Junos® Space

Network Director Interface User Guide

Release
1.5

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Junos® Space Network Director Interface User Guide
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The information in this document is current as of the date on the title page.

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About the Documentation

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Documentation Conventions

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

Table 1: Notice Icons

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

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

Table 2: Text and Syntax Conventions

Convention	Description	Examples
Bold text like this	Represents text that you type.	To enter configuration mode, type the **configure** command: user@host> **configure**
`Fixed-width text like this`	Represents output that appears on the terminal screen.	`user@host>` **show chassis alarms** `No alarms currently active`
Italic text like this	• Introduces or emphasizes important new terms. • Identifies guide names. • Identifies RFC and Internet draft titles.	• A policy *term* is a named structure that defines match conditions and actions. • *Junos OS CLI User Guide* • RFC 1997, *BGP Communities Attribute*
Italic text like this	Represents variables (options for which you substitute a value) in commands or configuration statements.	Configure the machine's domain name: [edit] root@# **set system domain-name** *domain-name*
Text like this	Represents names of configuration statements, commands, files, and directories; configuration hierarchy levels; or labels on routing platform components.	• To configure a stub area, include the **stub** statement at the **[edit protocols ospf area area-id]** hierarchy level. • The console port is labeled **CONSOLE**.
< > (angle brackets)	Enclose optional keywords or variables.	**stub <default-metric** *metric***>;**

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

Convention	Description	Examples
| (pipe symbol)	Indicates a choice between the mutually exclusive keywords or variables on either side of the symbol. The set of choices is often enclosed in parentheses for clarity.	**broadcast | multicast** **(*string1* | *string2* | *string3*)**
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	**rsvp { # Required for dynamic MPLS only**
[ ] (square brackets)	Enclose a variable for which you can substitute one or more values.	**community name members [*community-ids*]**

Indention and braces ({ })	Identify a level in the configuration hierarchy.	[edit]
		routing-options {
		  static {
		  route default {
		  nexthop *address*;
		  retain;
		  }
		  }
		}

; (semicolon)	Identifies a leaf statement at a configuration hierarchy level.	
GUI Conventions		
Bold text like this	Represents graphical user interface (GUI) items you click or select.	• In the Logical Interfaces box, select **All Interfaces**. • To cancel the configuration, click **Cancel**.
> (bold right angle bracket)	Separates levels in a hierarchy of menu selections.	In the configuration editor hierarchy, select **Protocols>Ospf**.

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- Document or topic name
- URL or page number
- Software release version (if applicable)

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Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active J-Care or JNASC support contract,

or are covered under warranty, and need post-sales technical support, you can access our tools and resources online or open a case with JTAC.

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

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- Search for known bugs: http://www2.juniper.net/kb/
- Find product documentation: http://www.juniper.net/techpubs/
- Find solutions and answer questions using our Knowledge Base: http://kb.juniper.net/
- Download the latest versions of software and review release notes: http://www.juniper.net/customers/csc/software/
- Search technical bulletins for relevant hardware and software notifications: https://www.juniper.net/alerts/
- Join and participate in the Juniper Networks Community Forum: http://www.juniper.net/company/communities/
- Open a case online in the CSC Case Management tool: http://www.juniper.net/cm/

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

Opening a Case with JTAC

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

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

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

PART 1

Overview

CHAPTER 1

Overview

Understanding Network Director and the Management Lifecycle Modes

Junos Space Network Director is a Junos Space application for unified management of the Juniper Networks WLC Series Wireless LAN Controllers (WLCs), EX Series Ethernet Switches, EX Series switches with ELS, QFX Series switches, QFabrics, and Virtual devices in your network. Providing full network lifecycle management, Network Director simplifies the discovery, configuration, visualization, monitoring, and administration of large networks. Operators can quickly deploy a network by using it, configure it optimally to improve network uptime and maximize resources, and respond agilely to the needs of applications and users.

