



SRC-PE Software

CLI User Guide

Release 1.0.x

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About This Guide

This preface provides the following guidelines for using the *SRC-PE Software CLI User Guide*.

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- Audience on page ix
- Documentation Conventions on page x
- Related Juniper Networks Documentation on page xi
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Objectives

This guide provides information about the Session and Resource Control (SRC) command-line interface (CLI). It describes features of the CLI, explains how to get started using the CLI, and describes basic CLI tasks.



NOTE: If the information in the latest *SRC Release Notes* differs from the information in this guide, follow the *SRC Release Notes*.

Audience

This guide is intended for experienced system and network specialists working with JUNOS routers and JUNOS routing platforms in an Internet access environment. We assume that readers know how to use the routing platforms, directories, and RADIUS servers that they will deploy in their SRC networks. For users who deploy the SRC software on a Solaris platform, we also assume that readers are familiar with the Lightweight Directory Access Protocol (LDAP) and the UNIX operating system.

If you are using the SRC software in a cable network environment, we assume that you are familiar with the *PacketCable Multimedia Specification* (PCMM) as defined by Cable Television Laboratories, Inc. (CableLabs) and with the Data-over-Cable Service Interface Specifications (DOCSIS) 1.1 protocol. We also assume that you are familiar with operating a multiple service operator (MSO) multimedia-managed IP network.

Documentation Conventions

The sample screens used throughout this guide are representations of the screens that are displayed when you install and configure the SRC software. The actual screens may differ.

For convenience and clarity, the installation and configuration examples show default file paths. If you do not accept the installation defaults, your paths will vary from the examples.

Table 1 defines notice icons used in this guide. Table 2 defines text conventions used throughout the documentation.

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.

Table 2: Text Conventions

Convention	Description	Examples
Bold typeface	<ul style="list-style-type: none"> Represents keywords, scripts, and tools in text. Represents a GUI element that the user selects, clicks, checks, or clears. 	<ul style="list-style-type: none"> Specify the keyword exp-msg. Run the install.sh script. Use the pkgadd tool. To cancel the configuration, click Cancel.
Bold sans serif typeface	Represents text that the user must type.	<code>user@host# set cache-entry-age cache-entry-age</code>
Monospace sans serif typeface	Represents information as displayed on your terminal's screen, such as CLI commands in output displays.	<pre> nic-locators { login { resolution { resolver-name /realms/login/A1; key-type LoginName; value-type SaeId; } } } </pre>

Table 2: Text Conventions (continued)

Convention	Description	Examples
Regular sans serif typeface	<ul style="list-style-type: none"> ■ Represents configuration statements. ■ Indicates SRC CLI commands and options in text. ■ Represents examples in procedures. ■ Represents URLs. 	<ul style="list-style-type: none"> ■ <code>system ldap server { stand-alone;</code> ■ Use the <code>request sae modify device failover</code> command with the <code>force</code> option. ■ <code>user@host# . . .</code> ■ <code>http://www.juniper.net/techpubs/software/management/sdx/api-index.html</code>
<i>Italic sans serif typeface</i>	Represents variables in SRC CLI commands.	<code>user@host# set local-address local-address</code>
Angle brackets	In text descriptions, indicate optional keywords or variables.	Another runtime variable is <code><gfwif></code> .
Key name	Indicates the name of a key on the keyboard.	Press Enter.
Key names linked with a plus sign (+) .	Indicates that you must press two or more keys simultaneously.	Press Ctrl + b.
<i>Italic typeface</i>	<ul style="list-style-type: none"> ■ Emphasizes words. ■ Identifies chapter, appendix, and book names. ■ Identifies distinguished names. ■ Identifies files, directories, and paths in text but not in command examples. 	<ul style="list-style-type: none"> ■ There are two levels of access: <i>user</i> and <i>privileged</i>. ■ <i>Chapter 2, Services.</i> ■ <i>o = Users, o = UMC</i> ■ The <i>/etc/default.properties</i> file.
Backslash	At the end of a line, indicates that the text wraps to the next line.	<code>Plugin.radiusAcct-1.class=\net.juniper.smgmt.sae.plugin\RadiusTrackingPluginEvent</code>
Words separated by the symbol	Represent a choice to select one keyword or variable to the left or right of this symbol. (The keyword or variable may be either optional or required.)	<code>diagnostic line</code>

Related Juniper Networks Documentation

With each SRC software release, we provide the *SRC Documentation CD*, which contains the documentation described in Table 3.

With each SRC Application Library release, we provide the *SRC Application Library CD*. This CD contains both the software applications and the *SRC Application Library Guide*.

The C-Web interface, which is based on the J-Web interface, is available for monitoring C-series platforms and the SRC software. For general information about the J-Web interface, see the *J-Web Interface User Guide*.

A complete list of abbreviations used in this document set, along with their spelled-out terms, is provided in the *SRC Getting Started Guide*.

Table 3: Juniper Networks C-series and SRC Technical Publications

Document	Description
Core Documentation Set	
<i>C-series Hardware Guide</i>	Describes the hardware platforms and how to install, maintain, replace, and troubleshoot them. The guide also includes specifications.
<i>SRC-PE Getting Started Guide</i>	Describes the SRC software and explains how to set up an initial configuration and manage a C-series platform. The guide describes how to set up and start the SRC CLI and C-Web, as well as other SRC configurations. It provides information about setting up an initial SRC configuration on a Solaris platform. The guide also describes how to upgrade the SRC software and how to use the SRC configuration tools. It includes reference material for the SRC documentation.
<i>SRC-PE CLI User Guide</i>	Describes how to use the SRC CLI, configure and monitor the platform with the CLI, and control the CLI environment. The guide also describes how to manage SRC components with the CLI.
<i>SRC-PE Network Guide: SAE, Juniper Networks Routers, and NIC</i>	Describes how to use and configure the SAE and the NIC. This guide also provides detailed information for using JUNOS routers and JUNOS routing platforms in the SRC network.
<i>SRC-PE Integration Guide: Network Devices, Directories, and RADIUS Servers</i>	Describes how to integrate external components—network devices, directories, and RADIUS servers—into the SRC network. The guide provides detailed information about integrating specific models of the external components.
<i>SRC-PE Services and Policies Guide</i>	Describes how to work with services and policies. The guide provides an overview, configuration procedures, and management information. The guide also provides information about the SRC tools for configuring policies.
<i>SRC-PE Subscribers and Subscriptions Guide</i>	Describes how to work with residential and enterprise subscribers and subscriptions. The guide provides an overview, configuration procedures, and management information. This guide also provides information about the sample residential portals and enterprise service portals, including the Enterprise Manager Portal.
<i>SRC-PE Monitoring and Troubleshooting Guide</i>	Describes how to use logging, the SNMP agent, the SRC CLI, and the C-Web interface to monitor and troubleshoot SRC components. This guide also describes the SNMP traps.
<i>SRC-PE Solutions Guide</i>	Provides high-level instructions for SRC implementations. The guide documents the following scenarios: managing QoS services on JUNOS routers; managing subscribers in a wireless roaming environment; providing voice over IP (VoIP) services; integrating the SRC software in a PCMM environment, including the use of the Juniper Policy Server (JPS); mirroring subscriber traffic on JUNOS routers; demonstrating network resource management features in a sample IP television (IPTV) application; and demonstrating the integration of prepaid services in a sample application.
<i>SRC-PE CLI Command Reference, Volume 1</i> <i>SRC-PE CLI Command Reference, Volume 2</i>	Together constitute information about command and statement syntax; descriptions of commands, configuration statements, and options; editing level of statement options; and a history of when a command was added to the documentation.
<i>SRC-PE Comprehensive Index</i>	Provides a complete index of the SRC guides, excluding the <i>C-series Hardware Guide</i> and the <i>SRC CLI Command Reference</i> .
<i>J-Web User Interface Guide</i>	Provides general information about the J-Web interface.

Table 3: Juniper Networks C-series and SRC Technical Publications (continued)

Document	Description
Application Library	
<i>SRC Application Library Guide</i>	Describes how to install and work with applications that you can use to extend the capabilities of the SRC software. The guide documents the following applications: SRC-SG (SOAP Gateway) Web applications, applications to integrate the Juniper Networks Intrusion Detection and Protection (IDP) software into an SRC-managed environment, an application to provide endpoint security by integrating Juniper Networks Instant Virtual Extranet (IVE) Host Checker, a traffic-mirroring Web application, an application to integrate IP address managers with the SAE, an application to provide tracking and QoS control at the application level by integrating the SRC software with the Ellacoya deep packet inspection (DPI) platform, an application to control volume usage, and the SRC-ACP (Admission Control Plug-In) application.
Release Notes	
<i>SRC-PE Release Notes</i> <i>SRC Application Library Release Notes</i>	In the <i>Release Notes</i> , you will find the latest information about features, changes, known problems, resolved problems, supported platforms and network devices (such as Juniper Networks routers and CMTS devices), and third-party software. If the information in the <i>Release Notes</i> differs from the information found in the documentation set, follow the <i>Release Notes</i> . Release notes are included in the corresponding software distribution and are available on the Web.

Obtaining Documentation

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Part 1

Introduction

Chapter 1

Introducing the CLI

The SRC command-line interface (CLI) is the software interface you use to configure the C-series platform. You can also use the CLI to configure supported components for SRC software installed on Solaris platforms. This chapter provides an overview of the SRC CLI. Topics include:

- About the SRC CLI on page 3
- Understanding CLI Command Modes on page 4
- Understanding Command and Statement Hierarchies on page 4
- Key Features of the CLI on page 6
- Leveraging Industry-Standard Technologies on page 7

About the SRC CLI

The SRC CLI is a JUNOS-like command shell that runs on top of a Linux-based operating system kernel on a C-series platform or on top of a Solaris operating system. By leveraging industry-standard tools and utilities, the CLI provides a powerful set of commands you can use to monitor and configure the SRC software and a C-series platform.

The SRC CLI is a straightforward command interface. You type commands on a single line, and the commands are executed when you press the **Enter** key. The CLI provides command help and command completion, and supports Emacs-style keyboard sequences that allow you to move around on a command line and scroll through recently executed commands.

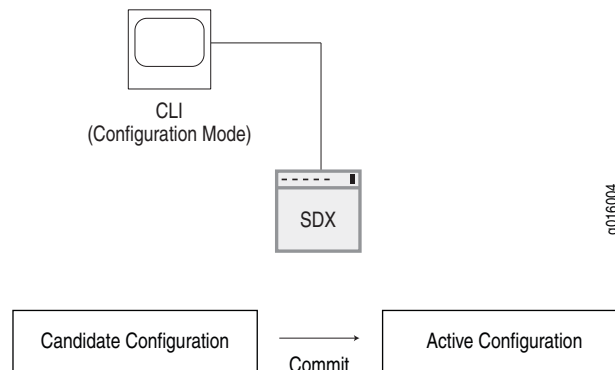
Understanding CLI Command Modes

The CLI has two modes:

- Operational mode—Provides commands to monitor and troubleshoot system status.
- Configuration mode—Provides commands and configuration statements to define properties for the SRC software. The statements appear in a hierarchy which groups related properties.

In configuration mode, you view and change a working configuration, called the *candidate configuration*. This configuration allows you to make configuration changes without causing operational changes to the current operating configuration, called the *active configuration*. The software does not implement the changes in a candidate configuration until you commit them, which activates the configuration in the SRC software.

Figure 1: Committing a Configuration



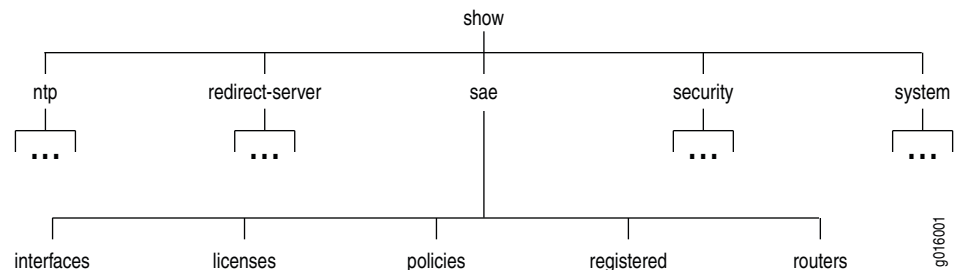
Understanding Command and Statement Hierarchies

The CLI provides numerous commands and statements and organizes them in a hierarchical fashion.

CLI Command Hierarchy

CLI commands are organized in a hierarchy. Commands that perform a similar function are grouped together under the same level of the hierarchy. For example, all commands that display information about the system and the system software are grouped under the `show system` command. Figure 2 illustrates a portion of the `show` command hierarchy.

Figure 2: CLI Command Hierarchy Example



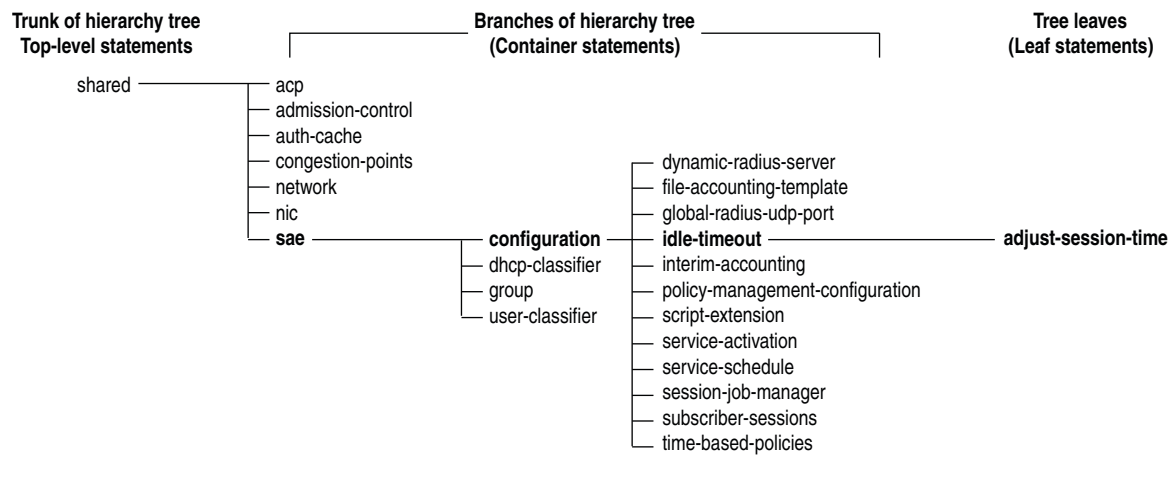
To execute a command, you enter the full command name, starting at the top level of the hierarchy. For example, to display information about SAE licenses, you enter the `show sae licenses` command.

Configuration Statement Hierarchy

The configuration statement hierarchy has two types of statements: *container statements*, which are statements that contain other statements, and *leaf statements*, which do not contain other statements. All the container and leaf statements together form the *configuration hierarchy*.

Figure 3 illustrates part of the hierarchy tree.

Figure 3: Configuration Statement Hierarchy Example



Key Features of the CLI

The hierarchical organization results in commands that have a regular syntax and provides several features that simplify CLI use:

- Consistent command names—Commands that provide the same type of function have the same name, regardless of the portion of the software on which they are operating. As examples, all **show** commands display software information and statistics, and all **clear** commands erase various types of system information.
- Lists and short descriptions of available commands—Information about available commands is provided at each level of the CLI command hierarchy. If you type a question mark (?) at any level, you see a list of the available commands along with a short description of each command. This means that if you already are familiar with the SRC software, JUNOS software, or routing software, you can use many of the CLI commands without referring to the documentation.
- Detailed descriptions of command and configuration statements—Complete information about commands and statements from the **help** command. You can access the reference documentation for each command and statement by typing the **help** command followed by the command or **help configuration** followed by the configuration statement.
- Command completion—Command completion for command names (keywords) and for command options is also available at each level of the hierarchy. To complete a command or option that you have partially typed, press the Spacebar or the tab key. If the partially typed letters begin a string that uniquely identifies a command, the complete command name appears. Otherwise, a caret (^) indicates that you have entered an ambiguous command, and the possible completions are displayed. Completion also applies to other strings, such as filenames, interface names, usernames, and configuration statements.

Leveraging Industry-Standard Technologies

The operating system on a C-series platform is based on a Linux kernel, with a special shell called the CLI (command-line interface). If you run the SRC software on a Solaris platform, the software leverages the features of a Solaris kernel. A variety of standard utilities are available. For example, you can:

- Use regular expression matching to locate and replace values and identifiers in a configuration, or to filter command output.
- Use Emacs-based key sequences to scroll through command output or edit the command line.
- On a C-series platform, store and archive system files on a Linux-based file system.
 - You can use standard Linux conventions to specify filenames and paths.
 - You can exit from the CLI environment and create a Linux shell to navigate the file system, manage system processes, and so on.

