



JUNOS® Software

Access Privilege Configuration Guide

Release 10.0

Juniper Networks, Inc.

1194 North Mathilda Avenue
Sunnyvale, California 94089
USA

408-745-2000

www.juniper.net

Published: 2009-10-07

This product includes the Envoy SNMP Engine, developed by Epilogue Technology, an Integrated Systems Company. Copyright © 1986-1997, Epilogue Technology Corporation. All rights reserved. This program and its documentation were developed at private expense, and no part of them is in the public domain.

This product includes memory allocation software developed by Mark Moraes, copyright © 1988, 1989, 1993, University of Toronto.

This product includes FreeBSD software developed by the University of California, Berkeley, and its contributors. All of the documentation and software included in the 4.4BSD and 4.4BSD-Lite Releases is copyrighted by the Regents of the University of California. Copyright © 1979, 1980, 1983, 1986, 1988, 1989, 1991, 1992, 1993, 1994. The Regents of the University of California. All rights reserved.

GateD software copyright © 1995, the Regents of the University. All rights reserved. Gate Daemon was originated and developed through release 3.0 by Cornell University and its collaborators. Gated is based on Kirton's EGP, UC Berkeley's routing daemon (routed), and DCN's HELLO routing protocol. Development of Gated has been supported in part by the National Science Foundation. Portions of the GateD software copyright © 1988, Regents of the University of California. All rights reserved. Portions of the GateD software copyright © 1991, D. L. S. Associates.

This product includes software developed by Maker Communications, Inc., copyright © 1996, 1997, Maker Communications, Inc.

Juniper Networks, the Juniper Networks logo, JUNOS, NetScreen, ScreenOS, and Steel-Belted Radius are registered trademarks of Juniper Networks, Inc. in the United States and other countries. JUNOSe is a trademark of Juniper Networks, Inc. All other trademarks, service marks, registered trademarks, or registered service marks are the property of their respective owners.

Juniper Networks assumes no responsibility for any inaccuracies in this document. Juniper Networks reserves the right to change, modify, transfer, or otherwise revise this publication without notice.

Products made or sold by Juniper Networks or components thereof might be covered by one or more of the following patents that are owned by or licensed to Juniper Networks: U.S. Patent Nos. 5,473,599, 5,905,725, 5,909,440, 6,192,051, 6,333,650, 6,359,479, 6,406,312, 6,429,706, 6,459,579, 6,493,347, 6,538,518, 6,538,899, 6,552,918, 6,567,902, 6,578,186, and 6,590,785.

JUNOS® Software Access Privilege Configuration Guide

Release 10.0

Copyright © 2009, Juniper Networks, Inc.

All rights reserved. Printed in USA.

Writing: Edwin Skau

Editing: Stella Hackell, Nancy Kurahashi, Sonia Saruba, Joanne McClintock, and Ben Mann

Cover Design: Edmonds Design

Revision History

October 2009—R1 JUNOS 10.0

The information in this document is current as of the date listed in the revision history.

YEAR 2000 NOTICE

Juniper Networks hardware and software products are Year 2000 compliant. The JUNOS Software has no known time-related limitations through the year 2038. However, the NTP application is known to have some difficulty in the year 2036.

END USER LICENSE AGREEMENT

READ THIS END USER LICENSE AGREEMENT ("AGREEMENT") BEFORE DOWNLOADING, INSTALLING, OR USING THE SOFTWARE. BY DOWNLOADING, INSTALLING, OR USING THE SOFTWARE OR OTHERWISE EXPRESSING YOUR AGREEMENT TO THE TERMS CONTAINED HEREIN, YOU (AS CUSTOMER OR IF YOU ARE NOT THE CUSTOMER, AS A REPRESENTATIVE/AGENT AUTHORIZED TO BIND THE CUSTOMER) CONSENT TO BE BOUND BY THIS AGREEMENT. IF YOU DO NOT OR CANNOT AGREE TO THE TERMS CONTAINED HEREIN, THEN (A) DO NOT DOWNLOAD, INSTALL, OR USE THE SOFTWARE, AND (B) YOU MAY CONTACT JUNIPER NETWORKS REGARDING LICENSE TERMS.

1. **The Parties.** The parties to this Agreement are (i) Juniper Networks, Inc. (if the Customer's principal office is located in the Americas) or Juniper Networks (Cayman) Limited (if the Customer's principal office is located outside the Americas) (such applicable entity being referred to herein as "Juniper"), and (ii) the person or organization that originally purchased from Juniper or an authorized Juniper reseller the applicable license(s) for use of the Software ("Customer") (collectively, the "Parties").

2. **The Software.** In this Agreement, "Software" means the program modules and features of the Juniper or Juniper-supplied software, for which Customer has paid the applicable license or support fees to Juniper or an authorized Juniper reseller, or which was embedded by Juniper in equipment which Customer purchased from Juniper or an authorized Juniper reseller. "Software" also includes updates, upgrades and new releases of such software. "Embedded Software" means Software which Juniper has embedded in or loaded onto the Juniper equipment and any updates, upgrades, additions or replacements which are subsequently embedded in or loaded onto the equipment.

3. **License Grant.** Subject to payment of the applicable fees and the limitations and restrictions set forth herein, Juniper grants to Customer a non-exclusive and non-transferable license, without right to sublicense, to use the Software, in executable form only, subject to the following use restrictions:

- a. Customer shall use Embedded Software solely as embedded in, and for execution on, Juniper equipment originally purchased by Customer from Juniper or an authorized Juniper reseller.
- b. Customer shall use the Software on a single hardware chassis having a single processing unit, or as many chassis or processing units for which Customer has paid the applicable license fees; provided, however, with respect to the Steel-Belted Radius or Odyssey Access Client software only, Customer shall use such Software on a single computer containing a single physical random access memory space and containing any number of processors. Use of the Steel-Belted Radius or IMS AAA software on multiple computers or virtual machines (e.g., Solaris zones) requires multiple licenses, regardless of whether such computers or virtualizations are physically contained on a single chassis.
- c. Product purchase documents, paper or electronic user documentation, and/or the particular licenses purchased by Customer may specify limits to Customer's use of the Software. Such limits may restrict use to a maximum number of seats, registered endpoints, concurrent users, sessions, calls, connections, subscribers, clusters, nodes, realms, devices, links, ports or transactions, or require the purchase of separate licenses to use particular features, functionalities, services, applications, operations, or capabilities, or provide throughput, performance, configuration, bandwidth, interface, processing, temporal, or geographical limits. In addition, such limits may restrict the use of the Software to managing certain kinds of networks or require the Software to be used only in conjunction with other specific Software. Customer's use of the Software shall be subject to all such limitations and purchase of all applicable licenses.
- d. For any trial copy of the Software, Customer's right to use the Software expires 30 days after download, installation or use of the Software. Customer may operate the Software after the 30-day trial period only if Customer pays for a license to do so. Customer may not extend or create an additional trial period by re-installing the Software after the 30-day trial period.
- e. The Global Enterprise Edition of the Steel-Belted Radius software may be used by Customer only to manage access to Customer's enterprise network. Specifically, service provider customers are expressly prohibited from using the Global Enterprise Edition of the Steel-Belted Radius software to support any commercial network access services.

The foregoing license is not transferable or assignable by Customer. No license is granted herein to any user who did not originally purchase the applicable license(s) for the Software from Juniper or an authorized Juniper reseller.

4. **Use Prohibitions.** Notwithstanding the foregoing, the license provided herein does not permit the Customer to, and Customer agrees not to and shall not: (a) modify, unbundle, reverse engineer, or create derivative works based on the Software; (b) make unauthorized copies of the Software (except as necessary for backup purposes); (c) rent, sell, transfer, or grant any rights in and to any copy of the Software, in any form, to any third party; (d) remove any proprietary notices, labels, or marks on or in any copy of the Software or any product in which the Software is embedded; (e) distribute any copy of the Software to any third party, including as may be embedded in Juniper equipment sold in the secondhand market; (f) use any 'locked' or key-restricted feature, function, service, application, operation, or capability without first purchasing the applicable license(s) and obtaining a valid key from Juniper, even if such feature, function, service, application, operation, or capability is enabled without a key; (g) distribute any key for the Software provided by Juniper to any third party; (h) use the Software in any manner that extends or is broader than the uses purchased by Customer from Juniper or an authorized Juniper reseller; (i) use Embedded Software on non-Juniper equipment; (j) use Embedded Software (or make it available for use) on Juniper equipment that the Customer did not originally purchase from Juniper or an authorized Juniper reseller; (k) disclose the results of testing or benchmarking of the Software to any third party without the prior written consent of Juniper; or (l) use the Software in any manner other than as expressly provided herein.

5. **Audit.** Customer shall maintain accurate records as necessary to verify compliance with this Agreement. Upon request by Juniper, Customer shall furnish such records to Juniper and certify its compliance with this Agreement.

6. **Confidentiality.** The Parties agree that aspects of the Software and associated documentation are the confidential property of Juniper. As such, Customer shall exercise all reasonable commercial efforts to maintain the Software and associated documentation in confidence, which at a minimum includes restricting access to the Software to Customer employees and contractors having a need to use the Software for Customer's internal business purposes.

7. **Ownership.** Juniper and Juniper's licensors, respectively, retain ownership of all right, title, and interest (including copyright) in and to the Software, associated documentation, and all copies of the Software. Nothing in this Agreement constitutes a transfer or conveyance of any right, title, or interest in the Software or associated documentation, or a sale of the Software, associated documentation, or copies of the Software.

8. **Warranty, Limitation of Liability, Disclaimer of Warranty.** The warranty applicable to the Software shall be as set forth in the warranty statement that accompanies the Software (the "Warranty Statement"). Nothing in this Agreement shall give rise to any obligation to support the Software. Support services may be purchased separately. Any such support shall be governed by a separate, written support services agreement. TO THE MAXIMUM EXTENT PERMITTED BY LAW, JUNIPER SHALL NOT BE LIABLE FOR ANY LOST PROFITS, LOSS OF DATA, OR COSTS OR PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES, OR FOR ANY SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES ARISING OUT OF THIS AGREEMENT, THE SOFTWARE, OR ANY JUNIPER OR JUNIPER-SUPPLIED SOFTWARE. IN NO EVENT SHALL JUNIPER BE LIABLE FOR DAMAGES ARISING FROM UNAUTHORIZED OR IMPROPER USE OF ANY JUNIPER OR JUNIPER-SUPPLIED SOFTWARE, EXCEPT AS EXPRESSLY PROVIDED IN THE WARRANTY STATEMENT TO THE EXTENT PERMITTED BY LAW, JUNIPER DISCLAIMS ANY AND ALL WARRANTIES IN AND TO THE SOFTWARE (WHETHER EXPRESS, IMPLIED, STATUTORY, OR OTHERWISE), INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NONINFRINGEMENT. IN NO EVENT DOES JUNIPER WARRANT THAT THE SOFTWARE, OR ANY EQUIPMENT OR NETWORK RUNNING THE SOFTWARE, WILL OPERATE WITHOUT ERROR OR INTERRUPTION, OR WILL BE FREE OF VULNERABILITY TO INTRUSION OR ATTACK. In no event shall Juniper's or its suppliers' or licensors' liability to Customer, whether in contract, tort (including negligence), breach of warranty, or otherwise, exceed the price paid by Customer for the Software that gave rise to the claim, or if the Software is embedded in another Juniper product, the price paid by Customer for such other product. Customer acknowledges and agrees that Juniper has set its prices and entered into this Agreement in reliance upon the disclaimers of warranty and the limitations of liability set forth herein, that the same reflect an allocation of risk between the Parties (including the risk that a contract remedy may fail of its essential purpose and cause consequential loss), and that the same form an essential basis of the bargain between the Parties.

9. **Termination.** Any breach of this Agreement or failure by Customer to pay any applicable fees due shall result in automatic termination of the license granted herein. Upon such termination, Customer shall destroy or return to Juniper all copies of the Software and related documentation in Customer's possession or control.

