



JUNOS® Software

Access Privilege Configuration Guide

Release 9.4

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JUNOS® Software Access Privilege Configuration Guide

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About This Guide

This preface provides the following guidelines for using the *JUNOS® Software Access Privilege Configuration Guide*:

- Objectives on page xi
- Audience on page xii
- Supported Platforms on page xii
- Documentation Conventions on page xii
- List of Technical Publications on page xiv
- Documentation Feedback on page xxi
- Requesting Technical Support on page xxi

Objectives

This guide describes how to configure access privileges for login classes in order to restrict the commands and statements available to users who manage your router. It also provides a list of permission flags and their corresponding command-line interface (CLI) operational mode commands and configuration statements.



NOTE: This guide documents Release 9.4 of the JUNOS software. For additional information about the JUNOS software—either corrections to or information that might have been omitted from this guide—see the software release notes at <http://www.juniper.net/>.

For information about configuration statements and guidelines related to the commands described in this reference, see the following configuration guides:

- *JUNOS CLI User Guide*
- *JUNOS Software Installation and Upgrade Guide*
- *JUNOS System Basics Configuration Guide*
- *JUNOScript API Guide*
- *JUNOS Network Management Configuration Guide*

Audience

This guide is designed for network administrators who are configuring and monitoring a Juniper Networks M-series, MX-series, T-series, EX-series, or J-series router or switch.

To use this guide, you need to know how to use the JUNOS command-line interface (CLI) operational mode commands and configuration statements. For more information about the JUNOS operational commands and configuration statements, see the *JUNOS CLI User Guide*.

Supported Platforms

For the features described in this manual, the JUNOS software currently supports the following platforms:

- J-series
- M-series
- MX-series
- T-series
- EX-series

Documentation Conventions

Table 1 on page xii defines notice icons used in this guide.

Table 1: Notice Icons





| Icon | Meaning | Description |
|---|--------------------|---|
|  | Informational note | Indicates important features or instructions. |
|  | Caution | Indicates a situation that might result in loss of data or hardware damage. |
|  | Warning | Alerts you to the risk of personal injury or death. |
|  | Laser warning | Alerts you to the risk of personal injury from a laser. |

Table 2 on page xiii defines the text and syntax conventions used in this guide.

Table 2: Text and Syntax Conventions

| Convention | Description | Examples |
|--------------------------------|---|--|
| Bold text like this | Represents text that you type. | To enter configuration mode, type the configure command: user@host> configure |
| Fixed-width text like this | Represents output that appears on the terminal screen. | user@host> show chassis alarms No alarms currently active |
| <i>Italic text like this</i> | <ul style="list-style-type: none"> Introduces important new terms. Identifies book names. Identifies RFC and Internet draft titles. | <ul style="list-style-type: none"> A policy <i>term</i> is a named structure that defines match conditions and actions. <i>JUNOS System Basics Configuration Guide</i> RFC 1997, <i>BGP Communities Attribute</i> |
| <i>Italic text like this</i> | Represents variables (options for which you substitute a value) in commands or configuration statements. | Configure the machine's domain name: [edit] root@# set system domain-name domain-name |
| Plain text like this | Represents names of configuration statements, commands, files, and directories; IP addresses; configuration hierarchy levels; or labels on routing platform components. | <ul style="list-style-type: none"> To configure a stub area, include the stub statement at the [edit protocols ospf area area-id] hierarchy level. The console port is labeled CONSOLE. |
| < > (angle brackets) | Enclose optional keywords or variables. | stub <default-metric <i>metric</i> >; |
| (pipe symbol) | Indicates a choice between the mutually exclusive keywords or variables on either side of the symbol. The set of choices is often enclosed in parentheses for clarity. | broadcast multicast (string1 string2 string3) |
| # (pound sign) | Indicates a comment specified on the same line as the configuration statement to which it applies. | rsvp { # Required for dynamic MPLS only |
| [] (square brackets) | Enclose a variable for which you can substitute one or more values. | community name members [<i>community-ids</i>] |
| Indentation and braces ({ }) | Identify a level in the configuration hierarchy. | [edit] routing-options { static { route default { nexthop address; retain; } } } |
| ; (semicolon) | Identifies a leaf statement at a configuration hierarchy level. | |

Table 2: Text and Syntax Conventions (*continued*)

| Convention | Description | Examples |
|------------------------------|--|---|
| J-Web GUI Conventions | | |
| Bold text like this | Represents J-Web graphical user interface (GUI) items you click or select. | <ul style="list-style-type: none"> ■ In the Logical Interfaces box, select All Interfaces. ■ To cancel the configuration, click Cancel. |
| > (bold right angle bracket) | Separates levels in a hierarchy of J-Web selections. | In the configuration editor hierarchy, select Protocols > Ospf . |

List of Technical Publications

Table 3 on page xiv lists the software and hardware guides and release notes for Juniper Networks M-series, MX-series, and T-series routing platforms and describes the contents of each document. Table 4 on page xviii lists the books included in the *Network Operations Guide* series. Table 5 on page xix lists the manuals and release notes supporting JUNOS software for J-series and SRX-series platforms. All documents are available at <http://www.juniper.net/techpubs/>.

Table 6 on page xx lists additional books on Juniper Networks solutions that you can order through your bookstore. A complete list of such books is available at <http://www.juniper.net/books>.

Table 3: Technical Documentation for Supported Routing Platforms

| Book | Description |
|---|---|
| JUNOS Software for Supported Routing Platforms | |
| <i>Access Privilege</i> | Explains how to configure access privileges in user classes by using permission flags and regular expressions. Lists the permission flags along with their associated command-line interface (CLI) operational mode commands and configuration statements. |
| <i>Broadband Subscriber Management Solutions</i> | Describes residential subscriber management and how you can deploy solutions that include multisubscriber IP address assignment, service provisioning, authentication, authorization, accounting, and dynamic request services in your network. |
| <i>Class of Service</i> | Provides an overview of the class-of-service (CoS) functions of the JUNOS software and describes how to configure CoS features, including configuring multiple forwarding classes for transmitting packets, defining which packets are placed into each output queue, scheduling the transmission service level for each queue, and managing congestion through the random early detection (RED) algorithm. |
| <i>CLI User Guide</i> | Describes how to use the JUNOS command-line interface (CLI) to configure, monitor, and manage Juniper Networks routing platforms. This material was formerly covered in the <i>JUNOS System Basics Configuration Guide</i> . |

Table 3: Technical Documentation for Supported Routing Platforms (*continued*)

| Book | Description |
|--|--|
| <i>Feature Guide</i> | Provides a detailed explanation and configuration examples for several of the most complex features in the JUNOS software. |
| <i>High Availability</i> | Provides an overview of hardware and software resources that ensure a high level of continuous routing platform operation and describes how to configure high availability (HA) features such as nonstop active routing (NSR) and graceful Routing Engine switchover (GRES). |
| <i>MPLS Applications</i> | Provides an overview of traffic engineering concepts and describes how to configure traffic engineering protocols. |
| <i>Multicast Protocols</i> | Provides an overview of multicast concepts and describes how to configure multicast routing protocols. |
| <i>Multiplay Solutions</i> | Describes how you can deploy IPTV and voice over IP (VoIP) services in your network. |
| <i>MX-series Layer 2 Configuration Guide</i> | Provides an overview of the Layer 2 functions of the MX-series routers, including configuring bridging domains, MAC address and VLAN learning and forwarding, and spanning-tree protocols. It also details the routing instance types used by Layer 2 applications. All of this material was formerly covered in the <i>JUNOS Routing Protocols Configuration Guide</i> . |
| <i>MX-series Layer 2 Solutions Guide</i> | Describes common configuration scenarios for the Layer 2 features supported on the MX-series routers, including basic bridged VLANs with normalized VLAN tags, aggregated Ethernet links, bridge domains, Multiple Spanning Tree Protocol (MSTP), and integrated routing and bridging (IRB). |
| <i>Network Interfaces</i> | Provides an overview of the network interface functions of the JUNOS software and describes how to configure the network interfaces on the routing platform. |
| <i>Network Management</i> | Provides an overview of network management concepts and describes how to configure various network management features, such as SNMP and accounting options. |
| <i>Policy Framework</i> | Provides an overview of policy concepts and describes how to configure routing policy, firewall filters, and forwarding options. |
| <i>Protected System Domain</i> | Provides an overview of the JCS 1200 platform and the concept of Protected System Domains (PSDs). The JCS 1200 platform, which contains up to six redundant pairs of Routing Engines running JUNOS software, is connected to a T320 router or to a T640 or T1600 routing node. To configure a PSD, you assign any number of Flexible PIC concentrators (FPCs) in the T-series routing platform to a pair of Routing Engines on the JCS 1200 platform. Each PSD has the same capabilities and functionality as a physical router, with its own control plane, forwarding plane, and administration. |
| <i>Routing Protocols</i> | Provides an overview of routing concepts and describes how to configure routing instances, and unicast routing protocols. |

Table 3: Technical Documentation for Supported Routing Platforms (continued)

| Book | Description |
|--|---|
| <i>Secure Configuration Guide for Common Criteria and JUNOS-FIPS</i> | Provides an overview of secure Common Criteria and JUNOS-FIPS protocols for the JUNOS software and describes how to install and configure secure Common Criteria and JUNOS-FIPS on a routing platform. |
| <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>Software Installation and Upgrade Guide</i> | Describes the JUNOS software components and packaging and explains how to initially configure, reinstall, and upgrade the JUNOS system software. This material was formerly covered in the <i>JUNOS System Basics Configuration Guide</i> . |
| <i>Subscriber Access</i> | Provides an overview of the subscriber access features of the JUNOS software and describes how to configure subscriber access support on the router, including dynamic profiles, class of service, AAA, and access methods. |
| <i>System Basics</i> | Describes Juniper Networks routing platforms and explains how to configure basic system parameters, supported protocols and software processes, authentication, and a variety of utilities for managing your router on the network. |
| <i>VPNs</i> | Provides an overview and describes how to configure Layer 2 and Layer 3 virtual private networks (VPNs), virtual private LAN service (VPLS), and Layer 2 circuits. Provides configuration examples. |
| JUNOS References | |
| <i>Hierarchy and RFC Reference</i> | Describes the JUNOS configuration mode commands. Provides a hierarchy reference that displays each level of a configuration hierarchy, and includes all possible configuration statements that can be used at that level. This material was formerly covered in the <i>JUNOS System Basics Configuration Guide</i> . |
| <i>Interfaces Command Reference</i> | Describes the JUNOS software operational mode commands you use to monitor and troubleshoot interfaces. |
| <i>Routing Protocols and Policies Command Reference</i> | Describes the JUNOS software operational mode commands you use to monitor and troubleshoot routing policies and protocols, including firewall filters. |
| <i>System Basics and Services Command Reference</i> | Describes the JUNOS software operational mode commands you use to monitor and troubleshoot system basics, including commands for real-time monitoring and route (or path) tracing, system software management, and chassis management. Also describes commands for monitoring and troubleshooting services such as class of service (CoS), IP Security (IPsec), stateful firewalls, flow collection, and flow monitoring. |
| <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. |
| J-Web User Guide | |

Table 3: Technical Documentation for Supported Routing Platforms *(continued)*

| Book | Description |
|--|---|
| <i>J-Web Interface User Guide</i> | Describes how to use the J-Web graphical user interface (GUI) to configure, monitor, and manage Juniper Networks routing platforms. |
| JUNOS API and Scripting Documentation | |
| <i>JUNOScript API Guide</i> | Describes how to use the JUNOScript application programming interface (API) to monitor and configure Juniper Networks routing platforms. |
| <i>JUNOS XML API Configuration Reference</i> | Provides reference pages for the configuration tag elements in the JUNOS XML API. |
| <i>JUNOS XML API Operational Reference</i> | Provides reference pages for the operational tag elements in the JUNOS XML API. |
| <i>NETCONF API Guide</i> | Describes how to use the NETCONF API to monitor and configure Juniper Networks routing platforms. |
| <i>JUNOS Configuration and Diagnostic Automation Guide</i> | Describes how to use the commit script and self-diagnosis features of the JUNOS software. This guide explains how to enforce custom configuration rules defined in scripts, how to use commit script macros to provide simplified aliases for frequently used configuration statements, and how to configure diagnostic event policies. |
| Hardware Documentation | |
| <i>Hardware Guide</i> | Describes how to install, maintain, and troubleshoot routing platforms and components. Each platform has its own hardware guide. |
| <i>PIC Guide</i> | Describes the routing platform's Physical Interface Cards (PICs). Each platform has its own PIC guide. |
| <i>DPC Guide</i> | Describes the Dense Port Concentrators (DPCs) for all MX-series routers. |
| JUNOScope Documentation | |
| <i>JUNOScope Software User 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 routing platform configuration files and monitor routing platform operations. |
| Advanced Insight Solutions (AIS) Documentation | |
| <i>Advanced Insight Solutions Guide</i> | Describes the Advanced Insight Manager (AIM) application, which provides a gateway between JUNOS devices and Juniper Support Systems (JSS) for case management and intelligence updates. Explains how to run AI-Scripts on Juniper Networks devices. |
| Release Notes | |

Table 3: Technical Documentation for Supported Routing Platforms (*continued*)

| Book | Description |
|-------------------------------------|---|
| <i>JUNOS Release Notes</i> | Summarize new features and known problems for a particular software release, provide corrections and updates to published JUNOS, JUNOScript, and NETCONF 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 routing platform and summarize known problems with the hardware and accompanying software. Each platform has its own release notes. |
| <i>JUNOScope Release Notes</i> | Contain corrections and updates to the published JUNOScope manual, provide information that might have been omitted from the manual, and describe upgrade and downgrade procedures. |
| <i>AIS Release Notes</i> | Summarize AIS new features and guidelines, identify known and resolved problems, provide information that might have been omitted from the manuals, and provide initial setup, upgrade, and downgrade procedures. |
| <i>AIS AI-Scripts Release Notes</i> | Summarize AI-Scripts new features, identify known and resolved problems, provide information that might have been omitted from the manuals, and provide instructions for automatic and manual installation, including deleting and rolling back. |

Table 4: JUNOS Software Network Operations Guides

| Book | Description |
|---------------------------|--|
| <i>Baseline</i> | Describes the most basic tasks for running a network using Juniper Networks products. Tasks include upgrading and reinstalling JUNOS software, gathering basic system management information, verifying your network topology, and searching log messages. |
| <i>Interfaces</i> | Describes tasks for monitoring interfaces. Tasks include using loopback testing and locating alarms. |
| <i>MPLS</i> | Describes tasks for configuring, monitoring, and troubleshooting an example MPLS network. Tasks include verifying the correct configuration of the MPLS and RSVP protocols, displaying the status and statistics of MPLS running on all routing platforms in the network, and using the layered MPLS troubleshooting model to investigate problems with an MPLS network. |
| <i>MPLS Log Reference</i> | Describes MPLS status and error messages that appear in the output of the <code>show mpls lsp extensive</code> command. The guide also describes how and when to configure Constrained Shortest Path First (CSPF) and RSVP trace options, and how to examine a CSPF or RSVP failure in a sample network. |
| <i>MPLS Fast Reroute</i> | Describes operational information helpful in monitoring and troubleshooting an MPLS network configured with fast reroute (FRR) and load balancing. |

Table 4: JUNOS Software Network Operations Guides (*continued*)

| Book | Description |
|-----------------|---|
| <i>Hardware</i> | Describes tasks for monitoring M-series and T-series routing platforms. |

To configure and operate a J-series Services Router or an SRX-series Services Gateway running JUNOS software, you must also use the configuration statements and operational mode commands documented in JUNOS configuration guides and command references. To configure and operate a WX Integrated Services Module, you must also use WX documentation.