Chapter 2

Getting Started: A Quick Tour of the CLI

As an introduction to the command-line interface (CLI), this chapter provides instructions for simple steps that you take after installing software on the system. It shows you how to start the CLI, view the command hierarchy, and make small configuration changes. Topics include:

- Before You Start the SRC CLI on page 9
- Starting the CLI on page 10
- Displaying Commands on page 10
- Verifying System Status on page 11
- Configuring a User Account on page 13
- Creating a Configuration on page 15
- Rolling Back Configuration Changes on page 18

Before You Start the SRC CLI

Make sure the SRC software has been configured for:

- C-series platform only—Remote access through SSH and/or Telnet



NOTE: On a C-series platform, `root` access is not allowed over a Telnet session. To enable root access over an SSH connection, you must configure the `system services ssh root-login allow` statement.

- All platforms—A user account that has superuser privileges

For information about initial CLI configuration, see:

- C-series platform—*C-series Hardware Guide* and *SRC Getting Started Guide*
- SRC software on a Solaris platform—*SRC Getting Started Guide*

Starting the CLI

When you log in to the CLI, the privileges for your user account determine which commands and configuration statements you can access. A login account with superuser privileges gives a user access to all commands and statements.

Starting the CLI on a C-series Platform

To log in to a C-series platform and start the CLI through an admin account:

```
#ssh admin@my_C-series-platform
Password:

— SRC CLI 7.0 build CLI.A.7.0.0.0171
(c) 2005-2006 Juniper Networks Inc.
user@host>
```

The `>` command prompt shows that you are in operational mode. Later, when you enter configuration mode, the prompt changes to `#`.

Starting the CLI on a Solaris Platform

To start the CLI on a Solaris platform:

1. Log in to the Solaris system through a user account that has superuser privileges configured for the SRC software:
2. Start the CLI from the directory in which it is installed:

```
# /opt/UMC/cli/bin/cli
— SRC CLI 7.0 build CLI.A.7.0.0.0171
(c) 2005-2006 Juniper Networks Inc.
user@host>
```

Displaying Commands

The CLI includes several ways to get help about commands.

To use the various Help commands:

1. Type `?` to show the top-level commands available in operational mode.

```
user@host> ?
Possible completions:
clear                Delete statement
configure            Enter configuration mode
disable              Stop an SRC component
enable               Start an installed SRC component
exit                 Exit a CLI session
file                 Perform file operations
help                 Display help about commands and statements
history              Display command history
ping                 Ping remote target
request              Request service
restart              Restart an SRC component
```


set	Properties for the CLI environment
show	Display information
ssh	Open SSH session to another host
start	Start shell
telnet	Telnet to another host
test	Test a NIC resolution
tracert	Trace route to remote host

2. Type `file ?` to show all possible completions for the `file` command.

```
user@host> file ?
Possible completions:
archive      Archive files from the system (local)
checksum     Calculate file checksum
compare      Compare files (local)
copy         Copy files
delete       Delete a file (local)
list         List files (local)
rename       Rename a file (local)
show         Show file contents
```

3. Type `file archive ?` to show all possible completions for the `file archive` command.

```
user@host> file archive ?
Possible completions:
compress     Compresses the archived file using GNU gzip (.tgz)
* destination Name of created archive
* source      Path of directory to archive
```

For more information about getting help about commands and statements, see *Chapter 4, Getting Online Help*.

Verifying System Status

You can use `show` commands to check system status and monitor system activity.

To help you become familiar with `show` commands:

1. Type `show ?` to display the list of `show` commands that you can use to monitor the SRC software and C-series platform.

```
user@host> show ?
Possible completions:
acp          Display information about ACP
cli          Configure properties for the CLI environment
component    Display information about SDX components
configuration Information about the SDX configuration
date         System time and date
disk         Configuration for RAID disks
interfaces   Show interface information
iptables     Display information about the iptables LINUX tool
jps          Display information about the JPS
nic          Display information about the NIC
ntp          NTP configuration information
redirect-server Statistics for redirect server
route        Show routing table information
sae          Display SAE information
```

security	Display security information
system	Display system information

2. Use the show component command to view a the status of installed components.

```
user@host> show component
```

Installed Components

Name	Version	Status
cli	Release: 7.0 Build: CLI.A.7.0.0.0171	running
acp	Release: 7.0 Build: ACP.A.7.0.0.0174	disabled
jdb	Release: 7.0 Build: DIRXA.A.7.0.0.0176	running
editor	Release: 7.0 Build: EDITOR.A.7.0.0.0176	disabled
redir	Release: 7.0 Build: REDIR.A.7.0.0.0176	disabled
licSvr	Release: 7.0 Build: LICSVR.A.7.0.0.0179	stopped
nic	Release: 7.0 Build: GATEWAY.A.7.0.0.0170	disabled
sae	Release: 7.0 Build: SAE.A.7.0.0.0166	running
www	Release: 7.0 Build: UMC.A.7.0.0.0169	disabled
jps	Release: 7.0 Build: JPS.A.7.0.0.0172	disabled
agent	Release: 7.0 Build: SYSMAN.A.7.0.0.0174	disabled
webadm	Release: 7.0 Build: WEBADM.A.7.0.0.0173	disabled

3. Use the show system information command to view general system information.

```
user@host> show system information
```

System Identification

Hostname	myC-seriesPlatform
Manufacturer	Juniper Networks
Product Name	SDX-2000
Version	1.0
Serial Number	0207082006000001
UUID	48384441-5254-0030-4859-0030485977EE
Hostid	e30a2e07
Software version	SDX-300 Release 7.0 [B.7.0.0-7]

System Time

Current time	2006-12-19 13:52:26 EST
Uptime	21:30
Number of active users	3
Load Averages (1m/5m/15m)	0.02/0.07/0.02

Memory

Total	15G
Free	14G

CPU Info

Number of CPU	4
CPU Model	Dual Core AMD Opteron(tm) Processor 265
Clock Speed	1804.132 MHz

Disk Information

Mountpoint	Total	Used	Use%
/	2015M	955M	47%
/altroot	2015M	35M	1%
/altvar	29G	75M	0%
/boot	98M	14M	14%
/var	31G	829M	2%

Temperature

System +24 C

CPU-1 +34 C

CPU-2 +36 C

Fan Speed

Fan-1 9375 RPM

Fan-2 9375 RPM

Configuring a User Account

This section describes how to use the CLI to view system status and to perform a simple configuration change. You configure a new user account, one for your own use or a test account.

To configure a user account on the system:

1. Log in as that user with superuser privileges, start the CLI, and enter configuration mode.

```
user@host> configure
[edit]
user@host#
```

The prompt in brackets ([edit]), also known as a *banner*, shows that you are in configuration edit mode, at the top of the hierarchy.

2. Move to the [edit system login] level of the configuration hierarchy.

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

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

The prompt in brackets changes to [edit system login] to show you are at a new level in the hierarchy.

3. Add a new user account.

```
[edit system login]
user@host# edit user nchen
```

This example adds an account **nchen** (for Nathan Chen), but you can use any account name.

4. Configure a full name for the account. If the name includes spaces, enclose the entire name in quotation marks (" ").

```
[edit system login user nchen]
user@host# set full-name "Nathan Chen"
```

5. Configure an account class. The account class sets the user access privileges for the account.

```
[edit system login user nchen]
user@host# set class super-user
```

6. Configure an authentication method and password for the account.

```
[edit system login user nchen]
user@host# set authentication plain-text-password
New password:
Retype new password:
```

When the new password prompt appears, enter a clear-text password that the system will encrypt, and then confirm the new password.

7. Commit the configuration.

```
[edit system login user nchen]
user@host# commit
commit complete
```

Configuration changes are not activated until you commit the configuration. If the commit is successful, a **commit complete** message appears.

8. Return to the top level of the configuration, and then exit.

```
[edit system login user nchen]
user@host# top
```

```
[edit]
user@host# exit
Exiting configuration mode
```

9. Log out of the SRC software.

```
user@host> exit
[user@host]#
```

10. To test your changes, log back in with the user account and password that you just configured.

```
— SRC CLI 7.0 build CLI.A.7.0.0.0171
(c) 2005-2006 Juniper Networks Inc.
nchen@host>
```

When you log in, the new username appears at the command prompt.

Creating a Configuration

This section shows how to configure SAE properties for aggregate services as an example of how to navigate through various hierarchy levels in the CLI and use **help** and **show** commands to obtain information while working at the CLI.

In the SRC software, an aggregate service is a type of SAE service that comprises a number of individual services. Combining services lets the SRC software treat the services within an aggregate service as a unit.

The final configuration looks like this:

```
sae {
  configuration {
    aggregate-services {
      keepalive-time 172800;
      keepalive-retry-time 900;
      activation-deactivation-time 900;
      failed-notification-retry-time 92000;
    }
  }
}
```

To configure SAE properties for aggregate services:

1. Enter configuration mode.

```
user@host> edit
Entering configuration mode.
```

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

2. In configuration mode, move to the hierarchy level at which you configure aggregate services.

```
[edit]
user@host# edit shared sae configuration aggregate-services
```

```
[edit shared sae configuration aggregate-services]
user@host#
```

Press the space bar after typing the initial characters of a word to quickly complete the word.

3. Verify which values you can set.

```
[edit shared sae configuration aggregate-services]
```

```
user@host# set ?
```

Possible completions:

```
activation-deactivation-time      Time to activate or deactivate fragment service session (0..INF s)
failed-notification-retry-time    Maximum time to send failure notifications (0..INF s)
keepalive-retry-time              Length of keepalive time period (0..INF s)
keepalive-time                    Keepalive from aggregate svce session to remote session (0..INF s)
```

4. Set the values for the four time intervals.

```
[edit shared sae configuration aggregate-services]
user@host# set keepalive-time 172800
```

```
user@host# set keepalive-retry-time 900
```

```
[edit]
user@host# set activation-deactivation-time 900
```

```
[edit]
user@host# set failed-notification-retry-time 9200
```

5. Verify the configuration.

```
[edit shared sae configuration aggregate-services]
user@host# show
keepalive-time 172800;
keepalive-retry-time 900;
activation-deactivation-time 900;
failed-notification-retry-time 9200;
```

6. Move up one level in the hierarchy, and run the **show** command again.

```
[edit shared sae configuration aggregate-services]
user@host# up
```

```
[edit shared sae configuration]
user@host# show
policy-management-configuration {
    enable-junose-classifier-expansion;
}
aggregate-services {
    keepalive-time 172800;
    keepalive-retry-time 900;
    activation-deactivation-time 900;
    failed-notification-retry-time 9200;
}
. . .
```

The output shows the configuration for aggregate services plus any other configuration under the [shared sae configuration] hierarchy level.

7. Before you commit the configuration, verify that the configuration is correct.

```
[edit shared sae configuration]
user@host# commit check
configuration check succeeds
```

8. Commit the configuration.

```
[edit shared sae configuration]
user@host# commit
commit complete.
```

Using Shortcuts to Create a Configuration

You can navigate through the configuration hierarchy to enter statements, or you can use **set** commands to configure statements at the [edit] hierarchy level. The following list of commands creates the same configuration as the procedure:

```
user@host# set shared sae configuration aggregate-services keepalive-time 172800
```

```
user@host# set shared sae configuration aggregate-services  
keepalive-retry-time 900
```

```
[edit]  
user@host# set shared sae configuration aggregate-services  
activation-deactivation-time 900
```

```
[edit]  
user@host# set shared sae configuration aggregate-services  
failed-notification-retry-time 92000
```

Making Changes to the Configuration

You can change a configuration by entering a **set** command and providing a new value.

To change the value for the keepalive timer for aggregate services:

1. Navigate to the location in the hierarchy where properties for aggregate services are configured.

```
[edit]  
user@host#  
user@host# edit shared sae configuration aggregate-services
```

```
[edit shared sae configuration aggregate-services]  
user@host#
```

2. Change the value for the keepalive timer.

```
[edit shared sae configuration aggregate-services]  
user@host# set keepalive-time 150000
```

3. Verify the change.

```
[edit shared sae configuration aggregate-services]  
user@host# show  
keepalive-time 150000;  
keepalive-retry-time 900;  
activation-deactivation-time 900;  
failed-notification-retry-time 9200;
```

4. Commit the change.

```
[edit shared sae configuration aggregate-services]  
user@host# commit  
commit complete
```

Rolling Back Configuration Changes

This section shows how to use the **rollback** command to return to the most recently committed configuration. This command is useful if you make configuration changes, and then decide not to keep the changes.

This example shows how to view the default configuration for redirect server when the component is running, make configuration changes for redirect server, then return to the most recently committed configuration that does not include the changes. Redirect server redirects HTTP requests to a captive portal page.

1. Enter configuration mode.

```
user@host> configure
Entering configuration mode.
[edit]
user@host#
```

2. View the current configuration (if any) for redirect server.

```
[edit]
user@host# show redirect-server
tcp-port 8800;
destination-url;
refresh;
refresh-document etc/refresh.html;
request-rate 12000;
request-burst-size 18000;
client-rate 25;
client-burst-size 50;
```

The statements in the output show the default configuration for redirect server.

3. Configure the destination URL for redirect server.

```
[edit]
user@host# set redirect-server destination-url
http://www.mycompany.com/default.html
```

4. View the updated configuration.

```
[edit]
user@host# show redirect-server
tcp-port 8800;
destination-url http://www.mycompany.com/default.html;
refresh;
refresh-document etc/refresh.html;
request-rate 12000;
request-burst-size 18000;
client-rate 25;
client-burst-size 50;
```

The **destination-url** statement shows the new URL.

5. Use the **rollback** configuration mode command to return to the most recently committed configuration.

```
[edit]
user@host# rollback
rollback complete.
```

6. View the configuration again to make sure that your change is no longer present.

```
[edit]
user@host# show redirect-server
tcp-port 8800;
destination-url;
refresh;
refresh-document etc/refresh.html;
request-rate 12000;
request-burst-size 18000;
client-rate 25;
client-burst-size 50;
```

The `destination-url` statement shows there is no URL.

7. Exit configuration mode.

```
[edit]
user@host# exit
Exiting configuration mode.
```


Chapter 3

SRC CLI Basics

This chapter provides basic information about the SRC CLI. Topics include:

- Elements of the Command-Line Interface on page 21
- CLI Messages on page 22
- Displaying Command Output on page 24
- Types of Commands and Statements on page 25
- Switching Between Operational Mode and Configuration Mode on page 28
- Moving Among Hierarchy Levels on page 30
- Displaying CLI Command History on page 31
- CLI Support for C-series Platforms and for SRC Software installed on Solaris Platforms on page 31

Elements of the Command-Line Interface

Figure 4 shows elements of the command-line interface in operational mode.

Figure 4: Elements of the Command-Line Interface

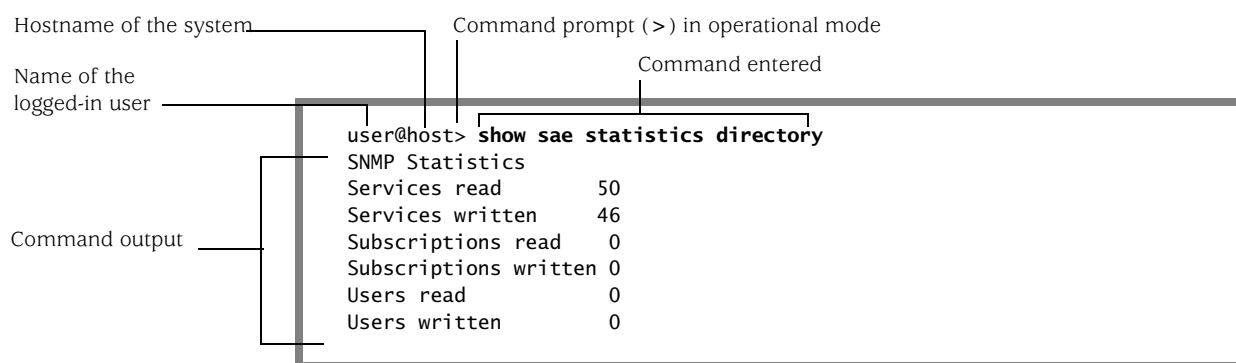
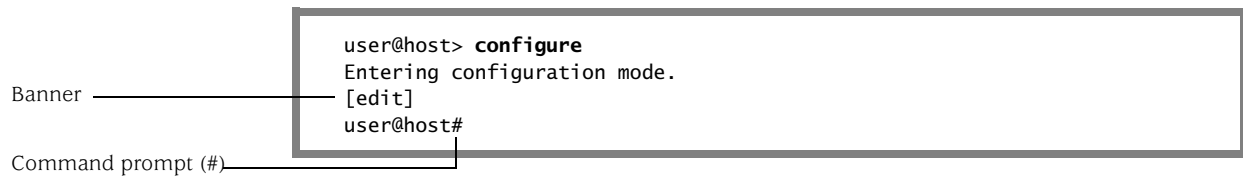


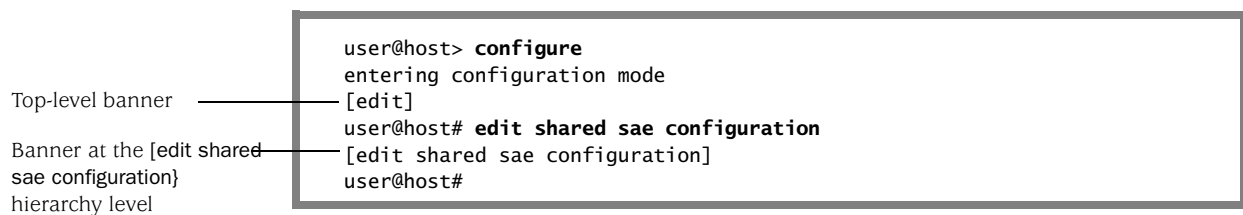
Figure 5 shows elements of the command-line interface in configuration mode. In configuration mode, the prompt changes from a > to a #.