The Network Director user interface is based on the network management lifecycle. The interface provides five main working modes that are aligned to the network management lifecycle, and a sixth mode for working with Network Director itself. Each mode provides access to different tasks:

- Build mode—Use Build mode to build your network in Network Director. You use Build mode to discover the devices in your network, to create and manage device configurations, and to manage devices. You can also organize your devices into hierarchal groupings based on logical relationships or by physical locations. To support flexible, large-scale deployment of devices, Build mode enables you to apply configurations across multiple devices grouped by logical relationships, physical locations, or type.
- Deploy mode—Use Deploy mode to deploy and manage changes to devices. In Deploy mode, you deploy the configurations you built in Build mode, install new software images on your devices, and manage device configuration files.
- Monitor mode—Use Monitor mode to gain visibility into your network performance and health. Monitor mode provides a host of information about your network such as the operational status of devices, traffic patterns and trends, client session statistics, port capacity, and wireless signal throughput and interference patterns. You can also search for a user and view a history of the user sessions.

- Fault mode—Use Fault mode to gain visibility into unexpected network events and to manage faults or notifications.
- Report mode—Use Report mode to generate reports from the data that Network Director stores on network performance, status, and activity.

In addition to these modes, Network Director enables you to perform system level tasks from the System button and the Preferences button. System level tasks include viewing the Network Director user and system audit trail, managing jobs, and gathering logs for troubleshooting.

Related Documentation

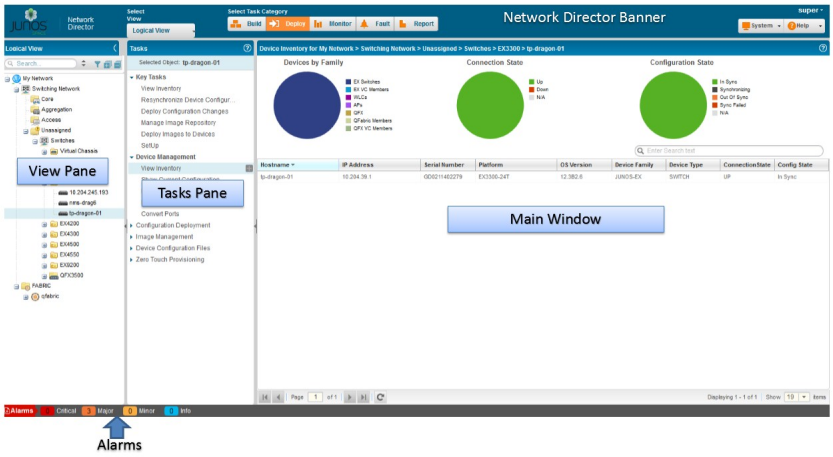
- Understanding the Network Director User Interface on page 4
- *Understanding Network Director User Administration*

Understanding the Network Director User Interface

Junos Space Network Director provides a simple to use, HTML5-based, Web 2.0 user interface that you can access through standard Web browsers. The user interface is task-oriented, using task-based workflows to help you accomplish administrative tasks quickly and efficiently. It provides you the flexibility to work with single devices or with multiple devices grouped by logical relationship, location, or device type. You can filter, sort, and select columns in tables, making looking for specific information easy.

Figure 1 on page 4 illustrates the main components of the interface.

Figure 1: The Network Director User Interface Components



This topic describes:

- Network Director Banner on page 5
- View Pane on page 6
- Tasks Pane on page 9
- Alarms on page 10

- Main Window or Workspace on page 10
- Tables in Network Director on page 10

Network Director Banner

Use the Network Director banner, shown in Figure 2 on page 5, to select the working mode. You can also use the Network Director banner to perform other global tasks, such as setting up your preferences or accessing Junos Space. Table 3 on page 5 describes the functions available to you on the banner.

