the device discovery operation:
 - Clear the **Schedule at a later time** check box (the default) to initiate the discovery operation when you complete Step 7 in this procedure.
 - Select the **Schedule at a later time** check box to specify a later start date and time for the discovery operation.



NOTE: The selected time in the scheduler corresponds to Junos Space server time but is mapped to the local time zone of the client computer.

7. In the Specify Credentials window, click **Discover** to discover and synchronize the device targets in Junos Space.

The Discovery Status window, shown in the following illustration, displays the progress of discovery in real-time. Click on any bar in the chart to view information about devices currently managed, discovered, or for which discovery failed.



8. For information about device discovery results you can view the Detailed Reports and view job status from the **Jobs** workspace:

- To view device discovery details, click **View Detailed Report** in the Discovery Status window.

The Detailed Report displays the IP address, host name, and discovery status for discovered devices.

Devices			
IP Address	Hostname	Status	Description
10.155.69.22	Tokyo	Device Managed	
10.155.69.23	HongKong	Device Managed	
10.155.69.24	Denver	Device Managed	

Page 1 of 1 | Displaying 1 - 3 of 3



NOTE: If the discovery operation fails, the **Description** field in the **Detailed Report** table indicates the cause of failure.

- To view device discovery from the **Jobs** workspace:
 - From the task ribbon, select the **Jobs** workspace.
 - From the task ribbon, select the **Manage Jobs** icon.

- c. From the Job Manager inventory panel, enter **Discover Network Elements** in the search field to view only device discovery jobs. The following example shows a table view of Discover Network Elements jobs.



The screenshot shows the 'Manage Jobs' interface with a table of jobs. The table has columns for Percent, State, Job Type, ID, Summary, and Scheduled Start Time. Two jobs are visible, both with a 100.0% completion rate and a 'SUCCESS' state. The first job (ID 13107) was scheduled for March 6, 2010, at 12:07:22 AM PST. The second job (ID 65536) was scheduled for March 5, 2010, at 6:03:56 PM PST. Both jobs are of type 'Discover Network Elements'. The summary for each job includes statistics on scanned IP addresses, discovery success, and device management.

Percent	State	Job Type	ID	Summary	Scheduled Start Time
100.0	SUCCESS	Discover Network Elements	13107	Number of scanned IP: 1 Number of Discovery succeeded: 1 Number of Add Device failed: 0 Number of Already Managed: 0 Number of Skipped: 0 Number of Device Managed: 1	Mar 6, 2010 12:07:22 AM PST
100.0	SUCCESS	Discover Network Elements	65536	Number of scanned IP: 1 Number of Already Managed: 0 Number of Skipped: 0 Number of Discovery succeeded: 1 Number of Device Managed: 1 Number of Juniper Device but Add device failed: 0	Mar 5, 2010 6:03:56 PM PST

Specifying Device Targets

To discover a topology using Junos Space Topology Discovery, you must first specify a device target. This device acts as a seed device in initiating a topology discovery. You can also begin a topology discovery by using subnets as targets or seeds.

To specify device targets:

1. From the task ribbon, select **Topology Visualization > Discover Topology > Specify Target**.

The **Topology Visualization Workspace: Specify Target** page appears (Figure 1 on page 49).

Figure 1: Specify Device Targets



2. Here you can perform one or more of the following actions:

- Select the **Include Managed Devices as Targets** checkbox if you want Junos Space to use Junos managed devices as the target devices for topology discovery.
- Add, edit, or delete device targets. For more information, see Managing Device Targets.

Related Documentation

- Topology Discovery Overview on page 215
- Specifying SNMP probes on page 49
- Viewing Discovered Topologies on page 221

Specifying SNMP probes

Junos Space uses SNMP to discover network elements that are connected to the specified seed devices and subnets. The Junos Space server contacts the targeted devices in the specified subnets and gets the relevant management information base (MIB) information that is needed for computing the topology. You can also specify a hop count to limit the number of routers from the seed device that you want Junos Space to discover. If the hop count is 1, the Junos Space server takes the IP addresses present in the IP routing tables of all the initially targeted devices and considers them for further discovery. This process is repeated based on the hop count value that you specified. For example, if a device X is targeted for discovery with hop count as 1, then all the IP addresses present in the routing table of device X are targeted for discovery. If the hop count is 2, then all the IP addresses present in the routing tables of the devices whose IP addresses were in the routing table of device X are also targeted for discovery.

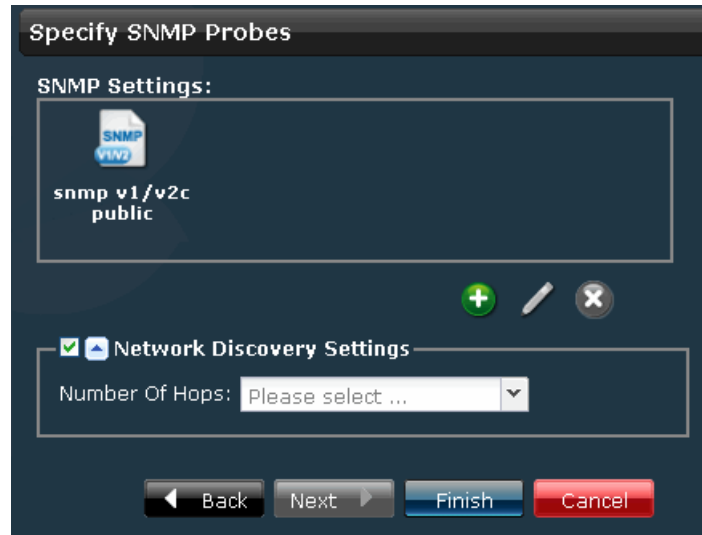
To use SNMP to probe devices as part of topology discovery, make sure that SNMP is enabled on the devices in the network with appropriate read-only version 1, version 2, or version 3 credentials.

To configure SNMP settings.

1. From the task ribbon, select **Topology Visualization > Discover Topology > Specify SNMP Probes**.

The **Topology Visualization Workspace: SNMP Probes** page appears (Figure 2 on page 50).

Figure 2: Specify SNMP Probes



2. Here, you can perform one or more of the following actions:

- Add, edit, or delete SNMP probes that specify how Junos Space discovers the network. For more information, see [Managing SNMP Probes](#).
- Specify a hop count to limit the number of routers from the target that Junos Space tries to discover. Select the **Network Discovery Settings** checkbox and select the number of hops from the **Number of Hops** drop down list.

Related Documentation

- [Topology Discovery Overview](#) on page 215
- [Specifying Device Targets](#) on page 48
- [Viewing Discovered Topologies](#) on page 221

CHAPTER 4

Adding Deployed Devices

- Add Deployed Devices Overview on page 51
- Adding Deployed Devices on page 52
- Managing Deployed Devices on page 55

Add Deployed Devices Overview

Network devices deployed on the network can be easily managed by Junos Space using the Discover Devices task. However in case of security devices, SSH and Ping are disabled on the device interface for any incoming traffic. Hence security devices will not be able to communicate with Junos Space. In such instances, you can use the Add Deployed Devices Wizard to enable communication between security devices and Junos Space. This creates a Task Instance which you can use to obtain management CLIs related to these devices. These CLIs can be pasted on the device console, enabling the device to connect to Junos Space for further management.

You can create Task Instances either manually or by uploading a comma-separated values (CSV) file. You need to specify the following details to create a Task Instance:

- Device name
- Device platform
- OS version
- Device count
- Authentication details

You can store the management CLIs obtained from a Task instance and paste it on the device console or on a command line session on the device.



NOTE: If you are using Internet Explorer to download the management CLIs, you need to customize the browser settings to be able to download them. Perform the following steps to customize the Internet Explorer settings:

1. Open Internet Explorer and navigate to **Tools > Internet Options**.
2. Click the **Security** tab and select the **Custom Level** tab.
3. In the **Automatic prompting for file downloads** section click the **Enable** radio button.

Related Documentation

- Adding Deployed Devices on page 52
- Managing Deployed Devices on page 55
- Managing DMI Schemas Overview on page 438

Adding Deployed Devices

To create a new Task Instance:

1. From the **Network Application** task ribbon, select **Devices > Add Deployed Devices**.
The **Add Deployed Devices** inventory panel displays icons for all the Task Instances.
2. From the task ribbon, select the **Add Device** icon. You can use this to add branch ScreenOS devices.

The **Add Devices** window is displayed, as shown in Figure 3 on page 52.

Figure 3: Add Devices Window

3. In the **Name** field, enter a name for the new Task Instance.

4. In the **Description** field, enter a description for the new Task Instance.
5. You can add a new Task Instance either manually or by importing a CSV file.

To add a new Task Instance by importing a CSV file:

- a. Select the **Import to CSV** radio button.
- b. To view a sample of the CSV file that should be uploaded, select the **View Sample CSV** link in the **Import** section.
- c. Save the sample CSV file to your storage location.
- d. Make necessary changes in this CSV file and rename it with an appropriate name.

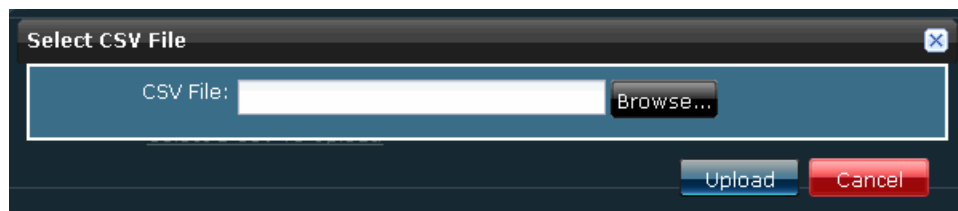


NOTE: Do not add or delete any columns in the CSV file. You will not be able upload the CSV file successfully if you add or delete any columns.

- e. Select the **Select a CSV To Upload** link in the Import section.

The **Select CSV File** window is displayed, as shown in the Figure 4 on page 53.

Figure 4: Selecting a CSV File to Upload



- f. Click **Browse** and upload the CSV file from your storage location.
- g. If the CSV file is successfully uploaded, a Green mark appears next to the **Select a CSV To Upload** link.

The **Upload** window is displayed.

- h. Click **OK**.

To add a new Task Instance manually:

- a. Select the **Add Manually** radio button.
- b. Enter the following details in the **Device Details** section:
 - From the **Platform** drop-down menu, select an appropriate platform.
 - From the **OS Version** drop-down menu, select an appropriate OS version.
 - In the **Number of devices** field, enter the number of devices with the same platform and OS version.



NOTE: If you add multiple devices, a unique numerical identifier is appended at the end of each device name.

c. In the **Authentication Details** section:

- In the **Username** field, choose an appropriate user name.
- In the **Password** field, enter a password.
- In the **Re-enter Password** field, re-enter the password.

6. Click **Next**.

This table lists all management CLIs associated with the Task Instance. The icons used to view or download management CLIs are listed in Table 7 on page 54

Table 7: Icons to View/Download Management CLIs

Icon	Description
	Used to view the details of the management CLIs
	Used to download the management CLIs

7. You can view or download the management CLIs in this table.

To view the management CLIs:

- Select the check boxes to the left of the rows you want to view.
- Click the View icon.

A new pop-up displays the details of the management CLIs you want to view.

To download the management CLIs:

- Select the check boxes to the left of the rows corresponding to the management CLIs you want to download.
- Click the Download icon.



NOTE: If you are using Internet Explorer to download management CLIs, you need to customize the browser settings to be able to download them. Perform the following steps to customize the Internet Explorer settings:

1. Open Internet Explorer and navigate to **Tools > Internet Options**.
2. Click the **Security** tab and then select the **Custom Level** tab.
3. In the **Automatic prompting for file downloads** section click the **Enable** radio button.

To sort the rows displayed in the table by a specific field:

- a. Select the down arrow to the right of the column header and select either **Sort Ascending** or **Sort Descending** from the menu.

The table reappears with the rows sorted by the selected column. The changes in the sort order persist on return to the same screen.

To hide columns displayed in the table:

- a. Select the down arrow to the right of the column header and select **Columns**.
- b. In the submenu that appears, clear the check boxes for the columns you want to hide.

The deselected columns are hidden.

8. Click **Finish**.

The new Task Instance you have added is displayed in the **Add Deployed Devices** inventory panel. A new job is created and the job ID is displayed in the **Job Information** dialog box.

9. Click the job ID to view more information about the job created.

This action will direct you to the **Job Management** work space.

Related Documentation

- Add Deployed Devices Overview on page 51
- Managing Deployed Devices on page 55
- Managing DMI Schemas Overview on page 438

Managing Deployed Devices

You can view or download the management CLIs associated with the Task Instances listed in the **Add Deployed Devices** inventory panel. You can also view the device instance status or delete the Task Instances listed in the **Add Deployed Devices** inventory panel.

To open the **Add Deployed Devices** inventory panel:

1. From the **Network Application** task ribbon, select **Devices > Add Deployed Devices**.

The **Add Deployed Devices** inventory panel is displayed. All Task Instances created is listed by default, in the graphical view.

You can perform the following the tasks on the Task Instances and management CLIs:

1. Viewing the Details of a Task Instance on page 56
2. Viewing the Device Status on page 56
3. Deleting a Task Instance on page 56
4. Downloading Management CLIs on page 57

Viewing the Details of a Task Instance

To view the details of a Task Instance:

1. From the **Network Application** task ribbon, select **Devices > Add Deployed Devices**.
The **Add Deployed Devices** inventory panel is displayed.
2. Double-click the icon for the Task Instance whose details you intend to view.
The details of the Task Instance are displayed in the **Add Instance Details** window.
3. Click **Close** to close the **Add Instance Details** window.

Viewing the Device Status

To view the device status:

1. From the **Network Application** task ribbon, select **Devices > Add Deployed Devices**.
The **Add Deployed Devices** inventory panel is displayed.
2. Select the Task Instance you intend to view the device status for and click the **View Device Status** link from the **Actions** panel in the left hand top corner of the inventory panel.
A new window displays the connection status and managed status of the devices.
3. Click **Back** on the left corner to return to the inventory panel.



NOTE: You can view the device status for a Task Instance using a right-click. To do so, right-click on the Task Instance and select the **View Device Status** link from the contextual menu.

Deleting a Task Instance

To delete a Task Instance you have created:

1. From the **Network Application** task ribbon, select **Devices > Add Deployed Devices**.
The **Add Deployed Devices** inventory panel is displayed.
2. Select the Task Instance you intend to delete and click the **Delete** link from the **Actions Drawer** in the left corner of the inventory panel.
The **Delete Instance** confirmation window is displayed.
3. Select the Task Instance you want to delete and click **Delete**.



NOTE: You can delete a Task Instance using a right-click. To do so, right-click on the Task Instance and select the **Delete** link from the contextual menu.

Downloading Management CLIs

To download management CLIs from the Task Instance you have created:

1. From the **Network Application** task ribbon, select **Devices > Add Deployed Devices**.
The **Add Deployed Devices** inventory panel is displayed.
2. Select the Task Instance containing the management CLI you intend to download and click the **Download Management CLIs** link from the **Actions Drawer** in the left corner of the inventory panel.
The **Download Management CLIs** window is displayed.
3. Select the **Download Management CLIs** link from the **Download Management CLIs** window.
4. Save the .zip file in your storage location.

Related Documentation

- Add Deployed Devices Overview on page 51
- Adding Deployed Devices on page 52
- Managing DMI Schemas Overview on page 438

CHAPTER 5

Managing Devices

- Device Management Overview on page 59
- Viewing Device Statistics on page 60
- Device Inventory Management Overview on page 65
- Viewing Managed Devices on page 66
- Viewing Hardware Inventory for Devices on page 69
- Editing Device Configuration Overview on page 71
- Selecting the Device and the Configuration Perspective on page 73
- Editing Device Configuration Options on page 75
- Finalizing Device Configuration Changes on page 77
- Viewing Change Requests on page 79
- Viewing Physical Interfaces for Devices on page 81
- Troubleshooting Devices on page 82
- Deleting Devices on page 84
- Understanding How Junos Space Automatically Resynchronizes Managed Devices on page 85
- Resynchronizing Managed Devices on page 87
- Changing Login Credentials for Managed Devices on page 89
- Exporting Device Inventory Information on page 91
- Configuring SRX Device Clusters in Junos Space on page 95

Device Management Overview

You can use Junos Space to simplify management of the devices running Junos software on your network.

From the Devices workspace, you use device discovery to discover devices and synchronize device configurations with the Junos Space database. You can use device discovery to discover one or many devices at a time. After Junos Space discovers your network devices, you can perform the following tasks to monitor and configure devices from Junos Space:

- View statistics about the managed devices in your network, including the number of devices by platform and the number of Junos family devices by release.
- View connection status and configuration status for managed devices.
- View operational and administrator status of the physical interfaces on which devices are running.
- View hardware inventory for a selected device, such as information about power supplies, chassis cards, fans, FPCs, and available PIC slots.
- Resynchronize a managed device to resynchronize the device configuration in the Junos Space database with the physical device.
- Deploy service orders to activate a service on your network devices.
- Troubleshoot devices.

Supported Devices

Junos Space supports the following platforms running Junos Software:

- EX Series Switches
- J Series Routers
- M Series Routers
- MX Series Routers
- SRX Series Services Gateways
- T Series Routers

Related Documentation

- Device Discovery Overview on page 39
- Device Inventory Management Overview on page 65
- Discovering Devices on page 40
- Understanding How Junos Space Automatically Resynchronizes Managed Devices on page 85
- Viewing Managed Devices on page 66
- Troubleshooting Devices on page 82

Viewing Device Statistics

The Devices statistics page provides the device manager three types of data for managed devices:

- Device Count by Platform—the number of Juniper Networks devices organized by type.
- Device Status—the connection status of managed devices on the network.
- Device Count by OS—the number of devices running a particular Junos OS release

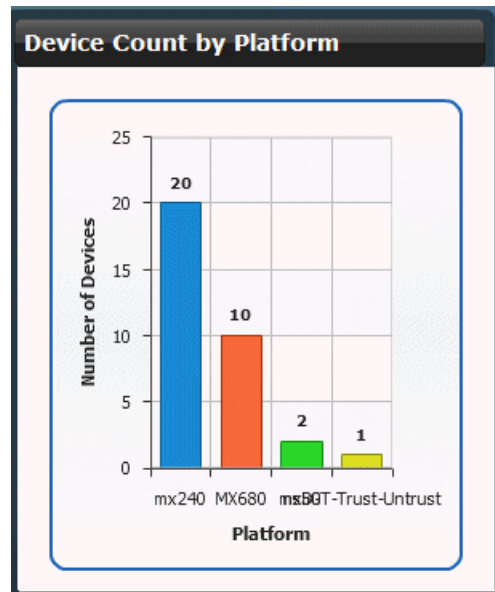
To view device statistics, navigate to the Platform > Devices workspace.

This topic includes the following tasks:

- Viewing the Number of Devices by Platform on page 62
- Viewing Connection Status for Devices on page 62
- Viewing Devices by Junos OS Release on page 63

Viewing the Number of Devices by Platform

The Device Count by Platform bar chart shows the number of Juniper Networks devices on the y axis discovered by platform type on the x axis. Each vertical bar in the chart displays the number of managed devices for a platform.



To view more detailed information about devices per platform:

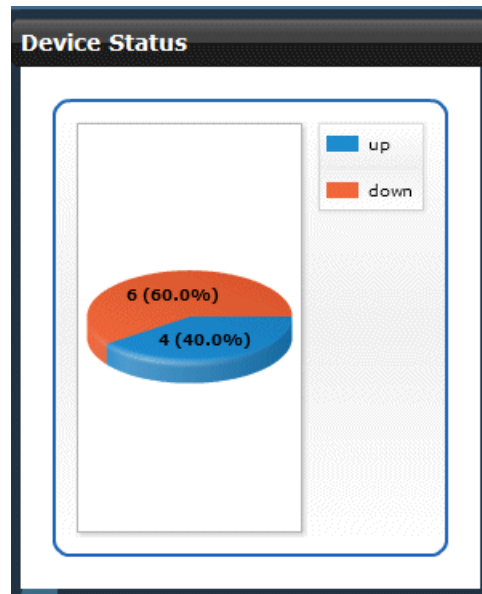
- Click a bar in the bar graph. The Manage Devices inventory page appears filtered by the device type you selected. For more details about the Manage Devices inventory page, see "Viewing Managed Devices" on page 66.

To save the bar chart as an image or to print for presentations or reporting:

- Right click the bar chart. The popup menu appears.

Viewing Connection Status for Devices

The Device Status pie chart displays the percentage and number of devices that are connected and disconnect on the network. The up or down status is expressed as a percentage of the total number of devices.



To view more detailed device status information:

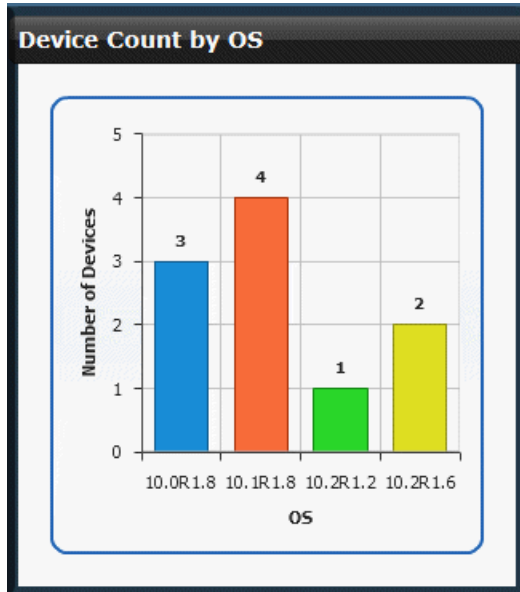
- Click a slice in the pie chart. The Manage Devices inventory page appears filtered by the devices that are up or down. For more details about the Manage Devices inventory page, see "Viewing Managed Devices" on page 66.

To save the pie chart as an image or to print for presentations or reporting:

- Right click the bar chart. The popup menu appears.

Viewing Devices by Junos OS Release

The Devices Count by OS bar chart shows the number of Juniper Networks devices on the network (the y axis) categorized by running a certain Junos OS release (the x axis).



To view more detailed information about devices running a particular Junos OS release:

- Click a bar in the chart. The Manage Devices inventory page appears. For more details about the Manage Devices inventory page, see “Viewing Managed Devices” on page 66.

To save the pie chart as an image or to print for presentations or reporting:

- Right-click the bar chart. The popup menu appears.

Related Documentation

- Viewing Managed Devices on page 66
- Viewing Hardware Inventory for Devices on page 69
- Discovering Devices on page 40

Device Inventory Management Overview

You manage device inventory through the Manage Devices application in the Devices workspace. From the Manage Devices window you can perform several functions:

- List the device inventory to view information about the hardware and software components of each device that Junos Space manages.
- View the operational and administrator status for the physical interfaces on which devices are run.
- Change credentials for a device.
- Export the device inventory information for use in other applications, such as those used for asset management.
- Troubleshoot a device.
- Resynchronize the network devices managed by Junos Space.

The device inventory in the Junos Space database is generated when the device is first discovered and synchronized in Junos Space. After a device is synchronized, the device inventory in the Junos Space database matches the inventory on the device itself.

If either the physical (hardware) or logical (config) inventory on the device is changed, then the inventory on the device is no longer synchronized with the Junos Space database. However, Junos Space automatically triggers a re-sync job when a configuration change request commit or out-of-band CLI commit occurs on a managed device.

You can also manually resynchronize the Junos Space database with the physical device by using the **Resynchronize with Network** command from the Devices workspace in the Junos Space user interface.

To reach the device management applications, navigate to **Devices > Manage Devices**

Related Documentation

- Device Management Overview on page 59
- Device Discovery Overview on page 39
- Viewing Hardware Inventory for Devices on page 69
- Understanding How Junos Space Automatically Resynchronizes Managed Devices on page 85
- Resynchronizing Managed Devices on page 87
- Exporting Device Inventory Information on page 91
- Troubleshooting Devices on page 82

Viewing Managed Devices

You can view operating system, platform, IP-address, and connection status information for all the managed devices in your network. Device information can be viewed graphically or in a table. By default, Junos Space displays thumbnail representations of devices.

- Viewing Devices as Graphics on page 66
- Viewing Devices in a Table on page 67

Viewing Devices as Graphics

You can view thumbnails, summary information, and detailed information about the devices managed by Junos Space.




To view the managed devices:

1. From the task ribbon, select the **Devices** workspace.
2. From the task ribbon, select the **Manage Devices** icon.

The inventory panel displays thumbnails of managed devices by name and IP address.

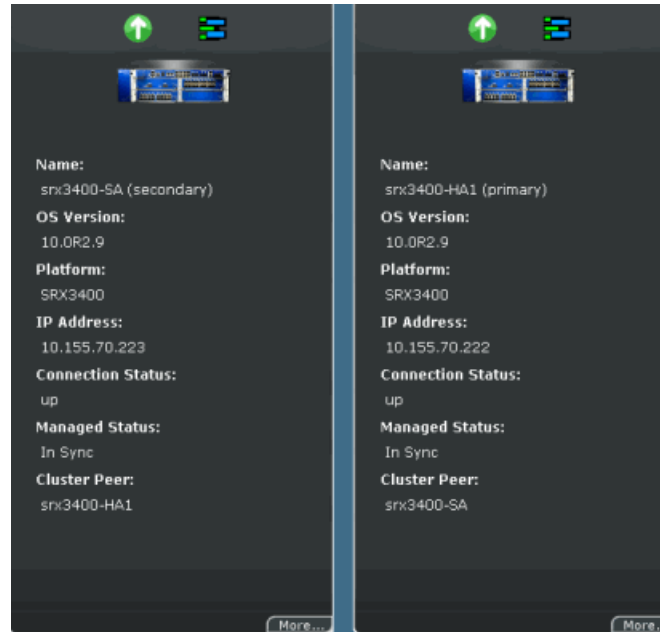
Above each thumbnail, an icon indicates whether the device is connected (up) or down. Table 8 on page 66 describes the connection status icons.

Table 8: Device Connection Status Icon

Icon	Description
	<p>Connection is up—The device is connected to Junos Space and is running properly.</p> <p>NOTE: Before you can update a device from Junos Space (deploy service orders), the device connection must be up.</p>
	<p>Out Of Sync—The device is connected to Junos Space but the device configuration in the Junos Space database is Out Of Sync with the physical device.</p>
	<p>Connection is down—Device is not currently connected to Junos Space or an event has occurred, either manually by an administrator or automatically by the flow of a type of traffic, that has stopped the device from running.</p>

3. You can use the following options to view information about devices:
 - To restrict the display of devices, enter a search criterion of one or more characters in the Search bar and press Enter.
All devices that match the search criterion are shown in the main display area.
 - To view summary information for a device, select the device in the inventory panel and drag the zoom slider to the rightmost position.
Junos Space displays information about the selected device, including OS version, platform, IP address, connection status, and managed status.

For SRX devices that are configured as cluster devices, Junos Space displays a cluster icon and indicates whether the device is the primary or secondary cluster device, as shown in the following example.



- To view hardware inventory information for a device, double-click on the thumbnail, or select the device, and click **View Physical Inventory** from the Actions drawer.

Viewing Devices in a Table

To view configuration and run-time information for devices in a table:

1. From the task ribbon, select the **Devices** workspace.
2. Click the table icon in the filter bar, as shown in the following example.



Junos Space displays a table of devices in the inventory panel.

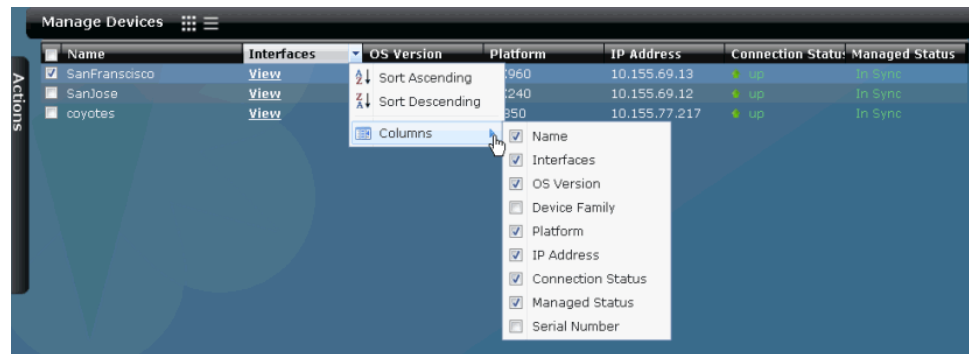
Name	Interfaces	OS Version	Platform	IP Address	Connection Status	Managed Status
SanFrancisco	View	10.1R1.1	MX960	10.155.69.13	up	In Sync
SanJose	View	10.1R1.7	MX240	10.155.69.12	up	In Sync
coyotes	View	9.6R3.2	J6350	10.155.77.217	up	In Sync

Table 9 on page 68 describes the fields displayed in the inventory window.

Table 9: Fields in the Manage Devices Table

Field	Description
Connection Status	<p>Connection status of the device in Junos Space.</p> <ul style="list-style-type: none"> up—Device is connected to Junos Space. When connection status is up, the Managed status is Out of Sync, Synchronizing, In Sync, or Sync Failed. down—Device is not connected to Junos Space. When Connection status is down, the Managed status can be None or Connecting.
Device Family (not displayed by default)	Device family of the selected device.
Interfaces	Link to the view of physical interfaces for the device.
IP Address	IP address of the device.
Managed Status	<p>Current status of the managed device in Junos Space:</p> <ul style="list-style-type: none"> Connecting— Junos Space has sent connection RPC and is waiting for first connection from device. In Sync—Sync operation has completed successfully, and Junos Space and the device are synchronized. None—Device is discovered, but Junos Space has not yet sent connection RPC. Out of Sync—Device has connected to Junos Space, but the sync operation has not been initiated, or an out-of-band configuration change on the device was detected and auto-resync is disabled or has not yet started. Synchronizing—Sync operation has started because of device discovery, a manual re-sync operation, or an automatic re-sync operation. Sync Failed—Sync operation failed.
Name	The device configuration name for the device.
OS Version	Operating system firmware version running on the device.
Platform	Model number of the device.
Serial Number (not displayed by default)	Serial number of the device chassis.

3. To sort any column, mouse over any column header and click the down arrow. A pull-down menu appears, showing Sort Ascending and Sort Descending. Make the appropriate selection.
4. To display columns not shown in the default table view or to hide columns:
 - a. Mouse over any column header and click the down arrow. The Device List pull-down menu is displayed.
 - b. Select **Columns** from the pull-down menu, as shown in the following example.



c. Select the check box for columns that you want to view. Clear the check box for columns that you want to hide.

5. You can use the following options to view information about devices:

- To restrict the display of devices, enter a search criterion of one or more characters in the Search bar and press Enter.

All devices that match the search criterion are shown in the main display area.

- To view hardware inventory information for a device, double-click on the table row for the device, or select the row for the device, and click **View Physical Inventory** from the Actions drawer.
- To view the physical interfaces for a device, select the row for the device, and click **View Interfaces** from the Actions drawer.

Related Documentation

- Viewing Device Statistics on page 60
- Viewing Hardware Inventory for Devices on page 69
- Viewing Physical Interfaces for Devices on page 81
- Discovering Devices on page 40

Viewing Hardware Inventory for Devices

Hardware inventory information shows the slots that are available for a device and provides information about power supplies, chassis cards, fans, part numbers, and so forth. Junos Space displays hardware inventory by device name, based on data that Junos Space retrieves from the device during discovery and resync operations, and from data stored in the hardware catalog. For each managed device, the Junos Space hardware catalog provides descriptions for field replaceable units (FRUs), part numbers, model numbers, and the pluggable locations from which empty slots are determined.

Sorting is disabled for the hardware inventory view to preserve the natural slot order of the devices.

To view hardware inventory for devices that Junos Space manages:

1. From the task ribbon, select the **Devices** workspace.
2. From the task ribbon, select **Manage Devices** icon.

The Manage Devices inventory view displays the devices managed in Junos Space.

3. Double-click on a device, or select a device and click **View Physical Inventory** in the Actions drawer, or select that command from the right mouse-click menu..

The device inventory panel displays the chassis components and FRUs and inventory detail for the selected device, as shown in the following example.

Return to Inventory View				
Item	Model Number	Part Number	Serial Number	Description
SanFrancisco - MX960			JN1118EBEAF8	
Chassis	CHAS-BP-MX960-S	710-013698	JN1118EBEAF8	MX960
FPM Board	CRAFT-MX960-S	710-014974 (REV 03)	XE1330	Front Panel Display
PDM		740-013110 (REV 03)	QCS1243504A	Power Distribution Module
PEM 0		740-013682 (REV 04)	QCS1239402A	PS 1.7kW; 200-240VAC in
PEM 2		740-013682 (REV 04)	QCS123340EM	PS 1.7kW; 200-240VAC in
PEM 3		740-013682 (REV 04)	QCS123340F2	PS 1.7kW; 200-240VAC in
Routing Engine 0	RE-S-1300-2048-S	740-015113 (REV 07)	9009009811	RE-S-1300
Routing Engine 1	RE-S-1300-2048-S	740-015113 (REV 07)	9009009266	RE-S-1300
CB 0	SCB-MX960-S	710-021523 (REV 03)	XA5623	MX SCB
CB 1	SCB-MX960-S	710-021523 (REV 03)	XC0534	MX SCB
CB 2	SCB-MX960-S	710-021523 (REV 03)	XA5805	MX SCB
FPC 0	DPCE-R-40GE-SFP	750-021679 (REV 13)	XA6865	DPCE 40x 1GE R
CPU		710-022351 (REV 03)	XA1540	DPC PMB
PIC 0		BUILTIN	BUILTIN	10x 1GE(LAN)
Xcyr 0		740-013111 (REV 01)	7351693	SFP-T
Xcyr 1		740-013111 (REV 01)	7351258	SFP-T
Xcyr 2		740-013111 (REV 01)	7351312	SFP-T
Xcyr 3		740-013111 (REV 01)	7351640	SFP-T
Xcyr 4		740-013111 (REV 01)	7351358	SFP-T
Xcyr 5		740-013111 (REV 01)	7351448	SFP-T
Xcyr 6		740-013111 (REV 01)	7351265	SFP-T
Xcyr 7		740-013111 (REV 01)	7351369	SFP-T
Xcyr 8		740-013111 (REV 02)	9012993	SFP-T
Xcyr 9		740-013111 (REV 01)	7351299	SFP-T

For cluster devices, Junos Space displays chassis information for each node (primary and secondary) in the cluster, as shown in the following example.

Return to Inventory View				
Item	Model Number	Part Number	Serial Number	Description
Cluster				
srx3400-bottom - SRX3400			AA2808AD0015	
Chassis (node1)	SRX3400-CHAS	710-015748	AA2808AD0015	SRX 3400
srx3400-top - SRX3400			AA2808AD0013	
Chassis (node0)	SRX3400-CHAS	710-015748	AA2808AD0013	SRX 3400

Table 10 on page 70 describes the information displayed in the device inventory panel.

Table 10: Device Inventory Fields

Field	Description
Item	Chassis component. Depending on the device type, can include the midplane, backplane, power supplies, fan trays, Routing Engine, front panel module board, PDM, CIP, PEM, SCG, CB, FPCs, and PICs.
Model Number	Model number for the chassis component.

Table 10: Device Inventory Fields (*continued*)

Part Number	Part number and revision level of the component (FRU). "BUILTIN" indicates the component is not a FRU.
Serial Number	Serial number of the component (FRU). "BUILTIN" indicates the component is not a FRU.
Description	Description of the component or FRU.

4. To return to the device inventory view, click **Return to Inventory View** at the top of the inventory panel.
5. To export the device inventory information in .CSV format, click Export at the top of the inventory panel, just below the navigation ribbon.

The Export Inventory Job Status window appears, displaying the progress of the job and the job ID.
6. To access the file, go to the Job Manager and click on the download link.

Related Documentation

- Viewing Managed Devices on page 66
- Viewing Physical Interfaces for Devices on page 81
- Resynchronizing Managed Devices on page 87
- Understanding How Junos Space Automatically Resynchronizes Managed Devices on page 85

Editing Device Configuration Overview

For Release Candidate Test Only

This action enables you to communicate directly with a device, viewing its existing configuration and editing it according to your requirements. You can then deploy the new configuration or schedule it for later.

When you edit a device configuration, Junos Space uses a default DMI schema for the device type, unless you have uploaded the schema that particular device is actually using to Junos Space using the DMI schema workspace (see "Managing DMI Schemas Overview" on page 438). If Junos Space has the schema for the device, you can edit any and all of the device's configuration options instead of just the options that are provided by the default schema. If Junos Space does not have all the configuration options for the device, it is possible that some already configured parameters on the device will not be displayed. In that case, what Junos Space cannot see, it does not change. Space checks for an exact match between device and DMI schema every time you edit its configuration.

Editing device configuration relates to three types of device configuration file:

- Running configuration—the current running configuration

- Candidate configuration—the future running configuration, which is saved as a change request until you deploy it or create another candidate configuration. In this last case, the first, undeployed, candidate configuration, is overwritten when you create the second candidate configuration. For details, see “Viewing Change Requests” on page 79.
- Backup configuration—the copy of the running configuration created by a commit command applied to a candidate configuration. All former running configurations are saved in the change request history.

When you edit a device configuration, you are creating a candidate configuration file. When you deploy the candidate, you are creating a new running configuration and a backup configuration file.

The sequence of tasks in editing device configuration is as follows:

1. Selecting the Device and the Configuration Perspective on page 73
2. Editing Device Configuration Options on page 75
3. Finalizing Device Configuration Changes on page 77

Although Junos devices can maintain up to 49 copies of a configuration file, Junos Space provides database management of configuration files too. For more information on this, see “Managing Configuration Files Overview” on page 272.

Related Documentation

- Selecting the Device and the Configuration Perspective on page 73
- Editing Device Configuration Options on page 75
- Finalizing Device Configuration Changes on page 77
- Managing Configuration Files Overview on page 272
- Viewing Change Requests on page 79
- Managing DMI Schemas Overview on page 438

Selecting the Device and the Configuration Perspective

For Release Candidate Test Only

To get an overview of the device configuration editing process, see “Editing Device Configuration Overview” on page 71.

The Edit Device Configuration Page shows the DMI schema applied by Junos Space to the selected device. If Junos Space has the same DMI schema as the device, then that schema will be applied. If Junos Space does not, then it displays the default schema for the selected device's type. The default schema does not necessarily show all of the configuration options available in the actual device schema. Therefore you cannot configure those options using Junos Space; you must go to the device itself. To avoid this situation, upload the device's schema to Junos Space using the DMI Schema management workspace (see “Managing DMI Schemas Overview” on page 438).

This topic describes how to view the device configuration preparatory to editing it.

The task described below is the first task in the process of editing a device configuration. After completing this task, go to “Editing Device Configuration Options” on page 75

To select the device and the perspective:

1. Navigate to **Devices > Manage Devices**, and select a single device.
2. Either select **Edit Device Configuration** from the Actions drawer, or select the same action from the right mouse-click menu.

The **Edit Device Configuration** page appears.

The device name, device family and OS version are displayed on the top left.

The main part of the **Edit Device Configuration** page shows:

- On the left, in alphabetical order, the hierarchy of configuration options for the selected device. The default perspective is **All data**, which means all configuration options, whether set or not.
 - a. To see the content of an option, click the plus icon to the left of the option.
The plus icon becomes a minus icon, and the list of the option's content (its children) appears below the opened option.
 - b. (Optional) Continue drilling down in the hierarchy by repeating the above step as often as necessary.
 - On the right, all the parameters for the device's configuration options, in the same sequence as the device's output in response to the **show running config** command. When you first arrive at this page, by default, the content of the topmost option on the left - Configuration - displays on the right.
3. (Optional) To see which configuration options in the hierarchy are actually set, select from the Perspective dropdown list box on the top of the left panel next to the magnifying glass/search icon **Configured Data**.

4. (Optional) To search for a particular option, see “Finding Configuration Options” on page 164. Although that topic deals with Device Templates, the principle is exactly the same.
5. To see precisely which parameters it is possible to configure in an option, click the appropriate entry in the configuration option hierarchy on the left.

The parameters available for configuration are displayed in the panel on the right.

6. (Optional) To display in the right panel only those options that are actually configured (as opposed to all the those that it is possible to configure), select the **Show configured data only** checkbox on the title bar at the right.

For information about the individual options, mouse over the blue information icon next to each option. The explanatory text is the same as that in the device cli.

As navigation aids to facilitate orientation in the right panel, you have breadcrumbs above that panel, while the title bar of the panel displays the name of the currently selected configuration option.

**Related
Documentation**

- Editing Device Configuration Overview on page 71
- Editing Device Configuration Options on page 75
- Finalizing Device Configuration Changes on page 77
- Updating a DMI Schema on page 440

Editing Device Configuration Options

For Release Candidate Test Only

This topic describes the individual operations in editing a device configuration after you have selected your device and the perspective.

This is the second task in the process of editing a device configuration. The first task was “Selecting the Device and the Configuration Perspective” on page 73, and the last one is “Finalizing Device Configuration Changes” on page 77.

To edit a configuration option:

1. Select a configuration option in the hierarchy in the panel on the left.

The contents of the panel on the right changes to reflect your selection on the left, and the full name of the configuration option appears in the title bar of the panel on the right.

The way the parameters in a configuration option are displayed varies depending on the option's data type. The data type is shown in a tooltip when you mouse over an option in the hierarchy. It is the data type that determines how the parameter is validated, and the data type is in turn determined by the DMI schema.

For example, tables are shown as rows that can be:

- edited by selecting a row and clicking the diagonal pencil icon
- added by clicking the plus icon
- deleted by selecting a row and clicking the minus icon.

The variety in the data presentation only affects how you arrive at the value you want to change, not the value itself.

For more information on the correlation between data types and validation methods, see “Defining the Operator's View” on page 157. For more detailed instructions on how to handle entering your parameters, consult “Specifying Default Values for Configuration Options” on page 183. Although both these topics deal with Device Templates instead of editing device configuration, both features use basically the same displays. Note that when editing a device configuration you not entering a default value but the actual value..

A parameter available for configuration is usually displayed as a link: **Click to Configure**.

2. Click on the appropriate link, and even if it leads to another, keep clicking until you arrive at the parameter you want to change.
3. Make your change(s).

In the hierarchy on the left, the option you have changed is highlighted, and the option label is bolded. This distinguishes it from subsequent options that you simply visit, without making any changes. If you have opened up the hierarchy, you can see not only the name of the principal option, but also the name of the particular parameter you have changed, for example not only “SNMP,” but also “Description”.



NOTE: Your edits are saved when you click anywhere else on the Edit Device Configuration page, whether another configuration option or any of the buttons.

4. Either continue to make changes, or do any or none of the following:

- (Optional) To see how your changes would look on the device cli, click **Preview**. The **View Device Configuration Changes** page appears, displaying in xml format all the parameters you changed.



NOTE: All changes are displayed, not just the one you are currently working on.

Click **Close** to return to the device configuration editor.

- (Optional) To ensure the device will accept your changes, click **Validate**.

The **The Validate Device Configuration Changes** page appears, asking that you wait while the configuration is being validated on the device. When it has finished, the device validation status appears, announcing success or failure.

To avoid not knowing which parameter in a complex configuration change caused validation to fail, you may want to do your changes one by one, validating after each one.

Click **Close** to return to the device configuration editor.

- (Optional) To abort the editing operation without making any changes, click **Cancel**.

You can also use the **Preview** and **Validate** buttons for configurations that you have not changed.

5. To finish editing, click **Finish**.

The **Finalize Device Configuration Changes** page appears.

6. Choose one of the following:

- **Save as Change Request** (default setting).

Select this radio button and click **OK**.

The item appears in the Change Request list for that device. For more information, see “Viewing Change Requests” on page 79.

- **Deploy now**

Select this radio button and click **OK**.

The **Deploy Configuration Changes Job Information** window appears, displaying the job ID you can click for details.

- a. To view details, click the job ID.

The Manage Jobs page appears, filtered to display your job. For more information, see “Job Management Overview” on page 287.

- b. To return to the Manage Devices page, click **OK**.

The Manage Devices page appears, displaying the device you edited now unselected.

- **Deploy later**

- a. Choose the date and time.

The time zone is determined by the setting on the Junos Space server. If you choose a time or date that is in the past, a little red exclamation mark icon appears. Mouse over it to see the warning.

- b. Click **OK**.

The **Deploy Configuration Changes Job Information** window appears, displaying the job ID you can click for details.

- To view details, click the job ID.

The Manage Jobs page appears, filtered to display your job. For more information, see “Job Management Overview” on page 287.

- To return to the Manage Devices page, click **OK**.

The Manage Devices page appears, displaying the device you edited now unselected.

After completing this task, go to “Finalizing Device Configuration Changes” on page 77

**Related
Documentation**

- Editing Device Configuration Overview on page 71
- Selecting the Device and the Configuration Perspective on page 73
- Finalizing Device Configuration Changes on page 77
- Managing DMI Schemas Overview on page 438

Finalizing Device Configuration Changes

For Release Candidate Test Only

This is the last task in editing device configuration.

When you have finished editing (see “Editing Device Configuration Options” on page 75),

1. Do any, all, or none of the following:

- (Optional) To see how your changes would look on the device cli, click **Preview**.

The **View Device Configuration Changes** page appears, displaying in xml format all the parameters you changed.



NOTE: All changes are displayed, not just the one you are currently working on.

Click **Close** to return to the device configuration editor.

- (Optional) To ensure the device will accept your changes, click **Validate**,

The **The Validate Device Configuration Changes** page appears, requesting you wait while the configuration is being validated on the device. When it has finished, the device validation status appears, announcing success or failure. Validation status also appears on the status bar.



NOTE: To avoid not knowing which parameter in a complex configuration change caused validation to fail, you may want to do your changes one by one, validating after each one.

Click **Close** to return to the device configuration editor.

- (Optional) To abort the editing operation without making any changes, click **Cancel**.

You can also use the **Preview** and **Validate** buttons for configurations that you have not changed.

2. To finish editing, click **Finish**.

The **Finalize Device Configuration Changes** page appears.

3. Choose one of the following:

- **Save as Change Request** (default setting).

Select this radio button and click **OK**.

The item appears in the Change Request list for that device. For more information, see “Viewing Change Requests” on page 79.

- **Deploy now**

Select this radio button and click **OK**.

The **Deploy Configuration Changes Job Information** window appears.

- a. To view details, click the job ID.

The Manage Jobs page appears, filtered to display your job. For more information, see “Job Management Overview” on page 287.

- b. To return to the Manage Devices page, click **OK**.

The Manage Devices page appears, displaying the device you edited, now unselected.

- **Deploy later**

- a. Choose the date and time.

The time zone is determined by the setting on the Junos Space server. If you choose a time or date that is in the past, a little red exclamation mark icon appears. Mouse over it to see the warning.

- b. Click **OK**.

The item appears in the Change Request list for that device. For more information, see “Viewing Change Requests” on page 79.

The **Deploy Configuration Changes Job Information** window appears.

- To view details, click the job ID.

The Manage Jobs page appears, filtered to display your job. For more information, see “Job Management Overview” on page 287.

- To return to the Manage Devices page, click **OK**.

The Manage Devices page appears, displaying the device you edited, now unselected.

Related Documentation

- Editing Device Configuration Overview on page 71
- Selecting the Device and the Configuration Perspective on page 73
- Editing Device Configuration Options on page 75
- Viewing Change Requests on page 79

Viewing Change Requests

For Release Candidate Test Only

Change requests are generated when you edit a device configuration and save the edits instead of deploying them immediately or scheduling deployment (see “Finalizing Device Configuration Changes” on page 77 for instructions on this).

This topic includes the following tasks:

- Overview of Change Requests on page 79
- Adding, Modifying, or Deleting a Change Request on page 80

Overview of Change Requests

To view a change request:

1. Navigate to **Devices > Manage Devices**.

The list of managed devices appears on the **Manage Devices** inventory page. For more details about that page, see “Viewing Managed Devices” on page 66.

2. Select a single device, and either mouse over the **Actions** drawer to select the **View Change Requests** menu item, or select the same command from the right mouse-click menu.

The list of change requests for the selected device appears in the form of a table.

The table displays the following column headings:

- **Checkbox**—When checked, this selects all entries in the table.
 - **Description**—In this column appears the value of the changed parameter. Note that this value is likely to be ambiguous without the context of the parameter name and the schema path: for example, one schema path for the parameter name “Description” is “configuration/snmp/description.”
 - **Created By**—The name of the person who edited the configuration to produce the change request.
 - **Creation Time**—The time at which the change request was created.
 - **Last Updated By**—The name of the person who updated the original change request. See “Adding, Modifying, or Deleting a Change Request” on page 80.
 - **Last Update Time**—The time at which the update was made.
 - **Schedule Status**—Scheduled, unscheduled, or in progress.
3. To finish or save any modifications or deletions (see “Adding, Modifying, or Deleting a Change Request” on page 80), click **Return to Inventory View**.

Adding, Modifying, or Deleting a Change Request

To add a change request, click the green plus icon above the table.

The **Edit Device Configuration** page appears. For instructions, see “Editing Device Configuration Overview” on page 71.

To modify a change request, select it, then click the diagonal pencil icon above the table.

The **Edit Device Configuration** page appears. For instructions, see “Editing Device Configuration Overview” on page 71.

To delete a change request, select it, then click the red X icon above the table.



NOTE: Change requests in progress cannot be deleted. An error message appears if your change is in progress.

The **Confirm Deletion of Change Request** window opens. It displays two columns, **Description** and **Created By**.

Confirm by clicking **Delete**.

An error message tells you if the delete action cannot be completed, and you return to the **Confirm Deletion of Change Request** window.

Related Documentation

- Editing Device Configuration Overview on page 71
- Selecting the Device and the Configuration Perspective on page 73

- Editing Device Configuration Options on page 75
- Finalizing Device Configuration Changes on page 77

Viewing Physical Interfaces for Devices

Junos Space displays physical interfaces by device name, based on the device information Junos Space has in its database. You can view the operational status and admin status of physical interfaces for one or more devices to troubleshoot problems.

Sorting is disabled for the physical interfaces view to preserve the natural slot order of the devices.

If the interface status changes on the managed device, the data is not updated in Junos Space until the device is resynchronized with the Junos Space database.

To view the physical interfaces for devices:

1. From the task ribbon, select the **Devices** workspace.
2. From the task ribbon, select the **Manage Devices** icon.
3. In the Manage Device inventory view, select the device for which you want to view the physical interfaces.
4. In the Actions drawer, click **View Interfaces**.

Junos Space displays the status of the physical interfaces for a device.

Return to Inventory View									
Device Name	Interface Name	Ip Address	MAC Address	Operational Sta	Admin Status	Encapsulation	Link Type	Speed (Mbps)	MTU
SanFrancisco	lo0	192.168.1.40		up	up				Unlimited
SanFrancisco	ge-0/0/0	10.1.10.30	00:22:83:d9:d8:1	up	up	Ethernet	full-duplex	1000	1514
SanFrancisco	ge-0/0/1		00:22:83:d9:d8:1	down	down	Ethernet	full-duplex	1000	1514
SanFrancisco	ge-0/0/2		00:22:83:d9:d8:1	up	up	52	full-duplex	1000	1522
SanFrancisco	ge-0/0/3		00:22:83:d9:d8:1	up	up	Ethernet	full-duplex	1000	1514
SanFrancisco	ge-0/0/4		00:22:83:d9:d8:1	up	up	Ethernet	full-duplex	1000	1514
SanFrancisco	ge-0/0/5		00:22:83:d9:d8:1	up	up	Ethernet	full-duplex	1000	1514
SanFrancisco	ge-0/0/6		00:22:83:d9:d8:1	up	up	Ethernet	full-duplex	1000	1514
SanFrancisco	ge-0/0/7		00:22:83:d9:d8:1	up	up	Ethernet	full-duplex	1000	1514
SanFrancisco	ge-0/0/8		00:22:83:d9:d8:1	up	up	Ethernet-VPLS	full-duplex	1000	1522
SanFrancisco	ge-0/0/9		00:22:83:d9:d8:1	up	up	Ethernet-VPLS	full-duplex	1000	1522
SanFrancisco	ge-0/1/0		00:22:83:d9:d8:1	up	up	Ethernet	full-duplex	1000	1514

Table 11 on page 81 describes the information displayed for the physical Interfaces.

Table 11: Physical Interfaces Columns

Field	Description
Admin Status	Admin status of the interface: up or down.
Device Name	Device configuration name.
Encapsulation	Encapsulation used on the physical interface.
Interface Name	Standard information about the interface, in the format <i>type-/fpc/pic/port</i> where <i>type</i> is the media type that identifies the network device; for example, ge-0/0/6.
IP Address	IP address for the interface.

Table 11: Physical Interfaces Columns (*continued*)

Link Type	Physical interface link type: full duplex or half duplex.
MTU	Maximum transmission unit size on the physical interface.
Operational Status	Operational status of the interface: up or down.
Speed (Mbps)	Speed at which the interface is running.

- To return to the device inventory, click **Return to Inventory View** at the top of the inventory panel.

Related Documentation

- Viewing Managed Devices on page 66
- Viewing Hardware Inventory for Devices on page 69

Troubleshooting Devices

You can troubleshoot M/MX devices from Network Application Platform if you have Network Activate installed.

In Junos Space you can also perform troubleshooting on N-PE devices from Network Activate (see Troubleshooting N-PE Devices Before Provisioning a Service).

You can use the **Troubleshoot** option in Network Application Platform to check device configurations on all discovered M/MX devices.

To check device configuration, follow these steps:

- In the Network Application Platform task ribbon, select **Devices > Manage Devices**.
The Manage Devices inventory page appears, displaying all discovered devices on the network.
- Select the device that you want to troubleshoot.
- Either right-click the selected device and select **Troubleshoot** from the menu, or, in the Actions panel, select **Troubleshoot**.

The Troubleshoot Device window appears.



NOTE: This command is not available for devices other than M/MX.

The table here describes the show commands that you can run to check the configuration on a device.

Table 12: Commands Available in the Troubleshoot Device Window

Command	Description	Fields Displayed
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Table 12: Commands Available in the Troubleshoot Device Window (*continued*)

show mpls lsp ingress	Display whether ingress LSP is up and running.	<ul style="list-style-type: none"> • Device name • LSP State • Destination Address
show mpls lsp egress	Display whether egress LSP is up and running.	<ul style="list-style-type: none"> • Device name • LSP State • Destination Address
show bgp summary	Display summary information about BGP and its neighbors to determine if routes are received from peers in the autonomous system (AS). When a BGP session is established, the peers exchange update messages.	<ul style="list-style-type: none"> • Peer Address • Peer State
show ospf neighbor	Display information about OSPF neighbors.	<ul style="list-style-type: none"> • Interface Name • Neighbor Address • OSPF Neighbor State
show bgp neighbor	Display information about all BGP peers.	<ul style="list-style-type: none"> • Peer Address • Peer State • Local AS
show ldp interface	Display standard status information about all LDP-enabled interfaces for all routing instances.	<ul style="list-style-type: none"> • Interface Name • LDP Neighbor Count
show ldp neighbor	Display standard information about LDP neighbors for all routing instances.	<ul style="list-style-type: none"> • Interface Name • Neighbor Address • Remaining Time—remaining hold time before the neighbor expires, in seconds.
show rsvp session	Display information about Resource Reservation Protocol (RSVP) sessions.	<ul style="list-style-type: none"> • Name • LSP State • Destination Address <p>For complete information about the fields displayed for the show rsvp session command, see the <i>Junos Software Routing Protocols and Policies Command Reference</i>.</p>
show rsvp interface	Display the status of Resource Reservation Protocol (RSVP)-enabled interfaces and packet statistics.	<ul style="list-style-type: none"> • Interface Name • RSVP Status • Static Bandwidth • Available Bandwidth • Total Reserved Bandwidth

Table 12: Commands Available in the Troubleshoot Device Window (*continued*)

show isis adjacency	Display information about intermediate System-to-Intermediate System (*IS-IS) neighbors.	<ul style="list-style-type: none"> Interface Name Adjacency State System Name <p>For complete information about the fields displayed for the show isis adjacency command, see the <i>Junos Software Routing Protocols and Policies Command Reference</i>.</p>
---------------------	--	--

- Select any show command to view device-specific configuration information.



NOTE: For additional information about a device configuration, you can explicitly run a show command with the extensive option, for example, **show mpls lsp extensive**.

Related Documentation

- Managing Devices on page 111
- Troubleshooting N-PE Devices Before Provisioning a Service

Deleting Devices

You can delete devices from Junos Space. Deleting a device removes all device configuration and device inventory information from the Junos Space database.

To delete a device from Junos Space:

- From the task ribbon, select the **Devices** workspace.
- From the task ribbon, click the **Manage Devices** icon.

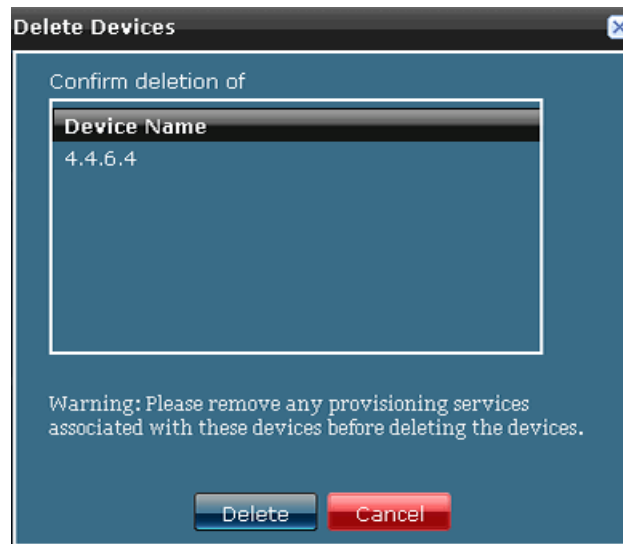
The Manage Devices inventory panel displays thumbnails of the devices managed in Junos Space.

- Optional: To view summary information for a device before deleting, select on the device and move the scroll bar to the far right.

Junos Space displays basic device information, including name, OS version, platform, IP address, and connection status.

- From the Manage Devices inventory panel, select one or more devices to delete.
- If provisioning services are associated with a device that you want to delete, you must remove the provisioning services before deleting the device. For information about deleting service orders, see [Deleting a Service Order](#).
- Select **Delete** from the Actions drawer.

Junos Space displays the Delete Devices confirmation window.



7. Select **Delete** to delete the selected devices.

Junos Space deletes all device configuration and inventory information for the selected devices from the Junos Space database.

Related Documentation

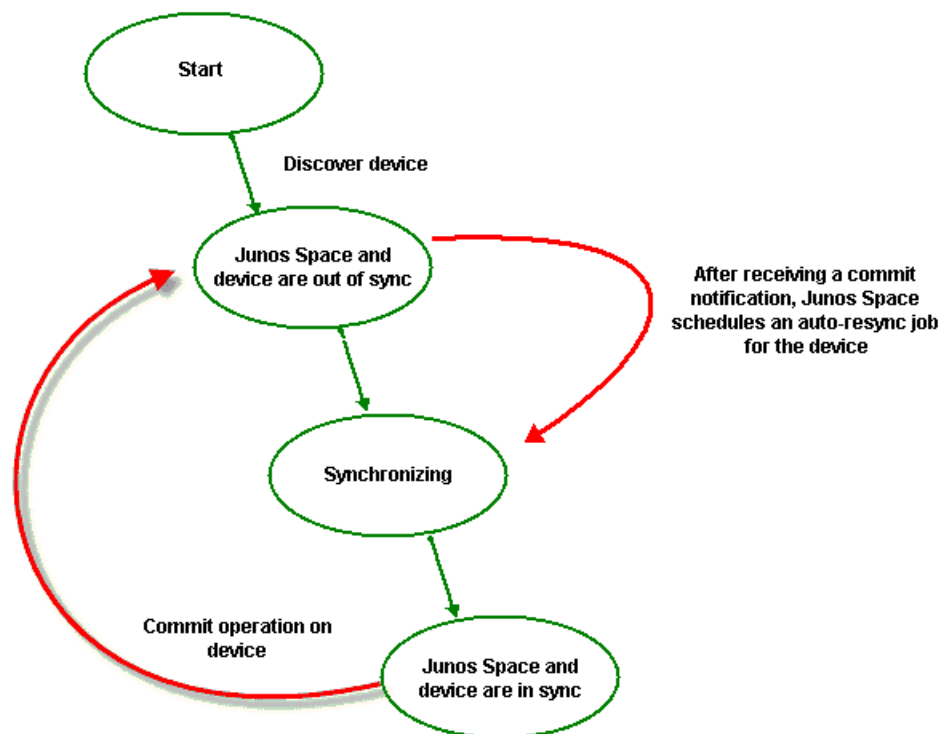
- Viewing Managed Devices on page 66
- Viewing Hardware Inventory for Devices on page 69
- Viewing Physical Interfaces for Devices on page 81
- Discovering Devices on page 40

Understanding How Junos Space Automatically Resynchronizes Managed Devices

When configuration changes are made on a physical device that Junos Space manages, Junos Space automatically resynchronizes with the device, so that the device inventory information in the Junos Space database matches the current configuration information on the device.

After Junos Space discovers and imports a device, Junos Space enables the auto-resync feature on the physical device by initiating a commit operation.

After auto-resynchronization is enabled, any configuration changes made on the physical device, including out-of-band CLI commits and change-request updates, automatically trigger resynchronization on the device. The following diagram shows how a commit operation on the device triggers resynchronization.



When a commit operation is performed on a managed device, Junos Space schedules a re-sync job to run 20 seconds after the commit notification is received. However, by default, if Junos Space receives another commit notification from the device within 25 seconds of the previous commit notification, no additional re-sync jobs are scheduled, but Junos Space will resynchronize both commit operations in one job. This damping feature of automatic resynchronization provides a window of time during which multiple commit operations can be executed on the device, but only one or a few re-sync jobs are required to resynchronize the Junos Space database after multiple configuration changes are executed on the device.

When Junos Space receives the device commit notification, the device status is “Out of Sync”. When the re-sync job begins on the device, the Managed Status for the device displays “Synchronizing” and then “In Sync” after the re-sync job has completed, unless a pending device commit operation causes the device to display “Out of Sync” while it was synchronizing.

When a resync job is scheduled to run but another resync job on the same device is in progress, Junos Space delays the scheduled resync job. The time delay is determined by the damper interval that you can set from the application workspace. By default, the time delay is 20 seconds. The scheduled job is delayed as long as the other resync job to the same device is in progress. When the currently running job finishes the scheduled resync job starts.

You can disable the auto-resync feature in the **Application** workspace. When auto-resync is turned off, the server continues to receive notifications and will go into the out of sync

state; however the auto-resync will not run on the device. To resynchronize a device when the auto-resync feature is disabled, you can use the resync feature to manually resync the device.

For information about setting the damper interval to change the resync time delay and information about disabling the auto-resync feature, see “Modifying Application Settings” on page 393.

**Related
Documentation**

- Resynchronizing Managed Devices on page 87
- Device Discovery Overview on page 39
- Device Inventory Management Overview on page 65
- Viewing Managed Devices on page 66

Resynchronizing Managed Devices

You can resynchronize a managed device at any time. For example, when a managed device is updated by a device administrator from the device's native GUI or CLI, you can resynchronize the device configuration in the Junos Space database with the physical device.

To resynchronize a device:

1. From the task ribbon, select the **Devices** workspace icon.
2. From the task ribbon, select the **Manage Devices** icon.

The Manage Devices inventory panel displays the list of managed devices by name and IP address.

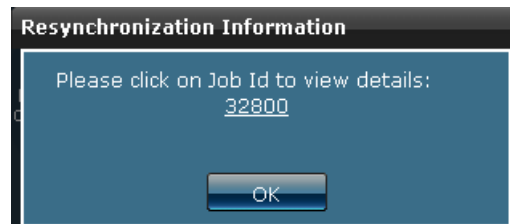
3. From the Manage Devices inventory panel, select one or more devices to resynchronize:
4. From the Actions drawer, click **Resynchronize with Network** to reimport the devices in Junos Space.

Junos Space displays the Resynchronize Devices window, as shown in the following example.



5. Click **Confirm**.

Junos Space starts resynchronizing the device and displays the Resynchronization Information window, as shown in the example.



6. Click on the Job ID to view details about the device resynchronization, or click **OK** to close the window.

When a resync job is scheduled to run but another resync job on the same device is in progress, Junos Space delays the scheduled resync job. The time delay is determined by the damper interval that you can set from the application workspace. By default the time delay is 20 seconds. The scheduled job is delayed as long as the other resync job to the same device is in progress. When the job that is currently running finishes, the scheduled resync job starts.

For information about setting the damper interval to change the time delay for resync, see "Modifying Application Settings" on page 393.

Related Documentation

- Understanding How Junos Space Automatically Resynchronizes Managed Devices on page 85
- Device Inventory Management Overview on page 65
- Viewing Managed Devices on page 66
- Viewing Hardware Inventory for Devices on page 69
- Viewing Physical Interfaces for Devices on page 81

Changing Login Credentials for Managed Devices

You can change the login credentials for any device that Junos Space manages. Changing the credentials for a managed device updates the credentials in Junos Space but not on the device itself. To change credentials on a device, you must access the device directly from the CLI.

Juniper recommends that you bring down the managed device connection before you change the login credentials.

To change the login credentials for devices that Junos Space manages:

1. From the task ribbon, select the **Devices** workspace.
2. From the task ribbon, click the **Manage Devices** icon.


The Manage Devices inventory panel displays the devices managed in Junos Space.



NOTE: You can select one or more devices and apply the same login credentials to the selected devices.

3. To change credentials for one or more managed devices for which the connection status is down:
 - a. Select the device or devices for which you want to change login credentials.
 - b. Select **Change Credentials** from the Actions drawer.

The Change Credentials dialog box appears, as shown in the following example:



The dialog box titled "Change Credentials" contains a warning message, a checked checkbox, a table of devices, and three input fields for credentials.

Warning: Credentials will be changed within Junos Space only. Please update credentials on devices manually.

☒ Do not change device credentials in the database for devices currently connected to Junos Space

Confirm changing credentials of

Device Name	Connection Status
4.4.4.6	down
4.4.4.7	down

Username:

Password:

Confirm password:

- c. Enter a user name and password, and reenter the password.
 - d. Click **Confirm**.

The new login credentials for the selected devices are updated in the Junos Space database.

To change credentials for one or more managed devices for which the connection status is up:

- a. Select one or more devices for which you want to change the login credentials.
- b. Select **Change Credentials** from the Actions drawer.

The Change Credentials dialog box appears.

- c. Clear the checkbox **Do not change device credentials in the database for devices currently connected to Junos Space**.

The Change Credentials dialog box displays the selected devices that are connected to Junos Space, as shown in the following example:



Warning: Credentials will be changed within Junos Space only. Please update credentials on devices manually.

☐ Do not change device credentials in the database for devices currently connected to Junos Space

Confirm changing credentials of

Device Name	Connection Status
Laguna_pe_d1	up

Username:

Password:

Confirm password:

d. Enter a user name and password, and reenter the password.

e. Click **Confirm**.

The new login credentials for the selected devices are updated in the Junos Space database.

Related Documentation

- Connecting to a Device From Secure Console on page 125

Exporting Device Inventory Information

From the Manage Devices application in the Junos Space Devices workspace you can view the list of devices managed through Junos Space and export the device information to a comma-separated view (.csv) file. You can upload the .CSV file that you create into other applications, such as those you use for asset management. The export task runs as a Junos Space job.

You can display the device inventory summary in table format from the Manage Devices task on the task ribbon, or in a detailed list form from the Actions drawer. You will use both forms in the export device inventory process.

1. Display the device inventory.

To display the device inventory from the Manage Devices task, navigate to **Network Application Platform > Devices > Manage Devices**.

The screenshot shows the 'Manage Devices' window with a table of 13 devices. The table has columns: Name, Interfaces, OS Version, Platform, IP Address, Connection..., and Managed S... Each row has a checkbox, a 'View' link, and status indicators for connection and sync.

Name	Interfaces	OS Version	Platform	IP Address	Connection...	Managed S...
<input type="checkbox"/> 10.155.70.222	View	10.2R1.8	SRX3400	10.155.70.222	down	In Sync
<input type="checkbox"/> CE-1	View	9.6R3.8	M10	10.155.69.1	down	In Sync
<input type="checkbox"/> CE2	View	9.3R4.4	M10	10.155.69.2	down	Connecting
<input type="checkbox"/> Eureka-PE	View	10.1R1.8	M71	10.155.69.26	down	In Sync
<input type="checkbox"/> Florence-PE	View	10.1R1.8	M71	10.155.69.27	down	In Sync
<input type="checkbox"/> Laguna_pe_d1	View	10.2R1.3	MX480	10.155.69.14	down	In Sync
<input type="checkbox"/> RioVista_pe_d1	View	10.2R2.3	MX240	10.155.69.25	down	In Sync
<input type="checkbox"/> RiverSide	View	10.2R1.6	M10I	10.155.69.22	down	In Sync
<input type="checkbox"/> Sacramento-P2	View	10.1R1.8	M10I	10.155.69.24	down	In Sync
<input type="checkbox"/> SanDiego-P1	View	10.1R1.8	M10I	10.155.69.15	down	In Sync
<input type="checkbox"/> SanFrancisco	View	10.0R3.10	MX960	10.155.69.13	down	Connecting
<input type="checkbox"/> SanJose	View	10.2R1.8	MX240	10.155.69.12	down	Connecting

2. Select the devices you want to include in the inventory report.

You may select specific devices by

- clicking the checkbox next to the device name
- select all devices by clicking the checkbox next to the **Name** field in the window header of the **Manage Devices** inventory display window
- select all the devices on the page by clicking **Select Page** in the window header, or by
- searching to find devices that meet search criteria that you specify

Selection methods and sorting are described in "Inventory Pages Overview" on page 29

3. (Optional) Preview the details for the device selection.

