



Junos Space

Network Application Platform User Guide

Release 1.2

Juniper Networks, Inc.

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Part 1

Junos Space User Interface

- Getting Started with Junos Space on page 3
- User Interface Overview on page 7

Chapter 1

Getting Started with Junos Space

- Logging In To the System on page 3
- Using the Getting Started Assistants on page 4
- Accessing Help on page 5
- Logging Out From the System on page 5

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 into the system, your browser must have the Flash 10 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 log in screen appears.



3. Type your username and password. The default username is **super**; the password is **juniper123**. See “Changing User Passwords” on page 123 for information about how to change your user password. For information about how to change your username, see the system administrator.
4. Click Log In. The Junos Space Application Chooser appears, see “Application Chooser Overview” on page 7.

- Related Topics**
- Logging Out From the System on page 5
 - Changing User Passwords on page 123
 - Application Chooser Overview on page 7
 - Junos Space User Interface Overview on page 13

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 Ethernet Activator 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 Topics**
- 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 Topics**
- Using the Getting Started Assistants on page 4
 - Application Chooser Overview on page 7
 - Platform Dashboard Overview on page 17

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

- Related Topics**
- Logging In To the System on page 3
 - Changing User Passwords on page 123
 - Application Chooser Overview on page 7
 - Junos Space User Interface Overview on page 13

Chapter 2

User Interface Overview

- Application Chooser Overview on page 7
- Modifying Application Settings on page 11
- Junos Space User Interface Overview on page 13
- Network Application Platform Overview on page 17
- Platform Dashboard Overview on page 17
- Viewing Dashboard Statistics on page 20
- Workspace Statistics Pages Overview on page 23
- Inventory Pages Overview on page 26

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 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.

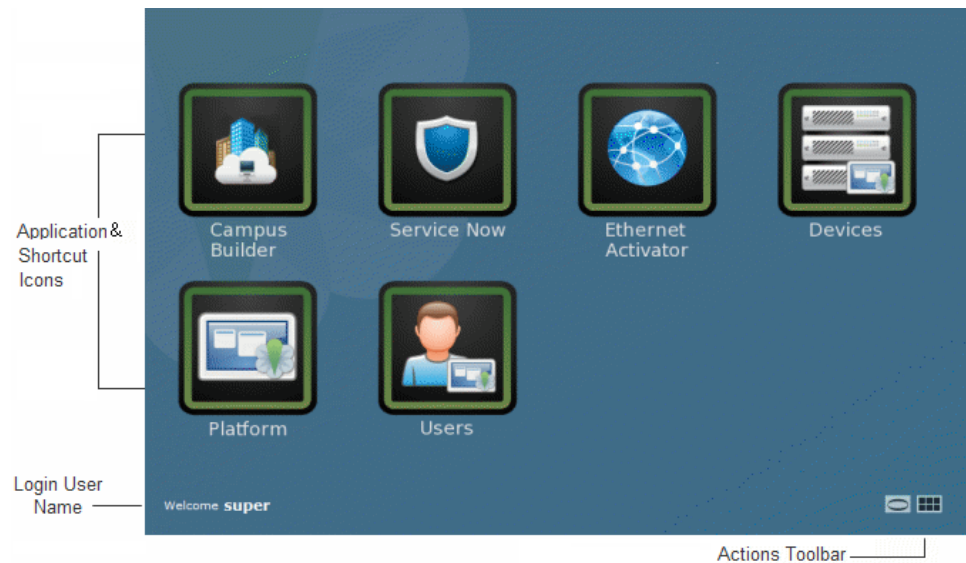
New applications will be added in subsequent software releases.

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

Filter application icons by those newest first, alphabetically, and custom criteria using the **Sorted by** link.

Add or remove applications from Application Chooser using the + icon in the actions toolbar at the bottom right.

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



The following sections describe the parts of Application Chooser.

Parts of Application Chooser


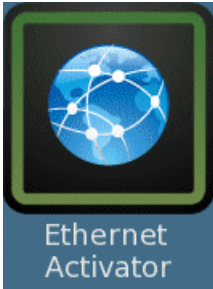

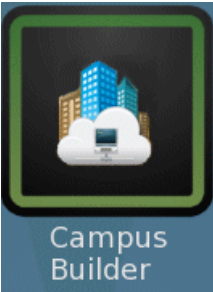
- Application Icons on page 8
- Shortcut Icons on page 10
- Login User Name on page 10
- Actions Toolbar on page 10

Application Icons

The 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.


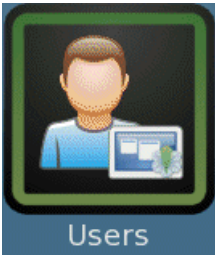
The Application Chooser includes the following applications, as listed in Table 1 on page 9.

Table 1: Junos Space Applications

Application Icon/Name	For more information
 Platform	See “Platform Dashboard Overview” on page 17.
 Ethernet Activator	See Ethernet Activator Dashboard Overview.
 Service Now	See Service Now Overview.
 Campus Builder	See Campus Builder 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
	See “Viewing Managed Devices” on page 159.
	See “Viewing Users” on page 126.



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 10 defines the toolbar buttons.

Table 2: Application Chooser Toolbar Buttons

Application Toolbar Button	Description
	Displays the application icons so that they rotate in a circular manner in the workspace
	Displays the application icons tiled in the workspace.

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 in the bottom-right actions toolbar.
- Sort Applications—To sort applications, click the Sort by link at the bottom of the Application Chooser page, then select a sort option in the pop-up menu. The filter options include newest application first, alphabetical, and custom user settings.
- 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 Topics**
- Junos Space User Interface Overview on page 13
 - Platform Dashboard Overview on page 17
 - Modifying Application Settings on page 11

Modifying Application Settings

The administrator can modify the settings of Junos Space installed applications. Each application has specific configurable settings. Application settings are modified from the Platform Administration > Manage Applications task.

The Modify Application Settings action allows the administrator to optimize the operation of each application.

To modify application settings, follow these steps:

1. Navigate to the Platform application.
2. Click the Administration workspace icon in the navigation ribbon.
3. Click the Manage Application task icon in the navigation ribbon. The Manage Application inventory page appears. You can view Junos Space applications in thumbnail or tabular view by clicking the view icons in the inventory page banner.

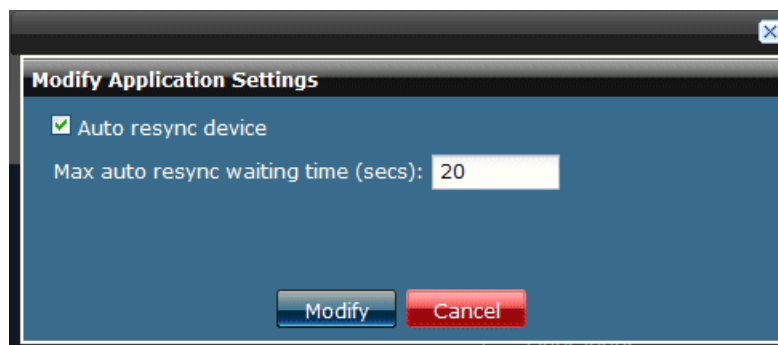


4. Select the application for which you want to modify settings. Information about the selected application appears in the Quick Look panel for both thumbnail and tabular view.



NOTE: The Ethernet Analyzer application settings are not available for this release.

5. Mouse over the Actions drawer to open it, then select Modify Application Settings. The Modify Application Settings dialog box appears. The Platform applications dialog box is shown here.



The Platform Modify Application Settings dialog box allows you to change the following settings:

- Auto resync device check box—Ensures that configuration changes on a connected Juniper Networks device is synchronized or imported to the application database.
- Max auto resync waiting time (secs)—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.

- Related Topics**
- Application Management Overview on page 91
 - Application Chooser Overview on page 7

- Junos Space User Interface Overview on page 13

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 between the Network Application Platform and other installed applications. The figures shown in this topic are from the Network Application Platform user interface.

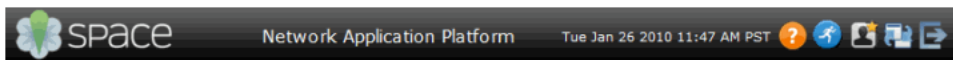
Parts of the System User Interface

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

- Banner on page 13
- Application Chooser on page 14
- Application Dashboard on page 14
- Workspace Statistics on page 15
- Inventory Page on page 15

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 13 describes the global action icons at the right in the banner.

Table 3: Banner Global Actions






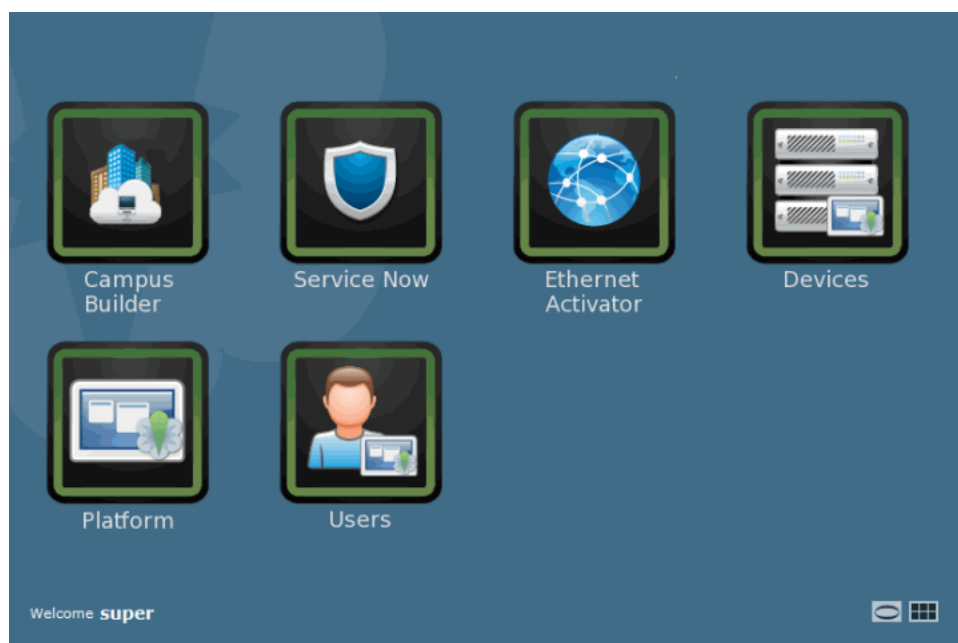
Banner Global Action Icon	Description
	Displays the application Help. To access workspace context-sensitive help, click the Help icon after navigating to that workspace. See “Accessing Help” on page 5.
	Displays the My Jobs dialog box from which you can view the progress and status of current managed jobs. See Viewing Your Jobs.

Table 3: Banner Global Actions *(continued)*

Banner Global Action Icon	Description
	Displays the User Preferences dialog box from you can change user preferences, such as the password. See “Changing User Passwords” on page 123.
	Displays the Application Switcher drop-down menu to switch between up to the last five applications used. See “Application Chooser Overview” on page 7.
	Logs you out of the system. See “Logging Out From the System” on page 5.

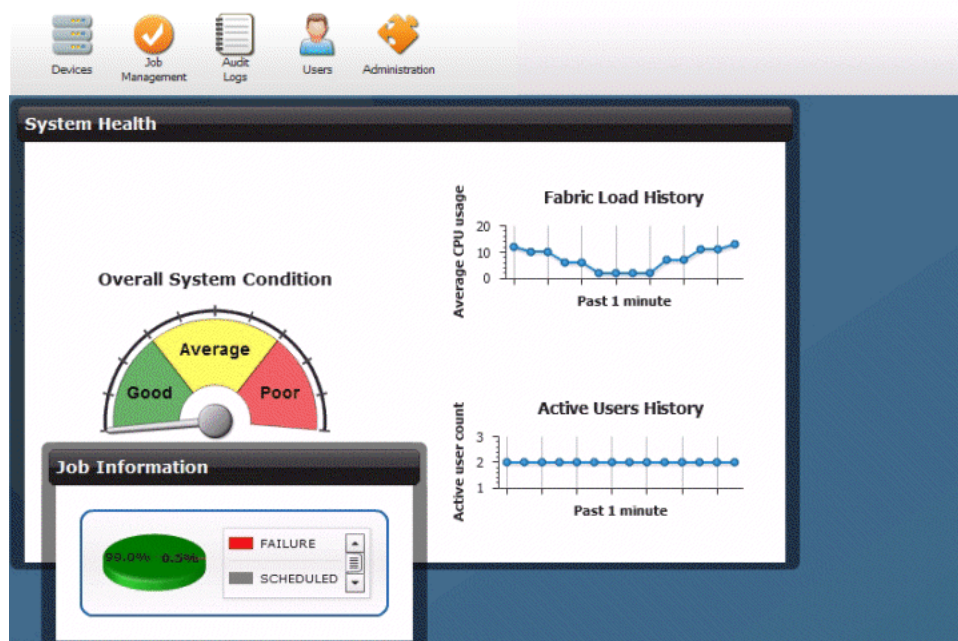
Application Chooser

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 to it’s dashboard that displays graphical data about devices, jobs, users, administration, and etc. For example, the Platform dashboard is shown here. For more information about the application dashboard, see “Platform Dashboard Overview” on page 17.



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 sub-tasks. For more information about the workspace statistics page, see “Workspace Statistics Pages Overview” on page 23.



Inventory Page

Click a sub-task in the workspace task ribbon to view its inventory page. For more information about inventory pages, see “Inventory Pages Overview” on page 26. 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 26.

- Inventory Page Thumbnail View on page 16
- Inventory Page Tabular View on page 16

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.



- Related Topics**
- Application Chooser Overview on page 7
 - Platform Dashboard Overview on page 17

- Workspace Statistics Pages Overview on page 23
- Inventory Pages Overview on page 26

Network Application Platform Overview

The Junos Space Network Application Platform (Platform) provides effective tools the network administrator needs for automating network operations, including device discovery and management, job operation management, audit logging, and network administration. Network administration tasks include managing the Junos Space fabric which comprises one or more IP-connected nodes, database, software upgrades, licenses, installed applications, and troubleshooting.

The Platform application icon appears in Application Chooser.



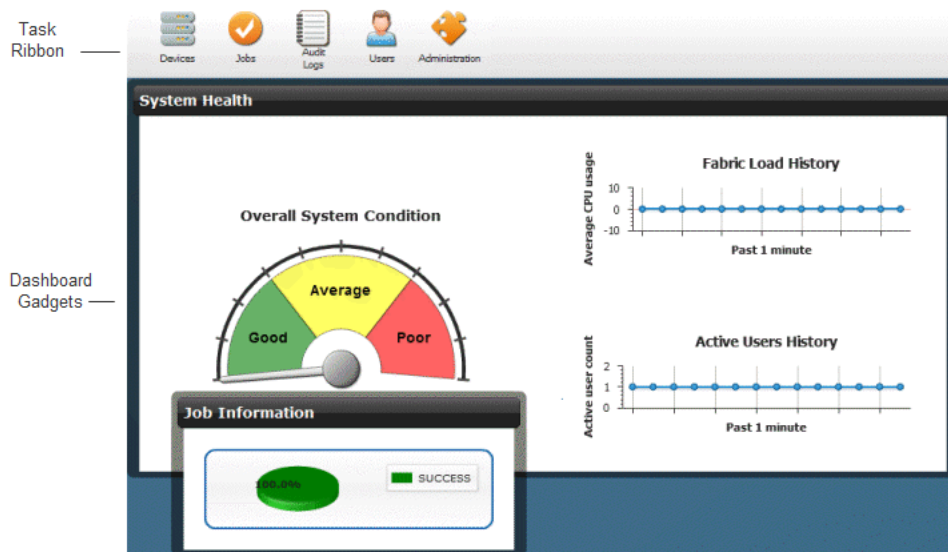
Mousing over the Platform application icon displays a brief description. Clicking the icon displays the Platform dashboard that displays the available workspaces from which the administrator can perform tasks. For more information about the Platform Dashboard, see “Platform Dashboard Overview” on page 17.

- Related Topics**
- Application Chooser Overview on page 7
 - Platform Dashboard Overview on page 17
 - Ethernet Activator Dashboard Overview
 - Service Now Overview
 - Campus Builder Overview

Platform Dashboard Overview

The Platform dashboard provides a single page snapshot of the current status of your network. The Platform provides the standard tools or workspaces the Junos Space administrator uses to manage the basic network components and operations—devices, jobs, logs, users, and administration. The Platform dashboard appears when you

click the Platform application icon from Application Chooser or switch to it from the Application Switcher. An example of the Platform dashboard is shown here.



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

Parts of Platform Dashboard

- Task Ribbon on page 18
- Dashboard Gadgets on page 19

Task Ribbon

The task ribbon contains the workspaces that provide network management tasks for an application. To view a workspace click its icon. The tasks to perform in that workspace appear in the task ribbon. Table Table 4 on page 18 describes each Platform workspace.

Table 4: Workspace Icons






Icon	Workspace Name	Task
	Devices	Manage devices, including adding, discovering, importing, and updating them. See “Device Management Overview” on page 131.
	Jobs	Monitor the progress of ongoing jobs. See “Job Management Overview” on page 171.
	Audit Logs	View and filter system audit logs. See “Junos Space Audit Logs Overview” on page 185.
	Users	Add, manage, and delete users. See “Understanding How to Configure Users to Manage Objects in Junos Space” on page 108.

Table 4: Workspace Icons *(continued)*

Icon	Workspace Name	Task
	Administration	Add network nodes, backup your database, or troubleshoot. See “Managing Nodes in the Fabric” on page 43, “Database Backup and Restore Overview” on page 63, “Downloading the Troubleshooting Log File from the UI” on page 98, “Downloading the Troubleshooting Log File In Maintenance Mode” on page 100.

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 51.

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 20 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 gauge	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 “Viewing Nodes in the Fabric” on page 47.
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 47.
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 125.
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 177.

- Related Topics**
- Viewing Dashboard Statistics on page 20
 - Application Chooser Overview on page 7
 - Junos Space User Interface Overview on page 13
 - Understanding Overall System Condition and Fabric Load on page 51
 - Viewing Nodes in the Fabric on page 47
 - Viewing User Statistics on page 125
 - Viewing Scheduled Jobs on page 177

Viewing Dashboard Statistics

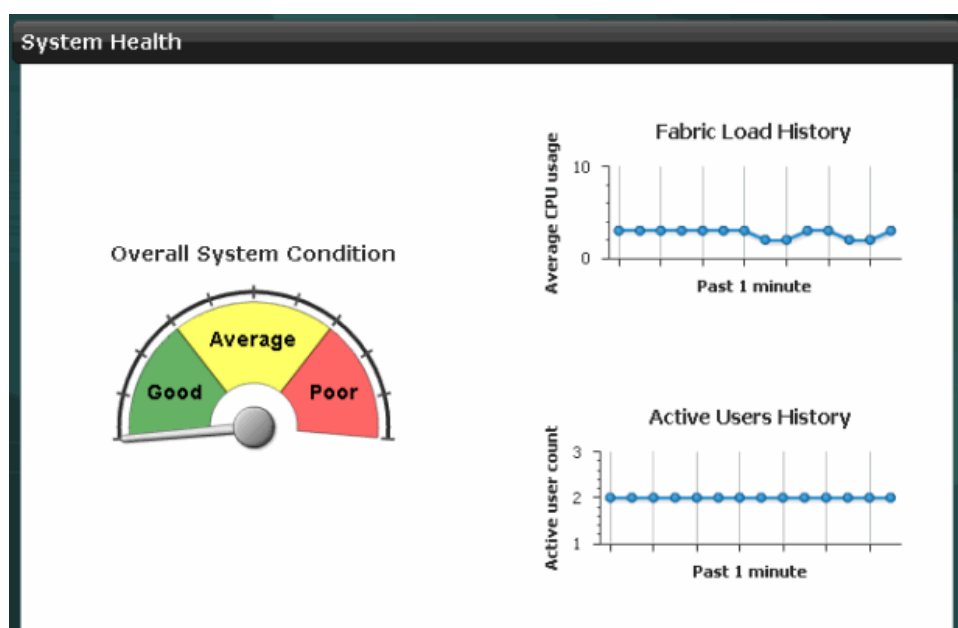
The dashboard appears when you select an application from Application Chooser. It contains graphs and charts known as gadgets that provide high-level monitoring information for the system.

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

- Viewing System Health Statistics on page 21
- Viewing the Job Information on page 23

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.

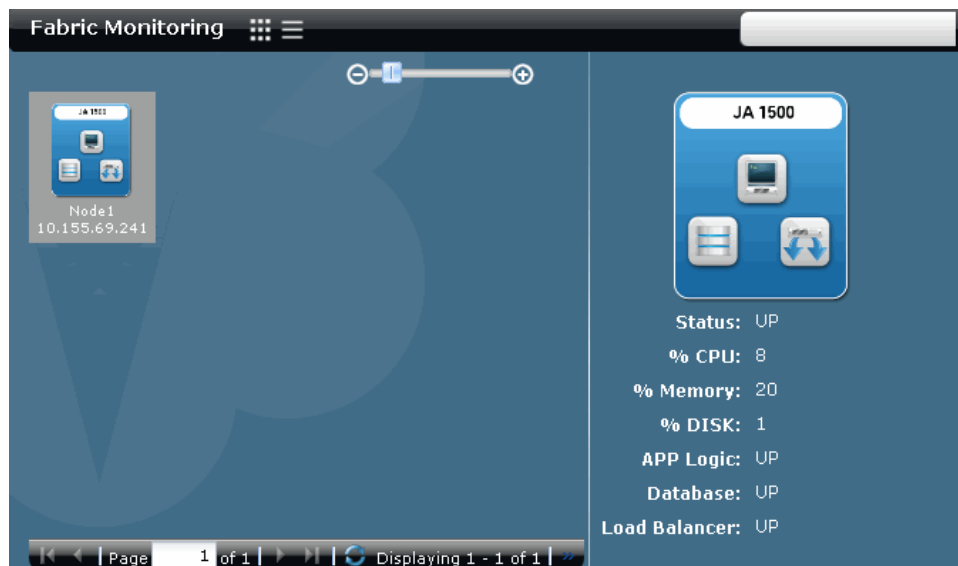


The Overall System Condition gauge represents a combination of the health of the database, the application, and load balancing software. If all these components are functional on all processors in the fabric, then the overall system condition is reported as good.

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.

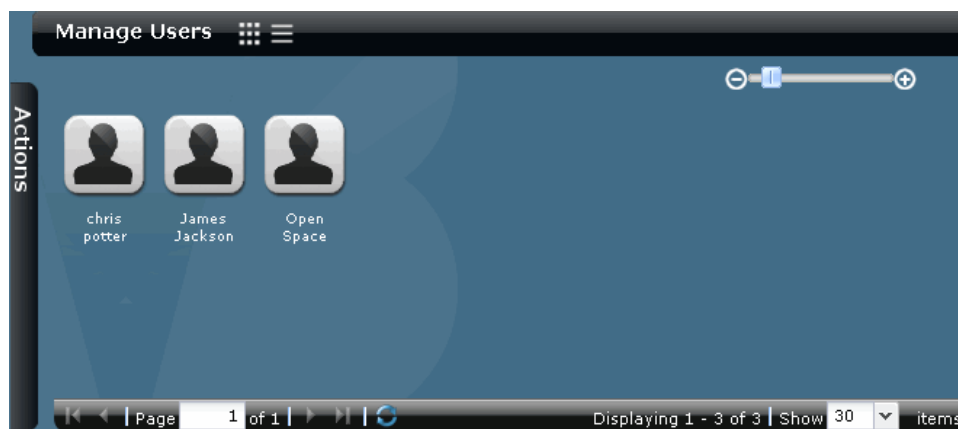
To obtain more details about the status of the fabric, click any data point in the graph. The Fabric Monitoring page appears and shows detailed status of each node in the fabric as shown.



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

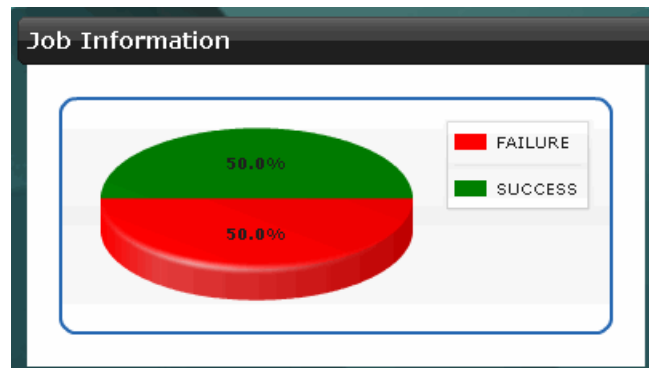
To view the number of active users at a specific data point, drag the mouse over the data point of interest. The fabric load is shown in parentheses in a tooltip.

To obtain more details about active users, click any data point in the graph. The Administration workspace statistics page appears as shown.