10. **Taxes.** All license fees payable under this agreement are exclusive of tax. Customer shall be responsible for paying Taxes arising from the purchase of the license, or importation or use of the Software. If applicable, valid exemption documentation for each taxing jurisdiction shall be provided to Juniper prior to invoicing, and Customer shall promptly notify Juniper if their exemption is revoked or modified. All payments made by Customer shall be net of any applicable withholding tax. Customer will provide reasonable assistance to Juniper in connection with such withholding taxes by promptly: providing Juniper with valid tax receipts and other required documentation showing Customer's payment of any withholding taxes; completing appropriate applications that would reduce the amount of withholding tax to be paid; and notifying and assisting Juniper in any audit or tax proceeding related to transactions hereunder. Customer shall comply with all applicable tax laws and regulations, and Customer will promptly pay or reimburse Juniper for all costs and damages related to any liability incurred by Juniper as a result of Customer's non-compliance or delay with its responsibilities herein. Customer's obligations under this Section shall survive termination or expiration of this Agreement.

11. **Export.** Customer agrees to comply with all applicable export laws and restrictions and regulations of any United States and any applicable foreign agency or authority, and not to export or re-export the Software or any direct product thereof in violation of any such restrictions, laws or regulations, or without all necessary approvals. Customer shall be liable for any such violations. The version of the Software supplied to Customer may contain encryption or other capabilities restricting Customer's ability to export the Software without an export license.

12. **Commercial Computer Software.** The Software is "commercial computer software" and is provided with restricted rights. Use, duplication, or disclosure by the United States government is subject to restrictions set forth in this Agreement and as provided in DFARS 227.7201 through 227.7202-4, FAR 12.212, FAR 27.405(b)(2), FAR 52.227-19, or FAR 52.227-14(ALT III) as applicable.

13. **Interface Information.** To the extent required by applicable law, and at Customer's written request, Juniper shall provide Customer with the interface information needed to achieve interoperability between the Software and another independently created program, on payment of applicable fee, if any. Customer shall observe strict obligations of confidentiality with respect to such information and shall use such information in compliance with any applicable terms and conditions upon which Juniper makes such information available.

14. **Third Party Software.** Any licensor of Juniper whose software is embedded in the Software and any supplier of Juniper whose products or technology are embedded in (or services are accessed by) the Software shall be a third party beneficiary with respect to this Agreement, and such licensor or vendor shall have the right to enforce this Agreement in its own name as if it were Juniper. In addition, certain third party software may be provided with the Software and is subject to the accompanying license(s), if any, of its respective owner(s). To the extent portions of the Software are distributed under and subject to open source licenses obligating Juniper to make the source code for such portions publicly available (such as the GNU General Public License ("GPL") or the GNU Library General Public License ("LGPL")), Juniper will make such source code portions (including Juniper modifications, as appropriate) available upon request for a period of up to three years from the date of distribution. Such request can be made in writing to Juniper Networks, Inc., 1194 N. Mathilda Ave., Sunnyvale, CA 94089, ATTN: General Counsel. You may obtain a copy of the GPL at <http://www.gnu.org/licenses/gpl.html>, and a copy of the LGPL at <http://www.gnu.org/licenses/lgpl.html>.

15. **Miscellaneous.** This Agreement shall be governed by the laws of the State of California without reference to its conflicts of laws principles. The provisions of the U.N. Convention for the International Sale of Goods shall not apply to this Agreement. For any disputes arising under this Agreement, the Parties hereby consent to the personal and exclusive jurisdiction of, and venue in, the state and federal courts within Santa Clara County, California. This Agreement constitutes the entire and sole agreement between Juniper and the Customer with respect to the Software, and supersedes all prior and contemporaneous

agreements relating to the Software, whether oral or written (including any inconsistent terms contained in a purchase order), except that the terms of a separate written agreement executed by an authorized Juniper representative and Customer shall govern to the extent such terms are inconsistent or conflict with terms contained herein. No modification to this Agreement nor any waiver of any rights hereunder shall be effective unless expressly assented to in writing by the party to be charged. If any portion of this Agreement is held invalid, the Parties agree that such invalidity shall not affect the validity of the remainder of this Agreement. This Agreement and associated documentation has been written in the English language, and the Parties agree that the English version will govern. (For Canada: Les parties aux présentes confirment leur volonté que cette convention de même que tous les documents y compris tout avis qui s'y rattache, soient rédigés en langue anglaise. (Translation: The parties confirm that this Agreement and all related documentation is and will be in the English language)).

Table of Contents

About This Guide xi

JUNOS Documentation and Release Notes	xi
Objectives	xi
Audience	xii
Supported Platforms	xii
Documentation Conventions	xii
Documentation Feedback	xiv
Requesting Technical Support	xiv
Self-Help Online Tools and Resources	xv
Opening a Case with JTAC	xv

Part 1

Configuring Access Privileges

Chapter 1

Configuring and Customizing Access Privileges 3

Using Permission Flags to Configure Access	3
Example: Configuring Access Privilege Levels	5
Allowing or Denying Individual Commands	6
Specifying Operational Mode Commands	6
Example: Defining Access Privileges to Individual Operational Commands	8
Example: Configuring Access Privileges to Individual Operational Mode Commands	8
Specifying Configuration Mode Commands	9
Example: Defining Access Privileges to Individual Configuration Mode Commands	11
Example: Configuring Access Privileges to Individual Configuration Mode Commands	11

Chapter 2

User Permission Flags 13

access	14
admin	15
clear	15
configure	22
control	22
firewall	22
flow-tap	22

- interface23
- maintenance23
- network28
- pgcp-session-mirroring30
- reset30
- routing30
- security34
- shell36
- snmp36
- system36
- trace37
- view42

Part 2

Index

- Index81

List of Tables

About This Guide	xi
Table 1: Notice Icons	xiii
Table 2: Text and Syntax Conventions	xiii

Part 1

Configuring Access Privileges

Chapter 1	Configuring and Customizing Access Privileges	3
	Table 3: Login Class Permission Flags	4
	Table 4: Common Regular Expression Operators to Allow or Deny Operational Mode Commands	7
	Table 5: Configuration Mode Commands—Common Regular Expression Operators	10

About This Guide

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

- JUNOS Documentation and Release Notes on page xi
- Objectives on page xi
- Audience on page xii
- Supported Platforms on page xii
- Documentation Conventions on page xii
- Documentation Feedback on page xiv
- Requesting Technical Support on page xiv

JUNOS Documentation and Release Notes

For a list of related JUNOS documentation, see <http://www.juniper.net/techpubs/software/junos/>.