You might want to preview the device information before you export to the .CSV file. To display the device inventory details in list format, open the Action Drawer and click the **View Physical Inventory** task.

Manage Devices

Sorted by Device Family

10 Items Selected

Selected: Page | None 240

View Physical Inventory

View Interfaces

Relate

Resynchronize with Network

Secure Console

Change Credentials

Export Physical Inventory

Tag It

View Tags

Clear All Selections

Interfaces

OS Version

Device...

Platform

IP Address

Connection Status

Managed Status

Serial No...

Level 2 De

View

10.1R1.8

junos

MX240

10.155.69.12

down

Connecting

JN112AE3

OS Version: 10.1R1.8
Platform: MX240

View

10.2R1.3

junos

MX480

10.155.69.14

down

Connecting

JN115607

OS Version: 10.2R1.3
Platform: MX480

View

10.0R3.10

junos

MX960

10.155.69.13

down

Connecting

JN1118E8

OS Version: 10.0R3.10
Platform: MX960

View

10.0R2.10

junos

MX240

10.155.69.25

down

Connecting

JN1193B7

OS Version: 10.0R2.10
Platform: MX240

☒ Florence-PE

View

10.1R1.8

junos

M7I

10.155.69.27

down

Connecting

B5259

OS Version: 10.1R1.8
Platform: M7I

☒ Jackson

View

10.2R1.6

junos

M10I

10.155.69.23

up

In Sync

B4203

OS Version: 10.2R1.6
Platform: M10I

☒ RiverSide

View

10.2R1.6

junos

M10I

10.155.69.22

up

In Sync

B4170

OS Version: 10.2R1.6
Platform: M10I

Page 1 of 1

Displaying 1 - 10 of 10 | Show 20

The resulting display is shown here:

[Return to Inventory View](#) [Export](#)

Item	Model Number	Part Number	Serial Number	Description
RioVista-pe-d1-MX240			JN1193B79AFC	
SanFrancisco-MX960			JN1118E9EAFA	
SanJose-MX240			JN112AE30AFC	
Florence-PE-M7I			B5259	
Sacramento-P2-M10I			B3901	
SanDiego-P1-M10I			B4171	
Laguna-pe-d1-MX480			JN1156D73AFB	
Jackson-M10I			B4203	
RiverSide-M10I			B4170	
CE-1-M10			52839	

You can expand the information in this view to see the details of each device. Click on the plus sign (+) to the left of the device in the list.

[Return to Inventory View](#) [Export](#)

Item	Model Number	Part Number	Serial Number	Description
space-EX2200-EX2200-24T-4G			CW0210102867	
Chassis	EX2200-24T-4G		CW0210102867	EX2200-24T-4G
Routing Engine 0	EX2200-24T-4G	750-026468 (REV 11)	CW0210102867	EX2200-24T-4G
FPC 0	EX2200-24T-4G	750-026468 (REV 11)	CW0210102867	EX2200-24T-4G
CPU		BUILTIN	BUILTIN	FPC CPU
PIC 0	EX2200-24T-4G	BUILTIN	BUILTIN	24x 10/100/1000 Base-T
PIC 1	EX2200-24T-4G	BUILTIN	BUILTIN	4x GE SFP
Xcvr 0 (Empty)				
Xcvr 1 (Empty)				
Xcvr 2 (Empty)				
Xcvr 3 (Empty)				
Power Supply 0				PS 100W AC
Fan Tray				Fan Tray
ft-sw1-EX2200-24T			BH0208180206	
cs2-EX2200-24T			BM0208204486	
CE1-EX2200-48T			BP0208248984	

If the device information in this display is what you want to include in your report, you may click **Export** in the window header to begin creating the .CSV file. If you want to change the content of the report, click **Return to Inventory View** in the window header

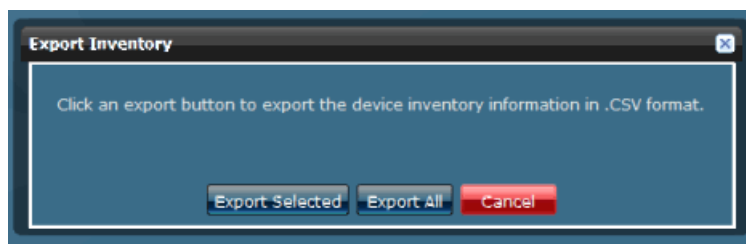
to display the device summary table again. You may make a new selection or continue with the export

4. Export the device inventory information to the .CSV file.

You can export information about selected devices or export information about all of the devices managed by Junos Space.

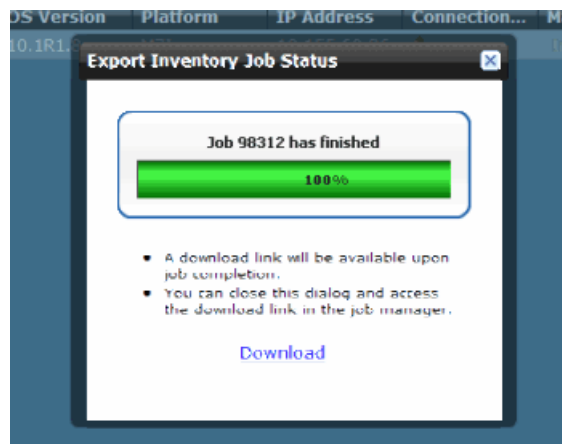
Once you are satisfied with your selection of devices to include in your report, open the Action Drawer and click **Export Physical Inventory** to display the Export Inventory window where you indicate how you want the .CSV report created.

Click either the **Export Selected** button or the **Export All** button to begin creating the .CSV file.



Clicking on an export button starts a Junos Space job that creates and saves the .CSV report. When the job starts, the Export Inventory Job Status window appears.

When the job is completed, the Export Inventory Job Status window indicates the job is 100% complete. Click the **Download** link in the Export Inventory Job Status window to display the .CSV file.



5. Download the resulting .CSV file.

Now that you have the .CSV report, you can import that .CSV file into other applications such as those you use for asset management.

Related Documentation

- Device Inventory Management Overview on page 65
- Viewing Managed Devices on page 66
- Inventory Pages Overview on page 29

- Viewing Hardware Inventory for Devices on page 69
- Device Management Overview on page 59
- Device Discovery Overview on page 39

Configuring SRX Device Clusters in Junos Space

You can create a cluster of two SRX-series devices that are combined to act as a single system, or create a single-device cluster and then add a second device to the cluster later. You can also configure a standalone device from an existing cluster device.



NOTE: You can discover and manage SRX device clusters in Junos Space.

This topic includes the following tasks:

- Configuring a Standalone Device from a Single-node Cluster on page 95
- Configuring a Standalone Device from a Two-node Cluster on page 97
- Configuring a Primary Peer in a Cluster from a Standalone Device on page 99
- Configuring a Secondary Peer in a Cluster from a Standalone Device on page 100

Configuring a Standalone Device from a Single-node Cluster

You can configure a standalone device from device that is currently configured as a single-node cluster.

To configure a single-node cluster as a standalone device:

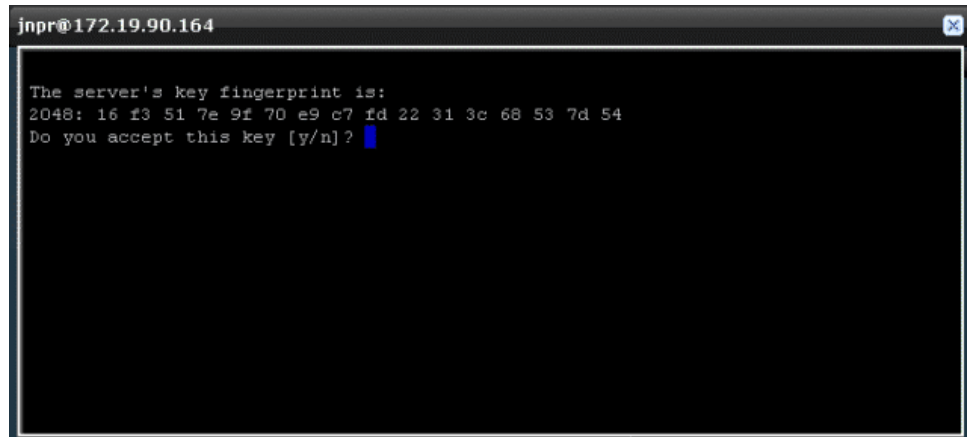
1. From the task ribbon, select the **Devices** workspace.
2. From the task ribbon, select the **Secure Console** icon.
The Secure Console dialog box is displayed.
3. Specify the IP address of the single-node cluster device.



NOTE: A device in a single-node cluster is always the primary member.

4. To establish an SSH connection for the device, specify the administrator user name and password. The name and password must match the name and password configured on the device.
5. Click **Connect**.

The device key fingerprint window is displayed, as shown in the following example.



6. Verify that the fingerprint is for the device you want to connect to, then type **y** and press Enter to validate the Server's key fingerprint.

A terminal window opens in a non-modal popup with an SSH connection opened on the selected device.

7. Enter the set chassis command to remove the cluster configuration:

```
set chassis cluster cluster-id 0 node 0
```

8. Reboot the device, by entering the command:

```
request system reboot
```

9. Copy the outbound-ssh configuration from group node to system level, for example:

```
set system services outbound-ssh client 00089BBC494A device-id 6CFF68
```

```
set system services outbound-ssh client 00089BBC494A secret  
"$9$-zbgoDikf5zDjuO1ISyW8Xxbs"
```

```
set system services outbound-ssh client 00089BBC494A services netconf
```

```
set system services outbound-ssh client 00089BBC494A 10.155.70.252 port 7804
```

10. Copy the syslog configuration from group node to system level:

```
set system syslog file default-log-messages any any
```

```
set system syslog file default-log-messages structured-data
```

11. Copy the fxp0 interface setting from group node to system level, for example:

```
set interfaces fxp0 unit 0 family inet address 10.155.70.223/19
```

12. Delete the outbound-ssh configuration from the group node, for example:

```
delete groups node0 system services outbound-ssh
```

13. Delete the syslog configuration from the group node, for example:

```
delete groups node0 system syslog file default-log-messages any any
```

```
delete groups node0 system syslog file default-log-messages structured-data
```

14. Delete the interfaces configuration from the group node, for example:

```
delete groups node0 interfaces fxp0 unit 0 family inet address 10.155.70.223/19
```

15. Commit the configuration changes on the device:

```
commit
```

In the Junos Space user interface, the device connection status will go down and then up again. After the device connection is back up, you can verify that the device you configured displays as a standalone device.

16. To terminate the SSH session, type **exit** from the terminal window prompt, and press Enter.
17. Click in the top right corner of the terminal window to close the window.

Configuring a Standalone Device from a Two-node Cluster

You can configure a standalone device from the secondary peer device in a cluster.



NOTE: You cannot use the primary peer in a two-node cluster to configure a standalone device.

To configure a secondary peer device in a cluster as a standalone device:

1. From the task ribbon, select the **Devices** workspace.
2. From the task ribbon, select the **Secure Console** icon.
The Secure Console dialog box is displayed.
3. Specify the IP address of the secondary peer device.
4. To establish an SSH connection for the device, specify the administrator user name and password. The name and password must match the name and password configured on the device.
5. Click **Connect**.

The device key fingerprint window is displayed, as shown in the following example.

6. Verify that the fingerprint is for the device you want to connect to, then type **y** and press Enter to validate the Server's key fingerprint.

A terminal window opens in a non-modal popup with an SSH connection opened on the selected device.

7. Disconnect the HA cable from the device that you want to configure as a standalone device.
8. Enter the set chassis command for the peer device, for example:

```
set chassis cluster cluster-id 0 node 1
```
9. Reboot the device, by entering the command:

```
request system reboot
```

10. Copy the outbound-ssh configuration from group level to system level, for example:

```
set system services outbound-ssh client 00089BBC494A device-id 6CFF68
```

```
set system services outbound-ssh client 00089BBC494A secret  
"$9$-zbgoDikf5zDjuOIISyW8Xxbs"
```

```
set system services outbound-ssh client 00089BBC494A services netconf
```

```
set system services outbound-ssh client 00089BBC494A 10.155.70.252 port 7804
```

11. Copy the syslog configuration from group level to system level:

```
set system syslog file default-log-messages any any
```

```
set system syslog file default-log-messages structured-data
```

12. Copy the fxp0 interface setting from group level to system level, for example:

```
set interfaces fxp0 unit 0 family inet address 10.155.70.223/19
```

13. Delete the outbound-ssh configuration from the group level, for example:

```
delete groups node1 system services outbound-ssh
```

14. Delete the syslog configuration from the group level, for example:

```
delete groups node1 system syslog file default-log-messages any any
```

```
delete groups node1 system syslog file default-log-messages structured-data
```

15. Delete the interfaces configuration from the group level, for example:

```
delete groups node1 interfaces fxp0 unit 0 family inet address 10.155.70.223/19
```

16. Commit the configuration changes on the device:

```
commit
```

In the Junos Space user interface, the device connection status will go down and then up again. After the device connection is back up, you can verify that the device you configured displays as a standalone device.

After the device connections are up, verify the following changes in the Manage Devices inventory landing page:

- The device you configured now displays as a standalone device.
- The cluster that formerly included a primary and secondary peer device now displays the primary peer device only.

17. To terminate the SSH session, type **exit** from the terminal window prompt, and press Enter.

18. Click in the top right corner of the terminal window to close the window.

Configuring a Primary Peer in a Cluster from a Standalone Device

You can create a device cluster from two standalone devices. Use the following procedure to configure a standalone device as the primary peer in a cluster.

To configure a primary peer in a cluster from a standalone device:

1. From the task ribbon, select the **Devices** workspace.
2. From the task ribbon, select the **Secure Console** icon.

The Secure Console dialog box is displayed.

3. Specify the IP address of the standalone device that you want to configure as the primary peer in the cluster.
4. To establish an SSH connection for the device, specify the administrator user name and password. The name and password must match the name and password configured on the device.

5. Click **Connect**.

The device key fingerprint window is displayed.

6. Verify that the fingerprint is for the device you want to connect to, and type **y** and press Enter to validate the Server's key fingerprint.

A terminal window opens in a non-modal popup with an SSH connection opened on the selected device.

7. For the standalone device, enter the command:

```
set chassis cluster cluster-id 1 node 0
```

8. Reboot the device, by entering the command:

```
request system reboot
```

9. Copy the outbound-ssh configuration from the system level to the group level, for example:

```
set groups node0 system services outbound-ssh client 00089BBC494A device-id 6CFF68
```

```
set groups node0 system services outbound-ssh client 00089BBC494A secret "$9$-zbgoDikf5zDjuOIISyW8Xxbs"
```

```
set groups node0 system services outbound-ssh client 00089BBC494A services netconf
```

```
set groups node0 system services outbound-ssh client 00089BBC494A 10.155.70.252 port 7804
```

10. Copy the fxp0 interface configuration from the system level to the group level, for example:

```
set groups node0 interfaces fxp0 unit 0 family inet address 10.155.70.223/19
```

11. Copy the syslog configuration from system level to group level:

```
set groups node0 system syslog file default-log-messages any any
```

```
set groups node0 system syslog file default-log-messages structured-data
```

12. Delete the outbound-ssh configuration from the system level, for example:

```
delete system services outbound-ssh
```

13. Delete the syslog configuration from the system level, for example:

```
delete system syslog file default-log-messages any any
```

```
delete system syslog file default-log-messages structured-data
```

14. Delete the interfaces configuration from the system level, for example:

```
delete interfaces fxp0 unit 0 family inet address 10.155.70.223/19
```

15. Commit the configuration changes on the device again:

```
commit
```

After the device connection is up, verify the following changes:

- In the Manage Devices inventory landing page:
 - The cluster icon is displayed for the device.
 - The new cluster device is displayed as the primary device.
 - In the physical inventory landing page, Junos Space displays chassis information for the primary device cluster.
16. To terminate the SSH session, type **exit** from the terminal window prompt, and press Enter.
17. Click in the top right corner of the terminal window to close the window.

Configuring a Secondary Peer in a Cluster from a Standalone Device

If a device cluster contains only a primary peer, you can configure a standalone device to function as a secondary peer in the cluster. Use the following procedure to ensure that Junos Space is able to manage both devices.

To add a standalone device to a cluster:

1. From the task ribbon, select the **Devices** workspace.
2. From the task ribbon, select the **Secure Console** icon.

The Secure Console dialog box is displayed.
3. Specify the IP address of the standalone device that you want to configure as a secondary peer in a cluster.
4. To establish an SSH connection for the device, specify the administrator user name and password. The name and password must match the name and password configured on the device.

5. Click **Connect**.

The device key fingerprint window is displayed.

6. Verify that the fingerprint is for the device you want to connect to, and type **y** and press Enter to validate the Server's key fingerprint.

A terminal window opens in a non-modal popup with an SSH connection opened on the selected device.

From the terminal window prompt, you can enter CLI commands to create a standalone device from the device cluster.

7. For the standalone device, enter the command:

```
set chassis cluster cluster-id 1 node 1
```

8. Enter the command:

```
request system reboot
```

9. Copy the outbound-ssh configuration from the system level to the group level, for example:

```
set groups node1 system services outbound-ssh client 00089BBC494A device-id 6CFF68
```

```
set groups node1 system services outbound-ssh client 00089BBC494A secret  
"$9$-zbgoDikf5zDjuO1ISyW8Xxbs"
```

```
set groups node1 system services outbound-ssh client 00089BBC494A services netconf
```

```
set groups node1 system services outbound-ssh client 00089BBC494A 10.155.70.252  
port 7804
```

10. Copy the fxp0 interface configuration from the system level to the group level, for example:

```
set groups node1 interfaces fxp0 unit 0 family inet address 10.155.70.223/19
```

11. Copy the syslog configuration from system level to group level:

```
set groups node1 system syslog file default-log-messages any any
```

```
set groups node1 system syslog file default-log-messages structured-data
```

12. Delete the outbound-ssh configuration from the system level, for example:

```
delete system services outbound-ssh
```

13. Delete the syslog configuration from the system level, for example:

```
delete system syslog file default-log-messages any any
```

```
delete system syslog file default-log-messages structured-data
```

14. Delete the interfaces configuration from the system level, for example:

```
delete interfaces fxp0 unit 0 family inet address 10.155.70.223/19
```

15. Commit the configuration changes on the device again:

commit

16. Connect the HA cable to each device in the cluster.
17. Establish an SSH connection to the primary device in the cluster.
18. On the primary device, make some trivial change to the device, for example, add a description, and commit the change:

commit

After the device connections are up for both devices in the cluster, verify the following changes:

- In the Manage Devices inventory landing page:
 - Each peer device displays the other cluster member.
 - The cluster icon is displayed for each member device.
 - One device is displayed as the primary device and the other as the secondary device in the cluster.
 - In the physical inventory landing page, chassis information is displayed for each peer device in the cluster.
19. To terminate the SSH sessions, type **exit** from the terminal window prompt, and press Enter.
 20. Click in the top right corner of the terminal window to close the window.

CHAPTER 6

Adding Devices and Connection Profiles

- Add Devices Overview on page 103
- Adding Devices on page 105
- Managing Devices on page 111
- Connection Profiles Overview on page 115
- Creating Connection Profiles on page 117
- Managing Connection Profiles on page 121

Add Devices Overview

You can use the Add Device Wizard to create deployment instances that are used to deploy SRX devices. You can create deployment instances either manually or by uploading a comma-separated values (CSV) file. A deployment instance contains the configlets used to deploy branch SRX series devices which are currently using the factory default settings.

A configlet is a small subset of a configuration used by a device to obtain an IP address and connect back to management station for further management. Configlet contains information about the device series, device platform, OS version, and the connection details used to bootstrap the device. It can be used to deploy devices from an external storage device such as a USB stick.

You need to specify the following details to create a configlet:

- Device name
- Device series
- Device platform
- OS version
- Device count
- Connectivity type
- Interface
- Connection profile
- Encryption password

You can store this configlet in an external USB stick and plug it into the SRX device to boot it. The device count and encryption option determine the subsequent steps in booting the SRX device using the configlet.

The following parameters determine the steps in booting the SRX device using the configlet:

- Plain text configlet

If you save the configlet as a plain text file, the device will not prompt you to enter a password during the bootup process.

- Encrypted configlet using AES encryption with a custom key

If you encrypt the configlet with a custom key, the device will prompt you to enter a password. You are required to enter the 16 character password specified during the creation of the configlet. You can also save a text file named `key.txt` in the USB stick which you are using to boot the device. This file contains the password; the device will automatically use the password specified in this file.



NOTE: You can also refer the respective device User Guide for more information.

- Device count value is 1

If you create an individual configlet for each device with a Device Count column value of 1, the configlet contains the host name. The device will not prompt you to enter the host name during boot-up.

- Device count value greater than 1

You can boot devices with similar network connection parameters (for example, obtaining IP address via DHCP) using an individual configlet. This is done by specifying the number of devices that can be booted with the same configlet in the Device Count column. If you create such a configlet, the devices prompts for a host name during boot-up. You are required to enter a unique host name for each of the devices that are used to bootup using this configlet. You can also save a text file named `hostname.txt` in the USB stick which you are using to boot the device. This file contains the hostnames for all devices that are booted using the configlet.



NOTE: You can also refer the respective device User Guide for more information.



NOTE: By default, the configlet that you download is named `Configlets.zip`. This zip file is unzipped to obtain the configlet files. You should not rename the configlet files. Renaming the configlet files may not complete the device bootup process.



NOTE: If you are using Internet Explorer to download the configlets, you need to customize the browser settings to be able to download them. Perform the following steps to customize the Internet Explorer settings:

1. Open Internet Explorer and navigate to **Tools > Internet Options**.
2. Click the **Security** tab and select the **Custom Level** tab.
3. In the **Automatic prompting for file downloads** section click the **Enable** radio button.

Related Documentation

- Adding Devices on page 105
- Managing Devices on page 111
- Managing DMI Schemas Overview on page 438

Adding Devices

To create a new deployment instance:

1. From the **Network Application** task ribbon, select **Devices > Deploy Devices**.

The **Deploy Devices** inventory panel displays icons for all the deployment instances, as shown in Figure 5 on page 105.

Figure 5: Deploy Devices Inventory Panel



2. From the task ribbon, select the **Add Devices** icon.

The **Rapid Deployment** window is displayed, as shown in Figure 6 on page 106.

Figure 6: Device Details Window

3. In the **Name** field, enter a name for the new deployment instance.
4. In the **Description** field, enter a description for the new deployment instance.
5. You can add a new deployment instance either manually or by importing a CSV file.

To add a new deployment instance by importing a CSV file:

- a. Select the **Import to CSV** radio button.
- b. To view a sample of the CSV file that should be uploaded, select the **View Sample CSV** link in the **Import** section.
- c. Save the sample CSV file to your storage location.
- d. Make necessary changes in this CSV file and rename it with an appropriate name.

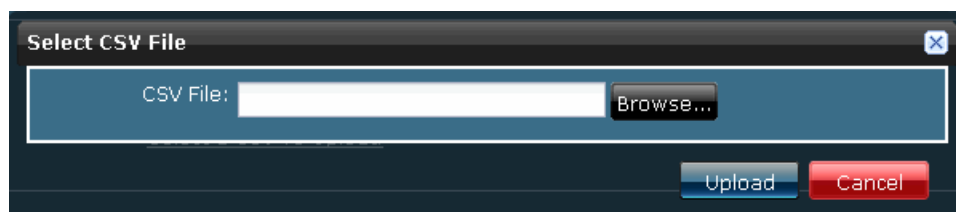


NOTE: Do not add or delete any columns in the CSV file. You will not be able upload the CSV file successfully if you add or delete any columns.

- e. Select the **Select a CSV To Upload** link in the **Import** section.

The **Select CSV File** window is displayed, as shown in the Figure 7 on page 107.

Figure 7: Selecting a CSV File to Upload



- f. Click **Browse** and upload the CSV file from your storage location.
- g. If the CSV file is successfully uploaded, a Green mark appears next to the **Select a CSV To Upload** link.

The **Upload** window is displayed.

- h. Click **OK**.

To add a new deployment instance manually:

- a. Select the **Add Manually** radio button.
- b. Enter the following details in the **Device Details** section:
 - From the **Platform** drop down menu, select an appropriate platform, as shown in Figure 8 on page 107.

Figure 8: Specifying Device Details

A screenshot of a web-based form titled "Device Details". The form has a dark blue header bar with the title and a close button (X). Below the header is a light blue area containing three fields: "Platform:" with a dropdown menu showing "SRX650", "OS Version:" with a dropdown menu showing "10.3", and "Number of devices:" with a text input field showing "1".

- From the **OS Version** drop-down menu, select an appropriate OS version.
 - In the **Number of devices** field, enter the number of devices with the same connection details.

These devices will use a common connection profile.
- c. In the **Connectivity Details** section:

- In the **Connection** field, choose an appropriate radio button to specify the connection type, as shown in Figure 9 on page 108.

Figure 9: Specifying Connectivity Details

Connectivity Details

Interface Type: ☒ Ethernet ☐ ADSL

Interface:

IP Assignment via: ▼

Connection Profile: ▼

- The **Interface** field displays the default interface in the untrust zone, depending on the connection type chosen. Make appropriate changes to this field if you intend to do so.
- From the **IP Assignment via** field, select an appropriate IP assignment type.
- From the **Connection Profile** field, select an appropriate connection profile.
- To create a new connection profile, click **Create**. For more information about creating a connection profile, see “Creating Connection Profiles” on page 117.

6. Click **Next**.

The **Rapid Deployment** window is displayed in a table format. This window displays the deployment instance which you have added manually or uploaded using a CSV file. Each record in this table can be used to generate a configlet. The fields which you need to add manually in this table are listed in Table 13 on page 108.






Table 13: Fields Manually Entered in the Rapid Deployment Window

Field	Description
Device Count	This field specifies the number of devices that can be deployed using this configlet
Interface IP	This field specifies the IP address of the interface
Gateway	This field specifies the IP address of the gateway

7. You can clone, delete, sort the rows and hide the columns in the **Rapid Deployment** window. You can also view and download the configlet in this window.

The icons that are used to perform these tasks are listed in Table 14 on page 109.

Table 14: Icons in the Rapid Deployment Window

Icon	Description
	Used to view the details of a configlet
	Used to download configlets
	Used to create a connection profile
	Used to delete a row from the deployment instance table
	Used to clone a row from the deployment instance table

To clone the rows:

- Select the check boxes to the left of the rows you want to clone.
- Specify the number of clones in the **Clone Times** field and click the Clone icon.
- Click the **Clone** tab.

The new rows will appear at the end of the table.

To delete the rows:

- Select the check box to the left of the row you want to delete. You can also select multiple rows to delete them at one go.
- Click the Delete icon.

To view a configlet:

- Select the check box to the left of the row corresponding to the configlet you want to view.
- Click the View Configlet icon.

To download the configlets:

- Select the check boxes to the left of the rows corresponding to the configlets you want to download.
- Click the Download Configlet icon.



NOTE: If you are using Internet Explorer to download the configlets, you need to customize the browser settings to be able to download them. Perform the following steps to customize the Internet Explorer settings:

1. Open Internet Explorer and navigate to **Tools > Internet Options**.
2. Click the **Security** tab and select the **Custom Level** tab.
3. In the **Automatic prompting for file downloads** section click the **Enable** radio button.

To sort the rows displayed in the table by a specific field:

- a. Select the down arrow to the right of the column header and select either **Sort Ascending** or **Sort Descending** from the menu.

The table reappears with the rows sorted by the selected column. The changes in the sort order persist on return to the same screen.

To hide columns displayed in the table:

- a. Select the down arrow to the right of the column header and select **Columns**.
- b. In the submenu that appears, clear the check boxes for the columns you want to hide.

The deselected columns are hidden.

8. You can encrypt, save, or FTP the configlet.

- To encrypt the configlet, select the type of encryption you want to use in the **Encryption** section.
 - a. Select the **AES** radio button if you want to use AES encryption, as shown in Figure 10 on page 110.

Figure 10: Specifying Configlet Options

- b. Enter a password with 16 characters in the corresponding field.



NOTE: You will need to provide this password when you deploy devices using this configlet.

- c. Select the **Plain Text** radio button to save the configlet in a plain text format.

- To save the configlet to a disk drive:
 - a. Click the **Click Here** link next to the **Save to Disk** field in the **Save** section.
- To save the configlet to an FTP location:
 - a. Select the radio button corresponding to the file transfer method you want to use.
 - b. Enter the user ID, password, server address and folder details in the appropriate fields.

9. Click **Finish**.

The new deployment instance you have added is displayed in the **Device Details** inventory panel. A new job is created and the job ID is displayed in the **Job Information** dialog box.

10. Click the job ID to view more information about the job created.

This action will direct you to the **Job Management** work space.



NOTE: In case of large number of devices, it is recommended to wait for the **Job** to complete before downloading the configlets.

Related Documentation

- Add Devices Overview on page 103
- Managing Devices on page 111
- Managing DMI Schemas Overview on page 438

Managing Devices

You can view, delete and search for specific deployment instances listed in the **Deploy Devices** inventory panel. You can also download configlets from a specific deployment instance.

To open the **Deploy Devices** inventory panel:

1. From the **Network Application** task ribbon, select **Devices > Deploy Devices**.

The **Deploy Devices** inventory panel is displayed. All deployment instances created are listed by default, in the graphical view.

You can perform the following tasks on the deployment instances and configlets:

1. Viewing the Details of a Deployment Instance on page 112
2. Viewing the Device Status on page 112
3. Deleting a Deployment Instance on page 113
4. Downloading Configlets on page 113
5. Searching for a Deployment Instance on page 114

Viewing the Details of a Deployment Instance

To view the details of a deployment instance:

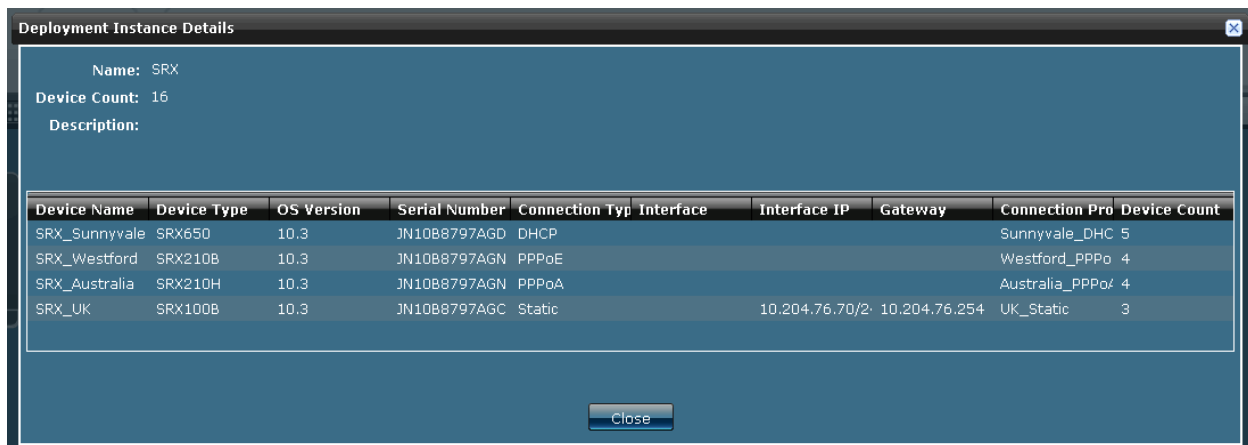
1. From the **Network Application** task ribbon, select **Devices > Deploy Devices**.

The **Deploy Devices** inventory panel is displayed.

2. Select the icon for the deployment instance whose details you intend to view and double-click.

The details of the deployment instance is displayed in the **Deployment Instance Details** window, as shown in the Figure 11 on page 112.

Figure 11: Deployment Instance Details Window



Device Name	Device Type	OS Version	Serial Number	Connection Typ	Interface	Interface IP	Gateway	Connection Pro	Device Count
SRX_Sunnyvale	SRX650	10.3	JN10B8797AGD	DHCP				Sunnyvale_DHC	5
SRX_Westford	SRX210B	10.3	JN10B8797AGN	PPPoE				Westford_PPPo	4
SRX_Australia	SRX210H	10.3	JN10B8797AGN	PPPoA				Australia_PPPo	4
SRX_UK	SRX100B	10.3	JN10B8797AGC	Static		10.204.76.70/2	10.204.76.254	UK_Static	3

3. Click **Close**.

Viewing the Device Status

To view the device status:

1. From the **Network Application** task ribbon, select **Devices > Deploy Devices**.

The **Deploy Devices** inventory panel is displayed.

2. Select the deployment instance you intend to view the device status for and click the **View Device Status** link from the **Actions** panel in the left corner of the inventory panel.

A new window displays the connection status of the devices.

3. Click **Back** on the left corner of this window to return to the inventory panel.



NOTE: You can view the device status for a deployment instance using a right-click. To do so, right-click on the deployment instance and select the **View Device Status** link from the contextual menu.

Deleting a Deployment Instance

To delete a deployment instance you have created:

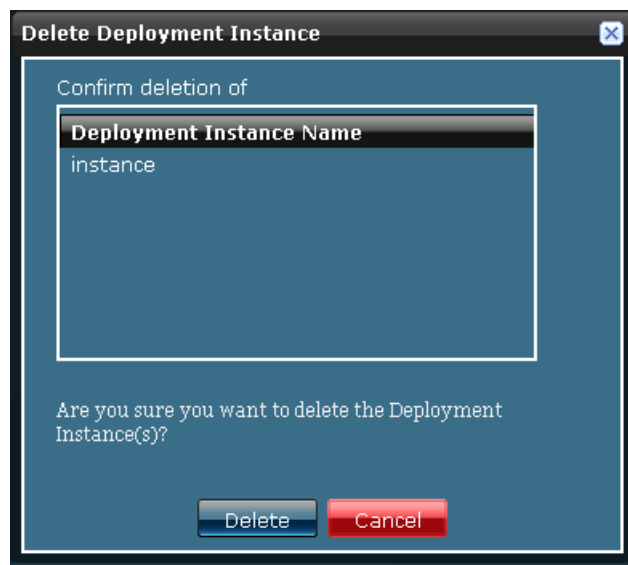
1. From the **Network Application** task ribbon, select the **Devices > Deploy Devices**.

The **Deploy Devices** inventory panel is displayed.

2. Select the deployment instance you intend to delete and click the **Delete** link from the **Actions Drawer** in the left corner of the inventory panel.

The **Delete Deployment Instance** confirmation window is displayed, as shown in the Figure 12 on page 113.

Figure 12: Delete Deployment Instance Window



3. Select the deployment instance you want to delete and click **Delete**.



NOTE: You can delete a deployment instance using a right-click. To do so, right-click on the deployment instance and select the **Delete** link from the contextual menu.

Downloading Configlets

To download the configlet you have created:

1. From the **Network Application** task ribbon, select **Devices > Deploy Devices**.

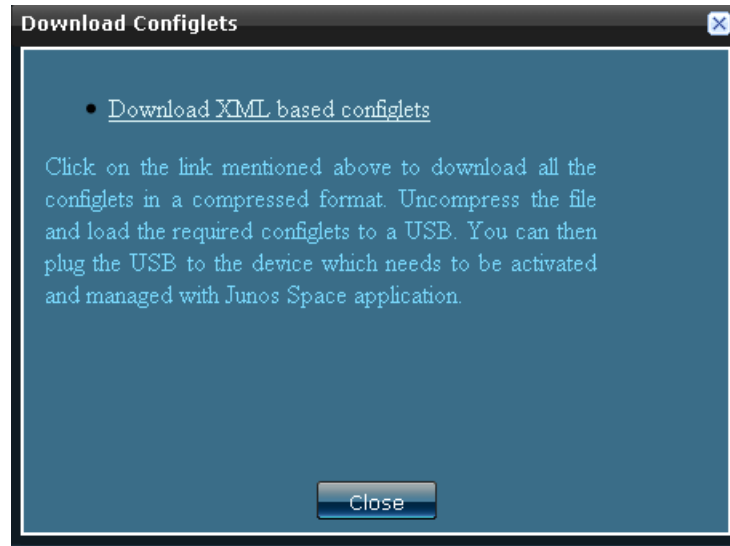
The **Deploy Devices** inventory panel is displayed.

2. Select the deployment instance containing the configlet you intend to download and click the **Download Configlets** link from the **Actions Drawer** in the left corner of the inventory panel.

The **Download Configlets** window is displayed.

3. Select the **Download XML based Configlets** link in the **Download Configlets** window, as shown in Figure 13 on page 114.

Figure 13: Download Configlets Window



4. Save the .zip file in your storage location.



NOTE: You can also download the configlets when you are creating a deployment instance. However, for large number of devices it is recommended to download the configlets from the inventory panel. For more information, see “Adding Devices” on page 105.



NOTE: You can download all configlets that are a part of a deployment instance using a right-click. To do so, right-click on the deployment instance and select the **Download Configlets** link from the contextual menu.



NOTE: You will not be able to download the configlets associated with a deployment instance if a job related to that deployment instance is in progress. The **Download Configlets** action be disabled till the job is completed.

Searching for a Deployment Instance

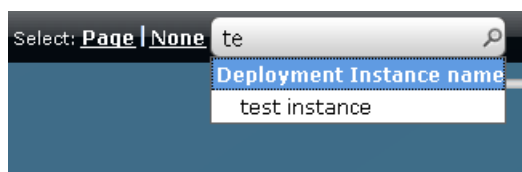
To search for a deployment instance you have created:

1. From the **Network Application** task ribbon, select **Devices > Deploy Devices**.

The **Deploy Devices** inventory panel is displayed.

2. In the **Search** field, enter the name of deployment instance you want to search, as shown in the Figure 14 on page 115.

Figure 14: Searching for a Configlet



3. Click the magnifying glass icon next to the **Search** field.

The **Deploy Devices** inventory panel is populated with the deployment instances matching your search criterion.

Related Documentation

- Add Devices Overview on page 103
- Adding Devices on page 105
- Managing DMI Schemas Overview on page 438

Connection Profiles Overview

You can use the Connection Profile Wizard to create connection profiles that are used as part of rapid deployment to generate startup configlets. A connection profile is a network connection template that can be shared across multiple configlets.

You can configure the following parameters for a connection profile:

- SSH credentials - SSH username, SSH password
- NAT parameters - NAT IP and/or port number, if your Junos Space server is behind a NAT
- DHCP parameters
- PPPoA parameters
- PPPoE parameters

If you choose to configure a DHCP-based connection profile, you need to provide the following details:

- Retransmission parameters
- Lease time
- DHCP Server Address

If you choose to configure a PPPoA-based connection profile, you need to provide the following details:

- Authentication protocol used – either CHAP or PAP
- PPPoA username and password
- Access profile username and password (optional)

- Virtual Path Identifier (VPI) and Virtual Connection Identifier (VCI) values
- Encapsulation type – either LLC or VP-MUX based

If you choose to configure a PPPoE-based connection profile, you need to provide the following details:

- Authentication protocol used – either CHAP or PAP
- PPPoE username and password
- Access profile username and password (optional)
- Concentrator name (optional)
- Service name (optional)
- Time interval for auto-connect (optional)
- Time interval before an idle connection disconnects (optional)

When a connection profile is created, Junos Space creates an object in the Junos Space database to represent the connection profile. You can use this object to create configlets during rapid deployment of devices.



NOTE: VCI and VPI values used for the connection profile may differ based on the service provider. Ensure that you enter appropriate VCI and VPI values provided by your service provider.

**Related
Documentation**

- [Creating Connection Profiles on page 117](#)
- [Managing Connection Profiles on page 121](#)

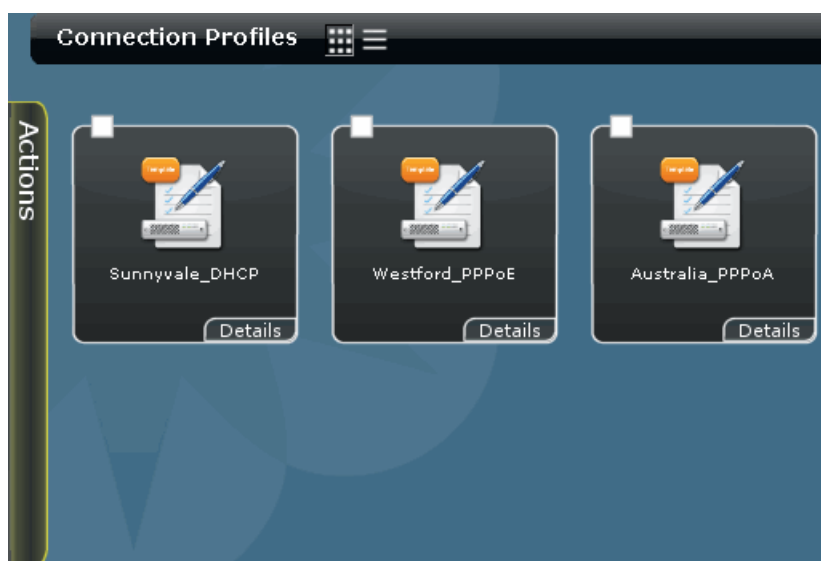
Creating Connection Profiles

To create a new connection profile:

1. From the **Network Application Platform** task ribbon, select **Devices > Deploy Devices > Connection Profiles**.

The **Connection Profiles** inventory panel is displayed with icons for all the connection profiles, as shown in Figure 15 on page 117.

Figure 15: Connection Profiles Inventory Panel



2. From the task ribbon, select the **Create** icon.

The **Create Connection Profile** window is displayed as shown in Figure 16 on page 118.

Figure 16: Creating a Connection Profile

The screenshot shows a web-based configuration interface. At the top, there are two text input fields labeled 'Name:' and 'Description:'. Below these is a section titled 'SSH Credentials' with a blue expand/collapse icon. Inside this section are three text input fields: 'SSH Username:' containing 'root', 'SSH Password:' with masked characters, and 'Re-enter Password:' also with masked characters. Below the SSH section is a section titled 'NAT' with a blue expand/collapse icon. At the bottom of the visible form is a panel titled 'IP Assignment Type:' which contains four radio buttons: 'DHCP' (which is selected and has a green indicator), 'PPPoA', 'PPPoE', and 'Static'.

3. In the **Name** field, enter a name for the new connection profile.
4. In the **Description** field, enter a description for the new connection profile.
5. Enter the following details in the **SSH Credentials** section:
 - a. In the **SSH Username** field, enter a username.
 - b. In the **SSH Password** field, enter a password.
 - c. In the **Re—enter Password** field, enter the password you specified in the **SSH Password** field.
6. Enter the following details in the **NAT** section:
 - a. In the **IP** field, enter an IP address used by the NAT configuration.
 - b. In the **Port** field, enter a port number used by the NAT configuration.
7. From the **IP Assignment Type** panel, specify the type of IP assignment. You can specify the following IP assignment types in the **IP Assignment Type** panel:
 - a. DHCP: To choose DHCP as the IP assignment type:
 1. Select the **DHCP** radio button. The **IP Assignment Type** panel refreshes to display the DHCP connection parameters.
 2. In the **Attempts** field in the **Retransmission Parameters** section, enter the number of attempts that a DHCP client will make to get a DHCP address.
 3. In the **Interval (in sec)** field in the **Retransmission Parameters** section, enter the duration between successive retransmission attempts.
 4. In the **Server Address** field enter the IP address of the DHCP server.

5. Select the **Update Server** check box to ensure that the DHCP server is updated.
6. In the **Lease Time** section, specify how the DHCP server assigns and manages the leases. Leases can be assigned and managed in three ways:
 - a. Check the **Default** radio button if you want to specify a default lease time.
 - b. Check the **Lease Never Expires** radio button to assign a permanent lease to DHCP clients.
 - c. Check the **Lease Time** radio button to specify a custom lease time. In the **Lease Time (in sec)** field, enter the lease time before which the DHCP server must renew the lease for the client or the client must obtain a new lease.
- b. PPPoA: To choose PPPoA as the IP assignment type:
 1. Select the **PPPoA** radio button. The **IP Assignment Type** panel refreshes to display the PPPoA connection parameters, as shown in Figure 17 on page 119.

Figure 17: PPPoA Connection Settings

The screenshot shows the 'IP Assignment Type' configuration window. At the top, there are four radio buttons: DHCP, PPPoA (which is selected), PPPoE, and Static. Below the radio buttons, the 'Authentication Protocol' is set to 'CHAP' in a drop-down menu. There are three text input fields for 'User name:', 'Password:', and 'Re-enter Password:'. Below these fields is a section titled 'Access Profile (To Authenticate B-RAS)' with a blue expand/collapse icon. Inside this section, there are two text input fields for 'VPI:' and 'VCI:', and a drop-down menu for 'Encapsulation Type' which is currently set to 'atm-ppp-vc-mux'.

2. From the **Authentication Protocol** drop-down menu, select an authentication protocol.
3. In the **Username** field, enter a user name.
4. In the **Password** field, enter a password.
5. In the **Re—enter Password** field, enter the password you specified in the **Password** field.
6. In the **Username** field in the **Access Profile** section, enter a user name.
7. In the **Password** field in the **Access Profile** section, enter a password.
8. In the **Re—enter Password** field in the **Access Profile** section, enter the password you specified in the **Password** field.
9. In the **VPI** field, enter a value for the virtual path used for this connection.

10. In the **VCI** field, enter a value for the virtual circuit used for this connection
 11. From the **Encapsulation Type** drop down menu, select the type of encapsulation you intend to use for this connection.
- c. PPPoE: To choose PPPoE as the IP assignment type:
1. Select the **PPPoE** radio button. The **IP Assignment Type** panel refreshes to display the PPPoE connection parameters, as shown in Figure 18 on page 120.

Figure 18: PPPoE Connection Settings

The screenshot shows the 'IP Assignment Type' configuration window. At the top, there are four radio buttons: DHCP, PPPoA, PPPoE (which is selected), and Static. Below the radio buttons, the 'Authentication Protocol' is set to 'CHAP' in a dropdown menu. There are three text input fields for 'User name:', 'Password:', and 'Re-enter Password:'. Below these is a section titled 'Access Profile (To Authenticate B-RAS)' with a checkbox that is checked. This section contains three text input fields: 'Concentrator Name:', 'Service Name:', and 'Auto connect time interval:'. The 'Auto connect time interval' field has a unit '(in sec)' next to it. Below this is another text input field for 'Idle period before disconnect:' with a unit '(in sec)' next to it.

2. From the **Authentication Protocol** drop-down menu, select an authentication protocol.
3. In the **Username** field, enter a user name.
4. In the **Password** field, enter a password.
5. In the **Re—enter Password** field, enter the password you specified in the **Password** field.
6. In the **Username** field in the **Access Profile** section, enter a user name.
7. In the **Password** field in the **Access Profile** section, enter a password.
8. In the **Re—enter Password** field in the **Access Profile** section, enter the password you specified in the **Password** field.
9. In the **Concentrator Name** field, enter the name of the concentrator for this connection.
10. In the **Service Name** field, enter a name for the service this connection uses.

11. In the **Auto connect time interval (in sec)** field, enter a value in seconds.
12. In the **Idle period before disconnect (in sec)** field, enter a value in seconds.
- d. Static: To choose Static as a IP assignment type:
 1. Select the **Static** radio button. This option is used to share the SSH credentials and NAT settings.
8. Click **Create** to create a new connection profile.

**Related
Documentation**

- Connection Profiles Overview on page 115
- Managing Connection Profiles on page 121

Managing Connection Profiles

You can view, modify, delete, or copy the connection profiles listed in the **Connection Profiles** inventory panel.

To open the **Connection Profiles** inventory panel:

- From the **Network Application Platform** task ribbon, select **Devices > Deploy Devices > Connection Profiles**. The **Connection Profiles** inventory panel is displayed. All connection profiles created are listed by default, in the graphical view.

You can perform the following tasks in the **Connection Profiles** space:

1. Viewing the details of a Connection Profile on page 121
2. Modifying a Connection Profile on page 122
3. Deleting a Connection Profile on page 123
4. Copying a Connection Profile on page 124
5. Searching for a Connection Profile on page 124

Viewing the details of a Connection Profile

To view the details of a connection profile, perform the following steps:

1. From the **Network Application Platform** task ribbon, select the **Devices > Deploy Devices > Connection Profiles**.

The **Connection Profiles** inventory panel is displayed.

2. Select the icon for the connection profile whose details you intend to view and double-click.

The details of the connection profile are displayed in the **Connection Profile Detail Summary** window, as shown in the Figure 19 on page 122. The **Connection Profile Detail Summary** window lists the SSH credentials and connection settings used for this connection profile.

Figure 19: Viewing the details of a Connection Profile

The screenshot shows a window titled "Connection Profile Detail Summary" with a close button in the top right corner. The window contains three main sections: a top section with "Name" and "Description", an "SSH Credentials" section, and a "Connection Settings" section. The "Name" is "Australia_PPPOA" and the "Description" is "Includes parameters for activating devices in Australia via PPPoA". The "SSH Credentials" section shows "SSH Username" as "root" and "SSH Password" as masked dots. The "Connection Settings" section lists "Connection Type" as "PPPoA", "Authentication Protocol" as "CHAP", "User Name" as "hkp@verizon.au.com", "Password" as masked dots, "Access Profile User Name" as "root", "Access Profile Password" as masked dots, "VPI" as "8", "VCI" as "35", and "Encapsulation Type" as "atm-ppp-vc-mux".

Field	Value
Name	Australia_PPPOA
Description	Includes parameters for activating devices in Australia via PPPoA
SSH Username	root
SSH Password	••••••
Connection Type	PPPoA
Authentication Protocol	CHAP
User Name	hkp@verizon.au.com
Password	••••••••••••••••
Access Profile User Name	root
Access Profile Password	••••••
VPI	8
VCI	35
Encapsulation Type	atm-ppp-vc-mux

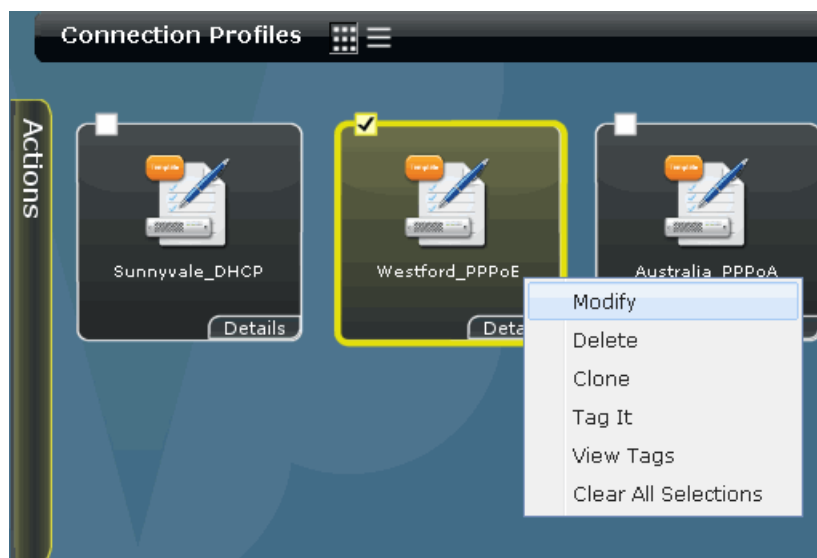
3. Click **Close**.

Modifying a Connection Profile

To modify a connection profile you have created:

1. From the **Network Application Platform** task ribbon, select the **Devices > Deploy Devices > Connection Profiles**.
The **Connection Profiles** inventory panel is displayed.
2. Right-click the connection profile you wish to modify and click the **Modify** link from the contextual menu, as shown in Figure 20 on page 123.

Figure 20: Modifying a Connection Profile



3. In the **Name** field, enter a new name .
4. In the **Description** field, enter a new description .
5. Make necessary changes to the fields in the **SSH Credentials** section.
6. Make necessary changes in the **IP Assignment Type** panel.
7. Click **Modify** .

Deleting a Connection Profile

To delete a connection profile you have created:

1. From the **Network Application Platform** task ribbon, select **Devices > Deploy Devices > Connection Profiles**.

The **Connection Profiles** inventory panel is displayed.

2. Right-click the connection profile you wish to delete and click the **Delete** link from the contextual menu.

The **Delete Connection Profile** confirmation window is displayed.

3. Click **Delete**.

Copying a Connection Profile

To copy a connection profile you have created:

1. From the **Network Application Platform** task ribbon, select **Devices > Deploy Devices > Connection Profiles**.

The **Connection Profiles** inventory panel is displayed.

2. Right-click a connection profile you want to copy and click the **Clone** link from the contextual menu.

This window displays the parameters of the connection profile you have copied, with the **Name** field left blank.

3. In the **Name** field, enter a name for the new connection profile.
4. Edit the other fields of the connection profile if you intend to do so.
5. Click **Create**.

The connection profile you have created is displayed in the **Connection Profiles** inventory panel.

Searching for a Connection Profile

To search for a connection profile you have created:

1. From the **Network Application Platform** task ribbon, select **Devices > Deploy Devices > Connection Profiles**.

The **Connection Profiles** inventory panel is displayed.

2. In the **Search** field, enter the name of connection profile you want to search, as shown in the Figure 21 on page 124.

Figure 21: Searching for a Connection Profile



3. Click the magnifying glass icon next to the **Search** field.

The **Connection Profiles** inventory panel is populated with the connection profiles matching your search criterion.

Related Documentation

- Connection Profiles Overview on page 115
- Creating Connection Profiles on page 117

CHAPTER 7

Secure Console

- [Connecting to a Device on page 125](#)

Connecting to a Device

- [Secure Console Overview on page 125](#)
- [Connecting to a Device From Secure Console on page 125](#)

Secure Console Overview

From the Junos Space user interface, you can use the Secure Console feature to open an SSH session to connect to a Junos space managed device or unmanaged device. The Secure Console is a terminal window embedded in Junos Space that eliminates the need for a third party SSH client.

Secure Console initiates the SSH session from the Junos Space server (rather than from your browser) to provide a secure and reliable connection for both managed and unmanaged devices.

You can use Secure Console to connect to any managed device in Junos Space by using the credentials previously stored for the device. To connect to devices that are not managed by Junos Space, you must provide device credentials before connecting to the device.

You can establish multiple SSH connections to connect to different devices simultaneously, with each SSH connection in a different window.

You must have Super Administrator or Device Manager privileges to open an SSH session to a device in Junos Space.

Related Documentation

- [Connecting to a Device From Secure Console on page 125](#)

Connecting to a Device From Secure Console

You can use Secure Console to establish a connection to a device directly from the Junos Space user interface. Secure Console uses the SSH protocol to provide a secure remote access connection to a device. After you connect to a device, you can enter CLI commands from the terminal window to monitor or troubleshoot the device. You can use Secure

Console to establish a connection to a managed device or unmanaged device. An unmanaged device is a device that has not been discovered in Junos Space.

This topic includes the following tasks:

- Connecting to a Managed Device on page 126
- Connecting to an Unmanaged Device on page 127

Connecting to a Managed Device

To open an SSH session to connect to a managed device, the following conditions must be met:

- You must have Super Administrator or Device Manager privileges in Junos Space.
- The status of the managed device must be “UP”

You can use Secure Console to establish a connection to a Junos Space managed device. Secure Console uses the SSH protocol to provide a secure remote access connection to your managed devices.

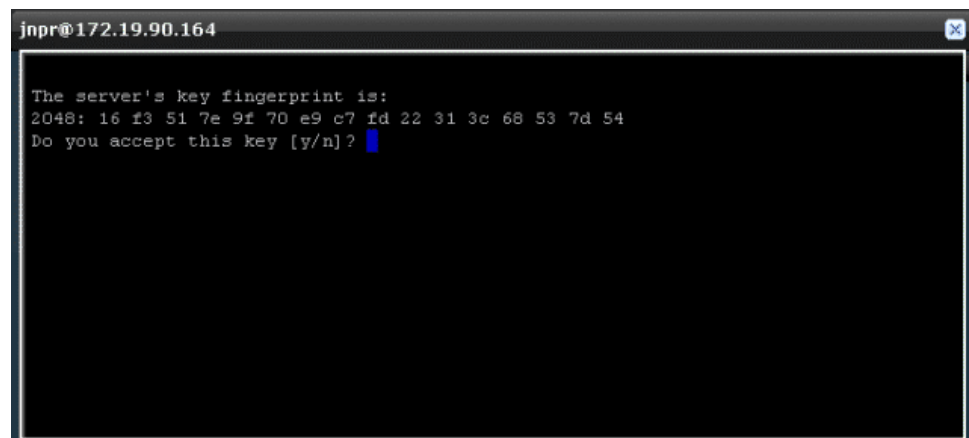
To connect to the managed device:

1. From the task ribbon, select the **Devices** workspace.
2. From the task ribbon, select the **Manage Devices** icon.

The Manage Devices inventory panel displays managed devices by name and IP address.

3. Select a device by clicking on the thumbnail image for the device or selecting the table row for the device.
4. In the Actions drawer, click **Secure Console**.

A window is displayed that prompts you to validate the device key fingerprint, as shown in the following illustration.



5. Verify that the fingerprint is for the device you want to connect to, and type **y** and press Enter to validate the Server's key fingerprint.

A terminal window opens in a non-modal popup with the SSH connection opened on the selected device, as shown in the following example.



```

jnpr@172.19.90.164
The server's key fingerprint is:
2048: 16 f3 51 7e 9f 70 e9 c7 fd 22 31 3c 68 53 7d 54
Do you accept this key [y/n]? y

--- JUNOS 9.6R2.11 built 2009-10-06 20:
56:00 UTC
(master)
jnpr@Artemis-MX480-PE0>

```



NOTE: You might encounter the error messages “Unable to Connect”, “Authentication Error”, or “Connection Lost or Terminated”, which are displayed as standard text in terminal window. When an error occurs, all other functionality in the terminal window is stopped. When you encounter such an error, you can close the terminal window and open a new SSH session.

6. From the terminal window prompt, you can enter CLI commands to monitor or troubleshoot the device.

Secure Console supports the following terminal control characters:

- **CRTL + A**—moves cursor to start of the command line
 - **CRTL + E**—moves cursor to end of the command line
 - **↑** (up arrow key)—repeats the last command
 - **TAB**—completes a partially typed command
7. To terminate the SSH session, type **exit** from the terminal window prompt and press Enter.
 8. Click in the top right corner of the terminal window to close the window.

Connecting to an Unmanaged Device

You can use Secure Console to establish a connection to an unmanaged device.

To open an SSH session to connect to an unmanaged device, the following conditions must be met:

- You must have Super Administrator or Device Manager privileges in Junos Space.
- The device is configured with a static management IP address that is reachable from the Junos Space appliance.
- SSH v2 is enabled on the device. To enable SSH v2 on a device, issue the following CLI command:

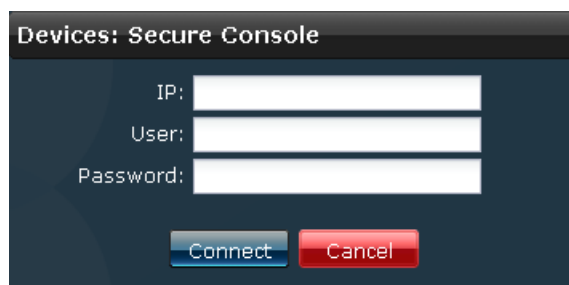
```
set system services ssh protocol-version v2
```

- The status of the device must be “UP”
- A valid user name and password is created on the device.

To connect to an unmanaged device:

1. From the task ribbon, select the **Devices** workspace.
2. From the task ribbon, select the **Secure Console** icon.

The Secure Console dialog box is displayed, as shown in the following illustration.

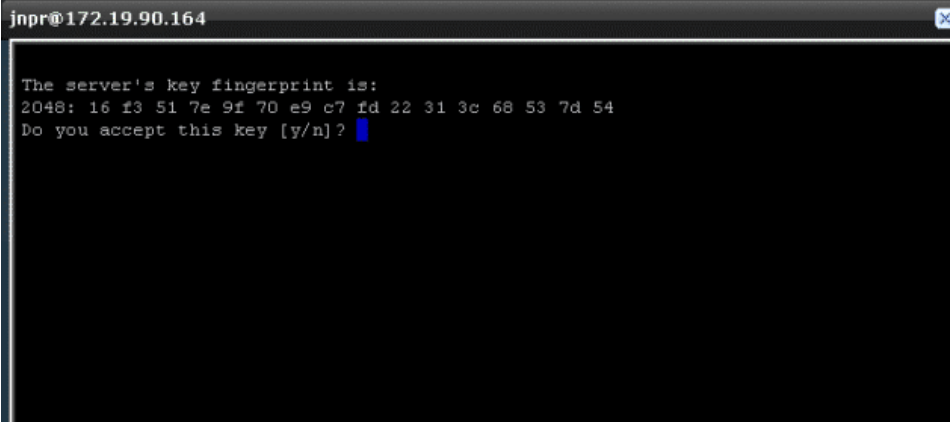


3. Specify the IP address of the device.
4. To establish an SSH connection for the device, specify the administrator user name and password.

The name and password must match the name and password configured on the device.

5. Click **Connect**.

The device key fingerprint window is displayed, as shown in the following example.

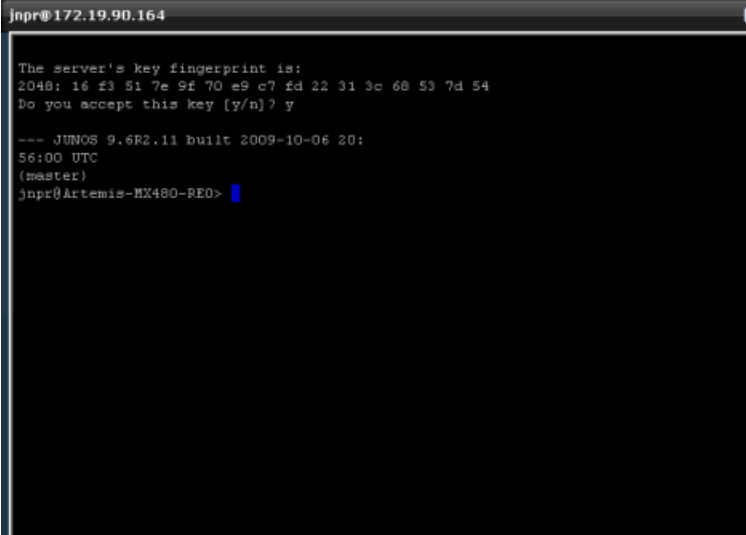
A terminal window titled 'jnpr@172.19.90.164' with a black background and white text. The text inside the terminal reads: 'The server's key fingerprint is:', '2048: 16 f3 51 7e 9f 70 e9 c7 fd 22 31 3c 68 53 7d 54', and 'Do you accept this key [y/n]?'. A blue cursor is positioned at the end of the last line.

```
jnpr@172.19.90.164

The server's key fingerprint is:
2048: 16 f3 51 7e 9f 70 e9 c7 fd 22 31 3c 68 53 7d 54
Do you accept this key [y/n]?
```

6. Verify that the fingerprint is for the device you want to connect to, and type **y** and press Enter to validate the Server's key fingerprint.

A terminal window opens in a non-modal popup with an SSH connection opened on the selected device, as shown in the following example.

A terminal window titled 'jnpr@172.19.90.164' with a black background and white text. The text inside the terminal reads: 'The server's key fingerprint is:', '2048: 16 f3 51 7e 9f 70 e9 c7 fd 22 31 3c 68 53 7d 54', 'Do you accept this key [y/n]? y', '--- JUNOS 9.6R2.11 built 2009-10-06 20:', '56:00 UTC', '{master}', and 'jnpr@Artemis-MX480-PE0>'. A blue cursor is positioned at the end of the last line.

```
jnpr@172.19.90.164

The server's key fingerprint is:
2048: 16 f3 51 7e 9f 70 e9 c7 fd 22 31 3c 68 53 7d 54
Do you accept this key [y/n]? y

--- JUNOS 9.6R2.11 built 2009-10-06 20:
56:00 UTC
{master}
jnpr@Artemis-MX480-PE0>
```



NOTE: You might encounter the error messages “Unable to Connect”, “Authentication Error”, or “Connection Lost or Terminated”, which are displayed as standard text in terminal window. When an error occurs, all other functionality in the terminal window is stopped. If you encounter such an error, you can close the terminal window and open a new SSH session.

7. From the terminal window prompt, you can enter CLI commands to monitor or troubleshoot the device.

Secure Console supports the following terminal control characters:

- **CRTL + A**—moves cursor to start of the command line
 - **CRTL + E**—moves cursor to end of the command line
 - **↑** (up arrow key)—repeats the last command
 - **TAB**—completes a partially typed command
8. To terminate the SSH session, type **exit** from the terminal window prompt, and press Enter.
 9. Click in the top right corner of the terminal window to close the window.

**Related
Documentation**

- Secure Console Overview on page 125

CHAPTER 8

Device Adapters

- Installation/Management on page 131

Installation/Management

- Screen OS Software Adapter Overview on page 131
- Installing the ScreenOS Software Adapter for Managing Non-DMI Security Devices on page 132
- Deleting a ScreenOS Adapter on page 138
- Worldwide Junos OS Adapter Overview on page 138
- Installing the Worldwide Junos OS Adapter on page 139

Screen OS Software Adapter Overview

The Junos Space ScreenOS (SOS) software adapter makes it possible for you to manage Juniper Networks non-DMI security devices through Junos Space. Use the SOS Adapter to manage all security devices supported by ScreenOS, Version 6.0 or later. For a list of supported devices refer to the Juniper Web site:

<http://www.juniper.net/us/en/products-services/>

Before you can install the ScreenOS Adapter, complete the following prerequisites:

- The ScreenOS Adapter image has been downloaded to the local client workstation.
- The ScreenOS Firewall device has been deployed on the network.
- Junos Space servers must have been deployed and are reachable from the device you plan to add to Junos Space.

Related Documentation

- Installing the ScreenOS Software Adapter for Managing Non-DMI Security Devices on page 132
- Deleting a ScreenOS Adapter on page 138

Installing the ScreenOS Software Adapter for Managing Non-DMI Security Devices

This document describes the process for installing the ScreenOS Software Adapter. The ScreenOS software Adapter allows you to manage Juniper Networks non-DMI security devices through Junos Space.

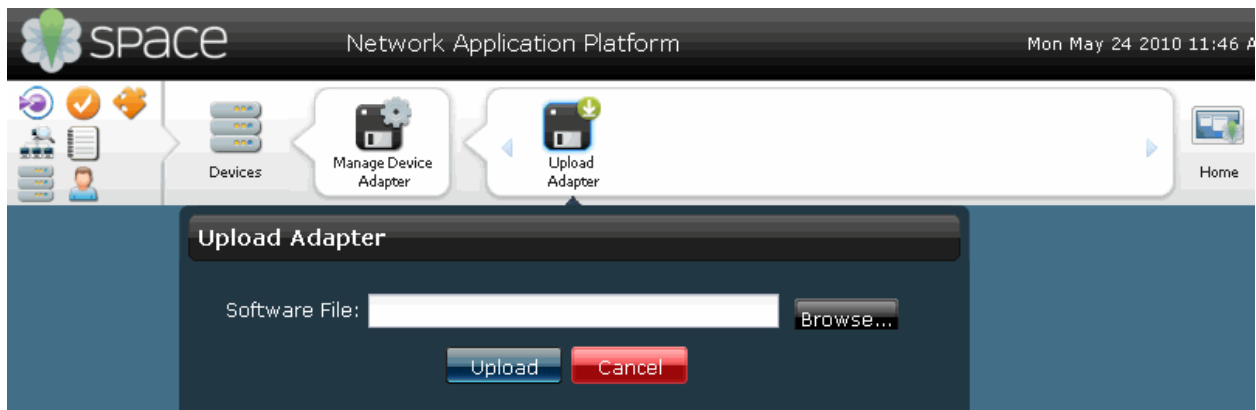
This multi-task process includes instructions for

1. Uploading the SOS Adapter Image on page 132
2. Installing the ScreenOS Adapter on page 132
3. Verifying the SOS Adapter Installation on page 133
4. Adding Screen OS Devices to Junos Space on page 134
5. Uploading the Device Management Commands on page 137

Uploading the SOS Adapter Image

Before you can install the SOS Adapter, you need to upload the image. Navigate to the Upload screen on the Devices task page.

1. Navigate to **Network Application Platform > Devices > Manage Device Adapter > Upload Adapter**
2. Browse to the adapter image file and select the filename so that the full path appears in the Software File field.
3. Click Upload to bring the image into Junos Space. A pop-up window shows the progress of the image upload.



