CHAPTER 2

Command-Line Interfaces

This chapter describes the CLIs you use to configure the Catalyst 4500 series switch. This chapter includes the following major sections:

- Accessing the Switch CLI, page 2-2
- Performing Command-Line Processing, page 2-3
- Performing History Substitution, page 2-4
- About Cisco IOS Command Modes, page 2-4
- Getting a List of Commands and Syntax, page 2-5
- ROMMON Command-Line Interface, page 2-7
- Archiving Crashfiles Information, page 2-8

Note For complete syntax and usage information for the switch commands used in this chapter, look at the *Cisco Catalyst 4500 Series Switch Command Reference* and related publications at this location:

http://www.cisco.com/en/US/products/hw/switches/ps4324/index.html

If the command is not found in the Catalyst 4500 Command Reference, it is located in the larger Cisco IOS library. Refer to the *Cisco IOS Command Reference* and related publications at this location:

http://www.cisco.com/en/US/products/ps6350/index.html

The following command changes only apply to the Supervisor Engines 6-E and 6L-E:

- The **verify** and **squeeze** commands are not supported in the FAT file system.
- The **rename** command is supported in the FAT file system.

  For Supervisor Engine 6-E and Supervisor Engine 6L-E the **rename** command has been added for bootflash and slot0. For all other supervisor engines, the **rename** command is is supported for NVRAM devices only.
- The **fsck** command is supported for the slot0 device. It is not supported in the file systems on supervisor engines other than Supervisor Engine 6-E and 6L-E.

Accessing the Switch CLI

The following sections describe how to access the switch CLI:

- Accessing the CLI Using the EIA/TIA-232 Console Interface, page 2-2
- Accessing the CLI Through Telnet, page 2-2

Accessing the CLI Using the EIA/TIA-232 Console Interface

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

Perform the initial switch configuration over a connection to the EIA/TIA-232 console interface. Refer to the *Catalyst 4500 Series Switch Module Installation Guide* for console interface cable connection procedures.

To access the switch through the console interface, perform this task:

	Command	Purpose
Step 1	`Switch> enable`	From the user EXEC prompt (>), enter **enable** to change to enable mode (also known as privileged mode or privileged EXEC mode).

Step 2	`Password: password`
	
	`Switch#`
		At the password prompt, enter the system password. The prompt (#) appears, indicating that you have accessed the CLI in enabled mode.

Step 3	`Switch# quit`	When you are finished executing the task command, exit the session.

After accessing the switch through the EIA/TIA-232 interface, you see this display:

```
Press Return for Console prompt

Switch> enable
Password:< >
Switch#
```

Accessing the CLI Through Telnet

Note Before you make a Telnet connection to the switch, you must set the IP address for the switch. See the "Configuring Physical Layer 3 Interfaces" section on page 30-12.

The switch supports up to eight simultaneous Telnet sessions. Telnet sessions disconnect automatically after remaining idle for the period specified by the **exec-timeout** command.

To make a Telnet connection to the switch, perform this task:

	Command	Purpose
Step 1	**telnet** {*hostname* | *ip_addr*}	From the remote host, enter the **telnet** command and the name or IP address of the switch you want to access.
Step 2	Password: *password* Switch#	At the prompt, enter the password for the CLI. If no password has been configured, press **Return**.
Step 3		Enter the necessary commands to complete your desired tasks.
Step 4	Switch# **quit**	When finished, exit the Telnet session.

This example shows how to open a Telnet session to the switch:

```
unix_host% telnet Switch_1
Trying 172.20.52.40...
Connected to 172.20.52.40.
Escape character is '^]'.
User Access Verification
Password:< >
Switch_1> enable
Password:
Switch_1#
```

Performing Command-Line Processing

Switch commands are not case sensitive. You can abbreviate commands and parameters if the abbreviations 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 a command at the prompt. Table 2-1 lists the keyboard shortcuts for entering and editing switch commands.

Table 2-1 Keyboard Shortcuts

Keystrokes	Result
Press **Ctrl-B** or press the **Left Arrow** key[1]	Moves the cursor back one character.
Press **Ctrl-F** or press the **Right Arrow** key[1]	Moves the cursor forward one character.
Press **Ctrl-A**	Moves the cursor to the beginning of the command line.
Press **Ctrl-E**	Moves the cursor to the end of the command line.
Press **Esc-B**	Moves the cursor back one word.
Press **Esc-F**	Moves the cursor forward one word.

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

Performing History Substitution

The history buffer stores the last 20 command lines you entered. History substitution enables you to access these command lines without retyping them. Table 2-2 lists the history substitution commands.