Table 5: JUNOS Software for J-series Services Routers and SRX-series Services Gateways Documentation

| Book | Description |
|--|---|
| J-series and SRX-series Platforms | |
| <i>JUNOS Software Interfaces and Routing Configuration Guide</i> | Explains how to configure SRX-series and J-series interfaces for basic IP routing with standard routing protocols, ISDN service, firewall filters (access control lists), and class-of-service (CoS) traffic classification. |
| <i>JUNOS Software Security Configuration Guide</i> | Explains how to configure and manage SRX-series and J-series security services such as stateful firewall policies, IPsec VPNs, firewall screens, Network Address Translation (NAT), Public Key Cryptography, chassis clusters, Application Layer Gateways (ALGs), and Intrusion Detection and Prevention (IDP). |
| <i>JUNOS Software Administration Guide</i> | Shows how to monitor SRX-series and J-series devices and routing operations, firewall and security services, system alarms and events, and network performance. This guide also shows how to administer user authentication and access, upgrade software, and diagnose common problems. |
| <i>JUNOS Software CLI Reference</i> | Provides the complete configuration hierarchy available on SRX-series and J-series devices. This guide also describes the configuration statements and operational mode commands unique to these devices. |
| <i>JUNOS Release Notes</i> | Summarize new features and known problems for a particular release of JUNOS software, including JUNOS software for J-series and SRX-series devices. The release notes also contain corrections and updates to the manuals and software upgrade and downgrade instructions for JUNOS software. |
| J-series Only | |
| <i>JUNOS Software Design and Implementation Guide</i> | Provides guidelines and examples for designing and implementing IPsec VPNs, firewalls, and routing on J-series Services Routers running JUNOS software. |

Table 5: JUNOS Software for J-series Services Routers and SRX-series Services Gateways Documentation (continued)

| Book | Description |
|--|---|
| <i>J-series Services Routers Quick Start</i> | Explains how to quickly set up a J-series Services Router. This document contains router declarations of conformity. |
| <i>J-series Services Routers Hardware Guide</i> | Provides an overview, basic instructions, and specifications for J-series Services Routers. This guide explains how to prepare a site, unpack and install the router, replace router hardware, and establish basic router connectivity. This guide contains hardware descriptions and specifications. |
| <i>JUNOS Software Migration Guide</i> | Provides instructions for migrating an SSG device running ScreenOS software to JUNOS software or upgrading a J-series device to a later version of the JUNOS software. |
| <i>WXC Integrated Services Module Installation and Configuration Guide</i> | Explains how to install and initially configure a WXC Integrated Services Module in a J-series Services Router for application acceleration. |

Table 6: Additional Books Available Through <http://www.juniper.net/books>

| Book | Description |
|---|--|
| <i>Interdomain Multicast Routing</i> | Provides background and in-depth analysis of multicast routing using Protocol Independent Multicast sparse mode (PIM SM) and Multicast Source Discovery Protocol (MSDP); details any-source and source-specific multicast delivery models; explores multiprotocol BGP (MBGP) and multicast IS-IS; explains Internet Gateway Management Protocol (IGMP) versions 1, 2, and 3; lists packet formats for IGMP, PIM, and MSDP; and provides a complete glossary of multicast terms. |
| <i>JUNOS Cookbook</i> | Provides detailed examples of common JUNOS software configuration tasks, such as basic router configuration and file management, security and access control, logging, routing policy, firewalls, routing protocols, MPLS, and VPNs. |
| <i>MPLS-Enabled Applications</i> | Provides an overview of Multiprotocol Label Switching (MPLS) applications (such as Layer 3 virtual private networks [VPNs], Layer 2 VPNs, virtual private LAN service [VPLS], and pseudowires), explains how to apply MPLS, examines the scaling requirements of equipment at different points in the network, and covers the following topics: point-to-multipoint label switched paths (LSPs), DiffServ-aware traffic engineering, class of service, interdomain traffic engineering, path computation, route target filtering, multicast support for Layer 3 VPNs, and management and troubleshooting of MPLS networks. |
| <i>OSPF and IS-IS: Choosing an IGP for Large-Scale Networks</i> | Explores the full range of characteristics and capabilities for the two major link-state routing protocols: Open Shortest Path First (OSPF) and IS-IS. Explains architecture, packet types, and addressing; demonstrates how to improve scalability; shows how to design large-scale networks for maximum security and reliability; details protocol extensions for MPLS-based traffic engineering, IPv6, and multipoint routing; and covers troubleshooting for OSPF and IS-IS networks. |
| <i>Routing Policy and Protocols for Multivendor IP Networks</i> | Provides a brief history of the Internet, explains IP addressing and routing (Routing Information Protocol [RIP], OSPF, IS-IS, and Border Gateway Protocol [BGP]), explores ISP peering and routing policies, and displays configurations for both Juniper Networks and other vendors' routers. |

Table 6: Additional Books Available Through <http://www.juniper.net/books> (continued)

| Book | Description |
|------------------------------------|---|
| <i>The Complete IS-IS Protocol</i> | Provides the insight and practical solutions necessary to understand the IS-IS protocol and how it works by using a multivendor, real-world approach. |

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- Document name
- Document part number
- Page number
- Software release version (not required for *Network Operations Guides [NOGs]*)

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Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active J-Care or JNASC support contract, or are covered under warranty, and need postsales technical support, you can access our tools and resources online or open a case with JTAC.

- JTAC policies—For a complete understanding of our JTAC procedures and policies, review the JTAC User Guide located at <http://www.juniper.net/customers/support/downloads/710059.pdf>.
- Product warranties—For product warranty information, visit <http://www.juniper.net/support/warranty/>.
- JTAC Hours of Operation —The JTAC centers have resources available 24 hours a day, 7 days a week, 365 days a year.

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- Find CSC offerings: <http://www.juniper.net/customers/support/>
- Search for known bugs: <http://www2.juniper.net/kb/>
- Find product documentation: <http://www.juniper.net/techpubs/>
- Find solutions and answer questions using our Knowledge Base: <http://kb.juniper.net/>

- Download the latest versions of software and review release notes:
<http://www.juniper.net/customers/csc/software/>
- Search technical bulletins for relevant hardware and software notifications:
<https://www.juniper.net/alerts/>
- Join and participate in the Juniper Networks Community Forum:
<http://www.juniper.net/company/communities/>
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Opening a Case with JTAC

You can open a case with JTAC on the Web or by telephone.

- Use the Case Management tool in the CSC at <http://www.juniper.net/cm/> .
- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the USA, Canada, and Mexico).

For international or direct-dial options in countries without toll-free numbers, visit us at <http://www.juniper.net/support/requesting-support.html>.

Part 1

Configuring Access Privileges

- Configuring and Customizing Access Privileges on page 3
- User Permission Flags on page 13

Chapter 1

Configuring and Customizing Access Privileges

This chapter provides information about how you can configure user access privileges. It covers the use of permission flags for configuring user access privilege levels, and the use of regular expressions for configuring access to individual commands and statements.

- Using Permission Flags to Configure Access on page 3
- Allowing or Denying Individual Commands on page 6

Using Permission Flags to Configure Access

Each top-level command-line interface (CLI) operational mode command and each configuration statement are associated with an access privilege level. Users can execute only those commands and configure and view only those statements for which they have access privileges. The privilege level for each command and statement is listed along with other details. The access privileges for each login class are defined by one or more *permission flags*. Table 7 on page 4 lists permission flags and their associated commands and statements.

To configure access privilege levels, include the **permissions** statement at the [edit system login class *class-name*] hierarchy level:

```
[edit system login class class-name]  
permissions [ permissions ];
```

permissions specifies one or more of the permission flags listed in Table 7 on page 4. Permission flags are not cumulative, so you must list all the bits needed for each login class, including **view** to display information and **configure** to enter configuration mode. Two forms of permissions control the individual parts of the configuration:

- Plain form—Provides read-only capability for that permission type; for example, **interface**.
- Form that ends in **-control**—Provides read and write capability for that permission type; for example, **interface-control**.

Table 7: Login Class Permission Flags

| Permission Flag | Description |
|------------------------|---|
| access | Can view the access configuration in configuration mode using the show configuration operational mode command. |
| access-control | Can view and configure access information at the [edit access] hierarchy level. |
| admin | Can view user account information in configuration mode and with the show configuration command. |
| admin-control | Can view user accounts and configure them at the [edit system login] hierarchy level. |
| all | Has all permissions. |
| clear | Can clear (delete) information learned from the network that is stored in various network databases using the clear commands. |
| configure | Can enter configuration mode using the configure command. |
| control | Can perform all control-level operations—all operations configured with the -control permission flags. |
| field | Reserved for field (debugging) support. |
| firewall | Can view the firewall filter configuration in configuration mode. |
| firewall-control | Can view and configure firewall filter information at the [edit firewall] hierarchy level. |
| floppy | Can read from and write to the removable media. |
| flow-tap | Can view the flow-tap configuration in configuration mode. |
| flow-tap control | Can view the flow-tap configuration in configuration mode and can configure flow-tap configuration information at the [edit services flow-tap] hierarchy level. |
| flow-tap-operation | Can make flow-tap requests to the router. For example, a Dynamic Tasking Control Protocol (DTCP) client must authenticate itself to JUNOS as an administrative user. That account must have flow-tap-operation permission. NOTE: flow-tap operation is not included in the all permission. |
| interface | Can view the interface configuration in configuration mode and with the show configuration operational mode command. |
| interface-control | Can view the interface configuration in configuration mode and with the show configuration operational mode command. |
| maintenance | Can perform system maintenance, including starting a local shell on the router and becoming the superuser in the shell using the su root command, and can halt and reboot the router using the request system commands. |
| network | Can access the network by entering the ping , SSH , telnet , and traceroute commands. |
| pgcp-session-mirroring | Can view pgcp session mirroring configuration. |
| reset | Can restart software processes using the restart command and can configure whether software processes are enabled or disabled at the [edit system processes] hierarchy level. |

Table 7: Login Class Permission Flags *(continued)*

| Permission Flag | Description |
|------------------|--|
| rollback | Can use the <code>rollback</code> command to return to a previously committed configuration other than the most recently committed one. |
| routing | Can view general routing, routing protocol, and routing policy configuration information in configuration and operational modes. |
| routing-control | Can view general routing, routing protocol, and routing policy configuration information and configure general routing at the <code>[edit routing-options]</code> hierarchy level, routing protocols at the <code>[edit protocols]</code> hierarchy level, and routing policy at the <code>[edit policy-options]</code> hierarchy level. |
| secret | Can view passwords and other authentication keys in the configuration. |
| secret-control | Can view passwords and other authentication keys in the configuration and can modify them in configuration mode. |
| security | Can view security configuration in configuration mode and with the <code>show configuration</code> operational mode command. |
| security-control | Can view and configure security information at the <code>[edit security]</code> hierarchy level. |
| shell | Can start a local shell on the router by entering the <code>start shell</code> command. |
| snmp | Can view Simple Network Management Protocol (SNMP) configuration information in configuration and operational modes. |
| snmp-control | Can view SNMP configuration information and modify SNMP configuration at the <code>[edit snmp]</code> hierarchy level. |
| system | Can view system-level information in configuration and operational modes. |
| system-control | Can view system-level configuration information and configure it at the <code>[edit system]</code> hierarchy level. |
| trace | Can view trace file settings in configuration and operational modes. |
| trace-control | Can view trace file settings and configure trace file properties. |
| view | Can use various commands to display current systemwide, routing table, and protocol-specific values and statistics. Cannot view secret configuration. |

Example: Configuring Access Privilege Levels

Create two access privilege classes on the router, one for configuring and viewing user accounts only and the other for configuring and viewing SNMP parameters only:

```
[edit]
system {
  login {
    class user-accounts {
      permissions [ configure admin admin-control ];
    }
    class network-mgmt {
```

```

        permissions [ configure snmp snmp-control ];
    }
}

```

Allowing or Denying Individual Commands

By default, all top-level CLI commands have associated access privilege levels. Users can execute only those commands and view only those statements for which they have access privileges. For each login class, you can explicitly deny or allow the use of operational and configuration mode commands that would otherwise be permitted or not allowed by a privilege level specified in the **permissions** statement. For information about CLI commands, see the *JUNOS CLI User Guide*.



