



JUNOS® Software

Migration Guide

for J Series Services Routers

Release 9.6

Juniper Networks, Inc.

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About This Guide

This preface provides the following guidelines for using the *JUNOS Software Migration Guide* and J Series related Juniper Networks, Inc., technical documents:

- Objectives on page ix
- Supported Routing Platforms on page x
- Audience on page x
- How to Use This Manual on page x
- Documentation Conventions on page xii
- List of Technical Publications on page xiv
- Documentation Feedback on page xiv
- Requesting Support on page xiv

Objectives

This guide shows you how to perform the following software tasks:

- Migrate the JUNOS Software on a J Series router to JUNOS software with enhanced services.
- Manage CompactFlash card space.
- Migrate ScreenOS software on an SSG 300M-series or SSG 500M-series security device to JUNOS software with enhanced services on a J Series Services Router (hardware conversion kit also required).
- Convert the JUNOS Software on a J Series router to ScreenOS software on an SSG 300M-series or SSG 500M-series security device (hardware conversion kit also required).
- Downgrade the JUNOS software with enhanced services on a J Series router to the JUNOS Software.

For a list of the Secure Services Gateway (SSG) security devices and J Series routers on which you can perform these tasks, see “Supported Routing Platforms” on page x.



NOTE: This manual documents Release 9.6 of the JUNOS Software. For additional information—either corrections to or information that might have been omitted from this manual—see the *JUNOS Software Release Notes* at <http://www.juniper.net/>.

Supported Routing Platforms

For the features described in this manual, the JUNOS software with enhanced services currently supports only the J Series Services Routers listed in Table 1.

Table 1: SSG Security Devices and J Series Services Routers Supported for Migration

SSG Security Device	J Series Services Router
SSG 320M	J2320
SSG 350M	J2350
SSG 520M	J4350
SSG 550M	J6350

Audience

This manual is designed for anyone needing to migrate from JUNOS or ScreenOS software to JUNOS software with enhanced services, or downgrade from JUNOS software with enhanced services to the JUNOS Software. This manual is intended for the following audiences:

- Customers with technical knowledge of and experience with networks and network security, the Internet, and Internet routing protocols
- Network administrators who install, configure, and manage Internet routers

How to Use This Manual

This manual and the other manuals in this set explain how to install, configure, and manage:

- JUNOS Software with enhanced services for J Series Services Routers
- JUNOS Software for SRX Series Services Gateways

Table 2 identifies the tasks required to configure and manage these devices and shows where to find task information and instructions.

For an annotated list of the documentation referred to in Table 2, see “List of Technical Publications” on page xiv. All documents are available at <http://www.juniper.net/techpubs/>.

Table 2: Tasks and Related Documentation

Task	Related Documentation
Basic Device Installation and Setup	
■ Reviewing safety warnings and compliance statements	J Series Services Routers:
■ Installing hardware and establishing basic connectivity	■ <i>J Series Services Routers Quick Start</i>
■ Initially setting up the router	■ <i>J Series Services Routers Hardware Guide</i> ■ <i>JUNOS Software Release Notes</i>
Migration from ScreenOS or JUNOS to JUNOS Software with Enhanced Services (if necessary)	
■ Migrating from JUNOS Release 8.2 or higher to JUNOS Software with enhanced services	<i>JUNOS Software Migration Guide</i> (J Series Services Routers only)
■ Migrating from ScreenOS Release 5.4 or higher to JUNOS Software with enhanced services	
Context—Changing to Secure Context or Router Context	
Changing the device from one context to another and understanding the factory default settings	<i>JUNOS Software Administration Guide</i>
Interface Configuration	
Configuring device interfaces	■ <i>JUNOS Software Interfaces and Routing Configuration Guide</i> ■ <i>JUNOS Software CLI Reference</i>
Services Router Deployment Planning and Configuration	
■ Understanding and gathering information required to design network firewalls and IPSec VPNs	JUNOS Software Design and Implementation Guide (J Series Services Routers only)
■ Implementing a JUNOS Software with enhanced services firewall from a sample scenario	
■ Implementing a policy-based IPSec VPN from a sample scenario	
Security Configuration	
Configuring and managing the following security services:	■ <i>JUNOS Software Security Configuration Guide</i> ■ <i>JUNOS Software CLI Reference</i>
■ Stateful firewall policies	
■ Zones and their interfaces and address books	
■ IPSec VPNs	
■ Firewall screens	
■ Interfaces modes: Network Address Translation (NAT) mode and Route mode	
■ Public Key Cryptography	
■ Application Layer Gateways (ALGs)	
■ Chassis clusters	
■ Intrusion Detection and Prevention (IDP)	

Table 2: Tasks and Related Documentation (continued)

Task	Related Documentation
Routing Protocols and Services Configuration	
<ul style="list-style-type: none">■ Configuring routing protocols, including static routes and the dynamic routing protocols RIP, OSPF, BGP, and IS-IS■ Configuring class-of-service (CoS) features, including traffic shaping and policing■ Configuring packet-based stateless firewall filters (access control lists) to control access and limit traffic rates■ Configuring MPLS to control network traffic pattern	<ul style="list-style-type: none">■ <i>JUNOS Software Interfaces and Routing Configuration Guide</i>■ <i>JUNOS Software CLI Reference</i>
WAN Acceleration Module Installation (Optional)	
Installing and initially configuring a WXC Integrated Services Module (ISM 200)	<i>WXC Integrated Services Module Installation and Configuration Guide (J Series Services Routers only)</i>
User and System Administration	
<ul style="list-style-type: none">■ Administering user authentication and access■ Monitoring the device, routing protocols, and related operations■ Configuring and monitoring system alarms and events, real-time performance (RPM) probes, and performance■ Monitoring the firewall and other security-related services■ Managing system log files■ Upgrading software■ Diagnosing common problems	<i>JUNOS Software Administration Guide</i>
User Interfaces	
<ul style="list-style-type: none">■ Understanding and using the J-Web interface■ Understanding and using the CLI configuration editor	<ul style="list-style-type: none">■ <i>J Series Services Routers Quick Start</i>■ <i>JUNOS Software Administration Guide</i>

Documentation Conventions

Table 3 defines notice icons used in this manual.

Table 3: 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.

Table 4 defines the text and syntax conventions used in this manual.

Table 4: Text and Syntax Conventions (Page 1 of 2)

Convention	Element	Example
Bold sans serif typeface	Represents text that you type.	To enter configuration mode, type the <code>configure</code> command: user@host> configure

Table 4: Text and Syntax Conventions (Page 2 of 2)

Convention	Element	Example
Fixed-width typeface	Represents output on the terminal screen.	<code>user@host> show chassis alarms</code> <code>No alarms currently active</code>
<i>Italic typeface</i>	<ul style="list-style-type: none"> ■ Introduces important new terms. ■ Identifies book names. ■ Identifies RFC and Internet draft titles. 	<ul style="list-style-type: none"> ■ A policy <i>term</i> is a named structure that defines match conditions and actions. ■ <i>JUNOS System Basics Configuration Guide</i> ■ RFC 1997, <i>BGP Communities Attribute</i>
<i>Italic sans serif typeface</i>	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 <i>domain-name</i>
Sans serif typeface	Represents names of configuration statements, commands, files, and directories; IP addresses; configuration hierarchy levels; or labels on routing platform components.	<ul style="list-style-type: none"> ■ To configure a stub area, include the stub statement at the [edit protocols ospf area <i>area-id</i>] hierarchy level. ■ The console port is labeled CONSOLE.
< > (angle brackets)	Enclose optional keywords or variables.	<code>stub <default-metric <i>metric</i>>;</code>
(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.	<code>broadcast multicast</code> <code>(<i>string1</i> <i>string2</i> <i>string3</i>)</code>
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	<code>rsvp { # Required for dynamic MPLS only</code>
[] (square brackets)	Enclose a variable for which you can substitute one or more values.	<code>community name members [<i>community-ids</i>]</code>
Indentation and braces ({ })	Identify a level in the configuration hierarchy.	[edit] routing-options { static { route default { nexthop <i>address</i> ; retain; } } }
; (semicolon)	Identifies a leaf statement at a configuration hierarchy level.	

J Series Documentation and Release Notes

For a list of related J Series documentation, see

<http://www.juniper.net/techpubs/software/junos-jservices/index-main.html>.

If the information in the latest release notes differs from the information in the documentation, follow the *JUNOS Software Release Notes*.

To obtain the most current version of all Juniper Networks technical documentation, see the product documentation page on the Juniper Networks website at <http://www.juniper.net/techpubs/>.

Documentation Feedback

We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation. Send your comments to techpubs-comments@juniper.net, or fill out the documentation feedback form at <https://www.juniper.net/cig-bin/docbugreport/l>. If you are using e-mail, be sure to include the following information with your comments:

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

Requesting Support

For technical support, open a support case using the Case Management 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).

Chapter 1

Preparing for Migration

Before migrating JUNOS or ScreenOS software to JUNOS software with enhanced services, become familiar with the effects of migration on your existing software. Before performing any migration, be sure you meet the hardware and software requirements and understand the migration process and tools.

This chapter contains the following sections:

- Migration Guide Roadmap on page 1
- Secure and Router Contexts and Effects on Migration on page 3
- Hardware and System Software Requirements on page 4
- Introducing the Migration Tools on page 5

Migration Guide Roadmap

Before migrating JUNOS or ScreenOS software to JUNOS Software with enhanced services, refer to Table 5 on page 1 to see what sections are most helpful to you to meet your migration needs.

Table 5: Migration Guide Roadmap

Current Configuration	Configuration Goal	Instructions
256-MB DRAM/256-MB CompactFlash card	Minimum 512 MB of DRAM For systems with a 256-MB CompactFlash card, you have the option of following a two-step upgrade process or upgrading to a minimum 512-MB CompactFlash card.	■ Upgrading the DRAM Module or the CompactFlash Card on page 65

Table 5: Migration Guide Roadmap

Current Configuration	Configuration Goal	Instructions
JUNOS	JUNOS Software with enhanced services 9.2R1	<p>512 MB of CompactFlash card and 512 MB of DRAM is required to upgrade to JUNOS Software with enhanced services 9.2.</p> <p>For upgrading DRAM and CompactFlash card information, see “Replacing DRAM Modules” on page 66. For information on formatting a new, blank CompactFlash card, see the “Configuring Internal CompactFlash Card Recovery” section of the <i>JUNOS Software Administration Guide</i>.</p> <p>For more information on system requirement and migration tools, see the following:</p> <ul style="list-style-type: none"> ■ Hardware and System Software Requirements on page 4 ■ Introducing the Migration Tools on page 5 ■ Migrating JUNOS to JUNOS Software with Enhanced Services on page 7 ■ Using the JUNOS to JUNOS Software with Enhanced Services Migration Tool on page 15
JUNOS Software with enhanced services 8.0 or 8.5	JUNOS Software with enhanced services 9.2R1	<p>512 MB of CompactFlash card and 512 MB of DRAM is required to upgrade to JUNOS Software with enhanced services 9.2.</p> <p>For upgrading DRAM and CompactFlash card information, see “Replacing DRAM Modules” on page 66. For information on formatting a new, blank CompactFlash card, see the “Configuring Internal CompactFlash Card Recovery” section of the <i>JUNOS Software with Enhanced Services Administration Guide</i>.</p> <p>For installation information, see:</p> <ul style="list-style-type: none"> ■ Downloading JUNOS Software with Enhanced Services from Juniper Networks on page 12 ■ Installing JUNOS Software with Enhanced Services with the CLI on page 13
JUNOS Software with enhanced services 9.2 or 9.4	JUNOS Software with enhanced services 9.5R1	<p>512 MB of CompactFlash card and 512 MB of DRAM is required to upgrade to JUNOS Software with enhanced services 9.5.</p> <p>For more information on system requirements and migration tools, see the following:</p> <ul style="list-style-type: none"> ■ Hardware and System Software Requirements on page 4 ■ Migrating JUNOS Software with Enhanced Services Policy-Based NAT to Rule-Based NAT on page 21 ■ Using the JUNOS Software with Enhanced Services Policy-Based NAT to Rule-Based NAT Migration Tool on page 29
ScreenOS	JUNOS Software with enhanced services.	<ul style="list-style-type: none"> ■ Hardware and System Software Requirements on page 4 ■ Introducing the Migration Tools on page 5 ■ Migrating ScreenOS to JUNOS Software with Enhanced Services on page 35 ■ Converting JUNOS or JUNOS Software with Enhanced Services to ScreenOS on page 57

Table 5: Migration Guide Roadmap

Current Configuration	Configuration Goal	Instructions
JUNOS or JUNOS Software with enhanced services	ScreenOS	■ Converting JUNOS or JUNOS Software with Enhanced Services to ScreenOS on page 57
JUNOS Software with enhanced services	JUNOS	■ Downgrading JUNOS Software with Enhanced Services to JUNOS Software on page 59
CompactFlash card	Clean up or delete files on the CompactFlash card	■ Managing CompactFlash Card Space on page 67

Secure and Router Contexts and Effects on Migration

A J Series Services Router running JUNOS software with enhanced services can operate as either a stateful firewall or a router. When a Services Router is initially configured as a firewall, it operates in *secure context*. When a Services Router is initially configured as a router, it operates in *router context*.

- **Secure context**—Allows a Services Router to act as a stateful firewall with only management access. To allow traffic to pass through a Services Router, you must explicitly configure a security policy for that purpose. In secure context, a Services Router forwards packets only if a security policy permits it.
- **Router context**—Allows a Services Router to act as a router in which all management and transit traffic is allowed. In router context, a security policy is created that specifies that the Services Router forwards all packets. To deny specific traffic, you must configure a security policy to do so.

On JUNOS Migration

During the migration process from the JUNOS Software to JUNOS software with enhanced services, JUNOS configurations without **stateful-firewall**, **services nat**, or **services ipsec-vpn** configuration statements defined are converted so that no security policy is required to forward packets. In this case, the Services Router operates in router context.

JUNOS configurations with **stateful-firewall**, **services nat**, or **services ipsec-vpn** configuration statements defined are converted so that JUNOS software with enhanced services security policies are created, based on the original configuration statements.

On ScreenOS Migration

An SSG security device running ScreenOS requires that security policies be defined to ensure that traffic is forwarded appropriately. During the migration process to JUNOS software with enhanced services, ScreenOS security policy commands are converted to JUNOS software with enhanced services security policy configuration statements.

A J Series Services Router using a configuration file that was migrated from a ScreenOS configuration file operates in secure context.

