

## About this Manual

This chapter provides a high-level overview of the *JUNOS Internet Software Configuration Guide: Installation and System Management* :

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## Objectives

This manual provides an overview of the installation and system management functions of the JUNOS Internet software and describes how to install the software and to configure the software to manage the router.

This manual fully documents the installation and system management configuration in Release 4.1 of the JUNOS Internet software.

To obtain additional information about the JUNOS software—either corrections to information in this manual or information that might have been omitted from this manual—refer to the printed software release notes that accompany your router.

To obtain the most current version of this manual and the most current version of the software release notes, refer to the product documentation page on the Juniper Networks Web site, which is located at <http://www.juniper.net/>.

To order printed copies of this manual or to order a documentation CD-ROM, which contains this manual, please contact your sales representative.

## Audience

This manual is designed for network administrators who are configuring a Juniper Networks router. It assumes that you have a broad understanding of networks in general, the Internet in particular, networking principles, and network configuration. This manual assumes that you are familiar with one or more of the following Internet routing protocols: Border Gateway Protocol (BGP), Intermediate System-to-Intermediate System (IS-IS), Open Shortest Path First (OSPF), Internet Control Message Protocol (ICMP) router discovery, Internet Group Management Protocol (IGMP), Distance Vector Multicast Routing Protocol (DVMRP), Protocol-Independent Multicast (PIM), Multicast Source Discovery Protocol (MSDP), Multiprotocol Label Switching (MPLS), Resource Reservation Protocol (RSVP), Routing Information Protocol (RIP), and Simple Network Management Protocol (SNMP).

## Document Organization

This manual is divided into several parts. Each part describes a major functional area of the JUNOS software, and the individual chapters within a part describe the software components of that functional area.

This manual contains the following parts and chapters:

Part 1, “Overview,” provides an overview of the hardware and software components of the router, describes the user command-line interface, and provides the procedures for installing and upgrading the software.

Chapter 1, “Product Architecture,” discusses the router hardware and product architecture.

Chapter 2, “JUNOS Software Overview,” provides an overview of the JUNOS software features and lists the software standards that the JUNOS software supports.

Chapter 3, “Complete Configuration Mode Commands and Statements,” lists all the commands available in configuration mode. It also lists the complete configuration statement hierarchy, showing all possible configuration statements and levels in the configuration hierarchy.

Part 2, “Command-Line Interface,” describes the interface that you use to configure and monitor the JUNOS software. The command-line interface (CLI) is the interface you use whenever you access the router.

Chapter 4, “Command-Line Interface Overview,” provides an overview of the functions of the CLI.

Chapter 5, “Command-Line Interface Operational Mode,” describes the operational mode of the CLI.

Chapter 6, “Control the CLI Environment,” describes how to configure the CLI environment.

Chapter 7, “Configure the Router with the CLI,” describes the configuration mode of the CLI.

Chapter 8, “Configuration Groups,” describes configuration groups.

- Chapter 9, "Summary of CLI Environment Commands," explains each of the CLI environment commands.
- Chapter 10, "Summary of CLI Operational Mode Commands," explains each of the CLI operational mode commands.
- Chapter 11, "Summary of CLI Configuration Mode Commands," explains each of the CLI configuration mode commands.
- Part 3, "Software Installation and Upgrade," describes how to install, reinstall, and upgrade the JUNOS software on a router.
  - Chapter 12, "Installation Overview," provides background information for the installation process.
  - Chapter 13, "Configure the Software Initially," describes how to initially configure the JUNOS software.
  - Chapter 14, "Reinstall the Software," describes how to reinstall the JUNOS software.
  - Chapter 15, "Upgrade Software Packages," describes how to upgrade software packages.
- Part 4, "System Management," describes how to manage the router using the CLI and using SNMP:
  - Chapter 16, "System Management Overview," provides background information for configuring system management functions.
  - Chapter 17, "System Management Configuration Statements," lists all the statements available at the [edit system] hierarchy level.
  - Chapter 18, "Configure Basic System Management," describes how to configure basic system management functions.
  - Chapter 19, "Configure System Authentication," describes how to configure RADIUS and TACACS+ authentication.
  - Chapter 20, "Configure User Access," describes how to configure user access.
  - Chapter 21, "Configure Time," describes how to set the time zone and configure the Network Time Protocol, which provides mechanisms to synchronize time and coordinate time distribution in a large, diverse network.
  - Chapter 22, "Configure System Logging," describes how to control system logging and how much information the system should log.
  - Chapter 23, "Configure Miscellaneous System Management," describes how to configure various system management functions, such as console and auxiliary port properties and the source address for locally generated TCP/IP packets.
  - Chapter 24, "Summary of System Management Configuration Statements," explains each of the system management configuration statements.
- Part 5, "SNMP," describes the SNMP and how to configure the SNMP agent on the router.

Chapter 25, “SNMP Overview,” provides a short overview of the SNMP, which allows you to manage a router running the JUNOS software.

Chapter 26, “Configure SNMP,” describes how to configure the SNMP agent on the router.

Chapter 27, “Summary of SNMP Configuration Statements,” explains each of the SNMP configuration statements.

Chapter 28, “JUNOS Proprietary MIBs and Traps,” defines JUNOS-proprietary MIBs and traps.

A glossary and an index of the material in this manual are provided at the end of this manual.

## Related Documentation

The following additional documentation describes the JUNOS Internet software:

*JUNOS Internet Softw are Configur ation Guide: Interf aces and Chassis* —Provides an overview of the interface and chassis functions of the JUNOS Internet software and describes how to configure the interfaces and chassis on the router.

