



---

# Junos<sup>®</sup> OS for EX Series Ethernet Switches

## Access and User Management Feature Guide for EX Series Switches

Release

15.1



---

Modified: 2015-06-12

Juniper Networks, Inc.  
1133 Innovation Way  
Sunnyvale, California 94089  
USA  
408-745-2000  
[www.juniper.net](http://www.juniper.net)

Juniper Networks, Junos, Steel-Belted Radius, NetScreen, and ScreenOS are registered trademarks of Juniper Networks, Inc. in the United States and other countries. The Juniper Networks Logo, the Junos logo, and JunosE are trademarks 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.

*Junos<sup>®</sup> OS for EX Series Ethernet Switches Access and User Management Feature Guide for EX Series Switches*  
Release 15.1  
Copyright © 2016, Juniper Networks, Inc.  
All rights reserved.

The information in this document is current as of the date on the title page.

#### YEAR 2000 NOTICE

Juniper Networks hardware and software products are Year 2000 compliant. Junos OS 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

The Juniper Networks product that is the subject of this technical documentation consists of (or is intended for use with) Juniper Networks software. Use of such software is subject to the terms and conditions of the End User License Agreement ("EULA") posted at <http://www.juniper.net/support/eula.html>. By downloading, installing or using such software, you agree to the terms and conditions of that EULA.

# Table of Contents

	About the Documentation . . . . .	xi
	Documentation and Release Notes . . . . .	xi
	Supported Platforms . . . . .	xi
	Using the Examples in This Manual . . . . .	xi
	Merging a Full Example . . . . .	xii
	Merging a Snippet . . . . .	xii
	Documentation Conventions . . . . .	xiii
	Documentation Feedback . . . . .	xv
	Requesting Technical Support . . . . .	xv
	Self-Help Online Tools and Resources . . . . .	xv
	Opening a Case with JTAC . . . . .	xvi
<b>Part 1</b>	<b>Overview</b>	
<b>Chapter 1</b>	<b>Software Overview . . . . .</b>	<b>3</b>
	Understanding Software Infrastructure and Processes . . . . .	3
	Routing Engine and Packet Forwarding Engine . . . . .	3
	Junos OS Processes . . . . .	4
<b>Chapter 2</b>	<b>Unattended Mode for U-Boot Overview . . . . .</b>	<b>7</b>
	Understanding Unattended Mode for U-Boot on EX Series Switches . . . . .	7
<b>Part 2</b>	<b>Configuration</b>	
<b>Chapter 3</b>	<b>Configuration Tasks . . . . .</b>	<b>11</b>
	Configuring Management Access for the EX Series Switch (J-Web Procedure) . . . . .	11
	Generating SSL Certificates to Be Used for Secure Web Access . . . . .	14
	Configuring MS-CHAPv2 to Provide Password-Change Support (CLI Procedure) . . . . .	15
	Using Unattended Mode for U-Boot to Prevent Unauthorized Access . . . . .	15
	Configuring the Boot Loader Password . . . . .	16
	Configuring Unattended Mode for U-Boot . . . . .	16
	Accessing the U-Boot CLI . . . . .	17
<b>Chapter 4</b>	<b>Configuration Statements . . . . .</b>	<b>19</b>
	[edit services] Configuration Statement Hierarchy on EX Series Switches . . . . .	20
	Supported Statements in the [edit services] Hierarchy Level . . . . .	21
	Unsupported Statements in the [edit services] Hierarchy Level . . . . .	23
	allow-commands . . . . .	24
	allow-configuration . . . . .	25
	announcement . . . . .	26

archive-sites .....	26
authentication (Login) .....	27
authentication-order .....	28
boot-loader-authentication .....	29
change-type .....	30
class (Assigning a Class to an Individual User) .....	30
class (Defining Login Classes) .....	31
class-usage-profile .....	32
counters .....	33
deny-commands .....	33
deny-configuration .....	34
destination-classes .....	35
fields (for Interface Profiles) .....	36
file (Associating with a Profile) .....	37
file (Configuring a Log File) .....	38
files .....	39
filter-profile .....	40
format .....	41
full-name .....	42
idle-timeout (System-Login) .....	43
interface-profile .....	44
interval .....	45
login .....	46
login-alarms .....	47
login-tip .....	47
maximum-length .....	48
message .....	49
mib-profile .....	50
minimum-changes .....	51
minimum-length .....	52
object-names .....	53
operation .....	53
password (Login) .....	54
permissions .....	55
radius-options (edit system) .....	56
retry-options .....	57
root-authentication .....	58
root-login .....	59
routing-engine-profile .....	60
size .....	61
source-classes .....	61
start-time .....	62
tacplus-options .....	63
tacplus-server .....	64
traceoptions (Address-Assignment Pool) .....	65
transfer-interval .....	66
uid .....	67
unattended-boot .....	68
user (Access) .....	69

<b>Part 3</b>	<b>Administration</b>	
<b>Chapter 5</b>	<b>Routine Monitoring</b> .....	<b>73</b>
	Managing Users (J-Web Procedure) .....	73
<b>Chapter 6</b>	<b>Operational Commands</b> .....	<b>77</b>
	request message .....	78
	show subscribers .....	79
<b>Part 4</b>	<b>Troubleshooting</b>	
<b>Chapter 7</b>	<b>Troubleshooting</b> .....	<b>101</b>
	Troubleshooting Loss of the Root Password .....	101



# List of Figures

Part 4	Troubleshooting	
Chapter 7	Troubleshooting .....	101
	Figure 1: Connecting to the Console Port on the EX Series Switch .....	102





# List of Tables

	<b>About the Documentation</b> . . . . .	<b>xi</b>
	Table 1: Notice Icons . . . . .	xiii
	Table 2: Text and Syntax Conventions . . . . .	xiii
<b>Part 1</b>	<b>Overview</b>	
<b>Chapter 1</b>	<b>Software Overview</b> . . . . .	<b>3</b>
	Table 3: Junos OS Processes . . . . .	4
<b>Chapter 2</b>	<b>Unattended Mode for U-Boot Overview</b> . . . . .	<b>7</b>
	Table 4: Unattended Mode Behavior . . . . .	8
<b>Part 2</b>	<b>Configuration</b>	
<b>Chapter 3</b>	<b>Configuration Tasks</b> . . . . .	<b>11</b>
	Table 5: Secure Management Access Configuration Summary . . . . .	12
<b>Chapter 4</b>	<b>Configuration Statements</b> . . . . .	<b>19</b>
	Table 6: Unsupported [edit services] Configuration Statements on EX Series Switches . . . . .	23
<b>Part 3</b>	<b>Administration</b>	
<b>Chapter 5</b>	<b>Routine Monitoring</b> . . . . .	<b>73</b>
	Table 7: User Management Configuration Page Summary . . . . .	74
	Table 8: Add an Authentication Server . . . . .	75
<b>Chapter 6</b>	<b>Operational Commands</b> . . . . .	<b>77</b>
	Table 9: show subscribers Output Fields . . . . .	82



# About the Documentation

- Documentation and Release Notes on page xi
- Supported Platforms on page xi
- Using the Examples in This Manual on page xi
- Documentation Conventions on page xiii
- Documentation Feedback on page xv
- Requesting Technical Support on page xv

## Documentation and Release Notes

---

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

If the information in the latest release notes differs from the information in the documentation, follow the product Release Notes.

Juniper Networks Books publishes books by Juniper Networks engineers and subject matter experts. These books go beyond the technical documentation to explore the nuances of network architecture, deployment, and administration. The current list can be viewed at <http://www.juniper.net/books>.

## Supported Platforms

---

For the features described in this document, the following platforms are supported:

- EX Series

## Using the Examples in This Manual

---

If you want to use the examples in this manual, you can use the **load merge** or the **load merge relative** command. These commands cause the software to merge the incoming configuration into the current candidate configuration. The example does not become active until you commit the candidate configuration.

If the example configuration contains the top level of the hierarchy (or multiple hierarchies), the example is a *full example*. In this case, use the **load merge** command.

If the example configuration does not start at the top level of the hierarchy, the example is a *snippet*. In this case, use the **load merge relative** command. These procedures are described in the following sections.

## Merging a Full Example

To merge a full example, follow these steps:

1. From the HTML or PDF version of the manual, copy a configuration example into a text file, save the file with a name, and copy the file to a directory on your routing platform.

For example, copy the following configuration to a file and name the file **ex-script.conf**. Copy the **ex-script.conf** file to the **/var/tmp** directory on your routing platform.

```
system {
  scripts {
    commit {
      file ex-script.xml;
    }
  }
}
interfaces {
  fxp0 {
    disable;
    unit 0 {
      family inet {
        address 10.0.0.1/24;
      }
    }
  }
}
```

2. Merge the contents of the file into your routing platform configuration by issuing the **load merge** configuration mode command:

```
[edit]
user@host# load merge /var/tmp/ex-script.conf
load complete
```

## Merging a Snippet

To merge a snippet, follow these steps:

1. From the HTML or PDF version of the manual, copy a configuration snippet into a text file, save the file with a name, and copy the file to a directory on your routing platform.

For example, copy the following snippet to a file and name the file **ex-script-snippet.conf**. Copy the **ex-script-snippet.conf** file to the **/var/tmp** directory on your routing platform.

```
commit {
  file ex-script-snippet.xml; }
```

2. Move to the hierarchy level that is relevant for this snippet by issuing the following configuration mode command:

```
[edit]
user@host# edit system scripts
[edit system scripts]
```

3. Merge the contents of the file into your routing platform configuration by issuing the **load merge relative** configuration mode command:

```
[edit system scripts]
user@host# load merge relative /var/tmp/ex-script-snippet.conf
load complete
```

For more information about the **load** command, see the *CLI User Guide*.

## 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.
	Tip	Indicates helpful information.
	Best practice	Alerts you to a recommended use or implementation.

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

Table 2: Text and Syntax Conventions

Convention	Description	Examples
<b>Bold text like this</b>	Represents text that you type.	To enter configuration mode, type the <b>configure</b> command:  user@host> <b>configure</b>

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

Convention	Description	Examples
Fixed-width text like this	Represents output that appears on the terminal screen.	<code>user@host&gt; show chassis alarms</code> <code>No alarms currently active</code>
<i>Italic text like this</i>	<ul style="list-style-type: none"><li>Introduces or emphasizes important new terms.</li><li>Identifies guide names.</li><li>Identifies RFC and Internet draft titles.</li></ul>	<ul style="list-style-type: none"><li>A policy <i>term</i> is a named structure that defines match conditions and actions.</li><li><i>Junos OS CLI User Guide</i></li><li>RFC 1997, <i>BGP Communities Attribute</i></li></ul>
<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@# <b>set system domain-name</b> <i>domain-name</i>
Text like this	Represents names of configuration statements, commands, files, and directories; configuration hierarchy levels; or labels on routing platform components.	<ul style="list-style-type: none"><li>To configure a stub area, include the <b>stub</b> statement at the [edit protocols ospf area area-id] hierarchy level.</li><li>The console port is labeled <b>CONSOLE</b>.</li></ul>
< > (angle brackets)	Encloses optional keywords or variables.	<b>stub &lt;default-metric <i>metric</i>&gt;;</b>
(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.	<b>broadcast   multicast</b>  <b>(<i>string1</i>   <i>string2</i>   <i>string3</i>)</b>
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	<b>rsvp { # Required for dynamic MPLS only</b>
[ ] (square brackets)	Encloses a variable for which you can substitute one or more values.	<b>community name members [ <i>community-ids</i> ]</b>
Indentation and braces ( { } )	Identifies a level in the configuration hierarchy.	[edit] routing-options { static { route default { nexthop <i>address</i> ; retain; } } }
;(semicolon)	Identifies a leaf statement at a configuration hierarchy level.	
GUI Conventions		
Bold text like this	Represents graphical user interface (GUI) items you click or select.	<ul style="list-style-type: none"><li>In the Logical Interfaces box, select <b>All Interfaces</b>.</li><li>To cancel the configuration, click <b>Cancel</b>.</li></ul>

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

Convention	Description	Examples
> (bold right angle bracket)	Separates levels in a hierarchy of menu selections.	In the configuration editor hierarchy, select <b>Protocols&gt;Ospf</b> .

## Documentation Feedback

We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation. You can provide feedback by using either of the following methods:

- Online feedback rating system—On any page of the Juniper Networks TechLibrary site at <http://www.juniper.net/techpubs/index.html>, simply click the stars to rate the content, and use the pop-up form to provide us with information about your experience. Alternately, you can use the online feedback form at <http://www.juniper.net/techpubs/feedback/>.
- E-mail—Send your comments to [techpubs-comments@juniper.net](mailto:techpubs-comments@juniper.net). Include the document or topic name, URL or page number, and software 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 Partner Support Service support contract, or are covered under warranty, and need post-sales 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/us/en/local/pdf/resource-guides/7100059-en.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:  
<http://kb.juniper.net/InfoCenter/>
- 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, see <http://www.juniper.net/support/requesting-support.html>.



## PART 1

# Overview

- [Software Overview on page 3](#)
- [Unattended Mode for U-Boot Overview on page 7](#)



## CHAPTER 1

# Software Overview

- [Understanding Software Infrastructure and Processes on page 3](#)

### Understanding Software Infrastructure and Processes

---

Each switch runs the Juniper Networks Junos operating system (Junos OS) for Juniper Networks EX Series Ethernet Switches on its general-purpose processors. Junos OS includes processes for Internet Protocol (IP) routing and for managing interfaces, networks, and the chassis.

The Junos OS runs on the Routing Engine. The Routing Engine kernel coordinates communication among the Junos OS processes and provides a link to the Packet Forwarding Engine.

With the J-Web interface and the command-line interface (CLI) to the Junos OS, you configure switching features and routing protocols and set the properties of network interfaces on your switch. After activating a software configuration, use either the J-Web or CLI user interface to monitor the switch, manage operations, and diagnose protocol and network connectivity problems.

- [Routing Engine and Packet Forwarding Engine on page 3](#)
- [Junos OS Processes on page 4](#)

### Routing Engine and Packet Forwarding Engine

A switch has two primary software processing components:

- **Packet Forwarding Engine**—Processes packets; applies filters, routing policies, and other features; and forwards packets to the next hop along the route to their final destination.
- **Routing Engine**—Provides three main functions:
  - Creates the packet forwarding switch fabric for the switch, providing route lookup, filtering, and switching on incoming data packets, then directing outbound packets to the appropriate interface for transmission to the network
  - Maintains the routing tables used by the switch and controls the routing protocols that run on the switch.

- Provides control and monitoring functions for the switch, including controlling power and monitoring system status.

## Junos OS Processes

The Junos OS running on the Routing Engine and Packet Forwarding Engine consists of multiple processes that are responsible for individual functions.

The separation of functions provides operational stability, because each process accesses its own protected memory space. In addition, because each process is a separate software package, you can selectively upgrade all or part of the Junos OS, for added flexibility.

[Table 3 on page 4](#) describes the primary Junos OS processes.

**Table 3: Junos OS Processes**

Process	Name	Description
Chassis process	chassisd	<p>Detects hardware on the system that is used to configure network interfaces.</p> <p>Monitors the physical status of hardware components and field-replaceable units (FRUs), detecting when environment sensors such as temperature sensors are triggered.</p> <p>Relays signals and interrupts—for example, when devices are taken offline, so that the system can close sessions and shut down gracefully.</p>
Ethernet switching process	eswd	<p>Handles Layer 2 switching functionality such as MAC address learning, Spanning Tree protocol and access port security. The process is also responsible for managing Ethernet switching interfaces, VLANs, and VLAN interfaces.</p> <p>Manages Ethernet switching interfaces, VLANs, and VLAN interfaces.</p>
Forwarding process	pfem	<p>Defines how routing protocols operate on the switch. The overall performance of the switch is largely determined by the effectiveness of the forwarding process.</p>
Interface process	dcd	<p>Configures and monitors network interfaces by defining physical characteristics such as link encapsulation, hold times, and keepalive timers.</p>
Management process	mgd	<p>Provides communication between the other processes and an interface to the configuration database.</p> <p>Populates the configuration database with configuration information and retrieves the information when queried by other processes to ensure that the system operates as configured.</p> <p>Interacts with the other processes when commands are issued through one of the user interfaces on the switch.</p> <p>If a process terminates or fails to start when called, the management process attempts to restart it a limited number of times to prevent thrashing and logs any failure information for further investigation.</p>
Routing protocol process	rpd	<p>Defines how routing protocols such as RIP, OSPF, and BGP operate on the device, including selecting routes and maintaining forwarding tables.</p>

**Related  
Documentation**



## CHAPTER 2

# Unattended Mode for U-Boot Overview

- [Understanding Unattended Mode for U-Boot on EX Series Switches on page 7](#)

## Understanding Unattended Mode for U-Boot on EX Series Switches

---

Unattended mode for U-Boot can be configured to prevent unauthorized access to the switch that can occur during the boot process. After the CPU has been reset, there are several known methods of accessing the system before the JUNOS OS login prompt appears that do not require the user to enter authorization credentials. By gaining unauthorized access, the user can view, modify, or corrupt the switch configuration, or make the switch unavailable on the network.

When unattended mode is configured, the user can access the CLI during the boot process only by pressing <Ctrl+c> and entering the correct password, which is known as the boot-loader password. The boot-loader password must have been previously configured on the switch. Entering the correct boot-loader password will place the user in the U-Boot CLI. If the password is incorrect, or if no password is entered within one minute, access to the U-Boot CLI is blocked and the boot process continues automatically.

Access to the bootstrap loader command prompt (**loader>**) is blocked in unattended mode, which prevents the use of the following recovery mechanisms: root password recovery by using single-user mode, and booting the switch by using a software package stored on a USB flash drive.