Hardware and System Software Requirements

To migrate between JUNOS Software, ScreenOS, and JUNOS software with enhanced services, your system must meet certain requirements:

- J Series Required Hardware and Operating System Software on page 4
- SSG Required Hardware and Operating System Software on page 4
- Web Browser Requirements on page 4
- Juniper Network Web Account Requirement on page 5

J Series Required Hardware and Operating System Software

For JUNOS users, the following hardware and operating system requirements must be met to migrate to JUNOS Software with enhanced services:

- Services Router with JUNOS 8.3 or later—J2320, J2350, J4350, or J6350.
- All Services Routers must have 512 MB of DRAM and a CompactFlash card with at least 512 MB of storage capacity.



To copy the software image to the router and install using that image, you need at least 135 MB of available space on the CompactFlash card.

For replacing or upgrading the DRAM module or the CompactFlash card, see “Upgrading the DRAM Module or the CompactFlash Card” on page 65.

SSG Required Hardware and Operating System Software

For ScreenOS users, Table 6 lists the SSG security devices running ScreenOS Release 5.4 or later that you can convert to J Series Services Routers to run JUNOS software with enhanced services.



A conversion kit is required. If you have not already done so, you must obtain the appropriate conversion kit from Juniper Networks to convert the hardware.

Table 6: Convertible SSG Hardware and Software

SSG Security Device with ScreenOS 5.4 or Later	Conversion Kit	Resulting Services Router
SSG 320M	SSG-320M-J-CONV-S	J2320
SSG 350M	SSG-350M-J-CONV-S	J2350
SSG 520M	SSG-520M-J-CONV-S	J4350
SSG 550M	SSG-550M-J-CONV-S	J6350

Web Browser Requirements

To use the Juniper Networks migration tools, you need one of the following Web browsers:

- Microsoft Internet Explorer 5.5 or later
- Netscape Navigator 6.1 or later
- Mozilla Firefox 2.0 or later

Any Web browser you use must support 128-bit encryption.

Juniper Network Web Account Requirement

To access the migration tools, you need a Web account with Juniper Networks. To obtain an account, complete the registration form at the Juniper Networks Web site <https://www.juniper.net/registration/Register.jsp>.

Introducing the Migration Tools

As part of the migration process, you migrate a JUNOS or ScreenOS configuration file to a JUNOS software with enhanced services configuration file. You must migrate the original configuration file before you can use JUNOS software with enhanced services.

To assist you with the migration of the configuration file, use one of the following Juniper Networks Migration Tools:

- JUNOS to JUNOS Software with Enhanced Services Migration Tool
- JUNOS Software with enhanced services policy-based NAT to rule-based NAT Migration Tool
- ScreenOS to JUNOS Software with Enhanced Services Migration Tool

The Migration Tools are Web-based tools available on the Juniper Networks Web site that allow you to input your original configuration and convert that configuration to a configuration file in JUNOS software with enhanced services format.

For a task overview of the migration from JUNOS or ScreenOS to JUNOS software with enhanced services, see “Migration Overview” on page 8 and “Migration Overview” on page 36.

If you are migrating to JUNOS software with enhanced services on multiple devices, there are likely common elements in the configuration files across devices. Use the migration tool as part of your overall migration process and not as the only tool for migration.

Chapter 2

Migrating JUNOS to JUNOS Software with Enhanced Services

You can migrate a J2320, J2350, J4350, or J6350 Services Router running JUNOS 8.3 or later, with basic network connectivity, to JUNOS software with enhanced services.

If you follow the procedures in this chapter, the router retains connectivity to the network and can be managed remotely.

NOTE: J Series Services Routers are currently shipped with the JUNOS Software. Before using the procedures in this chapter, you must first establish basic network connectivity for the router. For more information, see the *J-series Services Routers Hardware Guide*.

This chapter contains the following sections:

- Migration Overview on page 8
- Before You Begin on page 9
- Backing Up the JUNOS Configuration File on page 10
- Downloading and Decompressing the JUNOS Configuration File on page 10
- Migrating the JUNOS Configuration on page 11
- Renaming and Uploading the New JUNOS Software with Enhanced Services Configuration File on page 11
- Downloading JUNOS Software with Enhanced Services from Juniper Networks on page 12
- Installing JUNOS Software with Enhanced Services with the CLI on page 13

Migration Overview

Migrating JUNOS Software to JUNOS software with enhanced services is similar to upgrading JUNOS Software, except that you must first convert your JUNOS configuration file to a JUNOS software with enhanced services configuration file. After the conversion, you download the JUNOS software with enhanced services image in a software package, install the image on the router, and reboot the router so the software and configuration take effect.

Migration Tasks

To migrate JUNOS Software to JUNOS software with enhanced services, you perform the following tasks:



CAUTION: Be sure to follow this sequence of tasks when migrating to JUNOS software with enhanced services. If you try to install JUNOS software with enhanced services on the router before uploading your migrated configuration file, you lose IP-based remote management access and must use the console port to access the router. (Console access is not affected.)

1. Backing Up the JUNOS Configuration File on page 10
2. Downloading and Decompressing the JUNOS Configuration File on page 10
3. Migrating the JUNOS Configuration on page 11
4. Renaming and Uploading the New JUNOS Software with Enhanced Services Configuration File on page 11
5. Downloading JUNOS Software with Enhanced Services from Juniper Networks on page 12
6. Installing JUNOS Software with Enhanced Services with the CLI on page 13
7. Installing JUNOS Software with Enhanced Services with the CLI on page 13

Understanding Software Packages

All JUNOS and JUNOS software with enhanced services is delivered in signed packages that contain digital signatures to ensure official Juniper software. For more information about signed software packages, see the *JUNOS Software Installation and Upgrade Guide*.

An upgrade software package name is in the following format:
package-name-m.nZx.y-distribution.tgz.

- *package-name* is the name of the package—for example, *junos-jsr*.
- *m.n* is the software release, with *m* representing the major release number and *n* representing the minor release number—for example, **9.2**.
- *Z* indicates the type of software release. For example, **R** indicates released software, and **B** indicates beta-level software.

- *x.y* represents the software build number and spin number—for example, 1.1.
- *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 JUNOS software with enhanced services package name is `junos-jsr-9.2R1.1-domestic.tgz`.

Before You Begin

Before you upgrade a J Series Services Router running the JUNOS Software to JUNOS software with enhanced services, make sure that the following requirements are met:

- The version of JUNOS Software running on the router must be JUNOS Release 8.3 or later.
- Make sure that the Services Router has basic connectivity to your network and that you have remote management access to the router. Also make sure that you have configured a root user account for the router.
- Before a migration, you can optionally back up your primary boot device onto a secondary storage device, such as a USB storage drive. If you have a power failure during a migration, the primary boot device can fail or become corrupted. In either case, if a backup device is not available, the router might be unable to boot and come back online. Creating a backup also stores your active configuration files and log files and ensures that you recover to a known, stable environment in case of an unsuccessful migration.

During a successful migration, the software package completely reinstalls the existing software. The process retains configuration files, log files, and similar information from the previous version.

- The router must have FTP or SSH enabled to allow file transfers to and from the router.
- The router must allow login with **start shell** operational command privileges.
- You must know the root password for the router and have one of the following types of user accounts:
 - Account with access and privileges for the superuser class
 - Account with **start shell** operational command privileges

Backing Up the JUNOS Configuration File

Make a backup copy of the JUNOS configuration file you want to migrate, `juniper.conf.gz`, which is located in the `/config` directory.

In operational mode on the router, enter the **start shell** command to start a shell session:

```
user@host> start shell
%
```

At the shell prompt (%), enter the following command:

```
% cp /config/juniper.conf.gz /path/juniper.conf.junos.gz
```

Replace `/path` with the path of the directory to which you want to copy the configuration file. If you want to copy the backup file to the `/config` directory, make sure you have root privileges (using the **su** UNIX command) before using the **cp** command.

After creating a backup file of the JUNOS configuration file, you now need to download and compress it. See “Downloading and Decompressing the JUNOS Configuration File” on page 10.

Downloading and Decompressing the JUNOS Configuration File

The `/config/juniper.conf.gz` file is a file compressed by the GNU zip (gzip) utility. The gzip utility is available on most UNIX-based systems. Third-party compression utilities such as WinZip also support this compression format. For more information about gzip, see <http://www.gnu.org/software/gzip/>.

As part of the migration process, you need to download and decompress the JUNOS configuration and file and then convert it to JUNOS software with enhanced services format. Use a utility such as gunzip or a third-party compression utility that supports the `.gz` format, such as WinZip, to decompress the configuration file. After decompression, you have an ASCII file named `juniper.conf`, which contains the JUNOS configuration statements. You convert the file with the JUNOS to JUNOS software with enhanced services migration tool, which is a Web-based tool available on the Juniper Networks Web site.

You can download and decompress the existing JUNOS configuration file using one of the following methods, depending on whether you have gunzip or a compression utility (such as WinZip) on the system to which you download the configuration file:

- If you have gunzip or another compression utility that supports `.gz` files on your local system:
 1. Using FTP or SCP, download the `/config/juniper.conf.gz` file to a local system so that you can decompress the file. If you use FTP to download `/config/juniper.conf.gz`, use binary as the transfer method.

2. Use gunzip or another compression utility to decompress the `juniper.conf.gz` file. Refer to your compression utility's documentation for information about using the utility.

After you have decompressed `juniper.conf.gz`, the resulting file is `juniper.conf`.

- If you do not have gunzip or another compression utility that supports `.gz` files on your local system:
 1. At the shell prompt (%) on the Services Router, navigate to the user account's home directory and create a copy of `/config/juniper.conf.gz` in the user's home directory:

```
% cd
% cp /config/juniper.conf.gz ./juniper.conf.gz
```

2. Decompress the `juniper.conf.gz` file by entering the following command:

```
% gunzip juniper.conf.gz
```

The resulting `juniper.conf` file is now in the user account's home directory.

3. Use FTP or SCP to download the `juniper.conf` file to your local system. If you use FTP to download `juniper.conf`, use ASCII as the transfer method.

After you have downloaded and decompressed `juniper.conf`, you need to migrate the `juniper.conf` file. See “Migrating the JUNOS Configuration” on page 11.

Migrating the JUNOS Configuration

You use the JUNOS to JUNOS software with enhanced services migration tool to convert the JUNOS configuration file to a JUNOS software with enhanced services configuration file. For more information, see “Using the JUNOS to JUNOS Software with Enhanced Services Migration Tool” on page 15.

Renaming and Uploading the New JUNOS Software with Enhanced Services Configuration File

After downloading the new JUNOS software with enhanced services configuration file, you rename it and upload it to the router. We recommend that you test the new configuration file in a lab or staging environment so that you can verify that the new configuration supports your network design. After you are satisfied that the configuration meets your network requirements, you can deploy the configuration to a production router.

To rename and upload the new JUNOS software with enhanced services configuration file:

1. On your local system, navigate to the migrated JUNOS software with enhanced services configuration file (for example, `juniper-j2jesOutput.conf`) that you downloaded in “Migrating the JUNOS Configuration” on page 11.
2. Rename the migrated file to `juniper.conf`. If you rename the file from a text editor, make sure that the line breaks, or end-of-line (EOL) characters, are compatible with UNIX,
3. If you are not at the shell prompt on the router, use the **start shell** operational command to start a shell.
4. At the shell prompt, type the **su** UNIX command to switch to a user with root privileges:

```
% su
root@host%
```

5. Use FTP or SCP to upload the `juniper.conf` file to the `/var/tmp` directory. If you use FTP to upload `juniper.conf`, use ASCII as the transfer method.

Verify that the `juniper.conf` file is intact, with UNIX-compatible line breaks, using a text editor such as `vi` or `emacs`.

6. Create a new directory to store existing configuration files:

```
root@host% mkdir /config/backup
```

7. Move the existing configuration files to the new backup directory:

```
root@host% mv /config/backup/juniper.conf* /config/backup
```

8. Copy the `juniper.conf` file to `/config`:

```
root@host% cp /var/tmp/juniper.conf /config/juniper.conf
```

After you have uploaded the new JUNOS software with enhanced services configuration file, you can download the JUNOS software with enhanced services. For more information, see “Downloading JUNOS Software with Enhanced Services from Juniper Networks” on page 12.

Downloading JUNOS Software with Enhanced Services from Juniper Networks

To download JUNOS software with enhanced services:

1. If you have not already created a Web account with Juniper Networks, complete the registration form at the Juniper Networks Web site:
<https://www.juniper.net/registration/Register.jsp>.

2. 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/>
3. Log in to the Juniper Networks authentication system using the username (generally your e-mail address) and password supplied by Juniper Networks representatives.
4. Select the appropriate JUNOS software with enhanced services package.
5. Download the software to a local host or to an internal software distribution site.

Installing JUNOS Software with Enhanced Services with the CLI

To install JUNOS software with enhanced services with the CLI:

1. If you have not already done so, download the software package, as described in “Downloading JUNOS Software with Enhanced Services from Juniper Networks” on page 12.
2. To install the software package from a local directory on the router, copy the software package to the router. We recommend that you copy it to the `/var/tmp` directory.

You do not need to copy the software package to the router to install the software. If you posted the software package to an FTP or Web server after downloading the package, you can use the server as the source from which to install.

3. From operational mode in the CLI, enter the following command to install the new package on the router:

```
user@host> request system software add no-validate unlink no-copy source-path
```

Replace *source-path* with one of the following paths:

- For a software package that is installed from a local directory on the router—*/pathname/package-name* (for example, `/var/tmp/junos-jsr-9.2R1.1-domestic.tgz`).
- For software packages that are downloaded and installed from a remote location:
 - `ftp://hostname/pathname/package-name`
 - or
 - `http://hostname/pathname/package-name`

NOTE: The **no-validate** option prevents the JUNOS Software from validating the software package against the current active configuration as a prerequisite to adding the software package. You need to specify this option because the configuration that is running on the router is still the JUNOS configuration (not the JUNOS software with enhanced services configuration file that you uploaded). The JUNOS software with enhanced services configuration file that you uploaded takes effect after the router reboots.

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

(Optional) The **no-copy** option specifies that a software package is installed, but a copy of the package is not saved in **/var/sw/pkg**. Include this option if you do not have enough space on the CompactFlash card to perform an upgrade that keeps a copy of the package on the router.

4. After the software package is installed, reboot the router:

```
user@host> request system reboot
```

When the reboot is complete, you are able to establish IP-based remote access to the router.

The router is now running JUNOS software with enhanced services, and the JUNOS software with enhanced services configuration file that you uploaded before the software installation is now the active configuration.

5. To verify the JUNOS software with enhanced services configuration file, enter the **show configuration** command from operational mode in the CLI.

For information about configuring secure Web access and installing and managing J Series licenses, see the *JUNOS Software Administration Guide*.

