

Using the CLI

MANUAL PAGE

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1 Using the CLI

This document describes the tasks and commands you use to navigate the command-line interface (CLI) to the SmartEdge router. It also describes how to display help for a command, recall previous command entries, and edit command entries.

This document applies to both the Ericsson SmartEdge® and SM family routers. However, the software that applies to the SM family of systems is a subset of the SmartEdge OS; some of the functionality described in this document may not apply to SM family routers.

For information specific to the SM family chassis, including line cards, refer to the SM family chassis documentation.

For specific information about the differences between the SmartEdge and SM family routers, refer to the Technical Product Description *SM Family of Systems* (part number 5/221 02-CRA 119 1170/1) in the **Product Overview** folder of this Customer Product Information library.

The CLI recognizes abbreviated forms of commands, so it only requires you to enter enough of any command or keyword to uniquely identify it.

The primary administrator interface to the SmartEdge router is the CLI. See *Start an Administrative Session* for detailed information.

Note: In the following descriptions, the term controller card applies to the Cross-Connect Route Processor (XCRP4), including the controller carrier card unless otherwise noted.

The term controller carrier card refers to the controller functions on the carrier card within the SmartEdge 100 chassis. The term I/O carrier card refers to the traffic card functions on the carrier card; these functions are compatible with the similar functions that are implemented on the traffic card that are supported on all other SmartEdge routers.

Note: In this section, the command syntax in the task table displays only the root command; for the complete command syntax, search for the command in the *Command List* to find the command reference documentation with the full description for the command.



1.1 Starting an Administrative Session

The primary administrator interface to the SmartEdge router is the CLI. You access the CLI from the console port or through a remote session (for example, Telnet or Secure Shell [SSH]) to monitor, administer, and troubleshoot the SmartEdge router. To access the SmartEdge router software and its CLI, use either of the following methods:

- Connect to the console port—Located on the controller card and labeled “Craft 2”; you can connect a terminal to this port, either directly or through a terminal server.

If the console port has been secured, you are prompted to log on; if the console port has not been secured, you initiate your session by simply pressing **Enter**.

- Connect to the Ethernet management port—Located on the controller card and labeled *ENET*; you can use this port to connect a terminal to the system over a LAN if remote access using Telnet or SSH has been enabled. SSH and Telnet are enabled on all contexts by default.

If the Ethernet management port has been configured, you are prompted to log on. For procedures to configure the Ethernet management port, see *Performing Basic Configuration Tasks*.

1.1.1 Telnet and SSH Sessions

If the management port has been configured, you can establish a Telnet or SSH session to the system. There are many tools that provide Telnet and SSH access to remote systems. These tools are beyond the scope of this document. In general, you must provide the system name (the hostname configured for the system) or IP address (the IP address configured for the system management port), as well as an administrator name and password.

Within the system, the maximum number of concurrent sessions permitted is either 32 or the sum of all sessions permitted for each context, whichever is smaller. If the maximum number of concurrent sessions permitted on the system is greater than the maximum number of permitted SSH sessions, the remaining sessions must be Telnet sessions. See the following configuration commands for more information: `aaa authentication administrator` and `ssh server full-drop`.

1.1.2 Console Sessions

The SmartEdge router provides default settings for local console sessions. You can customize these settings for the duration of the current session. To change the settings, see *Performing Basic System Tasks*. After you are logged on to the system, you have access to the CLI, based on the context to which you are logged on and the privilege level of your account.



1.1.3 Administrator Names and Passwords

To log on to the system using SSH:

- If you are logging on to a router for which the IP address and SSH service are configured in a context different from that of the administrator, enter the administrator name in the following format:

```
admin-name@ctx-name
```

Replace the *ctx-name* argument with the name of the context in which the user is configured for authentication.

