

Chapter 3

Installing JUNOS Software

The JUNOS software resides on a nonvolatile storage (NVS) card located in the switch route processor (SRP) module. Each SRP module is shipped with an NVS card that contains a software release. Each SRP module is shipped with an NVS card that contains a software release. New software releases are shipped on a set of CDs. You can also download software releases from the Juniper Networks Web site. This chapter provides information on how to install a new software release on a router and contains the following sections:

- Overview on page 113
- Platform Considerations on page 115
- Installing Software When a Firewall Exists on page 115
- Installing Software When a Firewall Does Not Exist on page 120
- Copying Release Files from One Router to Another on page 128
- Upgrading Systems That Are Operating with Two SRP Modules on page 129
- Upgrading from Release 5.1.1 or Lower-Numbered Releases on page 130
- Downgrading JUNOS Software on page 133



CAUTION: See the *Release Notes* for extra information about installing and upgrading the software.

Overview

If the router contains only one SRP module, we recommend you divert traffic to another router before installing a new software release because the router is unavailable during the installation process. Depending on whether a firewall separates the router from the network host, you can then complete the appropriate software installation. (See *Installing Software When a Firewall Exists* on page 115 or *Installing Software When a Firewall Does Not Exist* on page 120.) However, if the router contains two SRP modules, you can upgrade the software while the system is operating. (See *Upgrading Systems That Are Operating with Two SRP Modules* on page 129.)

When installing new JUNOS software, you must copy the contents of the release files to a network host and transfer the release files to at least one router in the network. Depending on the network configuration, you can copy the release files from either the network host or the first router to the other routers in the network. (See *Copying Release Files from One Router to Another* on page 128.)



NOTE: Some line modules and SRP modules on ERX-14xx models, ERX-7xx models, and the ERX-310 router require a minimum amount of memory to be used with JUNOS Release 5.3.0 or a higher-numbered release. See the *ERX Module Guide* for module specifications.

Identifying the Software Release File

You can find the software release file on one of the following JUNOS software CDs:

- JUNOS <release> #1—Contains the release files for the ERX-7xx routers, the ERX-14xx routers, and the ERX-310 router
- JUNOS <release> #2—Contains the release file for the E120 and the E320 router, the MIB directory, and the *Release Notes*

You can also download a compressed version of the software release by logging on to <https://www.juniper.net/support/>. The .zip file that you download contains the software release file.

The release is in the software directory, which is identified by the release number. For example, if the release number is x.y.z, the name of the directory is x-y-z. See Table 12.

Table 12: Software Release Files

Router	File Format (x-y-z is the release number)
E120 and E320	e320_x-y-z.rel
ERX-1440	erx40_x-y-z.rel
ERX-310	erx310_x-y-z.rel
All other E-series routers	erx_x-y-z.rel

To identify the software release file:

1. Access the software directory.
2. Find the files with the extension .rel.

The procedures outlined in the following sections provide detailed instructions for typical installations. For additional information about commands and troubleshooting, see *Chapter 2, Command-Line Interface* and *JUNOS Command Reference Guide, About This Guide*

Platform Considerations

You can install JUNOS software on all E-series routers.

For information about the modules supported on E-series routers:

- See the *ERX Module Guide* for modules supported on ERX-7xx models, ERX-14xx models, and the ERX-310 router.
- See the *E120 and E320 Module Guide* for modules supported on the E120 router and the E320 router.

Installing Software When a Firewall Exists

When a firewall separates the router from the network host, you must use FTP to transfer the software release files from the network host to the router. In this case, you must configure the FTP server on the router and ensure that FTP client software is installed on the network host.

For this network configuration, you must install the software from the normal operational mode of the command-line interface (CLI). You can access the CLI through either the local console or a Telnet session. If you have not yet configured the router to support Telnet, then you must use the local console.

To install the software, perform the following tasks. (See Table 13.)

Table 13: Software Installation Procedure When a Firewall Exists

1. Obtain the required information for the installation.
2. For routers that are currently operating, divert network traffic to another router.
3. Access the Privileged Exec CLI command mode.
4. Configure IP on an interface.
5. Copy the release files on the network host.
6. Configure access to the network host.
7. Enable the FTP server on the router.
8. Identify the files to transfer.
9. Transfer the files to the user space on the router.
10. Install the software release file to the system space on the router.
11. Save the current configuration.
12. Reboot the system.