Chapter 3

Using the JUNOS to JUNOS Software with Enhanced Services Migration Tool

You need to migrate the JUNOS configuration file to a JUNOS software with enhanced services configuration file before you can use JUNOS software with enhanced services. To migrate your JUNOS configuration file, use the JUNOS to JUNOS software with enhanced services migration tool, which is a Web-based tool available on the Juniper Networks Web site.

JUNOS software with enhanced services requires security zone information before you can manage the router remotely. The JUNOS to JUNOS software with enhanced services migration tool takes interface information in the JUNOS configuration and binds the interfaces to a security zone named “Trust.” Each interface is also assigned the types of incoming traffic to accept based on the protocols defined at the [edit system-services] hierarchy level in the original JUNOS configuration.

This chapter contains the following sections:

- JUNOS Features Supported and Not Supported by the Migration Tool on page 15
- Migrating a JUNOS Configuration File to a JUNOS Software with Enhanced Services Configuration File on page 16
- Downloading and Reviewing the Migrated Configuration File on page 19
- Adding Key Information to the Migrated Configuration File on page 20

JUNOS Features Supported and Not Supported by the Migration Tool

For a list of JUNOS features that are supported and not supported by the JUNOS to JUNOS software with enhanced services migration tool, see <http://migration-tools.juniper.net/j2jes/j2jes-feature-status.jsp>.

Migrating a JUNOS Configuration File to a JUNOS Software with Enhanced Services Configuration File

To migrate your `juniper.conf` ASCII file to a JUNOS software with enhanced services configuration file, you use the Juniper Networks JUNOS to JUNOS software with enhanced services migration tool (J2JES).

To convert the JUNOS configuration to a JUNOS software with enhanced services configuration:

1. Using a Web browser, navigate to <http://migration-tools.juniper.net>.
2. Log in using your Juniper Networks support username and password.

If you do not have a Juniper Networks user account, go to <https://www.juniper.net/registration/Register.jsp> and complete the registration form.

3. On the Migration Tools home page, select **JUNOS to JUNOS software with enhanced services**. The Terms of Use page appears.

4. Read the contents of the Terms of Use page. If you agree to the terms of use, click **I Agree**. The JUNOS to JUNOS software with enhanced services migration tool page appears.

The screenshot shows the Juniper Networks Support page for the JUNOS to JUNOS software with enhanced services migration tool. The page has a blue header with the Juniper logo and navigation links. The main content area is titled "Support" and contains the following information:

- JUNOS TO JUNOS SOFTWARE WITH ENHANCED SERVICES MIGRATION TOOL BUILD: 1.29 1/21/2008**
- The tool converts full JUNOS configuration files into Juniper Networks JUNOS Enhanced Services format.
- Not all JUNOS statements are converted and some might be converted incorrectly. Hand reviewing the output is absolutely necessary.
- Although most JUNOS statements can be input individually, this is not recommended or supported.

The form includes the following elements:

- Upload a JUNOS configuration file** with a **Browse...** button.
- OR -**
- Paste a complete JUNOS configuration file** with a large text area.
- Select option(s)** section with a dropdown for "Select Target JUNOS software with enhanced services Release" set to 8.5.
- Three checked checkboxes:
 - ☒ Output JUNOS lines that converted properly
 - ☒ Output verbose JUNOS comments
 - ☒ Use my configuration for future J2JES enhancements ([privacy information](#))
- [Help with options](#) link.
- Reset Form** and **Migrate** buttons.

5. On the migration tool page, click the **Browse** button (next to the Upload a JUNOS configuration file box).



NOTE: To migrate an entire configuration, upload the configuration file to the JUNOS to JUNOS software with enhanced services migration tool page. Use the copy and paste feature to convert a small set of configuration statements.

6. Navigate to the directory that contains the `junos.conf` file (JUNOS configuration file).
7. Select the JUNOS configuration file, and click **Open**.
8. Select or clear any conversion options. By default, all options are selected.
 - **Select Target JUNOS Software with enhanced services release**—Select **9.2** to migrate the configuration file to release 9.2 of the JUNOS Software with enhanced services.

- **Output JUNOS lines that converted properly**—Select this option to display all JUNOS configuration statements, even those that have no warnings, errors, or informational messages associated with them after the conversion.
- **Output verbose JUNOS comments**—Select this option to display informational messages associated with certain statements. These informational messages usually describe differences between defaults in JUNOS and JUNOS software with enhanced services.
- **Use my configuration for future J2JES enhancements**—Select this option to save your configuration and possibly have it used by Juniper Networks for migration tool testing and future enhancements. Go to <http://migration-tools.juniper.net/j2jes/j2jes-security.jsp> for more information about how your configuration information might be used.

For online Help for these options, click the **Help with options** link on the JUNOS to JUNOS software with enhanced services migration tool page.

9. Click **Migrate**. The Migration Tool Output page appears, listing the newly migrated JUNOS software with enhanced services configuration. After the JUNOS software with enhanced services configuration, the original JUNOS configuration is listed with any errors, warnings, or comments associated with the conversion.

The screenshot displays the Juniper J2JES Migration Tool interface. The top navigation bar includes links for Home, Solutions, Products & Services, J-Security Center, Support, Education, Partners, Company, and How to Buy. The main content area is titled 'Support' and shows the 'MIGRATION TOOL OUTPUT' page. The page header indicates the tool version is 1.29, dated 1/21/2008. The output section contains a 'Download J2JES Output' button and a sample JUNOS configuration snippet. To the right, there is a 'J2JES Feature Poll' section with radio buttons for NAT, IPV6, Policy, and Other (selected), and an 'Additional Feedback' text area with a 'SUBMIT' button.

```

/*
 * J2JES Version:      1.0 / Jan 14 2008
 * Parse Date:        Sat Feb 02 18:14:02 PST 2008
 * Error Lines:        0
 * Warning Lines:      0
 * Information Lines:   0
 * Generated from JUNOS config file: juniper.conf.txt
 *
 * NOTE: This config is NOT PERFECT. It must be carefully
 *       examined to ensure correctness.
 *
 * Jump to JUNOS configuration file with conversion messages
 */

system {
    /* Password=7Bh90Wxa7JHALPkV */
    root-authentication {
        plain-text-password-value 7Bh90Wxa7JHALPkV;
    }
}

security {
    zones;
    policies {
        default-policy {
            permit-all;
        }
    }
}

```

For more information about reviewing the newly migrated configuration, see “Downloading and Reviewing the Migrated Configuration File” on page 19.

Migrating Small JUNOS Configuration Files or Partial Configurations

You can migrate small JUNOS configuration files or partial JUNOS configurations to JUNOS software with enhanced services configurations by copying the JUNOS statements directly into the JUNOS to JUNOS software with enhanced services migration tool page:

1. If you are migrating a configuration file, open the JUNOS configuration file in a text editor.
2. Copy the text in the configuration file.
3. In the Migration Tool page, paste the text in the Paste a complete JUNOS configuration file box.
4. Click **Migrate**. The Migration Tool Output page appears, listing the newly migrated JUNOS software with enhanced services configuration. After the JUNOS software with enhanced services configuration, the original JUNOS configuration is listed with any errors, warnings, or comments associated with the conversion.

Downloading and Reviewing the Migrated Configuration File

After migrating the JUNOS configuration to a JUNOS software with enhanced services configuration, download it and carefully review each line to ensure that your configuration was migrated properly. Also use the migration output, which is the original JUNOS configuration and the associated messages listed on the Migration Tool Output page, to assist you. If necessary, identify the commands that the migration tool could not convert.

Downloading the Migrated Configuration File

Click the **Download J2JES Output** button on the JUNOS to JUNOS software with enhanced services migration tool page to download the migrated JUNOS software with enhanced services configuration file (for example, `j2jesOutput`) to your local system.

Reviewing the Migrated Configuration File

When reviewing the migrated configuration, make sure that the following areas were properly converted:

- Interface configuration—Verify that the IP addresses that were configured to remotely manage the router are properly converted in the migrated configuration.
- System services—Verify that the protocols listed at the [edit system services] hierarchy level are now listed at the [edit system services] and [edit security zones security-zone Trust host-inbound-traffic system-services] hierarchy levels in the migrated configuration. These protocols are used to manage the router.

- Security policies—If `stateful-firewall`, `services nat`, or `services ipsec-vpn` configuration statements were defined in the JUNOS configuration, verify that the JUNOS software with enhanced services security policies correctly allow and deny network and VPN traffic.

Interpreting Messages in the Migration Output

Errors, warnings, and comments are indicated as follows in the migration output:

- Any JUNOS configuration statements that could not be converted are listed in red.
- Any warnings or comments associated with configuration statements are listed in blue.
- Any previously displayed errors or warnings are listed in magenta.

Here are some of the common messages that you might see in the migration output and their explanations:

- “Line not recognized by J2JES” (error)—The migration tool does not recognize this JUNOS command. There might be an equivalent configuration statement in JUNOS software with enhanced services.
- “Line not yet supported by J2JES” (error)—Currently, this JUNOS command is not supported by the migration tool.
- “This is not supported in JUNOS-ES” (error)—The feature for this command is not supported in JUNOS software with enhanced services.
- “Command-name is not supported in JUNOS-ES” (warning)—The feature for this command is not supported in JUNOS software with enhanced services.
- “Feature is not currently supported.” (warning)—The feature for this command is not currently supported.

Adding Key Information to the Migrated Configuration File

For security purposes, the JUNOS to JUNOS software with enhanced services migration tool does not include encrypted data for keys, such as preshared keys for IKE policy authentication, in the migrated configuration file.

Any keys that are in the migrated configuration file are replaced by ASCII text. For example, a preshared key for IKE policy authentication in the migrated configuration file contains the following ASCII text: “Key MUST be changed to become valid.” To change the preshared key, open the migrated configuration file in a text editor, and replace the ASCII text with the actual preshared key. Be sure to replace the ASCII text for all keys with the actual keys and save the migrated configuration file. The keys are encrypted when you upload the migrated configuration file to the router.

You are now ready to rename and upload the migrated configuration file to the router. For more information, see “Renaming and Uploading the New JUNOS Software with Enhanced Services Configuration File” on page 11.

Chapter 4

Migrating JUNOS Software with Enhanced Services Policy-Based NAT to Rule-Based NAT

You can migrate a J2320, J2350, J4350, or J6350 Services Router running JUNOS software with enhanced services 9.2 or later with policy-based NAT to JUNOS software with enhanced services running rule-based NAT.

If you follow the procedures in this chapter, the router retains connectivity to the network and can be managed remotely.

This chapter contains the following sections:

- Migration Overview on page 22
- Before You Begin on page 23
- Backing Up the JUNOS Software with Enhanced Services Configuration File on page 24
- Downloading and Decompressing the JUNOS Software with Enhanced Services Configuration File on page 24
- Migrating the JUNOS Software with Enhanced Services Policy-Based Configuration File on page 25
- Renaming and Uploading the New JUNOS Software with Enhanced Services Configuration File on page 25
- Downloading JUNOS Software with Enhanced Services from Juniper Networks on page 26
- Installing JUNOS Software with Enhanced Services with the CLI on page 27

Migration Overview

Migrating JUNOS software with enhanced services with policy-based NAT to JUNOS software with enhanced services with rule-based NAT is similar to upgrading JUNOS software with enhanced services, except that you must first convert your JUNOS software with enhanced services (policy-based) configuration file. After the conversion, you download the JUNOS software with enhanced services image in a software package, install the image on the router, and reboot the router so the software and configuration take effect.

Migration Tasks

To migrate JUNOS software with enhanced services with policy-based NAT to JUNOS software with enhanced services with rule-based NAT, you perform the following tasks:



CAUTION: Be sure to follow this sequence of tasks when migrating to the rule-based NAT. If you try to install JUNOS software with enhanced services on the router before uploading your migrated configuration file, you lose IP-based remote management access and must use the console port to access the router. (Console access is not affected.)

1. Backing Up the JUNOS Software with Enhanced Services Configuration File on page 24
2. Downloading and Decompressing the JUNOS Software with Enhanced Services Configuration File on page 24
3. Migrating the JUNOS Software with Enhanced Services Policy-Based Configuration File on page 25
4. Renaming and Uploading the New JUNOS Software with Enhanced Services Configuration File on page 25
5. Downloading JUNOS Software with Enhanced Services from Juniper Networks on page 26
6. Installing JUNOS Software with Enhanced Services with the CLI on page 27

Understanding Software Packages

JUNOS software with enhanced services is delivered in signed packages that contain digital signatures to ensure official Juniper software. For more information about signed software packages, see the *JUNOS Software Installation and Upgrade Guide*.

An upgrade software package name is in the following format:
package-name-m.nZx.y-distribution.tgz.

- *package-name* is the name of the package—for example, *junos-jsr*.
- *m.n* is the software release, with *m* representing the major release number and *n* representing the minor release number—for example, **9.2**.

- Z indicates the type of software release. For example, R indicates released software, and B indicates beta-level software.
- x.y represents the software build number and spin number—for example, 1.1.
- *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 JUNOS software with enhanced services package name is `junos-jsr-9.5R1.1-domestic.tgz`.

Before You Begin

Before you upgrade to JUNOS software with enhanced services running rule-based NAT, make sure that the following requirements are met:

- The version of JUNOS software with enhanced services running on the router must be Release 9.2 or later.
- Make sure that the Services Router has basic connectivity to your network and that you have remote management access to the router. Also make sure that you have configured a root user account for the router.
- Before a migration, you can optionally back up your primary boot device onto a secondary storage device, such as a USB storage drive. If you have a power failure during a migration, the primary boot device can fail or become corrupted. In either case, if a backup device is not available, the router might be unable to boot and come back online. Creating a backup also stores your active configuration files and log files and ensures that you recover to a known, stable environment in case of an unsuccessful migration.

During a successful migration, the software package completely reinstalls the existing software. The process retains configuration files, log files, and similar information from the previous version.

- The router must have FTP or SSH enabled to allow file transfers to and from the router.
- The router must allow login with **start shell** operational command privileges.
- You must know the root password for the router and have one of the following types of user accounts:
 - Account with access and privileges for the superuser class
 - Account with **start shell** operational command privileges

Backing Up the JUNOS Software with Enhanced Services Configuration File

Make a backup copy of the JUNOS software with enhanced services configuration file you want to migrate, `juniper.conf.gz`, which is located in the `/config` directory.

In operational mode on the router, enter the `start shell` command to start a shell session:

```
user@host> start shell
%
```

At the shell prompt (%), enter the following command:

```
% cp /config/juniper.conf.gz /path/juniper.conf.junos.gz
```

Replace `/path` with the path of the directory to which you want to copy the configuration file. If you want to copy the backup file to the `/config` directory, make sure you have root privileges (using the `su` UNIX command) before using the `cp` command.