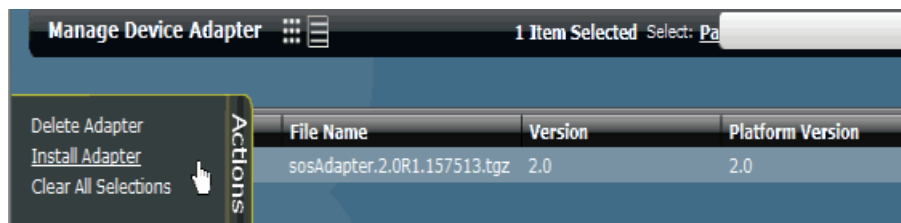
Installing the ScreenOS Adapter

Once you install the SOS Adapter, you will be able to add devices supported by Screen OS so that they can be monitored and managed through the Devices workspace.

To install the SOS Adapter from the image you just uploaded, follow these steps:

1. Navigate to **Network Application Platform > Devices > Manage Device Adapter** The Manage Software window appears with the SOS Adapter showing in the list of manageable devices.

2. Select the SOS Adapter and open the Action drawer to see the list of tasks that you can perform.



3. Click Install Software from the action list. The adapter starts automatically when it is installed.

Verifying the SOS Adapter Installation

Before you add any devices, verify that the installation was successful. This procedure shows how to verify the installation, as well as stop and start the adapter as needed.

To verify that the installation was successful, look at the device console on the Space server.

1. On the server, change directories to verify that the SOS Adapter directory has been created.

```
cd /home/jmp/
sosadapter
```

2. To verify that the SOS Adapter is running, enter the following command on the Space server:

```
Router > service sosadapter status
service adapter start to start the adapter
```

If the SOS Adapter is not active, you will see the status as

```
service adapter stop to stop the adapter
```

Use the following commands to either start or stop the SOS Adapter:

```
service adapter start to start the adapter
service adapter stop to stop the adapter
```

3. To see the SOS Adapter logs, change directories to the adapter directory.

```
cd /home/jmp/sosadapter/var/errorlog
sosadapterserver.0
```

To view the contents of the error log file, open it with any standard text editor.

[Adding Screen OS Devices to Junos Space](#)

You can register supported devices with Junos Space so that they can be managed through the Manage Devices task. You can add one or more devices by uploading a comma-separated values (.CSV) file that contains the device definitions, or you can manually add one device at a time by entering the device information.

To add ScreenOS devices, navigate to **Network Application Platform > Devices > Add Deployed Devices > Add Device**

Adding Devices Manually

This procedure describes how to add devices manually, one at a time.

1. From the list of devices displayed in the device wizard, select the newly uploaded adapter.

Adding Devices Using a .CSV File

This procedure describes how to add a group of devices by uploading a .CSV file.



NOTE: You must create the .CSV file before you begin this procedure.

In the .CSV file you define each device by providing the following information for each device:

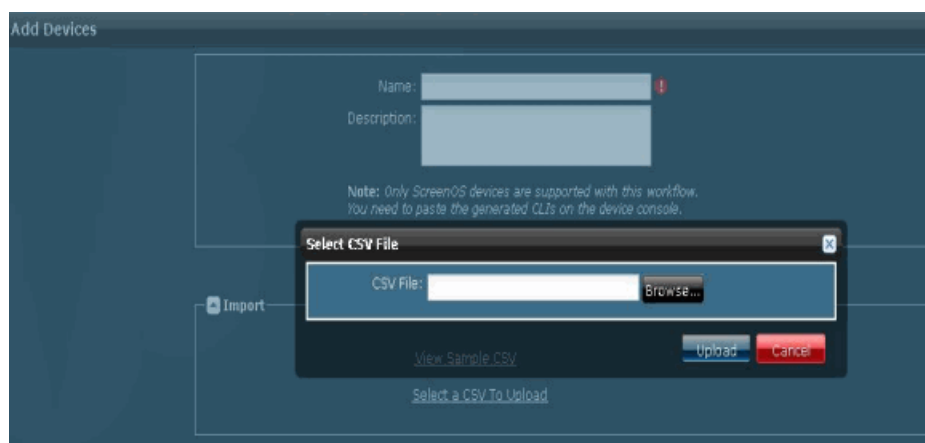
- Device name
- Platform
- Screen OS Version

To see a sample .CSV file, click [View Sample .CSV](#). The following figure illustrates the format to use for the .CSV file.

	A	B	C	D	E
1	#Rows which start with # are treated as a commented row				
2	#Explanation for the Column Names				
3	#Device Name - The name of the device to be created in SPACE.				
4	#				
5	#Platform - The SSG20-WLAN)				
6	#				
7	#OS Version - The ScreenOS version of the box				
8	#				
9	#Device Name	Platform	OS Version		
10	Seattle_ISG	nsISG1000	6		
11	Toronto_SSG	SSG550	6.1		
12	Auckland_SSG	SSG350	6.1		
13	UK_SSG	SSG20-WLAN	6.1		
14					

To upload the .CSV file, follow these steps:

1. Click the .CSV radio button to open the File Upload window.
2. Browse to the .CSV file that you have created and select it so that the full path appears in the .CSV File field.



3. Click Upload.

Uploading the Device Management Commands

A set of management commands is created automatically for each device you add. The following figure shows the set of commands you will see for the SOS Adapter.



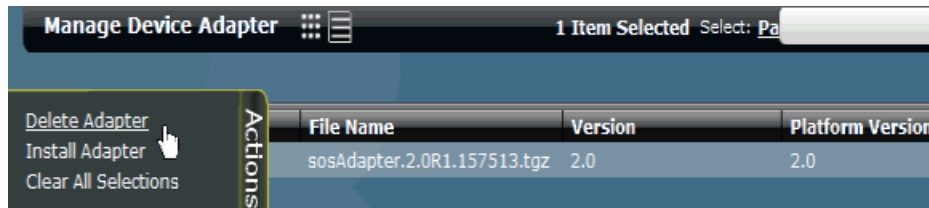
You must copy the entire set of commands for each device into the device console. You must repeat this procedure for each device you add. To retrieve the device management commands, perform the following steps:

1. Navigate to **Network Application Platform > Devices > Manage Devices > View Management CLI**
2. Select the device you have added to display the management commands for that device.
3. Copy the entire set of commands.
4. Past the copied commands into the device console.
5. Click Finish to complete the installation.

Deleting a ScreenOS Adapter

To delete a ScreenOS adapter, navigate to **Network Application Platform > Devices > Manage Devices**.

- In the device list, select the ScreenOS adapter that you want to delete.
- Open the Action Drawer.



- Click **Delete Adapter**.

Related Documentation

- Add Deployed Devices Overview on page 51
- Adding Deployed Devices on page 52
- Managing Deployed Devices on page 55
- Installing the ScreenOS Software Adapter for Managing Non-DMI Security Devices on page 132

Worldwide Junos OS Adapter Overview

The Junos Space wwadapter enables you to manage devices running the worldwide version of Junos OS (ww Junos OS devices) through Junos Space.

ww Junos OS devices use Telnet instead of Secure Shell (SSH2) to communicate with other network elements. Junos Space uses the failover approach when identifying a ww Junos OS device. It first tries to initiate a connection to the device using SSH2. If it cannot connect to the device, Junos Space identifies the device as a ww Junos OS device. Since Junos Space does not support Telnet, it uses an adapter to communicate with ww Junos OS devices. Junos Space connects to the adapter using SSH2 and the adapter starts a Telnet session with the device.

Before you install the wwadapter, complete the following prerequisites:

- Download the adapter image from the local client workstation.
- Ensure that the Junos Space servers have been deployed and are able to access devices.
- Configure Junos Space to initiate connections with the device.



NOTE: Ensure that you allow at least three Telnet connections between the ww Junos OS device and the Junos Space server. Junos Space needs a minimum of three Telnet connections with the device in order to be able to manage it.



NOTE: For ww Junos OS devices, the Junos Space Service Now application works only on AI-Scripts version 2.5R1 and later.

The **Secure Console** workspace and the **SSH to Device** option in the right-click contextual menu in the Manage Devices workspace are disabled for ww Junos OS devices.

For more information, see “Installing the Worldwide Junos OS Adapter” on page 139.

Related Documentation

- Installing the Worldwide Junos OS Adapter on page 139

Installing the Worldwide Junos OS Adapter

This section shows you how to install and use the wwadapter to manage devices running on the worldwide version of Junos OS (ww Junos OS devices).

This section includes the following tasks:

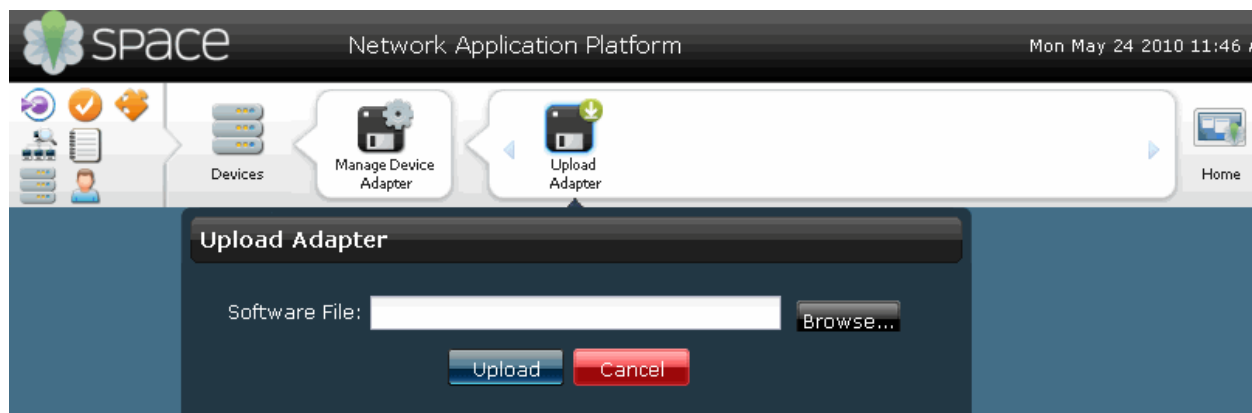
- Installing the wwadapter Image on page 139
- Connecting to ww Junos OS Devices on page 141

Installing the wwadapter Image

Before you install the wwadapter, you must upload the ww Junos OS device wwadapter image file.

To upload the wwadapter image file:

1. From the application chooser, select **Network Application Platform > Devices > Manage Device Adapter > Upload Adapter**.



2. Browse to the wwadapter image file and select the filename so that the full path appears in the Software File field.
3. Click **Upload** to bring the image into Junos Space.
A pop-up window shows the progress of the image upload.

To install the ww Junos OS device wwadapter:

1. From the application chooser, select **Network Application Platform > Devices > Manage Device Adapter**.
The Manage Device Adapter window appears with the wwadapter displayed in the list of manageable adapters.
2. Select the adapter and select **Install Software** from the **Actions** panel or from the right-click contextual menu.
The adapter starts automatically after installation.

Before you connect to any device, you must verify that the installation was successful.

To verify that the installation was successful, look at the device console on the Space server.

1. On the server, change directories to verify that the wwadapter directory has been created.

cd /home/jmp/wwadapter
2. To verify that the wwadapter is running, enter the following command on the Space server:

```
prompt > service wwadapter status  
wwadapter running
```

If the wwadapter is not active, you see the following status:

```
wwadapter stopped
```

Use the following commands to start or stop the wwadapter:

To start the wwadapter:

```
service wwadapter start
```

To stop the wwadapter:

```
prompt > ps -ef | grep wwadapter  
prompt > kill -9 {wwadapter pid}
```

To see the wwAdapter logs, change directories to the wwadapter directory.

```
cd /home/jmp/wwadapter/var/errorLog/DmiAdapter.log
```

To view the contents of the error log file, open it with any standard text editor.

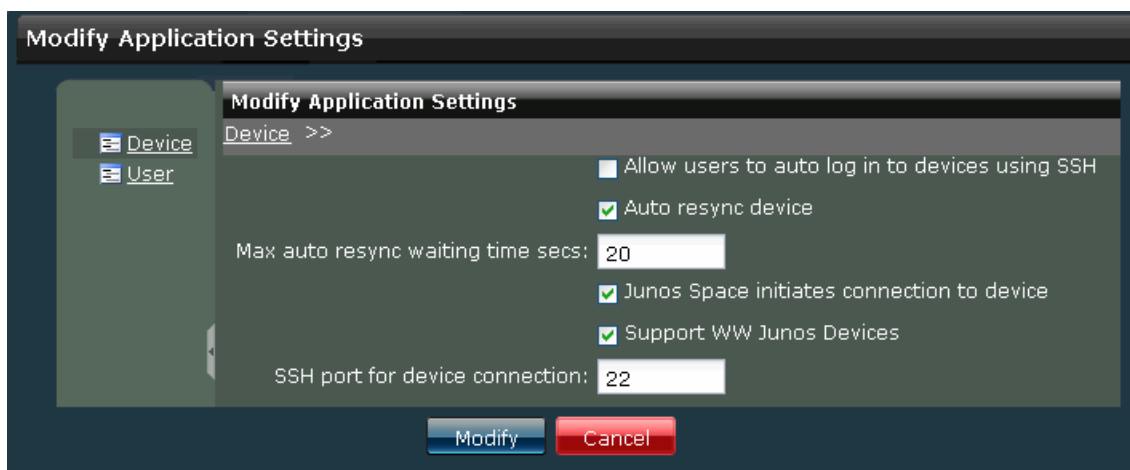
To view the contents of the log4j configuration file, change directories to the wwadapter directory.

```
cd /home/jmp/wwadapter /wwadapterlog4j.lcf
```

Connecting to ww Junos OS Devices

A device running worldwide Junos OS (ww Junos OS device) cannot initiate a connection with Junos Space. Junos Space must initiate the connection to the device. To configure this setting:

1. From the application chooser, select **Network Application Platform > Administration > Manage Applications**.
The Manage Applications page appears displaying all the applications currently running in the Junos Space server.
2. Select **Network Application Platform** and click **Modify Application Settings** from the **Actions** panel or from the right-click contextual menu.
The Modify Application Settings page appears.



3. Select the **Junos Space initiates connection to device** check box.
4. Select the **Support ww Junos Devices** check box so that Junos Space can connect to a ww Junos OS device using the wwadapter.

After Junos Space has discovered the ww Junos OS device through the wwadapter ("Discovering Devices" on page 40), it manages the device just as it would manage a device that runs the domestic version of Junos OS.



NOTE: The **Secure Console** workspace and the **SSH to Device** option on the right-click contextual menu in the **Manage Devices** workspace are disabled for ww Junos OS devices.



NOTE: If you are not able to discover the WW Junos OS device, make sure that the NMAP utility returns 'telnet' as open for port 23 on the device.

```
$ nmap -p23 < Device IP >
```

- Related Documentation**
- Worldwide Junos OS Adapter Overview on page 138
 - Modifying Application Settings on page 393

PART 3

Overview

- Device Templates on page 145

CHAPTER 9

Device Templates

- [Device Templates Overview on page 146](#)
- [Device Templates Workflow Overview on page 147](#)
- [Managing CSV Files Overview on page 147](#)

Device Templates Overview

Device Templates provides the tools to create custom device templates deployable through Junos Space. Unlike other systems that provide configuration of most aspects of a device and allow implementation of some form of template, Device Templates is schema-driven and therefore has all the configuration commands and values that can be sent down to all supported devices. Conversely, when you want to focus on a single device family, the configuration commands for other device families are filtered out.

For efficient device deployment, device templates implements two roles: a designer who understands the technical details of device configuration and knows how to implement this knowledge to solve specific business problems; and an operator, a junior individual to execute the orders of the designer.

A template definition designer creates template definitions and publishes them. An operator selects a template definition and creates from it a template to configure one or more devices. The operator then tests the template on the devices (without deploying it). If the template is validated, the operator deploys the template to the devices. With this division of labor, the operator does not need specialist knowledge. The designer can design the device templates to allow (or prevent) specific tasks to be performed by specified administrator roles. Alternatively, one person can be both designer and operator.

Device Templates provides two views: the designer's view and the operator's view. While creating the definition, the designer can verify what the operator sees. The operator, however, cannot see what the designer sees.

Designers can subdivide the device configuration tasks into areas, each to be handled by a separate template definition. Designers can choose not only which options to display to their operators, but also whether to display them at all. They can make configuration options editable or read-only, and even provide customized explanations for operators. Operators can immediately deploy a template to the devices they select, or schedule a later deployment.

Both kinds of user require the appropriate permissions; see "User Privileges in Device Templates" on page 209.

**Related
Documentation**

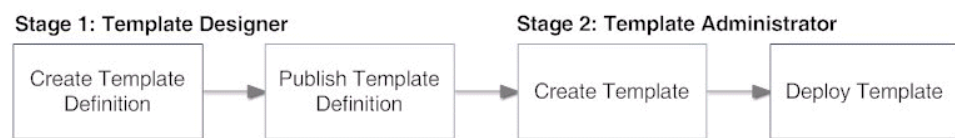
- Device Templates Workflow Overview on page 147
- Defining the Operator's View on page 157
- Defining the Content the Operator Enters on page 170

Device Templates Workflow Overview

The device templates workflow has two main parts, with two different roles:

- The designer, who creates the template definition (see “Device Template Definition Workflow” on page 153).
- The operator, who creates a template from a template definition (see “Creating a Device Template Overview” on page 198).

Figure 22: Workflow for Device Template Definition and Template Creation



Both designer and operator must ensure that they have appropriate permissions. See “User Privileges in Device Templates” on page 209.



NOTE: Do not use your browser’s **Back** and **Forward** buttons to navigate in **Device Templates**.

Related Documentation

- Device Templates Overview on page 146
- Creating a Device Template Overview on page 198

Managing CSV Files Overview

Device Templates uses CSV files to specify device-specific values. You can therefore create a template definition and associate it with a CSV file. For instructions on the procedure for linking the file to a definition, see “Specifying Device-Specific Data in Definitions” on page 177.

Although designers can configure the parameter governed by the CSV file as editable, operators can neither view nor change the file when they create templates. For instructions on configuring this parameter, see “Filling in the Advanced Tab” on page 176.

The CSV files you use can be any file format (for example, .xls or .txt) as long as they have appropriate columns and key columns.

You can add a record to a CSV file from within Device Templates. However, if you change a CSV file outside Junos Space, from its native application (for example, Microsoft Excel or Notepad), you must upload it again. You can do this within the device templates workflow.

To add the CSV files you use for template definitions to Junos Space:

1. From the Device Templates workspace, navigate from **Manage Definitions** to **Manage CSV Files**.

The Manage Template Definitions page appears.

2. Click **Upload**.

The CSV File upload dialog appears.

3. Click **Browse**.

The File Upload dialog opens.

4. Navigate to the desired CSV file, select it and click **Open**.

The CSV File upload dialog reappears, this time displaying the name of the selected file.

5. Click **Upload**.

The Manage CSV Files page reappears. The name of the file just imported is displayed in the left pane.

To display the content of a file, select its name in the left pane. Its content displays in the right pane.



TIP: Note down the names of the column headings. These are essential for setting up a template definition to use the correct values.

To add a record, see step 6 of “Specifying Device-Specific Data in Definitions” on page 177.

Related Documentation

- Managing Device Template Definitions Overview on page 152
- Creating a Device Template Definition Overview on page 153
- Defining the Content the Operator Enters on page 170
- Creating a Device Template Overview on page 198

PART 4

Device Template Definitions

- [Template Definitions on page 151](#)

CHAPTER 10

Template Definitions

- Managing Device Template Definitions Overview on page 152
- Device Template Definition Workflow on page 153
- Creating a Device Template Definition Overview on page 153
- Junos OS Configuration Hierarchy Reference on page 154
- Defining the Operator's View on page 157
- Selecting the Device Family and Naming a Device Template Definition on page 159
- Creating Configuration Pages for a Device Template Definition on page 160
- Finding Configuration Options on page 164
- Filling in the General Tab on page 166
- Filling in the Description Tab on page 169
- Defining the Content the Operator Enters on page 170
- Filling in the Validation Tab on page 172
- Composing Error Messages on page 175
- Filling in the Advanced Tab on page 176
- Specifying Device-Specific Data in Definitions on page 177
- Using Rules Overview on page 180
- Working with Rules on page 181
- Specifying Default Values for Configuration Options on page 183
- Publishing and Unpublishing a Device Template Definition on page 185
- Modifying a Device Template Definition on page 187
- Cloning a Device Template Definition on page 187
- Deleting a Device Template Definition on page 188
- Importing Device Template Definitions Overview on page 189
- Importing a Device Template Definition on page 189
- Exporting a Device Template Definition on page 190

Managing Device Template Definitions Overview

Managing template definitions gives you access to the entire template definition workflow.

Before you begin, make sure you have the appropriate permissions; see “User Privileges in Device Templates” on page 209.



NOTE: Do not use your browser’s **Back** and **Forward** buttons to navigate in **Device Templates**.

To manage Device Template definitions, navigate to the Manage Definitions inventory page by clicking **Platform > Device Templates > Manage Definitions**. The **Manage Definitions** inventory page displays all published or unpublished template definitions, and has two views: thumbnail and table. You can display the definitions themselves as icons or in table format: change from one view to the other by clicking on the display format icon in the Platform task ribbon. You can select or deselect all items, and you can use the search function to find a template definition by name.

From the Manage Definitions page, you can also publish, unpublish, modify, delete, import, export, and clone a template definition. You can also tag and untag an object.

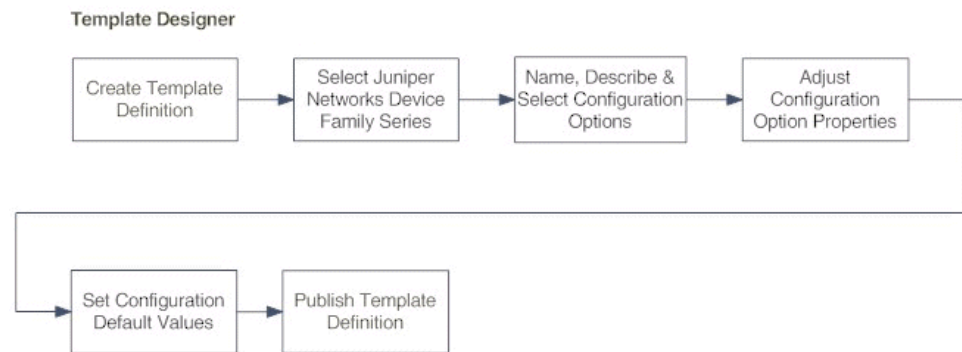
Related Documentation

- Device Template Definition Workflow on page 153
- Publishing and Unpublishing a Device Template Definition on page 185
- Modifying a Device Template Definition on page 187
- Deleting a Device Template Definition on page 188
- Importing a Device Template Definition on page 189
- Exporting a Device Template Definition on page 190
- Cloning a Device Template Definition on page 187
- Tagging an Object on page 432
- Untagging Objects on page 433
- Managing Device Templates Overview on page 195
- Changing Device Template Definition States on page 209

Device Template Definition Workflow

The workflow for creating a template definition is illustrated by Figure 23 on page 153.

Figure 23: Template Definition Workflow



Creating a template definition includes the following tasks:

1. Select a device family. See “Selecting the Device Family and Naming a Device Template Definition” on page 159.
2. Select the configuration options to be included in the definition. See “Creating Configuration Pages for a Device Template Definition” on page 160.
3. Define the text, labels, and template UI elements the operator sees, which includes defining the parameters the operator sees and can change. See “Defining the Operator’s View” on page 157.
4. Set the default values for the parameters. See “Specifying Default Values for Configuration Options” on page 183.
5. Set the values the operator sees. See “Defining the Content the Operator Enters” on page 170.
6. Preview the template and if necessary modify the definition. See “Modifying a Device Template Definition” on page 187.



NOTE: Template definitions are published by default. If you want to avoid making a definition available to operators, you must unpublish it. See “Publishing and Unpublishing a Device Template Definition” on page 185.

Related Documentation

- Device Templates Overview on page 146
- Device Templates Workflow Overview on page 147

Creating a Device Template Definition Overview

There are three main stages in creating a template definition.

First you select the device family and configuration options the definition will handle. This is covered in:

1. Selecting the Device Family and Naming a Device Template Definition on page 159
2. Creating Configuration Pages for a Device Template Definition on page 160

Then, you configure the options: “Defining the Operator’s View” on page 157 gives an overview of:

3. Filling in the General Tab on page 166
4. Filling in the Description Tab on page 169
5. Filling in the Validation Tab on page 172
6. Composing Error Messages on page 175
7. Filling in the Advanced Tab on page 176
8. Specifying Device-Specific Data in Definitions on page 177
9. Using Rules Overview on page 180

Finally, you specify the content the operator can enter. This is covered in “Defining the Content the Operator Enters” on page 170, which in turn gives an overview of:

8. Specifying Default Values for Configuration Options on page 183



NOTE: Do not use your browser’s **Back** and **Forward** buttons to navigate in **Device Templates**.

**Related
Documentation**

- Device Template Definition Workflow on page 153
- Publishing and Unpublishing a Device Template Definition on page 185

Junos OS Configuration Hierarchy Reference

This topic provides references for configuring device configuration template definitions for the following Junos Space-supported devices;

- J Series, M Series, MX Series, T Series, and TX Matrix routing platforms
- SRX Series Services Gateway
- EX Series Ethernet Switches
- Firewalls NS/SSG Series
- Data Center / Media Flow Controller

Junos Space Device Templates supports the Juniper Networks device family DMI schemas. Each device family you select supports a unique set of Junos OS configuration hierarchy options available in the **Create Definition** user interface. Table 15 on page 155 lists the

main Junos OS configuration hierarchy options and the Junos configuration guides where you can find information about them.

Table 15 on page 155 also maps the Device Template configuration options hierarchy to the Juniper Networks guides that describe how to configure the individual options. For a comprehensive list of Junos OS configuration guides, see

http://www.juniper.net/techpubs/en_US/release-independent/junos/information-products/pathway-pages/junos/product/.

Table 15: Junos OS Configuration Hierarchy Guide Reference

Configuration Hierarchy	Junos OS for J Series, M Series, MX Series, and T Series Routing Platform Configuration Guide
access	<i>Junos OS System Basics Configuration Guide</i> and Junos subscriber management documentation
accounting-options	Network management documentation
applications	Services interfaces documentation
bridge-domains	Layer 2 configuration documentation
chassis	<i>Junos OS System Basics Configuration Guide</i>
class-of-service	Class of service documentation
diameter	Junos subscriber management documentation
dynamic-profiles	Junos subscriber management documentation
event-options	<i>Junos OS Hierarchy and Standards Reference</i>
firewall	<i>Junos OS Policy Framework Configuration Guide</i>
forwarding-options	Policy framework documentation
groups	CLI user guide documentation
interfaces	<i>Junos OS Junos Network Interfaces Configuration Guide</i>
jsrc	Junos subscriber management documentation
logical-systems	Routing protocols documentation
multicast-snooping-options	Multicast protocols documentation
policy-options	<i>Junos OS Policy Framework Configuration Guide</i>
protocols	<i>Junos OS Routing Protocols Configuration Guide</i>
routing-instances	<i>Junos OS Routing Protocols Configuration Guide</i>

Table 15: Junos OS Configuration Hierarchy Guide Reference (*continued*)

Configuration Hierarchy	Junos OS for J Series, M Series, MX Series, and T Series Routing Platform Configuration Guide
routing-options	<i>Junos OS Routing Protocols Configuration Guide</i>
security	<i>Junos OS System Basics Configuration Guide</i> and the SRX Series release 10.0 documentation
services	Services interfaces documentation
snmp	<i>Junos OS Network Management Configuration Guide</i>
switch-options	Junos MX Series routers Layer 2 services — bridging, address learning, and forwarding
system	<i>Junos OS System Basics Configuration Guide</i>
virtual-chassis	<i>Junos OS Hierarchy and Standards Reference</i> and documentation for the EX Series Ethernet Switches
vlan	<i>Junos OS Hierarchy and Standards Reference</i> and documentation for the EX Series Ethernet Switches
wlan	Documentation for the SRX Series Services Gateway

EX-Series Devices

For more information about configuring EX Series devices, see

http://www.juniper.net/techpubs/en_US/release-independent/junos/information-products/pathway-pages/ex-series/product/

SRX Series Devices

For more information about configuring SRX Series devices, see

<http://www.juniper.net/techpubs/hardware/junos-srx/index.html>.

Defining the Operator's View

This section gives an overview of the **Create Definition** pages. The designer specifies the fields that will be in templates based on the definition, and determines what data can be entered in those fields. Designers determine whether fields are visible and editable by the operator.



NOTE: Do not use your browser's **Back** and **Forward** buttons to navigate in **Device Templates**.

Table 16 on page 157 lists the data types for the configuration options, and the tabs associated with each type. The data type is determined by the DMI schema, and itself determines the method of validation and the way the parameters are displayed.

Table 16: Data Types and Tabs

Data Types	Tabs			
	General	Description	Validation	Advanced
Container	*	*		
Table	*	*	*	*
String - Key column in a table	*	*	*	*
String	*	*	*	*
Integer [Number]	*	*	*	*
Boolean	*	*		*
Enumeration	*	*		*
Choice	*	*		*

Table 17 on page 157 lists the validation parameters for the data types supporting validation.

Table 17: Data Types and Validation Parameters

Data Type	Validation Parameters		
Integer [Number]	Min Value	Max Value	
String	Min Length	Max Length	Regular Expression
Table	Min Occurrence	Max Occurrence	

Table 17: Data Types and Validation Parameters (*continued*)

Data Type	Validation Parameters		
String - Key column in a table	Min Length	Max Length	Regular Expression

- All table configuration options have a key column by default.
- You can use any sequence to move options onto your pages.
- Because the tabs and their contents depend on the data type of the option selected, each tab has its own help topic:
 - Filling in the General Tab on page 166
 - Filling in the Description Tab on page 169
 - Filling in the Validation Tab on page 172
 - Composing Error Messages on page 175
 - Filling in the Advanced Tab on page 176
- Selecting another tab or option or configuration page saves the settings you enter. The **Next** or **Finish** buttons also save your settings. To save the template definition, click **Finish**.

After creating configuration groups and filling in all the tabs for each option, continue with “Defining the Content the Operator Enters” on page 170 and “Specifying Default Values for Configuration Options” on page 183.

Related Documentation

- Specifying Device-Specific Data in Definitions on page 177
- Creating Configuration Pages for a Device Template Definition on page 160
- Creating a Device Template Definition Overview on page 153

Selecting the Device Family and Naming a Device Template Definition

The first task in creating a template definition is selecting the device family and naming your template definition.

Each template definition is associated with a Juniper Networks Device Family DMI schema determining the Junos OS versions and device platforms supported. Before creating any template definitions, you must therefore set a default DMI schema for each device family. See “Setting a Default DMI Schema” on page 445.

Each template definition must have a unique name. Although the description is optional, operators have no other way of identifying the contents of the definition without going through all the options visible to them in the template they create on the basis of that definition.



NOTE: Do not use your browser’s **Back** and **Forward** buttons to navigate in **Device Templates**.

To select the device family and name the template definition:

1. From the Network Application Platform, click **Device Templates**. The **Device Templates** statistics page appears, displaying all available statistics for both template definitions and templates.
2. Click **Manage Definitions**. The **Device Templates** inventory page appears, displaying all template definitions.
3. Click **Create Definition**.

The **Create Definition** page appears.

4. From the **Device Family Series** panel, select the device family to which your definition will apply. The Junos OS versions and hardware platforms supported by the selected device family appear in the **Description** panel on the right. The OS version, which is related to the default DMI schema, appears on the lower left. By default, the OS version displayed is the one that is set as default for that device family (see “Setting a Default DMI Schema” on page 445).



NOTE: This information is not displayed to the operator. Unless you include it in the definition name or description, the operator will not know to which device family this definition applies.

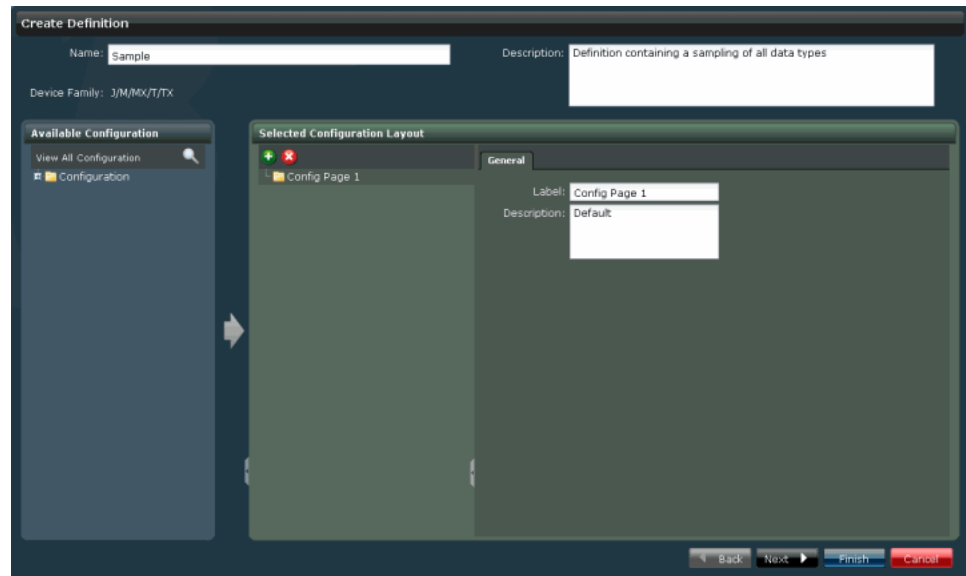
5. Select the appropriate OS version from the dropdown list in the lower part of the panel on the left.



NOTE: If you do not use the most up to date DMI schema, you will not have access to all the most recent device configuration options.

6. Click **Next**.

The following page displays the selected device family, **Available Configuration** panel and the **Selected Configuration Layout** panel.



7. In the **Name** field, enter a name for the template definition (limit of 63 characters). It is helpful to give the definition a name that makes sense to the operator. Entering text in the **Description** field is optional, but again, helpful for the operator, who has no other way of knowing to which device family this definition applies (limit of 255 characters).

In the next task in the process of creating a template definition, “Creating Configuration Pages for a Device Template Definition” on page 160, you select configuration options and insert them into configuration pages.

Related Documentation

- Creating a Device Template Definition Overview on page 153
- Device Template Definition Workflow on page 153
- Setting a Default DMI Schema on page 445
- Managing DMI Schemas Overview on page 438

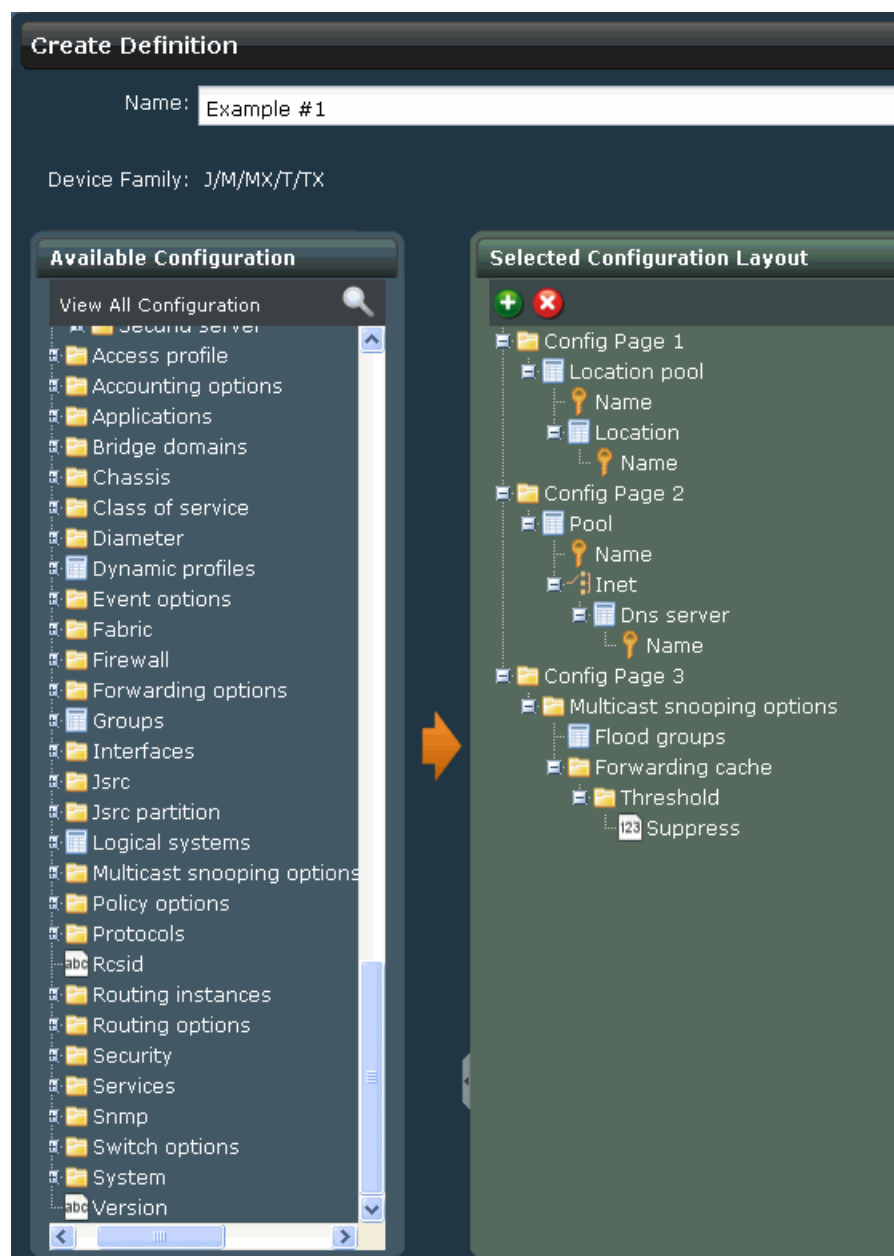
Creating Configuration Pages for a Device Template Definition

You create configuration pages as part of the process of selecting configuration options, to organize and group those options.

Before you begin, complete the steps in “Selecting the Device Family and Naming a Device Template Definition” on page 159.

The list in the **Available Configuration** panel displays the Junos OS configuration hierarchy level options available for the device family you selected. In the **Selected Configuration Layout** panel, you construct your groupings by putting the options into pages. Because

operators never see the hierarchy in the **Available Configuration** page, they need guidance in understanding precisely which options they are configuring. Bear this in mind when composing a page of configuration options. Consider reducing the number of options per page.



To find particular configuration options, see “Finding Configuration Options” on page 164.

To create a configuration page:

1. In the Create Definition page, expand the list of options available for the selected device family by opening the list, filtering, or searching, as described in “Finding Configuration Options” on page 164.
2. Move an option from the **Available Configurations** panel to a page in the **Selected Configuration Layout** panel. The first page, “Config Page 1,” is available by default.

There are two ways to move an option from the **Available Configurations** panel to a page in the **Selected Configuration Layout** panel:

- a) Select an option, and drag it and drop it onto the name of the page or any options already on a page, or
- b) Select the name of a page by clicking on it, then click the desired option, and finally click the arrow between the panels to transfer the option to the page.

Any sequence is permissible, and there is no limit on the number of options a page can hold.



NOTE: You cannot put children of the same parent into different pages.

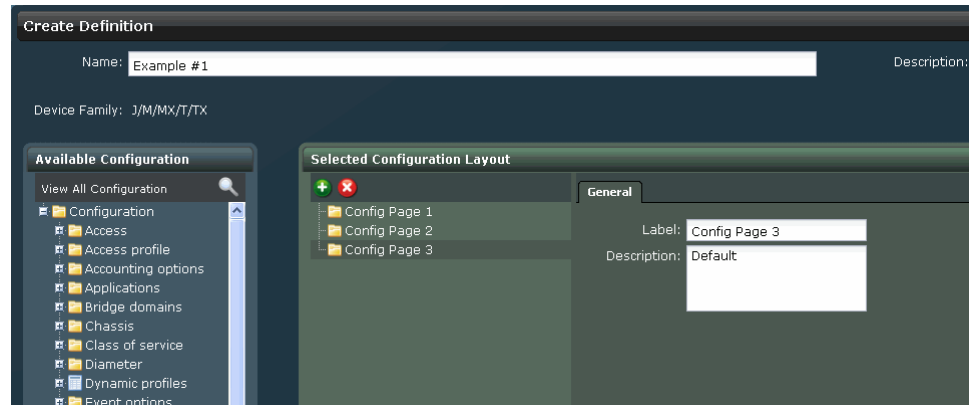


NOTE: Options that are either subsidiary or integral to others bring their respective parents and children with them when you move them onto a page. If you drill down and select a parameter deep in the hierarchy, such as **L3 interface**, dragging that parameter causes all the other parameters that require configuration to come with it. In this example, you get not only **L3 interface**, but also **Name**, both of which are under **Vlan**. This ensures that all the parameters required for a particular configuration option are present in your configuration group.

Conversely, you cannot add an option of the 'choice' data type directly to a page. Instead, add a child of the choice to add the choice itself.

3. Name your configuration grouping by double-clicking the placeholder name; in the example below, “Config Page 3” under **Selected Configuration Layout**.

On the right, the **General** tab appears.



4. (Optional) In the **Label** field on the **General** tab, replace the placeholder name (Config Page x) with a more informative name.
5. (Optional) Enter a description in the **Description** field.

Add or remove pages as desired.

In both cases, in the status bar at the bottom of the page a message indicates whether your definition had any validation errors. If it did, revise your entries.

To add a page:

5. Click the plus icon [+] at the top left of the **Selected Configuration Layout** panel.
A new page appears: "Config Page x."

To remove a page or a configuration option from a page:

6. Select the page or configuration option and click the X at the top left of the **Selected Configuration Layout** panel.
The page disappears.
7. When you have finished creating configuration pages, click **Next**.

Continue with "Defining the Operator's View" on page 157.

Related Documentation

- Filling in the General Tab on page 166
- Filling in the Description Tab on page 169
- Filling in the Validation Tab on page 172
- Composing Error Messages on page 175
- Filling in the Advanced Tab on page 176
- Device Template Definition Workflow on page 153

Finding Configuration Options

There are two ways to locate particular configuration options: you can use the search function or display the whole list.

Searching

To search for a specific configuration option:

1. Click the magnifying glass icon.
The search term bar appears.
2. Enter your search term.

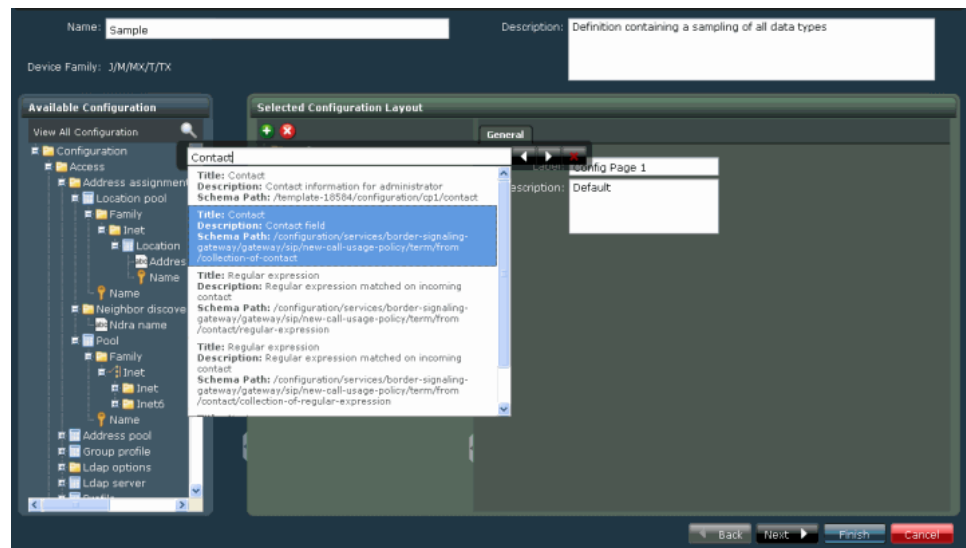
As soon as you enter the first three letters, the bar opens downwards, displaying the search results.

Search displays only the first ten matches for your term.



TIP: Search results appear while you are typing. You can continue typing or even delete text. Note that the cursor might not be visible in the search field if the focus is somewhere within the list of search results.

The order of the search results is not dependent on the order of those items in the **Available Configuration** panel. It is based on the similarity of your search term to indexed fields.



3. While the result list is still visible, select a result by:
 - Using the mouse to click on it.
 - Pressing the Enter key to select the first result in the list.

- Using the up and down arrow keys on the keyboard to move through the list, pressing the Enter key to select a result.

The tree in the **Available Configuration** panel jumps to the location of the match for the result you selected and highlights the option. The list of results disappears.

4. (Optional) To review the results that you did *not* select, either:

- Click the white arrows next to the Search field.

Click the arrow to the left to move to the result listed previous to the selected result.

Click the arrow to the right to move to the result after the selected result.

- Use the left and right arrow keys on the keyboard.

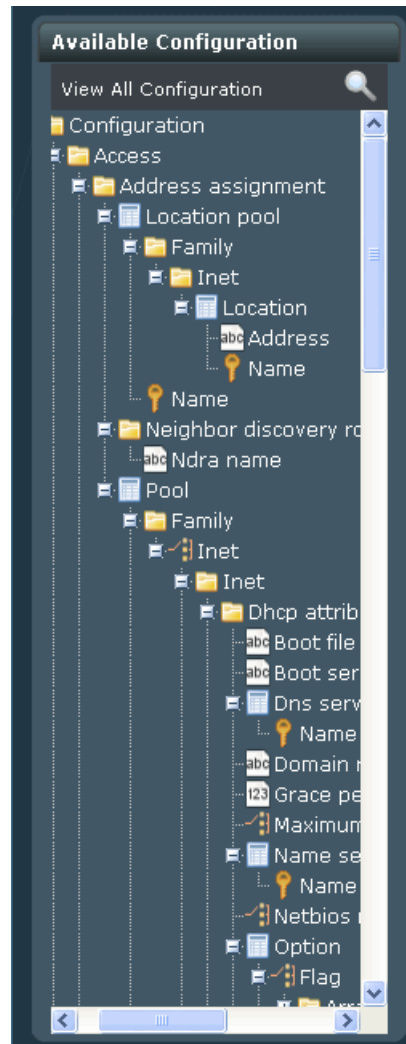
Press the arrow to the left to move to the result listed previous to the selected result.

Press the arrow to the right to move to the result after the selected result.

5. To close the search bar, click the X in the top right corner of the bar.

Displaying all configuration options: To display the top level configuration options, click the plus sign [+] or expansion icon at the top of the tree in the **Available Configuration**

panel. Many of the options contain further parameters. To display these, click on the plus sign [+] or expansion icon left of the option.



- Related Documentation**
- Creating Configuration Pages for a Device Template Definition on page 160

Filling in the General Tab

This topic describes how to fill in the **General** tab in the **Selected Configuration Layout** panel when you are creating a template definition.

Before you begin, review “Defining the Operator’s View” on page 157 and “Creating Configuration Pages for a Device Template Definition” on page 160.

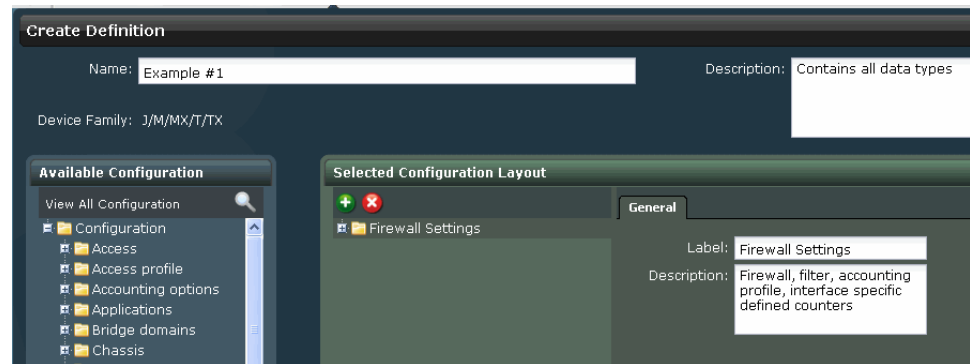
The **General** tab enables you to create field labels that help the operator enter correct field data. The **General** tab applies to both the configuration *pages* and the configuration *options* you select.

To fill in the **General** tab:

1. For the *page* you are building, in the **Selected Configuration Layout** panel, select a page (the default is “Config Page x”).

The **General** tab appears.

2. In the **Label** field, enter an informative name for the configuration page you are creating.

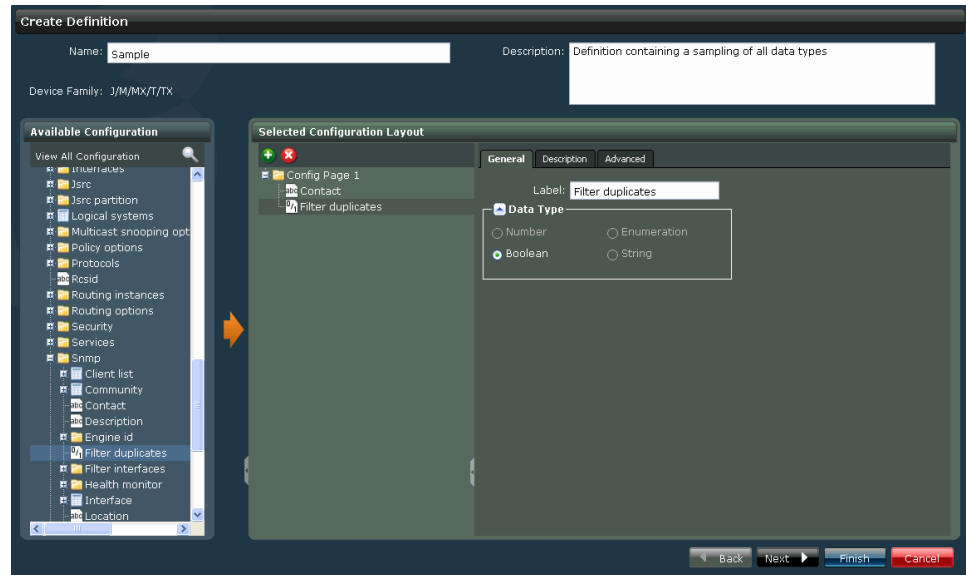


3. (Optional) In the **Description** field, enter a description of the configuration grouping.
Your entries are saved when you click any other configuration layout page, option, or button on the page.
4. In the **Selected Configuration Layout** panel, select the first *configuration option* in the newly named page.
The **General** tab appears.
5. (Optional) To rename the selected option, in the **Label** field, enter a name for that configuration option. You can leave the default name, if desired.



TIP: Because the context of the configuration options you move to the **Available Configuration** panel will not match that of the **Selected Configuration Layout** panel, consider changing the labels to give some indication to the operator where they are located in the configuration tree, which operators do not see in templates. The default labels are ambiguous

without the context of the tree. For example, there are many options called pool.



The **Data Type** box displays the selected component's data type, which determines not only the tabs displayed, but also the method of validation. For tables showing the various data types and their tabs, see “Defining the Operator’s View” on page 157.

6. (Optional) If the data type of the selected option is String, you can change it to Enumeration by clicking the String radio button while the option is selected.

Either a box containing ready-made choices appears, or a box to contain the choices you create appears, and next to it, plus [+] and minus [-] icons.

7. To enter the enumeration choices, for each one, click the plus [+] icon and enter text in the field that appears (limit 255 alphanumeric characters).



TIP: Keep your choices short, otherwise they are hard to read when you specify the default values and or when the operator tries to select from the list. You can create up to 23 choices.

Click OK to save each entry, or to delete it, click Close.

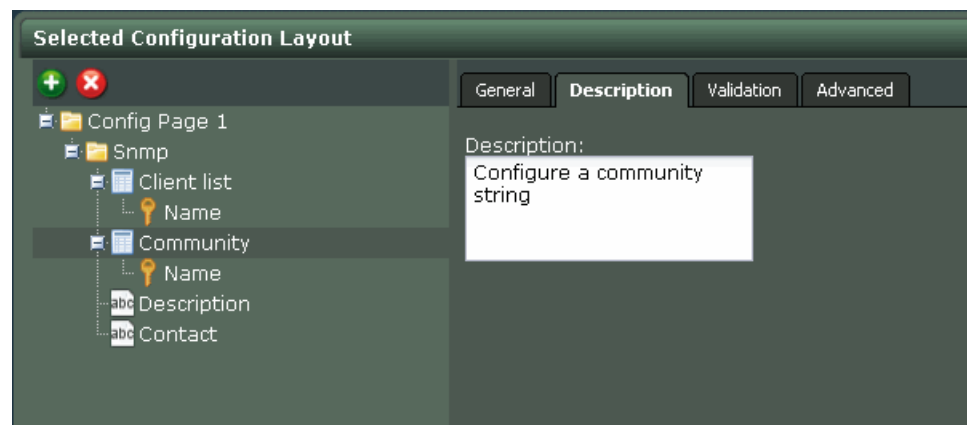
To close the window, click Close or the X.

8. To save your entries on the General tab, select another tab or another option, or click **Next** or **Finish**.
9. Either fill in the **General** tab as described above for each option in your configuration group, or go on to fill in the **Description** tab for the current option (see “Filling in the Description Tab” on page 169).

- Related Documentation**
- Defining the Content the Operator Enters on page 170
 - Specifying Default Values for Configuration Options on page 183
 - Device Template Definition Workflow on page 153
 - Creating a Device Template Definition Overview on page 153
 - Defining the Operator's View on page 157
 - Filling in the Description Tab on page 169

Filling in the Description Tab

This topic describes how to fill in the **Description** tab in the **Selected Configuration Layout** panel when you create a template definition.



Before you begin, review “Defining the Operator’s View” on page 157, “Creating Configuration Pages for a Device Template Definition” on page 160, and “Filling in the General Tab” on page 166.

The **Description** tab enables you to add descriptive text to help the operator enter the correct data. When the operator creates a template, he or she can view your description or explanation by clicking the little Information icon to the right of the parameter. A pop-up appears, displaying the content you entered in the **Description** field.



To fill in the **Description** tab:

1. In the **Selected Configuration Layout** panel, select a configuration option. It can be the same option for which you have just filled out the **General** tab, or any other option.
2. Click the **Description** tab to display it.
3. In the **Description** field, enter [additional] descriptive text for the selected configuration option, or leave the default text, if desired.
4. To save your the description, move to another tab or another option, or click **Next**.

**Related
Documentation**

- Defining the Operator's View on page 157
- Creating Configuration Pages for a Device Template Definition on page 160
- Filling in the General Tab on page 166
- Filling in the Validation Tab on page 172
- Creating a Device Template on page 198

Defining the Content the Operator Enters

This topic describes how you define the content the operator can enter into the template.

When you define fields in which you intend the operator to enter content, you usually restrict or limit that content in order to prevent validation errors during deployment. For example, if you define a field that you label **Hostname**, you could use a regular expression to prevent the operator from entering anything other than an IP address (see "Filling in the Validation Tab" on page 172). Another situation might be when a particular attribute allows values A/B/C/D/E, but you want templates that allow only values A/C.



TIP: Remember that the definition is just the "template of the template." Therefore in the definition you only need to set up one Primary Resolver, for example, because it is during template creation that the number of actual instances will be determined.

After you have filled out the tabs (**General**, **Description**, **Validation**, **Advanced**) for your configuration options, specify the default values for the configuration parameters.

Specify default values for configuration parameters Operator View

Add_LdapSvr >> Ldap_server >>

Lightweight Directory Access Protocol server options

Id	Name	Port	Retry	Source address	Timeout
1	245.1.1.100	389	3	245.1.1.254	5

No Validation Error

Back Next Finish Cancel

The **Specify default values for configuration parameters** page of the template definition shows the parameter fields the operator sees. The parameters shown are for the table data type, so table rows can be added, edited, and deleted (see “Specifying Default Values for Configuration Options” on page 183). If you have specified that the option (for example, LDAP server) and its parameters are editable (see “Filling in the Advanced Tab” on page 176), the operator sees the same page as you do, and the operator can also add, edit, and delete table rows. If you specify that the option is hidden, the **Operator View** shows nothing.

When you add a row, the fields shown as column headings on the **Create Definition** page display as a list of fields.

Specify default values for configuration parameters Operator View

Add_LdapSvr >> Ldap_server >> Ldap_server [new] >>

Lightweight Directory Access Protocol server options Save Undo

Name:

Port: 389

Retry: 3

Source address:

Timeout: 5

Again, the fields that the operator sees are determined by your settings on the **Advanced** tab on the previous page. The operator’s ability to edit the fields is also dependent on

the **Advanced** tab settings. What the operator can enter in the fields is determined by your **Validation** tab settings. Clicking the little blue Information icon to the far right of each option on this page displays a pop-up with the information from the **Description** tab.

Click **Save** at any time to save your draft. Also, if you click **Back** or move to another page, you are prompted to save your draft.



NOTE: Do not use your browser's **Back** and **Forward** buttons to navigate in **Device Templates**.

Related Documentation

- Specifying Default Values for Configuration Options on page 183
- Junos OS Configuration Hierarchy Reference on page 154

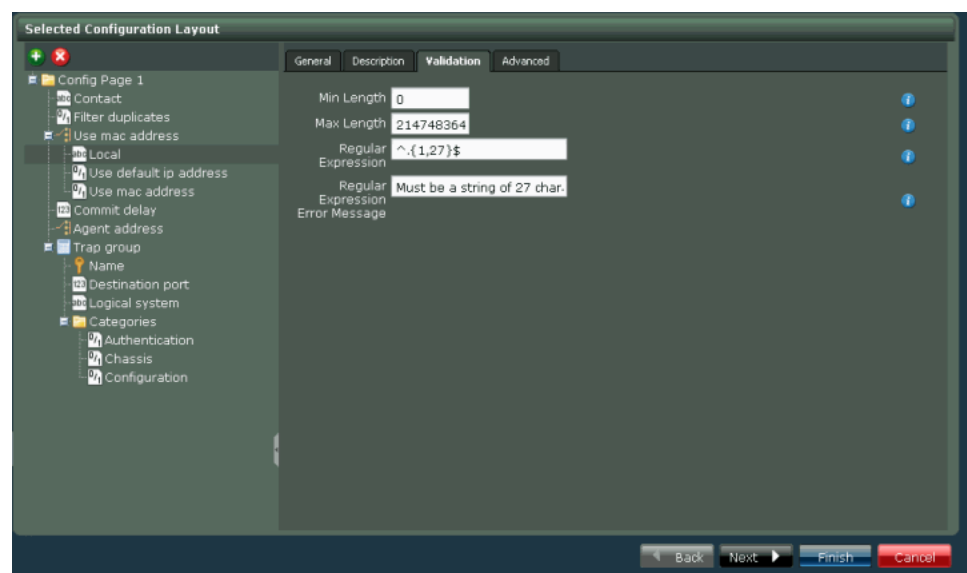
Filling in the Validation Tab

This topic describes how to fill in the **Validation** tab in the **Selected Configuration Layout** panel when you are creating a template definition. Both the template definition and the template must be valid before they can be respectively used and deployed.

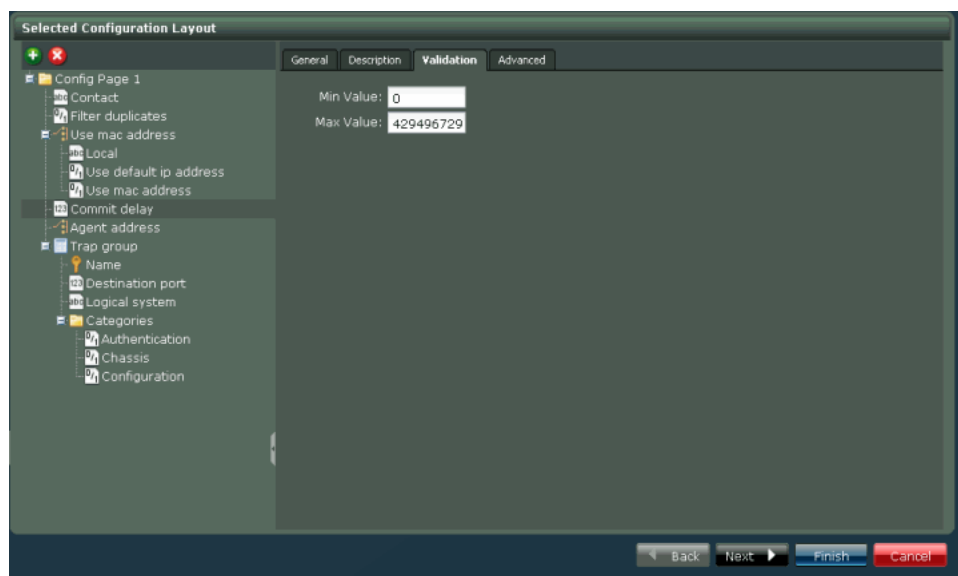
Before you begin, review “Defining the Operator’s View” on page 157 and “Creating Configuration Pages for a Device Template Definition” on page 160.

The **Validation** tab displays the validation criteria for the selected configuration option, if relevant. These criteria are determined by the option’s data type: string, integer/number, table, container, choice, or enumeration.

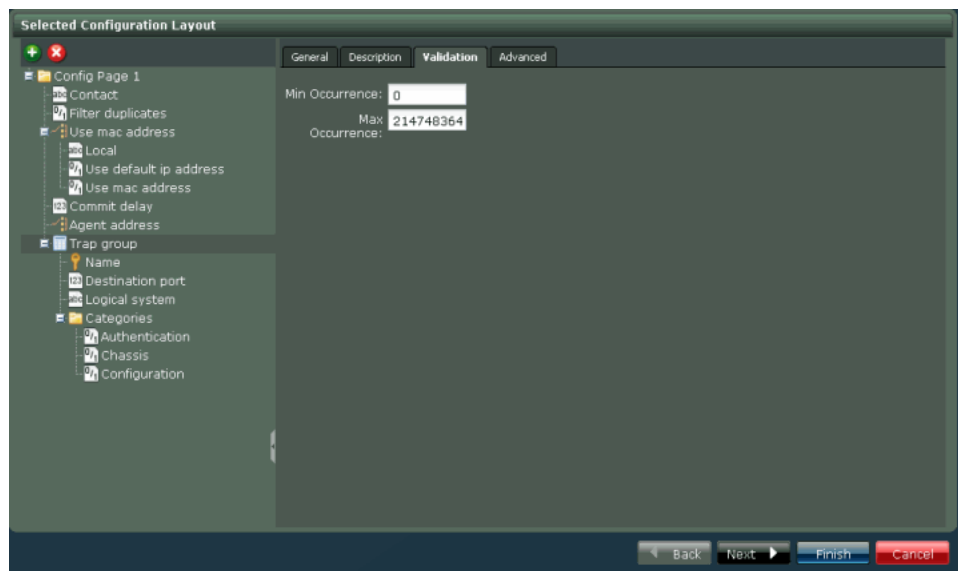
The following screen capture shows the validation tab for a string.



The next screen capture shows the Validation tab for the integer/number data type.



The following shows the Validation tab for the table data type.



For a table showing data type correlated to validation criteria, see “Defining the Operator’s View” on page 157.



NOTE: If values are already displayed on the validation tab, note that they provide the limits within which you or the operator must remain when you set the default values for the current device template definition (see “Specifying Default Values for Configuration Options” on page 183). The operator only sees the validation criteria and their values if you supply them when you create an error message (see “Composing Error Messages” on page 175).

You do not always need to enter anything on the **Validation** tab. However, in certain cases, input is mandatory, for example when a hostname is to be validated.

To fill in the **Validation** tab:

1. In the **Selected Configuration Layout** panel, select a configuration option of the appropriate type. It can be the same option for which you have just filled out the **General** and the **Description** tabs, or any other option for which validation is relevant.
2. Click the **Validation** tab in the **Create Definition** page.
3. Enter the parameters for the option in the appropriate fields.

If the fields already display default values and you change them, ensure that your values do not exceed the default values.

4. (Optional) For a string, in the **Regular Expression** field, enter a regular expression to further constrain what the operator can enter.
5. (Optional) For a string, compose an error message.

This is not a validation parameter but instead a clue to enable the operator to enter correct field data. See “Composing Error Messages” on page 175.

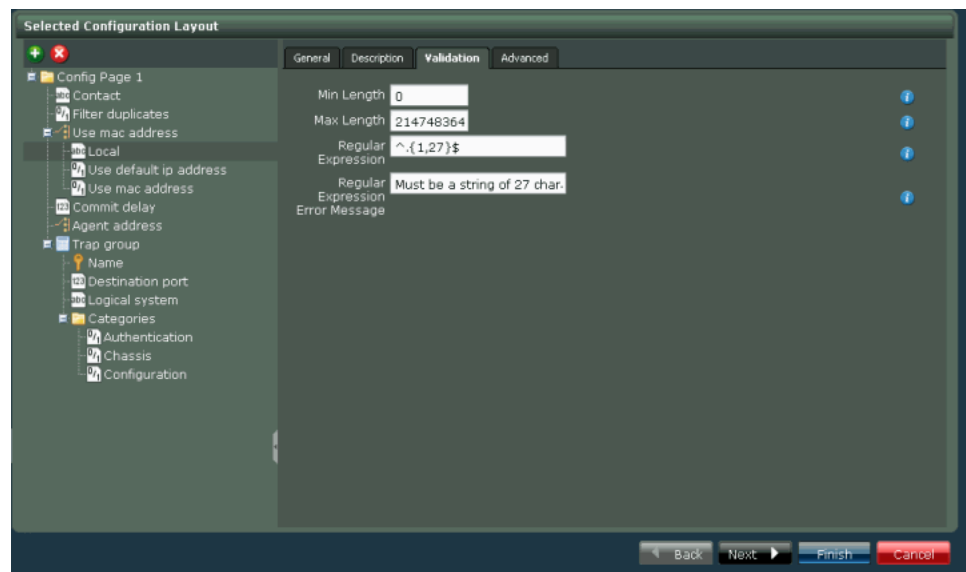
6. To save your entries, select another tab or another option, or click **Next** or **Finish**.

Related Documentation

- Defining the Operator’s View on page 157
- Creating Configuration Pages for a Device Template Definition on page 160
- Filling in the General Tab on page 166
- Creating a Device Template on page 198
- Filling in the Description Tab on page 169
- Composing Error Messages on page 175

Composing Error Messages

This topic describes how to create an error message that is displayed when an operator enters invalid content in a template field. Composing an error message is optional, but very helpful for ensuring that operators are successful in creating templates. You cannot enter an error message if you have not entered a regular expression.



Before you begin, review “Filling in the Validation Tab” on page 172, “Defining the Operator’s View” on page 157, and “Creating Configuration Pages for a Device Template Definition” on page 160.

The **Regular Expression Error Message** field on the **Validation** tab appears only if you configure an option of the string data type.

To fill in the **Regular Expression Error Message** field on the **Validation** tab:

1. In the **Create Definition** page, in the **Selected Configuration Layout** panel, select a configuration option of the string data type. It can be the same option for which you have just filled out the **Validation** tab, or any other option of the string data type.
If you select another option, the **General** tab appears.
2. If it is not already on top, select the **Validation** tab.
3. In the **Regular Expression Error Message** field, enter an error message that explains the meaning of the regular expression you entered on this tab, so that the operator understands how to correct his or her input. For example, for `^[a-zA-Z0-9_]*$` you might provide the following error message: **Enter only upper and lowercase letters, numbers, and underscores.**
4. To save your entries, move to another tab or another option, or click **Next** or **Finish**.

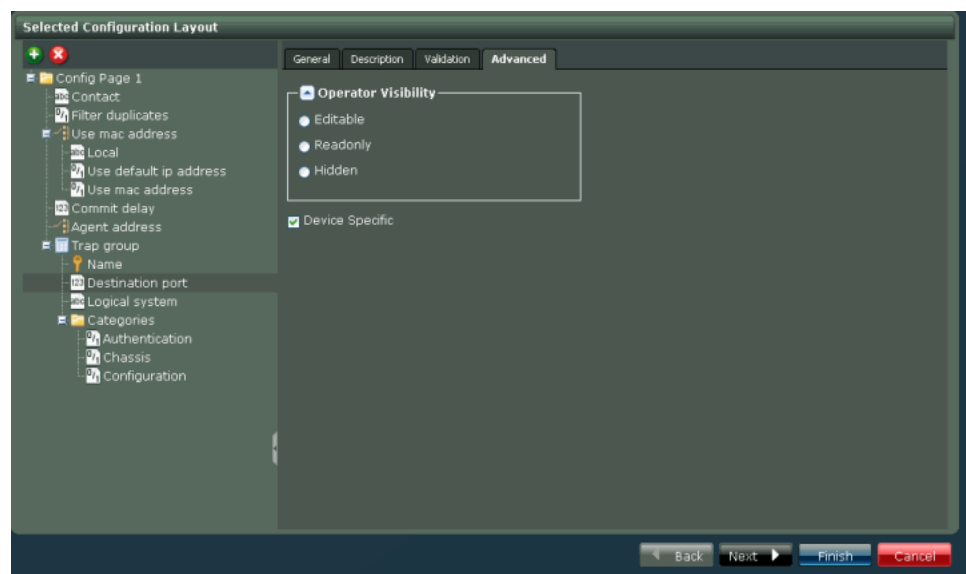
Related Documentation

- Filling in the Validation Tab on page 172
- Defining the Operator's View on page 157
- Creating Configuration Pages for a Device Template Definition on page 160
- Filling in the General Tab on page 166
- Creating a Device Template on page 198

Filling in the Advanced Tab

This topic describes how to fill in the **Advanced** tab in the **Selected Configuration Layout** panel when you are creating a template definition. The settings on this tab determine whether the operator can see the selected option or edit its values.