If the information in the latest release notes differs from the information in the documentation, follow the *JUNOS Software Release Notes*.

To obtain the most current version of all Juniper Networks® technical documentation, see the product documentation page on the Juniper Networks website at <http://www.juniper.net/techpubs/>.

Juniper Networks supports a technical book program to publish books by Juniper Networks engineers and subject matter experts with book publishers around the world. These books go beyond the technical documentation to explore the nuances of network architecture, deployment, and administration using JUNOS Software and Juniper Networks devices. In addition, the Juniper Networks Technical Library, published in conjunction with O'Reilly Media, explores improving network security, reliability, and availability using JUNOS configuration techniques. All the books are for sale at technical bookstores and book outlets around the world. The current list can be viewed at <http://www.juniper.net/books>.

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: For additional information about 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, JUNOS Software currently supports the following platforms:

- J Series
- M Series
- MX Series
- T Series
- EX Series

Documentation Conventions

Table 1 on page xiii 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 <code>configure</code> 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 <i>domain-name</i>
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> >;

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

Convention	Description	Examples
(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 [community-ids]
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.	
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 .

Documentation Feedback

We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation. You can send your comments to techpubs-comments@juniper.net, or fill out the documentation feedback form at <https://www.juniper.net/cgi-bin/docbugreport/>. If you are using e-mail, be sure to include the following information with your comments:

- Document or topic name
- URL or page number
- Software release version (if applicable)

Requesting Technical Support

Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active J-Care or JNAS 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.

Self-Help Online Tools and Resources

For quick and easy problem resolution, Juniper Networks has designed an online self-service portal called the Customer Support Center (CSC) that provides you with the following features:

- 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/>
- Open a case online in the CSC Case Management tool: <http://www.juniper.net/cm/>

To verify service entitlement by product serial number, use our Serial Number Entitlement (SNE) Tool: <https://tools.juniper.net/SerialNumberEntitlementSearch/>

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 3 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 3 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 3: 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	<p>Can make flow-tap requests to the router. For example, a Dynamic Tasking Control Protocol (DTCP) client must authenticate itself to the JUNOS Software as an administrative user. That account must have flow-tap-operation permission.</p> <p>NOTE: flow-tap operation is not included in the all permission.</p>
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 session mirroring configuration for the pgcp command.
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 3: 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 the JUNOS Software 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 4 on page 7 lists common regular expression operators.

Table 4: 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, <code>(show system alarms) (show system software)</code> .
^	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, <code>allow-command "show interfaces\$"</code> means that the user can issue the <code>show interfaces</code> command but cannot issue the <code>show interfaces detail</code> or <code>show interfaces extensive</code> 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 5 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 the JUNOS Software 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 5 on page 10 lists common regular expression operators.

Table 5: 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 3 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.

- access on page 14
- admin on page 15
- clear on page 15
- configure on page 22
- control on page 22
- firewall on page 22

- flow-tap on page 22
- interface on page 23
- maintenance on page 23
- network on page 28
- pgcp-session-mirroring on page 30
- reset on page 30
- routing on page 30
- security on page 34
- shell on page 36
- snmp on page 36
- system on page 36
- trace on page 37
- view on page 42

access

Can view access configuration in configuration mode.

Commands No associated CLI commands.

Statements

```
[edit access]
[edit dynamic-profile]
[edit logical-systems access]
[edit logical-systems routing-instances instance system services static-subscribers
access-profile]
[edit logical-systems routing-instances instance system services static-subscribers
dynamic-profile]
[edit logical-systems routing-instances instance system services static-subscribers
group access-profile]
[edit logical-systems routing-instances instance system services static-subscribers
group dynamic-profile]
[edit logical-systems system services static-subscribers access-profile]
[edit logical-systems system services static-subscribers dynamic-profile]
[edit logical-systems system services static-subscribers group access-profile]
[edit logical-systems system services static-subscribers group dynamic-profile]
[edit routing-instances instance system services static-subscribers access-profile]
[edit routing-instances instance system services static-subscribers dynamic-profile]
[edit routing-instances instance system services static-subscribers group
access-profile]
[edit routing-instances instance system services static-subscribers group
dynamic-profile]
[edit system services static-subscribers access-profile]
[edit system services static-subscribers dynamic-profile]
[edit system services static-subscribers group access-profile]
[edit system services static-subscribers group dynamic-profile]
```

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 ancp subscriber clear ancp subscriber identifier <clear-ancp-subscriber-identifier-information> clear arp <clear-arp-table> clear auto-configuration clear auto-configuration interfaces 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-damping> clear bgp neighbor <clear-bgp-neighbor> clear bgp table <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 diameter

clear diameter function
    <clear-diameter-function>

clear diameter peer
    <clear-diameter-peer>

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-adjacency-information>

clear isis database
    <clear-isis-database-information>

clear isis overload
    <clear-isis-overload-information>

clear isis statistics
    <clear-isis-statistics-information>

clear l2-learning
clear l2-learning mac-move-buffer
clear l2-learning remote-backbone-edge-bridges
clear ldp
clear ldp neighbor
clear ldp session

```

```
clear lldp
clear lldp neighbors
clear lldp neighbors interface
clear lldp statistics
clear lldp statistics interface
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-lsp-information>