- If you are logging on to a router for which the IP address and SSH service are configured in the same context as the administrator, enter the administrator name in the following format:

```
admin-name
```

To log on to the system using Telnet:

- If you are logging on to a router that has the administrator configured in a nonlocal context, enter the administrator name in the following format when prompted:

```
admin-name@ctx-name
```

- If you are logging on to a router that has the administrator configured in a local context, enter the administrator name in the following format when prompted:

```
admin-name@[ctx-name]
```

Note: In this situation, the *ctx-name* argument is optional.

Note: The separator character between the *admin-name* and the *ctx-name* arguments is configurable and can be any of %, -, @, _, \, #, and /. The default value is @, which is used throughout this document.

When you connect to the system either directly to the console or remotely to the management port, the password you enter is not echoed.

If you forget a password, you must delete the administrator account and create a new one; there is no way to modify the password for an administrator account.

If you forget all passwords on the system, you must perform the password discovery procedure described in *Recovering Passwords*.



1.2 Displaying Help for a Command

You can access the online Help for the CLI in the following ways:

- Use the `?` command when entering a command to display the options available at the current state of the command syntax.
- Use the `help` command to display how to use the `?` character to obtain help.

Table 1 lists these commands; enter either command in any mode.

Table 1 Access Online Help

Task	Root Command
Obtain help for the current command.	<i>counters (VPLS)</i>
Obtain help for using the <code>?</code> command.	<i>help</i>

Note: To enter the `?` character as part of a command, when it is not a request for online Help, enter the `Esc` character followed by the `?` character.

1.3 Navigating the CLI

To navigate the CLI, perform the tasks described in Table 2.

Table 2 Navigate the CLI

Task	Root Command
Return the privilege level for the current exec session to the initial privilege level configured for the current administrator account. When you create the account, the initial privilege level is specified. Enter this command in exec mode.	<i>disable</i>
Change the current privilege level for an exec session while in exec mode. You can specify a level up to the level specified for your account. Enter this command in exec mode.	<i>enable</i>
Return to exec mode while in any configuration mode.	<i>end</i>
Terminate the current CLI session while in exec mode. Enter this command in exec mode.	<i>show configuration</i>
Move up one level in the configuration mode hierarchy while in a configuration mode; return to exec mode while in global configuration mode. Enter this command in any configuration mode.	<i>exit</i>
Enter global configuration mode. Enter this command in exec mode.	<i>configure</i>



Table 2 Navigate the CLI

Task	Root Command
Displays the current configuration of the SmartEdge router or the contents of a previously saved configuration file on the local file system. Enter this command in any configuration mode.	<i>show configuration</i>
Display the command history for the current session. Enter this command in any configuration mode.	<i>show history</i>
Display outstanding transactions for other administrators or internal processes. Enter this command in any configuration mode.	<i>show transaction</i>
Enter a configuration mode from another configuration mode. ⁽¹⁾	

(1) Commands to enter various configuration mode. See the *Command List* or the specific document for the mode you plan to access.

1.4 Recalling Previous Command Entries

Table 3 lists two Emacs-style command keyboard sequences that allow you to step through previously entered commands.

Table 3 Recall Previously Entered Commands

Keyboard	Description
Ctrl + p or up arrow	Recalls previous command in the command history.
Ctrl + n or down arrow	Recalls next command in the command history.

1.5 Editing Command Entries

Table 4 lists additional Emacs-style command keyboard sequences.

Table 4 Additional Emacs-Style Keyboard Sequences

Keyboard	Description
Ctrl+f or right arrow	Moves cursor forward one character.
Ctrl+b or left arrow	Moves cursor backward one character.
Esc+f	Moves cursor forward one word.
Esc+b	Moves cursor backward one word.
Ctrl+a	Moves cursor to beginning of line.
Ctrl+e	Moves cursor to end of line.



Table 4 Additional Emacs-Style Keyboard Sequences

Keyboard	Description
Ctrl+k	Deletes to end of line.
Ctrl+u	Deletes to beginning of line.
Ctrl+d	Deletes character.
Esc+d	Deletes word.
Ctrl+c	Quits editing the current line.
Ctrl+l	Refreshes (redraws) the current line.
Ctrl+t	Transposes current character with previous.