Before you begin, review “Defining the Operator’s View” on page 157 and “Creating Configuration Pages for a Device Template Definition” on page 160. The **Advanced** tab does not display for all data types.



To fill in the **Advanced** tab:

1. Navigate to the **Advanced** tab in the **Create Definition** page.
2. In the **Selected Configuration Layout** panel, select a configuration option. It can be the same option for which you have just filled out other tabs, or any other.
If it is not already visible, the **General** tab appears.
3. Select the **Advanced** tab.
4. Select **Editable**, **Readonly**, or **Hidden**, depending on how you want the operator to interact with the option.

5. (Optional) To mark this configuration option as device-specific, click the **Device Specific** check box. For more information on this, go to step 4 ff of “Specifying Device-Specific Data in Definitions” on page 177.
6. To save your entries, select another tab or another option, or click **Next** or **Finish**.

The next task in this sequence is “Specifying Default Values for Configuration Options” on page 183.

Related Documentation

- Defining the Operator’s View on page 157
- Creating Configuration Pages for a Device Template Definition on page 160
- Defining the Content the Operator Enters on page 170
- Creating a Device Template on page 198
- Using Rules Overview on page 180

Specifying Device-Specific Data in Definitions

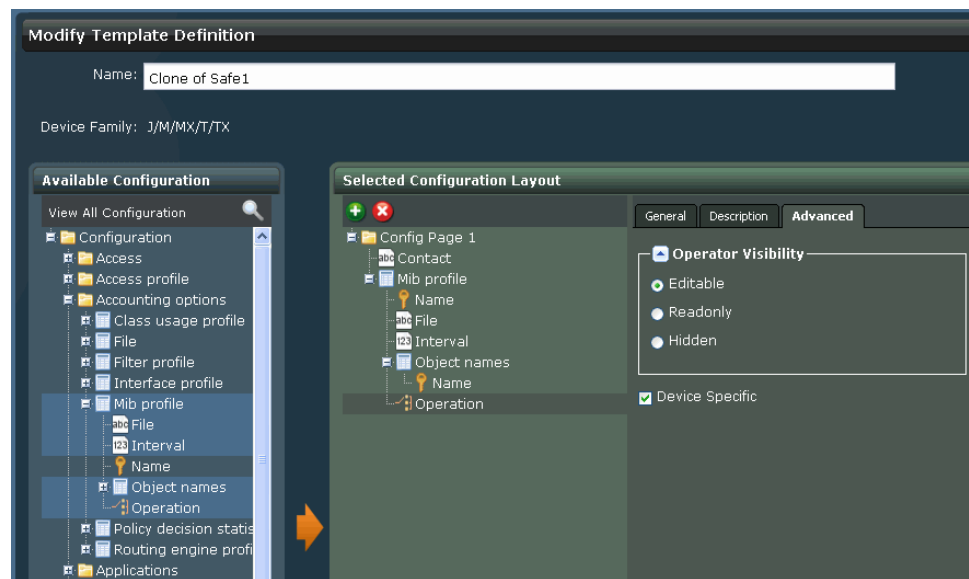
You can use a comma-separated value (CSV) file to provide device-specific values in a template definition. For example, the designer can use a CSV file to specify the SNMP contact as shown.

	A	B	C	D	E	F	G	H
1	device	contact	ip					
2	SanDiego	sd-contac	123.123.123.123					
3	Sacremen	sac-conta	123.123.123.124					
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								

Each device can have only one row. If you want to specify multiple values for individual devices, use one row per device, and as many columns as necessary for the different values. In the example illustrated above, if you wanted to specify interfaces in addition to the contact and the IP address, you would simply add a column for each interface.

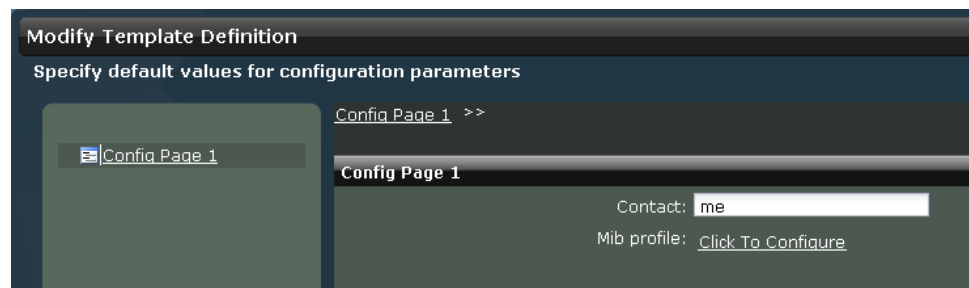
To use a CSV file to set device-specific values in a template definition:

1. Navigate to **Platform > Device Templates > Manage Definitions > Create Definition**.
The **Create Definition** page appears.
2. Add the configuration option for which you want to supply device-specific values (for instructions on adding an option, see “Creating a Device Template Definition Overview” on page 153).
3. Click the **Advanced** tab.
4. Select the Device Specific option.



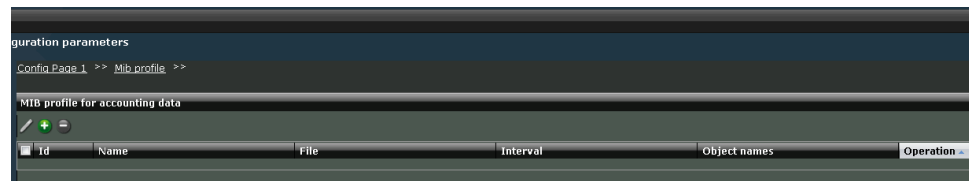
5. Click **Next**.

You see the device-specific value link if it is not buried in a table, for example. If you find the link immediately in the next screen, skip to Step 6. In the example illustrated in Step 4, note that the **Device Specific** check box applies to the **Operation** configuration option, which is a child of the MIB profile. Therefore clicking the **Next** button shows only a link for configuring the MIB profile, as shown.

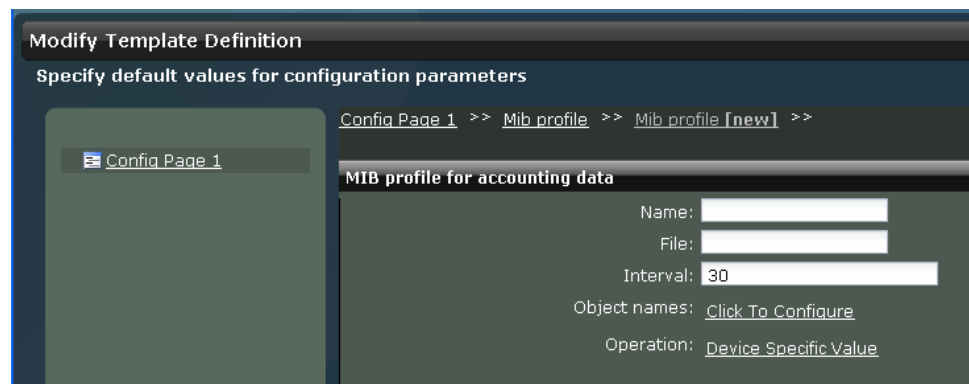


To see the device-specific value link, drill down into the MIB profile by clicking **Click to Configure**.

This reveals the table where the **Operation** option appears as a column heading, along with the other children of the MIB profile, as shown.

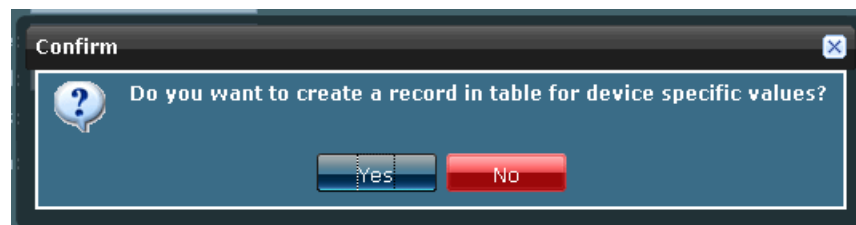


In the example illustrated, click the **Add** button above the table to display the **Device Specific Value** link next to the **Operation** label.



6. Click the **Device Specific Value** link.

In the example illustrated, where the device-specific value is in a table, the **Confirm** dialog box appears. Click **Yes**.



The **Configure Device Specific Values** dialog box appears.

7. Click **Please select a CSV file**.

The **Manage CSV files** dialog box appears.

Use the **Manage CSV files** dialog box to navigate and upload CSV files from the local file system. Select a CSV file to view its contents in the preview pane on the right.

8. Click **Upload**.

The **CSV Upload** dialog box appears.

9. Navigate to the CSV file that you want to use.

10. Click **Upload**.

11. In the **Manage CSV files** dialog box, preview the CSV file.

Select the CSV file in the left pane. The file contents appears in the right pane.



12. Specify the column and the key column in the CSV file.

For **Column** select the column with node values, and for **Key Column** select the column with device hostname.

13. Click **OK**.

14. Click **Finish**.

The template definition is automatically published.

An operator can now create a template from the template definition and deploy the template).

Related Documentation

- Filling in the Advanced Tab on page 176
- Creating a Device Template Definition Overview on page 153
- Defining the Operator's View on page 157
- Defining the Content the Operator Enters on page 170
- Creating a Device Template Overview on page 198
- Creating a Device Template on page 198
- Deploying a Device Template to a Device on page 201

Using Rules Overview

Device Templates uses rules to supplement the device-specific value capability supplied by CSV files.

You can use rules in addition to CSV files, or instead of CSV files.

The system resolves device specific values by first checking the CSV file and then the rules. If both the CSV file and the rules return a value, the CSV file takes precedence. If neither the CSV file nor the rules return a value, deployment validation will fail. If a rule cannot provide the requisite value, the operator will be prompted to enter it at deployment.

Related Documentation

- Working with Rules on page 181
- Managing CSV Files Overview on page 147

- Filling in the Advanced Tab on page 176
- Specifying Device-Specific Data in Definitions on page 177
- Creating a Device Template Definition Overview on page 153
- Creating a Device Template Overview on page 198

Working with Rules

Specify rules to resolve device specific values at the time of deployment. Rules are applied in the order shown. You can change the order as necessary.

You can create rules for devices whose names start with a specific word, or rules for devices with a specific tag.

For the selected configuration option, on the **Advanced** tab, select the **Device Specific Value** check box to trigger the **Device Specific Value** dialog.

After “Filling in the Advanced Tab” on page 176 continue with “Specifying Device-Specific Data in Definitions” on page 177.

You can add, edit, move, and delete rules. Instructions for all of these actions follow.

You can only select one rule at a time. If no rule is selected, only the **Add** button is enabled.

To add a rule:

1. In the **Device Specific Value** dialog, select the check box to the left of **Specify rules to resolve the value at deploy time**.

The rules section of the dialog is activated, displaying the name of the configuration option for which you are setting a device specific value.

2. Click the **[+]** icon.

Two options appear:

- Rule matching tagged device
- Rule matching device name.

3. Select the appropriate option.

A rule appears, depending on your selection in the previous step, either of the following:

- Set to a specific value for devices tagged with a specific tag
- Set to a specific value for devices with name starting with a specific word.

In both cases, the phrase “a specific value” is a link, as are “a specific tag” and “a specific word.”

4. Click either **a specific tag** or **a specific value**.

The **Set \$dsdv** field appears.

5. Enter the appropriate value in the field.

If the value you enter is not valid, an error message appears in the form of a tool tip explaining why the entry is invalid.

6. To save your input, click the **OK** button. To clear your input, click the **[X]** button.

The rule reappears, this time with your input replacing the link.

7. (Optional) To change the sequence of in which the rules will be applied, select a rule and click either the up arrow icon or the down arrow icon.

The selected rule moves to the new position.

8. (Optional) To delete a rule, select the rule and click the **[X]** button.

The selected rule disappears.

9. (Optional) To clone a rule, select the rule and click the last icon on the right, next to the down arrow.

A clone of the selected rule appears.

10. (Optional) Refresh the rules display by clicking the Refresh icon in the lower bar of the Rules section of the Device Specific Value dialog.

11. When you have finished working with rules, close the Device Specific Value window by clicking **Close**.

**Related
Documentation**

- Using Rules Overview on page 180
- Managing Device Template Definitions Overview on page 152
- Creating a Device Template Definition Overview on page 153
- Defining the Content the Operator Enters on page 170
- Creating a Device Template Overview on page 198

Specifying Default Values for Configuration Options

This procedure assumes you have performed the tasks described in “Defining the Operator’s View” on page 157.

This topic describes how to specify default values for configuration options that the operator sees when using the definition to create a template.

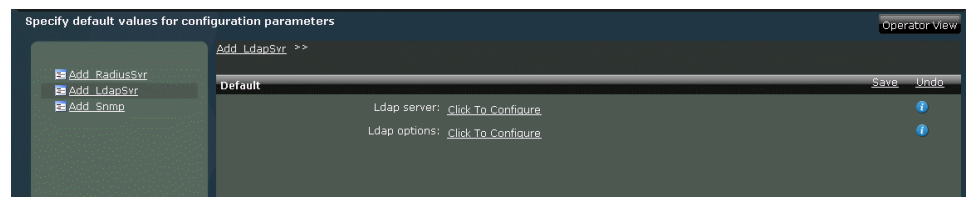
If you choose not to enter default values, the operator must decide what values to enter when creating a template.

The default values appear when the template is actually being created or edited. You can make these values editable, read-only, or hide the entire setting. In this last case, the operator would see neither the default value nor even the parameter itself.

To specify default values for configuration parameters:

1. In the **Specify default values for configuration parameters** page, on the left, select one of your configuration pages.

To the right a breadcrumb of that name appears, and in the panel under that, the options you added to the page on the **Create Definition** page.



2. To display the fields for the default values, click **Click To Configure**.

The layout of the fields on the page varies depending on the data type of the configuration option you selected. For more details, see “Defining the Operator’s View” on page 157.

The screen shows the default configuration parameters for an option of the table data type.

Specify default values for configuration parameters

Add_LdapSvr >> Ldap server >>

Operator View

Add_RadiusSvr
Add_LdapSvr
Add_Snmp

Lightweight Directory Access Protocol server options

Id	Name	Port	Retry	Source address	Timeout
1	245.1.1.100	389	3	245.1.1.254	5

No Validation Error

Back Next Finish Cancel

3. To add a row to a table, click the plus sign (+).

The fields for the options displayed in the previous view appear. Whether the operator can edit the option values depends on the settings you made on the **Advanced** tab (see “Filling in the Advanced Tab” on page 176).

To remove a row from a table, select the row and click the minus sign (-). To edit a table row, select the row and click the pencil icon (looks like a diagonal line).

Specify default values for configuration parameters

Add_LdapSvr >> Ldap server >> Ldap server [new] >>

Operator View

Add_RadiusSvr
Add_LdapSvr
Add_Snmp

Lightweight Directory Access Protocol server options

Name:

Port:

Retry:

Source address:

Timeout:

Save Undo

Back Next Finish Cancel

No Validation Error

As you drill down, successive breadcrumbs appear, with the names of the options you clicked to configure, enabling you to navigate through multiple configuration option levels. The operator also sees these breadcrumbs.

4. Enter the data, as appropriate.



TIP: You may click **Back** to review your settings on the **Advanced** tab. Any field that you have marked as editable can remain empty, but do not leave hidden and read-only fields empty.

If you enter an invalid value in a field, a little red exclamation mark icon appears. Click the icon to find out what the value should be. The same icon is also visible to the operator when creating a template.

Click the blue Information icon on the far right of each setting to view the explanatory text you entered for the operator on the **Description** tab.

5. To verify what the operator sees, click **Operator View**.

To return to the designer view, click **Designer View**.

Repeat these steps as necessary with all your configuration options.

6. To complete specifying default values, click **Finish**.



Related Documentation

- Junos OS Configuration Hierarchy Reference on page 154
- Filling in the General Tab on page 166
- Filling in the Description Tab on page 169
- Filling in the Validation Tab on page 172
- Composing Error Messages on page 175
- Filling in the Advanced Tab on page 176
- Specifying Device-Specific Data in Definitions on page 177

Publishing and Unpublishing a Device Template Definition

In the lifecycle of a definition there are two states. Table 18 on page 185 shows the icons that indicate the states of a template definition.

Table 18: Template Definition States

Icon	Description
	Unpublished template definition. When you finish creating a definition, it is automatically published and available to operators.
	Published template definition To make a template definition unavailable to operators, you must unpublish it. You must also unpublish a definition before you can modify or delete it.



NOTE: If you unpublish a definition that is already being used as the basis for templates, all templates based on that definition are disabled. Republishing the definition alone is not enough to re-enable the templates. The templates must be reviewed before they can be re-enabled (see “Managing Device Templates Overview” on page 195).

1. To view all template definition states, select **Platform > Device Templates > Manage Definitions**.

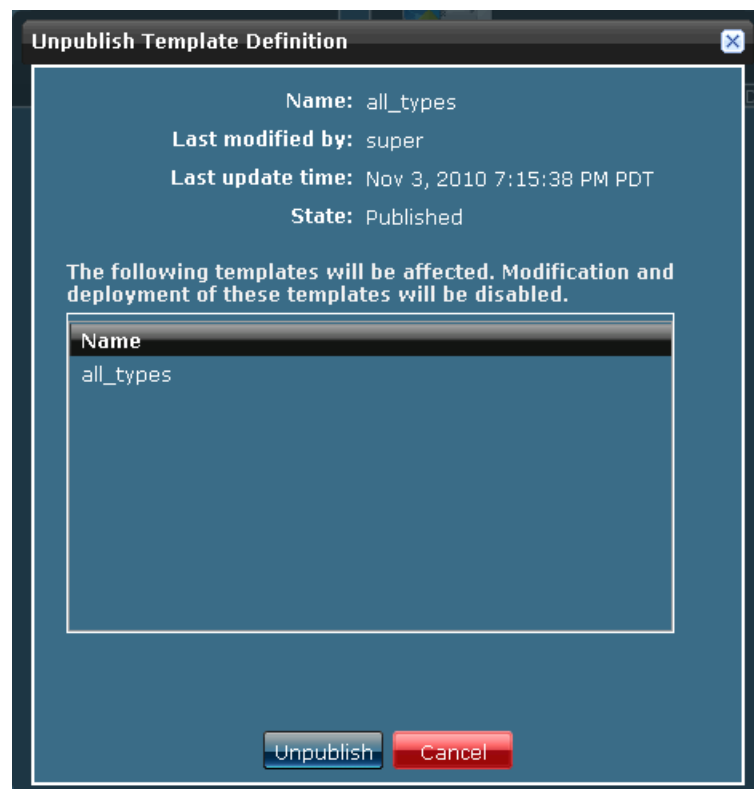


TIP: To use an existing published definition as the basis for a new definition, clone the existing definition and make your modifications to the clone (see “Cloning a Device Template Definition” on page 187).

To publish a template definition:

1. Navigate to **Manage Definitions**, and select the definition.
2. Either mouse over the **Actions** drawer to select **Publish** or **Unpublish**, or select the appropriate command from the object right-click pop-up menu.

If you try to unpublish a definition already being used for templates, the **Unpublish Template Definition** dialog notifies you that in unpublishing, you will disable those templates, and prompts you to confirm you want to do this.



Related Documentation

- Cloning a Device Template Definition on page 187
- Modifying a Device Template Definition on page 187
- Changing Device Template Definition States on page 209

Modifying a Device Template Definition

You can modify a template definition only when it is unpublished.

To modify a published definition, you must first unpublish it (see “Publishing and Unpublishing a Device Template Definition” on page 185).

When you modify a template definition, you cannot change the device family. Also, by default, the same OS and schema versions are used as in the original template definition.

When you modify a template definition, you cannot change any existing pages. You can only add additional pages.

To modify a template definition:

1. Navigate to **Manage Definitions**, and select the definition by clicking on its check box.
2. Either mouse over the **Actions** drawer to select **Modify**, or select **Modify** from the right-click menu.
3. To make the modified definition available to operators, publish it.



NOTE: Because you must unpublish a definition before modifying it, any templates based on that definition are disabled. After you modify a definition and republish, templates based on that definition are not automatically re-enabled. The status of the affected templates is **Needs Review**.

Related Documentation

- Publishing and Unpublishing a Device Template Definition on page 185
- Cloning a Device Template Definition on page 187
- Deleting a Device Template Definition on page 188
- Importing a Device Template Definition on page 189
- Exporting a Device Template Definition on page 190

Cloning a Device Template Definition

Cloning a template definition is the same as copying it. If you want to copy a definition from one Junos Space fabric to another, however, you must import or export it.

To modify a template definition without disabling templates based upon that definition, first clone the definition, then modify the clone.

Unlike the **Modify** function, the **Clone** function does not require that a definition be unpublished.

When you clone a template definition, you cannot change the device family or any existing pages.

To add additional pages, modify the clone (see “Modifying a Device Template Definition” on page 187).

To clone a template definition:

1. Navigate to **Manage Definitions**, and select the definition by clicking on its check box.
2. Either mouse over the **Actions** drawer to select **Clone**, or select **Clone** from the right-click menu.

The new definition appears, named **Clone of ...**

3. To make the cloned definition available to operators, publish it (see “Publishing and Unpublishing a Device Template Definition” on page 185).

Related Documentation

- Deleting a Device Template Definition on page 188
- Modifying a Device Template Definition on page 187
- Publishing and Unpublishing a Device Template Definition on page 185
- Importing Device Template Definitions Overview on page 189

Deleting a Device Template Definition

You can delete a template definition only when it is unpublished. This status is indicated by an appropriate icon. A different icon indicates a published definition.

To delete a published definition, you must first unpublish it (see “Publishing and Unpublishing a Device Template Definition” on page 185). When you unpublish a definition, any templates based on that definition are disabled. When you delete a definition, all templates based on that definition are permanently disabled. They can therefore be neither modified nor deployed.

To delete a template definition:

1. Navigate to **Manage Definitions**, and select the definition.
2. Either mouse over the **Actions** drawer to select **Delete**, or select **Delete** from the right-click menu.



TIP: Ensure that you have a plan in place before you delete a definition that is being used for templates. All templates based on a deleted definition are disabled.

Related Documentation

- Publishing and Unpublishing a Device Template Definition on page 185
- Cloning a Device Template Definition on page 187
- Modifying a Device Template Definition on page 187
- Changing Device Template Definition States on page 209

Importing Device Template Definitions Overview

The Import Definition facility in Device Templates enables you to import template definitions from xml files and export template definitions to xml files. You can therefore send definitions to other parties and or transfer definitions from one Junos Space fabric to another.

A definition retains its state when it is exported or imported: published definitions that are exported also appear as published when they are imported. Therefore, if you import a definition that was published, but do not want it to be available to operators, you must unpublish it either before you export it or immediately after importing it.

Related Documentation

- Exporting a Device Template Definition on page 190
- Importing a Device Template Definition on page 189
- Publishing and Unpublishing a Device Template Definition on page 185
- Managing Device Template Definitions Overview on page 152

Importing a Device Template Definition

Importing a template definition enables you to transfer a definition from another Junos Space fabric.

A template definition is based on a specific OS version, or DMI schema. If the definition you import is based on a schema that is not found, the definition is set to the default DMI schema assigned to the device family to which the definition applies. If you have not set default schemas for your device families, Junos Space defaults to the most recent schema for each.

Before you begin, make sure you have access to a template definition file. Although it is an xml file, the system expects to find it packed into a .tgz file, which is the way the system exports .xml files (see “Exporting a Device Template Definition” on page 190).

To import a template definition:

1. From the task ribbon, select the Device Templates workspace, and then click the Manage Definitions icon. From the task ribbon, click the Import Definition icon.

The **Import Definition** dialog appears.

2. Click **Browse**.

The **File Upload** window opens.

3. Navigate to the appropriate file, select it, and click **Open**.

The **Import Definition** dialog reappears, displaying the name of the selected file in the **Definition File** field.



NOTE: Under some circumstances, when the **Import Definition** dialog reappears, it displays a message beginning **Confirm name mapping of**. This message serves as a warning that the system has changed:

- The name mapping on the CSV file associated with the imported definition, or
- The name of the definition itself.

4. Click **Import**.

The **Manage Template Definitions** page reappears, displaying the newly imported template definition.

The newly imported definition has the same name as the original definition, so you may wish to use the **Modify** command to rename it.

Related Documentation

- Importing Device Template Definitions Overview on page 189
- Exporting a Device Template Definition on page 190
- Modifying a Device Template Definition on page 187
- Managing Device Template Definitions Overview on page 152

Exporting a Device Template Definition

Exporting a template definition enables you to transfer it to another Junos Space fabric.

Before you begin, you must have a template definition already created.

To export a definition:

1. From the **Manage Template Definitions** page, select the definition to export.
2. Hover over the **Actions** drawer and select **Export** or right-click the definition and select **Export**.

The **Export Template Definition** window appears.

3. Click **Download file for selected template definitions (tgz format)**.

The **Opening xxx.tgz** window appears. (XXX is a placeholder for the name of the definition.)

4. Select **Save File** and click **OK**.

You may have to toggle between the radio buttons to activate the **OK** button.

The **Enter name of file to save to ...** dialog appears.

5. Rename the file if desired and save it to the appropriate location.

The **Export Template Definition** dialog reappears.

6. Click **Close**.

Although the exported definition file is an .xml file, it is saved as a .tgz file, which is the format the system uses to import xml files.

You can now import the definition into another Junos Space fabric.

**Related
Documentation**

- [Importing Device Template Definitions Overview on page 189](#)
- [Importing a Device Template Definition on page 189](#)
- [Cloning a Device Template Definition on page 187](#)
- [Managing Device Template Definitions Overview on page 152](#)

PART 5

Device Templates

- [Templates on page 195](#)

Templates

- Managing Device Templates Overview on page 195
- Creating a Device Template Overview on page 198
- Creating a Device Template on page 198
- Deploying a Device Template to a Device on page 201
- Modifying a Device Template on page 202
- Deleting a Device Template on page 203
- Viewing Device Template Inventory on page 204
- Viewing Device Template Statistics on page 204

Managing Device Templates Overview

The **Manage Templates** page gives you access to the entire template workflow.

The **Manage Templates** inventory page enables you to view the Junos OS device templates created to deploy configuration changes to multiple Juniper Networks discovered devices simultaneously. Device templates are derived from device template definitions created by a designer, who assigns the template operator certain configuration settings to configure, review, or validate as necessary, and then deploy.

Device templates appear as icons in the **Manage Templates** thumbnail view and as rows in a table in tabular view.

From **Platform > Device Templates > Manage Templates**, you can create , deploy, modify, or delete device templates.






NOTE: Do not use your browser's **Back** and **Forward** buttons to navigate in **Device Templates**.

Template States

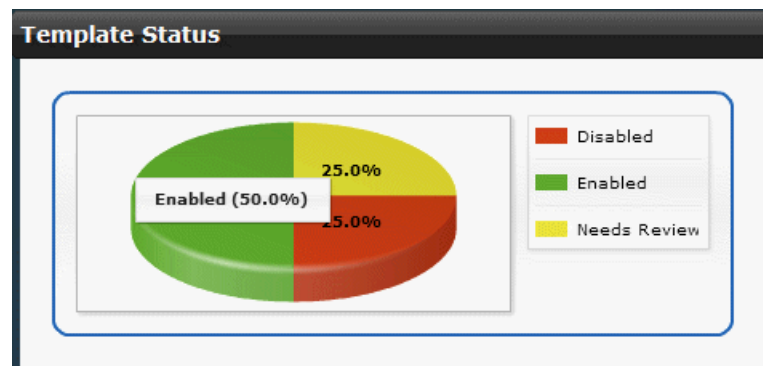
Device templates have several states that are identified by icon indicators in the **Manage Templates** inventory page in thumbnail view. In tabular view these states are indicated in the State column of the table: review, disabled, and enabled—ready to deploy. The title and description tell you how to manage the device template. See Table 19 on page 196.

Table 19: Device Template State Icon Indicators

State Icon	Description
	Needs Review—The device template cannot be deployed until you review it. This state is triggered by a designer modifying the definition on which the template is based. That template is then automatically moved into the Needs Review state.
	Disabled—The device template cannot be deployed. This state is triggered by the designer unpublishing the definition upon which a template is based. That template is then automatically disabled.
	Enabled—The device template can be deployed. As soon as you finish creating a template, it is enabled automatically.

Filtering and Searching Templates

You can filter the view of the device templates by state using the **Platform > Device Templates** statistics page. A quick way to view which templates you need to review, modify, or deploy is to click the status type in the Template Status pie chart—Disabled, Enabled, Needs Review. The **Manage Templates** inventory page appears filtered by the state you selected.



You can also search for templates by name using the Search field at the top-right in the **Manage Templates** inventory page. If you start typing a template name in the Search field, you see the name in the **Search Name** list.

Device Template Detailed Information

To view detailed template information in the **Manage Templates** inventory page in thumbnail view, click the **Details** link or double-click the template. In tabular view, template detailed information displays in the table columns. Table 20 on page 196 describes the device template detailed information.

Table 20: Descriptive Information

Information	Description
Name	Unique name for the template.

Table 20: Descriptive Information (*continued*)

Description	Description of the device template.
Device Family	Refers to the Juniper Networks DMI Schema, for example J/M/MX/T/TX.
Last Modified By	Login name of the operator who last modified the template.
Last Update Time	Time when the template was last updated.
State	Template deployment readiness: needs review, disabled, or enabled.

Template Actions

From the **Manage Templates** inventory page, you can perform the following actions:

Create Template—See “Creating a Device Template” on page 198.

Deploy Template—See “Deploying a Device Template to a Device” on page 201.

Modify Template—See “Modifying a Device Template” on page 202.

Delete Template—See “Deleting a Device Template” on page 203.

Tag It—See “Tagging an Object” on page 432.

View Tags—See “Viewing Tags” on page 433.

UnTag It—See “Untagging Objects” on page 433.

Clear All Selections—All selected device templates on the **Manage Templates** inventory page are deselected. This action works the same as the **Select: None** link to the left of the Search field.

Related Documentation

- Creating a Device Template Overview on page 198
- User Privileges in Device Templates on page 209
- Deploying a Device Template to a Device on page 201
- Modifying a Device Template on page 202
- Deleting a Device Template on page 203
- Creating a Tag on page 431
- Tagging an Object on page 432
- Viewing Tags on page 433
- Untagging Objects on page 433

Creating a Device Template Overview

Device templates enable you to update the configuration committed on multiple Juniper Networks devices in one mechanism. Deploying device templates from Junos Space saves time and reduces the risk of errors, especially when you are responsible for updating the configuration on a large number of devices in the same network when many of the configuration parameters are the same.

The Junos Space device templates user interface is based upon Juniper Network device family schemas. The Device Management Interface (DMI) enables Junos Space to connect with and configure Juniper Networks devices.

This topic covers template creation. Template definitions must be available before you can create any templates.

Ensure that you have the appropriate user permissions before undertaking any of these tasks (see “User Privileges in Device Templates” on page 209).



NOTE: Do not use your browser’s **Back** and **Forward** buttons to navigate in **Device Templates**.

Related Documentation

- Creating a Device Template on page 198
- Deploying a Device Template to a Device on page 201

Creating a Device Template

Device templates enable operators to update the Junos OS configuration running on multiple Juniper Networks devices at once. Operators can create and deploy device templates (based on definitions created by designers) from **Platform > Device Templates > Manage Templates**.

Before you begin, ensure that you have the appropriate permissions (see “User Privileges in Device Templates” on page 209).



NOTE: Do not use your browser’s **Back** and **Forward** buttons to navigate in **Device Templates**.

To create a template, complete these main tasks, in order:

1. Selecting a Device Template Definition on page 199
2. Naming and Describing a Device Template on page 199
3. Entering Data and Finishing the Device Template on page 200
4. Deploying the Device Template on page 201



NOTE: Do not use your browser's **Back** and **Forward** buttons to navigate in **Device Templates**.

1. Selecting a Device Template Definition on page 199
2. Naming and Describing a Device Template on page 199
3. Entering Data and Finishing the Device Template on page 200
4. Deploying the Device Template on page 201

Selecting a Device Template Definition

The Select Template Definitions inventory page enables you to select a template definition from which to create a device template.

You can view the details of the template definition by clicking on the **Details** button on each definition icon in the image view, or by looking at the grid view.

Operators cannot create or change template definitions, only templates themselves. You can regard the device template as an instance of a template definition. You can only make changes to the configuration parameters in your template if the designer has made them editable.

To select a template definition:

1. Navigate to **Platform > Device Templates > Manage Templates > Create Templates**. The **Select Template Definition** inventory page appears.
2. Select a template definition.



TIP: Operators can only see published definitions. If you do not see a definition that you expect to see, the designer might have unpublished it.

3. Click **Next**.

The **Create Template** page appears.

Naming and Describing a Device Template

The **Create Templates** page enables you to view the definition content so that you can name and describe the template you will create from it.

To name and describe a device template:

1. On the **Create Templates** page, in the **Template Name** field, enter a name for the device template.

The template name is a required field. The template name must be unique and limited to 63 characters.

2. Enter a template description in the **Description** field.

The template description is optional and limited to 255 characters.

If you leave a required field empty, an error message prompts you to fix the error.

Entering Data and Finishing the Device Template

In your template, you can see only the parameters that the definition designer has made visible. You can edit only the parameters that the definition designer has made editable. If you are looking at a template that is in the Needs Review state, it is necessary to look at all the visible parameters, whether you can change them or not.

1. In the **Create Template** page, on the left, select a configuration page.

To the right a breadcrumb of that name appears, and in the panel under that, the configuration options.



TIP: To navigate through the configuration options on any page, click the breadcrumbs.

As you drill down, successive breadcrumbs appear, with the names of the options you clicked to configure, enabling you to navigate through multiple configuration option levels.

The layout of the fields on the page varies depending on the data type of the configuration option selected.

2. To display the fields that are not immediately evident, click **Click To Configure**.
3. (Optional) For information on the individual parameters, click the little blue information icons to the right of the configuration settings to display the explanations the designer wrote.
4. (Optional) Add any required configuration specifics.

You can change only configuration options that the definition designer made editable.



NOTE: You must click through all the settings to ensure that all necessary fields are populated.

5. To save your entries, you can:

- Click **Save**.
- Click another link or a breadcrumb.

A message appears, prompting you to confirm that you want to save.

- Click **Finish**.

6. (Optional) To delete your entries, click **Undo**.
7. (Optional) To add a row to a table, click the plus sign (+).

To remove a row from a table, select the row and click the minus sign (-). To edit a table row, select the row and click the pencil icon (looks like a diagonal line).

8. Enter the data, as appropriate.

If you enter an invalid value in a field, a little red exclamation mark icon appears. Click the icon to find out what the value should be.

9. Click **Finish**.

The template appears on the **Manage Templates** inventory page. The template details include the name, description, device family, last modified by login name, last update time, and state. The template is automatically enabled.

Deploying the Device Template

To deploy a device template to selected devices, see “Deploying a Device Template to a Device” on page 201.

Related Documentation

- Deploying a Device Template to a Device on page 201
- Modifying a Device Template on page 202
- Selecting the Device Family and Naming a Device Template Definition on page 159
- Publishing and Unpublishing a Device Template Definition on page 185

Deploying a Device Template to a Device

Deploying a device template allows the Template Administrator or operator to update the device configuration on multiple devices. Deploying a template is the second stage of creating a template. For more information about creating a template, see “Creating a Device Template” on page 198. You can deploy a template when you create it or schedule it to deploy later.



NOTE: When you select devices in a service order selection, you can select devices that are down. This is permitted because the device status could change between the time the deploy is submitted and the time the actual push is performed.

Junos Space allows you to validate the template against the device family and against the device.

To deploy a device template:

1. Navigate to **Platform > Device Templates > Manage Templates**.

The **Manage Templates** inventory page appears.

2. Right-click the template you want to deploy and select **Deploy Template** from the pop-up menu.

You can also select **Deploy Template** from the **Actions** drawer.

The **Platform > Devices > Manage Devices > Select Devices** inventory page appears, displaying Junos Space devices.

3. Select the devices to which you want to deploy the template.

4. Click **Next**.

The **Review Changes** page appears for you to review the validation result.

This is the static template validation related to the CSV file. Does the CSV file have all the device specific values? If there is an error, request that the designer fix the CSV file or ensure that the right devices have been selected to deploy the template.

The validation ensures that the template is syntactically correct against the device family.

5. Click **Validate** to test the template against the selected device.

The device validation ensures that the template is semantically correct. Junos Space performs a check on the device and displays any errors in the Device Validation Result dialog box, which lists all the devices that are affected.

6. If the device validation result is successful, click **OK**.

7. Click **Next**.

The **Deployment Confirmation** dialog box appears.

You can select the deployment options, including scheduling deployment at a later time.

If you schedule deployment at a later time, set the time and date.

If you do not schedule template deployment, the template deploys immediately.

8. Click **Finish**.

Junos Space creates a job. The **Deploy Template Job Information** dialog box appears.

9. Click the **job ID** to ensure the template deployment is successful.

10. Click **OK**.

11. If you need to troubleshoot template deployment, navigate to **Platform > Audit Logs > View Audit Logs** to review what configuration was deployed on each device.

The **Audit Log** page captures all template deployment operations.

Related Documentation

- Creating a Device Template Overview on page 198
- Creating a Device Template on page 198
- Modifying a Device Template on page 202
- Deleting a Device Template on page 203

Modifying a Device Template

Modifying a device template allows you to make changes to it before deploying.

If you need to modify the template after deployment, the Template Designer must check the template and the template definition to fix any errors. Thereafter, you must redeploy the template. For more information about deploying a template, see “Deploying a Device Template to a Device” on page 201.

You must have the appropriate user privileges before undertaking this task (see “User Privileges in Device Templates” on page 209).

A device template must be enabled for you to modify or deploy it.

To modify a device template:

1. Navigate to **Platform > Device Templates > Manage Templates**.

The **Manage Templates** inventory page appears.

2. Right-click the device template you want to modify and select **Modify Template**.

You can also select the device template and hover over the **Actions** drawer to select **Modify**.

3. Modify the template name, description, or configuration settings.
4. Click **Finish**.

Now, you can deploy the template.

If you need to modify the template after deployment, the Template Designer must check the template and the template definition to fix any errors. Thereafter, you must redeploy the template. For more information about deploying a template, see “Deploying a Device Template to a Device” on page 201

Related Documentation

- Creating a Device Template Overview on page 198
- Creating a Device Template on page 198
- Deploying a Device Template to a Device on page 201
- Deleting a Device Template on page 203

Deleting a Device Template

Deleting a device template removes it from the Junos Space database.

You need to have the appropriate user privileges before undertaking this task (see “User Privileges in Device Templates” on page 209).

1. Navigate to **Platform > Device Templates > Manage Templates**.

The **Manage Templates** inventory page appears.

2. Right-click the device template you want to delete and select **Delete Template** from the pop-up menu.

The device template disappears from the **Manage Templates** inventory page.

- Related Documentation**
- Creating a Device Template Overview on page 198
 - Modifying a Device Template on page 202

Viewing Device Template Inventory

To view Device Template inventory, in the Device Template workspace, click **Manage Templates**. The **Manage Templates** inventory page appears.

You can display templates in thumbnail or tabular views. To change the view, click the appropriate icon in the **Manage Templates** banner. You can also do the following:

- Use the Search function to find a particular template.
- Select all templates on a page, or you can deselect them.
- You can refresh the page by clicking on the Refresh icon in the status bar.
- When you have selected a template, you can perform actions on it by right-clicking it or hovering over the **Actions** drawer.

- Related Documentation**
- Deleting a Device Template on page 203
 - Deploying a Device Template to a Device on page 201
 - Modifying a Device Template on page 202
 - Tagging an Object on page 432
 - Untagging Objects on page 433
 - Viewing Device Template Statistics on page 204

Viewing Device Template Statistics

The device template statistics page shows the states of both definitions and templates, and the number of templates per device family.

All the charts are interactive. Clicking on the enabled templates part of the Template Status chart, for example, takes you directly to the page displaying that category of template.



NOTE: Do not use your browser's **Back** and **Forward** buttons to navigate in **Device Templates**.



The Device Templates statistics page displays the following information:

- **Template Status**—this pie chart shows the templates that are enabled, disabled, and needing review. The templates based on a definition that is currently in a published state are enabled. Templates based on a definition that is currently unpublished are disabled. Templates based on a republished definition are marked as needing review.
- **Template Definition Status**—this pie chart shows published and unpublished definitions (available for template creation and unavailable, respectively).
- **Template Count by Device Family**—this bar chart shows the number of templates per device family (each template can apply to only one device family).

Related Documentation

- Changing Device Template Definition States on page 209
- Viewing Device Template Inventory on page 204
- Managing Device Template Definitions Overview on page 152
- Publishing and Unpublishing a Device Template Definition on page 185

PART 6

Troubleshooting

- Troubleshooting on page 209

CHAPTER 12

Troubleshooting

- [Changing Device Template Definition States on page 209](#)
- [User Privileges in Device Templates on page 209](#)

Changing Device Template Definition States

When a designer finishes creating a template definition, that definition is automatically published by default. Designers can perform a series of operations on definitions, but to do so, they must first unpublish the definitions. Operators can see only published definitions; unpublished ones are not visible for them.

Ensure that you have the appropriate permissions before undertaking any of these tasks or operations. See “User Privileges in Device Templates” on page 209

- To be available for use by operators, template definitions must be published. Template definitions that are unpublished are not available for the creation of templates.
- Templates based on a definition that was unpublished after the templates were created are automatically disabled.
- Templates based on a definition that was unpublished and then republished are marked as needing review. They cannot be deployed before the operator reviews them.
- Templates based on a definition that has been deleted are permanently disabled.
- Templates based on a published definition that has not been unpublished in the meantime are enabled.

Related Documentation

- [Publishing and Unpublishing a Device Template Definition on page 185](#)
- [Device Template Definition Workflow on page 153](#)
- [Creating a Device Template on page 198](#)
- [Creating a Device Template Definition Overview on page 153](#)

User Privileges in Device Templates

In Junos Space Users, the two roles for Device Templates users are predefined: Template Design Manager for the definition designer and Template Manager for the operator. For

ease of use, in this documentation we refer to the Template Design Manager as the designer, and to the Template Manager as the operator.

You must have Template Design Manager privileges to create, delete, modify, and manage template definitions.

You must have Template Manager Privileges to create, deploy, delete, modify, and manage templates.

**Related
Documentation**

- [Role-Based Access Control Overview on page 317](#)

PART 7

Topology Visualization

- Topology Visualization on page 213
- Topology Discovery on page 215
- Administration on page 219

Topology Visualization

- Topology Visualization Overview on page 213

Topology Visualization Overview

Topology Visualization is a workspace where you can discover network topologies and then monitor the status of the discovered network elements.

You can access the Topology Visualization workspace by clicking **Topology Visualization** on the **Junos Space Network Application Platform** task ribbon.

The Topology Visualization workspace enables you to perform the following tasks:

- **Discover Topology**

Use **Discover Topology** to look for a network topology based on a device or subnet that you specify. When you discover a topology, Topology Visualization creates an object in the Junos Space database that represents the elements of the discovered network topology. For more information, see “Topology Discovery Overview” on page 215.

- **View Topology**

Use **View Topology** to look at information about the devices and links in the discovered network. You can choose to view this information in map view or tabular view. For more information, see “Viewing Discovered Topologies” on page 221.

To use the Junos Space Topology Visualization workspace, assign the **Topology Manager** role to your user account. For more information about assigning a role to your user account, see “Modifying a User” on page 331.

**Related
Documentation**

- Topology Discovery Overview on page 215
- Viewing Discovered Topologies on page 221

Topology Discovery

- Topology Discovery Overview on page 215

Topology Discovery Overview

Topology discovery is the process of discovering information about network devices and their interconnections. The topology discovery process creates a topology map that displays how the devices in the network are connected. You can use topology maps to monitor the network and ensure that the network is functioning effectively. You can identify weaknesses in the network infrastructure, such as bottlenecks and failures within a network, and isolate problem areas when you are troubleshooting network problems.

Using **Discover Topology**, you can search for network topologies based on a target device or subnet that you specify. When you discover a topology, Topology Visualization creates objects in the Junos Space database representing all the discovered devices and links.

Topology Discovery consists of two main steps:

1. Specifying the device target

To discover a topology using Topology Discovery, you must first specify a device target. This device initiates topology discovery. Junos Space searches for all the devices and subnets that are connected to the specified device. You can specify either the hostname or IP address of the device target. You can also use a range of IP addresses or an IP subnet to initiate topology discovery.

2. Specifying the SNMP probes

Junos Space uses SNMP to discover network elements that are connected to the specified target devices and subnets. The Junos Space server uses SNMP probes to contact the targeted devices and get the relevant management information base (MIB) information needed to compute the topology.

You can also specify a hop count to limit the number of routers that you want Junos Space to discover from the specified device. For example, if you specify a hop count of 1 for a target device, then all the IP addresses present in the routing table of that device are targeted for discovery. If the hop count is 2, this process is repeated for all the routing tables of the devices that were discovered in the first hop.

For more information about how to discover a topology, see “Discovering a Topology” on page 219.

To go to the Discover Topology task, select **Platform** on the application switcher, and select **Topology Visualization > Discover Topology**.

The **Discover Topology** landing page appears (Figure 24 on page 216) displaying details of the last topology discovery job that was carried out as described in Table 21 on page 216.

Figure 24: Discover Topology

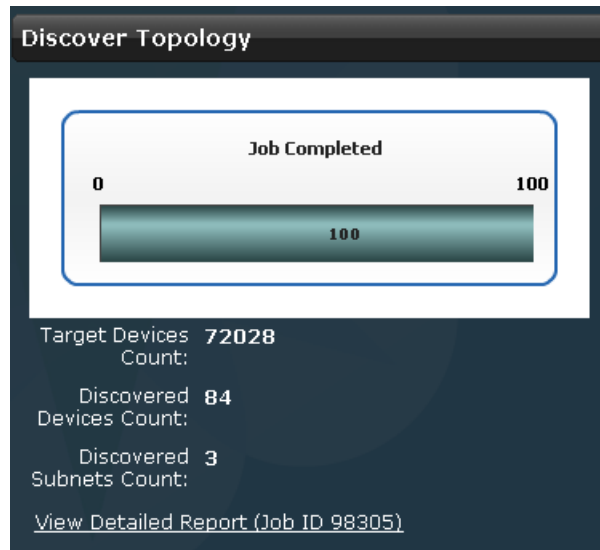


Table 21: Discover Topology Landing Page Field Name and Descriptions

Field Name	Description
Job Completion bar	How much of the job is completed as a percentage
Target Devices Count	Number of target devices that were specified for the job
Discovered Devices Count	Number of devices that were discovered
Discovered Subnets Count	Number of subnets that were discovered
View Detail Report	Link to the Discovery Job Details dialog box

The **Discovery Job Details** dialog box (Figure 25 on page 217) displays more information about the discovery job. Table 22 on page 217 describes the field names displayed in the **Discovery Job Details** dialog box.

Figure 25: Discovery Job Details Dialog Box

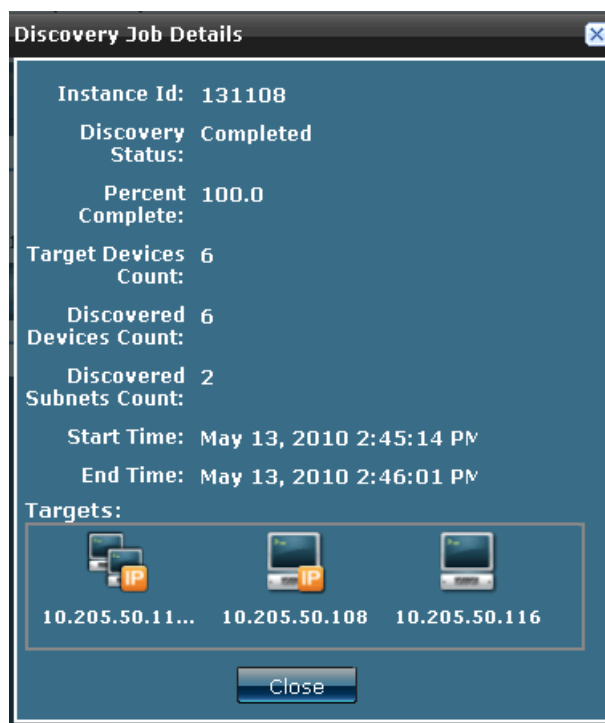


Table 22: Discovery Job Details Field Names and Descriptions

Field Name	Description
Instance ID	Unique identification number of the topology discovery job
Discovery Status	Job status The status can be Starting , In Progress , Stopped , Completed , or Fail .
Percent Complete	How much of the job was completed The value ranges from 0.0 to 100.0.
Target Devices Count	Number of target devices that were specified for the job
Discovered Devices Count	Number of devices that were discovered
Discovered Subnets Count	Number of subnets that were discovered
Start Time	Date and time when the job started
End Time	Date and time when the job was completed
Targets	Targets and corresponding IP addresses that were specified for the discovery job

Prerequisites for Discovering a Topology

For Junos Space to discover a topology, the following conditions must be met.

- SNMP credentials must be configured on all the targeted devices in the network.
- Either LLDP or xSTP protocols must be enabled on all the devices in the network.

You can monitor all tasks performed from the **Topology Visualization** user interface by navigating to the **View Audit Logs** workspace (**Audit Logs > View Audit Logs**). These audit logs list information about the task, such as task name, result, description, and job ID. For more information about audit logs, see “Junos Space Audit Logs Overview” on page 303.

**Related
Documentation**

- Discovering a Topology on page 219
- Viewing Discovered Topologies on page 221

Administration

- Discovering on page 219
- Viewing on page 220

Discovering

- Discovering a Topology on page 219

Discovering a Topology

To discover a topology:

1. From the task ribbon, select **Topology Visualization > Discover Topology > Specify Targets**.

The **Topology Visualization Workspace: Specify Targets** page appears (Figure 26 on page 219).

Figure 26: Specify Device Targets



Here you can add, edit, or delete device targets. For more information, see Managing Device Targets.

2. (Optional) You can select the **Include Managed Devices as Targets** check box if you want Junos Space to use the Juniper Networks devices as the target devices for topology discovery.

- Click **Next** to open the **Specify SNMP Probes** page (Figure 27 on page 220).
Alternatively, click **Finish** to discover topologies based on the seed devices that you have specified.
You can also click **Cancel** to go back to the Discover Topology page.

Figure 27: Specify SNMP Probes

On the **Specify SNMP Probes** page, you can add, edit, or delete SNMP probes that specify how Junos Space discovers the network.

For more information about adding, editing, or deleting SNMP probes, see [Managing SNMP Probes](#).

- (Optional) You can specify a hop count to limit the number of routers from the target that Junos Space tries to discover. To do so, select the **Network Discovery Settings** check box and select the number of hops from the **Number of Hops** list.

The hop count limits the number of routers from the target device that you want Junos Space to discover.
- Click **Finish** to discover topologies based on the seed devices and SNMP probe settings that you have specified.
Alternatively, click **Back** to go to the previous step of the Discover Topology wizard.
You can also click **Cancel** to go back to the Discover Topology page

Related Documentation

- [Topology Discovery Overview](#) on page 215
- [Managing Device Targets](#)
- [Managing SNMP Probes](#)
- [Viewing Discovered Topologies](#) on page 221

Viewing

- [Viewing Discovered Topologies](#) on page 221

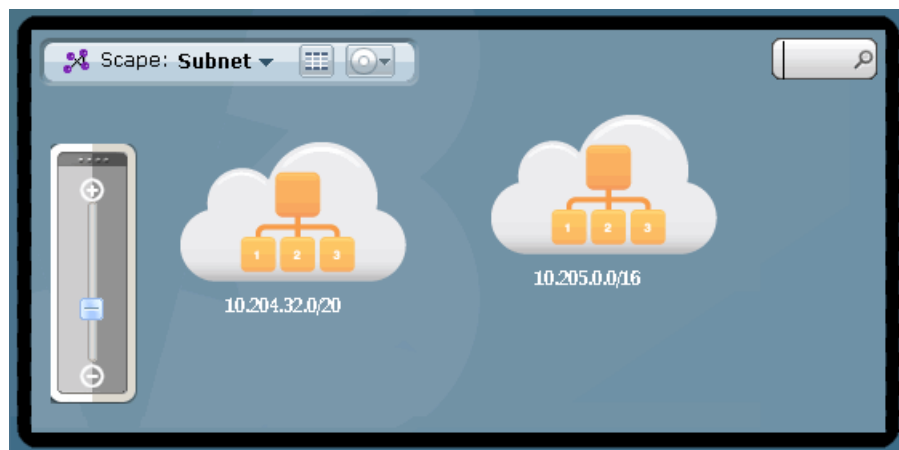
Viewing Discovered Topologies

After you have discovered a topology, you can use Junos Space to view the details of the network devices within the discovered topology.

To view discovered topologies, select **Topology Visualization** from the task ribbon and click **View Topology**.

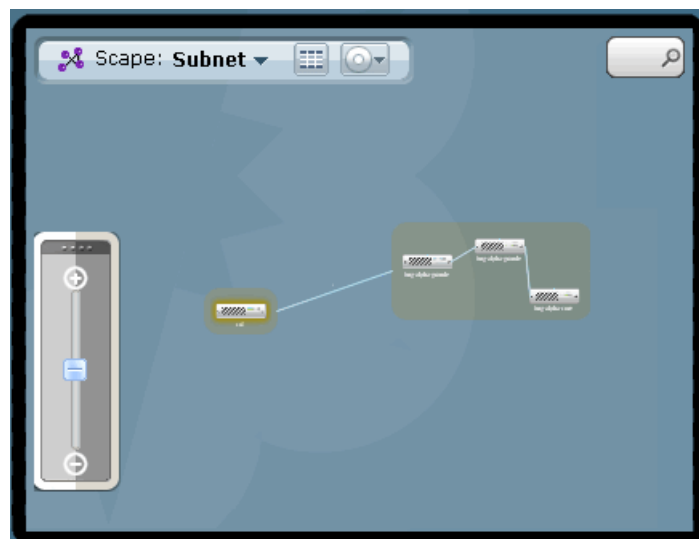
The **View Topology** page appears (Figure 28 on page 221), displaying a topology map of the network elements grouped according to subnets.

Figure 28: Topology Map Grouped According to Subnet



Junos Space enables you zoom in to the displayed map and increase the display size of the subnets. As you zoom in further, the subnets expand to display individual devices and their interconnections, as shown in Figure 29 on page 221.

Figure 29: Topology Map (Zoomed in)



You can use the **Search** field to search for devices or subnets based on the device or subnet name, MAC address, or IP address. The network element that you searched for is highlighted in the displayed topology map.

By default, Junos Space displays all the devices in the discovered network. However, you can use the device filter to view devices according to vendor (Juniper Networks devices or non-Juniper Networks devices). To filter devices, click the view selector panel (Figure 30 on page 222) and click the appropriate icon. See Table 23 on page 222 for more information.

Figure 30: Device Filter

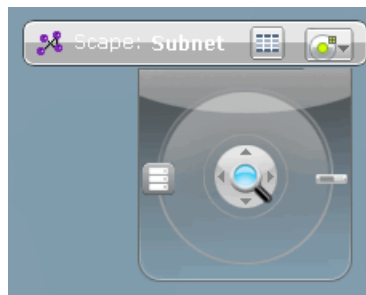






Table 23: Device Filter Icon Description

Icon	Description
	Displays the device filter
	Displays only Juniper Networks devices <i>NOTE:</i> This option is available only when you have zoomed in enough to display devices in the topology map.
	Displays only non-Juniper Networks devices <i>NOTE:</i> This option is available only when you have zoomed in enough to display devices in the topology map.
	Displays all discovered devices <i>NOTE:</i> This option is available only when you have zoomed in enough to display devices in the topology map.

From the View Topology page, you can also perform the following actions:

- View Discovered Devices on page 222
- View Device Links on page 224

View Discovered Devices

In Junos Space, you can view device information such as the operating system, IP address, and managed status for all the discovered devices, in tabular form. This table does not include information about endpoint devices such as PCs or servers.

To view discovered devices:

1. Select **Topology Visualization** from the task ribbon, and click **View Topology**.

The **View Topology** page opens.

- Click the tabular view icon on the view selector panel to view device information in tabular form

The **View Devices** table (Figure 32 on page 223) appears, displaying device information as described in Table 25 on page 223.

To go back to the topology map view, click the grid icon. See Table 24 on page 223 for more information.

Figure 31: View Selector Panel



Table 24: View Selector Icon Description





Icon	Description
	Displays the topology details in tabular view
	Displays the topology details in map view
	Displays the details of discovered devices in tabular view
	Displays the details of the links between the discovered devices in tabular view

Figure 32: View Devices Table

Name	IP Address	Phys Address	Vendor Name	Product Model	OS Version	Managed Status
NS-IDP-250	10.205.61.25	00:30:48:5f:cf:1	Juniper Networks			Unmanaged
bng-tsunami8	10.204.98.57	2c:6b:f5:38:db:0	Juniper Networks	EX4500	JUNOS Base OS Software Suite [10.2I20100511,	Unmanaged
10.204.97.17	10.204.97.17	00:1f:12:36:8d:0	Juniper Networks	EX4200	JUNOS Base OS Software Suite [10.4I20100506,	Unmanaged

Table 25: View Device Column Descriptions

Column Name	Description
Name	Device hostname that the user configured
IP Address	Management IP address of the discovered device
Phys Address	MAC address of the discovered device

Table 25: View Device Column Descriptions (*continued*)

Column Name	Description
Vendor Name	Device vendor name
Product Model	Model number of the discovered device. For example, EX 3200-24p.
OS Version	Version of the Junos operating system that is running on the discovered device
Managed Status	Whether the devices are managed in Junos Space or not. The possible options and their definitions are: <ul style="list-style-type: none"> Managed—The device is managed by Junos Space. Unmanaged—The device is not managed by Junos Space.

View Device Links

Using Junos Space Topology Visualization, you can view such information as IP and MAC addresses, port names of the source and destination devices, and link speed for all the links (including edge links). Edge link information includes information about the links between a switch and an end device such as an IP phone or a PC.

To view device links:

1. Select **Topology Visualization** from the task ribbon, and click **View Topology**. The **View Topology** page opens.
2. Click the tabular view icon on the view selector panel to see information about the network devices and their interconnections in tabular form. The **View Devices** table appears.
3. Click the **View Links** icon to open the **View Links** table. The **View Links** table (Figure 33 on page 224) displays information about the links between the devices in the discovered network, as described in Table 26 on page 225.

To go back to the topology map view, click the grid icon. See Table 24 on page 223 for more information.

Figure 33: View Links Table

Source Device	Source IP	Source Phy	Source Port	Destination	Destination	Destination	Destination	Link Speed
htest-ssw7	10.204.32.8	00:1f:12:36:	ge-0/0/27	02:00:1f:12:	02:00:1f:12:	-	-	1G
e48p2-nmsft	10.204.97.6	00:1f:12:32:	ge-0/0/2	00:17:cb:70	00:17:cb:70	-	-	100M

Table 26: View Links Column Descriptions

Column Name	Description
Source IP Address	Management IP address of the source device
Source Physical Address	MAC address of the source device
Source Port Name	Name of the port on the source device through which the source device connects to the destination device If no name is configured for the port, Junos Space displays the port number.
Destination IP Address	Management IP address of the destination device
Destination Physical Address	MAC address of the destination device
Destination Port Name	Name of the port on the destination device through which the destination device connects to the source device If no name is configured for the port, Junos Space displays the port number.
Link Speed	Speed of the link between the source and destination devices

Related Documentation

- [Topology Discovery Overview on page 215](#)

PART 8

Device Images

- Overview on page 229
- Managing Device Images on page 233

CHAPTER 16

Overview

- Device Images Overview on page 229
- Device Images User Roles on page 231

Device Images Overview

In Junos Space, a device image is a software installation package that enables you to upgrade or downgrade from one JUNOS OS release to another. You can download these device images from

<https://www.juniper.net/customers/support/> . For more information about downloading the device image, see the *Junos OS Installation and Upgrade Guide*.

Junos Space facilitates management of device images for JUNOS OS devices by enabling you to upload device images from your local file system, and deploy these device images onto a device or onto multiple devices of the same device family at once. You can modify the platforms supported by the device image and the description of the device image.

After uploading device images, you can stage a device image on a device, verify the checksum, and deploy the staged image whenever required. You can also schedule the staging, deployment, and validation of device images.

The Device Images dashboard graphically displays platforms, device types, and the number of images installed. Clicking the bars within the graph takes you to the **Manage Images** page where only the device images installed on the selected platform are displayed. For example, in the **Device Image Count by Platform Group** graph (Figure 34 on page 230), clicking the green bar of the graph that represents the EX4200 platform takes you to the **Manage Images** page that displays two device images installed on the EX4200 platform devices.

Figure 34: Device Images Page

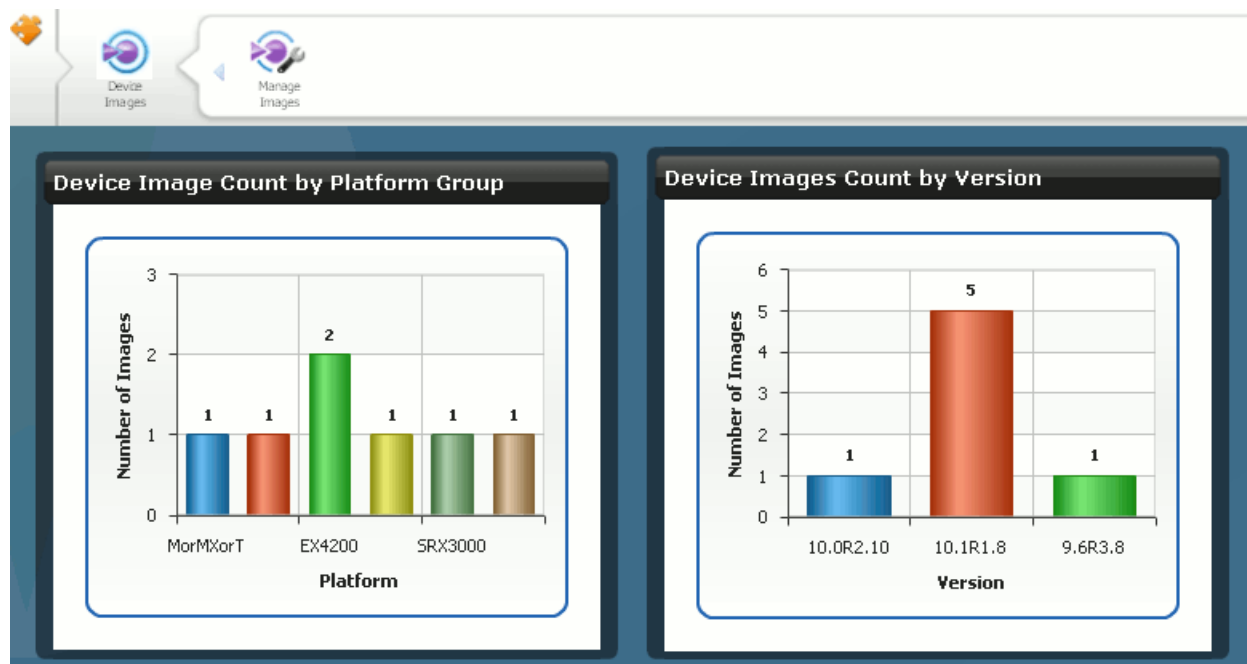


Table 27 on page 230 describes the fields on the **Manage Images** page.

Table 27: Manage Images Page Fields Descriptions

Field	Description
File Name	Name of the device image.
Version	Version that the device image belongs to.
Series	Series that are supported by the device image.

You can perform the following tasks from the **Manage Device Images** page:

- Stage an image on devices
- Verify the checksum
- Deploy device images
- Delete device images
- Modify device images

Related Documentation

- Deploying Device Images on page 238
- Staging Device Images on page 234
- Modifying Device Image Details on page 243
- Uploading Device Images to Junos Space on page 233

Device Images User Roles

The Junos Space User Administrator creates users and assigns roles (permissions) so that you can access and perform different tasks. You cannot view the pages that you do not have access to. While Junos Space allows you to create users and control their access to different tasks, it also has a set of predefined user roles. See Table 28 on page 231 which describes the Device Images tasks that different users have access to, based on the roles assigned to them.

You can create users and manage them on the **Manage Users** page, if you have User Administrator permissions. To create and manage these users, navigate to **Application Switcher > Network Application Platform > Users > Manage Users**. The **Manage Users** page lists the existing users. Use this page to create and assign roles to the Device Images users.

You can also navigate to the **Manage Users** page by selecting **Application Switcher > Jump to Users**.

Table 28: Device Images User Roles

User Role	Permitted Tasks
Device Image Manager	Viewing, uploading, modifying, deleting, staging, verifying the checksum of, and deploying device images.
Device Image Read Only User	Viewing Device Images and Manage Images pages.

- Related Documentation**
- Deploying Device Images on page 238
 - Staging Device Images on page 234

Managing Device Images

- Uploading Device Images to Junos Space on page 233
- Staging Device Images on page 234
- Verifying the Checksum on page 236
- Viewing and Deleting MD5 Validation Results on page 236
- Deploying Device Images on page 238
- Deleting Device Images on page 243
- Modifying Device Image Details on page 243

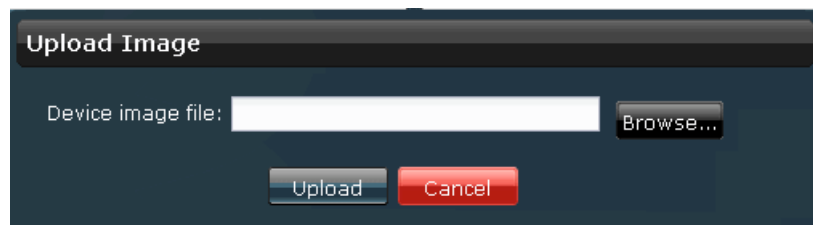
Uploading Device Images to Junos Space

To deploy a device image using Junos Space, you must first download the device image from the Juniper Networks Support Web page <http://www.juniper.net/customers/support/>. Download the device image to the local file system of your workstation or client, and then upload it into the JUNOS Space server. Once uploaded, you can stage a device image, verify the checksum, deploy the device image on one or more devices, modify the description and supported platforms, and also delete the device image from Junos Space.

To upload device images:

1. From the task ribbon select **Device Images > Manage Images > Upload Image**.

The **Upload Image** page is displayed.



2. Click **Browse**.

The **File Upload** dialog box displays the directories and folders on your local file system.

3. Navigate to the device image file and click **Open**.

The image filename is displayed within the Device Image File field.

4. Click **Upload**.

The time taken to upload the file depends on the size of the device image and the connection speed between the local machine and the JUNOS Space server. Once the file is uploaded, into the platform, it is listed on the **Manage Images** page.

**Related
Documentation**

- Device Images Overview on page 229
- Deploying Device Images on page 238
- Staging Device Images on page 234

Staging Device Images

Junos Space enables you to stage an image on one device or on multiple devices of the same device family at once. Staging an image enables you to hold a device image on a device, ready to be deployed when needed. At any given time, you can stage only a single device image. Staging images repeatedly on a device merely replaces the staged device image. While staging device images, you can also delete existing device images from the device. After you stage a device image, you can verify the checksum to ensure that the device image was transferred completely.

To stage an image on devices:

1. From the task ribbon select **Device Images > Manage Images**.

The **Manage Images** page is displayed.

2. Select the image that you want to stage on one or more devices.

The selected image is highlighted.

3. Right-click the selected device image or go to the Actions panel.
Click **Stage Image on Device**.

The **Stage Image On Devices** dialog box displays a list of the Junos Space devices.

Stage Image On Devices

Image name: jinstall-ex-4500-10.3R1.9-domestic-signed.tgz

Host Name	IP Address	Platform	Serial Number	Software Version
<input checked="" type="checkbox"/> tsunami5-nmft	10.204.97.231	EX4500-40F	DE0210215083	11.1-20101030.0

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Staging Options

☒ Delete any existing image before download

☐ Schedule at a later time

Stage Image **Cancel**

- Select the device or devices on which you want to stage the device image. By default, 25 devices are displayed. Use the navigation arrows to select devices across multiple pages.
- To delete existing device images from the device, expand the **Staging Options** section and check the **Delete any existing image before download** check box. This deletes all .tgz files and files whose filenames begin with **jinstall**.
- To schedule a time for staging the device image, check the **Schedule at a later time** check box and use the drop-down menus to specify the date and time.
- Click **Stage Image**.
The image is staged on the selected device or devices and a **Jobs** dialog box displays the job ID.
- To verify the status of this job, click the job ID link or navigate to the **Manage Jobs** page and view the status of the job. When there is a failure in the staging of the device image, you can view the reason for failure within the job description.

To verify the checksum of the staged device image, see “Verifying the Checksum” on page 236.

Table 29: Stage Image On Devices Dialog Box Fields Descriptions

Field	Description
Image Name	Name of the device image.
Host Name	Identifier used for network communication between Junos Space and the Junos OS device.
IP Address	IP address of the device.
Platform	Model number of the device.
Serial Number	Serial number of the device chassis.