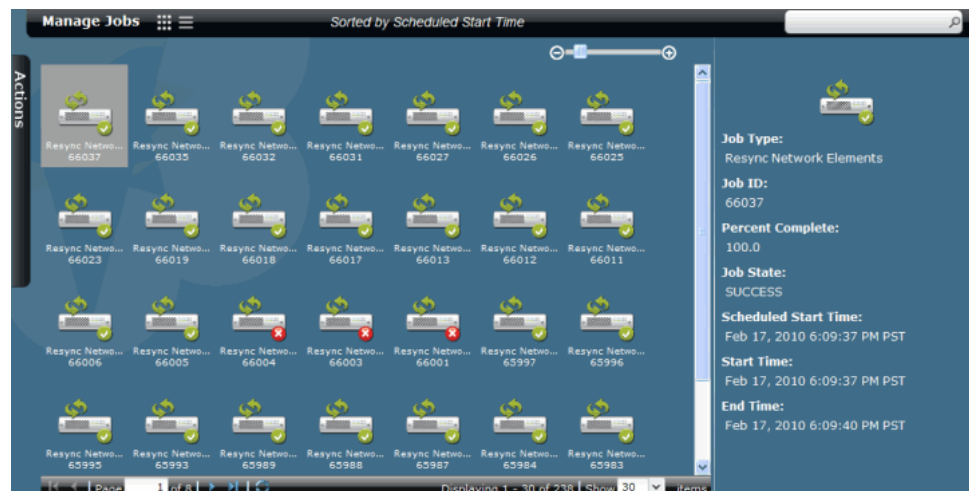
Viewing the Job Information

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.

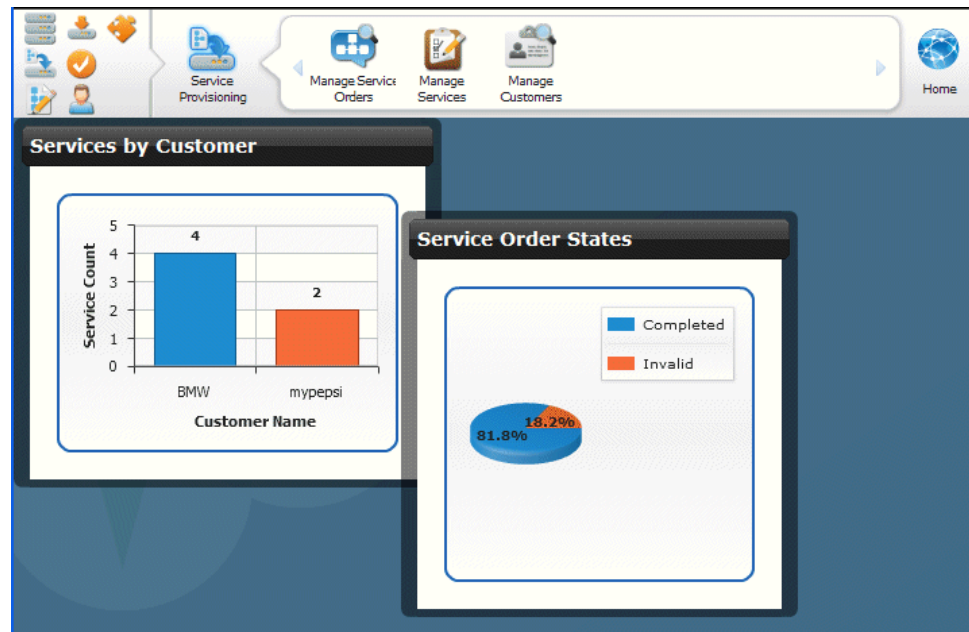
To view details about the jobs represented in the chart, click on the segment of interest. For example, click on the red segment to view details about failed jobs. The Manage Jobs page appears as shown.



Workspace Statistics Pages Overview

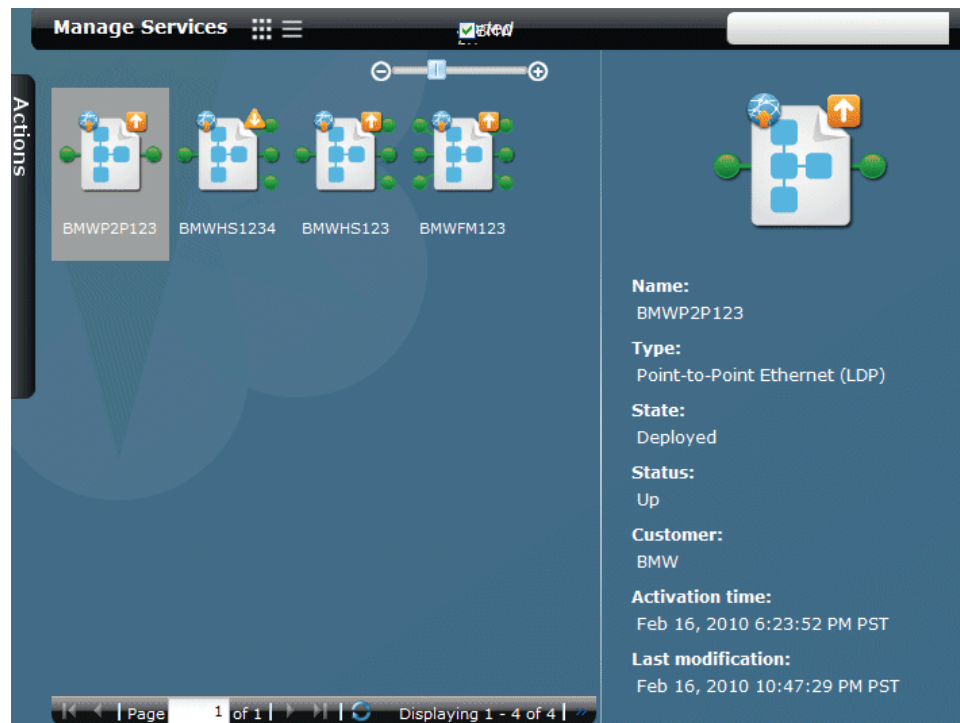
When you select a workspace from the application dashboard task ribbon, Junos Space typically displays high-level statistics relevant to that workspace. The example shows a bar chart of Ethernet Activator Service Provisioning statistics, which includes

service orders by customer and a pie chart showing the proportion of service requests in each potential service request state.



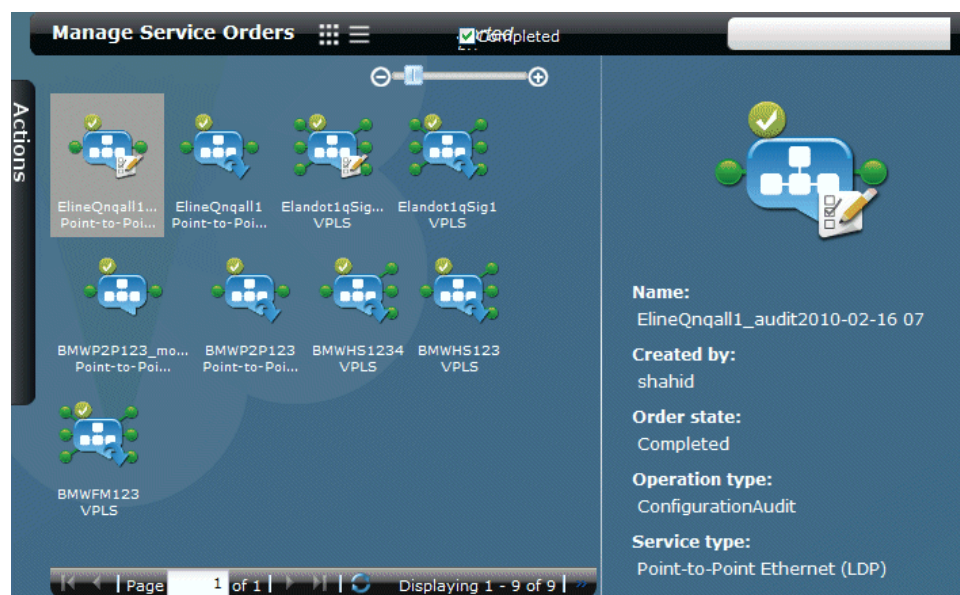
The tasks for a workspace appears to the right in the task ribbon; the workspace icons collapse to the left in the task bar.

From the statistics page, you can display more detailed information about statistics shown. For example, if you click a customer in the Services by Customer statistics bar chart, the Manage Services inventory is displayed as shown.



For more information about managing Ethernet Activator provisioned services, see [Viewing Services](#).

If you click the Service Order States statistics pie chart, the Manage Service Orders inventory page is displayed.



For more information about managing Ethernet Activator service orders, see [Viewing Service Orders](#).

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, and displays information filtered according to the bar or segment you selected. For example, if you select the blue bar in the Services by Customer bar chart, a service order inventory page appears showing only service orders associated with the customer named BMW.

- Related Topics**
- Viewing Services
 - Viewing Service Orders
 - Inventory Pages Overview on page 26

Inventory Pages Overview

Inventory pages allow you to view multiple managed objects you want to manage simultaneously, including users, jobs, clients, software, etc. You can browse, zoom, filter, and sort items. An Inventory page allows you to perform actions on these managed items. Select the items on which you want to perform actions, and select an action from the actions drawer or from the right-mouse-click menu.

To navigate to an inventory page, select an application from Application Chooser, select a workspace in the navigation ribbon, then select a task in the navigation ribbon. For example, to view the Manage Devices inventory page, select the Platform from Application Chooser, click the Devices workspace in the navigation ribbon, then click Manage Devices. The Manage devices inventory page is displayed as shown.

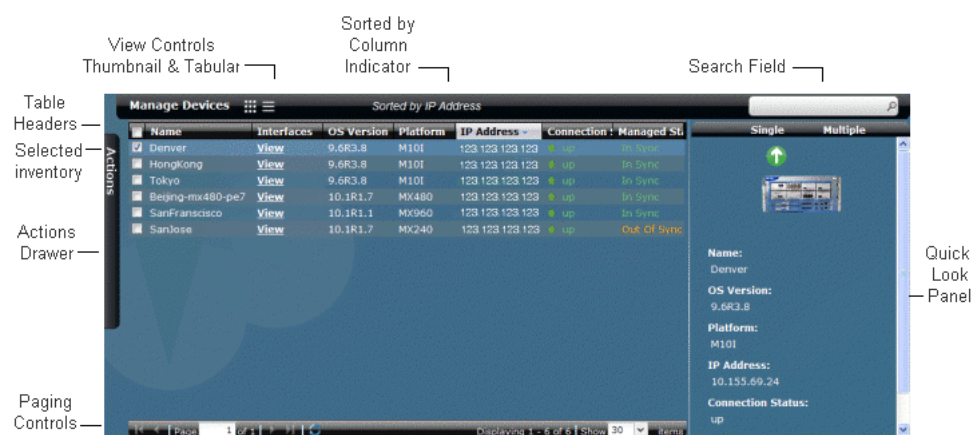
You can display Inventory pages in two views: thumbnail and tabular.

Parts of the Inventory Page

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



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



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

- View Controls (Thumbnail and Tabular) on page 28
- Sorted By Indicator on page 29
- Selected Inventory (Single and Multiple Selection Modes) on page 30
- Zoom Slider on page 31
- Search and Filter Field on page 31
- Actions Drawer and Right-Mouse Clicking Objects on page 32
- Quick Look Panel on page 33
- Paging Controls on page 33

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 28
- Tabular View on page 28

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, etc. 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 as shown. In the Manage Service Definitions inventory page, a visual element indicates whether a service definition is standard or custom.



Each icon includes a title. Selected items appear with a grey background. In the default Single selection mode, detailed information about the selected item appears in the Quick Look panel.

The scroll bar and paging controls at the bottom of the page let you navigate through managed inventory.

Tabular View

In Tabular view, managed objects appear as rows in a table. Data about each managed object is displayed in the table columns. The Platform > Devices > Manage Devices inventory page is shown.



Selected objects in tabular view are displayed with a check mark and highlighting. In the default Single selection mode, detailed information about the selected object is displayed in the Quick Look panel. In Multiple selection mode selected objects are listed in the Quick Look panel to let you perform actions on multiple items without having to navigate through multiple pages of inventory. You can drag a column header border to change its width.

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

The scroll bar and paging controls at the bottom of the page let you navigate through managed inventory.

Sorted By Indicator

The Sorted by indicator in the inventory page banner displays how the inventory objects are sorted in the tabular view. The Sorted by indicator is displayed in both the thumbnail and tabular views. 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 IP Address. The current IP Address column header is highlighted. The Platform column drop-down sort menu is displayed, and the Platform column is highlighted because the column header is currently selected. When you sort on the Platform column the IP Address column is no longer highlighted. The Sorted by indication changes from IP Address to Platform.



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



Selected Inventory (Single and Multiple Selection Modes)

Selected inventory objects are highlighted. Highlighted objects are ones on which you can perform management action. You can select items using single or multiple selection modes in both thumbnail and tabular view. Use the single and multiple selection buttons above the Quick Look panel to change between selection modes.

In single selection mode, details about that object is displayed in the Quick Look panel. In thumbnail view, click and object's icon to select it. In tabular view, click an object's check box.

In multiple selection mode, selected items are listed in the Quick Look panel as shown.



The single and multiple selection modes are displayed only on inventory pages that support batch operations. The Ethernet Activator > Service Design > Manage Service Definitions inventory page, for example, has no bulk operations, so the single and multiple selection modes do not appear. Similarly, if only one item appears in a device inventory, the single/multiple section panel does not appear.

You can deselect items before selecting a batch action. Deselected items remain in the Selections list, but are no longer check marked.

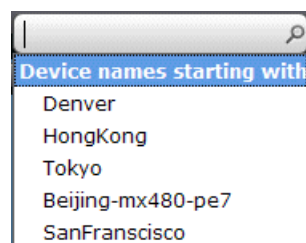
When you have selected the objects you want, select any of the commands in the Actions drawer or right-mouse click menu to perform operations on those objects.

Zoom Slider

The zoom slider determines the size of the icons displayed on the screen. Displaying managed objects smaller on the inventory page reduces the amount of paging. The zoom slider is displayed only in thumbnail view. To reduce object size, move the slider to the left toward (-); move to the right toward (+) to enlarge objects. The size of objects is persistent between work sessions.

Search and Filter Field

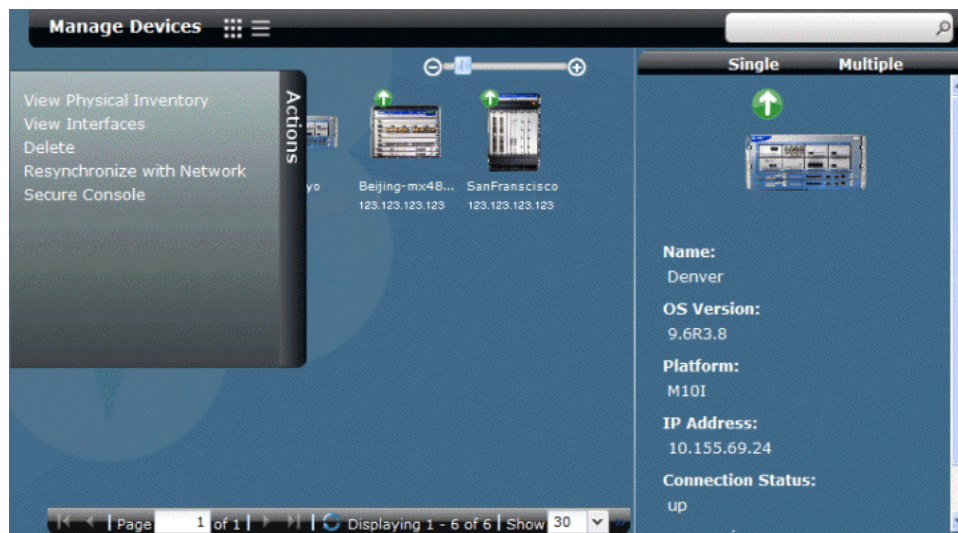
The Search and Filter field on the right of the banner enables you to search for specific items so that only specific items are displayed on the inventory page. Clicking the magnifying glass at the right in the field displays a drop-down list with the search options for that particular inventory page as shown. When you select a search option in the drop-down list, inventory items specific to that search option only are displayed on the page. When you erase the contents in the Search field or type **all**, and press Enter, all the inventory items are displayed on the page again.



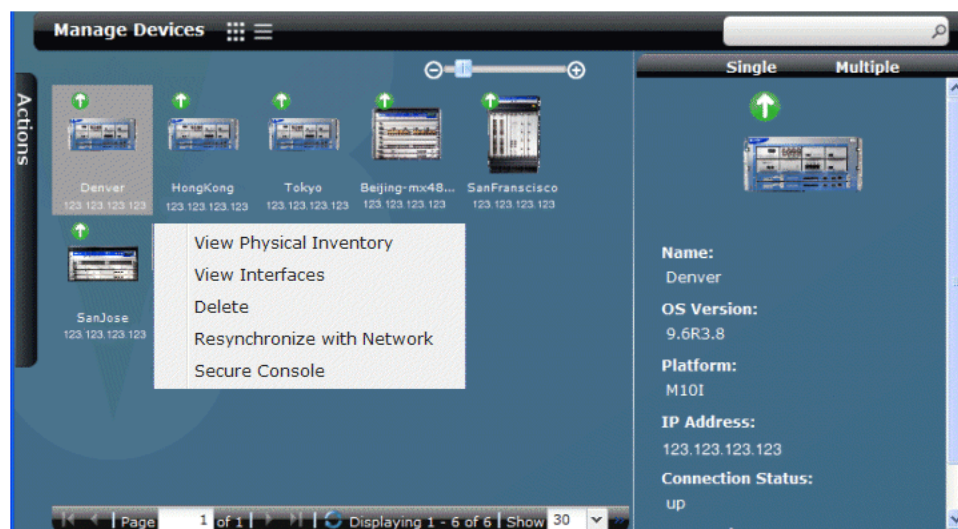
Actions Drawer and Right-Mouse Clicking Objects

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 drawer, mouse over it. 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.

Actions in the Actions panel are disabled if the object you selected does not support the selected action in its current state.



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





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.

Quick Look Panel

The Quick Look Panel provides information about the selected object. The Quick Look panel also displays a list of objects selected in multiple selection mode.

In single object selection mode, the Quick Look panel displays information about one or more selected inventory items. Single-click an object in the inventory panel once to see summary information about that object in the Quick Look panel. Double-click an item to see more details about certain items.

In multiple object mode, the Quick Look panel displays a list of the objects selected so that you can perform actions on them without having to navigate between pages.

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 33.

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.

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

Table Control	Operation
	Displays the last page of the table.
	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 are on one page.



Related Topics ■ Junos Space User Interface Overview on page 13

Part 2

Managing the Junos Space Fabric

- Fabric Overview on page 37
- Configuring Nodes on page 43
- Monitoring Nodes on page 47

Chapter 3

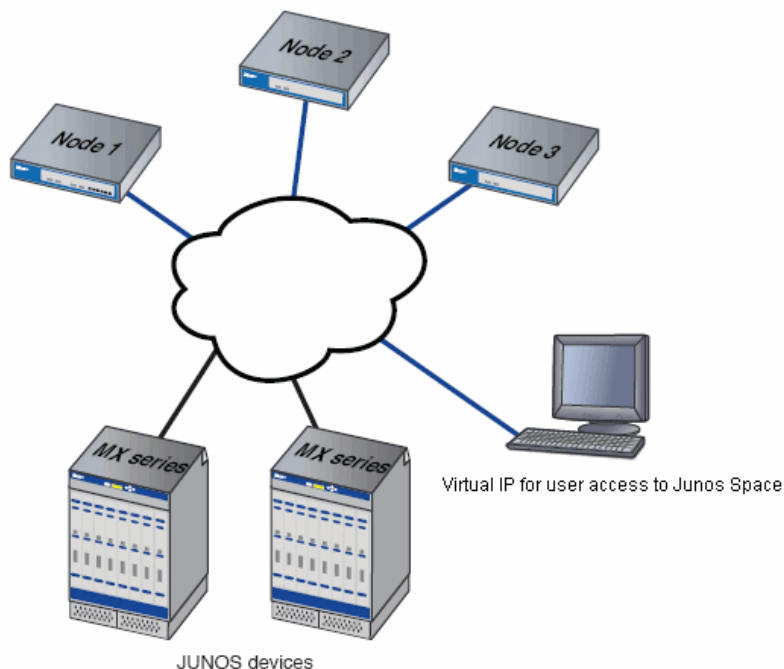
Fabric Overview

- Fabric Management Overview on page 37

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:

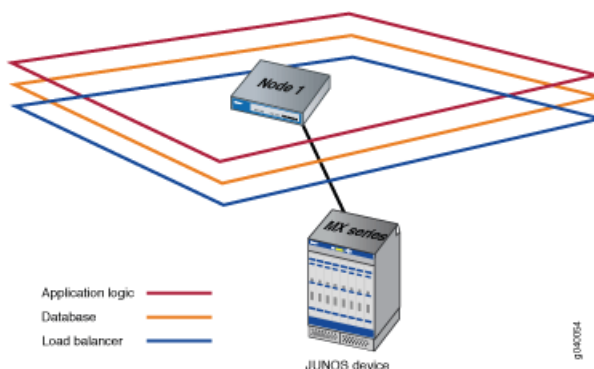
- **Load Balancer**— When a node that functions as the active load balancer server is down, all HTTP requests are automatically routed to the standby load balancer server that is running on a separate node.
- **Database**— When a node that functions as the active database server is down, all database 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:

$$\text{Threshold Limit} = \lceil (\text{number of devices in database} / (\text{number of nodes running})) \rceil + 2$$

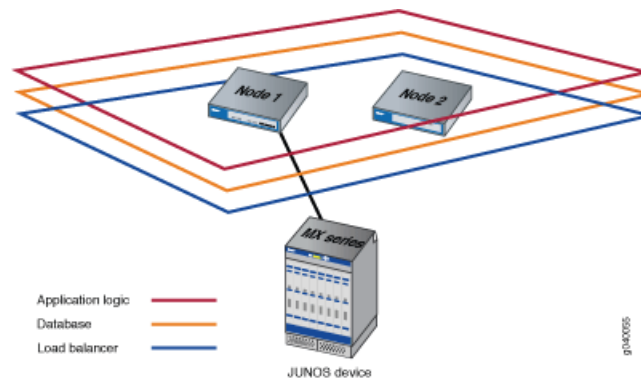
The following workflow describes how the node functions are enabled across the fabric as nodes are added:

- **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.

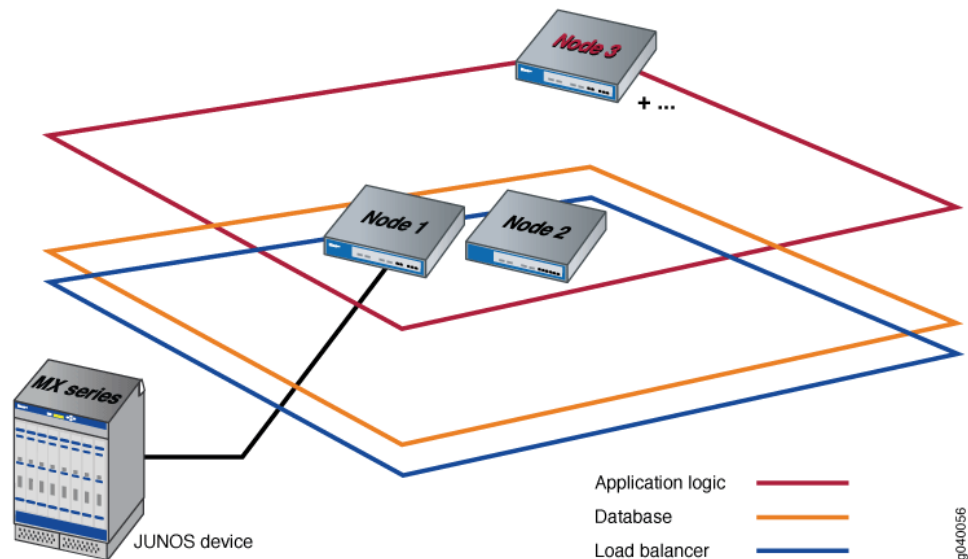


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- Add second node: When a second node is added to the fabric, the first node functions as the active load balancer server and active database server, and the second node functions as the standby load balancer server and standby database server. The 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 Topics**
- Managing Nodes in the Fabric on page 43
 - Viewing Nodes in the Fabric on page 47

Chapter 4

Configuring Nodes

- Managing Nodes in the Fabric on page 43

Managing Nodes in the 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.

- Adding a Node on page 43

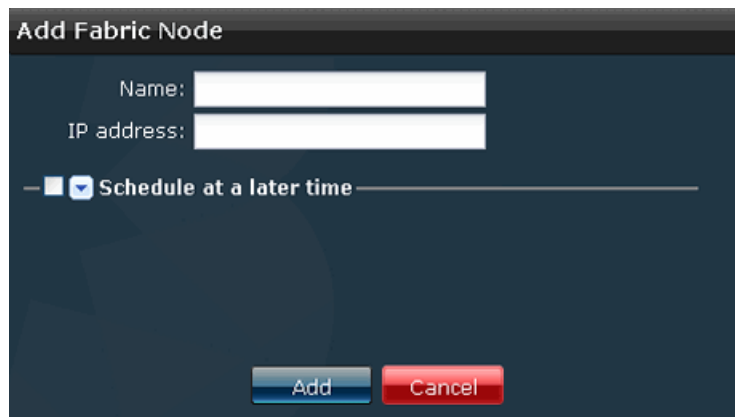
Adding a Node

You can add one or more nodes to the existing Junos Space fabric, but you can add only one node at a time.

