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Junos® Space Network Director

Network Director Quick Start Guide

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The information in this document is current as of the date on the title page.

YEAR 2000 NOTICE

Juniper Networks hardware and software products are Year 2000 compliant. Junos OS has no known time-related limitations through the year 2038. However, the NTP application is known to have some difficulty in the year 2036.

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About This Guide

Use this guide to install or upgrade Junos Space Network Director, and perform tasks to get the devices ready for management by Network Director.

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CHAPTER

Quick Start Guide for Junos Space Network Director

Quick Start Guide

Junos Space Network Director can be used for campus network management. In the campus, Network Director automates routine management tasks such as network provisioning and troubleshooting, dramatically improving operational efficiency and reliability.

Campus networks have increased variability and unpredictability stemming from a wide range of user and IoT devices. Juniper's portfolio of services, software and hardware products securely address end to end campus network solutions.

Junos Space Network Director enables unified management of EX Series Ethernet Switches, MX Series routers, QFX Series switches, and Junos Fusion Enterprise in your network. It provides for full network life cycle management by simplifying the discovery, configuration, visualization, monitoring, and administration of large networks containing physical and virtual devices.

This chapter describes how you can install Network Director, upgrade Network Director, bring your devices under Network Director management.

These installation steps are intended for network operators and administrators who install, configure, and manage Junos switching with EX Series, QFX Series, and virtualized devices using Network Director.

Before you install Network Director, you must configure the Junos Space Appliance as a Junos Space node.

You can install Network Director in Junos Space Virtual Appliance. For details, see "Setting up a Junos Space Appliance for Network Director" on page 2.

Setting up a Junos Space Appliance for Network Director

IN THIS SECTION

You can install Network Director in one of the following appliances:

- "Junos Space Virtual Appliance" on page 3

Junos Space Virtual Appliance

The Junos Space Virtual Appliance consists of preconfigured Junos Space Network Management Platform software with a built-in operating system and application stack that is easy to deploy, manage, and maintain. A Junos Space Virtual Appliance includes the same software and provides all the functionality available in a Junos Space physical appliance. However, you must deploy the virtual appliance on the VMware ESX or ESXi server, or Kernel-based virtual machine (KVM) which provides a CPU, hard disk, RAM, and a network controller, but requires installation of an operating system and applications to become fully functional.

For information about installing Junos Space appliances in a fabric configuration and installing Junos Space Virtual Appliance on a VMware ESX or ESXi server, see Junos Space Virtual Appliance.

Upgrading Junos Space Network Management Platform

You can install Network Director Release 6.2R1 newly only on Junos Space Network Management Platform Release 22.2R1. If you are using Junos Space Network Management Platform Release 22.2R1, you can skip this procedure and begin installation of Network Director.

If you are using a Junos Space Platform release that is earlier than the supported release, you need to upgrade Junos Space Platform before installing Network Director. To determine the Junos Space Platform release version and to upgrade Junos Space Network Management Platform, follow these steps:

1. Determine the installed Junos Space Platform version:
   a. Log in to Junos Space by using the default username and password for Junos Space: **super** and **juniper123**.

      Junos Space opens the dashboard.

   b. Click the plus symbol **(+)** next to Administration to expand the Administration menu.

   c. Click **Applications** to list all of the applications installed.

   d. Note the version of the Junos Space Platform or the Network Application Platform. (Some earlier versions of the Network Management Platform were named Network Application Platform.) If the currently installed release is a supported one, you can skip the rest of this procedure; if not, you must upgrade Junos Space Platform to a supported release.
2. Upgrade Junos Space Network Management Platform to 22.2R1. For upgrade steps, see Junos Space Network Management Platform Upgrade Instructions.

NOTE: You can upgrade the existing Junos Space Platform running on your appliance to the immediate next release. For example, you can upgrade to Junos Space Network Management Platform 22.2R1 from Junos Space Network Management Platform 22.1R1.

NOTE: If the Junos Space Platform runs a version earlier than Release 20.3R1, you must first upgrade Junos Space Platform to Release 22.2R1.