After creating a backup file of the JUNOS software with enhanced services configuration file, you now need to download and compress it. See “Downloading and Decompressing the JUNOS Software with Enhanced Services Configuration File” on page 24.

Downloading and Decompressing the JUNOS Software with Enhanced Services Configuration File

The `/config/juniper.conf.gz` file is a file compressed by the GNU zip (gzip) utility. The gzip utility is available on most UNIX-based systems. Third-party compression utilities such as WinZip also support this compression format. For more information about gzip, see <http://www.gnu.org/software/gzip/>.

As part of the migration process, you need to download and decompress the JUNOS software with enhanced services (policy-based NAT) configuration file and then convert it to JUNOS software with enhanced services (rule-based NAT) format. Use a utility such as gunzip or a third-party compression utility that supports the `.gz` format, such as WinZip, to decompress the configuration file. After decompression, you have an ASCII file named `juniper.conf`, which contains the JUNOS configuration statements. You convert the file with the **JUNOS software with enhanced services policy-based NAT to rule-based NAT** migration tool, which is a Web-based tool available on the Juniper Networks Web site.

You can download and decompress the existing JUNOS software with enhanced services configuration file by using one of the following methods, depending on whether you have gunzip or a compression utility (such as WinZip) on the system to which you download the configuration file:

- If you have gunzip or another compression utility that supports `.gz` files on your local system:
 1. Using FTP or SCP, download the `/config/juniper.conf.gz` file to a local system so that you can decompress the file. If you use FTP to download `/config/juniper.conf.gz`, use binary as the transfer method.

2. Use gunzip or another compression utility to decompress the `juniper.conf.gz` file. Refer to your compression utility's documentation for information about using the utility.

After you have decompressed `juniper.conf.gz`, the resulting file is `juniper.conf`.

- If you do not have gunzip or another compression utility that supports `.gz` files on your local system:
 1. At the shell prompt (%) on the Services Router, navigate to the user account's home directory and create a copy of `/config/juniper.conf.gz` in the user's home directory:

```
% cd
% cp /config/juniper.conf.gz ./juniper.conf.gz
```

2. Decompress the `juniper.conf.gz` file by entering the following command:

```
% gunzip juniper.conf.gz
```

The resulting `juniper.conf` file is now in the user account's home directory.

3. Use FTP or SCP to download the `juniper.conf` file to your local system. If you use FTP to download `juniper.conf`, use ASCII as the transfer method.

After you have downloaded and decompressed `juniper.conf`, you need to migrate the `juniper.conf` file. See “Migrating the JUNOS Software with Enhanced Services Policy-Based Configuration File” on page 25.

Migrating the JUNOS Software with Enhanced Services Policy-Based Configuration File

You use the JUNOS software with enhanced services policy-based NAT to rule-based NAT migration tool to convert the JUNOS software with enhanced services (policy-based NAT) configuration file to a JUNOS software with enhanced services (rule-based NAT) configuration file. For more information, see “Using the JUNOS to JUNOS Software with Enhanced Services Migration Tool” on page 15.

Renaming and Uploading the New JUNOS Software with Enhanced Services Configuration File

After downloading the new JUNOS software with enhanced services (rule-based NAT) configuration file, you rename it and upload it to the router. We recommend that you test the new configuration file in a lab or staging environment so that you can verify that the new configuration supports your network design. After you are satisfied that the configuration meets your network requirements, you can deploy the configuration to a production router.

To rename and upload the new JUNOS software with enhanced services configuration file:

1. On your local system, navigate to the migrated JUNOS software with enhanced services configuration file (for example, `juniper-j2natngOutput.conf`) that you downloaded in “Migrating the JUNOS Software with Enhanced Services Policy-Based Configuration File” on page 25.
2. Rename the migrated file to `juniper.conf`. If you rename the file from a text editor, make sure that the line breaks, or end-of-line (EOL) characters, are compatible with UNIX,
3. If you are not at the shell prompt on the router, use the **start shell** operational command to start a shell.
4. At the shell prompt, type the **su** UNIX command to switch to a user with root privileges:

```
% su
root@host%
```

5. Use FTP or SCP to upload the `juniper.conf` file to the `/var/tmp` directory. If you use FTP to upload `juniper.conf`, use ASCII as the transfer method.

Verify that the `juniper.conf` file is intact, with UNIX-compatible line breaks, by using a text editor such as `vi` or `emacs`.

6. Create a new directory to store existing configuration files:

```
root@host% mkdir /config/backup
```

7. Move the existing configuration files to the new backup directory:

```
root@host% mv /config/backup/juniper.conf* /config/backup
```

8. Copy the `juniper.conf` file to `/config`:

```
root@host% cp /var/tmp/juniper.conf /config/juniper.conf
```

After you have uploaded the new JUNOS software with enhanced services configuration file, you can download the JUNOS software with enhanced services. For more information, see “Downloading JUNOS Software with Enhanced Services from Juniper Networks” on page 26.

Downloading JUNOS Software with Enhanced Services from Juniper Networks

To download JUNOS software with enhanced services with rule-based NAT:

1. If you have not already created a Web account with Juniper Networks, complete the registration form at the Juniper Networks Web site:
<https://www.juniper.net/registration/Register.jsp>.

2. 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/>
3. Log in to the Juniper Networks authentication system by using the username (generally your e-mail address) and password supplied by Juniper Networks representatives.
4. Select the appropriate JUNOS software with enhanced services package (Release 9.5).
5. Download the software to a local host or to an internal software distribution site.

Installing JUNOS Software with Enhanced Services with the CLI

To install JUNOS software with enhanced services with rule-based NAT by using the CLI:

1. If you have not already done so, download the software package, as described in “Downloading JUNOS Software with Enhanced Services from Juniper Networks” on page 26.
2. To install the software package from a local directory on the router, copy the software package to the router. We recommend that you copy it to the `/var/tmp` directory.

You do not need to copy the software package to the router to install the software. If you posted the software package to an FTP or Web server after downloading the package, you can use the server as the source from which to install.

3. From operational mode in the CLI, enter the following command to install the new package on the router:

```
user@host> request system software add no-validate unlink no-copy source-path
```

Replace *source-path* with one of the following paths:

- For a software package that is installed from a local directory on the router—`/pathname/package-name` (for example, `/var/tmp/junos-jsr-9.5R1.1-domestic.tgz`).
- For software packages that are downloaded and installed from a remote location:
 - `ftp://hostname/pathname/package-name`
 - or
 - `http://hostname/pathname/package-name`



NOTE: You need to specify this option because the configuration that is running on the router is still the policy-based NAT configuration (not the JUNOS software with enhanced services (rule-based NAT) configuration file that you uploaded). The JUNOS software with enhanced services configuration file that you uploaded takes effect after the router reboots.

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

(Optional) The **no-copy** option specifies that a software package is installed, but a copy of the package is not saved in **/var/sw/pkg**. Include this option if you do not have enough space on the CompactFlash card to perform an upgrade that keeps a copy of the package on the router.

4. After the software package is installed, reboot the router:

```
user@host> request system reboot
```

When the reboot is complete, you are able to establish IP-based remote access to the router.

The router is now running JUNOS software with enhanced services with policy-based NAT, and the JUNOS software with enhanced services configuration file that you uploaded before the software installation is now the active configuration.

5. To verify the JUNOS software with enhanced services configuration file, enter the **show configuration** command from operational mode in the CLI.

For information about configuring secure Web access and installing and managing J Series licenses, see the *JUNOS Software Administration Guide*.

Chapter 5

Using the JUNOS Software with Enhanced Services Policy-Based NAT to Rule-Based NAT Migration Tool

You need to migrate the JUNOS Software with enhanced services policy-based NAT configuration file to a rule-based NAT configuration file before you can use JUNOS software with enhanced services Release 9.5 that has rule-based NAT. To migrate your JUNOS software with enhanced services policy-based NAT configuration file, use the **JUNOS software with enhanced services policy-based NAT to rule-based NAT** migration tool, which is a Web-based tool available on the Juniper Networks Web site.

JUNOS software with enhanced services requires security zone information before you can manage the router remotely. The migration tool takes interface information in the current configuration and binds the interfaces to a security zone named “Trust.” Each interface is also assigned the types of incoming traffic to accept based on the protocols defined at the [edit system-services] hierarchy level in the original JUNOS software with enhanced services configuration.

This chapter contains the following sections:

- Migrating a JUNOS Software with Enhanced Services Policy-Based NAT Configuration File to a Rule-Based NAT Configuration File on page 30
- Downloading and Reviewing the Migrated Configuration File on page 33
- Adding Key Information to the Migrated Configuration File on page 34

Migrating a JUNOS Software with Enhanced Services Policy-Based NAT Configuration File to a Rule-Based NAT Configuration File

To migrate your juniper.conf ASCII file to a JUNOS software with enhanced services rule-based NAT configuration file, you use the Juniper Networks **JUNOS software with enhanced services policy-based NAT to rule-based NAT (J2NATNG)** migration tool.

To convert the current JUNOS software with enhanced services configuration (policy-based NAT) to a JUNOS software with enhanced services (rule-based NAT) configuration:

1. Using a Web browser, navigate to <http://migration-tools.juniper.net>.
2. Log in using your Juniper Networks support username and password.

If you do not have a Juniper Networks user account, go to <https://www.juniper.net/registration/Register.jsp> and complete the registration form.

3. On the Migration Tools home page, select **J2NATNG**. The Terms of Use page appears.
4. Read the contents of the Terms of Use page. If you agree to the terms of use, click **I Agree**. The **Migration Tool** page appears.

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JUNOS TO JUNOS SOFTWARE WITH ENHANCED SERVICES MIGRATION TOOL BUILD: 1.29 1/21/2008

The JUNOS to JUNOS software with enhanced services Migration Tool (J2JES) converts full JUNOS configuration files into Juniper Networks JUNOS Enhanced Services format.

Not all JUNOS statements are converted and some might be converted incorrectly. Hand reviewing the output is absolutely necessary.

Although most JUNOS statements can be input individually, this is not recommended or supported.

Upload a JUNOS configuration file

- OR -

Paste a complete JUNOS configuration file

Select option(s)

Select Target JUNOS software with enhanced services Release 8.5

☒ Output JUNOS lines that converted properly

☒ Output verbose JUNOS comments

☒ Use my configuration for future J2JES enhancements ([privacy information](#))

[Help with options](#)

5. On the Migration Tool page, click the **Browse** button (next to the Upload a JUNOS Software with enhanced services configuration file box).



NOTE: To migrate an entire configuration, upload the configuration file to the Migration Tool page. Use the copy and paste feature to convert a small set of configuration statements.

6. Navigate to the directory that contains the `juniper.conf` file (JUNOS software with enhanced services configuration file).
7. Select the JUNOS software with enhanced services configuration file, and click **Open**.
8. Select or clear any conversion options. By default, all options are selected.
 - **Output JUNOS lines that converted properly**—Select this option to display all JUNOS configuration statements, even those that have no warnings, errors, or informational messages associated with them after the conversion.
 - **Output verbose JUNOS comments**—Select this option to display informational messages associated with certain statements. These informational messages usually describe differences between defaults in JUNOS and JUNOS software with enhanced services.
 - **Use my configuration for future J2NATNG enhancements**—Select this option to save your configuration and possibly have it used by Juniper Networks for migration tool testing and future enhancements. Go to <http://migration-tools.juniper.net/j2natng/j2natng-security.jsp> for more information about how your configuration information might be used.

For online Help for these options, click the **Help with options** link on the **JUNOS software with enhanced services policy-based NAT to rule-based NAT** migration tool page.

9. Click **Migrate**. The Migration Tool Output page appears, listing the newly migrated rule-based NAT configuration. After the rule-based NAT configuration, the original JUNOS software with enhanced services policy-based NAT configuration is listed with any errors, warnings, or comments associated with the conversion.

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JUNOS SOFTWARE WITH ENHANCED SERVICES POLICY-BASED NAT TO RULE-BASED NAT MIGRATION TOOL BUILD: 1.13 3/20/2009

MIGRATION TOOL OUTPUT

Text Size:

J2NATNG Feature Poll

What should be better supported?

☐ NAT

☐ IPV6

☐ Policy

☒ Other

If Other...

Additional Feedback:

SUBMIT

```

/*
 * J2NATNG Version:      1.0 / Jan 8 2008
 * Parse Date:          Wed Apr 01 11:36:37 PDT 2009
 * Error Lines:          0
 * Warning Lines:        0
 * Information Lines:    0
 *
 * NOTE: This config is NOT PERFECT. It must be carefully
 *       examined to ensure correctness.
 *
 * Jump to JUNOS configuration file with conversion messages
 */

Download J2NATNG Output

class-of-service {
  drop-profiles {
    segmented-style-profile {
      fill-level 25 drop-probability 25;
      fill-level 50 drop-probability 50;
      fill-level 75 drop-probability 75;
      fill-level 95 drop-probability 100;
    }
  }
}

```

Lines that could not be converted are in **red**.
 Lines with warnings or comments are in **blue**.
 Lines with previously shown errors or warnings are in **magenta**.
 PFC / PIC / Port numbers MUST ALWAYS be changed to match your Juniper Networks hardware.

For more information about reviewing the newly migrated configuration, see “Downloading and Reviewing the Migrated Configuration File” on page 33.

Migrating Small JUNOS Configuration Files or Partial Configurations

You can migrate small policy-based NAT configuration files or partial policy-based NAT configurations to rule-based NAT configurations by copying the JUNOS software with enhanced services statements directly into the JUNOS software with enhanced services policy-based NAT to rule-based NAT migration tool page:

1. If you are migrating a configuration file, open the JUNOS configuration file in a text editor.
2. Copy the text in the configuration file.
3. In the Migration Tool page, paste the text in the Paste a complete JUNOS configuration file box.
4. Click **Migrate**. The Migration Tool Output page appears, listing the newly migrated rule-based NAT configuration. After the rule-based NAT configuration, the original policy-based configuration is listed with any errors, warnings, or comments associated with the conversion.

Downloading and Reviewing the Migrated Configuration File

After migrating the JUNOS software with enhanced services (policy-based NAT) configuration to a JUNOS software with enhanced services (rule-based NAT) configuration, download it and carefully review each line to ensure that your configuration was migrated properly. Also use the migration output, which is the original JUNOS software with enhanced services (policy-based NAT) configuration and the associated messages listed on the Migration Tool Output page, to assist you. If necessary, identify the commands that the Migration Tool could not convert.

