

J-series Services Router Release Notes for JUNOS 8.0

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These release notes introduce the newest release of Juniper Networks J-series Services Routers and Release 8.0R4 of the JUNOS Internet software. They briefly describe J-series hardware features, identify known firmware and hardware problems, describe new J-Web features, and explain how to upgrade and downgrade the JUNOS Internet software and firmware on a Services Router.

For information about software features and problems, see the *JUNOS Internet Software Release Notes*. You can find the release notes on the Juniper Networks Technical Publications Web page, which is located at <http://www.juniper.net/techpubs/>.

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J-series Services Router Features

This section describes the new J-series Services Routers features, available with the JUNOS 8.0R4 release. For more information, see the following manuals:

- *J2300, J4300, and J6300 Services Router Getting Started Guide*
- *J4350 and J6350 Services Router Getting Started Guide*
- *J-series Services Router Basic LAN and WAN Access Configuration Guide*
- *J-series Services Router Advanced WAN Access Configuration Guide*
- *J-series Services Router Administration Guide*

For more information about the JUNOS Internet software that runs on Services Routers, see the manuals listed in Table 5 on page 14.

Interfaces and Chassis

- Two new J-series Services Router models—The new J4350 and J6350 Services Routers have identical dimensions. Each router chassis fits into a 19-inch rack using 2 rack units (RUs) of vertical space. Each chassis contains four built-in Gigabit Ethernet ports with link speeds of 10/100/1000 Mbps over a copper interface and six slots for field-replaceable Physical Interface Modules (PIMs). Additional features include:
 - Hardware-based IPSec acceleration (optional on J4350 routers).
 - Support for existing J-series PIMs in all six PIM slots.
 - Support for new Gigabit Ethernet and 4-port Fast Ethernet ePIMs in PCI Express (high-speed) slots. J4350 routers have two PCI Express slots (slots 3 and 6), and J6350 routers have four PCI Express slots (slots 2, 3, 5, and 6).
 - New slot numbering—In contrast to the existing J-series routers, the slots on the new J4350 and J6350 Services Routers are numbered consecutively from top to bottom and left to right. The slots on the left side are 1, 2, and 3 from the top down, and the slots on the right side are 4, 5, and 6.
- New high-speed Ethernet ePIMs—The new J4350 and J6350 Services Routers support the following new Ethernet ePIMs in PCI Express slots:
 - 1-port Copper Gigabit Ethernet ePIM.
 - 1-port SFP Gigabit Ethernet ePIM. The SFP Gigabit Ethernet ePIM supports 1000Base-LX and 1000Base-SX small form-factor pluggable transceivers (SFPs) only, and does not support 1000Base-LH or 1000Base-TX SFPs.
 - 4-port 10/100Base-T Fast Ethernet ePIM.

The new high-speed Ethernet ePIMs do not support SNMP, nor are they intended for use in J2300, J4300, and J6300 Services Routers.

- LFI and MLPPP support on serial interfaces—Link fragmentation and interleaving (LFI) and Multilink Point-to-Point protocol (MLPPP) support has been extended

to serial interfaces. Support on serial interfaces is the same as the existing LFI and MLPPP support on T1 and E1 interfaces.

Services Router User Interface and Configuration

- Capturing and viewing packets with the J-Web Interface—The J-Web graphical user interface enables you to capture packets and display them partially decoded in near real time. You can also construct simple filters to capture only certain packets based on expressions used by tcpdump and the **monitor traffic** command line interface (CLI) command. The captured packets can also be saved to a file for offline analysis.
- J-Web support for multilink interfaces—The J-Web interface provides new Quick Configuration pages to configure Multilink Point-to-Point Protocol (MLPPP) and Multilink Frame Relay (MLFR) bundles on the link services **ls-0/0/0** interface, an internal interface on the Services Router. The link services interface consists of services provided by the following interfaces on M-series and T-series routing platforms: multilink services interface (**ml-fpc/pic/port**), link services interface (**ls-fpc/pic/port**), and link services intelligent queuing interface (**lsq-fpc/pic/port**).

Multilink bundles provide additional bandwidth, load balancing, and redundancy by aggregating multiple T1, T3, E1, E3, or serial interfaces into a single logical link as follows:

- Bundle multiple Point-to-Point Protocol (PPP) links into a single MLPPP logical link
- Bundle multiple Frame Relay data-link connection identifiers (DLCIs) into a single MLFR logical link

To configure services bundles using Quick Configuration, navigate to **Configuration > Quick Configuration > Interfaces** and click the link services interface name—**ls-0/0/0**.

