



Command-Line Interfaces

This chapter describes the command-line interfaces (CLI) available on the Catalyst 6500 series switches and contains these sections:

- [Switch CLI, page 1-1](#)
- [ROM Monitor CLI, page 1-12](#)

For information regarding the ATM CLI and commands, refer to the *ATM Software Configuration Guide and Command Reference—Catalyst 5000 Family and 6000 Family Switches* publication.

For information regarding the IDSM CLI and commands, refer to the *Catalyst 6500 Series Switch Intrusion Detection System Module Installation and Configuration Note* publication.

For definitions of terms and acronyms listed in this publication, see [Appendix A, “Acronyms.”](#)

Switch CLI

Catalyst 6500 series switches are multimodule systems. Commands you enter from the CLI can apply to the entire system or to a specific module, port, or VLAN.

You can configure and maintain the Catalyst 6500 series switches by entering commands from the switch CLI. The CLI is a basic command-line interpreter similar to the UNIX C shell. Using the CLI **session** command, you can access the router configuration software and perform tasks such as history substitution and alias creation.



Note

The Catalyst 6500 series consists of the Catalyst 6500 and 6000 series switches. The Catalyst 6500 series consists of the Catalyst 6006, 6009, 6506, 6509, 6509-NEB, and 6513 switches. Throughout this publication and all Catalyst 6500 series switch documents, the phrase *Catalyst 6500 series switches* refers to these switches, unless otherwise noted.

Accessing the Switch CLI

You can access the switch CLI from a console terminal connected to an EIA/TIA-232 port or through a Telnet session. The CLI allows fixed baud rates. Telnet sessions disconnect automatically after remaining idle for a user-defined time period.

**Note**

EIA/TIA-232 was known as RS-232 before its acceptance as a standard by the Electronic Industries Alliance and Telecommunications Industry Association.

Accessing the Switch CLI Through the Console Port (EIA/TIA-232)

To access the switch through the console (EIA/TIA-232) port, perform these steps:

	Task	Command
Step 1	From the Cisco Systems Console prompt, press Return .	
Step 2	At the prompt, enter the system password. The Console> prompt appears, indicating that you have accessed the CLI in normal mode.	<i><password></i>
Step 3	Enter the necessary commands to complete your desired tasks.	Appropriate commands
Step 4	When finished, exit the session.	quit

After connecting through the console port, you see this display:

```
Cisco Systems Console
Enter password:
Console>
Console>
```

Accessing the Switch CLI Through Telnet

To access the switch through a Telnet session, you must first set the IP address for the switch. You can open multiple sessions to the switch through Telnet.

To access the switch from a remote host with Telnet, perform these steps:

	Task	Command
Step 1	From the remote host, enter the telnet command and the name or IP address of the switch you want to access.	telnet <i>hostname ip_addr</i>
Step 2	At the prompt, enter the password for the CLI. If no password has been configured, press Return .	<i><password></i>
Step 3	Enter the necessary commands to complete your desired tasks.	Appropriate commands
Step 4	When finished, exit the Telnet session.	quit

After connecting through a Telnet session, you see this display:

```
host% telnet cat6000-1.cisco.com
Trying 172.16.44.30 ...
Connected to cat6000-1.
```

Operating the Switch CLI

This section describes command modes and functions that allow you to operate the switch CLI.

Accessing the Command Modes

The CLI has two modes of operation: normal and privileged. Both are password-protected. Use normal-mode commands for everyday system monitoring. Use privileged commands for system configuration and basic troubleshooting.

After you log in, the system enters normal mode, which gives you access to normal-mode commands only. You can enter privileged mode by entering the **enable** command followed by the enable password. Privileged mode is indicated by the word “enable” in the system prompt. To return to normal mode, enter the **disable** command at the prompt.

The following example shows how to enter privileged mode:

```
Console> enable
Enter password: <password>
Console> (enable)
```

Using Command-Line Processing

Switch commands are not case sensitive. You can abbreviate commands and parameters as long as they contain enough letters to be different from any other currently available commands or parameters. You can scroll through the last 20 commands stored in the history buffer and enter or edit the command at the prompt. (See [Table 1-1](#).)