Figure 5: Command Prompt in Configuration Mode



The portion of the prompt in square brackets, [edit], is a *banner*. The banner indicates that you are in configuration mode and shows your location in the statement hierarchy. When you first enter configuration mode, you are always at the top level of the hierarchy, as indicated by the [edit] banner. (See Figure 6.)

Figure 6: Hierarchy-Level Banner



CLI Messages

The CLI displays messages when you enter and exit from configuration and operational command modes, when you successfully complete some commands, and when you type an invalid string or value.

If you type an invalid string—for example, the name of a command or statement that does not exist—you see the message “syntax error” or “unknown command.” A caret (^) indicates where the error is. For example:

```

user@host> clear sae <Enter>
               ^
syntax error, expecting <command>.

[edit]
user@host# display
               ^
unknown command.
  
```

In configuration mode, if you do not type an option for a statement that requires one, a message indicates the type of information expected.

In this example, you need to type a slot number to complete the command:

```
user@host# edit slot
               ^
syntax error, expecting <identifier>.
```

In this example, you need to type a value for the keepalive time to complete the command:

```
user@host# set shared sae configuration aggregate-services keepalive-time
                                                    ^
syntax error, expecting <data>.
```

If you have omitted a required statement at a particular hierarchy level, when you attempt to move from that hierarchy level or when you issue the **show** command in configuration mode, a message indicates which statement is missing. For example:

```
[edit system login user phil]
user@host# up
Warning: missing mandatory statement: 'class'
[edit system login]
user@host# show
user phil {
    full-name "Phil James";
    # Warning: missing mandatory statement(s): 'class'
}
```

Displaying Command Output

If the command output is longer than the screen length, it appears one screen at a time by means of a UNIX `more`-type interface. The prompt `--MORE--` indicates that more output is available. (See Figure 7.)

Figure 7: The MORE Prompt

```
user@host> show system information
System Identification
Hostname          myC-seriesPlatform
Manufacturer       Juniper Networks
Product Name      SDX-2000
Version           1.0
Serial Number     0207082006000001
UUID              48384441-5254-0030-4859-0030485977EE
Hostid            e30a2e07
Software version  SDX-300 Release 7.0 [A.7.0.0-24]

System Time
Current time      2006-12-08 14:03:37 EST
Uptime            28 days, 15:01
Number of active users 3
Load Averages (1m/5m/15m) 0.31/0.26/0.18

Memory
Total 15G
Free 4025M

CPU Info
Number of CPU 4
-- MORE --
```

The ---More--- prompt

To continue command output:

- Press Enter.

Occasionally, if a command produces extensive output, you may wish to cancel the output.

To cancel command output:

- Press `q`. Command output stops, and the command prompt appears.

Table 4 lists common keyboard sequences you can use at the `—(more)—` prompt.

Table 4: MORE Prompt Keyboard Sequences

Category	Action	Keyboard Sequence
Scroll down	Scroll down one line.	e, Ctrl+e, j, Ctrl+n, Enter, down arrow
	Scroll down one-half screen.	d, Ctrl+d
	Scroll down one whole screen.	f, Ctrl+f, Ctrl+v, z, Space
	Scroll down to the bottom of the output and wait for more input. (To resume output, press Ctrl-C.)	F
Scroll up	Jump to last line in output and exit to the CLI prompt.	G
	Display the previous line of output.	y, Ctrl+y, k, Ctrl+k, Ctrl+p, up arrow
	Scroll up one-half screen.	u, Ctrl+u
	Scroll up one whole screen.	b, Ctrl+b, Esc+v, w
Scroll up and down	Jump to the first line of the output.	g
	Scroll up and down through the output.	-E (hyphen E)
	To exit this mode, press q.	

For more information about working with command output, see *Chapter 7, Filtering Command Output*.

Types of Commands and Statements

The SRC CLI supports the following types of commands and statements:

- Operational mode commands—Commands that you enter in operational mode are used to monitor system operation.
 - For more information about using top-level CLI operational mode commands, see *Chapter 5, Using CLI Operational Commands to Monitor the SRC Software*.
 - For a complete list of CLI operational mode commands, see the *SRC-PE CLI Command Reference*.
- Environment commands—A set of operational mode commands that you can use to control the CLI environment. For example, you can specify editing level for the CLI. For more information, see *Chapter 9, Controlling the CLI Environment*.

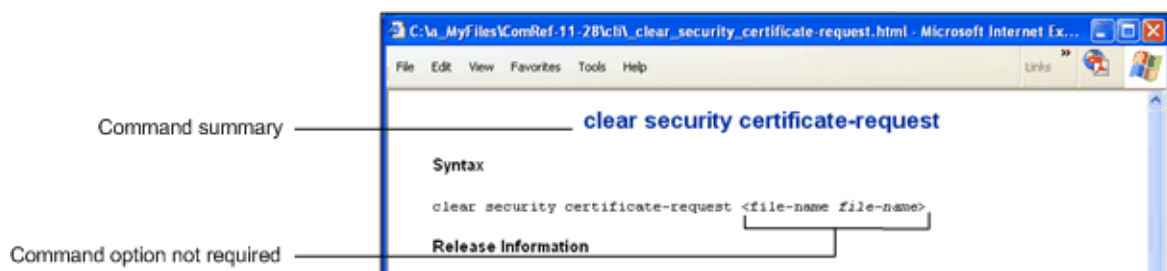
- Configuration mode commands—Commands that you enter in configuration mode are used to perform general configuration functions; for example, committing a configuration, navigating the hierarchy, and managing configuration files. For more information, see *Chapter 6, Using Commands and Statements to Configure the SRC Software*.
- Configuration statements—Used to define your SRC configuration. Your location in the configuration hierarchy determines which configuration statements are available. For example, the [edit shared sae] hierarchy level includes statements to configure the SAE.
 - For information about using SRC configuration statements, see the other SRC guides.
 - For a complete list of the SRC configuration statements, see the *SRC-PE CLI Command Reference*.

Command Options

When working on the command line, you are bound by specific CLI syntax rules. Some commands function very simply with just a single word necessary to run them. Others have required options that you must enter to complete the command. Some commands may have options that are not required, allowing you to change the way the commands run or the information they return.

The command and statement summaries in the *SRC-PE CLI Command Reference* show which options are required and which options are not. Options at the top statement level that are not required are shown with angle brackets (< >). (See Figure 8.) Dots after an option indicate that more than one value can be supplied for the option.

Figure 8: Command Options



Configuration Statements and Identifiers

You configure SRC properties by including *statements* in the configuration. A statement consists of a keyword, which is fixed text, and, optionally, an *identifier*. An identifier is an identifying name that you define, such as the name of an interface or a username, and that allows you and the CLI to discriminate among a collection of statements.

The following list shows the statements available at the top level of configuration mode:

```
[edit]
user@host# set ?
Possible completions:
> interfaces      Interfaces on the SDX platform
> policies        Policy configuration
> redirect-server  Redirect server properties
> routing-options Protocol-independent routing option configuration
> services        Service configuration
> shared          Shared component information
> slot            Component configuration
> snmp            SNMP agent
> subscribers     Subscriber and subscription configuration
> system          System configuration
```

An angle bracket (>) before the statement name indicates that it is a container statement and that you can set values for other statements at levels below it.

The following list shows the statements available at the [edit system ntp] level of configuration mode. This level includes output that shows:

- No angle bracket (>) before the statement name—A leaf statement. You cannot define other statements at hierarchy levels below it.
- Plus sign (+) before the statement name—A statement that can contain a set of values. To specify a set, include the values in brackets.

```
[edit system ntp]
user@host# set ?
Possible completions:
> authentication-key  Configure NTP authentication keys
  boot-server         Server to query during boot sequence
> broadcast           Configure for broadcast mode
  broadcast-client     Listen for NTP broadcasts
> multicast-client    Listen for NTP multicasts
> peer               NTP peer properties
> server              NTP server properties
+ trusted-key         List of trusted authentication keys (1..INF)
```

Listings can also include:

- Asterisk (*) before a statement name—A required statement or option that is not configured.
- Asterisk and Plus (+ *) before a statement name—Required options that can contain a set of values.

When you type a statement, enclose in quotation marks (double quotes) identifiers and any strings that include the following characters: space tab () [] { } ! @ # \$ % ^ & | ' = ?

Privilege Levels for Using Commands and Statements

Each CLI command and each configuration statement has an access privilege level associated with it. Users can execute only those commands and configure and view only those statements for which they have access privileges.

For example, users with **configure** permissions can use the **configure** command to enter configuration mode, and users with **network** permissions can access the network by using the **telnet** and **ssh** commands. The root login account has superuser privileges—with access to all commands and statements.



NOTE: Although **root** has superuser privileges, the editing level for **root** is set to normal.

For information about the editing level, see *Chapter 9, Controlling the CLI Environment*.

Required privilege levels are listed in command and statement summaries. For more information about setting user accounts and privileges, see the *SRC-PE Getting Started Guide, Chapter 19, Configuring User Access*.

Switching Between Operational Mode and Configuration Mode

When you monitor and configure the SRC software, you may need to switch between operational mode and configuration mode. When you change to configuration mode, the command prompt also changes. By default, the operational mode prompt is a right angle bracket (>), and the configuration mode prompt is a pound sign (#).

Switching to Configuration Mode

To enter configuration mode:

- Type the **configure** command or the **edit** command from the CLI operation mode. For example:

```
user@host> configure
Entering configuration mode.
[edit]
user@host#
```

The CLI prompt changes from **user@host>** to **user@host#** and a banner appears to indicate the hierarchy level.

Returning to Operational Mode

You can return to operational mode with or without committing configuration changes. You can enter or exit configuration mode as many times as you wish without committing your changes.

To commit the configuration and exit:

```
[edit]
user@host# commit-and-quit
commit complete
Exiting configuration mode
user@host>
```

To exit without committing:

```
[edit]
user@host# exit
Exiting configuration mode
user@host>
```

If there are changes that have not been committed, the CLI returns a message to that effect:

```
[edit]
user@host# exit
Exiting configuration mode.
The configuration has been changed but not committed.
```

To return to operational mode from any configuration hierarchy level, such as `[edit system services]`:

```
[edit system services]
user@host# exit configuration-mode

user@host>
```

Running Operational Mode Commands from Configuration Mode

To display the output of an operational mode command, such as `show`, while in configuration mode:

- Issue the `run` configuration mode command, then specify the operational mode command.

```
[edit]
user@host# run operational-mode-command
```

For example, to display the SAE configuration and then check whether the SAE is running:

```
[edit shared sae configuration]
user@host# show
plug-ins {
  pool rksPlugin {
    pcmm-rks {
      load-balancing-mode failover;
```

```

        failback-timer -1;
        retry-interval 3000;
        maximum-queue-length 10000;
        feid-mso-domain-name abcd.com;
        trusted-element;
        default-peer radius01;
        peer-group rksPeer {
            server-address 10.10.3.60;
            server-port 1812;
        }
    }
}
driver {
    . . .

```

[edit shared sae configuration]

user@host# **run show component**

Installed Components

Name	Version	Status
cli	Release: 7.0 Build: CLI.A.7.0.0.0171	running
acp	Release: 7.0 Build: ACP.A.7.0.0.0174	disabled
jdb	Release: 7.0 Build: DIRXA.A.7.0.0.0176	running
editor	Release: 7.0 Build: EDITOR.A.7.0.0.0176	disabled
redir	Release: 7.0 Build: REDIR.A.7.0.0.0176	disabled
licSvr	Release: 7.0 Build: LICSVR.A.7.0.0.0179	stopped
nic	Release: 7.0 Build: GATEWAY.A.7.0.0.0170	disabled
sae	Release: 7.0 Build: SAE.A.7.0.0.0166	running
www	Release: 7.0 Build: UMC.A.7.0.0.0169	disabled
jps	Release: 7.0 Build: JPS.A.7.0.0.0172	disabled
agent	Release: 7.0 Build: SYSMAN.A.7.0.0.0174	disabled
webadm	Release: 7.0 Build: WEBADM.A.7.0.0.0173	disabled

Moving Among Hierarchy Levels

You can use the CLI commands in Table 5 to navigate the levels of the configuration statement hierarchy.

Table 5: CLI Configuration Mode Navigation Commands

Command	Description
<code>edit hierarchy-level</code>	Moves to an existing configuration statement hierarchy or creates a hierarchy and moves to that level.
<code>exit</code>	Moves up the hierarchy to the previous level where you were working. This command is, in effect, the opposite of the <code>edit</code> command. Alternatively, you can use the <code>quit</code> command. <code>exit</code> and <code>quit</code> are interchangeable.
<code>up</code>	Moves up the hierarchy one level at a time.
<code>top</code>	Moves directly to the top level of the hierarchy.

Displaying CLI Command History

To display a list of recent commands issued:

- In operational mode or configuration mode, use the `history` command.

```
user@host> history
469 show shared sae configuration ldap subscriber-data
    edit shared sae configuration ldap subscriber-data
    set subscription-loading-filter subscriberRefFilter
    set load-subscriber-schedules
    set login-cache-dn
    set session-cache-dn
    set server-address 10.10.10.3
    set dn umc=user
    set password abcde
    set directory-eventing
    set polling-interval 60
    set ldaps
    show
    set login-cache-dn o=Users,<base>
    . . .
```

You can copy a set of commands from the history and paste them into the CLI to execute the commands again.

CLI Support for C-series Platforms and for SRC Software installed on Solaris Platforms

The CLI lets you manage and monitor a C-series platform and configure and monitor the SRC software whether it runs on a C-series platform or a Solaris platform. When the CLI runs on a C-series platform, it provides system-level commands not available on a Solaris platform.

The CLI lets you perform the following system-level tasks on a C-series platform:

- Configure and monitor:
 - Juniper Networks database
 - Platform interfaces that provide connectivity from the network to a platform
 - System log server
 - Network time Protocol (NTP)
- Configure system hostname, domain name service, security certificates, incoming SSH connections, incoming Telnet connections, RADIUS and TACACS+ authentication for users who access a C-series platform
- Manage the system including system disks
- Install, upgrade, and uninstall system software
- View statistics for the Iptables tool

The CLI provides lets you perform the following tasks on a C-series platform or for the SRC software installed on a Solaris platform:

- Configure and monitor:
 - ACP
 - JPS
 - NIC
 - Redirect server
 - SAE
 - SNMP agent
- Configure policies, services, subscribers, and subscriptions
- Manage security certificates
- Set the system date through the **set date** command
- View NTP status
- Manage files
- Discover all manageable network elements on a subnet
- Manage CLI settings
- Manage configurations
- Navigate in the CLI
- Work with files
- Configure user access

Chapter 4

Getting Online Help

This chapter describes the SRC CLI online help. Topics include:

- Getting Help for Commands and Statements on page 33
- Getting Help for Omitted Statements on page 34
- Using CLI Command Completion on page 35
- Using Command Completion in Configuration Mode on page 36

Getting Help for Commands and Statements

Information about commands and statements is provided at each level of the CLI hierarchy. You can type a question mark to get help in the following ways:

- If you type the question mark at the command-line prompt, the CLI lists the available commands, statements, or options. For example, to view a list of top-level operational mode commands, type a question mark (?) at the command-line prompt.

```
user@host> ?
Possible completions:
clear                Clear system-level objects
configure            Enter configuration mode
disable              Stop an SDX component
enable              Start an installed and configured component
exit                 Exit a CLI session
file                 Perform file operations
help                 Display help about commands and statements
history              Display command history
request              Make request for specified component
restart              Restart an SDX component
set                  Properties for the CLI environment
show                 Display configuration information
ssh                  Open SSH session to another host
start                Start shell
telnet               Telnet to another host
test                 Test a NIC resolution
user@host>
```

- If you type the question mark after entering the complete name of a command, statement, or option, the CLI lists the available options, then displays again the text that you typed.

```
user@host> clear ?
Possible completions:
  sae                Clear SAE-level objects
  security            Delete security data
user@host> clear
```

- If you type the question mark in the middle of a command, statement, or option name, the CLI lists possible command completions that match the letters you have entered so far, then displays again the text that you typed. For example, to list all operational mode commands that start with the letter c, type the following:

```
user@host> c?
Possible completions:
  clear              Clear (delete) data
  configure          Enter configuration mode
user@host> c
```

You can also get extended help for a command, statement, or option by using the **help** command:

```
user@host> help enable
Start a specified SDX component.
```

Getting Help for Omitted Statements

If you omit a required statement at a particular hierarchy level, when you issue the **show** command in configuration mode, a message indicates which statement is missing. For example:

```
user@host# show system
user test {
  class subscriber-control; ## Warning: Undefined class
'subscriber-control'
  full-name test;
  uid 503;
  gid 100;
  authentication {
    encrypted-password "{crypt}0N5Od4BqvwPKY";
  }
}
```


Using CLI Command Completion

You do not always have to remember or type the full command or option name for the CLI to recognize it.

