

SRP Field Upgrade Installation Instructions

03 November 2004
Part No: 162-00982-00
Revision A01

This document describes installation procedures for upgrading switch route processor (SRP) modules, I/O modules, and nonvolatile storage (NVS) for the Juniper Networks, Inc. ERX-14xx and ERX-7xx routers.

You can also find these upgrade instructions and complete hardware documentation on the Juniper Networks technical documentation Web page, which is located at <http://www.juniper.net/techpubs/>.

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Overview

Juniper Networks E-series routers contain SRP modules, which perform system management, routing table calculations and maintenance, forwarding table computations, statistics processing, configuration storage, and other control functions. SRP modules are PowerPC-based systems with their own memory, nonvolatile disk storage, and power supply. The ERX-14xx and ERX-7xx routers use one or two redundant SRP modules.

To upgrade an ERX SRP module, you follow this general process:

1. Check to see how much memory is currently installed on the router.
2. Prepare for the upgrade by checking the contents of the upgrade kit and assembling all tools and materials.
3. Save the running configuration (optional) if you are installing or replacing a redundant SRP.
4. Halt the system.
5. Remove the SRP module from the chassis.
6. Remove the old SODIMMs, if necessary, and install the new SODIMMs.
7. Install any additional upgrades, such as NVS or I/O modules.
8. Reinstall the SRP module in the chassis.
9. Restore the saved JUNOS software configuration or perform a fresh configuration.

The following sections provide specific instructions on how to perform upgrades.

Upgrading ERX-14xx and ERX-7xx Routers

This section describes how to upgrade the SRP memory, NVS, and the SRP I/O module for the ERX router. Prepare for the upgrade by assembling the following items:

- Flathead screwdriver
- Phillips screwdriver
- Antistatic wrist strap
- Antistatic mat and bags to hold components
- The upgrade kits needed

Upgrading Memory on ERX-14xx and ERX-7xx Routers

This section describes how to upgrade memory on the router. The upgrade procedure you follow depends on whether you have one SRP or two redundant SRPs.

Upgrading a System with One SRP

In a router with one SRP module, the SRP module is installed in either slot 6 or slot 7 on the ERX-14xx or slots 0 and 1 on the ERX-7xx. To upgrade a router with one SRP module, follow this procedure:

1. Check the memory currently installed in the SRP by issuing the `show hardware` command.
2. Optionally, save the configuration currently running on the router to a remote router configuration file with a `.cnf` extension. For example:

```
host1#copy running-configuration erx1440conf.cnf
```

3. Halt the SRP module installed in the router by issuing the `halt` command. The OK and FAIL LEDs lights start to blink on the module.
4. Attach the antistatic wrist strap to your wrist and connect it to one of the ESD grounding jacks on the router.

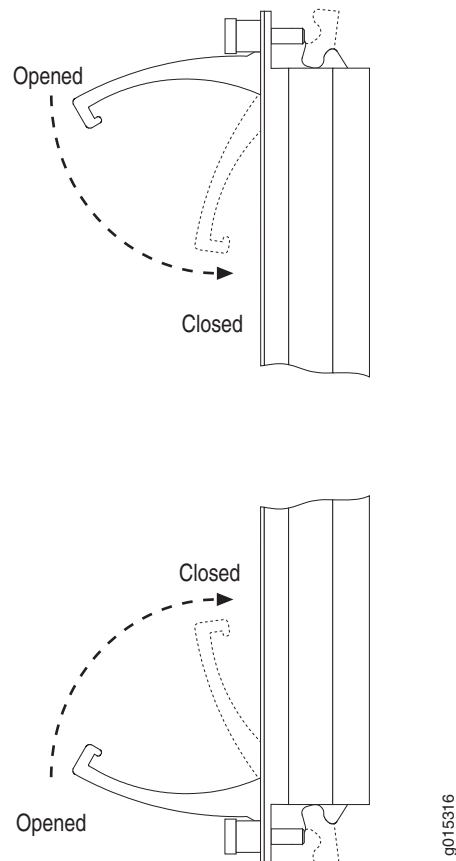


WARNING: Do not insert any metal object, such as a screwdriver, or place your hand into an open slot or the backplane when the E-series router is on. Remove jewelry (including rings, necklaces, and watches) before working on equipment that is connected to power lines. These actions prevent electric shock and serious injuries.