Table 1-1 Command-Line Processing Keystroke

Keystroke	Function
Ctrl-A	Jumps to the first character of the command line.
Ctrl-B or the left arrow key	Moves the cursor back one character.
Ctrl-C	Escapes and terminates prompts and tasks.
Ctrl-D	Deletes the character at the cursor.
Ctrl-E	Jumps to the end of the current command line.
Ctrl-F or the right arrow key ¹	Moves the cursor forward one character.
Ctrl-K	Deletes from the cursor to the end of the command line.
Ctrl-L; Ctrl-R	Repeats current command line on a new line.
Ctrl-N or the down arrow key ¹	Enters next command line in the history buffer.
Ctrl-P or the up arrow key ¹	Enters previous command line in the history buffer.
Ctrl-U; Ctrl-X	Deletes from the cursor to the beginning of the command line.
Ctrl-W	Deletes last word typed.

Table 1-1 Command-Line Processing Keystroke (continued)

Keystroke	Function
Esc B	Moves the cursor back one word.
Esc D	Deletes from the cursor to the end of the word.
Esc F	Moves the cursor forward one word.
Delete key or Backspace key	Erases a mistake when entering a command; reenter the command after using this key.

1. The arrow keys function only on ANSI-compatible terminals such as VT100s.

Using the Command-Line Editing Features

Catalyst 6500 series switch software includes an enhanced editing mode that provides a set of editing key functions similar to those of the Emacs editor. You can enter commands in uppercase, lowercase, or a mix of both. Only passwords are case sensitive. You can abbreviate commands and keywords to the number of characters that allow a unique abbreviation.

For example, you can abbreviate the **show** command to **sh**. After entering the command at the system prompt, press **Return** to execute the command.

Moving Around on the Command Line

Perform one of these tasks to move the cursor around on the command line for corrections or changes:

Task	Keystrokes
Move the cursor back one character.	Press Ctrl-B or press the left arrow key ¹ .
Move the cursor forward one character.	Press Ctrl-F or press the right arrow key ¹ .
Move the cursor to the beginning of the command line.	Press Ctrl-A .
Move the cursor to the end of the command line.	Press Ctrl-E .
Move the cursor back one word.	Press Esc B .
Move the cursor forward one word.	Press Esc F .

1. The arrow keys function only on ANSI-compatible terminals such as VT100s.

Pasting in Buffer Entries

The system provides a buffer that contains the last ten items you deleted. You can recall these items and paste them in the command line by performing this task:

Task	Keystrokes
Recall the most recent entry in the buffer.	Press Ctrl-Y .
Recall the next buffer entry.	Press Esc Y .

The buffer contains only the last ten items you have deleted or cut. If you press **Esc Y** more than ten times, you cycle back to the first buffer entry.

Editing Command Lines That Wrap

The new editing command set provides a wraparound feature for commands that extend beyond a single line on the screen. When the cursor reaches the right margin, the command line shifts ten spaces to the left. You cannot see the first ten characters of the line, but you can scroll back and check the syntax at the beginning of the command. To scroll back, perform this task:

Task	Keystrokes
Return to the beginning of a command line to verify that you have entered a lengthy command correctly.	Press Ctrl-B or the left arrow key repeatedly until you scroll back to the beginning of the command entry, or press Ctrl-A to return directly to the beginning of the line ¹ .

1. The arrow keys function only on ANSI-compatible terminals such as VT100s.

Use line wrapping with the command history feature to recall and modify previous complex command entries. See the [“Using History Substitution” section on page 1-7](#) for information about recalling previous command entries.

The system assumes your terminal screen is 80 columns wide. If your screen has a different width, enter the **terminal width** command to tell the router the correct width of your screen.

Deleting Entries

Perform one of these tasks to delete command entries if you make a mistake or change your mind:

Task	Keystrokes
Erase the character to the left of the cursor.	Press the Delete or Backspace key.
Delete the character at the cursor.	Press Ctrl-D .
Delete from the cursor to the end of the command line.	Press Ctrl-K .
Delete from the cursor to the beginning of the command line.	Press Ctrl-U or Ctrl-X .
Delete the word to the left of the cursor.	Press Ctrl-W .
Delete from the cursor to the end of the word.	Press Esc D .