Task 1: Obtain the Required Information

Before you install the software, obtain the following information:

- The password (if one is configured) that enables you to access Privileged Exec mode on the router
- The IP address of the network host

- The IP address of the router
- The IP address of the next hop to reach the destination network (for example, a gateway)
- The login name and password for the vty line
- The procedure for copying the release files to the network host

Task 2: Divert Network Traffic to Another Router

The system will be unavailable during the installation process.

Task 3: Access Privileged Exec Mode

To access this mode via the CLI:

1. Issue the enable command.

```
host1>enable
```

2. Type the password if the system prompts you.

Task 4: Configure IP on an Interface

Typically, you configure IP on the Fast Ethernet interface of the SRP module. To configure IP on an interface:

1. Determine the slot number of the module.

```
host1#show version
```

2. Determine the port number of the module.

3. Determine whether the interface already has an IP address.

- On ERX-7xx models, ERX-14xx models, and the ERX-310 router:

```
host1#show ip interface fastEthernet 6/0
```

- On the E120 router and the E320 router:

```
host1#show ip interface fastEthernet 6/0/0
```



NOTE: If an IP interface is not configured, an Invalid interface message appears.

If the interface already has an IP address, go to Step 5. Otherwise, proceed with Step 4.

4. Configure an IP address on the interface.

- On ERX-7xx models, ERX-14xx models, and the ERX-310 router:

```
host1#configure
```

Configuring from terminal or file [terminal]?

Enter configuration commands, one per line. End with CNTL/Z.

```
host1(config)#interface fastEthernet 6/0
```

```
host1(config-if)#ip address ipAddress [ mask ]
```

- On the E120 router and the E320 router:

```
host1#configure
```

Configuring from terminal or file [terminal]?

Enter configuration commands, one per line. End with CNTL/Z.

```
host1(config)#interface fastEthernet 6/0/0
```

```
host1(config-if)#ip address ipAddress [ mask ]
```

5. Press Ctrl + z to return to Privileged Exec mode.

Task 5: Copy the Release Files to the Network Host

If you downloaded the software from the Juniper Networks Web site as a .zip file, uncompress the files to a directory, and copy the release files to the network host.

If you are accessing the release files from one of the software CDs, you must mount the CD. The way you mount the release files on the network host depends on the type of computer you use, the operating system, and the network configuration. To find out how to mount the release files on the network host, review the manual for the operating system, or contact your network administrator.

Task 6: Configure Access to the Network Host

To configure access to the network host:

1. Use the **ping** command to determine whether the router can reach the network host.

```
host1#ping hostname
```

If the router can reach the network host, go to the next section. Otherwise, go to Step 2.

2. Determine whether a route exists between the router and the network host.

```
host1#show ip route
```

If the appropriate route is displayed, go to Step 5. Otherwise, proceed with Step 3.

3. Configure a route to reach the network host.

```
host1#configure
Configuring from terminal or file [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
host1(config)#ip route ipNetwork networkMask ipNextHop
```

4. Press Ctrl + z to return to Privileged Exec mode.
5. Determine whether the router has been configured to recognize the network host.

```
host1#show host
```

If the network host is listed, go to Step 8. Otherwise, proceed with Step 6.

6. Add an entry to the Static Host Table so that the router can access the network host. Use the **host** command to specify the network hostname and IP address.

```
host1#configure
Configuring from terminal or file [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
host1(config)#host hostName ipAddress ftp loginname password
```

7. Press Ctrl + z to return to Privileged Exec mode.
8. Use the **ping** command to determine whether the router can now reach the network host.

```
host1#ping hostname
```

If the router cannot reach the network host, verify that you correctly performed the previous steps in this procedure and that the network host is operational.

Task 7: Enable the FTP Server on the Router

The router divides its vty resources among Telnet, SSH, and FTP services. Each FTP session requires one vty line, and the FTP service uses the authentication method configured for the vty line. If you configured more than one vty line for Telnet access, the FTP service uses one of those lines. If you configured only one line for Telnet access, configure another vty line.