- To display all possible command or option completions, type the partial command followed immediately by a question mark.
- To complete a command or option that you have partially typed, press the Spacebar. If the partially typed letters begin a string that uniquely identifies a command, the complete command name appears. Otherwise, a prompt indicates that you have entered an ambiguous command, and the possible completions are displayed.

Command completion also applies to other strings, such as filenames, interface names, and usernames. To display all possible values, type a partial string followed immediately by a question mark. However, to complete these strings, press the Tab key; pressing the Spacebar does not work.

Examples: Using CLI Command Completion

Issue a `show` command for a component that starts with the letter `s`:

```
user@host> show s
                ^
's' is ambiguous.
Possible completions:
  sae                Display SAE information
  security           Display security information
  system            Display system information
user@host>
```

Display a list of all log files whose names start with the letter `m`:

```
user@host> file show /var/log/m?
Possible completions:
<filename>      Filename to show
/var/log/maillog  Size: 0, Last changed: Sep 27, 2006 10:33 AM
/var/log/messages Size: 109569, Last changed: Oct 2, 2006 3:10 PM
```

Using Command Completion in Configuration Mode

The CLI command completion functions also apply to the commands in configuration mode and to configuration statements. To display all possible commands or statements, type the partial string followed immediately by a question mark; to complete a command or statement that you have partially typed, press the Spacebar.

Command completion also applies to identifiers, with one slight difference. To display all possible identifiers, type a partial string followed immediately by a question mark. To complete an identifier, you must press the Tab key. This scheme allows you to enter identifiers with similar names; then press the Spacebar when you are done typing the identifier name.

Examples: Using Command Completion in Configuration Mode

List the configuration mode commands:

```
[edit]
user@host# ?
Possible completions:
  commit      Commit a set of changes
  delete      Delete a configuration statement or identifier
  edit        Specify edit level in hierarchy
  exit        Exit from this level
  help        Display help about commands and statements
  history     Display command history
  insert      Insert an identifier
  load        Load configuration from an ASCII file
  rename      Rename a statement or identifier
  rollback    Discard current set of changes
  run         Run an operational mode command
  save        Save configuration to an ASCII file
  set         Set a configuration property
  show        Display configuration information
  top         Return to top level of configuration mode
  up          Move up one level in hierarchy
```

List all the statements available at the [edit] hierarchy level:

```
[edit]
user@host# edit ?
Possible completions:
> interfaces  Interfaces on the SDX platform
> policies    Policy configuration
> redirect-server Redirect server properties
> routing-options Protocol-independent routing option configuration
> services    Service configuration
> shared      Configure a shared configuration
> slot        Component configuration
> snmp        SNMP agent
> subscribers Subscriber and subscription configuration
> system      System parameters
```

List all the statements available at the [edit system] hierarchy level:

```
[edit]
user@host# edit system ?
Possible completions:
  <[Enter]>      Execute this command
> ldap          LDAP properties
> login         Login properties
> ntp           NTP configuration
> radius-server RADIUS server configuration
> services      System services configuration
> syslog        System log configuration
> tacplus-server TACACS+ server configuration
|              Pipe through a command
```

List all commands that start with a particular letter or string:

```
[edit]
user@host# edit system l?
Possible completions:
> ldap          LDAP properties
> login         Login properties
user@host# edit system l
```

List all configured Ethernet interfaces:

```
[edit]
user@host# edit interfaces et?
Possible completions:
  <name>          Interface name
eth0
eth1
eth2
eth3
user@host# edit interfaces et
```

Display a list of all configured interfaces:

```
user@host# show interfaces ?
Possible completions:
  <[Enter]>      Execute this command
  <name>         Interface name
eth0           Interface name
lo             Interface name
|              Pipe through a command
user@host# show interfaces
```


Part 2

Operational Mode and Configuration Mode

Chapter 5

Using CLI Operational Commands to Monitor the SRC Software

This chapter provides information about CLI operational commands. Topics include:

- CLI Command Categories on page 41
- Commonly Used Operational Mode Commands on page 42
- Viewing Files and Directories on page 42
- Managing SRC Components on page 46

CLI Command Categories

When you log in to the SRC CLI and it starts, broad groups of CLI commands are available:

- Commands for controlling the CLI environment—The commands in the **set** hierarchy configure the CLI display screen.
- Commands for monitoring and troubleshooting—The following commands display information and statistics about the software and test network connectivity:
 - **clear**—Clears statistics and protocol database information.
 - **show**—Displays the current configuration and information about interfaces, routing protocols, routing tables, routing policy filters, system alarms, and the chassis.
 - **test**—Tests the configuration.
- Commands for connecting to other network systems—The **ssh** command opens secure shell connections, and the **telnet** command opens Telnet sessions to other hosts on the network.

- Commands for copying files—The **file copy** command copies files from one location on the system to another, from the system to a remote system, or from a remote system to the local system.
- Commands for restarting software processes—The commands in the **restart** hierarchy restart the various SRC components, including the Admission Control Plug-In (ACP), SNMP agent, the service and policy editor, the Juniper Networks database, Juniper Policy Server, the network information collector, the redirect server, SAE, and C-Web.
- A command—**request**—for performing system-level operations, including stopping and rebooting the C-series platform and loading SRC software images.
- A command—**start**—to exit the CLI and start a shell.
- A command—**configure**—to enter configuration mode, which provides a series of commands that configure the SRC software, including system management and SRC components.
- A command—**quit**—to exit the CLI.

For more information about the CLI operational mode commands, see *SRC-PE CLI Command Reference*.

Commonly Used Operational Mode Commands

Table 6 lists operational commands that you may find useful to monitor system operation. For a complete description of operational commands, see *SRC-PE CLI Command Reference*.

Table 6: Commonly Used Operational Mode Commands

Items to Check	Description	Command
CLI	Settings for CLI environment	show cli
Configuration	Current system configuration	show configuration
Manipulate files	List of files and directories	file list
	Contents of a file	file show
Redirect server	Redirect server usage information	show redirect-server statistics
SRC licenses	Type of license and detailed license information	show sae licenses
System	General system information, including hostname, hardware version, software version, disk usage	show system information
System components	List of installed components and the status of each component	show component

Viewing Files and Directories

The SRC software stores information in files on the system, including configuration files, log files, and system software files. This section shows some examples of operational commands that you can use to view files and directories on the system.

Directories on the C-series Platform

The C-series platform has numerous directories used by the operating system. Table 7 lists directories on a C-series platform.

Table 7: Directories on a C-series Platform

Directory	Description
<i>/altroot</i>	Files that are a snapshot of the file system. You can use these files to restore the file system to the state in the snapshot.
<i>/altvar</i>	Files that are a snapshot of the file system. You can use these files to restore the file system to the state in the snapshot.
<i>/media</i>	Mount points created automatically for dynamic devices (for example, USB flash drive)
<i>/opt/UMC</i>	SRC files for installed components
<i>/tmp</i>	Temporary files
<i>/var/home</i>	Home directory for local users
<i>/var/log</i>	System log files
<i>/var/UMC</i>	Operational files and log files for SRC components

Listing Files and Directories

You can view the system's directory structure as well as individual files by issuing the file commands in operational mode.

The user's home directory is the default directory for most of the SRC software commands that require a filename.



NOTE: You can change the default directory by using the `set cli directory` command.

- To view a list of the file commands, type the following:

```
user@host> file ?
Possible completions:
archive      Archive files from the system (local)
checksum     Calculate file checksum
compare      Compare files (local)
copy         Copy files
delete       Delete a file (local)
list         List files (local)
rename       Rename a file (local)
show         Show file contents
user@host> file
```

- Use the `list` option to see the directory structure. For example, to show the files located in your home directory:

```
user@host> file list
initial.cfg
install.log
install.log.syslog
```

- To view the contents of other file directories, specify the directory location. For example:

```
user@host> file list /opt/UMC/
acp
agent
cli
editor
idp
jdb
jps
jre
licsvr
net-snmp
nic
pom
redir
sae
smg
webadm
```

- You can also use the CLI context-sensitive help system to locate a directory. For example:

```
user@host> file list /?
Possible completions:
  <path>      Path to list
  /.autofsck  Size: 0, Last changed: Sep 19, 2006 1:36 PM
  /altroot/   Last changed: Sep 19, 2006 1:22 PM
  /bin/       Last changed: Sep 19, 2006 1:27 PM
  /boot/      Last changed: Sep 19, 2006 1:25 PM
  /dev/       Last changed: Sep 19, 2006 1:36 PM
  /etc/       Last changed: Sep 19, 2006 2:42 PM
  /home/      Last changed: Feb 18, 2005 4:26 AM
  /initrd/    Last changed: Feb 18, 2005 4:26 AM
  /lib/       Last changed: Sep 19, 2006 1:26 PM
  /lib64/     Last changed: Sep 19, 2006 1:26 PM
  /lost+found/ Last changed: Sep 19, 2006 1:22 PM
  /media/     Last changed: Sep 19, 2006 1:36 PM
  /misc/      Last changed: Aug 15, 2006 8:33 PM
  /mnt/       Last changed: Feb 18, 2005 4:26 AM
  /net/       Last changed: Sep 19, 2006 1:36 PM
  /opt/       Last changed: Sep 19, 2006 1:27 PM
  /proc/      Last changed: Sep 19, 2006 1:36 PM
  /root/      Last changed: Sep 19, 2006 6:44 PM
  /sbin/      Last changed: Sep 19, 2006 1:26 PM
  /selinux/   Last changed: Sep 19, 2006 1:36 PM
  /srv/       Last changed: Feb 18, 2005 4:26 AM
  /sys/       Last changed: Sep 19, 2006 1:36 PM
  /tmp/       Last changed: Sep 19, 2006 6:46 PM
  /usr/       Last changed: Sep 19, 2006 1:24 PM
  /var/       Last changed: Sep 19, 2006 1:36 PM
```

```
user@host> file list /var/?
```

```
Possible completions:
```

<path>	Path to list
/var/UMC/	Last changed: Sep 19, 2006 1:28 PM
/var/account/	Last changed: Sep 19, 2006 1:25 PM
/var/acp/	Last changed: Sep 19, 2006 1:27 PM
/var/cache/	Last changed: Sep 19, 2006 1:26 PM
/var/crash/	Last changed: Sep 19, 2006 1:25 PM
/var/db/	Last changed: Sep 19, 2006 1:26 PM
/var/empty/	Last changed: Sep 19, 2006 1:26 PM
/var/home/	Last changed: Sep 19, 2006 6:44 PM
/var/lib/	Last changed: Sep 19, 2006 1:36 PM
/var/local/	Last changed: Feb 18, 2005 4:26 AM
/var/lock/	Last changed: Sep 19, 2006 1:36 PM
/var/log/	Last changed: Sep 19, 2006 2:41 PM
/var/lost+found/	Last changed: Sep 19, 2006 1:22 PM
/var/mail/	Last changed: Feb 18, 2005 4:26 AM
/var/net-snmp/	Last changed: Sep 19, 2006 6:44 PM
/var/nis/	Last changed: Feb 18, 2005 4:26 AM
/var/opt/	Last changed: Feb 18, 2005 4:26 AM
/var/preserve/	Last changed: Feb 18, 2005 4:26 AM
/var/run/	Last changed: Sep 19, 2006 6:44 PM
/var/spool/	Last changed: Sep 19, 2006 1:26 PM
/var/tmp/	Last changed: Sep 19, 2006 1:28 PM
/var/yp/	Last changed: Sep 19, 2006 1:26 PM

- You can also display the contents of a file. For example:

```
user@host> file show install.log
```

```
Installing 309 packages
```

```
Installing chkconfig-1.3.13.4-1.x86_64.
Installing ethtool-1.8-4.x86_64.
Installing hdparm-5.7-2.x86_64.
Installing hwdata-0.146.22.EL-1.noarch.
Installing iputils-20020927-18.EL4.3.x86_64.
Installing libgcc-3.4.6-3.i386.
Installing libgcc-3.4.6-3.x86_64.
Installing mingetty-1.07-3.x86_64.
Installing mktemp-1.5-20.x86_64.
Installing redhat-logos-1.1.26-1.junosx.noarch.
Installing rootfiles-8-1.noarch.
Installing setserial-2.17-17.x86_64.
. . .
```

Specifying Filenames and URLs

In some CLI commands and configuration statements—including **file copy**, **file archive**, **load**, and **save**—you can include a filename.

You can specify a filename or URL in one of the following ways:

- **filename**—File in the user’s current directory on the local system. You can use wildcards to specify multiple source files or a single destination file. Wildcards are not supported in FTP.



NOTE: Wildcards are supported only by the **file compare**, **file copy**, **file delete**, **file list**, **file rename**, **file show**, and **save** commands. When you issue the **file show** command with a wildcard, it must resolve to one filename.

- **path/filename**—File on the local system.
- **File URL**—File URL of local files.
- **usb:filename**—Files on a dynamically mounted USB port.
- **ftp://hostname/path/filename**—File on an FTP server. You can also specify **hostname** as **username@hostname** or **username:password@hostname**.

For example:

```
user@host> file copy ftp://username@ftp.hostname.net//filename
file copy ftp.hostname.net: Not logged in.
```

Managing SRC Components

This section shows some examples of operational commands that you can use to manage SRC components.

Viewing C-series Platform Information

You can view general information about the C-series platform and version and status information for the installed SRC components.

To view SRC software information, including hostname and version information for the SRC software installed on your system, type the following command:

```
user@host> show system information
```

System Identification

Hostname	myC-seriesPlatform
Manufacturer	Juniper Networks
Product Name	SDX-2000
Version	1.0
Serial Number	0207082006000001
UUID	48384441-5254-0030-4859-0030485977EE
Hostid	e30a2e07
Software version	SDX-300 Release 7.0 [A.7.0.0-24]

System Time

Current time	2006-11-30 12:09:15 EST
Uptime	20 days, 13:06
Number of active users	4
Load Averages (1m/5m/15m)	0.19/0.22/0.18

Memory

Total	15G
Free	6955M

CPU Info

Number of CPU	4
CPU Model	Dual Core AMD Opteron(tm) Processor 265
Clock Speed	1804.158 MHz

Disk Information

Mountpoint	Total	Used	Use%
/	2015M	1310M	64%
/altroot	2015M	35M	1%
/altvar	29G	75M	0%
/boot	98M	14M	14%
/var	31G	1850M	5%

Temperature

System	+27 C
CPU-1	+37 C
CPU-2	+40 C

Fan Speed

Fan-1	9375 RPM
Fan-2	9375 RPM

- To display version and status information for each component installed on the C-series platform, in operational mode type the following command:

```
user@host> show component
```

Installed Components

Name	Version	Status
cli	Release: 7.0 Build: CLI.A.7.0.0.0171	running
acp	Release: 7.0 Build: ACP.A.7.0.0.0174	disabled
jdb	Release: 7.0 Build: DIRXA.A.7.0.0.0176	running
editor	Release: 7.0 Build: EDITOR.A.7.0.0.0176	disabled
redir	Release: 7.0 Build: REDIR.A.7.0.0.0176	disabled

licSvr	Release: 7.0 Build: LICSVR.A.7.0.0.0179	stopped
nic	Release: 7.0 Build: GATEWAY.A.7.0.0.0170	disabled
sae	Release: 7.0 Build: SAE.A.7.0.0.0166	running
www	Release: 7.0 Build: UMC.A.7.0.0.0169	disabled
jps	Release: 7.0 Build: JPS.A.7.0.0.0172	disabled
agent	Release: 7.0 Build: SYSMAN.A.7.0.0.0174	disabled
webadm	Release: 7.0 Build: WEBADM.A.7.0.0.0173	disabled

Restarting an SRC Component

In some instances, you may need to restart a SRC component. You can restart a component gracefully, immediately, or by sending a hangup signal before restarting the component. Table 8 shows options available for the **request restart** command.

Table 8: Options to Restart an SRC Component

Option	Description
<i>component</i>	Name of SRC component to restart.
<i>gracefully component</i>	Restart a specified SRC component by sending the equivalent of a UNIX SIGTERM signal.
<i>immediately component</i>	Immediately restart an SRC component by sending the equivalent of a UNIX SIGKILL signal.
<i>soft component</i>	Reread and reactivate the configuration without completely restarting the SRC component. This option is the equivalent of a UNIX SIGHUP signal; omitting this option is the equivalent of a UNIX SIGTERM (kill) operation.

To restart a component:

- In operational mode, enter a **request restart** command.