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 statistics
    <clear-aaa-statistics-table>

clear network-access aaa statistics address-assignment
clear network-access aaa statistics address-assignment client
clear network-access aaa statistics address-assignment pool
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 delay-statistics
  <clear-cfm-delay-statistics>

clear oam ethernet connectivity-fault-management path-database
  <clear-cfm-linktrace-path-database>

clear oam ethernet connectivity-fault-management policer
clear oam ethernet connectivity-fault-management statistics
  <clear-cfm-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 oam ethernet lmi
clear oam ethernet lmi statistics
  <clear-elmi-statistics>

clear ospf
clear ospf database
  <clear-ospf-database-information>

clear ospf io-statistics
  <clear-ospf-io-statistics-information>

clear ospf neighbor
  <clear-ospf-neighbor-information>

clear ospf overload
  <clear-ospf-overload-information>

clear ospf statistics
  <clear-ospf-statistics-information>

clear ospf3
clear ospf3 database
  <clear-ospf3-database-information>

clear ospf3 io-statistics
clear ospf3 neighbor
  <clear-ospf3-neighbor-information>

```

```

clear ospf3 overload
  <clear-ospf3-overload-information>

clear ospf3 statistics
  <clear-ospf3-io-statistics-information>

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-session-information>

clear rsvp statistics
  < clear-rsvp-counters-information>

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 denied-messages
  <clear-service-bsg-denied-messages>

clear services border-signaling-gateway name-resolution-cache
  <clear-service-border-signaling-gateway-name-resolution-cache>

clear services border-signaling-gateway name-resolution-cache all
  <clear-service-border-signaling-gateway-name-resolution-cache-all>

```

```

clear services border-signaling-gateway name-resolution-cache by-fqdn
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 gates gateway
    <clear-service-pgcp-gates-gateway>

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

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

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 dynamic-profiles firewall]
 [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 dynamic-profiles routing-instances instance system services dhcp-local-server] [edit dynamic-profiles routing-instances instance system services static-subscribers group] [edit forwarding-options] [edit interfaces] [edit jnx-example] [edit logical-systems forwarding-options] [edit logical-systems interfaces] [edit logical-systems routing-instances instance system services dhcp-local-server] [edit logical-systems routing-instances instance system services static-subscribers group] [edit logical-systems system services dhcp-local-server] [edit logical-systems system services static-subscribers group] [edit routing-instances instance system services dhcp-local-server] [edit routing-instances instance system services static-subscribers group] [edit services logging] [edit services radius-flow-tap] [edit services radius-flow-tap interfaces] [edit system services dhcp-local-server] [edit system services static-subscribers group]

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> clear-system-services-reverse-information file archive monitor traffic request chassis cb
-----------------	---

```
request chassis cfeb
request chassis cfeb master
request chassis cip
request chassis fabric
request chassis fabric plane
request chassis feb
  <request-feb>
```

```
request chassis fpc
request chassis mcs
request chassis mic
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 sib f13
```

```
request chassis sib f2s
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 datapath-debug
request security datapath-debug action-profile
request security datapath-debug action-profile reload-all
  <reload-eedebg-action-profile>
```

```
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 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 re
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 re
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 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 software validate in-service-upgrade
    <check-in-service-upgrade>

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

request system zeroize
request vpls-switchover
set date
set date ntpshow 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
  <request-ping-ethernet>

ping mpls
ping mpls l2circuit
ping mpls l2circuit interface
  <request-ping-l2circuit-interface>

ping mpls l2circuit virtual-circuit
  <request-ping-l2circuit-virtual-circuit>

ping mpls l2vpn
ping mpls l2vpn instance
  <request-ping-l2vpn-instance>

ping mpls l2vpn interface
  <request-ping-l2vpn-interface>

ping mpls l3vpn
  <request-ping-l3vpn>

ping mpls ldp
  <request-ping-ldp-lsp>

ping mpls ldp p2mp
  <request-ping-ldp-p2mp-lsp>

ping mpls lsp-end-point
  <request-ping-lsp-end-point>

ping mpls rsvp
  <request-ping-rsvp-lsp>

ping vpls
ping vpls instance
  <request-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
  <request-traceroute-ethernet>

```

```

traceroute monitor
traceroute mpls
traceroute mpls ldp
traceroute mpls rsvp

```

Statements No associated configuration statements.

pgcp-session-mirroring

Can view session mirroring configuration for the `pgcp` command.