To enable the FTP server, use the **ftp-server enable** command.

```
host1(config)#ftp-server enable
```

Task 8: Identify the Files to Transfer

To identify all the files for the release, use a text editor to open the software release (.rel) file on the JUNOS software CD or from the directory in which you downloaded from the Juniper Networks Web site. The software release file contains a list of all the files associated with the release. You must transfer the software release file and all the files it contains to the user space.

Task 9: Transfer Files to the User Space

To transfer the files for the release to the user space, use the FTP client software on the network host to connect to the FTP server on the router. Transfer the files to a subdirectory within the incoming directory. If you specify a subdirectory that does not exist, the router creates the directory.



NOTE: Be sure to transfer the software release file and all the files it lists.

Task 10: Install Files on the System Space

Installing the software release file to the system space installs all files listed in the software release file. To install the software release file from the incoming directory in the user space to the router space, use the **copy** command.

Be sure to specify the correct software release (.rel) filename for the router you are using, as described in *Identifying the Software Release File* on page 114.



NOTE: The destination file must have a .rel extension.

For example:

```
host1#copy /incoming/releases/erx_x-y-z.rel erx_x-y-z.rel
```

The software release is copied from the user space to the system space. This process can take several minutes.

Task 11: Save the Current Configuration

To save the current configuration, use the **copy running-configuration** command:

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

Task 12: Reboot the System

To reboot the system using the newly installed software:

1. Access Global Configuration mode.

```
host1#configure
Configuring from terminal or file [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
host1(config)#
```

2. Run the **boot system** command, specifying the .rel filename of the software release.

For example:

```
host1(config)#boot system erx_x-y-z.rel
```

The following message appears when you issue this command:

WARNING: We recommend that you copy the current running-configuration to a file prior to reloading a different release of software.

3. Press Ctrl + z to return to Privileged Exec mode.
4. Verify that the router is ready to boot with the new software release.

host1#**show boot**

If the old software version is still listed, verify that you completed the previous steps correctly.

5. Run the **reload** command.

host1#**reload**

The following message appears when you issue this command:

WARNING: Execution of this command will cause the system to reboot. Proceed with reload? [confirm]

The system reboots. The reboot might take longer than normal because line modules initialize with the old version of the software, acquire the new version from the SRP module, and reinitialize. When you observe the LEDs on the line modules, the line modules appear to boot twice.

Installing Software When a Firewall Does Not Exist

If there is no firewall between the router and the network host to which you copied the release files, you can transfer the software release files from the network host to the router via the FTP server or by issuing the **copy** command. To transfer files via the FTP server, refer to the previous section, *Installing Software When a Firewall Exists*. This section describes how to transfer files by issuing the **copy** command.

If you use the **copy** command to transfer the files, the network host must be an FTP server. This command activates an FTP client on the router.

For this network configuration, you can install the software in the normal command line interface (CLI) operational mode or in boot mode.

Installing Software in Normal Operational Mode

For this procedure, you must access the CLI through either the local console or a Telnet session. If you have not yet configured the router to support Telnet, then you must use the local console.

To install the software, perform the following tasks. (See Table 14.)

Table 14: Software Installation Procedure When a Firewall Does Not Exist

- | |
|--|
| 1. Obtain the required information for the installation. |
| 2. For routers that are currently operating, divert network traffic to another router. |
| 3. Access the Privileged Exec CLI command mode. |
| 4. Configure IP on an interface. |
| 5. Configure access to the network host. |
| 6. Copy the release files to the network host. |
| 7. Copy the software release file to the router. |
| 8. Save the current configuration. |
| 9. Reboot the system. |

Task 1: Obtain the Required Information

Before you install the software, obtain the following information:

- The password (if one is configured) that enables you to access Privileged Exec mode on the router
- The IP address of the network host
- The IP address of the router
- The IP address of the next hop to reach the destination network (for example, a gateway)
- The login name and password for the FTP server
- The procedure for copying the release files to the network host

Task 2: Divert Network Traffic to Another Router

The system will be unavailable during the installation process.