For example, to gracefully restart the NIC component:

```
user@host> request restart gracefully component UMCnic
Shutting down the NICHOST server: done
Starting NICHOST: may take a few minutes...
```

Stopping the SRC Software

To gracefully shut down the SRC software and power off the system, in operational mode, enter the following command:

```
user@host> request system halt
```

This command stops all system components, halts the operating system, and powers down the C-series platform.



NOTE: The **request system halt** command does not give you the opportunity to restart the system from the CLI.

For example:

```
user@host> request system halt
Halt the system [yes,no] ? (no) y
Broadcasting HAL daemon: [ OK ]
Stopping system message bus: [ OK ]
Stopping atd: [ OK ]
Shutting down xfs: [ OK ]
Stopping sshd: [ OK ]
Shutting down smartd: [ OK ]
Stopping snmpd: [ OK ]
Stopping xinetd: [ OK ]
Stopping acpi daemon: [ OK ]
Stopping crond: [ OK ]
Stopping autofs: [ OK ]
Stopping nsd: [ OK ]
Shutting down ntpd: [ OK ]
Stopping NFS statd: [ OK ]
Stopping irqbalance: [ OK ]
Stopping portmap: [ OK ]
Shutting down kernel logger: [ OK ]
Shutting down system logger: [ OK ]
Stopping pcmcia: unloading Kernel Card Services
[ OK ]
Stopping sysstat: [ OK ]
Starting killall: [ OK ]
Sending all processes the TERM signal...
Sending all processes the KILL signal...
Saving random seed:
Syncing hardware clock to system time
Turning off swap:
Turning off quotas:
Unmounting pipe file systems:
Unmounting file systems:
Halting system...
md: stopping all md devices.
md: md0 switched to read-only mode.
Synchronizing SCSI cache for disk sda:
Power down.
acpi_power_off called
```

Rebooting the SRC Software

In some instances, such as after software upgrades that make changes to the operating system kernel, you need to reboot the SRC software. Reboot requests are recorded to the system log files and the messages about the final stages of system appear on the screen when the command to reboot the system is run.

To reboot the SRC software, enter the following command in operational mode:

```
user@host> request system reboot

Reboot the system [yes,no] ? (no) y
Broadcasting HAL daemon: [ OK ]
Stopping system message bus: [ OK ]
Stopping atd: [ OK ]
Shutting down xfs: [ OK ]
Stopping sshd: [ OK ]
Shutting down smartd: [ OK ]
```

```
Stopping snmpd: [ OK ]
Stopping xinetd: [ OK ]
Stopping acpi daemon: [ OK ]
Stopping crond: [ OK ]
Stopping autofs: [ OK ]
Stopping nsd: [ OK ]
Shutting down ntpd: [ OK ]
Stopping NFS statd: [ OK ]
Stopping irqbalance: [ OK ]
Stopping portmap: [ OK ]
Shutting down kernel logger: [ OK ]
Shutting down system logger: [ OK ]
Stopping pcmcia: unloading Kernel Card Services
[ OK ]
Stopping sysstat: [ OK ]
Starting killall: [ OK ]
Sending all processes the TERM signal...
Sending all processes the KILL signal...
Saving random seed:
Syncing hardware clock to system time
Turning off swap:
Turning off quotas:
Unmounting pipe file systems:
Unmounting file systems:
Please stand by while rebooting the system...
md: stopping all md devices.
md: md0 switched to read-only mode.
Synchronizing SCSI cache for disk sda:
Restarting system.
```


Chapter 6

Using Commands and Statements to Configure the SRC Software

This chapter describes how to use the CLI to configure the SRC software. Topics include:

- Understanding CLI Configuration Mode on page 51
- Entering and Exiting Configuration Mode on page 55
- Modifying the Configuration on page 56
- Verifying a Configuration on page 65
- Committing a Configuration on page 66
- When Multiple Users Configure the Software on page 67

Understanding CLI Configuration Mode

In configuration mode, you can configure properties for the SRC software, such as properties for the Juniper Networks database, SRC components, user access, and system properties. You can configure all SRC properties for the C-series platform, but only a subset of these properties if you are running SRC software on a Solaris platform.

A configuration is stored as a hierarchy of statements. In configuration mode, you create the specific hierarchy of configuration statements that you want to use. When you have finished entering the statements, you commit them, which activates the configuration.

You can create the hierarchy interactively at the CLI, or you can load configuration from a file that you create. To activate the configuration, you commit it.

For information about loading a configuration from a file, see *Chapter 10, Managing Configurations*.

For information about CLI support for SRC installations on Solaris platforms, see *Chapter 3, SRC CLI Basics*.

Configuration Mode Commands

Table 9 summarizes each CLI configuration mode command. The commands are listed alphabetically.

Table 9: Summary of Configuration Mode Commands

Command	Description
commit	Commit the set of changes to the database and cause the changes to take operational effect.
delete	Delete a statement or identifier. All subordinate statements and identifiers contained within the specified statement path are deleted with it.
edit	Move inside the specified statement hierarchy. If the statement does not exist, it is created.
exit	Exit the current level of the statement hierarchy, returning to the level before the last edit command, or exit from configuration mode. The quit and exit commands are synonyms.
help	Display help about available configuration statements.
history	Display the previous commands entered at the CLI.
insert	Insert an identifier into an existing hierarchy.
load	Load a configuration from a file. Your current location in the configuration hierarchy is ignored when the load operation occurs.
quit	Exit the current level of the statement hierarchy, returning to the level before the last edit command, or exit from configuration mode. The quit and exit commands are synonyms.
rename	Rename an existing configuration statement or identifier.
rollback	Return to the previously committed configuration. The software saves only the last committed configuration.
run	Run an operational mode CLI command without exiting from configuration mode.
save	Save the configuration to an ASCII file. The contents of the current level of the statement hierarchy (and below) are saved, along with the statement hierarchy containing it. This action allows a section of the configuration to be saved, while fully specifying the statement hierarchy.
set	Create a statement hierarchy and set identifier values. This command is similar to edit except that your current level in the hierarchy does not change.
show	Display the current configuration.
top	Return to the top level of configuration command mode, which is indicated by the [edit] banner.
up	Move up one level in the statement hierarchy.

For more information about configuration mode commands, see *SRC-PE CLI Command Reference*.

Configuration Statements

You configure SRC properties by including statements in the configuration. A statement consists of the following parts:

- Keyword—Fixed text
- Identifier (Optional)—Identifying name that you define, such as the name of an interface, or a username, which allows you and the CLI to discriminate among a collection of statements

Table 10 describes top-level CLI configuration mode statements.

Table 10: Configuration Mode Top-Level Statements

Statement	Description
interfaces	Configure interfaces on the C-series platform.
policies	Configure routing policies.
redirect-server	Configure the redirect server.
routing-options	Configure static routes.
services	Define subscriber services.
shared	Configure ACP, admission control, congestion points, auth-cache, network devices, NIC, and SAE.
slot	Configure properties for a component, such as ACP, Juniper Policy Server, network information collector, and SAE on a slot.
snmp	Configure Simple Network Management Protocol (SNMP) community strings, interfaces, traps, and notifications.
subscribers	Configure subscriber definitions.
system	Configure systemwide properties, including the hostname, domain name, Domain Name System (DNS) server, user logins and permissions, and software processes.

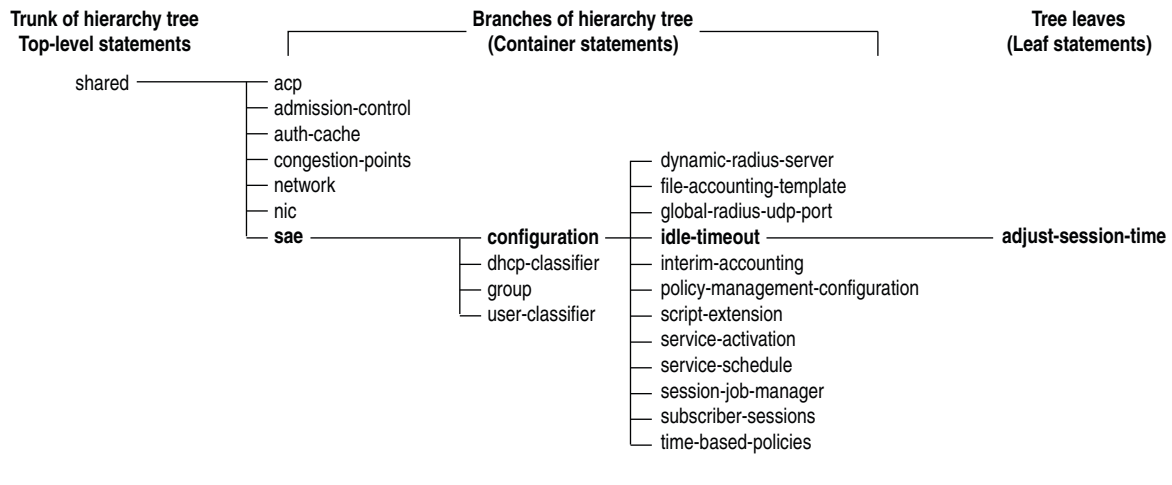
For information about specific configuration statements, see the *SRC-PE CLI Command Reference*.

Configuration Statement Hierarchy

The SRC software configuration consists of a hierarchy of *statements*. There are two types of statements: *container statements*, which are statements that contain other statements, and *leaf statements*, which do not contain other statements. All the container and leaf statements together form the *configuration hierarchy*.

Figure 9 shows container statements and leaf statements in the **sae** hierarchy. To view this hierarchy at the CLI, the editing level must be set to expert.

Figure 9: Sample Configuration Mode Hierarchy of Statements



Each statement at the top level of the configuration hierarchy resides at the trunk (or root level) of a hierarchy tree. The top-level statements are container statements, containing other statements that form the tree branches. The leaf statements are the leaves of the hierarchy tree. An individual hierarchy of statements, which starts at the trunk of the hierarchy tree, is called a *statement path*. Figure 9 illustrates the hierarchy tree, showing a statement path for the portion of the shared configuration hierarchy that configures the idle timeout for the SAE.

The **shared** statement is a top-level statement at the trunk of the configuration tree. The **acp**, **admission-control**, **auth-cache**, **congestion-points**, **network**, **nic**, and **sae** statements are all subordinate container statements of the **shared** statement (they are branches of the **shared** hierarchy tree). The **configuration** and the **idle-timeout** statements are successive branches in the hierarchy under the **sae** branch. The **adjust-session-time** statement is a leaf on the tree, which, in this case, specifies that when a session is terminated by an idle timeout, the session time reported in the accounting stop message is automatically reduced by the idle time.

The CLI represents the statement path shown in Figure 9 on page 54 as **[shared sae configuration idle-timeout]**, and displays the configuration as follows:

```

shared {
  sae {
    configuration {
      idle-timeout {
        adjust-session-time;
      }
    }
  }
}

```

The CLI indents each level in the hierarchy to indicate each statement's relative position in the hierarchy and generally sets off each level with braces, using an open brace at the beginning of each hierarchy level and a closing brace at the end. Each leaf statement ends with a semicolon.

Entering and Exiting Configuration Mode

You configure the SRC software by entering configuration mode and creating a hierarchy of configuration mode statements.

Users must have configure permission to view and use the **configure** command to enter configuration mode. When in configuration mode, users can view and modify only those statements for which they have access privileges set.

Entering Configuration Mode

To enter configuration mode:

- Use the **configure** command.

```
user@host> configure
Entering configuration mode.
```

When you enter configuration mode, the following configuration mode commands are available:

```
[edit]
user@host# ?
Possible completions:
  commit      Commit a set of changes
  delete      Delete a configuration statement or identifier
  edit        Specify edit level in hierarchy
  exit        Exit from this level
  help        Display help about commands and statements
  history      Display command history
  insert      Insert an identifier
  load        Load configuration from an ASCII file
  rename      Rename a statement or identifier
  rollback    Discard current set of changes
  run         Run an operational mode command
  save        Save configuration to an ASCII file
  set         Set a configuration property
  show        Display configuration information
  top         Return to top level of configuration mode
  up          Move up one level in hierarchy
```

Exiting from Configuration Mode

To exit configuration mode:

- Use the **exit configuration-mode** command from any level.

or

Use the **exit** command from the top level.

For example:

```
[edit shared sae configuration time-based-policies]
user@host# exit configuration-mode
Exiting configuration mode.
user@host>
```

```
[edit]
user@host# exit
Exiting configuration mode.
user@host>
```

If you try to exit from configuration mode by using the **exit** command and the configuration contains changes that have not been committed, you see a message:

```
[edit shared sae configuration time-based-policies]
user@host# exit configuration-mode
Exiting configuration mode.
The configuration has been changed but not committed.

user@host>
```

Modifying the Configuration

To configure the SRC software or to modify an existing configuration, you add statements to the configuration. For each statement hierarchy, you create the hierarchy starting with a statement at the top level and continuing with statements that move progressively lower in the hierarchy.

To modify the hierarchy, you use two configuration mode commands:

- **edit**—Moves to a particular hierarchy level. If that hierarchy level does not exist, the **edit** command creates it. The **edit** command has the following syntax:

```
edit <statement-path>
```

where *statement-path* is the hierarchy to the configuration statement and the statement itself.

- **set**—Creates a configuration statement and sets identifier values. After you issue a **set** command, you remain at the same level in the hierarchy. The **set** command has the following syntax:

```
set <statement-path> statement <identifier>
```

where

statement-path is the hierarchy to the configuration statement and the statement itself. If you have already moved to the statement's hierarchy level, you can omit the statement path.

statement is the configuration statement itself.

identifier is a string that identifies an instance of a statement.

You cannot use the **edit** command to change the value of identifiers. You must use the **set** command.

Entering Values for Statement Options

When values include the following characters—space, single quotation marks ('), double quotation marks ("), curly braces ({}), brackets ([]), or commas (,)—you must enclose the value in quotation marks (" ") or use a backslash (\) before the character.

To enter words or letters separated by a space, such as a full name with a first name and last name, enclose the words in quotation marks. For example:

```
"Chris Bee"
```

To enter multiple values, separate values with a space, and enclose the values with brackets. For example:

```
[192.0.2.24 192.0.4.25]
```

To enter a number using a regular expression, use backslashes (\) to escape the brackets. For example:

```
\[0-9\]
```

Displaying the Current Configuration

You can display the current configuration from operational mode or from configuration mode. In configuration mode, you can display the configuration at the specified hierarchy level.

To display the current configuration from configuration mode:

- Use the **show** command.

```
[edit]
user@host# show <statement-path>
```

or

```
[edit <hierarchy-level>]
user@host# show
```

To display the current configuration from operational mode:

- Use the **show configuration** command.

```
user@host> show configuration
```

The configuration statements appear in a fixed order; however, when you configure the C-series platform, you can enter statements in any order.

If you omit a required statement at a particular hierarchy level, when you issue the **show** or **show configuration** command, a message indicates which statement is missing. As long as a mandatory statement is missing, the CLI continues to display this message each time you issue a **show** or **show configuration** command.

For example, the following output includes a warning that lists mandatory attributes that need to be configured:

```
[edit]
user@host# show
. . .
shared {
  sae {
    configuration {
      aggregate-services {
        keepalive-time 172800;
        warning: missing mandatory attribute(s): 'keepalive-retry-time',
'activation-deactivation-time', 'failed-notification-retry-time'
      }
    }
    . . .
  }
}
```

Examples: Displaying the Current Configuration

Configure timers for aggregate services from the **[edit]** hierarchy level, and then view the configuration from the same hierarchy level:

```
[edit]
user@host# set shared sae configuration aggregate-services keepalive-time 86400
[edit]
user@host# set shared sae configuration aggregate-services keepalive-retry-time 900
[edit]
user@host# set shared sae configuration aggregate-services activation-deactivation-time 900
[edit]
user@host# set shared sae configuration aggregate-services failed-notification-retry-time 86400

[edit]
user@host# show
. . .
shared {
  sae {
    configuration {
      aggregate-services {
        keepalive-time 86400;
        keepalive-retry-time 900;
        activation-deactivation-time 900;
        failed-notification-retry-time 86400;
      }
    }
    . . .
  }
}
```


Display a configuration at a specific hierarchy level:

```
[edit]
user@host# show shared sae configuration aggregate-services
keepalive-time 172800;
keepalive-retry-time 900;
activation-deactivation-time 900;
failed-notification-retry-time 86400;
```

Move to a lower level in the hierarchy, [edit shared sae configuration aggregate-services], and then display the configuration at that level:

```
[edit]
user@host# edit shared sae configuration aggregate-services

[edit shared sae configuration aggregate-services]
user@host# show
keepalive-time 172800;
keepalive-retry-time 900;
activation-deactivation-time 900;
failed-notification-retry-time 86400;
```

Display all of the last committed configuration from operational mode:

```
[edit]
user@host# set shared sae configuration aggregate-services keepalive-time 172800
[edit]
user@host# set shared sae configuration aggregate-services keepalive-retry-time 900
[edit]
user@host# set shared sae configuration aggregate-services activation-deactivation-time 900
[edit]
user@host# set shared sae configuration aggregate-services failed-notification-retry-time 86400
[edit]
user@host# show
user@host# commit
commit complete.
[edit]
user@host# quit
Exiting configuration mode.

user@host> show configuration
. . .
shared {
  sae {
    configuration {
      aggregate-services {
        keepalive-time 172800;
        keepalive-retry-time 900;
        activation-deactivation-time 900;
        failed-notification-retry-time 86400;
      }
    }
  }
  . . .
}
```

Adding Configuration Statements and Identifiers

When you use the **?** help to view a list of possible command completions, the output includes symbols that provide more information about the statement. The following symbols can appear in a list:

- Angle bracket (>) before the statement name indicates that the statement is a container statement and that you can define other statements at levels below it.
- No angle bracket (>) before the statement name indicates that the statement is a leaf statement; you cannot define other statements at hierarchy levels below it.
- Plus sign (+) before the statement name indicates that the statement can contain a set of values. To specify a set, include the values in brackets.
- Asterisk (*) before a statement name indicates a required statement or option that is not configured.
- Plus/Asterisk (+ *) before a statement name indicates a required option that can contain a set of values.