NOTE: The all login class permission flags take precedence over extended regular expressions when a user with **rollback** permission issues the **rollback** command.

Expressions used to allow and deny commands for users on RADIUS/TACACS+ servers have been simplified. Instead of a single, long expression with multiple commands (for example, **allow-command=cmd1 cmd2 cmdn**), you can specify each command as a separate expression. This new syntax is valid for **allow-configuration**, **deny-configuration**, **allow-command**, **deny-command**, and **user-permissions**.

Users cannot issue the **load override** command when specifying an extended regular expression. Users can only issue the **merge**, **replace**, and **patch** configuration commands.

This section describes how to define a user's access privileges to individual operational and configuration mode commands. It contains the following topics:

- Specifying Operational Mode Commands on page 6
- Specifying Configuration Mode Commands on page 9

Specifying Operational Mode Commands

You can specify extended regular expressions with the **allow-command** and **deny-command** statements to define a user's access privileges to individual operational commands. Doing so takes precedence over login class permission flags set for a user. You can include one **deny-command** statement and one **allow-command** statement in each login class.

To explicitly allow an individual operational mode command that would otherwise be denied, include the **allow-command** statement at the **[edit system login class class-name]** hierarchy level:

```

[edit system login class class-name]
allow-command "regular-expression";

```

To explicitly deny an individual operational mode command that would otherwise be allowed, include the `deny-command` statement at the `[edit system login class class-name]` hierarchy level:

```
[edit system login class class-name]
deny-command "regular-expression";
```

If the regular expression contains any spaces, operators, or wildcard characters, enclose it in quotation marks. Regular expressions are not case-sensitive.

Use extended regular expressions to specify which operational mode commands are denied or allowed. You specify these regular expressions in the `allow-command` and `deny-command` statements at the `[edit system login class]` hierarchy level, or by specifying attributes specific to JUNOS in your TACACS+ or RADIUS authentication server configuration. You must specify that these regular expressions are sent as the value of Juniper Networks vendor-specific attributes. If regular expressions are received during TACACS+ or RADIUS authentication, they merge with any regular expressions configured on the local router. For information about TACACS+ or RADIUS authentication, see the *JUNOS System Basics Configuration Guide*.

Command regular expressions implement the extended (modern) regular expressions as defined in POSIX 1003.2. Table 8 on page 7 lists common regular expression operators.

Table 8: Common Regular Expression Operators to Allow or Deny Operational Mode Commands

| Operator | Match... |
|----------|---|
| | One of two or more terms separated by the pipe. Each term must be a complete standalone expression enclosed in parentheses (), with no spaces between the pipe and the adjacent parentheses. For example, (show system alarms) (show system software). |
| ^ | At the beginning of an expression, used to denote where the command begins, and where there might be some ambiguity. |
| \$ | Character at the end of a command. Used to denote a command that must be matched exactly up to that point. For example, allow-command "show interfaces\$" means that the user can issue the show interfaces command but cannot issue the show interfaces detail or show interfaces extensive command. |
| [] | Range of letters or digits. To separate the start and end of a range, use a hyphen (-). |
| () | A group of commands, indicating a complete, standalone expression to be evaluated; the result is then evaluated as part of the overall expression. Parentheses must always be used in conjunction with pipe operators as explained previously. |

If a regular expression contains a syntax error, it becomes invalid, and although the user can log in, the permission granted or denied by the regular expression does not take effect. When regular expressions configured on TACACS+ or RADIUS servers are merged with regular expressions configured on the router and the final expression has a syntax error, the overall result is an invalid regular expression. If a regular

expression does not contain any operators, all varieties of the command are allowed. For example, if the following statement is included in the configuration, the user can issue the commands `show interfaces detail` and `show interfaces extensive` in addition to showing an individual interface:

```
allow-command "show interfaces"
```

Example: Defining Access Privileges to Individual Operational Mode Commands

The following examples define user access privileges to individual operational mode commands.

If the following statement is included in the configuration and the user does not have the `configure` login class permission flag, the user can enter configuration mode:

```
[edit system login class class-name]
user@host# set allow-command configure
```

If the following statement is included in the configuration and the user does not have the `configure` login class permission flag, the user can enter configuration exclusive mode:

```
[edit system login class class-name]
user@host# set allow-command "configure exclusive"
```



NOTE: You cannot use runtime variables. In the following example, the runtime variable `1.2.3.4` cannot be used:

```
[edit system login class class-name]
user@host# set deny "show bgp neighbor 1.2.3.4"
```

Example: Configuring Access Privileges to Individual Operational Mode Commands

Configure permissions for individual operational mode commands:

```
[edit]
system {
  login {
    # This login class has operator privileges and the additional ability to
    # reboot the router.
    class operator-and-boot {
      permissions [ clear network reset trace view ];
      allow-commands "request system reboot";
    }
    # This login class has operator privileges but can't use any command that
    # begins with "set."
    class operator-no-set {
      permissions [ clear network reset trace view ];
      deny-commands "^set";
    }
  }
}
```

```

    }
    # This login class has operator privileges and can install software but not
    # view bgp information, and can invoke show route without specifying commands
    # or arguments under it.
    class operator-and-install-but-no-bgp {
        permissions [ clear network reset trace view ];
        allow-commands "(request system software add)|(show route)";
        deny-commands "show bgp";
    }
}
}

```

Specifying Configuration Mode Commands

You can specify extended regular expressions with the **allow-configuration** and **deny-configuration** attributes to define user access privileges to parts of the configuration hierarchy or individual configuration mode commands. Doing so overrides any login class permission flags set for a user. You can also use wildcards to restrict access. When you define access privileges to parts of the configuration hierarchy or individual configuration mode commands, do the following:

- Specify the full paths in the extended regular expressions with the **allow-configuration** and **deny-configuration** attributes.
- Enclose parentheses around an extended regular expression that connects two or more expressions with the pipe | symbol. For example:

```

[edit system login class class-name]
user@host# set deny-configuration "(system login class) | (system services)"

```



NOTE: Each expression separated by a pipe | symbol must be a complete standalone expression, and must be enclosed with parentheses (). Do not use spaces between regular expressions separated by parentheses and connected with the pipe | symbol. You cannot define access to keywords such as **set**, **edit**, or **activate**.

For more information about how to use wildcards, see Table 9 on page 10.

To explicitly allow an individual configuration mode command that would otherwise be denied, include the **allow-configuration** statement at the [edit system login class *class-name*] hierarchy level:

```

[edit system login class class-name]
allow-configuration "regular-expression";

```

To explicitly deny an individual configuration mode command that would otherwise be allowed, include the **deny-configuration** statement at the [edit system login class *class-name*] hierarchy level:

```

[edit system login class class-name]
deny-configuration "regular-expression";

```

If the regular expression contains any spaces, operators, or wildcard characters, enclose it in quotation marks. Regular expressions are not case-sensitive.

You can include one **deny-configuration** and one **allow-configuration** statement in each login class.

Use extended regular expressions to specify which configuration mode commands are denied or allowed. You specify these regular expressions in the **allow-configuration** and **deny-configuration** statements at the **[edit system login class]** hierarchy level, or by specifying attributes, that are specific to JUNOS, in your TACACS+ or RADIUS authentication server's configuration. You must specify that these regular expressions are sent as the value of Juniper Networks vendor-specific attributes. If regular expressions are received during TACACS+ or RADIUS authentication, they merge with any regular expressions configured on the local router. For information about TACACS+ or RADIUS authentication, see the *JUNOS System Basics Configuration Guide*.

Command regular expressions implement the extended (modern) regular expressions, as defined in POSIX 1003.2. Table 9 on page 10 lists common regular expression operators.

Table 9: Configuration Mode Commands—Common Regular Expression Operators

| Operator | Match... |
|----------|---|
| | One of two or more terms separated by the pipe. Each term must be a complete standalone expression enclosed in parentheses (), with no spaces between the pipe and the adjacent parentheses. For example, (show system alarms) (show system software). |
| ^ | At the beginning of an expression, used to denote where the command begins, and where there might be some ambiguity. |
| \$ | Character at the end of a command. Used to denote a command that must be matched exactly up to that point. For example, allow-command "show interfaces\$" means that the user can issue the show interfaces command but cannot issue the show interfaces detail or show interfaces extensive command. |
| [] | Range of letters or digits. To separate the start and end of a range, use a hyphen (-). |
| () | A group of commands indicating a complete, standalone expression to be evaluated; the result is then evaluated as part of the overall expression. Parentheses must always be used in conjunction with pipe operators as explained previously. |
| * | Zero or more terms. |
| + | One or more terms. |
| . | Any character except for a space " ". |

Example: Defining Access Privileges to Individual Configuration Mode Commands

The following examples show how to configure access privileges to individual configuration mode commands.

If the following statement is included in the configuration and the user's login class permission flag is set to **all**, the user cannot configure telnet parameters:

```
[edit system login class class-name]
user@host# set deny-configuration "system services telnet"
```

If the following statement is included in the configuration and the user's login class permission flag is set to **all**, the user cannot issue login class commands within any login class whose name begins with the letter *m*:

```
[edit system login class class-name]
user@host# set deny-configuration "system login class m.*"
```

If the following statement is included in the configuration and the user's login class permission flag is set to **all**, the user cannot issue configuration mode commands at the system login class or system services hierarchy levels:

```
[edit system login class class-name]
user@host# set deny-configuration "(system login class) | (system services)"
```

Example: Configuring Access Privileges to Individual Configuration Mode Commands

Configure permissions for individual configuration mode commands:

```
[edit]
system {
  login {
    # This login class has operator privileges and the additional ability to
    # issue commands at the system services hierarchy.
    class only-system-services {
      permissions [ configure ];
      allow-configuration "system services";
    }
    # This login class has operator privileges but can't issue any system
    # services commands.
    class all-except-system-services {
      permissions [ all ];
      deny-configuration "system services";
    }
  }
}
```


Chapter 2

User Permission Flags

This chapter provides details about the permission flags that grant access to operational mode commands and configuration statements.



NOTE: Only permission flags that grant a specific set of access privileges are listed in this chapter. Those permission flags that provide no access, or provide access to all commands and statements do not appear in this list. For a complete list of permission flags, see Table 7 on page 4.

Permission flags are used to grant a user access to operational commands and configuration statements. By specifying a specific permission flag on that user's login class at the [edit system login class] hierarchy level, you grant the user access to the corresponding commands and configuration statements. To grant access to all commands and configuration statements, use the **all** permission flag.

For permission flags that grant access to configuration statements, the flag grants read-only privilege to that configuration. For example, the **interface** permission flag grants read-only access to the [edit interfaces] hierarchy level. The **-control** form of the flag grants read-write access to that configuration. Using the preceding example, **interface-control** grants read-write access to the [edit interfaces] hierarchy level.



NOTE: Each command listed represents that command and all subcommands with that command as a prefix. Each configuration statement listed represents the top of the configuration hierarchy to which that flag grants access.

The permission flags that effect access to operational mode commands and configuration statements are listed in alphabetical order in this chapter. Each permission flag is listed with the operational commands and configuration statements for which that flag grants access.

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- firewall on page 20

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access

Can view access configuration in configuration mode.

Commands No associated CLI commands.

Statements

- [edit access]
- [edit logical-systems access]

admin

Can view user account information in configuration mode.

Commands

- show system audit

Statements

- [edit system]
- [edit system accounting]
- [edit system diag-port-authentication]
- [edit system extensions]
- [edit system login]
- [edit system pic-console-authentication]
- [edit system root-authentication]
- [edit system services ssh protocol-version]
- [edit system services ssh root-login]

clear

Can clear (delete) information learned from the network that is stored in various network databases.

Commands

```
clear
clear ancp
clear ancp neighbor
    <clear-ancp-neighbor-connection>

clear arp
    <clear-arp-table>

clear bfd
clear bfd adaptation
clear bfd adaptation address
clear bfd adaptation discriminator
clear bfd session
clear bfd session address
clear bfd session discriminator
clear bgp
clear bgp damping
clear bgp neighbor
clear bgp table
clear bridge
clear bridge mac-table
    <clear-bridge-mac-table>

clear bridge mac-table interface
    <clear-bridge-interface-mac-table>

clear cli
clear cli logical-system
clear database-replication
clear database-replication statistics
    <clear-database-replication-statistics-information>

clear dhcp
clear dhcp relay
clear dhcp relay binding
    <clear-dhcp-relay-binding-information>

clear dhcp relay binding interface
clear dhcp relay statistics
    <clear-dhcp-relay-statistics-information>

clear dhcp server
clear dhcp server binding
    <clear-dhcp-server-binding-information>

clear dhcp server binding interface
clear dhcp server statistics
    <clear-server-statistics-information>
```

```

clear dot1x
clear dot1x interface
    <clear-dot1x-interface-session>

clear dot1x mac-address
    <clear-dot1x-mac-session>

clear error
clear error bpdu
clear error bpdu interface
clear error mac-rewrite
clear error mac-rewrite interface
clear esis
clear esis adjacency
clear esis statistics
clear firewall
clear firewall all
clear helper
clear helper statistics
    <clear-helper-statistics-information>

clear igmp
clear igmp membership
clear igmp snooping
clear igmp snooping membership
clear igmp snooping membership bridge-domain
clear igmp snooping statistics
clear igmp snooping statistics bridge-domain
clear igmp statistics
clear ike
clear ike security-associations
clear ilmi
clear ilmi statistics
clear interfaces
clear interfaces interface-set
clear interfaces interface-set statistics
clear interfaces interface-set statistics all
clear interfaces interval
clear interfaces mac-database
clear interfaces mac-database statistics
clear interfaces mac-database statistics all
clear interfaces statistics
    <clear-interfaces-statistics>

clear interfaces statistics all
    <clear-interfaces-statistics-all>

clear ipsec
clear ipsec security-associations
clear ipv6
clear ipv6 neighbors
    <clear-ipv6-nd-information>

clear ipv6 neighbors all
clear isis
clear isis adjacency