Commands `show services pgcp gates gate-way 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 services`
`restart services pgcp`
`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 dynamic-profiles routing-instances]`
`[edit dynamic-profiles routing-instances instance bridge-domains]`
`[edit dynamic-profiles routing-instances instance bridge-domains domain`

```

multicast-snooping-options]
[edit dynamic-profiles routing-instances instance bridge-domains domain
multicast-snooping-options traceoptions]
[edit dynamic-profiles routing-instances instance multicast-snooping-options
traceoptions]
[edit dynamic-profiles routing-instances instance pbb-options]
[edit dynamic-profiles routing-instances instance protocols]
[edit dynamic-profiles routing-instances instance protocols bgp group neighbor
traceoptions]
[edit dynamic-profiles routing-instances instance protocols bgp group traceoptions]
[edit dynamic-profiles routing-instances instance protocols bgp traceoptions]
[edit dynamic-profiles routing-instances instance protocols esis traceoptions]
[edit dynamic-profiles routing-instances instance protocols isis traceoptions]
[edit dynamic-profiles routing-instances instance protocols l2vpn traceoptions]
[edit dynamic-profiles routing-instances instance protocols ldp traceoptions]
[edit dynamic-profiles routing-instances instance protocols msdp group peer
traceoptions]
[edit dynamic-profiles routing-instances instance protocols msdp group traceoptions]
[edit dynamic-profiles routing-instances instance protocols msdp peer traceoptions]
[edit dynamic-profiles routing-instances instance protocols msdp traceoptions]
[edit dynamic-profiles routing-instances instance protocols mvpn traceoptions]
[edit dynamic-profiles routing-instances instance protocols ospf traceoptions]
[edit dynamic-profiles routing-instances instance protocols pim traceoptions]
[edit dynamic-profiles routing-instances instance protocols rip traceoptions]
[edit dynamic-profiles routing-instances instance protocols ripng traceoptions]
[edit dynamic-profiles routing-instances instance protocols router-discovery
traceoptions]
[edit dynamic-profiles routing-instances instance protocols vpls traceoptions]
[edit dynamic-profiles routing-instances instance routing-options]
[edit dynamic-profiles routing-instances instance routing-options multicast
traceoptions]
[edit dynamic-profiles routing-instances instance routing-options traceoptions]
[edit dynamic-profiles routing-instances instance service-groups]
[edit dynamic-profiles routing-instances instance switch-options]
[edit dynamic-profiles routing-options multicast traceoptions]
[edit jnx-example]
[edit logical-systems bridge-domains]
[edit logical-systems bridge-domains domain multicast-snooping-options]
[edit logical-systems bridge-domains domain multicast-snooping-options 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 pbb-options]
[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 service-groups]
[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 logical-systems switch-options]
[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 pbb-options]
[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 service-groups]
[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 application-statistics
  <clear-idp-applications-information>

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 datapath-debug
request security datapath-debug action-profile
request security datapath-debug action-profile reload-all
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-ddos
show security idp application-ddos application
    <get-idp-addos-application-information>

show security idp application-identification
show security idp application-identification application-system-cache
    <get-idp-application-system-cache>

show security idp application-statistics
    <get-idp-applications-information>

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 dynamic-profiles routing-instances instance forwarding-options helpers tftp]
[edit dynamic-profiles routing-instances instance routing-options fate-sharing]
[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-configuration-rollbacks]
[edit system max-configurations-on-flash]
[edit system mirror-flash-on-disk]
[edit system name-server]
[edit system no-multicast-echo]
[edit system no-neighbor-learn]
[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

<request-monitor-ethernet-delay-measurement>

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 demux traceoptions]
 [edit dynamic-profiles protocols igmp traceoptions]
 [edit dynamic-profiles routing-instances instance bridge-domains domain forwarding-options dhcp-relay traceoptions]
 [edit dynamic-profiles routing-instances instance bridge-domains domain multicast-snooping-options traceoptions]
 [edit dynamic-profiles routing-instances instance bridge-domains domain protocols igmp-snooping traceoptions]
 [edit dynamic-profiles routing-instances instance forwarding-options dhcp-relay traceoptions]
 [edit dynamic-profiles routing-instances instance multicast-snooping-options traceoptions]
 [edit dynamic-profiles routing-instances instance protocols bgp group neighbor traceoptions]
 [edit dynamic-profiles routing-instances instance protocols bgp group traceoptions]
 [edit dynamic-profiles routing-instances instance protocols bgp traceoptions]
 [edit dynamic-profiles routing-instances instance protocols esis traceoptions]
 [edit dynamic-profiles routing-instances instance protocols igmp-snooping traceoptions]
 [edit dynamic-profiles routing-instances instance protocols isis traceoptions]
 [edit dynamic-profiles routing-instances instance protocols l2vpn traceoptions]
 [edit dynamic-profiles routing-instances instance protocols ldp traceoptions]
 [edit dynamic-profiles routing-instances instance protocols msdp group peer traceoptions]
 [edit dynamic-profiles routing-instances instance protocols msdp group traceoptions]
 [edit dynamic-profiles routing-instances instance protocols msdp peer traceoptions]
 [edit dynamic-profiles routing-instances instance protocols msdp traceoptions]
 [edit dynamic-profiles routing-instances instance protocols mvpn traceoptions]
 [edit dynamic-profiles routing-instances instance protocols ospf traceoptions]
 [edit dynamic-profiles routing-instances instance protocols pim traceoptions]
 [edit dynamic-profiles routing-instances instance protocols rip traceoptions]
 [edit dynamic-profiles routing-instances instance protocols ripng traceoptions]
 [edit dynamic-profiles routing-instances instance protocols router-discovery traceoptions]
 [edit dynamic-profiles routing-instances instance protocols vpls traceoptions]
 [edit dynamic-profiles routing-instances instance routing-options multicast traceoptions]
 [edit dynamic-profiles routing-instances instance routing-options traceoptions]
 [edit dynamic-profiles routing-instances instance services mobile-ip traceoptions]
 [edit dynamic-profiles routing-instances instance system services dhcp-local-server traceoptions]

```

[edit dynamic-profiles routing-options multicast traceoptions]
[edit forwarding-options dhcp-relay traceoptions]
[edit jnx-example traceoptions]
[edit logical-systems bridge-domains domain forwarding-options dhcp-relay
traceoptions]
[edit logical-systems bridge-domains domain multicast-snooping-options traceoptions]
[edit logical-systems bridge-domains domain protocols igmp-snooping 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 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 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 oam ethernet lmi 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 ppp-service traceoptions]
[edit logical-systems protocols pppoe 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 services mobile-ip 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 services mobile-ip 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 dvmrp 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 oam ethernet lmi traceoptions]
[edit protocols ospf traceoptions]
[edit protocols pim traceoptions]
[edit protocols ppp monitor-session]
[edit protocols ppp traceoptions]
[edit protocols ppp-service traceoptions]
[edit protocols pppoe 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 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 system accounting traceoptions]
[edit system auto-configuration 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 processes sdk-service traceoptions]
[edit system processes static-subscribers 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 application-aware-access-list
clear services application-aware-access-list statistics
clear services application-aware-access-list statistics interface
clear services application-aware-access-list statistics subscriber
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 flows
    <clear-service-msp-flow-table-information>

clear services flows ip-action
    <clear-service-msp-flow-ipaction-table>

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 local-policy-decision-function
clear services local-policy-decision-function statistics
clear services local-policy-decision-function statistics interface
clear services local-policy-decision-function statistics subscriber
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 ancp subscriber identifier
show ancp subscriber neighbor
show aps
show aps group
show aps interface
show arp
  <get-arp-table-information>

show as-path
show as-path domain
show auto-configuration
show auto-configuration interfaces
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 bmp
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 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 cip
show chassis craft-interface
  <get-craft-information>