Figure 2: Network Director Banner

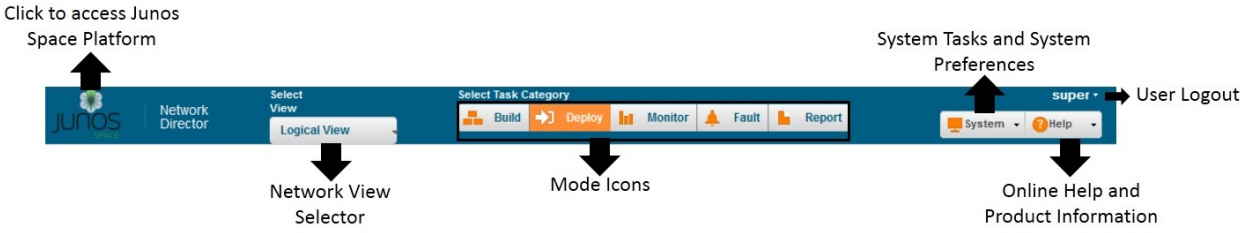


Table 3: Network Director Banner Functions

Item	Function
Accessing Junos Space Platform	Click to exit Network Director and open the Junos Space Network Application Platform. You can switch back and forth between Network Director and Junos Space without logging in again.
Network View Selector	Select the network view that you want to work in. You can choose from one of the following views: • Logical View • Location View • Device View • Custom Group View • Virtual View • Topology View For more details, see "Displaying Devices in Various Network Views" on page 6.
Mode Icons	Select the mode you want to work in. NOTE: You might not have access to all the Network Director modes. What modes you have access to depends on your assigned user role.
User Log out	Displays the username using which you logged in to Network Director. Click the Down arrow next to the username and select Logout to log out of Network Director and Junos Space.

Table 3: Network Director Banner Functions *(continued)*

Item	Function
System Tasks and System Preferences	Access the system tasks such as viewing audit logs, jobs, and to collect troubleshooting logs. Click the Down arrow next to System and select Preferences to set your Network Director user and system preferences.
Online Help and Product Information	Help—Open searchable help. This help icon is not context-sensitive—it always opens help to the first page. From here, you can browse or search the help. Context-sensitive help is available from the help icon provided on each pane or page. Click the Down arrow next to the help button and click **About** to display information about Network Director, such as the currently running version.

In addition to this, Network Director displays the date and time in the local time zone in the bottom right corner.

View Pane

In the View pane, Network Director provides you a unified, hierarchal view of your wired, wireless, and virtual networks in the form of a expand tree that is expandable and collapsible. For wired and wireless networks, you can choose from three views, or perspectives, of your network—Logical view, Location view, and Device view. By selecting both a view and a node in the tree, you indicate the *scope* over which you want an operation or task to occur. For example:

- By selecting the Access node in Logical view, you indicate that the scope for a task is all access switches under the Access node.
- By selecting a floor node in Location view, you indicate that the scope for a task is all devices belonging to that floor.
- By selecting the EX4200 node in Device view, you indicate that the scope for a task is all EX4200 switches in your network.

You can perform the following actions in the View pane:

- Displaying Devices in Various Network Views on page 6
- Filtering the Network Tree on page 8
- Expanding or Collapsing Nodes in the Network Tree on page 8
- Searching the Network Tree on page 9

Displaying Devices in Various Network Views

Use the selection box in the Network Director banner to choose one of the following network views:

- Logical view—Devices are organized by their logical relationships in the network. All switches appear in the Switching Network and are categorized by their role in the network: access, aggregation, or core. All wireless devices appear in the Wireless Network. Controllers appear under the mobility domains to which they belong and access points appear under the controller or cluster that manages them. All QFX Series switches that are part of a QFabric appear in the Fabric node.

  Network Director builds most of this view for you as you discover devices. However, you need to manually assign switches to the access, aggregation, or core categories.

- Location view—Devices are organized by their physical locations. You build this view by creating sites, building, floors, aisles, racks, outdoor areas, and then assigning your switches, wireless controllers, access points, and QFabric systems to these locations.