- J-Web support for Gigabit Ethernet interfaces—The J-Web interface provides new Quick Configuration pages to configure Gigabit Ethernet interfaces.

To configure Gigabit Ethernet interfaces using Quick Configuration, navigate to **Configuration > Quick Configuration > Interfaces** and click the Gigabit Ethernet interface name—for example, **ge-0/0/0**.

Changes in Default Behavior

Interfaces and Chassis

- On Gigabit Ethernet ePIMs of J4350 and J6350 Services Routers, you can configure a maximum transmission unit (MTU) size of only 9018 bytes even though the CLI indicates that you can configure an MTU of up to 9192 bytes. If you configure an MTU greater than 9018 bytes, the router does not accept the configuration and generates a system log error message similar to the following:

```
/kernel: ge-0/0/0: Illegal media change. MTU invalid: 9192.  
Max MTU supported on this PIC: 9018
```

- On 4-port Fast Ethernet ePIMs of J4350 and J6350 Services Routers, you can configure a maximum transmission unit (MTU) size of only 1518 bytes even though the CLI indicates that you can configure an MTU of up to 9192 bytes. If you configure an MTU greater than 1518 bytes, the router does not accept the configuration and generates a system log error message similar to the following:

```
/kernel: fe-3/0/1: Illegal media change. MTU invalid: 9192.  
Max MTU supported on this PIC: 1518
```

Outstanding J-series Services Router Issues

The following problems currently exist in J-series Services Routers. The identifier following the description is the tracking number in the Juniper Networks bug database.

Services Router User Interface and Configuration

If you include the **explicit-priority** statement at the **[edit system syslog file messages]** hierarchy level, the event ID is not displayed for any event in the J-Web event viewer. If you include **system syslog time-format millisecond** in the configuration, you cannot filter events in the J-Web event viewer. [PR/70523]

Interfaces and Chassis

- For ISDN dialer interfaces, when you include the **no-keepalives** statement at the **[edit interfaces dlo unit *logical-unit-number*]** hierarchy level and you issue the **show interfaces dlo** command, the output might display default keepalive settings. [PR/58520]
- If you disable an adaptive services interface by including the **disable** statement at the **[edit interfaces sp-0/0/0]** hierarchy level and then delete the **disable** statement from the configuration, the IPSec service might not reset correctly. As a workaround, either issue the **deactivate services** command followed by the **activate services** command, or issue the **request chassis pic offline fpc-slot *pim-slot* pic-slot 0** command followed by the **request chassis pic online fpc-slot *pim-slot* pic-slot 0** command. [PR/58522]
- When you configure the **dialer-watch** option, IPv6 prefixes are not monitored. [PR/59143]
- If you take an ISDN interface offline, the LEDs on the ISDN PIM might not turn off. [PR/59536]
- For ISDN interfaces, if you include the **vrf-table-label** statement at the **[edit interfaces routing-instances *routing-instance-name*]** hierarchy level, packets might be dropped from the connection. [PR/59718]
- For ISDN dialer interfaces, if you include the **minimum-links** statement at the **[edit interfaces dlo unit *logical-unit-number*]** hierarchy level and then deactivate the BRI interface associated with the dialer interface, the output packets counter displayed

in the output of the **show interfaces** command might continue to increment when the specified number of minimum links are not available. [PR/59986]

- For ISDN dialer interfaces, when you configure the **load-threshold 100** statement at the **[edit interfaces dIO unit *logical-unit-number* dialer-options]** hierarchy level and the 56-Kbps threshold is exceeded, the interface does not support additional network traffic and might not activate another BRI interface. [PR/60045]
- If an ISDN dialer interface is configured as a dialer watch interface and is deactivated and configured as a backup interface, the dialer interface does not dial out when the primary interface becomes unavailable. As a workaround, disable the primary interface and commit the configuration, then enable the primary interface and commit the configuration. [PR/67355]
- On a serial PIM of a J-series services router, the member link of an MLPPP bundle might show large, incorrect values for input and output counters when the remote end of the serial connection is not operating. The problem might also happen when the logical interface configuration is deactivated and reactivated. This condition has no operational impact, and after a few minutes the counter values are automatically corrected. [PR/72241]

Class of Service

- If you oversubscribe an E1 interface, latency on the high-priority queue might be higher than expected. As a workaround, configure a shaping rate on the E1 interface that is equal to the line rate minus the E1 framing overhead. [PR/60595]
- J4350 and J6350 Services Routers might not have the requisite data buffers needed to meet expected delay-bandwidth requirements. Lack of data buffers might degrade CoS performance with smaller-sized (500 bytes or less) packets. [PR/73054]

Resolved Issues

The following issues have been resolved since JUNOS Release 8.0R1. The identifier following the description is the tracking number in our bug database.