Downloading the Migrated Configuration File

Click the **Download J2NATNG Output** button on the **JUNOS software with enhanced services policy-based NAT to rule-based NAT** migration tool page to download the migrated JUNOS software with enhanced services (rule-based NAT) configuration file (for example, j2natngOutput) to your local system.

Reviewing the Migrated Configuration File

When reviewing the migrated configuration, make sure that the following areas were properly converted:

- Interface configuration—NAT does not impact configuration; hence the migration tool will not change any configuration and the interfaces remain the same as configured in your policy-based configuration.
- System services—Verify that the protocols listed at the [edit system services] hierarchy level are now listed at the [edit system services] and [edit security zones security-zone Trust host-inbound-traffic system-services] hierarchy levels in the migrated configuration. These protocols are used to manage the router.
- Security policies—If `stateful-firewall`, `services NAT`, or `services ipsec-vpn` configuration statements were defined in the JUNOS software with enhanced services (policy-based NAT) configuration, verify that the JUNOS software with enhanced services security policies correctly allow and deny network and VPN traffic.

Interpreting Messages in the Migration Output

Errors, warnings, and comments are indicated as follows in the migration output:

- Any JUNOS software with enhanced services (policy-based NAT) configuration statements that could not be converted are listed in red.
- Any warnings or comments associated with configuration statements are listed in blue.
- Any previously displayed errors or warnings are listed in magenta.

Here are some of the common messages that you might see in the migration output and their explanations:

- “Line not recognized by J2NATNG” (error)—The **JUNOS software with enhanced services policy-based NAT to rule-based NAT** migration tool does not recognize this JUNOS Software with enhanced services (policy-based NAT) command. There might be an equivalent configuration statement in JUNOS software with enhanced services (rule-based NAT).
- “Line not yet supported by J2NATNG” (error)—Currently, this command is not supported by the **JUNOS software with enhanced services policy-based NAT to rule-based NAT** migration tool.
- “This is not supported in JUNOS Software with enhanced services” (error)—The feature for this command is not supported in JUNOS software with enhanced services.
- “Command-name is not supported in JUNOS Software with enhanced services” (warning)—The feature for this command is not supported in JUNOS software with enhanced services.
- “Feature is not currently supported.” (warning)—The feature for this command is not currently supported.

Adding Key Information to the Migrated Configuration File

For security purposes, the migration tool does not include encrypted data for keys, such as preshared keys for IKE policy authentication, in the migrated configuration file.

Any keys that are in the migrated configuration file are replaced by ASCII text. For example, a preshared key for IKE policy authentication in the migrated configuration file contains the following ASCII text: “Key MUST be changed to become valid.” To change the preshared key, open the migrated configuration file in a text editor, and replace the ASCII text with the actual preshared key. Be sure to replace the ASCII text for all keys with the actual keys and save the migrated configuration file. The keys are encrypted when you upload the migrated configuration file to the router.

You are now ready to rename and upload the migrated configuration file to the router. For more information, see “Renaming and Uploading the New JUNOS Software with Enhanced Services Configuration File” on page 11.

Chapter 6

Migrating ScreenOS to JUNOS Software with Enhanced Services

You can convert certain SSG security devices running ScreenOS software to J Series Services Routers running JUNOS software with enhanced services with the appropriate conversion kit (see Table 7).

Table 7: Convertible SSG Hardware and Software

SSG Security Device with ScreenOS 5.4 or Later	Conversion Kit	Resulting Services Router
SSG 320M	SSG-320M-J-CONV-S	J2320
SSG 350M	SSG-350M-J-CONV-S	J2350
SSG 520M	SSG-520M-J-CONV-S	J4350
SSG 550M	SSG-550M-J-CONV-S	J6350

After converting your hardware, you migrate your ScreenOS configuration to a JUNOS software with enhanced services configuration, upload the file to the router, thoroughly test the configuration, and register the new hardware configuration.

This chapter contains the following sections:

- Migration Overview on page 36
- Before You Begin on page 36
- Migrating the ScreenOS Configuration to JUNOS Software with Enhanced Services Format on page 36
- Uploading the Migrated Configuration File to the Router on page 37
- Registering the New Hardware Configuration on page 38

Migration Overview

To migrate ScreenOS software to JUNOS software with enhanced services, you perform the following tasks:

1. Convert your SSG security device to a J Series Services Router by following the instructions in your conversion kit documentation.
2. Migrate the ScreenOS configuration to JUNOS software with enhanced services format. (See “Migrating the ScreenOS Configuration to JUNOS Software with Enhanced Services Format” on page 36.)
3. Upload the migrated JUNOS software with enhanced services configuration file to the router. (See “Uploading the Migrated Configuration File to the Router” on page 37.)
4. Register the new hardware configuration. (See “Registering the New Hardware Configuration” on page 38.)

Before You Begin

Before you migrate a ScreenOS configuration to JUNOS software with enhanced services, you need to perform the following tasks. For more information, see your conversion kit documentation.

- Download a copy of the ScreenOS configuration (so that you can migrate it to JUNOS software with enhanced services format later).
- Enter the `set boot junos` command to change the hardware platform's boot settings.
- Power off the SSG security device and remove it from a rack mount, if applicable.
- Replace the ScreenOS internal CompactFlash card with the CompactFlash card (with JUNOS software with enhanced services) contained in your conversion kit.
- Place the device back in a rack mount, if applicable, and power on the device.

The device boots with the JUNOS software with enhanced services. You now must complete the migration process, as described in “Migration Overview” on page 36.

Migrating the ScreenOS Configuration to JUNOS Software with Enhanced Services Format

You use the ScreenOS to JUNOS Software with Enhanced Services Migration Tool to convert the ScreenOS configuration file to a JUNOS software with enhanced services configuration file. For more information, see “Using the ScreenOS to JUNOS Software with Enhanced Services Migration Tool” on page 49.

Uploading the Migrated Configuration File to the Router

After reviewing the migrated JUNOS software with enhanced services configuration file, you upload it to the router. We recommend that you test the new configuration file in a lab or staging environment so that you can verify that the new configuration supports your network design. After you are satisfied that the configuration meets your network requirements, you can deploy the configuration to a production router.

To upload a migrated JUNOS software with enhanced services configuration file to the router:

1. Connect a PC or laptop to the console port of the router.

For information about how to connect to the router's console port, see the *J-series Services Routers Hardware Guide*.

2. Using an asynchronous terminal emulation application, such as Microsoft HyperTerminal, log in as **root**. If you are logging in for the first time after using a conversion kit to convert an SSG security device to a J Series router, you do not need a password.

3. Enter the **cli** command at the console prompt to invoke the CLI and enter operational mode:

```
root% cli
root>
```

4. From operational mode in the CLI, enter the **configure** command to enter CLI configuration mode:

```
root> configure
root#
```

5. Make sure that you are at the top level of the configuration mode hierarchy. If you are below the top level, enter **exit** to return to the top level.

6. From the top level of the configuration hierarchy, enter the **load override terminal** command:

```
root# load override terminal
[Type ^D at a new line to end input]
```

7. Using a text editor, open the migrated JUNOS software with enhanced services configuration file.

8. Select all the text in the file, and copy the text.

9. Make the asynchronous terminal emulation application the active application.

10. Paste the text from the configuration file into the CLI.

11. Press Enter once. Make sure that you perform this step before proceeding.

12. Press Ctrl + d to indicate the end of the pasted text.

13. To verify the configuration but not activate it, use the **commit check** command:

```
root# commit check
```

If the validation is successful, go to Step 14. Otherwise, review any error messages and use the CLI to change the configuration and resolve errors.

14. Commit the configuration to activate it:

```
root# commit  
commit complete
```

The migrated JUNOS software with enhanced services configuration file is activated and is now the running configuration on the router.

Registering the New Hardware Configuration

After thoroughly testing the configuration and deciding to make the hardware conversion permanent, make sure to register the new hardware configuration and validate it with Juniper Networks Customer Service, as described in the *Read This First* document included with your OS conversion kit. You can register the new hardware configuration only once.

After registering the new hardware configuration, allow up to 45 days for restocking of the new hardware configuration to support any Next Day or Same Day contracts. Juniper Networks Customer Service will provide best-effort support until restocking of the converted product is complete. After the registration process is completed, your Customer Support Center access profile is updated so that you can access the software and tools that support your new hardware configuration.

Chapter 7

Migrating ScreenOS to JUNOS Software with Enhanced Services by USB-Storage-Device Method

You can convert certain SSG security devices running ScreenOS software to J Series Services Routers running JUNOS software with enhanced services with the appropriate conversion kit. (See Table 8.)

Table 8: Convertible SSG Hardware and Software

SSG Security Device with ScreenOS 6.1 or Later	Conversion Kit	Resulting Services Router
SSG 320M	SSG-320M-J-CONV-USB	J2320
SSG 350M	SSG-350M-J-CONV-USB	J2350
SSG 520M	SSG-520M-J-CONV-USB	J4350
SSG 550M	SSG-550M-J-CONV-USB	J6350

This chapter contains the following sections:

- Migration Overview on page 40
- Before You Begin on page 40
- Upgrading the ScreenOS Software on page 41
- Downloading the ScreenOS Configuration File on page 42
- Migrating the ScreenOS Configuration File to a JUNOS Software with Enhanced Services Configuration File on page 42
- Copying the Migrated JUNOS Software with Enhanced Services Configuration File to the USB Storage Device on page 42
- Migrating to JUNOS Software with Enhanced Services on a Trial Basis on page 44
- Migrating to JUNOS Software with Enhanced Services Permanently on page 45
- Ending the JUNOS Software with Enhanced Services Evaluation on page 47
- Registering the New Hardware Configuration on page 47

Migration Overview

To migrate ScreenOS to JUNOS software with enhanced services, you perform the following tasks:

1. Upgrading the ScreenOS Software on page 41
2. Downloading the ScreenOS Configuration File on page 42
3. Migrating the ScreenOS Configuration File to a JUNOS Software with Enhanced Services Configuration File on page 42
4. Copying the Migrated JUNOS Software with Enhanced Services Configuration File to the USB Storage Device on page 42
5. Migrating to JUNOS Software with Enhanced Services on a Trial Basis on page 44
6. Migrating to JUNOS Software with Enhanced Services Permanently on page 45
7. Registering the New Hardware Configuration on page 47

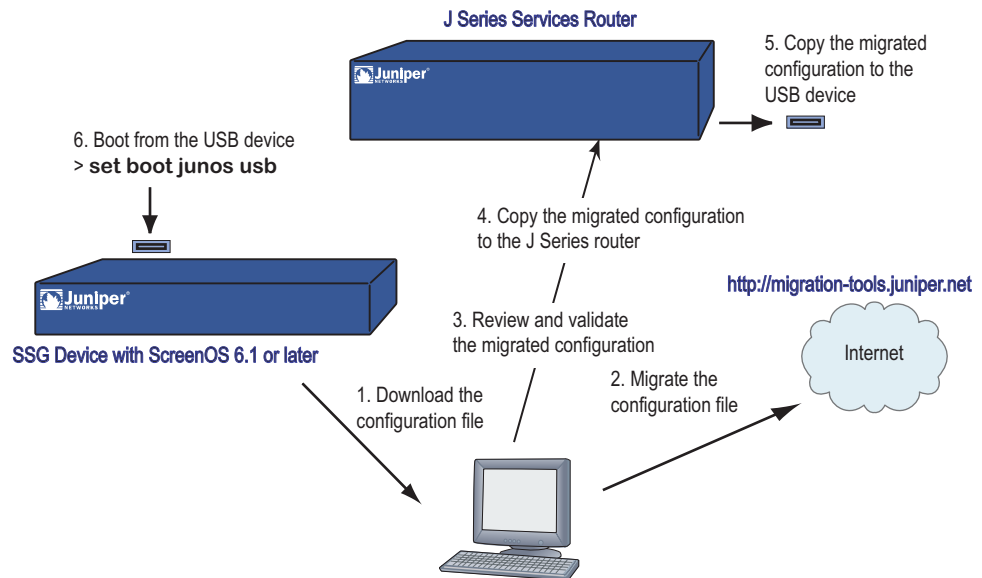
Before You Begin

To copy the migrated JUNOS software with enhanced services configuration to the USB storage device provided in your conversion kit, it is required that you have access to an additional J Series Services Router running JUNOS Release 8.3 or later or JUNOS software with enhanced services.

Figure 1 shows the USB approach to migrate the ScreenOS configuration to JUNOS Software with enhanced services. The additional J Series router is recommended for mass deployment of JUNOS software with enhanced services. The J Series router provides the JUNOS environment to copy the migrated file to the USB storage device. (The file system on a USB pendrive is formatted with the FreeBSD UFS file system which PCs cannot read.)



NOTE: If you do not have access to an additional J Series router, you can copy and paste the configuration statements from the migrated configuration file to the SSG device. However, this requires you to have a console connection to the SSG device.

Figure 1: Migrating ScreenOS to JUNOS Software with Enhanced Services

The additional J Series Services Router must meet the following requirements:

- Make sure that the Services Router has basic connectivity to your network and that you have remote management access to the router. Also make sure that you have configured a root user account for the router.
- The router must have FTP or SSH enabled to allow file transfers to and from the router.
- The router must allow login with **start shell** operational command privileges.
- You must know the root password for the router and have one of the following types of user accounts:
 - Account with access and privileges for the superuser class
 - Account with **start shell** operational command privileges

Upgrading the ScreenOS Software

Before you can convert an SSG device to a J Series Services Router, the SSG device must be running ScreenOS Release 6.1.0 or later. For more information about upgrading ScreenOS software to Release 6.1.0 or later, see the ScreenOS release notes and *Upgrade Guide* for the most current release.

After upgrading to or verifying that ScreenOS Release 6.1.0 or later is running, see “Downloading the ScreenOS Configuration File” on page 42.

Downloading the ScreenOS Configuration File

After you have upgraded to ScreenOS Release 6.1.0 or later, you need to download the ScreenOS configuration file to a PC or local server. You use that configuration file to migrate to a JUNOS software with enhanced services configuration file. You can use any of the following methods to download the configuration file:

- Trivial File Transfer Protocol (TFTP)
- Secure Copy (SCP)
- WebUI

For information about how to download a configuration file, see the ScreenOS documentation.

After downloading the ScreenOS configuration file, see “Migrating the ScreenOS Configuration File to a JUNOS Software with Enhanced Services Configuration File” on page 42.

Migrating the ScreenOS Configuration File to a JUNOS Software with Enhanced Services Configuration File

For information about how to migrate your original ScreenOS configuration to a JUNOS software with enhanced services configuration and complete the migration process, see “Using the ScreenOS to JUNOS Software with Enhanced Services Migration Tool” on page 49.