- Device view—Devices are organized by device type: switches, wireless LAN controllers, and QFabric systems. Within each device type, devices are organized by device model. For example, all models of EX4200 switches are grouped together under one node in the tree.

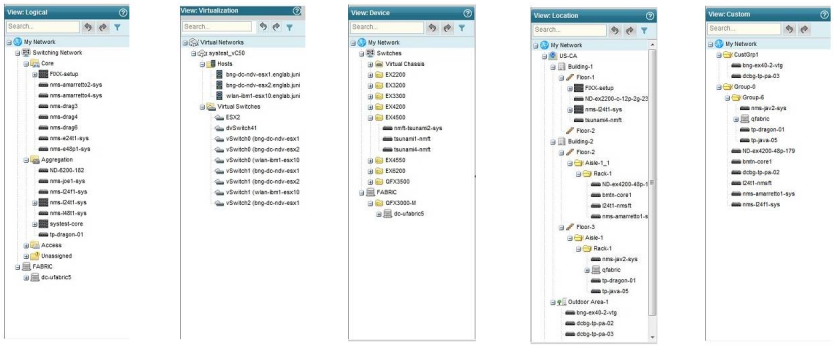
- Virtual view—Displays devices that are part of your virtual network such as the VMware vCenter servers, virtual switches, and hosts. Within each vCenter server, the hosts and virtual switches that are part of that vCenter server are displayed as separate nodes.

- Custom Group view—If you have defined one or more custom groups, Network Director displays these custom groups in this view. You can manually add devices to a custom group or define a rule to automatically add devices to the custom group once they are discovered in Network Director. The devices are grouped under each custom group.

- Topology View—Topology enables you to view all the discovered devices in your network, overlaid on a map where the devices are located across sites, buildings, floors, closets, aisles, and racks along with their physical interconnection with other devices in your network. Topology also provides visualization around physical and logical connectivity between various discovered interconnected devices.

Figure 3 on page 7 shows examples of each view.

Figure 3: Network Views

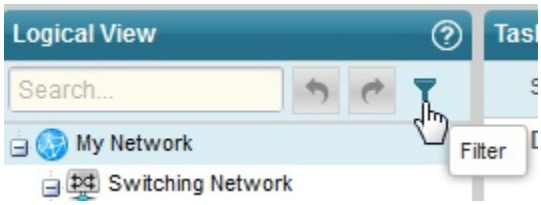


Filtering the Network Tree

To make it easier for you to focus on selected aspects of your network, you can apply predefined filters to your network tree so that only nodes and devices that meet the filter criteria are shown. For example, you can apply a filter so that only devices in a specific building are shown in the network tree in all views.

To apply filters:

1. Click the filter icon:



2. In the Filters dialog box, click **Show available filters**.

   The Available Filters section of the dialog box appears.

3. Under Available Filters, click the tab for the view you want to use to define your filter. For example, if you want to filter on devices—that is, show only certain types of devices–click the **Device** tab.

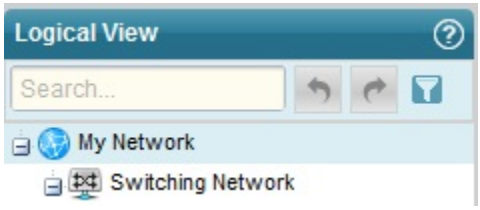
   The filters that you can apply are listed below the tab.

4. To select a filter, click its associated plus icon.

   The filter appears in the Selected Filters section of the dialog box. You can repeat steps 3 and 4 until you have selected all the filters you want apply.

5. Click **Apply**.

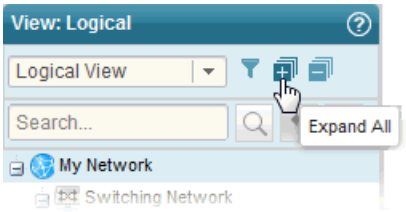
   The Filters dialog box closes and the filters are applied. The filter icon changes appearance to indicate that filters have been applied:



To remove a filter, click the filter icon, click the trash can next to the filter in the Selected Filters list, and click **Apply**.