- If you are using a G.SHDSL interface in two-wire mode with an ADTRAN DSLAM, the 320-Kbps line rate might not work. [PR/62177: This issue has been resolved.]
- A G.SHDSL interface configured in two-wire mode with an ADTRAN DSLAM might show considerable packet loss if the line rate is configured at 448 Kbps. [PR/62179: This issue has been resolved.]
- When a G.SHDSL interface initiates negotiations with an ADTRAN DSLAM, the G.SHDSL interface requires more than a minute to negotiate successfully. [PR/62462: This issue has been resolved.]
- On a J2300 Services Router with G.SHDSL interfaces installed, the line flaps at 320 Kbps with an ADTRAN DSLAM. [PR/64727; 64729: This issue has been resolved.]

Errata

Payload loopback functionality is not supported on ATM-over-SHDSL interfaces.
[*J-series Services Router Basic LAN and WAN Access Configuration Guide*]

The *J-series Services Router Advanced WAN Access Configuration Guide* incorrectly states that you can use the J-Web interface to configure the accounting option for a discard action for IPv6 firewall filters. You can configure the accounting option for a discard action only for IPv4 (not IPv6) firewall filters.

Supported Third-Party Hardware

The USB slots on J-series Services Routers accept a USB storage device or USB storage device adapter with a compact flash disk installed, as defined in the *CompactFlash Specification* published by the CompactFlash Association. When the USB device is installed and configured, it automatically acts as a secondary boot device if the primary compact flash disk fails on startup. Depending on the size of the USB storage device, you can also configure it to receive any core files generated during a router failure. The USB device must have a storage capacity of at least 256 MB.

Table 1 on page 7 lists USB devices supported for use with the J-series routers.

Table 1: Supported USB Devices on the J-series Services Routers

Manufacturer	Storage Capacity	Part Number
SanDisk—Cruzer Mini 2.0	256 MB	SDCZ2-256-A10
SanDisk—ImageMate USB 2.0 Reader/Writer for CompactFlash Type I and II	N/A	SDDR-91-A15
SanDisk CompactFlash	512 MB	SDCFB-512-455
SanDisk CompactFlash	1 GB	SDCFB-1000-A10

J-series Compact Flash and Memory Requirements

Table 2 on page 7 lists the compact flash and DRAM requirements for all J-series Services Routers.

Table 2: J-series Compact Flash and DRAM Requirements

Model	Minimum Compact Flash Required	Minimum DRAM Required	Maximum DRAM Supported
J2300	256 MB	256 MB	1 GB
J4300	256 MB	256 MB	1 GB
J4350	256 MB	256 MB	2 GB

Table 2: J-series Compact Flash and DRAM Requirements *(continued)*

Model	Minimum Compact Flash Required	Minimum DRAM Required	Maximum DRAM Supported
J6300	256 MB	256 MB	1 GB
J6350	256 MB	256 MB	2 GB



NOTE: If your J2300 Services Router contains a 128-MB compact flash, we recommend you upgrade it to at least 256 MB.

J-series Upgrade and Downgrade Instructions

This section contains the following topics:

- Upgrade and Downgrade Overview on page 8
- Before You Begin on page 9
- Downloading Software Upgrades from Juniper Networks on page 10
- Installing Software Upgrades on page 10
- Downgrade Instructions on page 13



NOTE: If the router is running a software version previous to JUNOS Release 7.2R3 or 7.3R2, you might need to upgrade to one of these interim software releases before you can upgrade to JUNOS Release 8.0R4.

Upgrade and Downgrade Overview

Typically, you upgrade the JUNOS Internet software on a Internet Router by downloading a set of images onto your router or onto another system on your local network, such as a PC. You then uncompress the package and install the uncompressed software using the J-Web interface or the CLI. Finally, you boot your system with this upgraded device.