For more information on Emacs key bindings, see the GNU Emacs documentation available at <http://www.gnu.org>.

1.6 Modifying Output of show Commands

All `show` commands accept a common set of keywords and arguments called modifiers that you can use to refine the command output. For example, you can specify the line number at which the output is to begin, output only lines containing certain patterns, and apply filtering criteria that pass only those lines you want to see.

This section describes the syntax of show command output modifiers and how to get help for the `grep` command in the CLI. It also provides examples of a show command displaying lines before and after a pattern, a show command displaying lines that include a pattern, and a show command displaying lines that match a grep pattern.

1.6.1 Syntax of show Command Output Modifiers

The syntax for the output modifiers is as follows:

```
[ | {begin [before lines] [after lines] pattern | count | exclude
pattern | include pattern | join-lines | {grep [options options] |
pattern} | save filename}]
```

Table 5 describes how each modifier affects the `show` command output.

Table 5 Modifier Syntax Descriptions

Modifier	Description
	Modifies the output with the keywords that follow; that is, pipes the output of the <code>show</code> command into keyword-specified functions that control which lines of the output display.



Table 5 Modifier Syntax Descriptions

Modifier	Description
begin pattern	Displays output beginning at the first occurrence of text matching the specified pattern. Surround groups of words that must be matched as a unit with double quotes. The pattern must be a regular expression. For more information on regular expressions, see the GNU documentation available at http://www.gnu.org .
before lines	Optional. Number of lines before the first line containing the matching pattern to display.
after lines	Optional. Number of lines after the first line containing the matching pattern to display.
count	Counts the number of lines generated by the show command but does not display the lines.
exclude pattern	Excludes all lines that contain text that matches the specified pattern from the display.
include pattern	Displays only the lines that contain text that matches the specified pattern.
join-lines	Optional. Temporarily arranges (concatenates) all lines of a record entry (circuit, route, subscriber, and so on.) from a multi-line output into a single-line output. This keyword is convenient when using exclude and grep keywords. Not all commands will return concatenated output when the join-lines keyword is issued. For output examples, see Section 1.6.6 on page 9.
grep pattern	Displays only the lines that contain text that matches the specified pattern. The pattern must be a regular expression. For more information on regular expressions, see Help for the grep Command in the CLI.
options options	Optional. UNIX grep command options.
save filename	Output saved to the specified file name.

1.6.2 Help for the **grep** Command in the CLI

You can get help for the **grep** (global regular expression print) command by entering **grep ?** or **grep --help** after a **show** command at the command line. For more information on the **grep** command options, see the GNU **grep** documentation available at <http://www.gnu.org>.

The following example displays using regular CLI help to understand the syntax of the **grep** command:



```
[local]Redback#show port counters | grep ?
WORD      Pattern to match
options   Grep options starting with a hyphen
[local]Redback#show port counters | grep 4/2 ?
|         Output Modifiers
<cr>
```

To get more detailed help, enter the `--help` keyword after adding the `grep` command to a show command as in the following example:

```
[local]Redback#show hardware card 4/1 | grep --help
usage: grep [-[ABC] num] [-EFGHILVZabcdhilnoqrsvwxz] [-D action]
[-d action] [-e pattern] [-f file]
```

Table 6 describes the `grep` command options:

Table 6 Grep Command Option Descriptions

Syntax Element	Description
<code>[ABCnum]</code>	Regular expression to match, starting with a hyphen. It can contain capital letters and numbers.
<code>-EFGHILVZabcdhilnoqrsvwxz</code>	Regular expression, starting with a hyphen, which can contain upper and lower case letters.
<code>-D action</code>	Grep option, indicating the action to take with devices. Actions could be <i>read</i> (the default) or <i>skip</i> .
<code>-d action</code>	Grep option indicating the action to take with directories. Actions could be <i>read</i> (the default), <i>skip</i> , or <i>recurse</i> (reads all files under each directory, recursively).
<code>-e pattern</code>	Pattern (regular expression) to match.
<code>-f file</code>	Grep command option followed by input file name.