Task 3: Access Privileged Exec Mode

To access this mode via the CLI:

1. Issue the enable command.

 host1>**enable**
2. Type the password if the system prompts you.

Task 4: Configure IP on an Interface

Typically, you configure IP on the Fast Ethernet interface of the SRP module. To configure IP on an interface:

1. Determine the slot number of the module.

```
host1#show version
```

2. Determine the port number of the module.

3. Determine whether the interface already has an IP address.

- On ERX-7xx models, ERX-14xx models, and the ERX-310 router:

```
host1#show ip interface fastEthernet 6/0
```

- On the E120 router and the E320 router:

```
host1#show ip interface fastEthernet 6/0/0
```



NOTE: If an IP interface is not configured, an Invalid interface message appears.

If the interface already has an IP address, go to Step 5. Otherwise, proceed with Step 4.

4. Configure an IP address on the interface.

- On ERX-7xx models, ERX-14xx models, and the ERX-310 router:

```
host1#configure
```

Configuring from terminal or file [terminal]?

Enter configuration commands, one per line. End with CNTL/Z.

```
host1(config)#interface fastEthernet 6/0
```

```
host1(config-if)#ip address ipAddress [ mask ]
```

- On the E120 router and the E320 router:

```
host1#configure
```

Configuring from terminal or file [terminal]?

Enter configuration commands, one per line. End with CNTL/Z.

```
host1(config)#interface fastEthernet 6/0/0
```

```
host1(config-if)#ip address ipAddress [ mask ]
```

5. Press Ctrl + z to return to Privileged Exec mode.

Task 5: Configure Access to the Network Host

To configure access to the network host:

1. Use the **ping** command to determine whether the router can reach the network host.

```
host1#ping ipAddress
```

If the router can reach the network host, go to the next section. Otherwise, go to Step 2.

2. Determine whether a route exists between the router and the network host.

```
host1#show ip route
```

If the appropriate route is displayed, go to Step 4. Otherwise, proceed with Step 3.

3. Configure a route to reach the network host.

```
host1#configure
```

Configuring from terminal or file [terminal]?

Enter configuration commands, one per line. End with CNTL/Z.

```
host1(config)#ip route ipNetwork networkMask ipNextHop
```

4. Press Ctrl + z to return to Privileged Exec mode.
5. Determine whether the router has been configured to recognize the network host.

```
host1#show host
```

If the network host is listed, go to Step 8. Otherwise, proceed with Step 6.

6. Add an entry to the Static Host Table so that the router can access the network host. Use the **host** command to specify the network hostname and IP address.

```
host1#configure
```

Configuring from terminal or file [terminal]?

Enter configuration commands, one per line. End with CNTL/Z.

```
host1(config)#host hostName ipAddress ftp loginname password
```

7. Press Ctrl + z to return to Privileged Exec mode.
8. Use the **ping** command to determine whether the router can now reach the network host.

```
host1#ping hostname
```

If the router cannot reach the network host, verify that you correctly performed the previous steps in this procedure and that the network host is operational.

Task 6: Copy the Release Files to the Network Host

If you downloaded the software from the Juniper Networks Web site as a .zip file, uncompress the files to a directory, and copy the release files to the network host.

If you are accessing the release files from one of the software CDs, you must mount the CD. The way you mount the CD on the network host depends on the type of network host you use, the operating system, and the way your network is configured. To find out how to mount a CD on the network host, review the manual for the operating system, or contact your network administrator.

Task 7: Copy the Software Release File to the Router

To copy the software release file to the router, use the **copy** command.

Be sure to specify the correct software release (.rel) filename for the router you are using, as described in *Identifying the Software Release File* on page 114.



NOTE: The destination file must have a .rel extension.

For example:

```
host1#copy hostname:/cdrom/x-y-z/erx_x-y-z.rel erx_x-y-z.rel
```

The software release is copied from the network host to the router. This process can take several minutes.

Task 8: Save the Current Configuration

To save the current configuration, use the **copy running-configuration** command:

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

Task 9: Reboot the System

To reboot the system using the newly installed software:

1. Access Global Configuration mode.

```
host1#configure
Configuring from terminal or file [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
host1(config)#
```

2. Run the **boot system** command, specifying the .rel filename of the software release. For example:

```
host1(config)#boot system erx_x-y-z.rel
```

The following message appears when you issue this command:

WARNING: We recommend that you copy the current running-configuration to a file prior to reloading a different release of software.