CAUTION: When handling modules, use an antistatic wrist strap connected to the router's ESD grounding jack, and hold modules by their edges. Do not touch the components, pins, leads, or solder connections. These actions help to protect the module from damage by electrostatic discharge.

5. Use a Phillips screwdriver to loosen the thumbscrews located at the top and bottom of the LED panel on the SRP module.
6. Move the ejector handles located at the top and bottom of the module so that they are in the open position, as shown in Figure 1.

Figure 1: Open and Closed Positions for Ejectors

7. Slide the SRP module out of the chassis and rest it on the antistatic mat with memory sockets and NVS card facing up.
8. Install the new SODIMMs on the SRP. Follow the directions in “Upgrading SODIMMs” on page 9 .
9. If you are also upgrading nonvolatile storage, replace the existing NVS card. Follow the directions in “Upgrading NVS on the ERX-1440 Router” on page 13.
10. If you are also upgrading the SRP I/O module, replace the I/O module. Follow the directions in “Upgrading the SRP I/O Module” on page 11.
11. Attach the new faceplate label to the SRP as described in “Attaching the New Faceplate Label” on page 14.
12. Reinstall the SRP module into the chassis:
 - Install the SRP module in slot 6 or slot 7 on the ERX-14xx or in slot 0 or slot 1 on the ERX-7xx
 - Install the SRP module

- Ensure that the ejectors are in the open position
- Slide the module in between the guides at the top and bottom of the slot
- Push the module all the way into the chassis until the ejectors are flush with the front of the chassis



CAUTION: If the module does not slide all the way into the chassis, do not force it. Carefully remove it and make sure that you are installing it in the correct slot and that the module is between the slot's metal guides.

13. Press the ejectors into their closed position as shown in Figure 1.
14. Tighten the module's captive screws using a Phillips screwdriver. Alternate tightening each screw until all are secure and the module is securely seated.
15. Issue the `show hardware` command to check that the new components are available to the router and that the correct memory capacity is available.
16. Restore the software configuration, if appropriate, as described in "Restoring the JUNOS Software Configuration" on page 12.

Upgrading a System with Two SRPs

In an ERX-14xx with a redundant SRP module, the primary SRP module is installed in slot 6 and the redundant SRP module is installed in slot 7. In an ERX-7xx with a redundant SRP module, the primary SRP module is installed in slot 0 and the redundant SRP is installed in slot 1. To upgrade an ERX router that contains two SRP modules, follow this procedure:

1. Check the memory currently installed in the SRPs by issuing the `show hardware` command.
2. Prepare for the upgrade by ensuring that you have the following items:
 - Flathead screwdriver
 - Phillips screwdriver
 - Antistatic wrist strap
 - Antistatic mat and bags to hold components
 - The SRP upgrade kit



WARNING: Do not insert any metal object, such as a screwdriver, or place your hand into an open slot or the backplane when the E-series router is on. Remove jewelry

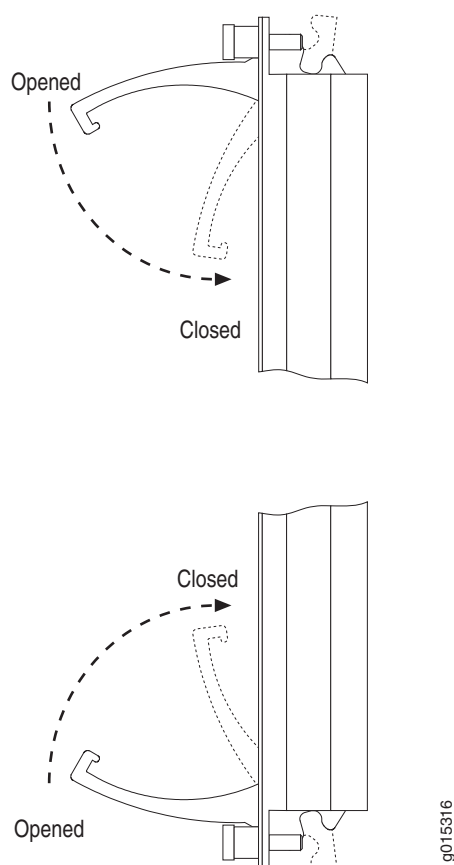
(including rings, necklaces, and watches) before working on equipment that is connected to power lines. These actions prevent electric shock and serious injuries.



