

Chapter 4

Installation Overview

Your router comes with JUNOS software installed on it. When you power on the router, all software starts automatically. You simply need to configure the software and the router will be ready to participate in the network.

The software is installed on the router's flash drive (a nonrotating drive) and hard disk (a rotating disk). A copy of the software also is provided on removable media, either an LS-120 floppy disk or a PC Card, which can be inserted into the router's drive or card slot. Normally, when you power on the router, it runs the copy of the software that is installed on the flash drive.

You might want to upgrade the router software as new features are added or software problems are fixed. You normally obtain new software by downloading the images onto your router or onto another system on your local network. Then you install the software upgrade on the router's flash and hard disks. You can also copy the software onto the removable media.

If the software on the flash drive, hard disk, or removable media becomes damaged, you can reinstall the software onto those devices.

This chapter discusses the following concepts and terminology related to installing and upgrading the JUNOS software:

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JUNOS Software Distribution

This section discusses the following topics:

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Software Release Names

A JUNOS software release has a name in the following format:

JUNOS-*m.nZx*

m.n is two integers that represent the software release number; *m* denotes the major release number.

Z is a capital letter that indicates the type of software release. In most cases, it is an R, to indicate that this is released software. If you are involved in testing prereleased software, this letter might be an A (for alpha-level software), B (for beta-level software), or I (a capital letter I; for internal, test, or experimental versions of software).

x represents the version of the major software release.

The following is an example of a software release name:

JUNOS-6.0R1

Package Names

A *package* is a collection of files that make up a software component.



Note

All JUNOS software is now delivered in signed packages that contain MD5 checksums. A package is installed only if the MD5 checksum within it matches the md5 hash recorded in its corresponding .md5 file. (For example, jinstall-6.0R1-export-signed.tgz contains jinstall-6.0R1-export.tgz and jinstall-6.0R1-export.tgz.md5. The jinstall-6.0R1-export.tgz package will only be installed if it matches the md5 hash recorded in jinstall-6.0R1-export.tgz.md5.)

You can upgrade the packages individually.

A software package has a name in the following format:

package-name-release.tgz or *package-name-release-signed.tgz*

package-name is the name of the package. Examples are jroute (the routing package) and jkernel (the operating system package).

Each JUNOS software release consists of a set of software packages whose names contain the package name and the software release version, and includes the following components:

- Kernel and network tools package, which contains the operating system
- Base package, which contains additions to the operating system
- Routing package, which contains the software that runs on the Routing Engine
- Encryption package, which contains security software (domestic version)
- Packet Forwarding Engine software package
- Documentation package, which contains the documentation for the software

release is the software release number; for example, 6.0R1 or 6.0R1.5.

The following are examples of package names:

```
jroute-6.0R1-signed.tgz
jkernel-6.0R1-signed.tgz
jpfe-6.0R1-signed.tgz
jinstall-6.0R1-signed.tgz
```

The JUNOS software contains two additional packages: `jbundle` and `jinstall`. These packages contain the complete JUNOS software.

`jinstall`—A package used to upgrade from JUNOS Release 5.x to 6.0 or when the software becomes damaged. After you upgrade to 6.0 using `jinstall`, use `jbundle` for subsequent upgrades or downgrades. The `jinstall` package completely reinstalls the software. It rebuilds the JUNOS file system only, but retains configuration, log files, and similar information from the previous version. For more information about how to use `jinstall` when the software becomes damaged, see “Reinstall Software using `jinstall`” on page 115.

`jbundle`—A package used to downgrade from release 6.0. `jbundle` is also used to upgrade or downgrade between minor versions of the JUNOS software. `jbundle` modifies the smallest set of files needed to change to the new software version. For more information about how to upgrade from Release 5.x to 6.0 or downgrade from Release 6.0 to 5.x, see “Upgrade to Release 6.0 or Downgrade from Release 6.0” on page 119.



Note

`jbundle` cannot be used to upgrade from JUNOS 5.x to JUNOS 6.0.

Two sets of JUNOS software packages are provided: one for customers in the United States and Canada and another for other customers. The worldwide version does not include any capabilities that provide encryption of data leaving the router. Otherwise, the two packages are identical.

Storage Media

The router has three forms of storage media:

Flash drive, which is a nonrotating drive. When a new router is shipped from the factory, the JUNOS software is preinstalled on the flash drive.

Hard disk, which is a rotating drive. When a new router is shipped from the factory, the JUNOS software is preinstalled on the hard disk. This drive also is used to store system log files and diagnostic dump files.

Removable media, either a PC Card or a LS-120MB floppy disk. The removable media that ships with each router contains a copy of the JUNOS software.

Table 3 specifies the router's device names. The device names are displayed when the router boots.

Table 3: Device Names

Device	Routing Engine 200	Routing Engine 333	Routing Engine 600
Flash drive	ad0	ad0	ad0
Hard disk	ad2	ad1	ad1
Removable media	afd0	ad4	ad4

Boot Devices

There are three devices from which the router boots: the flash drive, the hard disk, or a removable medium. Typically, the router boots from the flash drive. The disk from which the router boots is called the *primary boot device*, and the other disk is the *alternate boot device*. The primary boot device is generally the flash drive, and the alternate boot device is generally the hard disk.



Note

If the router boots from an alternate boot device, a yellow alarm lights the LED on the router's craft interface. Some routers have text and LED displays.

For information about chassis conditions that trigger alarms, see "Chassis Conditions That Trigger Alarms" on page 487.

Boot Sequence

Normally, the router boots from the flash drive. If it fails, the router attempts to boot from the hard disk, which is the alternate boot device.

If a removable medium is installed when the router boots, the router attempts to boot the image on it. If the booting fails, the router tries the flash drive and then the hard disk.



Note

To reinstall the JUNOS software, you boot the router from the removable media. Do not insert the removable media during normal operations. The router does not operate normally when it is booted from the removable media.

If the router boots from an alternate boot device, the JUNOS software displays a message indicating this when you log in to the router. For example, this message shows that the software booted from the hard disk (/dev/ad2s1a):

```
login: username
Password: password
Last login: date on terminal

--- JUNOS 6.0 R1 built date
---
--- NOTICE: System is running on alternate media device (/dev/ad2s1a).
```