3. Press Ctrl + z to return to Privileged Exec mode.
4. Make sure that the router is ready to boot with the new software release.

host1#**show boot**

If the old software version is still listed, verify that you completed the previous steps correctly.

5. Run the **reload** command.

host1#**reload**

The following message appears when you issue this command:

WARNING: Execution of this command will cause the system to reboot. Proceed with reload? [confirm]

The system reboots. The reboot might take longer than normal because line modules initialize with the old version of the software, acquire the new version from the SRP module, and reinitialize. When you observe the LEDs on the line modules, the line modules appear to boot twice.

Installing Software in Boot Mode

To install the software in Boot mode, you must access the CLI via the local console.

To install the software, perform the following tasks. (See Table 15.)

Table 15: Software Installation Procedure in Boot Mode

1. Obtain the required information for the installation.
2. For routers that are currently operating, divert network traffic to another router.
3. Access the Boot mode.
4. Assign an IP address to the router.
5. Configure access to the network host.
6. Reset the SRP module.
7. Copy the release files to the network host.
8. Copy the software release file to the router.
9. Reboot the system.

Task 1: Obtain the Required Information

Before you install the software, obtain the following information:

- The IP address of the network host
- The IP address of the router
- The IP address of the next hop to reach the destination network (for example, a gateway)

- The login name and password for the FTP server
- The procedure for copying the release files to the network host

Task 2: Divert Network Traffic to Another System

The system will be unavailable during the installation process.

Task 3: Access the Boot Mode

To access Boot mode from the local console:

1. At the Privileged Exec prompt, type the **reload** command.

Information on the reloading process appears.

2. When the countdown begins, press the key sequence **mb**.

This action puts the CLI in Boot mode and the **:boot##** prompt appears.



NOTE: If you do not press the key sequence **mb** before the countdown ends, the reloading process continues and returns the CLI to the normal User Exec mode.

Task 4: Assign an IP Address

When you assign an IP address to the router in Boot mode, the address is configured on the Fast Ethernet port of the primary SRP module. To assign an Internet address to the router, use the **ip address** command.

```
:boot##ip address ipAddress [ mask ]
```

Task 5: Configure Access to the Network Host

To configure access to the network host:

1. Configure a gateway through which the router can reach the network host.

```
:boot##ip gateway ipAddress
```

2. Determine whether the router has been configured to recognize the network host.

```
:boot##show host
```

If the network host is listed, go to the next section. Otherwise, proceed with Step 3.

3. Add an entry to the Static Host Table so that the router can access the network host.

```
:boot##host hostName ipAddress ftp login-name password
```

Use the **host** command to specify the network host name and IP address.

Task 6: Resetting the SRP Module

To ensure that the IP addresses are properly activated, you must reset the SRP module. To reset the SRP module, issue the **reload** command from the **:boot##** prompt or depress the recessed module reset button located on the front of the module.

Depressing the module reset button on the SRP module is equivalent to rebooting the router and causes all of the line modules to reboot.

Task 7: Copy the Release Files to the Network Host

If you downloaded the software from the Juniper Networks Web site as a .zip file, uncompress the files to a directory, and copy the release files to the network host.

If you are accessing the release files from one of the software CDs, you must mount the CD. The way you mount the CD on the network host depends on the type of network host you use, the operating system, and the way your network is configured. To find out how to mount a CD on the network host, review the manual for the operating system, or contact your network administrator.

Task 8: Copy the Software Release File to the Router

To copy the software release file to the router, use the **copy** command.

Be sure to specify the correct software release (.rel) filename for the router you are using, as described in *Identifying the Software Release File* on page 114.



NOTE: The destination file must have a .rel extension.

For example:

```
:boot##copy hostname:/cdrom/x-y-z/erx_x-y-z.rel erx_x-y-z.rel
```

The software release is copied from the network host to the router. This process can take several minutes.