CAUTION: When handling modules, use an antistatic wrist strap connected to the router's ESD grounding jack, and hold modules by their edges. Do not touch the components, pins, leads, or solder connections. These actions help to protect the module from damage by electrostatic discharge.

3. Halt the redundant SRP module installed in the router by issuing the `halt standby` command. The **OK** and **FAIL LEDs** lights start to blink on the module.
4. Attach the antistatic wrist strap to your wrist and connect it to one of the ESD grounding jacks on the router, located inside the front bezel and in the upper-right corner on the rear of the chassis.
5. Remove the redundant SRP module from the slot by loosening the thumbscrews with a Phillips screwdriver and lifting the ejector handles located at the top and bottom of the SRP module so that they are in the open position as shown in Figure 2.

Figure 2: Open and Closed Positions for Ejectors



6. Slide the SRP module out of the chassis and rest it on the antistatic mat with memory sockets and NVS card facing up.
7. Install the new SODIMMs on the SRP. Follow the directions in “Upgrading SODIMMs” on page 9 .
8. If you are also upgrading nonvolatile storage, replace the existing NVS card. Follow the directions in “Upgrading NVS on the ERX-1440 Router” on page 13.
9. If you are also upgrading the SRP I/O module, replace the I/O module. Follow the directions in “Upgrading the SRP I/O Module” on page 11.
10. Attach the new faceplate label to the SRP as described in “Attaching the New Faceplate Label” on page 14.
11. Reinstall the SRP module into the chassis:
 - Install the SRP modules in slot 6 or slot 7 only for the ERX-14xx or in slot 0 or slot 1 on the ERX-7xx.
 - Ensure that the ejectors are in the open position.

- Slide the module in between the guides at the top and bottom of the slot.
- Push the module all the way into the chassis until the ejectors are flush with the front of the chassis.



CAUTION: If the module does not slide all the way into the chassis, do not force it. Carefully remove it and make sure that you are installing it in slot 6 or slot 7 and that the module is between the slot's metal guides.

12. Press the ejectors into their closed position as shown in Figure 2.
13. Tighten the module's captive screws using a Phillips screwdriver. Alternate tightening each screw until all are secure and the module is securely seated.
14. When the redundant SRP module has rebooted, issue the `synchronize` command to synchronize the two SRPs.

The `synchronize` command copies all new or changed files, including release (*.rel) and configuration (*.cnf) files, from the NVS card onto the newly upgraded redundant SRP module. This maintains the current JUNOS release and configuration running on the router.

15. When the SRP modules are synchronized, reboot the upgraded SRP module by issuing the `reload` command:

```
host1#reload slot 7
```

16. Issue the `show hardware` command to check that the new components are available to the router.
17. To ensure that the contents of both modules' NVS cards are synchronized after the reboot, issue the `synchronize` command again.
18. To switch control from the primary (nonupgraded) SRP module to the newly upgraded redundant SRP module, issue the `switch` command.

```
host1#srp switch
```

19. Halt the nonupgraded SRP module by issuing the `halt standby` command.
20. Remove the nonupgraded SRP from the chassis. Follow Step 5 through Step 17 in this section.
21. Optionally, issue the `switch` command a second time to restore the original primary and redundant SRP configuration.

Upgrading SODIMMs

On SRP-5 and SRP-10 modules, you must remove the two SODIMMs to perform the upgrade. You do not remove SODIMMs on the ERX-14xx SRP modules.

The SODIMM sockets are close to the NVS card and have a cream ceramic connector at one edge. Some or all of the sockets may already contain SODIMMs. If you receive Depending on the number of SODIMM:

1. Locate the four SODIMM sockets on the SRP module.



CAUTION: When handling modules, use an antistatic wrist strap connected to the router's ESD grounding jack, and hold modules by their edges. To not touch the components, pins, leads, or solder connections. These actions help to protect the module from damage by electrostatic discharge.