Copying the Migrated JUNOS Software with Enhanced Services Configuration File to the USB Storage Device

After converting the ScreenOS configuration file to a JUNOS software with enhanced services configuration file, copy the file to the USB storage device that was provided in the conversion kit.

To perform this procedure, you must have an available J Series router in addition to the one you are converting from a security device.

To copy the migrated JUNOS software with enhanced services configuration file to the USB storage device:

1. Using Telnet or SSH, log in to the additional J Series router running JUNOS or JUNOS software with enhanced services.
2. Using FTP or SCP, copy the recently saved JUNOS software with enhanced services migrated configuration file from the local system to the `/var/tmp` directory on the additional J Series router. If you are using FTP to upload the file, use ASCII as the transfer method.

Verify that the file is intact with UNIX-compatible line breaks using a text editor such as vi or emacs.

3. Review and validate the configuration file, specifically passwords, zones, address information.
4. On the additional J Series router, use the **start shell** command to start the UNIX shell:

```
user@host> start shell
%
```

- a. Insert the USB storage device included in the conversion kit into the USB port.
- b. Enter the UNIX command **su** to switch to a user with superuser privileges, and enter the root password for the router:

```
% su
Password:
root@host%
```

- c. Mount the **/config** partition of the USB storage device with the UNIX **mount** command:

```
root@host% mount /dev/da0s1e /mnt
```



NOTE: You must use the **request system snapshot media usb as-primary partition** command in the CLI mode before mounting the partition.

- d. Delete any factory default configuration files with the UNIX **rm** command:

```
root@host% rm /mnt/juniper.conf*
```

5. Copy the migrated configuration file to the USB storage device:

```
root@host% cp /var/tmp/migrated-config-file /mnt/juniper.conf
```

Replace *migrated-config-file* with the name of your migrated configuration file.

6. Boot from the USB device:
 - To use the migrated software on a trial basis, see “Migrating to JUNOS Software with Enhanced Services on a Trial Basis” on page 44.
 - To use the migrated software on a permanent basis, see “Migrating to JUNOS Software with Enhanced Services Permanently” on page 45.

Unmounting the USB Storage Device

To unmount the USB storage device, perform the following tasks:

1. Unmount the USB storage device:

```
root@host% cd /
root@host% umount /mnt
```



CAUTION: You must first **unmount** the USB storage drive before you remove it. If you remove the USB drive before you unmount, the file system on the drive becomes corrupted and causes JUNOS Software with enhanced services to crash.

2. Remove the USB storage device from the USB port.

The migrated configuration file is now on the USB storage device, and you are now ready to upgrade to JUNOS software with enhanced services on a trial basis. For more information, see “Migrating to JUNOS Software with Enhanced Services on a Trial Basis” on page 44.

Migrating to JUNOS Software with Enhanced Services on a Trial Basis

After migrating the ScreenOS configuration to a JUNOS software with enhanced services configuration file and copying it to the USB storage device, you can evaluate the migrated configuration file on a trial basis.

To use the migrated software on a trial basis, you run the software from the USB storage device provided in your conversion kit. Running JUNOS software with enhanced services from the USB storage device allows you to evaluate the software and test the migrated configuration on your SSG security device in a lab or staging area without converting the device to a J Series Services Router.



NOTE: You can run JUNOS software with enhanced services from the USB storage device for up to total of 5 days.

To migrate to JUNOS software with enhanced services on a trial basis:

1. Using SSH or Telnet, connect to the SSG device running ScreenOS.
2. Enter the **set boot junos** command to allow the device to boot from the USB port.

```
device-> set boot junos usb
device-> save
```

3. Insert the USB storage device into an available USB port on the SSG security device.

For information about where the USB ports are located on SSG 300M-series and SSG 500M-series security devices, see the documentation included with your conversion kit.

If you are logged in to the console, the following error messages about the USB storage device failing to mount appear:

```
Mount usb device. Please wait...
Mount usb device (usb) failed.
```

You do not need to take any action. The USB storage device will mount correctly after you reboot the SSG security device.

4. Enter the **reset** command to reboot the SSG device.

```
device-> reset
device->
```

The SSG security device boots from the USB storage device with JUNOS software with enhanced services on it, using the migrated configuration file. When the SSG security device is back online, you are prompted to log in to JUNOS software with enhanced services. You are now able to use JUNOS software with enhanced services to configure the SSG security device.



NOTE: You can run JUNOS software with enhanced services from the USB storage device for up to a total of 5 days.

After you have finished evaluating JUNOS software with enhanced services, do one of the following:

- Upgrade to JUNOS software with enhanced services permanently. (See “Migrating to JUNOS Software with Enhanced Services Permanently” on page 45.)
- End the JUNOS software with enhanced services Evaluation. (See “Ending the JUNOS Software with Enhanced Services Evaluation” on page 47.)

Migrating to JUNOS Software with Enhanced Services Permanently

After evaluating JUNOS software with enhanced services, you can permanently convert the SSG security device to a J Series Services Router running JUNOS software with enhanced services. To do so, follow these steps:

1. Enter the **request system snapshot operational** command:

```
user@host> request system snapshot as-primary partition swap-size 0 media compact-flash
```

2. Reboot the router:

```
user@host> request system reboot
```

The router boots JUNOS software with enhanced services from the internal CompactFlash card.

3. After the router has finished rebooting, remove the USB storage drive from the USB port.
4. (Optional) Peel off the SSG overlay from the front of the chassis.

Completion of Steps 4 and 5 is optional and does not affect the registration of your new hardware configuration.

5. (Optional) Peel the backing from the self-adhesive J Series overlay provided with your OS conversion kit. Apply the overlay to the front of the chassis. Starting on the left side, line up the cutouts on the overlay with the ports and LEDs on the chassis.
6. Register the new hardware configuration and validate it with Juniper Networks Customer Service, as described in “Registering the New Hardware Configuration” on page 47 and the *Read This First* document included with your OS conversion kit.

Ending the JUNOS Software with Enhanced Services Evaluation

You can stop the evaluation of JUNOS software with enhanced services at any time.

To stop the evaluation:

1. In operational mode for the JUNOS software with enhanced services CLI, enter the following command:

```
user@host> request system reboot
```

The device reboots from the CompactFlash card, restoring ScreenOS as the operating system for the device.

2. After the device has finished rebooting, remove the USB storage device from the USB port.
3. Using the ScreenOS CLI, use the **set boot screenos** command to return the device to FIPS-compliant mode and disable the booting of any USB storage devices.

```
device-> set boot screenos  
device-> save
```

Registering the New Hardware Configuration

After thoroughly testing the configuration and deciding to make the hardware conversion permanent, make sure to register the new hardware configuration and validate it with Juniper Networks Customer Service, as described in the *Read This First* document included with your OS conversion kit. You can register the new hardware configuration only once.

After registering the new hardware configuration, allow up to 45 days for restocking of the new hardware configuration to support any Next Day or Same Day contracts. Juniper Networks Customer Service will provide best-effort support until restocking of the converted product is complete. After the registration process is completed, your Customer Support Center access profile is updated so that you can access the software and tools that support your new hardware configuration.

Chapter 8

Using the ScreenOS to JUNOS Software with Enhanced Services Migration Tool

After converting an SSG security device to a J Series router, you need to migrate the ScreenOS configuration file to a JUNOS software with enhanced services configuration file before you can use JUNOS software with enhanced services. To migrate your ScreenOS configuration file, use the ScreenOS to JUNOS software with enhanced services migration tool, which is a Web-based tool available on the Juniper Networks Web site.

JUNOS software with enhanced services requires security zone information before you can manage the router remotely. The ScreenOS to JUNOS software with enhanced services migration tool takes interface information in the ScreenOS configuration and binds the interfaces to the security zones that were defined in the original configuration. When using the Migration Tool, you have the option to map ScreenOS interfaces to JUNOS software with enhanced services interfaces.

This chapter contains the following sections:

- ScreenOS Features Supported and Not Supported by the Migration Tool on page 49
- Migrating a ScreenOS Configuration File to a JUNOS Software with Enhanced Services Configuration File on page 50
- Downloading and Reviewing the Migrated Configuration File on page 53
- Editing the Migrated Configuration File on page 54

ScreenOS Features Supported and Not Supported by the Migration Tool

For the list of ScreenOS features that are supported and not supported by the ScreenOS to JUNOS software with enhanced services migration tool, see <http://migration-tools.juniper.net/s2jes/s2jes-feature-status.jsp>.

Migrating a ScreenOS Configuration File to a JUNOS Software with Enhanced Services Configuration File

To migrate your downloaded ScreenOS configuration file to a JUNOS software with enhanced services configuration file, use the ScreenOS to JUNOS software with enhanced services migration tool (S2JES).

To migrate the ScreenOS configuration to a JUNOS software with enhanced services configuration:

1. Using a Web browser, navigate to <http://migration-tools.juniper.net>.
2. Log in using your Juniper Networks support username and password.

If you do not have a Juniper Networks user account, go to <https://www.juniper.net/registration/Register.jsp> and complete the registration form.

3. On the Migration Tools home page, select **ScreenOS to JUNOS Software with enhanced services**. The Terms of Use page appears.
4. Read the contents of the Terms of Use page.
5. If you agree to the terms of use, click **I Agree**. The ScreenOS to JUNOS software with enhanced services migration tool page appears.

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SCREENOS TO JUNOS SOFTWARE WITH ENHANCED SERVICES MIGRATION TOOL

SCREENOS INPUT

The ScreenOS to JUNOS software with enhanced services Migration Tool (S2JES) converts full ScreenOS Configuration files into Juniper Networks JUNOS Enhanced Services format.

Not all ScreenOS statements are converted and some might be converted incorrectly. Hand reviewing the output is absolutely necessary.

Although most ScreenOS statements can be input individually, this is not recommended or supported.

Upload a ScreenOS configuration file

- OR -

Paste a complete ScreenOS configuration file

Select option(s)

Select Target JUNOS software with enhanced services Release

☒ Output ScreenOS lines that converted properly

☒ Output verbose ScreenOS comments

☒ Use my configuration for future S2JES enhancements ([privacy information](#))

[Help with options](#)

6. On the Migration Tool page, click the **Browse** button (next to the Upload a ScreenOS configuration file box).



NOTE: To migrate an entire configuration, upload the configuration file to the ScreenOS to JUNOS software with enhanced services migration tool page. Use the copy and paste feature to convert a small set of ScreenOS commands.

7. Navigate to the directory that contains the ScreenOS configuration file that you downloaded.
8. Select the ScreenOS configuration file, and click **Open**.
9. Select or clear any conversion options. By default, all options are selected.
 - **Output ScreenOS lines that converted properly**—Select this option to display all ScreenOS configuration statements, even those that have no warnings, errors, or informational messages associated with them after the conversion.
 - **Output verbose ScreenOS comments**—Select this option to display informational messages associated with certain statements. These informational messages usually describe differences between defaults in ScreenOS and JUNOS software with enhanced services.
 - **Use my configuration for future S2JES enhancements**—Select this option to save your configuration and possibly have it used by Juniper Networks for migration tool testing and future enhancements. Go to <http://migration-tools.juniper.net/s2jes/s2jes-security.jsp> for more information about how your configuration information might be used.

For online help for these options, click the **Help with options** link on the Migration Tool page.

10. Click **Migrate**.

The ScreenOS configuration is analyzed, and if interfaces are defined in the configuration, the Migration Options page appears.

ScreenOS Interface	Zone	Convert	JUNOS-ES Interface	Use No IP (Unnumbered Tunnel)	IP Address (Unnumbered Tunnel)
ethernet1/0/1	"Untrust"	<input checked="" type="checkbox"/>	ge-1/0/1	<input checked="" type="checkbox"/>	
ethernet1/0/2	"REGIONAL_WAN"	<input checked="" type="checkbox"/>	ge-1/0/2	<input checked="" type="checkbox"/>	
ethernet3/0/1		<input checked="" type="checkbox"/>	ge-3/0/1	<input checked="" type="checkbox"/>	
ethernet3/0/2	"Null"	<input checked="" type="checkbox"/>	ge-3/0/2	<input checked="" type="checkbox"/>	
tunnel0/0/0.1	"Untrust"	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
tunnel0/0/0.2	"Untrust"	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
tunnel0/0/0.10	"Untrust"	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	

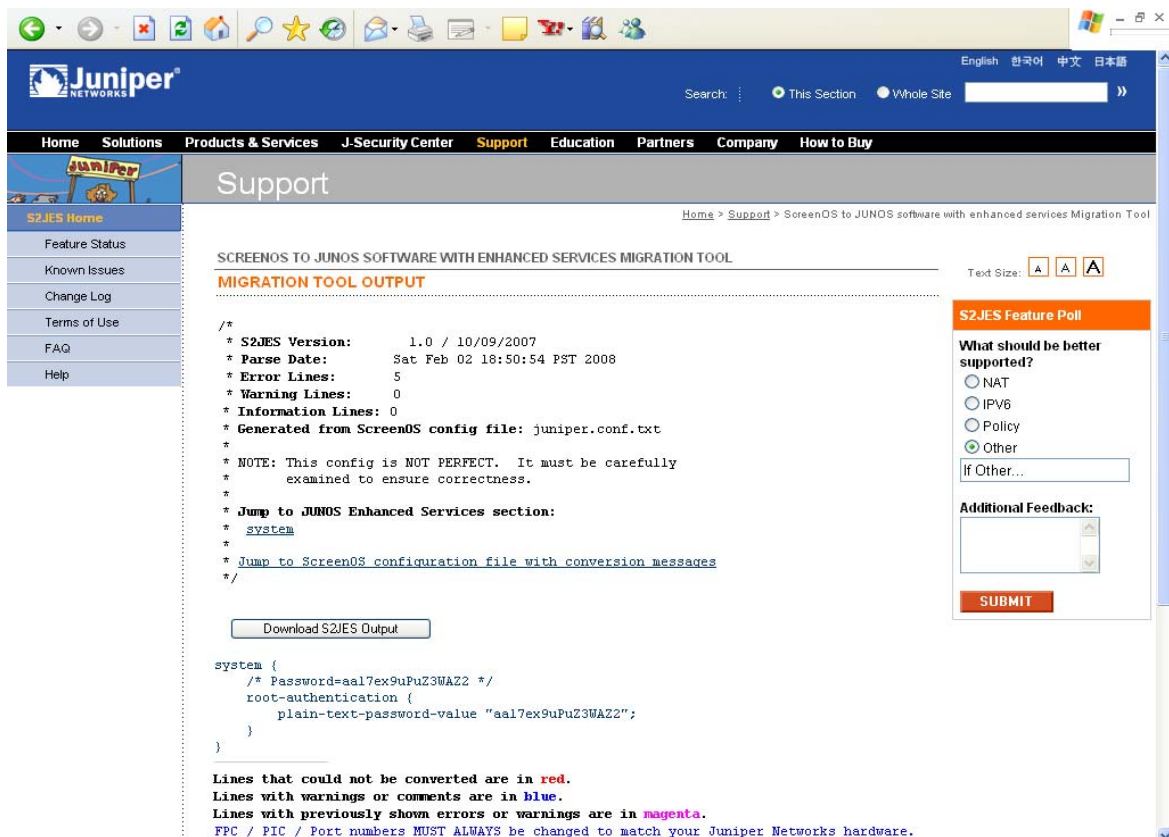
[Finish Migration](#)

The Migration Options page lists all of the interfaces in the configuration.