Task 9: Reboot the System

To reboot the system using the newly installed software:

1. Run the **boot system** command, specifying the .rel filename of the software release. For example:

```
:boot##boot system erx_x-y-z.rel
```

The following message appears when you issue this command:

WARNING: We recommend that you copy the current running-configuration to a file prior to reloading a different release of software.

2. Run the **reload** command.

```
:boot##reload
```

The following message appears when you issue this command:

WARNING: Execution of this command will cause the system to reboot. Proceed with reload? [confirm]

The system reboots. The reboot might take longer than normal because line modules initialize with the old version of the software, acquire the new version from the SRP module, and reinitialize. When you observe the LEDs on the line modules, the line modules appear to boot twice.

Copying Release Files from One Router to Another

When you have copied the release files from a network host to one router, you can transfer files from that router to other routers on the network. This feature is useful when:

- The other routers are unreachable from the network host but have network connectivity to the router on which you installed the new software.
- The connection between routers is faster than the connection between a router and the network host to which it is connected.

The procedures for transferring release files from a source router to a destination router are almost identical to transferring release files from a network host to a router on the same side of the firewall.



NOTE: You must enable the FTP server on the source router.

To transfer release files from a source router to a destination router, follow the instructions in *Installing Software When a Firewall Does Not Exist* on page 120, with the following changes:

- Substitute the source router for the network host.
- Omit the step about copying the release files to the network host.
- Copy the file to the system space of the second router from the user space of the first router.

Be sure to specify the correct software release (.rel) filename for the router you are using, as described in *Identifying the Software Release File* on page 114.

For example:

```
host1#copy boston:/outgoing/releases/erx_x-y-z.rel erx_x-y-z.rel
```


Upgrading Systems That Are Operating with Two SRP Modules

Use this procedure when the system contains two SRP modules and is already operating with an earlier software release. Each SRP module keeps the system operational while you upgrade the software on the other, so that you can minimize service interruption.



CAUTION: You must upgrade the software on the redundant SRP module when you upgrade the software on the primary SRP module. This action prevents the redundant SRP module from overwriting the new software on the primary SRP module if the primary SRP module fails and the redundant SRP module takes control.

To upgrade the software on a system that is operational and contains two SRP modules:

1. Turn off autosynchronization.

```
host1(config)#disable-autosync
```

2. Copy the new release of the software to NVS of the primary SRP module. Be sure to specify the correct software release (.rel) filename for the router you are using, as described in *Identifying the Software Release File* on page 114.

- If a firewall separates the router from the network host, transfer files to the user space with the FTP client on the network host, and install files on the system space (See *Installing Software When a Firewall Exists* on page 115.) For example:

```
host1#copy /incoming/releases/erx_x-y-z.rel erx_x-y-z.rel
```

- If no firewall separates the router from the network host, copy the files to the router (See *Installing Software When a Firewall Does Not Exist* on page 120.) For example:

```
host1#copy hostname:/cdrom/x-y-z/erx_x-y-z.rel erx_x-y-z.rel
```

- If you are transferring the files from one router to another, copy the file to the system space of the second router from the user space of the first router (See *Copying Release Files from One Router to Another* on page 128.) For example:

```
host1#copy boston:/outgoing/releases/erx_x-y-z.rel erx_x-y-z.rel
```

3. Save the current configuration. For example:

```
host1#copy running-configuration system2.cnf
```

4. Specify that the router should use the new software release when it reboots. For example:

```
host1(config)#boot system erx_x-y-z.rel
```

5. Synchronize the NVS file system of the redundant module with that of the primary module.

```
host1#synchronize
```

The redundant SRP module automatically reboots because the software release that it is configured to run differs from the software release it is running.



CAUTION: The secondary SRP module does not run the new software until it reboots. If you issue the **srp switch** command or the primary SRP module fails before the redundant SRP module reboots, then the secondary SRP module runs with the old release when it takes control.

6. Wait for the redundant SRP module to boot, initialize, and reach the standby state. When the module is in standby state, the REDUNDANT LED is on and the ONLINE LED is off. The State field in the **show version** display indicates the module is in standby.

After any type of reboot, the primary and redundant SRP module NVS file systems are unsynchronized again.

