



ATM Module Management

This chapter provides basic configuration and management information for the ATM modules and describes the command-line interface (CLI) used to configure the ATM modules for the Catalyst 5000 and 6000 family switches.



Note

For descriptions of all ATM commands, see Chapter 7, “Command Reference.”

This chapter consists of these sections:

- ATM Module CLI Overview, page 2-1
- Accessing the ATM Module CLI, page 2-2
- Operating the ATM Module CLI, page 2-2
- Downloading System Software Images to the ATM Modules, page 2-6
- Performing ATM Module Functions, page 2-12
- Configuring PHY Redundancy, page 2-21
- Configuring Basic ATM Parameters, page 2-22
- Displaying ATM Module Statistics and Information, page 2-28

ATM Module CLI Overview

The ATM modules use a subset of the Cisco IOS software. The Cisco IOS user interface provides access to several different command modes. Each command mode provides a group of related commands.

Cisco IOS software provides two command access modes: *user EXEC* and *privileged EXEC*. The user EXEC mode does not require a password and allows you direct access only to the ATM module with which you have established a session. The user EXEC mode commands are a subset of the privileged EXEC mode commands.

The privileged EXEC mode requires a password (the default password is **atm**). From the privileged level, you can access the six configuration modes:

- User EXEC
- Privileged EXEC
- Global configuration
- Interface configuration

- Line configuration
- LAN Emulation (LANE) database configuration

Enter a question mark (?) at the system prompt to display the available commands for the current command mode.

Almost every configuration command has a **no** form. The **no** form disables a feature or function. Enter the command without the keyword **no** to reenable a disabled feature or to enable a feature that is disabled by default. See Chapter 7, “Command Reference” for more information about the ATM module commands.

The user interface also provides context-sensitive help on command syntax. For information on how to use the help system, see the “Getting Context-Sensitive Help” section on page 2-13. The user interface also describes the command editing and command history features that allow you to recall previous command entries and easily edit command entries.

Accessing the ATM Module CLI

To access an ATM module installed in a Catalyst 5000 or 6000 family switch, enter the **session mod_num** command at the Console> prompt. The switch responds with the Enter Password prompt. Enter **atm** as the default password. The ATM module responds with the ATM> prompt. At this point, you are in user EXEC command mode, and you have direct access only to the ATM module with which you have established a session.

This example shows how to open a session on an ATM module installed in slot 4:

```
Console> session 4
Enter Password:
ATM>
```

Operating the ATM Module CLI

This section describes the command modes and functions that allow you to access and operate the ATM module CLI. Table 2-1 lists the command modes, how to access each mode, the prompt you 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 ATM Module Command Mode Summary

Command Mode	Access Method	Prompt	Exit Method
User EXEC	Enter the session command in the switch CLI.	ATM>	Enter the logout command.
Privileged EXEC	From user EXEC mode, enter the enable EXEC command. Enter the enable password at the prompt (default is atm).	ATM#	Enter the disable command.
Global configuration	From privileged EXEC mode, enter the configure privileged EXEC command.	ATM(config)#	Enter the exit or end command, or press Ctrl-Z

Table 2-1 ATM Module Command Mode Summary (continued)

Command Mode	Access Method	Prompt	Exit Method
Interface configuration	From global configuration mode, enter the interface <i>interface_num</i> command.	ATM (config-if)#	To exit to global configuration mode, enter the end command. To exit to privileged EXEC mode, enter the exit command, or press Ctrl-Z .
Subinterface configuration	From interface configuration mode, enter the interface <i>sub_interface_num</i> command.	ATM (config-subif)#	To exit to global configuration mode, enter the end command. To exit to privileged EXEC mode, enter the exit command, or press Ctrl-Z .
Line configuration	From global configuration mode, enter the line <i>line_number</i> command.	ATM (config-line)#	To exit to global configuration mode, enter the exit command. To exit to privileged EXEC.
LANE database configuration	From global configuration mode, enter the lane database command.	ATM (config-if)#	To exit to global configuration mode, enter the exit command. To exit to privileged EXEC mode, enter the end command, or press Ctrl-Z .

Accessing User EXEC Mode

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

To list the commands available in user EXEC mode, enter a question mark (?) at the ATM> prompt.