Figure 3: Location of SODIMMs on the ERX-14xx and ERX-7xx Router

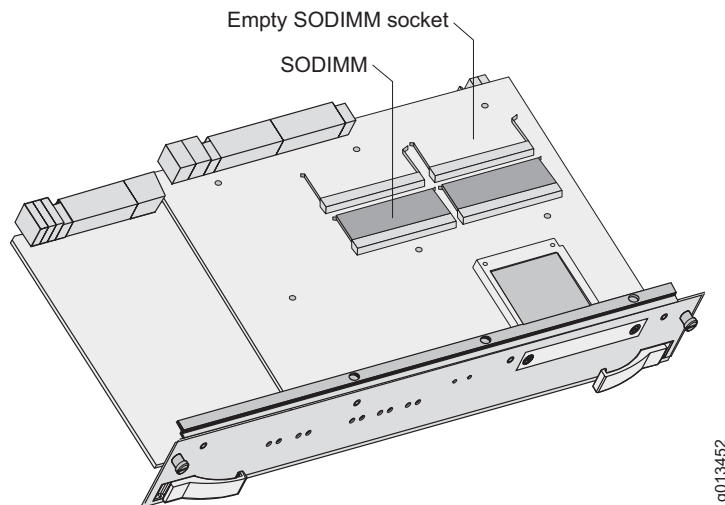
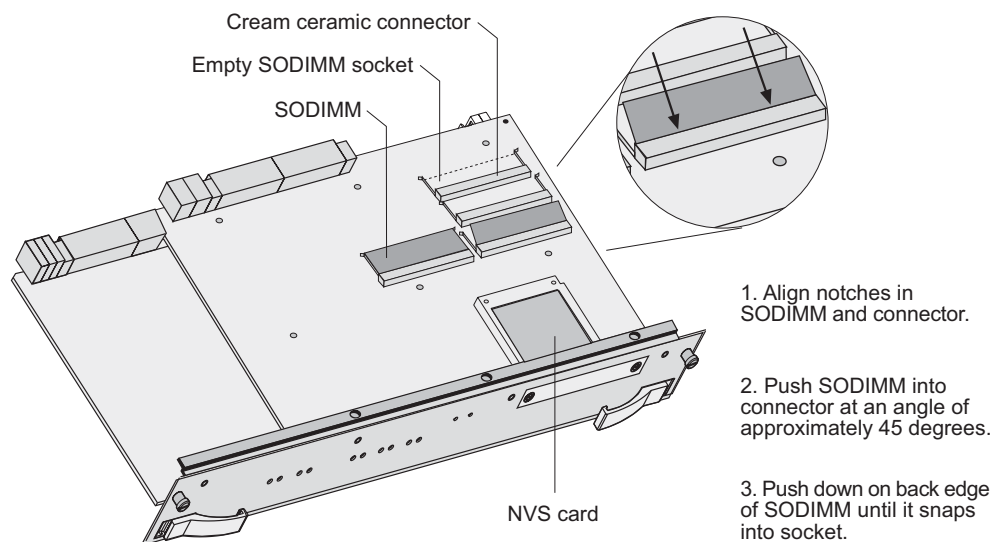


Figure 4: Location of SODIMMs on the SRP-5 and SRP-10

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2. If you are updating an SRP-5 or an SRP-10, first remove the existing SODIMMs by pushing down on the back edge of each SODIMM to release it from the socket.
3. Gently pull up and out to disconnect each SODIMM from the connectors and remove them from the sockets.
4. Next, install the new SODIMMs by aligning the notches in the new SODIMM with an empty connector on the SRP module. For ERX-14xx upgrades, you install the new SODIMMs in the upper two empty sockets. On SRP-5 and SRP-10 modules, you install new SODIMMs in all four of the sockets.
5. Insert the new SODIMM at a 45-degree angle into the connector. Align the notch in the long gold edge of the SODIMM with the notch in the connector.

When the SODIMM is completely inserted, the notch on the long gold edge will no longer be visible.