```

```

clear isis database
clear isis overload
clear isis statistics
clear l2-learning
clear l2-learning mac-move-buffer
clear ldp
clear ldp neighbor
clear ldp session
clear mld
clear mld membership
clear mld statistics
clear mobile-ip
clear mobile-ip binding
clear mobile-ip binding all
    <clear-binding-all>

clear mobile-ip binding ip-address
    <clear-binding-ip>

clear mobile-ip binding nai
    <clear-binding-nai>

clear mobile-ip visitor
clear mobile-ip visitor all
    <clear-visitor-all>

clear mobile-ip visitor ip-address
    <clear-visitor-ip>

clear mobile-ip visitor nai
    <clear-visitor-nai>

clear mpls
clear mpls lsp
clear mpls traceroute
clear mpls traceroute database
clear mpls traceroute database ldp
clear msdp
clear msdp cache
clear msdp statistics
clear multicast
clear multicast bandwidth-admission
clear multicast scope
clear multicast sessions
clear multicast statistics
clear network-access
clear network-access aaa
clear network-access aaa subscriber
    <clear-aaa-subscriber-table>

clear network-access aaa subscriber statistics
    <clear-aaa-subscriber-table-specific-statistics>

clear network-access requests
clear network-access requests pending
    <clear-authentication-pending-table>

```

```
clear network-access requests statistics
  <clear-authentication-statistics>

clear network-access securid-node-secret-file
  <clear-node-secret-file>

clear oam
clear oam ethernet
clear oam ethernet connectivity-fault-management
clear oam ethernet connectivity-fault-management path-database
clear oam ethernet connectivity-fault-management statistics
clear oam ethernet link-fault-management
clear oam ethernet link-fault-management state
clear oam ethernet link-fault-management statistics
clear oam ethernet link-fault-management statistics action-profile
clear ospf
clear ospf database
clear ospf io-statistics
clear ospf neighbor
clear ospf overload
clear ospf statistics
clear ospf3
clear ospf3 database
clear ospf3 io-statistics
clear ospf3 neighbor
clear ospf3 statistics
clear pgm
clear pgm negative-acknowledgments
clear pgm source-path-messages
clear pgm statistics
clear pim
clear pim join
clear pim register
clear pim statistics
clear ppp
clear ppp statistics
  <clear-ppp-statistics-information>

clear pppoe
clear pppoe sessions
clear pppoe statistics
clear pppoe statistics interfaces
clear protection-group
clear protection-group ethernet-ring
clear protection-group ethernet-ring statistics
clear rip
clear rip general-statistics
clear rip statistics
clear ripng
clear ripng general-statistics
clear ripng statistics
clear rsvp
clear rsvp session
clear rsvp statistics
clear services application-identification
```



```
clear services application-identification application-system-cache
<clear-appid-application-system-cache>
```

```
clear services application-identification counter
<clear-appid-counter>
```

```
clear services border-signaling-gateway
clear services border-signaling-gateway statistics
<clear-service-border-signaling-gateway-statistics>
```

```
clear services ipsec-vpn ike
clear services ipsec-vpn ike security-associations
clear services pgcp
clear services pgcp gates
<clear-service-pgcp-gates>
```

```
clear services pgcp statistics
<clear-service-pgcp-statistics>
```

```
clear snmp
clear snmp statistics
clear spanning-tree
clear spanning-tree protocol-migration
clear spanning-tree protocol-migration interface
clear spanning-tree statistics
clear spanning-tree statistics interface
clear spanning-tree statistics routing-instance
clear spanning-tree topology-change-counter
clear system
```

```
<clear-dhcp-binding-information>
```

```
<clear-dhcp-conflict-information>
```

```
<clear-dhcp-statistics-information>
```

```
clear vpls
clear vpls mac-address
clear vpls mac-table
<clear-vpls-mac-table>
```

```
clear vpls mac-table interface
<clear-vpls-interface-mac-table>
```

```
clear vrrp
clear vrrp interface
request services ipsec-vpn ipsec
request services ipsec-vpn ipsec switch
request services ipsec-vpn ipsec switch tunnel
```

Statements No associated configuration statements.

configure

Can enter configuration mode.

Commands

configure
request snmp

Statements No associated configuration statements.

control

Can perform all control-level operations; can modify any configuration.

Commands

test configuration

Statements No associated configuration statements.

firewall

Can view firewall filter configuration in configuration mode.

Commands

show firewall
 <get-firewall-information>

show firewall counter
 <get-firewall-counter-information>

show firewall filter
 <get-firewall-filter-information>

show firewall log
 <get-firewall-log-information>

show firewall prefix-action-stats
 <get-firewall-prefix-action-information>

show policer

Statements

[edit firewall]
[edit logical-systems firewall]

flow-tap

Can view the flow-tap configuration in configuration mode.

Commands No associated CLI commands.

Statements

[edit services flow-tap]
 [edit services radius-flow-tap]
 [edit system services flow-tap-dtcp]

interface

Can view interface configuration in configuration mode.

Commands No associated CLI commands.

Statements

[edit accounting-options]
 [edit chassis]
 [edit class-of-service]
 [edit class-of-service interfaces]
 [edit dynamic-profiles class-of-service]
 [edit dynamic-profiles class-of-service interfaces]
 [edit dynamic-profiles interfaces]
 [edit forwarding-options]
 [edit interfaces]
 [edit logical-systems forwarding-options]
 [edit logical-systems interfaces]
 [edit logical-systems routing-instances instance system services dhcp-local-server]
 [edit logical-systems system services dhcp-local-server]
 [edit routing-instances instance system services dhcp-local-server]
 [edit services logging]
 [edit services radius-flow-tap]
 [edit services radius-flow-tap interfaces]
 [edit system services dhcp-local-server]

maintenance

Can perform system maintenance, including starting a local shell on the router and becoming the superuser in the shell, and can halt and reboot the router.

Commands clear system reboot
 <clear-reboot>

file archive
 monitor traffic
 request chassis cb
 request chassis cfeb
 request chassis cfeb master
 request chassis fabric
 request chassis fabric plane

```

request chassis feb
  <request-feb>

request chassis fpc
request chassis mcs
request chassis pcg
request chassis pic
request chassis redundancy
request chassis redundancy feb
  <request-redundancy-feb>

request chassis scg
request chassis sfm
request chassis sfm master
request chassis sib
request chassis spmb
request chassis ssb
request chassis ssb master
request chassis synchronization
request chassis synchronization switch
request chassis vcpu
request chassis vnpu
request l2circuit-switchover
request mpls
request mpls lsp
request mpls lsp adjust-autobandwidth
request security
request security certificate
request security certificate enroll
request security idp
  <request-idp-security-package-load>

request security idp security-package
request security idp security-package download
  <request-idp-security-package-download>

request security idp security-package download version
  <request-idp-security-package-download-version>

request security idp security-package install
  <request-idp-security-package-install>

request security idp ssl-inspection
request security idp ssl-inspection key
request security idp ssl-inspection key add
  <request-idp-ssl-key-add>

request security idp ssl-inspection key delete
  <request-idp-ssl-key-delete>

request security key-pair
request security pki
request security pki ca-certificate
request security pki ca-certificate enroll
request security pki ca-certificate load
request security pki crl

```

```

request security pki crt load
request security pki generate-certificate-request
request security pki generate-key-pair
request security pki local-certificate
request security pki local-certificate enroll
request security pki local-certificate load
request services fips
request services fips authorize
request services fips authorize pic
request services fips zeroize
request services fips zeroize pic
request services flow-collector
request services flow-collector change-destination
    <request-services-flow-collector-destination>

request services ggsn
request services ggsn pdp
request services ggsn pdp terminate
request services ggsn pdp terminate apn
    <request-ggsn-terminate-contexts-apn>

request services ggsn pdp terminate context
    <request-ggsn-terminate-context>

request services ggsn pdp terminate context msisdn
    <request-ggsn-terminate-msisdn-context>

request services ggsn restart
request services ggsn restart interface
    <request-ggsn-restart-interface>

request services ggsn restart node
    <request-ggsn-restart-node>

request services ggsn start
request services ggsn start interface
request services ggsn stop
request services ggsn stop interface
    <request-ggsn-stop-interface>

request services ggsn stop node
    <request-ggsn-stop-node>

request services ggsn trace
request services ggsn trace software
request services ggsn trace software update
    <request-ggsn-software-update>

request services ggsn trace start
request services ggsn trace start imsi
    <request-ggsn-start-imsi-trace>

request services ggsn trace start msisdn
    <request-ggsn-start-msisdn-trace>

request services ggsn trace stop

```

```

request services ggsn trace stop all
<request-ggsn-stop-trace-activity>

request services ggsn trace stop imsi
<request-ggsn-stop-imsi-trace>

request services ggsn trace stop msisdn
<request-ggsn-stop-msisdn-trace>

request support
request support information
request system
request system certificate
request system certificate add
request system configuration
request system configuration rescue
request system configuration rescue delete
<request-delete-rescue-configuration>

request system configuration rescue save
<request-save-rescue-configuration>

request system firmware
request system firmware downgrade
request system firmware downgrade feb
request system firmware downgrade fpc
request system firmware downgrade pic
request system firmware downgrade scb
request system firmware downgrade sfm
request system firmware downgrade spmb
request system firmware downgrade ssb
request system firmware downgrade vcpu
request system firmware upgrade
request system firmware upgrade feb
request system firmware upgrade fpc
request system firmware upgrade pic
request system firmware upgrade scb
request system firmware upgrade sfm
request system firmware upgrade spmb
request system firmware upgrade ssb
request system firmware upgrade vcpu
request system halt
<request-halt>

request system license
request system license add
request system license delete
<request-license-delete>

request system license save
request system license update
request system logout
request system partition
request system partition abort
request system partition compact-flash
request system partition hard-disk

```

```

request system power-off
  <request-power-off>

request system power-on
request system power-on other-routing-engine
request system reboot
  <request-reboot>

request system scripts
request system scripts add
  <request-scripts-package-add>

request system scripts convert
request system scripts convert slax-to-xslt
request system scripts convert xslt-to-slax
request system scripts delete
  <request-scripts-package-delete>

request system scripts event-scripts
request system scripts event-scripts reload
  <reload-event-scripts>

request system scripts rollback
  <request-scripts-package-rollback>

request system snapshot
  <request-snapshot>

request system software
request system software abort
request system software abort in-service-upgrade
  <abort-in-service-upgrade>

request system software add
  <request-package-add>

request system software delete
  <request-package-delete>

request system software delete-backup
  <request-package-delete-backup>

request system software in-service-upgrade
  <request-package-in-service-upgrade>

request system software rollback
  <request-package-rollback>

request system software validate
  <request-package-validate>

request system storage
request system storage cleanup
  <request-system-storage-cleanup>

request system zeroize

```

```

request vpls-switchover
set date
set date ntp
show services fips
start shell
start shell user
test access
test access profile
    <get-radius-profile-access-test-result>

test access radius-server
    <get-radius-server-access-test-result>

```

Statements

```

[edit event-options]
[edit security ipsec internal]
[edit services dynamic-flow-capture traceoptions]
[edit services ggsn]
[edit services ggsn rule-space]
[edit system processes daemon-process command]
[edit system scripts]
[edit system scripts commit]
[edit system scripts op]

```

network

Can access the network using the ping, SSH, telnet, and traceroute Commands.

Commands

```

mtrace
mtrace from-source
mtrace monitor
mtrace to-gateway
ping
    <ping>

ping atm
ping clns
ping ethernet
ping mpls
ping mpls l2circuit
ping mpls l2circuit interface
ping mpls l2circuit virtual-circuit
ping mpls l2vpn
ping mpls l2vpn instance
ping mpls l2vpn interface
ping mpls l3vpn
ping mpls ldp
ping mpls lsp-end-point
ping mpls rsvp
ping vpls
ping vpls instance
request routing-engine
request routing-engine login

```



```
request routing-engine login other-routing-engine
request services flow-collector
request services flow-collector test-file-transfer
  <request-services-flow-collector-test-file-transfer>
```

```
show host
show interfaces level-extra descriptions
show multicast mrinfo
ssh
telnet
traceroute
  <traceroute>
```

```
traceroute clns
traceroute ethernet
traceroute monitor
traceroute mpls
traceroute mpls ldp
traceroute mpls rsvp
```

Statements No associated configuration statements.

pgcp-session-mirroring

Can view pgcp session mirroring configuration.

Commands

```
show services pgcp gates gate-id display session-mirroring
```

Statements

```
[edit services pgcp gateway session-mirroring]
[edit services pgcp session-mirroring]
```

reset

Can restart software processes, and can configure whether software processes are enabled or disabled.

Commands

```
request chassis cfeb master switch
request chassis cfeb master switch no-confirm
request chassis sfm master switch
request chassis sfm master switch no-confirm
request chassis ssb master switch
request chassis ssb master switch no-confirm
restart
restart kernel-replication
restart routing
restart web-management
```

Statements No associated configuration statements.

routing

Can view general routing, routing protocol, and routing policy configuration information.

Commands No associated CLI commands.