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.




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 JA1500 Junos Space Appliance or Junos Space Virtual 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 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)

The third node (and all subsequent nodes) added to a fabric perform only the Application Logic function.

- Related Topics**
- Fabric Management Overview on page 37
 - Viewing Nodes in the Fabric on page 47
 - Understanding Overall System Condition and Fabric Load on page 51

Chapter 5

Monitoring Nodes

- Viewing Nodes in the Fabric on page 47
- Understanding Overall System Condition and Fabric Load on page 51

Viewing Nodes in the Fabric

You can view configuration and runtime information for 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. You can view nodes in the fabric either graphically or in a table.

- Viewing Nodes as Graphics on page 47
- Viewing Nodes in a Table on page 49

Viewing Nodes as Graphics

You can view thumbnail, quick look, and detailed information about the nodes running on a fabric.

To view the nodes in a fabric:

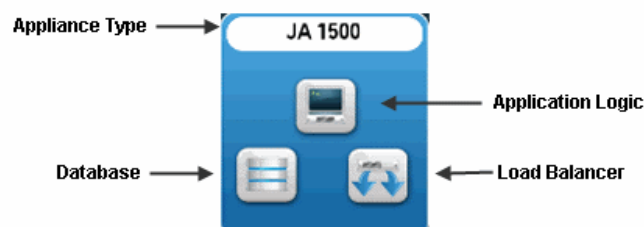
1. From the task ribbon, select the **Administration** workspace icon.
2. From the task ribbon, select the **Manage Fabric** icon.

The Fabric Monitoring window displays the nodes in the fabric.



The Fabric Monitoring window is refreshed every 10 seconds, by default.

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, the following illustration shows the icons for a JA1500 Junos Space Appliance, that is running all node functions.



3. To view runtime and node function status for a node, click on the node.

Runtime and status information for the selected node is displayed in the Quick Look panel.

4. To view detailed runtime and status information for a node, double-click on the node.

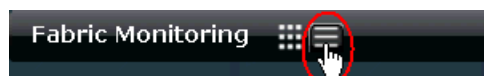
For example, the following illustration shows the node icon and detailed information for a JA1500 Junos Space Appliance.





Viewing Nodes in a Table

To view configuration and runtime information in a table:

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



Junos Space displays a table with information about each node in the fabric.

Fabric Monitoring  									
<input type="checkbox"/>	Node Name	Management IP	Status	% CPU	% RAM	% Disk	App Logic	Database	Load Balancer
<input checked="" type="checkbox"/>	Node1	10.155.69.241	UP	8	20	1	UP	UP	UP

Page 1 of 1 | Show 30 items

Table 7 on page 50 describes the node information displayed in each field in the table and information available from the detailed view.

Table 7: 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.
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.</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.</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 <code>/var</code> directory utilized by the node.</p> <ul style="list-style-type: none"> ■ Unknown—The percentage of the <code>/var</code> 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.
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>
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>

Table 7: Fields for the Fabric Monitoring Inventory Panel *(continued)*

Field	Description
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>
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>

- Related Topics**
- Managing Nodes in the Fabric on page 43
 - Understanding Overall System Condition and Fabric Load on page 51
 - Fabric Management Overview on page 37

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 %.

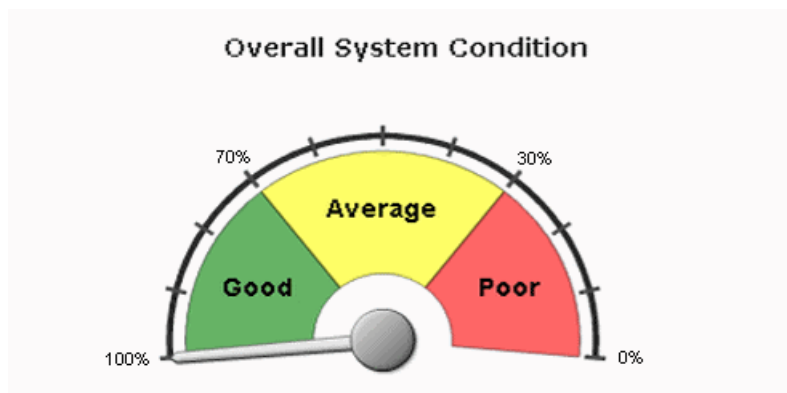
Junos Space retrieves data on the nodes and the node functions running, and then applies the following algorithm to determine the overall system condition:

$$\text{overall system condition} = [(\text{number of nodes running}) / (\text{number of nodes in fabric})] * [(\text{number of nodes running load balancing process}) / (\text{number of nodes enabled for load balancing})] * [(\text{number of nodes running database server process}) / (\text{number of nodes enabled as database server})] * [(\text{number of nodes running application logic process}) / (\text{number of nodes enabled for application logic})]$$

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.

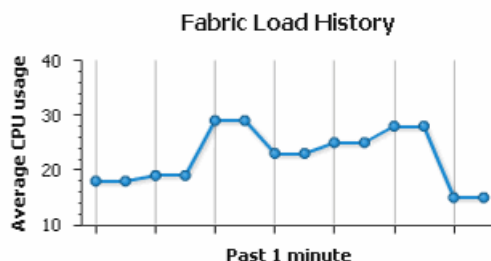


The overall system health indicates 0 % (Poor) when any one of the following conditions is detected:

- 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.

$$\begin{aligned} \text{fabric load} &= [80\% + 30\% + 10\%] / 3 \\ \text{fabric load} &= 120\% / 3 \\ \text{fabric load} &= 40\% \end{aligned}$$

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 Topics**
- Fabric Management Overview on page 37
 - Junos Space User Interface Overview on page 13

Part 3

Junos Space Administration

- System Maintenance on page 57

Chapter 6

System Maintenance

- System Administration on page 57
- Database Backup and Restore on page 62
- Software Upgrade on page 78
- Licensing on page 86
- Application Management on page 91
- Troubleshooting on page 94

System Administration

- Junos Space Administrators Overview on page 57
- Maintenance Mode Overview on page 58
- Understanding Overall System Condition and Fabric Load on page 60

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 8 on page 57 shows the Junos Space administrators and the tasks that can be performed.

Table 8: Junos Space Administrators

Junos Space Administrator Function	Description	Tasks
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Table 8: Junos Space Administrators *(continued)*

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
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 109.</p>

- Related Topics**
- Maintenance Mode Overview on page 58
 - Role Based Access Control Overview on page 107
 - Understanding How to Configure Users to Manage Objects in Junos Space on page 108

Maintenance Mode Overview

In Junos Space, maintenance mode is a special mode that an administrator can use 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.

Maintenance Mode

Space is currently in maintenance mode.

[If you have the privileges to manage maintenance mode, click here to log in](#)

- An authorized Junos Space administrator initiates a **Restore database** 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 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.
- A Junos Space administrator connects to an appliance in maintenance mode using the URL `https://ip-address/maintenance`, where *ip-address* is the Web access IP address for the appliance.

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

Only one maintenance mode administrator can access the maintenance mode landing page at a time. When an administrator logs in to maintenance mode, Junos Space locks the landing 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 the Maintenance Mode landing page is locked. The maintenance mode lock is released when the first administrator logs out or the lock times out. If the logged-in administrator is inactive for a period of time, the maintenance mode lock is released after 5 minutes, and 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.

- Related Topics**
- Restoring a Database in the User Interface on page 69
 - Restoring a Database in Maintenance Mode on page 73
 - Backing Up the Database on page 64
 - Database Backup and Restore Overview on page 63

Understanding Overall System Condition and Fabric Load

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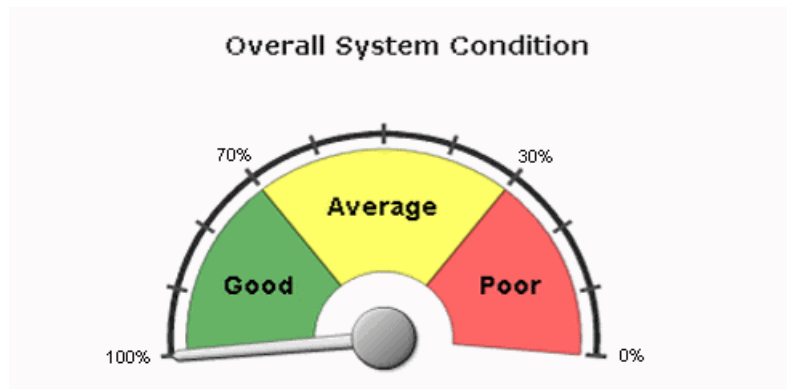
Junos Space retrieves data on the nodes and the node functions running, and then applies the following algorithm to determine the overall system condition:

$$\text{overall system condition} = \left[\frac{\text{number of nodes running}}{\text{number of nodes in fabric}} \right] * \left[\frac{\text{number of nodes running load balancing process}}{\text{number of nodes enabled for load balancing}} \right] * \left[\frac{\text{number of nodes running database server process}}{\text{number of nodes enabled as database server}} \right] * \left[\frac{\text{number of nodes running application logic process}}{\text{number of nodes enabled for application logic}} \right]$$

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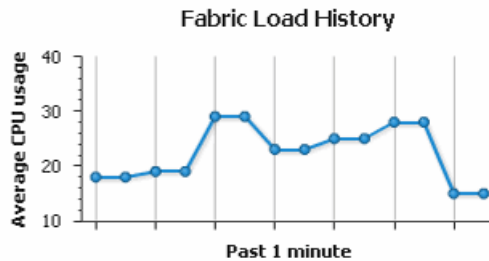


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Fabric Load

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:

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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.

$$\begin{aligned} \text{fabric load} &= [80\% + 30\% + 10\%] / 3 \\ \text{fabric load} &= 120\% / 3 \\ \text{fabric load} &= 40\% \end{aligned}$$

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 Topics**
- Fabric Management Overview on page 37
 - Junos Space User Interface Overview on page 13

Database Backup and Restore

- Database Backup and Restore Overview on page 63
- Backing Up the Database on page 64
- Restoring a Database in the User Interface on page 69
- Restoring a Database in Maintenance Mode on page 73
- Viewing Database Backup Files on page 75
- Deleting Database Backup Files on page 77

Database Backup and Restore Overview

You can perform Junos Space database backup and restore operations from the Administration workspace. By default, Junos Space does not automatically backup the database. However, you 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.

You might need to 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 became corrupted, and you reinstalled the Junos Space software.
- You are upgrading to a new version of Junos Space and you need to populate the Junos Space database with your existing data.

Database Backup

You can perform a local backup to copy data and log files to the Junos Space default directory or perform a remote backup to copy data and log files to remote network hosts or media. You cannot specify a location for a local backup.

When you perform a local backup, Junos Space backs up all data and log files to a default directory.

When you perform 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.

During a backup, Junos Space archives data files and the logical logs that record database transactions, such as the users, nodes, devices, services that were added or deleted in Junos Space.

Database Restore

When you perform a restore operation, you retrieve data that was previously backed up to restore the Junos Space database to a previous state. You can restore a database from the Junos Space user interface, or directly from the Maintenance Mode Actions window, if Junos Space goes down and you cannot access the user interface. 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 Topics**
- Restoring a Database in the User Interface on page 69
 - Restoring a Database in Maintenance Mode on page 73
 - Backing Up the Database on page 64
 - Maintenance Mode Overview on page 58

Backing Up the Database

You 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. When you perform a backup, Junos Space backs up the entire database. The database backup file contains configuration data for managed nodes, managed devices, deployed services, scheduled jobs, Junos Space users, and so forth.

You can perform local and remote backup and restore operations. You perform a local backup to copy the backup file to the default directory `/var/lib/mysql/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 64
- Backing Up the Database to a Remote Host on page 66

Backing Up the Database to a Local Directory

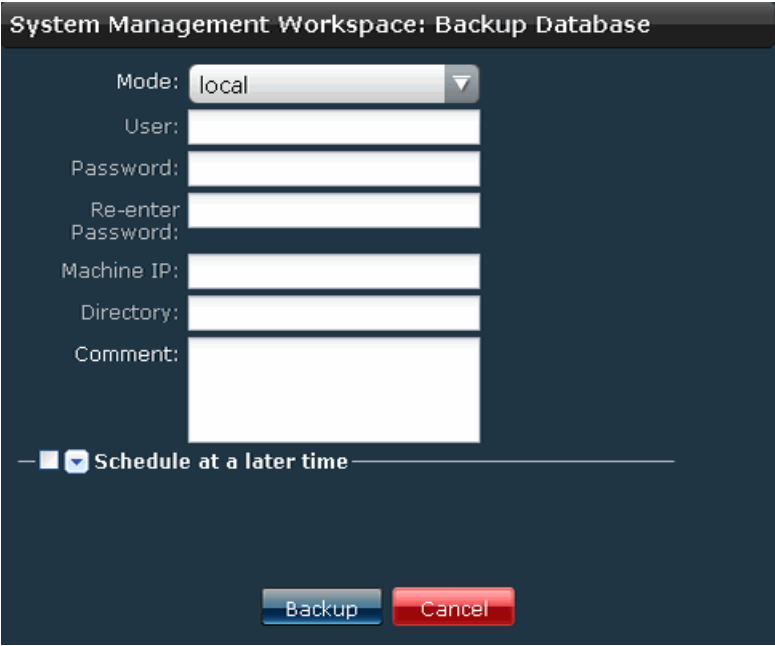
To back up the Junos Space database to a local directory:

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

The inventory panel displays thumbnails for all existing database backup files.

3. From the task ribbon, select the **Backup Database** icon.

The Backup Database dialog box is displayed.



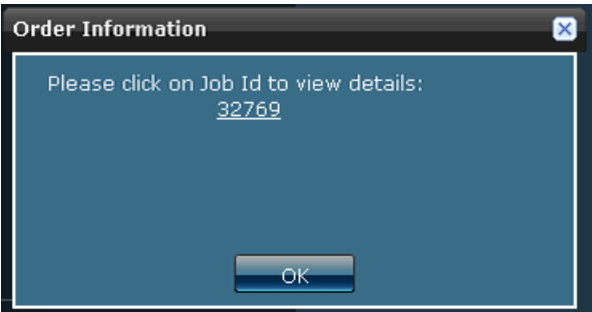
4. In the Mode field, select local to back up the Junos Space database to the default directory `/var/lib/mysql/backup`.
5. Optional: In the Comment field, add a comment to describe or otherwise identify the backup operation.
6. Schedule the Junos Space database backup operation:
 - Clear the **Schedule at a later time** check box (the default) to initiate the database backup when you complete Step 7.
 - 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.

7. Click **Backup**.

The database is backed up. The Order Information window is displayed.



8. Optional: To view job details for the database backup, click on the Job Id in the Order Information window.

Junos Space displays the View Job Details window.



9. Click OK.

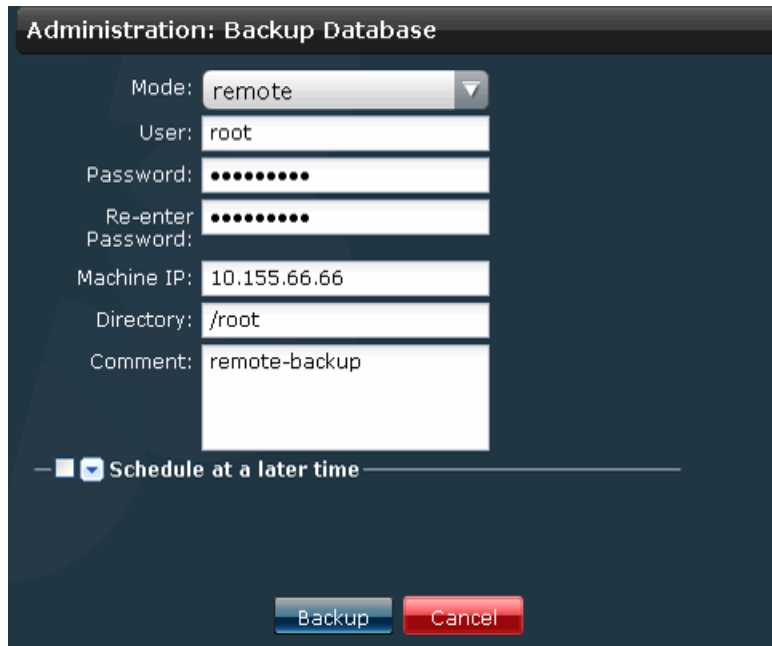
The Junos Space database backup is displayed in the Manage Databases inventory panel.

Backing Up the Database to a Remote Host

To back up the Junos Space database to a remote host:

1. From the task ribbon, select the **Administration** workspace.
2. From the task ribbon, select the **Manage Databases** icon.
3. From the task ribbon, select the **Backup Database** icon.

The Backup Database dialog box is displayed.



The image shows a dialog box titled "Administration: Backup Database". It contains several input fields: "Mode" is a drop-down menu set to "remote"; "User" is a text field with "root"; "Password" and "Re-enter Password" are masked text fields with dots; "Machine IP" is a text field with "10.155.66.66"; "Directory" is a text field with "/root"; and "Comment" is a text field with "remote-backup". At the bottom left, there is a checkbox labeled "Schedule at a later time" which is currently unchecked. At the bottom right, there are two buttons: "Backup" (blue) and "Cancel" (red).

4. In the Mode field, select **remote** from the drop-down menu.
5. Enter a valid user name to access the remote host server.
6. Enter a valid password to access the remote host server.
7. Reenter the password you entered in the previous step.
8. Enter the IP address of the remote host server.
9. Enter a directory path on the remote host server for the database backup file.



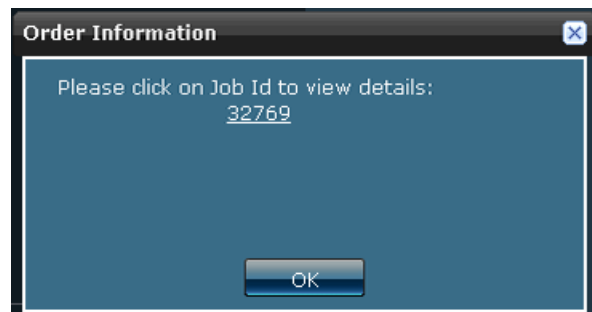
NOTE: The directory path must already exist on the remote host server.

10. Optional: Add a comment to describe or otherwise identify the backup operation.
11. Schedule the Junos Space database backup operation:
 - Clear the **Schedule at a later time** check box (the default) to initiate the database backup when you complete Step 12.
 - 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.

12. Click **Backup**.
The Order Information window is displayed.



13. Optional: To view job details for the database backup, click on the Job Id in the Order Information window.

Junos Space displays the View Job Details window.



14. Click OK to close the View Job Details window..

When the backup operation finishes, the Junos Space database backup file is displayed in the Manage Databases inventory panel.

- Related Topics**
- Restoring a Database in the User Interface on page 69
 - Restoring a Database in Maintenance Mode on page 73
 - Viewing Database Backup Files on page 75
 - Deleting Database Backup Files on page 77
 - Database Backup and Restore Overview on page 63

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 75.

Junos Space supports both local and remote backup and restore operations.

- Restoring a Local Database on page 69
- Restoring a Database from a Remote Host on page 71

Restoring a Local Database

To restore the Junos Space database to a previous state:

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

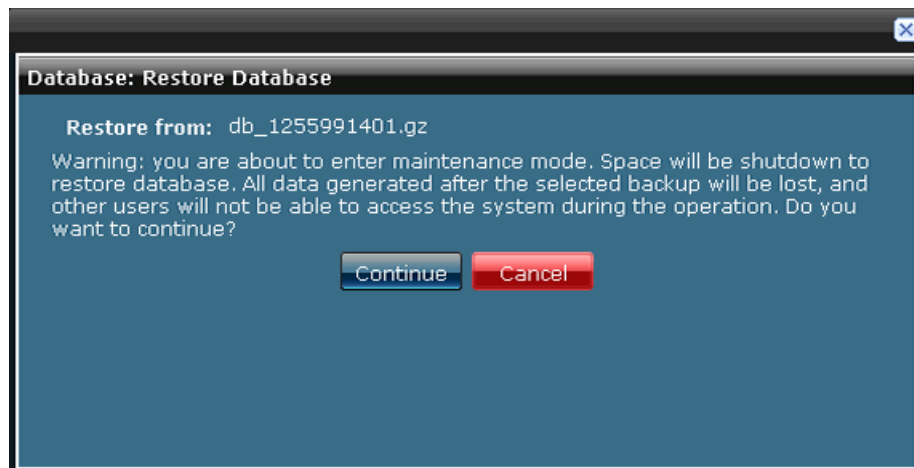
The Manage Databases inventory panel displays database backups as graphics (or in a table).

3. In the inventory panel, select the database backup file that you want to restore.

Junos Space displays summary information for the selected database backup in the Quick Look panel.

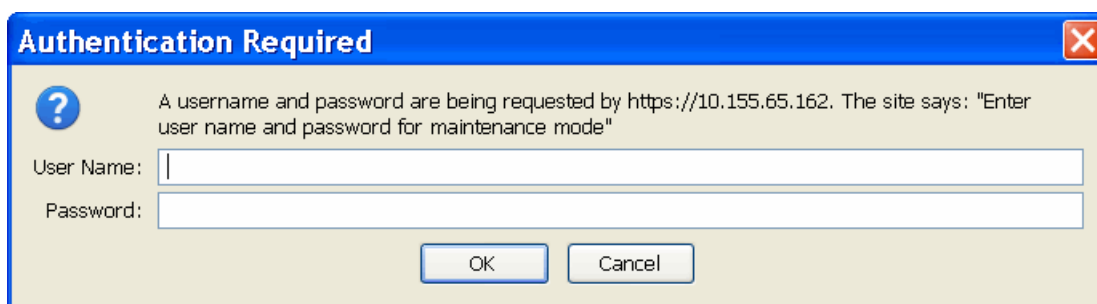
4. From the Actions panel, select the **Restore Database** option.

Junos Space displays the Restore Database confirmation window.



5. Click **Continue** in the Restore Database window.

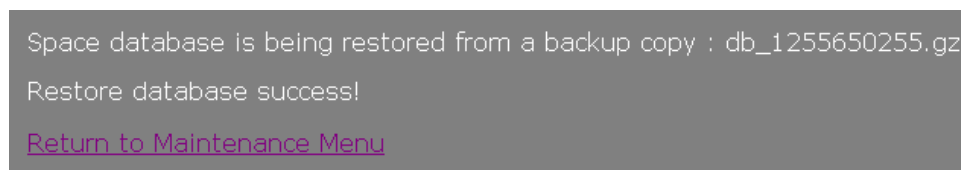
Junos Space prompts you enter a user name and password to enter maintenance mode.



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, as shown in the following example.



8. In the Restore Database Status window, click **Return to Maintenance Menu**.
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

9. In the Maintenance Mode Actions window, click **Log Out and Exit from Maintenance Mode** to exit maintenance mode, start up Junos Space, and return to normal operational mode.

The process of exiting maintenance mode and restarting Junos Space takes several minutes.

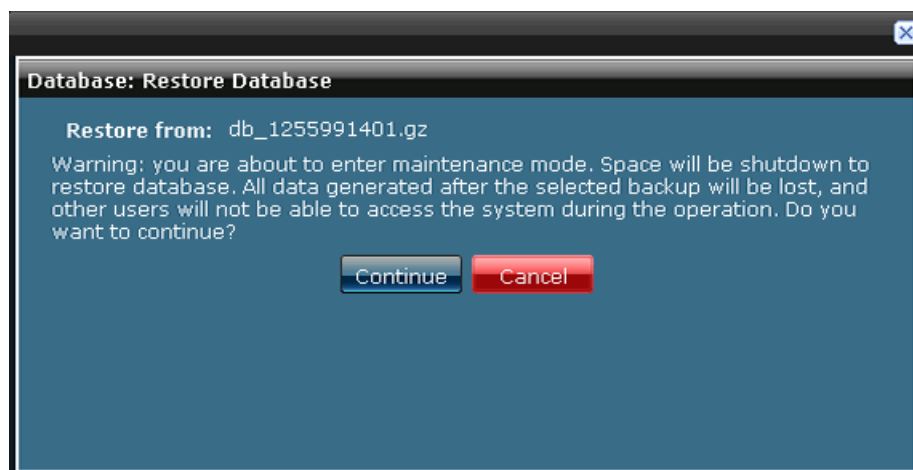
Restoring a Database from a Remote Host

To restore the Junos Space database to a previous state:

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

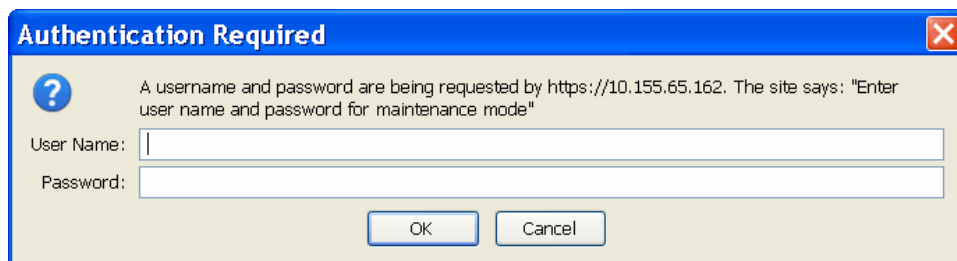
The Manage Databases inventory panel displays database backups as graphics or as a table.