The following example at the [edit system services] hierarchy level shows that authentication-order, domain-search, and name-server can contain more than one value.

```
[edit system]
user@host# show ?
Possible completions:
<[Enter]>      Execute this command
+ authentication-order Order in which authentication methods are invoked
+ domain-search  List of domain names to search
  host-name      Hostname for SDX platform
> ldap          LDAP properties
> login         Login properties
+ name-server    DNS name servers
> ntp           NTP configuration
> radius-server  RADIUS server configuration
> services      System services configuration
> syslog        System log configuration
> tacplus-server TACACS+ server configuration
  time-zone      Time zone definition name
  |              Pipe through a command
```

The following example at the [edit shared sae configuration driver] hierarchy level shows that mac-cache-expiration and unauthenticated-subscriber-dn are required statements.

```
[edit shared sae configuration driver]
user@host# show ?
Possible completions:
<[Enter]>      Execute this command
> junos        Parameters the SAE uses to manage JUNOS routing platforms
> junose       Parameters the SAE uses to manage JUNOSe routers
* mac-cache-expiration Time that a subscriber profile remains in SAE cache (0..1 NF s)
> pcmm         Parameters that SAE uses to manage PCMM devices
> scripts      Scripts to customize setup of SAE connections to devices
> simulated    Parameters that the SAE uses for simulated drivers
```

```

> snmp                Global default SNMP communities
> third-party         Parameters that SAE uses to manage third-party devices
* unauthenticated-subscriber-dn
                        DN of an unauthenticated subscriber profile
virtual-portal-address
                        IP address of the portal server
|                      Pipe through a command

```

If you do not type an option for a statement that requires one, a message indicates the type of information expected. In this example, you need to type an area number as an identifier to complete the logger name:

```

[edit]
user@host# set shared sae configuration logger
                                              ^
syntax error, expecting <identifier>.

```

Deleting a Statement from the Configuration

Deleting a statement or an identifier effectively “unconfigures” the functionality associated with that statement or identifier, returning that functionality to its default condition.

To delete a statement or identifier:

- Use the **delete** configuration mode command.

```
user@host# delete <statement-path> <identifier>
```

When you delete a statement, the statement and all its subordinate statements and identifiers are removed from the configuration.

For statements that can have more than one identifier, when you delete one identifier, only that identifier is deleted. The other identifiers in the statement remain.

To delete the entire hierarchy starting at the current hierarchy level:

- In configuration mode, use the **delete** command. Do not specify a statement or an identifier.

When you omit the statement or identifier, you are prompted to confirm the deletion. For example:

```

[edit]
user@host# delete
Delete everything under this level? [yes, no] (no)?

```

Examples: Deleting a Statement from the Configuration

Configure the `aggregate-services` statements, then delete these statements from the `[edit]` level. Using the `delete` command effectively unconfigures the SAE properties for `aggregate-services` in the SRC software:

```
[edit]
user@host# set shared sae configuration aggregate-services keepalive-time 172800
[edit]
user@host# set shared sae configuration aggregate-services keepalive-retry-time 900
[edit]
user@host# set shared sae configuration aggregate-services activation-deactivation-time 900
[edit]
user@host# set shared sae configuration aggregate-services failed-notification-retry-time 86400
```

```
[edit]
user@host# show
...
shared {
  sae {
    configuration {
      aggregate-services {
        keepalive-time 172800;
        keepalive-retry-time 900;
        activation-deactivation-time 900;
        failed-notification-retry-time 86400;
      }
    }
  }
  ...
}
```

```
[edit]
user@host# delete shared sae configuration aggregate-services
```

```
[edit]
user@host# show shared sae configuration aggregate-services
```

Configure the `aggregate-services` statements, then delete these statements from the `[edit shared sae configuration aggregate-services]` level:

```
[edit]
user@host# set shared sae configuration aggregate-services keepalive-time 172800
[edit]
user@host# set shared sae configuration aggregate-services keepalive-retry-time 900
[edit]
user@host# set shared sae configuration aggregate-services activation-deactivation-time 900
[edit]
user@host# set shared sae configuration aggregate-services failed-notification-retry-time 86400
[edit]
user@host# edit shared sae configuration aggregate-services
```

```
[edit shared sae configuration aggregate-services]
user@host# delete
Delete everything under this level? [yes,no] (no) yes
```

```
[edit shared sae configuration aggregate-services]
user@host# show
```

```
[edit shared sae configuration aggregate-services]
user@host#
```

Remove the configuration for a specific property (routing-options):

```
[edit]
user@host# set routing-options static route 192.0.2.20/24 reject

[edit]
user@host# show
. . .
static {
  route 192.0.2.20/24 {
    reject;
  }
}
. . .
[edit]
user@host# delete routing-options

[edit]
user@host# edit routing-options

[edit routing-options]
user@host# show
```

Renaming an Identifier

To modify a configuration, you can rename an identifier that already exists. You can do this either by deleting the identifier (using the **delete** command) and then adding the renamed identifier (using the **set** and **edit** commands), or you can rename the identifier using the **rename** mode command:

```
user@host# rename <statement-path> identifier1 to identifier2
```

Example: Renaming an Identifier

Change the Network Time Protocol (NTP) server address to 10.0.0.6:

```
[edit]
user@host# rename system ntp server 10.0.0.7 to server 10.0.0.6
```

Inserting a New Identifier

You can enter most statements and identifiers in any order. Regardless of the order in which you enter the configuration statements, the CLI always displays the configuration in a strict order. However, in a few cases the ordering of the statements matters because the configuration statements create a sequence that is analyzed in order.

For example, rules for interface, subscriber, and DHCP classification scripts are evaluated in the order in which they appear in the configuration. If you add a rule that you want to be evaluated before an existing rule, you need to modify the ordering of the rules. To modify a portion of the configuration in which the statement order matters:

- Use the `insert` configuration mode command:

```
user@host# insert <statement-path> identifier1 (before | after) identifier2
```

If you do not use the `insert` command, but instead simply configure the identifier, it is placed at the end of the list of similar identifiers.

You use the `insert` command to reorder identifiers that you have already configured.

Examples: Inserting a New Identifier

Add a new subscriber classification rule and insert it before existing rules at the [edit shared sae user-classifier] hierarchy level:

```
[edit shared sae user-classifier]
user@host> show
rule rule-2 {
  target <-retailerDn->??sub?(uniqueID=<-userName->);
  condition {
    loginType == "SYNC";
  }
}
rule rule-3 {
  target <-unauthenticatedUserDn->;
  condition {
    loginType == "TOKEN";
    loginType == "PUBLIC";
  }
}
rule rule-4 {
  target <-retailerDn->??sub?(uniqueID=<-userName->);
  condition {
    retailerDn != "";
    & userName != "";
  }
}

[edit shared sae user-classifier]
user@host# set rule new target "[<-unauthenticatedUserDn->]"

[edit shared sae user-classifier]
user@host# set rule new condition "loginType=="AuthADDR""

[edit shared sae user-classifier]
user@host# insert rule new before rule-2

[edit shared sae user-classifier]
user@host# show
rule new {
  target "[<-unauthenticatedUserDn->]";
  condition {
    loginType==AuthADDR;
  }
}
```

```

rule rule-2 {
  target <-retailerDn->??sub?(uniqueID=<-userName->);
  condition {
    loginType == "SYNC";
  }
}
rule rule-3 {
  target <-unauthenticatedUserDn->;
  condition {
    loginType == "TOKEN";
    loginType == "PUBLIC";
  }
}
rule rule-4 {
  target <-retailerDn->??sub?(uniqueID=<-userName->);
  condition {
    retailerDn != "";
    & userName != "";
  }
}

```

Verifying a Configuration

To verify that the syntax of a configuration is correct:

- Use the configuration mode **commit check** command.

```

[edit]
user@host# commit check
configuration check succeeds
[edit]
user@host#

```

If there is an error in the configuration syntax, the **commit check** command returns a message that indicates the location of the error. For example:

```

[edit]
user@host# commit check
[edit shared sae configuration driver]
missing mandatory attribute(s): 'unauthenticated-subscriber-dn',
'mac-cache-expiration'

```

Committing a Configuration

To save software configuration changes to the directory and activate the configuration:

- Use the **commit** configuration mode command.

```
[edit]
user@host# commit
commit complete
[edit]
user@host#
```

When you enter the **commit** command, the software reviews the configuration for syntax errors (**commit check**). Then, if the syntax is correct, the configuration is activated and becomes the active configuration.

You can issue the **commit** command from any hierarchy level.

If the configuration contains syntax errors, a message indicates the location of the error, and the configuration is not activated. The error message has the following format:

```
[edit edit-path]
'offending-statement;'
error-message
```

For example:

```
user@host# commit
[edit system login user Chris Bee class]
Undefined class 'newClass'
```

We recommend that you correct the error before recommitting the configuration. To return quickly to the hierarchy level where the error is located, copy the path from the last line of the message and paste it at the configuration mode prompt at the **[edit]** hierarchy level.

When you commit a configuration, you commit the entire configuration in its current form. If more than one user is modifying the configuration, committing it saves and activates the changes of all the users.

Committing a Configuration and Exiting Configuration Mode

To save software configuration changes, activate the configuration, and exit configuration mode. Use the **commit and-quit** configuration mode command. This command succeeds only if the configuration contains no errors.

```
[edit]
user@host# commit and-quit
commit complete
exiting configuration mode
user@host>
```


When Multiple Users Configure the Software

A number of users can be working in configuration mode simultaneously, and they all can be making changes to the configuration. All changes made by all users are visible to everyone editing the configuration—the changes become visible as soon as the user presses the Enter key at the end of a command that changes the configuration, such as **set**, **edit**, or **delete**.

When any of the users editing the configuration issues a **commit** command, all changes made by all users are checked and activated.

If, when you enter configuration mode, the configuration contains changes that have not been committed, a message appears:

```
user@host> configure  
Entering configuration mode  
The configuration has been changed but not committed  
[edit]  
user@host>
```


Chapter 7

Filtering Command Output

For commands that display output, such as the **show** commands, you can filter the output. Topics include:

- Using Keyboard Sequences at the MORE Prompt on page 69
- Using the Pipe (|) Symbol When Entering Commands on page 70

Using Keyboard Sequences at the MORE Prompt

If the output from a command is longer than the screen length, it appears one screen at a time by means of a UNIX **more**-type interface. The prompt **—(more)—** indicates that more output is available. This format is helpful when you want to scroll and search through lengthy output.

The SRC software uses the Less program to provide navigation and search capability at the MORE prompt. The SRC software does not permit the Less program access to files or the shell.

Table 11 lists the keyboard sequences for the commands most frequently used at the MORE prompt.

Table 11: MORE Prompt Keyboard Sequences

Category	Action	Keyboard Sequence
Get Help	Display information about the keyboard sequences you can display at the MORE prompt. Commands listed that access files or the shell are not supported.	h, H
Scroll Down	Scroll down one line.	e, Ctrl+e, j, Ctrl+n, Enter, down arrow
	Scroll down one-half screen.	d, Ctrl+d
	Scroll down one whole screen.	f, Ctrl+f, Ctrl+v, z, Space
	Scroll down to the bottom of the output.	F
	Jump to the last line in the output and exit to the CLI prompt.	G

Table 11: MORE Prompt Keyboard Sequences (continued)

Category	Action	Keyboard Sequence
Scroll Up	Display the previous line of output.	y, Ctrl+y, k, Ctrl+k, Ctrl+p, up arrow
	Scroll up one-half screen.	u, Ctrl+u
	Scroll up one whole screen.	b, Ctrl+b, Esc+v, w
	Jump to the first line of the output.	g
Move left and right	Move right one-half screen width.	Esc +), right arrow
	Move left one-half screen width.	ESC + (, left arrow
Search	Search forward for a string. You can also search for a string by specifying the match filter when entering a command using the pipe symbol. See <i>Displaying Output That Matches a Regular Expression</i> on page 74.	/string
	Search backward for a string.	?string
	Repeat a previous search for a string.	Up arrow while in search mode
	Repeat the previous search for a string in the opposite direction.	Down arrow while in search mode
Interrupt or End Output, Redraw the Output, and Save the Output to a File	Interrupt the display of output.	q, :q, Q, :Q, ZZ
	Redraw the output on the screen.	r, Ctrl+r, Ctrl+l
	Redraw the output on the screen and discard buffered input.	R

Using the Pipe (|) Symbol When Entering Commands

You can filter output by adding the | (*pipe*) symbol when you enter a command. For example, you can use the pipe symbol after show configuration:

```

user@host> show configuration ?
Possible completions:
<[Enter]>      Execute this command
> interfaces   Interfaces on the SDX platform
> policies     Policy configuration
> redirect-server Redirect server properties
> routing-options Protocol-independent routing option configuration
> services     Service configuration
> shared       Shared configuration
> slot         Component configuration
> snmp         SNMP agent
> subscribers  Subscriber and subscription configuration
> system       System parameters
|              Pipe through a command

```

The following example lists the filters that can be used with the pipe symbol:

```
user@host> show configuration | ?
Possible completions:
count          Count occurrences
display        Show additional kinds of information
except         Show only text that does not match a pattern
find           Search for first occurrence of the pattern
last           Display end of output only
match          Show only text that does match a pattern
no-more        Do not paginate output
save           Save output text to file
```

You can enter any of the pipe filters in conjunction. For example:

```
user@host> command | match regular-expression | save filename
```

See *Pipe Filter Functions* on page 72 for a description of each type of filter.



NOTE: This section describes *only* the filters that can be used for operational mode command output. For information about filters that can be used in configuration mode, see the *JUNOS System Basics Configuration Guide*.

Using Regular Expressions with the Pipe Symbol

The `except`, `find`, and `match` filters used with the pipe symbol employ regular expressions to filter output. Juniper Networks uses the regular expressions as defined in POSIX 1003.2. (See Table 12.) If the regular expression contains spaces, operators, or wildcard characters, enclose the expression in quotation marks.

Table 12: Common Regular Expression Operators in Operational Mode Commands

Operator	Function
	Indicates that a match can be one of the two terms on either side of the pipe.
^	Used at the beginning of an expression, denotes where a match should begin.
\$	Used at the end of an expression, denotes that a term must be matched exactly up to the point of the \$ character.
[]	Specifies a range of letters or digits to match. To separate the start and end of a range, use a hyphen (-).
()	Specifies a group of terms to match.

For example, if a command produces the following output:

```
1 2
2 2
3 2 1
4
```

A pipe filter of `| match 2` displays the following output:

```
1 2
2 2
3 2 1
```

A pipe filter of `| except 1` displays the following output:

```
2 2
4
```

For more examples of using regular expressions, see the following sections:

- Disregarding Output That Does Not Match a Regular Expression on page 73
- Displaying Output from the First Match of a Regular Expression on page 73
- Displaying Output That Matches a Regular Expression on page 74

Pipe Filter Functions

You can perform the following tasks by using the pipe filter:

- Counting the Number of Lines of Output on page 72
- Displaying Output in XML Tag Format on page 72
- Disregarding Output That Does Not Match a Regular Expression on page 73
- Displaying Output from the First Match of a Regular Expression on page 73
- Displaying the End of the Output for a Command on page 74
- Displaying Output That Matches a Regular Expression on page 74
- Preventing Output from Being Paginated on page 75
- Saving Output to a File on page 75

Counting the Number of Lines of Output

To count the number of lines in the output from a command:

- Enter `count` after the pipe symbol.

For example:

```
user@host> show configuration | count
Count: 369 lines
```

Displaying Output in XML Tag Format

To display command output in XML tag format:

- Enter `display xml` after the pipe symbol.

The following example displays the `show cli directory` command output as XML tags:

```
user@host> show cli directory | display xml
<?xml version="1.0"?>
<output>
Current directory: /root
</output>
```

Disregarding Output That Does Not Match a Regular Expression

If the regular expression contains any spaces, operators, or wildcard characters, enclose it in quotation marks.

For information about common regular expression operators, see Table 12 on page 71.

To disregard text that matches a regular expression:

- Specify the **except** command after the pipe symbol.