Scrolling Down a Line or a Screen

When you use the help facility to list the commands in a particular mode, the list is often longer than the terminal screen can display. In such cases, a ---More--- prompt is displayed at the bottom of the screen. To view the next line or screen, perform these tasks:

Task	Keystrokes
Scroll down one line.	Press the Return key.
Scroll down one screen.	Press the Spacebar .

**Note**

The ---More--- prompt is used for any output that has more lines than can be displayed on the terminal screen, including **show** command output.

Scrolling to Specified Text

If you enter */text* and press the **Return** key at the --More-- prompt, the display starts two lines above the line containing the *text* string. If the text string is not found, “Pattern Not Found” is displayed. You can also enter “**n**” at the --More-- prompt to search for the last entered *text* string. You can use this search method on all **show** commands that use the more buffer to display screen by screen output. The following is a list of **show** commands that do not use the more buffer and do not support this feature:

- **show cam**
- **show mls**
- **show tech-support**

Redisplaying the Current Command Line

If you enter a command and the system suddenly sends a message to your screen, you can recall your current command line entry. To do so, perform this task:

Task	Keystrokes
Redisplay the current command line.	Press Ctrl-L or Ctrl-R .

Transposing Mistyped Characters

If you mistype a command entry, you can transpose the mistyped characters by performing this task:

Task	Keystrokes
Transpose the character to the left of the cursor with the character located at the cursor.	Press Ctrl-T .

Controlling Capitalization

You can change words to uppercase or lowercase, or capitalize a set of letters, with simple keystroke sequences:

Task	Keystrokes
Capitalize at the cursor.	Press Esc C .
Change the word at the cursor to lowercase.	Press Esc L .
Capitalize letters from the cursor to the end of the word.	Press Esc U .

Designating a Keystroke as a Command Entry

You can use a particular keystroke as an executable command. Perform this task:

Task	Keystrokes
Insert a code to indicate to the system that the keystroke immediately following should be treated as a command entry, <i>not</i> an editing key.	Press Ctrl-V or Esc Q .

Using Command Aliases

Like regular commands, aliases are not case sensitive. However, unlike regular commands, some aliases cannot be abbreviated. See [Table 1-2](#) for a list of switch CLI aliases that cannot be abbreviated.

Table 1-2 Switch CLI Command Aliases

Alias	Command
batch	configure
di	show
earl	cam
exit	quit
logout	quit

Using History Substitution

Commands that you enter during each terminal session are stored in a history buffer, which stores the last 20 commands you entered during a terminal session. History substitution allows you to access these commands without retyping them by using special abbreviated commands. (See [Table 1-3](#).)

Table 1-3 History Substitution Commands

Command	Function
To repeat recent commands:	
!!	Repeat the most recent command.
!-nn	Repeat the <i>nn</i> th most recent command.
!n	Repeat command <i>n</i> .
!aaa	Repeat the command beginning with string <i>aaa</i> .

Table 1-3 History Substitution Commands (continued)

Command	Function
! ?aaa	Repeat the command containing the string aaa.
To modify and repeat the most recent command:	
^aaa^bbb	Replace string aaa with string bbb in the most recent command.
To add a string to the end of a previous command and repeat it:	
!!aaa	Add string aaa to the end of the most recent command.
!n aaa	Add string aaa to the end of command n.
!aaa bbb	Add string bbb to the end of the command beginning with string aaa.
!?aaa bbb	Add string bbb to the end of the command containing string aaa.

Accessing Command Help

To see a list of top-level commands and command categories, type **help** in normal or privileged mode. Context-sensitive help (usage and syntax information) for individual commands can be seen by appending **help** to any specific command. If you enter a command using the wrong number of arguments or inappropriate arguments, usage and syntax information for that command is displayed. Additionally, appending **help** to a command category displays a list of commands in that category.