**NOTE:** If the root password is lost while the switch is in unattended mode, the switch must be reset to the factory default configuration using the LCD panel. For more information see *Reverting to the Default Factory Configuration for the EX Series Switch*.

If unattended mode is not configured, but a boot-loader password has been configured, the user must enter the correct password to access the U-Boot CLI. If a boot-loader password has not been configured, the user can access the U-Boot CLI without entering a password. In either case, the user can access the bootstrap loader command prompt, which enables root password recovery by using single-user mode as well as booting from a USB flash drive.

Unattended mode is not enabled by default. When configured, unattended mode is turned on and will block unauthorized access to the switch. [Table 4 on page 8](#) summarizes the behaviors for U-Boot mode.

**Table 4: Unattended Mode Behavior**

Unattended Mode	Boot-loader password	Behavior
On	Set	<ul style="list-style-type: none"> <li>Access to U-Boot CLI is allowed only after entering correct password.</li> <li>Access to loader command prompt is blocked.</li> <li>Booting from USB is blocked.</li> <li>Root password recovery by using single-user mode is blocked.</li> </ul>
On	Not Set	<ul style="list-style-type: none"> <li>Access to U-Boot CLI is blocked.</li> <li>Access to loader command prompt is blocked.</li> <li>Booting from USB is blocked.</li> <li>Root password recovery by using single-user mode is blocked.</li> </ul>
Off	Set	<ul style="list-style-type: none"> <li>Access to U-Boot CLI is allowed only after entering correct password.</li> <li>Access to loader command prompt is allowed.</li> <li>Booting from USB is allowed.</li> <li>Root password recovery by using single-user mode is allowed.</li> </ul>
Off	Not Set	<ul style="list-style-type: none"> <li>Access to U-Boot CLI is allowed.</li> <li>Access to loader command prompt is allowed.</li> <li>Booting from USB is allowed.</li> <li>Root password recovery by using single-user mode is allowed.</li> </ul>

**Related Documentation**

- [Using Unattended Mode for U-Boot to Prevent Unauthorized Access on page 15](#)
- [Troubleshooting Loss of the Root Password on page 101](#)



## PART 2

# Configuration

- [Configuration Tasks on page 11](#)
- [Configuration Statements on page 19](#)



## CHAPTER 3

# Configuration Tasks

- [Configuring Management Access for the EX Series Switch \(J-Web Procedure\)](#) on page 11
- [Generating SSL Certificates to Be Used for Secure Web Access](#) on page 14
- [Configuring MS-CHAPv2 to Provide Password-Change Support \(CLI Procedure\)](#) on page 15
- [Using Unattended Mode for U-Boot to Prevent Unauthorized Access](#) on page 15

### Configuring Management Access for the EX Series Switch (J-Web Procedure)

You can manage an EX Series switch remotely through the J-Web interface. To communicate with the switch, the J-Web interface uses HTTP. HTTP enables easy Web access, but uses no encryption. The data that is transmitted between the Web browser and the switch by means of HTTP is vulnerable to interception and attack. To enable secure Web access the switch supports HTTPS. You can enable HTTP or HTTPS access on specific interfaces and ports as needed.

Navigate to the Secure Access Configuration page by selecting **Configure > System Properties > Management Access**. On this page, you can enable HTTP and HTTPS access on interfaces for managing the EX Series switch through the J-Web interface. You can also install SSL certificates and enable Junos XML management protocol over SSL with the Secure Access page.

1. Click **Edit** to modify the configuration. Enter information into the Management Access Configuration page as described in [Table 5 on page 12](#).
2. To verify that Web access is enabled correctly, connect to the switch using the appropriate method:
  - For HTTP access—In your Web browser, type **http://URL** or **http://IP address**.
  - For HTTPS access—In your Web browser, type **https://URL** or **https://IP address**.
  - For SSL Junos XML management protocol access—To use this option, you must have a Junos XML management protocol client such as Junos Scope. For information about how to log in to Junos Scope, see the *Junos Scope Software User Guide*.



**NOTE:** After you make changes to the configuration on this page, you must commit the changes for them to take effect. To commit all changes to the active configuration, select **Commit Options > Commit**. See [Using the Commit Options to Commit Configuration Changes](#) for details about all commit options.

**Table 5: Secure Management Access Configuration Summary**

Field	Function	Your Action
<b>Management Access tab</b>		
Management Port IP/Management Port IPv6	<p>Specifies the management port IP address. The software supports both IPv4 ( displayed as IP) and IPv6 address.</p> <p><b>NOTE:</b> IPv6 is not supported on EX2200 and EX 4500 switches.</p>	<p>To specify an IPv4 address:</p> <ol style="list-style-type: none"> <li>1. Select the check box <b>IPv4 address</b>.</li> <li>2. Type an IP address—for example: <b>10.10.10.10</b>.</li> <li>3. Enter the subnet mask or address prefix. For example, 24 bits represents <b>255.255.255.0</b>.</li> <li>4. Click <b>OK</b>.</li> </ol> <p>To specify an IPv6 address:</p> <ol style="list-style-type: none"> <li>1. Select the check box <b>IPv6 address</b>.</li> <li>2. Type an IP address—for example: <b>2001:db8:85a3::8a2e:370:7334</b>.</li> <li>3. Enter the subnet mask or address prefix.</li> <li>4. Click <b>OK</b>.</li> </ol>
Default Gateway	Defines a default gateway through which to direct packets addressed to networks that are not explicitly listed in the bridge table constructed by the switch.	For IPv4 address type a 32-bit IP address, in dotted decimal notation. Type a 128-bit IP address for IPv6 address type.
Loopback address	Specifies the IP address of the loopback interface.	Type an IP address.
Subnet Mask	Specifies the subnet mask for the loopback interface.	Enter the subnet mask or address prefix.
<b>Services tab</b>		
Services	Specifies services to be enabled: telnet and SSH.	Select to enable the required services.
Enable Junos XML management protocol over Clear Text	Enables clear text access to the Junos XML management protocol XML scripting API.	To enable clear text access, select the <b>Enable Junos XML management protocol over Clear Text</b> check box.
Enable Junos XML protocol over SSL	Enables secure SSL access to the Junos XML management protocol XML scripting API.	To enable SSL access, select the <b>Enable Junos XML management protocol over SSL</b> check box.

Table 5: Secure Management Access Configuration Summary (*continued*)

Field	Function	Your Action
Junos XML management protocol Certificate	Specifies SSL certificates to be used for encryption.  This field is available only after you create at least one SSL certificate.	To enable an SSL certificate, select a certificate from the Junos XML management protocol SSL Certificate list—for example, <b>new</b> .
Enable HTTP	Enables HTTP access on interfaces.	To enable HTTP access, select the <b>Enable HTTP access</b> check box.  Select and clear interfaces by clicking the direction arrows: <ul style="list-style-type: none"><li>To enable HTTP access on an interface, add the interface to the HTTP Interfaces list. You can either select either all interfaces or specific interfaces.</li></ul>
Enable HTTPS	Enables HTTPS access on interfaces.	To enable HTTPS access, select the <b>Enable HTTPS access</b> check box.  Select and deselect interfaces by clicking the direction arrows: <ul style="list-style-type: none"><li>To enable HTTPS access on an interface, add the interface to the HTTPS Interfaces list. You can either select either all interfaces or specific interfaces.</li></ul> <b>NOTE:</b> Specify the certificate to be used for HTTPS access.

**Certificates tab**

Certificates	Displays digital certificates required for SSL access to the switch.  Allows you to add and delete SSL certificates.	To add a certificate: <ol style="list-style-type: none"><li>Have a general SSL certificate available. See Generating SSL Certificates for more information.</li><li>Click <b>Add</b>. The Add a Local Certificate page opens.</li><li>Type a name in the Certificate Name box—for example, <b>new</b>.</li><li>Open the certificate file and copy its contents.</li><li>Paste the generated certificate and RSA private key in the Certificate box.</li></ol> To edit a certificate, select it and click <b>Edit</b> .  To delete a certificate, select it and click <b>Delete</b> .
--------------	--	--

**Related Documentation** • [Security Features for EX Series Switches Overview](#)

- *Understanding J-Web User Interface Sessions*
- *Enabling HTTPS and XNM-SSL Services on Switches Using Self-Signed Certificates (CLI Procedure)*

## Generating SSL Certificates to Be Used for Secure Web Access

---

You can set up secure Web access for an EX Series switch. To enable secure Web access, you must generate a digital Secure Sockets Layer (SSL) certificate and then enable HTTPS access on the switch.

To generate an SSL certificate:

1. Enter the following **openssl** command in your SSH command-line interface on a BSD or Linux system on which **openssl** is installed. The **openssl** command generates a self-signed SSL certificate in the privacy-enhanced mail (PEM) format. It writes the certificate and an unencrypted 1024-bit RSA private key to the specified file.

```
% openssl req -x509 -nodes -newkey rsa:1024 -keyout filename.pem -out filename.pem
```

where **filename** is the name of a file in which you want the SSL certificate to be written—for example, **my-certificate**.

2. When prompted, type the appropriate information in the identification form. For example, type **US** for the country name.
3. Display the contents of the file that you created.

```
cat my-certificate.pem
```

You can use the J-Web Configuration page to install the SSL certificate on the switch. To do this, copy the file containing the certificate from the BSD or Linux system to the switch. Then open the file, copy its contents, and paste them into the Certificate box on the J-Web Secure Access Configuration page.

You can also use the following CLI statement to install the SSL certificate on the switch:

```
[edit]  
user@switch# set security certificates local my-signed-cert load-key-file my-certificate.pem
```

### Related Documentation

- [Configuring Management Access for the EX Series Switch \(J-Web Procedure\) on page 11](#)
- *Security Features for EX Series Switches Overview*

## Configuring MS-CHAPv2 to Provide Password-Change Support (CLI Procedure)

Junos OS for EX Series switches enables you to configure the Microsoft Corporation implementation of the Challenge Handshake Authentication Protocol version 2 (MS-CHAPv2) on the switch to provide password-change support. Configuring MS-CHAPv2 on the switch provides users accessing a switch the option of changing the password when the password expires, is reset, or is configured to be changed at next login.

See RFC 2433, *Microsoft PPP CHAP Extensions*, for information about MS-CHAP.

Before you configure MS-CHAPv2 to provide password-change support, ensure that you have:

- Configured RADIUS server authentication. Configure users on the authentication server and set the first-tried option in the authentication order to radius. See *Example: Connecting a RADIUS Server for 802.1X to an EX Series Switch*.

To configure MS-CHAPv2, specify the following:

```
[edit system radius-options]
user@switch# set password-protocol mschap-v2
```

You must have the required access permission on the switch in order to change your password.

### Related Documentation

- [Managing Users \(J-Web Procedure\) on page 73](#)
- For more about configuring user access, see the [Junos OS Access Privilege Configuration Guide](#).

## Using Unattended Mode for U-Boot to Prevent Unauthorized Access

Unattended mode for U-Boot can be used to prevent unauthorized access to the switch that can occur during the boot process. When unattended mode is configured, the user can access the CLI during the boot process only by entering the correct password, which is known as the boot-loader password. The boot-loader password must have been previously configured on the switch.

When unattended mode is configured, access to the bootstrap loader command prompt (**loader>**) is blocked, which prevents the use of the following recovery mechanisms: root password recovery by using single-user mode, and booting the switch by using a software package stored on a USB flash drive.



**WARNING:** On EX2200 switches, if both the root and unattended mode password are lost while the switch is in unattended mode, there is no alternative recovery method available. The switch must be returned to Juniper Networks. For more information, see *Returning an EX2200 Switch or Component for Repair or Replacement*.

To use unattended mode, follow the following procedures:

- [Configuring the Boot Loader Password on page 16](#)
- [Configuring Unattended Mode for U-Boot on page 16](#)
- [Accessing the U-Boot CLI on page 17](#)

## Configuring the Boot Loader Password

To configure the boot loader password, you can use either a plain-text password that the system encrypts for you, or a password that has already been encrypted. If you use a plain-text password, Junos OS displays the password as an encrypted string so that users viewing the configuration cannot see it. As you enter the password in plain text, Junos OS encrypts it immediately. You do not have to configure Junos OS to encrypt the password. Plain-text passwords are hidden and marked as `## SECRET-DATA` in the configuration.

To configure the boot-loader password:

1. Enter either a plain-text password or an encrypted password by using the **set system boot-loader authentication** command.

- To enter a plain-text password, use the **plain-text-password** option, and re-enter the password when prompted:

```
[edit]
root@# set system boot-loader-authentication plain-text-password
New Password: type password here
Retype new password: retry password here
```

- To enter a password that is already encrypted, use the **encrypted-password** option:

```
[edit]
root@# set system boot-loader-authentication encrypted-password password
```

2. Commit the changes.

```
[edit]
root@# commit
```

3. To view the encrypted password entries, use the configuration mode **show** command. For example:

```
[edit]
root@# show system boot-loader-authentication
encrypted-password "$ABC123"; ## SECRET-DATA
```

## Configuring Unattended Mode for U-Boot

Before enabling unattended mode for U-Boot, you must download and install the jloader firmware package

`/volume/build/junos/13.2/service/13.2X51-D20.2/ship/jloader-ex-2200-13.2X51-D20.2-signed.tgz`, as described in [TSB16425](#).



Unattended mode for U-Boot is not enabled by default. Use the following procedure to configure unattended mode:

1. Configure unattended mode.

```
[edit]  
root@# set system unattended-boot
```

2. Commit the changes.

```
[edit]  
root@# commit
```

## Accessing the U-Boot CLI

When unattended mode for U-Boot is configured and the boot-loader password has been set, you can access the U-Boot CLI during the boot process by pressing <Ctrl+c> and entering the password at the prompt:

```
Press Ctrl-C in next 1 seconds to enter u-boot prompt...  
Enter password:  
password correct...  
=>
```

The correct password must be entered within one minute after the prompt appears. If the password is not entered within one minute, or if the password is incorrect or has not been configured, access to the U-Boot CLI will be blocked, and the boot process will continue. For more information about unattended mode behavior, see [“Understanding Unattended Mode for U-Boot on EX Series Switches” on page 7](#).

### Related Documentation

- [Understanding Unattended Mode for U-Boot on EX Series Switches on page 7](#)
- [unattended-boot on page 68](#)
- [boot-loader-authentication on page 29](#)



## CHAPTER 4

# Configuration Statements

- [\[edit services\] Configuration Statement Hierarchy on EX Series Switches on page 20](#)
- [allow-commands on page 24](#)
- [allow-configuration on page 25](#)
- [announcement on page 26](#)
- [archive-sites on page 26](#)
- [authentication \(Login\) on page 27](#)
- [authentication-order on page 28](#)
- [boot-loader-authentication on page 29](#)
- [change-type on page 30](#)
- [class \(Assigning a Class to an Individual User\) on page 30](#)
- [class \(Defining Login Classes\) on page 31](#)
- [class-usage-profile on page 32](#)
- [counters on page 33](#)
- [deny-commands on page 33](#)
- [deny-configuration on page 34](#)
- [destination-classes on page 35](#)
- [fields \(for Interface Profiles\) on page 36](#)
- [file \(Associating with a Profile\) on page 37](#)
- [file \(Configuring a Log File\) on page 38](#)
- [files on page 39](#)
- [filter-profile on page 40](#)
- [format on page 41](#)
- [full-name on page 42](#)
- [idle-timeout \(System-Login\) on page 43](#)
- [interface-profile on page 44](#)
- [interval on page 45](#)
- [login on page 46](#)
- [login-alarms on page 47](#)

- [login-tip on page 47](#)
- [maximum-length on page 48](#)
- [message on page 49](#)
- [mib-profile on page 50](#)
- [minimum-changes on page 51](#)
- [minimum-length on page 52](#)
- [object-names on page 53](#)
- [operation on page 53](#)
- [password \(Login\) on page 54](#)
- [permissions on page 55](#)
- [radius-options \(edit system\) on page 56](#)
- [retry-options on page 57](#)
- [root-authentication on page 58](#)
- [root-login on page 59](#)
- [routing-engine-profile on page 60](#)
- [size on page 61](#)
- [source-classes on page 61](#)
- [start-time on page 62](#)
- [tacplus-options on page 63](#)
- [tacplus-server on page 64](#)
- [traceoptions \(Address-Assignment Pool\) on page 65](#)
- [transfer-interval on page 66](#)
- [uid on page 67](#)
- [unattended-boot on page 68](#)
- [user \(Access\) on page 69](#)

---

## [edit services] Configuration Statement Hierarchy on EX Series Switches

This topic lists supported and unsupported configuration statements in the **[edit services]** hierarchy level on EX Series switches.

- *Supported* statements are those that you can use to configure some aspect of a software feature on the switch.
- *Unsupported* statements are those that appear in the command-line interface (CLI) on the switch, but that have no effect on switch operation if you configure them.