Table 2-2 History Substitution Commands

Command	Purpose
Ctrl-P or the **Up Arrow** key[1]	Recalls commands in the history buffer, beginning with the most recent command. Repeat the key sequence to recall older commands successively.
Ctrl-N or the **Down Arrow** key[1]	Returns to more recent commands in the history buffer after commands have been recalled with **Ctrl-P** or the **Up Arrow** key. Repeat the key sequence to recall more recent commands.
`Switch# show history`	Lists the last several commands you have entered in EXEC mode.

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

About Cisco IOS Command Modes

Note For complete information about Cisco IOS command modes, refer to the *Cisco IOS Configuration Fundamentals Configuration Guide* and the *Cisco IOS Configuration Fundamentals Command Reference* at the following URLs:

http://www.cisco.com/en/US/docs/ios/12_2/configfun/configuration/guide/ffun_c.html

http://www.cisco.com/en/US/docs/ios/fundamentals/command/reference/cf_book.html

The Cisco IOS user interface has many different modes: user EXEC, privileged EXEC (enable), global configuration, interface, subinterface, and protocol-specific. The commands available to you depend on which mode you are in. To get a list of the commands in a given mode, enter a question mark (?) at the system prompt. See the "Getting a List of Commands and Syntax" section on page 2-5 for more information.

When you start a session on the switch, you begin in user mode, also called user EXEC mode. Only a small subset of commands are available in EXEC mode. To have access to all commands, you must enter privileged EXEC mode, also called enable mode. To access the privileged EXEC mode, you must enter a password. When you are in the privileged EXEC mode, you can enter any EXEC command or access global configuration mode. Most EXEC commands are one-time commands, such as **show** commands, which display the current configuration status, and **clear** commands, which reset counters or interfaces. The EXEC commands are not saved when the switch is rebooted.

The configuration modes allow you to make changes to the running configuration. If you save the configuration, these commands are stored when you reboot the switch. You must start in global configuration mode. From global configuration mode, you can enter interface configuration mode, subinterface configuration mode, and a variety of protocol-specific modes.

You use a separate mode called ROMMON when the switch cannot boot up properly. For example, the switch might enter ROMMON mode if it does not find a valid system image when it is booting, or if its configuration file is corrupted. For more information, see the "ROMMON Command-Line Interface" section on page 2-7.

Table 2-3 lists and describes frequently used Cisco IOS modes.

Table 2-3 Frequently Used Cisco IOS Command Modes

Mode	What You Use It For	How to Access	Prompt
User EXEC	To connect to remote devices, change terminal settings on a temporary basis, perform basic tests, and display system information.	Log in.	`Switch>`
Privileged EXEC (enable)	To set operating parameters. The privileged command set includes the commands in user EXEC mode, as well as the **configure** command. Use the **configure** command to access the other command modes.	From user EXEC mode, enter the **enable** command and the enable password (if a password has been configured).	`Switch#`
Global configuration	To configure features that affect the system as a whole, such as the system time or switch name.	From privileged EXEC mode, enter the **configure terminal** command.	`Switch(config)#`
Interface configuration	To enable or modify the operation of a 10-Gigabit Ethernet, Gigabit Ethernet, or Fast Ethernet interface with **interface** commands.	From global configuration mode, enter the **interface** *type location* command.	`Switch(config-if)#`
Console configuration	To configure the console interface; from the directly connected console or the virtual terminal; used with Telnet.	From global configuration mode, enter the **line console 0** command.	`Switch(config-line)#`

The Cisco IOS command interpreter, called the EXEC, interprets and runs the commands you enter. You can abbreviate commands and keywords by entering just enough characters to make the command unique from other commands. For example, you can abbreviate the **show** command to **sh** and the **configure terminal** command to **config t**.

When you type **exit**, the switch backs out one level. To exit configuration mode completely and return to privileged EXEC mode, press **Ctrl-Z**.

Getting a List of Commands and Syntax

In any command mode, you can get a list of available commands by entering a question mark (?).

```
Switch> ?
```

To obtain a list of commands that begin with a particular character sequence, enter those characters followed by the question mark (?). Do not include a space before the question mark. This form of help is called word help, because it completes a word for you.

To list keywords or arguments, enter a question mark in place of a keyword or argument. Include a space before the question mark. This form of help is called command syntax help, because it reminds you which keywords or arguments are applicable based on the command, keywords, and arguments you have already entered.

```
Switch# configure ?
  memory             Configure from NV memory
  network            Configure from a TFTP network host
  overwrite-network  Overwrite NV memory from TFTP network host
  terminal           Configure from the terminal
  <cr>
```

To redisplay a command you previously entered, press the **Up Arrow** key or **Ctrl-P**. You can continue to press the **Up Arrow** key to see the last 20 commands you entered.

Tip If you are having trouble entering a command, check the system prompt and enter the question mark (?) for a list of available commands. You might be in the wrong command mode or using incorrect syntax.

Type **exit** to return to the previous mode. Press **Ctrl-Z** or enter the **end** command in any mode to immediately return to privileged EXEC mode.