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

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

show chassis environment cip
  <get-environment-cip-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 environment sib f13
show chassis environment sib f2s
show chassis ethernet-switch
show chassis ethernet-switch errors
show chassis ethernet-switch statistics
show chassis fabric
show chassis fabric errors
show chassis fabric errors fpc
  <get-fm-fpc-errors>

show chassis fabric errors sib
  <get-fm-sib-errors>

show chassis fabric errors sib f13
show chassis fabric errors sib f2s
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 fan
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
  <get-power-usage-information>

show chassis power sequence
show chassis power upgrade

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 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 forwarding-class-map
    <get-cos-forwarding-class-map-table-information>

show class-of-service forwarding-table forwarding-class-map mapping
    <get-cos-forwarding-class-map-interface-table-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 multi-destination
  <get-cos-multi-destination-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 diameter
  <get-diameter-information>

show diameter function
  <get-diameter-function-information>

show diameter function statistics
  <get-diameter-function-statistics>

show diameter instance
  <get-diameter-instance-information>

show diameter network-element
  <get-diameter-network-element-information>

show diameter network-element map

```

```
<get-diameter-network-element-map-information>

show diameter peer
  <get-diameter-peer-information>

show diameter peer map
  <get-diameter-peer-map-information>

show diameter peer statistics
  <get-diameter-peer-statistics>

show diameter route
  <get-diameter-route-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 forwarding-options
show forwarding-options next-hop-group
show forwarding-options port-mirroring

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

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

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

show igmp output-group
    <get-igmp-output-group-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 mc-ae
show interfaces policers
  <get-interface-policer-information>

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

show interfaces redundancy
show interfaces redundancy detail
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
  <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 backup
show isis backup coverage
  <get-isis-backup-coverage-information>

show isis backup label-switched-path
  <get-isis-backup-lsp-information>

show isis backup spf

show isis backup spf results
  <get-isis-backup-spf-results-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 backbone-instance
show l2-learning global-information
show l2-learning global-mac-count
show l2-learning instance
show l2-learning interface
show l2-learning mac-move-buffer
show l2-learning provider-instance
show l2-learning remote-backbone-edge-bridges

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 lldp
<get-lldp-information>

show lldp detail
<get-lldp-information-detail>

show lldp local-information
<get-lldp-local-info>

show lldp neighbors
<get-lldp-neighbors-information>

show lldp neighbors interface
show lldp remote-global-statistics
<get-lldp-remote-global-statistics>

show lldp statistics
<get-lldp-statistics-information>

show lldp statistics interface
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 output-group
    <get-mld-output-group-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 mobile-ip wimax
show mobile-ip wimax release
    <get-mip-wimax-release-information>

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 pim-to-igmp-proxy
  <get-multicast-pim-to-igmp-proxy-information>

show multicast pim-to-mld-proxy
  <get-multicast-pim-to-mld-proxy-information>

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

```

```

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

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

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 statistics address-assignment
show network-access aaa statistics address-assignment client
show network-access aaa statistics address-assignment pool
show network-access aaa subscribers
  <get-aaa-subscriber-table>

show network-access aaa subscribers session-id

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 delay-statistics
  <get-cfm-delay-statistics>

show oam ethernet connectivity-fault-management forwarding-state
show oam ethernet connectivity-fault-management forwarding-state instance
  <get-cfm-forwarding-state-instance-information>

show oam ethernet connectivity-fault-management forwarding-state interface
  <get-cfm-forwarding-state-interface-information>

show oam ethernet connectivity-fault-management interfaces
  <get-cfm-interfaces-information>

show oam ethernet connectivity-fault-management mep-database
  <get-cfm-mep-database>

show oam ethernet connectivity-fault-management mep-statistics
  <get-cfm-mep-statistics>

show oam ethernet connectivity-fault-management mip
  <get-cfm-mip-information>

show oam ethernet connectivity-fault-management path-database
  <get-cfm-linktrace-path-database>

show oam ethernet connectivity-fault-management policer
  <get-evc-information>

show oam ethernet link-fault-management
  <get-lfmd-information>

show oam ethernet lmi
  <get-elmi-information>

show oam ethernet lmi statistics
  <get-elmi-statistics>

show ospf
show ospf backup
show ospf backup coverage
  <get-ospf-backup-coverage-information>

show ospf backup lsp
  <get-ospf-backup-lsp-information>

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

```

```
show ospf backup spf
  <get-ospf-backup-spf-information>

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 backup
show ospf3 backup coverage
  <get-ospf3-backup-coverage-information>

show ospf3 backup lsp
  <get-ospf3-backup-lsp-information>

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

show ospf3 backup spf
  <get-ospf3-backup-spf-information>

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 pfem
show pfe pfem detail
show pfe pfem extensive
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 cpu fpe

```

```

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

show pfe version brief
show pfe version detail
show pfe version extensive
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-information>

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 service-name-tables
    <get-pppoe-service-name-table-information>

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

show pppoe underlying-interfaces
    <get-pppoe-underlying-interface-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 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-rteexport-table-information>

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

show route export vrf-target
    <get-rteexport-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>

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>

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 application-system-cache pic
show services application-identification counter
  <get-appid-counter>

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

show services border-signaling-gateway
show services border-signaling-gateway admission-control
  <get-service-border-signaling-gateway-statistics-admission-control>

show services border-signaling-gateway by-call-context-id
  <get-service-bsg-information-by-call-context-id>

```

```

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

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

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

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

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

show services border-signaling-gateway denied-messages
  <get-service-bsg-denied-messages>

show services border-signaling-gateway name-resolution-cache
  <get-service-border-signaling-gateway-name-resolution-cache>

show services border-signaling-gateway name-resolution-cache all
  <get-service-border-signaling-gateway-name-resolution-cache-all>

show services border-signaling-gateway name-resolution-cache by-fqdn
show services border-signaling-gateway status
  <get-service-bsg-status-information>

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

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 flows
    <get-service-msp-flow-table-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>

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
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>

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

show services pgcp active-configuration gateway
  <get-service-pgcp-active-configuration-gateway>

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

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

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

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

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

```

```

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

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

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

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

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

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 pgcp terminations gateway
  <get-service-pgcp-terminations-gateway>

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 plug-ins
  <get-service-set-plugin-summary>

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

show services service-sets statistics tcp-mss
  <get-service-set-tcp-mss-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>

show system firmware
  <get-system-firmware-information>

show system license
  <get-license-summary-information>

show system license installed
  <get-license-information>

show system license keys
  <get-license-key-information>

show system license usage
  <get-license-usage-summary>

show system processes
show system processes brief
show system processes extensive
show system processes health
  <get-process-health-information>
```