6. Press the top surface of the SODIMM downward into the socket until the socket spring snaps into place and secures the SODIMM.
7. Repeat Steps 2 through 4 with the second SODIMM.
8. If you are also upgrading the NVS or the SRP I/O module on the router, see “Upgrading NVS on the ERX-1440 Router” on page 13 or “Upgrading the SRP I/O Module” on page 11. If you are finished upgrading components or have a second SRP module to upgrade, see “Attaching the New Faceplate Label” on page 14.

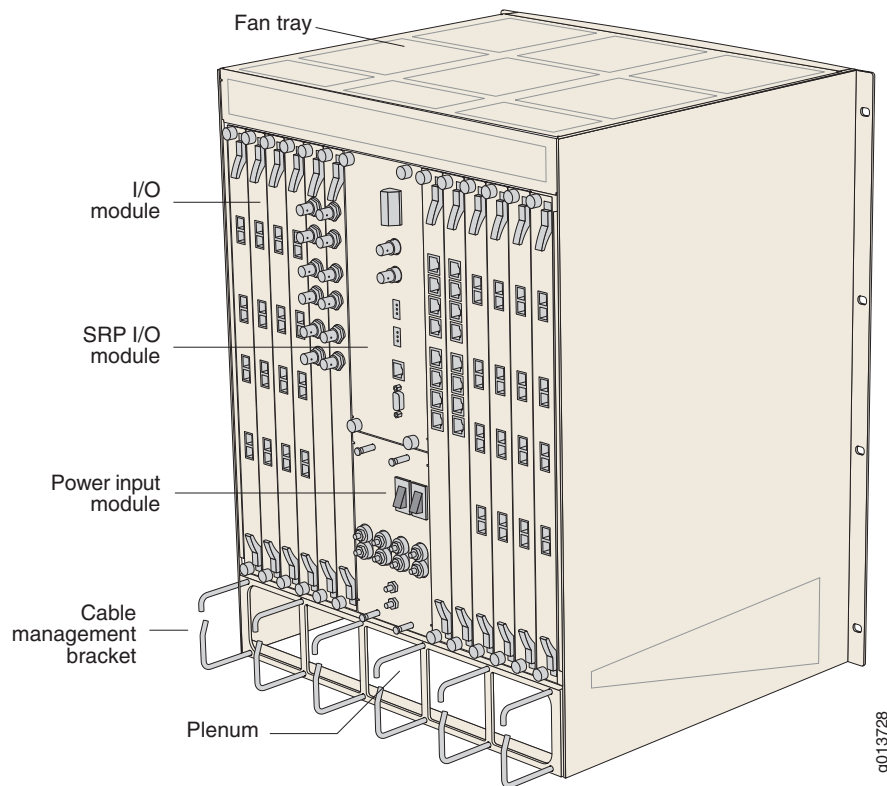
Upgrading the SRP I/O Module

Older routers might need to be upgraded with the enhanced SRP I/O module to run later versions of JUNOS. The enhanced I/O module has an assembly number of 350-00033-02.A01 or greater.

If the upgrade kit contains a new SRP I/O, follow this procedure to upgrade the SRP I/O module:

1. Attach the antistatic wrist strap to your wrist and connect it to one of the ESD grounding jacks on the router, located inside the front bezel and in the upper-right corner on the rear of the chassis.
2. Disconnect the cable connectors from the external timing ports and console ports on the SRP I/O module. Figure 4 shows the location of the SRP I/O module in the chassis.

Figure 5: SRP I/O Module in ERX-1440 Chassis



3. Loosen the thumbscrews with a Phillips screwdriver. Slide the existing SRP I/O module out of the chassis and rest it on an antistatic mat with the memory sockets and NVS cards face up.

4. Remove the enhanced SRP I/O module from its antistatic bag.
5. Slide the new module into the same slot and tighten the thumbscrews with a Phillips screwdriver to secure it.
6. Reconnect the cables for the timing and console ports.
7. To upgrade the NVS, go to “Upgrading NVS on the ERX-1440 Router” on page 13. If you are finished upgrading components or have a second SRP module to upgrade, attach the new faceplate label as described in “Attaching the New Faceplate Label” on page 14.

Restoring the JUNOS Software Configuration

If you saved your configuration file to a remote router before installing a new, non-redundant SRP, you can reload this configuration after the upgrade is complete provided that the new SRP supports the software release you are running. See *E-series SRP Hardware Installation and Software Compatibility Guide* for more information.