Top-Level Commands and Command Categories

In normal mode, use the **help** command to display a list of top-level commands and command categories, as follows:

```

Console> help
Commands:
-----
cd                Set default flash device
dir              Show list of files on flash device
enable          Enable privileged mode
help            Show this help screen
history         Show contents of history substitution buffer
l2trace         Layer2 trace between hosts
ping            Send echo packets to hosts
pwd             Show default flash device
quit           Exit from the Admin session
session        Tunnel to ATM or Router module
set            Set commands, use 'set help' for more info
show          Show commands, use 'show help' for more info
traceroute    Trace the route to a host
verify        Verify checksum of file on flash device
wait          Wait for x seconds
whichboot     Which file booted
Console>

```

In privileged mode, enter the **help** command to display a list of top-level commands and command categories, as follows:

```

Console> (enable) help
Commands:
-----

```

cd	Set default flash device
clear	Clear, use 'clear help' for more info
commit	Commit ACL to hardware and NVRAM
configure	Configure system from network
copy	Copy files between TFTP/RCP/module/flash devices
delete	Delete a file on flash device
dir	Show list of files on flash device
disable	Disable privileged mode
disconnect	Disconnect user session
download	Download code to a processor
enable	Enable privileged mode
format	Format a flash device
help	Show this help screen
history	Show contents of history substitution buffer
l2trace	Layer2 trace between hosts
ping	Send echo packets to hosts
pwd	Show default flash device
quit	Exit from the Admin session
reconfirm	Reconfirm VMPS
reload	Force software reload to linecard
reset	Reset system or module
rollback	Rollback changes made to ACL in editbuffer
session	Tunnel to ATM or Router module
set	Set commands, use 'set help' for more info
show	Show commands, use 'show help' for more info
slip	Attach/detach Serial Line IP interface
squeeze	Reclaim space used by deleted files
switch	Switch to standby <clock supervisor>
telnet	Telnet to a remote host
test	Test command, use 'test help' for more info
undelete	Undelete a file on flash device
upload	Upload code from a processor
verify	Verify checksum of file on flash device
wait	Wait for x seconds
whichboot	Which file booted
write	Write system configuration to terminal/network
Console> (enable)	

Command Categories

On some commands (such as **clear**, **set**, and **show**), typing **help** after the command provides a list of commands in that category. For example, this display shows a partial list of commands for the **clear** category:

```
Console> (enable) clear help
```

```
Clear commands:
```

```
-----
clear alias          Clear aliases of commands
clear arp            Clear ARP table entries
clear banner         Clear Message Of The Day banner
clear boot           Clear booting environment variable
clear cam            Clear CAM table entries
clear channel        Clear PAgP statistical information
.
.
.
```

Context-Sensitive Help

Usage and syntax information for individual commands can be seen by appending **help** to any specific command. For example, the following display shows usage and syntax information for the **set length** command:

```
Console> set length help
Usage: set length <screenlength> [default]
      (screenlength = 5..512, 0 to disable 'more' feature)
Console>
```

Designating Modules, Ports, and VLANs

The Catalyst 6500 series modules (module slots), ports, and VLANs are numbered starting with 1. The supervisor engine module is module 1, residing in the top slot. On each module, port 1 is the leftmost port. To reference a specific port on a specific module, the command syntax is *mod/port*. For example, **3/1** denotes module 3, port 1. In some commands, such as **set trunk**, **set cam**, and **set vlan**, you can enter lists of ports and VLANs.

You can designate ports by entering the module and port number pairs, separated by commas. To specify a range of ports, use a dash (-) between the module number and port number pairs. Dashes take precedence over commas. The following examples show several ways of designating ports:

Example 1: **2/1,2/3** denotes module 2, port 1 and module 2, port 3.

Example 2: **2/1-12** denotes module 2, ports 1 through 12.

Example 3: **2/1-2/12** also denotes module 2, ports 1 through 12.

Each VLAN is designated by a single number. You can specify lists of VLANs the same way you do for ports. Individual VLANs are separated by commas (,); ranges are separated by dashes (-). In the following example, VLANs 1 through 10 and VLAN 1000 are specified:

```
1-10,1000
```

Designating MAC Addresses, IP and IPX Addresses, and IP Aliases

Some commands require a MAC address that you must designate in a standard format. The MAC address format must be six hexadecimal numbers separated by hyphens, as shown in this example:

```
00-00-0c-24-d2-fe
```

Some commands require an IP address. The IP address format is 32 bits, written as four octets separated by periods (dotted decimal format). IP addresses are made up of a network section, an optional subnet section, and a host section, as shown in this example:

```
126.2.54.1
```

If DNS is configured properly on the switch, you can use IP host names instead of IP addresses. For information on configuring DNS, refer to the *Catalyst 6500 Series Switch Software Configuration Guide*.