Statements

```
[edit bridge-domains]
[edit bridge-domains domain multicast-snooping-options]
[edit bridge-domains domain multicast-snooping-options traceoptions]
[edit dynamic-profiles protocols igmp traceoptions]
[edit logical-systems policy-options]
[edit logical-systems protocols]
[edit logical-systems protocols bgp group neighbor traceoptions]
[edit logical-systems protocols bgp group traceoptions]
[edit logical-systems protocols bgp traceoptions]
[edit logical-systems protocols dvmrp traceoptions]
[edit logical-systems protocols esis traceoptions]
[edit logical-systems protocols igmp traceoptions]
[edit logical-systems protocols igmp-host traceoptions]
[edit logical-systems protocols isis traceoptions]
[edit logical-systems protocols l2circuit traceoptions]
[edit logical-systems protocols l2iw traceoptions]
[edit logical-systems protocols ldp traceoptions]
[edit logical-systems protocols mld traceoptions]
[edit logical-systems protocols mld-host traceoptions]
[edit logical-systems protocols msdp group peer traceoptions]
[edit logical-systems protocols msdp group traceoptions]
[edit logical-systems protocols msdp peer traceoptions]
[edit logical-systems protocols msdp traceoptions]
[edit logical-systems protocols ospf traceoptions]
[edit logical-systems protocols pim traceoptions]
[edit logical-systems protocols rip traceoptions]
[edit logical-systems protocols ripng traceoptions]
[edit logical-systems protocols router-advertisement traceoptions]
[edit logical-systems protocols router-discovery traceoptions]
[edit logical-systems protocols rsvp traceoptions]
[edit logical-systems routing-instances]
[edit logical-systems routing-instances instance bridge-domains]
[edit logical-systems routing-instances instance bridge-domains domain
multicast-snooping-options]
[edit logical-systems routing-instances instance bridge-domains domain
multicast-snooping-options traceoptions]
[edit logical-systems routing-instances instance multicast-snooping-options]
[edit logical-systems routing-instances instance multicast-snooping-options
traceoptions]
[edit logical-systems routing-instances instance protocols]
[edit logical-systems routing-instances instance protocols bgp group neighbor
traceoptions]
[edit logical-systems routing-instances instance protocols bgp group traceoptions]
[edit logical-systems routing-instances instance protocols bgp traceoptions]
```

```

[edit logical-systems routing-instances instance protocols esis traceoptions]
[edit logical-systems routing-instances instance protocols isis traceoptions]
[edit logical-systems routing-instances instance protocols l2vpn traceoptions]
[edit logical-systems routing-instances instance protocols ldp traceoptions]
[edit logical-systems routing-instances instance protocols msdp group peer
traceoptions]
[edit logical-systems routing-instances instance protocols msdp group traceoptions]
[edit logical-systems routing-instances instance protocols msdp peer traceoptions]
[edit logical-systems routing-instances instance protocols msdp traceoptions]
[edit logical-systems routing-instances instance protocols mvpn traceoptions]
[edit logical-systems routing-instances instance protocols ospf traceoptions]
[edit logical-systems routing-instances instance protocols pim traceoptions]
[edit logical-systems routing-instances instance protocols rip traceoptions]
[edit logical-systems routing-instances instance protocols ripng traceoptions]
[edit logical-systems routing-instances instance protocols router-discovery
traceoptions]
[edit logical-systems routing-instances instance protocols vpls traceoptions]
[edit logical-systems routing-instances instance routing-options]
[edit logical-systems routing-instances instance routing-options multicast traceoptions]
[edit logical-systems routing-instances instance routing-options traceoptions]
[edit logical-systems routing-instances instance switch-options]
[edit logical-systems routing-options]
[edit logical-systems routing-options multicast traceoptions]
[edit logical-systems routing-options traceoptions]
[edit multicast-snooping-options]
[edit multicast-snooping-options traceoptions]
[edit policy-options]
[edit protocols]
[edit protocols bgp group neighbor traceoptions]
[edit protocols bgp group traceoptions]
[edit protocols bgp traceoptions]
[edit protocols dvmrp traceoptions]
[edit protocols esis traceoptions]
[edit protocols igmp traceoptions]
[edit protocols igmp-host traceoptions]
[edit protocols isis traceoptions]
[edit protocols l2circuit traceoptions]
[edit protocols l2iw traceoptions]
[edit protocols ldp traceoptions]
[edit protocols mld traceoptions]
[edit protocols mld-host traceoptions]
[edit protocols msdp group peer traceoptions]
[edit protocols msdp group traceoptions]
[edit protocols msdp peer traceoptions]
[edit protocols msdp traceoptions]
[edit protocols ospf traceoptions]
[edit protocols pim traceoptions]
[edit protocols rip traceoptions]
[edit protocols ripng traceoptions]
[edit protocols router-advertisement traceoptions]
[edit protocols router-discovery traceoptions]
[edit protocols rsvp traceoptions]
[edit routing-instances]
[edit routing-instances instance bridge-domains]
[edit routing-instances instance bridge-domains domain multicast-snooping-options]
[edit routing-instances instance bridge-domains domain multicast-snooping-options]

```

```

traceoptions]
[edit routing-instances instance multicast-snooping-options]
[edit routing-instances instance multicast-snooping-options traceoptions]
[edit routing-instances instance protocols]
[edit routing-instances instance protocols bgp group neighbor traceoptions]
[edit routing-instances instance protocols bgp group traceoptions]
[edit routing-instances instance protocols bgp traceoptions]
[edit routing-instances instance protocols esis traceoptions]
[edit routing-instances instance protocols isis traceoptions]
[edit routing-instances instance protocols l2vpn traceoptions]
[edit routing-instances instance protocols ldp traceoptions]
[edit routing-instances instance protocols msdp group peer traceoptions]
[edit routing-instances instance protocols msdp group traceoptions]
[edit routing-instances instance protocols msdp peer traceoptions]
[edit routing-instances instance protocols msdp traceoptions]
[edit routing-instances instance protocols mvpn traceoptions]
[edit routing-instances instance protocols ospf traceoptions]
[edit routing-instances instance protocols pim traceoptions]
[edit routing-instances instance protocols rip traceoptions]
[edit routing-instances instance protocols ripng traceoptions]
[edit routing-instances instance protocols router-discovery traceoptions]
[edit routing-instances instance protocols vpls traceoptions]
[edit routing-instances instance routing-options]
[edit routing-instances instance routing-options multicast traceoptions]
[edit routing-instances instance routing-options traceoptions]
[edit routing-instances instance switch-options]
[edit routing-options]
[edit routing-options multicast traceoptions]
[edit routing-options traceoptions]
[edit switch-options]

```

security

Can view security configuration.

Commands

```

clear security
clear security idp
clear security idp application-identification
clear security idp application-identification application-system-cache
    <clear-idp-application-system-cache>

clear security idp attack
clear security idp attack table
    <clear-idp-attack-table>

clear security idp counters
    <clear-idp-counters-by-counter-class>

clear security idp ssl-inspection
clear security idp ssl-inspection session-id-cache
    <clear-idp-ssl-session-cache-information>

clear security pki

```

```

clear security pki ca-certificate
clear security pki certificate-request
clear security pki crl
clear security pki local-certificate
request security
request security certificate
request security certificate enroll
request security idp
  <request-idp-security-package-load>

request security idp security-package
request security idp security-package download
  <request-idp-security-package-download>

request security idp security-package download version
  <request-idp-security-package-download-version>

request security idp security-package install
  <request-idp-security-package-install>

request security idp ssl-inspection
request security idp ssl-inspection key
request security idp ssl-inspection key add
  <request-idp-ssl-key-add>

request security idp ssl-inspection key delete
  <request-idp-ssl-key-delete>

request security key-pair
request security pki
request security pki ca-certificate
request security pki ca-certificate enroll
request security pki ca-certificate load
request security pki crl
request security pki crl load
request security pki generate-certificate-request
request security pki generate-key-pair
request security pki local-certificate
request security pki local-certificate enroll
request security pki local-certificate load
request system set-encryption-key
show security
show security idp
show security idp application-identification
show security idp application-identification application-system-cache
  <get-idp-application-system-cache>

show security idp attack
show security idp attack table
  <get-idp-attack-table-information>

show security idp counters
  <get-idp-counter-information>

show security idp memory
  <get-idp-memory-information>

```

```

show security idp security-package-version
  <get-idp-security-package-information>

show security idp ssl-inspection
show security idp ssl-inspection key
  <get-idp-ssl-key-information>

show security idp ssl-inspection session-id-cache
  <get-idp-ssl-session-cache-information>

show security idp status
  <get-idp-status-information>

show security pki
show security pki ca-certificate
show security pki certificate-request
show security pki crl
show security pki local-certificate

```

Statements

```
[edit security]
```

shell

Can start a local shell on the router.

Commands

```

start shell
start shell user

```

Statements

No associated configuration statements.

snmp

Can view Simple Network Management Protocol (SNMP) configuration.

Commands

No associated CLI commands.

Statements

```
[edit snmp]
```

system

Can view system-level configuration information.

Commands

```

request chassis synchronization
request chassis synchronization switch

```

Statements

```

[edit applications]
[edit chassis system-domains]
[edit forwarding-options helpers bootp]
[edit forwarding-options helpers domain]
[edit forwarding-options helpers port]
[edit forwarding-options helpers tftp]
[edit logical-systems]
[edit logical-systems routing-instances instance forwarding-options helpers bootp]
[edit logical-systems routing-instances instance forwarding-options helpers domain]
[edit logical-systems routing-instances instance forwarding-options helpers port]
[edit logical-systems routing-instances instance forwarding-options helpers tftp]
[edit logical-systems routing-instances instance routing-options fate-sharing]
[edit logical-systems routing-options fate-sharing]
[edit logical-systems system]
[edit routing-instances instance forwarding-options helpers bootp]
[edit routing-instances instance forwarding-options helpers domain]
[edit routing-instances instance forwarding-options helpers port]
[edit routing-instances instance forwarding-options helpers tftp]
[edit routing-instances instance routing-options fate-sharing]
[edit routing-options fate-sharing]
[edit services]
[edit services ggsn charging charging-log traceoptions]
[edit system]
[edit system archival]
[edit system backup-router]
[edit system compress-configuration-files]
[edit system default-address-selection]
[edit system domain-name]
[edit system domain-search]
[edit system encrypt-configuration-files]
[edit system host-name]
[edit system inet6-backup-router]
[edit system internet-options gre-path-mtu-discovery]
[edit system internet-options ipip-path-mtu-discovery]
[edit system internet-options ipv6-path-mtu-discovery]
[edit system internet-options ipv6-path-mtu-discovery-timeout]
[edit system internet-options ipv6-reject-zero-hop-limit]
[edit system internet-options no-tcp-reset]
[edit system internet-options no-tcp-rfc1323]
[edit system internet-options no-tcp-rfc1323-paws]
[edit system internet-options path-mtu-discovery]
[edit system internet-options source-port upper-limit]
[edit system internet-options source-quench]
[edit system internet-options tcp-drop-synfin-set]
[edit system internet-options tcp-mss]
[edit system license]
[edit system max-configurations-on-flash]
[edit system mirror-flash-on-disk]
[edit system name-server]
[edit system no-arp-learn]
[edit system no-multicast-echo]
[edit system no-redirects]
[edit system ports auxiliary log-out-on-disconnect]
[edit system ports console log-out-on-disconnect]
[edit system processes]

```

```
[edit system saved-core-context]
[edit system saved-core-files]
[edit system services]
[edit system services web-management]
[edit system static-host-mapping]
[edit system syslog]
[edit system time-zone]
```

trace

Can view trace file settings and configure trace file properties.

Commands

```
clear log
monitor
monitor interface
monitor interface traffic
monitor label-switched-path
monitor list
monitor start
monitor stop
show log
show log user
  <get-syslog-events>
```

Statements

```
[edit bridge-domains domain forwarding-options dhcp-relay traceoptions]
[edit bridge-domains domain multicast-snooping-options traceoptions]
[edit bridge-domains domain protocols igmp-snooping traceoptions]
[edit dynamic-profiles protocols igmp traceoptions]
[edit forwarding-options dhcp-relay traceoptions]
[edit jnx-example traceoptions]
[edit logical-systems forwarding-options dhcp-relay traceoptions]
[edit logical-systems protocols ancp traceoptions]
[edit logical-systems protocols bgp group neighbor traceoptions]
[edit logical-systems protocols bgp group traceoptions]
[edit logical-systems protocols bgp traceoptions]
[edit logical-systems protocols dot1x traceoptions]
[edit logical-systems protocols dvmp traceoptions]
[edit logical-systems protocols esis traceoptions]
[edit logical-systems protocols igmp traceoptions]
[edit logical-systems protocols igmp-host traceoptions]
[edit logical-systems protocols ilmi traceoptions]
[edit logical-systems protocols isis traceoptions]
[edit logical-systems protocols l2circuit traceoptions]
[edit logical-systems protocols l2iw traceoptions]
[edit logical-systems protocols lacp traceoptions]
[edit logical-systems protocols layer2-control traceoptions]
[edit logical-systems protocols ldp traceoptions]
[edit logical-systems protocols mld traceoptions]
[edit logical-systems protocols mld-host traceoptions]
[edit logical-systems protocols mpls label-switched-path oam traceoptions]
[edit logical-systems protocols mpls label-switched-path primary oam traceoptions]
[edit logical-systems protocols mpls label-switched-path secondary oam traceoptions]
```



```

[edit logical-systems protocols mpls oam traceoptions]
[edit logical-systems protocols msdp group peer traceoptions]
[edit logical-systems protocols msdp group traceoptions]
[edit logical-systems protocols msdp peer traceoptions]
[edit logical-systems protocols msdp traceoptions]
[edit logical-systems protocols neighbor-discovery secure traceoptions]
[edit logical-systems protocols oam ethernet connectivity-fault-management
traceoptions]
[edit logical-systems protocols oam ethernet link-fault-management traceoptions]
[edit logical-systems protocols ospf traceoptions]
[edit logical-systems protocols pim traceoptions]
[edit logical-systems protocols ppp monitor-session]
[edit logical-systems protocols ppp traceoptions]
[edit logical-systems protocols rip traceoptions]
[edit logical-systems protocols ripng traceoptions]
[edit logical-systems protocols router-advertisement traceoptions]
[edit logical-systems protocols router-discovery traceoptions]
[edit logical-systems protocols rsvp traceoptions]
[edit logical-systems routing-instances instance bridge-domains domain
forwarding-options dhcp-relay traceoptions]
[edit logical-systems routing-instances instance bridge-domains domain
multicast-snooping-options traceoptions]
[edit logical-systems routing-instances instance bridge-domains domain protocols
igmp-snooping traceoptions]
[edit logical-systems routing-instances instance forwarding-options dhcp-relay
traceoptions]
[edit logical-systems routing-instances instance multicast-snooping-options
traceoptions]
[edit logical-systems routing-instances instance protocols bgp group neighbor
traceoptions]
[edit logical-systems routing-instances instance protocols bgp group traceoptions]
[edit logical-systems routing-instances instance protocols bgp traceoptions]
[edit logical-systems routing-instances instance protocols esis traceoptions]
[edit logical-systems routing-instances instance protocols igmp-snooping traceoptions]
[edit logical-systems routing-instances instance protocols isis traceoptions]
[edit logical-systems routing-instances instance protocols l2vpn traceoptions]
[edit logical-systems routing-instances instance protocols ldp traceoptions]
[edit logical-systems routing-instances instance protocols msdp group peer
traceoptions]
[edit logical-systems routing-instances instance protocols msdp group traceoptions]
[edit logical-systems routing-instances instance protocols msdp peer traceoptions]
[edit logical-systems routing-instances instance protocols msdp traceoptions]
[edit logical-systems routing-instances instance protocols mvpn traceoptions]
[edit logical-systems routing-instances instance protocols ospf traceoptions]
[edit logical-systems routing-instances instance protocols pim traceoptions]
[edit logical-systems routing-instances instance protocols rip traceoptions]
[edit logical-systems routing-instances instance protocols ripng traceoptions]
[edit logical-systems routing-instances instance protocols router-discovery
traceoptions]
[edit logical-systems routing-instances instance protocols vpls traceoptions]
[edit logical-systems routing-instances instance routing-options multicast traceoptions]
[edit logical-systems routing-instances instance routing-options traceoptions]
[edit logical-systems routing-instances instance system services dhcp-local-server
traceoptions]
[edit logical-systems routing-options multicast traceoptions]
[edit logical-systems routing-options traceoptions]