Installing Network Director

IN THIS SECTION

Before you begin:

- Configure a Junos Space Appliance or a Junos Space Virutal Appliance as a Junos Space node or as a specialized node used for fault monitoring and performance monitoring (FMPM). For more information, see Configuring a Junos Space Appliance as a Junos Space Node for configuring a Junos Space Appliance or see Configuring a Junos Space Virtual Appliance as a Junos Space Node.
- Upgrade Junos Space Platform to Release 22.2R1. For upgrade steps, see "Upgrading Junos Space Network Management Platform" on page 3.

You can install Network Director on Junos Space Network Management Platform by using one of the following methods:

- Installing Network Director from Junos Space Store
- Installing Network Director by manually downloading the Network Director application image

NOTE: The preferred method to install Network Director on Junos Space Network Management Platform is by installing Network Director from Junos Space Store.

For more information about installing Network Director by manually downloading the Network Director application image, see *Installing Network Director by Manually Downloading the Network Director Application Image*.

Installing Network Director From Junos Space Store

Starting Release 18.2R1, Junos Space Platform provides Junos Space store from where you can download and install or upgrade Network Director in a single operation. On the Junos Space store page, you can view the versions of Network Director that are compatible with the currently installed version of Junos Space Platform.

NOTE: Before you install or upgrade Network Director by using Junos Space store, you must configure the credentials to access Junos Space Store. For information see, Configuring and Managing Junos Space Store.

To install Network Director from Junos Space Store:

1. Click **Administration > Applications > Junos Space Store**.

   The Junos Space Store opens. Junos Space Store lists all the applications that can be installed on the Junos Space Platform.
2. Click **Network Director**.

   The right-side of the page lists the Network Director versions that can be installed on Junos Space Platform.
3. (Optional) Select the **Show only compatible version** check box to list only the compatible versions of Network Director that can be installed on the current installed version of Junos Space Platform.
4. Click **Next** to install Network Director.

   The end user license agreement page appears.
5. Click **Accept and install** to install Network Director.

   The Network Director installation job status appears. The status indicates each step that is completed while Network Director is getting installed.

   Once installed successfully, Network Director is listed on the Applications page (**Administration > Applications**).

NOTE: The applogic service restarts after the application installation job is successful.

Upgrading Network Director

You can upgrade to Network Director Release 6.2R1 from Network Director 6.1R1 release.

If you do not have a supported version of Network Director, upgrade to Network Director Release 6.1R1. For instructions on upgrading to Network Director Release 6.1R1, see *Network Director Release 6.1 Quick Start Guide*.

Before you start the upgrade, ensure that you have:

- Disabled monitoring for all categories in the Monitoring tab of the Preferences page. For more details, see Disabling Data Collection for Monitors.
- Taken a back up of your database using the Junos Space backup feature. For more details, see Executing the Data Back Up Procedure.
- Junos Space Release 22.2R1 running on your appliance. If your appliance is running an unsupported release of Junos Space Platform, you must upgrade Junos Space Platform before installing Network Director. For step-by-step instructions on upgrading Junos Space, see "Upgrading Junos Space Network Management Platform" on page 3.

You can upgrade to Network Director Release 6.2R1 either by using the Junos Space Store option under **Administration > Applications** task or by manually downloading the Network Director software image.

To upgrade Network Director by using Junos Space Store, see "Installing Network Director From Junos Space Store" on page 5.

To upgrade Network Director from a previous version by manually downloading the software image:

1. Download the Network Director Release 6.2R1 software image to the hard disk or to an SCP server. You can download the Network Director Software image from the Network Director Download Software page.
2. Log in to Junos Space Platform.
3. Click the add symbol (+) adjacent to the Administration and click **Applications**.

   The Applications page opens.
4. Click add symbol (+) symbol to add the Network Director application.

   The Add Application page opens.

5. Select Network Director from the list of installed applications and click **Upgrade Application** from the Actions menu.
6. In the Upgrade Application page, click either **Upload via HTTP** or **Upload via SCP** and navigate to the location where you saved the Network Director image.

   To upload Network Director by using HTTP:

   a. Click **Upload via HTTP** .

      The Upload Software via HTTP page opens.

   b. Click **Browse** to select the Network Director image file. You can either navigate to the local directory and select the Network Director software image, or copy and paste the download URL in the **File name** if the image is not already downloaded to the local directory.

   c. Click **Open** to download the image file.

   d. Click **Upload** to load the image file into Junos Space.