The following example displays information about configuration interfaces with the exception of the family information for each interface:

```
user@host> show configuration interfaces |except family
lo {
  unit 0 {
    inet {
      address 192.0.0.1;
    }
  }
}
eth0 {
  unit 0 {
    inet {
      address 10.27.7.45/24;
    }
  }
}
```

Displaying Output from the First Match of a Regular Expression

When you use regular expressions, enclose any spaces, operators, or wildcard characters in quotation marks.

For information about common regular expression operators, see Table 12 on page 71.

To display output starting with the first occurrence of text matching a regular expression:

- Enter **find** after the pipe symbol.

The following example starts displaying information for the **show system information** command starting with the **System Time** section:

```
user@host> show system information |find time
Current time      2006-10-31 09:34:17 EST
Uptime           11 days, 17:26
Number of active users  2
Load Averages (1m/5m/15m) 0.09/0.08/0.09

Memory
Total 15G
Free 14G
```

CPU Info

```

Number of CPU 4
CPU Model      Dual Core AMD Opteron(tm) Processor 265
Clock Speed    1804.137 MHz

```

Disk Information

Mountpoint	Total	Used	Use%
/	2015M	1018M	50%
/altroot	2015M	1015M	50%
/boot	98M	14M	14%
/var	5039M	497M	9%

. . .

Displaying the End of the Output for a Command

To display the end of the output for a command:

- Enter `last` after the pipe symbol.

The following example shows the end of the output for the `show system information` command.

```

user@host> show system information |last
Temperature
System +26 C
CPU-1   +39 C
CPU-2   +39 C

Fan Speed
Fan-1 9375 RPM
Fan-2 9375 RPM

```

Displaying Output That Matches a Regular Expression

If the regular expression contains any spaces, operators, or wildcard characters, enclose it in quotation marks.

For information about common regular expression operators, see Table 12 on page 71.

To display output that matches a regular expression:

- Enter `match regular-expression` after the pipe symbol.

The following example matches all Ethernet interfaces in the interface configuration:

```

user@host> show configuration interfaces | match eth
eth0 {

```


Preventing Output from Being Paginated

By default, if output is longer than the length of the terminal screen, a **MORE** message lets you display the remaining output when you press the Spacebar. You can use the **| no-more** filter to display all output at once. This feature is useful when you want access to the entire output, such as to copy the entire output and paste it into an e-mail message.

To prevent the output from being paginated:

- Enter **no-more** after the pipe symbol.

For example, to display all output from the **show configuration** command at once:

```
user@host> show configuration | no-more
```

Saving Output to a File

When command output is lengthy, when you need to store or analyze the output, or when you need to send the output in an e-mail or by FTP, you can save the output to a file.



NOTE: When you run a **show** command, your SRC privileges determine the information that you view. Therefore, when you save this information, you are saving only the configuration information that you have privileges to view.

By default, the file is placed in the current working directory of the CLI.

To save command output to a file:

- Enter **save filename** after the pipe symbol.

The following example saves the output from the **show** command to a file named **my-config-info.txt**:

```
[edit system]
user@host> show | save my-config-info.txt
Wrote 78 lines of output to 'my-config-info.txt'
user@host>
```


Chapter 8

Using Keyboard Shortcuts at the Command Line

This chapter provides information about how to use keyboard shortcuts to save time when you enter commands and configuration statements.

In the CLI, you can use keyboard sequences to move around on a command line and edit the command line. You can also use keyboard sequences to scroll through a list of recently executed commands. Table 13 lists some of the CLI keyboard sequences. They are the same as those used in Emacs.

Table 13: CLI Keyboard Sequences

Category	Action	Keyboard Sequence
Move the Cursor	Move the cursor back one character.	Ctrl+b
	Move the cursor back one word.	Esc+b or Alt+b
	Move the cursor forward one character.	Ctrl+f
	Move the cursor forward one word.	Esc+f or Alt+f
	Move the cursor to the beginning of the command line.	Ctrl+a
	Move the cursor to the end of the command line.	Ctrl+e
Delete Characters	Delete the character before the cursor.	Delete or Backspace
	Delete the character at the cursor.	Ctrl+d
	Delete all characters from the cursor to the end of the command line.	Ctrl+k
	Delete all characters on the command line.	Ctrl+u or Ctrl+x
	Delete the word before the cursor.	Ctrl+w, Esc+Backspace, Alt+Delete, or Alt+Backspace
	Delete the word after the cursor.	Esc+d or Alt+d
Insert Recently Deleted Text	Insert the most recently deleted text at the cursor.	Ctrl+y

Table 13: CLI Keyboard Sequences (continued)

Category	Action	Keyboard Sequence
Redraw the Screen	Redraw the current line.	Ctrl+l
Display Previous Command Lines	Scroll backward through the list of recently executed commands.	Ctrl+p or up arrow
	Scroll forward through the list of recently executed commands.	Ctrl+n or down arrow
	Search the CLI history in reverse order for lines matching the search string.	Ctrl+r
	Terminate a search, and display the found command.	Esc or Ctrl+j
	Abort a search.	Ctrl+g
Repeat Keyboard Sequences	Specify the number of times to execute a keyboard sequence; <i>number</i> can be from 1 through 9.	Esc+ <i>number sequence</i> or Alt+ <i>number sequence</i>

Part 3

SRC CLI Environment and SRC Component Management

Chapter 9

Controlling the CLI Environment

This chapter describes how to set up your CLI environment. Topics include:

- Overview of Commands to Control the CLI Environment on page 82
- Setting the Editing Level for the CLI on page 82
- Setting the Terminal Type on page 83
- Setting the Language for the Terminal Environment on page 83
- Setting the Screen Length on page 83
- Setting the Screen Width on page 84
- Changing the Password on page 84
- Setting the CLI Prompt on page 84
- Setting the CLI Directory on page 85
- Setting Command Completion on page 85
- Viewing CLI Settings on page 85

Overview of Commands to Control the CLI Environment

In operational mode, you can use commands to control the command-line interface (CLI) environment. For example, you can specify the remote terminal type. The following output lists the options that you can use to control the CLI environment settings.

```
user@host> set cli ?
Possible completions:
complete-on-space  Command completion on partial command entry
directory          Working directory on the system
language           Terminal language and encoding
level             Access level for CLI commands
password          Change the current password
prompt            CLI command prompt
screen-length      Number of lines on the screen
screen-width       Screen width in columns
terminal          Terminal type
```



NOTE: When you use SSH to log in to a C-series platform or log in from the console when its terminal type is already configured, your terminal type, screen length, and screen width are already set.

Setting the Editing Level for the CLI

The editing level determines which statements and commands are visible to a user from the SRC CLI. Table 14 describes the editing levels.

Table 14: Editing Levels

Level	Description
Basic	Only values that must be configured are visible.
Normal	Common values and basic values are visible; this is the default setting.
Advanced	All configurable values, including the common and basic values, are visible.
Expert	All configurable values and internal values used for debugging are visible.

If you log in to the CLI as **root**, the default editing level, normal, is available to you because **root** does not require a user profile to access the CLI. Although **root** access is used for initial configuration of a C-series platform, user accounts are used to enter commands and statements at the CLI.

The editing level can be set for:

- Specified users in the user profiles
- A current user session.

For information about the editing level of configuration statements and options, see the *SRC-PE CLI Command Reference*.

To set the editing level for the CLI:

- In operational mode, use the `set cli level` command.
 - `set cli level basic`
 - `set cli level normal`
 - `set cli level advanced`
 - `set cli level expert`

To view the editing level of the current CLI session:

- In operational mode, use the `show cli` command.

Setting the Terminal Type

To set the terminal type:

- Use the `set cli terminal` command.

user@host> **set cli terminal** *terminal-type*

The terminal type can be one of the following: `ansi`, `vt100`, `xterm`, or `dumb`.

Setting the Language for the Terminal Environment

To set the language appropriate to the terminal environment:

- In operational mode, use the `set cli language` *language* command.

For *language*, specify the language and encoding in the following format:

2-character language code (lower case)_2-character country code (upper case)

For example, `en_US.UTF8` (the default).

Setting the Screen Length

Typically, the terminal used to access the C-series platform controls the length of the screen. Although you can change the value for the screen length, if the terminal supports reporting the screen size, the screen size reported by the terminal takes precedence.

To change the length of the CLI screen:

- Use the `set cli screen-length` command.

user@host> **set cli screen-length** *length*

Setting the Screen Width

Typically, the terminal used to access the C-series platform controls the width of the screen. Although you can change the value for the screen width, if the terminal supports reporting the screen size, the screen size reported by the terminal takes precedence.

To change the width:

- Use the `set cli screen-width` command.

```
user@host> set cli screen-width width
```

Changing the Password

To change the current password used to access the CLI:

- In operational mode, use the `set cli password` command.

```
user@host> set cli password
```



NOTE: If you are using a C-series platform, the `root` password should have been changed from the default setting when the system was initially configured.

Setting the CLI Prompt

The default CLI prompt is `user@host>` in operational mode and `user@host#` in configuration mode.

To change the prompt:

- Use the `set cli prompt` command.

```
user@host> set cli prompt string
```

If the prompt string contains spaces, enclose the string in quotation marks (" ").

Specify the characters `\>` to have `>` appear at the end of the prompt in operational mode and `#` at the end of the prompt in configuration mode.

Setting the CLI Directory

By default, on a C-series platform the working directory is the home directory of the user. On a Solaris platform, it is the directory from which you executed the `cli` command to start the CLI. You can change your working directory for the CLI.

To change the current working directory,:

- Use the `set cli directory` command.

```
user@host> set cli directory directory
```

where *directory* is the pathname of working directory.

Setting Command Completion

You can enter a Tab after a partially typed command to complete the command. In addition, you can enable and disable the CLI to complete a command by typing a space for:

- Specified users in the user profiles
- A current user session

To disable command completion when entering a space:

- Use the `set cli complete-on-space off` command.

```
user@host> set cli complete-on-space off
```

To re-enable command completion when entering a space:

- Use the `set cli complete-on-space on` command.

```
user@host> set cli complete-on-space on
```

Viewing CLI Settings

To view the current CLI settings:

```
user@host> show cli
CLI complete-on-space set to on
CLI editing level is: normal
CLI working directory is '/'
```

You can also use the `show cli directory` command to display the current working directory.

To view the authorization settings for the user logged in to the CLI:

```

user@host> show cli authorization
Current user: 'root' class 'super-user'
Permissions:
  admin                -- Can view user accounts
  admin-control        -- Can modify user accounts
  clear                -- Can clear learned network information
  configure            -- Can enter configuration mode
  field                -- Special for field (debug) support
  firewall             -- Can view firewall configuration
  firewall-control     -- Can modify firewall configuration
  interface            -- Can view interface configuration
  interface-control    -- Can modify interface configuration
  maintenance          -- Can perform system maintenance (as wheel)
  network              -- Can access the network
  reset               -- Can reset and restart interfaces and
processes
  routing              -- Can view routing configuration
  routing-control      -- Can modify routing configuration
  secret              -- Can view secret configuration
  secret-control       -- Can modify secret configuration
  security             -- Can view security configuration
  security-control     -- Can modify security configuration
  shell               -- Can start a local shell
  snmp                 -- Can view SNMP configuration
  snmp-control         -- Can modify SNMP configuration
  system              -- Can view system configuration
  system-control       -- Can modify system configuration
  view                -- Can view current values and statistics
  service             -- Can view service definitions
  service-control      -- Can modify service definitions
  subscriber           -- Can view subscriber profiles
  subscriber-control   -- Can modify subscriber profiles
Individual command authorization:
Allow regular expression: none
Deny regular expression: none
Allow configuration regular expression: none
Deny configuration regular expression: none

```

Chapter 10

Managing Configurations

This chapter provides basic information about managing configurations. Topics include:

- How the Configuration Is Stored on page 87
- Updating the Configuration on page 88
- Working with Configuration Files in XML Format on page 89
- Preparing an XML File to Be Loaded into the Current SRC Configuration on page 92
- About ASCII Files That Contain Configuration Mode Commands on page 94
- Loading a Configuration on page 94
- Reverting to a Previous Configuration on page 100
- Cutting and Pasting Configuration Information at the CLI on page 100

How the Configuration Is Stored

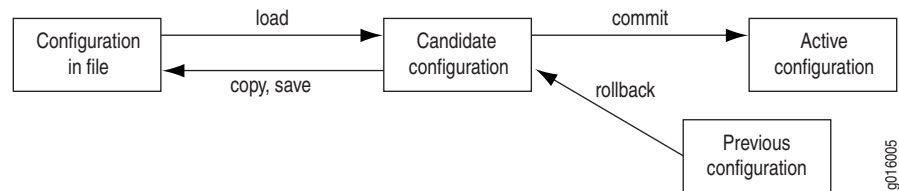
When you edit a configuration, you work in a copy of the current configuration to create a candidate configuration. The changes you make to the candidate configuration are visible in the CLI immediately, so if multiple users are editing the configuration at the same time, all users can see all changes.

To have a candidate configuration take effect, you *commit* the changes. At this point, the software verifies the candidate configuration for proper syntax. If multiple users are editing the configuration, when you commit the candidate configuration, all changes made by all the users take effect.

Slot (local) configuration is stored in files, and the remainder of the configuration is stored in the Juniper Networks Database or another directory that you have configured to store SRC configuration data.

Figure 10 illustrates the various configuration states and the configuration mode commands that you use to load, commit, copy, and save the configuration.

Figure 10: Commands for Storing and Modifying the Configuration



Updating the Configuration

You can update the SRC configuration to include configuration changes from a file or to revert to the configuration supplied with the SRC product. You can also retain the active configuration and discard changes not yet committed. After you load one of these configurations, you can commit it to activate the configuration on the C-series platform, or you can edit the configuration interactively using the CLI and commit it at a later time.

Before You Load a Configuration

Before you load a configuration, make a copy of the current configuration. This configuration contains the active configuration plus any configuration changes that have been made at the CLI.

For this release, you can save the configuration to a file only in XML format.

To make a backup copy of the configuration:

- From the **[edit]** hierarchy level of configuration mode, save the configuration. For example:

```
[edit]
user@host> save backupcfg.xml
```

Commands to Load a Configuration

You can use the following commands in configuration mode to make configuration changes:

- **load factory-default**—Replace the existing configuration with the configuration supplied with the SRC software.
- **load merge *filename* <relative>**—Combine the configuration that is currently shown in the CLI and the configuration in the specified XML file.
- **load override *filename***—Discard the entire configuration that is currently shown in the CLI, and load the entire configuration in the specified XML file.

- `load replace filename <relative>`—Look for replace tags in the specified file, delete the existing statements of the same name, and replace then with the configuration in the specified XML file.
- `load set filename <relative>`—Execute configuration mode commands such as `set`, `edit`, `exit`, and `top` from an ASCII file.

The `relative` option for the `load merge`, `load replace`, and `load set` commands lets you load the configuration at a specified hierarchy level.

Working with Configuration Files in XML Format

The `load merge`, `load override`, and `load replace` commands let you update configuration statements in the SRC configuration from an XML file. The structure of this file must conform to the structure for an SRC configuration file. For this reason, we recommend that you copy a configuration to an XML file and modify that file.

For a merge or replace operation, you can save a copy of the configuration at any level in the configuration hierarchy, then load the updated configuration at the same level.

Use the editor of your choice to modify a saved configuration file. When you edit an XML file that is to be loaded into the SRC configuration, you can add specified attributes to XML tags to specify actions to be taken.

About XML Format for Configuration Files

The XML structure follows the same hierarchy as the CLI. For example, in configuration mode the following statements are available at the `[edit system]` hierarchy level:

```
[edit system]
user@host# set ?
Possible completions:
+ authentication-order  Order in which authentication methods are invoked
+ domain-search         List of domain names to search
  host-name             Hostname for C-series platform
> ldap                 LDAP properties
> login                Login properties
+ name-server           DNS name servers
> ntp                  Configure NTP
> radius-server         RADIUS server configuration
> services              System services configuration
> syslog               System log configuration
> tacplus-server        TACACS+ server configuration
  time-zone             Time zone definition name
```

In an XML file, the tags within the `<system>` tags are the same as the statements in the `[edit system]` hierarchy. The tags under `<system>` can appear in any order.

```
<configuration>
  <system>
    <authentication-order> </authentication-order>
    <domain-search> </domain-search>
    <host-name> </host-name>
```

```

<ldap> </ldap>
<login> </login>
<name-server> </name-server>
<ntp> </ntp>
<radius-server> </radius-server>
<services> </services>
<syslog> </syslog>
<tacplus-server> </tacplus-server>
<time-zone> </time-zone>
</system>
</configuration>

```

The following example shows parts of a configuration file for statements in the [edit system] hierarchy:

```

<?xml version="1.0"?>
<configuration>
  <system>
    <time-zone>Canada/Eastern</time-zone>
    <services>
      <telnet/>
      <ssh>
        <root-login>allow</root-login>
      </ssh>
    </services>
    <host-name>myhost</host-name>
    <name-server>192.2.2.10</name-server>
    <name-server>192.2.2.20</name-server>
    <domain-search>mydomain.juniper.net</domain-search>
    <domain-search>juniper.net</domain-search>
    <ntp>
      <server> <address>192.2.2.100</address>
      </server>
      <boot-server>192.2.2.100</boot-server>
    </ntp>
    <ldap>
      <server>
        <address>10.227.2.100</address>
      </server>
      <boot-server>10.227.2.100</boot-server>
    </ldap>
    <ldap>
      <server>
        <community>
          <primary-neighbors>neighbor1</primary-neighbors>
          <role>primary</role>
        </community>
      </server>
    </ldap>
    <ldap>
      <client>
        <connection-manager-id>CLI_DATA_MANAGER
        </connection-manager-id>
        . . .
      </client>
    </ldap>
  </system>
</configuration>

```



```

<class>
  <name>class-cfg</name>
  <allow-configuration>s.*m$|s.*m l.*n</allow-configuration>
  <permissions>configure</permissions>
  <permissions>interface</permissions>
</class>
<user>
  <user-name>admin</user-name>
  <class>super-user</class>
  <full-name>admin</full-name>
  <uid>500</uid>
  <gid>100</gid>
  <authentication>
    . . .
  </authentication>
  <level>normal</level>
  <complete-on-space>on</complete-on-space>
</user>
</login>
<syslog>
  . . .
</syslog>
</system>
</configuration>

```

Using Attributes When Editing an XML Configuration File

You can add the following attributes to XML tags in a configuration file to be loaded through the **load merge**, **load override**, and **load replace** commands. If you do not add any attribute tags, the software merges all changes.