3. In the inventory panel, select the database backup file that you want to restore.
Junos Space displays summary information for the selected database backup in the Quick Look panel.
4. From the Actions panel, select the **Restore Database** option.
Junos Space displays the Restore Database confirmation window.



5. Click **Continue** in the Restore Database window.

Junos Space prompts you enter a user name and password to enter maintenance mode.



The dialog box has a blue title bar with the text "Authentication Required" and a close button (X). Inside, there is a question mark icon and a message: "A username and password are being requested by https://10.155.65.162. The site says: 'Enter user name and password for maintenance mode'". Below the message are two input fields: "User Name:" and "Password:". At the bottom right are two buttons: "OK" and "Cancel".

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, as shown in the following example.

Space database is being restored from a backup copy : db_1255650255.gz
 Restore database success!
[Return to Maintenance Menu](#)

8. In the Restore Database Status window, click **Return to Maintenance Menu**.

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

9. In the Maintenance Mode Actions window, click **Log Out and Exit from Maintenance Mode** to exit maintenance mode, start up Junos Space, and return to normal operational mode.

The process of exiting maintenance mode and restarting Junos Space takes several minutes.

Related Topics

- Backing Up the Database on page 64
- Viewing Database Backup Files on page 75
- Deleting Database Backup Files on page 77

- Maintenance Mode Overview on page 58
- Restoring a Database in Maintenance Mode on page 73

Restoring a Database in Maintenance Mode

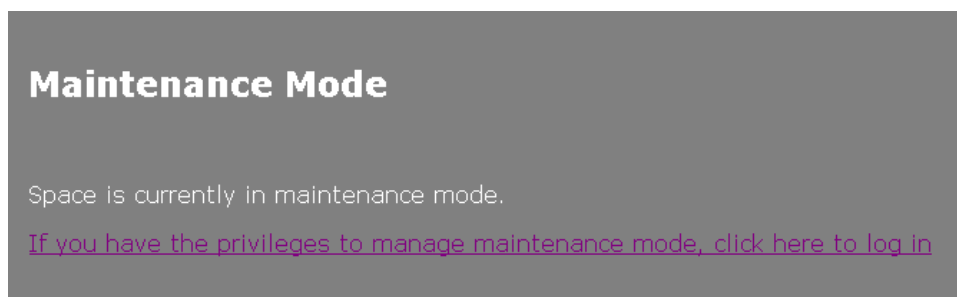
In Junos Space, maintenance mode is a special mode that an administrator can use to restore the database when Junos Space is down on all nodes in the fabric and the Web proxy is running.

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:

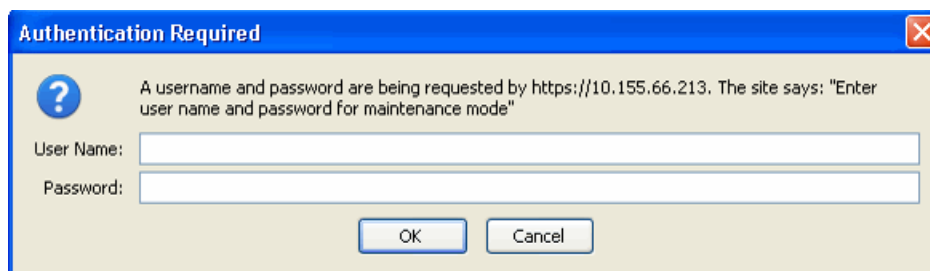
`https://ip-address/maintenance`

The Maintenance Mode window is displayed.



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.

Choose a backup database to restore

☒ db_1255398948.gz (test1) created at Mon Oct 12 18:55:49 2009

[Return to Maintenance Menu](#)

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.

Space database is being restored from a backup copy : db_1255650255.gz

Restore database success!

[Return to Maintenance Menu](#)

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 Topics

- Maintenance Mode Overview on page 58
- Database Backup and Restore Overview on page 63
- Backing Up the Database on page 64
- Restoring a Database in the User Interface on page 69

Viewing Database Backup Files

You can view 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. You can view Junos Space database backup information graphically or in tables. By default, Junos Space displays graphical thumbnail representations of database backups.

- Viewing Database Backups Graphically on page 75
- Viewing Database Backups in a Table on page 76

Viewing Database Backups Graphically

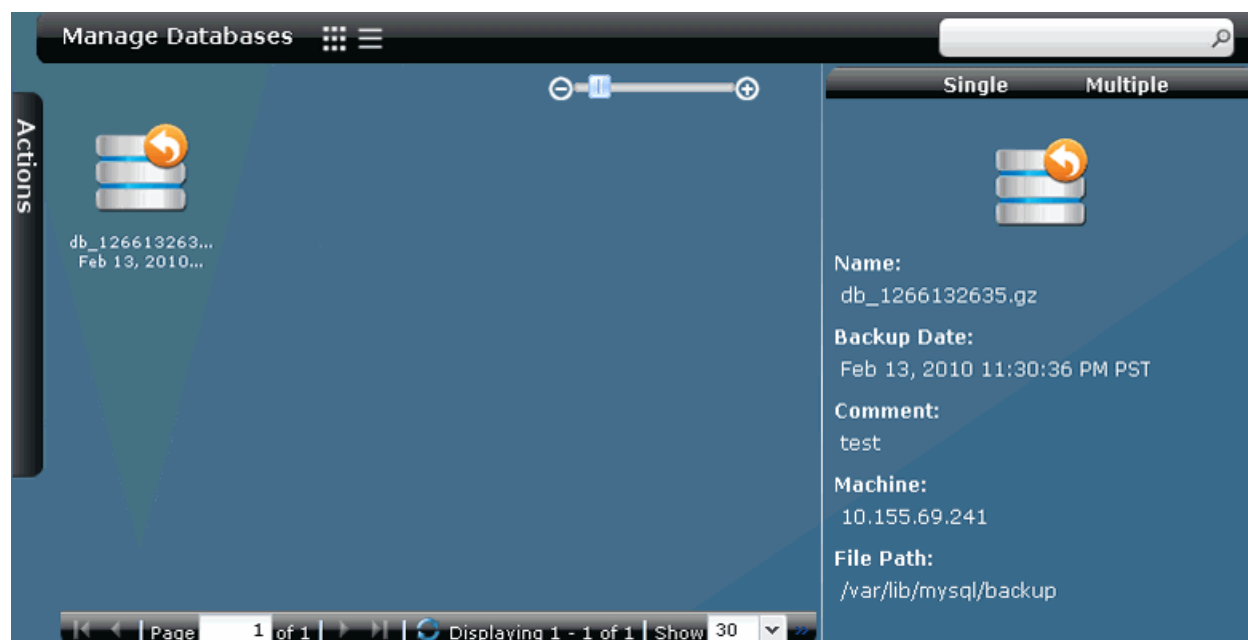
To view Junos Space database backups graphically:

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

The Manage Databases inventory panel displays thumbnails of database backups by file name and date.

3. To view summary information for a database backup, click on the thumbnail.

Junos Space displays summary information about the database backup in the Quick Look panel, as shown in the following illustration.



Viewing Database Backups in a Table

To view Junos Space database backups in a table:

1. From the task ribbon, select the **Administration** workspace.
2. From the task ribbon, select the **Manage Databases** icon.
3. Click the table view in the filter bar, as shown in the following illustration.



The Manage Databases inventory panel displays database backups as a table, as shown in the following example.

 A screenshot of the 'Manage Databases' inventory panel. The panel displays a table with the following data:

Name	Backup Date	Comment	Machine	File Path
<input checked="" type="checkbox"/> db_1266132635.c	Feb 13, 2010 11:30:36 PM PST	test	10.155.69.241	/var/lib/mysql /backup

 The table is part of a larger interface with a sidebar on the left labeled 'Actions' and a footer at the bottom showing 'Page 1 of 1' and 'Displaying 1 - 1 of 1' items.

Table 9 on page 76 describes the fields displayed in the inventory window.

Table 9: Fields in the Manage Databases Table

Field	Description
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.

Deleting Database Backup Files

You 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. From the task ribbon, select the **Administration** workspace.
2. From the task ribbon, select the **Manage Databases** icon.

The Manage Databases inventory panel displays thumbnail representations of database backups by file name and date.

3. Optional: To view summary information for a database backup file before deleting the file, click on the database backup thumbnail from the inventory panel.

Junos Space displays summary information about the database backup file in the Quick Look panel, as shown in the following illustration.



4. From the Manage Databases inventory panel (thumbnails or table view), select one or more database backup files that you want to delete.

To delete more than one database at a time, click on the **Multiple** button above the Quick Look panel, then select the thumbnails of the databases you want to delete.

5. From the Actions drawer, select **Delete Database Backup**.

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 Topics**
- Backing Up the Database on page 64
 - Restoring a Database in the User Interface on page 69
 - Restoring a Database in Maintenance Mode on page 73
 - Viewing Database Backup Files on page 75

Software Upgrade

- Junos Space Software Upgrade Overview on page 78
- Upgrading Junos Space Software on page 79
- Viewing Uploaded Software on page 85

Junos Space Software Upgrade Overview

To upgrade software for the JA1500 Junos Space Appliance or 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 log in as the default super administrator.

- 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 Topics**
- Viewing Uploaded Software on page 85
 - Upgrading Junos Space Software on page 79

Upgrading Junos Space Software

To upgrade software for the JA1500 Junos Space appliance or 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.

- Upgrading from Junos Space Release 1.0 to Release 1.2 on page 79
- Upgrading from Junos Space Release 1.1 to Release 1.2 on page 81

Upgrading from Junos Space Release 1.0 to Release 1.2

You can upload and install the Release 1.2 software image file to upgrade from Junos Space Release 1.0 to Release 1.2.

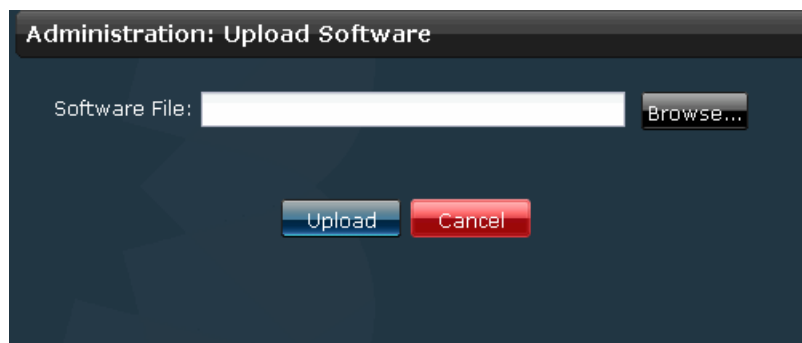
Juniper Networks recommends that you back up the Junos Space database before you begin the upgrade process.

You must log in as the default super administrator to upgrade from Junos Space, Release 1.0.

To add or upgrade software:

1. From the task ribbon, select the **Administration** workspace icon.
2. From the task ribbon, select the **Manage Software** icon.
3. From the task ribbon, select the **Upload Software** task.

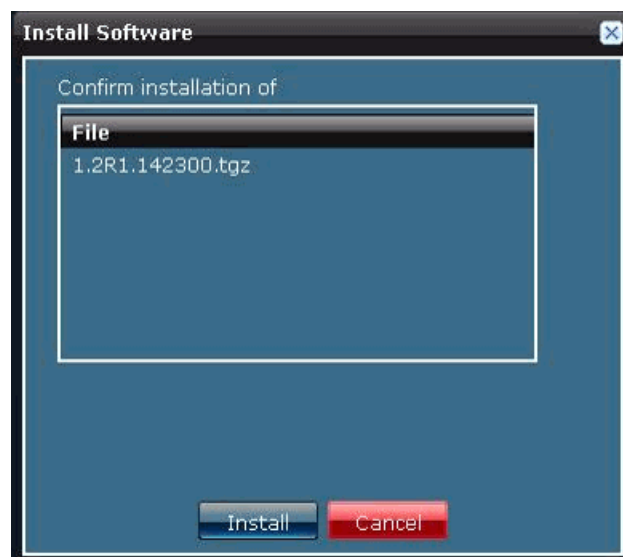
The Upload Software window is displayed, as shown in the following illustration.



4. Use the Browse button to locate the Release 1.2 software image file you want to upload to Junos Space from your computer.
5. Click **Upload** to upload the software image, and wait until the software uploading is complete.
6. From the task ribbon, select the **Manage Software** icon to display the Manage Software inventory panel.
7. Select the Release 1.2 software image that you uploaded, as shown in the following illustration.

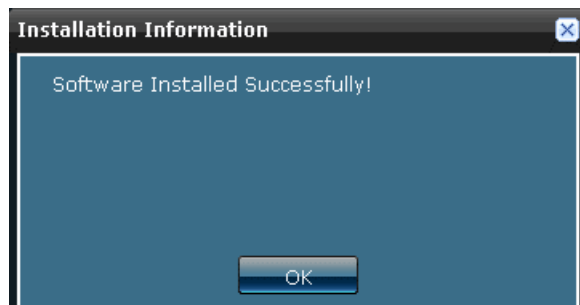


8. In the Actions panel, click **Install Software** to upgrade to Junos Space Release 1.2. The Install Software confirmation window is displayed.



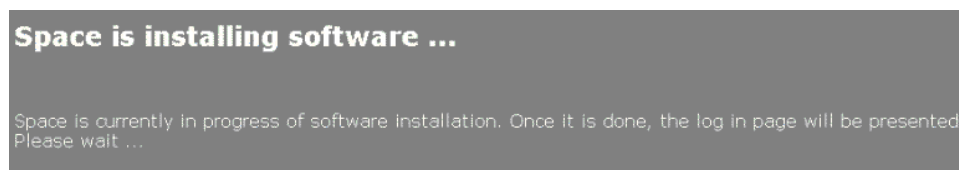
9. Select the file, and click **Install**.

The Installation Information window displays status, as shown in the following illustration.



10. Click OK.
11. If the software upgrade status window does not display, click the refresh button in your browser.

Junos Space displays the following status window during the software upgrade process.



NOTE: The software upgrade takes some time to complete.

12. When the installation is complete, the Junos Space login prompt is displayed. You can now log in to begin using Junos Space Release 1.2.

Upgrading from Junos Space Release 1.1 to Release 1.2

You can upload and install the Release 1.2 software image file to upgrade from Junos Space Release 1.1 to Release 1.2.

Juniper Networks recommends that you back up the Junos Space database before you begin the upgrade process.

It is also recommended that you clear the Web browser cache before logging in to the upgraded Junos Space software.

You must log in as the default super administrator to upgrade from Junos Space, Release 1.1.

To add or upgrade software:

1. From the task ribbon, select the **Administration** workspace icon.
2. From the task ribbon, select the **Manage Software** icon.
3. From the task ribbon, select the **Upload Software** task.

The Upload Software window is displayed.

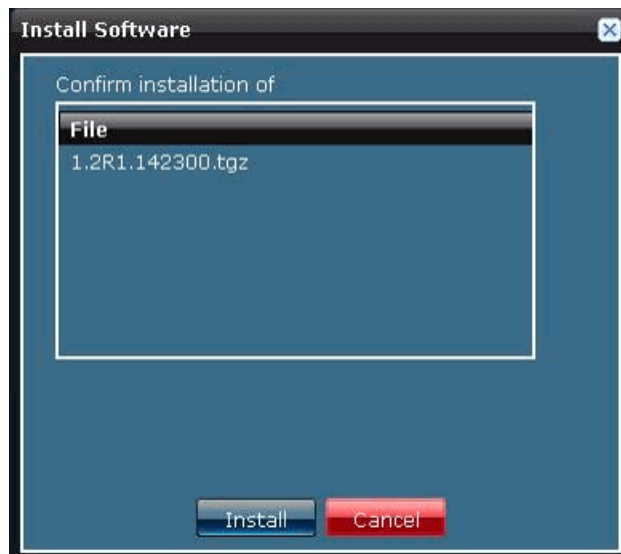


4. Use the Browse button to locate the software image you want to upload to Junos Space from your computer.
5. Click Upload to upload the software image, and wait until the software uploading is complete.

The software image is displayed in the Manage Software inventory panel, as shown in the following illustration.

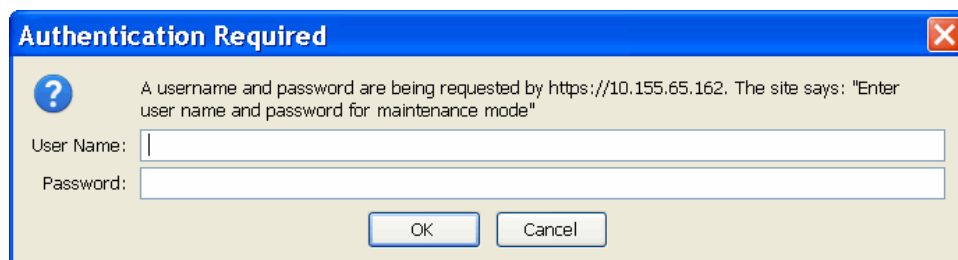


6. In the Manage Software inventory panel, select the software image that you uploaded.
7. In the Actions panel, click **Install Software** to upgrade the Junos Space software. The Install Software confirmation window is displayed.



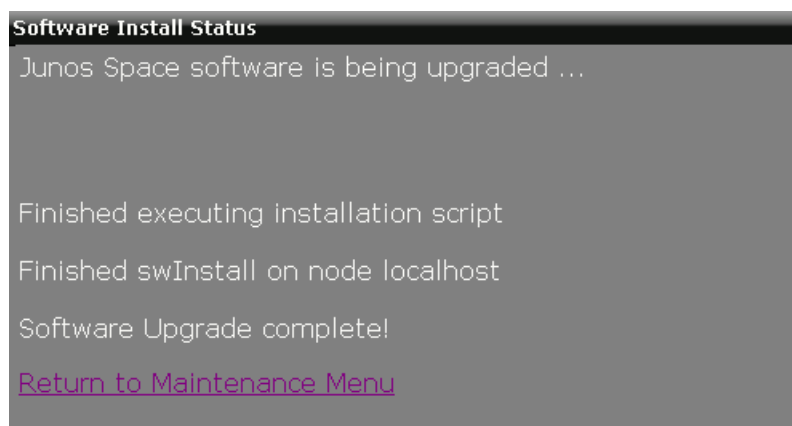
8. Select the file, and click **Install**.

Junos Space prompts you enter a user name and password to enter maintenance mode.



9. Enter the maintenance mode user name and password.
10. Click **OK**.

Junos Space displays a status window during the software upgrade process, as shown in the following illustration.



11. When the software upgrade completes, click **Return to Maintenance Menu**.

The Maintenance Mode Actions window is displayed, as shown in the following illustration.

Maintenance Mode Actions

- [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 Junos Space logs for troubleshooting
- [Install Junos Space Software](#)
This action leads user to install new software
- [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

12. Click **Log Out and Exit from Maintenance Mode**.

Junos Space displays the following window.

Space is installing software ...

Space is currently in progress of software installation. Once it is done, the log in page will be presented. Please wait ...



NOTE: The software upgrade takes some time to complete.

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 to Junos Space 1.2.

You can now log in to begin using Junos Space with the latest software.

- Related Topics**
- Junos Space Software Upgrade Overview on page 78
 - Viewing Uploaded Software on page 85

Viewing Uploaded Software

The Manage Software inventory page allows you to view information about Junos Space software images that you have uploaded. Detailed information about the selected software image displays in the Quick View panel. You can also double-click a software image icon to view more detailed information. You must have Administrator privileges to upload Junos Space software.

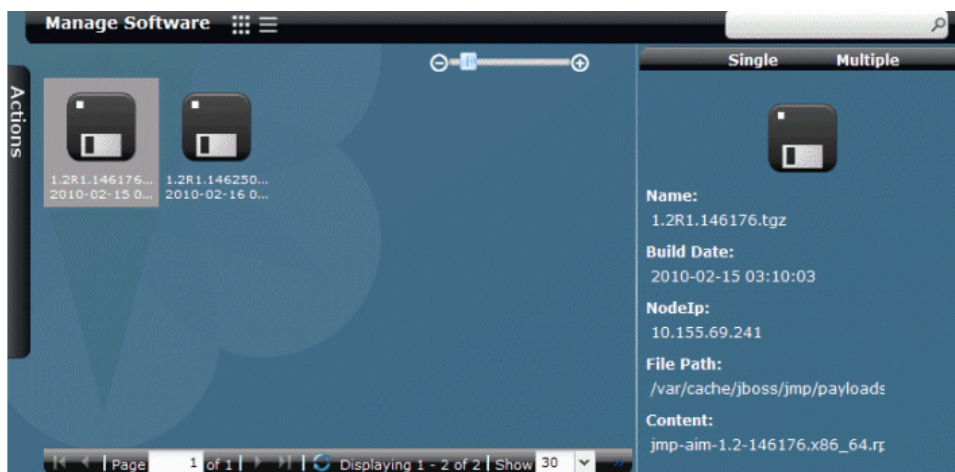
- Displaying the Manage Software Inventory Page on page 85

Displaying the Manage Software Inventory Page

To view software that has been uploaded into Junos Space:

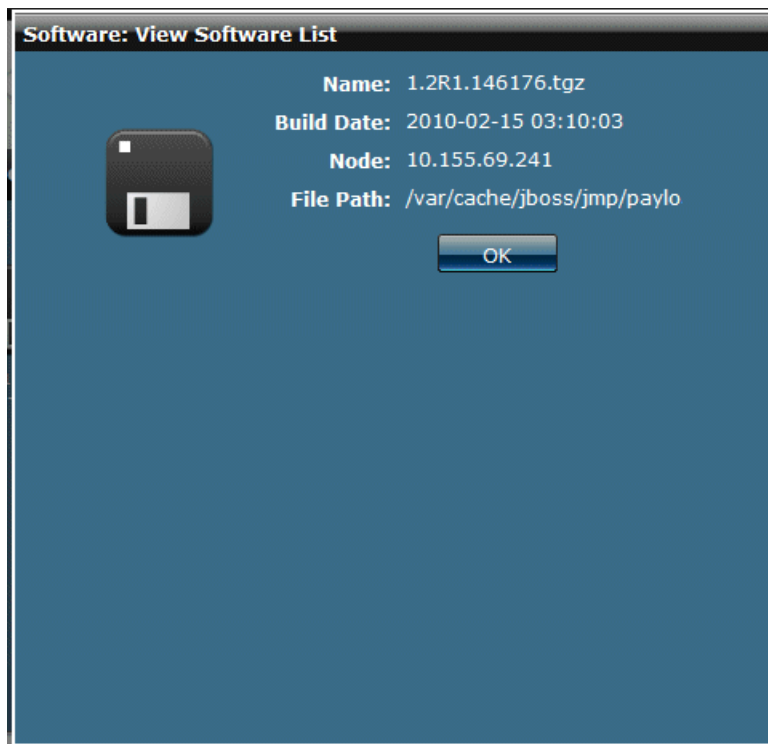
1. From the Platform task ribbon, select the **Administration** workspace.
2. From the task ribbon, select the **Manage Software** icon.

The Manage Software inventory page is displayed. The Manage Software inventory page is empty until you upload software. Once you have uploaded software, an icon represent each software *.tgz file.



You can display software in both thumbnail and tabular views. In the tabular view, you can sort software data by columns by clicking the down arrow in each column header.

3. To view information about a specific software file, select the icon. The Quick Look panel displays information about the software, as described in Table 10 on page 86. You can also view this information by double-clicking a software icon.

**Table 10: Fields in the Manage Software Table**

Field	Description
Name	Name of the software file.
Build Date	Date and time of the software build.
NodeIP	IP address of the appliance where the software file was uploaded.
File Path	The directory location of the software file.
Content	The software that is packaged inside the zipped file.

- Related Topics**
- Junos Space Software Upgrade Overview on page 78
 - Upgrading Junos Space Software on page 79

Licensing

- Generating and Uploading the Junos Space License Key File on page 87
- Viewing Licenses on page 89

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 into 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 87
2. Uploading the License Key File Contents on page 87

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.

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

License Information

License uploaded successfully!

OK

9. Click **OK**. The license appears on the Manage Licenses inventory page.



Related Topics ■ Viewing Licenses on page 89

Viewing Licenses

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.

- Viewing Licenses as Graphics on page 89
- Viewing Licenses in Tables on page 90

Viewing Licenses as Graphics

To view licenses that have been uploaded in Junos Space:

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

The inventory panel displays thumbnails for uploaded licenses, as shown in the following example.



Each thumbnail represents a single license.

3. To view information for a license, click on the thumbnail.

The Quick Look panel displays license information, as shown in the preceding illustration.



Viewing Licenses in Tables

To view license information in a table:






1. From the task ribbon, select the **Administration** workspace.
2. From the task ribbon, select the **Manage Licenses** icon.
3. To display jobs in a table, click the table icon from the filter bar, as shown in the illustration.



