CHAPTER 2

Command Line Interfaces

You configure and maintain the Catalyst 5000 series switch by entering commands from the Command Line Interface (CLI). Through the CLI, you can configure and maintain the Catalyst 5000 components. Specific commands are available in each of the two types of commands: switch commands and ATM module commands.

Switch Command Line Interface

The CLI for the Catalyst 5000 series switch is a basic command line interpreter similar to that of the UNIX C Shell. Command line editing is provided, including history substitution and the creation of aliases.

You access the 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 are automatically disconnected after remaining idle for a configurable time period.

Connection through EIA/TIA-232

To access the switch through the EIA/TIA-232 port, use the following procedure:

Task	Command
From the Cisco Systems Console prompt, press **Return**.	**None**
At the prompt, enter the system password. The `Console>` prompt appears indicating that you have successfully accessed the CLI in normal mode.	**None**
Enter the necessary commands to complete your desired tasks.	**Appropriate commands**
When finished, exit the session.	**quit**

A connection through the console port (EIA/TIA-232) displays the following prompts on the terminal:

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

Connection through Telnet

To use Telnet, you must have previously set the IP address for the switch. Refer to the "Configuring the Software" chapter for information about setting the IP address. Multiple sessions through Telnet are possible.

To access the switch from a remote host with Telnet, perform the following tasks:

Task	Command
From the remote host, enter the **telnet** command and designate the name or IP address of the switch you want to access.	**telnet** *hostname* | *ip address*
At the prompt, enter the password for the CLI. The default password is **Return** unless a password was previously established using the **set password** command (See the chapter "Command Reference" for details about the **set password** command.)	**None**
Enter the necessary commands to complete your desired tasks.	**Appropriate commands**
When finished, exit the Telnet session. Refer to Figure 2-1 for a sample Telnet session.	**quit**

Figure 2-1 Telnet Session Sample

```
% telnet catalyst1
Trying 123.236.273.11...
Connected to catalyst1.
Escape character is '^]'.


Cisco Systems Console                    Fri Mar 10 1995, 17:50:45


Enter password:
Sorry.  Try again.
Enter password:
Console>
Console>
Console> quit
Connection closed by foreign host.
%
```

Command Line Processing

The switch administration command sets are not case sensitive. In addition, commands and parameters can be abbreviated as long as they contain enough letters to be unique with reference to the other commands or parameters at that level. When entering a command, use Ctrl-W to delete the last word typed; use Ctrl-U to delete an entire line. If you make a mistake while entering a command, use the Delete or Backspace key to erase the mistake, and then reenter the command. The escape sequence Ctrl-C terminates prompts and lengthy tasks.

History Substitution

Commands that you enter during each terminal session are stored in a history buffer. Commands in the history buffer may be repeated or edited in a style similar to using the UNIX C Shell. The history buffer stores the last 20 commands entered during a terminal session.

To repeat a recent command:

```
!! - repeat the most recent command
!-nn - repeat the nnth most recent command
!nn - repeat command nn
!aaa - repeat the command beginning with string aaa
!?aaa - repeat the command containing the string aaa
```

To modify and repeat the most recent command:

```
^aaa^bbb - replace the string aaa with the 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
!nn aaa - add string aaa to the end of command nn
!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 the string aaa
```

Command Modes

There are 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 successfully, the system automatically enters normal mode, which gives you access to normal-mode commands only. You can enter privileged mode by issuing the **enable** command followed by a second password. Privileged mode is indicated by (enable) immediately after the system prompt. To return to normal mode, enter the **disable** command at the prompt.

The following is a sample session showing entry into privileged mode:

```
Cisco Systems Console                    Fri Mar 10 1995, 17:50:45

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

Command Help

Context-sensitive help for commands is provided. Type **help** or **?** in normal or privileged mode to see a listing of the commands available in those modes. On selected commands, typing **help** or **?** after a command will provide additional information. In general, command usage, the help menu, and, when appropriate, parameter ranges are provided if you enter a command using the wrong number of arguments or inappropriate arguments.

The **?** command allows you to display usage and syntax information about a specific command or to list groups of commands. In normal mode, use the **?** command to display a list of top-level commands, as follows:

```
Console> ?
Commands:
------------------------------------------------------------------------
enable                  Enable privileged mode
help                    Show this message
history                 Show contents of history substitution buffer
ping                    Send echo packets to hosts
quit                    Exit from the Admin session
set                     Set, use 'set help' for more info
session                 Tunnel in ATM Module
show                    Show, use 'show help' for more info
wait                    Wait for x seconds
Console>
```

Note The overall function of the **?** command is the same as the **help** command.

In privileged mode, use the **?** command to display a list of commands, as follows:

```
Console> enable
Enter password:
Console> (enable) ?
Commands:
------------------------------------------------------------------------
clear               Clear, use 'clear help' for more info
configure           Configure system from terminal/network
disable             Disable privileged mode
disconnect          Disconnect user session
download            Download code to a processor
enable              Enable privileged mode
help                Show this message
history             Show contents of history substitution buffer
ping                Send echo packets to hosts
quit                Exit from the Admin session
reset               Reset system or module
session             Sets alias for command
set                 Set, use 'set help' for more info
show                Show, use 'show help' for more info
slip                Attach/detach Serial Line IP interface
telnet              Starts a telnet connection from a remote host
test                Test, use 'test help' for more info
upload              Upload code from a processor
wait                Wait for x seconds
write               Write system configuration to terminal/network
Console> (enable)
```

Note In general, you can use the **?** command appended to any command associated with a group of commands, for example, **clear**, **set**, and **show**. Or you can append **?** to any specific command for a list of usage and syntax information. For an example of how you can use the **?** command to display usage and syntax information about a specific command, refer to the chapter "Command Reference."

Designating Modules, Ports, and VLANs

The Catalyst 5000 series switch is a multimodule system. Commands you enter from the CLI can apply to the entire system or to a specific module, port, or VLAN.

The Catalyst 5000 modules (module slots), ports, and VLANs are numbered starting with 1. The supervisor module is module 1, residing in the top slot. On each module, port 1 is the left most port. To reference a specific port on a specific module, the command syntax is *mod_num/port_num*. For example, **3/1** denotes module 3, port 1. In some commands, such as **set trunk**, **set cam**, and **set vlan** commands, you can enter lists of ports and VLANs.

You 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, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12

Example 3. **2/1-2/12** is the same as Example 2

Each VLAN is designated by a single number. You 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, VLAN numbers 1 through 10 and VLAN 1000 are specified:

```
1-10,1000
```

Designating MAC Addresses, IP Addresses, and IP Aliases

Some commands require a MAC address, IP address, or IP alias, which must be designated in a standard format. The MAC address format must be six hexadecimal numbers separated by hyphens, as shown in the following example:

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

The IP address format is 32 bits, written as four octets separated by periods (dotted decimal format) that are made up of a network section, an optional subnet section, and a host section, as shown in the following example:

```
126.2.54.1
```

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. (See the **set interface** and **set ip alias** commands in the "Command Reference" chapter.)

ATM Module Command Line Interface

If an ATM module is installed in the Catalyst 5000, you can open a session with the ATM module. To open a session with the ATM module, use the **session** *mod_num* command from the Console> prompt. After you enter this command, the switch responds with the **Enter Password** prompt. Enter **atm** as the default password. At this point, you are at the **ATM#>** prompt, and you have direct access to only the ATM module that you have established a session with.

The ATM module uses a subset of the Internetwork Operating System (IOS) software. Generally, the IOS software works the same on the ATM module as it does on routers. This section explains the IOS software specifically used to configure the ATM module interface.

The Cisco Internetwork Operating System (Cisco IOS) user interface provides access to several different command modes. Each command mode provides a group of related commands. This chapter describes how to access and list the commands available in each command mode, and explains the primary uses for each command mode.

For security purposes, the Cisco IOS provides two levels of access to commands: *user* and *privileged*. The unprivileged, user mode is called user EXEC mode. The privileged mode is called privileged EXEC mode, and requires a password. The default password to access privileged EXEC mode on the ATM module is **atm**. The commands available in user EXEC mode are a subset of the commands available in privileged EXEC mode.

From the privileged level, you can access the six configuration modes: user EXEC, privileged EXEC, global configuration, interface configuration, line configuration, and LANE database configuration. Entering a question mark (**?**) at the system prompt displays a list of commands available for each command mode.

Almost every configuration command also has a **no** form. In general, use the **no** form to disable a feature or function. Use the command without the keyword **no** to reenable a disabled feature or to enable a feature that is disabled by default. Refer to the "Command Reference" chapter for the complete syntax for every ATM module command and descriptions of what the **no** form of the commands does.

The user interface also provides context-sensitive help on command syntax. This chapter describes how to use the help system. It also describes the command editing and command history features that enable you to recall previous command entries and easily edit command entries.

User Interface Task List

You can perform the tasks in the following sections to become familiar with the Cisco IOS user interface:

- Accessing the Command Modes
- Get Context-Sensitive Help
- Check Command Syntax
- Use the Command History Features
- Use the Editing Features
- End a Session

Accessing the Command Modes

This section describes how to access each of the Cisco IOS command modes:

- User EXEC Mode
- Privileged EXEC Mode
- Global Configuration Mode
- Interface Configuration Mode
- Line Configuration Mode
- LANE Database Configuration Mode

Table 2-1 lists the command modes, how to access each mode, the prompt you will see while you are in that mode, the main uses for each configuration mode, and the method to exit that mode. The prompts listed assume the default name "ATM." Table 2-1 might not include all of the possible ways to access or exit each command mode.

Table 2-1 Command Modes Summary

Command Mode	Access Method	Prompt	Exit Method
User EXEC	Begin a session with the ATM module.	`ATM>`	Use the **logout** command.
Privileged EXEC	From user EXEC mode, use the **enable** EXEC command. When the Enter Password prompt appears, enter the default password **atm**.	`ATM#`	To exit to user EXEC mode, use the **disable** command. To enter global configuration mode, use the **configure** privileged EXEC command.
Global configuration	From privileged EXEC mode, use the **configure** privileged EXEC command.	`ATM(config)#`	To exit to privileged EXEC mode, use the **exit** or **end** command or press **Ctrl-Z**. To enter interface configuration mode, enter an interface configuration command.
Interface configuration	From global configuration mode, enter by specifying an interface with an interface command.	`ATM (config-if)#`	To exit to global configuration mode, use the **end** command. To exit to privileged EXEC mode, use the **exit** command or press **Ctrl-Z**. To enter subinterface configuration mode, specify a subinterface with the **interface** command. On the ATM module, the LANE client is considered a subinterface.
Line configuration	From global configuration mode, enter by specifying a line with a **line** command.	`ATM (config-line)#`	To exit to global configuration mode, use the **exit** command. To enter privileged EXEC mode use the **end** command or press **Ctrl-Z**.
LANE database configuration	From global EXEC mode, use the **lane database** *database name* command.	`ATM (config-if)`	To exit to global configuration mode, use the **exit** command. To exit to privileged EXEC mode, use the **end** command or press **Ctrl-Z**.

User EXEC Mode

After you log in to the ATM module, you are automatically in user EXEC command mode. The EXEC commands available at the user level are a subset of those available at the privileged level. In general, the user EXEC commands allow you to change terminal settings on a temporary basis, perform basic tests, and list system information.

To list the user EXEC commands, complete the following task:

Task	Command
List the user EXEC commands.	**?**

The user-level prompt consists of ATM followed by the angle bracket (>):

```
ATM>
```

To list the commands available in user EXEC mode, enter a question mark (**?**) as shown in the following example:

```
ATM>?
Exec commands:
  connect[1]          Open a terminal connection
  disable            Turn off privileged commands
  disconnect[1]       Disconnect an existing network connection
  enable             Turn on privileged commands
  exit               Exit from the EXEC
  help               Description of the interactive help system
  lock[1]             Lock the terminal
  login[1]            Log in as a particular user
  logout             Exit from the EXEC
  name-connection[1]  Name an existing network connection
  ping[1]             Send echo messages
  resume[1]           Resume an active network connection
  show               Show running system information
  systat             Display information about terminal lines
  telnet[1]           Open a telnet connection
  terminal           Set terminal line parameters
  traceroute[1]       Trace route to destination
  tunnel[1]           Open a tunnel connection
  where[1]            List active connections