1.6.3 Example of the show Command Displaying Lines Before and After a Pattern

The following example displays all lines from the output for the `show configuration` command (in any mode) beginning with the line before the first line that contains the word (pattern), `ospf`, and including the 6 lines after the first occurrence of the pattern:

```
[local]Redback#show configuration | begin before 1 after 6 ospf
router ospf 64001
  spf-timers 1 1
  area 0.0.0.0
    interface 10.100.11.10
  area 0.0.0.11
    interface 10.100.11.27
    interface 10.100.11.49
```



1.6.4 Example of the show Command Displaying Lines that Include a Pattern

The following example displays all lines in the current configuration file that contain the word (pattern), port:

```
[local]Redback#show configuration | include port
card ge-10-port 1
card ocl2e-4-port 2
card gigaether-4-port 3
port ethernet 1/1
port ethernet 1/2
port ethernet 1/3
port ethernet 1/4
port pos 2/1
port pos 2/2
port pos 2/3
port pos 2/4
```

1.6.5 Example of the show Command Displaying Lines that Match a grep Pattern

The following example takes the output of `show port counters` command with the `live` keyword and pipes it into the `grep` command. Next, the `grep` command filters what it receives and outputs only the lines that contain `atm`, `ethernet`, or `rate`. (The `-E` option interprets the pattern as an extended regular expression where the pipe character (`|`) is a logical OR operator.) The output of the `grep` command is received by the `exclude` keyword, which removes all lines containing the pattern `interval` and outputs the remainder to the display:

```
[local]Redback#show port counters live | grep option -E
'atm|ethernet|rate' | exclude interval
1/1 atm
send packet rate : 0.00 send bit rate : 0.00
recv packet rate : 0.00 recv bit rate : 0.00
1/2 atm
send packet rate : 0.00 send bit rate : 0.00
recv packet rate : 0.00 recv bit rate : 0.00
1/3 atm
send packet rate : 0.00 send bit rate : 0.00
recv packet rate : 0.00 recv bit rate : 0.00
1/4 atm
send packet rate : 0.00 send bit rate : 0.00
recv packet rate : 0.00 recv bit rate : 0.00
```

1.6.6 Example of the show Command Displaying Lines using the join-lines Keyword

The following examples display various ways the `join-lines` keyword can be used to output record entries.

The following output is that of the `show circuit count` command without the `join-lines` keyword.



```
[local]Redback#show circuit count
Circuit      Packets/Bytes Sent Packets/Bytes Received
1/1          0                   0
4/1:1        0                   0
4/1          0                   0
5/1          0                   0
5/3          0                   0
5/4          0                   0
6/1          0                   6
12/2         0                   360
14/1         0                   0
```

When the `exclude pattern` keyword is piped with the `join-lines` keyword, the record(s) that do not contain the pattern 2 is output.

```
[local]Redback#show circuit count | join-lines | exclude 2
Circuit      Packets/Bytes Sent Packets/Bytes Received
1/1          0                   0
4/1:1        0                   0
4/1          0                   0
5/1          0                   0
5/3          0                   0
5/4          0                   0
6/1          0                   6
12/2         0                   360
14/1         0                   0
```

