

## About this Manual

This chapter provides a high-level overview of the *JUNOS Internet Software Configuration Guide: Interfaces and Chassis*.

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## Objectives

This manual 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.

This manual fully documents the interfaces and chassis configuration in Release 4.2 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 how to configure the router’s interface and chassis properties:

Chapter 1, “Interfaces and Chassis Overview,” describes the router’s interfaces and chassis.

Chapter 2, “Complete Interface and Chassis Configuration Mode Statements,” lists all of the commands discussed in this manual, and provides a visual display of their hierarchy.

Part 2, “Router Interfaces,” includes a chapter for each interface type plus associated statements, properties, and trace operations:

Chapter 3, “Interfaces Overview,” provides an overview of interfaces, including a description of the interfaces support by the router and interface naming conventions.

Chapter 4, “Interfaces Configuration Statements,” lists all of the statements used to configure the interfaces.

Chapter 5, “Configure Physical Interface Properties,” provides a description of the interface statements used at the physical layer.

Chapter 6, “Configure Logical Interface Properties,” describes the process of configuring logical interfaces within a physical interface.

Chapter 7, “Configure Protocol Family and Address Interface Properties,” explains the assignment of a protocol family to an interface.

Chapter 8, “Configure Circuit Cross-Connect,” explains the use of Circuit Cross-Connect techniques across Layer 2 physical interfaces.

Chapter 9, “Trace Interface Operations,” describes how to trace interface operations.

- Chapter 10, “Configure ATM Interfaces,” presents interfaces designed for Asynchronous Transmission Mode encapsulation.
  - Chapter 11, “Configure Channelized Interfaces,” documents interfaces designed to support time division multiplexing of lower rate data streams over a single high-speed facility.
  - Chapter 12, “Configure E1 Interfaces,” details the configuration of the E1 interface type used outside North America.
  - Chapter 13, “Configure E3 Interfaces,” details the configuration of the E3 interface type used outside North America.
  - Chapter 14, “Configure Ethernet Interfaces,” provides configuration information for both the Fast Ethernet and Gigabit Ethernet interface types.
  - Chapter 15, “Configure Frame Relay,” explains the configuration of Frame Relay interface encapsulation on logical interfaces.
  - Chapter 16, “Configure the Loopback Interface,” documents the configuration of the loopback interface and how to set loopback addresses.
  - Chapter 17, “Configure SONET/SDH Interfaces,” documents the configuration of the various high-speed fiber-optical interface types.
  - Chapter 18, “Configure T1 Interfaces,” explains the use of the T1 interface type used in North America.
  - Chapter 19, “Configure T3 Interfaces,” explains the use of the DS-3 metallic interface type used in North America.
  - Chapter 20, “Configure Tunnel Interfaces,” explains the use of a Tunnel PIC to set up point-to-point connections.
  - Chapter 21, “Summary of Interface Configuration Statements,” provides a detailed listing of all the configuration statements used in the Router Interfaces part of the manual.
- Part 3, “Firewall Filters,” describes the use of firewall filters to control traffic flow to the Routing Engine and through the router:
- Chapter 22, “Firewall Filter Overview,” introduces the concept of firewall filters.
  - Chapter 23, “Firewall Filter Configuration Guidelines,” describes how to configure firewall filters on router interfaces.
  - Chapter 24, “Summary of Firewall Filter Configuration Statements,” provides a detailed listing of all the configuration statements used in the Firewall Filters part of the manual.
- Part 4, “Forwarding,” describes how to configure the JUNOS software to perform statistical monitoring of traffic:
- Chapter 25, “Configure Traffic Sampling,” explains the configuration of Traffic Sampling.

Chapter 26, "Summary of Traffic Sampling Configuration Statements," provides a detailed listing of all the configuration statements used in the Traffic Sampling part of the manual.

Part 5, "CoS," describes how to configure and monitor the JUNOS software to support Class of Service decision making:

Chapter 27, "CoS Overview," introduces the concept of Class of Service.

Chapter 28, "CoS Configuration Guidelines," describes how to configure CoS.

Chapter 29, "Summary of CoS Configuration Statements," provides a detailed listing of all the configuration statements used in the Class of Service part of the manual.

Part 6, "Router Chassis," covers the configuration of router chassis properties:

Chapter 30, "Router Chassis Configuration Guidelines," describes how to configure router chassis properties.

Chapter 31, "Summary of Router Chassis Configuration Statements," provides a detailed listing of all the configuration statements used in router chassis configuration.

A glossary and an index 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: Inst allation and System Management* —Provides an overview of the JUNOS Internet software and describes how to install and upgrade the software. This manual also describes how to configure system management functions, including user accounts, passwords, and SNMP.

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

*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 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 part.

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 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 xxx.

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 the *JUNOS Internet Software Configuration Guide: Installation and System Management* .

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 sections of configuration 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 the configuration guidelines section 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 { # Required for dynamic MPLS only
    interface interface-name;
  }
}
```

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.

