

Installing ERX System Software

E



Caution: Check the Release Notes for extra information about installing and upgrading the software.

This appendix provides information on how to install new software on the Juniper Networks ERX systems.

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Overview

When installing new ERX software, you must mount the software CD on a network host and transfer the release files to at least one ERX system in the network. Depending on the network configuration, you can copy the release files from either the network host or the first ERX system to the other ERX systems in the network.

Identifying the Software Release File

The ERX system software CD contains two software releases: one for the ERX-1440 system and one for all other ERX systems. Both releases are 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. To identify the software release file:

- 1 Access the software directory.
- 2 Find the files with the extension .rel.
 - The software release file for the ERX-1440 system has the format `erx40_x-y-z.rel`, where x.y.z is the release number.
 - The software release file for all other ERX systems has the format `erx_x-y-z.rel`, where x.y.z is the release number.

The procedures outlined in the following sections provide detailed instructions for typical installations. For additional information about commands and troubleshooting, refer to the *ERX System Basics Configuration Guide* and the *ERX Command Reference Guide*.

Installing Software When a Firewall Exists

When a firewall separates the ERX system from the network host, you must FTP the software release files from the network host to the ERX system. In this case, you must configure the FTP server on the ERX system 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 ERX system to support Telnet, then you must use the local console. See *Chapter 5, Accessing the ERX System*, for information on using a local console or a Telnet session.

To install the software, perform the following tasks:

- 1 Obtain the required information for the installation.
- 2 Access the Privileged Exec CLI command mode.
- 3 Configure IP on an interface.
- 4 Mount the CD on the network host.
- 5 Configure access to the network host.
- 6 Enable the FTP server on the ERX system.
- 7 Identify the files to transfer.
- 8 Transfer the files to the user space on the ERX system.

- 9 Install the software release file to the system space on the ERX system.
- 10 Save the current configuration.
- 11 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 allows you to access Privileged Exec mode on the ERX system
- The IP address of the network host
- The IP address of the ERX system
- 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 mounting a CD on the network host

Task 2: 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 3: 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.

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



Note: If an IP interface is not configured, you see the message “Invalid interface.”

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

- 4 Set an IP address on the interface.

```
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 ]
```

- 5 Press <CTRL-Z>, to return to Privileged Exec mode.

Task 4: Mount the CD on the Network Host

The way you mount the CD 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 a CD on the network host, review the manual for the operating system, or check with your network administrator.

Task 5: Configure Access to the Network Host

To configure access to the network host:

- 1 Use the **ping** command to determine whether the ERX system can reach the network host.

```
host1#ping hostname
```

If the ERX system can reach the network host, go to the next section. Otherwise, go to step 2.

- 2 Determine if a route exists between the ERX system 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 ERX system 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 ERX system can access the network host. The **host** command allows you to specify the network host name 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 ERX system can now reach the network host.

```
host1#ping hostname
```

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

Task 6: Enable the FTP Server on the ERX System

The ERX system 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 will use one of those lines. If you configured only one line for Telnet access, configure another vty line. See *Chapter 5, Accessing the ERX System*.

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

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

Task 7: Identify the Files to Transfer

To identify all the files for the release, open the software release (.rel) file on the ERX software CD with a text editor. 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 8: Transfer Files to the User Space

To transfer the files for the release to the ERX user space, use the FTP client software on the network host to connect to the FTP server on the ERX system. Transfer the files to a subdirectory within the incoming

directory. If you specify a subdirectory that does not exist, the ERX system creates the directory.



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

Task 9: 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 ERX user space to the ERX system space, use the **copy** command.



Note: *The destination file must have a .rel extension.*

For example:

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

The software release will be copied from the network host to the ERX system. This process can take several minutes.

Task 10: Save the Current Configuration

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

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

Task 11: 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 x-y-z.rel
```

The following message appears when you execute this command:

```
WARNING: It is recommended 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 Check that the ERX system 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 execute this command:

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

The system reboots. The reboot may 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 ERX system and the network host on which you mount the software CD, you can transfer the software release files from the network host to the ERX system via the ERX FTP server or by issuing the **copy** command. To transfer files via the ERX 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 a hidden FTP client on the ERX system.