- Not all features are supported on all switch platforms. For detailed information about feature support on specific EX Series switches, see *EX Series Switch Software Features Overview*.
- [Supported Statements in the \[edit services\] Hierarchy Level on page 21](#)
- [Unsupported Statements in the \[edit services\] Hierarchy Level on page 23](#)

## Supported Statements in the [edit services] Hierarchy Level

The following hierarchy shows the **[edit services]** configuration statements supported on EX Series switches:

```

services {
  captive-portal {
    authentication-profile-name authentication-profile-name;
    custom-options {
      banner-message string;
      footer-bgcolor color;
      footer-message string;
      footer-text-color color;
      form-header-bgcolor color;
      form-header-message string;
      footer-header-text-color color;
      form-reset-label label-name;
      form-submit-label label-name;
      header-bgcolor color;
      header-logo filename;
      header-message string;
      header-text-color color0;
      post-authentication-url url;
    }
  }
  interface (all | interface-name) {
    quiet-period seconds;
    retries number-of-retries;
    server-timeout seconds;
    session-expiry seconds;
    supplicant (multiple | single | single-secure);
  }
  secure-authentication (http | https);
  traceoptions {
    file filename <files number> <size maximum-file-size> <world-readable |
      no-world-readable>;
    flag flag <disable>;
  }
}
rpm {
  bgp {
    data-fill data;
    data-size size;
    destination-port port;
    history-size size;
    moving-average-size number-of-samples;
    probe-count count;
    probe-interval seconds;
    probe-type type;
  }
}

```

```
routing-instances {
    routing-instance-name;
}
test-interval seconds;
}
probe owner {
    test test-name {
        data-fill data;
        data-size size;
        destination-port port;
        dscp-code-point dscp-bits;
        hardware-timestamp;
        history-size size;
        moving-average-size number;
        one-way-hardware-timestamp;
        probe-count count;
        probe-interval seconds;
        probe-type type;
        routing-instance instance-name;
        source-address address;
        target (address address | url url);
        test-interval interval;
        thresholds {
            egress-time microseconds;
            ingress-time microseconds;
            jitter-egress microseconds;
            jitter-ingress microseconds;
            jitter-rtt microseconds;
            rtt microseconds;
            std-dev-egress microseconds;
            std-dev-ingress microseconds;
            std-dev-rtt microseconds;
            successive-loss count;
            total-loss count;
        }
        traps [ trap-names ];
    }
}
probe-limit number;
probe-server {
    tcp {
        port port-number;
    }
    udp {
        port port-number;
    }
}
}
unified-access-control {
    certificate-verification (optional | required | warning);
    infranet-controllerhostname {
        address ip-address;
        interface interface-name;
        password password;
        port port-number;
    }
}
```

```

interval seconds;
timeout seconds;
timeout-action (close | no-change);
traceoptions {
    file filename <files number> <size maximum-file-size> <world-readable |
        no-world-readable>;
    flag flag <disable>;
}
}
}

```

## Unsupported Statements in the [edit services] Hierarchy Level

All statements in the [edit services] hierarchy level that are displayed in the command-line interface (CLI) on the switch are supported on the switch and operate as documented with the following exceptions:

**Table 6: Unsupported [edit services] Configuration Statements on EX Series Switches**

Statement	Hierarchy
<b>NOTE:</b> Variables, such as <i>interface-name</i> , are not shown in the statements or hierarchies.	
ca-profile	[edit services unified-access-control infranet-controller]
interface	[edit services interface-pools] [edit services service-device-pools pool]
pool	[edit services interface-pools] [edit services service-device-pools]
server-certificate-subject	[edit services unified-access-control infranet-controller]
service-device-pools	[edit services]
service-interface-pools	[edit services]

**Related Documentation**

- *Junos OS Configuration Statements and Commands*

## allow-commands

---

<b>Syntax</b>	<code>allow-commands "regular-expression";</code>
<b>Hierarchy Level</b>	[edit system login <a href="#">class</a> <i>class-name</i> ]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Specify the operational mode commands that members of a login class can use.
<b>Default</b>	If you omit this statement and the <b>deny-commands</b> statement, users can issue only those commands for which they have access privileges through the <b>permissions</b> statement.
<b>Options</b>	<b>regular-expression</b> —Extended (modern) regular expression as defined in POSIX 1003.2. If the regular expression contains any spaces, operators, or wildcard characters, enclose it in quotation marks.
<b>Required Privilege Level</b>	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Specifying Access Privileges for Junos OS Operational Mode Commands</i></li><li>• <a href="#">deny-commands on page 33</a></li><li>• <a href="#">user on page 69</a></li></ul>



## allow-configuration

---

<b>Syntax</b>	<code>allow-configuration "regular-expression";</code>
<b>Hierarchy Level</b>	[edit system login <a href="#">class</a> <i>class-name</i> ]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Explicitly allow configuration access to the specified levels in the hierarchy even if the permissions set with the <b>permissions</b> statement do not grant such access by default.
<b>Default</b>	If you omit this statement and the <b>deny-configuration</b> statement, users can edit only those commands for which they have access privileges through the <b>permissions</b> statement.
<b>Options</b>	<b>regular-expression</b> —Extended (modern) regular expression as defined in POSIX 1003.2. If the regular expression contains any spaces, operators, or wildcard characters, enclose it in quotation marks.
<b>Required Privilege Level</b>	<b>admin</b> —To view this statement in the configuration. <b>admin-control</b> —To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <i>Specifying Access Privileges Using allow/deny-configuration Statements</i></li> <li>• <i>Regular Expressions for Allowing and Denying Junos OS Configuration Mode Hierarchies</i></li> <li>• <a href="#">deny-configuration on page 34</a></li> <li>• <a href="#">user on page 69</a></li> </ul>

## announcement

---

<b>Syntax</b>	<code>announcement text;</code>
<b>Hierarchy Level</b>	[edit system <a href="#">login</a> ]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Configure a system login announcement. This announcement appears after a user logs in.
<b>Options</b>	<b>text</b> —Text of the announcement. If the text contains any spaces, enclose it in quotation marks.
<b>Required Privilege Level</b>	<b>system</b> —To view this statement in the configuration. <b>system-control</b> —To add this statement to the configuration
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring the Junos OS to Display a System Login Announcement</i></li><li>• <a href="#">message on page 49</a></li></ul>

## archive-sites

---

<b>Syntax</b>	<code>archive-sites {     site-name; }</code>
<b>Hierarchy Level</b>	[edit accounting-options <a href="#">file filename</a> ]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Configure an archive site. If more than one site name is configured, an ordered list of archive sites for the accounting-data log files is created. When a file is archived, the router or switch attempts to transfer the file to the first URL in the list, moving to the next site only if the transfer does not succeed. The log file is stored at the archive site with a filename of the format <b>router-name_log-filename_timestamp</b> .
<b>Options</b>	<b>site-name</b> —Any valid FTP/SCP URL to a destination.
<b>Required Privilege Level</b>	<b>snmp</b> —To view this statement in the configuration. <b>snmp-control</b> —To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring Archive Sites</i></li></ul>

## authentication (Login)

<b>Syntax</b>	<pre>authentication {   (encrypted-password "password"   plain-text-password);   load-key-file URL filename;   no-public-keys;   ssh-dsa "public-key";   ssh-ecdsa "public-key";   ssh-rsa "public-key"; }</pre>
<b>Hierarchy Level</b>	[edit system login <b>user</b> <i>username</i> ]
<b>Release Information</b>	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Option <b>no-public-keys</b> introduced in Junos OS Release 15.1.</p>
<b>Description</b>	Authentication methods that a user can use to log in to the router or switch. You can assign multiple authentication methods to a single user.
<b>Options</b>	<p><b>encrypted-password "password"</b>—Message Digest 5 (MD5) or other encrypted authentication. Specify the MD5 or other password. You can specify only one encrypted password for each user.</p> <p>You cannot configure a blank password for <b>encrypted-password</b> using blank quotation marks (" "). You must configure a password whose number of characters range from 1 through 128 characters and enclose the password in quotation marks.</p> <p><b>load-key-file URL filename</b>—Load previously-generated RSA (SSH version 1 and SSH version 2) and DSA (SSH version 2) public keys from a named file at a specified URL location. The file contains one or more SSH keys.</p> <p><b>plain-text-password</b>—When using this option, the command-line interface (CLI) prompts you for the password and then encrypts it.</p> <p><b>no-public-keys</b>—Disables public key authentication for the user specified.</p> <p><b>ssh-dsa "public-key"</b>—SSH version 2 authentication. Specify the DSA public key. You can specify one or more public keys for each user.</p> <p><b>ssh-ecdsa "public-key"</b>—SSH version 2 authentication. Specify the ECDSA public key. You can specify one or more public keys for each user.</p> <p><b>ssh-rsa "public-key"</b>—SSH version 1 and SSH version 2 authentication. Specify the RSA public key. You can specify one or more public keys for each user.</p>
<b>Required Privilege Level</b>	<p><b>admin</b>—To view this statement in the configuration.</p> <p><b>admin-control</b>—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <i>Configuring Junos OS User Accounts by Using a Configuration Group</i></li> <li>• <a href="#">root-authentication on page 58</a></li> </ul>

## authentication-order

---

<b>Syntax</b>	<code>authentication-order [ <i>authentication-methods</i> ];</code>
<b>Hierarchy Level</b>	<code>[edit system]</code>
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Configure the order in which the software tries different user authentication methods when attempting to authenticate a user. For each login attempt, the software tries the authentication methods in order, starting with the first one, until the password matches.
<b>Default</b>	If you do not include the <b>authentication-order</b> statement, users are verified based on their configured passwords.
<b>Options</b>	<b><i>authentication-methods</i></b> —One or more authentication methods, listed in the order in which they should be tried. The method can be one or more of the following: <ul style="list-style-type: none"><li>• <b>password</b>—Use the password configured for the user with the <b>authentication</b> statement at the <code>[edit system login user]</code> hierarchy level.</li><li>• <b>radius</b>—Use RADIUS authentication services.</li><li>• <b>tacplus</b>—Use TACACS+ authentication services.</li></ul>
<b>Required Privilege Level</b>	<code>system</code> —To view this statement in the configuration. <code>system-control</code> —To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Understanding User Authentication Methods</i></li></ul>

## boot-loader-authentication

<b>Syntax</b>	<code>boot-loader-authentication {     (encrypted-password <i>password</i>   plain-text-password); }</code>
<b>Hierarchy Level</b>	[edit system]
<b>Release Information</b>	Statement introduced in Junos OS Release 13.2X51-D20 for EX Series switches.
<b>Description</b>	<p>Set the boot-loader password for accessing the U-Boot CLI during the boot process. The password can be entered either as a plain-text password or as an encrypted password.</p> <p>Encrypted passwords must be entered in Message Digest 5 (MD5) format. Plain-text passwords are encrypted by using MD5 by default. The encryption format for plain-text passwords can be changed by using the <b>set system login password format</b> command.</p> <p>Encrypted passwords must be between 1 and 128 characters long. The password must be enclosed in quotation marks and cannot be blank within the quotation marks (" ").</p> <p>The default requirements for plain-text passwords are as follows:</p> <ul style="list-style-type: none"> <li>• The password must be between 6 and 128 characters long</li> <li>• You can include most character classes in a password (uppercase letters, lowercase letters, numbers, punctuation marks, and other special characters). Control characters are not recommended.</li> <li>• The password must contain at least one change of case or character class.</li> </ul>
<b>Options</b>	<p><b>encrypted-password <i>password</i></b>— Enter a password that has already been encrypted. You can specify only one encrypted password.</p> <p><b>plain-text-password</b>—Enter a plain-text password. The CLI prompts you for the password and then encrypts it. The CLI displays the encrypted version, and the software places the encrypted version in its user database. You can specify only one plain-text password.</p>
<b>Required Privilege Level</b>	<p>admin—To view this statement in the configuration.</p> <p>admin-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">Using Unattended Mode for U-Boot to Prevent Unauthorized Access on page 15</a></li> <li>• <a href="#">format on page 41</a></li> <li>• <a href="#">unattended-boot on page 68</a></li> </ul>

## change-type

---

<b>Syntax</b>	<code>change-type (character-sets   set-transitions);</code>
<b>Hierarchy Level</b>	[edit system login <a href="#">password</a> ]
<b>Release Information</b>	Statement introduced in Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Set requirements for using character sets in plain-text passwords. When you combine this statement with the <b>minimum-changes</b> statement, you can check for the total number of character sets included in the password or for the total number of character-set changes in the password. Newly created passwords must meet these requirements.
<b>Options</b>	Specify one of the following: <ul style="list-style-type: none"><li>• <b>character-sets</b>—The number of character sets in the password. Valid character sets include uppercase letters, lowercase letters, numbers, punctuation, and other special characters.</li><li>• <b>set-transitions</b>—The number of transitions between character sets.</li></ul>
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Special Requirements for Junos OS Plain-Text Passwords</i></li><li>• <a href="#">minimum-changes on page 51</a></li></ul>

## class (Assigning a Class to an Individual User)

---

<b>Syntax</b>	<code>class class-name;</code>
<b>Hierarchy Level</b>	[edit system login <a href="#">user</a> username]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Assign a user to a login class. You must assign each user to a login class.
<b>Options</b>	<b>class-name</b> —One of the classes defined at the [edit system login class] hierarchy level.
<b>Required Privilege Level</b>	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring Junos OS User Accounts by Using a Configuration Group</i></li></ul>

## class (Defining Login Classes)

<b>Syntax</b>	<pre> class <i>class-name</i> {   <b>allow-commands</b> "<i>regular-expression</i>";   ( <b>allow-configuration</b>   allow-configuration-regexps ) "<i>regular expression 1</i>" "<i>regular expression 2</i>";   configuration-breadcrumbs;   <b>deny-commands</b> "<i>regular-expression</i>";   ( <b>deny-configuration</b>   deny-configuration-regexps ) "<i>regular expression 1</i>" "<i>regular expression 2</i>";   <b>idle-timeout</b> <i>minutes</i>;   login-script <i>filename</i>;   <b>login-tip</b>;   <b>permissions</b> [ <i>permissions</i> ]; } </pre>
<b>Hierarchy Level</b>	[edit system <a href="#">login</a> ]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Define a login class.
<b>Options</b>	<p><b><i>class-name</i></b>—A name you choose for the login class.</p> <p>The remaining statements are explained separately.</p>
<b>Required Privilege Level</b>	<p>admin—To view this statement in the configuration.</p> <p>admin-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>Defining Junos OS Login Classes</li> <li><a href="#">user on page 69</a></li> </ul>

## class-usage-profile

---

Syntax	<pre>class-usage-profile <i>profile-name</i> {     file <i>filename</i>;     interval <i>minutes</i>;     source-classes {         <i>source-class-name</i>;     }     destination-classes {         <i>destination-class-name</i>;     } }</pre>
Hierarchy Level	[edit accounting-options]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	<p>Create a class usage profile, which is used to log class usage statistics to a file in the <code>/var/log</code> directory. The class usage profile logs class usage statistics for the configured source classes on every interface that has <b>destination-class-usage</b> configured.</p> <p>For information about configuring source classes, see the <a href="#">Junos Routing Protocols Configuration Guide</a>. For information about configuring source class usage, see the <a href="#">Junos Network Management Configuration Guide</a>.</p>
Options	<p><b>profile-name</b>—Name of the destination class profile.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"><li>• <a href="#">Configuring Class Usage Profiles</a></li></ul>



## counters

---

<b>Syntax</b>	<code>counters {     counter-name; }</code>
<b>Hierarchy Level</b>	[edit accounting-options <a href="#">filter-profile</a> profile-name]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Names of counters for which filter profile statistics are collected. The packet and byte counts for the counters are logged to a file in the <code>/var/log</code> directory.
<b>Options</b>	<b>counter-name</b> —Name of the counter.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <i>Configuring the Counters</i></li> </ul>

## deny-commands

---

<b>Syntax</b>	<code>deny-commands "regular-expression";</code>
<b>Hierarchy Level</b>	[edit system login <a href="#">class</a> ]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Specify the operational mode commands that the user is denied permission to issue even though the permissions set with the <b>permissions</b> statement would allow it.
<b>Default</b>	If you omit this statement and the <b>allow-commands</b> statement, users can issue only those commands for which they have access privileges through the <b>permissions</b> statement.
<b>Options</b>	<b>regular-expression</b> —Extended (modern) regular expression as defined in POSIX 1003.2. If the regular expression contains any spaces, operators, or wildcard characters, enclose it in quotation marks.
<b>Required Privilege Level</b>	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <i>Specifying Access Privileges for Junos OS Operational Mode Commands</i></li> <li>• <a href="#">allow-commands on page 24</a></li> <li>• <a href="#">user on page 69</a></li> </ul>

## deny-configuration

---

<b>Syntax</b>	<code>deny-configuration "regular-expression";</code>
<b>Hierarchy Level</b>	[edit system login <a href="#">class</a> ]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Explicitly deny configuration access to the specified levels in the hierarchy even if the permissions set with the <b>permissions</b> statement grant such access by default. Note that the user cannot view a particular hierarchy if configuration access is denied for that hierarchy.
<b>Default</b>	If you omit this statement and the <b>allow-configuration</b> statement, users can edit those levels in the configuration hierarchy for which they have access privileges through the <b>permissions</b> statement.
<b>Options</b>	<b>regular-expression</b> —Extended (modern) regular expression as defined in POSIX 1003.2. If the regular expression contains any spaces, operators, or wildcard characters, enclose it in quotation marks.
<b>Required Privilege Level</b>	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Specifying Access Privileges Using allow/deny-configuration Statements</i></li><li>• <a href="#">allow-configuration on page 25</a></li><li>• <a href="#">user on page 69</a></li></ul>

---

## destination-classes

---

<b>Syntax</b>	<code>destination-classes {     <i>destination-class-name</i>; }</code>
<b>Hierarchy Level</b>	[edit accounting-options <a href="#">class-usage-profile</a> <i>profile-name</i> ]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Specify the destination classes for which statistics are collected.
<b>Options</b>	<b><i>destination-class-name</i></b> —Name of the destination class to include in the source class usage profile.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring a Class Usage Profile</i></li></ul>