Junos Space displays a table view of uploaded licenses, as shown in the following example.

Manage Licenses  

<input type="checkbox"/>	Name	Creation Date	Expiration Date	Serial	Node	File Path
<input checked="" type="checkbox"/>	Space- license.txt	2009-10-15T19:21	None	SPC-VA-BSE05	10.157.59.122	/var/cache/jboss /jnp/licenses

  Page 1 of 1   


Displaying 1 - 1 of 1 | Show 30  items

Table 11 on page 90 describes the fields in the Manage Licenses table.

Table 11: Fields in the Manage Licenses Table

Field	Description
Name	Name of the license file
Creation Date	Date and Time that the license is generated.
Expiration Date	Specifies the number of days the license is valid, starting from the Creation date.
File Path	The directory location of the license file.
Node	The IP address of the node that is displaying the license information.

Table 11: Fields in the Manage Licenses Table *(continued)*

Serial Number	<p>The serial number of the appliance/node.</p> <p>Each JA1500 Junos Space Appliance and Junos Space Virtual Appliance is represented as a unique node in the Junos Space fabric, and each appliance has a unique serial number.</p>
---------------	--

4. To show or hide columns in the table view:
 - a. Mouse over any column header, and click the down arrow button. The Licenses table pull-down menu is displayed.
 - b. Select **Columns** from the pull-down menu.
 - c. Select the check box for columns not currently displayed that you want to view. Clear the check box for columns that you want to hide.

Related Topics ■ Generating and Uploading the Junos Space License Key File on page 87

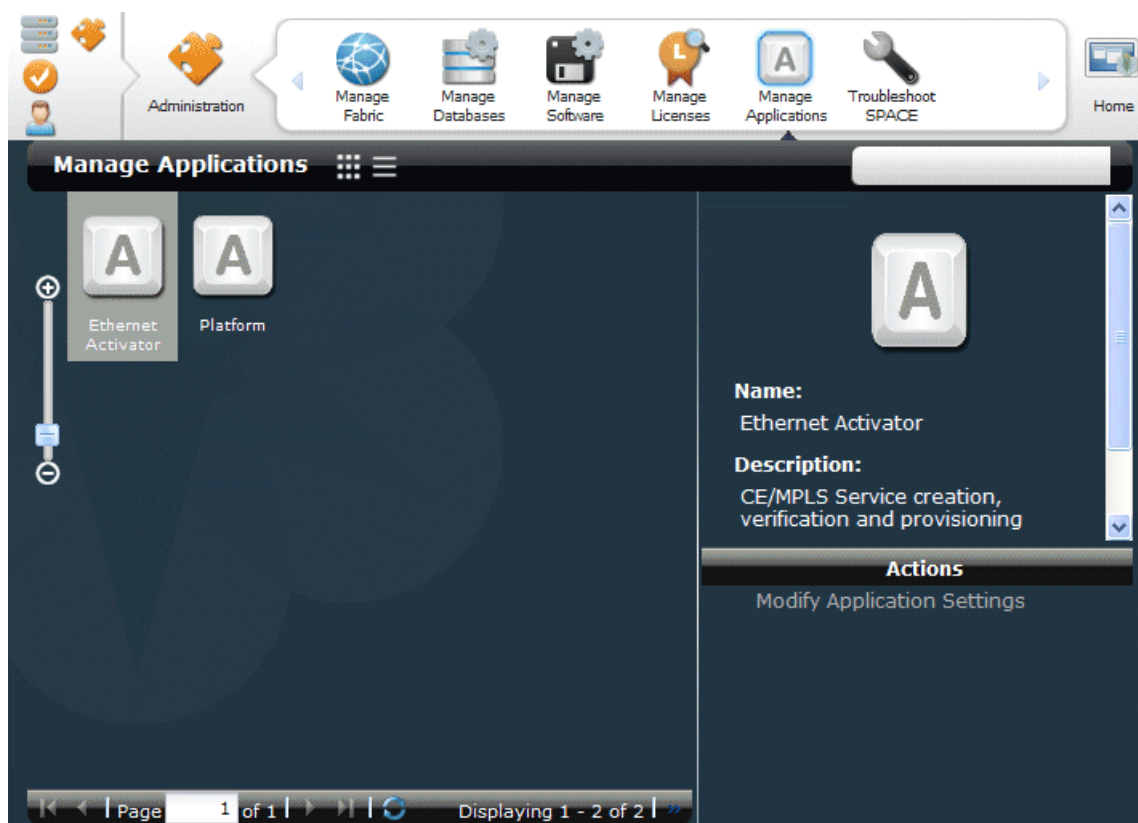
Application Management

- Application Management Overview on page 91
- Modifying Application Settings on page 93

Application Management Overview

In the Administration workspace, use the Manage Applications task to administer the settings of Junos Space applications. Each application has specific settings. You must have administrator privileges to manage applications.

To navigate to the Manage Applications page from the Space Platform, click Administration > Manage Applications. The Manage Application page appears as shown in Figure 1 on page 92.

Figure 1: Manage Applications Page

In the Manage Applications inventory panel, you display applications in both thumbnail and tabular views.

The Quick Look panel displays the application name and description.

The Actions panel displays the actions you can perform on selected applications. For example, you can modify specific application settings per application.

For more information about modifying application settings, see “Modifying Application Settings” on page 11.

- Related Topics**
- Application Management Overview on page 91
 - Application Chooser Overview on page 7

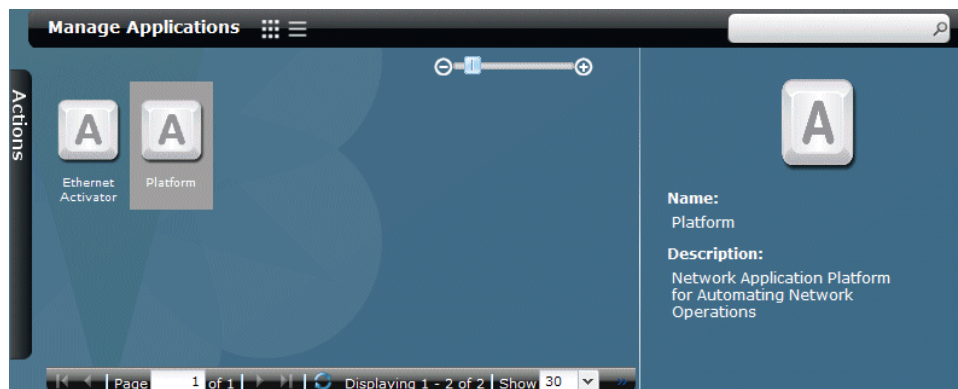
Modifying Application Settings

The administrator can modify the settings of Junos Space installed applications. Each application has specific configurable settings. Application settings are modified from the Platform Administration > Manage Applications task.

The Modify Application Settings action allows the administrator to optimize the operation of each application.

To modify application settings, follow these steps:

1. Navigate to the Platform application.
2. Click the Administration workspace icon in the navigation ribbon.
3. Click the Manage Application task icon in the navigation ribbon. The Manage Application inventory page appears. You can view Junos Space applications in thumbnail or tabular view by clicking the view icons in the inventory page banner.

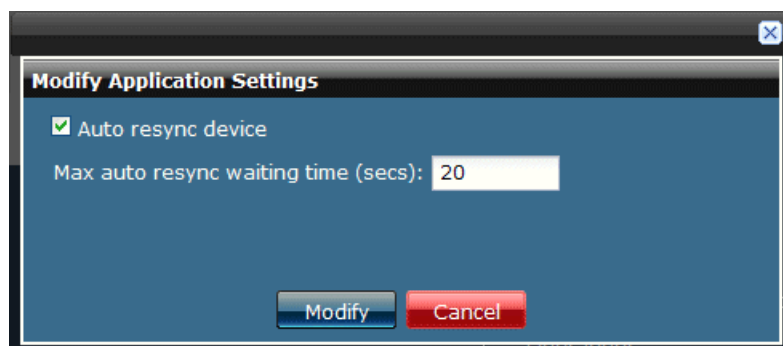


4. Select the application for which you want to modify settings. Information about the selected application appears in the Quick Look panel for both thumbnail and tabular view.



NOTE: The Ethernet Analyzer application settings are not available for this release.

5. Mouse over the Actions drawer to open it, then select Modify Application Settings. The Modify Application Settings dialog box appears. The Platform applications dialog box is shown here.



The Platform Modify Application Settings dialog box allows you to change the following settings:

- Auto resync device check box—Ensures that configuration changes on a connected Juniper Networks device is synchronized or imported to the application database.
- Max auto resync waiting time (secs)—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.

- Related Topics**
- Application Management Overview on page 91
 - Application Chooser Overview on page 7
 - Junos Space User Interface Overview on page 13

Troubleshooting

- System Status Log File Overview on page 95
- Customizing Node System Status Log Checking on page 97
- Customizing Node Log Files To Download on page 98
- Downloading the Troubleshooting Log File from the UI on page 98
- Downloading the Troubleshooting Log File In Maintenance Mode on page 100
- Downloading Troubleshooting System Log Files Using the CLI on page 101

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 95.

The system administrator can customize the information that is collected in the system log file. See “Customizing Node System Status Log Checking” on page 97.

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 96.

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 98.

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: 1.1.1.1Filesystem      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 97.

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 12 on page 96 lists the files included in the troubleshoot file.

Table 12: 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 98.)
- Maintenance Mode (See “Downloading the Troubleshooting Log File In Maintenance Mode” on page 100.)
- CLI mode (See “Downloading Troubleshooting System Log Files Using the CLI” on page 101.)

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 98.

- Related Topics**
- Maintenance Mode Overview on page 58
 - System Status Log File Overview on page 95
 - Customizing Node System Status Log Checking on page 97
 - Customizing Node Log Files To Download on page 98
 - Downloading the Troubleshooting Log File from the UI on page 98

- Downloading the Troubleshooting Log File In Maintenance Mode on page 100
- Downloading Troubleshooting System Log Files Using the CLI on page 101

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 Topics**
- Maintenance Mode Overview on page 58
 - System Status Log File Overview on page 95
 - Customizing Node Log Files To Download on page 98
 - Downloading the Troubleshooting Log File from the UI on page 98
 - Downloading the Troubleshooting Log File In Maintenance Mode on page 100
 - Downloading Troubleshooting System Log Files Using the CLI on page 101