ATM>
```

1. Although this command appears, it is currently not supported in this software release.

Privileged EXEC Mode

Because many of the privileged commands set operating parameters, privileged access should be password-protected to prevent unauthorized use. The privileged command set includes those commands contained in user EXEC mode, as well as the **configure** command through which you can access the remaining command modes. Privileged EXEC mode also includes high-level testing commands, such as **debug**. For details on the **debug** commands, see the *Debug Command Reference* publication.

To access and list the privileged EXEC commands, complete the following tasks:

Task		Command
Step 1	Enter the privileged EXEC mode.	**enable** [*password*]
Step 2	List privileged EXEC commands.	**?**

If the system administrator has set a password, you are prompted to enter it before being allowed access to privileged EXEC mode. The password is not displayed on the screen and is case sensitive. If an enable password has not been set, enabled mode can only be accessed from the console. The password for the ATM module is **atm**.

The privileged EXEC mode prompt consists of ATM followed by the pound sign (#).

```
ATM#
```

The following example shows how to access privileged EXEC mode and list privileged EXEC commands:

```
ATM>enable
Password:
ATM#?
Exec commands:
  clear              Reset functions
  clock[1]           Manage the system clock
  configure          Enter configuration mode
  connect[1]         Open a terminal connection
  copy[1]            Copy a config file to or from a tftp server
  debug              Debugging functions (see also 'undebug')
  disable            Turn off privileged commands
  disconnect[1]      Disconnect an existing network connection
  enable             Turn on privileged commands
  exit               Exit from the EXEC
  help               Description of the interactive help system
  lock[1]            Lock the terminal
  login[1]           Log in as a particular user
  logout             Exit from the EXEC
  name-connection[1] Name an existing network connection
  no                 Disable debugging functions
  ping[1]            Send echo messages
  reload             Halt and perform a cold restart
  resume[1]          Resume an active network connection
  rsh[1]             Execute a remote command
  send[1]            Send a message to other tty lines
  setup[1]           Run the SETUP command facility
  show               Show running system information
  systat             Display information about terminal lines
  telnet[1]          Open a telnet connection
  terminal           Set terminal line parameters
  test[1]            Test subsystems, memory, and interfaces
  traceroute[1]      Trace route to destination
  tunnel[1]          Open a tunnel connection
  undebug            Disable debugging functions (see also 'debug')
  where[1]           List active connections
  write              Write running configuration to memory[2], network, or terminal[2]

ATM#
```

1. Although this command appears, it is currently not supported in this software release.
2. Currently, only the **write memory** and **write terminal** commands are supported. The **write network** command is not supported.

From the privileged level, you can access global configuration mode. For instructions, see the "Global Configuration Mode" section, which follows this section.

To return from privileged EXEC mode to user EXEC mode, perform the following task:

Task	Command
Go from privileged EXEC mode to user EXEC mode.	**disable**

Global Configuration Mode

Global configuration commands apply to features that affect the ATM module as a whole. Use the **configure** privileged EXEC command to enter global configuration mode. When you enter this command, the EXEC prompts you for the source of the configuration commands:

```
Configuring from terminal, memory, or network [terminal]?
```

You can then specify either the terminal, nonvolatile memory (NVRAM), or a file stored on a network server as the source of configuration commands (see the "System Image, Microcode Image, and Configuration File Load Commands" chapter in the *Router Products Command Reference* publication). The default is to enter commands from the terminal console. Pressing the Return key begins this configuration method.

To access and list the global configuration commands, complete the following tasks:

Task		Command
Step 1	At the terminal, from the privileged EXEC mode, enter global configuration mode.	**configure**
Step 2	List the global configuration commands.	**?**

The following example shows how to access global configuration mode and list global configuration commands:

```
ATM#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
ATM(config)#?
Configure commands:
  aaa[1]                          Authentication, Authorization and Accounting.
  access-list[1]                  Add an access list entry
  alias                           Create command alias
  arp[1]                          Set a static ARP entry
  async-bootp[1]                  Modify system bootp parameters
  banner                          Define a login banner
  boot[1]                         Modify system boot parameters
  buffers                         Adjust system buffer pool parameters
  clock[1]                        Configure time-of-day clock
  config-register[1]              Define the configuration register
  downward-compatible config      Generate a configuration compatible with older
                                  software
  default-value                   Default character-bits values
  dnsix-dmdp[1]                   Provide DMDP service for DNSIX
  dnsix-nat[1]                    Provide DNSIX service for audit trails
  enable[1]                       Modify enable password parameters
  end                             Exit from configure mode
  exit                            Exit from configure mode
  help                            Description of the interactive help system
  hostname[1]                     Set system's network name
  interface                       Select an interface to configure
  ip[1]                           Global IP configuration subcommands
  lane                            Configure LAN Emulation
  line                            Configure a terminal line
  logging                         Modify message logging facilities
  map-class[1]                    Configure static map class
  map-list[1]                     Configure static map list
  no                              Negate a command or set its defaults
  priority-list[1]                Build a priority list
  privilege                       Command privilege parameters
  queue-list[1]                   Build a custom queue list
  scheduler                       Scheduler parameters
  service                         Modify use of network based services
  snmp-server                     Modify SNMP parameters
```

```
tacacs-server[1]              Modify TACACS query parameters
tftp-server[1]                Provide TFTP service for netload requests
username[1]                   Establish User Name Authentication
```

1. Although this command appears, it is currently not supported in this software release.

To exit global configuration command mode and return to privileged EXEC mode, use one of the following commands:

Task	Command
Exit global configuration mode.	**exit** **end** **Ctrl-Z**

Interface Configuration Mode

Interface configuration commands modify the operation of the ATM interface. Interface configuration commands always follow an **interface** global configuration command, which defines the interface type.

To access and list the interface configuration commands, complete the following tasks:

Task		Command
Step 1	From global configuration mode, enter interface configuration mode.	**interface** *type-number*[1]
Step 2	List the interface configuration commands.	**?**

1. Always specify interface 0 for the Catalyst 5000 ATM module.

In the following example, ATM interface 0 is about to be configured. The new prompt `ATM (config-if)#` indicates interface configuration mode. In this example, the user asks for help by requesting a list of commands.

```
ATM(config)#interface atm 0
ATM(config-if)#?
Interface configuration commands:
  arp[1]               Set arp type (arpa, probe, snap) or timeout
  asig                 ATM Signalling Interface Subcommands
  atm                  Modify ATM parameters
  backup[1]            Modify dial-backup parameters
  bandwidth[1]         Set bandwidth informational parameter
  custom-queue-list[1] Assign a custom queue list to an interface
  delay[1]             Specify interface throughput delay
  description          Interface specific description
  exit                 Exit from interface configuration mode
  fair-queue[1]        Enable Fair Queuing on an Interface
  help                 Description of the interactive help system
  hold-queue[1]        Set hold queue depth
  ip[1]                Interface Internet Protocol config commands
  keepalive[1]         Enable keepalive
  lane                 Modify LANE parameters
  load-interval[1]     Specify interval for load calculation for an interface
  loopback[1]          Configure internal loopback on an interface
  map-group[1]         Configure static map group
  mtu                  Set the interface Maximum Transmission Unit (MTU)
  no                   Negate a command or set its defaults
  priority-group[1]    Assign a priority group to an interface
  shutdown             Shutdown the selected interface
  snmp                 Modify SNMP interface parameters
```

```
  sscop              SSCOP Interface Subcommands
  transmit-interface[1] Assign a transmit interface to a receive-only interface
  tx-queue-limit[1]    Configure card level transmit queue limit

ATM(config-if)#
```

1. Although this command appears, it is currently not supported in this software release.

To exit interface configuration mode and return to global configuration mode, enter the **exit** command. To exit configuration mode and return to privileged EXEC mode, use the **end** command or press **Ctrl-Z**.

Line Configuration Mode

Line configuration commands modify the operation of a terminal line. Line configuration commands always follow a **line** command, which defines a line number. These commands are generally used to change terminal parameter settings either on a line-by-line basis or for a range of lines.

To access and list the virtual terminal line configuration commands, complete the following tasks:

Task		Command
Step 1	From global configuration mode, configure a virtual terminal line.	**line** {**vty**} *line-number* [*ending-line-number*][1]
Step 2	List the line configuration commands.	**?**

1. This command is documented in the "Terminal Lines and Modem Support Commands" chapter in the *Router Products Command Reference* publication.

The following example shows how to enter line configuration mode for virtual terminal line 3 and list the line configuration commands. The new prompt `ATM (config-line)#` indicates line configuration mode.