## fields (for Interface Profiles)

---

<b>Syntax</b>	<pre>fields {     field-name; }</pre>
<b>Hierarchy Level</b>	[edit accounting-options <b>interface-profile</b> <i>profile-name</i> ]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Statistics to collect in an accounting-data log file for an interface.
<b>Options</b>	<p><i>field-name</i>—Name of the field:</p> <ul style="list-style-type: none"><li>• <b>input-bytes</b>—Input bytes</li><li>• <b>input-errors</b>—Generic input error packets</li><li>• <b>input-multicast</b>—Input packets arriving by multicast</li><li>• <b>input-packets</b>—Input packets</li><li>• <b>input-unicast</b>—Input unicast packets</li><li>• <b>output-bytes</b>—Output bytes</li><li>• <b>output-errors</b>—Generic output error packets</li><li>• <b>output-multicast</b>—Output packets sent by multicast</li><li>• <b>output-packets</b>—Output packets</li><li>• <b>output-unicast</b>—Output unicast packets</li></ul>
<b>Required Privilege Level</b>	<p><b>interface</b>—To view this statement in the configuration.</p> <p><b>interface-control</b>—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring the Interface Profile</i></li></ul>

## file (Associating with a Profile)

<b>Syntax</b>	<code>file <i>filename</i>;</code>
<b>Hierarchy Level</b>	[edit accounting-options <a href="#">class-usage-profile</a> <i>profile-name</i> ], [edit accounting-options <a href="#">filter-profile</a> <i>profile-name</i> ], [edit accounting-options <a href="#">interface-profile</a> <i>profile-name</i> ], [edit accounting-options <a href="#">mib-profile</a> <i>profile-name</i> ], [edit accounting-options <a href="#">routing-engine-profile</a> <i>profile-name</i> ]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. The [edit accounting-options <a href="#">mib-profile</a> <i>profile-name</i> ] hierarchy added in Junos OS Release 8.2. Statement introduced in Junos OS Release 9.0 for EX Series Switches.
<b>Description</b>	Specify the accounting log file associated with the profile.
<b>Options</b>	<b><i>filename</i></b> —Name of the log file. You must specify a filename already configured in the <b>file</b> statement at the [edit accounting-options] hierarchy level.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">Configuring the Interface Profile</a></li> <li>• <a href="#">Configuring the Filter Profile</a></li> <li>• <a href="#">Configuring the MIB Profile</a></li> <li>• <a href="#">Configuring the Routing Engine Profile</a></li> </ul>

## file (Configuring a Log File)

---

<b>Syntax</b>	<pre>file <i>filename</i> {     archive-sites {         <i>site-name</i>;     }     files <i>number</i>;     nonpersistent;     size <i>bytes</i>;     source-classes <i>time</i>;     transfer-interval <i>minutes</i>; }</pre>
<b>Hierarchy Level</b>	[edit accounting-options]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Specify a log file to be used for accounting data.
<b>Options</b>	<p><i>filename</i>—Name of the file in which to write accounting data.</p> <p>The remaining statements are explained separately.</p>
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>Configuring Accounting-Data Log Files</li></ul>

---

## files

---

<b>Syntax</b>	<code>files <i>number</i>;</code>
<b>Hierarchy Level</b>	[edit accounting-options <a href="#">file</a> <i>filename</i> ]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Specify the maximum number of log files to be used for accounting data.
<b>Options</b>	<i>number</i> —The maximum number of files. When a log file (for example, <b>profilelog</b> ) reaches its maximum size, it is renamed <b>profilelog.0</b> , then <b>profilelog.1</b> , and so on, until the maximum number of log files is reached. Then the oldest log file is overwritten. The minimum value for <i>number</i> is 3 and the default value is 10.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring Accounting-Data Log Files</i></li></ul>

## filter-profile

---

Syntax	<pre>filter-profile <i>profile-name</i> {     counters {         counter-name;     }     file <i>filename</i>;     interval <i>minutes</i>; }</pre>
Hierarchy Level	[edit accounting-options]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Create a profile to filter and collect packet and byte count statistics and write them to a file in the <code>/var/log</code> directory. To apply the profile to a firewall filter, you include the <b>accounting-profile</b> statement at the [edit firewall filter <i>filter-name</i> ] hierarchy level. For more information about firewall filters, see <a href="#">Firewall Filters Feature Guide for Routing Devices</a> .
Options	<p><b><i>profile-name</i></b>—Name of the filter profile.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"><li>• <a href="#">Configuring the Filter Profile</a></li></ul>



## format

---

<b>Syntax</b>	format ( md5   sha1   sha256   sha512 );
<b>Hierarchy Level</b>	[edit system login password]
<b>Release Information</b>	Statement introduced in Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Configure the authentication algorithm for plain-text passwords.
<b>Default</b>	For Junos OS, the default encryption format is <b>md5</b> . For Junos-FIPS software, the default encryption format is <b>sha1</b> .
<b>Options</b>	The hash algorithm that authenticates the password can be one of these algorithms: <ul style="list-style-type: none"> <li>• <b>md5</b>—Produces a 128-bit digest.</li> <li>• <b>sha1</b>—Produces a 160-bit digest.</li> <li>• <b>sha256</b>—Produces a 256-bit digest.</li> <li>• <b>sha512</b>—Produces a 512-bit digest.</li> </ul>
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <i>Special Requirements for Junos OS Plain-Text Passwords</i></li> </ul>

## full-name

---

<b>Syntax</b>	<code>full-name <i>complete-name</i>;</code>
<b>Hierarchy Level</b>	[edit system login user]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 11.1 for the QFX Series. Statement introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.
<b>Description</b>	Configure the complete name of a user.
<b>Options</b>	<b><i>complete-name</i></b> —Full name of the user. If the name contains spaces, enclose it in quotation marks.
<b>Required Privilege Level</b>	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring Junos OS User Accounts by Using a Configuration Group</i></li><li>• <a href="#">user on page 69</a></li></ul>

## idle-timeout (System-Login)

<b>Syntax</b>	<code>idle-timeout <i>minutes</i>;</code>
<b>Hierarchy Level</b>	[edit system login <a href="#">class</a> <i>class-name</i> ]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	For a login class, configure the maximum time that a session can be idle before the user is logged out of the router or switch. The session times out after remaining at the CLI operational mode prompt for the specified time.
<b>Default</b>	If you omit this statement, a user is never forced off the system after extended idle times.



**NOTE:** After you log in to a device from a shell prompt such as `csch`, if you start another program to run in the foreground of the CLI, the idle timer control is stopped from being computed. The calculation of idle time of the CLI session is restarted only after the foreground process exits and the control is returned to the shell prompt. When the restart of the idle-timer occurs, if no interaction from the user occurs on the shell, the user is automatically logged out after the expiry of the idle timeout value.

**Options** *minutes*—Maximum idle time.  
**Range:** 0 through 4294967295 minutes



**NOTE:** The timeout feature is disabled if the value of *minutes* is set to 0.

<b>Required Privilege Level</b>	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">Configuring the Timeout Value for Idle Login Sessions</a></li> <li>• <a href="#">user on page 69</a></li> </ul>

## interface-profile

---

<b>Syntax</b>	<pre>interface-profile <i>profile-name</i> {     <b>fields</b> {         <i>field-name</i>;     }     <b>file</b> <i>filename</i>;     <b>interval</b> <i>minutes</i>; }</pre>
<b>Hierarchy Level</b>	[edit accounting-options]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Create a profile to filter and collect error and packet statistics and write them to a file in the <code>/var/log</code> directory. You can specify an interface profile for either a physical or a logical interface.
<b>Options</b>	<p><b><i>profile-name</i></b>—Name of the interface profile.</p> <p>The remaining statements are explained separately.</p>
<b>Required Privilege Level</b>	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring the Interface Profile</i></li></ul>

## interval

---

<b>Syntax</b>	<code>interval <i>minutes</i>;</code>
<b>Hierarchy Level</b>	[edit accounting-options <a href="#">class-usage-profile</a> <i>profile-name</i> ], [edit accounting-options <a href="#">filter-profile</a> <i>profile-name</i> ], [edit accounting-options <a href="#">interface-profile</a> <i>profile-name</i> ], [edit accounting-options <a href="#">mib-profile</a> <i>profile-name</i> ], [edit accounting-options <a href="#">routing-engine-profile</a> <i>profile-name</i> ]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. The [edit accounting-options <a href="#">mib-profile</a> <i>profile-name</i> ] hierarchy level added in Junos OS Release 8.2. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Specify how often statistics are collected for the accounting profile.
<b>Options</b>	<p><b><i>minutes</i></b>—Length of time between each collection of statistics.</p> <p><b>Range:</b> 1 through 2880 minutes</p> <p><b>Default:</b> 30 minutes</p>
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <i>Configuring the Interface Profile</i></li> <li>• <i>Configuring the Filter Profile</i></li> <li>• <i>Configuring the MIB Profile</i></li> <li>• <i>Configuring the Routing Engine Profile</i></li> </ul>

## login

```
Syntax login {
    announcement text;
    class class-name {
        allow-commands "regular-expression";
        allow-configuration-regexps "regular expression 1" "regular expression 2";
        configuration-breadcrumbs;
        deny-commands "regular-expression";
        ( deny-configuration | deny-configuration-regexps ) "regular expression 1" "regular
            expression 2 ";
        idle-timeout minutes;
        login-script filename;
        login-tip;
        permissions [ permissions ];
    }
    message text;
    password {
        change-type (set-transitions | character-set);
        format (md5 | sha1 | des);
        maximum-length length;
        minimum-changes number;
        minimum-length length;
    }
    retry-options {
        backoff-threshold number;
        backoff-factor seconds;
        minimum-time seconds;
        tries-before-disconnect number;
    }
    user username {
        full-name complete-name;
        uid uid-value;
        class class-name;
        authentication authentication;
        (encrypted-password "password" | plain-text-password);
        ssh-rsa "public-key";
        ssh-dsa "public-key";
    }
}
```

**Hierarchy Level** [edit system]

**Release Information** Statement introduced before Junos OS Release 7.4.  
Statement introduced in Junos OS Release 9.0 for EX Series switches.

**Description** Configure user access to the router or switch.



**NOTE:** The remaining statements are explained separately.

**Required Privilege Level** admin—To view this statement in the configuration.  
admin-control—To add this statement to the configuration.

**Related Documentation**

- *Defining Junos OS Login Classes*

## login-alarms

**Syntax** login-alarms;

**Hierarchy Level** [edit system login class *class-name*]

**Release Information** Statement introduced before Junos OS Release 7.4.  
Statement introduced in Junos OS Release 9.0 for EX Series switches.  
Statement introduced in Junos OS Release 11.1 for the QFX Series.  
Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

**Description** Show system alarms automatically when an **admin** user logs in to the router or switch.

**Options** *class-name*—Login class name.

**Required Privilege Level** admin—To view this statement in the configuration.  
admin-control—To add this statement to the configuration.

**Related Documentation**

- *Configuring System Alarms to Appear Automatically Upon Login*

## login-tip

**Syntax** login-tip;

**Hierarchy Level** [edit system login class *class-name*]

**Release Information** Statement introduced before Junos OS Release 7.4.  
Statement introduced in Junos OS Release 9.0 for EX Series switches.

**Description** Enable CLI tips at login.

**Default** Disabled.

**Required Privilege Level** system—To view this statement in the configuration.  
system-control—To add this statement to the configuration.

**Related Documentation**

- *Configuring Login Tips*

## maximum-length

---

<b>Syntax</b>	maximum-length <i>length</i> ;
<b>Hierarchy Level</b>	[edit system login passwords]
<b>Release Information</b>	Statement introduced in Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Specify the maximum number of characters allowed in plain-text passwords. Newly created passwords must meet this requirement.
<b>Default</b>	For Junos-FIPS software, the maximum number of characters for plain-text passwords is 20. For Junos OS, no maximum is set.
<b>Options</b>	<b>length</b> —The maximum number of characters the password can include. <b>Range:</b> 1 to 64 characters
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Special Requirements for Junos OS Plain-Text Passwords</i></li><li>• <i>Example: Changing the Requirements for Junos OS Plain-Text Passwords</i></li><li>• <a href="#">password (Login) on page 54</a></li></ul>



---

## message

---

<b>Syntax</b>	<code>message <i>text</i>;</code>
<b>Hierarchy Level</b>	[edit system login]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	<p>Configure a system login message. This message appears before a user logs in.</p> <p>You can format the message using the following special characters:</p> <ul style="list-style-type: none"><li>• \n—New line</li><li>• \t—Horizontal tab</li><li>• \'—Single quotation mark</li><li>• \"—Double quotation mark</li><li>• \\—Backslash</li></ul>
<b>Options</b>	<i>text</i> —Text of the message.
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring the Junos OS to Display a System Login Message</i></li><li>• <a href="#">announcement on page 26</a></li></ul>

## mib-profile

---

**Syntax**    `mib-profile profile-name {  
                  file filename;  
                  interval minutes;  
                  object-names {  
                      mib-object-name;  
                  }  
                  operation operation-name;  
                  }`

**Hierarchy Level**    [edit accounting-options]

**Release Information**    Statement introduced in Junos OS Release 8.2.  
                              Statement introduced in Junos OS Release 9.0 for EX Series switches.

**Description**    Create a MIB profile to collect selected MIB statistics and write them to a file in the `/var/log` directory.



**NOTE:** Do not configure MIB objects related to interface octets or packets for a MIB profile, because it can cause the SNMP walk or a CLI show command to time out.

---

**Options**    *profile-name*—Name of the MIB statistics profile.

The remaining statements are explained separately.

**Required Privilege Level**    interface—To view this statement in the configuration.  
                                  interface-control—To add this statement to the configuration.

**Related Documentation**    • *Configuring the MIB Profile*

## minimum-changes

---

<b>Syntax</b>	<code>minimum-changes <i>number</i>;</code>
<b>Hierarchy Level</b>	[edit system login passwords]
<b>Release Information</b>	Statement introduced in Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	<p>Specify the minimum number of character sets (or character set changes) required in plain-text passwords. Newly created passwords must meet this requirement.</p> <p>This statement is used in combination with the <b>change-type</b> statement. If the change-type is <b>character-sets</b>, then the number of character sets included in the password is checked against the specified minimum. If change-type is <b>set-transitions</b>, then the number of character set changes in the password is checked against the specified minimum.</p>
<b>Default</b>	For Junos OS, the minimum number of changes is 1. For Junos-FIPS Software, the minimum number of changes is 3.
<b>Options</b>	<i>number</i> —The minimum number of character sets (or character set changes) required for the password.
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li><i>Special Requirements for Junos OS Plain-Text Passwords</i></li> <li><a href="#">change-type on page 30</a></li> </ul>

## minimum-length

---

<b>Syntax</b>	minimum-length <i>length</i> ;
<b>Hierarchy Level</b>	[edit system login passwords]
<b>Release Information</b>	Statement introduced in Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	<p>Specify the minimum number of characters required in plain-text passwords. Newly created passwords must meet this requirement.</p> <p>This statement can be used in combination with all of the other requirement options for plain-text passwords, such as <b>minimum-upper-cases</b>, <b>minimum-punctuations</b>, <b>minimum-lower-cases</b>, and so on.</p> <p>Using several password minimum requirement options will cause the <b>minimum-length</b> to be reset if the total sum of the required minimums exceeds the <b>minimum-length</b> setting.</p>
<b>Default</b>	For Junos OS, the minimum number of characters for plain-text passwords is six. For Junos-FIPS software, the minimum number of characters for plain-text passwords is 10.
<b>Options</b>	<b>length</b> —The minimum number of characters the password must include. <b>Range:</b> 6 to 20 characters
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Special Requirements for Junos OS Plain-Text Passwords</i></li><li>• <i>Example: Changing the Requirements for Junos OS Plain-Text Passwords</i></li><li>• <a href="#">maximum-length on page 48</a></li></ul>

## object-names

---

<b>Syntax</b>	<code>object-names {     <i>mib-object-name</i>; }</code>
<b>Hierarchy Level</b>	[edit accounting-options <a href="#">mib-profile</a> <i>profile-name</i> ]
<b>Release Information</b>	Statement introduced in Junos OS Release 8.2. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Specify the name of each MIB object for which MIB statistics are collected for an accounting-data log file.
<b>Options</b>	<i>mib-object-name</i> —Name of a MIB object. You can specify more than one MIB object name.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <i>Configuring the MIB Profile</i></li> </ul>

## operation

---

<b>Syntax</b>	<code>operation <i>operation-name</i>;</code>
<b>Hierarchy Level</b>	[edit accounting-options <a href="#">mib-profile</a> <i>profile-name</i> ]
<b>Release Information</b>	Statement introduced in Junos OS Release 8.2. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Specify the name of the operation used to collect MIB statistics for an accounting-data log file.
<b>Options</b>	<i>operation-name</i> —Name of the operation to use. You can specify a <b>get</b> , <b>get-next</b> , or <b>walk</b> operation. <b>Default:</b> walk
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <i>Configuring the MIB Profile</i></li> </ul>

## password (Login)

---

<b>Syntax</b>	<pre>password {   change-type (set-transitions   character-set);   format (md5   sha1   sha256   sha512);   maximum-length length;   minimum-changes number;   minimum-length length;   minimum-lower-cases number;   minimum-numeric number;   minimum-punctuations number;   minimum-upper-cases number; }</pre>
<b>Hierarchy Level</b>	[edit system <a href="#">login</a> ]
<b>Release Information</b>	Statement introduced in Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	<p>Configure special requirements such as character length and encryption format for plain-text passwords. Newly created passwords must meet these requirements.</p> <p>Using several password minimum requirement options will cause the <b>minimum-length</b> to be reset if the total sum of the required minimums exceeds the <b>minimum-length</b> setting.</p> <p>The individual statements are explained separately.</p>
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Special Requirements for Junos OS Plain-Text Passwords</i></li><li>• <i>Example: Changing the Requirements for Junos OS Plain-Text Passwords</i></li></ul>