Virtual Console for Standby Supervisor Engine

Catalyst 4500 series switches can be configured with 2 supervisor engines to provide redundancy. When the switch is powered, one of the supervisor engines becomes active and remains active until a switchover occurs. The other supervisor engine remains in standby mode.

Each supervisor engine has its own console port. Access to the standby supervisor engine is possible only through the console port of the standby supervisor engine. You must connect to the standby console to access, monitor or debug the standby supervisor.

The virtual console for standby supervisor engine enables you to access the standby console from the active supervisor engine without requiring a physical connection to the standby console. It uses IPC over EOBC to communicate with the standby supervisor engine and thus emulate the standby console on the active supervisor engine. Only one active standby console session is active at any time.

The virtual console for standby supervisor engine enables users who are logged onto the active supervisor engine to remotely execute **show** commands on the standby supervisor engine and view the results on the active supervisor engine. Virtual console is available only from the active supervisor engine.

You can access the standby virtual console from the active supervisor engine with the **attach module**, **session module**, or **remote login** commands on the active supervisor engine. You must be in privilege EXEC mode (level 15) to run these commands to access the standby console.

Once you enter the standby virtual console, the terminal prompt automatically changes to *hostname*-standby-console#, where hostname is the configured name of the switch. The prompt is restored back to the original prompt when you exit the virtual console.

You exit the virtual console with the **exit** or **quit** commands. When the inactivity period of the terminal on the active supervisor engine where you logged in exceeds the configured idle time, you are automatically logged out of the terminal on the active supervisor engine. In this case, the virtual console session is also terminated. Virtual console session is also automatically terminated when the standby is rebooted. After the standby boots up, you need to create another virtual console session.

To log in to the standby supervisor engine using a virtual console, enter the following command:

```
Switch# session module 2
Connecting to standby virtual console
Type "exit" or "quit" to end this session
Switch-standby-console# exit
```

If the standby console is not enabled, the following message appears:

```
Switch-standby-console#
Standby console disabled.
Valid commands are: exit, logout
```

Virtual session into the standby console is N/A with RPR:

```
Switch# session module 2
IPC server port name IFConsoleServer:2 not registered on standby.
Secondary cannot be accessed by virtual console
```

Note The standby virtual console provides the standard features that are available from the supervisor console such as command history, command completion, command help and partial command keywords.

The following limitations apply to the standby virtual console:

- All commands on the virtual console run to completion. It does not provide the auto-more feature; it behaves as if the **terminal length 0** command has been executed. It is also noninteractive. A executing command cannot be interrupted or aborted by any key sequence on the active supervisor engine. If a command produces considerable output, the virtual console displays it on the supervisor screen.
- The virtual console is noninteractive. Because the virtual console does not detect the interactive nature of a command, any command that requires user interaction causes the virtual console to wait until the RPC timer aborts the command.

  The virtual console timer is set to 60 seconds. The virtual console returns to its prompt after 60 seconds. During this time, you cannot abort the command from the keyboard. You must wait for the timer to expire before you continue.
- You cannot use virtual console to view debug and syslog messages that are being displayed on the standby supervisor engine. The virtual console only displays the output of commands that are executed from the virtual console. Other information that is displayed on the real standby console does not appear on the virtual console.

ROMMON Command-Line Interface

ROMMON is a ROM-based program that is involved at power-up or reset, or when a fatal exception error occurs. The switch enters ROMMON mode if the switch does not find a valid software image, if the NVRAM configuration is corrupted, or if the configuration register is set to enter ROMMON mode. From the ROMMON mode, you can load a software image manually from flash memory, from a network server file, or from bootflash.

You can also enter ROMMON mode by restarting the switch and pressing **Ctrl-C** during the first five seconds of startup.

Note **Ctrl-C** is always enabled for 60 seconds after you reboot the switch, even if **Ctrl-C** is configured to be off in the configuration register settings.

When you enter ROMMON mode, the prompt changes to **rommon 1>**. Use the **?** command to see the available ROMMON commands.

For more information about the ROMMON commands, refer to the *Cisco IOS Command Reference*.

Archiving Crashfiles Information

This feature allows you to archive crashinfo files (otherwise overwritten if another system reset were to happen first to the bootflash). Having access to archived crashinfo data greatly assists in troubleshooting.

To archive crashinfo files, perform this task:

	Command	Purpose
Step 1	`Switch# configure terminal`	Enters global configuration mode.
Step 2	`Switch(config)# exception crashinfo file bootflash:` *name*	Enables archiving crashinfo files to bootflash. The files are stored in bootflash with the *name* specified concatenated with the date.
Step 3	`Switch(config)# end`	Returns to privileged EXEC mode.
Step 4	`Switch# show running-config`	Verifies your entries.
Step 5	`Switch# copy running-config startup-config`	(Optional) Saves your entries in the configuration file.