Expanding or Collapsing Nodes in the Network Tree

To expand a node in the network tree, select the node and then click the **Expand All** icon:



The node you selected and any child nodes under the selected node are expanded to show their contents.

Similarly, to collapse a node in the network tree, select the node and then click the **Collapse All** icon (next to the Expand All icon). The node you selected is collapsed and no nodes under it are shown.

Searching the Network Tree

To quickly find and select a particular node, including device nodes, use the search function.

To perform a search, type three or more characters into the Search box and click the **Search** icon:

Network Director finds the first instance of a node whose name contains the characters. To find the next instance, click the right arrow.

Searches are not case-insensitive: a search on *wla115* and *WLA115* returns the same results.

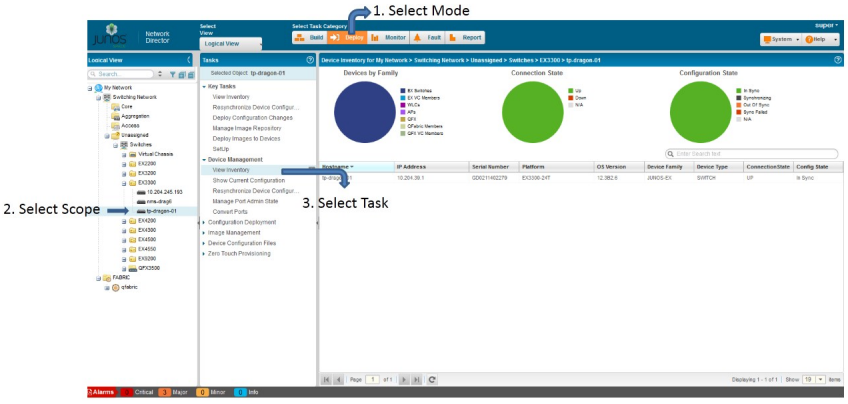
Tasks Pane

The Tasks pane is available in every mode and lists tasks specific to that mode. In addition to changing according to the mode selected, tasks listed in the Tasks pane can change as you select different scopes in the View pane. For example, some tasks are appropriate only at the device level and thus appear only when you have selected an individual device.

Clicking a task brings up task-specific content in the main window.

In general, to perform a task in Network Director, you navigate to the task as shown in Figure 4 on page 10. You select your mode, your scope, and then your task.

Figure 4: Navigating to a Task in a Tasks Pane



TIP: The location of the Tasks pane changes with mode. In Build and Deploy mode, it is adjacent to the View pane. In Monitor, Fault, and Report mode, it located to the right of the main window.

Alarms

The Alarms bar that is displayed at the bottom of your browser window provides a quick summary of how many critical, major, minor, and info alarms are currently active in the network and is visible in every mode. To display more information about alarms, click the alarm count or the Alarms banner. You are automatically placed in Fault mode and the Fault mode monitors are displayed.

Main Window or Workspace

The main window or workspace displays the content relevant to the mode, scope, and task you have selected. When you log in to Network Director, this pane displays the Device Inventory page. The Device Inventory page is the default landing page for Build and Deploy modes. It contains a list of the devices for your current scope. It includes pie charts that permit you to see at a glance the connection states, configuration synchronization states, and device-type distribution for your devices.

Tables in Network Director

Tables are used throughout Network Director to display data. These tables share common features. By becoming familiar with these features, you can navigate and manipulate tabular data quickly and efficiently. The following sections describe:

- Searching Table Contents on page 12
- Filtering Table Contents on page 13

Moving and Resizing Columns

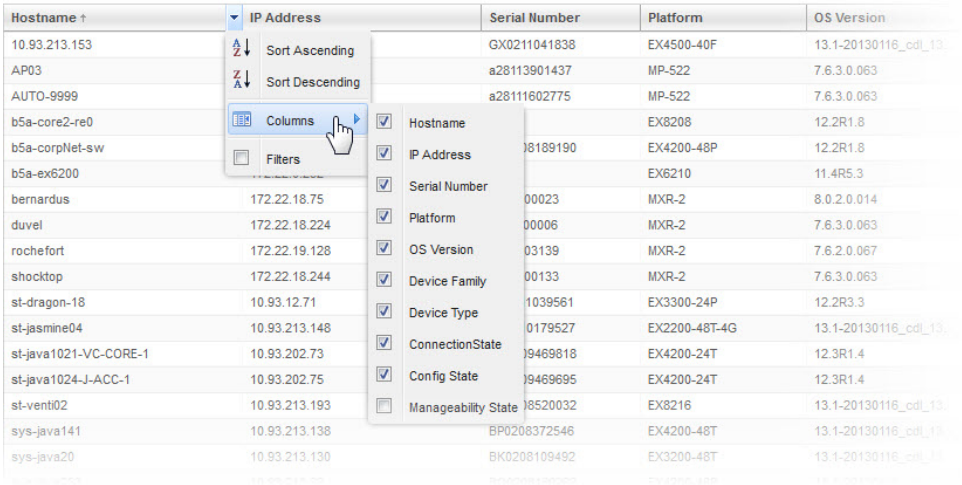
You can reposition and resize columns in a table. To move a column, drag and drop the column head to the new location. Network Director displays a green check mark when you mouse over a valid column location.

To resize a column, mouse over the edge of a column until the cursor becomes two vertical lines with outward arrows. Drag the column width to the new size.

Displaying the Column Drop-Down Menu

A drop-down menu is available from each column head, allowing you to perform additional operations on columns. To display the column drop-down menu, mouse over the column head. A downward arrow appears. By clicking the arrow, you display the drop-down menu, as shown in Figure 5 on page 11.

Figure 5: Column Drop-Down Menu



Sorting on a Column

You can sort the table on a column by clicking the column head—each click changes the direction of the sort. In addition, you can use the Sort Ascending and Sort Descending options in the drop-down menu.

When you sort on a column, a small arrow appears next to the column name to indicate that the table is being sorted by the column and the direction of the sort.

Network Director uses a lexical sort for tabular data that is not strict numeric data, which means that data such as IP addresses do not sort in numerical sequence, as shown in Table 4 on page 12.

Table 4: Numerical Sorts and Lexical Sorts

Numerical Sort	Lexical Sort
10.93.200.65	10.93.200.129
10.93.200.129	10.93.200.199
10.93.200.199	10.93.200.65

Hiding and Exposing Columns

You can customize your tables by hiding or exposing columns. This way, you can choose to see only relevant information.

To hide or expose columns, display the drop-down menu for any column head and mouse over the Columns option, as shown in Figure 5 on page 11. Select a column to expose it—clear a column to hide it.

As a general rule, Network Director displays all columns in a table by default. However, some tables have more columns than can fit easily within the page. In these tables, some columns are hidden by default.

Searching Table Contents

You can search for specific data in large tables by using search criteria.

To search for an item in a table, enter the search term in the text box. Select ANY for Network Director to search for the term in all columns in the table. Every table has a predefined default column that the system searches first; before it proceeds to search other columns.

You can also choose to search a particular column for a term. Network Director displays a list of all the columns in a table. To search a particular column for a term, select that column for the list.

NOTE: When you enter a search expression, note the following:

- You must add a back slash "\" if you want to use the following special characters in the search text:

  + ~ && || ! ( ) { } [ ] ^ " ~ * ? : \

- Field names are case-sensitive.

  For example, if you have a few systems running on Junos OS 12.3 Release 4.5, then os: 12.3R4.5 returns search results, whereas OS: 12.3R4.5 does not return search results. This is because the field name that is indexed is "os" and not "OS."

- If you want to search for a term that includes a space, enclose the term within double quotation marks.

  For example, to search for all devices that are synchronized (that is, In Sync), enter "In Sync" in the Search field.