```
show system processes providers
show system processes resource-limits
show system processes summary
show system queues
show system reboot
show system resource-cleanup
show system resource-cleanup processes
    <get-system-resource-cleanup-processes-information>

show system rollback
    <get-rollback-information>

show system services
show system services dhcp
show system services dhcp binding
    <get-dhcp-binding-information>

show system services dhcp conflict
    <get-dhcp-conflict-information>

show system services dhcp global
    <get-dhcp-global-information>

show system services dhcp pool
    <get-dhcp-pool-information>

show system services dhcp statistics
    <get-dhcp-statistics-information>

show system services reverse
    <get-system-services-reverse-information>

show system services service-deployment
    <get-service-deployment-service-information>

show system snapshot
    <get-snapshot-information>

show system software
show system software backup
    <get-package-backup-information>

<get-software-installation-status>

show system statistics

    <get-statistics-information>

show system statistics bridge
show system statistics vpls
show system storage
    <get-system-storage>

show system switchover
    <get-switchover-information>
```

```
show system uptime
    <get-system-uptime-information>

show system users
    <get-system-users-information>

show system virtual-memory
show task
show task io
show task memory
show task replication
show task snooping
show task snooping io
show task snooping memory
show ted
show ted database
    <get-ted-database-information>

show ted link
    <get-ted-link-information>

show ted protocol
    <get-ted-protocol-information>

show version
    <get-software-information>

show vpls
show vpls connections
    <get-vpls-connection-information>

show vpls flood
show vpls flood event-queue
    <get-vpls-event-queue-information>

show vpls flood route
show vpls flood route all-ce-flood
    <get-vpls-all-ce-flood-route-information>

show vpls flood route all-flood
    <get-vpls-all-flood-route-information>

show vpls flood route alt-root-flood
    <get-vpls-alt-root-flood-route-information>

show vpls flood route ce-flood
    <get-vpls-ce-flood-route-information>

show vpls flood route mlp-flood
    <get-vpls-mlp-flood-route-information>

show vpls flood route re-flood
    <get-vpls-re-flood-route-information>

show vpls mac-table
    <get-vpls-mac-table>
```

```
show vpls mac-table interface
  <get-vpls-interface-mac-table>
```

```
show vpls statistics
  <get-vpls-statistics-information>
```

```
show vrrp
show vrrp interface
show vrrp track
test interface
test interface fdl-line-loop
test interface fdl-line-loop ansi
test interface fdl-line-loop ansi initiate
test interface fdl-line-loop ansi terminate
test interface fdl-line-loop bellcore
test interface fdl-line-loop bellcore initiate
test interface fdl-line-loop bellcore terminate
test interface fdl-payload-loop
test interface fdl-payload-loop ansi
test interface fdl-payload-loop ansi initiate
test interface fdl-payload-loop ansi terminate
test interface fdl-payload-loop bellcore
test interface fdl-payload-loop bellcore initiate
test interface fdl-payload-loop bellcore terminate
test interface inband-line-loop
test interface inband-line-loop ansi
test interface inband-line-loop ansi initiate
test interface inband-line-loop ansi terminate
test interface inband-line-loop bellcore
test interface inband-line-loop bellcore initiate
test interface inband-line-loop bellcore terminate
test interface inband-line-loop initiate
test interface inband-line-loop terminate
test interface inband-payload-loop
test interface inband-payload-loop ansi
test interface inband-payload-loop ansi initiate
test interface inband-payload-loop ansi terminate
test interface inband-payload-loop bellcore
test interface inband-payload-loop bellcore initiate
test interface inband-payload-loop bellcore terminate
test msdp
test msdp dependent-peers
test msdp rpf-peer
test policy
```

Statements	<pre>[edit dynamic-profiles routing-instances instance services mobile-ip home-agent enable-service] [edit logical-systems routing-instances instance services mobile-ip home-agent enable-service] [edit logical-systems services mobile-ip home-agent enable-service] [edit routing-instances instance services mobile-ip home-agent enable-service] [edit services mobile-ip home-agent enable-service]</pre>
-------------------	--

Part 2

Index

- Index on page 81

Index

Symbols

!	regular expression operator.....	7, 10
#	comments in configuration statements.....	xiv
\$	regular expression operator.....	7, 10
()	regular expression operator.....	7, 10
()	in syntax descriptions.....	xiv
*	regular expression operator.....	10
+	regular expression operator.....	10
.	regular expression operator.....	10
< >	in syntax descriptions.....	xiii
[]	in configuration statements.....	xiv
\	regular expression operator.....	7, 10
^	regular expression operator.....	7, 10
{ }	in configuration statements.....	xiv
	(pipe), in syntax descriptions.....	xiv

A

access privilege levels	login classes.....	3
allow-commands statement	usage guidelines.....	6
allow-configuration statement	usage guidelines.....	6
allowing commands to login classes.....		6

B

braces, in configuration statements.....	xiv
brackets	
angle, in syntax descriptions.....	xiii
square, in configuration statements.....	xiv

C

commands	allowing or denying to login classes.....	6
comments, in configuration statements.....		xiv
conventions	text and syntax.....	xiii
curly braces, in configuration statements.....		xiv
customer support.....		xiv
	contacting JTAC.....	xiv

D

deny-commands statement	usage guidelines.....	6
deny-configuration statement	usage guidelines.....	6
denying commands to login classes.....		6
documentation	comments on.....	xiv

F

font conventions.....		xiii
-----------------------	--	------

L

login classes	access privilege levels.....	3
	commands, allowing or denying.....	6
	defining.....	5

M

manuals	comments on.....	xiv
---------	------------------	-----

O

operators, regular expression.....		7, 10
------------------------------------	--	-------

P

parentheses, in syntax descriptions.....		xiv
--	--	-----

permissions statement	
usage guidelines.....	3

R

regular expression operators.....	7, 10
-----------------------------------	-------

S

support, technical <i>See</i> technical support	
syntax conventions.....	xiii

T

technical support	
contacting JTAC.....	xiv