   To upload Network Director by using SCP if you have a Linux server:

   a. Click **Upload via SCP**.

      The Upload Software via SCP page opens.

      Enter the following secure copy credentials to upload the image from a remote server to Junos Space.

      - Enter the user name of the remote server.
      - Enter the password of the remote server and reenter the password in the Confirm Password field.
      - Enter the host IP address of the remote server.
      - Enter the path of the remote server to which you have copied the Network Director image file.

        Click **Upload** to load the image file into Junos Space.

        The Upload Application Job Information dialog opens.
7. Click **OK** to skip viewing the job results.
8. Select Network Director and click **Upgrade**.

   You can check the Job Status page to see the progress of the upgrade job. Once the upgrade completes, Network Director appears on the Applications inventory page. The new or upgraded application also appears in the Application Chooser (at the upper-left corner).
9. (Optional) Bookmark this page in your browser for future use.

   You can use the bookmarked URL to log in to Network Director without logging in to Junos Space first.

NOTE: Network Director cannot be installed on a system that has Connectivity Services Director or Edge Services Director already installed. Uninstall Connectivity Services Director or Edge Services Director before you install Network Director on your system. For steps to uninstall a Junos Space Application, see Uninstalling a Junos Space Application.

NOTE: The applogic service restarts after the application upgrade job is successful.

Uploading DMI Schemas

Junos Space Network Management Platform interfaces with network devices using an open API called the Device Management Interface (DMI), which is a standard interface used by Juniper Networks devices. Each device type is described by a unique data model (DM) that contains all the configuration data of the device. The DMI schema lists all the possible fields and attributes for a type of device. The newer schemas describe the new features coming out with recent device releases. It is important that you load all your device schemas into Junos Space Network Management Platform; otherwise only a default schema is applied when you try to edit a device configuration by using the device configuration edit action in the Devices workspace.

Typically, when you perform a clean installation of Junos Space Platform, a schema (usually the latest one) is automatically set as the default for each device family. If an exact matching schema is not available, the default schema for the device family is used.

For the list of DMI schema that you can obtain and upload in Junos Space before you start working on Network Director 6.2R1 Release, see Junos Space DMI Schema Requirements for Network Director.

If you cannot find the schema equivalent, use the latest DMI schema from the main release or contact the Juniper Support. For example, for an EX4500 switch running Junos OS Release 13.2X51-D20, you must use the Junos OS Release 13.2X51-D20 schema. If this is not available, you can use the latest schema available from the Junos OS Release 13.2X51 releases.

You can download the schema from Schema Repository.

To install or update a DMI schema on Junos Space Platform, see Adding Missing DMI Schemas or Updating Outdated DMI Schemas by Using the Update Schema Menu.

Next Steps

After your devices are up and synchronized, much of the function in Network Director is automatically enabled. However, there are a few additional tasks that you will need to perform to use all the features of Network Director. We suggest that you explore:

- Set up a Location View

  Location View is one of seven different views, or perspectives, in your network. In Location View, you can manage devices based on a site. Here you define the buildings, floors, wiring closets, and outdoor areas. You can upload floor maps for easy reference and assign devices to a specific spot.

  To set up a Location View:

  1. Click **Build** in the Network Director banner.
  2. Select **Location View** in the View pane to the left of the screen.
  3. Click **Setup Locations** in the Tasks pane to start setting up your location, buildings, floors, racks, wiring closets, and outdoor areas.

- Enable Trap Forwarding and Alarms for Fault Management

  A key component of Network Director is to diagnose problems with precision and ease. Network Director correlates multiple traps from the same device to a single alarm.

  You must complete device discovery and the devices must be up before you can enable trap forwarding. Traps are not enabled by default; you need to enable them after device discovery.

  1. Use **Set SNMP Trap Configuration** in the Tasks pane of Deploy mode to configure your device to send SNMP traps to Network Director.
  2. Review the list of alarms in Preferences, located in the Network Director banner. All alarms are enabled by default, but you might want to disable those alarms that are not pertinent to your installation. You can also change the severity of an alarm by using Preferences.

- Set up users

  After you install Network Director, there is only one username defined: *super* with the default password, *juniper123*.