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/mysqld.log /var/log/httpd/* /var/log/watchdog /var/log/messages
/var/log/SystemStatusLog > /dev/null");
...
```

- Related Topics**
- Maintenance Mode Overview on page 58
 - System Status Log File Overview on page 95
 - Customizing Node System Status Log Checking on page 97
 - Downloading the Troubleshooting Log File from the UI on page 98
 - Downloading the Troubleshooting Log File In Maintenance Mode on page 100
 - Downloading Troubleshooting System Log Files Using the CLI on page 101

Downloading the Troubleshooting Log File from the UI

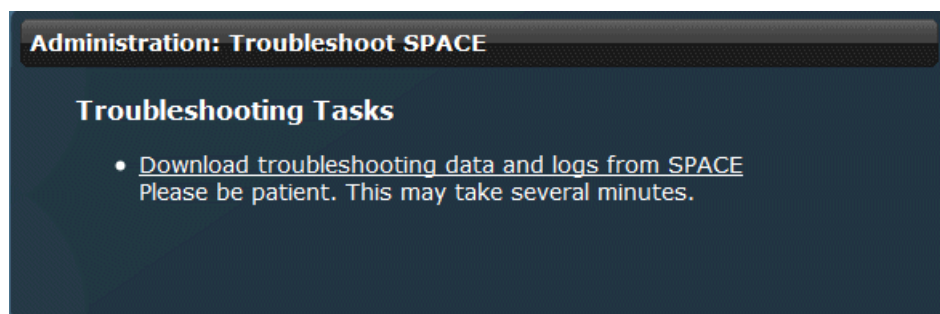
From the Administration workspace, the system administrator can download a troubleshooting file `troubleshoot.zip` that contains useful information for managing and monitoring the nodes in the system.

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 is displayed, as shown in Figure 2 on page 98.

Figure 2: Troubleshoot SPACE Page



3. Click on the hypertext link **Download troubleshooting data and logs from SPACE** to access the **troubleshoot.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.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 13 on page 99 lists the files included in the **troubleshoot.zip** file.

Table 13: Data and Log Files in troubleshoot.zip File

Description	Location
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/*
CPU/RAM/Disk statistics (during past 24 hours)	Not applicable

- Related Topics**
- Maintenance Mode Overview on page 58
 - System Status Log File Overview on page 95
 - Customizing Node System Status Log Checking on page 97
 - Customizing Node Log Files To Download on page 98
 - Downloading the Troubleshooting Log File In Maintenance Mode on page 100
 - Downloading Troubleshooting System Log Files Using the CLI on page 101

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.

To download the troubleshooting log file in maintenance mode, follow these steps:

1. Connect to an appliance in maintenance mode using the following URL.

<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.zip** file to the connected computer.
7. Click Log Out and Exit from Maintenance Mode.

- Related Topics**
- Maintenance Mode Overview on page 58
 - System Status Log File Overview on page 95
 - Customizing Node System Status Log Checking on page 97
 - Customizing Node Log Files To Download on page 98
 - Downloading the Troubleshooting Log File from the UI on page 98
 - Downloading Troubleshooting System Log Files Using the CLI on page 101

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 95.

This procedure includes the following tasks:

- Downloading a System Log File Using a USB Device on page 101
- Downloading System Log File Using SCP on page 102

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 don't 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 Topics**
- Maintenance Mode Overview on page 58
 - System Status Log File Overview on page 95
 - Customizing Node System Status Log Checking on page 97
 - Customizing Node Log Files To Download on page 98
 - Downloading the Troubleshooting Log File from the UI on page 98
 - Downloading the Troubleshooting Log File In Maintenance Mode on page 100

Part 4

Managing Users

- Role-Based Access Control on page 107
- Authenticating Users on page 115
- Monitoring Users on page 125

Chapter 7

Role-Based Access Control

- Role Based Access Control Overview on page 107
- Understanding How to Configure Users to Manage Objects in Junos Space on page 108
- Predefined Administrator Roles on page 109

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 controls 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 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 are 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 Topics**
- Understanding How to Configure Users to Manage Objects in Junos Space on page 108
 - Predefined Administrator Roles on page 109
 - Creating Users on page 115
 - Viewing User Statistics on page 125
 - Viewing Users on page 126

Understanding How to Configure Users to Manage Objects in Junos Space

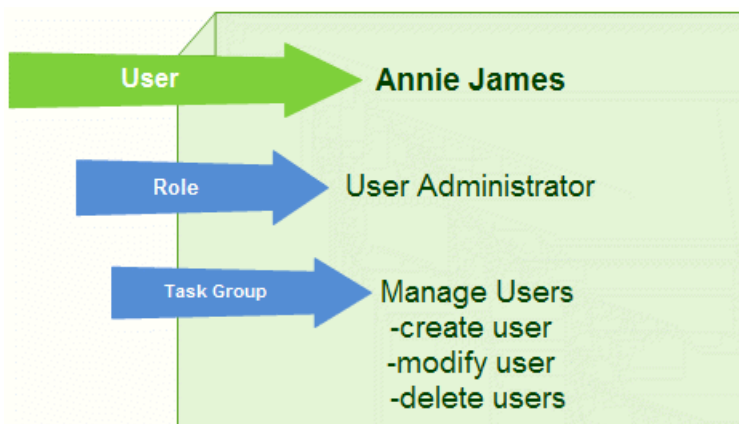
Junos Space is shipped with a super administrator that has full access to the Junos Space system. When you first log on to Junos Space with the default super administrator, you can perform all tasks and access all Junos Space system resources. The super administrator can create new users and assign roles 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 setup Junos Space, you can disable the super administrator, if necessary. However, before disabling the default super administrator, 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 109.

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 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 Topics**
- Role Based Access Control Overview on page 107
 - Creating Users on page 115
 - Viewing Users on page 126
 - Viewing User Statistics on page 125

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.

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 14 on page 110 shows the Junos Space predefined roles for the Network Application Platform.

Table 14: Predefined Roles for the Network Application Platform

Predefined Role	Task Group and Tasks	Workspace
User Administrator	<ul style="list-style-type: none"> ■ Manage Users <ul style="list-style-type: none"> ■ Create User ■ Modify User ■ Delete Users 	Users
Job Manager	<ul style="list-style-type: none"> ■ Manage Jobs <ul style="list-style-type: none"> ■ Cancel Job 	Job Management
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 ■ Manage Software <ul style="list-style-type: none"> ■ Upload Software ■ Install Software ■ Delete Software ■ Troubleshoot Space ■ Manage Applications <ul style="list-style-type: none"> ■ Modify Application Settings ■ Manage Licenses <ul style="list-style-type: none"> ■ Upload License 	Administration
Audit Log Administrator	<ul style="list-style-type: none"> ■ View Audit Logs <ul style="list-style-type: none"> ■ Archive/Purge 	Audit Logs
Super Administrator	All Junos Space task groups and tasks (See Platform > Users > Create Users user interface for the current roles.)	All Junos Space workspaces (See Platform > Users > Create Users user interface for the current roles.)

Table 14: Predefined Roles for the Network Application Platform *(continued)*

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 ■ View Physical Inventory ■ View Interfaces ■ Resynchronize with Network ■ SSH to Device ■ Secure Console 	Devices
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Table 15 on page 111 shows the Junos Space predefined roles for the Ethernet Activator application.

Table 15: Predefined Roles for Ethernet Activator 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 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 15: Predefined Roles for Ethernet Activator Application (continued)

Service Activator	<div><div>■</div><div>Manage Customers</div><div><div>■</div>Create Customer</div><div><div>■</div>Modify Customer</div><div><div>■</div>Delete Customers</div></div> <div><div>■</div>Manage Service Orders<div><div>■</div>Create P2P Service Order</div><div><div>■</div>Deploy Service Order</div><div><div>■</div>Delete Service Order</div><div><div>■</div>Create VPLS Service Order</div></div>
-------------------	---

■

Manage Services

■

Modify Service

■

Decommission Service

■

View Configuration Audit Results

■

Perform Configuration Audit

■

View Functional Audit Results

■

Perform Functional Audit

■

View Service Configuration

Table 16 on page 112 shows the Junos Space predefined roles for the Service Now application.

Table 16: Predefined Roles for Service Now Application

Predefined Role	Task Group and Tasks	Workspace
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Table 16: Predefined Roles for Service Now Application *(continued)*

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 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 ■ 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 16: Predefined Roles for Service Now Application *(continued)*

Service Now Read Only User	■ Administration	Administration
	■ Service Now Devices	Service Central
	■ Service Control	
	■ Incidents	
	■ View Tech Support Cases	
	■ JMB Errors	
	■ Information	
	■ Messages	
	■ Device Snapshots	
	■ Notifications	

Table 17 on page 114 shows the Junos Space predefined roles for the Campus Builder application.

Table 17: Predefined Roles for Campus Builder Application

Predefined Role	Task Group and Tasks	Workspace
Network Engineer	■ Port Profiles	EZ Campus Design
	■ Create Port Profile	
	■ Provision Port Profile	

- Related Topics**
- Role Based Access Control Overview on page 107
 - Understanding How to Configure Users to Manage Objects in Junos Space on page 108
 - Creating Users on page 115
 - Viewing Users on page 126
 - Viewing User Statistics on page 125

Chapter 8

Authenticating Users

- Creating Users on page 115
- Modifying a User on page 119
- Deleting Users on page 121
- Changing User Passwords on page 123

Creating Users

You can create users and assign roles to allow users access to Junos Space workspaces. 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.



NOTE: A user can access all the objects within the workspace that the assigned role controls.

- Creating a User Without Assigning A Role on page 115
- Creating a User with Roles on page 117

Creating a User Without Assigning A Role

You can create a user without assigning any roles, and then at a later date, use the **Modify User** option to assign roles to the user.

To create a new user account without assigning a role:

1. From the task ribbon, select the **Users** workspace.
2. From the task ribbon, select the **Manage Users** icon
3. From the task ribbon, select the **Create User** icon. The Create User dialog box is displayed.

4. 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 dash (-), underscore (_), apostrophe ('), letters, and numbers.
5. In the Password field, enter a password for the user account.
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.

6. In the Confirm Password field, reenter the password you entered in Step 5.
7. In the First Name field, enter the user's first name.
8. In the Last Name field, enter the user's last name.
9. In the Email field, enter the user's email address.
10. 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 JPG, PNG, and TIF file types.
 - b. Click the **Upload** button.
Junos Space saves the photo ID file for the user account.
11. Click **Create** to create the user account without any assigned roles.

The user account is created in Junos Space.

Creating a User with Roles

To create a new user with one or more roles:

1. From the task ribbon, select the **Users** workspace.
2. From the task ribbon, select the **Manage Users** icon.
3. From the task ribbon, select **Create User**. The Create User dialog box is displayed.

4. In the Login ID field, enter a login ID for the new Junos Space user.
The login ID cannot exceed 32 characters. Allowable characters include dash (-), underscore (_), apostrophe ('), letters, and numbers.
5. In the Password field, enter a password for the user account.
The password must include a minimum of two numbers or symbols and must be from 6 to 31 characters.



NOTE: All passwords in Junos Space are case-sensitive.

6. In the Confirm Password field, reenter the password you entered in the previous step.
7. In the First Name field, enter the user's first name.

8. In the Last Name field, enter the user's last name
9. In the Email field, enter the user's email address.
10. 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 JPG, PNG, and TIF file types.
 - b. Click the **Upload** button.
Junos Space saves the photo ID file with the user account.
11. To assign roles to the new user, use either of the following options:
 - To select roles from the Available Roles column:
 - a. Select one or more roles from the Available Roles column.
 - b. Click the right arrow to move the roles to the Selected Roles column.



TIP: You can also move a role to the Selected Roles column by double-clicking on the role.

- To select roles for a new user by using the roles of an existing user:



TIP: You can enter one or more characters in the **Use Same Roles Assigned to** field to retrieve a filtered list of users with role assignments that you might want to use.

- a. Select the check box **Use Same Roles Assigned to**.
 - b. From the drop-down menu, select the name of the user whose role assignment you want to assign to the new user.
 - c. Optional: To modify the role assignments, add or remove roles from the Selected Roles column.
12. Click **Create** to create the user account with the assigned roles.
The new user account is created in Junos Space and can be viewed from the Manage Users inventory page.

- Related Topics**
- Understanding How to Configure Users to Manage Objects in Junos Space on page 108
 - Predefined Administrator Roles on page 109
 - Changing User Passwords on page 123
 - Modifying a User on page 119
 - Deleting Users on page 121
 - Viewing Users on page 126

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. From the task ribbon, select the **Users** workspace.
2. From the task ribbon, select the **Manage Users** icon.
3. From the inventory panel, select the user account that you want to modify.

User account information is displayed in the **Quick Look** panel.



NOTE: You can modify only one user account at a time.

4. From the Actions drawer, select **Modify User**. The Manage Users dialog box is displayed.

Users: Manage Users

Login ID:

Password:

Confirm Password:

First Name:

Last Name:

Email:

Image File:

☐ Use Same Roles Assigned to

Available Roles

Selected Roles

- User Administrator
- Job Manager
- System Administrator
- Audit Log Administrator
- Super Administrator
- Device Manager
- Service Designer
- Service Manager
- Service Activator
- Service Now Admin

5. You can change the password, first name, last name, email 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.
 - To change the user name, enter a new name in the First Name and/or Last Name fields.
 - To change the email account, enter a new email address in the Email field.
 - To modify the image file:
 - a. Use the **Browse** button to locate the new user photo ID file.
You can upload JPG, PNG, and TIF file types.
 - 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.
6. Click **Modify** to save your changes to the user account.
Junos Space updates the user account with the changes you specified.

- Related Topics**
- Understanding How to Configure Users to Manage Objects in Junos Space on page 108
 - Creating Users on page 115
 - Deleting Users on page 121
 - Viewing Users on page 126

Deleting Users

When a Junos Space user leaves your organization or no longer needs access to the network objects that Junos Space manages, you can delete the existing user account.

To delete one or more users:

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

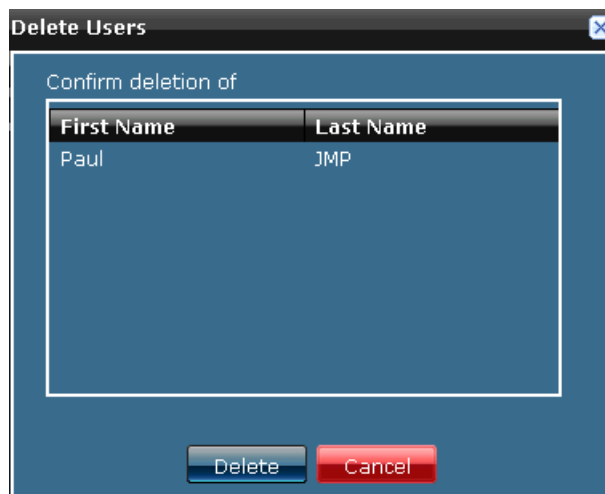
The inventory panel displays all Junos Space users.

3. Optional: To view detailed user account information before deleting a user:
 - a. Double-click on the thumbnail (or table row) in the inventory panel. The following illustration shows the User Detail Summary window.



- b. Click **OK** to close the User Detail Summary window.
4. In the inventory panel, select one or more users to delete.
5. In the Actions drawer, click **Delete Users**.

The Delete Users confirmation window is displayed.



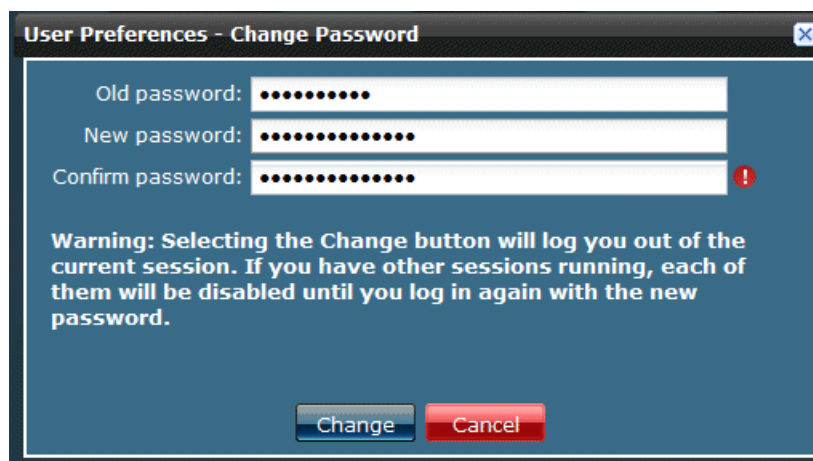
6. Verify the list of users that you want to delete, and click **Delete** to delete all selected user accounts.

- Related Topics**
- Creating Users on page 115
 - Modifying a User on page 119
 - Viewing Users on page 126

Changing User Passwords