11. You can specify the following options from the Migration Options page:

- To convert a ScreenOS interface to a JUNOS software with enhanced services interface—Select the **Convert** box. To prevent conversion of a ScreenOS interface, clear the **Convert** box. By default, all ScreenOS interfaces are converted to JUNOS software with enhanced services interfaces.
- To change the mapping between a ScreenOS interface and JUNOS software with enhanced services interface—Select the interface type from the list, and type the Physical Interface Module (PIM) slot and port number.
- To assign no IP address to a tunnel interface (if the ScreenOS configuration had tunnel interfaces defined)—Select the **Use No IP (Unnumbered Tunnel)** box. To assign an IP address, clear the box and then type the IP address and subnet mask in classless interdomain routing (CIDR) format in the two fields that appear.

12. Click **Finish Migration**. The Migration Tool Output page appears, listing the newly migrated JUNOS software with enhanced services configuration. After the JUNOS software with enhanced services configuration, the original ScreenOS configuration is listed with any errors, warnings, or comments associated with the conversion.



For more information about reviewing the newly migrated configuration, see “Downloading and Reviewing the Migrated Configuration File” on page 53.

Migrating Small ScreenOS Configuration Files or Partial Configurations

You can migrate small ScreenOS configuration files or partial ScreenOS configurations to JUNOS software with enhanced services configurations by copying the ScreenOS statements directly into the ScreenOS to JUNOS software with enhanced services migration tool page:

1. If you are migrating a configuration file, open the ScreenOS configuration file in a text editor.
2. Copy the text in the configuration file.
3. In the Migration Tool page, paste the text in the Paste a complete JUNOS config file box.
4. Click **Migrate**. The Migration Tool Output page appears, listing the newly migrated JUNOS software with enhanced services configuration. After the JUNOS software with enhanced services configuration, the original ScreenOS configuration is listed with any errors, warnings, or comments associated with the conversion.

Downloading and Reviewing the Migrated Configuration File

After migrating the ScreenOS configuration to a JUNOS software with enhanced services configuration, download it and carefully review each line to ensure that your configuration was migrated properly. Also use the migration output, which is the original ScreenOS configuration and the associated messages listed on the Migration Tool Output page, to assist you. If necessary, identify the commands that the Migration Tool could not convert.

When reviewing the migration output, make sure that the following areas were properly converted:

- Interface configuration—Verify that the IP addresses that were configured to remotely manage the security device are properly converted in the migration output.
- System services—Verify that the protocols used to manage the security device are listed at the [edit system services] and [edit security zones security-zone security-zone host-inbound-traffic system-services] hierarchy levels.
- Security policies—Verify that the JUNOS software with enhanced services security policies correctly allow and deny network and VPN traffic.

Interpreting Messages in the Migration Output

Errors, warnings, and comments are indicated as follows in the migration output:

- Any ScreenOS configuration statements that could not be converted are listed in red.
- Any warnings or comments associated with configuration statements are listed in blue.
- Any previously displayed errors or warnings are listed in magenta.

Here are some of the common messages that you might see in the migration output and their explanations:

- “Line not recognized by S2JES” (error)—The Migration Tool does not recognize this ScreenOS command. There might be an equivalent configuration statement in JUNOS software with enhanced services.
- “Line not yet supported by S2JES” (error)—Currently, this ScreenOS command is not supported by the Migration Tool.
- “This is not supported in JUNOS-ES” (error)—The feature for this command is not supported in JUNOS software with enhanced services.
- “Command-name is not supported in JUNOS-ES” (warning)—The feature for this command is not supported in JUNOS software with enhanced services.
- “Feature is not currently supported” (warning)—The feature for this command is not currently supported.

Downloading the Migrated Configuration File

After you are satisfied that the configuration statements are properly translated, click the **Download S2JES Output** button on the ScreenOS to JUNOS software with enhanced services migration tool page to download the translated JUNOS software with enhanced services configuration file (for example, **s2jesOutput**) to your local system.

After you have downloaded the JUNOS software with enhanced services configuration file, you need to edit it to add passwords and other encrypted keys. For more information, see “Editing the Migrated Configuration File” on page 54.

Editing the Migrated Configuration File

For security purposes, the ScreenOS to JUNOS software with enhanced services migration tool does not include the encrypted passwords for users from the ScreenOS configuration in the migrated configuration file. The Migration Tool creates a random clear-text password for each user and includes that random password in the migrated configuration file. If you do not change any user passwords in the migrated configuration file, these random passwords are encrypted after you copy the file to the router and commit the configuration.

To define your own user passwords, you need to edit the migrated configuration before you copy it to the router. At a minimum, you must define the following:

- Root user and password
- One local user and password (because you cannot by default log in as root using a Telnet or SSH session)

If you have a valid JUNOS configuration file, you can copy the encrypted passwords for the root user and one local user account when editing the migrated configuration file. If you do not have a valid JUNOS configuration file, replace the clear-text passwords in the migrated configuration file.

If the original ScreenOS configuration contained encrypted keys, such as preshared keys for IKE policy authentication, the keys are not included in the migrated configuration file and are replaced by ASCII text. For example, a preshared key for IKE policy authentication in the migrated configuration file contains the following ASCII text: “Pre Shared Key MUST be changed to become valid.” You must replace the ASCII text with each actual preshared key. The keys are encrypted when you copy the migrated configuration file to the router and commit the configuration.

To edit the migrated configuration file:

1. On your system, open the migrated configuration file in a text editor.
2. *If you have a valid JUNOS configuration file* that contains encrypted passwords for the root user and a local user account:
 - a. Open the valid JUNOS configuration file and copy the **encrypted-password** statement for the root user. This statement is located at the **[system root-authentication]** hierarchy level.
 - b. In the migrated configuration file, replace the **plain-text-password-value** statement for the root user with the **encrypted-password** statement from the JUNOS configuration file.
 - c. In the JUNOS configuration file, replace the clear-text password in the **plain-text-password** statement for the root user with the password you want to define. This statement is located at the **[system root-authentication]** hierarchy level.
 - d. In the migrated configuration file, replace the **plain-text-password-value** statement for the local user with the **encrypted-password** statement from the JUNOS configuration file.
3. *If you do not have a valid JUNOS configuration file:*
 - a. In the migrated configuration file, replace the clear-text password in the **plain-text-password** statement for the root user with password you want to define. This statement is located at the **[system root-authentication]** hierarchy level.

- b. In the migrated configuration file, replace the clear-text password in the **plain-text-password** statement for the local user with password you want to define. This statement is located at the **[system login user *username* authentication]** hierarchy level.
4. Replace the ASCII text for any encrypted keys with the actual keys.

For example, replace the ASCII text for any preshared keys for IKE policy authentication with the actual preshared key. The keys are encrypted when you upload the file to the router and commit the configuration.
5. Save the migrated configuration file.

You are now ready to upload the migrated configuration file to the router. For more information, see “Uploading the Migrated Configuration File to the Router” on page 37.

Chapter 9

Converting JUNOS or JUNOS Software with Enhanced Services to ScreenOS

You can convert certain J Series Services Routers running JUNOS or JUNOS software with enhanced services to SSG security devices with the appropriate conversion kit (see Table 9).

Table 9: Convertible J Series Hardware and Software

Services Router with JUNOS 8.3 or Later	Conversion Kit (if applicable)	Resulting SSG Security Device (if applicable)
J2320	J2320-SSG-CONV-S	SSG 320M
J2350	J2350-SSG-CONV-S	SSG 350M
J4350	J4350-SSG-CONV-S	SSG 520M
J6350	J6350-SSG-CONV-S	SSG 550M

Use the appropriate conversion kit in the following situations:

- Convert a J Series Services Router to an SSG security device.
- After converting an SSG security device to a J Series Services Router and registering the new hardware configuration, convert the J Series router back to an SSG security device.

For information about converting J Series Services Routers to SSG security devices, see the documentation included with your conversion kit.

Chapter 10

Downgrading JUNOS Software with Enhanced Services to JUNOS Software

When you install JUNOS software with enhanced services, the router creates a backup image of the software that was previously installed, as well as installing the requested software.

If you migrated JUNOS Software to JUNOS software with enhanced services, you can downgrade the software by using the backup image of the software that was previously installed, which is saved on the router. If you revert to the previous image, this backup image is used, and the image of the running software is deleted. With this method, you can downgrade to only the software release that was installed on the router before the current release.

If the software backup image that was previously installed does not exist on the router, use the procedures in “Installing JUNOS Software with Enhanced Services with the CLI” on page 13 and specify a JUNOS Software image as the source image to be upgraded.

This chapter contains the following sections:

- Backing Up and Replacing the JUNOS Software with Enhanced Services Configuration on page 59
- Verifying Whether the Backup Software Image Exists on the Router on page 60
- Reverting to JUNOS Software Using the Backup Software Image on page 61
- Reverting to JUNOS Software by Installing the Software Image on page 63

Backing Up and Replacing the JUNOS Software with Enhanced Services Configuration

To back up and replace the JUNOS software with enhanced services configuration file;

1. Use the `start shell` operational command to start a shell session.
2. Use the `su` UNIX command to switch to a user with superuser privileges:

```
% su  
root@host%
```

3. At the shell prompt, make a backup file of the JUNOS software with enhanced services configuration file (/config/juniper.conf.gz):

```
% cp /config/juniper.conf.gz /path/juniper.conf.junos-es.gz
```

Replace */path* with the absolute path to which you want to store the backup file.

4. Replace the JUNOS software with enhanced services configuration file with the JUNOS configuration file that you created in “Backing Up the JUNOS Configuration File” on page 10:

```
root@host% cp /path/juniper.conf.junos.gz /config/juniper.conf.gz
```

Replace */path* with the absolute path to the JUNOS configuration file.

5. Return to the shell prompt by using the `exit` command:

```
root@host% exit  
%
```

6. Enter the `exit` command to return to operational mode in the CLI:

```
% exit  
user@host>
```

After backing up and replacing the JUNOS software with enhanced services configuration file, verify whether a backup software image exists on the router, as described in “Verifying Whether the Backup Software Image Exists on the Router” on page 60.

Verifying Whether the Backup Software Image Exists on the Router

You can verify whether the backup software image is available on the router by using the J-Web interface or the CLI:

- “Verifying the Backup Software Image with the J-Web Interface” on page 60
- “Verifying the Backup Software Image with the CLI” on page 61

Verifying the Backup Software Image with the J-Web Interface

To verify whether the backup software image exists on the router:

1. In the J-Web interface, select **Maintain > Files**.
2. In the Delete Backup JUNOS Package section, verify that a backup software image is available and whether it is the release to which you want to downgrade.

3. Do one of the following:
 - If a backup software image is available, you can revert to JUNOS Software by using the procedure described in “Reverting to JUNOS Software Using the Backup Software Image” on page 61 or in “Reverting to JUNOS Software by Installing the Software Image” on page 63.
 - If no backup software image is available, see “Reverting to JUNOS Software by Installing the Software Image” on page 63.

Verifying the Backup Software Image with the CLI

To verify whether the backup software image exists on the router:

1. From operational mode in the CLI, enter the following command:

```
user@host> file list /cf/packages
```

Output like the following appears:

```
/cf/packages:
junos@ -> junos-9.1R1.8-domestic
junos-9.1R1.8-domestic
junos-9.1R1.8-domestic.md5
junos-9.1R1.8-domestic.sha1
junos.old@ -> junos-8.5R1.3-domestic
mnt/
```

2. Verify that `junos.old@` links to the appropriate JUNOS Software image to which you want to downgrade.
3. Do one of the following:
 - If a backup software image is available, you can revert to JUNOS Software by using the procedure described in “Reverting to JUNOS Software Using the Backup Software Image” on page 61 or in “Reverting to JUNOS Software by Installing the Software Image” on page 63.
 - If no backup software image is available, see “Reverting to JUNOS Software by Installing the Software Image” on page 63.

Reverting to JUNOS Software Using the Backup Software Image

If the backup software image is available on the router, you can revert to JUNOS Software with the J-Web interface or with the `request system software rollback` command in the CLI. For the changes to take effect, you must reboot the router. If the backup software image is not available, see “Reverting to JUNOS Software by Installing the Software Image” on page 63.

This section contains the following topics:

- Reverting to JUNOS Software with the J-Web Interface on page 62
- Reverting to JUNOS Software with the CLI on page 62

Reverting to JUNOS Software with the J-Web Interface

To revert to JUNOS Software with the J-Web interface:

1. If you have not already created a backup of the JUNOS software with enhanced services configuration file and replaced it with the backup of the JUNOS configuration file, see “Backing Up and Replacing the JUNOS Software with Enhanced Services Configuration” on page 59.
2. In the J-Web interface, select **Maintain > Software > Downgrade**. The image of the previous software version is displayed on this page.



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

3. Select **Downgrade** to downgrade to the previous version of the software or **Cancel** to cancel the downgrade process.
4. When the downgrade process is complete, for the new software to take effect, select **Maintain > Reboot** from the J-Web interface to reboot the router.

After you downgrade the software, the previous release is loaded, and you cannot reload the running version of software again. To downgrade to an earlier version of software, follow the procedure for upgrading, using the JUNOS Software image labeled with the appropriate release.

Reverting to JUNOS Software with the CLI

To revert to JUNOS Software with the CLI:

1. If you have not already created a backup of the JUNOS software with enhanced services configuration file and replaced it with the backup of the JUNOS configuration file, see “Backing Up and Replacing the JUNOS Software with Enhanced Services Configuration” on page 59.
2. Enter the `request system software rollback` command to return to the previous JUNOS Software version:

```
user@host> request system software rollback
```

The previous JUNOS Software version is now ready to become active when you next reboot the router.

3. Reboot the router:

```
user@host> request system reboot
```

The router is now running JUNOS Software.