When the `grep pattern` command is piped with the `join-lines` keyword, the record(s) containing the pattern `00:30:88:01:cc:00` is output.



```
[local]Redback#show circuit details | join-lines | grep 00:30:88:01:cc:00
Circuit: 6/1, internal id: 1/1/29, state: Up
-----
interface bound      : eth10@3
bind type            : interface
admin state          : 0
media type           : ethernet
mode type            : 0x1
mtu size             : 1500
ipv6 mtu size        : 1500
cct speed            : 100000
cct flags (attr)     : 0x0
L3 proto flags       : 0x0
L3 v4 proto          : DISABLED
L3 v4 proto          : DOWN
slot mask            : 0x0
ppa cct clear        : FALSE
if flags             : 0x0
profile id           : 0
nd profile           : 0
lg_id                : 0
internal handle      : 2/10:1023:63/1/1/29

hardware address     : 00:30:88:01:cc:00
encap type           : ethernet
port type            : ethernet
cfg mtu size         : 1500
ipv6 cfg mtu size   : 1500
cct rx speed         : 0
cct flags2 (attr)    : 0x0
L3 proto valid       : NO
L3 v6 proto          : DISABLED
L3 v6 proto          : DOWN
parent slot mask     : 0x0
aaa index             : 0x0
version              : 270
h node id            : 0
spg_id               : 0
```

1.7 Context-Specific show Commands

Some **show** commands are context-specific. For these commands, enter the **context** *ctx-name* command before entering the **show** command.



2 Operations Commands

Operations commands are characterized as follows:

- Many operations commands are nonintrusive; they do not impact traffic flowing into and out of the SmartEdge router; for example, monitoring commands.
- Not all operations commands are applicable for all features; for example, some features support monitoring commands only; administration and troubleshooting commands are not appropriate.
- Most operations commands are run in exec mode; other administration commands, such as those to manage Automatic Protection Switching (APS) groups or place a traffic or controller card in an out-of-service state, must be entered in a configuration mode.
- Some operations commands require that you have configured a related feature to allow that type of function.

For more information about specific commands, see the *Command List*.

Operations commands are described in the following sections.

2.1 Monitoring Commands

Monitoring commands allow you to view the state of one or more feature elements. Table 7 lists the types of monitoring commands and examples of each type.

Table 7 Types of Monitoring Commands

Type of Command	Example	Function
Monitor a system component	<code>show chassis</code> <code>show hardware</code>	Displays status of cards installed in the chassis. Displays detailed card hardware information.
	<code>show port perf-monitor</code>	Displays configuration and performance statistics for one or more ports.
	<code>show circuit counters</code>	Displays statistics for one or more circuits.



Table 7 Types of Monitoring Commands

Type of Command	Example	Function
Monitor the status of a process and provide continuous updates.	<code>monitor process</code>	Enter this command in exec mode.
Monitor files in memory	<code>directory</code> <code>pwd</code>	Displays a list of files in the specified directory. Enter this command in exec mode. Displays the current working directory. Enter this command in exec mode.
Monitor a process	<code>show process</code>	Displays current status of a process. Enter this command in all modes.
Display a software release or version	<code>show release</code> <code>show version</code>	Displays release and installation information. Enter this command in all modes. Displays the version of the currently running OS. Enter this command in all modes.
Monitor an administrator session	<code>show privilege</code> <code>show public-key</code>	Displays the current privilege level for the current session.. Displays the public keys for an administrator. Enter these commands in all modes.
System monitoring	<code>show clock-source</code>	Displays clock source information. Enter this command in all modes.
	<code>show configuration</code>	Displays the configuration commands for a feature. Enter this command in all modes.
	<code>show memory</code>	Displays memory statistics. Enter this command in all modes.



Table 7 Types of Monitoring Commands

Type of Command	Example	Function
	<code>show redundancy</code>	Displays state of the standby controller card. Enter this command in all modes.
	<code>show system alarm</code>	Displays system alarms at one or more levels. Enter this command in all modes.

2.2 Administration Commands

Administration commands allow you to perform routine maintenance. Table 8 lists the types of administration commands that you enter in exec mode and examples of each type.

Table 8 Types of Administration Commands

Type of Command	Example	Function
Manage a device	<code>mount /md</code> <code>shutdown</code>	Mounts a mass-storage device. Disables a port (stop operations on it).
Manage a feature	<code>clear circuit counters</code>	Clears circuit counters for one or more circuits. Enter this command in exec mode.
Manage Files	<code>delete</code> <code>mkdir</code>	Deletes a file. Enter this command in exec mode. Create a directory. Enter this command in exec mode.
Manage process es	<code>process restart es</code>	Restarts a process. Enter this command in exec mode.
Upgrade software	<code>release upgrade</code>	Installs another release. Enter this command in exec mode.