```

```

[edit logical-systems system services dhcp-local-server traceoptions]
[edit multicast-snooping-options traceoptions]
[edit protocols ancp traceoptions]
[edit protocols bgp group neighbor traceoptions]
[edit protocols bgp group traceoptions]
[edit protocols bgp traceoptions]
[edit protocols dot1x traceoptions]
[edit protocols dvmp traceoptions]
[edit protocols esis traceoptions]
[edit protocols igmp traceoptions]
[edit protocols igmp-host traceoptions]
[edit protocols ilmi traceoptions]
[edit protocols isis traceoptions]
[edit protocols l2circuit traceoptions]
[edit protocols l2iw traceoptions]
[edit protocols lacp traceoptions]
[edit protocols layer2-control traceoptions]
[edit protocols ldp traceoptions]
[edit protocols mld traceoptions]
[edit protocols mld-host traceoptions]
[edit protocols mpls label-switched-path oam traceoptions]
[edit protocols mpls label-switched-path primary oam traceoptions]
[edit protocols mpls label-switched-path secondary oam traceoptions]
[edit protocols mpls oam traceoptions]
[edit protocols msdp group peer traceoptions]
[edit protocols msdp group traceoptions]
[edit protocols msdp peer traceoptions]
[edit protocols msdp traceoptions]
[edit protocols neighbor-discovery secure traceoptions]
[edit protocols oam ethernet connectivity-fault-management traceoptions]
[edit protocols oam ethernet link-fault-management traceoptions]
[edit protocols ospf traceoptions]
[edit protocols pim traceoptions]
[edit protocols ppp monitor-session]
[edit protocols ppp traceoptions]
[edit protocols rip traceoptions]
[edit protocols ripng traceoptions]
[edit protocols router-advertisement traceoptions]
[edit protocols router-discovery traceoptions]
[edit protocols rsvp traceoptions]
[edit routing-instances instance bridge-domains domain forwarding-options dhcp-relay
  traceoptions]
[edit routing-instances instance bridge-domains domain multicast-snooping-options
  traceoptions]
[edit routing-instances instance bridge-domains domain protocols igmp-snooping
  traceoptions]
[edit routing-instances instance forwarding-options dhcp-relay traceoptions]
[edit routing-instances instance multicast-snooping-options traceoptions]
[edit routing-instances instance protocols bgp group neighbor traceoptions]
[edit routing-instances instance protocols bgp group traceoptions]
[edit routing-instances instance protocols bgp traceoptions]
[edit routing-instances instance protocols esis traceoptions]
[edit routing-instances instance protocols igmp-snooping traceoptions]
[edit routing-instances instance protocols isis traceoptions]
[edit routing-instances instance protocols l2vpn traceoptions]
[edit routing-instances instance protocols ldp traceoptions]

```

```

[edit routing-instances instance protocols msdp group peer traceoptions]
[edit routing-instances instance protocols msdp group traceoptions]
[edit routing-instances instance protocols msdp peer traceoptions]
[edit routing-instances instance protocols msdp traceoptions]
[edit routing-instances instance protocols mvpn traceoptions]
[edit routing-instances instance protocols ospf traceoptions]
[edit routing-instances instance protocols pim traceoptions]
[edit routing-instances instance protocols rip traceoptions]
[edit routing-instances instance protocols ripng traceoptions]
[edit routing-instances instance protocols router-discovery traceoptions]
[edit routing-instances instance protocols vpls traceoptions]
[edit routing-instances instance routing-options multicast traceoptions]
[edit routing-instances instance routing-options traceoptions]
[edit routing-instances instance system services dhcp-local-server traceoptions]
[edit routing-options multicast traceoptions]
[edit routing-options traceoptions]
[edit security idp traceoptions]
[edit services adaptive-services-pics traceoptions]
[edit services l2tp traceoptions]
[edit services logging traceoptions]
[edit services mobile-ip traceoptions]
[edit services pgcp traceoptions]
[edit system accounting traceoptions]
[edit system license traceoptions]
[edit system processes diameter-service traceoptions]
[edit system processes general-authentication-service traceoptions]
[edit system processes mac-validation traceoptions]
[edit system processes process-monitor traceoptions]
[edit system processes resource-cleanup traceoptions]
[edit system services database-replication traceoptions]
[edit system services dhcp traceoptions]
[edit system services dhcp-local-server traceoptions]
[edit system services local-policy-decision-function traceoptions]
[edit system services outbound-ssh traceoptions]
[edit system services service-deployment traceoptions]

```

view

Can view current system-wide, routing table, and protocol-specific values and statistics.

Commands

```

clear ipv6 router-advertisement
clear ldp statistics
clear lacp
clear lacp statistics
clear lacp statistics interfaces
    <clear-lacp-interface-statistics>

clear ldp statistics interface
clear passive-monitoring
    <clear-passive-monitoring>

clear passive-monitoring statistics

```

```

<clear-passive-monitoring-statistics>

clear services
clear services cos
clear services cos statistics
clear services crtp
clear services crtp statistics
clear services dynamic-flow-capture
clear services dynamic-flow-capture criteria
  <clear-services-dynamic-flow-capture-criteria>

clear services dynamic-flow-capture sequence-number
  <clear-services-dynamic-flow-capture-sequence-number>

clear services flow-collector
  <clear-services-flow-collector-information>

clear services flow-collector statistics
  <clear-services-flow-collector-statistics>

clear services ids
clear services ids destination-table
clear services ids pair-table
clear services ids source-table
clear services ipsec-vpn
clear services ipsec-vpn certificates
clear services ipsec-vpn certificates service-set
clear services ipsec-vpn ipsec
clear services ipsec-vpn ipsec security-associations
clear services ipsec-vpn ipsec statistics
clear services l2tp
clear services l2tp multilink
clear services l2tp session
clear services l2tp tunnel
clear services l2tp user
clear services service-sets
clear services service-sets statistics
clear services service-sets statistics packet-drops
  <clear-service-set-packet-drop-statistics>

clear services stateful-firewall
clear services stateful-firewall flows
  <clear-service-sfw-flow-table-information>

clear services stateful-firewall sip-call
  <clear-service-sfw-sip-call-information>

clear services stateful-firewall sip-register
  <clear-service-sfw-sip-register-information>

clear services stateful-firewall statistics
clear snmp history
request snmp
request snmp spoof-trap
  <request-snmp-spoof-trap>

```

```
show
show accounting
show accounting profile
    <get-accounting-profile-information>

show accounting records
    <get-accounting-record-information>

show ancp
show ancp cos
    <get-ancp-cos-information>

show ancp cos last-update
    <get-ancp-cos-last-update-information>

show ancp cos pending-update
    <get-ancp-cos-pending-information>

show ancp neighbor
    <get-ancp-neighbor-information>

show ancp subscriber
    <get-ancp-subscriber-information>

show aps
show aps group
show aps interface
show arp
    <get-arp-table-information>

show as-path
show as-path domain
show bfd
show bfd session
    <get-bfd-session-information>

show bfd session address
show bfd session discriminator
show bfd session prefix
show bgp
show bgp group
    <get-bgp-group-information>

show bgp group rtf
    <get-bgp-rtf-information>

show bgp group traffic-statistics
    <get-bgp-traffic-statistics-information>

show bgp neighbor
    <get-bgp-neighbor-information>

show bgp neighbor orf
    <get-bgp-orf-information>

show bgp replication
```

```
show bgp summary
  <get-bgp-summary-information>

show bridge
show bridge domain
  <get-bridge-instance-information>

show bridge domain operational
show bridge flood
show bridge flood event-queue
  <get-bridge-domain-event-queue-information>

show bridge flood route
show bridge flood route all-ce-flood
  <get-show-bridge-domain-all-ce-flood-route-information>

show bridge flood route all-ve-flood
  <get-show-bridge-domain-ve-flood-route-information>

show bridge flood route alt-root-flood
  <get-bridge-domain-alt-root-flood-route-information>

show bridge flood route bd-flood
  <get-bridge-domain-bd-flood-route-information>

show bridge flood route mlp-flood
  <get-bridge-domain-mlp-flood-route-information>

show bridge flood route re-flood
  <get-bridge-domain-re-flood-route-information>

show bridge mac-table
  <get-bridge-mac-table>

show bridge mac-table global-count
  <get-global-mac-count>

show bridge mac-table interface
  <get-bridge-interface-mac-table>

show bridge statistics
  <get-bridge-statistics-information>

show chassis
show chassis alarms
  <get-alarm-information>

show chassis cfeb
  <get-cfeb-information>

show chassis craft-interface
  <get-craft-information>

show chassis environment
  <get-environment-information>
```

show chassis environment cb
<get-environment-cb-information>

show chassis environment feb
<get-environment-feb-information>

show chassis environment fpc
<get-environment-fpc-information>

show chassis environment fpm
<get-environment-fpm-information>

show chassis environment mcs
<get-environment-mcs-information>

show chassis environment pcg
<get-environment-pcg-information>

show chassis environment pem
<get-environment-pem-information>

show chassis environment psu
<get-environment-psu-information>

show chassis environment routing-engine
<get-environment-re-information>

show chassis environment scg
<get-environment-scg-information>

show chassis environment sfm
<get-environment-sfm-information>

show chassis environment sib
<get-environment-sib-information>

show chassis ethernet-switch
show chassis ethernet-switch errors
show chassis ethernet-switch statistics
show chassis fabric
show chassis fabric feb
show chassis fabric fpcs
<get-fm-fpc-state-information>

show chassis fabric map
show chassis fabric plane
<get-fm-plane-state-information>

show chassis fabric plane-location
show chassis fabric sibs
<get-fm-sib-state-information>

show chassis fabric summary
<get-fm-state-information>

show chassis fabric topology

```
show chassis feb
  <get-feb-brief-information>

show chassis feb detail
  <get-feb-information>

show chassis firmware
  <get-firmware-information>

show chassis forwarding
  <get-fwdd-information>

show chassis fpc
  <get-fpc-information>

show chassis fpc pic-status
  <get-pic-information>

show chassis fpc-feb-connectivity
  <get-fpc-feb-connectivity-information>

show chassis hardware
  <get-chassis-inventory>

show chassis in-service-upgrade
show chassis ioc-npc-connectivity
  <get-ioc-npc-connectivity-information>

show chassis lccs
  <get-fru-information>

show chassis location
  <get-chassis-location>

show chassis location fpc
show chassis location interface
show chassis location interface by-name
  <get-interface-location-name-information>

show chassis location interface by-slot
  <get-interface-location-information>

show chassis network-services
  <network-services>

show chassis pic
  <get-pic-detail>

show chassis power-ratings
  <get-power-management>

show chassis psd
  <get-psd-information>

show chassis redundancy
show chassis redundancy feb
```



```

<get-feb-redundancy-information>

show chassis redundancy feb errors
  <get-feb-redundancy-error-information>

show chassis redundancy feb redundancy-group
  <get-feb-redundancy-group-information>

show chassis redundant-power-supply
  <get-rps-chassis-information>

show chassis routing-engine
  <get-route-engine-information>

show chassis routing-engine bios
show chassis scb
  <get-scb-information>

show chassis sfm
  <get-sfm-information>

show chassis sfm detail
show chassis sibs
  <get-sib-information>

show chassis spmb
  <get-spmb-information>

show chassis spmb sibs
  <get-spmb-sib-information>

show chassis ssb
  <get-ssb-information>

show chassis synchronization
  <get-clock-synchronization-information>

show chassis synchronization backup
show chassis synchronization master
show chassis temperature-thresholds
  <get-temperature-threshold-information>

show chassis vcpu
  <get-vcpu-information>

show class-of-service
  <get-cos-information>

show class-of-service adaptive-shaper
  <get-cos-adaptive-shaper-information>

show class-of-service classifier
  <get-cos-classifier-information>

show class-of-service code-point-aliases
  <get-cos-code-point-map-information>