  You have the ability to set up users with different Network Director privileges. New Network Director users are set up in Junos Space and follow the roles and privileges as defined in Junos Space. For a complete discussion on how to properly set up users, see Understanding Network Director User Administration.

- Configure Network Director API—The Network Director API is a set of Representational State Transfer (REST) APIs that enable network management functions and is installed when you install Network Director. To know more about configuring Network Director API, see Network Director API Guide.

- Learn what you can do with Network Director

  There are two ways you can become familiar with the functions and features of Network Director:

  - Use the extensive online help system that guides you through Network Director. Clicking the main Help icon provides a top-down view into the help system; clicking a Help icon on a pane or window provides context-sensitive information. Use the help system to familiarize yourself with Network Director and the different modes and panes in the interface.

  - Refer to the Network Director User Guide.

Preparing Devices for Management by Network Director

To discover and manage devices, Network Director requires the following minimum device configuration as a prerequisite. Ensure that the device:

- Has a static management IP address. The address can be in-band or out-of-band, but must be reachable from the Junos Space server.

- Is enabled for SSH v2. On EX Series switches you need to enable SSH. Issue the `set system services ssh protocol-version v2` command to enable SSH v2 on EX Series switches.

- Has a user ID with the superuser class configured. Junos Space and Network Director uses this user ID to authenticate the SSH connection with the device.

- Is enabled for SNMP with the appropriate read-only V1, V2, and V3 credentials created. You do not need to configure SNMP trap receivers; Network Director configures traps as a deployment task.

In addition, the following protocol ports must be open for Network Director communication:

- Port 22 for SSH connections. If you have changed the SSH port to a port other than port 22 on your Network Management Platform, you must change the SSH ports on your managed devices to the port that the Network Management Platform is using.

- Port 10162 for SNMP traps. Network Director receives traps from managed devices on this port. (After you install Network Director, use Network Director to configure SNMP on your devices to send traps to Network Director on this port.)

- Port 21 (TCP) and port 69 (UDP) for uploading the software image and configuration file to the FTP server.

Discovering Devices

When you start Network Director for the first time, the system does not have any devices. The first step is to build your network. Even with large networks, Network Director has made this step relatively easy and straightforward. You will add devices to Network Director and the database by using a process called *device discovery*. Once a device is discovered, it shows in the interface and Network Director begins to monitor the device.

Network Director provides a wizard for device discovery. The following example shows the path for device discovery through the wizard. For an alternate path, you can get a step-by-step instruction from the help system.

In this example, we provide an IP address range, and Network Director populates the database with all supported devices within that range.

1. While in the **Build** mode, select **Logical View**, **Location View**, **Device View**, or **Custom Group View** from the View selector.
2. To discover physical devices, click **Discover Devices** in the Tasks pane. Each mode has a Tasks Pane that displays the actions you can take while in that mode and that particular network view.
3. (Optional) Type a name for the discovery job. The default name is ND Discovery.
4. Click **Add** in the Device Targets window. You can add a single device IP address, a range of IP addresses, an IP subnet, or a hostname. In this example, we select an IP address range.
5. Provide the initial or the lowest IP address value and the ending or highest IP address value for the range and click **Add**. You can have up to 1024 devices in a range. After you click Add, the address range is listed in the Device Targets window.
6. Click **Next** or click **Discovery Options** to proceed to specify the device credentials and method of discovery.
7. Click **Add** in the Device Credentials window and enter the username and password assigned for administrative access.
8. Select **Ping**, **SNMP**, or both as the method of device discovery. Selecting both is the preferred method if the device is configured for SNMP.

   If you select SNMP, the Add SNMP Settings dialog box is displayed. In this example, because we run SNMP version 2, we need to provide the community string. Click **Add** to save the setting.

> **NOTE**: You cannot choose a method for device discovery for virtual network discovery.

9. Click **Next** or **Schedule Options** to proceed to schedule the time when discovery is run.

> **NOTE**: Scheduling options are not available for virtual network discovery.

10. Indicate whether to run the device discovery now or set up a schedule to minimize network traffic. In this example, we set the schedule to run during off hours.
11. Click **Review** to review the settings before you exit the wizard.
12. Click **Finish** to complete the discovery setup and to save the settings.
13. Click **View Discovery Status** to view all scheduled and completed jobs. After a job completes, you can click **Show Details** to view further information on any unexpected results.