Reverting to JUNOS Software by Installing the Software Image

If you do not have a backup software image on the router, you can revert back to JUNOS Software on the Services Router by using the `request system software add` operational command, as described in “Installing JUNOS Software with Enhanced Services with the CLI” on page 13.

To revert to JUNOS Software from JUNOS software with enhanced services by installing the software image:

1. If you have not already created a backup of the JUNOS software with enhanced services configuration file and replaced it with the backup of the JUNOS configuration file, see “Backing Up and Replacing the JUNOS Software with Enhanced Services Configuration” on page 59.
2. Follow the instructions in “Installing JUNOS Software with Enhanced Services with the CLI” on page 13. Be sure to use the JUNOS Software image to which you want to downgrade.

The router is now running JUNOS Software.

Chapter 11

Upgrading the DRAM Module or the CompactFlash Card

Because many of the Services Router's hardware components are field-replaceable units (FRUs), you can remove and replace them yourself. When you need to replace a router component, contact your customer support or sales representative to order the field-replaceable unit (FRU) that contains the component.

This chapter contains the following sections:

- Replacing Internal CompactFlash Cards on J2320 and J2350 Routers on page 65
- Replacing Internal CompactFlash Cards on J4350 and J6350 Routers on page 66
- Replacing External CompactFlash Cards on page 66
- Replacing DRAM Modules on page 66

Replacing Internal CompactFlash Cards on J2320 and J2350 Routers

The internal CompactFlash card provides primary storage for the router and is installed in a slot on the bottom of the J2320 or J2350 chassis. It can accommodate software images, configuration files, and microcode.

For detailed information on replacing internal CompactFlash cards on J2320 and J2350 routers, see the “Managing Services Router Hardware” section in the *J-series Services Routers Hardware Guide*. For information on formatting a new, blank CompactFlash card, see the “Configuring Internal CompactFlash Card Recovery” section of the *JUNOS Software Administration Guide*. These guides are available on the Juniper Networks Technical Documentation Web site at www.juniper.net/techpubs.



Use only CompactFlash cards purchased from Juniper Networks for your J Series platform and model. For external CompactFlash cards, use only commercial grade CompactFlash cards because of the number of reads and writes performed by the JUNOS Software with enhanced services operating system.

Replacing Internal CompactFlash Cards on J4350 and J6350 Routers

The internal CompactFlash card is installed in a slot on the bottom of the J4350 or J6350 chassis.

For detailed information on replacing internal CompactFlash cards on J4350 and J6350 routers, see the “Managing Services Router Hardware” section in the *J-series Services Routers Hardware Guide*. For information on formatting a new, blank CompactFlash card, see the “Configuring Internal CompactFlash Card Recovery” section of the *JUNOS Software Administration Guide*. These guides are available on the Juniper Networks Technical Documentation Web site at www.juniper.net/techpubs.



Use only CompactFlash cards purchased from Juniper Networks for your J Series platform and model.

Replacing External CompactFlash Cards

The external CompactFlash card is an optional component on J2320 and J2350 Services Routers. It provides secondary storage for the router and can accommodate software images, configuration files, and microcode. If the internal CompactFlash card fails on startup, the router boots from the external CompactFlash card. For information on formatting a new, blank CompactFlash card, see the “Configuring Internal CompactFlash Card Recovery” section of the *JUNOS Software Administration Guide*.

For information on replacing external CompactFlash cards, see the “Managing Services Router Hardware” section of the *J-series Services Routers Hardware Guide*. These guides are available on the Juniper Networks Technical Documentation Web site at www.juniper.net/techpubs.

Replacing DRAM Modules

The DRAM installed on the Routing Engine provides storage for the routing and forwarding tables and for other Routing Engine processes. The design of the Routing Engine allows you to modify the DRAM configuration by adding DRAM modules to the system board or by removing DRAM modules from the board.

For information on replacing DRAM modules, see the “Managing Services Router Hardware” section in the *J-series Services Routers Hardware Guide*. The Getting Started Guide is available on the Juniper Networks Technical Documentation Web site at www.juniper.net/techpubs.



Use only DRAM modules purchased through Juniper Networks specifically for your model.

Chapter 12

Managing CompactFlash Card Space

Periodically you can manage your CompactFlash card space for general housekeeping purposes. If you want to create more space or just clean up your CompactFlash card, you can delete unnecessary files.



For upgrading from JUNOS Software or from JUNOS Software with enhanced services, you are required to have 512 MB of CompactFlash card and 512 MB of DRAM.

For upgrading DRAM and CompactFlash card information, see “Replacing DRAM Modules” on page 66. For information on formatting a new, blank CompactFlash card, see the “Configuring Internal CompactFlash Card Recovery” section of the *JUNOS Software Administration Guide*.

To increase the amount of available space on the CompactFlash card, you can delete unused files in one or more of the following ways:

- Using the Upgrade Helper Script on page 67
- Cleaning Up Files on page 68
- Deleting the Backup Software Image on page 68
- Cleaning Up Log, Temporary, and Diagnostic Files on page 69
- Deleting Remaining Temporary Files and Old Software Images on page 70

Using the Upgrade Helper Script



NOTE: If you would prefer not to use the `upgrade-helper` script and instead want to perform the file cleanup steps manually, proceed to “Cleaning Up Files” on page 68.

Juniper Networks provides an `upgrade-helper` script that is available for download at the Juniper Networks Support Knowledge Base page. To increase the amount of available CompactFlash card space on your router, perform the following steps:

1. Download the `upgrade-helper` script from <http://kb.juniper.net/KB11204> to a suitable location on your router (for example, `/root`).

2. Execute the script:

```
root@host% sh ./upgrade-helper
Upgrade helper script started
ATTENTION: PLEASE RUN THIS SCRIPT AGAIN IMMEDIATELY AFTER REBOOTING.
Rebooting system.
```

The system reboots (in no more than 10 seconds) without a swap partition.

3. Execute the **upgrade-helper** script again immediately after rebooting.
4. Execute the following commands to delete the backup image of the software that was previously installed and to rotate log files and delete unnecessary files:

```
root@host% request system software delete-backup
root@host% request system storage cleanup
```

Cleaning Up Files



NOTE: If you perform the steps described in “Using the Upgrade Helper Script” on page 67, you do not need to perform the steps described in this section and its subsections. These sections describe a manual approach for cleaning up your CompactFlash card.

To clean up files manually, you use CLI commands to delete the backup software image, rotate log files, and remove other unnecessary files. To perform these tasks, refer to the following sections:

- Deleting the Backup Software Image on page 68
- Cleaning Up Log, Temporary, and Diagnostic Files on page 69
- Deleting Remaining Temporary Files and Old Software Images on page 70

Deleting the Backup Software Image

When you install software on the router, it creates a backup image of the software that was previously installed so that you can downgrade to that software version if necessary. You can delete this image to free available CompactFlash card space.



CAUTION: If you delete this image, you cannot roll back to this software release (using **Maintain > Software > Downgrade** in the J-Web interface or the **request system software rollback** operational command in the CLI).

Deleting the Backup Software Image with the J-Web Interface

To delete the backup software image using J-Web:

1. In the J-Web interface, select **Maintain > Files**.
2. In the Delete Backup JUNOS Package section, review the backup image information listed.
3. To delete the backup image, click the **Delete backup JUNOS package** link.
4. Click one of the following buttons on the confirmation page:
 - To delete the backup image and return to the Files page, click **OK**.
 - To cancel the deletion of the backup image and return to the Files page, click **Cancel**.

Deleting the Backup Software Image with the CLI

To delete the backup software image using the CLI:

1. In operational mode in the CLI, enter the request system software delete-backup command:

```
user@host> request system software delete-backup
```

2. Enter yes when prompted:

```
Delete backup system software package [yes,no] (no) yes
```

Cleaning Up Log, Temporary, and Diagnostic Files

You can use the J-Web interface or the CLI `request system storage cleanup` command to rotate log files and delete unnecessary files on the Services Router. If you are running low on storage space, this file cleanup procedure quickly identifies files that can be deleted.

The file cleanup procedure performs the following tasks:

- Rotates log files—All information in the current log files is archived, old archives are deleted, and fresh log files are created.
- Deletes log files in `/var/log`—Any files that are not currently being written to are deleted.
- Deletes temporary files in `/var/tmp`—Any files that have not been accessed within two days are deleted.
- Deletes all diagnostic files in `/var/crash`—Any core files that the router has written during an error are deleted.
- Deletes all software images (*.tgz files) in `/var/sw/pkg`—Any software images copied to this directory during software upgrades are deleted.

Cleaning Up Files with the J-Web Interface

To rotate log files and delete unnecessary files with the J-Web interface:

1. In the J-Web interface, select **Maintain > Files**.
2. In the Clean Up Files section, click **Clean Up Files**. The router rotates log files and identifies the files that can be safely deleted.

The J-Web interface displays the files that you can delete and the amount of space that will be freed on the file system.

3. Click one of the following buttons on the confirmation page:
 - To delete the files and return to the Files page, click **OK**.
 - To cancel your entries and return to the list of files in the directory, click **Cancel**.

Cleaning Up Files with the CLI

To rotate log files and delete unnecessary files with the CLI:

1. Enter operational mode in the CLI.
2. To rotate log files and identify the files that can be safely deleted, enter the following command:

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

The router rotates log files and displays the files that you can delete.

3. Enter **yes** at the prompt to delete the files.



NOTE: You can issue the `request system storage cleanup dry-run` command to review the list of files that can be deleted with the `request system storage cleanup` command, without actually deleting the files.

Deleting Remaining Temporary Files and Old Software Images

After you complete the clean up procedure in “Cleaning Up Log, Temporary, and Diagnostic Files” on page 69, some temporary files might remain (for example, files that have been accessed within the last two days) in the `/cf/var/tmp` directory, as well as old software images in the `/var/sw/pkg` directory. Check for any remaining temporary files or old software images, and manually delete them.

Deleting Files with the J-Web Interface

To delete files with the J-Web interface:

1. In the J-Web interface, select **Maintain > Files**.
2. In the Download and Delete Files section, click **Temporary Files**.

The J-Web interface displays the files located in the directory.

3. Check the box next to each file you plan to delete.
4. Click **Delete**.

The J-Web interface displays the files that you can delete and the amount of space that will be freed on the file system.

5. Click one of the following buttons on the confirmation page:
 - To delete the files and return to the Files page, click **OK**.
 - To cancel your entries and return to the list of files in the directory, click **Cancel**.
6. In the Download and Delete Files section on the Files page, click **Old JUNOS Software**.

The J-Web interface displays the files located in the directory.

7. Check the box next to each file you plan to delete.
8. Click **Delete**.

The J-Web interface displays the files that you can delete and the amount of space that will be freed on the file system.

9. Click one of the following buttons on the confirmation page:
 - To delete the files and return to the Files page, click **OK**.
 - To cancel your entries and return to the list of files in the directory, click **Cancel**.

Deleting Files with the CLI

You can use the CLI to manually delete any remaining temporary files or old software images.

To delete files using the CLI:

1. From operational mode in the CLI, enter the following command to display a list of the files in the `/cf/var/tmp` directory:

```
user@host> file list /cf/var/tmp detail
/cf/var/tmp:
total 178
-rw-r--r--  1 root  wheel      3916 Oct 22 15:45 cleanup-pkgs.log
drwxrwxrwx  2 root  wheel       512 Jan 1  2001 install/
-rw-r--r--  1 jdoe  wheel    18005 Jul 17 06:53 cli.txt
-rw-r-----  1 root  wheel     2670 Oct 22 15:45 sampled.pkts
drwxrwxrwt  2 root  wheel       512 Oct 28 12:41 vi.recover/
```

2. From operational mode in the CLI, enter the following command to delete a file:

```
user@host> file delete /cf/var/tmp/filename
user@host>
```

To remove all files, enter the following command:

```
user@host> file delete /cf/var/tmp/*
user@host>
```



NOTE: The `file delete` command does not delete files that are owned by root.

3. Delete any remaining temporary files and directories that you created. For example, images copied into `/var/home/ <xyz>` or configurations backed up in `/var/home/ <xyz>` must be removed manually.

You can manually delete these files by using a UNIX shell. To do so, you must know the root password for the router and have one of the following types of user accounts:

- Account with access and privileges for the superuser class
- Account with `start shell` operational command privileges

4. In operational mode in the CLI, enter the following command:

```
user@host> start shell
%
```

5. At the shell prompt, enter the following command:

```
% su
```

6. Enter the root password. The password does not appear as you type.

```
Password:
root@host%
```

7. Enter the following commands:

```
root@host% cd /var/tmp
root@host% ls
```

Verify that the files listed in this directory are files that you want to delete.

8. Enter the following command:

```
root@host% rm -rf /var/tmp/*
root@host%
```

This command removes all files in the `/var/tmp` directory and recursively removes directories (even those with files in them) without any prompting for confirmation. If no matching files are found, a “No match.” message appears.

9. Enter the following command to remove all old software images in the `/var/sw/pkg` directory:

```
root@host% rm -rf /var/sw/pkg/*.tgz
root@host%
```

This command removes all software images (*.tgz files) and recursively removes directories without any prompting for confirmation. If no matching files are found, a “No match.” message appears.

10. Return to the default shell prompt by using the `exit` command:

```
root@host% exit
%
```

11. Enter the `exit` command to return to the operational mode in the CLI:

```
% exit
user@host>
```

Verifying CompactFlash Card Space

To see how much space is available on the CompactFlash card, use the CLI operational mode command **show system storage**:

```
user@host> show system storage
```

Filesystem	Size	Used	Avail	Capacity	Mounted on
/dev/ad0s1a	213M	119M	92M	57%	/
devfs	1.0K	1.0K	0B	100%	/dev
devfs	1.0K	1.0K	0B	100%	/dev/
/dev/md0	155M	155M	0B	100%	/junos
/cf	213M	119M	92M	57%	/junos/cf
devfs	1.0K	1.0K	0B	100%	/junos/dev/
procfs	4.0K	4.0K	0B	100%	/proc
/dev/bo0s1e	24M	16K	24M	0%	/config
/dev/md1	168M	7.2M	147M	5%	/mfs
/dev/md2	58M	42K	53M	0%	/jail/tmp
/dev/md3	7.7M	100K	7.0M	1%	/jail/var/etc
devfs	1.0K	1.0K	0B	100%	/jail/dev
/dev/md4	1.9M	6.0K	1.7M	0%	/jail/html/oem

The **show system storage** command output displays information about the root file system on the CompactFlash card on the line that contains only a forward slash (/) in the “Mounted on” column. In this example, the CompactFlash card has 92 MB of available space.

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