```

```
show class-of-service drop-profile
  <get-cos-drop-profile-information>

show class-of-service fabric
show class-of-service fabric scheduler-map
  <get-cos-fabric-scheduler-map-information>

show class-of-service fabric statistics
  <get-fabric-queue-information>

show class-of-service forwarding-class
  <get-cos-forwarding-class-information>

show class-of-service forwarding-table
  <get-cos-table-information>

show class-of-service forwarding-table classifier
  <get-cos-classifier-table-information>

show class-of-service forwarding-table classifier mapping
  <get-cos-classifier-table-map-information>

show class-of-service forwarding-table drop-profile
  <get-cos-red-information>

show class-of-service forwarding-table fabric
show class-of-service forwarding-table fabric scheduler-map
  <get-cos-fwtab-fabric-scheduler-map-information>

show class-of-service forwarding-table loss-priority-map
  <get-cos-loss-priority-map-table-information>

show class-of-service forwarding-table loss-priority-map mapping
  <get-cos-loss-priority-map-table-binding-information>

show class-of-service forwarding-table policer
  <get-cos-policer-table-map-information>

show class-of-service forwarding-table rewrite-rule
  <get-cos-rewrite-table-information>

show class-of-service forwarding-table rewrite-rule mapping
  <get-cos-rewrite-table-map-information>

show class-of-service forwarding-table scheduler-map
  <get-cos-scheduler-map-table-information>

show class-of-service forwarding-table shaper
  <get-cos-shaper-table-map-information>

show class-of-service forwarding-table translation-table
  <get-cos-translation-table-information>

show class-of-service forwarding-table translation-table mapping
  <get-cos-translation-table-mapping-information>
```

```

show class-of-service fragmentation-map
  <get-cos-fragmentation-map-information>

show class-of-service interface
  <get-cos-interface-map-information>

show class-of-service interface-set
  <get-cos-interface-set-map-information>

show class-of-service l2tp-session
  <get-cos-l2tp-session-map-information>

show class-of-service loss-priority-map
  <get-cos-loss-priority-map-information>

show class-of-service rewrite-rule
  <get-cos-rewrite-information>

show class-of-service routing-instance
  <get-cos-routing-instance-map-information>

show class-of-service scheduler-map
  <get-cos-scheduler-map-information>

show class-of-service traffic-control-profile
  <get-cos-traffic-control-profile-information>

show class-of-service translation-table
  <get-cos-translation-table-map-information>

show class-of-service virtual-channel
  <get-cos-virtual-channel-information>

show class-of-service virtual-channel-group
  <get-cos-virtual-channel-group-information>

show cli
show cli authorization
  <get-authorization-information>

show cli directory
show cli history
show configuration
show connections
show database-replication
show database-replication statistics
  <get-database-replication-statistics-information>

show database-replication summary
  <get-database-replication-summary-information>

show dhcp
show dhcp relay
show dhcp relay binding
  <get-dhcp-relay-binding-information>

```

```
show dhcp relay binding interface
show dhcp relay statistics
  <get-dhcp-relay-statistics-information>

show dhcp server
show dhcp server binding
  <get-dhcp-server-binding-information>

show dhcp server binding interface
show dhcp server statistics
  <get-dhcp-server-statistics-information>

show dot1x
show dot1x authentication-failed-users
  <get-dot1x-authentication-failed-users>

show dot1x interface
  <get-dot1x-interface-information>

show dot1x static-mac-address
  <get-dot1x-static-mac-addresses>

show dot1x static-mac-address interface
  <get-dot1x-interface-mac-addresses>

show dvmrp
show dvmrp interfaces
  <get-dvmrp-interfaces-information>

show dvmrp neighbors
  <get-dvmrp-neighbors-information>

show dvmrp prefix
  <get-dvmrp-prefix-information>

show dvmrp prunes
  <get-dvmrp-prunes-information>

show dynamic-tunnels
show dynamic-tunnels database
show esis
show esis adjacency
  <get-esis-adjacency-information>

show esis interface
  <get-esis-interface-information>

show esis statistics
  <get-esis-statistics-information>

show event-options
show event-options event-scripts
show event-options event-scripts policies
  <get-event-summary>
```

```
show extension-provider
show extension-provider system
show extension-provider system connections
  <get-mspinfo-connections>

show extension-provider system packages
  <get-mspinfo-packages>

show extension-provider system processes
  <get-mspinfo-processes>

show extension-provider system processes brief
  <get-mspinfo-processes-brief>

show extension-provider system processes extensive
  <get-mspinfo-processes-extensive>

show extension-provider system uptime
  <get-mspinfo-uptime>

show extension-provider system virtual-memory
  <get-mspinfo-virtual-memory>

show helper
show helper statistics
  <get-helper-statistics-information>

show igmp
show igmp group
  <get-igmp-group-information>

show igmp interface
  <get-igmp-interface-information>

show igmp snooping
show igmp snooping interface
  <get-igmp-snooping-interface-information>

show igmp snooping interface bridge-domain
show igmp snooping membership
  <get-igmp-snooping-membership-information>

show igmp snooping membership bridge-domain
show igmp snooping statistics
  <get-igmp-snooping-statistics-information>

show igmp snooping statistics bridge-domain
show igmp statistics
  <get-igmp-statistics-information>

show ike
show ike security-associations
  <get-ike-security-associations-information>

show ilmi
show ilmi interface
```

```
show ilmi statistics
show interfaces
  <get-interface-information>

show interfaces controller
show interfaces destination-class
  <get-destination-class-statistics>

show interfaces destination-class all
show interfaces diagnostics
show interfaces diagnostics optics
  <get-interface-optics-diagnostics-information>

show interfaces far-end-interval
show interfaces filters
  <get-interface-filter-information>

show interfaces interface-set
show interfaces interface-set queue
  <get-interface-set-queue-information>

show interfaces interval
show interfaces mac-database
  <get-mac-database>

show interfaces policers
  <get-interface-policer-information>

show interfaces queue
  <get-interface-queue-information>

show interfaces redundancy
show interfaces routing
show interfaces source-class
  <get-source-class-statistics>

show interfaces source-class all
show ipsec
show ipsec certificates
  <get-certificates-information>

show ipsec certificates crl
  <get-crl-information>

show ipsec redundancy
show ipsec redundancy interface
  <get-ipsec-pic-redundancy-information>

show ipsec redundancy security-associations
  <get-ipsec-tunnel-redundancy-information>

show ipsec security-associations
  <get-security-associations-information>

show ipv6
show ipv6 neighbors
```

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    <get-ipv6-nd-information>

show ipv6 router-advertisement
    <get-ipv6-ra-information>

show isis
show isis adjacency
    <get-isis-adjacency-information>

show isis authentication
    <get-isis-authentication-information>

show isis database
    <get-isis-database-information>

show isis hostname
    <get-isis-hostname-information>

show isis interface
    <get-isis-interface-information>

show isis overview
    <get-isis-overview-information>

show isis route
    <get-isis-route-information>

show isis spf
show isis spf brief
    <get-isis-spf-results-brief-information>

show isis spf log
    <get-isis-spf-log-information>

show isis spf results
    <get-isis-spf-results-information>

show isis statistics
    <get-isis-statistics-information>

show l2-learning
show l2-learning global-information
show l2-learning instance
show l2-learning interface
show l2-learning mac-move-buffer
show l2circuit
show l2circuit connections
    <get-l2ckt-connection-information>

show l2cpd
show l2cpd task
show l2cpd task io
show l2cpd task memory
show l2cpd task replication
show l2vpn
show l2vpn connections

```

```
<get-l2vpn-connection-information>

show lacp
show lacp interfaces
  <get-lacp-interface-information>

show lacp statistics
show lacp statistics interfaces
  <get-lacp-interface-statistics>

show ldp
show ldp database
  <get-ldp-database-information>

show ldp fec-filters
  <get-ldp-fec-filters-information>

show ldp interface
  <get-ldp-interface-information>

show ldp neighbor
  <get-ldp-neighbor-information>

show ldp oam
show ldp path
  <get-ldp-path-information>

show ldp route
  <get-ldp-route-information>

show ldp session
  <get-ldp-session-information>

show ldp statistics
  <get-ldp-statistics-information>

show ldp traffic-statistics
  <get-ldp-traffic-statistics-information>

show link-management
  <get-lm-information>

show link-management peer
  <get-lm-peer-information>

show link-management routing
  <get-lm-routing-information>

show link-management routing peer
  <get-lm-routing-peer-information>

show link-management routing resource
  <get-lm-routing-resource-information>

show link-management routing te-link
  <get-lm-routing-te-link-information>
```



```
show link-management statistics
  <get-lm-statistics-information>

show link-management statistics peer
  <get-lm-peer-statistics>

show link-management te-link
  <get-lm-te-link-information>

show mac-rewrite
show mac-rewrite interface
show mld
show mld group
  <get-mld-group-information>

show mld interface
  <get-mld-interface-information>

show mld statistics
  <get-mld-statistics-information>

show mobile-ip
show mobile-ip home-agent
show mobile-ip home-agent binding
  <get-mip-binding-information>

show mobile-ip home-agent binding ip-address
  <get-ip-mip-binding-information>

show mobile-ip home-agent binding nai
  <get-nai-mip-binding-information>

show mobile-ip home-agent binding summary
  <get-summary-mip-binding-information>

show mobile-ip home-agent interface
  <get-mip-ha-interface-information>

show mobile-ip home-agent overview
  <get-mip-ha-overview-information>

show mobile-ip home-agent traffic
  <get-mip-ha-traffic-information>

show mobile-ip home-agent virtual-network
  <get-mip-ha-virtual-network-information>

show mobile-ip tunnel
show mpls
show mpls admin-groups
  <get-mpls-admin-group-information>

show mpls call-admission-control
  <get-mpls-call-admission-control-information>
```

```
show mpls cspf
  <get-mpls-cspf-information>

show mpls diffserv-te
  <get-mpls-diffserv-te-information>

show mpls interface
  <get-mpls-interface-information>

show mpls lsp
  <get-mpls-lsp-information>

show mpls lsp defaults
  <get-mpls-lsp-defaults-information>

show mpls path
  <get-mpls-path-information>

show mpls traceroute
show mpls traceroute database
show mpls traceroute database ldp
show msdp
show msdp source
  <get-msdp-source-information>

show msdp source-active
  <get-msdp-source-active-information>

show msdp statistics
  <get-msdp-statistics-information>

show multicast
show multicast backup-pe-groups
  <get-multicast-backup-pe-groups-information>

show multicast backup-pe-groups address
  <get-multicast-backup-pe-address-information>

show multicast backup-pe-groups group
show multicast flow-map
  <get-multicast-flow-maps-information>

show multicast interface
  <get-multicast-interface-information>

show multicast next-hops
  <get-multicast-next-hops-information>

show multicast route
  <get-multicast-route-information>

show multicast rpf
  <get-multicast-rpf-information>

show multicast scope
  <get-multicast-scope-information>
```

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show multicast sessions
  <get-multicast-sessions-information>

show multicast snooping
show multicast snooping next-hops
  <get-multicast-snooping-next-hops-information>

show multicast snooping route
  <get-multicast-snooping-route-information>

show multicast statistics
  <get-multicast-statistics-information>

show multicast usage
  <get-multicast-usage-information>

show mvpn
show mvpn c-multicast
show mvpn instance
  <get-mvpn-instance-information>

show mvpn neighbor
show network-access
show network-access aaa
show network-access aaa statistics
  <get-aaa-module-statistics>

show network-access aaa subscribers
  <get-aaa-subscriber-table>

show network-access aaa subscribers statistics
  <get-aaa-subscriber-statistics>

show network-access address-assignment
show network-access address-assignment pool
  <get-address-assignment-pool-table>

show network-access requests
show network-access requests pending
  <get-authentication-pending-table>

show network-access requests statistics
  <get-authentication-statistics>

show network-access securid-node-secret-file
  <node-secret-file-table>

show ntp
show ntp associations
show ntp status
show oam
show oam ethernet
show oam ethernet connectivity-fault-management
show oam ethernet connectivity-fault-management forwarding-state
show oam ethernet connectivity-fault-management forwarding-state instance

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```
show oam ethernet connectivity-fault-management forwarding-state interface
show oam ethernet connectivity-fault-management interfaces
show oam ethernet connectivity-fault-management mep-database
show oam ethernet connectivity-fault-management mip
show oam ethernet connectivity-fault-management path-database
show oam ethernet link-fault-management
  <get-lfmd-information>

show ospf
show ospf database
  <get-ospf-database-information>

show ospf interface
  <get-ospf-interface-information>

show ospf io-statistics
  <get-ospf-io-statistics-information>

show ospf log
  <get-ospf-log-information>

show ospf neighbor
  <get-ospf-neighbor-information>

show ospf overview
  <get-ospf-overview-information>

show ospf route
  <get-ospf-route-information>

show ospf statistics
  <get-ospf-statistics-information>

show ospf3
show ospf3 database
  <get-ospf3-database-information>

show ospf3 interface
  <get-ospf3-interface-information>

show ospf3 io-statistics
  <get-ospf3-io-statistics-information>

show ospf3 log
  <get-ospf3-log-information>

show ospf3 neighbor
  <get-ospf3-neighbor-information>

show ospf3 overview
  <get-ospf3-overview-information>

show ospf3 route
  <get-ospf3-route-information>

show ospf3 statistics
```

```

    <get-ospf3-statistics-information>

show passive-monitoring
    <get-passive-monitoring-information>

show passive-monitoring error
    <get-passive-monitoring-error-information>

show passive-monitoring flow
    <get-passive-monitoring-flow-information>

show passive-monitoring memory
    <get-passive-monitoring-memory-information>

show passive-monitoring status
    <get-passive-monitoring-status-information>

show passive-monitoring usage
    <get-passive-monitoring-usage-information>

show pfe
show pfe cfeb
show pfe feb
show pfe fpc
show pfe fwdd
show pfe lcc
show pfe next-hop
show pfe route
show pfe route inet6
show pfe route inet6 table
show pfe route ip
show pfe route ip table
show pfe route iso
show pfe route iso table
show pfe scb
show pfe sfm
show pfe ssb
show pfe statistics
show pfe statistics ip
show pfe statistics ip6
show pfe statistics traffic
    <get-pfe-statistics>

show pfe statistics traffic cpu
show pfe statistics traffic egress-queues
show pfe statistics traffic multicast
show pfe statistics traffic protocol
show pfe terse
    <get-pfe-information>

show pgm
show pgm negative-acknowledgments
    <get-pgm-nak>

show pgm source-path-messages
    <get-pgm-source-path-messages>