---

## permissions

---

<b>Syntax</b>	<code>permissions [ <i>permissions</i> ];</code>
<b>Hierarchy Level</b>	[edit system login <a href="#">class</a> ]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Configure the login access privileges to be provided on the router or switch.
<b>Options</b>	<i>permissions</i> —Privilege type. For a list of permission flag types, see <i>Understanding Junos OS Access Privilege Levels</i> .
<b>Required Privilege Level</b>	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring Access Privilege Levels</i></li><li>• <a href="#">user on page 69</a></li></ul>

## radius-options (edit system)

<b>Syntax</b>	<pre>radius-options {   attributes {     nas-ip-address <i>ip-address</i>;   }   enhanced-accounting;   password-protocol <i>mschap-v2</i>; }</pre>
<b>Hierarchy Level</b>	[edit system]
<b>Release Information</b>	<p>Statement introduced in Junos OS Release 8.3.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>MS-CHAPv2 password protocol configuration option introduced in Junos OS Release 9.2.</p> <p>MS-CHAPv2 password protocol configuration option introduced in Junos OS Release 9.2 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.1 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.</p>
	<p> <b>NOTE:</b> The <code>radius-options</code> statement is not available on QFabric systems.</p>
	<p><b>enhanced-accounting</b> statement introduced in Junos OS Release 14.1.</p>
<b>Description</b>	Configure RADIUS options for the NAS-IP address for outgoing RADIUS packets and password protocol used in RADIUS packets.
<b>Options</b>	<p><b>enhanced-accounting</b>—View the attribute values of a logged in user.</p> <p><b>nas-ip-address <i>ip-address</i></b>—IP address of the network access server (NAS) that requests user authentication.</p> <p><b>password-protocol <i>mschap-v2</i></b>—Protocol MS-CHAPv2, used for password authentication and password changing.</p>
<b>Required Privilege Level</b>	<p>system—To view this statement in the configuration.</p> <p>system-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <i>Configuring MS-CHAPv2 for Password-Change Support</i></li> <li>• <i>Configuring RADIUS System Accounting</i></li> <li>• <i>enhanced-accounting</i></li> </ul>



## retry-options

---

<b>Syntax</b>	<pre> retry-options {   backoff-factor <i>seconds</i>;   backoff-threshold <i>number</i>;   maximum-time <i>seconds</i>;   minimum-time <i>seconds</i>;   tries-before-disconnect <i>number</i>; } </pre>
<b>Hierarchy Level</b>	[edit system <a href="#">login</a> ]
<b>Release Information</b>	<p>Statement introduced in Junos OS Release 8.0.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p><b>maximum-time</b> option introduced in Junos OS Release 9.6.</p> <p><b>maximum-time</b> option introduced in Junos OS Release 9.6 for EX Series switches.</p>
<b>Description</b>	Maximum number of times a user can attempt to enter a password while logging in through SSH or Telnet before being disconnected.
<b>Required Privilege Level</b>	<p>admin—To view this statement in the configuration.</p> <p>admin-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <i>Limiting the Number of User Login Attempts for SSH and Telnet Sessions</i></li> <li>• <i>rate-limit</i></li> </ul>

## root-authentication

<b>Syntax</b>	<pre> root-authentication {     (encrypted-password "password"   plain-text-password);     load-key-file URL:filename;     no-public-keys     ssh-dsa "public-key";     ssh-ecdsa "public-key";     ssh-rsa "public-key"; } </pre>
<b>Hierarchy Level</b>	[edit system]
<b>Release Information</b>	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p>
<b>Description</b>	<p>Configure the authentication methods for the root-level user, whose username is <b>root</b>.</p> <p>You can use the <b>load-key-file URL:filename</b> statement to load an SSH key file that was previously generated using <b>ssh-keygen</b>.</p> <p>Optionally, you can use the <b>ssh-dsa</b>, <b>ssh-ecdsa</b>, or <b>ssh-rsa</b> statements to directly configure SSH RSA, DSA, or ECDSA keys to authenticate root logins. You can configure more than one public key for SSH authentication of root logins as well as for user accounts. When a user logs in as root, the public keys are referenced to determine whether the private key matches any of them.</p> <p>To view the SSH keys entries, use the configuration mode <b>show</b> command. For example:</p> <pre> [edit system] user@host# set root-authentication load-key-file my-host:.ssh/id_dsa.pub .file.19692   0 KB   0.3 kB/s   ETA: 00:00:00   100% [edit system] user@host# show root-authentication {     ssh-rsa "ABC123 user@domain.net"; #     SECRET-DATA } </pre>
<b>Options</b>	<p><b>encrypted-password "password"</b>—MD5 or other encrypted authentication. Specify the MD5 or other password. You can specify only one encrypted password.</p> <p>You cannot configure a blank password for <b>encrypted-password</b> using blank quotation marks (" "). You must configure a password whose number of characters range from 1 through 128 characters and enclose the password in quotation marks.</p> <p><b>load-key-file URL:filename</b>—Load an SSH key file that was previously generated using <b>ssh-keygen</b>. The <b>URL:filename</b> is the path to the file's location and name. When using this option, the contents of the key file are copied into the configuration immediately after entering the <b>load-key-file URL:filename</b> statement. This command loads RSA (SSH version 1 and SSH version 2) and DSA (SSH version 2) public keys.</p> <p><b>no-public-keys</b>—Disable SSH public key based authentication.</p>

**plain-text-password**—Plain-text password. The CLI prompts you for the password and then encrypts it. The CLI displays the encrypted version, and the software places the encrypted version in its user database. You can specify only one plain-text password.

**ssh-ecdsa "public/private-key"**—SSH ECDSA (variant of DSA that uses elliptic curve cryptography) public key. You can specify one or more public keys.

**ssh-dsa "public-key"**—SSH version 2 authentication. Specify the DSA (SSH version 2) public key. You can specify one or more public keys.

**ssh-rsa "public-key"**—SSH version 1 authentication. Specify the RSA (SSH version 1 and SSH version 2) public key. You can specify one or more public keys.

**Required Privilege Level** admin—To view this statement in the configuration.  
admin-control—To add this statement to the configuration.

**Related Documentation**

- *Understanding User Accounts*
- *Protecting Network Security by Configuring the Root Password*
- *Recovering the Root Password*
- [authentication on page 27](#)

## root-login

**Syntax** root-login (allow | deny | deny-password);

**Hierarchy Level** [edit system services ssh]

**Release Information** Statement introduced before Junos OS Release 7.4.  
Statement introduced in Junos OS Release 9.0 for EX Series switches.  
Statement introduced in Junos OS Release 11.1 for the QFX Series.

**Description** Control user access through SSH.

**Default** Allow user access through SSH.

**Options** **allow**—Allow users to log in to the router or switch as root through SSH.

**deny**—Disable users from logging in to the router or switch as root through SSH.

**deny-password**—Allow users to log in to the router or switch as root through SSH when the authentication method (for example, RSA authentication) does not require a password.

**Required Privilege Level** admin—To view this statement in the configuration.  
admin-control—To add this statement to the configuration.

**Related Documentation**

- *Configuring SSH Service for Remote Access to the Router or Switch*

## routing-engine-profile

---

<b>Syntax</b>	<pre>routing-engine-profile <i>profile-name</i> {     fields {         <i>field-name</i>;     }     file <i>filename</i>;     interval <i>minutes</i>; }</pre>
<b>Hierarchy Level</b>	[edit accounting-options]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Create a Routing Engine profile to collect selected Routing Engine statistics and write them to a file in the <code>/var/log</code> directory.
<b>Options</b>	<p><i>profile-name</i>—Name of the Routing Engine statistics profile.</p> <p>The remaining statements are explained separately.</p>
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring the Routing Engine Profile</i></li></ul>

## size

<b>Syntax</b>	<code>size bytes;</code>
<b>Hierarchy Level</b>	[edit accounting-options <a href="#">file</a> <i>filename</i> ]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Specify attributes of an accounting-data log file.
<b>Options</b>	<p><b>bytes</b>—Maximum size of each log file, in bytes, kilobytes (KB), megabytes (MB), or gigabytes (GB). When a log file (for example, <b>profilelog</b>) reaches its maximum size, it is renamed <b>profilelog.0</b>, then <b>profilelog.1</b>, and so on, until the maximum number of log files is reached. Then the oldest log file is overwritten. If you do not specify a size, the file is closed, archived, and renamed when the time specified for the transfer interval is exceeded.</p> <p><b>Syntax:</b> <i>x</i> to specify bytes, <i>xk</i> to specify KB, <i>xm</i> to specify MB, <i>xg</i> to specify GB</p> <p><b>Range:</b> 256 KB through 1 GB</p>
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <i>Configuring the Maximum Size of the File</i></li> </ul>

## source-classes

<b>Syntax</b>	<pre>source-classes {   source-class-name; }</pre>
<b>Hierarchy Level</b>	[edit accounting-options <a href="#">class-usage-profile</a> <i>profile-name</i> ]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Specify the source classes for which statistics are collected.
<b>Options</b>	<b>source-class-name</b> —Name of the source class to include in the class usage profile.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <i>Configuring a Class Usage Profile</i></li> </ul>

## start-time

---

<b>Syntax</b>	<code>start-time <i>time</i>;</code>
<b>Hierarchy Level</b>	[edit accounting-options <a href="#">file</a> <i>filename</i> ]
<b>Release Information</b>	Statement introduced in Junos OS Release 8.2. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Specify the start time for transfer of an accounting-data log file.
<b>Options</b>	<b><i>time</i></b> —Start time for file transfer. <b>Syntax:</b> <i>YYYY-MM-DD.hh:mm</i>
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring the Start Time for File Transfer</i></li></ul>

## tacplus-options

<b>Syntax</b>	<pre> tacplus-options {   (exclude-cmd-attribute   no-cmd-attribute-value);   enhanced-accounting;   service-name <i>service-name</i>;   timestamp-and-timezone; } </pre>
<b>Hierarchy Level</b>	[edit system]
<b>Release Information</b>	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p><b>no-cmd-attribute-value</b> and <b>exclude-cmd-attribute</b> options introduced in Junos OS Release 9.3.</p> <p>Statement introduced in Junos OS Release 11.1 for QFX Series.</p> <p><b>timestamp-and-timezone</b> option introduced in Junos OS Release 12.2.</p> <p><b>enhanced-accounting</b> option introduced in Junos OS Release 14.1.</p> <p>Statement introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.</p>
<b>Description</b>	Configure TACACS+ options for authentication and accounting.
<b>Options</b>	<p><b>enhanced-accounting</b>—View the attribute values of a logged in user.</p> <p><b>exclude-cmd-attribute</b>—Exclude the <b>cmd</b> attribute value completely from start and stop accounting records to enable logging of accounting records in the correct log file on a TACACS+ server.</p> <p><b>no-cmd-attribute-value</b>—Set the <b>cmd</b> attribute value to an empty string in the TACACS+ accounting start and stop requests to enable logging of accounting records in the correct log file on a TACACS+ server.</p> <p><b>service-name <i>service-name</i></b>—Name of the authentication service used when you configure multiple TACACS+ servers to use the same authentication service.</p> <p><b>Default:</b> junos-exec</p> <p><b>timestamp-and-timezone</b>—Include this statement if you want start time, stop time, and timezone attributes included in start/stop accounting records.</p>
<b>Required Privilege Level</b>	<p>system—To view this statement in the configuration.</p> <p>system-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <i>Configuring TACACS+ Authentication</i></li> <li>• <i>Configuring TACACS+ System Accounting</i></li> <li>• <i>Junos OS Authentication Order for RADIUS, TACACS+, and Password Authentication</i></li> <li>• <i>enhanced-accounting</i></li> </ul>

## tacplus-server

---

<b>Syntax</b>	<code>tacplus-server server-address {     secret <i>password</i>;     single-connection;     source-address <i>source-address</i>;     timeout <i>seconds</i>; }</code>
<b>Hierarchy Level</b>	[edit system]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Configure the IPv4 or IPv6 TACACS+ server.
<b>Options</b>	<b><i>server-address</i></b> —Address of the IPv4 or IPv6 TACACS+ authentication server.



**NOTE:** Wildcard characters cannot be used in the TACACS server address or source address. This is because the TACACS server and source can accept both IPv4 and IPv6 addresses and, if you use wildcard characters for these addresses, Junos OS cannot validate mismatching server and source address families.

---

The remaining statements are explained separately.

<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring TACACS+ Authentication</i></li></ul>



## traceoptions (Address-Assignment Pool)

<b>Syntax</b>	<pre> traceoptions {     file <i>filename</i> {         files <i>number</i>;         size <i>maximum-file-size</i>;         match <i>regex</i>;         (world-readable   no-world-readable);     }     flag address-assignment;     flag all;     flag configuration;     flag framework;     flag ldap;     flag local-authentication;     flag radius; } </pre>
<b>Hierarchy Level</b>	[edit system processes general-authentication-service]
<b>Release Information</b>	<p>Flag for tracing address-assignment pool operations introduced in Junos OS Release 9.0.</p> <p><b>option-name</b> option introduced in Junos OS Release 8.3.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p>
<b>Description</b>	Configure tracing options.
<b>Options</b>	<p><b>file <i>filename</i></b>—Name of the file that receives the output of the tracing operation. Enclose the name in quotation marks. All files are placed in the directory <b>/var/log</b>.</p> <p><b>files <i>number</i></b>—(Optional) Maximum number of trace files. When a trace file named <b>trace-file</b> reaches its maximum size, it is renamed <b>trace-file.0</b>, then <b>trace-file.1</b>, and so on, until the maximum number of trace files is reached. Then the oldest trace file is overwritten.</p> <p>If you specify a maximum number of files, you also must specify a maximum file size with the <b>size</b> option and a filename.</p> <p><b>Range:</b> 2 through 1000</p> <p><b>Default:</b> 3 files</p> <p><b>flag <i>flag</i></b>—Tracing operation to perform. To specify more than one tracing operation, include multiple <b>flag</b> statements. You can include the following flags:</p> <ul style="list-style-type: none"> <li>• <b>address-assignment</b>—All address-assignment events</li> <li>• <b>all</b>—All tracing operations</li> <li>• <b>configuration</b>—Configuration events</li> <li>• <b>framework</b>—Authentication framework events</li> <li>• <b>ldap</b>—LDAP authentication events</li> <li>• <b>local-authentication</b>—Local authentication events</li> </ul>

- **radius**—RADIUS authentication events

**match *regex***—(Optional) Refine the output to include lines that contain the regular expression.

**no-world-readable**—(Optional) Restrict access to the originator of the trace operation only.

**size *size***—(Optional) Maximum size of each trace file, in kilobytes (KB), megabytes (MB), or gigabytes (GB). If you specify a maximum file size, you also must specify a maximum number of trace files with the **files** option and filename.

**Syntax:** **xk** to specify KB, **xm** to specify MB, or **xg** to specify GB

**Range:** 10 KB through 1 GB

**Default:** 128 KB

**world-readable**—(Optional) Enable unrestricted file access.

**Required Privilege Level**    **admin**—To view this statement in the configuration.  
                                     **admin-control**—To add this statement to the configuration.

**Related Documentation**

- *Configuring Address-Assignment Pools*

---

## transfer-interval

---

**Syntax**    **transfer-interval** *minutes*;

**Hierarchy Level**    [edit accounting-options **file** *filename*]

**Release Information**    Statement introduced before Junos OS Release 7.4.  
                                     Statement introduced in Junos OS Release 9.0 for EX Series switches.

**Description**    Specify the length of time the file remains open and receives new statistics before it is closed and transferred to an archive site.

**Options**    **minutes**—Time the file remains open and receives new statistics before it is closed and transferred to an archive site.  
                     **Range:** 5 through 2880 minutes  
                     **Default:** 30 minutes

**Required Privilege Level**    **interface**—To view this statement in the configuration.  
                                     **interface-control**—To add this statement to the configuration.

**Related Documentation**

- *Configuring the Transfer Interval of the File*

---


## uid

---

<b>Syntax</b>	<code>uid <i>uid-value</i>;</code>
<b>Hierarchy Level</b>	[edit system login <a href="#">user</a> ]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Numeric identifier associated with the user account name, either assigned by an administrator or assigned automatically when you commit the user configuration. It is used by applications that request numeric identifiers, such as some RADIUS queries or secure applications such as flow-tap monitoring.
<b>Options</b>	<b><i>uid-value</i></b> —Number associated with the login account. This value must be unique on the router or switch. <b>Range:</b> 100 through 64000
<b>Required Privilege Level</b>	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring Junos OS User Accounts by Using a Configuration Group</i></li></ul>

## unattended-boot

---

<b>Syntax</b>	unattended-boot;
<b>Hierarchy Level</b>	[edit system]
<b>Release Information</b>	Statement introduced in Junos OS Release 13.2X51-D20 for EX Series switches.
<b>Description</b>	<p>Set the switch to unattended mode for U-Boot to prevent unauthorized access to the system before the JUNOS OS login prompt appears. In unattended mode, access to the loader CLI is blocked, as well as recovery mechanisms such as password recovery by using single-user mode and booting the switch by using a USB flash drive. In order to access the CLI in U-Boot mode, the user must enter a boot-loader password that has been previously configured.</p>
	<div><p><b>NOTE:</b> If the root password is lost while the switch is in unattended mode, the switch must be reset to the factory default configuration using the LCD panel. For more information see <i>Reverting to the Default Factory Configuration for the EX Series Switch</i>.</p></div>
<b>Default</b>	Unattended mode is not enabled by default.
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">Using Unattended Mode for U-Boot to Prevent Unauthorized Access on page 15</a></li><li>• <a href="#">boot-loader-authentication on page 29</a></li></ul>

## user (Access)

<b>Syntax</b>	<pre> user username {   authentication {     class class-name;     (encrypted-password "password"   plain-text-password);     full-name complete-name;     load-key-file URL filename;     ssh-dsa "public-key" &lt;from hostname&gt;;     ssh-rsa "public-key" &lt;from hostname&gt;;     uid uid-value;   } } </pre>
<b>Hierarchy Level</b>	[edit system <a href="#">login</a> ]
<b>Release Information</b>	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p>
<b>Description</b>	Configure access permission for individual users.
<b>Options</b>	The remaining statements are explained separately.
<b>Required Privilege Level</b>	<p>admin—To view this statement in the configuration.</p> <p>admin-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <i>Configuring Junos OS User Accounts by Using a Configuration Group</i></li> <li>• <a href="#">class on page 30</a></li> </ul>



## PART 3

# Administration

- [Routine Monitoring on page 73](#)
- [Operational Commands on page 77](#)





## CHAPTER 5

# Routine Monitoring

- [Managing Users \(J-Web Procedure\) on page 73](#)

### Managing Users (J-Web Procedure)

---

You can use the Users Configuration page for user information to add new users to an EX Series switch. For each account, you define a login name and password for the user and specify a login class for access privileges.