A JUNOS software package is a collection of files that make up a software component. You can download software packages either for upgrading JUNOS software or for recovering a primary compact flash.

All JUNOS software is delivered in signed packages that contain digital signatures, Secure Hash Algorithm (SHA-1) checksums, and Message Digest 5 (MD5) checksums. For more information about JUNOS software packages, see the *JUNOS Installation and Upgrade Guide*.

Upgrade Software Packages

Download an upgrade software package, also known as an install package, to install new features and software fixes as they become available.

An upgrade software package name is in the following format:

package-name-m.nZx-distribution.tgz.

- *package-name* is the name of the package—for example, *junos-jseries*.
- *m.n* is the software release, with *m* representing the major release number—for example, 8.0.
- *Z* indicates the type of software release. For example, *R* indicates released software, and *B* indicates beta-level software.
- *x* represents the version of the major software release—for example, 2.
- *distribution* indicates the area for which the software package is provided—*domestic* for the United States and Canada and *export* for worldwide distribution.

A sample J-series upgrade software package name is *junos-jseries-8.0R2-domestic.tgz*.

Recovery Software Packages

Download a recovery software package, also known as an install media package, to recover a primary compact flash device.

A recovery software package name is in the following format:

package-name-m.nZx-export-cfnnn.gz.

- *package-name* is the name of the package—for example, *junos-jseries*.
- *m.n* is the software release, with *m* representing the major release number—for example, 8.0.
- *Z* indicates the type of software release. For example, *R* indicates released software, and *B* indicates beta-level software.
- *x* represents the version of the major software release—for example, 2.
- *export* indicates that the recovery software package is the exported worldwide software package version.
- *cfnnn* indicates the size of the target compact flash device in megabytes—for example, *cf256*.

A sample J-series recovery software package name is *junos-jseries-8.0R2-export-cf256.gz*.

Before You Begin

Before upgrading, be sure to back up the currently running and active file system and configuration so that you can recover to a known, stable environment in case the upgrade is unsuccessful. To back up the file system, you must have a removable

compact flash disk installed on a J4300, J4350, J6300 or J6350 Services Router, or a USB drive installed on any J-series Services Router. The backup device must have a storage capacity of at least 256 MB.

To back up the file system to the removable compact flash disk, issue the following command:

```
user@host> request system snapshot media removable-compact-flash
```

To back up the file system to the removable USB drive, issue the following command:

```
user@host> request system snapshot media usb
```

Before installing the software upgrade, issue the following command, which frees storage by rotating noncurrent log files in `/var/log`, deleting files in `/var/tmp` that have not been modified in two days, and deleting all crash files in `/var/crash`:

```
user@host> request system storage cleanup
```

Before deleting the files, you can view the files to be deleted by issuing the following command:

```
user@host> request system storage cleanup dry-run
```

Downloading Software Upgrades from Juniper Networks

Follow these steps to download software upgrades from Juniper Networks:

1. Using a Web browser, follow the links to the download URL on the Juniper Networks Web page. Depending on your location, select either **Canada and U.S. Version** or **Worldwide Version**:
 - <https://www.juniper.net/support/csc/swdist-domestic/>
 - <https://www.juniper.net/support/csc/swdist-ww/>
2. Log in to the Juniper Networks authentication system using the username (generally your e-mail address) and password supplied by Juniper Networks representatives.
3. Using either the J-Web interface or the CLI, select the appropriate junos-j-series software package for your application. For information about JUNOS software packages, see “Upgrade and Downgrade Overview” on page 8.
4. Download the software to a local host or to an internal software distribution site.

Installing Software Upgrades

Use either the J-Web interface or the CLI to install JUNOS software upgrades.

Installing Software Upgrades with the J-Web Interface

You can use the J-Web interface to install software upgrades from a remote server using FTP or HTTP, or by uploading the file to the router. This section contains the following topics:

- Installing Software Upgrades from a Remote Server on page 11
- Installing Software Upgrades by Uploading Files on page 11

Installing Software Upgrades from a Remote Server

You can use the J-Web interface to install software packages on the Internet Router that are retrieved with FTP or HTTP from the location specified.