```
ATM(config)#line 0 4
ATM(config-line)#?
Line configuration commands:
  access-class[1]           Filter connections based on an IP access list
  autocommand               Automatically execute an EXEC command
  ata-character-bits[1]     Size of characters being handled
  databits[1]               Set number of data bits per character
  editing                   Enable command line editing
  escape-character          Change the current line's escape character
  exec                      Start an EXEC process
  exec-banner               Enable the display of the EXEC banner
  exec-character-bits       Size of characters to the command exec
  exec-timeout              Set the EXEC timeout
  exit                      Exit from line configuration mode
  flowcontrol[1]            Set the flow control
  full-help                 Provide help to unprivileged user
  help                      Description of the interactive help system
  history                   Enable and control the command history function
  ip[1]                     IP options
  length                    Set number of lines on a screen
  location                  Enter terminal location description
  logging                   Modify message logging facilities
  login[1]                  Enable password checking
  modem[1]                  Configure the Modem Control Lines
  monitor                   Copy debug output to the current terminal line
  no                        Negate a command or set its defaults
  notify                    Inform users of output from concurrent sessions
  padding[1]                Set padding for a specified output character
  parity[1]                 Set terminal parity
```

```
  password                 Set a password
  privilege[1]             Change privilege level for line
  refuse-message[1]        Define a refuse banner
  rotary[1]                Add line to a rotary group
  rxspeed[1]               Set the receive speed
  session-timeout          Set interval for closing connection when there is no
                          input traffic
  special-character bits[1] Size of the escape (and other special) characters
  speed[1]                 Set the transmit and receive speeds
  start-character[1]       Define the start character
  stop-character[1]        Define the stop character
  stopbits[1]              Set async line stop bits
  terminal-type            Set the terminal type
  transport                Define transport protocols for line
  txspeed                  Set the transmit speeds
  vacant-message           Define a vacant banner
  width                    Set width of the display terminal

ATM(config-line)#
```

1. Although this command appears, it is currently not supported in this software release.

To exit line configuration mode and return to global configuration mode, use the **exit** command. To exit configuration mode and return to privileged EXEC mode, use the **end** command or press **Ctrl-Z**.

Get Context-Sensitive Help

The previous sections described the first level of help available with the user interface. Entering a question mark (**?**) at the system prompt displays a list of commands available for each command mode. You can also get a list of any command's associated keywords and arguments with the context-sensitive help feature.

To get help specific to a command mode, a command, a keyword, or arguments, perform one of the following tasks:

Task	Command
Obtain a brief description of the help system in any command mode.	**help**
Configure a line or lines to receive help for the full set of user-level commands when a user presses **?**.	**full-help**
Configure a line to receive help for the full set of user-level commands for this EXEC session.	**terminal full-help**[1]
Obtain a list of commands that begin with a particular character string.	*abbreviated-command-entry***?**
Complete a partial command name.	*abbreviated-command-entry*<**Tab**>
List all commands available for a particular command mode.	**?**
List a command's associated keywords.	*command* **?**
List a keyword's associated arguments.	*command keyword* **?**

1. This command is documented in the *Cisco Access Connection Guide*.

When using context-sensitive help, the space (or lack of a space) before the question mark (**?**) is significant. To obtain a list of commands that begin with a particular character sequence, type in those characters followed immediately by the question mark (**?**). Do not include a space. 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 **?**. 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.

You can abbreviate commands and keywords by using number of characters that allow a unique abbreviation. For example, you can abbreviate the **show** command to **sh**.

Enter the **help** command (which is available in any command mode) for a brief description of the help system:

```
ATM# help
Help may be requested at any point in a command by entering
a question mark '?'. If nothing matches, the help list will
be empty and you must back up until entering a '?' shows the
available options.
Two styles of help are provided:
1. Full help is available when you are ready to enter a
   command argument (e.g. 'show ?') and describes each possible
   argument.
2. Partial help is provided when an abbreviated argument is entered
   and you want to know what arguments match the input
   (e.g. 'show pr?'.)
```

As described in the **help** command output, you can enter a partial command name and a question mark (**?**) to obtain a list of commands beginning with a particular character set. See "Complete a Partial Command Name" later in this chapter for more detail.

The following example illustrates how the context-sensitive help feature enables you to create an access list from configuration mode. First enter the letters **co** at the system prompt followed by a question mark (?). Do not leave a space between the last letter and the question mark (?). The system provides the commands that begin with **co**.