To configure users:

1. Select **Configure > System Properties > User Management**.

The User Management page displays details of users, the authentication order, the RADIUS servers and TACACS servers present.

2. Click **Edit**.
3. Click any of the following options on the **Users** tab:
  - **Add**—Select this option to add a user. Enter details as described in [Table 7 on page 74](#).
  - **Edit**—Select this option to edit an existing user's details. Enter details as described in [Table 7 on page 74](#).
  - **Delete**—Select this option to delete a user.
4. Click an option on the **Authentication Methods and Order** tab:
  - **Authentication Order**—Drag and drop the authentication type from the Available Methods section to the Selected Methods. Click the up or down buttons to modify the authentication order.
  - **RADIUS server**—Click one of the following options:
    - **Add**—Select this option to add an authentication server. Enter details as described in [Table 8 on page 75](#).
    - **Edit**—Select this option to modify the authentication server details. Enter details as described in [Table 8 on page 75](#).
    - **Delete**—Select this option to delete an authentication server from the list.
  - **TACACS server**—Click one of the following options:

- **Add**—Select this option to add an authentication server. Enter details as described in [Table 8 on page 75](#).
- **Edit**—Select this option to modify the authentication server details. Enter details as described in [Table 8 on page 75](#).
- **Delete**—Select this option to delete an authentication server from the list.



**NOTE:** After you make changes to the configuration on this page, you must commit the changes for them to take effect. To commit all changes to the active configuration, select **Commit Options > Commit**. See [Using the Commit Options to Commit Configuration Changes](#) for details about all commit options.

**Table 7: User Management Configuration Page Summary**

Field	Function	Your Action
<b>User Information</b>		
Username (required)	Specifies the name that identifies the user.	Type the username. It must be unique within the switching platform. Do not include spaces, colons, or commas in the username.
User Id	Specifies the user identification.	Type the user's ID.
Full Name	Specifies the user's full name.	Type the user's full name. If the full name contains spaces, enclose it in quotation marks. Do not include colons or commas.
Login Class (required)	Defines the user's access privilege.	Select the user's login class from the list: <ul style="list-style-type: none"> <li>• <b>operator</b></li> <li>• <b>read-only</b></li> <li>• <b>super-user/superuser</b></li> <li>• <b>unauthorized</b></li> </ul> This list also includes any user-defined login classes.
Password	Specifies the login password for this user.	Type the login password for this user. The login password must meet these criteria: <ul style="list-style-type: none"> <li>• The password must be at least 6 characters long.</li> <li>• It can include alphabetic, numeric, and special characters, but not control characters.</li> <li>• It must contain at least one change of case or character class.</li> </ul>
Confirm Password	Verifies the login password for this user.	Retype the login password for this user.

Table 8: Add an Authentication Server

Field	Function	Your Action
IP Address	Specifies the IP address of the server.	Type the server's 32-bit IP address, in dotted decimal notation.
Password	Specifies the password of the server.	Type the password of the server.
Confirm Password	Verifies that the password of the server is entered correctly.	Retype the password of the server.
Server Port	Specifies the port with which the server is associated.	Type the port number.
Source Address	Specifies the source address of the server.	Type the server's 32-bit IP address, in dotted decimal notation.
Retry Attempts	Specifies the number of login retries allowed after a login failure.	Type the number.  <b>NOTE:</b> Only 1 retry is permitted for a TACACS server.
Time out	Specifies the time interval to wait before the connection to the server is closed.	Type the interval in seconds.

**Related  
Documentation**

- [Configuring Management Access for the EX Series Switch \(J-Web Procedure\) on page 11](#)



## CHAPTER 6

# Operational Commands

- request message
- show subscribers

## request message

---

<b>Syntax</b>	<code>request message all message "text"</code> <code>request message message "text" (terminal <i>terminal-name</i>   user <i>user-name</i>)</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. Command introduced in Junos OS Release 11.1 for the QFX Series. Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.
<b>Description</b>	Display a message on the screens of all users who are logged in to the router or switch or on specific screens.
<b>Options</b>	<b>all</b> —Display a message on the terminal of all users who are currently logged in.  <b>message "text"</b> —Message to display.  <b>terminal <i>terminal-name</i></b> —Name of the terminal on which to display the message.  <b>user <i>user-name</i></b> —Name of the user to whom to direct the message.
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<a href="#">request message message on page 78</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### request message message

```
user@host> request message message "Maintenance window in 10 minutes" user maria
Message from user@host on ttyp0 at 20:27 ...
Maintenance window in 10 minutes
EOF
```

## show subscribers

**Syntax** show subscribers  
 <detail | extensive | terse>  
 <aci-interface-set-name *aci-interface-set-name*>  
 <address *address*>  
 <agent-circuit-identifier *agent-circuit-identifier-substring*>  
 <client-type *client-type*>  
 <count>  
 <id>  
 <interface *interface*>  
 <logical-system *logical-system*>  
 <mac-address *mac-address*>  
 <physical-interface *physical-interface-name*>  
 <profile-name *profile-name*>  
 <routing-instance *routing-instance*>  
 <stacked-vlan-id *stacked-vlan-id*>  
 <subscriber-state *subscriber-state*>  
 <user-name *user-name*>  
 <vci *vci-identifier*>  
 <vpi *vpi-identifier*>  
 <vlan-id *vlan-id*>

**Release Information** Command introduced in Junos OS Release 9.3.  
 Command introduced in Junos OS Release 9.3 for EX Series switches.  
**client-type**, **mac-address**, **subscriber-state**, and **extensive** options introduced in Junos OS Release 10.2.  
**count** option usage with other options introduced in Junos OS Release 10.2.  
 Command introduced in Junos OS Release 11.1 for the QFX Series.  
 Options **aci-interface-set-name** and **agent-circuit-identifier** introduced in Junos OS Release 12.2.  
 The **physical-interface** and **user-name** options introduced in Junos OS Release 12.3.  
 Options **vci** and **vpi** introduced in Junos OS Release 12.3R3 and supported in later 12.3Rx releases.  
 Options **vci** and **vpi** supported in Junos OS Release 13.2 and later releases. (Not supported in Junos OS Release 13.1.)  
 Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.  
 Command introduced in Junos OS Release 15.1R3 on MX Series routers for enhanced subscriber management.

**Description** Display information for active subscribers.

**Options** **detail | extensive | terse**—(Optional) Display the specified level of output.

**aci-interface-set-name**—(Optional) Display all dynamic subscriber sessions that use the specified agent circuit identifier (ACI) interface set. Use the ACI interface set name generated by the router, such as aci-1003-ge-1/0/0.4001, and not the actual ACI value found in the DHCP or PPPoE control packets.

**address**—(Optional) Display subscribers whose IP address matches the specified address. You must specify the IPv4 or IPv6 address prefix without a netmask (for example,

192.168.17.1). If you specify the IP address as a prefix with a netmask (for example, 192.168.17.1/32), the router displays a message that the IP address is invalid, and rejects the command.

**agent-circuit-identifier-substring**—(Optional) Display all dynamic subscriber sessions whose ACI value matches the specified substring.

**client-type**—(Optional) Display subscribers whose client type matches one of the following client types:

- **dhcp**—DHCP clients only.
- **dot1x**—Dot1x clients only.
- **essm**—ESSM clients only.
- **fwauth**—FwAuth (authenticated across a firewall) clients only.
- **l2tp**—L2TP clients only.
- **mlppp**—MLPPP clients only.
- **ppp**—PPP clients only.
- **pppoe**—PPPoE clients only.
- **static**—Static clients only.
- **vlan**—VLAN clients only.
- **vlan-oob**—VLAN out-of-band (ANCP-triggered) clients only.
- **vpls-pw**—VPLS pseudowire clients only.
- **xauth**—Xauth clients only.

**count**—(Optional) Display the count of total subscribers and active subscribers for any specified option. You can use the **count** option alone or with the **address**, **client-type**, **interface**, **logical-system**, **mac-address**, **profile-name**, **routing-instance**, **stacked-vlan-id**, **subscriber-state**, or **vlan-id** options.

**id**—(Optional) Display a specific subscriber session whose session id matches the specified subscriber ID. You can display subscriber IDs by using the **show subscribers extensive** or the **show subscribers interface extensive** commands.

**interface**—(Optional) Display subscribers whose interface matches the specified interface.

**logical-system**—(Optional) Display subscribers whose logical system matches the specified logical system.

**mac-address**—(Optional) Display subscribers whose MAC address matches the specified MAC address.

**physical-interface-name**—(M120, M320, and MX Series routers only) (Optional) Display subscribers whose physical interface matches the specified physical interface.

**profile-name**—(Optional) Display subscribers whose dynamic profile matches the specified profile name.



**routing-instance**—(Optional) Display subscribers whose routing instance matches the specified routing instance.

**stacked-vlan-id**—(Optional) Display subscribers whose stacked VLAN ID matches the specified stacked VLAN ID.

**subscriber-state**—(Optional) Display subscribers whose subscriber state matches the specified subscriber state (ACTIVE, CONFIGURED, INIT, TERMINATED, or TERMINATING).

**user-name**—(M120, M320, and MX Series routers only) (Optional) Display subscribers whose username matches the specified subscriber name.

**vci-identifier**—(MX Series routers with MPCs and ATM MICs with SFP only) (Optional) Display active ATM subscribers whose ATM virtual circuit identifier (VCI) matches the specified VCI identifier. The range of values is 0 through 255.

**vpi-identifier**—(MX Series routers with MPCs and ATM MICs with SFP only) (Optional) Display active ATM subscribers whose ATM virtual path identifier (VPI) matches the specified VPI identifier. The range of values is 0 through 65535.

**vlan-id**—(Optional) Display subscribers whose VLAN ID matches the specified VLAN ID, regardless of whether the subscriber uses a single-tagged or double-tagged VLAN. For subscribers using a double-tagged VLAN, this option displays subscribers where the inner VLAN tag matches the specified VLAN ID. To display only subscribers where the specified value matches only double-tagged VLANs, use the **stacked-vlan-id** option to match the outer VLAN tag.



**NOTE:** Due to display limitations, logical system and routing instance output values are truncated when necessary.

**Required Privilege Level**

view

**Related Documentation**

- [show subscribers summary](#)
- [Verifying and Managing Agent Circuit Identifier-Based Dynamic VLAN Configuration](#)
- [Verifying and Managing Junos OS Enhanced Subscriber Management](#)

**List of Sample Output**

[show subscribers \(IPv4\) on page 86](#)  
[show subscribers \(IPv6\) on page 86](#)  
[show subscribers \(IPv4 and IPv6 Dual Stack\) on page 86](#)  
[show subscribers \(LNS on MX Series Routers\) on page 87](#)  
[show subscribers \(L2TP Switched Tunnels\) on page 87](#)  
[show subscribers client-type dhcp detail on page 87](#)  
[show subscribers client-type vlan-oob detail on page 87](#)  
[show subscribers count on page 88](#)  
[show subscribers address detail \(IPv6\) on page 88](#)

[show subscribers detail \(IPv4\) on page 88](#)  
[show subscribers detail \(IPv6\) on page 89](#)  
[show subscribers detail \(IPv6 Static Demux Interface\) on page 89](#)  
[show subscribers detail \(L2TP LNS Subscribers on MX Series Routers\) on page 89](#)  
[show subscribers detail \(L2TP Switched Tunnels\) on page 89](#)  
[show subscribers detail \(Tunneled Subscriber\) on page 90](#)  
[show subscribers detail \(IPv4 and IPv6 Dual Stack\) on page 90](#)  
[show subscribers detail \(ACI Interface Set Session\) on page 91](#)  
[show subscribers detail \(PPPoE Subscriber Session with ACI Interface Set\) on page 91](#)  
[show subscribers extensive on page 92](#)  
[show subscribers extensive \(RPF Check Fail Filter\) on page 92](#)  
[show subscribers extensive \(L2TP LNS Subscribers on MX Series Routers\) on page 92](#)  
[show subscribers extensive \(IPv4 and IPv6 Dual Stack\) on page 93](#)  
[show subscribers extensive \(ADF Rules \) on page 94](#)  
[show subscribers extensive \(Effective Shaping-Rate\) on page 94](#)  
[show subscribers aci-interface-set-name detail \(Subscriber Sessions Using Specified ACI Interface Set\) on page 94](#)  
[show subscribers agent-circuit-identifier detail \(Subscriber Sessions Using Specified ACI Substring\) on page 95](#)  
[show subscribers interface extensive on page 95](#)  
[show subscribers logical-system terse on page 96](#)  
[show subscribers physical-interface count on page 96](#)  
[show subscribers routing-instance inst1 count on page 96](#)  
[show subscribers stacked-vlan-id detail on page 96](#)  
[show subscribers stacked-vlan-id vlan-id detail \(Combined Output\) on page 96](#)  
[show subscribers stacked-vlan-id vlan-id interface detail \(Combined Output for a Specific Interface\) on page 97](#)  
[show subscribers user-name detail on page 97](#)  
[show subscribers vlan-id on page 97](#)  
[show subscribers vlan-id detail on page 97](#)  
[show subscribers vpi vci extensive \(PPPoE-over-ATM Subscriber Session\) on page 98](#)  
[show subscribers address detail \(Enhanced Subscriber Management\) on page 98](#)

**Output Fields** [Table 9 on page 82](#) lists the output fields for the **show subscribers** command. Output fields are listed in the approximate order in which they appear.

**Table 9: show subscribers Output Fields**

Field Name	Field Description
<b>Interface</b>	Interface associated with the subscriber. The router or switch displays subscribers whose interface matches or begins with the specified interface.  The * character indicates a continuation of addresses for the same session.
<b>IP Address/VLAN ID</b>	Subscriber IP address or VLAN ID associated with the subscriber in the form <i>tpid.vlan-id</i>  No IP address or VLAN ID is assigned to an L2TP tunnel-switched session. For these subscriber sessions the value is <b>Tunnel-switched</b> .
<b>User Name</b>	Name of subscriber.

Table 9: show subscribers Output Fields (*continued*)

Field Name	Field Description
LS:RI	Logical system and routing instance associated with the subscriber.
Type	Subscriber client type (DHCP, L2TP, PPP, PPPoE, STATIC-INTERFACE, VLAN).
IP Address	Subscriber IPv4 address.
IP Netmask	Subscriber IP netmask.
Primary DNS Address	IP address of primary DNS server.
Secondary DNS Address	IP address of secondary DNS server.
Primary WINS Address	IP address of primary WINS server.
Secondary WINS Address	IP address of secondary WINS server.
IPv6 Address	Subscriber IPv6 address, or multiple addresses.
IPv6 Prefix	Subscriber IPv6 prefix. If you are using DHCPv6 prefix delegation, this is the delegated prefix.
IPv6 User Prefix	IPv6 prefix obtained through ND/RA.
IPv6 Address Pool	Subscriber IPv6 address pool. The IPv6 address pool is used to allocate IPv6 prefixes to the DHCPv6 clients.
IPv6 Network Prefix Length	Length of the network portion of the IPv6 address.
IPv6 Prefix Length	Length of the subscriber IPv6 prefix.
Logical System	Logical system associated with the subscriber.
Routing Instance	Routing instance associated with the subscriber.
Interface	(Enhanced subscriber management for MX Series routers) Name of the enhanced subscriber management logical interface, in the form <b>demux0.nnnn</b> (for example, <b>demux0.3221225472</b> ), to which access-internal and framed subscriber routes are mapped.
Interface Type	Whether the subscriber interface is <b>Static</b> or <b>Dynamic</b> .
Interface Set	Internally generated name of the dynamic ACI interface set used by the subscriber session.
Interface Set Type	Interface type of the ACI interface set: <b>Dynamic</b> . This is the only ACI interface set type currently supported.
Interface Set Session ID	Identifier of the dynamic ACI interface set entry in the session database.