To install software upgrades from a remote server:

1. Download the software package as described in “Downloading Software Upgrades from Juniper Networks” on page 10.
2. In the J-Web interface, select **Manage > Software > Install Package**.
3. On the Install Remote page, enter information into the fields described in Table 3 on page 11.
4. Click **Fetch and Install Package**. The software is activated after the router has rebooted.

Table 3: Install Remote Summary

Field	Function	Your Action
Package Location (required)	Specifies the FTP or HTTP server, file path, and software package name.	Type the full address of the software package location on the FTP or HTTP server—one of the following: <code>ftp://hostname/pathname/package-name</code> <code>http://hostname/pathname/package-name</code>
User	Specifies the username, if the server requires one.	Type the username.
Password	Specifies the password, if the server requires one.	Type the password.
Reboot If Required	If this box is checked, the router is automatically rebooted when the upgrade is complete.	Check the box if you want the router to reboot automatically when the upgrade is complete.

Installing Software Upgrades by Uploading Files

You can use the J-Web interface to install software packages uploaded from your computer to the Internet Router.

To install software upgrades by uploading files:

1. Download the software package as described in “Downloading Software Upgrades from Juniper Networks” on page 10.
2. In the J-Web interface, select **Manage > Software > Upload Package**.
3. On the Upload Package page, enter information into the fields described in Table 4 on page 12.
4. Click **Upload Package**. The software is activated after the router has rebooted.

Table 4: Upload Package Summary

Field	Function	Your Action
File to Upload (required)	Specifies the location of the software package.	Type the location of the software package, or click Browse to navigate to the location.
Reboot If Required	If this box is checked the router is automatically rebooted when the upgrade is complete.	Select the check box if you want the router to reboot automatically when the upgrade is complete.

Installing Software Upgrades with the CLI

To install software upgrades on a router with the CLI:

1. Download the software package as described in “Downloading Software Upgrades from Juniper Networks” on page 10.
2. Copy the software package to the router. We recommend that you copy it to the `/var/tmp` directory.
3. Install the new package on the Internet Router:

```
user@host> request system software add validate unlink reboot source
```

Replace *source* with one of the following paths:

- For a software package that is installed from a local directory on the router—`/pathname/package-name`
- For software packages that are downloaded and installed from a remote location:
 - `ftp://hostname/pathname/package-name`
 - `http://hostname/pathname/package-name`

The **validate** option validates the software package against the current configuration as a prerequisite to adding the software package, to ensure that the router reboots successfully. This is the default behavior when you are adding a software package for a different release.

The **unlink** option removes the package at the earliest opportunity so that the router has enough room to complete the installation.

Adding the **reboot** command reboots the router after the upgrade is validated and installed. Rebooting takes place only if the upgrade is successful.

When the reboot is complete, the router displays the login prompt.

Downgrade Instructions

This section contains the following topics:

- Downgrading the Software with the J-Web Interface on page 13
- Downgrading the Software with the CLI on page 13



NOTE: Juniper Networks supports direct software downgrades for a maximum of three releases. For example, if your routing platform is running JUNOS Release 7.6, you should not expect any problems downgrading to Release 7.3. If you attempt to downgrade more than three releases and validation of your configuration fails, we recommend downgrading to an intermediate release first before downgrading to the desired release. For example, if your routing platform is running JUNOS Release 7.6 and you want to install Release 7.2, downgrade the software to Release 7.3 first and then downgrade to Release 7.2.

Downgrading the Software with the J-Web Interface

You can downgrade the software from the J-Web interface. When you downgrade the software to a previous version, the software version that is saved in **junos.old** is the version of JUNOS that your router is downgraded to. For your changes to take effect, you must reboot the router.

To downgrade software:

1. Go to **Manage > Software > Downgrade**. The previous version (if any) is displayed on this page. For example, you can downgrade to the previously installed version of the router software, `/cf/packages/junos-7.0120040930_1745-domestic`.



NOTE: After you perform this operation, you cannot undo it.

2. Select **Downgrade** to downgrade to the previous version of the software or **Cancel** to cancel the downgrade process.
3. When the downgrade process is complete, for the new software to take effect, click **Manage > Reboot** to reboot the router at your convenience.

Downgrading the Software with the CLI

You can revert to the previous set of software using the **request system software rollback** command in the CLI. Rollback fails if the **junos-jseries** software bundle cannot be found in `/var/sw/pkg`.