*JUNOS Internet Softw are Configur ation Guide: R outing and R outing Protocols Management* —Provides an overview of routing concepts and describes how to configure routing, routing policy, and unicast and multicast routing protocols.

*JUNOS Internet Softw are Configur ation Guide: Traffic Engineering* —Provides an overview of traffic engineering concepts and describes how to configure traffic engineering protocols.

*JUNOS Internet Software Command Reference* —Describes the JUNOS Internet software commands you use to monitor and troubleshoot Juniper Networks routers.

## Manual Part Organization

The parts in this manual typically contain the following chapters:

**Overview**—Provides background information about and discusses concepts related to the software component described in the following chapters. For example, in the system management part, the overview chapter provides brief background information and concepts related to system management.

**Configuration statements**—Lists all the configuration statements available to configure the software component. This list is designed to provide an overview of the configuration statement hierarchy for that software component.

**Configuration guidelines**—Describes how to configure all the features of the software component. The first section of the configuration guidelines describes the minimum configuration for that component, listing the configuration statements you must include to enable the software component on the router with only the bare minimum functionality. The remaining sections in the configuration guidelines are generally arranged so that the most common features are near the beginning.

Statement summary—A reference section that lists all configuration statements alphabetically and explains each statement and all its options. The explanation of each configuration statement consists of the following parts:

Syntax—Describes the full syntax of the configuration statement. For an explanation of how to read the syntax statements, see “Documentation Conventions” on page xxvi.

Hierarchy level—Tells where in the configuration statement hierarchy you include the statement.

Description—Describes the function of the configuration statement.

Options—Describes the configuration statement’s options if there are any. For options with numeric values, the allowed range and default value, if any, are listed. For multiple options, if one option is the default, that fact is stated. If a configuration statement is at the top of a hierarchy of options that are other configuration statements, these options are generally explained separately in the statement summary section.

Usage guidelines—Points to the section or sections in the configuration guidelines section that describes how to use the configuration statement.

Required privilege level—Indicates the permissions that the user must have to view or modify the statement in the router configuration. For an explanation of the permissions, see Table 7 on page 202.

See also—Indicates other configuration statements that might provide related or similar functionality.

## Using the Index

In the index, bold page numbers point to pages in the statement summary chapters. The index entry for each configuration statement always contains at least two entries. The first, with a bold page number on the same line as the statement name, references the statement summary section. The second entry, “usage guidelines,” references the section in a configuration guidelines chapter that describes how to use the statement.

## Documentation Conventions

### General Conventions

In general text, this manual uses the following conventions:

Statements, commands, filenames, directory names, IP addresses, and configuration hierarchy levels are shown in a sans serif font. In the following example, “stub” is a statement name and “[edit protocols ospf area *area-id*]” is a configuration hierarchy level:

To configure a stub area, include the stub statement at the [edit protocols ospf area *area-id*] hierarchy level:

In examples, text that you type literally is shown in a bold font. In the following example, you type the word “show”:

```
[edit protocols ospf area area-id]
cli# show
stub <default-metric metric>
```

Examples of command output are generally shown in a fixed-width font to preserve the column alignment. For example:

```
> show interfaces terse
Interface      Admin Link Proto Local          Remote
at-1/3/0       up    up
at-1/3/0.0     up    up   inet  1.0.0.1        --> 1.0.0.2
               iso
fxp0           up    up
fxp0.0         up    up   inet  192.168.5.59/24
```

### Conventions for Software Commands and Statements

When describing the JUNOS software, this manual uses the following type and presentation conventions:

Statement or command names that you type literally are shown in a nonitalicized font. In the following example, the statement name is “area”:

You configure all these routers by including the following area statement at the [edit protocols ospf] hierarchy level:

Options, which are variable terms for which you substitute appropriate values, are shown in italics. In the following example, “area-id” is an option. When you type the area statement, you substitute a value for *area-id*.

```
area area-id;
```

Optional portions of a configuration statement are enclosed in angle brackets. In the following example, the “default-metric *metric*” portion of the statement is optional:

```
stub <default-metric metric>;
```

For text strings separated by a pipe ( | ), you must specify either *string1* or *string2*, but you cannot specify both or neither of them. Parentheses are sometimes used to group the strings.

```
string1 | string2
(string1 | string2)
```

In the following example, you must specify either broadcast or multicast, but you cannot specify both:

```
broadcast | multicast
```

For some statements, you can specify a set of values. The set must be enclosed in square brackets. For example:

```
community name members [community-id]
```

The configuration examples in this manual are generally formatted in the way that they appear when you issue a show command. This format includes braces ( { } ) and semicolons. When you type configuration statements in the CLI, you do not type the braces and semicolons. However, when you type configuration statements in an ASCII file, you must include the braces and semicolons. For example:

```
[edit]
cli# set routing-options static route default nexthop address retain
[edit]
cli# show
routing-options {
  static {
    route default {
      nexthop address;
      retain;
    }
  }
}
```

Comments in the configuration examples are shown either preceding the lines that the comments apply to, or more often, on the same line. When comments are shown on the same line, they are preceded by a pound sign ( # ) to indicate where the comment starts. In an actual configuration, comments can only precede a line; they cannot be on the same line as a configuration statement. For example:

```
protocols {
  mpls {
    interface (interface-name | all); # Required to enable MPLS on the interface
  }
  rsvp {
    interface interface-name; # Required for dynamic MPLS only
  }
}
```

The general syntax descriptions provide no indication of the number of times you can specify a statement, option, or keyword. This information is provided in the text of the statement summary.