Any logged in user 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.

To change your user password, follow these steps:

A screenshot of a web-based dialog box titled "User Preferences - Change Password". The dialog has a dark blue header bar with the title and a close button (X). The main area is light blue and contains three password input fields: "Old password:", "New password:", and "Confirm password:". Each field is filled with black dots. A red exclamation mark icon is visible next to the "Confirm password:" field. Below the fields is a warning message: "Warning: Selecting the Change button will log you out of the current session. If you have other sessions running, each of them will be disabled until you log in again with the new password." At the bottom of the dialog are two buttons: "Change" (blue) and "Cancel" (red).

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 Topics

Chapter 9

Monitoring Users

- Viewing User Statistics on page 125
- Viewing Users on page 126

Viewing User Statistics

You can view the percentage and the number of Junos Space users that have been assigned to a role.

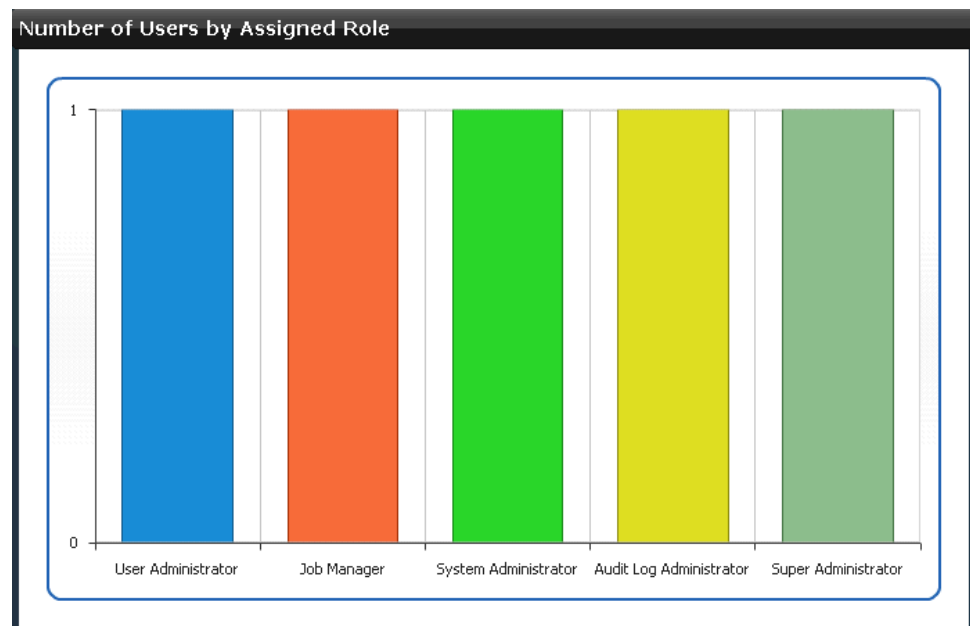
- Viewing the Number of Users Assigned by Role on page 125

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 Topics**
- Role Based Access Control Overview on page 107
 - Viewing Users on page 126
 - Creating Users on page 115
 - Deleting Users on page 121

Viewing Users

You can view user information as graphics or as a table. By default, Junos Space displays thumbnail representations of users.

- Viewing Users as Graphics on page 126
- Viewing Users in a Table on page 127

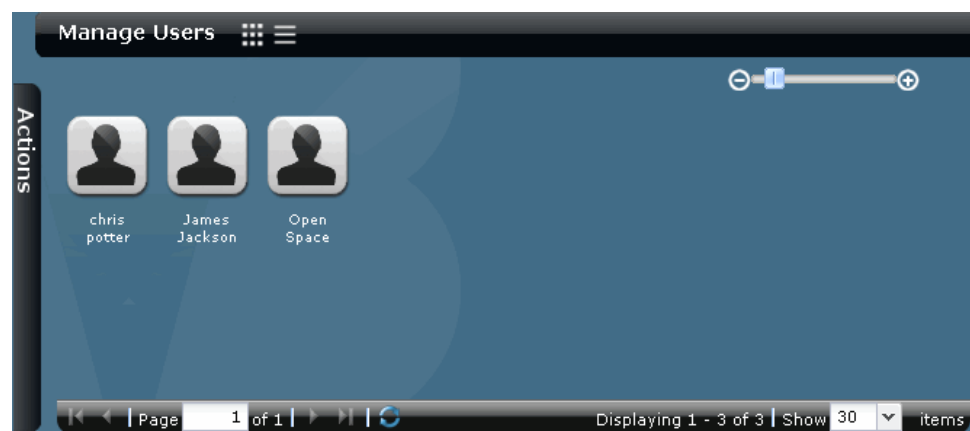
Viewing Users as Graphics

You can view thumbnail, quick look, and detailed information about Junos Space users.

To display a graphical view of users:

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

The task ribbon displays all available tasks for the Manage User task group. The inventory panel displays thumbnails of users in alphabetical order by first name, as shown in the following example.



3. You can use the following options to view user information:

- To restrict the display of users, enter a search criterion of one or more characters in the Search bar and press Enter.
All users that match the search criterion are shown in the main display area.
- To view summary information for a user, click on the thumbnail.
The Quick Look panel displays summary information, including the Login ID, first and last name, and email address.
- To view detailed information for a user, double-click on the thumbnail.
The User Detail Summary window displays the user's account information and assigned roles, as shown in the following example.



Viewing Users in a Table

You can view the inventory of Junos Space users as a table.

To display a table of users:

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



The user inventory panel displays a table view of users.

User Name	First Name	Last Name	Email
jwhite	jack	white	jackw@juniper.net
super	Open	Space	super@juniper.net

After you select the table view once, the table view is displayed each time you select the **Manage Users** task category.

4. You can use the following options to view user information:
 - To view summary information for a user, click on the table row.
The Quick Look panel displays summary information, including the Login ID, first and last name, and email address.
 - To view detailed information for a user, double click on the table row.
The User Detail Summary screen displays information about the user's account and assigned roles.

- Related Topics**
- Understanding How to Configure Users to Manage Objects in Junos Space on page 108
 - Creating Users on page 115
 - Deleting Users on page 121
 - Modifying a User on page 119
 - Viewing User Statistics on page 125

Part 5

Managing Devices

- Overview of Device Management on page 131
- Discovery on page 133
- Inventory on page 149
- Secure Console on page 153
- Monitoring Devices on page 159

Chapter 10

Overview of Device Management

- Device Management Overview on page 131

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.

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 Topics**
- Device Discovery Overview on page 133
 - Device Inventory Management Overview on page 149
 - Discovering Devices on page 136
 - Understanding How Junos Space Automatically Resynchronizes Managed Devices on page 134
 - Viewing Managed Devices on page 159

Chapter 11

Discovery

- Discovery Overview on page 133
- Managing Devices on page 136

Discovery Overview

- Device Discovery Overview on page 133
- Understanding How Junos Space Automatically Resynchronizes Managed Devices on page 134

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.

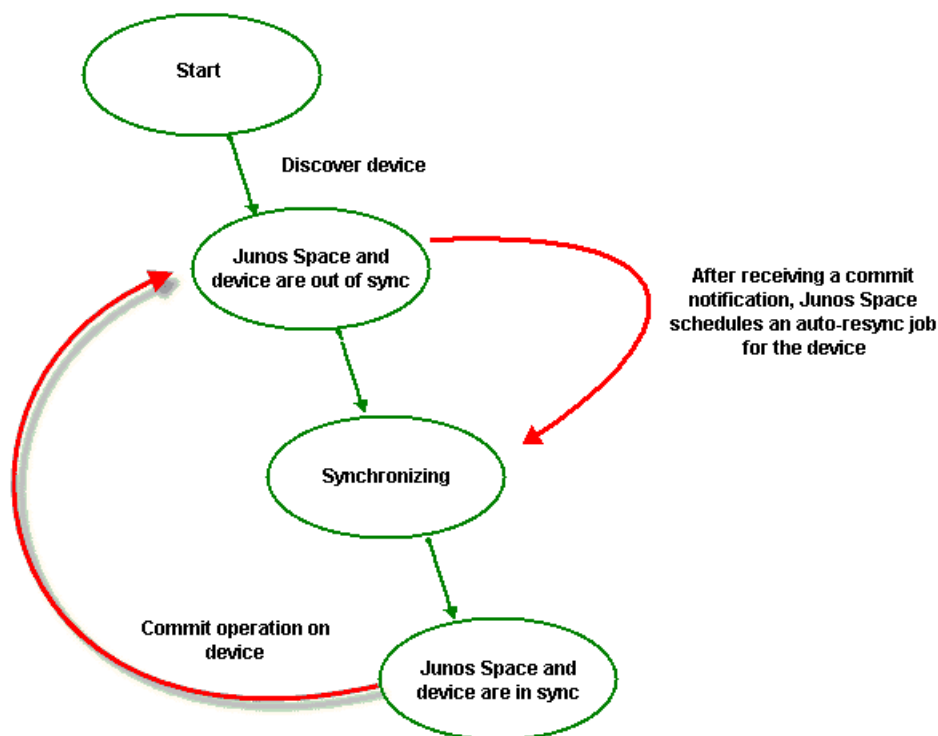
- Related Topics**
- Discovering Devices on page 136
 - Viewing Managed Devices on page 159
 - Understanding How Junos Space Automatically Resynchronizes Managed Devices on page 134
 - Resynchronizing Managed Devices on page 144
 - Device Management Overview on page 131
 - Device Inventory Management Overview on page 149

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 11.

- Related Topics**
- Resynchronizing Managed Devices on page 144
 - Device Discovery Overview on page 133
 - Device Inventory Management Overview on page 149
 - Viewing Managed Devices on page 159

Managing Devices

- Discovering Devices on page 136
- Resynchronizing Managed Devices on page 144
- Deleting Devices on page 146

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 and/or SNMP), and credentials to connect to each device.

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 should be 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 will manage the device and will manage the redundancy as well. If the master RE fails, the backup RE takes over and Junos Space manages the transition automatically without bringing down the device.



NOTE: Junos Space does not support SRX device clusters.

To discover and synchronize devices, complete the following tasks:

1. Specifying Device Targets on page 137
2. Specifying Probes on page 138
3. Specifying Credentials on page 141

Specifying Device Targets

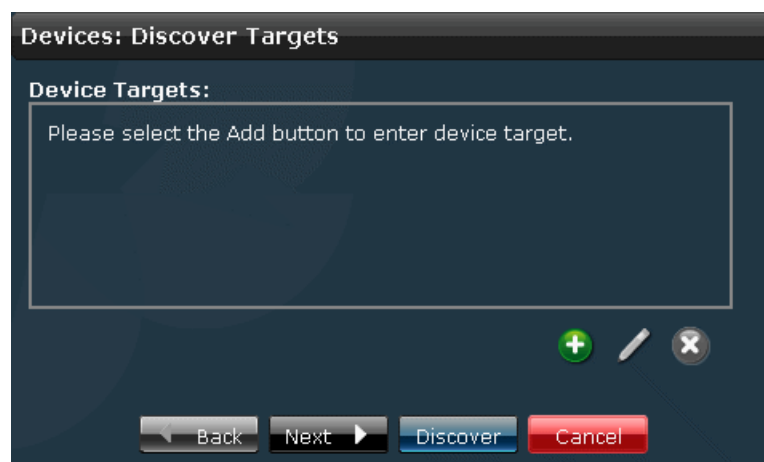
To specify the device targets that you want Junos Space to discover:

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.

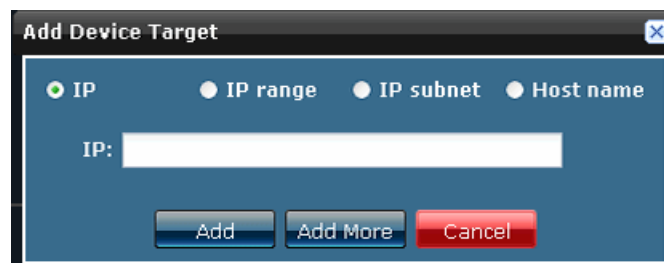
3. From the task ribbon, click the **Discover Targets** icon.

Junos Space displays the Discover Targets window.



4. Click the Add icon.

The Add Device Target dialog box is displayed.



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.
5. 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.

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

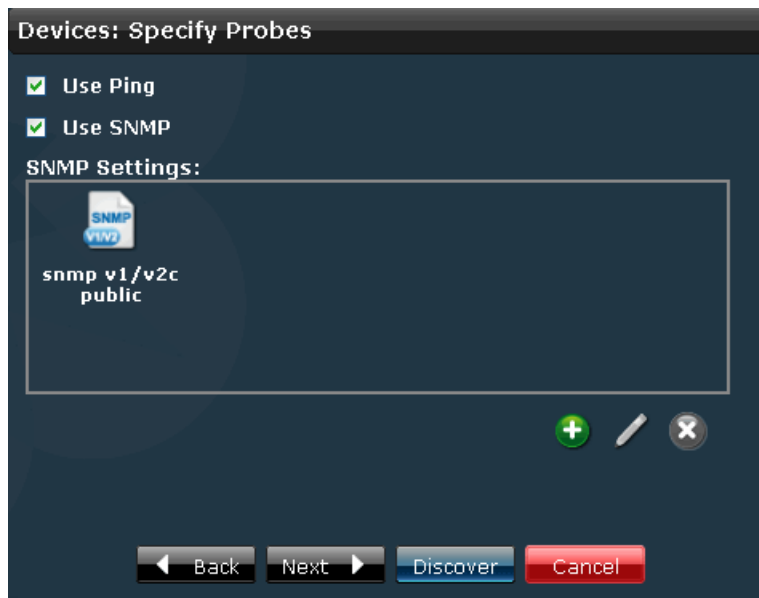
In the next task, you specify a probe method to connect to and discover the device targets.

Specifying Probes

To configure the method Junos Space will use to discover the device targets:

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

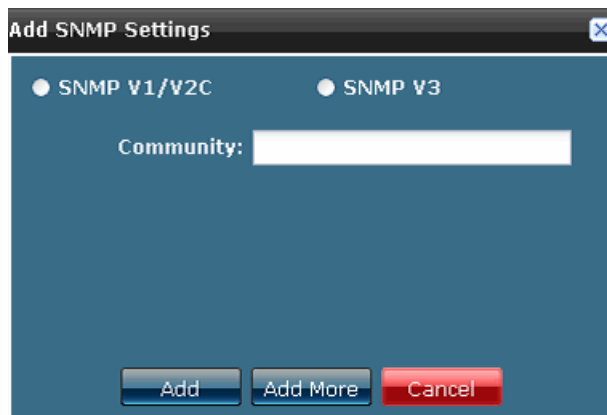
- If SNMP is not configured for the device, select the check box **Use Ping** , and clear the check box **Use SNMP**.

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.



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 image shows a dialog box titled "Add SNMP Settings" with a close button in the top right corner. Inside the dialog, there are two radio buttons: "SNMP V1/V2C" (which is unselected) and "SNMP V3" (which is selected). Below the radio buttons, there are five input fields: "Username:" (a text box), "Privacy type:" (a dropdown menu showing "Please select ..."), "Privacy password:" (a text box), "Authentication type:" (a dropdown menu showing "Please select ..."), and "Authentication password:" (a text box). At the bottom of the dialog, there are three buttons: "Add" (blue), "Add More" (blue), and "Cancel" (red).

- 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:

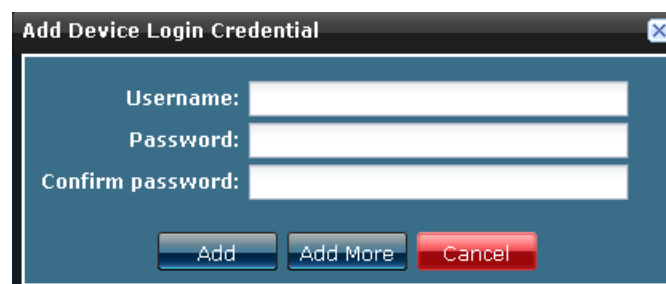
1. From the task ribbon, select the **Devices** workspace, and then click the **Discover Devices** icon.
2. From the task ribbon, select the **Specify Credentials** icon.

The Specify Credentials window is displayed.



3. Click the Add icon.

The Add Device Login Credential dialog box is displayed.



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.



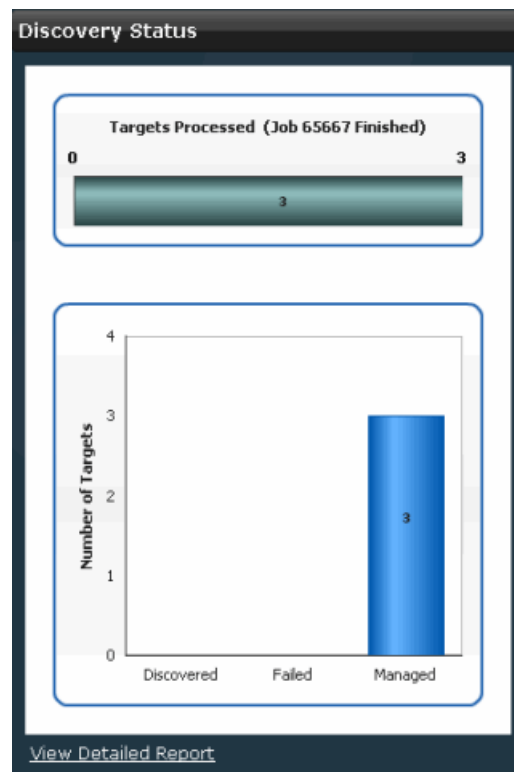
NOTE: The selected time in the scheduler corresponds to Junos Space server time but is mapped to the local time zone of the client computer.

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



NOTE:

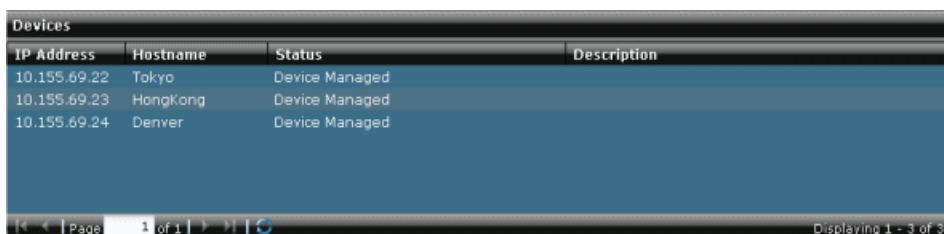
The Discovery Status window, shown in the following illustration, displays the progress of discovery in real-time. Click on any bar in the chart to view information about devices currently managed, discovered, or for which discovery failed.



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, as shown in the following example.



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.
 - 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.



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

Page 1 of 1 | Displaying 1 - 7 of 7 | Show 30 items

- Related Topics**
- Viewing Managed Devices on page 159
 - Viewing Scheduled Jobs on page 177
 - Resynchronizing Managed Devices on page 144
 - Understanding How Junos Space Automatically Resynchronizes Managed Devices on page 134
 - Viewing Hardware Inventory for Devices on page 150
 - Viewing Physical Interfaces for Devices on page 151

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. Select one or more devices to resynchronize:
 - To select a single device, from the Manage Devices inventory panel, click on the thumbnail image for the device.
 - To select multiple devices, select **Multiple** from the top of the Quick Look panel, then select the thumbnail images for the devices that you want to resynchronize from the Manage Devices inventory panel. The selected devices are displayed in the Quick Look panel, as shown in the following example.



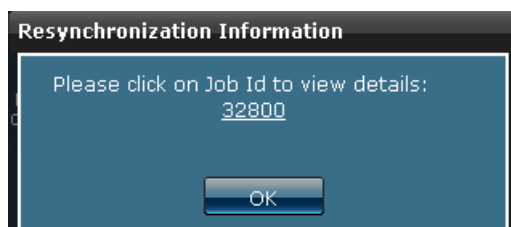
4. From the Actions drawer, click **Resynchronize with Network** to reimport the devices in Junos Space.

Junos Space displays the Resynchronize Devices window.



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 11.

- Related Topics**
- Understanding How Junos Space Automatically Resynchronizes Managed Devices on page 134
 - Device Inventory Management Overview on page 149
 - Viewing Managed Devices on page 159
 - Viewing Hardware Inventory for Devices on page 150
 - Viewing Physical Interfaces for Devices on page 151

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:

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 thumbnails of the devices managed in Junos Space.



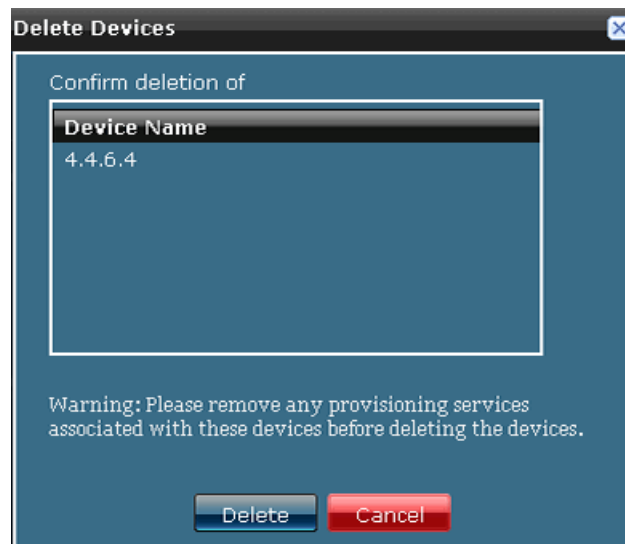
3. Optional: To view summary information for a device before deleting, select on the device. The Quick Look panel displays the summary information for the selected device, as shown in the example.



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

4. From the Manage Devices inventory panel, select one or more devices to delete.
To delete more than one device at a time, select each device that you want to delete from the Device Management inventory view.
5. 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](#).
6. 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 Topics**
- Viewing Managed Devices on page 159
 - Viewing Hardware Inventory for Devices on page 150
 - Viewing Physical Interfaces for Devices on page 151
 - Discovering Devices on page 136

Chapter 12

Inventory

- Overview of Device Inventory on page 149
- Viewing Device Inventory on page 150

Overview of Device Inventory

- Device Inventory Management Overview on page 149

Device Inventory Management Overview

You use the device inventory to view information about the hardware and software components of each device that Junos Space manages. You can also view the operational and administrator status for the physical interfaces on which devices are run.

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.

- Related Topics**
- Understanding How Junos Space Automatically Resynchronizes Managed Devices on page 134
 - Resynchronizing Managed Devices on page 144
 - Viewing Hardware Inventory for Devices on page 150
 - Device Management Overview on page 131
 - Device Discovery Overview on page 133

Viewing Device Inventory

- Viewing Hardware Inventory for Devices on page 150
- Viewing Physical Interfaces for Devices on page 151

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.

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 RE	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)
Xcvr_0		740-013111 (REV 01)	7351693	SFP-T
Xcvr_1		740-013111 (REV 01)	7351258	SFP-T
Xcvr_2		740-013111 (REV 01)	7351312	SFP-T
Xcvr_3		740-013111 (REV 01)	7351640	SFP-T
Xcvr_4		740-013111 (REV 01)	7351358	SFP-T
Xcvr_5		740-013111 (REV 01)	7351448	SFP-T
Xcvr_6		740-013111 (REV 01)	7351265	SFP-T
Xcvr_7		740-013111 (REV 01)	7351369	SFP-T
Xcvr_8		740-013111 (REV 02)	9012993	SFP-T
Xcvr_9		740-013111 (REV 01)	7351299	SFP-T

Table 18 on page 151 describes the information displayed in the device inventory panel.

Table 18: 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.
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.

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

- Related Topics**
- Viewing Managed Devices on page 159
 - Viewing Physical Interfaces for Devices on page 151
 - Resynchronizing Managed Devices on page 144
 - Understanding How Junos Space Automatically Resynchronizes Managed Devices on page 134

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:

- From the task ribbon, select the **Devices** workspace.
- 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.

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	Ethernet	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	qe-0/1/0		00:22:83:d9:d8:1	up	up	Ethernet	full-duplex	1000	1514

Table 19 on page 152 describes the information displayed for the physical Interfaces.

Table 19: 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-ifpc/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.
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.

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

- Related Topics**
- Viewing Managed Devices on page 159
 - Viewing Hardware Inventory for Devices on page 150

Chapter 13

Secure Console

- Connecting to a Device on page 153

Connecting to a Device

- Secure Console Overview on page 153
- Connecting to a Device From Secure Console on page 153

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 Topics**
- Connecting to a Device From Secure Console on page 153

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 154
- Connecting to an Unmanaged Device on page 155

Connecting to a Managed Device

To open an SSH session to connect to an 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.

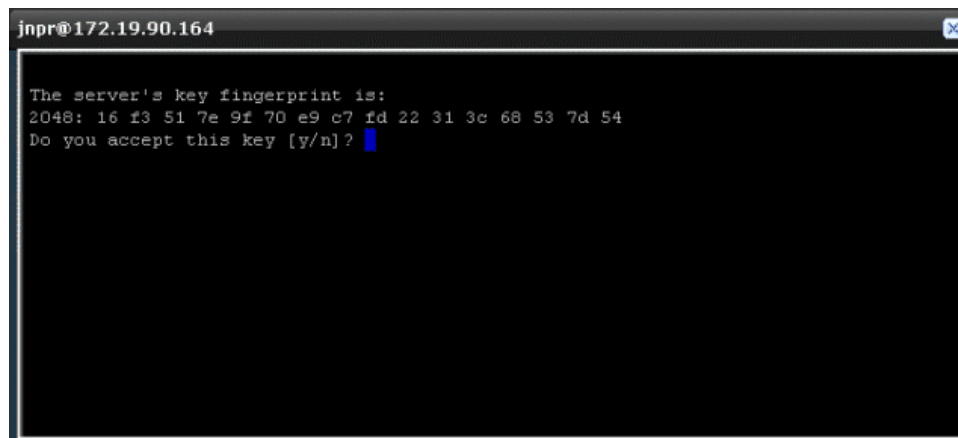
To view the managed devices:

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.

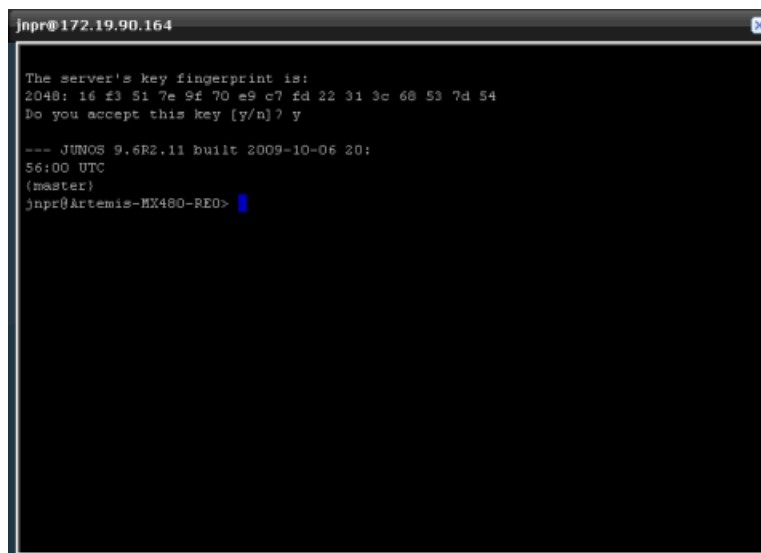
3. Select a device by clicking on the thumbnail image for the device or selecting the table row for the device.
4. In the Actions drawer, click **Secure Console**.

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:

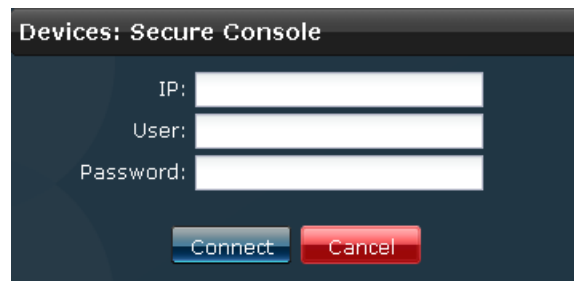
```
set system services ssh protocol-version v2
```

- The status of the managed device must be “UP”
- A valid user name and password is created on the device.

To view the managed devices:

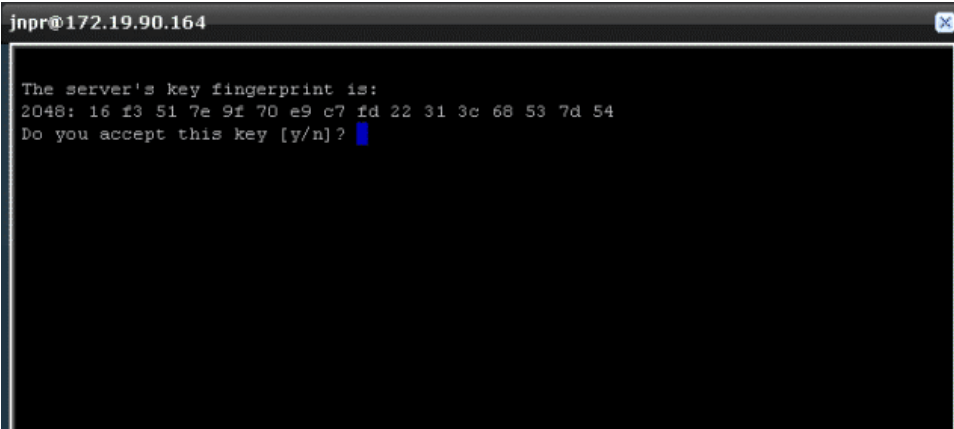
1. From the task ribbon, select the **Devices** workspace.
2. From the task ribbon, select the **Secure Console** icon.

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.