You can roll back only to the software release that was installed on the Services Router before the current release. After you issue the **request system software rollback** command, the old release is loaded and you cannot reload it again. Issuing the **request system software rollback** command again results in an error.

To downgrade to an earlier version of software, follow the procedure for upgrading, using the `junos-jseries` software bundle labeled for the appropriate release.

Related Juniper Networks Documentation

Table 5 on page 14 lists and describes the publications for J-series Services Routers, the JUNOS CLI, the JUNOScript application programming interface (API), and the JUNOScope network management software.

Table 5: Juniper Networks Technical Documentation

Title	Description
J-series Guides	
<i>Getting Started Guide</i>	Provides an overview, basic instructions, and specifications for J-series Services Routers. The guide explains how to prepare your site for installation, unpack and install the router and its components, install licenses, and establish basic connectivity. Use the Getting Started Guide for your router model.
<i>J-series Services Router Basic LAN and WAN Access Configuration Guide</i>	Explains how to configure the interfaces on J-series Services Routers for basic IP routing with standard routing protocols, ISDN backup, and digital subscriber line (DSL) connections.
<i>J-series Services Router Advanced WAN Access Configuration Guide</i>	Explains how to configure J-series Services Routers in virtual private networks (VPNs) and multicast networks, configure data link switching (DLSw) services, and apply routing techniques such as policies, stateless and stateful firewall filters, IP Security (IPSec) tunnels, and class-of-service (CoS) classification for safer, more efficient routing.
<i>J-series Services Router Administration Guide</i>	Shows how to manage users and operations, monitor network performance, upgrade software, and diagnose common problems on J-series Services Routers.
JUNOS Configuration Guides	
<i>JUNOS Class of Service Configuration Guide</i>	Provides an overview of the class-of-service (CoS) functions of the JUNOS software and describes how to configure CoS features, including configuring multiple forwarding classes for transmitting packets, defining which packets are placed into each output queue, scheduling the transmission service level for each queue, and managing congestion through the random early detection (RED) algorithm.
<i>JUNOS CLI User Guide</i>	Describes how to use the JUNOS command-line interface (CLI) to configure, monitor, and manage Juniper Networks routing platforms. This material was formerly covered in the <i>JUNOS System Basics Configuration Guide</i> .
<i>JUNOS Feature Guide</i>	Provides a detailed explanation and configuration examples for several of the most complex features in the JUNOS software.
<i>JUNOS MPLS Applications Configuration Guide</i>	Provides an overview of traffic engineering concepts and describes how to configure traffic engineering protocols.
<i>JUNOS Multicast Protocols Configuration Guide</i>	Provides an overview of multicast concepts and describes how to configure multicast routing protocols.

Table 5: Juniper Networks Technical Documentation (*continued*)

Title	Description
<i>JUNOS Network Interfaces Configuration Guide</i>	Provides an overview of the network interface functions of the JUNOS Internet software and describes how to configure the network interfaces on the routing platform.
<i>JUNOS Network Management Configuration Guide</i>	Provides an overview of network management concepts and describes how to configure various network management features, such as SNMP and accounting options.
<i>JUNOS Software Installation and Upgrade Guide</i>	Provides a description of JUNOS software components and packaging, and includes detailed information about how to initially configure, reinstall, and upgrade the JUNOS system software. This material was formerly covered in the <i>JUNOS System Basics Configuration Guide</i> .
<i>JUNOS Policy Framework Configuration Guide</i>	Provides an overview of policy concepts and describes how to configure routing policy, firewall filters, forwarding options, and cflowd.
<i>JUNOS Routing Protocols Configuration Guide</i>	Provides an overview of routing concepts and describes how to configure routing, routing instances, and unicast routing protocols.
<i>JUNOS Services Interfaces Configuration Guide</i>	Provides an overview of the services interfaces functions of the JUNOS software and describes how to configure the services interfaces on the router.
<i>JUNOS System Basics Configuration Guide</i>	Describes Juniper Networks routing platforms, and provides information about how to configure basic system parameters, supported protocols and software processes, authentication, and a variety of utilities for managing your router on the network.
<i>JUNOS VPNs Configuration Guide</i>	Provides an overview and describes how to configure Layer 2 and Layer 3 virtual private networks (VPNs), virtual private LAN service (VPLS), and Layer 2 circuits. Provides configuration examples.
JUNOS References	
<i>JUNOS Hierarchy and RFC Reference</i>	Describes the JUNOS <i>configuration mode</i> commands. Provides a hierarchy reference that displays each level of a configuration hierarchy and includes all possible configuration statements that can be used at that level. This material was formerly covered in the <i>JUNOS System Basics Configuration Guide</i> .
<i>JUNOS System Basics and Services Command Reference</i>	Describes the JUNOS software <i>operational mode</i> commands you use to monitor and troubleshoot system basics, including commands for real-time monitoring and route (or path) tracing, system software management, and chassis management. This guide also describes commands for monitoring and troubleshooting services such as class of service (CoS), IP Security (IPSec), stateful firewalls, flow collection, and flow monitoring.
<i>JUNOS Interfaces Command Reference</i>	Describes the JUNOS software <i>operational mode</i> commands you use to monitor and troubleshoot interfaces.
<i>JUNOS Routing Protocols and Policies Command Reference</i>	Describes the JUNOS software <i>operational mode</i> commands you use to monitor and troubleshoot routing policies and protocols, including firewall filters.
<i>JUNOS System Log Messages Reference</i>	Describes how to access and interpret system log messages generated by JUNOS software modules and provides a reference page for each message.
JUNOS API and Scripting Documentation	
<i>JUNOScript API Guide</i>	Describes how to use the JUNOScript application programming interface (API) to monitor and configure Juniper Networks routers.