7. Synchronize the NVS file system of the redundant module with that of the primary module.

```
host1#synchronize
```

8. Switch from the primary SRP module to the redundant SRP module.

```
host1#srp switch
```

The redundant SRP module becomes the primary. The former primary SRP module reboots and becomes the redundant.

9. Reenable autosynchronization.

```
host1(config)#no disable-autosync
```

Upgrading from Release 5.1.1 or Lower-Numbered Releases

Release 5.1.1 or lower-numbered releases only support application images up to 172 MB. To install larger application images for Release 6.0.0 and higher-numbered releases, you must first install Release 5.1.2 (or the highest-numbered 5.x.x release). This enables the system to support application images greater than 172 MB. For example, you cannot go from Release 5.1.1 to Release 7.2.0 without first upgrading to Release 5.1.2. See Table 16.

Table 16: Release Compatibility

JUNOS Release	Highest Release Able to Load	Cannot Load	Maximum Application Image
5.1.1 or lower-numbered release	5.3.5p0-2 or the highest-numbered 5.x.x release	6.x.x or higher-numbered release	~ 172 MB
5.1.2 or higher-numbered release	No limitation	Not applicable	~ 234 MB
7.2.0 or higher-numbered release	No limitation	Not applicable	~ 256 MB

Your software upgrades may be available remotely through Telnet or FTP, or may be delivered on a new NVS card. Depending on how you access the software updates, there are two different procedures to follow. See the appropriate section for instructions:

- *Upgrading Software Remotely Through Telnet or FTP*
- *Upgrading Software from an NVS Card*

Upgrading Software Remotely Through Telnet or FTP

Follow these steps to upgrade your system software remotely:

1. Copy the new release to your system (using Telnet or FTP).



NOTE: The release you are installing must be Release 5.1.2 or higher-numbered 5.x.x release.

2. Install and arm the release from the **config#** prompt using the normal upgrade procedures as described in this chapter.
3. Reload and configure the software.

After the system is configured with a 5.x.x release, newer releases are supported and can be installed.

Upgrading Software from an NVS Card

Follow these steps to upgrade your system software when the software is on an NVS card. The procedure you use depends on the number of SRP modules in the system.

Upgrading a System That Contains One SRP Module

If the system contains only one SRP module, you must power off the system before you upgrade the NVS card.

To upgrade the NVS card on a system that contains one SRP module:

1. Enter the **halt** command.
2. Connect your antistatic wrist strap to the ESD grounding jack on the router.
3. Power off the system.
4. Replace the NVS card on the SRP module.



NOTE: The release you are installing must be Release 5.1.2 or higher-numbered 5.x.x release.

5. Power on the system.

After the system is configured with a 5.x.x release, newer releases are supported and can be installed.

Upgrading a System That Contains Two SRP Modules

In a system that contains two SRP modules, you can upgrade the software without powering off the system.

To upgrade the software in a system that contains two SRP modules:

1. Connect your antistatic wrist strap to the ESD grounding jack on your router.
2. Turn off autosynchronization.

```
host1#enable
host1#configure
Configuring from terminal or file [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
```

```
host1 (config)#disable-autosync
host1 (config)#exit
```

3. Halt the redundant SRP module.

```
host1#halt standby-srp
```

Remove the redundant SRP module from the chassis.

4. Replace the NVS card on this SRP module.



NOTE: The release you are installing must be Release 5.1.2 or higher-numbered 5.x.x release.

5. Reinsert the SRP module into the chassis.

6. Force the redundant SRP module to take over from the primary SRP module.

```
host1#srp switch
```

7. Turn on autosynchronization.

```
host1#enable
```

```
host1#configure
```

```
Configuring from terminal or file [terminal]?
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
host1 (config)#no disable-autosync
```

```
host1 (config)#exit
```

The software is updated on the other SRP module.

After the system is configured with a 5.x.x release, newer releases are supported and can be installed.

Downgrading JUNOS Software

Downgrading JUNOS software requires factory defaults installed on the router, and can cause NVS and configuration script incompatibilities.



CAUTION: We do not recommend that you attempt to downgrade JUNOS software without the assistance of a Juniper Technical Assistance Center representative. Contact the Juniper Technical Assistance Center to obtain help.