Table 9: show subscribers Output Fields (*continued*)

Field Name	Field Description
<b>Underlying Interface</b>	Name of the underlying interface for the subscriber session.
<b>Dynamic Profile Name</b>	Dynamic profile used for the subscriber.
<b>Dynamic Profile Version</b>	Version number of the dynamic profile used for the subscriber.
<b>MAC Address</b>	MAC address associated with the subscriber.
<b>State</b>	Current state of the subscriber session ( <b>Init</b> , <b>Configured</b> , <b>Active</b> , <b>Terminating</b> , <b>Tunneled</b> ).
<b>L2TP State</b>	Current state of the L2TP session, <b>Tunneled</b> or <b>Tunnel-switched</b> . When the value is <b>Tunnel-switched</b> , two entries are displayed for the subscriber; the first entry is at the LNS interface on the LTS and the second entry is at the LAC interface on the LTS.
<b>Tunnel switch Profile Name</b>	Name of the L2TP tunnel switch profile that initiates tunnel switching.
<b>Local IP Address</b>	IP address of the local gateway (LAC).
<b>Remote IP Address</b>	IP address of the remote peer (LNS).
<b>VLAN Id</b>	VLAN ID associated with the subscriber in the form <i>tpid.vlan-id</i> .
<b>Stacked VLAN Id</b>	Stacked VLAN ID associated with the subscriber in the form <i>tpid.vlan-id</i> .
<b>RADIUS Accounting ID</b>	RADIUS accounting ID associated with the subscriber.
<b>Agent Circuit ID</b>	<p>For the <b>dhcp</b> client type, option 82 agent circuit ID associated with the subscriber. The ID is displayed as an ASCII string unless the value has nonprintable characters, in which case it is displayed in hexadecimal format.</p> <p>For the <b>vlan-oob</b> client type, the agent circuit ID or access-loop circuit identifier that identifies the subscriber line based on the subscriber-facing DSLAM interface on which the subscriber request originates.</p>
<b>Agent Remote ID</b>	<p>For the <b>dhcp</b> client type, option 82 agent remote ID associated with the subscriber. The ID is displayed as an ASCII string unless the value has nonprintable characters, in which case it is displayed in hexadecimal format.</p> <p>For the <b>vlan-oob</b> client type, the agent remote ID or access-loop remote identifier that identifies the subscriber line based on the NAS-facing DSLAM interface on which the subscriber request originates.</p>
<b>DHCP Relay IP Address</b>	IP address used by the DHCP relay agent.
<b>ATM VPI</b>	(MX Series routers with MPCs and ATM MICs with SFP only) ATM virtual path identifier (VPI) on the subscriber's physical interface.
<b>ATM VCI</b>	(MX Series routers with MPCs and ATM MICs with SFP only) ATM virtual circuit identifier (VCI) for each VPI configured on the subscriber interface.

Table 9: show subscribers Output Fields (*continued*)

Field Name	Field Description
Login Time	Date and time at which the subscriber logged in.
Effective shaping-rate	Actual downstream traffic shaping rate for the subscriber, in kilobits per second.
IPv4 rpf-check Fail Filter Name	Name of the filter applied by the dynamic profile to IPv4 packets that fail the RPF check.
IPv6 rpf-check Fail Filter Name	Name of the filter applied by the dynamic profile to IPv6 packets that fail the RPF check.
DHCP Options	len = number of hex values in the message. The hex values specify the type, length, value (TLV) for DHCP options, as defined in RFC 2132.
Session ID	ID number for a subscriber service session.
Underlying Session ID	For DHCPv6 subscribers on a PPPoE network, displays the session ID of the underlying PPPoE interface.
Service Sessions	Number of service sessions (that is, a service activated using RADIUS CoA) associated with the subscribers.
Service Session Name	Service session profile name.
Session Timeout (seconds)	Number of seconds of access provided to the subscriber before the session is automatically terminated.
Idle Timeout (seconds)	Number of seconds subscriber can be idle before the session is automatically terminated.
IPv6 Delegated Address Pool	Name of the pool used for DHCPv6 prefix delegation.
IPv6 Delegated Network Prefix Length	Length of the prefix configured for the IPv6 delegated address pool.
IPv6 Interface Address	Address assigned by the Framed-Ipv6-Prefix AAA attribute.
IPv6 Framed Interface Id	Interface ID assigned by the Framed-Interface-Id AAA attribute.
ADF IPv4 Input Filter Name	Name assigned to the Ascend-Data-Filter (ADF) interface IPv4 input filter (client or service session). The filter name is followed by the rules (in hexadecimal format) associated with the ADF filter and the decoded rule in Junos OS filter style.
ADF IPv4 Output Filter Name	Name assigned to the Ascend-Data-Filter (ADF) interface IPv4 output filter (client or service session). The filter name is followed by the rules (in hexadecimal format) associated with the ADF filter and the decoded rule in Junos OS filter style.
ADF IPv6 Input Filter Name	Name assigned to the Ascend-Data-Filter (ADF) interface IPv6 input filter (client or service session). The filter name is followed by the rules (in hexadecimal format) associated with the ADF filter and the decoded rule in Junos OS filter style.

Table 9: show subscribers Output Fields (*continued*)

Field Name	Field Description
ADF IPv6 Output Filter Name	Name assigned to the Ascend-Data-Filter (ADF) interface IPv6 output filter (client or service session). The filter name is followed by the rules (in hexadecimal format) associated with the ADF filter and the decoded rule in Junos OS filter style.
IPv4 Input Filter Name	Name assigned to the IPv4 input filter (client or service session).
IPv4 Output Filter Name	Name assigned to the IPv4 output filter (client or service session).
IPv6 Input Filter Name	Name assigned to the IPv6 input filter (client or service session).
IPv6 Output Filter Name	Name assigned to the IPv6 output filter (client or service session).
IFL Input Filter Name	Name assigned to the logical interface input filter (client or service session).
IFL Output Filter Name	Name assigned to the logical interface output filter (client or service session).

## Sample Output

### show subscribers (IPv4)

```

user@host> show subscribers
Interface          IP Address/VLAN ID  User Name          LS:RI
ge-1/3/0.1073741824 100                WHOLESALER-CLIENT default:default
demux0.1073741824   10.0.0.10           RETAILER1-CLIENT  test1:retailer1
demux0.1073741825   192.3.0.3           RETAILER1-CLIENT  test1:retailer1
demux0.1073741826   198.53.102.3        RETAILER2-CLIENT  test1:retailer2

```

### show subscribers (IPv6)

```

user@host> show subscribers
Interface          IP Address/VLAN ID  User Name          LS:RI
ge-1/0/0.0         2001:db8::c0:0:0:0/74 WHOLESALER-CLIENT default:default
*                  2001:db8::1/128     subscriber-25      default:default

```

### show subscribers (IPv4 and IPv6 Dual Stack)

```

user@host> show subscribers
Interface          IP Address/VLAN ID  User Name
LS:RI
demux0.1073741834  0x8100.1002 0x8100.1
default:default
demux0.1073741835  0x8100.1001 0x8100.1
default:default
pp0.1073741836     192.168.1.1        dualstackuser1@EXAMPLE1.com
default:ASP-1
*                  2001:db8:1::/48
*                  2001:db8:1:1::/64
pp0.1073741837     192.168.1.3        dualstackuser2@EXAMPLE1.com
default:ASP-1
*                  2001:db8:1:2:5::/64

```

**show subscribers (LNS on MX Series Routers)**

```

user@host> show subscribers
Interface      IP Address/VLAN ID  User Name      LS:RI
si-4/0/0.1     192.168.4.1        xyz@example.com default:default

```

**show subscribers (L2TP Switched Tunnels)**

```

user@host> show subscribers
Interface      IP Address/VLAN ID  User Name      LS:RI
si-2/1/0.1073741842 Tunnel-switched  ap@example.com  default:default

si-2/1/0.1073741843 Tunnel-switched  ap@example.com  default:default

```

**show subscribers client-type dhcp detail**

```

user@host> show subscribers client-type dhcp detail
Type: DHCP
IP Address: 192.20.9.7
IP Netmask: 255.255.0.0
Logical System: default
Routing Instance: default
Interface: demux0.1073744127
Interface type: Dynamic
Dynamic Profile Name: dhcp-demux-prof
MAC Address: 00:10:95:00:00:98
State: Active
Radius Accounting ID: jnpr :2304
Login Time: 2009-08-25 14:43:52 PDT

Type: DHCP
IP Address: 10.20.10.7
IP Netmask: 255.255.0.0
Logical System: default
Routing Instance: default
Interface: demux0.1073744383
Interface type: Dynamic
Dynamic Profile Name: dhcp-demux-prof
MAC Address: 00:10:94:00:01:f3
State: Active
Radius Accounting ID: jnpr :2560
Login Time: 2009-08-25 14:43:56 PDT

```

**show subscribers client-type vlan-oob detail**

```

user@host> show subscribers client-type vlan-oob detail
Type: VLAN-OOB
User Name: L2WS.line-aci-1.line-ari-1
Logical System: default
Routing Instance: ISP1
Interface: demux0.1073744127
Interface type: Dynamic
Underlying Interface: ge-1/0/0
Dynamic Profile Name: Prof_L2WS
Dynamic Profile Version: 1
State: Active
Radius Accounting ID: 2304
Session ID: 77
VLAN Id: 126

```

```
Core-Facing Interface: ge-2/1/1
VLAN Map Id: 6
Inner VLAN Map Id: 2001
Agent Circuit ID: line-aci-1
Agent Remote ID: line-ari-1
Login Time: 2013-10-29 14:43:52 EDT
```

#### show subscribers count

```
user@host> show subscribers count
Total Subscribers: 188, Active Subscribers: 188
```

#### show subscribers address detail (IPv6)

```
user@host> show subscribers address 10.16.12.137 detail
Type: PPPoE
User Name: pppoeTerV6User1Svc
IP Address: 10.16.12.137
IP Netmask: 255.0.0.0
IPv6 User Prefix: 2001:db8:0:c88::/32
Logical System: default
Routing Instance: default
Interface: pp0.1073745151
Interface type: Dynamic
Underlying Interface: demux0.8201
Dynamic Profile Name: pppoe-client-profile
MAC Address: 00:0d:02:01:00:01
Session Timeout (seconds): 31622400
Idle Timeout (seconds): 86400
State: Active
Radius Accounting ID: jnpr demux0.8201:6544
Session ID: 6544
Agent Circuit ID: if13720
Agent Remote ID: if13720
Login Time: 2012-05-21 13:37:27 PDT
Service Sessions: 1
```

#### show subscribers detail (IPv4)

```
user@host> show subscribers detail
Type: DHCP
IP Address: 10.20.9.7
IP Netmask: 255.255.0.0
Primary DNS Address: 192.168.17.1
Secondary DNS Address: 192.168.17.2
Primary WINS Address: 192.168.22.1
Secondary WINS Address: 192.168.22.2
Logical System: default
Routing Instance: default
Interface: demux0.1073744127
Interface type: Dynamic
Dynamic Profile Name: dhcp-demux-prof
MAC Address: 00:10:95:00:00:98
State: Active
Radius Accounting ID: jnpr :2304
Idle Timeout (seconds): 600
Login Time: 2009-08-25 14:43:52 PDT
DHCP Options: len 52
35 01 01 39 02 02 40 3d 07 01 00 10 94 00 00 08 33 04 00 00
00 3c 0c 15 63 6c 69 65 6e 74 5f 50 6f 72 74 20 2f 2f 36 2f
```



```
33 2d 37 2d 30 37 05 01 06 0f 21 2c
Service Sessions: 2
```

#### show subscribers detail (IPv6)

```
user@host> show subscribers detail
Type: DHCP
User Name: pd-user1
IPv6 Prefix: 2001:db8:db2:ffff:1::/64
Logical System: default
Routing Instance: default
Interface: ge-3/1/3.2
Interface type: Static
MAC Address: 00:51:ff:ff:00:03
State: Active
Radius Accounting ID: 1
Session ID: 1
Login Time: 2011-08-25 12:12:26 PDT
DHCP Options: len 42
00 08 00 02 00 00 00 01 00 0a 00 03 00 01 00 51 ff ff 00 03
00 06 00 02 00 19 00 19 00 0c 00 00 00 00 00 00 00 00 00
00 00
```

#### show subscribers detail (IPv6 Static Demux Interface)

```
user@host> show subscribers detail
Type: STATIC-INTERFACE
User Name: demux0.1@example.net
IPv6 Prefix: 2001:db8:3:4:5:6:7:aa/32
Logical System: default
Routing Instance: default
Interface: demux0.1
Interface type: Static
Dynamic Profile Name: junos-default-profile
State: Active
Radius Accounting ID: 185
Login Time: 2010-05-18 14:33:56 EDT
```

#### show subscribers detail (L2TP LNS Subscribers on MX Series Routers)

```
user@host> show subscribers detail
Type: L2TP
User Name: user1@example.net
IP Address: 10.1.32.58
IP Netmask: 255.255.0.0
Logical System: default
Routing Instance: default
Interface: si-5/2/0.1073749824
Interface type: Dynamic
Dynamic Profile Name: dyn-lns-profile2
Dynamic Profile Version: 1
State: Active
Radius Accounting ID: 8001
Session ID: 8001
Login Time: 2011-04-25 20:27:50 IST
```

#### show subscribers detail (L2TP Switched Tunnels)

```
user@host> show subscribers detail
Type: L2TP
User Name: ap@example.com
Logical System: default
```

```
Routing Instance: default
Interface: si-2/1/0.1073741842
Interface type: Dynamic
Dynamic Profile Name: dyn-lts-profile
State: Active
L2TP State: Tunnel-switched
Tunnel switch Profile Name: ce-lts-profile
Local IP Address: 10.50.1.1
Remote IP Address: 192.168.20.3
Radius Accounting ID: 21
Session ID: 21
Login Time: 2013-01-18 03:01:11 PST
```

```
Type: L2TP
User Name: ap@example.com
Logical System: default
Routing Instance: default
Interface: si-2/1/0.1073741843
Interface type: Dynamic
Dynamic Profile Name: dyn-lts-profile
State: Active
L2TP State: Tunnel-switched
Tunnel switch Profile Name: ce-lts-profile
Local IP Address: 10.30.1.1
Remote IP Address: 192.20.1.10
Session ID: 22
Login Time: 2013-01-18 03:01:14 PST
```

#### show subscribers detail (Tunneled Subscriber)

```
user@host> show subscribers detail
Type: PPPoE
User Name: user1@example.com
Logical System: default
Routing Instance: default
Interface: pp0.1
State: Active, Tunneled
Radius Accounting ID: 512
```

#### show subscribers detail (IPv4 and IPv6 Dual Stack)

```
user@host> show subscribers detail
Type: VLAN
Logical System: default
Routing Instance: default
Interface: demux0.1073741824
Interface type: Dynamic
Dynamic Profile Name: svlanProfile
State: Active
Session ID: 1
Stacked VLAN Id: 0x8100.1001
VLAN Id: 0x8100.1
Login Time: 2011-11-30 00:18:04 PST

Type: PPPoE
User Name: dualstackuser1@EXAMPLE1.com
IP Address: 10.1.1.1
IPv6 Prefix: 2001:db8:1::/32
IPv6 User Prefix: 2001:db8:1:1::/32
Logical System: default
Routing Instance: ASP-1
```

```

Interface: pp0.1073741825
Interface type: Dynamic
Dynamic Profile Name: dualStack-Profile1
MAC Address: 00:00:64:03:01:02
State: Active
Radius Accounting ID: 2
Session ID: 2
Login Time: 2011-11-30 00:18:05 PST

Type: DHCP
IPv6 Prefix: 2001:db8:1::/32
Logical System: default
Routing Instance: ASP-1
Interface: pp0.1073741825
Interface type: Static
MAC Address: 00:00:64:03:01:02
State: Active
Radius Accounting ID: jnpr :3
Session ID: 3
Underlying Session ID: 2
Login Time: 2011-11-30 00:18:35 PST
DHCP Options: len 42
00 08 00 02 0b b8 00 01 00 0a 00 03 00 01 00 00 64 03 01 02
00 06 00 02 00 19 00 19 00 0c 00 00 00 00 00 00 00 00 00 00
00 00

```

#### show subscribers detail (ACI Interface Set Session)

```

user@host> show subscribers detail
Type: VLAN
Logical System: default
Routing Instance: default
Interface: ge-1/0/0
Interface Set: aci-1001-ge-1/0/0.2800
Interface Set Session ID: 0
Underlying Interface: ge-1/0/0.2800
Dynamic Profile Name: aci-vlan-set-profile-2
Dynamic Profile Version: 1
State: Active
Session ID: 1
Agent Circuit ID: aci-ppp-dhcp-20
Login Time: 2012-05-26 01:54:08 PDT

```

#### show subscribers detail (PPPoE Subscriber Session with ACI Interface Set)

```

user@host> show subscribers detail
Type: PPPoE
User Name: ppphint2
IP Address: 10.10.1.5
Logical System: default
Routing Instance: default
Interface: pp0.1073741825
Interface type: Dynamic
Interface Set: aci-1001-demux0.1073741824
Interface Set Type: Dynamic
Interface Set Session ID: 2
Underlying Interface: demux0.1073741824
Dynamic Profile Name: aci-vlan-pppoe-profile
Dynamic Profile Version: 1
MAC Address: 00:00:64:39:01:02

```

```
State: Active
Radius Accounting ID: 3
Session ID: 3
Agent Circuit ID: aci-ppp-dhcp-dvlan-50
Login Time: 2012-03-07 13:46:53 PST
```

#### show subscribers extensive

```
user@host> show subscribers extensive
Type: DHCP
User Name: pd-user1
IPv6 Prefix: 2001:db8:db2:ffff:1::/32
Logical System: default
Routing Instance: default
Interface: ge-3/1/3.2
Interface type: Static
MAC Address: 00:51:ff:ff:00:03
State: Active
Radius Accounting ID: 1
Session ID: 1
Login Time: 2011-08-25 12:12:26 PDT
DHCP Options: len 42
00 08 00 02 00 00 00 01 00 0a 00 03 00 01 00 51 ff ff 00 03
00 06 00 02 00 19 00 19 00 0c 00 00 00 00 00 00 00 00 00
00 00
IPv6 Address Pool: pd_pool
IPv6 Network Prefix Length: 48
```