Table 29: Stage Image On Devices Dialog Box Fields Descriptions (*continued*)

Field	Description
Software Version	Operating system firmware version running on the device.

- Related Documentation**
- Device Images Overview on page 229
 - Deploying Device Images on page 238
 - Verifying the Checksum on page 236

Verifying the Checksum

When you stage an image on a device using Junos Space, sometimes the device image might not get completely transferred to the device. Verifying the checksum helps validate the completeness of the staged device image.

To verify the checksum:

1. From the task ribbon select **Device Images > Manage Images**.
The **Manage Images** page is displayed.
2. Select the image whose checksum you want to verify.
3. Right click the selected device image, and select **Verify Checksum**.
The **Manage Images** dialog box is displayed.
You can also select the **Verify Checksum** link from the Actions panel.
4. Select the devices that have the device image staged on them.
5. To schedule a time for verifying the checksum, check the **Schedule a later time** checkbox and use the drop-down menus to specify the date and time.
6. Click **Verify**.
The selected image is verified and a **Jobs** dialog box displays the job ID.
7. To check the status of verification you can click on the job ID link or navigate to the **Manage Jobs** page and view the job status.

- Related Documentation**
- Device Images Overview on page 229
 - Deploying Device Images on page 238

Viewing and Deleting MD5 Validation Results

Using Junos Space, you can validate completeness of a device image that is staged on devices. See “Verifying the Checksum” on page 236. The result of this validation is displayed

on the **Validation Results** page. From this page you can view and delete the validation results.

- Viewing the MD5 Validation Results on page 237
- Deleting the MD5 Validation Results on page 238

Viewing the MD5 Validation Results

The MD5 validation results indicate whether the device image that is staged on a device is completely transferred to the device or not. The result also indicates whether the device image is not present on the selected devices.

To view the MD5 validation results:

1. From the task ribbon select **Device Images > Manage Images**.
The **Manage Images** page displays the list of device images.
2. Select a device image.
3. Right click your selection or use the **Actions** panel and select **MD5 Validation Result**.
As shown in Figure 35 on page 237, the **Validation Results** page displays the results of all verification tasks.

Validation Results					
Sorted by Verification Time 0 Items Selected Select: Page None					
Return to Manage Images					
Device image name	Device name	Action	Checksum Result	Remarks	Verification Time
jinstall-ex-3200-10.0R2.10-domestic-signed.tgz	e48t2-nmsft	Verify	Success		May 7, 2010 1:44:22 PM IST
jinstall-ex-3200-10.0R2.10-domestic-signed.tgz	e48p2-nmsft	Verify	Failed	Error from device md5: /var/tmp/jinstall-ex-3200-10.0R2.10-domestic-signed.tgz: No such file or directory	May 7, 2010 1:44:02 PM IST
jinstall-ex-3200-10.0R2.10-domestic-signed.tgz	e123	Verify	Failed	Error from device md5: /var/tmp/jinstall-ex-3200-10.0R2.10-domestic-signed.tgz: No	May 7, 2010 1:44:00 PM IST

For a description of the fields on the **Validation Results** page, see Table 30 on page 237. You can also view these results on the **Manage Jobs** page in Junos Space.

Table 30: Validation Results Page Field Descriptions

Field Name	Description
Device Image Name	Name of the device image selected for verifying the checksum.
Device Name	Name of the selected devices on which the device images are verified.
Action	Name of the action performed.
Checksum Result	Result of the verification
Remarks	Observations made during the verification.
Verification Time	Time at which the verification was initiated.

Deleting the MD5 Validation Results

To delete the MD5 validation results:

1. From the task ribbon select **Device Images > Manage Images**.
The **Manage Images** page is displayed.
2. Select a device image.
3. Right click your selection or use the **Actions** panel and select **MD5 Validation Result**.
The **Validation Results** page displays the results of all verification tasks.
4. Select the result that you want to delete.
5. Right click your selection or go to the Actions panel and select **Delete Validation Results**.

The **Delete Validation Results** dialog box displays the selected results.

6. Click **Delete** to confirm.

The selected results are removed from Junos Space.

Related Documentation

- Device Images Overview on page 229
- Staging Device Images on page 234
- Verifying the Checksum on page 236

Deploying Device Images

Junos Space enables you to deploy device images onto a device or on multiple devices of the same device family at once. During deployment a device image is installed on the device. After you deploy an image onto a device, you can reboot the device, delete the device image from the device, check the device image's compatibility with the current configuration of the device, and load the image when even a single statement is valid. Using an image that is already staged on a device eliminates the time taken to load the device image on a device and directly jumps to the installation process. Junos Space also enables you to schedule a time when you want the image to be deployed.

You can deploy a device image only onto devices or platforms supported by that device image. When you select an image for deployment, the list of devices that are displayed contains only those devices that are supported by the selected device image.



NOTE: When you deploy a device image on dual routing engines (RE), the image is first deployed on the backup routing engine followed by the master routing engine. If deployment fails on the backup routing engine, the device image is not deployed on the master routing engine.



.....

NOTE: In Junos Space an SRX cluster is represented as two individual devices with cluster peer information. When you deploy a device image on an SRX cluster, the installation is done on both the cluster nodes.

.....

To deploy device images:

1. From the task ribbon select **Device Images > Manage Images**.

The **Manage Images** page is displayed.

2. Select the image that you want to deploy.

The selected image is highlighted.

3. Right-click the selected device image or go to the Actions panel.

4. Click **Deploy Device Image** from the **Actions** panel.

The **Deploy Image on Device** page displays the devices that are supported by the selected device image (see Figure 36 on page 240. For a description of the fields on this page, see Table 33 on page 242.

Figure 36: Deploy Image on Device Dialog Box

Deploy Image on Devices

Image name: junos-srxsme-11.2B2.3-domestic.tgz

Select Devices

Host Name	IP Address	Platform	Serial Number	Software Version
<input type="checkbox"/> puram	10.204.92.86	SRX240H	AG2909AA0129	10.3R1.9
<input type="checkbox"/> test	10.205.50.107	SRX210H	AD2909AA0640	11.2B2.3
<input type="checkbox"/> srx650_1	10.205.50.192	SRX650	AJ4410AA0037	10.0R3.10
<input type="checkbox"/> SRX650_191_Chngd	10.205.50.191	SRX650	AJ4410AA0031	10.2R4

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Deployment Options

- ☐ Use image already downloaded to device
- ☐ Archive data (Snapshot)
- ☐ Check compatibility with current configuration
- ☐ Load succeeds if at least one statement is valid
- ☐ Remove the package after successful installation
- ☐ Reboot device after successful installation
- ☐ Delete any existing image before download

Advanced Deployment Options

Execute script bundle before image deployment (pre scripts)
Please select ... [Configure Scripts Parameters](#)

Execute script bundle after image deployment (post scripts)
Please select ... [Configure Scripts Parameters](#)

- ☐ Select same pre script bundle for post script bundle
- ☐ Deploy and Enable script bundle before execution
- ☐ Disable scripts after execution

☐ Schedule at a later time

Deploy **Cancel**

5. Select the devices on which you want to deploy the device image.
6. To specify different deployment options, select one or more of the **Select Deployment Options** check boxes.

See Table 31 on page 241 for a description of the deployment options.

7. To specify advanced deployment options, select one or more of the **Select Advanced Deployment** options check boxes. See Table 32 on page 242 for a description of the advanced deployment options.

To configure the script parameters of scripts included in the script bundle:

- a. Select the pre script or post script bundle that you want to configure, using the respective drop-down lists.

If there are no script bundles available, you can create script bundles using the **Scripts** workspace (see Creating a Script Bundle) and then re-select the script bundle during script deployment.

- b. Click the **Configure Scripts Parameters** link.
The **Configure Script Bundle Parameters** page is displayed. You can hover over the script parameters to view short descriptions about them.
- c. You can edit the value (success or failure) of script parameters using the icon shown below before deploying the script bundles on devices. The changes made to script parameters are saved only on the devices on which the script bundle is executed. The script parameters in the script bundle in Junos Space continues to reflect the original values.



- d. Click **Configure**.
Your changes are saved and the **Deploy Image on Device** page is displayed.

8. To schedule a time for deployment, check the **Schedule at a later time** check box and use the drop-down menus to specify the date and time.

9. Click **Deploy**.

The selected image is deployed on the specified devices with the deployment options that you specified.

10. To view the result of deployment, navigate to the **View Deploy Results** page (see Viewing Device Image Deployment Results).

Table 31 on page 241 describes the different deployment options.

Table 31: Deployment Options Description

Deployment Options	Description
Use image already downloaded to device	Use the device image that is staged on the device for deployment.
Archive Data (Snapshot)	Collect and save device data and executable areas.
Check compatibility with current configuration	Verify device image compatibility with the current configuration of the device.
Load succeeds if at least one statement is valid	Ensure that the device image is loaded successfully even if only one of the statements is valid.

Table 31: Deployment Options Description (*continued*)

Deployment Options	Description
Remove the package after successful installation	Delete the device image from the device after successful installation .
Reboot device after successful installation	<p>Reboot the device after deployment is successful. If the device is down, Junos Space waits for the device to come up before initiating the reboot. If the device is not up within 30 minutes, the Image Deployment Job is marked as failed.</p> <p>After rebooting the device, the status of the device is checked every 5 minutes to check whether the device is up.</p>
Delete any existing image before download	Delete all device images with the same filename from the device before deploying the selected device image.

Table 32 on page 242 describes the different advanced deployment options.

Table 32: Advanced Deployment Options Description

Advanced Deployment Options	Description
Execute script bundle before image deployment (pre scripts)	Execute the selected script bundle before deploying the device image. This ensures that the scripts in the selected script bundle are executed before the device image is installed on the device.
Execute script bundle after image deployment (post scripts)	Execute the selected script bundle before deploying the device image. This ensures that the script bundle is executed after the device image is installed on the device.
Select same pre script bundle for post script bundle	Execute the same script bundle on the device before and after device image deployment.
Deploy and Enable script bundle before execution	Deploy the selected script bundle, enable the scripts included in the script bundle, and then execute the script bundle on the device.
Disable scripts after execution	Execute the script bundle on the device and then disable the script bundle.

Table 33 on page 242 describes the **Deploy image on device(s)** dialog box fields.

Table 33: Deploy Image on Device(s) Dialog Box Field Descriptions

Field	Description
Image Name	Name of the device image.
Host Name	Identifier used for network communication between Junos Space and the device running Junos OS.
IP Address	IP address of the device.
Platform	Model number of the device.

Table 33: Deploy Image on Device(s) Dialog Box Field Descriptions (*continued*)

Field	Description
Serial Number	Serial number of the device chassis.
Software Version	Operating system firmware version running on the device.
Related Documentation	<ul style="list-style-type: none">• Device Images Overview on page 229• Uploading Device Images to Junos Space on page 233• Script Bundles Overview

Deleting Device Images

You can delete device images from Junos Space including deleting multiple device images simultaneously.

To delete device images from the Junos Space:

1. From the task ribbon select **Device Images > Manage Images**.
The **Manage Images** page is displayed.
2. Select the image that you want to delete.
The selected image is highlighted.
To select multiple device images, click the **Multiple** tab and select the images you want to delete.
3. Right click the selected device image or go to the Actions panel.
4. Select **Delete Device Images** .
The **Delete Device Image** dialog box displays the image filename and the image version number.
5. Click **Delete** to confirm the deletion.
The selected image is deleted from Junos Space and no longer appears on the **Manage Images** page.

- Related Documentation**
- Device Images Overview on page 229
 - Deploying Device Images on page 238
 - Staging Device Images on page 234

Modifying Device Image Details

Junos Space enables you to add and modify the description of a device image and also to modify the series that the device image supports.

To modify the parameters of a device image:

1. From the task ribbon select **Device Images > Manage Images**.

The **Manage Images** page is displayed.

2. Select the image that you want to modify. The selected image is highlighted.
3. Right click the selected device image or go to the **Actions** panel.
4. Select **Modify Device Image Details**.

The **Modify Device Image Details** dialog box is displayed.

Modify Device Image Details

Image name: jinstall-ex-4200-9.6R3.8-domestic-signed.tgz

Version: 9.6R3.8

Series: EX4200

Platforms: EX4200-24T, EX4200-24P, EX4200-48T, EX4200-48P, EX4200-24F

Description:

Modify Cancel

5. To modify the series, use the **Series** drop-down menu and specify the series that the selected device image supports. The platforms that are part of the selected series are automatically displayed in the **Platforms** field and cannot be modified.

To add or modify the description, you can use a maximum of 256 characters within the **Description** field.

6. Click **Modify**.

Your changes are saved. These changes can be viewed on the device image detail and summary view.

Related Documentation

- Device Images Overview on page 229
- Deploying Device Images on page 238
- Deleting Device Images on page 243

PART 9

Scripts

- Overview on page 247

CHAPTER 18

Overview

- [Scripts Overview on page 247](#)
- [Scripts User Roles on page 250](#)

Scripts Overview

Scripts are configuration and diagnostic automation tools provided by the Junos OS. They help reduce network downtime and configuration complexity, automate common tasks, and decrease the time to problem resolution. Junos OS scripts are of three types: commit, op, and event scripts.

- **Commit scripts:** Commit scripts enforce custom configuration rules and can be used to automate configuration tasks, enforce consistency, prevent common mistakes, and more. Every time a new candidate configuration is committed, the active commit scripts are called and inspect the new candidate configuration. If a configuration violates your custom rules, the script can instruct the Junos OS to perform various actions, including making changes to the configuration, and generating custom, warning, and system log messages.
- **Op scripts:** Op scripts enable you to add your own commands to the operational mode CLI. They can automate the troubleshooting of known network problems, and correcting them.
- **Event scripts:** Event scripts use event policies to enable you to automate network troubleshooting by diagnosing and fixing issues, monitoring the overall status of the router, and examining errors periodically. Event scripts are similar to op scripts but are triggered by events that occur on the device.

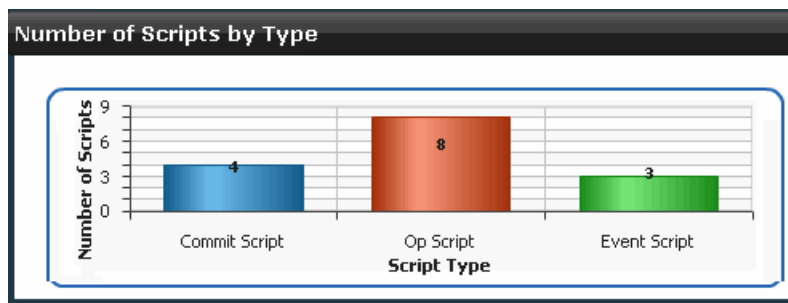
Using Junos Space you can import multiple scripts into the Junos Space server. After importing scripts, you can perform various tasks such as modifying the scripts, viewing their details, exporting their content, comparing them, and deploying them on multiple devices simultaneously. After you deploy scripts onto devices, you can use Junos Space to enable, disable, and execute them on those devices. You can remove the scripts from the devices as well. To help ensure that the deployed scripts are not corrupt, you can verify the checksum of the scripts.

Junos Space also supports task scheduling. You can specify the date and time when you want a script to be deployed, verified, enabled, disabled, removed, or executed.

The **Network Application Platform—Scripts** dashboard uses two gadgets to graphically display the number of scripts and their types, and the number of jobs for every script action. Clicking the bars within this graph takes you to the **Manage Scripts** page that displays only the type of script that you selected in the graph. For example, when you click the blue bar that represents **Commit** scripts, in the **Number of Scripts by Type** graph shown in Figure 37 on page 248, the **Manage Scripts** page displays only the commit scripts that you have imported into Junos Space.

The **Number of Scripts by Type** gadget (see Figure 37 on page 248) graphically displays number of scripts that are uploaded with respect to the type of the scripts (commit, op, and event).

Figure 37: Number of Scripts by Type Gadget



The **Number of Jobs per Script Action** (see Figure 38 on page 248) gadget graphically displays number of jobs that are created for different script actions. The green colored section of the bars in the graph represent the jobs that are successful and the red colored sections represent the ones that failed.

Figure 38: Number of Jobs per Script Action Gadget

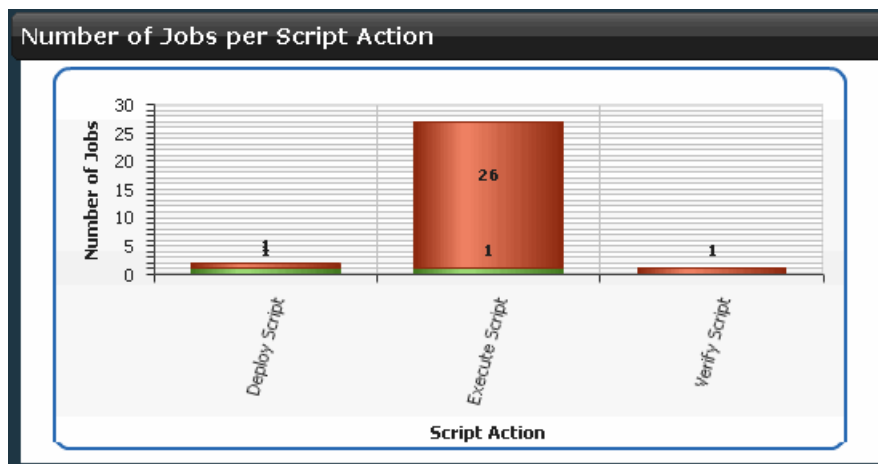


Table 34 on page 249 describes the information that is displayed on the **Manage Scripts** page (see Figure 39 on page 249).

Figure 39: Manage Scripts page

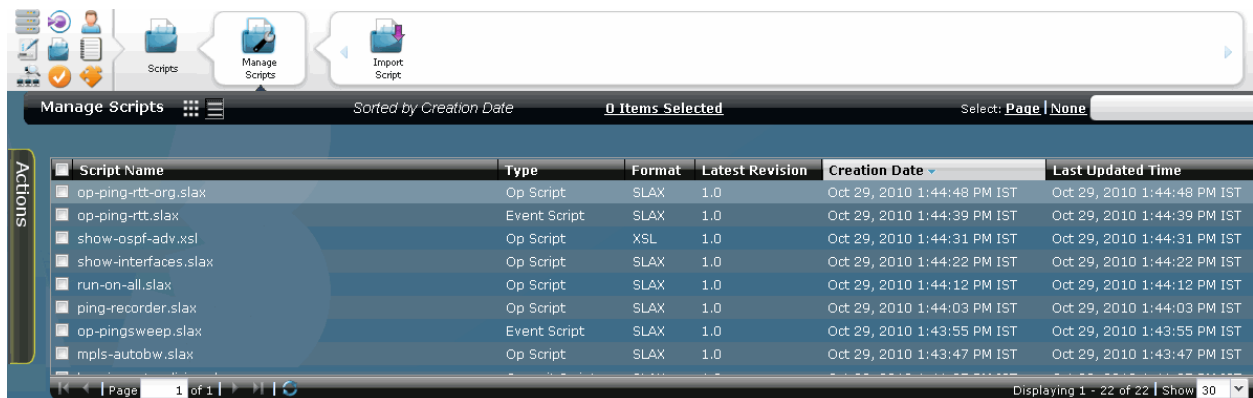


Table 34: Manage Scripts Page Fields Description

Field	Description
Script Name	Name of the script file.
Type	Type of script: <ul style="list-style-type: none"> • Commit script • Op script • Event script
Format	Format of the script file: <ul style="list-style-type: none"> • XSL • SLAX
Version	Version number of the script.
Creation Time	Date and time when the script was created.
Last Updated Time	Latest time when the script was last updated.

You can perform the following tasks from the **Manage Scripts** page:

- Importing a Script on page 255
- Viewing Script Details on page 267
- Modifying a Script on page 256
- Modifying Script Types on page 257
- Comparing Script Versions on page 258
- Deleting Scripts on page 259
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- Viewing Verification Results on page 269
- Enabling Scripts on Devices on page 263
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- Executing Scripts on Devices on page 265

Related Documentation

- Scripts User Roles on page 250

Scripts User Roles

The Junos Space User Administrator is a role assigned to a Junos Space administrator that enables the administrator to grant or deny access to different Junos Space tasks. The Junos Space administrator creates users and assigns roles (permissions) so that you can access and perform different tasks. You cannot view the pages that you do not have access to. You can create users and manage them on the **Manage Users** page if you have User Administrator permissions. To create and manage these users, navigate to **Application Selector > Network Application Platform > Users > Manage Users**. The **Manage Users** page lists the existing users. Use this page to create and assign roles to the Scripts users. You can also navigate to the **Manage Users** page by selecting **Application Switcher > Jump to Users**, or by using the **Users** shortcut from the Scripts task ribbon.

You can enable and disable scripts on devices using Junos Space only if you are a superuser with complete permissions or a user who has been given maintenance privileges.



NOTE: The Junos OS management process executes commit scripts with root permissions, and not the permission levels of the user who is committing the script. If the user has the necessary access permissions to commit the configuration, then Junos OS performs all actions of the configured commit scripts, regardless of the privileges of the user who is committing the script.

Table 35 on page 250 describes the Scripts tasks that different users have access to, based on the roles assigned to them.

Table 35: Scripts User Roles and Permitted Actions

User Role	Permitted Tasks
Device Script Manager	Viewing, importing, modifying, comparing, deleting, deploying, enabling, disabling, verifying, removing, and executing scripts.
Device Script Read Only User	Viewing Scripts , Manage Scripts , and Manage Script Bundles pages. Exporting scripts.

Related • [Scripts Overview on page 247](#)
Documentation

PART 10

Administration

- Managing Scripts on page 255
- Monitoring on page 267
- Managing Configuration Files on page 271

Managing Scripts

- Importing a Script on page 255
- Modifying a Script on page 256
- Modifying Script Types on page 257
- Comparing Script Versions on page 258
- Deleting Scripts on page 259
- Deploying Scripts on Devices on page 260
- Verifying the Checksum of Scripts on Devices on page 261
- Enabling Scripts on Devices on page 263
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- Executing Scripts on Devices on page 265

Importing a Script

Using Junos Space you can import scripts into the Junos Space server. To import scripts you must first save them on the local file system of your workstation or client, ensure that they are of the .slax or .xsl format, and also ensure that they are commit, op, or event scripts. After importing scripts, you can perform various tasks on them such as viewing their contents, exporting them, modifying them, comparing them, verifying their checksum, viewing verification results, enabling and disabling them on devices, removing them from devices, executing them on devices, and deploying them on one or more devices simultaneously.

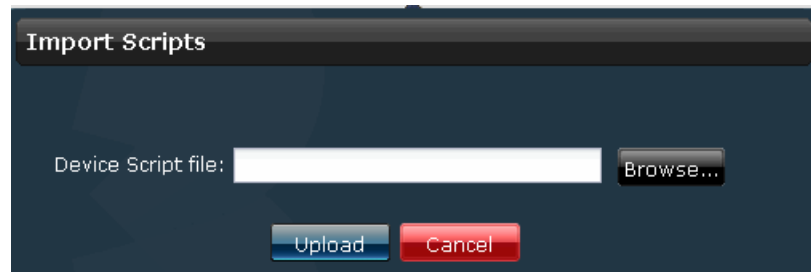
In earlier Junos OS releases, op scripts were run as event scripts by copying the op script to the `/var/db/scripts/event` folder and enabling it with event options and event policies. For subsequent releases, we recommend that you use dedicated event scripts in which the event options and policies specified in the script itself. In Junos Space, op scripts cannot be run as event scripts.

To import a script to Junos Space:

1. From the Network Application Platform task ribbon, select **Scripts > Manage Scripts > Import Script**.

The **Import Script** dialog box is displayed as shown in Figure 40 on page 256.

Figure 40: Import Scripts Dialog Box



2. Click **Browse**.

The **File Upload** dialog box displays the directories and folders on your local file system.

3. Locate the script that you want to upload and click **Open**.
4. Click **Upload**.

The selected script is uploaded into Junos Space and displayed on the **Manage Scripts** page.

5. Click **Cancel** to return to the **Manage Scripts** page.

Related Documentation

- Viewing Script Details on page 267

Modifying a Script

You can use Junos Space to modify the script type, script contents, and the script version to the latest version of the script. You can also add your comments to the details of a script. When you modify a script, the script is saved as the latest version by default. To modify the script type for multiple scripts, see “Modifying Script Types” on page 257.

To modify a script:

1. From the Network Application Platform task ribbon, select **Scripts > Manage Scripts**.
The **Manage Scripts** page displays the scripts that you imported into Junos Space.
2. Select the script that you want to modify.
3. Right-click your selection or use the **Actions** panel, and select **Modify**.

The **Modify Script** dialog box displays the details of the script, as shown in Figure 41 on page 257.

Figure 41: Modify Script Dialog Box

Modify Script

Script name: add-node-bgp.slax

Type: Op Script

Version: 1.2

Script contents:

```

/*
 * Script to add a node to the existing BGP mesh.
 * This script uses the remote-rpc mechanism available from 9.3 onwards.
 *
 * bgp-peer-group    BGP peer group name
 * bgp-peer-type     BGP peer type
 * local-address     IP-address of local machine (This node)
 * local-as-number   Local AS Number
 * peer-address      IP-address of one of the peer
 */

```

Comments: Script is imported for the first time

Note: Changes made to the script contents will be saved as a new version.

Modify Cancel

4. You can modify the script type, script version, script contents, and the comments about the script.

5. Click **Modify**.

Your changes are saved to the latest version of the script, and the old version of the script is retained. To verify these changes, you can view the details of this script. See “Viewing Script Details” on page 267.

Click **Cancel** to withdraw your changes and return to the **Manage Scripts** page.

Related Documentation

- Deploying Scripts on Devices on page 260

Modifying Script Types

Using Junos Space, you can modify the script type of multiple scripts simultaneously.

To modify the script type:

1. From the Network Application Platform task ribbon, select **Scripts > Manage Scripts**. The **Manage Scripts** page displays the scripts that you imported into Junos Space.
2. Select the script whose script type you want to modify.
3. Right-click your selection or use the **Actions** panel, and select **Modify Scripts Type**. The **Modify Scripts Type** dialog box displays the details of the script.
4. Use the **Bulk Actions** list to select a common script type for all scripts. To modify script types of individual scripts, click the **Script Type** column and use the drop-down list to make your changes.
5. Click **Apply**. Your changes are saved and the **Manage Scripts** page is displayed.
6. (Optional) To verify, double-click the script that you modified and view the script type.

- Related Documentation**
- Viewing Script Details on page 267
 - Deploying Scripts on Devices on page 260

Comparing Script Versions

Using Junos Space you can compare two scripts and view their differences. This comparison can be done with two different scripts or between the same scripts of different versions.

To compare scripts:

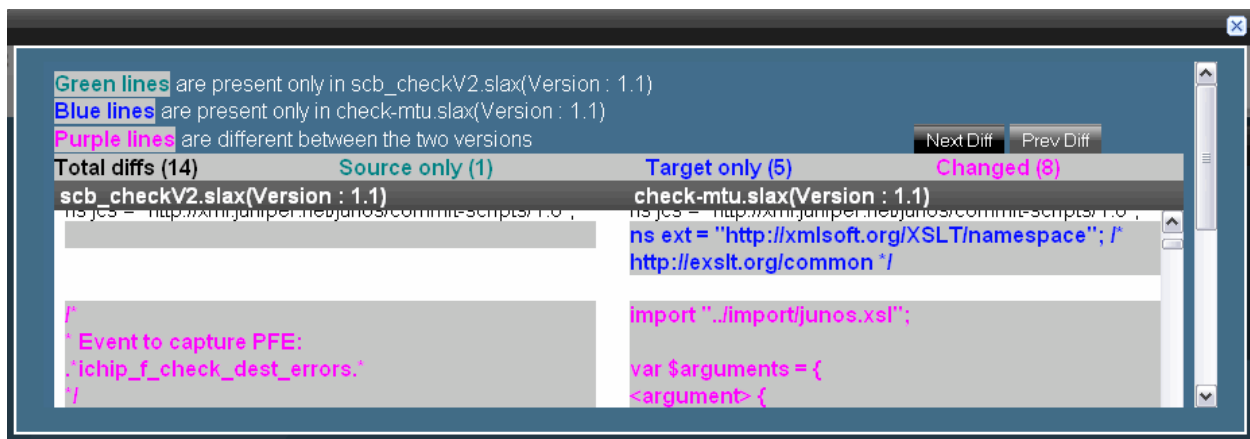
1. From the Network Application Platform task ribbon select, **Scripts > Manage Scripts**.
The **Manage Scripts** page displays the scripts that you imported into Junos Space.
2. Select the script that you want to compare.
3. Right-click your selection or use the **Actions** panel, and select **Compare Script Versions**.

The **Compare Scripts** dialog box is displayed. Figure 42 on page 258 is an example of the Compare Scripts dialog box where two same scripts of different versions are compared.

Figure 42: Compare Scripts Dialog Box

4. Use the **Source script** and **Target script** drop-down lists to select the scripts that you want to compare.
5. Use the **Version** drop-down lists to specify the versions of the source and target scripts that you have selected.
6. Click **Compare**.
The differences between the scripts are displayed as shown in Figure 43 on page 259. Use the **Next Diff** and **Prev Diff** buttons to navigate to the next change or the previous change respectively.

Figure 43: Compare Scripts Window



The differences between the two scripts are represented using three different colors:

- Green— The green lines represent the changes that appear only in the source script.
- Blue— The blue lines represent the changes that appear only in the target script.
- Purple— The purple lines represent the changes that are different between the two scripts.

After the **Next Diff** and **Prev Diff** buttons, the total number of differences, the number of differences in the source script, the number of differences in the target script, and the number of changes are displayed.

7. Click **x** to close the window and return to the **Manage Scripts** page.

Related Documentation

- Modifying a Script on page 256
- Deploying Scripts on Devices on page 260
- Scripts Overview on page 247

Deleting Scripts

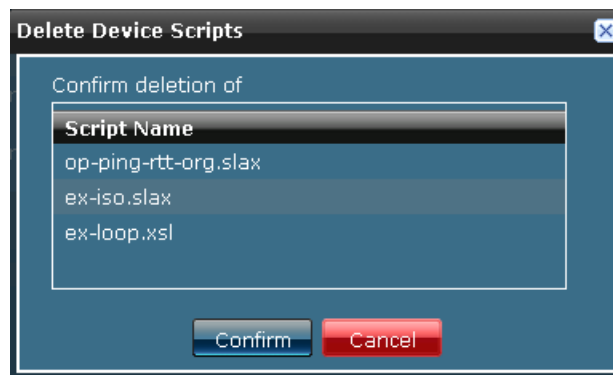
You can use Junos Space to delete the scripts that you import into the Junos Space server. When you delete a script, all versions of that script and the checksum verification results associated to that script are deleted.

To delete scripts:

1. From the Network Application Platform task ribbon, select **Scripts > Manage Scripts**.
The **Manage Scripts** page displays the scripts that you imported into Junos Space.
2. Select the scripts that you want to delete.
3. Right-click your selection or use the **Actions** panel, and click **Delete**.

The **Delete Device Scripts** dialog box lists the scripts that you chose for deletion.

Figure 44: Delete Device Scripts Dialog Box



4. Click **Confirm**.

The selected scripts are deleted and the **Jobs** dialog box displays a job ID link. You can click the link to view the status of the delete operation on the **Manage Jobs** page.

5. Click **Cancel** to return to the **Manage Scripts** page.

Related Documentation

- Modifying a Script on page 256

Deploying Scripts on Devices

You can use Junos Space to deploy scripts onto one or more devices. When you deploy a script, the latest version of the script file is transferred onto the device, and the MD5 checksum of the transferred file is checked against that of the script on Junos Space. If the result of the verification indicates that the script transferred onto the device is valid, then the script is enabled on the device. After you deploy scripts to devices, you can enable, disable, and execute them on those devices. You can remove the scripts from the device as well. Junos Space also enables you to schedule a time when you want the script to be deployed.

During script deployment, commit scripts are copied to the `/var/db/scripts/commit` directory on the device, op scripts are copied to the `/var/db/scripts/op` directory on the device, and event scripts are copied to the `/var/db/scripts/event` directory on the device. When you deploy scripts on dual Routing Engines, the scripts are copied to both Routing Engines, and in case of Virtual Chassis, the scripts are copied to all of the FPCs.



CAUTION: If the selected device already has a script with the same filename as the script that you have selected for deployment, then the deployed script overwrites the existing script.

To deploy a script:

1. From the Network Application Platform task ribbon, select **Scripts > Manage Scripts**.

The **Manage Scripts** page displays the scripts that you imported into Junos Space.

2. Select one or more scripts that you want to deploy.

When you deploy a script, the latest version of the script is deployed onto the device.

3. Right-click your selection or use the **Actions** panel, and click **Deploy Scripts on Devices**.

The **Deploy Scripts on Device(s)** dialog box displays the list of devices on which the script can be deployed, as shown in Figure 45 on page 261.

Figure 45: Deploy Scripts On Device(s) Dialog Box

Deploy Scripts On Device(s)

Script name(s): op-ping-rtt-org.slax
ex-iso.slax

Select Devices

Host Name	IP Address	Platform	Serial Number	Software Version
<input checked="" type="checkbox"/> Sudhaker-M120	10.204.92.13	M120	JN108DEB7AEA	10.1R3.7
<input checked="" type="checkbox"/> 10.205.105.2	10.205.105.2	EX4200-48P	BQ0208473139	10.0R1.8

Page 1 of 1 | Displaying 1 - 2

☒ Schedule at a later time

Date and time: 07/21/10 12:02 AM IST

Deploy **Cancel**

4. Select the devices on which you want to deploy the script.
5. (Optional) To schedule a time for deployment, check the **Schedule at a later time** checkbox and specify the date and time when you want the script to be deployed.
6. Click **Deploy**.

The scripts are deployed on the selected devices, and the **Jobs** dialog box displays a job ID link. You can click the link to view the status of the deployment action on the **Manage Jobs** page.

7. Click **Cancel** to return to the **Manage Scripts** page.

Related Documentation

- Verifying the Checksum of Scripts on Devices on page 261

Verifying the Checksum of Scripts on Devices

A script that is transferred to a device can be corrupt. Verifying the checksum of the script using Junos Space ensures that the transferred script is not corrupt. Junos Space enables you to verify the checksum of multiple scripts that are deployed on the devices.

When you verify scripts that have multiple versions, the latest version of selected scripts are verified with the version of script that is available on the device. If the version of the

script present on the device does not match the version that it is compared with, you will be notified by an error message.

To verify the checksum of a script:

1. From the Network Application Platform task ribbon, select **Scripts > Manage Scripts**.

The **Manage Scripts** page displays the scripts that you imported into Junos Space.

2. Select the script whose checksum you want to verify.
3. Right-click your selection or use the **Actions** panel, and select **Verify Checksum**.

The **Verify Checksum of Scripts on Device(s)** dialog box is displayed as shown in Figure 46 on page 262.

Figure 46: Verify Checksum of Scripts on Device(s) Dialog Box

Verify Checksum of Scripts On Device(s)

Script name(s): op-ping-rtt-org.slax
ex-iso.slax

Host Name	IP Address	Platform	Serial Number	Software Version
Sudhaker-M120	10.204.92.13	M120	JN108DEB7AEA	10.1R3.7
10.205.105.2	10.205.105.2	EX4200-48P	BQD208473139	10.0R1.8

Page 1 of 1 | Displaying 1 - 2

☒ **Schedule at a later time**

Date and time: 07/21/10 12:03 AM IST

Verify Checksum Cancel

4. Select the devices that have the script deployed on them.
5. To schedule a time for verification, check the **Schedule at a later time** checkbox and use the drop-down menus to specify the date and time when you want the script to be verified.
6. Click **Verify Checksum**.

The result of this verification is displayed, and a **Jobs** dialog box displays a job ID link. You can click the link to view the status of the verification operation on the **Manage Jobs** page. To display the checksum verification results, see “Viewing Verification Results” on page 269.

7. Click **Cancel** to return to the **Manage Scripts** page.

Related Documentation

- Enabling Scripts on Devices on page 263

Enabling Scripts on Devices

After you deploy scripts on devices, you can use Junos Space to enable these scripts on one or more devices at once.

When you enable scripts using Junos Space, depending on the type of script, an appropriate configuration is added on the device. For example, for a file named `bgp-active.slax`, the configuration added to the device is as follows:

- For a commit script:
Example: [edit]
`regress@e48t2-nmsft# set system scripts commit file bgp-active.slax`
- For an op script:
Example: [edit]
`regress@e48t2-nmsft# set system scripts op file bgp-active.slax`
- For an event script:
Example: [edit]
`regress@e48t2-nmsft# set system scripts event file bgp-active.slax`



CAUTION: If the filename of the selected script matches that of any script present on the device, then the script on the device is enabled regardless of its contents.

To enable scripts on devices:

1. From the Network Application Platform task ribbon, select **Scripts > Manage Scripts**.
The **Manage Scripts** page displays the scripts that you imported into Junos Space.
2. Select one or more scripts that you want to enable on devices.
3. Right-click your selection or use the **Actions** panel and select **Enable Scripts on Devices**.

The **Enable Scripts on Device(s)** page is displayed.

Figure 47: Enable Scripts on Device(s) Dialog Box

Enable Scripts On Device(s)

Script name: ex-max-prefix.slax,

Select Devices

Host Name	IP Address	Platform	Serial Number	Software Version
<input type="checkbox"/> 10.204.92.13	10.204.92.13	M120	JN108DEB7AEA	10.2R1.8
<input type="checkbox"/> olive0	10.94.162.92	M120		10.2R1.8
<input type="checkbox"/> olive1	10.94.163.165	OLIVE		10.2R1.8

Page 1 of 1 | Displaying 1 - 3 of

☐ Schedule at a later time

Enable Cancel

4. Select the devices on which you want the script to be enabled.
5. To schedule a time for enabling the script, check the **Schedule at a later time** checkbox and specify the date and time when you want the script to be enabled.
6. Click **Enable**.

The selected scripts are enabled on the devices, and the **Jobs** dialog box displays a link to the Job ID. You can click the link to view the status of this task on the **Manage Jobs** page.

Click **Cancel** to return to the **Manage Scripts** page.

Related Documentation

- Executing Scripts on Devices on page 265

Removing Scripts from Devices

You can use Junos Space to delete the scripts that you have transferred onto devices.



CAUTION: If the filename of the selected script matches that of any script present on the device, then the script on the device is removed regardless of its contents.

To remove scripts from devices:

1. From the Network Application Platform task ribbon, select **Scripts > Manage Scripts**.
The **Manage Scripts** page displays the scripts that you imported into Junos Space.
2. Select the script that you want to remove from the device

3. Right-click your selection or use the **Actions** panel, and select **Remove Scripts from Devices**.

The **Remove Scripts from Device(s)** dialog box lists the devices that the script is deployed on.

4. Select the devices from which you want the script to be removed.
5. Click **Remove**.

The script is removed from the selected devices, and a **Jobs** dialog box displays a job ID link. You can click the link to view the status of the script removal operation on the **Manage Jobs** page.

Click **Cancel** to return to the **Manage Scripts** page.

Related Documentation

- Deploying Scripts on Devices on page 260

Executing Scripts on Devices

You can use Junos Space to trigger the execution of op-scripts on one or more devices simultaneously. Commit and event scripts are automatically activated after they are enabled. Commit scripts get triggered every time a commit is called on the device and event scripts are triggered every time an event occurs on the device or if a time is specified.



CAUTION: If the filename of the selected script matches that of any script present on the device, then the script on the device is executed regardless of its contents.

To execute an op-script on devices:

1. From the Network Application Platform task ribbon, select **Scripts > Manage Scripts**.
The **Manage Scripts** page displays the scripts that you imported into Junos Space.
2. Select the op-script that you want to execute on a device.
3. Right-click your selection or use the **Actions** panel and select **Execute Script on Device(s)**.

The **Execute Script on Device(s)** page is displayed as shown in Figure 48 on page 266.

Figure 48: Execute Script on Device(s) Dialog Box

Execute Script On Device(s)

Script name: setMacLimitBpduDrop.slax

Select Devices

Host Name	IP Address
<input type="checkbox"/> 10.204.92.13	10.204.92.13
<input type="checkbox"/> olive0	10.94.162.92
<input type="checkbox"/> olive1	10.94.163.165

Page 1 of 1 | Displaying 1 - 3 of

Parameters needed for script execution

[Add Parameters](#) [Delete](#)

Name	Value
<input type="checkbox"/> Enter parameter name	Enter parameter value

☐ [Schedule at a later time](#)

[Execute](#) [Cancel](#)

4. Select the devices on which you want the script to be executed.
5. To specify the parameters for script execution, click **Add Parameters**, and specify the parameter name and value in the row that is displayed.
6. To schedule a time to execute the script, check the **Schedule at a later time** checkbox and specify the date and time when you want the script to be executed.
7. Click **Execute**.

The selected scripts are executed on the devices, and the **Jobs** dialog box displays a link to the Job ID. You can click the link to view the status of this task on the **Manage Jobs** page.

Click **Cancel** to return to the **Manage Scripts** page.

Related Documentation

- Enabling Scripts on Devices on page 263

CHAPTER 20

Monitoring

- Viewing Script Details on page 267
- Viewing Verification Results on page 269
- Exporting Scripts in Tar Format on page 270

Viewing Script Details

Using Junos Space, you can view detailed information about a script, such as its name, type, format, creation time, version, comments, and the contents of the script.

To view the details of a script:

1. From the Network Application Platform task ribbon, select **Scripts > Manage Scripts**.
The **Manage Scripts** page displays the scripts that you imported into Junos Space.
2. Double click the script whose details you want to view.

The **View Script Details** dialog box displays the script name, type, format, creation time, version, comments and the contents of the script as shown in Figure 49 on page 268.

Figure 49: Script Details Dialog Box

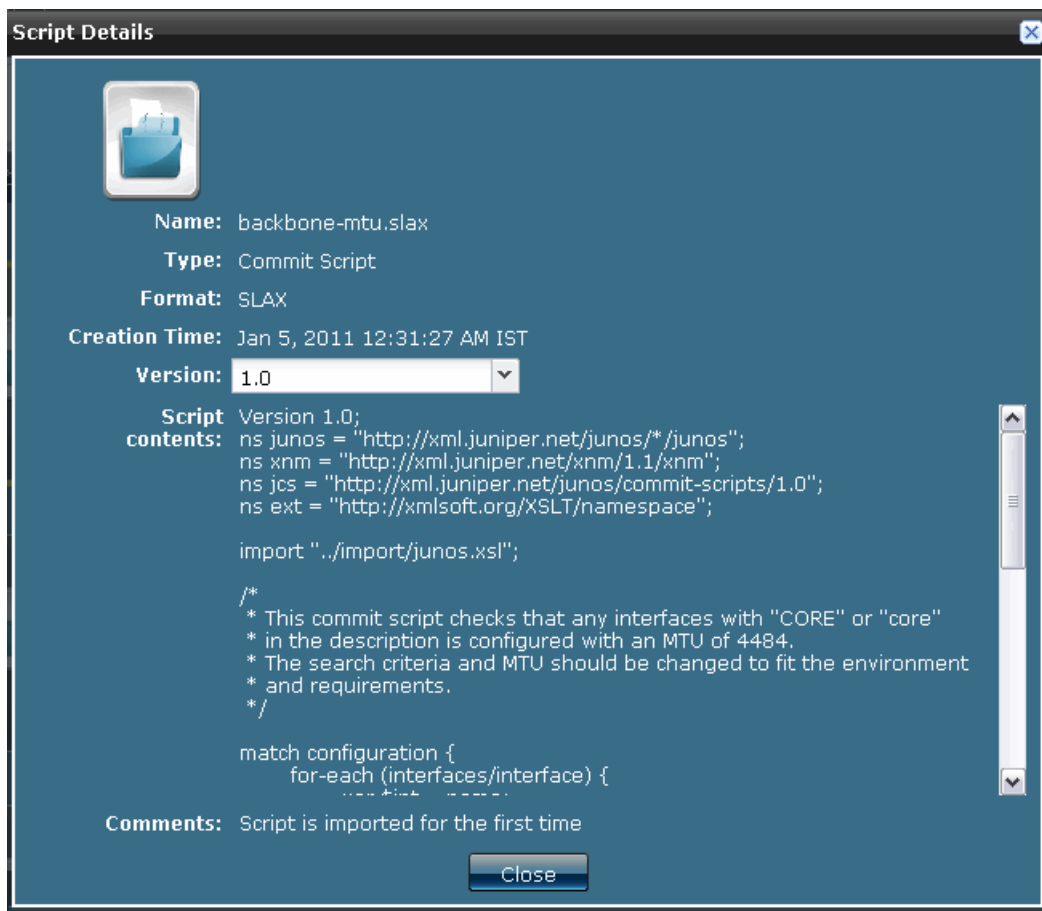


Table 36 on page 268 describes the fields displayed in the **Script Details** dialog box.

Table 36: Script Details Dialog Box Fields Description

Field	Description
Name	Name of the script file.
Type	Type of script. The values are: <ul style="list-style-type: none"> Commit script Op script Event script
Format	Format of the script file. The values are: <ul style="list-style-type: none"> XSL SLAX
Creation Time	Date and time when the script was created.

Table 36: Script Details Dialog Box Fields Description (*continued*)

Field	Description
Version	The version number of the script. When you modify a script, the changes are saved in the latest version of the script.
Script Contents	The contents of the script.
Comments	Text that describes the script that is entered by the user.

Related Documentation

- Exporting Scripts in Tar Format on page 270

Viewing Verification Results

You can use Junos Space to view the results of the checksum verification task. When a verification failure occurs, the results indicate the reason for failure. When you delete a script, the checksum verification results associated to that scrip are also deleted.

To view the verification results:

- From the Network Application Platform task ribbon, select **Scripts > Manage Scripts**.
The **Manage Scripts** page displays the scripts that you imported into Junos Space.
- Select the script whose verification result you want to view.
- Right-click your selection or use the **Actions** panel and select **View Verification Results**.

Figure 50: Script Verification Results Dialog Box

Script Verification Results					
Return to Manage Scripts					
Script name	Device name	Result	Start Time	Last Update Time	Remarks
op-ping-rtt-org.slax	Sudhaker-M120	Success	Jul 20, 2010 10:16:00 PM IST	Jul 20, 2010 10:16:00 PM IST	Script verified successfully

The **Script Verification Results** page displays the results of the checksum verification, as shown in Figure 50 on page 269.

Table 37 on page 269 describes the fields on the **Script Verification Results** page.

Table 37: Script Verification Results Page Fields Description

Field Name	Description
Script name	Filename of the script that is selected for verifying the checksum.
Device name	Name of the device on which the script is verified.

Table 37: Script Verification Results Page Fields Description (*continued*)

Field Name	Description
Result	Result of the verification. The values are: <ul style="list-style-type: none"> • Success • Failed
Start Time	Time when the verification was initiated.
Last Update Time	Latest time when the verification was updated.
Remarks	Errors encountered during the verification. This field is blank when the verification is successful.

4. Click the **Return to Manage Scripts** link to return to the **Manage Scripts** page.

Related Documentation

- Executing Scripts on Devices on page 265

Exporting Scripts in Tar Format

You can use Junos Space to export the contents of multiple scripts and save them on your local file system.

To export the contents of scripts:

1. From the Network Application Platform task ribbon, select **Scripts > Manage Scripts**.
The **Manage Scripts** page displays the scripts that you imported into Junos Space.
2. Select the scripts that you want to export.
3. Right-click your selection or use the **Actions** panel and select **Export Scripts**.
The **Export Scripts** dialog box asks you for a confirmation.
4. Click **Export**.
The **File Open** dialog box enables you to save the script files in the tar format and the **Export Scripts Job Status** dialog box displays the status of this task graphically. To view the status of your job in the Job Manager, click the bar of the graph. You can also save the tar files by clicking the **Download** link.
5. Click **OK** and save the files on your local file system.
6. Unzip the files to view the contents of the script.

Related Documentation

- Scripts Overview on page 247

CHAPTER 21

Managing Configuration Files

- Managing Configuration Files Overview on page 272
- Viewing Configuration File Statistics and Inventory on page 273
- Backing Up Configuration Files on page 274
- Deleting Configuration Files on page 276
- Restoring Configuration Files on page 277
- Comparing Configuration Files on page 278
- Editing Configuration Files on page 280
- Exporting Configuration Files on page 282
- Tagging, Viewing Tags, and Untagging Configuration Files on page 283
- User Privileges in Configuration File Management on page 283

Managing Configuration Files Overview

Centralized configuration file management enables you to maintain copies of your device configuration files within Junos Space, storing multiple versions of any given configuration file. It therefore provides for device configuration recovery. It also facilitates maintaining configuration consistency across multiple devices.

Because each commit command on a device creates a new version on that device, backup copies may not be kept long. No more than 49 copies can be stored on a device. Junos Space provides backups with longer lifecycles.



NOTE: Version management for configuration files in Junos Space is therefore independent from the configuration file versioning on devices.

The configuration file management workspace handles three types of configuration file:

- Running configuration—The configuration file currently in effect on the device. The running configuration file is labeled Version 0.
- Candidate configuration—The new, not yet committed, configuration file that will become the running configuration.
- Backup configuration—The configuration file for recovery or rollback purposes. A backup configuration file is created by a commit command and the oldest backup (version 49) is deleted. The most recent backup configuration file is labeled Version 1.

A potential workflow for an individual file or device in this workspace could be:

- Backup device and thus bring device's running configuration under Junos Space management
- Edit a copy of the backup configuration to create a candidate configuration
- Verify edits by comparing the initial backup version of the configuration file with the edited version
- Restore the candidate configuration to the device
- Export the initial backup to a zip file
- Delete the initial backup from Junos Space.

Stored configurations can be viewed by double-clicking the item on the **Manage Configuration Files** page.

A window appears, displaying the file in a non-editable format. You can select the version you want to view from the **Version** dropdown list.

The status bar near the bottom of the window shows the current page number, the total number of pages in the file, and provides paging controls and a Refresh button. Below that is the Comments area.

To perform an action on a configuration file, either select one and select an action from the Actions drawer, or right-click a configuration file and select an action from the right mouse-click menu. These are the actions you can perform:

- Deleting Configuration Files on page 276
- Restoring Configuration Files on page 277
- Comparing Configuration Files on page 278
- Editing Configuration Files on page 280
- Exporting Configuration Files on page 282
- Tagging, Viewing Tags, and Untagging Configuration Files on page 283

Viewing Configuration File Statistics and Inventory

The Config Files statistics page, which is directly under the Config Files workspace, displays two bar charts, showing:

- The Configuration file count by device family
- The most frequently revised configuration files.

In both cases, mouse over the graphic to display the contents in a tooltip.

All configuration files in Junos Space are displayed on the **Manage Config Files** inventory landing page. You can toggle between the icon view and the tabular view. View stored configurations either by clicking **Details** on a thumbnail, or by double-clicking an entry in the tabular view or a thumbnail in the icon view.

The following information is displayed for each configuration file:

- Host Name
- IP Address
- Platform
- Serial Number of Device
- Software Version

Related Documentation

- Backing Up Configuration Files on page 274
- Managing Configuration Files Overview on page 272
- Managing Tags Overview on page 427

Backing Up Configuration Files

Backing up a configuration file in the Config Files workspace means importing the configuration file from the device, and storing it in Junos Space.

Backing up your device configurations is therefore the prerequisite for configuration file management (see “Managing Configuration Files Overview” on page 272).

Only devices that have been previously discovered can have their configuration files backed up. The backup function will skip over any devices that cannot be reached. In the Job Manager, under Job Status, a skipped-over configuration file backup will show up as Failed.

The backup function will check for differences before creating a new version of a configuration file. If no changes are detected, the device will be skipped over. However, its status will be shown as Success.



.....

NOTE: The backup function checks for differences between the configuration on the device and the backup configuration stored in Junos Space. Therefore, even if no change has been made to a device's configuration, if you edit its configuration file and then make another backup, a new version will be created. To illustrate: the first backup will be version 1, the edited configuration file will be version 2, and the second backup will be version 3.

.....

A configuration file backup generates an audit log entry.

To back up your device configuration files to Junos Space, follow this procedure:

1. In Network Application Platform, navigate to **Config Files > Manage Config Files > Backup Config Files**.

The **Backup Config Files** page appears, displaying all the devices managed by Junos Space, with the following information:

- Host Name
- IP Address
- Platform
- Serial Number
- Software Version

Since the table displays one device (record) per row, a single page may not be sufficient to list all your devices.

The left side of the status bar at the bottom of the window shows which page you are looking at and the total number of pages of records. It also provides controls for navigating between the pages and refreshing them. The right side of the status bar indicates how many records are currently displayed and the total number of records.

2. Select the device(s) you want to back up. To back up all of them, select the checkbox in the column header next to Host Name.
3. To back up, choose one of the following options:
 - Immediately
 - Schedule for a Later Time—This results in one backup per device
 - a. Select the checkbox next to the **Schedule at a Later Time** label or click the arrow next to the **Schedule at a Later Time** label to display the corresponding fields.
 - b. Select a date from the field on the left, and a time from the field on the right. The time zone displays to the right of the time field. The time zone is set on and for the Junos Space server.
 - Repeat—This results in scheduled repetition, i.e., multiple backups per device
 - a. Select the checkbox next to the **Repeat** label or click the arrow next to the **Repeat** label to display the corresponding fields.
 - b. Choose Minutes, Hours, Days, Weeks or Years from the dropdown list.
 - c. To set the frequency of the repetition, enter the appropriate whole number in the upper field.
 - d. If necessary, set the End Time:

Select the checkbox next to the **End Time** label or click the arrow next to the **End Time** label to display the corresponding fields.
 - e. Select a date from the field on the left, and a time from the field on the right. The time zone displays to the right of the time field. The time zone is set on and for the Junos Space server.
4. Click **Backup**.
The **Backup Configuration Files** window appears, announcing that it has successfully scheduled backup of the selected devices, and giving you a job ID link to view details.
5. Click **OK**.

The **Manage Configuration Files** page reappears, displaying the backup files. If you display the data in tabular form, the page shows the following headers:

- Config File Name—This is the device name with .conf file ending.
- Device Name
- Latest Revision—This is always 1.
- Creation Date
- Last Updated Date

Click on any header to reveal the down arrow, which you can click to choose the mode of sorting, or adding or deleting column headers.

Related Documentation

- Managing Configuration Files Overview on page 272
- Deleting Configuration Files on page 276
- Restoring Configuration Files on page 277
- Comparing Configuration Files on page 278
- Editing Configuration Files on page 280
- Exporting Configuration Files on page 282
- Tagging, Viewing Tags, and Untagging Configuration Files on page 283
- Viewing Audit Logs on page 305

Deleting Configuration Files

This topic gives the procedure for deleting device configuration files from Junos Space.

To delete a configuration file, do the following:

1. In Network Application Platform, navigate to **Config Files > Manage Config Files**.

The **Manage Configuration Files** page displays all the configuration files saved in Junos Space.

2. Select the checkbox of a configuration file and either select **Delete** from the Actions Drawer or the right mouse-click menu.

A message appears, asking you to confirm deletion.

3. Click **Delete**.

The **Manage Configuration Files** page reappears, displaying any remaining configuration files.

Related Documentation

- Managing Configuration Files Overview on page 272
- Restoring Configuration Files on page 277
- Comparing Configuration Files on page 278
- Editing Configuration Files on page 280
- Exporting Configuration Files on page 282
- Tagging, Viewing Tags, and Untagging Configuration Files on page 283

Restoring Configuration Files

Restoring a configuration file means either merging the contents of a configuration file on Junos Space with the existing configuration on the device, or overriding the device's running configuration with a candidate configuration (a configuration file edited in the Config Files workspace) or a backup from Junos Space.

A restore action generates an audit log entry.

To restore a device configuration file from Junos Space to a device,

1. Navigate to **Config Files > Manage Config Files**.
2. Select the device whose configuration you want to restore. (To restore all of them, in the tabular view, select the checkbox in the column header next to **Config File Name**.)
The **Restore Config File(s)** window appears, displaying the name of the selected file, the name of the device, the version which is to be restored to the device, and the type of restore. By default, the latest version will be merged.
3. Select the appropriate version from the dropdown list that appears when you click next to the version number displayed in the **Versions** column.
4. Select the appropriate type of restore from the dropdown list that appears when you click next to the term displayed in the **Type** column.
5. You can either restore immediately or schedule the restoration for a later time.
 - Immediately—Click **Restore**.
 - Schedule at a Later Time
 - a. Select the checkbox next to the **Schedule at a Later Time** label or click the arrow next to the **Schedule at a Later Time** label to display the corresponding fields.
 - b. Select a date from the field on the left, and a time from the field on the right. The time zone displays to the right of the time field. The time zone is set on and for the Junos Space server.
 - c. Click **Restore**.

The **Restore Configuration Files** window appears, announcing the successful scheduling of the restoration, and presenting a link to the job ID so that you can view details.

A successful restore action will be indicated by the word Success in the status column of the Job Manager. If a device cannot be reached, it will be skipped over, and the job status will indicate failure.

6. Click **OK** to dismiss the window.
7. (Optional) Verify your work either by double-clicking the configuration file name on the **Manage Configuration Files** page, or by doing another backup, then comparing versions (see "Comparing Configuration Files" on page 278).

Related Documentation

- Managing Configuration Files Overview on page 272
- Deleting Configuration Files on page 276
- Comparing Configuration Files on page 278
- Editing Configuration Files on page 280
- Exporting Configuration Files on page 282
- Tagging, Viewing Tags, and Untagging Configuration Files on page 283
- Viewing Audit Logs on page 305

Comparing Configuration Files

The Compare feature enables you to view entire device configurations side by side, the total number of diffs run, the date and time of the last commit, and the number of changes made. Using the Compare feature does not generate an audit log entry.

You can compare the following:

- The configuration file of one device to the configuration file of another device. By default, the latest versions are compared.
- Two versions of the same configuration file. The default comparison is between the latest version and the previous version.
- An earlier version of the configuration file of one device with a later version of the configuration file of another device.

Any choices other than those listed above will result in a grayed-out menu.

To compare device configuration files in Junos Space, follow this procedure:

1. In Network Application Platform, navigate to **Config Files > Manage Config Files**.

The **Manage Configuration Files** page appears, displaying all the configuration files managed by Junos Space.

2. Select one of the configuration file you want to compare.
3. Either select **Compare Config File Versions** from the Actions drawer, or select the same action from the right mouse-click menu.

The **Compare Config Files** window appears.

4. For the source, select a configuration file from the **Source config file** dropdown list and a version from the **Version** dropdown list.

For the target, select a configuration file from the **Target config file** dropdown list and a version from the **Version** dropdown list.

Click **Compare**.

The **Compare Config Files** window displays the two configuration files side by side, with their file names and their versions in a dark gray bar underneath the legend at the top of the page. The legend references the following:

- Total diffs—Black text is content common to both files
- Source—Content in the file on the left that is not contained in the file on the right.
- Target—Content in the file on the right that is not contained in the file on the left.
- Changed—Hot pink text is content unique to its respective file.

The status bar shows the current page number and the total number of pages. It also provides controls for moving from page to page and for refreshing the display.

The date and time of the last commit is shown in hot pink.



NOTE: The Compare function sets each configuration parameter in one file or version side by side with the same parameter in the other. This may lead to multiple pages of configuration for a single parameter in one file, whereas the same parameter in the other file may be only a couple of lines.

5. (Optional) To locate differences in configuration, click **Prev Diff** or **Next Diff**.
6. To finish viewing a comparison, click **Close** at the bottom of the page.

Related Documentation

- Managing Configuration Files Overview on page 272
- Deleting Configuration Files on page 276
- Restoring Configuration Files on page 277
- Comparing Configuration Files on page 278
- Editing Configuration Files on page 280
- Exporting Configuration Files on page 282
- Tagging, Viewing Tags, and Untagging Configuration Files on page 283

Editing Configuration Files

This action enables a very advanced user to edit the configuration file of the selected device in a text editor. It is therefore very different from the Device Configuration Editor available as an Action in the Devices workspace (**Network Application Platform > Devices > Manage Devices**. See “Editing Device Configuration Overview” on page 71). The Edit Config Files action in the Config Files workspace has no validation and no sanity check.

Editing a configuration file generates an audit log entry (see “Viewing Audit Logs” on page 305); however, unlike configuration files edited in the Devices workspace, files edited in the Config Files workspace are not saved as change requests, instead, they are saved as versions..

To edit a configuration file using the Edit Config File action in the Config Files workspace:



NOTE: This facility neither validates your work, nor submits it to a sanity check. To get those features, use the Edit Device Configuration action in the Devices workspace.

1. In Network Application Platform, navigate to **Config Files > Manage Config Files** and select the device whose configuration you want to edit.

If no configuration files are displayed on the page, you must first back up the discovered devices (see “Backing Up Configuration Files” on page 274).

2. Either mouse over the Actions drawer and select Edit Config File, or select Edit Config File from the right mouse-click menu.

The **Edit Config File** page appears. It displays the name of the file you selected, the time at which the file was created, the version, and the contents.

3. Select a version to use as a baseline from the **Version** dropdown box.

A version can be either a backup of a device configuration, or an edited copy of that initial backup. For an explanation of versioning in this context, see “Backing Up Configuration Files” on page 274.)

The selected version is displayed in the text editor. Note that there are usually both vertical and horizontal scroll bars, and that a configuration usually has multiple pages. The status bar at the bottom displays the page you are on and the total number of pages. It also holds paging controls and a Refresh icon.

For ease of orientation, the pagination of the configuration file remains the same, even if you add or remove large quantities of text. The parameters that were on page 5 when you began editing are still on page 5 when you finish.

4. (Optional) To find a specific parameter, go through the file page by page. The browser's Search function does not work in the text editor.
5. Enter your changes, using the Copy/Paste function if required.



NOTE: Do not click **Modify** until you have finished editing.

6. (Optional) List the changes you have made (or anything else) in the **Comments** field. You cannot create a comment unless you have made changes. It is advisable to enter something in this field to distinguish the current version from a backup taken from the device itself.

7. When finished making all changes, click **Modify**

The **Manage Configuration Files** page reappears, displaying the edited configuration file still selected.

8. (Optional) Verify your work by double-clicking the device from the **Manage Configuration Files** page.

A window appears, displaying the file in a non-editable format. You can select the version from the dropdown list. By default, the edited version is displayed.

Here again, the pagination, Comments area, and controls are the same as they are in the text editor you used to make your changes.

Alternatively, you could compare versions of the file (see “Comparing Configuration Files” on page 278).

To deploy the edited configuration file, you must use the Restore action (see “Restoring Configuration Files” on page 277).

Related Documentation

- Managing Configuration Files Overview on page 272
- Deleting Configuration Files on page 276
- Restoring Configuration Files on page 277
- Comparing Configuration Files on page 278
- Exporting Configuration Files on page 282
- Tagging, Viewing Tags, and Untagging Configuration Files on page 283
- Viewing Audit Logs on page 305

Exporting Configuration Files

The Export action enables you to save one or more configuration files to a zip file on your local computer.



NOTE: Your browser security settings must be set to allow downloads. If the browser interrupts the download with a warning and then tries to restart the download by refreshing, the export will be aborted, and the zip file removed.

Exporting a configuration file generates an audit log entry.

To export a configuration file to a zip file,

1. Navigate to **Config Files > Manage Config Files** and select one or more configuration files.
2. Either select **Compare Config File Versions** from the Actions drawer, or select the same action from the right mouse-click menu.

The **Export Config File(s)** window opens, displaying the name of the file, the device name, and the configuration file versions stored. By default, the latest version is selected.

3. Select the appropriate version from the dropdown list that appears when you click next to the version number displayed in the **Versions** column.
4. Click **Export**.

The **Generating ZIP archive** window appears, displaying a progress bar showing when the zip file is ready for downloading, at which point, the **Opening deviceConfigFiles.zip** dialog opens.

5. Save the zip file to your computer before closing the progress bar or the **OpeningdeviceConfigFiles.zip** dialog, because the generated zip file is removed from the server immediately after the download is complete, or when either of these two windows is closed. Refreshing or exiting the browser will also remove the zip file from the server.

Related Documentation

- Managing Configuration Files Overview on page 272
- Deleting Configuration Files on page 276
- Restoring Configuration Files on page 277
- Comparing Configuration Files on page 278
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Tagging, Viewing Tags, and Untagging Configuration Files

- To tag configuration files, consult “Tagging an Object” on page 432.
- To view tags on configuration files, consult “Viewing Tags” on page 433.
- To untag configuration files, consult “Untagging Objects” on page 433.

Related Documentation

- Managing Configuration Files Overview on page 272
- Managing Tags Overview on page 427
- Managing Tags on page 428
- Filtering Inventory Using Tags on page 434
- Creating a Tag on page 431

User Privileges in Configuration File Management

In Junos Space Users, there is a predefined role for configuration file management: Configuration File Manager. That predefined role enables the users to which it has been assigned the permission to :

- Backup Config Files
- Delete Config Files
- Restore Config Files
- Compare Config Files
- Export Config Files

If you want to restrict the Configuration File Manager’s permissions to anything less than the full set listed above, you can create a role in the Config Files application workspace and assign the permissions specifically for each list item..

Related Documentation

- Role-Based Access Control Overview on page 317
- Managing Configuration Files Overview on page 272

PART 11

Job Management

- Overview on page 287
- Administration on page 291

CHAPTER 22

Overview

- Job Management Overview on page 287

Job Management Overview

The Job Management workspace lets you monitor the status of all jobs that have been run in all Junos Space applications. A job is a user-initiated action that is performed on a Junos Space object, such as a device, service, or customer. All scheduled jobs can be monitored.

Typical jobs in Junos Space include device discovery, deploying services, prestaging devices, and performing functional and configuration audits. Jobs can be scheduled to occur immediately or in the future. For all jobs scheduled in Junos Space, you can view job status from the **Jobs** workspace. Junos Space maintains a history of job status for all scheduled jobs. When a job is scheduled from a workspace, Junos Space assigns a job ID that serves to identify the job (along with the job type) in the Manage Jobs inventory panel.

You can perform the following tasks from the **Jobs** workspace:

- View status of all scheduled, running, canceled, and completed jobs
- Retrieve details about the execution of a specific job
- View statistics about average execution times for jobs, types of jobs that are run, and success rate
- Cancel a scheduled job or in-progress job (when the job has stalled and is preventing other jobs from starting)

Junos Space supports the following job types:



NOTE: The job types listed here may not represent the job types you are able to manage in your Junos Space software release. Job types are subject to change based on the licensed application in your Junos Space software release.

Table 38: Junos Space Job Types Per Application

Junos Space Application	Supported Job Types
Platform	Add Node
	Discover Network Elements
	Update Device
	Delete Device
	Resync Network Element
	Role Assignment
	Audit Log Archive and Purge
Network Activate	Deploy Service
	Prestage Device
	Role Assignment
	Service Deployment
	Service Decommission
	Functional Audit
	Configuration Audit
Service Now	Install AI-Scripts
	Uninstall AI-Scripts
Ethernet Design	Provision Device Profile
	Provision Port Profile
Security Design	Provisioning Security
	Policy Provisioning IPSec VPN
	Importing Address/Domain in Security Topology
QoS Design	Discover Domain
	Create QoS Profile

- Related Documentation**
- Viewing Scheduled Jobs on page 293
 - Viewing Statistics for Scheduled Jobs on page 296
 - Canceling a Job on page 299

CHAPTER 23

Administration

- Viewing Your Jobs on page 291
- Viewing Scheduled Jobs on page 293
- Viewing Statistics for Scheduled Jobs on page 296
- Canceling a Job on page 299
- Viewing Job Recurrence on page 299

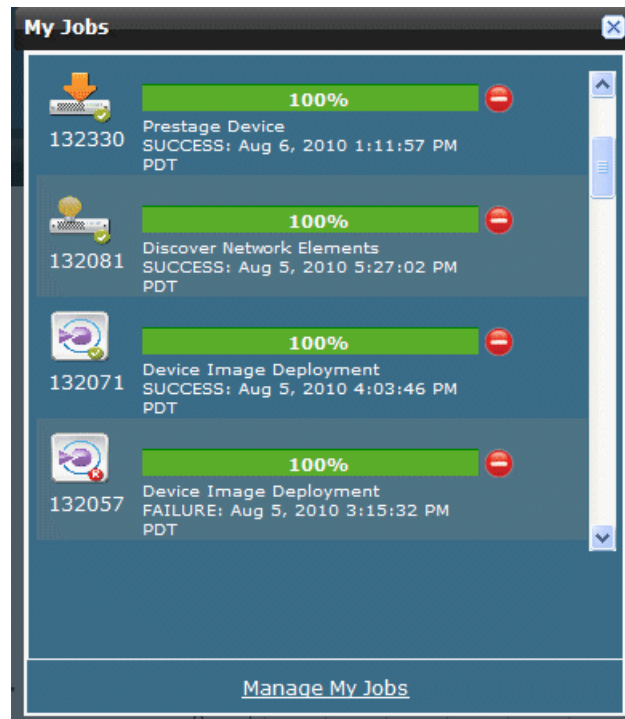
Viewing Your Jobs

You can view all your completed, in-progress, and scheduled jobs in Junos Space. You can quickly access summary and detailed information about all your jobs, from any work space and from any task you are currently performing. You can also clear jobs from your list when jobs are no longer of interest to you.

To view the jobs that you have initiated:

1. In the banner of the Junos Space user interface, click the **My Jobs** icon.

The My Jobs window is displayed, as shown in the following example.