If the IP alias table is configured, you can use IP aliases in place of the dotted decimal IP address. This is true for most commands that use an IP address, except commands that define the IP address or IP alias.

When entering the IPX address syntax, use the following format:

- IPX net address—1..FFFFFFFE
- IPX node address—x.x.x where x is 0..FFFF
- IPX address—ipx_net.ipx_node (for example 3.0034.1245.AB45, A43.0000.0000.0001)

Using Command Completion Features

The command completion features consist of these functions:

- [Using Command Self-Repeat](#)
- [Using Keyword Lookup](#)
- [Using Partial Keyword Lookup](#)
- [Using Command Completion](#)

Using Command Self-Repeat

Use the command self-repeat function to display matches to all possible keywords if a string represents a unique match. If a unique match is not found, the longest matching string is provided. To display the matches, enter a space after the last parameter and enter ?. Once the matches are displayed, the system comes back to the prompt and displays the last command without the ?. In the following example, notice how the system repeats the command entered without the ?:

```
Console> (enable) set mls nde
disable          Disable multilayer switching data export filter
enable          Enable multilayer switching data export filter
engineer        Engineer setting of the export filter
flow            Setting multilayer switching export filter
<collector_ip> IP address
Console> (enable) set mls nde
```

Using Keyword Lookup

Use the keyword-lookup function to display a list of valid keywords and arguments for a command. To display the matches, enter a space after the last parameter and enter ?. For example, five parameters are used by the **set mls** command. To see these parameters, enter **set mls ?** at the privileged prompt. In the following example, notice how the system repeats the command entered without the ?:

```
Console> (enable) set mls ?
agingtime       Set agingtime for MLS cache entry
exclude         Set MLS excluded protocol ports
flow            Set minimum flow mask
nde             Configure Netflow Data Export
statistics      Add protocols to protocol statistics list
Console> (enable) set mls
```

Using Partial Keyword Lookup

Use the partial keyword-lookup function to display a list of commands that begin with a specific set of characters. To display the matches, enter ? immediately after the last parameter. For example, enter **co?** at the privileged prompt to display a list of commands that start with **co**. The system displays all commands that begin with **co** and repeats the command entered without the ?:

```
Console> (enable) co?
commit         Commit ACL to hardware and NVRAM
configure      Configure system from network
copy           Copy files between TFTP/RCP/module/flash devices
Console> (enable) CO
```

Using Command Completion

Use the command completion function to complete a command or keyword. When you enter a unique partial character string and press **Tab**, the system completes the command or keyword on the command line. For example, if you enter **co** at the privileged prompt and press **Tab**, the system completes the command as **configure** because it is the only command that matches the criteria.

If no completion can be done, no action is carried out and the system returns to the prompt and the last command. The cursor appears immediately after the keyword, allowing you to enter additional information.

ROM Monitor CLI

The ROM monitor is a ROM-based program that executes upon platform startup, reset, or when a fatal exception occurs.

Accessing the ROM Monitor CLI

The system enters ROM-monitor mode if the switch does not find a valid system image, if the NVRAM configuration is corrupted, or if the configuration register is set to enter ROM-monitor mode. From the ROM-monitor mode, you can load a system image manually from Flash memory, from a network server file, or from bootflash. You can also enter ROM-monitor mode by restarting the switch and pressing the **Break** key during the first 60 seconds of startup.



Note

Break is always enabled for 60 seconds after rebooting the system, regardless of whether Break is configured to be off by configuration register settings.

To connect through a terminal server, escape to the Telnet prompt, and enter the **send break** command to break back to the ROM-monitor mode.

Operating the ROM Monitor CLI

The ROM monitor commands are used to load and copy system images, microcode images, and configuration files. System images contain the system software. Microcode images contain microcode to be downloaded to various hardware devices. Configuration files contain commands to customize Catalyst 6500 series software.

The manual **boot** command has the following syntax:



Note

Enter the **copy file-id {tftp | flash | file-id}** command to obtain an image from the network.

- **boot**—Boot from ROM
- **boot [-xv] [device:][imagename]**—Boot from the local device. If you do not specify an image name, the system defaults to the first valid file in the device. The image name is case sensitive.

Once you are in ROM-monitor mode, the prompt changes to rommon 1>. While you are in ROM-monitor mode, each time you enter a command, the number in the prompt increments by one.