Table 5: Juniper Networks Technical Documentation (*continued*)

Title	Description
<i>JUNOS XML API Configuration Reference</i>	Provides reference pages for the configuration tags in the JUNOScript API.
<i>JUNOS XML API Operational Reference</i>	Provides reference pages for the operational tags in the JUNOScript API.
<i>JUNOS Configuration and Diagnostic Automation Guide</i>	Provides an overview, instructions for using, and examples of the commit script and self-diagnosis features of the JUNOS software. This guide explains how to enforce custom configuration rules defined in scripts that run at commit time, how to use commit script macros to provide simplified aliases for frequently used configuration statements, and how to configure diagnostic event policies and actions associated with each policy.
<i>NETCONF API Guide</i>	Describes how to use the NETCONF API to monitor and configure Juniper Networks routing platforms.
JUNOS Comprehensive Index and Glossary	
<i>JUNOS Internet Software Comprehensive Index and Glossary</i>	Provides a complete index of all JUNOS Internet software books and the <i>JUNOScript API Guide</i> . Also provides a comprehensive glossary.
JUNOScope Software Documentation	
<i>JUNOScope Software User Guide</i>	Describes the JUNOScope software graphical user interface (GUI), how to install and administer the software, and how to use the software to manage router configuration files and monitor router operations.
Release Notes	
<i>J-series Services Router Release Notes</i>	Summarize new features, identify hardware problems, provide information omitted from the manual, and contain upgrade and downgrade instructions.
<i>JUNOS Release Notes</i>	Summarize new features for a particular software release, provide corrections and updates to published JUNOS and JUNOScript manuals, provide information that might have been omitted from the manuals, and describe upgrade and downgrade procedures.
<i>JUNOScope Release Notes</i>	Contain corrections and updates to the published JUNOScope manual, provide information that might have been omitted from the manual, and describe upgrade and downgrade procedures.

Documentation Feedback

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- Document name
- Document part number
- Page number
- Software release version

Requesting Support

For technical support, open a support case with the Case Manager link at <http://www.juniper.net/support/> or call 1-888-314-JTAC (from the United States, Canada, or Mexico) or 1-408-745-9500 (from elsewhere).

If you are reporting a hardware or software problem, issue the following command from the CLI before contacting support:

```
user@host> request support information | save filename
```

To provide a core file to Juniper Networks for analysis, compress the file with the `gzip` utility, rename the file to include your company name, and copy it to [ftp.juniper.net:pub/incoming](ftp://ftp.juniper.net/pub/incoming). Then send the filename, along with software version information (the output of the `show version` command) and the configuration, to support@juniper.net. For documentation issues, fill out the bug report form located at <http://www.juniper.net/techpubs/docbug/docbugreport.html>.

Revision History

15 May 2007—Revision 4, JUNOS Release 8.0R4

29 September 2006—Revision 3, JUNOS Release 8.0R2

16 August 2006—Revision 2, JUNOS Release 8.0R1

14 August 2006—Revision 1, JUNOS Release 8.0R1

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