To restore the JUNOS software release and configuration, follow this procedure:

1. Ensure that:
 - You have the JUNOS software on CD-ROM or other media.
 - You have saved the configuration file to a remote router as described in Step 3 of “Upgrading a System with One SRP” on page 3.
2. Install the JUNOS software from the CD-ROM to the router.
3. Use the `copy` command or the FTP server to transfer the saved configuration file from the remote router to the local router.
4. Issue the factory default command:


```
host1(config)#boot config factory-defaults
```
5. Issue the `boot` command, specifying the JUNOS release you want to use. In the following example, `x-y-z` represents the release number.


```
host1config#boot system erx40_x-y-z.rel
```
6. Specify that the system should use the previously saved configuration file at the next reboot. In the example, the system will use the file named `erx1440conf.cnf` only at the next reboot; after that time, the system will reboot using the running configuration.


```
host1(config)#boot config erx1440conf.cnf once
```

7. After the system has successfully rebooted, register the new components with Juniper Networks as described in “Registering the Upgraded System” on page 15.

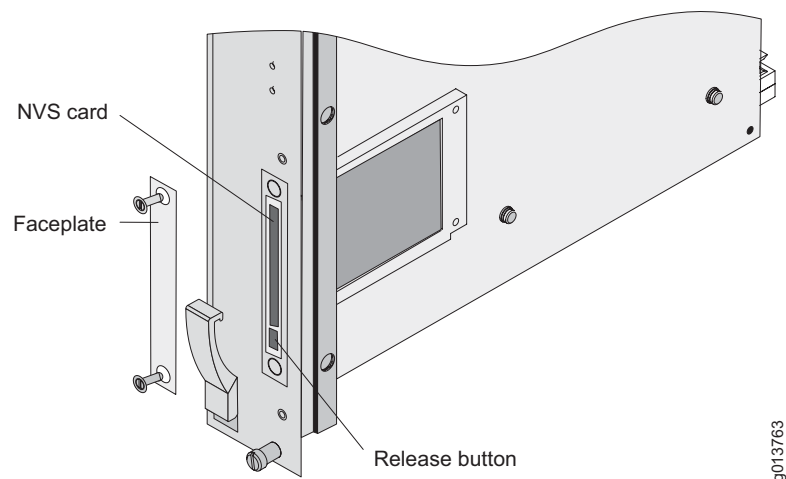
Upgrading NVS on the ERX-1440 Router

This section describes how to upgrade NVS on the SRP-40 module in the ERX-1440 router.

To replace the existing NVS card on the SRP module with an upgraded card, follow this procedure:

1. Make sure that you have an antistatic container for the old NVS before you remove it.
2. Attach the antistatic wrist strap to your wrist and connect it to one of the ESD grounding jacks on the router, located inside the front bezel and in the upper-right corner on the rear of the chassis.
3. Remove the SRP module from the chassis as described in “Upgrading Memory on ERX-14xx and ERX-7xx Routers” on page 3, if you have not removed it already.
4. Use a small flathead screwdriver to loosen the screws on the faceplate for the NVS card slot. remove the faceplate. See Figure 5.

Figure 6: NVS Card Slot on the SRP Module



5. Use the screwdriver to press the release button next to the NVS card, which releases the card from the module.
6. Slide the old NVS card out and place it in the antistatic container.

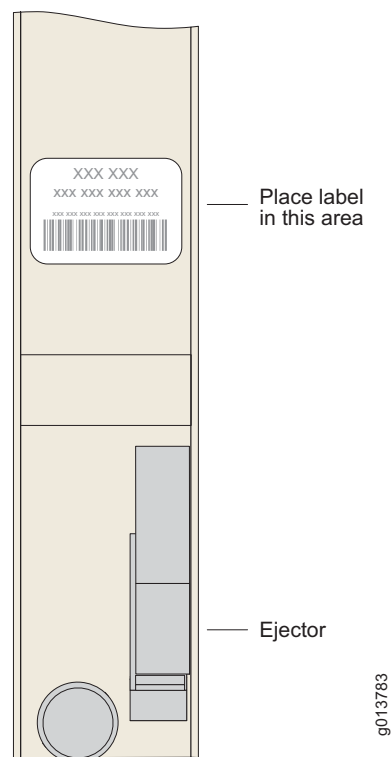
7. Insert the new NVS card into the slot, pushing it as far as it will go. It clicks when it is in place.
8. Replace the faceplate on the NVS card slot.
9. To upgrade the SRP I/O module, proceed to the “Upgrading the SRP I/O Module” on page 11. If you are finished upgrading components or have a second SRP module to upgrade, attach the new faceplate label as described in “Attaching the New Faceplate Label” on page 14.