```
ATM# co?
configure  connect  copy
```

Enter the **configure** command followed by a space and a question mark **(?**) to list the command's keywords and a brief explanation:

```
ATM# configure ?
  memory    Configure from NV memory
  network   Configure from a TFTP network host
  terminal  Configure from the terminal
  <cr>
```

Check Command Syntax

The user interface provides error isolation in the form of an error indicator (^). The ^ symbol appears at the point in the command string where you have entered an incorrect command, keyword, or argument. The error location indicator and interactive help system allow you to easily find and correct syntax errors.

In the following example, suppose you want to clear a virtual circuit. First, use context-sensitive help to check the syntax for the command.

```
ATM#clear ?
  access-list  Clear access list statistical information
  arp-cache    Clear the entire ARP cache
  atm-vc       Clear ATM virtual circuits on an interface
  counters     Clear counters on one or all interfaces
  host         Delete host table entries
  interface    Clear the hardware logic on an interface
  ip           IP
  lane         lane
  line         Reset a terminal line
```

The help output shows that the **atm-vc** keyword is required. Next, check the syntax for specifying the type of virtual circuit:

```
ATM#clear atm-vc ?
ATM  ATM interface
```

Enter the type of virtual circuit:

```
ATM#clear atm-vc atm 0
% Incomplete command.
```

The system indicates that you need to provide additional arguments to complete the command. Press **Ctrl-P** (see the next section, "Use the Command History Features") to automatically repeat the previous command entry. Then add a space and question mark (**?**) to reveal the additional arguments:

```
ATM#clear atm-vc atm 0 ?
  <1-4095>  Virtual Circuit Number (VCD)
```

Now you can complete the command entry:

```
ATM#clear atm-vc atm 0 4096
                       ^
% Invalid input detected at '^' marker.
```

The caret symbol (^) and help response indicate an error at 6. To list the correct syntax, enter the command up to the point where the error occurred and then enter a question mark (**?**):

```
ATM#clear atm-vc atm 0 ?
  <1-4095>  Virtual Circuit Number (VCD)
```

Enter the year using the correct syntax and press Return to execute the command.

```
ATM#clear atm-vc atm 0 11
```

Use the Command History Features

With the current software release, the user interface provides a history or record of commands you have entered. This feature is particularly useful for recalling long or complex commands or entries. With the command history feature, you can complete the tasks in the following sections:

- Set the Command History Buffer Size
- Recall Commands
- Disable the Command History Feature

Set the Command History Buffer Size

By default, the system records ten command lines in its history buffer. To set the number of command lines the system will record during the current terminal session, complete the following task in EXEC mode:

Task	Command
Enable the command history feature for the current terminal session.	**terminal history** [**size** *number-of-lines*][1]

1. This command is documented in the *Cisco Access Connection Guide*.

The **terminal no history size** command resets the number of lines saved by history to the default of 10 lines.

To configure the number of command lines the system will record, complete the following task in line configuration mode:

Task	Command
Enable the command history feature.	**history** [**size** *number-of-lines*][1]

1. The **no history** command turns off command history for the line.

Recall Commands

To recall commands from the history buffer, perform one of the following tasks:

Task	Key Sequence/Command
Recall commands in the history buffer, beginning with the most recent command. Repeat the key sequence to recall successively older commands.	Press **Ctrl-P** or the up arrow key.[1]
Return to more recent commands in the history buffer after recalling commands with Ctrl-P or the up arrow key. Repeat the key sequence to recall successively more recent commands.	Press **Ctrl-N** or the down arrow key.[1]
While in EXEC mode, list the last several commands you have just entered.	**show history**

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

Disable the Command History Feature

The command history feature is automatically enabled. To disable it during the current terminal session, complete the following task in EXEC mode:

Task	Command
Disable the command history feature for the current session.	**terminal no history**[1]

1. This command is documented in the *Cisco Access Connection Guide*.

To configure a specific line so that the command history feature is disabled, complete the following task in line configuration mode:

Task	Command
Configure the line so that the command history feature is disabled.	**no history**

Use the Editing Features

The current software release 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 line at the system prompt, press the Return key to execute the command.

The following subsections are included in this section:

- Enable Enhanced Editing Mode
- Move Around on the Command Line
- Complete a Partial Command Name
- Paste in Buffer Entries
- Edit Command Lines That Wrap
- Delete Entries
- Scroll Down a Line or a Screen
- Redisplay the Current Command Line
- Transpose Mistyped Characters
- Control Capitalization
- Designate a Keystroke As a Command Entry
- End a Session

Enable Enhanced Editing Mode

Although enhanced editing mode is automatically enabled with the current software release, you can disable it and revert to the editing mode of previous software releases. See the section “End a Session” later in this chapter.

To reenable the enhanced editing mode for the current terminal session, complete the following task in EXEC mode:

Task	Command
Enable the enhanced editing features for the current terminal session.	**terminal editing**[1]

1. This command is documented in the *Cisco Access Connection Guide*.

To reconfigure a specific line to have enhanced editing mode, complete the following task in line configuration mode:

Task	Command
Enable the enhanced editing features.	**editing**

Move Around on the Command Line

Perform the following 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.

Complete a Partial Command Name

If you cannot remember a complete command name, use the Tab key to allow the system to complete a partial entry. To do so, perform the following task:

Task	Keystrokes
Complete a command name.	Enter the first few letters and press the Tab key.

If your keyboard does not have a Tab key, press **Ctrl-I** instead.

In the following example, when you enter the letters **conf** and press the Tab key, the system provides the complete command:

```
ATM# conf<Tab>
ATM# configure
```

If you enter a set of characters that could indicate more than one command, the system beeps to indicate an error. Enter a question mark (**?**) to obtain a list of commands that begin with that set of characters. Do not leave a space between the last letter and the question mark (**?**).

For example, there are three commands in privileged mode that start with co. To see what they are, type **co?** at the privileged EXEC prompt:

```
ATM# co?
configure  connect  copy
```

Paste 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 the following task:

Task		Keystrokes
Step 1	Recall the most recent entry in the buffer.	Press **Ctrl-Y**.
Step 2	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 will cycle back to the first buffer entry.

Edit 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 the following 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.

In the following example, the **lane config-atm-address** command entry extends beyond one line. When the cursor first reaches the end of the line, the line is shifted ten spaces to the left and redisplayed. The dollar sign ($) indicates that the line has been scrolled to the left. Each time the cursor reaches the end of the line, the line is again shifted ten spaces to the left.

```
ATM(config-subif)#lane config-atm-address 39.000000000000014155551211.080020
ATM(config-subif)#$-atm-address 39.000000000000014155551211.0800200c1001.00
```

When you have completed the entry, press Ctrl-A to check the complete syntax before pressing the Return key to execute the command. The dollar sign ($) appears at the end of the line to indicate that the line has been scrolled to the right:

```
ATM(config-subif)#lane config-atm-address 39.000000000000014155551211.080020$
```

The system assumes you have a terminal screen that is 80 columns wide. If you have a width other than that, use the **terminal width** command to tell the router the correct width of your terminal.

Use line wrapping in conjunction with the command history feature to recall and modify previous complex command entries. See the section “Recall Commands” earlier in this chapter for information about recalling previous command entries.

Delete Entries

Perform any of the following 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**.

Scroll Down a Line or a Screen

When you use the help facility to list the commands available 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, complete the following 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. You can use the keystrokes listed above whenever you see the `---More---` prompt.

Redisplay the Current Command Line

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

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

Transpose Mistyped Characters

If you have mistyped a command entry, you can transpose the mistyped characters by performing the following task:

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

Control Capitalization

You can capitalize or lowercase words or capitalize a set of letters with simple keystroke sequences. To do so, perform the following task:

Task	Keystrokes
Capitalizes 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**.

Designate a Keystroke As a Command Entry

Sometimes you might want to use a particular keystroke as an executable command, perhaps as a shortcut. Complete the following task to insert a system code for this purpose:

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

End a Session

After using the **setup** command or other configuration commands, exit the ATM module and quit the session.

To end a session, perform the following steps:

Task	Command
Enter the quit EXEC command.	**quit**