

## About This Manual

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

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## Objectives

This manual provides an overview of the network management features of the JUNOS Internet software and describes how to manage your network with the JUNOS Internet software.

This manual documents the network management features in Release 6.0 of the JUNOS Internet software. 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 and management. It also assumes some knowledge of SNMP and SNMP management software.

## Document Organization

Part 1, “Network Management Introduction,” provides an overview of network management, its main components, and how you can manage your Juniper Networks routers using the JUNOS Internet software.

Chapter 1, “Network Management Overview,” introduces the concept of network management and its main components: fault management, configuration management, accounting management, performance management, and security management.

Chapter 2, “Complete Network Management Configuration Statements,” lists the complete statement hierarchies for the statements discussed in this manual. For a complete list of all configuration mode statements and commands, see the *JUNOS Internet Software Configuration Guide: Getting Started*.

Part 2, “SNMP,” describes SNMP, how to configure the SNMP agent on the router, how to use SNMP remote operations, and lists the full definitions for Juniper Networks Enterprise MIBs and traps.

Chapter 3, “SNMP Overview,” provides an overview of SNMP, the protocol that allows you to manage a router running the JUNOS software, and how it is implemented in the JUNOS software.

Chapter 4, “Configure SNMP,” describes how to configure the SNMP agent on the router.

Chapter 5, “SNMP Remote Operations,” describes how to use the ping and traceroute MIBs to monitor your SNMP network remotely.

Chapter 6, “Juniper Networks Enterprise-Specific MIBs,” lists the full definitions of enterprise-specific MIBs supported by the JUNOS software.

Chapter 7, “Juniper Networks Enterprise-Specific SNMP Traps,” describes the enterprise-specific traps supported by the JUNOS software and lists their full definitions.

Chapter 8, “Standard SNMP Traps,” describes the standard traps supported by the JUNOS software and lists their full definitions.

Chapter 9, “Summary of SNMP Configuration Statements,” explains each of the SNMP configuration statements.

Part 3, “RMON Alarms and Events,” describes RMON events and alarms, how to configure them on your router, and how to use the Juniper Networks enterprise-specific RMON alarm and event MIB to monitor other MIB variables.

Chapter 10, “Configure RMON Alarms and Events,” provides an introduction to the RMON alarm and event features supported by the JUNOS software. It also describes how to configure alarm and event entries and their attributes.

Chapter 11, “Monitor RMON Alarms and Events,” describes how to set, monitor, and poll events and alarms for any MIB object.

Chapter 12, “Summary of RMON Alarm and Event Configuration Statements,” explains each of the RMON alarm and event configuration statements.

Part 4, “The Juniper Networks Enterprise-Specific MIBs,” explains how to interpret the Juniper Networks enterprise-specific MIBs.

Chapter 13, “The Structure of Information Management MIB,” describes each part of the Juniper Networks enterprise-specific structure of information Management MIB.

Chapter 14, “Interpret the Enterprise-Specific Chassis MIBs,” describes each part of the Juniper Networks enterprise-specific chassis MIB.

Chapter 15, “Interpret the Enterprise-Specific Destination Class Usage MIB,” describes each part of the Juniper Networks enterprise-specific destination class usage MIB.

Chapter 16, “Interpret the Enterprise-Specific Ping MIB,” describes each part of the Juniper Networks enterprise-specific extensions to the ping MIB.

Chapter 17, “Interpret the Enterprise-Specific Traceroute MIB,” describes each part of the Juniper Networks enterprise-specific extensions to the traceroute MIB.

Chapter 18, “Interpret the Enterprise-Specific RMON Events and Alarms MIB,” describes each part of the Juniper Networks enterprise-specific extensions to the RMON alarm and event MIB.

Chapter 19, “Interpret the Enterprise-Specific Reverse Path Forwarding MIB,” describes each part of the Juniper Networks enterprise-specific reverse path forwarding MIB.

Chapter 20, “Interpret the Enterprise-Specific Source Class Usage MIB,” describes each part of the Juniper Networks enterprise-specific source class usage MIB.

Chapter 21, “Interpret the Enterprise-Specific Passive Monitoring MIB,” describes each part of the Juniper Networks enterprise-specific passive monitoring MIB.

Chapter 22, “Interpret the Enterprise-Specific SONET/SDH Interface Management MIB,” describes each part of the Juniper Networks enterprise-specific SONET/SDH MIB.

Chapter 23, “Interpret the Enterprise-Specific SONET Automatic Protection Switching MIB,” describes each part of the Juniper Networks enterprise-specific SONET automatic protection switching MIB.

Chapter 24, “Interpret the Enterprise-Specific Ethernet MAC MIB,” describes each part of the Juniper Networks enterprise-specific Ethernet MAC MIB.

Chapter 25, “Interpret the Enterprise-Specific Interface MIB,” describes each part of the Juniper Networks enterprise-specific Interface MIB.

Chapter 26, “Interpret the Enterprise-Specific VPN MIB,” describes each part of the Juniper Networks enterprise-specific VPN MIB.