NOTE: The My Jobs window displays your 25 most recent jobs.

2. To view jobs details, select one or more jobs in the My Jobs window and click **Manage My Jobs**.

The Manage Jobs inventory panel displays a listing of all jobs that you initiated.

3. To remove jobs from the My Jobs window:
 - To remove a job, click on the **Clear job** icon that is displayed to the right of the job.



NOTE: Clearing a job from the My Jobs window does not affect the job itself, but only updates the My Jobs view.

Related Documentation

- Viewing Statistics for Scheduled Jobs on page 296
- Canceling a Job on page 299
- Job Management Overview on page 287

Viewing Scheduled Jobs

The Manage Jobs inventory page displays all jobs that have been scheduled to run or have run from each Junos Space application.

- Changing the View on page 293
- Viewing Job Types on page 294
- Viewing Job Status Indicators on page 294
- Viewing Job Details, Status, and Results on page 295
- Performing Manage Jobs Commands on page 296

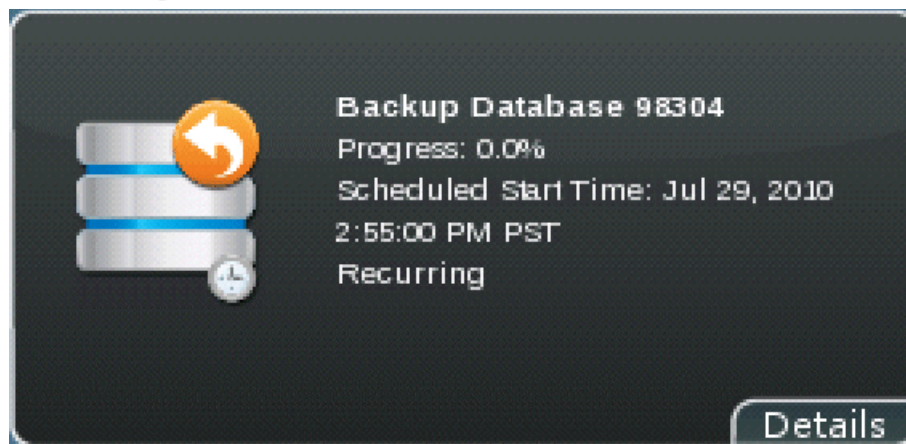
Changing the View

You can display jobs in two views: thumbnail and tabular. By default, Jobs appear on the page in thumbnail view.

In thumbnail view, jobs appear as icons listed in descending order by job ID. Each job has a title and job ID. To see more detailed job information, status, or results, double-click a job icon or move the zoom slider to the far right. The default zoom slider position is in the middle.



NOTE: A recurring database job appears as follows:



In tabular view, jobs appear in a table sorted by scheduled start time by default. Each job is a row in the Manage Jobs table.



NOTE: A recurring database backup job provides the following information in the Recurrence column of the Manage Jobs table.



To change views:

- Click a view indicator at the right in the Manage Jobs page title bar.

Viewing Job Types

Job types tell you what tasks or operations have been performed throughout Junos Space applications. Each Junos Space application supports certain job types. You can search for a particular job type. You can also sort by job type in tabular view. For more information about how to manipulate inventory page data, see “Inventory Pages Overview” on page 29.

To view job types:

- In thumbnail view, see the job icon and the job title. You can also mouse over a job icon to see its title.
- In tabular view, the job type appears as a column in the table. You can sort by

Viewing Job Status Indicators

Each job icon on the Manage Jobs inventory page in thumbnail view has a job status indicator. Table 39 on page 294 defines each job status indicator.

Table 39: Job Icon Status Indicators






Job Status Indicator	Description
	The job completed successfully.
	The job failed.
	The job was canceled by a user.

Table 39: Job Icon Status Indicators (*continued*)

	The job is scheduled.
	The job is in progress. You can only cancel jobs that are in progress from the Actions drawer.

Viewing Job Details, Status, and Results

Job details display all of the information that is stored about a job. You can also view job status and results.

To view job status, results, or details:

- Double-click a job icon in thumbnail view or double-click a row in the table in tabular view.
- Move the zoom slider to the far right in thumbnail view.

Table 40 on page 295 defines job information. All job information appears in the Job Details dialog, but not all of it appears in the Manage Jobs table. If a column is common to every job, for example, State and Percent, then it appears in both. But, if it's specific to each type of job, for example for Backup Database (Backup Date, Machine, and File Path), then it only appears in job details. Although the Details column for this job in Manage Jobs might show a subset of that information.

Table 40: Job Details and Columns in the Manage Jobs Table

Field	Description
Name	For most jobs, the name is the Job Type with the timestamp (in milliseconds) appended. However, for service-related jobs (Deploy Service, Decommission, Configuration Audit, and Functional Audit) jobs, the job name is supplied by the user as part of the workflow.
Backup Date	Date you backed up the database.
Comment	An optional descriptive note that describes or otherwise identifies the backup operation.
Machine	Name of the Junos Space server from which database backup occurred.
File Path	The pathname to the database backup file.
Percent	Percentage of job that has completed.
State	State of job execution: <ul style="list-style-type: none"> • SUCCESS—Job completed successfully • FAILURE—Job failed and was terminated. • IN PROGRESS—Job is in progress.. • CANCELED—Job was canceled by a user.
Job Type	The supported job types. Job types depend on the installed Junos Space applications.

Table 40: Job Details and Columns in the Manage Jobs Table (*continued*)

Job ID	The numerical ID of the job.
Summary	The operations executed for the job.
Scheduled Start Time	The scheduled start time for the job (specified by a Junos Space user).
Scheduled Start Time (not displayed in default view)	Time when Junos Space begins execution of the job. In most cases, actual start time should be the same as the scheduled start time.
User	The log in username.
End Time (not displayed in default view)	Time that the job completed or was terminated, if job execution failed.

Performing Manage Jobs Commands

You can perform the following commands from the Manage Jobs Actions drawer:

- **Cancel Job**—Stop a scheduled job. See “Canceling a Job” on page 299.
- **Delete Database Backup**—Delete a backup database backup file in the Manage Jobs inventory. See “Deleting Database Backup Files” on page 383.
- **View Recurrence**—Displays the View Job Recurrence dialog box from which you can view the recurring database job start date and time, recurrence interval, end date and time, and job ID to view all occurrences of the schedule. See “Viewing Job Recurrence” on page 299
- **Tag It**—Apply a tag to a job to segregate, filter, and categorize jobs. See “Tagging an Object” on page 432.
- **View Tags**—View tags applied to a job. See “Viewing Tags” on page 433.
- **Untag It**—Remove a tag from a job. See “Untagging Objects” on page 433.

Related Documentation

- Viewing Statistics for Scheduled Jobs on page 296
- Job Management Overview on page 287
- Canceling a Job on page 299

Viewing Statistics for Scheduled Jobs

The Platform Job Management workspace statistics page displays the following graphical data:

- Job Types pie chart
- State of Jobs Run pie chart

- Average Execution Time per Completed Job bar chart

This topic includes the following tasks:

- Viewing the Types of Jobs That Are Run on page 297
- Viewing the State of Jobs That Have Run on page 297
- Viewing Average Execution Times for Jobs on page 298

Viewing the Types of Jobs That Are Run

Viewing Job Types—The Job Types pie chart displays the percentage of all Junos Space jobs that run of a particular type. Each slice in the pie chart represents a job type and the percentage of time a job type was run. The job type legend appears to the right identifying the job type titles according to colors. Scroll down the list to see all of the job types. The number of jobs that appear in the job types legend depend on the number of jobs that have run in all Junos Space applications. Mousing over a slice in the pie chart displays the job type title and the number of jobs that have run.

Viewing Job Types Details—Clicking a job type in the Job Types pie chart displays only those job types filtered on the Manage Jobs inventory landing page. For more information about the Manage Jobs page, see “Viewing Scheduled Jobs” on page 293. The selected job types display in thumbnail view. Click **More** in the thumbnail displays that job’s status by device name, IP address, job status, and description. Move the details slider at the top right of the Manage Jobs page to the far right or change to tabular view to see the job details data fields: percentage complete, state, job type, job ID summary selected start time, and user name.

To view all the data fields available for a job in Manage Jobs in tabular view:

1. Select the down arrow in a table column. The drop-down sort and column menu appears.
2. Select **Columns**. The Columns cascading menu appears. You see all of the possible job data fields to show or hide. Checked jobs columns appear on the Manage Jobs table. Job columns that are not checked are hidden and do not appear in the table.

Viewing the State of Jobs That Have Run

Viewing the Job State—The State of Jobs Run pie chart graphically displays the percentage of jobs that have either succeeded or failed. Mouse over the pie chart to see the number of jobs that have succeeded or failed.

Viewing Job State Details—Clicking a slice in the State of Jobs Run pie chart displays only those jobs that have either succeeded or failed filtered on the Manage Jobs page in thumbnail view. For more information about the Manage Jobs page, see “Viewing Scheduled Jobs” on page 293. The selected job types display in thumbnail view. Click **More** in the thumbnail displays that job’s status by device name, IP address, job status, and description. Move the details slider at the top right of the Manage Jobs page to the far right or change to tabular view to see the job details data fields: percentage complete, state, job type, job ID summary selected start time, and user name.

To view all the data fields available for a job in Manage Jobs in tabular view:

1. Select the down arrow in a table column. The drop-down sort and column menu appears.
2. Select **Columns**. The Columns cascading menu appears. You see all of the possible job data fields to show or hide. Checked jobs columns appear on the Manage Jobs table. Job columns that are not checked are hidden and do not appear in the table.

Viewing Average Execution Times for Jobs

Viewing the Average Execution Time per Completed Job—Each bar in the Average Execution Time per Completed Job bar chart represents a job type and the average execution time in seconds. Depending on the size of the Average Execution Time per Completed Job bar chart is on the Job Management statistics page, the name of the job type displays at the bottom of each bar.

Viewing Completed Job Details—Clicking a bar in the Average Execution Time per Completed Job bar chart displays only those jobs that have been executed on the Manage Jobs inventory page in thumbnail view. For more information about the Manage Jobs page, see “Viewing Scheduled Jobs” on page 293. The selected job types display in thumbnail view. Click **More** in the thumbnail displays that job’s status by device name, IP address, job status, and description. Move the details slider at the top right of the Manage Jobs page to the far right or change to tabular view to see the job details data fields: percentage complete, state, job type, job ID summary selected start time, and user name.

To view all the data fields available for a job in Manage Jobs in tabular view:

1. Select the down arrow in a table column. The drop-down sort and column menu appears.
2. Select **Columns**. The Columns cascading menu appears. You see all of the possible job data fields to show or hide. Checked jobs columns appear on the Manage Jobs table. Job columns that are not checked are hidden and do not appear in the table.

- Related Documentation**
- Viewing Scheduled Jobs on page 293
 - Job Management Overview on page 287
 - Inventory Pages Overview on page 29

Canceling a Job

From the Platform Job Management inventory page you can cancel jobs that:

- Are scheduled, but that you don't want to run.
- Are in progress that are hanging or incapable of completing, and are preventing other jobs from starting.



NOTE: If Junos Space determines that the job operation is non-interruptible, the job runs to completion; otherwise the job is cancelled.



NOTE: Junos Space performs no cleanup on cancelled jobs.

To cancel a job:

1. From the task ribbon, navigate to Platform > Job Management > Manage Jobs. The Manage Jobs inventory page appears.
2. Select the job that you want to cancel.
3. Mouse over the Actions drawer to open it.
4. Select **Cancel Job**. When the Cancel Job operation completes, the inventory view displays the Job State CANCELLED. If a job is in a state that you can not cancel, The Cancel Job command is disabled in the Action drawer menu.

Related Documentation

- Viewing Statistics for Scheduled Jobs on page 296
- Job Management Overview on page 287
- Viewing Scheduled Jobs on page 293
- Inventory Pages Overview on page 29
- Viewing Your Jobs on page 291

Viewing Job Recurrence

You can view information about when a job recurs. For example, in Junos Space release 1.4, you can view the recurrence of a database backup job.

To view job recurrence information:

1. Navigate to **Platform > Administration > Manage Database**.
The **Manage Database** inventory page appears.
2. Select a recurring job and select **View Recurrence** from the **Actions** menu.

You can also double-click a database backup file or right-click and select **View Recurrence** from the pop-up menu.

The **View Job Recurrence** dialog box appears.

The **View Job Recurrence** dialog box displays the selected job start date and time, recurrence interval, and end date and time.

3. Optional: Click the **Job ID** link to view all recurrences of the schedule.
4. Click **OK**.

**Related
Documentation**

- Backing Up the Database on page 373
- Viewing Scheduled Jobs on page 293
- Viewing Audit Logs on page 305

PART 12

Audit Logs

- Overview on page 303
- Administration on page 305

CHAPTER 24

Overview

- Junos Space Audit Logs Overview on page 303

Junos Space Audit Logs Overview

Audit logs provide a record of Junos Space login history and user-initiated tasks that are performed from the user interface. From the Audit Logs workspace, you can monitor user login/logout activity over time, track device management tasks, view services that were provisioned on devices, and so forth. Junos Space audit logging does not record non-user initiated activities, such as device driven activities, and is not designed for debugging purposes. User-initiated changes made from the Junos Space CLI are logged but are not recorded as audit logs.

To use the audit log service to monitor user requests and track changes initiated by users, you must have Audit Log Administrator.



NOTE: Audit Logging is not currently supported for Ethernet Design and Service Now.

Over time, the Audit Log administrator will archive a large volume of Junos Space log entries. Such log entries might or might not be reviewed, but they must be retained for a period of time. The Archive Purge feature helps you manage your Junos Space log volume, allowing you to archive log files and then purge those log files from the Junos Space database. For each Archive Purge operation, the archived log files are saved in a single file, in CSV format. The audit logs can be saved to a local server (the server that functions as the active node in the Junos Space fabric) or a remote network host or media. When you archive data to a local server, the archived log files are saved to the default directory `/var/lib/mysql/archive`.

Related Documentation

- Archiving and Purging Audit Logs on page 310
- Viewing Audit Logs on page 305

CHAPTER 25

Administration

- Viewing Audit Logs on page 305
- Viewing Audit Log Statistics on page 307
- Converting the Audit Log File UTC Timestamp to Local Time in Microsoft Excel on page 309
- Archiving and Purging Audit Logs on page 310

Viewing Audit Logs

Audit logs are generated for login activity and tasks that are initiated from the Network Application Platform and Network Activate. The View Audit Logs page displays all tasks.

To view audit logs, you must have Audit Log Administrator privileges.



NOTE: Audit Logging is not currently supported by the Ethernet Design and Service Now applications.

You view audit logs in Junos Space only in tabular view. For more information about how to manipulate inventory page data, see “Inventory Pages Overview” on page 29.

Viewing Audit Log Details

The Audit Log Details window displays information about the task that was logged, including information about the objects affected by the task.

To view detailed audit log information:

- If an audit log entry does not include a job ID, double-click a table row for the audit log entry. The Audit Log Details window displays information about the task that was logged, including information about the objects affected by the task. Click **OK** to close the Audit Log Detail Window.
- If an audit log entry includes a Job ID, click the Job ID link in the audit log row. The Job Manager Inventory view displays information about the job. If this job is recurring, then it will display information about all recurrences of this job. Click **Return to Audit Logs** to close the Job Manager inventory view and return to the audit logs table.

The fields displayed in the Audit Logs table are described in Table 41 on page 306.

Table 41: Detailed Audit Logs Information and View Audit Log Table Columns

Field	Description
User Name	The login ID of the user that initiated the task.
User IP	The IP address of the client computer from which the user initiated the task.
Task	The name of the task that triggered the audit log.
Timestamp	Time is UTC time in database that is mapped to the local time zone of client computer.
Result	The execution result of the task that triggered the audit log: <ul style="list-style-type: none"> • Success—Job completed successfully • Failure—Job failed and was terminated. • Job Scheduled—Job is scheduled but has not yet started.
Job ID	For each job-based task, the audit log includes the job ID.
Description	A description of the audit log.

For both recurring and non-recurring jobs, such as a database backup, the Audit Logs table displays the following data described in table Table 42 on page 306.

Table 42:

Field	Description
Job ID	The numerical ID of the job.
Percent	Percentage of job that has completed.
State	State of job execution: <ul style="list-style-type: none"> • SUCCESS—Job completed successfully • FAILURE—Job failed and was terminated. • IN PROGRESS—Job is in progress.. • CANCELED—Job was canceled by a user.
Job Type	The supported job types. Job types depend on the installed Junos Space applications. In Junos Space 1.4, a recurring job type supported is Backup Database.
Summary	The operations executed for the job.
Scheduled Start Time	The scheduled start time for the job (specified by a Junos Space user).
Recurrence	The job recurrence interval, start time, and end time.

Related Documentation

- Viewing Audit Log Statistics on page 307
- Junos Space Audit Logs Overview on page 303

- Archiving and Purging Audit Logs on page 310
- Inventory Pages Overview on page 29
- Backing Up the Database on page 373

Viewing Audit Log Statistics

The Audit log workspace statistics page provides two graphs: Audit Log Statistical Graph pie chart and the Top 10 Active Users in 24 Hours for the audit log administrator to monitor Junos Space tasks.

The Audit Log Statistical Graph pie chart displays all tasks that have been performed and logged in all Junos Space applications over a specific period of time. You can view Audit Log statistics by task type, user, workspace, and application.



NOTE: Audit Logging is not currently supported by the Ethernet Design and Service Now applications.

The Top 10 Active Users in 24 hours graph displays the top 10 Junos Space users who have performed the most tasks over 24 hours. The graph X axis represents the activities performed by a single user. Each active session for that user is represented by a bubble on the X axis. The graph Y axis represents hours. For example, if a single user performed six active sessions during the last 24 hours, the chart displays six bubbles on the X axis according to the hours on the Y axis.

Viewing the Dynamic Audit Log Statistical Graph

The Audit Log Statistical Graph is an interactive graph that allows the audit log administrator to view audit logs by selecting both category and time frame. The category determines the statistical graph that displays—task, user, workarea, or application. Each slice in the pie represents a task and its usage percentage of the whole. The tasks types also appear in a list box at the right of the pie chart. Mousing over a slice of the pie displays the number of times the task is invoked. The time frame specifies the period of time within which to show audit log data.

To use the Audit Log Statistical Graph:

1. Select a graph category:

- Task—shows all tasks that have been performed. Click on each task slice to go to the next level chart showing the users who performed the selected task.

The graph path displays the path to show where you are located in the UI. Click Overview to go back to the top level chart. The task name in the path indicates the currently selected path.

Tasks display in terms of user name or IP address.

- User names display all users by name. Click a user to go to the inventory page filtered by task, user, and selected time frame.
- IP address displays all IP address where users performed tasks. Click an IP address to go to the inventory page filtered by task, IP address, and selected time frame.
- Users displays all users using the system within the time frame. 10 users display per chart. Click Others to go to the next page. Click the previous page link to go back.
- Workspace displays all workspaces used in the time frame. Click on a workspace slice to go to the inventory page filtered by workspaces.
- Application displays all applications used. Click a pie slice to go to the inventory page filtered by application and selected time frame.

2. Select a time frame in days, weeks, or months to display audit log data in the pie chart. The default is Days. A time selection description displays just below the time frame area.

- Days—Days mode displays the past seven days t the selected date. Select single or multiple days. Select mltiple days by dragging the mouse
- Weeks—Weeks mode displays the past five weeks, from past to most current on the right.
- Months—Months mode displays the past 12 month, from past to most current on the right.

The current day, week, or month is highlighted.

3. Click a slice in the pie chart to view more detailed information. Tasks appear in tabular view by user name, user IP, task , timestamp, results, description, job ID, and level 2 description.

See “Inventory Pages Overview” on page 29 for more information about manipulating the table data.

4. On the inventory page, click an audit log to view more detailed information. For a job-related log entry, there is a column for job-id, by clicking this link you will be led to a new table showing the corresponding Job info.

In the audit log detail view, if there are multiple affected objects for the log entry, the affected object detail always shows the first object detail. Clicking on any object in the list changes the object detail accordingly. If there is no affected object for this log entry, the affected object list is hidden and the object detail part is shown none.

5. Click Return to Audit Logs to go back to Audit Log View.

Viewing the Top 10 Active Users In 24 Hours Statistics

To view the Top 10 Active Users in 24 Hours graph:

1. In the Top 10 Active Users in 24 Hours graph, double-click a user’s bubble for a particular hour. The View Audit Log page appears with the jobs performed by that user.

Tasks appear by user name, user IP, task , timestamp, results, description, job ID, and level 2 description in tabular view. See “Inventory Pages Overview” on page 29 for more information about manipulating the table data.

Related Documentation

- Viewing Audit Logs on page 305
- Junos Space Audit Logs Overview on page 303
- Inventory Pages Overview on page 29
- Archiving and Purging Audit Logs on page 310

Converting the Audit Log File UTC Timestamp to Local Time in Microsoft Excel

You can unzip an audit log *.gz file. You can open the extracted *.csv file as a spreadsheet in Microsoft Excel. In Microsoft Excel, you can convert the Coordinated Universal Time (UTC) timestamp column entries to local time.

To convert the UTC time to local time:

1. Retrieve the JunosSpaceAuditLog_date_time_id.csv.gz audit log file from where you archived it. If you archived the file locally, the file is located in /var/lib/mysql/archive.
 - Where *date* specifies the year, month, and day, in yyyy-mm-dd format
 - Where *time* specifies military, 24-hour time in hour, minutes, and seconds (hh-mm-ss) format
 - Where *id* is an auto-generated, 13-character random number that uniquely identifies each audit log archive file

For example, JunosSpaceAuditLog_2010-03-04-00-00-00_xx...x.csv.gz.

2. Unzip the audit log *.csv file.
3. Open the audit log *.csv file in Microsoft Excel.
4. To the left of the **UTC Time** column, insert a new column.
5. Label the column header **Local Time**.
6. Click the first cell of the new column.
7. Insert the following function: $=XX/86400000 + 25569 - X/24$
 - Where XX is the cell letter and row number where you want to insert the local time conversion function.
 - Where X represents the hours difference between your local time and the UTC time; divided by 24 hours.
8. Click Enter. The calculated local time appears.
9. Format the local time. Right-click the cell and select **Format Cells**. The Format Cells dialog box appears.
10. In the Category list box, select **Date**.
11. In the Type list box, select a date format that you want.
12. Click OK. The local time and date appears.
13. Copy or apply the cell function and formatting to the rest of the rows in the **Local Time** column. The rest of the local times appear as shown.

	A	B	C	D	E	F	G	H	I	J
1	ID	Version	Timestamp	Local Time	UTC Time	User IP	Application	Task	Result	Correlation Tag
2	1900817	0	1.26971E+12	3/27/10 12:58	40264.70696	10.150.113.211	Network Application Platform	Archive/Purge	Job Scheduled	81E07BEDEF597C8CA5ECCEB14347FA29
3	1900821	0	1.26971E+12	3/27/10 13:14	40264.71815	10.150.113.211	Network Application Platform	Logout	Success	\N
4	1966342	0	1.26971E+12	3/27/10 13:24	40264.72546	10.150.113.211	Network Application Platform	Login	Success	\N
5										

14. If you want to keep the original audit log file, save it as a different filename.

Related Documentation

- Archiving and Purging Audit Logs on page 310

Archiving and Purging Audit Logs

The administrator can archive and then purge all audit logs files up to a specified data and time from the Junos Space database. The administrator can archive audit logs to the local server or a remote server location.

The archive file is stored in the The Junos Space archive file uses the following naming conventions:

JunosSpaceAuditLog_date_time_jd.csv.gz, where *date* specifies the year, month, and day, in the format *yyyy-mm-dd*, *time* specifies hours, minutes, and seconds, in the format

hh-mm-ss, and *id* is a 13 character random number that uniquely identifies each audit log archive file.

This topic includes the following tasks:

- Archiving Audit Logs To a Local Server and Purging the Database on page 311
- Archiving Audit Logs To a Remote Server and Purging the Database on page 312

Archiving Audit Logs To a Local Server and Purging the Database

You can archive audit logs to the local server. The local server is the server that functions as the active node in the Junos Space fabric.

To archive Junos Space audit log files to the local server and then purge the audit logs from the database:

1. Navigate to Platform > View Audit Logs > Archive Purge. The Archive/Purge dialog box appears.
2. In the Archive Logs Before field, specify the date and time up which to archived and purged audit logs from the Junos Space database. You can only specify a date and time in the past.



NOTE: If you do not specify a date and time in the Archive Logs Before field, Junos Space archives then purges from the database all logs generated up to the time that you initiated the operation.

3. In the Archive Mode field, select **local** from the drop-down menu.
4. Schedule the Junos Space Archive/Purge operation:
 - Clear the **Schedule at a later time** check box (the default) to initiate the Archive/Purge operation when you complete this procedure.
 - Select the **Schedule at a later time** check box to specify a later start date and time for the Archive/Purge operation.



NOTE: The selected time in the scheduler corresponds to Junos Space server time but using the local time zone of the client computer.

5. Click **Submit**.

The Audit Log Archive and Purge confirmation window displays the audit log file name and the location where it will be saved.

6. Click **Continue** to archive and purge the audit logs.
7. To view job details for the Audit Log Archive/Purge operation, click on the Job Id in the Job Information window; otherwise, click **OK** to close the window.

Archiving Audit Logs To a Remote Server and Purging the Database

You can archive audit logs to remote network hosts or media.

To back up the Junos Space database to a remote host and then purge those logs from the Junos Space database:

1. Navigate to Platform > View Audit Logs > Archive Purge. The Archive/Purge dialog box appears.
2. In the Archive Logs Before field, select a date and time to specify the date *up to which* all audit logs are to be archived and then purged from the Junos Space database. You can only specify date and time in the past.



NOTE: If you do not specify a date and time in the Archive Logs Before field, Junos Space will archive and then purge from the database all logs generated up to the time that you initiated the operation.

3. In the Archive Mode field, select **Remote** from the drop-down menu.
4. Enter a valid user name to access the remote host server.
5. Enter a valid password to access the remote host server.
6. Reenter the password you entered in the previous step.
7. Enter the IP address of the remote host server.
8. Enter a directory path on the remote host server for the archived log files.



NOTE: The directory path must already exist on the remote host server.

9. Schedule the Junos Space archive and purge operation:
 - Clear the **Schedule at a later time** check box (the default) to initiate the Archive/Purge operation when you complete this procedure.
 - Select the **Schedule at a later time** check box to specify a later start date and time for the Archive/Purge operation.



NOTE: The selected time in the scheduler corresponds to Junos Space server time but using the local time zone of the client computer.

10. Click **Submit**.

The Audit Log Archive and Purge window displays the audit log file location and name and the remote server to which the files copy.

11. Click **Continue** to archive and purge the audit logs.

Junos Space displays the Audit Log Archive and Purge Job Information window.

12. To view job details for the Archive/Purge operation, click the Job Id link.
13. Click **OK** to close the window.

- Related Documentation**
- Junos Space Audit Logs Overview on page 303
 - Viewing Audit Logs on page 305

PART 13

Users

- [Role-Based Access Control on page 317](#)
- [User Accounts on page 327](#)
- [User Roles on page 337](#)

Role-Based Access Control

- Role-Based Access Control Overview on page 317
- Understanding How to Configure Users to Manage Objects in Junos Space on page 318
- Predefined Administrator Roles on page 319

Role-Based Access Control Overview

Junos Space supports authentication and authorization. A Junos Space super administrator or user administrator creates users and assigns roles (permissions) that allow users to access and manage the users, nodes, devices, services, and customers in Junos Space.

To access and manage Junos Space, a user must be assigned one or more roles, which are validated during authorization. The roles that an administrator assigns to a user control the workspace or workspaces the user can access and the tasks that can be performed on the objects that are managed within a workspace. A user with no role assignments cannot access any Junos Space workspace and is unable to perform tasks.

Authentication

Through authentication, Junos Space validates users based on password and other security services. Junos Space supports local user authentication only. Each user password is saved in the Junos Space database and is used to validate a user during login.

RBAC Enforcement

With role-based access control (RBAC) enforcement, a Junos Space super administrator or user administrator controls the workspaces a user can access, the system resources users can view and manage, and the tasks available to a user within a workspace. RBAC is enforced in the Junos Space user interface navigation hierarchy by workspace, task group, and task. A user can only access those portions of the navigation hierarchy that are explicitly granted through access privileges. The following sections describe RBAC enforcement behavior at each level of the user interface navigation hierarchy.

Enforcement by Workspace

The Junos Space user interface provides a task-oriented environment in which a collection of related user tasks is organized by workspace. For example, the **Users** workspace defines the group of tasks related to managing users and roles. Tasks include creating, modifying, and deleting users, and assigning roles. Enforcement by workspace ensures that a user can view only those workspaces that contain the tasks that the user has permissions to execute. For example, a user that is assigned the Device Manager role,

which grants access privileges to all tasks in the **Devices** workspace, can access only the **Devices** workspace. No other workspaces are visible to this user unless other roles are assigned to this user.

RBAC Enforcement Not Supported for Getting Started Panel

RBAC enforcement is not enabled for the contents of the Getting Started panel. Consequently, a user who does not have certain access privileges can still view the steps displayed in the Getting Started panel. For example, a user without privileges to manage devices will still see the Discover Devices step. However, when the user clicks on the step, Junos Space displays an error to indicate that the user might not have permission to access the workspace or tasks to which the step is linked.

Related Documentation

- Understanding How to Configure Users to Manage Objects in Junos Space on page 318
- Predefined Administrator Roles on page 319
- Creating Users on page 327
- Viewing User Statistics on page 335
- Viewing Users on page 330

Understanding How to Configure Users to Manage Objects in Junos Space

Junos Space is shipped with a super administrator privilege level that has full access to the Junos Space system. When you first log in to Junos Space as default super administrator, you can perform all tasks and access all Junos Space system resources. The super administrator can create new users and assign roles to those users to specify which workspaces and system resources users can access and manage, and which tasks users can perform within each workspace.

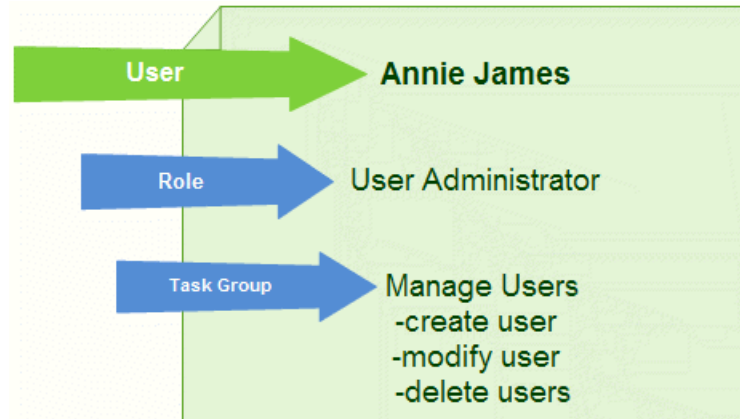
After you first set up Junos Space, you can disable the default super administrator user ID, if necessary. However, before doing so, you should first create another user with super administrator privileges.

To access and manage Junos Space system resources, a user must be assigned at least one role. A *role* defines the tasks (create, modify, delete) that can be performed on the objects (devices, users, roles, services, customers) that Junos Space manages. For complete information on the predefined roles, see “Predefined Administrator Roles” on page 319.

Users receive permission to perform tasks only through the roles that they are assigned. In most cases, a single role assignment enables a user to view and to perform tasks on the objects within a workspace. For example, a user assigned the Device Manager role can discover devices, resynchronize devices, view the physical inventory and interfaces for devices, and delete managed devices. A user that is assigned the User Administrator role can create, modify, and delete other users in Junos Space, and assign and remove roles.

Typically a role contains one or more task groups. A *task group* provides a mechanism for grouping a set of related tasks that can be performed on a specific object. The following

illustration shows the task group and associated tasks that are available to a user that is assigned the User Administrator role.



NOTE: You can assign multiple roles to a single user, and multiple users can be assigned the same role.

Related Documentation

- Role-Based Access Control Overview on page 317
- Creating Users on page 327
- Viewing Users on page 330
- Viewing User Statistics on page 335

Predefined Administrator Roles

Junos Space provides predefined roles that you can assign to users to define administrative responsibilities and specify the management tasks that a user can perform within applications and workspaces.



NOTE: The predefined roles that appear in the Junos Space release that you are using depend on the Junos Space applications that you have installed. For the most current predefined user roles, see the **Platform > Users > Manage Users > Create User** page or the **Platform > Users > Manage Roles** inventory page.

To assign roles to other users in Junos Space, a user must be a super Administrator or user administrator.

Each predefined role defines a set of tasks for a single workspace, except the super administrator role, which defines all tasks for all workspaces. By default, Junos Space provides Read privileges on all objects associated with the task groups defined in a predefined role.

Table 43 on page 320 shows the Junos Space predefined roles and corresponding tasks available for installed Junos Space applications.



NOTE: For the latest Predefined roles, see **Platform > Users > Manage Users > Create User** or **Platform > Users > Manage Roles**.

Table 43: Predefined Roles for the Network Application Platform

Predefined Role	Task Group and Tasks	Application > Workspace
Audit Log Administrator	<ul style="list-style-type: none"> View Audit Logs Archive/Purge 	Platform > Audit Logs
Device Image Manager	<ul style="list-style-type: none"> Devices <ul style="list-style-type: none"> Manage Device Adapter <ul style="list-style-type: none"> Upload Adapter Install Adapter Delete Adapter Device Images <ul style="list-style-type: none"> Manage Images <ul style="list-style-type: none"> Upload Image MD5 Validation Result Delete Images Modify Images Stage Images Verify Checksum Deploy Images 	Platform > Devices
Device Images Read Only User	Manage Images	Platform > Device Images

Table 43: Predefined Roles for the Network Application Platform (*continued*)

Predefined Role	Task Group and Tasks	Application > Workspace
Device Manager	<ul style="list-style-type: none"> Discover Devices <ul style="list-style-type: none"> Discover Targets Specify Probes Specify Credentials Manage Devices <ul style="list-style-type: none"> Delete Devices Change Device Credentials View Physical Inventory Export Physical Inventory View Interfaces Resynchronize with Network SSH to Device Secure Console Add Deployed Devices <ul style="list-style-type: none"> Add Device Deploy Devices <ul style="list-style-type: none"> Add Devices Connection Profiles <ul style="list-style-type: none"> Create 	Platform > Devices
Device Script Manager	<ul style="list-style-type: none"> Manage Scripts <ul style="list-style-type: none"> View Scripts Import Scripts Modify Script Delete Scripts Deploy Scripts on Device Verify Scripts on Device Enable Scripts on Device Disable Scripts on Device Remove Scripts from Device Execute Script on Device Export Script 	Platform > Scripts
Device Script Read Only User	<ul style="list-style-type: none"> Scripts <ul style="list-style-type: none"> Manage Scripts View Scripts Export Scripts 	Platform > Scripts
Job Manager	<ul style="list-style-type: none"> Manage Jobs <ul style="list-style-type: none"> Cancel Job View Recurrence 	Platform > Job Management

Table 43: Predefined Roles for the Network Application Platform (*continued*)

Predefined Role	Task Group and Tasks	Application > Workspace
Super Administrator	Manage all Junos Space task groups and tasks (See Platform > Users > Create Users user interface for the current roles.)	Access all Junos Space workspaces (See Platform > Users > Manage Users > Create Users user interface for the current roles.)
System Administrator	<ul style="list-style-type: none"> • Manage Fabric <ul style="list-style-type: none"> • Add Fabric Node • Manage Databases <ul style="list-style-type: none"> • Backup Database • Delete Database Backup • Restore Database • Troubleshoot Space • Manage Applications <ul style="list-style-type: none"> • Modify Application Settings • Add Application • Uninstall Application • Upgrade Application • Upgrade Platform • Manage Licenses <ul style="list-style-type: none"> • Upload License • Manage Tags <ul style="list-style-type: none"> • Share Tag • Rename Tags • Delete Tags • Apply Tag 	Administration
Tag Administrator	<ul style="list-style-type: none"> • Manage Tags <ul style="list-style-type: none"> • Rename Tag • Delete Tag • Share Tag • Create Tags 	Platform > Administration > Manage Tags
Template Design Manager	<ul style="list-style-type: none"> • Devices <ul style="list-style-type: none"> • Manage Template Definition <ul style="list-style-type: none"> • Create Template Definition • Modify Template • Clone Template • Publish Template • Delete Template 	Platform > Devices
Template Manager	<ul style="list-style-type: none"> • Manage Templates <ul style="list-style-type: none"> • Create Template • Modify Template • Clone Template • Deploy Template 	Platform > Devices

Table 43: Predefined Roles for the Network Application Platform (*continued*)

Predefined Role	Task Group and Tasks	Application > Workspace
Topology Manager	<ul style="list-style-type: none"> • Topology Visualization <ul style="list-style-type: none"> • Discover Topology <ul style="list-style-type: none"> • Specify Target • Specify SNMP Probes • View Topology 	Platform > Topology Manager
User Administrator	<ul style="list-style-type: none"> • Manage Users <ul style="list-style-type: none"> • Create User • Modify User • Delete Users • Manage Roles <ul style="list-style-type: none"> • Create Role • Modify Role • Delete Role 	Platform > Users

Table 44 on page 323 shows the Junos Space predefined roles for the Network Activate application.

Table 44: Predefined Roles for Network Activate Application

Predefined Role	Task Group and Tasks	Workspace
Service Designer	<ul style="list-style-type: none"> • Manage Service Definitions <ul style="list-style-type: none"> • Create Point-to-Point (P2P) Service Definition • Custom Service Definition • Create VPLS Service Definition • Publish Service Definition • Unpublish Service Definition 	Service Design
Service Manager	<ul style="list-style-type: none"> • Manage Device Roles <ul style="list-style-type: none"> • Rules • Discovery Roles • Unassign NPE Role • Manage Device UNIs • Delete UNI • Add Device UNIs • Assign UNI • Assign Roles • Modify Loopback Address • Manage Device UNIs • Exclude from UNI Role • Exclude from NPE Role • Assign NPE Role 	Prestage Devices

Table 44: Predefined Roles for Network Activate Application (*continued*)

Predefined Role	Task Group and Tasks	Workspace
Service Activator	<ul style="list-style-type: none">• Manage Customers<ul style="list-style-type: none">• Create Customer• Modify Customer• Delete Customers• Manage Service Orders<ul style="list-style-type: none">• Create Point-to-Point (P2P) Service Order• Deploy Service Order• Delete Service Order• Create VPLS Service Order• Manage Services<ul style="list-style-type: none">• Modify Service• Decommission Service• View Configuration Audit Results• Perform Configuration Audit• View Functional Audit Results• Perform Functional Audit• View Service Configuration	Service Provisioning

Table 45 on page 325 shows the Junos Space predefined roles for the Service Now application.

Table 45: Predefined Roles for Service Now Application

Predefined Role	Task Group and Tasks	Workspace
Service Now Administrator	<ul style="list-style-type: none"> Administration <ul style="list-style-type: none"> Service Now Devices <ul style="list-style-type: none"> Add Devices Script Bundles <ul style="list-style-type: none"> Add Script Bundle Organizations <ul style="list-style-type: none"> Add Organization Global Settings <ul style="list-style-type: none"> SNMP Configuration Proxy Server Configuration Service Contract Device Groups <ul style="list-style-type: none"> Create Device Group Service Central <ul style="list-style-type: none"> Incidents <ul style="list-style-type: none"> View Tech Support Cases View End Customer Cases JMB Errors Information <ul style="list-style-type: none"> Messages Device Snapshots Notifications <ul style="list-style-type: none"> Create Notifications 	All workspaces
Service Now Unrestricted User	<ul style="list-style-type: none"> Administration <ul style="list-style-type: none"> Service Now Devices Service Central <ul style="list-style-type: none"> Incidents <ul style="list-style-type: none"> View Tech Support Cases JMB Errors Information <ul style="list-style-type: none"> Messages Device Snapshots Notifications <ul style="list-style-type: none"> Create Notifications 	Administration Service Central

Table 45: Predefined Roles for Service Now Application (*continued*)

Predefined Role	Task Group and Tasks	Workspace
Service Now Read Only User	<ul style="list-style-type: none"> Administration <ul style="list-style-type: none"> Service Now Devices 	Administration
	<ul style="list-style-type: none"> Service Central <ul style="list-style-type: none"> Incidents <ul style="list-style-type: none"> View Tech Support Cases JMB Errors Information <ul style="list-style-type: none"> Messages Device Snapshots Notifications 	Service Central

Table 46 on page 326 shows the Junos Space predefined roles for the Ethernet Design application.

Table 46: Predefined Roles for Ethernet Design Application

Predefined Role	Task Group and Tasks	Workspace
Network Engineer	<ul style="list-style-type: none"> Port Profiles <ul style="list-style-type: none"> Create Port Profile Provision Port Profile 	EZ Campus Design

**Related
Documentation**

- Role-Based Access Control Overview on page 317
- Understanding How to Configure Users to Manage Objects in Junos Space on page 318
- Managing Roles on page 338
- Creating a User-Defined Role on page 339
- Modifying User-Defined Roles on page 341
- Deleting User-Defined Roles on page 341
- Creating Users on page 327
- Viewing Users on page 330
- Viewing User Statistics on page 335

CHAPTER 27

User Accounts

- Creating Users on page 327
- Viewing Users on page 330
- Modifying a User on page 331
- Deleting Users on page 333
- Changing User Passwords on page 333
- Clearing User Local Passwords on page 334
- Viewing User Statistics on page 335

Creating Users

The Create User task allows you, the Super Administrator and the User Administrator, to create Junos Space user accounts that specify the credentials and predefined roles allowing users to log in and use Junos Space applications, workspaces, and tasks. Each user account must include a login ID, password, first name, and last name.

For each user, you can assign roles that define the tasks and objects (devices, users, services, and so forth) that the user can access and manage. You can assign multiple roles to a single user and assign the same role to multiple users.

The **Use Same Roles Assigned To** option, allows you to quickly create multiple user accounts without having to reselect the same predefined roles. To see the available predefined user roles, open the **Create User** dialog box by navigating to **Platform > Users > Manage Users > Create User**.



NOTE: A user can access all the objects within the workspace that the assigned role controls.

- Creating a New User Account on page 327

Creating a New User Account

To create a new user account:

1. Navigate to **Platform > Administration > Users > Create User** task. The **Create User** dialog box appears.
2. In the **Login ID** field, enter a login ID for the new Junos Space user account.

The login ID cannot exceed 32 characters. Allowable characters include the dash (-), underscore (_), letters, and numbers.
3. (*Local mode*) Type and confirm the local password.

This password is required. The password must include at least two numbers or symbols and must be from 6 to 31 characters.



NOTE: All passwords in Junos Space are case-sensitive.

4. (*Remote Mode*) (Optional for emergency purposes. Assign only to a few privileged administrators.) If you selected Remote Authentication Server **Remote** or **Remote-Local** authentication modes using **Platform > Administration > Remote Authentication Server**, you can:
 - a. Select the **Local Password** check box.

This action automatically expands the **Local Password** area.
 - b. Type and confirm the local password.

Local password behaves differently in Remote versus Remote-Local cases:
 - In Remote mode, local password is used only in the emergency case, where the authentication servers are unreachable and should probably be limited to a few privileged admins.
 - In the Remote-Local mode, local password is mainly used for users who are intended to be managed locally, as opposed to other users who are authenticated by the remote server. In the case where user authentication exists in both places, the local password functions as a secondary password.
5. *Remote-Local Mode* (Enable for local users in a mixed mode environment. Disable for Remote mode users. In the **Confirm Password** field, reenter the password you entered.)
 - a. Select the **Local Password** check box.

This action automatically expands the **Local Password** area.
 - b. Type and confirm the local password.
6. In the **First Name** field, enter the user's first name.

The name cannot exceed 32 characters.
7. In the **Last Name** field, enter the user's last name.

The name cannot exceed 32 characters.
8. In the **Email** field, enter the user's e-mail address.

9. In the **Image File** field, upload the user's photo ID:

- a. Use the **Browse** button to locate the user's photo ID file.

You can upload .bmp, .gif, .jpg, and .png image file formats.

- b. Click **Upload**.

Junos Space uploads and saves the photo ID file for the user account.



NOTE: If you do not want to assign the user roles at this point, you can click **Create** to create the user account without assigning any roles. You can use the **Platform > Users > Manage Users** workspace later to modify the user account and assign roles. If you want to assign user roles now, proceed to the next step.

10. To assign roles to the new user, do one of the following:

- Select the **Use Same Roles Assigned to** check box and select the name of an existing user whose roles you want to assign to the new user.



TIP: Enter one or more characters of the existing user's name in the **Use Same Roles Assigned to** drop-down list box text field to open the drop-down list box and select a user's name. The assigned roles appear in the Selected roles list box. You can modify the new user's role assignments by adding or removing roles from the Selected Roles column.

- Use the double list box to select predefined roles for the user. Select one or more roles from the **Available** list box. Selected roles appear in the **Selected** list box. Use the right arrow to move the selected roles to the **Selected** list box. Use the left arrow to remove roles from the **Selected** list box back to the **Available** list box. You can also double-click a role to select or remove it. You see the details of selected roles appear in the right pane of the page.

You can also create user-defined roles for users. For more information, see "Creating a User-Defined Role" on page 339.



NOTE: The minimum role required for configuring a user for IBM Systems Director and Junos Space Launch in Context (LiC) is Device Manager.

11. Click **Create** to create the user account with the assigned roles.

The new user account is created in the Junos Space database. You see the new user account on the **Manage Users** inventory page.

Viewing Users

The Manage Users inventory page displays all of the Junos Space users who have accounts. To add new users, you must have administrator privileges. Use **Platform > Users > Manage Users > Create User** to add a new user (see “Creating Users” on page 327). Users have Junos Space access based on predefined user roles (see “Predefined Administrator Roles” on page 319). For more information about how to manipulate inventory page data, see “Inventory Pages Overview” on page 29.

- Changing Views on page 330
- Viewing User Details on page 330
- Performing Manage User Commands on page 331

Changing Views

You can display user in two views: thumbnail and tabular. By default, users appear on the page in thumbnail view.

In thumbnail view, users appear as icons listed in descending order alphabetically by user name. Each user has name.

In tabular view, users appear in a table sorted by username. Each user is a row in the Manage Users table.

To change views:

1. Navigate to **Platform > Users > Manage Users**. The **Manage Users** page appears.
2. Click a view indicator at the right of the **Manage Users** page title bar.

Viewing User Details

To view more detailed user information:

- Double-click a user icon in thumbnail view or double-click a row in the table in tabular view.
- Move the zoom slider to the far right. The default zoom slider position is in the middle.

Table 47 on page 330 defines the user detailed information.

Table 47: Users Detailed Information and Columns in the Manage Users Table

Data	Description
Login ID	The login username.
First Name	The user first name.
Last Name	The user last name.
E-mail Address	The user e-mail account.

Table 47: Users Detailed Information and Columns in the Manage Users Table (*continued*)

Data	Description
Assigned Roles	The predefined user roles assigned to user.
Role Summary	The workspaces and tasks a user can perform based on the predefined user roles.

Performing Manage User Commands

You can perform the following commands from the Manage Users Actions drawer:

- Modify User—See “Modifying a User” on page 331
- Delete User—See “Deleting Users” on page 333
- Clear Local Passwords—See “Clearing User Local Passwords” on page 334
- Tag It—“Tagging an Object” on page 432
- View Tags—“Viewing Tags” on page 433
- Clear All Selections—Clears all selections that you selected using Select Page. You can also clear all selections by clicking Select None.

Related Documentation

- Understanding How to Configure Users to Manage Objects in Junos Space on page 318
- Creating Users on page 327
- Deleting Users on page 333
- Modifying a User on page 331
- Viewing User Statistics on page 335
- Tagging an Object on page 432
- Viewing Tags on page 433

Modifying a User

A Super Administrator or User Administrator can modify any user account in Junos Space. You can add or remove roles and modify any user settings except the Login ID.

Each user account can have multiple roles and a role can be associated with multiple users.

To modify an existing user account:

1. Navigate to **Platform > Users > Manage Users**. The **Manage Users** inventory page appears.
2. From the inventory panel, select the user account that you want to modify.



NOTE: You can modify only one user account at a time.

3. From the **Actions** drawer, select **Modify User**.

The **Manage Users** dialog box appears filled in with the existing user account information.

4. You can change the password, first name, last name, e-mail address, photo ID, and the selected roles.

- To change the password, you must include at least two numbers or symbols in the new password and the password must be from 6 to 31 characters. All passwords in Junos Space are case-sensitive.
- *(For Remote or Remote-Local Authentication Server configuration only)* If you selected Remote Authentication Server **Remote** or **Remote-Local** authentication modes using **Platform > Administration > Remote Authentication Server**:

- a. If you want to remove the local password, deselect the **Local Password** check box.

This action automatically collapses the **Local Password** area.

- b. If you want to change the local password, type and confirm a new local password.

This setting allows an emergency password (authentication server down) if in Remote mode, or allows the user to be handled locally (remote authentication fails) if in Remote-Local mode.

- To change the user name, enter a new name in the **First Name** and/or **Last Name** fields.
- To change the e-mail account, enter a new e-mail address in the **Email** field.
- To upload another image file:

- a. Use the **Browse** button to locate the new user photo ID file.

You can upload BMP, GIF, JPG, and PNG image file formats.

- b. Click the **Upload** button.

Junos Space updates the photo ID file for the user account.

- To add or remove role assignments:
 - To add role assignments, select one or more roles from the **Available Roles** column and click the right arrow to move the roles to the **Selected Roles** column.
 - To remove role assignments, select one or more roles from the **Selected Roles** and click the left arrow to move the roles to the **Available Roles** column.

5. Click **Modify** to save your changes to the user account.

Junos Space updates the user account with the changes you specified.

**Related
Documentation**

- Understanding How to Configure Users to Manage Objects in Junos Space on page 318
- Creating Users on page 327

- Deleting Users on page 333
- Viewing Users on page 330

Deleting Users

When a Junos Space user leaves your organization or no longer needs access to the system, the administrator should delete the existing user account.

To delete one or more users:

1. Navigate to Platform > Users > Manage Users. The Manage Users inventory page appears displaying all user accounts.
2. Select one or more users to delete.
3. In the Actions drawer, click **Delete Users**. The Delete Users confirmation window appears.
4. Verify the list of users that you want to delete, and click **Delete**. All selected user accounts are removed from the Junos Space database and the Manage Users inventory page.

Related Documentation

- Creating Users on page 327
- Modifying a User on page 331
- Viewing Users on page 330

Changing User Passwords

Any user that is logged in to Junos Space can change their account password using the User Preferences icon in the Junos Space banner. You do not have to have any user roles configured to change your password.



WARNING: If you have a local password for remote or remote-local authentication modes, changing your password does that locally only. The change does not affect any passwords which a user administrator may have configured for you on a remote authentication server.



WARNING: If a user does not have a local password set, that user will not be able to set or change it.

To change your user password, follow these steps:

1. Click the User Preferences icon in the Junos Space banner. The **User Preferences – Change Password** dialog box appears.
2. Type your old password.
3. Type your new password. The password must be 6 to 31 characters long, including 2 numbers or symbols.
4. Retype your password again to confirm it.
5. Click **Change**. You are logged out of the system. You have to log in again using your new password. Any open sessions are disabled until you log in again.

- Related Documentation**
- Creating Users on page 327
 - Logging In to the System on page 3

Clearing User Local Passwords

The Clear Local Passwords command lets you remove the local password you assign to users with remote or remote-local authentication. This setting allows an emergency password (authentication server down) if in Remote mode, or allows the user to be handled locally (remote authentication fails) if in Remote-Local mode.

To remove one or more user local passwords, you must have User Administration privileges.

To remove a user local password:

1. Navigate to **Platform > Users > Manage Users**.
The **Manage Users** inventory page appears.
2. Select one or more users for which you want to remove a local password.
3. Right-click and select **Clear Local Passwords** from the pop-up menu, or open the Actions drawer and select the command.
The **Delete Users** dialog box appears.
4. Click **Clear Passwords**.

- Related Documentation**
- Viewing Users on page 330
 - Creating Users on page 327
 - Modifying a User on page 331
 - Creating a Remote Authentication Server on page 421

Viewing User Statistics

You can view the percentage and the number of Junos Space users that have been assigned to a role.

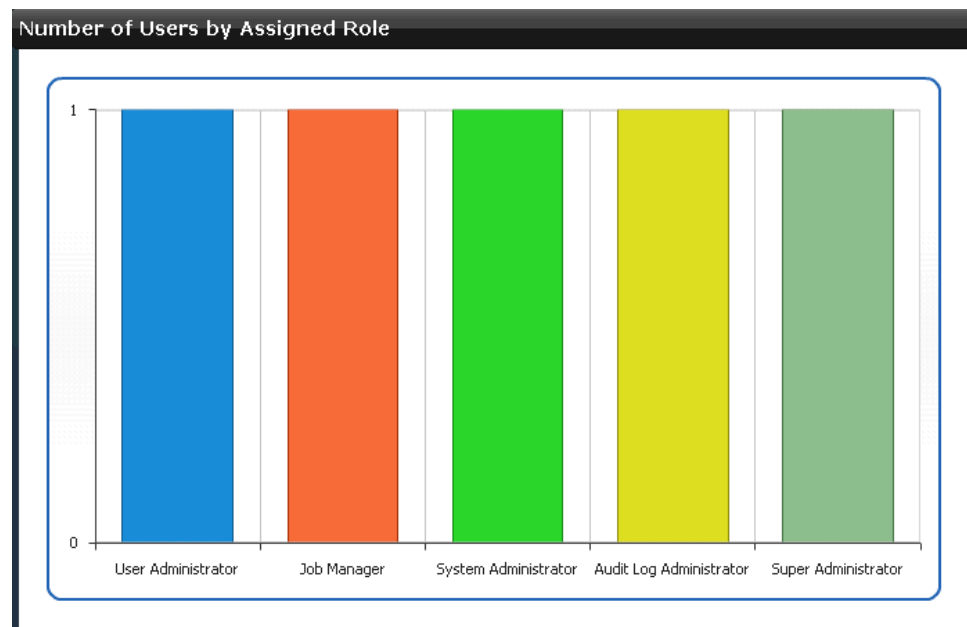
- Viewing the Number of Users Assigned by Role on page 335

Viewing the Number of Users Assigned by Role

To view the percentage of total users that have been assigned to a predefined role:

1. From the task ribbon, select the **Users** workspace.

Junos Space displays a bar chart showing users by assigned role.



The bar chart displays the number of users assigned to each role that has one or more assigned users.

2. To view the number of users assigned to a specific role, mouse over the role in the chart.
3. To display an inventory view of users assigned to a specific role, click on the segment of the chart that represents the role.

Related Documentation

- Role-Based Access Control Overview on page 317
- Viewing Users on page 330
- Creating Users on page 327
- Deleting Users on page 333

CHAPTER 28

User Roles

- Managing Roles Overview on page 337
- Managing Roles on page 338
- Creating a User-Defined Role on page 339
- Modifying User-Defined Roles on page 341
- Deleting User-Defined Roles on page 341

Managing Roles Overview

Roles define the application workspace tasks a user is assigned by the Super Administrator and User Administrator to perform in Junos Space. Users represent an individual in a security domain who is authorized to log into Junos Space and perform application workspace tasks according to predefined and user-defined roles.

The administrator can create a user account and assign tasks based on read-only predefined roles and read-write user-defined task roles. See “Creating Users” on page 327 and “Predefined Administrator Roles” on page 319. You can create user-defined tasks first, then create a user account, or create a user account, then modify the account afterward. You can also use an existing user account as a template to assign roles to users with similar job types.

The **Platform > Users > Manage Roles** task allows the Super Administrator or User Administrator to manage all roles by performing the following user role tasks:

- View all predefined and user-defined roles on the **Platform > Users > Manage Users** inventory page. See “Managing Roles” on page 338.
- Create user-defined roles from the **Platform > Users > Manage Roles > Create Role** task. See “Creating a User-Defined Role” on page 339.
- Modify user-defined roles using **Modify Role** in the **Platform > Users > Manage Users** inventory page **Actions** drawer. See “Modifying User-Defined Roles” on page 341.
- Delete user-defined roles using **Delete Roles** in the **Platform > Users > Manage Users** inventory page **Actions** drawer. See “Deleting User-Defined Roles” on page 341.

- Tag predefined and user-defined roles to group them for performing actions all at once. Use **Tag It** in the **Platform > Users > Manage Users** inventory page **Actions** drawer. See “Tagging an Object” on page 432.
- View all tags that exist on roles using **View Tags** in the **Platform > Users > Manage Roles** inventory page **Actions** drawer. See “Viewing Tags” on page 433

Related Documentation

- Role-Based Access Control Overview on page 317
- Predefined Administrator Roles on page 319
- Creating Users on page 327
- Managing Roles on page 338
- Creating a User-Defined Role on page 339
- Modifying User-Defined Roles on page 341
- Deleting User-Defined Roles on page 341

Managing Roles

A role is a description of tasks a user can perform in Junos Space to allow access to application workspaces. The **Platform > Users > Manage Roles** inventory page allows the Super Administrator or the User Administrator to view all predefined and user-defined roles that exist for Junos Space applications. The administrator should understand all predefined roles and create any user-defined roles before creating users.

Viewing User Role Details

The **Manage Roles** inventory page displays all predefined and user-defined roles in both thumbnail and tabular views. To switch between views, click the thumbnail and tabular view icons at the right of the **Manage Roles** page title.

In thumbnail view, a user role is represented as a selectable object. Visual cues indicate whether the role is predefined or user-defined.

In tabular view each role is represented by a row in the table. Roles are listed in the table in ascending alphabetical order by role title, description, and tasks assigned.

You can sort all table columns in ascending or descending order by clicking the column header drop-down menu arrow. You can also show or hide columns by using the **Columns** command in the table header drop-down menu.

In both thumbnail and tabular views, search for roles by typing the first letters of the role title in the search field. Role title starting with the first letters you type are listed in a drop-down menu.

To view a user role detail summary in both thumbnail and tabular views:

1. Double-click a role.
In thumbnail view, you can also click **Details**.

The Role Details Summary page appears.

The page displays the workspace, and workspace tasks.

2. Click expand **[+]** to view subtasks.
3. Click **OK**.

Performing Manage Roles Commands

The commands you can perform on predefined and user-defined roles are located in the Actions drawer or by right-clicking that role. You can only perform the **Modify Role** and **Delete Roles** commands on read-writeable user-defined roles. You can not manipulate read-only predefined roles. To perform a command, you must first select the role.

The following commands are included in the **Modify Role Actions** drawer:

- **Modify Role**—Modify the selected user-defined role title, description, and application workspace task. You can not modify predefined roles. For more information, see “Modifying User-Defined Roles” on page 341.
- **Delete Roles**—Delete the selected user-defined role. You can not delete predefined roles. For more information, see “Creating a User-Defined Role” on page 339.
- **Tag It**—Tag one or more selected inventory objects, see, see “Tagging an Object” on page 432.
- **View Tags**—View a list of tags that exist on a selected inventory object. For more information, see “Viewing Tags” on page 433.
- **Untag It**—Untag a tag that has been applied to an inventory object, see “Untagging Objects” on page 433.
- **Clear All Selections**—Clear any user role selections you made on the Manage Roles inventory page. Use the Select: Page in the Manage Roles page title bar to select all roles at once.

Related Documentation

- Role-Based Access Control Overview on page 317
- Predefined Administrator Roles on page 319
- Creating Users on page 327
- Creating a User-Defined Role on page 339
- Modifying User-Defined Roles on page 341
- Deleting User-Defined Roles on page 341

Creating a User-Defined Role

Junos Space provides a number of read-only predefined roles you, the Super Administrator, System Administrator, or User Administrator can use to create user log in, access, and perform tasks in application workspaces. You can also create read-write user-defined roles that conform to user responsibilities and access privileges required on your network.

You can modify and delete only user-defined roles that you create. You cannot modify or delete predefined roles.

To create a user-defined role:

1. Select **Platform > Users > Manage Roles > Create Role**.

The **Create Role** page appears allowing you to select workspaces and associated tasks from all deployed applications.

2. In the **Title** text field, type a user-defined role name.

The role title can not exceed 32 characters. The title can only contain letters, numbers, and can include a hyphen (-), underscore (_), or period (.).

3. In the **Description** field, type a user-defined role description.

The role description can not exceed 256 characters

4. Select an application workspace from the application workspace selection ribbon.

Mouse over an application workspace icon to view the application and workspace name. You can select one or more workspaces per user-defined role. An expandable/collapsible tree of associated tasks appear below the selection ribbon for you to modify specific tasks you want included in the **Task Summary** pane.

5. Select the specific task(s) you want for the user-defined role. All application workspace tasks are by default deselected in the task tree.

Only the currently edited application workspace node is expanded in the **Task Summary** pane; previously selected workspace nodes are collapsed. You can expand other workspace nodes manually.

Selecting the top node or workspace selects or deselects the whole task tree. Selecting any task node automatically selects its decedents. Selecting any task node automatically selects its parent and grand parent.

Only the currently active task tree appears in the **Task Summary** pane.

In the **Task Summary** pane, the top level application node in the tree is bold-italic; the second level workspace tree node is bold.

6. Click **Create**.

The user-defined role is created, saved, and appears in the **Platform > Users > Manage Roles** inventory page.

Scroll down or search to view it.

You cannot create or save a user-defined role when the workspace tasks are not selected.

Related Documentation

- [Predefined Administrator Roles on page 319](#)
- [Managing Roles on page 338](#)
- [Modifying User-Defined Roles on page 341](#)
- [Deleting User-Defined Roles on page 341](#)

- Creating Users on page 327

Modifying User-Defined Roles

The Super Administrator and the User Administrator can modify user-defined roles that have been created. You can modify the role description, application workspace, and the selected tasks. You can not modify the role title or predefined roles.

To modify a user-defined role:

1. Navigate to **Platform >Users >Manage Roles**.

The **Manage Roles** inventory page appears displaying all existing predefined and user-defined roles.

2. Select the user-defined role you want to modify.
3. Select **Modify Role** from the **Actions** drawer. You can also right-click the user-defined role and select the command from the pop-up menu.
4. Modify the part of the user-defined role that you want: description, application workspace, or tasks.

The role title can not exceed 32 characters. The title can only contain letters, numbers, and can include a hyphen (-), underscore (_), or period (.).

The role description can not exceed 256 characters

5. Click **Modify**.

The modified user-defined role is updated in the **Manage Roles** inventory page.

Related Documentation

- Predefined Administrator Roles on page 319
- Creating Users on page 327
- Managing Roles on page 338
- Managing Roles Overview on page 337
- Creating a User-Defined Role on page 339
- Deleting User-Defined Roles on page 341

Deleting User-Defined Roles

The Super Administrator and the User Administrator can delete user-defined roles from the **Manage Roles** inventory page only if they are not being used by other users. You can not delete pre-defined roles.

To delete a user-defined role:

1. Select **Platform > Users > Manage Roles**.

The **Manage Roles** inventory page appears displaying all existing predefined and user-defined roles.

2. Select the user-defined role(s) you want to delete.
3. Select **Delete Roles** from the **Actions** drawer. You can also right-click the user-defined role and select the command from the pop-up menu.

The **Delete Roles** dialog box appears.

4. Confirm deletion of the selected user defined role(s). Select the role(s).
5. Click **Delete**.

The role is deleted from the Manage Roles inventory page. If the role is used by other Junos Space users, you cannot delete the role. A warning message appears.

Related Documentation

- [Predefined Administrator Roles on page 319](#)
- [Managing Roles on page 338](#)
- [Creating a User-Defined Role on page 339](#)
- [Managing Roles Overview on page 337](#)
- [Modifying User-Defined Roles on page 341](#)
- [Creating Users on page 327](#)

PART 14

Administration

- Overview on page 345
- Fabric Management on page 349
- Managing Databases on page 371
- Managing Licenses on page 385
- Managing Applications on page 391
- System Troubleshooting on page 407
- Auth Servers on page 417
- Managing Tags on page 427
- Managing DMI Schemas on page 437

Overview

- Junos Space Administrators Overview on page 345
- Maintenance Mode Overview on page 346

Junos Space Administrators Overview

Junos Space administrators can serve different functional roles. A CLI administrator installs and configures Junos Space appliances. A maintenance-mode administrator performs system-level tasks, such as troubleshooting and database restore operations. After appliances are installed and configured, users are created from the Junos Space user interface to access workspaces and manage applications, users, devices, services, customers, and so forth.

Table 48 on page 345 shows the Junos Space administrators and the tasks that can be performed.

Table 48: Junos Space Administrators

Junos Space Administrator Function	Description	Tasks
CLI administrator	<p>An administrator responsible for setting up and managing system settings for Junos Space appliances from the serial console.</p> <p>The CLI administrator name is "admin".</p> <p>The CLI administrator password can be changed from the console system settings menu.</p>	<ul style="list-style-type: none">• Install and configure basic settings for Junos Space appliances.• Change network and system settings for appliances, for example:<ul style="list-style-type: none">• Change CLI administrator password.• Set routing• Set DNS servers• Change time options• Expand VM drive size (Junos Space Virtual Appliances only)• Retrieve log files for troubleshooting

Table 48: Junos Space Administrators (*continued*)

Maintenance mode administrator	<p>An administrator responsible for performing system-level maintenance on Junos Space.</p> <p>The maintenance mode administrator name is "maintenance".</p> <p>The maintenance mode password is configured from the serial console when you first configure a Junos Space appliance.</p>	<ul style="list-style-type: none"> • Restore Junos Space to previous state by using a database backup file. • Shut down Junos Space nodes by entering maintenance mode. • Retrieve log files for troubleshooting. • Exit Maintenance mode and explicitly start up Junos Space system.
Junos Space user interface users	<p>A Junos Space user that is assigned one or more predefined roles. Each role assigned to a user provides specific access and management privileges on the objects (applications, devices, users, jobs, services, customers) available from a workspace in the Junos Space user interface.</p>	<p>For complete information about the predefined roles that can be assigned to a Junos Space user, see "Predefined Administrator Roles" on page 319.</p>

- Related Documentation**
- Maintenance Mode Overview on page 346
 - Role-Based Access Control Overview on page 317
 - Understanding How to Configure Users to Manage Objects in Junos Space on page 318

Maintenance Mode Overview

In Junos Space, Maintenance mode is a special mode that the administrator uses to perform database restore or debugging tasks while all nodes in the fabric are shutdown and the Junos Space web proxy is running.

The Junos Space system goes into Maintenance mode in the following cases:

- Junos Space goes down.

The system will go into Maintenance mode when Junos Space is down on all nodes in the fabric. Users attempting to log in when the system is in Maintenance mode are redirected to the maintenance mode log in screen. Users who logged in to Junos Space before the shutdown and attempt to perform an action in the user interface are also redirected to the maintenance mode log in screen.

- An authorized Junos Space administrator initiates a **Restore Database from Backup** action.

When a user initiates a Restore database action, Junos Space prompts the user for user name and password to enter maintenance mode, as shown in the Authentication Required window. After the user is authenticated, Junos Space initiates the restore database operation and the system remains in Maintenance mode until the database is restored and the user exits maintenance mode.

- An authorized Junos Space administrator upgrades the Platform software.

When a user initiates a software upgrade, Junos Space prompts the user for user name and password to enter maintenance mode, as shown in the Authentication Required window. After the user is authenticated, Junos Space initiates the software upgrade and the system remains in Maintenance mode until the upgrade is finished and the user exits maintenance mode.

When a user is authenticated to access Junos Space in maintenance mode, the Maintenance Mode Actions menu displays the tasks a user can perform in Maintenance Mode.

- [Restore Database from Backup](#)
This action leads user to select a database backup file and overwrite the current database
- [Download Troubleshooting Data and Logs](#)
This action allows user to download Space logs for troubleshooting
- [Log Out and Remain in Maintenance Mode](#)
This action logs out the current user so that another administrator can login and manage in maintenance mode
- [Log Out and Exit from Maintenance Mode](#)
This action returns Space to normal operational mode

When a user exits maintenance mode, Junos Space is restarted. After several minutes, the system returns to normal operational mode, and Junos Space users can log in to the user interface.

Maintenance Mode Access and System Locking

An authorized Junos Space administrator puts the system into maintenance mode by initiating a Restore database action (see “Restoring a Database in Maintenance Mode” on page 380).

Only one Maintenance mode administrator can access Maintenance mode at a time. When an administrator logs in to Maintenance mode, Junos Space locks the page. When a second administrator attempts to log in to Maintenance mode while the first administrator is logged in, Junos Space displays a message indicating that another administrator is currently logged in to the system and that Maintenance Mode is locked. The Maintenance mode lock releases when the first administrator logs out or the lock times out. If the logged-in administrator is inactive, the maintenance mode lock is released after 5 minutes at which time another administrator can log in.

Maintenance Mode User Administration

The user name for the maintenance mode administrator is “maintenance”.

The password for the maintenance mode administrator is set from the Junos Space system console during the initial installation/configuration of a Junos Space appliance or virtual appliance.

A Junos Space administrator connects to an appliance that is already in maintenance mode by using the URL `https://ip-address/maintenance`, where *ip-address* is the Web access IP address for the appliance.