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 ERX system to support Telnet, then you must use the local console. See *Chapter 5, Accessing the ERX System*, for information on using a local console or a Telnet session.

To install the software, perform the following tasks:

- 1 Obtain the required information for the installation.
- 2 Access the Privileged Exec CLI command mode.
- 3 Configure IP on an interface.
- 4 Configure access to the network host.
- 5 Mount the CD on the network host.
- 6 Copy the software release file to the ERX system.
- 7 Save the current configuration.
- 8 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 allows you to access Privileged Exec mode on the ERX system
- The IP address of the network host
- The IP address of the ERX system
- 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 mounting a CD on the network host

Task 2: 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 3: 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.

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



Note: If an IP interface is not configured, you see the message: “Invalid interface.”

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

- 4 Set an IP address on the interface.

```
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 ]
```

- 5 Press <CTRL-Z> to return to Privileged Exec mode.

Task 4: Configure Access to the Network Host

To configure access to the network host:

- 1 Use the **ping** command to determine whether the ERX system can reach the network host.

```
host1#ping ipAddress
```

If the ERX system can reach the network host, go to the next section. Otherwise, go to step 2.

- 2 Determine if a route exists between the ERX system 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 ERX system 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 ERX system can access the network host. The **host** command allows you to specify the network host name 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 ERX system can now reach the network host.

```
host1#ping hostname
```

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

Task 5: Mount the CD on the Network Host

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 check with your network administrator.

Task 6: Copy the Software Release File

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



Note: *The destination file must have a .rel extension.*

For example:

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

The software release will be copied from the network host to the ERX system. This process can take several minutes.

Task 7: Save the Current Configuration

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

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

Task 8: 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 x-y-z.rel
```

The following message appears when you execute this command:

```
WARNING: It is recommended 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 Check that the ERX system 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 execute this command:

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

The system reboots. The reboot may 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 ERX software in Boot mode, you must access the CLI via the local console.

To install the software:

- 1 Obtain the required information for the installation.
- 2 Access the Boot mode.
- 3 Assign an IP address to the ERX system.
- 4 Configure access to the network host.
- 5 Mount the CD on the network host.
- 6 Copy the software release file to the ERX system.
- 7 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 ERX system
- 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 mounting a CD on the network host

Task 2: 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 3: Assign an IP Address

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

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

Task 4: Configure Access to the Network Host

To configure access to the network host, complete the following steps:

- 1 Configure a gateway through which the ERX system will reach the network host.

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

- 2 Determine whether the ERX system 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 ERX system can access the network host.

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

The **host** command allows you to specify the network host name and IP address.

Task 5: Mount the CD on the Network Host

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 check with your network administrator.

Task 6: Copy the Software Release File

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



Note: The destination file must have a *.rel* extension.

For example:

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

The software release will be copied from the network host to the ERX system. This process can take several minutes.

Task 7: 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 x-y-z.rel
```

The following message appears when you execute this command:

```
WARNING: It is recommended 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 execute this command:

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

The system reboots. The reboot may 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 ERX System to Another

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

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

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



Note: You must enable the FTP server on the source ERX system.

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

- Substitute the source ERX system for the network host.
- Omit the step about mounting the CD.
- Copy the file to the system space of the second ERX system from the user space of the first ERX system.

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

Upgrading Systems That Are Operating with Two SRP Modules

Use this procedure if the system contains two SRP modules and is already operating with an earlier software release. Each SRP module will keep the system operational while you upgrade the software on the other, so that you can avoid interrupting service.



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 assumes 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.

```
host1#copy host1:x-y-z.rel x-y-z.rel
```

- 3 Save the current configuration.

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

- 4 Specify that the ERX system should use the new software release when it reboots.

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

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

```
host1#synchronize
```

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

- 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. If you issue the **show version** command, the *state* field for the module should be *standby*.

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

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

```
host1#synchronize
```

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

```
host1#srp switch
```