Chapter 27, “Interpret the Enterprise-Specific BGP4 V2 MIB,” describes each part of the Juniper Networks enterprise-specific BGP4 V2 MIB.

Part 5, “Accounting Options,” describes how to configure accounting options for interfaces, firewall filters, destination classes, and the Routing Engine.

Chapter 28, “Accounting Options Overview,” provides background information for configuring accounting options.

Chapter 29, “Configure Accounting Options,” describes how to configure accounting options.

Chapter 30, “Summary of Accounting Options Configuration Statements,” explains each of the accounting options statements.

Part 6, “Appendix,” includes a glossary.

Appendix A, “Glossary”, provides a list of terms and definitions.

This manual also contains a complete index and an index of statements and commands.

## Using the Indexes

This manual contains two indexes: a complete index, which contains all index entries, and an index that contains only statements and commands.

In the complete 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**

This manual uses the following text 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 bold. 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 non italicized. 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 appear 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.

## List of Technical Publications

Table 1 lists the software and hardware books for Juniper Networks routers and describes the contents of each book.

Table 1: Juniper Networks Technical Documentation

Book	Description
<b>JUNOS Internet Software Configuration Guides</b>	
<i>Feature Guide</i>	Provides a detailed explanation and configuration examples for several of the most complex features in the JUNOS software.
<i>Getting Started</i>	Provides an overview of the JUNOS software and describes how to install and upgrade the software. This manual also describes how to configure system management functions and how to configure the chassis, including user accounts, passwords, and redundancy.
<i>MPLS Applications</i>	Provides an overview of traffic engineering concepts and describes how to configure traffic engineering protocols.
<i>Multicast</i>	Provides an overview of multicast concepts and describes how to configure multicast routing protocols.
<i>Network Interfaces and Class of Service</i>	Provides an overview of the network interface and class-of-service functions of the JUNOS software and describes how to configure the network interfaces on the router.
<i>Network Management</i>	Provides an overview of network management concepts and describes how to configure various network management features, such as SNMP, accounting options, and cflowd.
<i>Policy Framework</i>	Provides an overview of policy concepts and describes how to configure routing policy, firewall filters, and forwarding options.
<i>Routing and Routing Protocols</i>	Provides an overview of routing concepts and describes how to configure routing, routing instances, and unicast routing protocols.
<i>Services Interfaces</i>	Provides an overview of the services interfaces functions of the JUNOS software and describes how to configure the services interfaces on the router.
<i>VPNs</i>	Provides an overview of Layer 2 and Layer 3 Virtual Private Networks (VPNs), describes how to configure VPNs, and provides configuration examples.
<b>JUNOS Internet Software References</b>	
<i>Operational Mode Command Reference: Interfaces</i>	Describes the JUNOS Internet software operational mode commands you use to monitor and troubleshoot network and services interfaces on Juniper Networks M-series and T-series routers.
<i>Operational Mode Command Reference: Protocols, Class of Service, Chassis, and Management</i>	Describes the JUNOS Internet software operational mode commands you use to monitor and troubleshoot most aspects of Juniper Networks M-series and T-series routers.
<i>System Log Messages Reference</i>	Describes how to access and interpret system log messages generated by JUNOS software modules and provides a reference page for each message.
<b>JUNOScript API Documentation</b>	
<i>JUNOScript API Guide</i>	Describes how to use the JUNOScript API to monitor and configure Juniper Networks routers.
<i>JUNOScript API Reference</i>	Provides a reference page for each tag in the JUNOScript API.
<b>JUNOS Internet Software Comprehensive Index</b>	
<i>Comprehensive Index</i>	Provides a complete index of all JUNOS Internet software books and the <i>JUNOScript API Guide</i> .
<b>Hardware Documentation</b>	
<i>Hardware Guide</i>	Describes how to install, maintain, and troubleshoot routers and router components. Each platform has its own hardware guide.
<i>PIC Guide</i>	Describes the router Physical Interface Cards (PICs). Each router platform has its own PIC guide.

Book	Description
<b>Release Notes</b>	
<i>JUNOS Internet Software Release Notes</i>	Provide a summary of new features for a particular software release. Software release notes also contain corrections and updates to published JUNOS and JUNOScript manuals, provide information that might have been omitted from the manuals, and describe upgrade and downgrade procedures.
<i>Hardware Release Notes</i>	Describe the available documentation for the router platform and summarize known problems with the hardware and accompanying software. Each platform has its own release notes.
<b>JUNOScope Software</b>	
<i>JUNOScope Software Guide</i>	Describes the JUNOScope software graphical user interface (GUI), how to install and administer the software, and how to use the software to manage router configuration files and monitor router operations.

## Documentation Feedback

We are always interested in hearing from our customers. Please let us know what you like and do not like about the Juniper Networks documentation, and let us know of any suggestions you have for improving the documentation. Also, let us know if you find any mistakes in the documentation. Send your feedback to [techpubs-comments@juniper.net](mailto:techpubs-comments@juniper.net).

## How to Request Support

For technical support, contact Juniper Networks at [support@juniper.net](mailto:support@juniper.net), or at 1-888-314-JTAC (within the United States) or 408-745-9500 (from outside the United States).