- **operation="create"**—Create the specified configuration.

If you try to create a configuration object that already exists, the software does not create the new objects and generates an error message to that effect.

- **operation="delete"**—Delete the specified configuration.
- **operation="merge"**—Merge the specified configuration.
- **operation="replace"**—Replace a specified configuration with another defined configuration.

Do not use the **replace** attribute in a file to be loaded through the **load merge** command. If the **replace** attribute is in the file whose contents are merged, the command disregards the **replace** attribute.

You can modify a single value by inserting an attribute into one tag. For example, to delete the name server that has the IP address 192.2.2.20:

```
<configuration>
  <system>
    <name-server operation="delete">192.2.2.20</name-server>
  </system>
</configuration>
```

You can also modify a number of values within a hierarchy by adding an attribute at a higher level in the hierarchy. For example, to replace permissions for the class named class-cfg in the following configuration:

```
<configuration>
  <system>
    <class>
      <name>class-cfg</name>
      <allow-configuration>s.*m$|s.*m l.*n</allow-configuration>
      <permissions>configure</permissions>
      <permissions>interface</permissions>
    </class>
  </system>
</configuration>
```

Enter the **replace** attribute for the class:

```
<configuration>
  <system>
    <login>
      <class operation="replace">
        <name>class-cfg</name>
        <allow-configuration>s.*m$|s.*m l.*n</allow-configuration>
        <permissions>control</permissions>
        <permissions>maintenance</permissions>
      </class>
    </login>
  </system>
</configuration>
```

Preparing an XML File to Be Loaded into the Current SRC Configuration

When you save your current configuration to an XML file, the file contains the configuration in its current form, including any uncommitted changes. If more than one user is modifying the configuration, all changes made by all users are saved.

When you save a configuration to a file, the contents of the current level of the statement hierarchy (and below) are saved, along with the statement hierarchy containing it. The software inserts a line in the saved file to indicate the level at which the file was saved; for example;

```
<configuration>
  <system>
    <services sdx:current="true">
      <ssh>
```

```

        <root-login>deny</root-login>
    </ssh>
    <editor>
        <password-encryption>sha</password-encryption>
    </editor>
</services>
</system>
</configuration>

```

The file is saved in the current working directory. When you load a file that was saved at a specific hierarchy level, use the **relative** option for a **load** command. If you do not use the relative option, the command disregards the **sdx:current="true"** text.

If you plan to copy a configuration file from the C-series platform to another system and back, make sure that you have SSH or Telnet enabled on the C-series platform.

For information about enabling SSH and Telnet on the C-series platform, see *SRC-PE Getting Started Guide, Chapter 10, Managing Configurations*.

To prepare a configuration file for loading into the SRC configuration:

1. In configuration mode, navigate to the level at or below which you want to save the configuration.
2. Run the **save** command.

For example:

```

[edit system]
user@host# save systemcfg.xml
172 lines written to systemcfg.xml
[edit system]

```

3. Edit the file.

On a C-series platform:

- a. Copy the file to a remote system, and then edit it. For example:

```

user@host> file copy /root/systemcfg.xml ftp://user@myserver/systemcfg.xml
Password:
user@host>

```

For information about specifying the filename, see *Chapter 5, Using CLI Operational Commands to Monitor the SRC Software*.

- b. Edit the file in the editor of your choice.
- c. Copy the edited file back to the C-series platform. For example:

```

user@host> file copy ftp://user@myserver/systemcfg.xml /root/systemcfg2.xml
Password:
user@host>

```

On a Solaris platform:

- Edit the file in the text editor of your choice.

About ASCII Files That Contain Configuration Mode Commands

You can create an ASCII file that includes configuration mode commands to be executed and then load this file through the **load set** command. Use the editor of your choice to create the ASCII file.

For example, to add a name server that has the IP address 192.2.2.30 and to delete the name server that has the IP address 192.2.2.20 add the following lines to an ASCII file:

```
edit system
set name-server 192.2.2.30
delete name-server 192.2.2.20
```

Loading a Configuration

You can use the load commands to perform the following tasks:

- *Replacing the Current Configuration with the Default SRC Configuration* on page 94
- *Merging the Active Configuration with Another Configuration* on page 95
- *Replacing the Configuration* on page 96
- *Replacing Parts of the Configuration* on page 97
- *Adding a Configuration Through Configuration Mode Commands* on page 99
- *Loading a Configuration at a Specified Hierarchy Level* on page 99

Replacing the Current Configuration with the Default SRC Configuration

To restore the full default SRC configuration:

- In configuration mode, enter the **load factory-default** command.

```
[edit]
user@host# load factory-default
```

This command removes the active configuration and replaces it with the basic, default SRC configuration.

Merging the Active Configuration with Another Configuration

A merge operation is useful when you are adding a new section to an existing configuration. If the existing configuration and the incoming configuration contain conflicting statements, the statements in the incoming configuration override those in the existing configuration.

You can merge all of the configuration, or the configuration at a specified hierarchy level. For information about loading a configuration at a specified hierarchy level, see *Loading a Configuration at a Specified Hierarchy Level* on page 99.

To combine the active configuration and the configuration in a specified file:

- In configuration mode, specify the **load merge** command. For example:

```
[edit]
user@host# load merge newcfg.xml
```

The following example shows part of an existing configuration, the configuration in the file to be loaded, and the resulting configuration. In the resulting configuration, bold text indicates the configuration that changed.

Existing configuration:

```
<configuration>
...
<system>
...
<host-name>myhost</host-name>
<name-server>192.2.2.10</name-server>
<name-server>192.2.2.20</name-server>
<domain-search>mydomain.juniper.net</domain-search>
<domain-search>juniper.net</domain-search>
...
</system>
...
</configuration>
```

Configuration in the file to be loaded:

```
<configuration>
...
<system>
...
<host-name>myhost</host-name>
<name-server>192.2.2.30</name-server>
<domain-search>newdomain.juniper.net</domain-search>
...
</system>
...
</configuration>
```

Resulting configuration:

```
<configuration>
...
<system>
...
<host-name>myhost</host-name>
<name-server>192.2.2.10</name-server>
<name-server>192.2.2.20</name-server>
<name-server>192.2.2.30</name-server>
<domain-search>mydomain.juniper.net</domain-search>
<domain-search>juniper.net</domain-search>
<domain-search>newdomain.juniper.net</domain-search>
...
</system>
...
</configuration>
```

Replacing the Configuration

To replace all of the active configuration with a full configuration in a specified file:

- In configuration mode, specify the **load override** command. For example:

```
[edit]
user@host# load override complete-newcfg.xml
```

When you use the **load override** command and commit the configuration, all system processes reparse the configuration.

The following example shows part of an existing configuration, the configuration in the file to be loaded, and the resulting configuration. In the resulting configuration, bold text indicates the configuration that changed.

Existing configuration:

```
<configuration>
...
<system>
...
<host-name>myhost</host-name>
<name-server>192.2.2.10</name-server>
<name-server>192.2.2.20</name-server>
<domain-search>mydomain.juniper.net</domain-search>
<domain-search>juniper.net</domain -search>
...
</system>
...
</configuration>
```

Configuration in the file to be loaded:

```
<configuration>
...
<system>
...
  <host-name>myhost</host-name>
  <name-server>192.2.2.30</name-server>
  <name-server>192.2.2.40</name-server>
  <domain-search>newdomain.juniper.net
  </domain-search>
...
</system>
...
</configuration>
```

Resulting configuration:

```
<configuration>
...
<system>
...
  <host-name>myhost</host-name>
  <name-server>192.2.2.30</name-server>
  <name-server>192.2.2.40</name-server>
  <domain-search>newdomain.juniper.net</domain-search>
...
</system>
...
</configuration>
```

Replacing Parts of the Configuration

A replace operation searches for **replace** attributes in the specified XML file, deletes the existing statements of the same name, if any, and replaces them with the incoming configuration. If there is no existing statement of the same name, the replace operation adds to the configuration the statements marked with the **replace** tag. You can also use **create**, **delete**, and **merge** attributes in the file.

If you are performing a replace operation and the file you specify does not contain any **replace** tags, the replace operation is effectively equivalent to a merge operation. This type of operation might be useful if you are running automated scripts and cannot know in advance whether the scripts need to perform a replace or a merge operation. The scripts can use the replace operation to cover either case.

You can replace all of the configuration, or the configuration at a specified hierarchy level. For information about loading a configuration at a specified hierarchy level, see *Loading a Configuration at a Specified Hierarchy Level* on page 99.

To replace portions of a configuration:

1. Make sure that the incoming configuration file has **replace** attributes in place for each part of the configuration to be replaced.

See *Using Attributes When Editing an XML Configuration File* on page 91.

2. In configuration mode, specify the **load replace** command. For example:

```
user@host# load replace newcfg.xml
```

The following example shows part of the existing configuration, the configuration in the file to be loaded, and the resulting configuration. In the resulting configuration, bold text indicates the configuration that changed.

For an example of a file snippet that shows how to replace a number a values within a hierarchy, see *Using Attributes When Editing an XML Configuration File* on page 91.

Existing configuration:

```
<configuration>
...
<system>
...
  <host-name>myhost</host-name>
  <name-server>192.2.2.10</name-server>
  <name-server>192.2.2.20</name-server>
  <domain-search>mydomain.juniper.net</domain-search>
  <domain-search>juniper.net</domain -search>
...
</system>
...
</configuration>
```

Configuration in the file to be loaded:

```
<configuration>
...
<system>
...
  <host-name>myhost</host-name>
  < name-server operation="replace">192.2.2.10</name-server>
  <name-server>192.2.2.30
</name-server>
  <domain-search>mydomain.juniper.net</domain-search>
  <domain-search>mydomain.juniper.net
</domain-search>
  <domain-search>juniper.net</domain -search>
...
</system>
...
</configuration>
```


Resulting configuration:

```
<configuration>
. . .
<system>
. . .
  <host-name>myhost</host-name>
  <name-server>192.2.2.10</name-server>
  <name-server>192.2.2.30</name-server>
  <domain-search>mydomain.juniper.net</domain-search>
  <domain-search>juniper.net</domain-search>
  . . .
</system>
. . .
</configuration>
```

Adding a Configuration Through Configuration Mode Commands

When you use the **load set** command, it executes the configuration instructions line by line as they are stored in a file. The instructions can contain any configuration mode command, such as **set**, **edit**, **exit**, and **top**.

To load a configuration that contains configuration mode commands:

1. Create an ASCII file that includes **set** and other configuration mode commands. For example:

```
edit system login class name newclass permissions system
delete system login class name newclass permissions interface
set system login class name newclass permissions configure
```

2. In configuration mode, use the **load set** command.

```
user@host# load set newcfg2.txt
```

Loading a Configuration at a Specified Hierarchy Level

The **load merge**, **load replace**, and **load set** commands let you load the configuration at a specified hierarchy level by using the **relative** option.

To load a configuration at a hierarchy level:

1. In configuration mode, move to the hierarchy level at which you want to load a configuration.
2. At the hierarchy level, enter a **load merge**, **load replace**, or **load set** command. For example:

```
[edit system login class name newclass]
user@host# load merge mynewcfg.xml relative
```

Reverting to a Previous Configuration

You can revert to the active configuration and discard configuration changes not yet committed.

To revert to the full committed configuration:

- In configuration mode, at the [edit] hierarchy level enter the **rollback** command.

```
user@host> rollback
```

Cutting and Pasting Configuration Information at the CLI

You can also create a configuration by cutting and pasting existing portions of the configuration. You can copy configuration text from another source or from another part of the configuration to a new location. Use the cut and paste functions for your windowing system, such as X Windows.

Chapter 11

Managing SRC Components with the CLI

This chapter describes how you can start, stop, and view status of SRC components from the CLI. Topics include:

- Verifying Status of SRC Components on page 101
- Enabling SRC Components on page 102
- Disabling an SRC Component on page 102
- Restarting an SRC Component on page 103

Verifying Status of SRC Components

To view information about the status for SRC components:

```
user@host> show component
Installed Components
Name      Version
cli       Release: 7.0 Build: CLI.A.7.0.0.0171      Status: running
acp       Release: 7.0 Build: ACP.A.7.0.0.0174      disabled
jdb       Release: 7.0 Build: DIRXA.A.7.0.0.0176     running
editor    Release: 7.0 Build: EDITOR.A.7.0.0.0176   disabled
redir     Release: 7.0 Build: REDIR.A.7.0.0.0176    disabled
licSvr    Release: 7.0 Build: LICSVR.A.7.0.0.0179   stopped
nic       Release: 7.0 Build: GATEWAY.A.7.0.0.0170  disabled
sae       Release: 7.0 Build: SAE.A.7.0.0.0166     running
www       Release: 7.0 Build: UMC.A.7.0.0.0169     disabled
jps       Release: 7.0 Build: JPS.A.7.0.0.0172     disabled
agent     Release: 7.0 Build: SYSMAN.A.7.0.0.0174   disabled
webadm    Release: 7.0 Build: WEBADM.A.7.0.0.0173  disabled
```

Enabling SRC Components

On a C-series platform, you can enable all SRC components from the CLI. On a Solaris platform, you can enable the subset of components supported by the CLI.

You can enable the following SRC components from the CLI:

- Admission Control Plug-In (ACP)
- Service activation engine (SAE)
- C-Web
- Juniper Networks database
- Juniper Policy Server (JPS)
- Network Information Collector (NIC)
- Policy and Services Editor
- Redirect Server
- SNMP agent

To enable a component:

- In operational mode, use the `enable component` command. For example:

```
user@host> enable sae
```

Disabling an SRC Component

On a C-series platform, you can disable a running SRC component from the CLI. On a Solaris platform, you can disable a running component that is supported by the CLI.

To disable a component:

1. Verify which components are running by entering the `show component` command in operation mode:

```
user@host> show component
Installed Components
Name      Version                                     Status
cli       Release: 7.0 Build: CLI.A.7.0.0.0171     running
acp       Release: 7.0 Build: ACP.A.7.0.0.0174     disabled
jdb       Release: 7.0 Build: DIRXA.A.7.0.0.0176   running
editor    Release: 7.0 Build: EDITOR.A.7.0.0.0176  disabled
redir     Release: 7.0 Build: REDIR.A.7.0.0.0176   disabled
licSvr    Release: 7.0 Build: LICSVR.A.7.0.0.0179  stopped
nic       Release: 7.0 Build: GATEWAY.A.7.0.0.0170 disabled
sae       Release: 7.0 Build: SAE.A.7.0.0.0166     running
www       Release: 7.0 Build: UMC.A.7.0.0.0169     disabled
jps       Release: 7.0 Build: JPS.A.7.0.0.0172     disabled
```

agent	Release: 7.0 Build: SYSMAN.A.7.0.0.0174	disabled
webadm	Release: 7.0 Build: WEBADM.A.7.0.0.0173	disabled

2. Disable a component by using the `disable component` command in operational mode. For example:

```
user@host> disable sae
```

Restarting an SRC Component

If an SRC component is enabled, you can restart it if needed. You can use one of the following methods to restart a component:

- `gracefully`— Shuts down the component, then starts it again. (Default)
- `immediately`— Sends a signal kill (SIGKILL) signal to immediately stop the component, then starts it again.
- `soft`—Sends a signal hangup (SIGHUP) signal to the process for the component, then starts it again.

To restart an SRC component:

- In operational mode, use the `restart component` command.

```
user@host restart component component <gracefully | immediately | soft>
```

For example, to restart the SAE gracefully:

```
user@host restart component sae gracefully
```


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