Attaching the New Faceplate Label

After you have installed all the new components in your upgrade kit, attach the new faceplate label to the SRP module. The label indicates that you have installed new memory and NVS (if applicable). Follow this procedure:

1. Remove the backing on the new faceplate label.
2. Attach the label to the faceplate above the bottom ejector as shown in Figure 7 for ERX-1440 routers.

Figure 7: Faceplate Label for the ERX-1440 Router



3. You are ready to reinstall the SRP module into the chassis. Return to Step 12 in “Upgrading a System with One SRP” on page 3 or Step 11 in “Upgrading a System with Two SRPs” on page 5.

Registering the Upgraded System

Registering your system upgrades ensures that Juniper Networks has accurate information about your current hardware configuration if you need technical support in the future.

For instructions, go to the Juniper Networks Web site at <http://www.juniper.net/support/>.

List of Technical Publications

Table 1 lists and describes the E-series document set. A complete list of abbreviations used in this document set, along with their spelled-out terms, is provided in the *JUNOS System Basics Configuration Guide, Appendix A, Abbreviations and Acronyms*.

Table 1: Juniper Networks E-series Technical Publications

Document	Description
<i>E-series Hardware Guide</i>	Provides the necessary procedures for getting the router operational, including information on installing, cabling, powering up, configuring the router for management access, and general troubleshooting. Describes SRP modules, line modules, and I/O modules available for the E-series routers.
<i>E-series Module Guide</i>	Provides detailed specifications for line modules and I/O modules, and information about the compatibility of these modules with JUNOS software releases. Lists the layer 2 protocols, layer 3 protocols, and applications that line modules and their corresponding I/O modules support. Provides module LED information.
<i>JUNOS System Basics Configuration Guide</i>	Describes planning and configuring your network, managing the router, configuring passwords and security, configuring the router clock, and configuring virtual routers. Includes a list of references that provide information on the protocols and features supported by the router.
<i>JUNOS Physical Layer Configuration Guide</i>	Describes configuring physical layer interfaces.
<i>JUNOS Link Layer Configuration Guide</i>	Describes configuring link layer interfaces.
<i>JUNOS Routing Protocols Configuration Guide, Vol. 1</i>	Provides information about configuring routing policy and configuring IP, IP routing, and IP security.
<i>JUNOS Routing Protocols Configuration Guide, Vol. 2</i>	Describes BGP routing, MPLS, BGP-MPLS VPNs, and encapsulation of layer 2 services.
<i>JUNOS Policy and QoS Configuration Guide</i>	Provides information about configuring policy management and quality of service (QoS).
<i>JUNOS Broadband Access Configuration Guide</i>	Provides information about configuring remote access.

Document	Description
<i>JUNOSe Command Reference Guide A to M</i>	Together comprise the <i>JUNOSe Command Reference Guide</i> . Contain important information about commands implemented in the system software. Use to look up command descriptions, command syntax, a command's related mode, or a description of a command's parameters. Use with the JUNOSe configuration guides.
<i>JUNOSe Command Reference Guide N to Z</i>	
Release Notes	
<i>JUNOSe Release Notes</i>	<p>In the <i>Release Notes</i>, you will find the latest information about features, changes, known problems, resolved problems, and system maximum values. If the information in the Release Notes differs from the information found in the documentation set, follow the Release Notes.</p> <p>Release notes are included on the corresponding software CD and are available on the Web.</p>

Requesting Support

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

For documentation issues, fill out the bug report form located at <http://www.juniper.net/techpubs/docbug/docbugreport.html>.

Revision History

29 October 2004—Revision 1

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