```

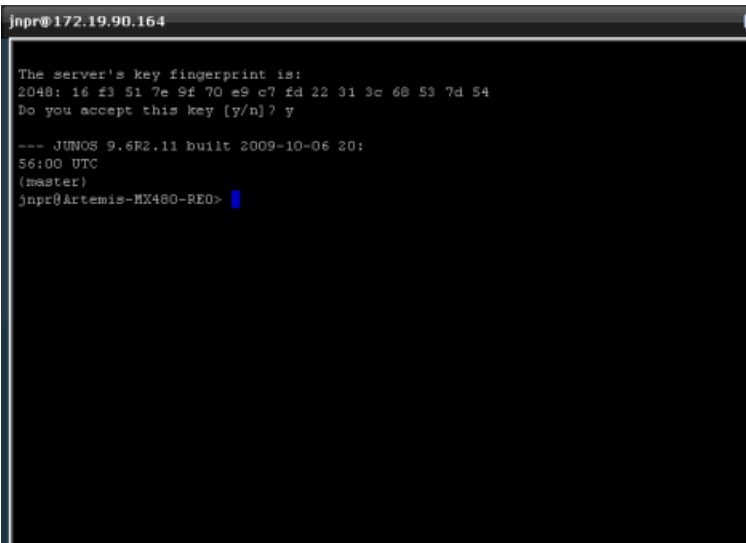
jnpr@172.19.90.164

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.



```

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 Topics ■ Secure Console Overview on page 153

Chapter 14

Monitoring Devices

- Viewing Managed Devices on page 159
- Viewing Device Statistics on page 164

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 159
- Viewing Devices in a Table on page 161

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 20 on page 160 describes the connection status icons.

Table 20: Device Connection Status Icon

Icon	Description
	Connection is up—The device is connected to Junos Space and is running properly. NOTE: Before you can update a device from Junos Space (deploy service orders), the device connection must be up.
	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.
	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.

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, click on the thumbnail.
Junos Space displays device information in the Quick Look panel



- 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.

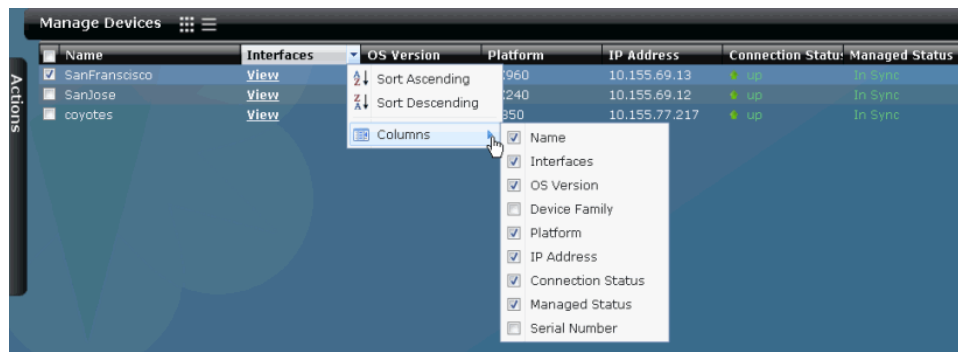
Name	Interfaces	OS Version	Platform	IP Address	Connection Status	Managed Status
<input checked="" type="checkbox"/> SanFrancisco	View	10.1R1.1	MX960	10.155.69.13	▲ up	In Sync
<input type="checkbox"/> SanJose	View	10.1R1.7	MX240	10.155.69.12	▲ up	In Sync
<input type="checkbox"/> coyotes	View	9.6R3.2	J6350	10.155.77.217	▲ up	In Sync

Table 21 on page 162 describes the fields displayed in the inventory window.

Table 21: 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 (not displayed by default)	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 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.
4. 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, click in the row .
Junos Space displays device information in the Quick Look panel



- 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, double-click on the table row for the device, or select the row for the device, and click **View Interfaces** from the Actions drawer.

- Related Topics**
- Viewing Device Statistics on page 164
 - Viewing Hardware Inventory for Devices on page 150
 - Viewing Physical Interfaces for Devices on page 151
 - Discovering Devices on page 136

Viewing Device Statistics

You can view the number of devices by platform, the number of Junos family devices by release, and the connection status for devices in your managed network.

This topic includes the following tasks:

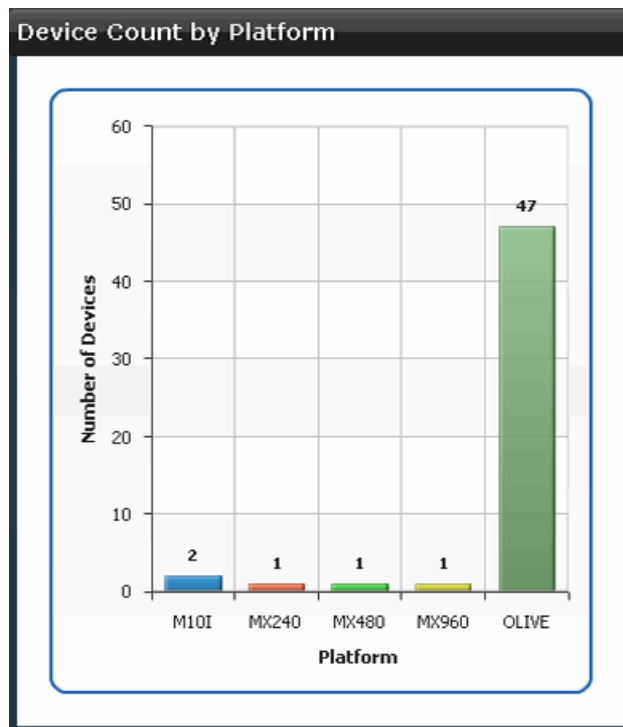
- Viewing the Number of Devices by Platform on page 164
- Viewing Connection Status for Devices on page 165
- Viewing Devices by Junos Release on page 166

Viewing the Number of Devices by Platform

To view the number of devices by device platform:

1. From the task ribbon, select the **Devices** workspace.

Junos Space retrieves and displays the number of devices by platform, as shown in the following example.



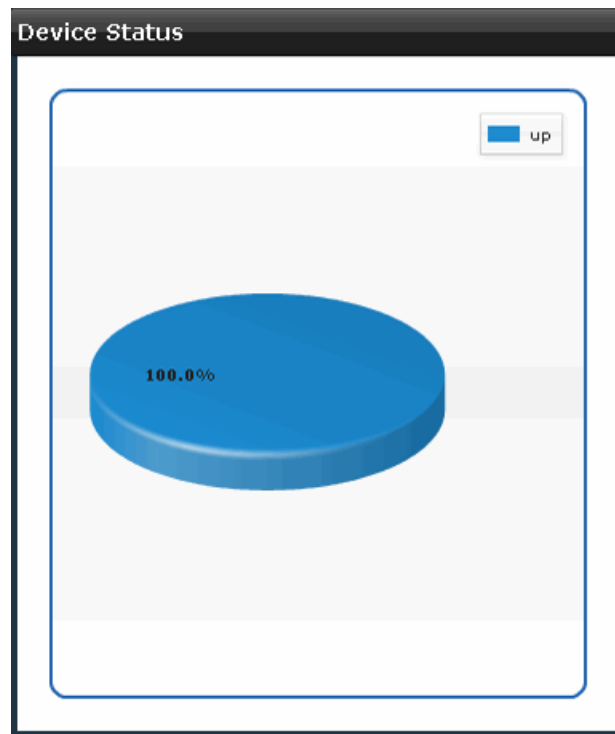
- Each vertical bar in the chart displays the number of managed devices for a platform.
- To display an inventory of devices for a specific platform, double-click on the vertical bar.

Viewing Connection Status for Devices

To view the percentage and number of devices that are connected and down:

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

Junos Space retrieves and displays device connection status, as shown in the following example.



The pie chart displays the connection status for all managed devices. The up or down status is expressed as a percentage of the total number of devices.

2. To view the number of devices that are connected or down, mouse over a segment in the chart.

Junos Space displays the number of devices that are connected or down.

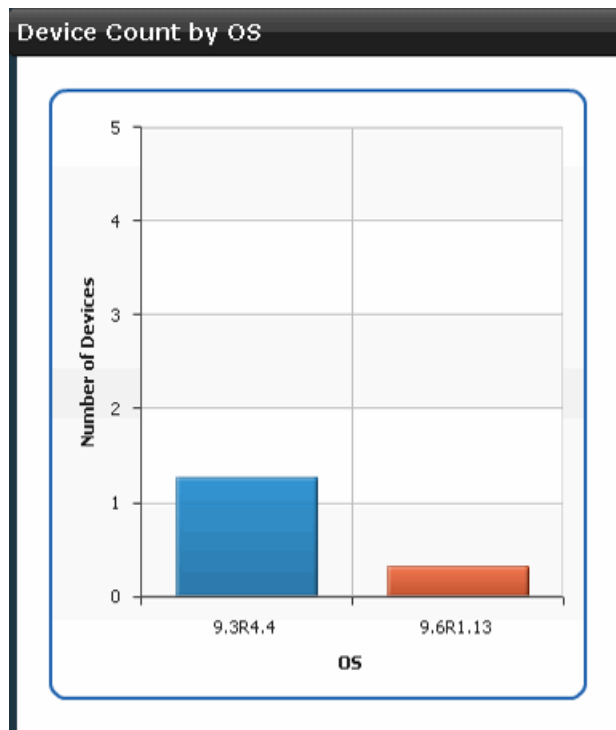
3. To display the inventory view of devices that are up or down, as represented in segments of the pie chart, double-click on a segment.

Viewing Devices by Junos Release

To view the number of devices by Junos release:

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

Junos Space retrieves and displays the number of devices by Junos release, as shown in the following example.



2. To display an inventory of devices for a specific Junos release, double-click on a vertical bar.

- Related Topics**
- Viewing Managed Devices on page 159
 - Viewing Hardware Inventory for Devices on page 150
 - Discovering Devices on page 136

Part 6

Managing Jobs

- Job Management Overview on page 171
- Managing Jobs on page 173
- Monitoring Jobs on page 175

Chapter 15

Job Management Overview

- Job Management Overview on page 171

Job Management Overview

In Junos Space, 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:

- AuditLog Archive and Purge
- Backup Database
- Configuration Audit
- Decommission Service
- Deploy Service
- Discover Network Elements
- Functional Audit
- Install AI-Scripts
- Prestage Device

- Provision Port Profile
- Restore Database
- Resync Network Elements
- Role Assignment
- Uninstall AI-Scripts

- Related Topics**
- Viewing Scheduled Jobs on page 177
 - Viewing Statistics for Scheduled Jobs on page 175
 - Canceling a Job on page 173

Chapter 16

Managing Jobs

- Canceling a Job on page 173

Canceling a Job

In some cases, you might need to cancel a job. For example, you can cancel jobs that are scheduled but that you don't want to run, or jobs in-progress that are hanging or incapable of completing and therefore 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 that is in progress:

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

The inventory panel displays thumbnails of scheduled jobs in order by scheduled start time.

3. Select the scheduled or in-progress job that you want to cancel.
4. In the actions panel, select **Cancel Job**.

When the Cancel Job operation completes, the inventory view displays the Job State CANCELLED.

- Related Topics**
- Viewing Statistics for Scheduled Jobs on page 175
 - Job Management Overview on page 171
 - Viewing Your Jobs

Chapter 17

Monitoring Jobs

- Viewing Statistics for Scheduled Jobs on page 175
- Viewing Scheduled Jobs on page 177

Viewing Statistics for Scheduled Jobs

You can view average execution times for scheduled jobs and information about the state and types of jobs that are run.

This topic includes the following tasks:

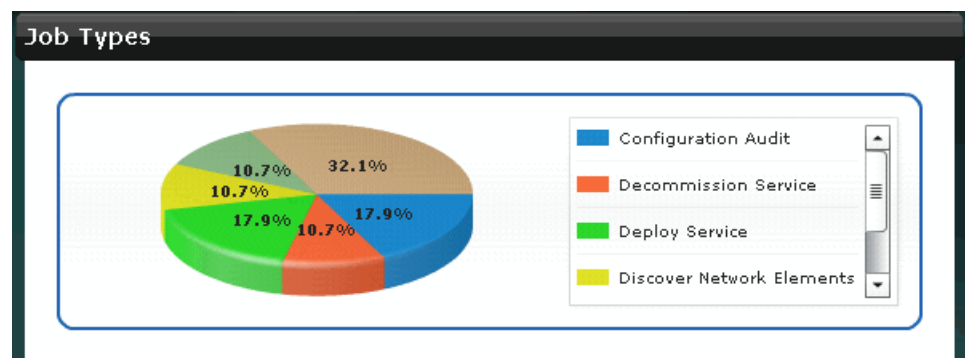
- Viewing the Types of Jobs That Are Run on page 175
- Viewing Average Execution Times for Jobs on page 176
- Viewing the State of Jobs That Have Run on page 176

Viewing the Types of Jobs That Are Run

To view the types of scheduled jobs that are run:

1. From the task ribbon, select the **Jobs** workspace.

Junos Space displays the job types for all jobs that have run, as shown in the following illustration.



Each segment of the pie chart displays a job type and the percentage of time a job type was run.

2. To view the number of jobs of a specific type that were run, mouse over the segment of the pie chart that represents the job type.

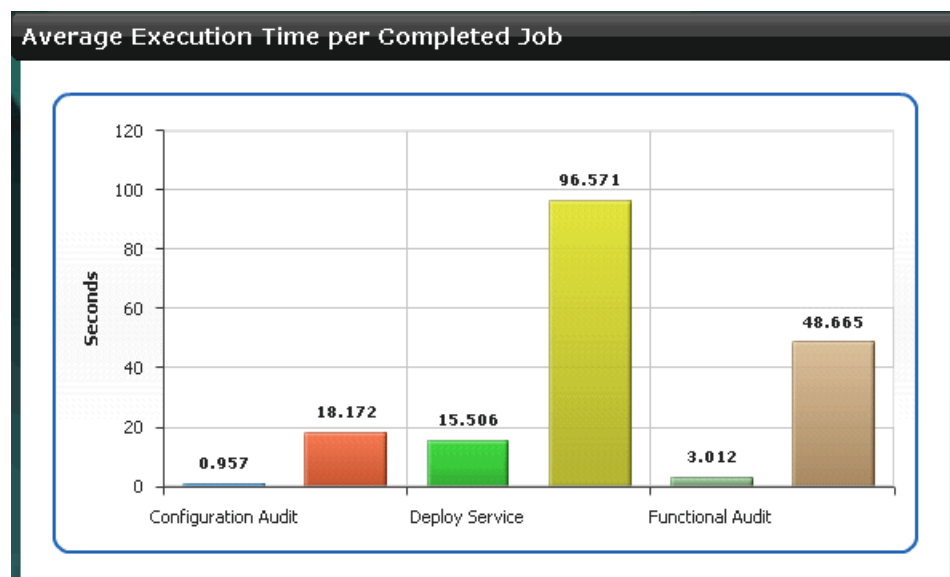
3. To view the inventory of jobs by job type, double-click on the segment of the pie chart that represents the job type.

Viewing Average Execution Times for Jobs

To view the average execution times for scheduled jobs:

1. From the task ribbon, select the **Jobs** workspace.

Junos Space displays the average execution time per completed job, as shown in the following illustration



Each vertical bar represents a type of job, such as discovering devices, deploying services, prestaging devices, and so forth. The average execution time for each job type (represented in seconds on the y axis) is displayed above the vertical bar for the job type.

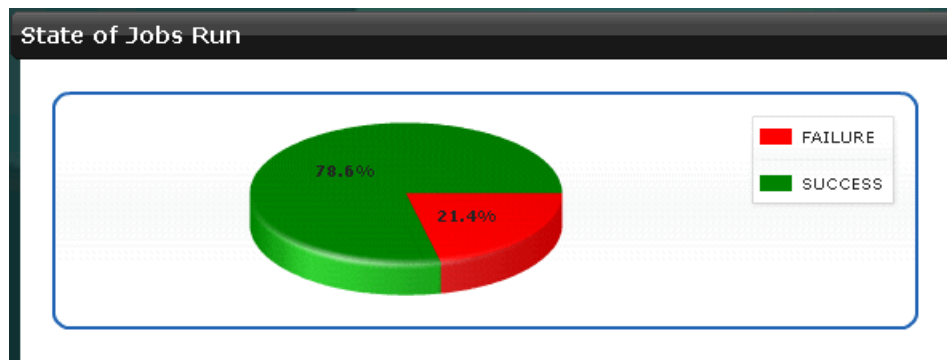
2. To see an inventory of the completed jobs for a specific job type, double-click on a vertical bar.

Viewing the State of Jobs That Have Run

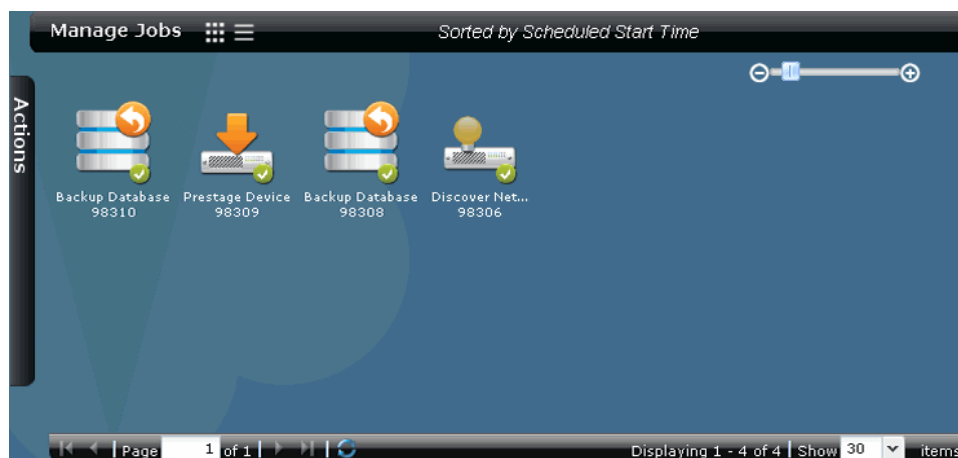
To view the state of scheduled jobs that have run:

1. From the task ribbon, select the **Jobs** workspace.

Junos Space displays the state of jobs that have run, as shown in the following illustration.



2. To view the number of jobs that succeeded or failed, mouse over a segment of the pie chart.
3. To display an inventory of jobs by job success or failure, double-click on the segment of the pie chart. For example, the following illustration shows thumbnails of all jobs that were successfully run.



- Related Topics**
- Viewing Scheduled Jobs on page 177
 - Job Management Overview on page 171

Viewing Scheduled Jobs

You can view scheduled jobs in Junos Space as graphics or as tables. By default, Junos Space displays thumbnail representations of jobs.

- Viewing Jobs as Graphics on page 177
- Viewing Jobs in a Table on page 180

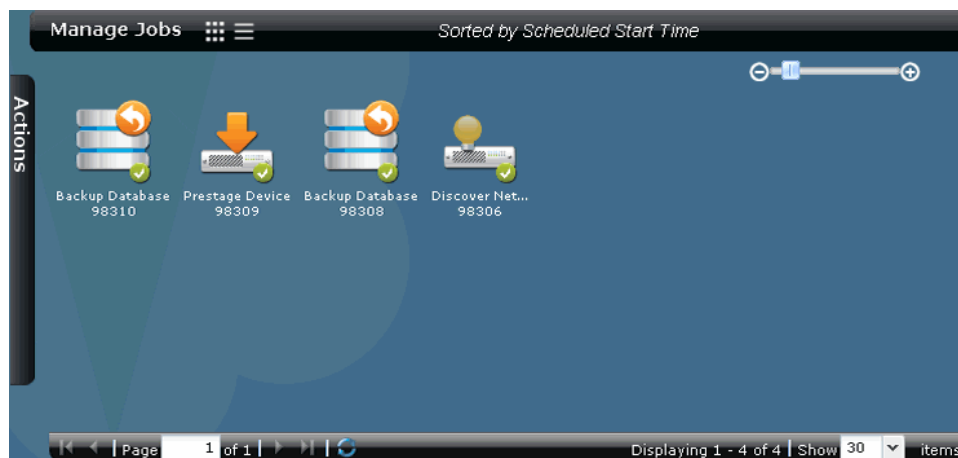
Viewing Jobs as Graphics

You can view thumbnail, quick look, and detailed information about scheduled jobs.

To view scheduled jobs:






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

The inventory panel displays thumbnails of scheduled jobs in order by scheduled start time, as shown in the following illustration.



Each thumbnail represents a scheduled job and the job type. An icon indicating job status is displayed in the lower right corner of the thumbnail. Table 22 on page 178 shows the icons.

Table 22: Job Icons

Icon	Description
	The job completed successfully.
	The job failed.
	The job was canceled by a user.
	The job is scheduled.
	The job is in progress.

3. To view additional information about tasks, use the following options:
 - To restrict the display of jobs, enter a search criterion of one or more numbers in the Search bar and press Enter.

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

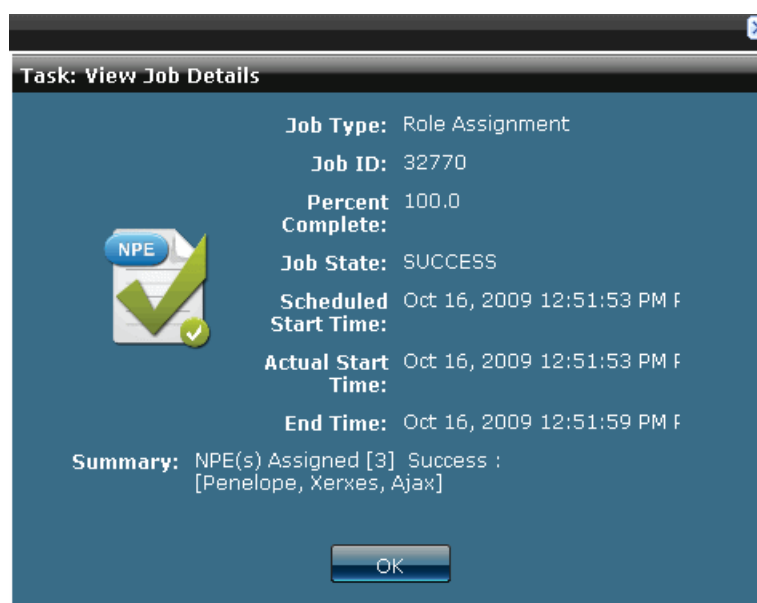
- To view summary information for a job, click on the thumbnail.

The Quick Look panel displays job summary information, as shown in the following example.



- To view detailed information about a scheduled job, double-click on the thumbnail. Detailed job information is displayed in either a form-based or table-based format depending on the job type.

For example, detailed information for a Role Assignment job is displayed in a form-based view.



Detailed information for a Discover Network Elements job is displayed in a table-based view.

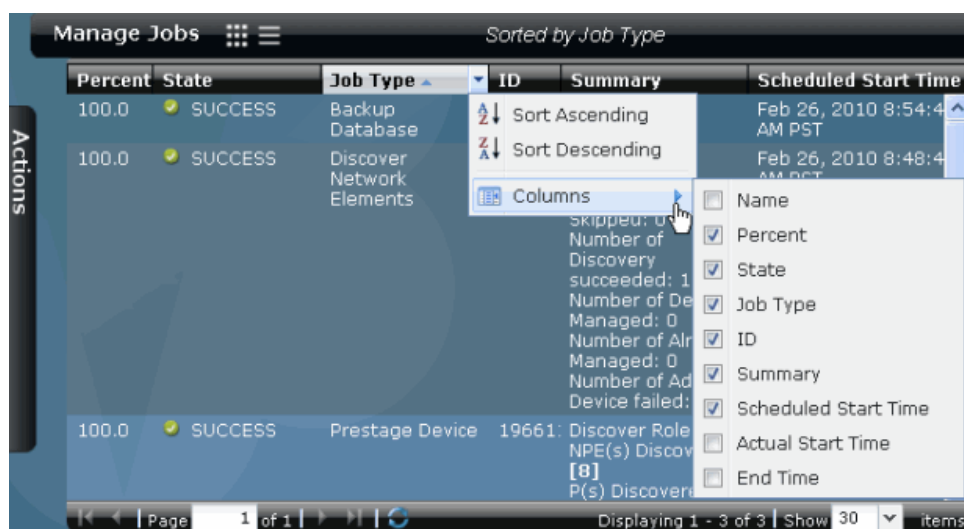
Viewing Jobs in a Table

To view job information in a table:

1. From the task ribbon, select the **Jobs** workspace.
2. To display jobs in a table, click the table icon from the filter bar, as shown in the illustration.



Junos Space displays a table view of jobs that have run, as shown in the example.



The fields displayed in the Jobs table are described in Table 23 on page 180.

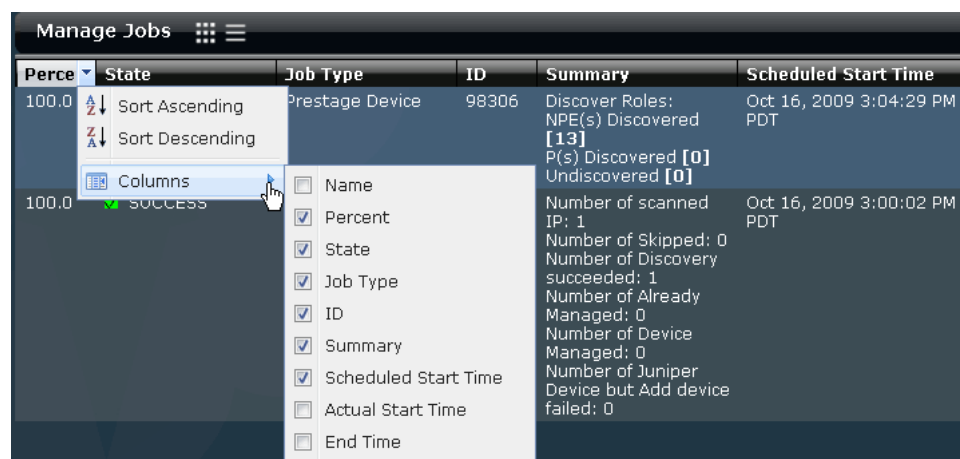
Table 23: Fields in the Jobs Table

Field	Description
Actual 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.
End Time (not displayed in default view)	Time that the job completed or was terminated, if job execution failed.
ID	ID of the job.

Table 23: Fields in the Jobs Table (continued)

Job Type	<p>The following job types are supported:</p> <ul style="list-style-type: none"> ■ Configuration Audit ■ Decommission Service ■ Deploy Service ■ Discover Network Elements ■ Functional Audit ■ Prestage Device ■ Resync Network Element
Name (not displayed in default view)	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.
Percent	Percentage of job that has completed.
Scheduled Start Time	The scheduled start time for the job (specified by a Junos Space user).
State	<p>State of job execution:</p> <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.
Summary	The operations executed for the job.

3. 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 button. The Job table pull-down menu is displayed.
 - b. Select **Columns** from the pull-down menu, as shown in the following illustration.



- c. Select the check box for columns not currently displayed that you want to view. Clear the check box for columns that you want to hide.

- Related Topics**
- Viewing Statistics for Scheduled Jobs on page 175
 - Job Management Overview on page 171
 - Canceling a Job on page 173

Part 7

Managing Audit Logs

- Audit Logs Overview on page 185
- Administration on page 187

Chapter 18

Audit Logs Overview

- Junos Space Audit Logs Overview on page 185

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 Campus Builder 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 Topics**
- Archiving and Purging Audit Logs on page 187
 - Viewing Audit Logs on page 192

Chapter 19

Administration

- Managing Audit Logs on page 187
- Viewing Audit Logs on page 191

Managing Audit Logs

- Archiving and Purging Audit Logs on page 187

Archiving and Purging Audit Logs

You can archive and then purge log files from the Junos Space database. You can archive audit logs to the local server or a remote server location.

The Junos Space archive file uses the following naming conventions:

`JunosSpaceAuditLog_date_time_id.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 187
- Archiving Audit Logs To a Remote Server and Purging the Database on page 189

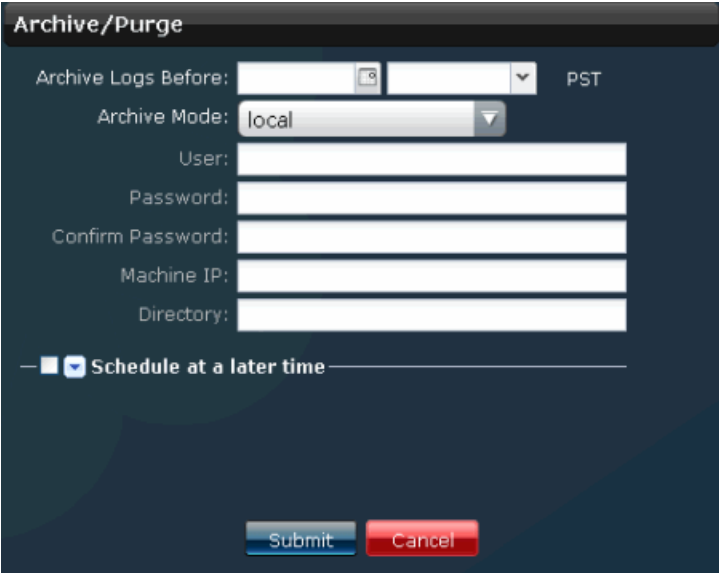
Archiving Audit Logs To a Local Server and Purging the Database

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. From the task ribbon, select the **Audit Logs** workspace.
2. From the task ribbon, select the **View Audit Logs** icon.
The inventory panel displays the audit logs table view.
3. From the task ribbon, select the **Archive/Purge** icon.

The Archive/Purge dialog box is displayed.



4. 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.

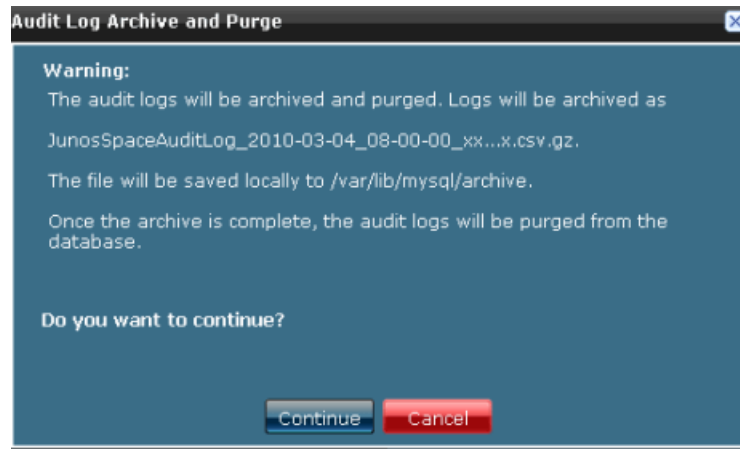
5. In the Archive Mode field, select **local** from the drop-down menu.
6. Schedule the Junos Space Archive/Purge operation:
 - Clear the **Schedule at a later time** check box (the default) to initiate the Archive/Purge operation when you complete this procedure.
 - Select the **Schedule at a later 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.

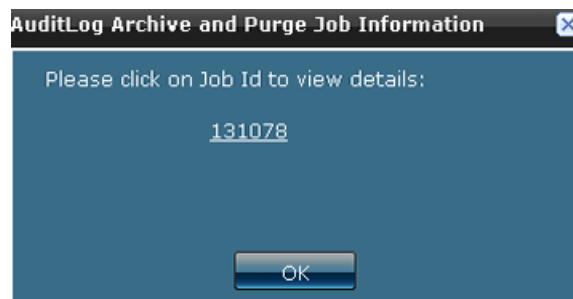
7. Click **Submit**.

The Audit Log Archive and Purge window displays the audit log file name and the location where it will be saved, as shown in the following example.



8. Click **Continue** to archive and purge the audit logs.

Junos Space displays the Audit Log Archive and Purge Job Information window, as shown in the following illustration.



9. 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. From the task ribbon, select the **Audit Logs** workspace.
2. From the task ribbon, select the **View Audit Logs** icon.
The inventory panel displays the audit logs table view.
3. From the task ribbon, select the **Archive/Purge** icon.
The Archive/Purge dialog box is displayed.

4. 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.

5. In the Archive Mode field, select **Remote** from the drop-down menu.
6. Enter a valid user name to access the remote host server.
7. Enter a valid password to access the remote host server.
8. Reenter the password you entered in the previous step.
9. Enter the IP address of the remote host server.
10. 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.

11. 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.

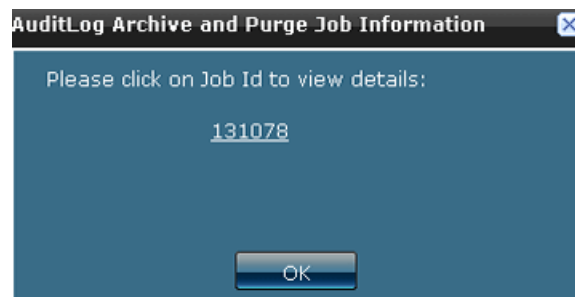
12. Click **Submit**.

The Audit Log Archive and Purge window displays the audit log file location and name and the remote server where the files will be copied, as shown in the following example.



13. Click **Continue** to archive and purge the audit logs.

Junos Space displays the Audit Log Archive and Purge Job Information window, as shown in the following illustration.



14. To view job details for the Archive/Purge operation, click on the Job Id in the Job Information window; otherwise, click **OK** to close the window.

- Related Topics**
- Junos Space Audit Logs Overview on page 185
 - Viewing Audit Logs on page 192

Viewing Audit Logs

- Viewing Audit Logs on page 192
- Viewing Audit Log Statistics on page 194

Viewing Audit Logs

You can view audit logs in Junos Space as tables. Audit logs are generated for login activity and tasks that are initiated from the Network Application Platform and Ethernet Activator.

To view audit logs, a user must have Audit Log Administrator privileges.

To view audit logs in a table:

1. From the task ribbon, select the **Audit Logs** workspace.
2. From the task ribbon, select the **View Logs** icon.

The View Audit Logs inventory page displays audit logs in a table view, as shown in the following example.

User Name	User IP	Task	Timestamp	Result	Description	Job ID
super	172.23.0.229	Create User	Jul 31, 2009 5:43:31 AM PDT	Success	User created: Wai Chow	
super	172.23.0.229	Login	Jul 31, 2009 5:41:27 AM PDT	Success	Login Succeeded	
wchow	172.23.0.229	Logout	Jul 31, 2009 5:39:11 AM PDT	Success	Logout Succeeded	
super	172.24.91.25	Login	Jul 31, 2009 5:33:14 AM PDT	Success	Login Succeeded	
wchow	172.23.0.229	Login	Jul 31, 2009 5:30:47 AM	Success	Login Succeeded	

The fields displayed in the Audit Logs table are described in Table 24 on page 192.

Table 24: Fields in the Audit Logs Table

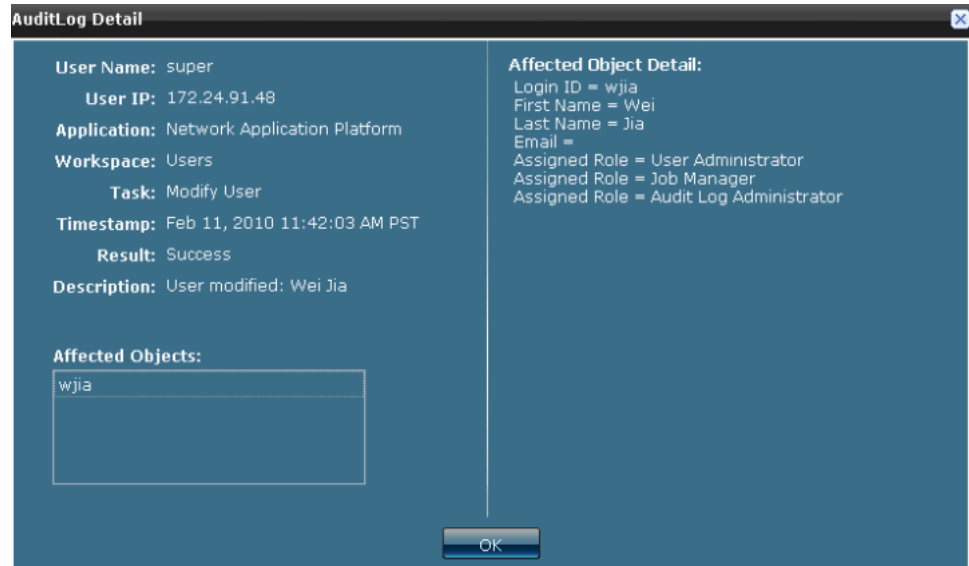
Field	Description
Description	A description of the audit log.
Job ID	For each job-based task, the audit log includes the job ID.
Result	<p>The execution result of the task that triggered the audit log:</p> <ul style="list-style-type: none"> ■ Success—Job completed successfully ■ Failure—Job failed and was terminated. ■ Job Scheduled—Job is scheduled but has not yet started.
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.
User IP	The IP address of the client computer from which the user initiated the task.
User Name	The login ID of the user that initiated the task.

3. To view audit log details:

If an audit log entry does not include a Job ID:

- a. Double click in the 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. The following example shows the Audit Log details for the task Modify User.



- b. Click OK to close the AuditLog Detail Window.

If an audit log entry includes a Job ID:

- a. Click on the Job ID link in the audit log row.

The Job Manager inventory view displays information about the job, as shown in the following example.

Return to Audit Logs					
Job ID	Percent	State	Job Type	Summary	Scheduled Start Time
32768	100.0	✓ SUCCESS	Discover Network Elements	Number of scanned IP: 1 Number of Skipped: 0 Number of Discovery succeeded: 1 Number of Device Managed: 1 Number of Already Managed: 0 Number of Juniper Device but Add device failed: 0	Jul 31, 2009 4:41:17 AM PDT

Page 1 of 1 | Displaying 1 - 1 of 1

- b. Click **Return to Audit Logs** to close Job Manager inventory view and return to the audit logs table.
4. To hide columns in the audit logs table view:
 - a. Mouse over any column header, and click the down arrow button. The Audit Logs table pull-down menu is displayed.



NOTE: By default, all available audit log table columns are displayed.

- b. Select **Columns** from the pull-down menu.
 - c. Clear the check box for columns that you want to hide.

- Related Topics**
- Viewing Audit Log Statistics on page 194
 - Junos Space Audit Logs Overview on page 185
 - Archiving and Purging Audit Logs on page 187

Viewing Audit Log Statistics

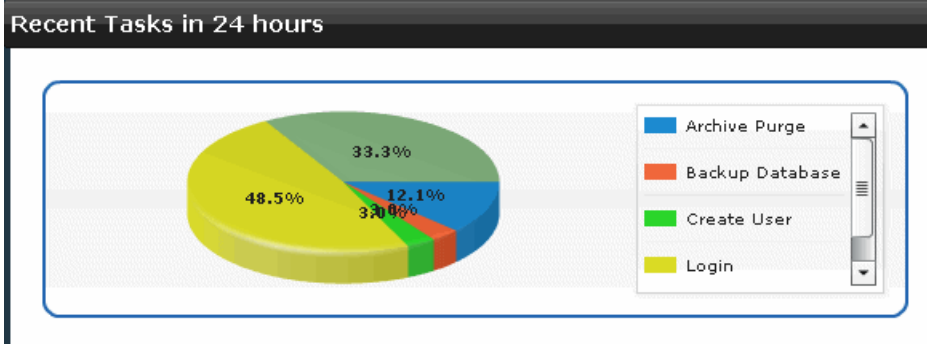
Audit log statistics display login activity and tasks that have been performed across Junos Space workspaces and applications in the past 24 hours, the results of those tasks, and the most active users in the past 24 hours.



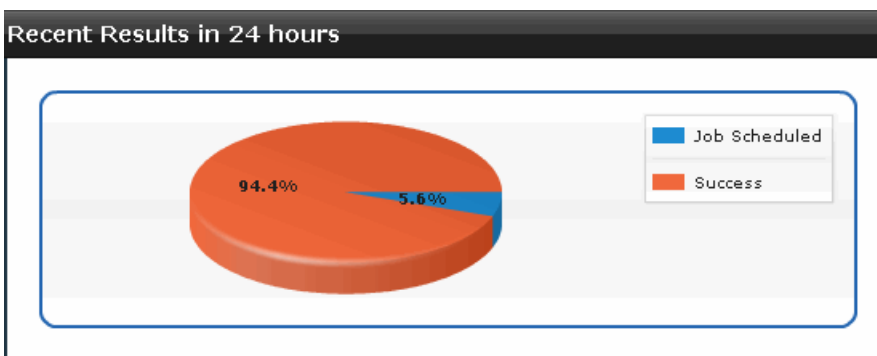
NOTE: Audit Logging is not currently supported for Campus Builder and Service Now.

To view audit log statistics:

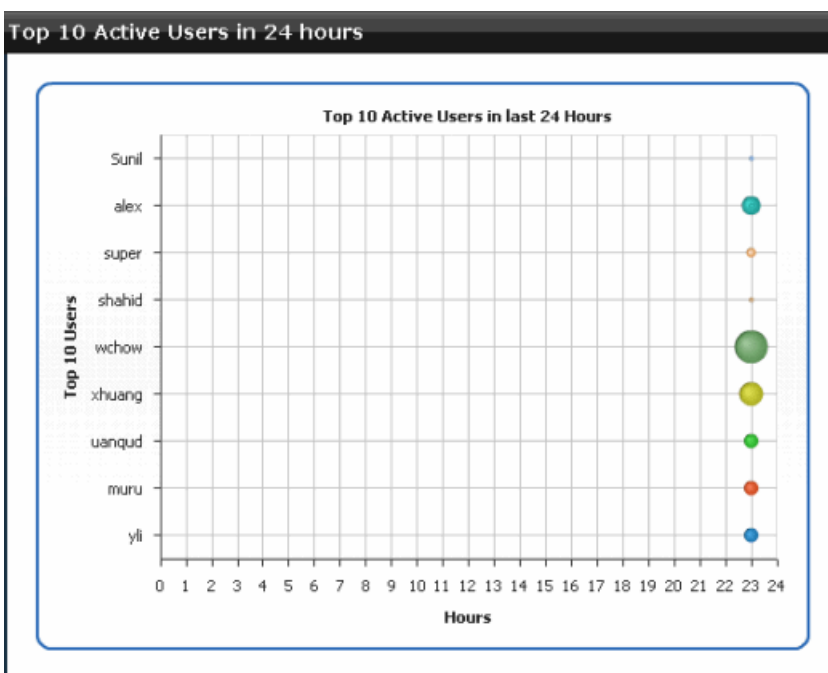
1. From the task ribbon, select the **Audit Logs** workspace.
Junos Space retrieves and displays statistical views of the recent tasks and the results of those tasks, and a view of active users.
2. To view the audit logs for recent tasks by type, click on any segment of the Recent Tasks in 24 hours pie chart. The following illustration shows a statistical view of recent tasks by type.



- To view the audit logs for recent tasks by results, click on a segment of the Recent Results in 24 hours pie chart. The following illustration shows a statistical view of recent tasks by results.



- To view detailed information about the recent activities of the most active Junos Space users, use the Top 10 Active Users in the last 24 Hours chart, as shown in the following example.



Each horizontal line in the chart displays the activities performed by a single user, and each active session for the user is represented by a bubble on the line. For example, if a single user performed six active sessions during the last 24 hours, the chart would display six bubble icons on the horizontal line.

5. To view the user activities performed during a specific active session, click on the bubble icon.

The Audit Logs inventory page displays all the tasks performed by the user during the active session.

- Related Topics**
- Viewing Audit Logs on page 192
 - Junos Space Audit Logs Overview on page 185
 - Archiving and Purging Audit Logs on page 187

Part 8

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- Index on page 199

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