Table 8 Types of Administration Commands

Type of Command	Example	Function
Manage administrator sessions	<code>enable</code> <code>ssh</code>	Modifies the privilege level for the current session. Enter this command in exec mode. Establishes an SSH session from the SmartEdge router to a host. Enter this command in exec mode.
Manage system	<code>bulkstats force transfer</code> <code>clock set</code>	Immediately transfers the bulkstats data file to the configured receiver. Enter this command in exec mode. Sets the system time. Enter this command in exec mode.

2.3 Troubleshooting, Performance Management, and Problem Recovery Commands

Troubleshooting commands allow you to view information or determine the low-level state of a feature element. Table 9 lists the types of troubleshooting and problem recovery commands, which are run in various modes, and examples of each type.

For more information about troubleshooting and data collection, see the *General Troubleshooting Guide*, *BRAS Troubleshooting Guide*, *Debugging*, and *Data Collection Guideline for the SmartEdge Router*.

Table 9 Types of Troubleshooting and Problem Recovery Commands

Type of Command	Example	Function
Troubleshoot a feature	<code>debug snmp</code>	Initiates internal monitoring of a feature and the generation of messages, which can be stored in the system log buffer or displayed in real time. Enter this command in exec mode.



Table 9 Types of Troubleshooting and Problem Recovery Commands

Type of Command	Example	Function
Collect system-wide data	<code>show tech-support</code>	Collects system-wide information (this macro has a basic form for general troubleshooting which is required to be saved and sent to customer support when logging a customer support request (CSR). It also has optional keywords for collecting data about more focussed problems such as ASE cards and many SmartEdge OS processes. Enter this command in exec mode.
troubleshoot system or recover from a problem	<code>reload</code> <code>save seos-core</code>	Reloads the operating system. Enter this command in exec mode. Saves a core dump of the operating system to a pair of files on the mass-storage device /md partition. Enter this command in exec mode.
	<code>ping</code>	Tests IP connectivity to a host. Enter this command in exec mode.
	<code>format microdrive⁽¹⁾</code>	Reformats the mass-storage device.
	<code>diag on-demand</code>	Initiates on-demand diagnostics for a traffic card. Enter <code>format microdrive</code> and the <code>diag on-demand</code> commands in exec mode.
Troubleshoot process or recover from a problem	<code>process set</code>	Sets process management parameters for a specified process. Enter this command in exec mode.



Table 9 Types of Troubleshooting and Problem Recovery Commands

Type of Command	Example	Function
	<code>process coredump</code>	Initiates a core dump of a process, and saves it in a crash file. Enter this command in exec mode.
	<code>process restart</code>	Restarts a process that has stopped. Enter this command in exec mode.

(1) This command is supported only on the SM family chassis 400, 600, 800, 1200, and 1200H routers. Use the format `media-device` command (in exec mode) on the SM family chassis 100 router.

For more information about these commands, see *Command List*.

2.3.1 Using Debugging Commands

Use debugging commands to enable the generation of messages that will help in troubleshooting problems.

To store or display debug messages, configure your system as follows:

1. To store messages in the system log buffer, use the `logging debug` command (in global configuration mode).
2. To display the messages, use the `show log` command (in exec mode).
3. To display messages in real time when connected through the console port, enter the `logging console` command (in context configuration mode).
4. To display them when connected through a Telnet or Secure Shell (SSH) session, use the `terminal monitor` command (in exec mode).

Note: For more information about `logging` commands and the `terminal monitor` command, see *Command List*.

Caution!

Risk of performance loss. Enabling the generation of debug messages can severely affect system performance. To reduce the risk, exercise caution when enabling the generation of any debug messages on a production system.