**Related
Documentation**

- [Restoring a Database in the User Interface on page 378](#)
- [Restoring a Database in Maintenance Mode on page 380](#)
- [Backing Up the Database on page 373](#)
- [Database Backup and Restore Overview on page 371](#)

CHAPTER 30

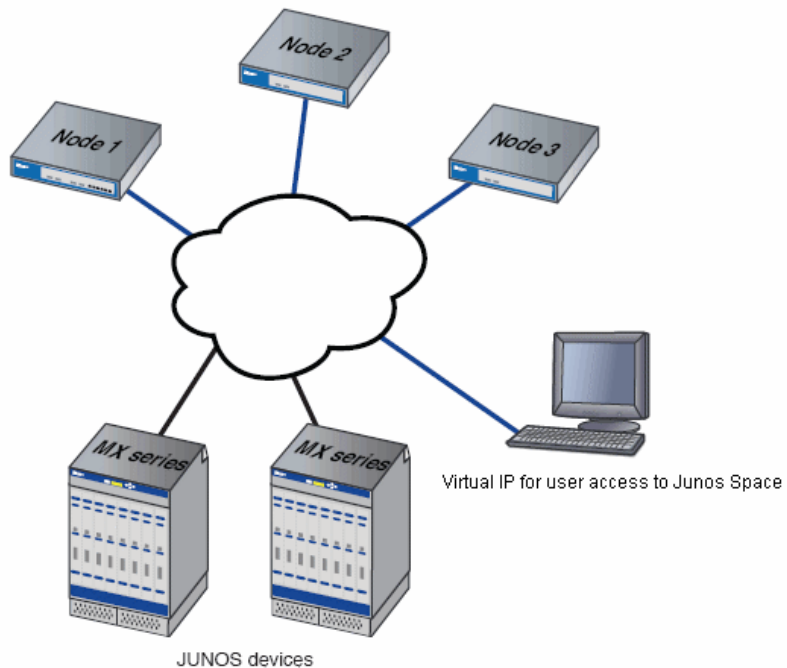
Fabric Management

- Fabric Management Overview on page 349
- Adding a Node to an Existing Fabric on page 353
- Viewing Nodes in the Fabric on page 354
- Configuring Node Network Settings on page 358
- Shutting Down or Rebooting a Node From Junos Space on page 362
- Deleting a Node on page 363
- Understanding Overall System Condition and Fabric Load on page 364
- Overview on page 366

Fabric Management Overview

You can deploy Junos Space appliances 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 JA1500 Junos Space Appliance or Junos Space Virtual Appliance, its operating system, and the Junos Space software that runs on the operating system. Each Junos Space appliance or 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. To add, manage, and monitor nodes in the fabric, a fabric administrator connects to a single virtual IP address, as shown in the illustration.



NOTE: All appliances (nodes) in a fabric must be from same Junos Space release. For example, a fabric comprises Junos Space Release 1.1 appliances or Junos Space Release 1.2 appliances, but not both.

Single Node Functionality

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

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



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

Multinode Functionality

As your network expands with new devices, services, and users, you can add Junos Space appliances to handle the increased workload. When you install and configure the first appliance, Junos Space automatically creates a fabric with one node. For each additional appliance you install and configure, you must add a node to logically represent the appliance in the fabric. 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 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 node functions distribute workload across operating nodes according to the following load-distribution rules:

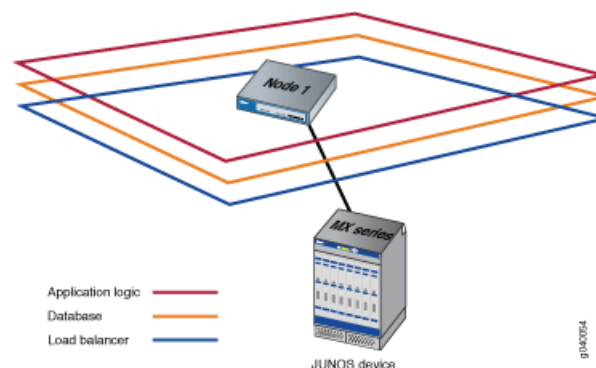
- **Load Balancer**— When a node that functions as the active load balancer server is down, all HTTP requests are automatically routed to the standby load balancer server that is running on a separate node.
- **Database**— When a node that functions as the active database server is down, all database requests (create, read, update, and delete) 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 uses the following algorithm to ensure that the number of devices connected to a node does not exceed the threshold limit for each node:

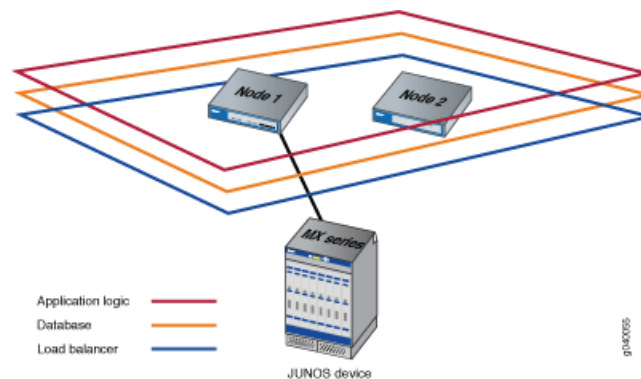
$$\text{Threshold Limit} = \lceil (\text{number of devices in database}) / (\text{number of nodes running}) \rceil + 2$$

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

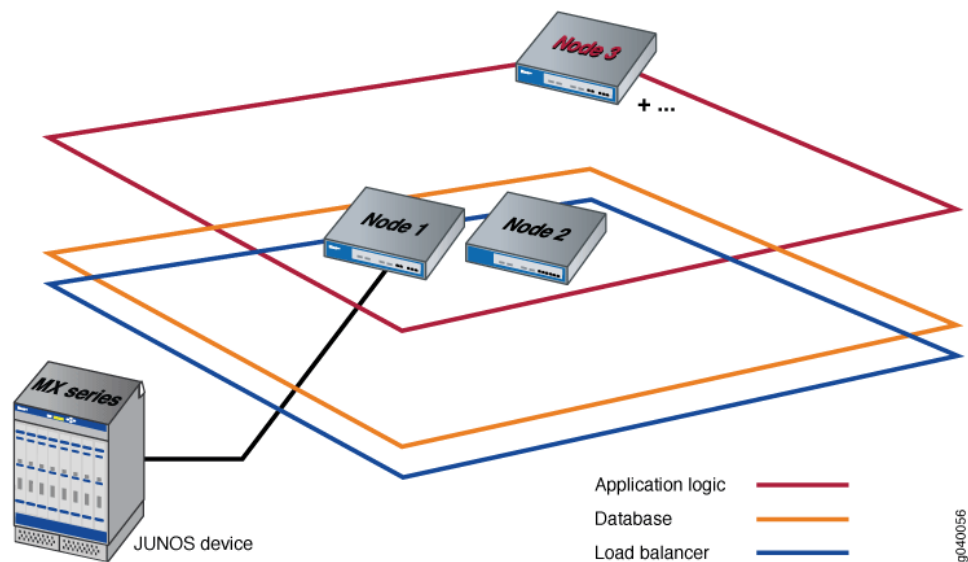
- **First node up:** The load balancer, database, and application logic functions are enabled on the node. Each node function provides both scalability and high availability. The following illustration shows all functions enabled on fabric comprising one node.



- Add 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. The following illustration shows the functions enabled on a fabric comprising two nodes.



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



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

Node Function Availability

In a fabric comprising two or more nodes, Junos Space provides failover when a node functioning as the active server (load balancer server or database server) goes down. By default, Junos Space marks a particular node down and routes failover requests to the node that Junos Space designates as standby server. Junos Space 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 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 active server.

Related Documentation

- Viewing Nodes in the Fabric on page 354

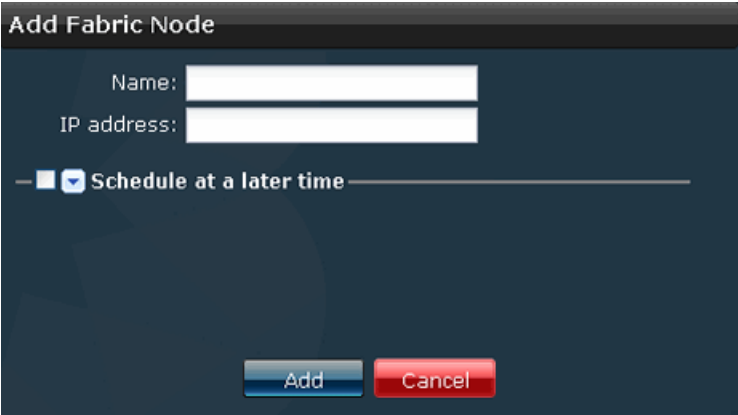
Adding a Node to an Existing Fabric

You can install one or more Junos Space appliances to create a scalable fabric. A Junos Space *appliance* can be either a JA1500 Junos Space Appliance or a Junos Space Virtual Appliance. Each Junos Space appliance that you install is represented as a single node in the fabric. As the number of devices on your network expands, you can add nodes to the fabric to manage the increased workload. By default, the Junos Space fabric contains a single node that provides complete Junos Space management functionality. When you install and configure the first appliance, Junos Space automatically adds the first node to the fabric and uses the logical node name that you assign to the appliance when you configure the appliance in the command line interface. For each additional appliance that you install and configure, you must add the node in Junos Space to represent the appliance in the fabric.

To add a node to the Junos Space fabric:

1. From the task ribbon, select the **Administration** workspace.
2. From the task ribbon, select the **Manage Fabric** icon.
3. From the task ribbon, select the **Add Fabric Node** task.

The Add Fabric Node screen is displayed.



Add Fabric Node

Name:

IP address:

☒ Schedule at a later time



NOTE: Before you add a node to the Junos Space fabric, make sure that no jobs are pending. No new jobs will be scheduled to run until the add node job has completed.

4. In the Name field, enter a name for the node.
5. In the IP address field, enter the IP address of the Junos Space appliance.



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

6. Schedule the Add Fabric Node operation:
 - Clear the **Schedule at a later time** check box (the default) to initiate the add node operation when you complete 7 of this procedure.
 - Select the **Schedule at a later time** check box to specify a later start date and time for the add node operation.



NOTE: The selected time in the scheduler corresponds to Junos Space server time but is mapped to the local time zone of the client computer.

7. Click **Add** to add the node to the fabric.

The node is added to the fabric and is displayed in the Junos Space user interface and database. When you add a node, the node functions are automatically assigned by Junos Space. By default, the first and second 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 service requests), and DML workload (device connectivity, device events, and logging)

By default, the third node, and all subsequent nodes, added to a fabric perform only the Application Logic function.

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 Monitoring inventory page refreshes every 10 seconds, by default.

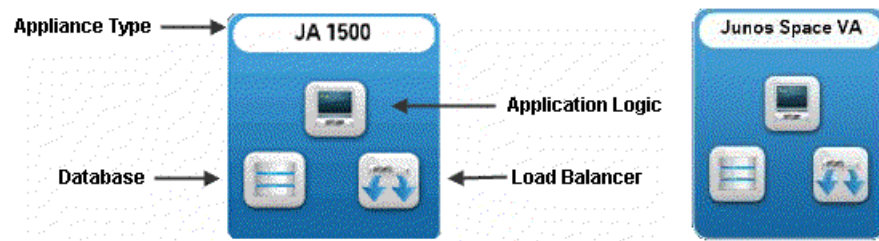
- Changing Views on page 355
- Viewing Fabric Node Details on page 355
- Performing Fabric Node Actions on page 357

Changing Views

You can display fabric monitoring in two views: thumbnail and tabular. By default, fabric monitoring objects appear in thumbnail view.

In thumbnail view, fabric monitoring appears as icons listed in descending order alphabetically by node name. Each fabric has a node name.

Each node in the fabric is represented by a thumbnail, which indicates whether the node is a JA1500 Junos Space Appliance (JA1500) or a Junos Space Virtual Appliance (Junos Space VA), and the node functions (database, load balancer, or application logic) that run (whether up or down) on the appliance. For example, icons for the JA1500 Junos Space appliance and virtual appliance are shown.



In tabular view, 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 **Platform > Administrator > Manage Fabric**. The **Manage Fabric** page appears.
2. Click a view indicator at the right of the Manage Fabric page title bar.

Viewing Fabric Node Details

To view detailed runtime and status information for a node:

- Double-click a node in either thumbnail or tabular views. The **View Node Details** page appears.
- In Fabric Monitoring thumbnail view, move the zoom slider to the far right.

Table 49 on page 356 describes the node information displayed in each column in the table and from the detailed view.

Table 49: Fields for the Fabric Monitoring Inventory Panel

Field	Description
Node Name	<p>The logical name assigned to the node.</p> <p>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.</p>
Management IP	The IP address for the node.
Device Connection IP	The IP address for connecting to the device.
Status	<p>Connection status for the node.</p> <ul style="list-style-type: none"> UP—Node is connected to the fabric. DOWN—Node is disconnected from the fabric.
% CPU	<p>The percentage of CPU resource utilized by the node; from 0 to 100%.</p> <ul style="list-style-type: none"> Unknown—The percentage of CPU utilized is unknown, for example, because the node is not connected.
% RAM	<p>The percentage of memory resource utilized by the node; from 0 to 100%.</p> <ul style="list-style-type: none"> Unknown—The percentage of memory utilized is unknown, for example, because the node is not connected.
% Disk	<p>The percentage of the /var directory utilized by the node; from 0 to 100%.</p> <ul style="list-style-type: none"> Unknown—The percentage of the /var directory utilized by the node is unknown, for example, because the node is not connected.
App Logic	<p>Application Logic function status for the node.</p> <ul style="list-style-type: none"> UP— Application Logic function is running on 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)—The configured primary node in the fabric.
Database	<p>Database function status for the node.</p> <ul style="list-style-type: none"> UP—Database function is running on node. DOWN—Database function that is enabled on the node but is not running. 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>

Table 49: Fields for the Fabric Monitoring Inventory Panel (*continued*)

Field	Description
Hardware Model	<p>Model of Junos Space Appliance.</p> <p>NOTE: Hardware model is displayed when you double-click a thumbnail or table row for a detailed view of the node.</p> <p>NOTE: Hardware model only applies for a Junos Space physical appliance.</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 that is enabled on the node is not running. • 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)—The configured virtual IP node in the fabric.
Serial Number	<p>Serial Number for the Junos Space appliance.</p> <p>NOTE: Serial number is displayed when you double-click a thumbnail or table row for a detailed view of the node.</p>
Software Version	<p>Junos Space Release Version.</p> <p>NOTE: Software version is displayed when you double-click a thumbnail or table row for a detailed view of the node.</p>

For more information about manipulating data on the Fabric Monitoring inventory page, see “Inventory Pages Overview” on page 29

Performing Fabric Node Actions

To perform an action:

- Select a node by clicking its check box in either view and select an action from the Action Drawer.
- Right-click a node and select an action from the pop-up menu.

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

- Shut Down Node—Shuts down or reboots fabric nodes (appliances or virtual machine hosts) when you move them or reconfigure their network settings. See “Shutting Down or Rebooting a Node From Junos Space” on page 362.
- Delete Node—Removes node from the Junos Space fabric directly if there is a physical or virtual appliance failure. See “Deleting a Node” on page 363.
- Tag It—Apply a tag to a fabric node. See “Tagging an Object” on page 432.
- View Tags—View tags applied to a fabric node. See “Viewing Tags” on page 433.

- Untag It—Remove a tag from a fabric node. See “Untagging Objects” on page 433.
- Clear All Selections—Clears the selection from all objects selected on the inventory page.

Related Documentation

- Understanding Overall System Condition and Fabric Load on page 364
- Fabric Management Overview on page 349
- Inventory Pages Overview on page 29

Configuring Node Network Settings

The Junos Space fabric consists of one or multiple nodes. Network settings for these nodes enable IP connectivity to external systems as well as internal connectivity between nodes. During the initial set up of a node, the Junos Space super administrator configures node networking settings through the CLI interface. However, You can not use the CLI interface to change network settings.

To change network settings, navigate to Platform > Manage Fabric > Network Settings. Changing network settings allow you to move Junos Space fabric from one network location to another location without reinstallation.

Existing settings for both the management interface and device management interface (IP address, net mask and default gateway) for all nodes are displayed in a table. The settings for a node are displayed as a row in the table.

Nodes require restart to apply new network settings.

This topic includes the following topics:

- Network Settings Configuration Guidelines on page 358
- Changing the VIP Interface in the Same Subnet on page 359
- Changing the Node Management IP in the Same Subnet on page 359
- Changing the Default Gateway on page 359
- Changing the Management IP to a Different Network on page 359
- Adding the Device Management IP Address on page 360
- Changing the Device Management IP Address in the Same Subnet on page 360
- Changing the Device Management IP Address to a Different Network on page 360
- Deleting a Device Management IP Address on page 361
- Changing the VIP Interface to a Different Network on page 361
- Changing the Node Management IP Address of All Nodes in the Fabric to the Same Subnet on page 361
- Changing the VIP interface of a Multi-Node Fabric to a Different Network on page 362

Network Settings Configuration Guidelines

- The VIP interface and Node IP address should be in the same subnet.

- The node management IP address of the first two nodes in the fabric must be in the same subnet.
- When you modify the device management IP address, all the devices connected to that node should be updated with the new device management IP address.

Changing the VIP Interface in the Same Subnet

There is only one VIP for the entire fabric.

Changing the Node Management IP in the Same Subnet

To change the node management IP in the same subnet:

1. Click the pencil icon for the node on which you want to change the management IP.
The settings appear for you to modify
2. Change the management IP in the same subnet.
3. Click OK.
4. Click Modify.

The Shutdown/reboot confirmation dialog box appears.

Changing the Default Gateway

To change the default gateway:

1. Click the pencil icon for the node on which you want to change the default gateway.
The settings appear for you to modify
2. Change the default gateway.
3. Click OK.
4. Click Modify.

The Shutdown/reboot confirmation dialog box appears.

Changing the Management IP to a Different Network

To change the management IP to a different network:

1. Click the pencil icon for the node on which you want to change the management IP.
The settings appear for you to modify.
2. Change the management IP from a different network.
3. Change the VIP, subnet mask, and default gateway.
4. Click OK.
5. Click Modify.

The Shutdown/reboot confirmation dialog box appears.

Adding the Device Management IP Address

To add the device management IP address:

1. Click the pencil icon for the node on which you want to add the device management IP address.

The settings appear for you to modify.

2. Click Add.
3. Add the VIP, subnet mask, and default gateway for the device management interface.
4. Click OK.
5. Click Modify.

The Shutdown/reboot confirmation dialog box appears.

Changing the Device Management IP Address in the Same Subnet

To change the device management IP address in the same subnet:

1. Click the pencil icon for the node on which you want to change the device management IP.

The settings appear for you to modify.

2. Change the device management IP to a new one in the same subnet.
3. Click OK.
4. Click Modify.

The Shutdown/reboot confirmation dialog box appears.

Changing the Device Management IP Address to a Different Network

To change the device management IP address to a different network:

1. Click the pencil icon for the node on which you want to change the device management IP.

The settings appear for you to modify.

2. Change the device management IP to a new in a different subnet.
3. Change the subnet mask and default gateway.
4. Click OK.
5. Click Modify.

The Shutdown/reboot confirmation dialog box appears.

Deleting a Device Management IP Address

To delete a device management IP address

1. Click the pencil icon for the node on which you want to delete the device management IP address.

The settings appear for you to modify.

2. Uncheck the Enable device management interface option.
3. Click OK.
4. Click Modify.

The Shutdown/reboot confirmation dialog box appears.

Changing the VIP Interface to a Different Network

The VIP interface and the node IP should be in the same subnet.

To change the VIP interface to a different network:

1. Change the VIP interface to a different network.
2. Change the node IP address.
3. Click OK.
4. Click Modify.

The Shutdown/reboot confirmation dialog box appears.

Changing the Node Management IP Address of All Nodes in the Fabric to the Same Subnet

To change the node management IP address and all nodes in the fabric to the same subnet:

1. Click the pencil icon for the node on which you want to change the node management IP address.

The settings appear for you to modify.

2. Change the node management IP address to a new one in the same subnet.
3. Click OK.
4. Repeat Steps 1 through 3 for each node in the fabric.
5. Click Modify.

The Shutdown/reboot confirmation dialog box appears.

Changing the VIP interface of a Multi-Node Fabric to a Different Network

The node IP address and the VIP interface must be in the same subnet.

To change the VIP interface of a multi-node fabric to a different network:

1. Change the VIP interface to a new one in a different network.
2. Change the node IP address.
3. Click OK.
4. Repeat Steps 1 through 3 for each node in the fabric.
5. Click Modify.

The Shutdown/reboot confirmation dialog box appears.

Related Documentation

- Shutting Down or Rebooting a Node From Junos Space on page 362

Shutting Down or Rebooting a Node From Junos Space

From Junos Space, you, the super administrator can shut down or reboot fabric nodes (appliances or virtual machine hosts) when you move them or reconfigure their network settings. You can shut down or reboot a fabric node using the **Platform > Administration > Manage Fabric > Shut Down Node** action. You can type an optional message to appear for administrators logged in to an affected node.

To shut down or reboot a node in the fabric:

1. Modify the node network settings.
2. Navigate to **Platform > Administration > Manage Fabric**.
4. Right-click the node and select **Power Management** from the popup menu.

The **Node Power Management** dialog box appears.

5. Select the node.
6. Select the power management action option: **Shut down** or **Reboot**.
7. In the **Console Message** text field, type an optional message for any administrator logged into the node using the CLI. The optional message appears on UNIX shell.

If you do not enter an optional console message, the following messages automatically appear: **Junos Space shutdown** or **Junos Space reboot**.

8. Click **Confirm**.

The shut down or reboot action occurs.

Related Documentation

Deleting a Node

You can delete a node from the Junos Space fabric directly using **Platform > Administration > Manage Fabric > Fabric Monitoring > Delete Node**. You must remove the deleted node from the network and re-image it. Thereafter, you can add it to the fabric using **Platform > Administration > Manage Fabric > Add Fabric Node**.

You can delete a node from the fabric under the following conditions:

- In a multiple node fabric if that node does not disrupt activities of other nodes.
- If a node is configured for high availability—with load balancing and as a database server capability—and there is another node that has the capacity to assume that role. You are prompted to enable that role on another candidate node before deleting that node. If you delete a high availability node, but there is not another node to transfer that role, high availability does not occur.

When you delete a fabric node, Junos Space does the following:

- Removes reference to that node host name and IP address from remaining nodes.
- Stops database replication on both the deleted node and the back up database node.
- The database backup copy in that node will not be available for the remaining cluster to restore from that copy
- Copies the database to the new database node.
- Shuts down all services that interact with other nodes.

You can delete only one node at a time. You must have Super Administrator or System Administrative role access privileges to delete a node.

To delete a node:

1. Select **Platform > Administration > Manage Fabric**.

Select the node that you want to delete, and select **Delete Node** from the **Actions** drawer.

You can also right-click the node and select **Delete Node** from the pop-up menu.

The Fabric Monitoring inventory page tabular view displays at a glance whether a node is configured for high availability. Look for Up in the Database and Load Balancer columns.

2. In the Warning dialog box, confirm that you want to delete the node by clicking **Continue**.
 - If a node you want to delete is not configured for high availability or a node is configured for high availability but there is no other node available to assume that role, the **Delete Node** dialog box appears displaying the node name and management IP address of only the node you want to delete.

- If a node is configured for high availability, the **Delete Node** dialog box notifies you of that fact and lists all candidate nodes that have the capacity to take over that role.
3. In the **Delete** dialog box, select the node you want to delete.
 4. Click **Delete**.

Node deletion is scheduled as a job immediately after you click **Delete**. The Delete Node action is also audit logged. The **Delete Fabric Node Job Information** dialog box appears.
 5. In the **Delete Fabric Node Job Information** dialog box, click the **Job ID** link.

Job Manager displays the **View Job Details** dialog box for you to verify and monitor delete node information, such as job type, job ID, percent complete, job state, scheduled start and end time, user name, and a brief job summary.
 6. If a problem occurs in the delete node job, you can troubleshoot by viewing the job status in the **Platform > Audit Logs > View Audit Logs** inventory page.



NOTE: When you delete a node, a UDP communication exception occurs. This behavior is normal.



NOTE: When you delete a load balancer node, a VIP switch may occur and cause the Junos Space progress indicator to appear. This behavior is normal.

Related Documentation

- Fabric Management Overview on page 349
- Viewing Nodes in the Fabric on page 354
- Adding a Node to an Existing Fabric on page 353

Understanding Overall System Condition and Fabric Load

You can view the overall Junos Space system condition and fabric load from the platform application dashboard or from the Administration workspace landing page.

System Condition

To calculate the overall system condition, Junos Space uses an algorithm based on cluster health and node-function health:

- Cluster health indicates the percentage of nodes in the fabric that are currently running.

For example, if only three nodes are reachable in a four-node fabric, cluster health is 75%.
- Load-balancer health indicates the percentage of nodes (enabled for load balancing) that are running the load balancing process.

For example, if two nodes are enabled for load balancing and the load-balancing process is running on only one node, the load-balancing health is 50%.

- Database health indicates the percentage of nodes (enabled for database requests) that are running the database process.

For example, if two nodes are enabled as database server and the database process is running on only one node, then database health is 50%.

- Application-logic health indicates the percentage of nodes (enabled for application logic (DML and business logic)) that are running the application-logic process.

For example, if three nodes are enabled for application logic and the application-logic process is running on only two nodes, then application-logic health is 67%.

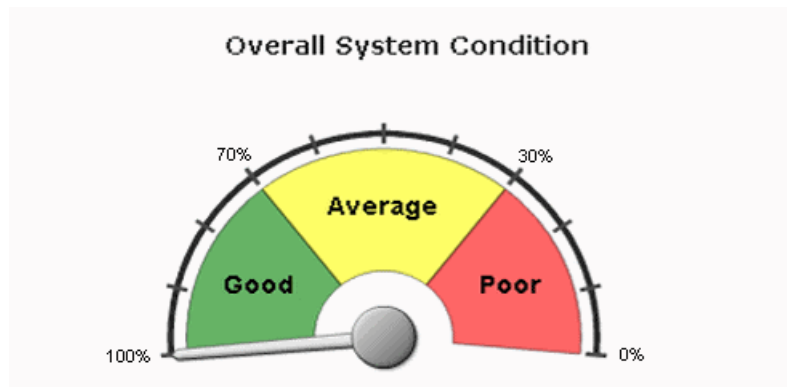
Junos Space retrieves data on the nodes and the node functions running, and then applies the following algorithm to determine the overall system condition:

$$\text{overall system condition} = \left[\frac{\text{number of nodes running}}{\text{number of nodes in fabric}} \right] * \left[\frac{\text{number of nodes running load balancing process}}{\text{number of nodes enabled for load balancing}} \right] * \left[\frac{\text{number of nodes running database server process}}{\text{number of nodes enabled as database server}} \right] * \left[\frac{\text{number of nodes running application logic process}}{\text{number of nodes enabled for application logic}} \right]$$

Using the preceding examples for cluster health and node-function health, the overall system condition is expressed as a percentage:

$$\text{overall system condition} = 75\% * 50\% * 50\% * 67\% = 12.5\%$$

The Overall System Condition window indicates Poor (0–30%), Average (30–70%), or Good (70–100%), based on the value the algorithm returns.

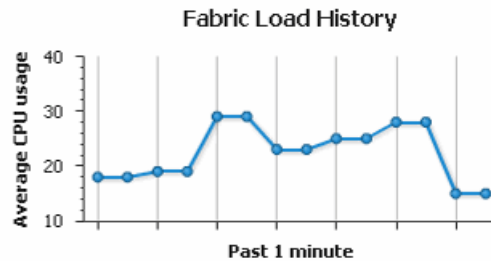


The overall system health indicates 0% (Poor) when any one of the following conditions is detected:

- No nodes in the fabric are running.
- No nodes enabled for load balancing are running the load balancing process.
- No nodes enabled for database requests are running the database process.
- No nodes enabled for application logic are running the application logic process.

Fabric Load

The Fabric Load chart displays the average CPU usage across all nodes that are running in the fabric.



Junos Space uses the following algorithm to determine the fabric load:

$$\text{fabric load} = [\text{total CPU usage for all nodes running}] / [\text{number of nodes running}]$$

For example, given a fabric with three nodes running and CPU usage of 80%, 30%, and 10%, respectively, the fabric load is 40%. The following example illustrates how the fabric load is calculated.

$$\text{fabric load} = [80\% + 30\% + 10\%] / 3$$

$$\text{fabric load} = 120\% / 3$$

$$\text{fabric load} = 40\%$$

To view the average CPU use at a specific data point, drag the mouse over the data point of interest.

To obtain details about the status of the fabric, click any data point in the graph. The Fabric Monitoring window is displayed and shows detailed status for each node in the fabric. Status information includes CPU, disk, and memory usage and indicates up or down status for each node function enabled on the node.

Related Documentation

- Fabric Management Overview on page 349
- Junos Space User Interface Overview on page 12

Overview

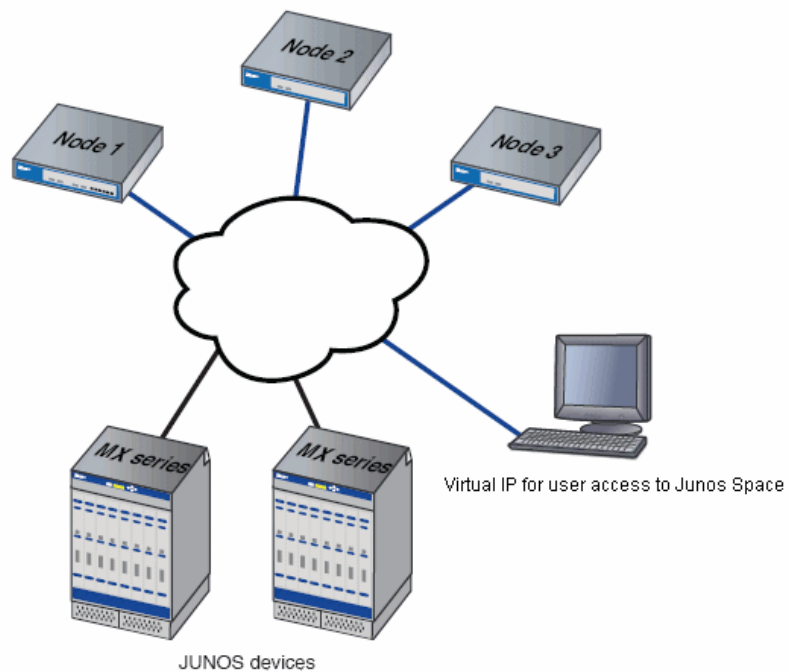
- Fabric Management Overview on page 366

Fabric Management Overview

You can deploy Junos Space appliances 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 JA1500 Junos Space Appliance or Junos Space Virtual Appliance, its operating system, and the Junos Space software that runs on the operating system. Each Junos Space appliance or 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. To add, manage, and monitor nodes in the fabric, a fabric administrator connects to a single virtual IP address, as shown in the illustration.



NOTE: All appliances (nodes) in a fabric must be from same Junos Space release. For example, a fabric comprises Junos Space Release 1.1 appliances or Junos Space Release 1.2 appliances, but not both.

Single Node Functionality

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

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



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

Multinode Functionality

As your network expands with new devices, services, and users, you can add Junos Space appliances to handle the increased workload. When you install and configure the first appliance, Junos Space automatically creates a fabric with one node. For each additional appliance you install and configure, you must add a node to logically represent the appliance in the fabric. 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 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 node functions distribute workload across operating nodes according to the following load-distribution rules:

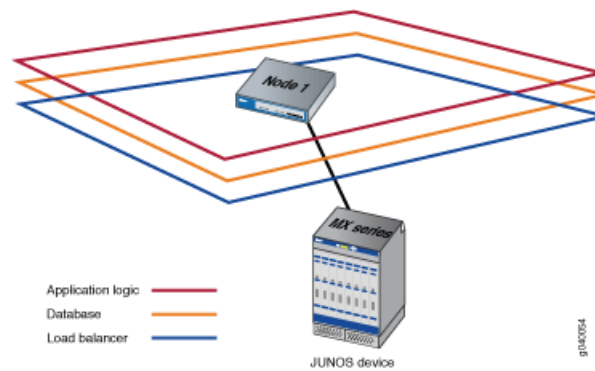
- **Load Balancer**— When a node that functions as the active load balancer server is down, all HTTP requests are automatically routed to the standby load balancer server that is running on a separate node.
- **Database**— When a node that functions as the active database server is down, all database requests (create, read, update, and delete) 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 uses the following algorithm to ensure that the number of devices connected to a node does not exceed the threshold limit for each node:

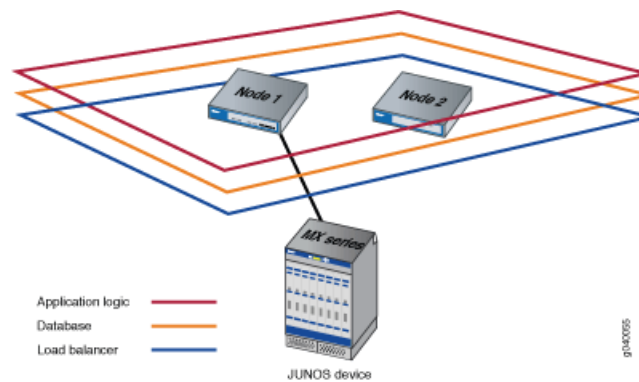
$$\text{Threshold Limit} = [(\text{number of devices in database}) / (\text{number of nodes running})] + 2$$

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

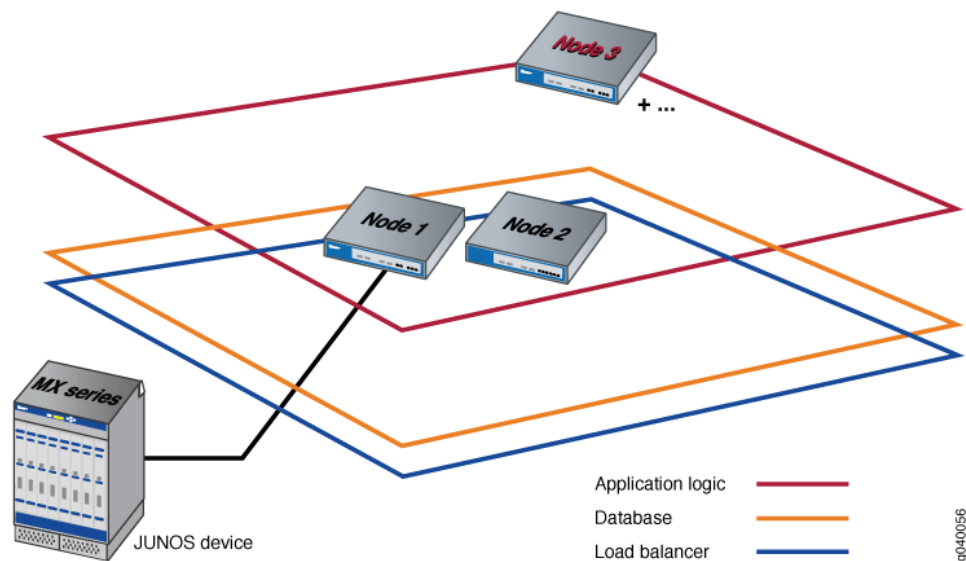
- **First node up:** The load balancer, database, and application logic functions are enabled on the node. Each node function provides both scalability and high availability. The following illustration shows all functions enabled on fabric comprising one node.



- Add 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. The following illustration shows the functions enabled on a fabric comprising two nodes.



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



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

Node Function Availability

In a fabric comprising two or more nodes, Junos Space provides failover when a node functioning as the active server (load balancer server or database server) goes down. By default, Junos Space marks a particular node down and routes failover requests to the node that Junos Space designates as standby server. Junos Space 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 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 active server.

Related Documentation

- Viewing Nodes in the Fabric on page 354

CHAPTER 31

Managing Databases

- Overview on page 371

Overview

- Database Backup and Restore Overview on page 371
- Backing Up the Database on page 373
- Restoring a Database in the User Interface on page 378
- Restoring a Database in Maintenance Mode on page 380
- Viewing Database Backup Files on page 382
- Deleting Database Backup Files on page 383
- Viewing Job Recurrence on page 384

Database Backup and Restore Overview

The system administrator can perform Junos Space database backup, restore, and delete operations from the Platform > Administration > Manage Databases workspace. The administrator can initiate a database backup operation from either the Manage Databases > Backup Database task or from Junos Space Maintenance Mode. In both cases, the backup database operation occurs in Maintenance Mode.

The backup database operation can be performed both locally or remotely.

By default, Junos Space does not automatically backup the database. However, the administrator can schedule a backup to run at anytime and perform either local or remote backups. All jobs that completed prior to the time the backup operation starts are captured in the database backup file.

To perform database backup or restore operations, a Junos Space user must be assigned the system administrator role.

Restore the Junos Space database if any of the following conditions occur:

- Junos Space data is corrupted, and you need to replace it with uncorrupted data.
- The Junos Space software becomes corrupted, and you reinstalled the Junos Space software.

- You upgrade to a new version of Junos Space and need to populate the Junos Space database with existing data.

Backing up a Database

The system administrator can back up a Junos Space database from the Platform > Administration > Manage Databases > Backup Database task. During a backup, Junos Space archives data files and the logical logs that record database transactions, such as the users, nodes, devices, and added or deleted services in Junos Space. The administrator can perform a local or remote database backup. When the administrator performs a local backup, Junos Space backs up all database data and log files to a local default directory `/var/cache/jboss/backup`. You cannot specify a different database backup file location for a local backup. When the administrator performs a remote database backup, Junos Space backs all data and log files to a remote location on a network hosts or media.

For a remote backup, you must specify a remote host that is configured to run the Linux Secure Copy (SCP) command. You must also specify a valid user ID and password for the remote host. To ensure that you are using a valid directory, check the destination directory before you initiate a database backup to the remote system.

For more information about backing up a database, see “Backing Up the Database” on page 373.

Restoring a Database

When the system administrator performs a restore database operation, data from a previous database backup is used to restore the Junos Space database to a previous state. The administrator can restore the database from the Junos Space user interface (Platform > Administration > Manage Databases workspace) (see “Restoring a Database in the User Interface” on page 378), or directly from the Maintenance Mode Actions window (if Junos Space goes down and you cannot access the user interface) (see “Restoring a Database in Maintenance Mode” on page 380).

When a user initiates a restore database operation from the user interface, Junos Space prompts the user for the user name and password to enter maintenance mode. When the user is authenticated, Junos Space initiates the restore database operation and Junos Space remains in maintenance mode until the database is restored. When Junos Space is in maintenance mode, Junos Space is down on all nodes in the fabric and only the web proxy is running. During this time, all Junos Space users, except the maintenance mode administrator, are locked out of the Junos Space system. When the restore operation completes and the administrator exits maintenance mode, Junos Space is restarted on all nodes, and users can again access the system through the Junos Space user interface.

Related Documentation

- Restoring a Database in the User Interface on page 378
- Restoring a Database in Maintenance Mode on page 380
- Backing Up the Database on page 373
- Maintenance Mode Overview on page 346

Backing Up the Database

The system administrator can make a backup copy of the Junos Space database and, at a later time, use the backup file to restore the Junos Space database to a previous state. The database backup file contains configuration data for managed nodes, managed devices, deployed services, scheduled jobs, Junos Space users, and so forth.

The administrator can perform local and remote backup and restore operations. You perform a local backup to copy the backup file to the default directory `/var/cache/jboss/backup`. You perform a remote backup to copy the backup file to remote network hosts or media.

This topic includes the following tasks:

- [Backing Up the Database to a Local Directory on page 374](#)
- [Backing Up the Database to a Remote Host on page 376](#)

Backing Up the Database to a Local Directory

To back up the Junos Space database to a local directory:

1. Navigate to the Platform > Administration > Manage Databases > Backup Database task. The Backup Database dialog box appears.

2. In the Mode field, select **local** to back up the Junos Space database to the default directory /var/cache/jboss/backup.



NOTE: When you select the **local** mode option, the **Username**, **Password**, **Confirm password**, **Machine IP**, and **Directory** text fields in the **Backup Database** dialog box are disabled.

3. Optional: In the **Comment** field, add a comment to describe or otherwise identify the backup operation.
4. Optional: Schedule the database backup to occur at a later time. Click the **Schedule at a later time** drop-down arrow to expand the schedule area of the **Backup Database**

dialog box. Specify a back up database start date and time. Clear the date and time if you want the operation to occur after you click **Backup**.



NOTE: The selected time in the scheduler corresponds to Junos Space server time but using the local time zone of the client computer.

5. Optional: Schedule database backup recurrence by clicking the **Repeat** drop-down arrow.

The Repeat area expands.

- a. Specify the database backup recurrence by typing a interval in the text box and selecting the time in the drop-down list box. The default recurrence interval is 1 hour.
- b. Specify when the recurrence should end.

Indicate a date and time. You can use the date calendar and the time drow-down list box. If you do not specify a recurrence end, the database backup will reoccur endlessly until you cancel the job manually.

6. Click **Backup**.

The database is backed up. The **Order Information** window appears.

7. Optional: Click the **Job ID** in the **Order Information** dialog box to view the database backup job details in the **View Job Details** window.
8. Click **OK**.

The Junos Space database backup is displayed on the Manage Databases inventory page. See “Viewing Scheduled Jobs” on page 293.

Backing Up the Database to a Remote Host

To back up the Junos Space database to a remote host:

1. Navigate to the Platform > Administration > Manage Databases > Backup Database task. The Backup Database dialog box appears.

Backup Database

Mode: remote

Username:

Password:

Confirm password:

Machine IP:

Directory:

Comment:

☒

Date and time: 08/09/10 2:11 PM PDT

☒

1 Hours

☒

Date and Time: 08/09/10 2:22 PM PDT

2. In the Mode field, select **remote** from the drop-down menu.
3. Enter a valid **user name** to access the remote host server.
4. Enter a valid **password** to access the remote host server.
5. Reenter the **password** you entered in the previous step.
6. Enter the **IP address** of the remote host server.
7. Enter a directory path on the remote host server for the database backup file.



NOTE: The directory path must already exist on the remote host server.

8. Optional: Add a **comment** to describe or otherwise identify the backup operation.
9. Optional: Schedule the Junos Space database backup operation to occur at a later time. Click the down-arrow to expand the schedule area of the dialog box.
 - Clear the **Schedule at a later time** check box (the default) to initiate the database backup when you click Backup.
 - Select the **Schedule at a later time** check box to specify a later start date and time for the database backup.



NOTE: The selected time in the scheduler corresponds to Junos Space server time but using the local time zone of the client computer.

10. Optional: Schedule database backup recurrence by clicking the **Repeat** drop-down arrow.

The Repeat area expands.

- a. Specify the database backup recurrence by typing a interval in the text box and selecting the time in the drop-down list box. The default recurrence interval is 1 hour.
- b. Specify when the recurrence should end.

Indicate a date and time. You can use the date calendar and the time drop-down list box. If you do not specify a recurrence end, the database backup will reoccur endlessly until you cancel the job manually.

11. Click **Backup**. The database back up occurs.

The Order Information window appears.

12. Optional: Click the Job ID in the Order Information dialog box to view job details for the database backup. The View Job Details window appears.

13. Click **OK** to close the View Job Details window.

When the backup operation finishes, the Junos Space database backup file appears in the Manage Databases inventory panel.

Related Documentation

- Restoring a Database in the User Interface on page 378
- Restoring a Database in Maintenance Mode on page 380
- Viewing Database Backup Files on page 382
- Deleting Database Backup Files on page 383
- Database Backup and Restore Overview on page 371
- Viewing Audit Logs on page 305
- Viewing Scheduled Jobs on page 293

Restoring a Database in the User Interface

You can restore any archived Junos Space database to restore your Junos Space system to a previous state. When you initiate a restore database operation, Junos Space is shutdown on all nodes in the fabric and the system goes into maintenance mode, during which time only one maintenance mode administrator can log in to the system at a time. Once the restore database operation is complete, Junos Space is restarted and users can access the Junos Space user interface.

To restore a database, you must have System Administrator privileges and be a Maintenance Mode administrator.



NOTE: Before you restore a database, wait until all jobs currently running have completed.

To view information about the available database backup files before you select a database to restore, see “Viewing Database Backup Files” on page 382.

Junos Space supports both local and remote backup and restore operations.

- Restoring a Local Database on page 378
- Restoring a Database from a Remote Host on page 379

Restoring a Local Database

To restore the Junos Space database to a previous state:

1. Navigate to Platform > Administration > Manage Databases workspace. The Manage Databases inventory page appears displaying the previous database back ups.
2. Select the database backup file you want to restore.

In the thumbnail view, slide the slider to the far right position. You see the database back up file detailed information for the selected database backup.

3. Open the Actions drawer and select **Restore Database**.

The Restore Database confirmation window appears.



WARNING: You must log in to Junos Space Maintenance mode. Junos Space shuts down to restore the database. All data generated after the selected backup will be lost. Junos Space users will not be able to log in to Junos Space during the restore database operation.

4. Click **Continue** in the Restore Database window.

Junos Space prompts you enter a user name and password to enter maintenance mode.

5. Enter the maintenance mode user name and password.
6. Click **OK**.

Junos Space is shut down and other users will be unable to access the system during the restore database operation.

The Restore Database Status window displays the status for the restore database operation.

7. In the Restore Database Status window, click **Return to Maintenance Menu**.

The Maintenance Mode Actions window appears.

8. In the Maintenance Mode Actions window, click **Log Out and Exit from Maintenance Mode**. This action exits maintenance mode, starts up Junos Space, and returns to normal operational mode.

The process of exiting maintenance mode and restarting Junos Space takes several minutes.

Restoring a Database from a Remote Host

To restore the Junos Space database to a previous state:

1. Navigate to Platform > Administration > Manage Databases workspace. The Manage Databases inventory page appears displaying the previous database back ups.
2. Select the database backup file you want to restore.
3. In thumbnail view, slide the slider to the far right to view the database backup detailed information. In tabular view the database backup detailed information appears in the table columns.
4. Open the Actions drawer and select **Restore Database**.

The Restore Database confirmation window appears.



WARNING: You must log in to Junos Space Maintenance mode. Junos Space shuts down to restore the database. All data generated after the selected backup will be lost. Junos Space users will not be able to log in to Junos Space during the restore database operation.

5. Click **Continue** in the Restore Database window.

Junos Space prompts you enter a user name and password to log in to Maintenance mode.

6. Enter the maintenance mode user name and password.
7. Click **OK**.

Junos Space is shut down and other users will be unable to access the system during the restore database operation.

The Restore Database Status window displays the status for the restore database operation.

8. In the Restore Database Status window, click **Return to Maintenance Menu**.

The Maintenance Mode Actions window appears.

9. In the Maintenance Mode Actions window, click **Log Out and Exit from Maintenance Mode**. This action exits maintenance mode, starts up Junos Space, and returns to normal operational mode.

The process of exiting maintenance mode and restarting Junos Space takes several minutes.

Related Documentation

- Backing Up the Database on page 373
- Viewing Database Backup Files on page 382
- Deleting Database Backup Files on page 383
- Maintenance Mode Overview on page 346
- Restoring a Database in Maintenance Mode on page 380

Restoring a Database in Maintenance Mode

In Junos Space, maintenance mode is a special mode that an administrator can use to restore the database when Junos Space is down on all nodes in the fabric and the Web proxy is running.

To restore a database in maintenance mode:

1. Connect to a Junos Space appliance in maintenance mode using the following URL, where *ip-address* is the Web access IP address for the appliance:

`https://ip-address/maintenance`

The Maintenance Mode window is displayed.

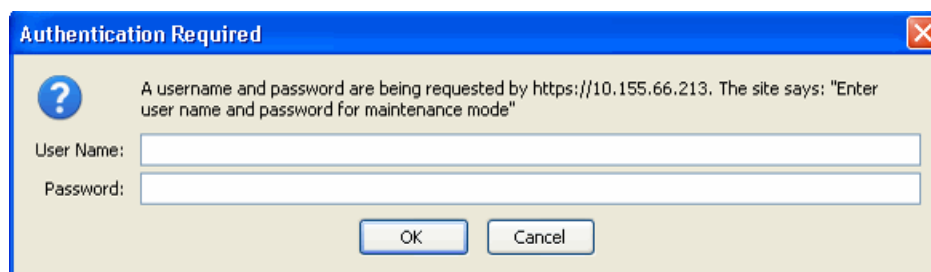
Maintenance Mode

Space is currently in maintenance mode.

[If you have the privileges to manage maintenance mode, click here to log in](#)

2. Click on the link to log in.

The Authentication Required dialog box is displayed.



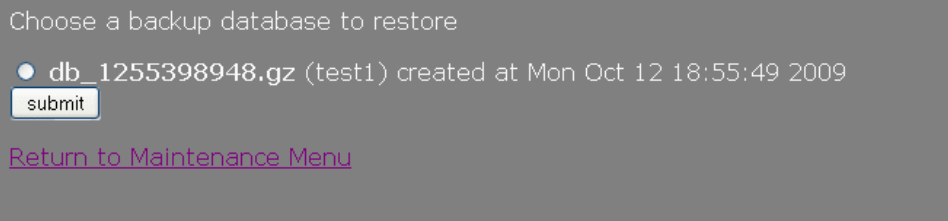
3. Enter the user name and password for maintenance mode access.
4. Click **OK**.

The Maintenance Mode Actions window is displayed.

- [Restore Database from Backup](#)
This action leads user to select a database backup file and overwrite the current database
- [Download Troubleshooting Data and Logs](#)
This action allows user to download Space logs for troubleshooting
- [Log Out and Remain in Maintenance Mode](#)
This action logs out the current user so that another administrator can login and manage in maintenance mode
- [Log Out and Exit from Maintenance Mode](#)
This action returns Space to normal operational mode

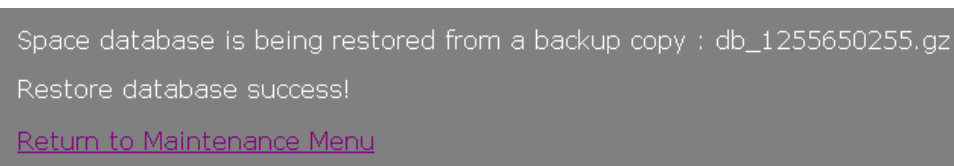
5. Click on the link **Restore Database from Backup** in the Maintenance Mode Actions window.

Junos Space displays the available database backup files, as shown in the following example.



6. From the available database backup files, select a database backup file to overwrite the current database.
7. Click **Submit**.

The database is restored from the backup copy you selected.



8. Click **Return to Maintenance Menu**.

The Maintenance Mode Actions window is displayed.

9. Click **Log Out and Exit from Maintenance Mode**.

Junos Space returns to normal operational mode.

**Related
Documentation**

- Maintenance Mode Overview on page 346
- Database Backup and Restore Overview on page 371
- Backing Up the Database on page 373
- Restoring a Database in the User Interface on page 378

Viewing Database Backup Files

The Manage Databases inventory page displays information about Junos Space database backups, including the date and time of the backup, the backup file name and location, and the IP address of the Junos Space appliance that was backed up. From the Manage Databases inventory page, the administrator can restore a database or delete a database backup.

- Changing Views on page 382
- Viewing Database Details on page 382
- Manage Database Commands on page 383

Changing Views

You can view database back information in thumbnail or tabular views. By default, Manage Database data displays in thumbnail view. In thumbnail view databases are represented by an icon has a database backup name and the date the back occurred. In tabular view, each database backup is represented by a row in the table,

To change views:

1. Navigate to Platform > Administrator > Manage Databases. The Manage Databases page appears.
2. Click a view indicator at the right of the Manage Databases page title bar.

Viewing Database Details

To view detailed database backup information:

- Double-click a database in either thumbnail or tabular views. The Database Backup Details page appears.
- In thumbnail view, move the zoom slider to the far right to display detailed informaton.

Table 50 on page 382 defines the database backup detailed information.

Table 50: Fields in the Manage Databases Table

Field	Description
-------	-------------

Table 50: Fields in the Manage Databases Table (*continued*)

Name	The name of the database backup file. Junos Space automatically assigns a name to the backup file.
Backup Date	Date and time of the database backup.
Comment	Information a Junos Space user optionally provides in the Comments field of the Backup Database dialog box when scheduling database backup.
Machine	IP address of the appliance on which the database backup was performed.
File Path	File path for the database backup.

Manage Database Commands

From the Manage Database inventory page, you can perform the following actions:

- Delete Database Backup—“Deleting Database Backup Files” on page 383
- Restore Database—“Restoring a Database in the User Interface” on page 378
- Tag It—“Tagging an Object” on page 432
- View Tags—“Tagging an Object” on page 432
- Clear All Selections—Clears all selections you made using the Select Page link. You can also clear all selections by clicking the Select None link.

Deleting Database Backup Files

The system administrator can delete archived database backup files that are no longer useful for restore operations.



NOTE: When you delete a database backup file from the Manage Databases inventory panel, the backup file is permanently deleted from Junos Space and cannot be retrieved or restored.

To delete a Junos Space database backup file:

1. Navigate to the Platform > Administration > Manage Databases workspace. The Manage Databases inventory page appears listing the previously database backed up files by file name.
2. From the Manage Databases inventory panel (thumbnails or table view), select one or more database backup files that you want to delete.
3. Optional: View the database backup file detailed information before deleting the file. In thumbnail view the slider to the far right. In tabular view, detailed database backup file information appears as columns in the table.
4. From the Actions drawer, select **Delete Database Backup**. You can also right-click the database backup files you want to delete.

Junos Space deletes the selected Junos Space database backup files. The deleted backup files are no longer displayed in the inventory panel and are deleted from the `/var/lib/mysql/backup` directory.

- Related Documentation**
- Backing Up the Database on page 373
 - Restoring a Database in the User Interface on page 378
 - Restoring a Database in Maintenance Mode on page 380
 - Viewing Database Backup Files on page 382

Viewing Job Recurrence

You can view information about when a job recurs. For example, in Junos Space release 1.4, you can view the recurrence of a database backup job.

To view job recurrence information:

1. Navigate to **Platform > Administration > Manage Database**.

The **Manage Database** inventory page appears.

2. Select a recurring job and select **View Recurrence** from the **Actions** menu.

You can also double-click a database backup file or right-click and select **View Recurrence** from the pop-up menu.

The **View Job Recurrence** dialog box appears.

The **View Job Recurrence** dialog box displays the selected job start date and time, recurrence interval, and end date and time.

3. Optional: Click the **Job ID** link to view all recurrences of the schedule.
4. Click **OK**.

- Related Documentation**
- Backing Up the Database on page 373
 - Viewing Scheduled Jobs on page 293
 - Viewing Audit Logs on page 305

CHAPTER 32

Managing Licenses

- Generating and Uploading the Junos Space License Key File on page 385
- Viewing Licenses on page 387

Generating and Uploading the Junos Space License Key File

The Junos Space software provides a default, 60-day trial license. After 60 days, the use of the Junos Space software expires except for the Upload License command. The administrator must activate the software with the Juniper Networks license key to regain use of the Junos Space software. Within two weeks of the license expiration date, a license expiration warning is displayed when users log in to Junos Space and from the About Junos Space page.

Junos Space license management involves a two-step process:

1. Generating the license key file. Juniper Networks uses a license management system (LMS) to manage the deployment of the Junos Space product—appliances, connection points, connections, and applications. When you order Junos Space, Juniper Networks LMS sends an e-mail with an authorization code or serial number and instructions on how to obtain a license key.
2. Uploading the license key using the Junos Space Administration workspace user interface. The system administrator must upload a license key file in the Administration Manage Licenses user interface to license the Junos Space product and activate the configuration ordered.

This procedure includes the following topics:

1. Generating the License Key File on page 385
2. Uploading the License Key File Contents on page 386

Generating the License Key File

If you order Junos Space, Juniper Networks sends an e-mail with an authorization code that includes a resource guide describing how to obtain a license key.

If you order a Junos Space virtual appliance, you also receive an e-mail with a serial number and instructions on how to go to the Juniper Networks license management system to apply that serial number.

Uploading the License Key File Contents

To upload the license key file, follow these steps:

1. Open the Juniper Networks Authorization Codes e-mail you received and follow the directions.
2. Open the license key text file attached to the e-mail and copy all the contents.
3. In Junos Space Application Chooser, click the Network Application Platform application icon.
4. In the task ribbon, click the **Administration** workspace icon. The Administration dashboard appears.
5. In the task ribbon, click the **Manage Licenses** task icon. The Manage Licenses inventory page appears.
6. In the task ribbon, click the **Upload License** icon. The Upload License page appears.
7. Paste the contents of the license key text file in the License Data text field using the Web browser Edit > Paste command.

Administration: Upload License

Please paste your license data to space below:

License Data: Juniper Networks FT-NM License File (v1)
Junos Space Platform
Generated on 2009-10-15T19:21:35Z
No expiration set

This license file is for the deployment using:

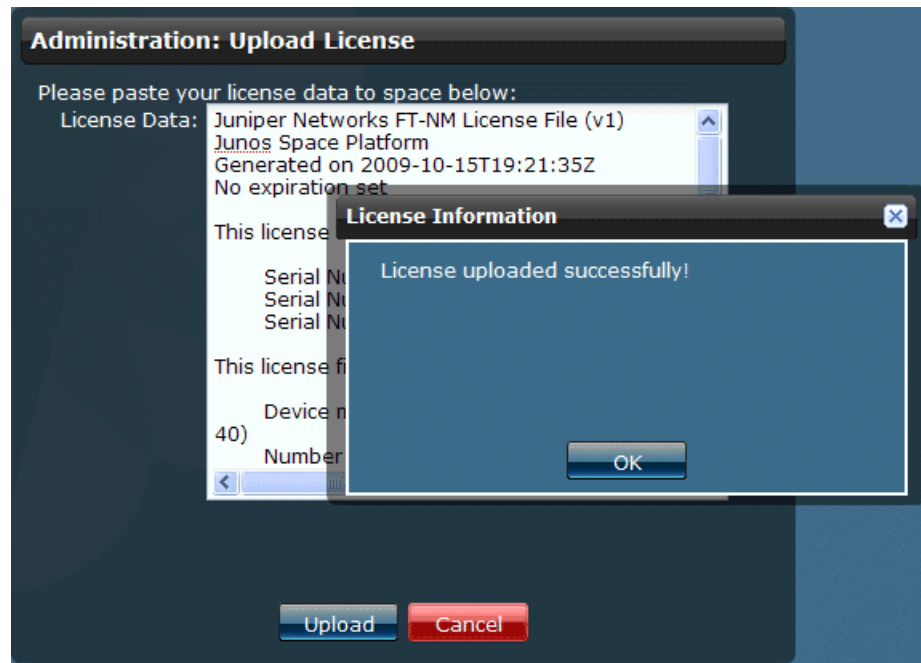
Serial Number: SPC-VA-BSE05
Serial Number: SPC-VA-BSE06
Serial Number: SPC-VA-BSE07

This license file enables the following:

Device management points (Capacity: 40)
Number connections (Capacity: 1000)

Upload Cancel

8. Click **Upload**. The license key data is uploaded in Junos Space database. The license uploaded successfully message appears.



9. Click **OK**. The license appears on the Manage Licenses inventory page.



Related Documentation

- Viewing Licenses on page 387

Viewing Licenses

The Manage Licenses inventory page displays the Junos Space license that the administrator has uploaded. For more information about obtaining and uploading the Junos Space licence, see “Generating and Uploading the Junos Space License Key File” on page 385. You can view licenses in Junos Space as graphics or as tables. By default,

Junos Space displays thumbnail representations of licenses. Licenses might include Junos Space licenses as well as licenses for VAR applications that run on Junos Space.

- [Changing the View on page 388](#)
- [Viewing Manage License Details on page 389](#)

Changing the View

The Manage Licenses page displays the Junos Space trial license until you upload the one specifically generated for your software installation. By default the Manage License inventory page appears in thumbnail view. In thumbnail view the uploaded license is represented by an icon. In tabular view, the software image is represented by a row in the Manage Software table. In tabular view, the uploaded license is displayed by name.

To change the Manage Licenses inventory page view:

- Click a view indicator to the right of the Manage Software name in the page title bar to switch between thumbnail and tabular view.

Viewing Manage License Details

In thumbnail view You can view the Junos Space license by double-clicking the license on the Manage Licenses inventory page . The License File dialog box appears. If the license is trial, you see the number of days before the 60-day trial license expires. If the license is commercial, you see the license file.



In Tabular view, you see the following license detailed information.

Table 51 on page 389 defines the license details.

Table 51: Manage Licenses Details

Field	Description
License Type	The Junos Space license can either be a trial license installed with the Junos Space software image or a commercial one that you upload into Junos Space.
SKU Model #	The Junos Space license stock keeping unit model number. If the license is trial, the SKU is trial-license . If commercial, the license SKU for example is <i>SPC-DEV-PTS_ADD-20</i> .
Total License Days	For a trial license, the total number of license days is 60; unlimited for a commercial license.

Table 51: Manage Licenses Details (*continued*)

Remaining Days	For a trial license, the remaining days is the count down of the number of days since when you installed Junos Space (for example 36) ; unlimited for a commercial license.
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**Related
Documentation**

- Generating and Uploading the Junos Space License Key File on page 385
- Inventory Pages Overview on page 29

CHAPTER 33

Managing Applications

- Managing Junos Space Applications on page 391
- Modifying Application Settings on page 393
- Configuring Network Application Platform Application Settings on page 394
- Configuring Network Activate Application Settings on page 395
- Adding a Junos Space Application on page 396
- Upgrading a Junos Space Application on page 398
- Junos Space Software Upgrade Overview on page 399
- Upgrading Junos Space Software on page 400
- Upgrading the Network Application Platform on page 401
- Uninstalling a Junos Space Application on page 404
- Overview on page 405

Managing Junos Space Applications

Manage Junos Space applications from the **Platform > Administration > Manage Applications** task. All applications that you have uploaded and installed appear in the **Manage Applications** inventory page. From the **Manage Applications** inventory page you, the super administrator or system administrator can manage Junos Space hot-pluggable applications, such as install, upgrade, and uninstall, while Junos Space is still running. You can also upgrade the Network Application Platform that provides the runtime environment for all Junos Space applications. Upgrading the Platform causes an interruption of Junos Space operation. The Platform upgrade takes place in **Maintenance** mode.

The administrator can also modify Platform application settings and tag applications to categorize and filter them to perform bulk actions on multiple applications at once.

To install or upgrade an application:

1. Download a new Junos Space application from the Juniper Networks software download site to the local client machine
2. To add an application, upload that application into Junos Space using **Platform > Administration > Manage Applications > Add Application**. To upgrade an application,

select **Platform > Administration > Manage Applications**. Select the application on the **Manage Applications** inventory page, then select the **Upgrade Application** action.

3. Once uploaded, you can install or upgrade the application.
 4. Once you upgrade or install an application, it appears on the **Manage Applications** inventory page. The new or upgraded application appears in **Application Chooser** and the Application Switcher global action pop-up menu at the right in the **Application Chooser** title bar.
- Changing The View on page 392
 - Viewing Detailed Application Information on page 392
 - Performing Manage Application Actions on page 393

Changing The View

Installed Junos Space applications appear in two views: thumbnail and tabular. The default is thumbnail view. Use the view indicators at the top-left in the Manage Applications title bar.

In thumbnail view, applications appear as icons listed in descending order by application title. Each application has a title, description, version, and build. To see more detailed information about an application double-click it move the zoom slider at the top-right to the far right. The default zoom slider position is in the middle. Select an application to select it before performing an action.

In tabular view, applications appear in a table sorted by application title. Each application is a row in the Manage Applications table. Click a row in the table to select it before performing a command. Double-click a row to see detailed application information.

To change views:

- Click a view indicator at the right in the **Manage Applications** page title bar.

Viewing Detailed Application Information

Table 52 on page 392 defines the information displayed for each application in the Manage Applications inventory page. In thumbnail view to see application details, double-click an application, click **Details**, or slide the slider to the far right. In tabular view, the detailed information is displayed in the columns.

Table 52: Application Information

Application Information	Description
Title	Name of the Junos Space application.
Version	The Junos Space application software version.
Release Type	The Junos Space application software version release level.
Build	The Junos Space application software build number.

Table 52: Application Information (*continued*)

Application Information	Description
Description (Thumbnail view)	A brief description of the Junos Space application

Performing Manage Application Actions

You can perform the following actions on applications from the **Manage Applications Actions** drawer. You must first select an application before you can perform an action on it from the Actions drawer. You can also right-click an application to perform these actions.

- Modify Application Settings—See “Modifying Application Settings” on page 393.



NOTE: This action is available for the Platform only.

- Uninstall Application—See “Uninstalling a Junos Space Application” on page 404.
- Upgrade Application—See “Upgrading a Junos Space Application” on page 398.
- Upgrade Platform—See “Upgrading the Network Application Platform” on page 401.



NOTE: This action is available for the Platform only.

- Tag It—See “Tagging an Object” on page 432.
- View Tags—See “Viewing Tags” on page 433.
- Untag It—“Untagging Objects” on page 433.

Modifying Application Settings

You, the Super Administrator or System Administrator, can modify Junos Space application settings from the **Platform > Administration > Manage Applications** inventory page.

To modify application settings:

1. Select **Platform > Administration > Manage Applications**.

The **Manage Applications** inventory page appears.

2. Select the application.

Select Network Application Platform to modify the Platform application settings.

3. Select **Modify Application Settings** from the Actions drawer or right-click the application and select that action from the pop-up menu. Mouse over the Actions drawer to open it.

The appropriate **Modify Application Settings** page appears.

4. Configure the following application settings depending on the application you are managing:
 - Configuring Network Application Platform Application Settings on page 394
 - Configuring Network Activate Application Settings on page 395
5. Click **Modify**.

Related Documentation

- Application Management Overview on page 405
- Managing Junos Space Applications on page 391
- Uninstalling a Junos Space Application on page 404
- Upgrading a Junos Space Application on page 398
- Creating a Tag on page 431
- Managing Tags on page 428

Configuring Network Application Platform Application Settings

Table 53 on page 394 defines the application settings you can configure for the Network Application Platform. You must have Super Administrator or System Administrator privileges.

Table 53: Network Application Platform Application Settings

Category	Application Setting Name	Description
Devices	Allow users to auto log in to devices using SSH	This check box allows users to automatically log in when starting an SSH connection on a device. The default, deselected, indicates that you have to add your credentials to log in to a device using SSH.
	Auto resync device	This check box ensures that configuration changes on a connected Juniper Networks device are synchronized or imported to the application database. By default this check box is selected.
	Max auto resync waiting time (secs)	This text box specifies the time within which device configuration changes are synchronized to the database. 20 seconds is the default waiting time. You can specify any number of seconds. There is no specific range.
	Junos Space initiates connection to device	This check box is selected by default, so Junos Spaces initiates connection with managed devices. To have managed devices initiate connection with Junos Space, deselect this checkbox.
	SSH port for device connection	This text field specifies the SSH port on the device. Junos Space uses this port to discover devices. The default value, 22 , is the standard SSH server port.

Table 53: Network Application Platform Application Settings (*continued*)

Category	Application Setting Name	Description
Users	Automatic logout of idle user sessions (min)	<p>This text box specifies the time, in minutes, after which a user who is idle and has not performed any action, such as keystrokes or mouse clicks, is automatically logged out of Junos Space to the logout page. This setting conserves server resources and protects the system from unauthorized access.</p> <p>The text box values are:</p> <ul style="list-style-type: none"> • 60 minutes is the default setting. An error message appears if you enter a value less than 0. • 120 minutes is the maximum setting. An error message appears if you enter a value more than 120 minutes. • 0 minutes turns the setting off.

Related Documentation

- Modifying Application Settings on page 393

Configuring Network Activate Application Settings

You can configure the Network Activate application settings from the Platform > Administration > Manage Applications inventory page. See “Modifying Application Settings” on page 393

You must have Super Administrator privileges to configure Network Activate application settings.

Table 54 on page 395 defines the application settings you can configure for the Network Activate application settings.

Table 54: Network Activate Application Settings

Category	Application Setting Name	Description
Deployment	Deploy configuration to the device	Disable this setting to deploy configuration to Junos Space user interface only.
	Save configuration in XML format	This setting is disabled by default, to deploy the service order and view the configuration using JUNOS curly braces syntax.
	Use vlanmaps for flexible tagged services	Enable this setting if MX Series devices are configured for VLAN mapping.
Audit	Perform functional audit on control plane only	Enable this option to check only the control plane to ensure connectivity among endpoints and verify that UNIs are functioning correctly. Disable this setting to check the control plane and also the data plane to verify packet transmission between each valid pair of endpoints in the service.

Table 54: Network Activate Application Settings (*continued*)

Category	Application Setting Name	Description
Logging	Log Directory	Modify the default audit log repository directory. The default log directory is /var/tmp/jboss.

Related Documentation

- Modifying Application Settings on page 393

Adding a Junos Space Application

The administrator can add a new Junos Space application while Junos Space is still running.



NOTE: Service Now and Service Insight are bundled with, installed, and upgraded with the Network Application Platform. You must add, or upgrade all other applications separately. Junos Space 11.2 supports only Junos Space release 11.2 hot-pluggable applications.

To upgrade Junos Space applications, see “Upgrading a Junos Space Application” on page 398.