```

```
show pgm statistics
  <get-pgm-statistics>

show pim
show pim bootstrap
  <get-pim-bootstrap-information>

show pim interfaces
  <get-pim-interfaces-information>

show pim join
  <get-pim-join-information>

show pim mdt
  <get-pim-mdt-information>

show pim mvpn
  <get-pim-mvpn-information>

show pim neighbors
  <get-pim-neighbors-information>

show pim rps
  <get-pim-rps-information>

show pim source
  <get-pim-source-information>

show pim statistics
  <get-pim-statistics-information>

show policy
show policy conditions
show policy damping
show ppp
show ppp address-pool
  <get-ppp-address-pool-inforamation>

show ppp interface
  <get-ppp-interface-information>

show ppp statistics
  <get-ppp-statistics-information>

show ppp summary
  <get-ppp-summary-information>

show pppoe
show pppoe interfaces
  <get-pppoe-interface-information>

show pppoe statistics
  <get-pppoe-statistics-information>

show pppoe version
```

```

<get-pppoe-version>

show protection-group
show protection-group ethernet-ring
show protection-group ethernet-ring aps
show protection-group ethernet-ring interface
show protection-group ethernet-ring node-state
show protection-group ethernet-ring statistics
show redundant-power-supply
show redundant-power-supply led
  <get-rps-led-information>

show redundant-power-supply power-supply
  <get-rps-power-supply-information>

show redundant-power-supply status
  <get-rps-status-information>

show redundant-power-supply version
  <get-rps-version-information>

show rip
show rip general-statistics
  <get-rip-general-statistics-information>

show rip neighbor
  <get-rip-neighbor-information>

show rip statistics
  <get-rip-statistics-information>

show ripng
show ripng general-statistics
show ripng neighbor
show ripng statistics
show route
  <get-route-information>

show route export
  <get-rlexport-table-information>

show route export instance
  <get-rlexport-instance-information>

show route export vrf-target
  <get-rlexport-target-information>

show route flow
show route flow validation
  <get-rtflow-dep-information>

show route forwarding-table
  <get-forwarding-table-information>

show route instance
  <get-instance-information>

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show route instance operational
  <get-operational-routing-instance-information>

show route martians
show route resolution
show route resolution summary
show route resolution unresolved
show route rib-groups
show route snooping
show route snooping summary
show route summary
  <get-route-summary-information>

show rsvp
show rsvp interface
  <get-rsvp-interface-information>

show rsvp neighbor
  <get-rsvp-neighbor-information>

show rsvp session
  <get-rsvp-session-information>

show rsvp statistics
  <get-rsvp-statistics-information>

show rsvp version
  <get-rsvp-version-information>

show sap
show sap listen
  <get-sap-listen-information>

show services
show services accounting
  <get-service-accounting-information>

show services accounting aggregation
  <get-service-accounting-aggregation-information>

show services accounting aggregation as
  <get-service-accounting-aggregation-as-information>

show services accounting aggregation destination-prefix
  <get-service-accounting-aggregation-destination-prefix-information>

show services accounting aggregation protocol-port
  <get-service-accounting-aggregation-protocol-port-information>

show services accounting aggregation source-destination-prefix
  <get-service-accounting-aggregation-source-destination-prefix-information>

show services accounting aggregation source-prefix
  <get-service-accounting-aggregation-source-prefix-information>
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show services accounting aggregation template
  <get-service-accounting-aggregation-template-information>

show services accounting errors
  <get-service-accounting-errors-information>

show services accounting flow
  <get-service-accounting-flow-information>

show services accounting flow-detail
  <get-service-accounting-flow-detail>

show services accounting memory
  <get-service-accounting-memory-information>

show services accounting packet-size-distribution
  <get-packet-distribution-information>

show services accounting status
  <get-service-accounting-status-information>

show services accounting usage
  <get-service-accounting-usage-information>

show services application-aware-access-list
show services application-aware-access-list statistics
show services application-aware-access-list statistics interface
show services application-aware-access-list statistics subscriber
show services application-identification
show services application-identification application-system-cache
  <get-appid-application-system-cache>

show services application-identification counter
  <get-appid-counter>

show services application-identification version
  <get-appid-package-version>

show services border-signaling-gateway
show services border-signaling-gateway information
show services border-signaling-gateway information by-contact
  <get-service-border-signaling-gateway-information-by-contact>

show services border-signaling-gateway information by-request-uri
  <get-service-border-signaling-gateway-information-by-request-uri>

show services border-signaling-gateway statistics
show services border-signaling-gateway statistics calls
  <get-service-border-signaling-gateway-statistics-calls>

show services border-signaling-gateway statistics calls-failed
  <get-service-border-signaling-gateway-statistics-calls-failed>

show services cos
show services cos statistics
  <get-service-cos-statistics-information>

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show services cos statistics diffserv
  <get-service-cos-diffserv-statistics>

show services cos statistics forwarding-class
  <get-service-cos-forwarding-class-statistics>

show services crtp
  <get-service-crtp-params-information>

show services crtp extensive
  <get-service-crtp-extensive-information>

show services crtp flows
  <get-service-crtp-flow-table-information>

show services dynamic-flow-capture
show services dynamic-flow-capture content-destination
  <get-services-dynamic-flow-capture-content-destination-information>

show services dynamic-flow-capture control-source
  <get-services-dynamic-flow-capture-control-source-information>

show services dynamic-flow-capture statistics
show services fips
show services fips pic
show services fips pic status
  <get-fips-pic-status-information>

show services flow-collector
  <get-services-flow-collector-information>

show services flow-collector file
  <get-services-flow-collector-file-information>

show services flow-collector input
  <get-services-flow-collector-input-information>

show services flow-table
show services flow-table statistics
  <get-flow-table-statistics-information>

show services ggsn
show services ggsn diagnostics
show services ggsn diagnostics pdp
  <get-pdp-diagnostics-per-apn>

show services ggsn statistics
  <get-ggsn-statistics>

show services ggsn statistics apn
  <get-ggsn-apn-statistics-information>

show services ggsn statistics charging
  <get-ggsn-charging-statistics-information>
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show services ggsn statistics gtp
  <get-ggsn-gtp-statistics-information>

show services ggsn statistics gtp-prime
  <get-ggsn-gtp-prime-statistics-information>

show services ggsn statistics imsi
  <get-ggsn-imsi-user-information>

show services ggsn statistics l2tp-tunnel
  <get-ggsn-l2tp-tunnel-statistics-information>

show services ggsn statistics msisdn
show services ggsn statistics radius
  <get-ggsn-radius-statistics-information>

show services ggsn statistics sgsn
  <get-ggsn-sgsn-statistics-information>

show services ggsn status
  <get-ggsn-interface-information>

show services ggsn trace
show services ggsn trace all
  <get-ggsn-trace>

show services ggsn trace imsi
  <get-ggsn-imsi-trace>

show services ggsn trace msisdn
  <get-ggsn-msisdn-trace>

show services ids
show services ids destination-table
  <get-service-ids-destination-table-information>

show services ids pair-table
  <get-service-ids-pair-table-information>

show services ids source-table
  <get-service-ids-source-table-information>

show services ipsec-vpn
show services ipsec-vpn certificates
show services ipsec-vpn ike
show services ipsec-vpn ike security-associations
  <get-ike-services-security-associations-information>

show services ipsec-vpn ipsec
show services ipsec-vpn ipsec security-associations
  <get-services-security-associations-information>

show services ipsec-vpn ipsec statistics
  <get-services-ipsec-statistics-information>

show services l2tp

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show services l2tp multilink
  <get-l2tp-multilink-information>

show services l2tp radius
show services l2tp radius accounting
show services l2tp radius accounting servers
  <get-services-l2tp-radius-accounting-servers-information>

show services l2tp radius accounting statistics
  <get-services-l2tp-radius-accounting-statistics-information>

show services l2tp radius authentication
show services l2tp radius authentication servers
  <get-services-l2tp-radius-authentication-servers-information>

show services l2tp radius authentication statistics
  <get-services-l2tp-radius-authentication-statistics-information>

show services l2tp radius servers
  <get-services-l2tp-radius-authentication-accounting-servers-information>

show services l2tp radius statistics
  <get-services-l2tp-radius-authentication-accounting-statistics-information>

show services l2tp session
  <get-l2tp-session-information>

show services l2tp summary
  <get-l2tp-summary-information>

show services l2tp tunnel
  <get-l2tp-tunnel-information>

show services l2tp user
show services link-services
show services link-services cpu-usage
  <get-link-services-cpu-usage>

show services local-policy-decision-function
show services local-policy-decision-function flows
show services local-policy-decision-function flows interface
show services local-policy-decision-function flows subscriber
show services local-policy-decision-function statistics
show services local-policy-decision-function statistics interface
show services local-policy-decision-function statistics subscriber
show services logging
show services logging history
show services logging history client
show services logging logfiles
show services nat
show services nat ipv6-multicast-interfaces
  <get-service-nat-ipv6-multicast-information>

show services nat pool
  <get-service-nat-pool-information>

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```

show services pgcp
show services pgcp active-configuration
    <get-pgcpd-active-configuration>

show services pgcp conversations
    <get-service-pgcp-conversation-information>

show services pgcp flows
    <get-service-pgcp-flow-table-information>

show services pgcp gates
    <get-service-pgcp-gates>

show services pgcp gates gate-id
    <get-service-pgcp-gates-gate-id>

show services pgcp gates gateway
    <get-service-pgcp-gates-gateway>

show services pgcp root-termination
    <get-services-pgcpd-root-termination>

show services pgcp statistics
    <get-service-pgcp-statistics>

show services pgcp statistics gateway
    <get-service-pgcp-statistics-gateway>

show services pgcp terminations
    <get-service-pgcp-terminations>

show services rpm
show services rpm active-servers
    <get-active-servers>

show services rpm history-results
    <get-history-results>

show services rpm probe-results
    <get-probe-results>

show services rpm twamp
show services rpm twamp server
show services rpm twamp server connection
show services rpm twamp server session
show services service-identification
show services service-identification header-redirect
show services service-identification header-redirect statistics
    <get-header-redirect-set-statistics-information>

show services service-identification statistics
    <get-service-identification-statistics-information>

show services service-identification uri-redirect
show services service-identification uri-redirect statistics
    <get-uri-redirect-set-statistics-information>

```

```
show services service-sets
show services service-sets cpu-usage
    <get-service-set-cpu-statistics>

show services service-sets memory-usage
    <get-service-set-memory-statistics>

show services service-sets memory-usage zone
show services service-sets statistics
show services service-sets statistics packet-drops
    <get-service-set-packet-drop-statistics>

show services service-sets summary
    <get-service-set-summary-information>

show services stateful-firewall
show services stateful-firewall conversations
    <get-service-sfw-conversation-information>

show services stateful-firewall flows
    <get-service-sfw-flow-table-information>

show services stateful-firewall sip-call
    <get-service-sfw-sip-call-information>

show services stateful-firewall sip-register
    <get-service-sfw-sip-register-information>

show services stateful-firewall statistics
    <get-service-sfw-statistics-information>

show services stateful-firewall statistics application-protocol
show snmp
show snmp health-monitor
    <get-health-monitor-information>

show snmp health-monitor alarms
    <get-health-monitor-alarm-information>

show snmp health-monitor logs
    <get-health-monitor-log-information>

show snmp inform-statistics
    <get-snmp-inform-statistics>

show snmp mib
show snmp mib get
    <get-snmp-object>

show snmp mib get-next
    <next-snmp-object>

show snmp mib walk
    <walk-snmp-object>
```

```
show snmp rmon
  <get-rmon-information>

show snmp rmon alarms
  <get-rmon-alarm-information>

show snmp rmon events
  <get-rmon-event-information>

show snmp rmon history
  <get-rmon-history-information>

show snmp rmon logs
  <get-rmon-log-information>

show snmp statistics
  <get-snmp-information>

show snmp v3
  <get-snmp-v3-information>

show snmp v3 access
  <get-snmp-v3-access-information>

show snmp v3 community
  <get-snmp-v3-community-information>

show snmp v3 general
  <get-snmp-v3-general-information>

show snmp v3 groups
  <get-snmp-v3-group-information>

show snmp v3 notify
  <get-snmp-v3-notify-information>

show snmp v3 notify filter
  <get-snmp-v3-notify-filter-information>

show snmp v3 target
  <get-snmp-v3-target-information>

show snmp v3 target address
  <get-snmp-v3-target-address-information>

show snmp v3 target parameters
  <get-snmp-v3-target-parameters-information>

show snmp v3 users
  <get-snmp-v3-usm-user-information>

show spanning-tree
show spanning-tree bridge
show spanning-tree interface
show spanning-tree mstp
show spanning-tree mstp configuration
```

```
show spanning-tree statistics
show spanning-tree statistics interface
show spanning-tree statistics routing-instance
show subscribers
  <get-subscribers>

  <get-syslog-filenames>

show system
show system alarms
  <get-system-alarm-information>

show system boot-messages
show system buffers
show system certificate
show system commit
  <get-commit-information>

show system configuration
show system configuration archival
  <get-system-archival>

show system configuration rescue
  <get-rescue-information>

show system connections
show system core-dumps
show system core-dumps core-file-info
  <get-core-file-information>

show system directory-usage
  <get-directory-usage-information>

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