#### show subscribers extensive (RPF Check Fail Filter)

```
user@host> show subscribers extensive
...
Type: VLAN
Logical System: default
Routing Instance: default
Interface: ae0.1073741824
Interface type: Dynamic
Dynamic Profile Name: vlan-prof
State: Active
Session ID: 9
VLAN Id: 100
Login Time: 2011-08-26 08:17:00 PDT
IPv4 rpf-check Fail Filter Name: rpf-allow-dhcp
IPv6 rpf-check Fail Filter Name: rpf-allow-dhcpv6
...
```

#### show subscribers extensive (L2TP LNS Subscribers on MX Series Routers)

```
user@host> show subscribers extensive
Type: L2TP
User Name: user1@example.net
IP Address: 10.1.32.58
IP Netmask: 255.255.0.0
Logical System: default
Routing Instance: default
Interface: si-5/2/0.1073749824
Interface type: Dynamic
Dynamic Profile Name: dyn-lns-profile2
Dynamic Profile Version: 1
State: Active
Radius Accounting ID: 8001
Session ID: 8001
```

```

Login Time: 2011-04-25 20:27:50 IST
IPv4 Input Filter Name: classify-si-5/2/0.1073749824-in
IPv4 Output Filter Name: classify-si-5/2/0.1073749824-out

```

### show subscribers extensive (IPv4 and IPv6 Dual Stack)

```

user@host> show subscribers extensive
Type: VLAN
Logical System: default
Routing Instance: default
Interface: demux0.1073741824
Interface type: Dynamic
Dynamic Profile Name: svlanProfile
State: Active
Session ID: 1
Stacked VLAN Id: 0x8100.1001
VLAN Id: 0x8100.1
Login Time: 2011-11-30 00:18:04 PST

Type: PPPoE
User Name: dualstackuser1@EXAMPLE1.com
IP Address: 192.1.1.1
IPv6 Prefix: 2001:db8:1::/32
IPv6 User Prefix: 2001:db8:1:1::/32
Logical System: default
Routing Instance: ASP-1
Interface: pp0.1073741825
Interface type: Dynamic
Dynamic Profile Name: dualStack-Profile1
MAC Address: 00:00:64:03:01:02
State: Active
Radius Accounting ID: 2
Session ID: 2
Login Time: 2011-11-30 00:18:05 PST
IPv6 Delegated Network Prefix Length: 48
IPv6 Interface Address: 2001:db8:1:1::1/32
IPv6 Framed Interface Id: 10:1:2:2
IPv4 Input Filter Name: FILTER-IN-pp0.1073741825-in
IPv4 Output Filter Name: FILTER-OUT-pp0.1073741825-out
IPv6 Input Filter Name: FILTER-IN6-pp0.1073741825-in
IPv6 Output Filter Name: FILTER-OUT6-pp0.1073741825-out

Type: DHCP
IPv6 Prefix: 2001:db8:1::/32
Logical System: default
Routing Instance: ASP-1
Interface: pp0.1073741825
Interface type: Static
MAC Address: 00:00:64:03:01:02
State: Active
Radius Accounting ID: jnpr :3
Session ID: 3
Underlying Session ID: 2
Login Time: 2011-11-30 00:18:35 PST
DHCP Options: len 42
00 08 00 02 0b b8 00 01 00 0a 00 03 00 01 00 00 64 03 01 02
00 06 00 02 00 19 00 19 00 0c 00 00 00 00 00 00 00 00 00 00
00 00
IPv6 Delegated Network Prefix Length: 48

```

### show subscribers extensive (ADF Rules )

```
user@host> show subscribers extensive
...
Service Session ID: 12
Service Session Name: SERVICE-PROFILE
State: Active
Family: inet
  ADF IPv4 Input Filter Name: __junos_adf_12-demux0.3221225474-inet-in
    Rule 0: 010101000b0101020b020200201811
      from {
        source-address 10.1.1.2/32;
        destination-address 10.2.2.0/24;
        protocol 17;
      }
      then {
        accept;
      }
```

### show subscribers extensive (Effective Shaping-Rate)

```
user@host> show subscribers extensive
Type: VLAN
Logical System: default
Routing Instance: default
Interface: demux0.1073741837
Interface type: Dynamic
Interface Set: ifset-1
Underlying Interface: ae1
Dynamic Profile Name: svlan-dhcp-test
State: Active
Session ID: 1
Stacked VLAN Id: 0x8100.201
VLAN Id: 0x8100.201
Login Time: 2011-11-30 00:18:04 PST
Effective shaping-rate: 31000000k
...
```

### show subscribers aci-interface-set-name detail (Subscriber Sessions Using Specified ACI Interface Set)

```
user@host> show subscribers aci-interface-set-name aci-1003-ge-1/0/0.4001 detail
Type: VLAN
Logical System: default
Routing Instance: default
Interface: ge-1/0/0.
Underlying Interface: ge-1/0/0.4001
Dynamic Profile Name: aci-vlan-set-profile
Dynamic Profile Version: 1
State: Active
Session ID: 13
Agent Circuit ID: aci-ppp-vlan-10
Login Time: 2012-03-12 10:41:56 PDT

Type: PPPoE
User Name: ppphint2
IP Address: 10.10.1.7
Logical System: default
Routing Instance: default
Interface: pp0.1073741834
Interface type: Dynamic
Interface Set: aci-1003-ge-1/0/0.4001
```

```

Interface Set Type: Dynamic
Interface Set Session ID: 13
Underlying Interface: ge-1/0/0.4001
Dynamic Profile Name: aci-vlan-pppoe-profile
Dynamic Profile Version: 1
MAC Address: 00:00:65:26:01:02
State: Active
Radius Accounting ID: 14
Session ID: 14
Agent Circuit ID: aci-ppp-vlan-10
Login Time: 2012-03-12 10:41:57 PDT

```

#### show subscribers agent-circuit-identifier detail (Subscriber Sessions Using Specified ACI Substring)

```

user@host> show subscribers agent-circuit-identifier aci-ppp-vlan detail
Type: VLAN
Logical System: default
Routing Instance: default
Interface: ge-1/0/0.
Underlying Interface: ge-1/0/0.4001
Dynamic Profile Name: aci-vlan-set-profile
Dynamic Profile Version: 1
State: Active
Session ID: 13
Agent Circuit ID: aci-ppp-vlan-10
Login Time: 2012-03-12 10:41:56 PDT

Type: PPPoE
User Name: ppphint2
IP Address: 10.10.1.7
Logical System: default
Routing Instance: default
Interface: pp0.1073741834
Interface type: Dynamic
Interface Set: aci-1003-ge-1/0/0.4001
Interface Set Type: Dynamic
Interface Set Session ID: 13
Underlying Interface: ge-1/0/0.4001
Dynamic Profile Name: aci-vlan-pppoe-profile
Dynamic Profile Version: 1
MAC Address: 00:00:65:26:01:02
State: Active
Radius Accounting ID: 14
Session ID: 14
Agent Circuit ID: aci-ppp-vlan-10
Login Time: 2012-03-12 10:41:57 PDT

```

#### show subscribers interface extensive

```

user@host> show subscribers interface demux0.1073741826 extensive
Type: VLAN
User Name: test1@test.com
Logical System: default
Routing Instance: testnet
Interface: demux0.1073741826
Interface type: Dynamic
Dynamic Profile Name: profile-vdemux-relay-23qos
MAC Address: 00:00:6e:56:01:04
State: Active
Radius Accounting ID: 12
Session ID: 12

```

```
Stacked VLAN Id: 0x8100.1500
VLAN Id: 0x8100.2902
Login Time: 2011-10-20 16:21:59 EST

Type: DHCP
User Name: test1@test.com
IP Address: 192.168.200.6
IP Netmask: 255.255.255.0
Logical System: default
Routing Instance: testnet
Interface: demux0.1073741826
Interface type: Static
MAC Address: 00:00:6e:56:01:04
State: Active
Radius Accounting ID: 21
Session ID: 21
Login Time: 2011-10-20 16:24:33 EST
Service Sessions: 2

Service Session ID: 25
Service Session Name: SUB-QOS
State: Active

Service Session ID: 26
Service Session Name: service-cb-content
State: Active
IPv4 Input Filter Name: content-cb-in-demux0.1073741826-in
IPv4 Output Filter Name: content-cb-out-demux0.1073741826-out
```

#### show subscribers logical-system terse

```
user@host> show subscribers logical-system test1 terse
Interface          IP Address/VLAN ID  User Name          LS:RI
demux0.1073741825  10.0.0.3            RETAILER1-CLIENT  test1:retailer1
demux0.1073741826  10.0.0.6            RETAILER2-CLIENT  test1:retailer2
```

#### show subscribers physical-interface count

```
user@host> show subscribers physical-interface ge-1/0/0 count
Total subscribers: 3998, Active Subscribers: 3998
```

#### show subscribers routing-instance inst1 count

```
user@host> show subscribers routing-instance inst1 count
Total Subscribers: 188, Active Subscribers: 183
```

#### show subscribers stacked-vlan-id detail

```
user@host> show subscribers stacked-vlan-id 101 detail
Type: VLAN
Interface: ge-1/2/0.1073741824
Interface type: Dynamic
Dynamic Profile Name: svlan-prof
State: Active
Stacked VLAN Id: 0x8100.101
VLAN Id: 0x8100.100
Login Time: 2009-03-27 11:57:19 PDT
```

#### show subscribers stacked-vlan-id vlan-id detail (Combined Output)

```
user@host> show subscribers stacked-vlan-id 101 vlan-id 100 detail
```



```
Type: VLAN
Interface: ge-1/2/0.1073741824
Interface type: Dynamic
Dynamic Profile Name: svlan-prof
State: Active
Stacked VLAN Id: 0x8100.101
VLAN Id: 0x8100.100
Login Time: 2009-03-27 11:57:19 PDT
```

#### show subscribers stacked-vlan-id vlan-id interface detail (Combined Output for a Specific Interface)

```
user@host> show subscribers stacked-vlan-id 101 vlan-id 100 interface ge-1/2/0.* detail
Type: VLAN
Interface: ge-1/2/0.1073741824
Interface type: Dynamic
Dynamic Profile Name: svlan-prof
State: Active
Stacked VLAN Id: 0x8100.101
VLAN Id: 0x8100.100
Login Time: 2009-03-27 11:57:19 PDT
```

#### show subscribers user-name detail

```
user@host> show subscribers user-name larry1 detail
Type: DHCP
User Name: larry1
IP Address: 10.0.0.37
IP Netmask: 255.255.0.0
Logical System: default
Routing Instance: default
Interface: ge-1/0/0.1
Interface type: Static
Dynamic Profile Name: foo
MAC Address: 00:10:94:00:00:01
State: Active
Radius Accounting ID: 1
Session ID: 1
Login Time: 2011-11-07 08:25:59 PST
DHCP Options: len 52
35 01 01 39 02 02 40 3d 07 01 00 10 94 00 00 01 33 04 00 00
00 3c 0c 15 63 6c 69 65 6e 74 5f 50 6f 72 74 20 2f 2f 32 2f
37 2d 30 2d 30 37 05 01 06 0f 21 2c
```

#### show subscribers vlan-id

```
user@host> show subscribers vlan-id 100
Interface          IP Address          User Name
ge-1/0/0.1073741824
ge-1/2/0.1073741825
```

#### show subscribers vlan-id detail

```
user@host> show subscribers vlan-id 100 detail
Type: VLAN
Interface: ge-1/0/0.1073741824
Interface type: Dynamic
Dynamic Profile Name: vlan-prof-tpid
State: Active
VLAN Id: 100
Login Time: 2009-03-11 06:48:54 PDT

Type: VLAN
```

```
Interface: ge-1/2/0.1073741825
Interface type: Dynamic
Dynamic Profile Name: vlan-prof-tpid
State: Active
VLAN Id: 100
Login Time: 2009-03-11 06:48:54 PDT
```

#### show subscribers vpi vci extensive (PPPoE-over-ATM Subscriber Session)

```
user@host> show subscribers vpi 40 vci 50 extensive
Type: PPPoE
User Name: testuser
IP Address: 10.0.0.2
IP Netmask: 255.255.0.0
Logical System: default
Routing Instance: default
Interface: pp0.0
Interface type: Static
MAC Address: 00:00:65:23:01:02
State: Active
Radius Accounting ID: 2
Session ID: 2
ATM VPI: 40
ATM VCI: 50
Login Time: 2012-12-03 07:49:26 PST
IP Address Pool: pool_1
IPv6 Framed Interface Id: 200:65ff:fe23:102
```

#### show subscribers address detail (Enhanced Subscriber Management)

```
user@host> show subscribers address 100.20.0.111 detail
Type: DHCP
User Name: simple_filters_service
IP Address: 10.0.0.2
IP Netmask: 255.0.0.0
Logical System: default
Routing Instance: default
Interface: demux0.3221225482
Interface type: Dynamic
Underlying Interface: demux0.3221225472
Dynamic Profile Name: dhcp-demux-prof
MAC Address: 00:01:02:03:04:0f
State: Active
Radius Accounting ID: 11
Session ID: 11
PFE Flow ID: 15
Stacked VLAN Id: 210
VLAN Id: 209
Login Time: 2014-03-24 12:53:48 PDT
Service Sessions: 1
DHCP Options: len 3
35 01 01
```

## PART 4

# Troubleshooting

- [Troubleshooting on page 101](#)



## CHAPTER 7

# Troubleshooting

- Troubleshooting Loss of the Root Password on page 101

### Troubleshooting Loss of the Root Password

---

**Problem**    **Description:** If you forget the root password for a switch, use the password recovery procedure to reset the root password.



**NOTE:** You need physical access to the switch to recover the root password.

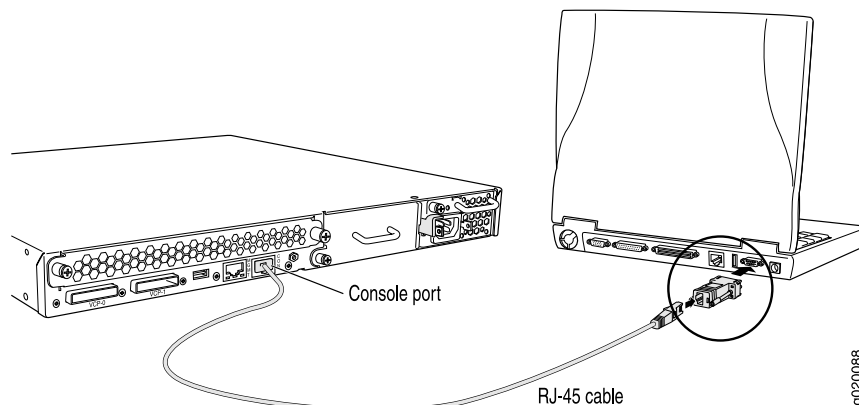


**TIP:** For a video on recovering the root password for routers, see *Recovering the Root Password*. The procedure is similar for switches.

**Solution**    To recover the root password:

1. Power off your switch by unplugging the power cord or turning off the power at the wall switch.
2. Insert one end of the Ethernet cable into the serial port on the management device and connect the other end to the console port on the back of the switch. See [Figure 1 on page 102](#).

Figure 1: Connecting to the Console Port on the EX Series Switch



3. On the management device, start your asynchronous terminal emulation application (such as Microsoft Windows Hyperterminal) and select the appropriate COM port to use (for example, COM1).
4. Configure the port settings as follows:
  - Bits per second: 9600
  - Data bits: 8
  - Parity: None
  - Stop bits: 1
  - Flow control: None
5. Power on your switch by plugging in the power cord or turning on the power at the wall switch.
6. When the following prompt appears, press the Spacebar to access the switch's bootstrap loader command prompt:
 

```
Hit [Enter] to boot immediately, or space bar for command prompt.
Booting [kernel] in 1 second...
```



**NOTE:** If the switch is in unattended mode for U-Boot, access to the bootstrap loader command prompt is blocked. If the root password is lost, you must reset the switch to the factory default configuration using the LCD panel. For more information, see *Reverting to the Default Factory Configuration for the EX Series Switch*.

7. At the following prompt, type **boot -s** to start up the system in single-user mode:
 

```
loader> boot -s
```
8. At the following prompt, type **recovery** to start the root password recovery procedure:
 

```
Enter full path name of shell or 'recovery' for root password recovery or RETURN for /bin/sh: recovery
```

A series of messages describe consistency checks, mounting of filesystems, and initialization and checkout of management services. Then the CLI prompt appears.

9. Enter configuration mode in the CLI:

```
user@switch> configure
```

10. Set the root password. For example:

```
user@switch# set system root-authentication plain-text-password
```

11. At the following prompt, enter the new root password. For example, juniper1:

```
user@switch# juniper1
```

```
Retype new password:
```

12. At the second prompt, reenter the new root password.

13. If you are finished configuring the network, commit the configuration.

```
root@switch# commit
```

```
commit complete
```

14. Exit configuration mode in the CLI.

```
root@switch# exit
```

15. Exit operational mode in the CLI.

```
root@switch> exit
```

16. At the prompt, enter **y** to reboot the switch.

```
Reboot the system? [y/n] y
```

#### Related Documentation

- *Connecting and Configuring an EX Series Switch (CLI Procedure)*
- *Connecting and Configuring an EX Series Switch (J-Web Procedure)*
- For information about configuring an encrypted root password, configuring SSH keys to authenticate root logins, and configuring special requirements for plain-text passwords, see *Configuring the Root Password*.