To add a Junos Space application:

1. Ensure that the Junos Space application you want to add is downloaded from the Juniper Software download site to the local client file system.

<https://www.juniper.net/support/products/space/#sw>

2. Select **Platform > Administration > Manage Applications > Add Application**.

The **Add Application** dialog box appears. If you have not uploaded any applications, the page is blank.

3. Upload the new application by performing one of the following:

- a. Click **Upload via HTTP**.

The **Software File** dialog box appears.

- i. Type the name of the application file or click **Browse** to navigate to where the new Junos Space application file is located on the local file system.

- ii. Click **Upload**

- b. Click **Upload via SCP**.

The **Upload Software via SCP** dialog box appears. Add the Secure Copy credentials to upload the Junos Space application image from a remote server to Junos Space.

- i. Add your username.
- ii. Add your password.

- iii. Conform by adding your password again.
- iv. Add the host IP address.
- v. Add the local path name of the Junos Software application file.
- vi. Click **Upload**.

The new application is uploaded from the local file system into Junos Space and displayed by application name, filename, version, release level, and required Junos Space Platform version

- 4. a. Wait until the job is completed.

The **Add Application Job Information** dialog box appears.

- b. In the **Add Application Job Information** dialog box, if you click the Job ID link, you see the Add Application job on the **Platform > Job Management > Manage Jobs** inventory page.
 - i. Ensure that the job is successful.
 - ii. Select **Administration > Manage Application > Add Application** to continue with the add application process.

The **Add Application** dialog box appears.

- c. In the **Add Application Job Information** dialog box, if you click **OK**, the **Add Application** dialog box appears.

- 5. In the **Add Application** dialog box, select the new uploaded application.

You see the new application file on the **Add Application** page .

- 6. Click **Install**.

Wait until the application fully deploys.

- 7. Without logging out of Junos Space, navigate to Application Chooser.
 - 8. Click the Application Switcher global icon at the top-right in the application banner.
- The Application Switcher pop-up menu appears.

- 9. Click **Select Application**.

Application Chooser appears with the new application icon.

- 10. Click the new application icon to view and begin using its workspaces and tasks.

Related Documentation

- Application Management Overview on page 405
- Managing Junos Space Applications on page 391
- Upgrading a Junos Space Application on page 398
- Upgrading the Network Application Platform on page 401
- Modifying Application Settings on page 393

- Uninstalling a Junos Space Application on page 404
- Upgrading a Junos Space Application on page 398
- Tagging an Object on page 432
- Viewing Tags on page 433

Upgrading a Junos Space Application

The Upgrade Application action allows you to upgrade an existing Junos Space application independently while the system is still running. Several hot-pluggable Junos Space applications are available for upgrade to the current release. Use Platform > Administration > Once the application is upgraded successfully, you can launch it from Application Chooser.

To install a new Junos Space application, use the **Platform > Administration > Manage Applications > Add Application** action, see “Adding a Junos Space Application” on page 396.

To upgrade an existing Junos Space application:

1. Ensure that the application to which you want to upgrade is downloaded from the Juniper Software download site to the local client file system.
<https://www.juniper.net/support/products/space/#sw>
2. Navigate to **Platforms > Administration > Manage Applications**. The **Manage Applications** inventory page appears.
3. Right-click the application that you want to upgrade and select Upgrade Application. You can also select the application and select Upgrade Application from the **Actions** drawer.

The **Upgrade Application** dialog box appears displaying all previously uploaded versions of that application.

4. Do one of the following:
 - If the software file for the application to which you want to upgrade is listed in the **Upgrade Application** dialog box, select it and click **Upgrade**.
The application upgrade process begins. Go to the next step.
 - If the application to which you want to upgrade is not listed in the **Upgrade Application** dialog box, click **Upload**. The **Software File** dialog box appears.
 - a. Click **Browse** and navigate to where the software file to which you want to upgrade is located on the local file system.
 - b. Click **Upload**. The software file is uploaded into Junos Space. You see the application in the **Upgrade Applications** dialog box.
 - c. Wait until the job is completed.

The **Upgrade Application Job Information** dialog box appears.

d. In the **Upgrade Application Job Information** dialog box, if you click the Job ID link, you see the Upgrade Application job on the **Platform > Job Management > Manage Jobs** inventory page.

i. Ensure that the job is successful.

ii. Select **Administration > Manage Applications** to continue with the add application process.

The **Upgrade Application** dialog box appears.

e. Select the software file to which you want to upgrade, and click **Upgrade**. The application upgrade process begins.

5. Navigate to Application Chooser and launch the application you upgraded.

Related Documentation

- Application Management Overview on page 405
- Managing Junos Space Applications on page 391
- Adding a Junos Space Application on page 396
- Upgrading the Network Application Platform on page 401
- Modifying Application Settings on page 393
- Uninstalling a Junos Space Application on page 404
- Tagging an Object on page 432
- Viewing Tags on page 433

Junos Space Software Upgrade Overview

To upgrade software for the Junos Space Virtual Appliance, you upload the Junos Space image file to your existing fabric and perform the software upgrade in the Junos Space user interface. When you perform an upgrade, all appliances (nodes) in the fabric are upgraded with the new software.

To ensure a successful upgrade of your Junos Space appliances, complete the following tasks.

- Back up all your Junos Space data files before you begin the upgrade process.
- Download the Junos Space software image from the Juniper Networks software download Web site.
- Complete the steps to upgrade your current Junos Space software to the latest software version.



NOTE: To perform a Junos Space upgrade, you must have super administrator or system administrator access privileges.

- Validate that the software is successfully installed by logging in to the user interface.

To view the version of the installed Junos Space software, select the Help icon in the user interface banner, and click on the **About** panel.

- Upload the License Key that was sent to you when you purchased the Junos Space software upgrade.

**Related
Documentation**

- Upgrading Junos Space Software on page 400

Upgrading Junos Space Software

To upgrade software for the Junos Space Virtual Appliance, you download the Junos Space Upgrade image file from the Juniper Networks software download site onto the local client file system. You upload the Junos Space image file to your local file system using the Platform > Administration > Manage Applications Upgrade Platform action. When you perform an upgrade, all appliances (nodes) in the fabric are upgraded with the new software.



CAUTION: The Junos Space Upgrade supports only two consecutive releases.



CAUTION: You cannot upgrade directly from older Junos Space releases 1.0, 1.1, 1.2, 1.3, or 1.4 to release 11.2. Instead, you must upgrade indirectly to Junos Space release 2.0 or 11.1 before upgrading to release 11.2.

- Junos Space 11.2 Release Highlights on page 400
- Before You Begin on page 401
- Upgrading Junos Space Release 2.0 or 11.1 to Release 11.2 on page 401

Junos Space 11.2 Release Highlights

The Junos Space Upgrade Release 11.2 includes:

Junos Space Release 11.2 Contents

- Network Application Platform Release 11.2 (The platform provides the operating environment for Junos Space, therefore upgrade using the Platform > Administration > Manage Application Upgrade Platform action.)
- Service Now Release 11.2
- Service Insight Release 11.2

Available Hot-Pluggable Applications

The following applications are hot-pluggable in Junos Space Release 11.2. Hot-pluggable applications mean that adding removing, and upgrading occurs while Junos Space is still running, and without service interruption. A hot-pluggable application is packaged separately and has an separate image file for installing and upgrading.

- Ethernet Design Release 11.2
- Network Activate Release 11.2
- QoS Design 11.2
- Security Design Release 11.2
- Virtual Control Release 11.2

Before You Begin

Before you upgrade the Junos Space Software, ensure that you are aware of the following:

- Upgrading to Junos Space release 11.2 clears existing user preferences set using the User Preference global action icon at the right in the title bar of Application Chooser.
- We recommend that you:
 - Back up the Junos Space database before you begin the upgrade process. See also “Application Management Overview” on page 405.
 - Clear the Web browser cache before logging in to the upgraded Junos Space software.
- You must log in as the default super administrator or system administrator to upgrade Junos Space.

Upgrading Junos Space Release 2.0 or 11.1 to Release 11.2

The Platform provides the running environment for all Junos Space applications, so upgrading it causes operation interruption.



NOTE: When upgrading Junos Space from releases 2.0 or 11.1 to 11.2, the Network Application Platform and Service Now and Service Insight applications are upgraded only. Other Junos Space release 2.0 or 11.1 applications are disabled. You must upgrade release 2.0 or 11.1 disabled applications to release 11.2 (see “Upgrading a Junos Space Application” on page 398) or uninstall them (see “Uninstalling a Junos Space Application” on page 404). Do not add disabled Junos Space applications using **Platform > Administration > Manage Applications > Add Application**.

To upgrade Junos Space from release 2.0 or release 11.1 to release 11.2, see “Upgrading the Network Application Platform” on page 401.

Related Documentation

- Application Management Overview on page 405
- Managing Junos Space Applications on page 391

Upgrading the Network Application Platform

The Network Application Platform (Platform) provides the running environment for all Junos Space applications, so upgrading causes operation interruption. The Upgrade

Network Application Platform action allows the administrator to upgrade the Network Application Platform independently from one version to another without installing other Junos Space applications.



NOTE: During an upgrade of Junos Space release 2.0, or 11.1 to release 11.2 on a multi-node fabric, the install status is shown in the installation process.

To upgrade the Junos Space Platform:

1. Ensure that the Junos Space Upgrade image to which you want to upgrade is downloaded to the local client file system using <https://www.juniper.net/support/products/space/#sw>.

2. Select **Platform > Administration > Manage Applications**.

The Manage Applications inventory page appears.

3. Right-click the **Network Application Platform** application to select it.
4. Select **Upgrade Platform** in the pop-up menu.

You can also select the platform and select **Upgrade Platform** from the **Actions** drawer. The **Upgrade Application** page appears displaying all previously uploaded versions of the Platform.

5. Do one of the following:

- If the platform to which you want to upgrade is listed in the Upgrade Application dialog box, select the file, and click **Upgrade**.

The application upgrade process begins. (Go to the next step.)

- If the application to which you want to upgrade is not listed in the Upgrade Application dialog box, click **Upload**.

The **Software File** page appears.

Upload the new application by performing one of the following:

- a. Click **Upload via HTTP**.

The **Software File** dialog box appears.

- i. Type the name of the application file or click **Browse** to navigate to where the new Junos Space application file is located on the local file system.
- ii. Click **Upload**

- b. Click **Upload via SCP**.

The **Upload Software via SCP** dialog box appears. You must add the following Secure Copy remote machine credentials.

- i. Add your username.
- ii. Add your password.

- iii. Conform by adding your password again.
- iv. Add the host IP address.
- v. Add the local path name of the Junos Software application file.
- vi. Click **Upload**.

The new application is uploaded from the local file system into Junos Space and displayed by application name, filename, version, release level, and required Junos Space Platform version

When the process is completed the Upgrade Platform Job Information dialog box appears.

- a. In the **Upgrade Application Job Information** dialog box, if you click the Job ID link, you see the Upgrade Application job on the **Platform > Job Management > Manage Jobs** inventory page.
 - i. Ensure that the job is successful.
 - ii. Select **Administration > Manage Applications** to continue with the add application process.

The **Manage Applications** inventory page appears.

- b. Right-click the **Network Application Platform** application and select **Upgrade Platform**.
- c. Click **OK**.

The **Upgrade Platform** dialog box appears. You see the application file that was uploaded.

- d. Select the application file to which you want to upgrade, and click **Upgrade**. The application upgrade process begins.
- 6. You enter **Maintenance** mode. Junos Space prompts you to enter a user name and password to enter maintenance mode. The user name is **maintenance**; the password is one that the administrator created during the initial installation process.
 - 7. Enter the maintenance mode user name and password in the text field.
 - 8. Click **OK**.

Junos Space displays a status window during the platform upgrade process.

- 9. When the platform upgrade completes, click the **Return to Maintenance Menu** link.

The Maintenance Mode Actions window appears.
- 10. Click the **Log Out and Exit from Maintenance Mode** link.

The installation progress window appears.



NOTE: The platform upgrade process takes approximately between 2 and 30 minutes to complete depending on the size of the Junos Space database.

When the installation is complete, the Junos Space login prompt is displayed.



NOTE: If a blank page is displayed instead of the login prompt, click Refresh. The login prompt is then displayed.



NOTE: Juniper Networks recommends that you clear the Web browser cache before logging in to the upgraded software.



NOTE: Juniper recommends that you perform a functional audit on all deployed services after upgrading.

You can now log in to begin using the upgraded Junos Space software.

Related Documentation

- Application Management Overview on page 405
- Managing Junos Space Applications on page 391
- Modifying Application Settings on page 393
- Uninstalling a Junos Space Application on page 404
- Upgrading a Junos Space Application on page 398
- Tagging an Object on page 432
- Viewing Tags on page 433

Uninstalling a Junos Space Application

The Uninstall application action allows the administrator to remove a Junos Space application independently while the system is still running. Uninstalling an application cleans up all database data and any process the application used. Uninstall a Junos Space application from the Manage Applications inventory page.

To uninstall a Junos Space application:

1. Select **Platform > Administration > Manage Applications**.
The **Manage Applications** inventory page appears.
2. Right-click the application you want to uninstall and select **Uninstall Application**.
You can also select **Uninstall Application** from the **Actions** drawer.

The **Uninstall Application** window appears.

3. Select the application to confirm that you want to uninstall.
4. Click **Uninstall**.

The application uninstall process begins and the Junos Space application is removed from Junos Space.

Related Documentation

- Application Management Overview on page 405
- Managing Junos Space Applications on page 391
- Modifying Application Settings on page 393
- Upgrading a Junos Space Application on page 398
- Upgrading the Network Application Platform on page 401
- Tagging an Object on page 432
- Viewing Tags on page 433

Overview

- Application Management Overview on page 405

Application Management Overview

From the **Platform > Administration > Manage Applications** task, the administrator can manage the Junos Space Network Application Platform (platform) and all other separately packaged applications by performing the following tasks:



NOTE: The Junos Space Upgrade image includes the platform, Service Now, and Service Insight. Other Junos Space applications are separately packaged in image files. The administrator must download application files from the Juniper Networks Web site to the local client file system. The administrator must upload an application file in Junos Space. Once uploaded, Junos Space installs or upgrades the application. When the application is installed, you can launch it from Application Chooser. When you upgrade Network Application Platform, all applications except Service Now are disabled. Upgrade all disabled applications to the current release. Users in an upgraded application's workspace are directed to Application Chooser.

- Install new Junos Space application using the **Platform > Administration > Manage Applications > Add Application** task, see “Adding a Junos Space Application” on page 396.
- Upgrade the Platform using the **Platform > Administration > Manage Applications > Upgrade Platform** action, see “Upgrading the Network Application Platform” on page 401. The Platform provides the running environment for all Junos Space applications, so upgrading it causes operation interruption.

- Upgrade a Junos Space application while Junos Space is still running using the **Platform > Administration > Manage Applications > Upgrade Application** action, see “Upgrading a Junos Space Application” on page 398.
- Uninstall a Junos Space application while Junos Space is still running using the **Platform > Administration > Manage Applications > Uninstall Application** action, see “Uninstalling a Junos Space Application” on page 404.
- Modify the Platform application settings using the **Platform > Administration > Manage Applications > Modify Application Settings** action, see “Modifying Application Settings” on page 393.
- Tag applications to categorize them for filtering and performing Manage Applications actions using the **Platform > Administration > Manage Applications > Tag It** action, see “Tagging an Object” on page 432.
- View Tags that you have already created on a selected application using the **Platform > Administration > Manage Applications > View Tags** action, see “Viewing Tags” on page 433.

Related Documentation

- Managing Junos Space Applications on page 391
- Modifying Application Settings on page 393
- Uninstalling a Junos Space Application on page 404
- Upgrading a Junos Space Application on page 398
- Upgrading the Network Application Platform on page 401
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System Troubleshooting

- System Status Log File Overview on page 407
- Customizing Node System Status Log Checking on page 409
- Customizing Node Log Files To Download on page 410
- Downloading the Troubleshooting Log File from the UI on page 410
- Downloading the Troubleshooting Log File In Maintenance Mode on page 412
- Downloading Troubleshooting System Log Files Using the CLI on page 413

System Status Log File Overview

The system writes a system log file for each fabric node to provide troubleshooting and monitoring information. See “System Status Log File” on page 407.

The system administrator can customize the information that is collected in the system log file. See “Customizing Node System Status Log Checking” on page 409.

The system administrator can download the latest log files for each fabric node when logged into an appliance. See “Downloading System Log Files For an Appliance” on page 408.

In each operating mode, the system administrator can customize the default log files that are download from an appliance. See “Customizing Node Log Files To Download” on page 410.

System Status Log File

Approximately once a minute, the system checks and writes a status log file **SystemStatusLog** for each fabric node by default. Each log file consists of system status, such as the disk, CPU, and memory usage information, as shown. Junos Space writes each system status log file to **/var/log/SystemStatusLog**.

```
2009-08-10 11:51:48,673 DEBUG [net.juniper.jmp.cmp.nma.NMAResponse] (Thread-110:)  
Node IP: 1.1.1.1 Filesystem      1K-blocks  Used Available Use% Mounted on  
/dev/mapper/VolGroup00-LogVol00  
       79162184 15234764 59841252 21% /  
Cpu(s): 8.7%us, 1.1%sy, 0.0%ni, 90.0%id, 0.1%wa, 0.0%hi, 0.0%si, 0.0%st
```

Mem: 3866536k total, 2624680k used, 1241856k free, 35368k buffers
 Swap: 2031608k total, 941312k used, 1090296k free, 439704k cached

Customizing Status Log File Content

The system administrator can customize the information that is written in a fabric node system status log file. For more information, see “Customizing Node System Status Log Checking” on page 409.

Downloading System Log Files For an Appliance

The system administrator can download the latest log files for each fabric node when logged into an appliance. The system status log file and all other third party log files are collected and compressed in a troubleshooting file.

Table 55 on page 408 lists the files included in the **troubleshoot** file.

Table 55: Log Files included in the troubleshoot File

Description	Location
System status log file	/var/logSystemStatusLog
Jboss log files	/var/log/jboss/*
Service Provisioning data files	/var/tmp/jboss/debug/*
MYSQL error log	/var/log/mysqld.log
Log files for Apache, NMA, Webproxy	/var/log/httpd/*
Watchdog log file	/var/log/watchdog/*
Linux system messages	/var/log/messages/*

The system administrator can download log files in each operation mode as follow:

- Server Mode (See “Downloading the Troubleshooting Log File from the UI” on page 410.)
- Maintenance Mode (See “Downloading the Troubleshooting Log File In Maintenance Mode” on page 412.)
- CLI mode (See “Downloading Troubleshooting System Log Files Using the CLI” on page 413.)

Customizing Log Files To Download

The system administrator can also customize the log files to be downloaded for specific fabric nodes. For more information, see “Customizing Node Log Files To Download” on page 410.

Related Documentation

- Maintenance Mode Overview on page 346
- Customizing Node System Status Log Checking on page 409
- Customizing Node Log Files To Download on page 410

- Downloading the Troubleshooting Log File from the UI on page 410
- Downloading the Troubleshooting Log File In Maintenance Mode on page 412
- Downloading Troubleshooting System Log Files Using the CLI on page 413

Customizing Node System Status Log Checking

The system administrator can customize the system checking for a fabric node so that the necessary information is written to `/var/log/SystemStatusLog`. The administrator must modify the fabric node Perl script in `/usr/nma/bin/writeLogCronJob`.

To customize system status checking for an appliance, modify the `writeSystemStatusLogFile` sub-function in `writeLogCronJob` as shown:

```
sub writeSystemStatusLogFile{
    my $err = 0;
    my $logfile = $_[0];
    $err = system("date >> $logfile");
    $err = system("df /var >> $logfile");
    $err = system("top -n 1 -b | grep Cpu >> $logfile");
    $err = system("top -n 1 -b | grep Mem: >> $logfile");
    $err = system("top -n 1 -b | grep Swap: >> $logfile");

    ***<Add additional system command here that you want to print out in the
    SystemStatusLog file>***

    if ($err == 0 ) {          print "write log to $logfile successfully\n";
    } else {                   print "cannot write log to $logfile\n";
    }
    return $err;
}
```

Related Documentation

- Maintenance Mode Overview on page 346
- System Status Log File Overview on page 407
- Customizing Node Log Files To Download on page 410
- Downloading the Troubleshooting Log File from the UI on page 410
- Downloading the Troubleshooting Log File In Maintenance Mode on page 412
- Downloading Troubleshooting System Log Files Using the CLI on page 413

Customizing Node Log Files To Download

The system administrator can customize the log files that are downloaded for each fabric node by modifying the Perl script in `/var/www/cgi-bin/getLogFiles`.

To customize the log files that are downloaded for each fabric node, modify the `getLogFiles` Perl script zip command as shown:

```
...
system("zip -r $logFileName /var/log/jboss/* /var/tmp/jboss/debug/
/var/log/mysql.log /var/log/httpd/* /var/log/watchdog /var/log/messages
/var/log/SystemStatusLog > /dev/null");
...
```

Related Documentation

- Maintenance Mode Overview on page 346
- System Status Log File Overview on page 407
- Customizing Node System Status Log Checking on page 409
- Downloading the Troubleshooting Log File from the UI on page 410
- Downloading the Troubleshooting Log File In Maintenance Mode on page 412
- Downloading Troubleshooting System Log Files Using the CLI on page 413

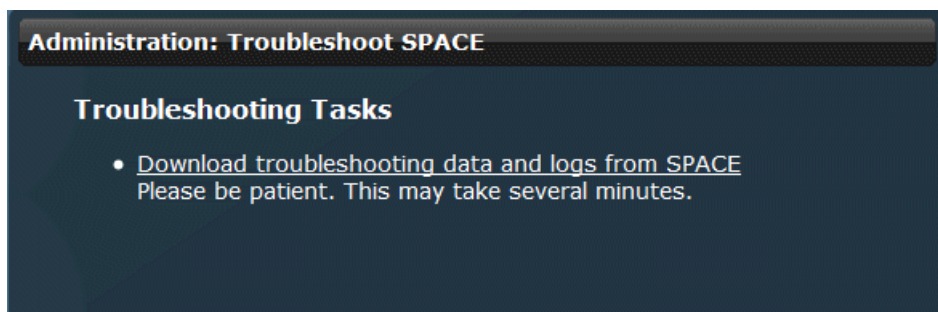
Downloading the Troubleshooting Log File from the UI

From the Administration workspace, the system administrator can download a troubleshooting file `troubleshoot_yyyy-mm-dd_hh-mm-ss.zip` that contains useful information for managing and monitoring the nodes in the system. The troubleshoot zip file includes the server Coordinated Universal Time (UTC) date and time. For example, `troubleshoot_2010-04-01_11-25-12.zip`.

To retrieve troubleshooting data and log files, follow these steps:

1. From the task ribbon, select the Administration workspace icon.
2. From the task ribbon, select the **Troubleshoot SPACE** task.

The Troubleshoot SPACE page appears.



3. Click the **Download troubleshooting data and logs from SPACE** link to access the `troubleshoot_yyyy-mm-dd_hh-mm-ss.zip` file in your browser.
 - If you are using Mozilla Firefox: In the Opening troubleshoot zip dialog box, select **Save file** and click **OK** to save the zip file to your computer using the Firefox Downloads window.
 - If you are using Internet Explorer: From the File Download screen, select **Save** and select a directory on your computer where you want to save the `troubleshoot_yyyy-mm-dd_hh-mm-ss.zip` file.
4. When you contact the Juniper Technical Assistance Center, describe the problem you encountered and provide the JTAC representative with the `troubleshoot.zip` file.

Table 56 on page 411 lists the files included in the `troubleshoot_yyyy-mm-dd_hh-mm-ss.zip` file.

Table 56: Data and Log Files in troubleshoot.zip File

Description	Location
Jboss log files	<code>/var/log/jboss/*</code>
Service Provisioning data files	<code>/var/tmp/jboss/debug/*</code>
MYSQL error log	<code>/var/log/mysqld.log</code>
Log files for Apache, NMA, Webproxy	<code>/var/log/httpd/*</code>
Watchdog log file	<code>/var/log/watchdog/*</code>
Linux system messages	<code>/var/log/messages/*</code>
CPU/RAM/Disk statistics (during past 24 hours)	Not applicable

Related Documentation

- Maintenance Mode Overview on page 346
- System Status Log File Overview on page 407
- Customizing Node System Status Log Checking on page 409
- Customizing Node Log Files To Download on page 410
- Downloading the Troubleshooting Log File In Maintenance Mode on page 412
- Downloading Troubleshooting System Log Files Using the CLI on page 413

Downloading the Troubleshooting Log File In Maintenance Mode

Maintenance Mode is a special mode that an administrator can use to perform system recovery or debugging tasks while all nodes in the fabric are shutdown and the web proxy is running.

The administrator can download the `troubleshoot_yyyy-mm-dd_hh-mm-ss.zip` file from Maintenance Mode. The troubleshoot zip file includes the server Coordinated Universal Time (UTC) date and time. For example, `troubleshoot_2010-04-01_11-25-12.zip`.

To download the troubleshooting log file in maintenance mode, follow these steps:

1. Connect to an appliance in maintenance mode by using the appliance URL.

For example:

```
https://<ipaddress>/maintenance
```

Where *ipaddress* is the address of the Juniper Networks appliance.

The maintenance mode page appears.

Maintenance Mode

Space is currently in maintenance mode.

[If you have the privileges to manage maintenance mode, click here to log in](#)

2. Click the **click here to log in** link. The login dialog box appears.
3. Log in to maintenance mode using the authorized login name and password.
4. Click OK. The Maintenance Mode Actions menu appears.
5. Click **Download Troubleshooting Data and Logs**. The file download dialog box appears.
6. Click Save to download the `troubleshoot_yyyy-mm-dd_hh-mm-ss.zip` file to the connected computer.
7. Click Log Out and Exit from Maintenance Mode.

Related Documentation

- Maintenance Mode Overview on page 346
- System Status Log File Overview on page 407
- Customizing Node System Status Log Checking on page 409
- Customizing Node Log Files To Download on page 410
- Downloading the Troubleshooting Log File from the UI on page 410

- Downloading Troubleshooting System Log Files Using the CLI on page 413

Downloading Troubleshooting System Log Files Using the CLI

If Junos Space is operating, the administrator can log into an appliance console and download system status logs for each fabric node using the CLI Network Settings Utility > SecureCoPy (SCP) command. If the system is not operating, the Administrator can download system status logs using the CLI USB command.

The Network Settings Utility, for both commands, collects all system log files in the `/var/log` subdirectory and creates a `*TAR` file to download. For more information on the log files that are written, see “System Status Log File Overview” on page 407.

This procedure includes the following tasks:

- Downloading a System Log File Using a USB Device on page 413
- Downloading System Log File Using SCP on page 414

Downloading a System Log File Using a USB Device

Using the Networks Settings Utility Retrieve Logs > USB command, the administrator can download system status logs to a connected USB device if the network is down.

1. Using a console utility, such as SSH or Telnet, connect to the appliance. The Junos Space Settings Menu appears.

Junos Space Settings Menu

```
1> Change Password
2> Set Routing
3> Set DNS Servers
4> Change Time Options
5> Retrieve Logs
6> Security
7> (Debug) run shell
```

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

Choice [1-7,QR]:

2. Type option **5> Retrieve Logs**. The Retrieve Logs submenu appears.

Choice [1-7,QR]: 5

```
1> Save to USB
2> Send via SCP
```

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

Choice [1-2,MR]:

3. Select **1> Save to USB**. The USB device must be connected to an appliance.
4. Indicate whether you want to continue. Enter **y** for yes; **n** to abort.
5. The Save to USB process downloads the log files from all cluster members and combines them into a **.tar** file. Once the file is created, the process copies the file onto a USB device. You see the following:

Copying 20090827-1511-logs.tar to USB drive

Downloading System Log File Using SCP

Using the Networks Settings Utility Retrieve Logs > SCP command, the administrator can download system status logs to a specific location.

To download system status logs using SCP, follow these steps:

1. Using a console utility, such as SSH or Telnet, connect to an appliance. The Junos Space Settings Menu appears.

Junos Space Settings Menu

```
1> Change Password
2> Set Routing
3> Set DNS Servers
4> Change Time Options
5> Retrieve Logs
6> Security
7> (Debug) run shell
```

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

Choice [1-7,QR]:

2. Type option **5> Retrieve Logs**. The Retrieve Logs submenu appears.

Choice [1-7,QR]: 5

```
1> Save to USB
2> Send via SCP
```

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

Choice [1-2,MR]:

3. Select **2> Send via SCP**. The process retrieves the log files on all cluster members and combines them into a **.TAR** file.
4. Indicate whether you want to continue. Enter **y** for yes; **n** to abort.
5. Specify the SCP server IP address to which to transfer the file.
6. Enter the remote SCP user. For example, **root**
7. Enter the remote SCP file location. For example, **/root/tmplogs**. You see the following:

```

Remote scp IP: 123.123.123.123
Remote scp user: root
Remote scp path: /root/tmplogs
Is this correct? [y/n]
The authenticity of host '123.123.123.123 (123.123.123.123)' can't be established.
RSA key fingerprint is 01:70:4c:47:9e:1e:84:fc:69:3c:65:99:6d:e6:88:87.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '123.123.123.123' (RSA) to the list of known hosts.
Warning-Please dont use this system
/etc/selinux/strict/contexts/files/file_contexts: Multiple same specifications for
/usr/local/lost\+found/*.*
/etc/selinux/strict/contexts/files/file_contexts: Multiple same specifications for
/usr/local/\.journal.
/etc/selinux/strict/contexts/files/file_contexts: Multiple same specifications for
/usr/local/lost\+found.
123.123.123.123 password:
20090827-1517-logs.tar
100% 18MB 17.6MB/s 00:01

```

8. Indicate whether the SCP server information is correct. Enter **y** for yes; **n** if incorrect.
9. Indicate whether you want to continue. Enter **y** for yes; **n** for no.

Related Documentation

- Maintenance Mode Overview on page 346
- System Status Log File Overview on page 407
- Customizing Node System Status Log Checking on page 409
- Customizing Node Log Files To Download on page 410
- Downloading the Troubleshooting Log File from the UI on page 410
- Downloading the Troubleshooting Log File In Maintenance Mode on page 412

CHAPTER 35

Auth Servers

- Managing Remote Authentication Servers on page 417

Managing Remote Authentication Servers

- Remote Authentication Overview on page 417
- Understanding Junos Space Authentication Modes on page 418
- Configuring Remote Authentication Method Workflows on page 419
- Managing Remote Authentication Servers on page 420
- Creating a Remote Authentication Server on page 421
- Modifying Authentication Settings on page 423
- Junos Space Log In Behavior with Remote Authentication Enabled on page 424

Remote Authentication Overview

Junos Space, by default, authenticates users to log in locally when you configure their accounts using **Platform > Users > Manage Users > Create User**.

Using the **Platform > Administration > Manage Auth Servers** workspace, you can authenticate users to log in exclusively from a centralized location using one or more RADIUS remote authentication servers. You can also authenticate users to log in to Junos Space using both local and remote authentication.

Users stored on RADIUS server contain no Junos Space role or authorization information, therefore you must create local dummy users corresponding to the RADIUS users, and configure them with Junos Space roles using **Platform > Users > Manage Roles > Create Role**. See “Creating Users” on page 327 and “Creating a User-Defined Role” on page 339.

You can configure the order in which Junos Space connects to remote authentication servers by preference. Junos Space authenticates using the first reachable remote authentication server on the list.

You must install or upgrade to Junos Space 11.2 or later to use remote authentication.

Junos Space supports RADIUS authentication methods: PAP and CHAP

You must have Super Administrator, System Administrator privileges to configure remote authentication server settings, authentication modes, and user passwords and settings.

Regular Junos Space users will not be able to configure their password if you maintain them solely by a remote authentication server.

You may choose to allow some privileged users to set a local password so they can still log onto the system if the remote authentication server is unreachable.

**Related
Documentation**

- Remote Authentication Overview on page 417
- Configuring Remote Authentication Method Workflows on page 419
- Understanding Junos Space Authentication Modes on page 418
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Understanding Junos Space Authentication Modes

Junos Space provides three authentication modes: local , remote, and remote-local. The default authentication mode is local. You configure local authentication from **Platform > Users >Manage Users > Create Users**. You configure remote and remote-local authentication from **Platform > Administration > Remote Auth Servers**.



NOTE: You configure local authorization from **Platform > Users >Manage Users > Create Roles**. See “Understanding How to Configure Users to Manage Objects in Junos Space” on page 318, “Creating Users” on page 327, and “Creating a User-Defined Role” on page 339. The current Junos Space release does not support remote authorization.

The following sections describe the authentication modes:

- Local Authentication on page 418
- Remote Authentication on page 418
- Remote-Local Authentication on page 419

Local Authentication

To configure local Junos Space authentication, navigate to **Platform > Users >Manage Users > Create Users**. To configure Junos Space authentication, see “Creating Users” on page 327.

Remote Authentication

User authentication information is stored on one or more remote authorization servers only. Authorization info, however, must be configured and stored in Junos Space. To configure Junos Space remote authentication, see “Configuring Remote Authentication Method Workflows” on page 419. User authentication and authorization information are stored locally in Junos Space.

Remote-Local Authentication

Existing and temporary user authentication and authorization information is stored in Junos Space. New user authentication information and password changes are maintained on the remote authentication server. You must configure new user authorization information which is stored in Junos Space. To configure Junos Space remote-local authentication, see “Configuring Remote Authentication Method Workflows” on page 419.

Related Documentation

- Remote Authentication Overview on page 417
- Configuring Remote Authentication Method Workflows on page 419
- Managing Remote Authentication Servers on page 420
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Configuring Remote Authentication Method Workflows

This topic describes the workflow necessary to configure Junos Space: local, remote, and remote-local authentication methods:

- Configuring Local Authentication on page 419
- Configuring Remote Only Authentication on page 419
- Configuring Local-Remote Authentication on page 420

Configuring Local Authentication

1. Log in to Junos Space.
2. Create users and select existing user roles from **Platform > Users > Manage Users > Create Users**.

See “Understanding How to Configure Users to Manage Objects in Junos Space” on page 318, and “Creating Users” on page 327.

3. Create user-defined roles if necessary from **Platform > Users > Manage Roles > Create Roles**.

See “Creating a User-Defined Role” on page 339.

Configuring Remote Only Authentication

1. If users have Junos Space accounts, enter their usernames and passwords on one or more of your remote authentication servers. Also enter the default Junos Space username **super** and **password** if you want to use it.
2. Log in to Junos Space.
3. Navigate to **Platform > Administration > Create Auth Server** and configure the preferences for one or more remote authentication servers. See “Creating a Remote Authentication Server” on page 421.

Configuring Local-Remote Authentication

1. If users exist in Junos Space, keep and manage them. You can manage Junos Space users from **Platform > Administration > Manage Users**.
2. If you need to add more Junos Space users, see “Creating Users” on page 327.
3. Configure an remote authentication server, see “Creating a Remote Authentication Server” on page 421.

Related Documentation

- Remote Authentication Overview on page 417
- Understanding Junos Space Authentication Modes on page 418
- Managing Remote Authentication Servers on page 420
- Creating a Remote Authentication Server on page 421
- Modifying Authentication Settings on page 423
- Junos Space Log In Behavior with Remote Authentication Enabled on page 424

Managing Remote Authentication Servers

The **Platform > Administration > Manage Auth Server** page allows you to configure remote authentication settings to allow users to log in to Junos Space from a remote authentication server. The **Manage Auth Server** page includes two areas: **Mode Settings** and **Remote Authentication Servers** table.

From the **Auth Mode Settings** area, you can select and save the Junos Space authentication mode: local, remote, or remote-local.

From the **Remote Authentication Servers** table area, you can:

- Create, modify, and delete remote authentication server connection settings and test the connection.
- Specify the remote authentication server connection order.

To select the remote authentication mode and manage remote authentication servers:

1. Navigate to **Platform > Administration > Manage > Remote Auth Servers**.
2. In the **Mode Settings** area, select the authentication method you want to use.

By default, Junos Space is in local authentication mode and the controls for the **Remote Authentication Server** table are disabled. If you select the Use **Remote Authentication** check box, the **Remote Authentication Only** and **Remote-Local Authentication** options are enabled.

3. Click **Save** to store the remote authentication mode setting you select.
4. In the **Authentication Servers** table Add a new remote authentication server by clicking Add (+). See “Creating a Remote Authentication Server” on page 421.
5. Modify an authentication server by doubling clicking that server row in the table. See “Modifying Authentication Settings” on page 423.

6. Delete an authentication server by selecting that row and clicking **Delete (X)** to remove an authentication server.
7. Click a row and select the arrows to move the server up and down the list. Up arrow will be grayed out if at the top of the list; down arrow will be grayed out if at the bottom of the list.

Sorting for columns are disabled, since there is an explicit sort order as determined by the arrows.

8. On selection of the server, click **Test Connection** to display a transient result of last connection test.
9. Confirm that you want to test the server connection.
After testing, the Status dialog box appears displaying the test results: success or failure.
10. Click OK.

If the connection results fails, ensure the server settings are correct.

Related Documentation

- Remote Authentication Overview on page 417
- Configuring Remote Authentication Method Workflows on page 419
- Understanding Junos Space Authentication Modes on page 418
- Creating a Remote Authentication Server on page 421
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- Junos Space Log In Behavior with Remote Authentication Enabled on page 424

Creating a Remote Authentication Server

To run Junos Space remote authentication, you must create one or more remote authentication servers and configure the server settings

To create a remote authentication server:

1. Navigate to **Platform > Administration > Manage > Remote Auth Servers**.
2. In the **Mode Settings** area, select the authentication method you want to use.

In local authentication mode, the controls for the **Remote Authentication Server** table are enabled so you can add authentication servers first and only switch to non-local authentication mode when you are ready later. If you select the Use **Remote Authentication** check box, the **Remote Authentication Only** and **Remote-Local Authentication** options are enabled. Mousing over the help icon, displays a description of the available authentication modes.

3. Click **Save** to store the remote authentication mode setting you select.
4. In the **Authentication Servers** table Add a new remote authentication server by clicking **Add (+)**.

The **Create Auth Server** dialog box appears.

5. Enter the required settings to connect Junos Space to the remote authentication server. See table Table 57 on page 422.

Table 57: Remote Authentication Server Settings

Setting	Description
Protocol	<p>The supported authentication protocols:</p> <ul style="list-style-type: none"> • PAP—Password Authentication Protocol. This default protocol provides a two-way handshake during the initiation of the connection with the remote authentication server and Junos Space. PAP requires on a username and password RADIUS attributes. It is protected by the RADIUS shared secret. • CHAP—Challenge Handshake Authentication Protocol. The remote authentication server sends a challenge and the Junos Space responds with the password and the challenge.
IP Address	The IP address of the remote authentication server. The format is 1.0.0.1 to 223.255.255.254, excluding 127.x.x.x.
Port Number	The remote authentication server assigned UDP port number. The default is 1812 . RADIUS has been officially assigned UDP port 1812 for RADIUS Authentication.
Shared Secret	The text string that serves as a password between the RADIUS server, proxy, and client.
Number of Tries	The number of retries that a device can attempt to contact a RADIUS authentication server. The default tries is 3 .
Max Retry Timeout MSecs	The interval in milliseconds Junos Space waits for a reply from a remote authentication server. The default value is 6000 . The retry timeout improves server access on busy networks where overall response times may vary widely from network to network.

6. In the **Create Auth Server** dialog box, click **OK**.

The remote authentication server appears as a row at the bottom of the table.

7. In the **Manage Auth Servers** page, click **Test Connection** to verify the Junos Space connection to the remote authentication server.

If the connection is successful, you see **Remote Authentication Server # is reachable**. If the connection is unsuccessful, you see **Remote Authentication Server # is unreachable**. Check to ensure that you have entered the correct remote authentication server settings.

Related Documentation

- Remote Authentication Overview on page 417
- Understanding Junos Space Authentication Modes on page 418
- Configuring Remote Authentication Method Workflows on page 419
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- Junos Space Log In Behavior with Remote Authentication Enabled on page 424

Modifying Authentication Settings

The Manage Authentication Servers page allows you to change Junos Space authentication mode and remote authentication server connection settings.

To modify remote authentication settings:

1. In the **Mode Settings** area, change to the authentication method you want to use.
By default, Junos Space is in local authentication mode and the controls for the **Remote Authentication Server** table are disabled. If you select the Use **Remote Authentication** check box, the **Remote Authentication Only** and **Remote-Local Authentication** options are enabled. Mousing over the help icon, displays a description of the available authentication modes.
2. Click **Save** to store the remote authentication mode setting you select.
3. In the **Authentication Servers** table click the server edit icon that you want to modify. See “Creating a Remote Authentication Server” on page 421.

The **Modify Authentication Server** dialog box appears.

4. Change the remote authentication server settings you want to change.
For a description of the available remote authentication server, see “Creating a Remote Authentication Server” on page 421.
5. In the **Create Auth Server** dialog box, click **OK**.
The modified remote authentication server settings are saved in the database.
6. On the **Manage Auth Servers** page, click **Test Connection** to verify the Junos Space connection to the remote authentication server.
If the connection is successful, you see **Remote Authentication Server # is reachable**. If the connection is unsuccessful, you see **Remote Authentication Server # is unreachable**. Check to ensure that you have entered the correct remote authentication server settings.

Related Documentation

- Remote Authentication Overview on page 417
- Configuring Remote Authentication Method Workflows on page 419
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Junos Space Log In Behavior with Remote Authentication Enabled

This topic describes Junos Space log in behavior with remote authentication only or remote-local authentication enabled.

Login Behavior with Remote Authentication Only Enabled

- The user logs in with the correct credentials:
 - As long as the user's password is on the remote server, log in is successful.
 - If the first remote authentication server is present, log in success or failure solely depends on the password stored there, as no other servers are consulted. If the first authentication server is not reachable, the second server is connected in the order specified. If no authentication server is reachable, Junos Space tries the local password in the Junos Space database. If the password matches, the user logs in successfully.



NOTE: For Remote authentication, most users should not have a local password. The local password in this case is for emergency purposes, when the remote authentication servers are unreachable. Hence, ensure that the user administrator can log in to Junos Space.

- The user logs in with incorrect credentials or the user does not exist on the remote authentication server:
 - Access to Junos Space is denied.



NOTE: Authentication servers, for security purposes, will not distinguish between these two cases. Therefore, Junos Space must always treat these type of log ins as an authentication failure. Once Junos Space receives a response from an authentication server, the only options are immediate success or failure. No other servers are contacted.

- If no authentication servers are reachable, Junos Space tries the local password. If the local password does not exist, or if the credentials do not match, logging into Junos Space fails.
- The user attempts to log in but the remote server is down—See the previous two log in behaviors for details. Notify the Junos Space administrator when a remote authentication server is down.
- The user attempt to login when the remote authentication server has the correct credentials, but there is no equivalent user in Junos Space. The user can not log in to Junos Space because there is no role information.
- The user attempts to login when the remote authentication server is configured for Challenge/Response:

- If the remote authentication server indicates a challenge is required, it provides the challenge question. Junos Space displays the challenge question to the user on the Juniper login page, and waits for the user's response.
- If the challenge question is answered correctly, it is possible that the authentication server may request additional challenges.
- If the challenge question is answered incorrectly, it is possible that the authentication server may re-challenge the user with the same challenge, use a different challenge, or fail the login attempt completely. It's up to the authentication server configuration.
- If the final challenge is answered correctly, the user logs in successfully.

Log In Behavior with Remote-Local Authentication Enabled

- The user logs in with the correct credentials—Junos Space checks the remote authentication servers first. If authentication fails or if a server is unreachable, Junos Space tries to authenticate locally. If there is a Junos Space local password and the credentials match, the user logs in successfully.
- The user logs in with incorrect credentials—Junos Space checks the remote authentication servers first. If authentication fails or if a server is unreachable, Junos Space tries to authenticate locally. If there is a Junos Space local password and the credentials match, the user logs in successfully.
- The user attempts to login but the remote server is down— Authentication occurs using only the local password. If the password exists and there is a match, the user logs in successfully. If the password does not exist and there is no match, the user does not log in successfully.
- The user attempts to login when the remote authentication server has the correct credentials, but there is no equivalent user in Junos Space. The user can not log in.
- The user attempts to login when the remote authentication server is configured for Challenge/Response:
 - If the remote authentication server indicates a challenge is required, it provides the challenge question. Junos Space displays the challenge question to the user on the Junos Space login page, and waits for the user's response.
 - If the user answers challenge question correctly, it is possible that the authentication server may request additional challenges.
 - If the user answers challenge question correctly, it is possible that the authentication server may re-challenge the user with the same challenge, use a different challenge, or fail the login attempt completely. It's up to the authentication server configuration.
 - If the user answers challenge question correctly, log in is successful.

Related Documentation

- Remote Authentication Overview on page 417
- Configuring Remote Authentication Method Workflows on page 419
- Understanding Junos Space Authentication Modes on page 418

- [Creating a Remote Authentication Server on page 421](#)
- [Modifying Authentication Settings on page 423](#)

CHAPTER 36

Managing Tags

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Overview

- Managing Tags Overview on page 427

Managing Tags Overview

Use Manage Tags to view tag information, and create, share, rename, or delete them. You must have the System Administrator role to access Manage Tags to create share, rename, or delete tags. However, every user can perform tag actions such as tag, view, apply, and untag objects in related inventory pages. You can create public and private tags. However, only the Tag Administrator can share user-defined tags and publish them to the public domain so that they become public and other users can use them.

Tag names should not start with space, can not contain a comma, double quote, parentheses, and can not exceed 255 characters.

To use Tags:

1. Create a private or shared tag using the **Platform > Administration > Manage Tags > Create Tag** user interface. See “Creating a Tag” on page 431.
2. Tag an object on an inventory page. For example you can tag an object on the **Platform > Manage Devices** inventory page. Once you tag an object, you can view or untag existing tags. See “Tagging an Object” on page 432 and “Untagging Objects” on page 433.
3. Manage tags using the **Platform > Administration > Manage tags** inventory page. You can share, rename, or delete tags. See “Viewing Tags” on page 433, “Renaming Tags” on page 430, “Deleting Tags” on page 431

Related Documentation

- Tagging an Object on page 432
- Viewing Tags on page 433
- Untagging Objects on page 433
- Filtering Inventory Using Tags on page 434

Managing Tags

- Managing Tags on page 428
- Sharing a Tag on page 429
- Renaming Tags on page 430
- Deleting Tags on page 431
- Creating a Tag on page 431
- Tagging an Object on page 432
- Viewing Tags on page 433
- Untagging Objects on page 433
- Filtering Inventory Using Tags on page 434

Managing Tags

You can use tags to label and categorize objects in your network, such as subnets, devices, services, users, customers, and so forth so you can filter, monitor, or perform batch actions on them without having to select each object separately. The **View Tags** inventory page allows you to manage and manipulate personal tags you created. You must the System Administrator role to manage tags.

The **View Tags** page is blank unless there are some public tags or private tags you created. Tags are only visible to you unless you have the Tag Administrator share them and make them public to all users. Tags created by other users are private and only visible to them unless the Tag Administrator shares them; making them public.

Manage all tags applied to inventory objects from the **Platform > Administration > Manage Tags View Tags** inventory page. You can share, rename or delete tags. The **View Tags** page is blank until you create one or more tags using the **Platform > Administration > Create Tag** task.

Viewing Tags On the View Tags Inventory Page

To view tags on the **View Tags** inventory page:

- All tags created appear on the **View Tags** inventory page in tabular view listed alphabetically by tag name.

You can filter inventory objects by a tag name (see “Filtering Inventory Using Tags” on page 434).

Viewing Tag Information

Tag data includes the tag name, access type, and the number of objects tagged by a particular tag. See Table 58 on page 429.

Table 58:

Tag Data	Description
Name	Unique tag name. Tag names cannot start with a space or be longer than 256 characters.
Access Type	Tags can either be public (shared) or private (visible only to the creator).
Tagged Object Count	The number of objects in all workspace inventory pages by the tag.

You can sort and hide columns using the column drop-down menus. For more information about manipulating tables in tabular view, see “Inventory Pages Overview” on page 29.

Performing Actions on Tags

To perform an action on one or more tags:

1. Select one or more tags in the table.

Click a tag to select it. If you select one tag, you can perform all tag management actions. If you select two or more tags, you can only delete the tags.

You can also select the **Page** link to select all tags at once. To deselect all tags, you can also click the None link.

2. Select a command from the **Actions** drawer or right-click pop-up menu.

You can share (see “Sharing a Tag” on page 429), rename (see “Renaming Tags” on page 430), delete (see “Deleting Tags” on page 431), or deselect all selected tags.

Related Documentation

- Managing Tags Overview on page 427
- Tagging an Object on page 432
- Viewing Tags on page 433
- Untagging Objects on page 433
- Creating a Tag on page 431

Sharing a Tag

User-defined tags are always created as private tags initially. When you feel that your tag has public value, sharing a tag makes it public for all users to use it to tag objects on a workspace inventory page. To share a tag, you must have Tag Administrator privileges.

To share a tag

1. Select **Platform > Administration > Manage Tags View Tags** inventory page:
2. Select one or more private tags on the **View Tags** inventory page.
3. Select **Share Tag** from the **Actions** drawer or right-click to select **Share Tag** from the pop-up menu.

The **Share Tag** status box appears to indicate whether the tag sharing is successful.

You can also share a tag when you create one (see “Creating a Tag” on page 431).

4. Click **OK**.

The tag **Access Type** changes on the **View Tags** inventory table from **private** to **public**.

Related Documentation

- Managing Tags Overview on page 427
- Managing Tags on page 428
- Renaming Tags on page 430
- Deleting Tags on page 431
- Creating a Tag on page 431

Renaming Tags

The Rename Tag command provides you flexibility to reorganize or re-categorize managed objects according to your changing needs.

To rename a tag:

1. Navigate to the **Platform > Administration > Manage Tags** inventory page.

The **View Tags** page appears.

2. In the **View Tags** table, select the tag you want to rename.
3. Select **Rename Tag** from the **Actions** drawer.

The **Rename Tag** dialog box appears.

4. Type a tag name in the **New Name** text field.

A tag name should not start with a space, cannot contain a comma, double quote, parentheses, or exceed 255 characters

5. Click **Rename**.

The old tag is renamed and saved in the database. You see the renamed tag in the **View Tags** table.

When you navigate to the manage inventory page from which you created the tag, you will see the renamed tag name in the **Actions > View Tags** dialog box and in the search field drop-down names list.

Related Documentation

- Managing Tags Overview on page 427
- Managing Tags on page 428
- Sharing a Tag on page 429
- Deleting Tags on page 431
- Creating a Tag on page 431
- Filtering Inventory Using Tags on page 434.

Deleting Tags

Use the Delete Tags action to remove managed object tags you no longer need.

To delete a tag:

1. Navigate to the **Platform > Administration > Manage Tags** inventory page.
The **View Tags** page appears.
2. In the **View Tags** table, select one or more tags you want to delete.
3. Select **Delete Tag** from the **Actions** drawer. You can also right-click the selected inventory object(s) and select **Delete Tags** from the pop-up menu.

The **Delete Tags** dialog box appears to confirm that you want to delete the tag.

4. Click **Delete**.

The tag is removed from the database and no longer appears in the View Tags table.

Related Documentation

- Managing Tags Overview on page 427
- Managing Tags on page 428
- Sharing a Tag on page 429
- Renaming Tags on page 430
- Creating a Tag on page 431

Creating a Tag

To create a tag:

1. Select **Platform > Administration > Manage Tags > Create User** task.

The **Create Tags** dialog box appears.

2. If necessary select the **Share Tag** option.

When you share a tag, all users can use that tag. Only the Tag Administrator can publish tags to the public domain.

3. Type a tag name in the text box.

A tag name should not start with a space, cannot contain a comma, double quote, parentheses, or exceed 255 characters

4. Click **Create**.

The tag appears in the **View tags** inventory page. If the tag is shared it is public; if not it is private.

Related Documentation

- Managing Tags Overview on page 427
- Managing Tags on page 428
- Sharing a Tag on page 429

- [Renaming Tags on page 430](#)
- [Deleting Tags on page 431](#)

Tagging an Object

You can create user-defined tags in an application workspace inventory page to easily categorize and organize managed objects. Subsequently, you can view and use these tags to easily search for multiple objects to view status or perform a bulk action on them without having to select each individually.

To tag an object:

1. Navigate to an application workspace manage inventory page. For example, select **Platform > Devices > Manage Devices**.
2. Select the inventory object(s) you want to tag.
3. Select **Tag It** from the **Actions** drawer.

The **Apply Tag** dialog box appears.

4. Type the tag name in the text field.

You can also use the text field drop-down arrow to view a list box of existing tag names. Select an existing tag name to tag the selected object(s) or create a new one.

If you have existing tags, start to type a tag name in the name field. Existing tags appear in the text box drop-down list box.

5. Click **Apply Tag**. This action tags the object and stores the tag in the database.

Related Documentation

- [Managing Tags Overview on page 427](#)
- [Managing Tags on page 428](#)
- [Viewing Tags on page 433](#)
- [Untagging Objects on page 433](#)
- [Filtering Inventory Using Tags on page 434](#)
- [Creating a Tag on page 431](#)

Viewing Tags

The View Tags action from application workspace inventory pages allows you to see all of the tags that you have assigned a managed object on your network. You must first tag a managed object to see its tags.

Use tags to label and categorize objects in your network, such as subnets, devices, services, users, customers, and so forth so you can filter, monitor, or perform batch actions on them without having to select each object separately.

Tags created by you are private and only visible to you unless you have the Tag Administrator share them to the public domain, making them public. Tags created by other users are only visible to them unless the Tag Administrator shares them, then you can view them.

To view tags on an inventory object:

1. Navigate to a workspace inventory page.
2. Select only one inventory object for which you want to view tags.
3. Select **View Tags** from the **Actions** drawer. You can also right-click an object and select **View Tags** from the pop-up menu.

The **View Tags** dialog box appears with a tag list displaying all tags applied to the selected object.

4. Click **OK**.

Related Documentation

- Managing Tags on page 428
- Tagging an Object on page 432
- Untagging Objects on page 433

Untagging Objects

You can untag or remove a tag from an object on a workspace inventory page. You can only select one object at a time to untag.

To untag an object:

1. Navigate to a workspace inventory page. For example, select **Platform > Devices > Manage Devices**.
2. Select one object on the workspace inventory page at a time.
3. Select **Untag** in the **Actions** drawer or right-click an object and select **Untag** from the pop-up menu.

The **Untag the Object** dialog box appears.

4. Select the tag that you want to remove and
5. Click **Untag**.

- Related Documentation**
- Managing Tags Overview on page 427
 - Managing Tags on page 428
 - Tagging an Object on page 432
 - Viewing Tags on page 433
 - Creating a Tag on page 431

Filtering Inventory Using Tags

You can use tags to filter objects on a workspace inventory page. Filtering allows you to view only the objects that you want categorized by the tag name.

To filter using a tag:

1. On the workspace inventory page, click the magnifying glass in the search field at the top-right of the page. You can also type the first letter of the tag name.

The drop-down list appears with the object names on the top and the tag names on the bottom. If you clicked a letter in the search field, only the tag names starting with that letter appear.

2. Click a tag name in the drop-down list.

Only the inventory objects with that tag name appear. You see **Filtered By** the tag name at the top-left of the page.

3. Click the red **X** to unfilter the inventory page.

- Related Documentation**
- Managing Tags Overview on page 427
 - Managing Tags on page 428
 - Tagging an Object on page 432
 - Viewing Tags on page 433
 - Untagging Objects on page 433
 - Creating a Tag on page 431

Creating Tags

- Creating a Tag on page 434

Creating a Tag

To create a tag:

1. Select **Platform > Administration > Manage Tags > Create User** task.
The **Create Tags** dialog box appears.
2. If necessary select the **Share Tag** option.

When you share a tag, all users can use that tag. Only the Tag Administrator can publish tags to the public domain.

3. Type a tag name in the text box.

A tag name should not start with a space, cannot contain a comma, double quote, parentheses, or exceed 255 characters

4. Click **Create**.

The tag appears in the **View tags** inventory page. If the tag is shared it is public; if not it is private.

**Related
Documentation**

- Managing Tags Overview on page 427
- Managing Tags on page 428
- Sharing a Tag on page 429
- Renaming Tags on page 430
- Deleting Tags on page 431

CHAPTER 37

Managing DMI Schemas

- Managing DMI Schemas Overview on page 438
- Updating a DMI Schema on page 440
- Creating a tgz File for Updating a DMI Schema on page 443
- Setting a Default DMI Schema on page 445
- Troubleshooting DMI Schema Management on page 446

Managing DMI Schemas Overview

To manage multiple DMI schemas (device management interface schemas) for Junos-based device families and device types, use the DMI schema management workspace.

Each device type is described by a unique data model (DM) that contains all the configuration data for it. The DMI schema lists all the possible fields and attributes for a type of device. The newer schemas describe the new features coming out with recent device releases. It is important that you load into Junos Space all your device schemas, otherwise only a default schema will be applied when you try to edit a device configuration using the device configuration edit action in the Devices workspace (see “Editing Device Configuration Overview” on page 71). If Junos Space has exactly the right DMI schema for each of your devices, you can access all of the configuration options specific to each device.

The DMI Schema Management workspace enables you to add or update schemas for all Junos Space devices. It also lets you know when you do not have the schema for a device. On the Manage DMI Schemas page, in the tabular view, when it says under the column DMI Schema “Need Import” it means the JunOS schema for that device OS is not bundled with Space and you need to download it from the Juniper Schema Repository.

An important aspect of schema management is setting a default DMI schema for each device family. When you create a device template, the template needs a default schema for the device family (see “Selecting the Device Family and Naming a Device Template Definition” on page 159).

The schema management facility enables you to connect with Juniper’s SVN Repository so that you can download new schemas as necessary.

A schema is delivered in the form of a .tgz file, an archive containing multiple files reflecting the configuration hierarchy for the selected device family, platform and OS version. You can even create your own tgz file (see “Creating a tgz File for Updating a DMI Schema” on page 443).

A typical goal in the DMI Management workspace—**Manage DMI Schemas**—is to enable a device to be managed in JUNOS Space.

For each DMI schema currently installed, the **Manage DMI Schemas** inventory landing page displays:

- Name
- Device Family
- OS Version
- Device Series
- State—default or otherwise

You can view the schemas in tabular form or as thumbnails. In tabular view, you can sort the schemas by clicking on their column headings.

You can select one or more schemas and perform the following actions on them using the Actions drawer or the right mouse-click menu.

- Set default schemas

Do this to return a custom configuration of a DMI schema to the default.

- Tag and untag schemas
- View schema tags, with
 - Tag Name
 - Access Type

To add or update a DMI schema, see “Updating a DMI Schema” on page 440.

Related Documentation

- Updating a DMI Schema on page 440
- Setting a Default DMI Schema on page 445
- Creating a tgz File for Updating a DMI Schema on page 443
- Troubleshooting DMI Schema Management on page 446
- Device Discovery Overview on page 39
- Add Deployed Devices Overview on page 51

Updating a DMI Schema

To add or update a DMI schema, you must have the .tgz archive containing it on the machine running the Junos Space GUI. There are several ways of acquiring such files. You can:

- Create your own file (see “Creating a tgz File for Updating a DMI Schema” on page 443).
- Download a file from Juniper’s SVN Repository. This topic contains the instructions for doing this.
- Get a file from Juniper support staff.

From the **Schema Update** page, Junos Space is able to identify which schemas you already have installed, and based on the discovered devices, also suggests new schemas. You can, however, pick other available schemas and download them as well, or instead.

On the **Schema Update** page, you can either:

- Install a DMI schema on Junos Space using a file you already have on the machine running the Junos Space GUI.

Or:

- Get a DMI schema from Juniper and update Junos Space, which involves the following sub-tasks:
 - Configure a connection to the SVN Repository.
 - Connect to the SVN Repository and install DMI schemas on Junos Space..

To install a DMI schema update on Junos Space:

From the Network Application Platform, navigate to **Administration > Manage DMI Schemas > Update Schema**.

The **Update Schema** page appears.

If you already have the tgz file on your system:

1. Select the **Archive (tgz)** radio button.
2. Click **Browse**.

The **File Upload** dialog appears.

3. Navigate to the .tgz file and select it. Click **Open**.

The **Schema Update** page reappears, displaying the .tgz filename in the **Browse** field.

4. Click **Upload**.

Do not move away from the **Schema Update** page while the .tgz file is uploading to Junos Space. Note that the process can take some time, depending on how many schemas are in the file.

5. Select the desired schema and click **Install**.

The **Manage DMI Schemas** inventory landing page reappears, displaying the newly installed schema.

If you need to download the file from the SVN Repository, and you have not yet configured the connection to the repository:

1. Have the following to hand:

- URL : <http://xml.juniper.net/dmi/repository/trunk>
- Username: userName
- Password: userPasswd

2. Select the **SVN Repository** radio button.

3. Click **Configure**.

The **SVN Access Configuration** window appears.

4. Enter the SVN URL, the username and the password in the appropriate text fields. Click **Test Connection**.

A message appears to tell you whether the connection was established successfully or not.

5. Whether or not connection was successful, click **OK**.

The **SVN Access Configuration** window reappears.

6. Either:

- If the connection failed, click **Cancel**, find the correct credentials, and repeat the above steps.
- If the connection was successful, click **Save**.

The **Schema Update** page reappears, displaying the SVN Repository URL.

If you need to install the file from the SVN Repository, and you have already configured the connection to the repository:

1. Select the SVN Repository radio button.
2. Ensure the repository's URL is displayed in the URL field. If the field is blank, you must configure the connection. See step 3.
3. Click **Connect**.

The content of the repository with DMI schema releases appears in table form under **Available Updates** on the **Schema Update** page. The already installed versions are preselected.

Junos Space detects and marks any missing schemas with a red arrow symbol. Missing schemas are the OS versions on devices that Junos Space discovers in your network, but which have not been installed on Junos Space.

You can sort by clicking on the column headings: Device Family, Release, Date. To change the display, click the arrow that appears when you click a column heading. To determine whether sorting should be ascending or descending, click the arrow that appears when you click a column heading.

4. (Optional) To display the recommended schemas, select the **Show recommended schemas** checkbox.

Select the desired schemas.



NOTE: You need at least one schema for each device family in your network. See “Setting a Default DMI Schema” on page 445.

Click **Install**.

A message appears, asking you to wait. After installation, the **Manage DMI Schemas** page reappears, displaying the new schema(s).

**Related
Documentation**

- Managing DMI Schemas Overview on page 438
- Setting a Default DMI Schema on page 445
- Troubleshooting DMI Schema Management on page 446
- Creating a tgz File for Updating a DMI Schema on page 443

Creating a tgz File for Updating a DMI Schema

This topic describes how to create a tgz file containing a DMI schema for any Junos-supported device.

Use the .tgz file to update a DMI schema on Junos Space (see “Updating a DMI Schema” on page 440).

This topic contains instructions for creating a .tgz file on Linux or on Microsoft Windows.

On Linux

Create a .tgz file containing a DMI schema on Linux as follows:

Before you begin, either install the Svn(Subversion) Client on Linux for Ubuntu:

```
> sudo bash
```

```
> apt-get install subversion
```

Or:

For other versions, consult:

http://wiki.greenstone.org/wiki/index.php/Install_SVN_on_Linux

The tgz must comply with the given format .

All the files must be extracted to a folder structured as follows:

```
dmi/deviceFamily/releases/osVersion/...
```

Examples For the whole Junos family

```
svn --username=userName --password=userPasswd co
http://xml.juniper.net/svn/dmi/trunk/junos/ dmi/junos/
tar czvf juniper-schema-repo-test.tgz dmi
```

For selected OS versions

```
svn --username=userName --password=userPasswd co
http://xml.juniper.net/svn/dmi/trunk/junos/releases/10.2R1.7/
dmi/junos/releases/10.2R1.7/
tar czvf juniper-schema-repo-test.tgz dmi
```

```
svn --username=userName --password=userPasswd co
http://xml.juniper.net/svn/dmi/trunk/junos/releases/10.4R2.3/
dmi/junos/releases/10.4R2.3/
tar czvf juniper-schema-repo-test.tgz dmi
```

```
svn --username=userName --password=userPasswd co
http://xml.juniper.net/svn/dmi/trunk/junos-es/releases/10.4R2.3/
dmi/junos-es/releases/10.4R2.3/
tar czvf juniper-schema-repo-test.tgz dmi
```

On MS Windows

Create a .tgz file containing a DMI schema on MS Windows as follows:

1. Install the Subversion (SVN) Client on MS Windows using the following instructions:

<http://tortoisesvn.tigris.org/>

2. Install 7zip to generate a .tgz on MS Windows using the following instructions:

<http://www.7-zip.org/>

3. Check out the files from SVN using the Subversion client:

Set the SVN URL to <http://xml.juniper.net/svn/dmi/trunk>. Right-click and select **Checkout**.

4. Make the following settings:

URL of repository

<http://xml.juniper.net/svn/dmi/trunk/junos/releases/10.4R2.6>

Checkout directory

C:\dnld1\dm\junos/releases/10.4R2.6

Checkout Depth

Immediate children, including folders

Leave the **Omit externals** checkbox empty.

Select **HEAD revision**. Click **OK**.

5. Create the tar file using 7-zip:

In 7-zip, right-click the DMI folder and select from the menu **Add To Archive**.

Select **Tar Format 2.5**.

6. Create gzip using 7-zip:

In 7-zip, right click the DMI .tar file and select from the menu **Add to Archive**.

Select **Zip Format**.

Related Documentation

- Managing DMI Schemas Overview on page 438
- Setting a Default DMI Schema on page 445
- Updating a DMI Schema on page 440
- Troubleshooting DMI Schema Management on page 446

Setting a Default DMI Schema

Set a default DMI schema for each device family to enable Junos Space to apply an appropriate schema to a device family. In a clean install situation, Junos Space automatically matches DMI schemas to device families, but in all other situations, you should set a default DMI schema for each device family.

When creating a device template definition, the system will use a default DMI schema for the device family unless you select a schema. See “Selecting the Device Family and Naming a Device Template Definition” on page 159.

The configuration edit action in the Devices workspace always checks for an exact match between device and DMI schema. If it does not find a match, it will use the default schema (see “Editing Device Configuration Overview” on page 71).

To set a default DMI schema,

1. Navigate to **Network Application Platform > Administration > Manage DMI Schemas**.

The **Manage DMI Schemas** page appears, in the tabular view displaying the data in a table with the following columns:

- Device Family
- OS Version
- Device Series
- State—Whether default or not. An empty cell in this column means that the DMI schema in that row is not the default.

In the thumbnail view, this information is presented on each thumbnail.

2. In the tabular view, select the row that contains the appropriate combination of device family, OS version, and device series, and either mouse over the Actions drawer to select **Set Default Schema**, or select the same action from the right mouse-click menu.

In the thumbnail view, select the appropriate thumbnail and perform the same action.

The **Set Default DMI Schema** window opens, displaying the DMI schema name, device family, and OS version.

3. Click **Set Default**.

If any other schema was previously the default, in the tabular view, its cell in the **State** column empties, and the word “Default” appears in the State column for the selected schema. In the thumbnail view, the default status is indicated by an orange star on the icon for a DMI schema, and the word “Default” below the OS version.

4. (Optional) To remove the default status from a DMI schema, set another schema of the same family as the default.

Related Documentation

- Managing DMI Schemas Overview on page 438
- Updating a DMI Schema on page 440
- Selecting the Device Family and Naming a Device Template Definition on page 159
- Creating a tgz File for Updating a DMI Schema on page 443
- Troubleshooting DMI Schema Management on page 446

Troubleshooting DMI Schema Management

This topic describes common problems associated with DMI schema management and provides solutions where possible. The following are issues that might be encountered:

- No schemas in new installation of Junos Space
- Schema tree not displayed

No schemas in new installation of Junos Space

When the Junos Space server first comes up, all the schemas for all the discovered devices should be pre-installed. Navigate to **Network Application Platform > Administration > Manage DMI Schemas**. There should be at least one schema per device family, and each device family should have one schema marked as default.

If the **Manage DMI Schemas** page is empty, installation was unsuccessful.

There is no workaround for this problem.

Schema tree not displayed

Typically, if a schema is defective, its schema tree will not be displayed.

Verify that a particular schema has been parsed successfully: navigate to **Network Application Platform > Device Templates > Manage Definitions > Create Definition**. Select the schema in question and click **Next**.

The schema tree or hierarchy of configuration options should be displayed on the left. All nodes should be navigable, that is, it should be possible to drill down into the hierarchy to reach all the options.

If the topmost node (**Configuration**) cannot be opened to reveal the hierarchy, the schema was corrupted during porting (grep for SchemaMgr ERROR in server.log).



NOTE: One defective schema will not affect the other DMI schemas, which will still be available for use.

The solution to this problem is to replace one or more existing DMI schemas on the Junos Space server.

There are two ways of doing this:

- Using a script supplied by Juniper support. This requires restarting jboss.
- Using your own tgz file. This does not require restarting jboss.

For instructions, see “Creating a tgz File for Updating a DMI Schema” on page 443.

**Related
Documentation**

- Managing DMI Schemas Overview on page 438
- Updating a DMI Schema on page 440
- Creating a tgz File for Updating a DMI Schema on page 443
- Setting a Default DMI Schema on page 445

PART 15

Index

- Index on page 451

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