- You must append "*" if you want to search using partial keywords. Otherwise, the search returns 0 (zero) matches or hits.

You can filter search results by specifying one or more search terms. Network Director uses the AND operator for each search term that you enter. Network Director lists the search results in the table, depending on the search criteria that you specified.

For example, perform the following steps to search for an EX4200 switch that is running Junos OS Release 12.2:

1. Enter **EX4200** as the search term in the text box.
2. From the list that appears, select to search the Platform column.

   Network Director lists all the EX4200 switches in your network.
3. Enter **12.2** as the search term after the comma separator in the text box.
4. From the list, select to search from the OS Version column.

   Network Director lists all the EX4200 switches in your network that are running Junos OS Release 12.2.

Filtering Table Contents

For large tables, it is helpful to be able to sort data to show only relevant entries. When you mouse over the Filters option in the column drop-down menu, a fill-in box appears

where you can type filter criteria. If you type a text string and click Go, entries that do not contain the text string (filter criterion) are removed from the table. A red asterisk appears on the column head to indicate that the column has been filtered. To restore all entries to the table, clear the Filters option.

For example, to filter the Device Inventory page so that only devices in the **192.168.1.0** subnet are displayed:

1. Mouse over the right side of the IP Address column head to expose the downward arrow.
2. Click the arrow to display the column drop-down menu.
3. Mouse over **Filters** to display the Filter field.
4. Type **192.168.1.** in the field and click **Go**.

Only the devices in the **192.168.1.0** subnet are shown.

Related Documentation

- Understanding Network Director and the Management Lifecycle Modes on page 3

PART 2

Administration

CHAPTER 2

User Login and Password

Logging In to Network Director

You connect to Network Director using your Web browser. The following Web browsers are supported: Internet Explorer versions 8.0 and 9.0, Mozilla Firefox version 3.6 or later, and Google Chrome version 17 and later. The minimum screen resolution is 1280 x 1024.

You can connect to Network Director one of two ways:

- Log in to Network Director directly by using the following URL:

  https://*<n.n.n.n>*/networkdirector

  where *n.n.n.n* is the IP address of the Junos Space Web interface. You can bookmark the login page for future use.

- Log in to Junos Space first by using the following URL:

  https://*<n.n.n.n>*/mainui

  where *n.n.n.n* is the IP address of the Junos Space Web interface.

  You can then switch to the Network Director interface by selecting Network Director from the Applications list in the left pane of the Junos Space user interface.

The default username and password is the same for both Junos Space and Network Director:

- username—super
- password—juniper123

Related Documentation

- Logging Out of Network Director on page 18
- Changing Your Password on page 18
- Understanding the Network Director User Interface on page 4

Logging Out of Network Director

When you are finished using Network Director, log out to prevent unauthorized access. To log out of Network Director, click on the username in the Network Director banner and select Logout from the list.

Network Director automatically logs you out if you have not performed any action, such as keystrokes or mouse clicks, for a set period of time. This automatic logout conserves server resources and protects the system from unauthorized access. By default, automatic logout occurs if a session has been idle for 60 minutes.

Network Director uses the same automatic logout period as Junos Space. To change the automatic logout period:

1. Click the System Platform icon.
2. Navigate to **Administration** > **Applications**.
3. Right-click **Network Management Platform** and select **Modify Application Settings**..
4. In the Modify Network Management Settings page, select **User**.

Related Documentation

- Logging In to Network Director on page 17
- Changing Your Password on page 18
- Understanding the Network Director User Interface on page 4

Changing Your Password

Any user, regardless of user role, can change his or her password.

Your username and password are the same in Junos Space and Network Director. To change your password, change it in Junos Space:

1. From Network Director, click the Junos Space icon in the Network Director banner.
2. Click the User Password icon in the Junos Space banner.
3. Follow the instructions to change your password.

Related Documentation

- Logging In to Network Director on page 17
- Logging Out of Network Director on page 18
- Understanding the Network Director User Interface on page 4