Accessing Privileged EXEC Mode

Because many privileged commands set operating parameters, use password protection to restrict access to privileged EXEC mode. The privileged EXEC command set includes those commands 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**.

To access and list the privileged EXEC commands, perform this task:

	Task	Command
Step 1	Enter privileged EXEC mode.	enable <i>password</i>
Step 2	List privileged EXEC commands.	?

If the system administrator has set a password, you are prompted to enter it before you are 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, you can only access privileged EXEC mode from the console. The default password for the ATM module is **atm**.

This example shows how to access privileged EXEC mode:

```
ATM> enable
Password:
ATM#
```

From privileged EXEC mode, you can access global configuration mode. For instructions, see the “Accessing Global Configuration Mode” section on page 2-4.

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

Task	Command
Exit privileged EXEC mode and return to user EXEC mode.	disable

Accessing Global Configuration Mode

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

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



Note

Only the **write memory** and **write terminal** commands are supported. The **write network** command is not supported.

You can specify either the terminal or NVRAM as the source of configuration commands (refer to the Cisco IOS configuration guide and command reference publications for complete information on Cisco IOS commands). The default is to enter commands from the console terminal. Press **Return** to enter terminal configuration mode.

To access and list the global configuration commands, perform this task:

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

This example shows how to access global configuration mode:

```
ATM#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
ATM(config)#
```

To exit global configuration command mode and return to privileged EXEC mode, perform this task using one of these commands:

Task	Command
Exit global configuration mode.	exit end

Accessing 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, perform this task:

	Task	Command
Step 1	Enter interface configuration mode.	interface atm0 ¹
Step 2	List the interface configuration commands.	?
Step 3	From interface configuration mode, enter subinterface configuration mode.	interface atm0.sub_interface_num
Step 4	List the subinterface configuration commands.	?

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

This example shows how to access interface configuration mode:

```
ATM(config)#interface atm0
ATM(config-if)#
```

This example shows how to access subinterface configuration mode:

```
ATM(config-if)#interface atm0.1
ATM(config-subif)#
```

To exit interface configuration mode and return to global configuration mode, perform this task:

Task	Command
Exit interface configuration mode.	exit

To exit global configuration mode and return to privileged EXEC mode, perform this task:

Task	Command
Exit global configuration mode.	end

Accessing 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 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, perform this task:

	Task	Command
Step 1	From global configuration mode, configure a virtual terminal line.	line [vty] <i>line-number</i> [<i>ending-line-number</i>] 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.

This example shows how to enter line configuration mode for virtual terminal line 4:

```
ATM(config)#line 0 4
ATM(config-line)#
```

To exit line configuration mode and return to global configuration mode, perform this task:

Task	Command
Exit line configuration mode.	exit

To exit global configuration mode and return to privileged EXEC mode, perform this task using one of these commands:

Task	Command
Exit global configuration mode.	end Ctrl-Z

Downloading System Software Images to the ATM Modules

This section contains the following subsections:

- Preparing to Download an Image, page 2-7
- Downloading ATM Module Images, page 2-7
- Example Download Procedures, page 2-9

You can download system software images to the ATM modules using the Trivial File Transfer Protocol (TFTP) or Remote Copy Protocol (rcp). Both methods allow you to download image files over the network from a server.

When you download a software image file to an ATM module, the switch checks the header of the image file to determine the type of software image.

When you download ATM module software images, you can either specify the module to which the image file should be downloaded or not specify the module, in which case the software image is downloaded to all ATM modules installed in the switch. The file is relayed packet by packet to the appropriate modules using the Inter-Process Communications protocol internal to the system, with communication taking place across the switching bus. Downloading a software image to multiple modules significantly speeds up the process of updating the software on multiple modules of the same type.

Preparing to Download an Image

Before you begin downloading a software image, make sure of the following:

- Ensure that the workstation acting as the TFTP or rcp server is configured properly.
- Ensure that the switch has a route to the server. The switch and the server must be in the same subnetwork if you do not have a router to route traffic between subnets. Check connectivity to the TFTP server using the **ping** command.
- Ensure that the software image to be downloaded is in the correct directory on the server (for example, /tftpboot on a UNIX workstation).
- Ensure that the permissions on the file are set correctly. Permissions on the file should be world-read.



Note

On a Catalyst 6500 series switch, enter the **session** command (see the “Accessing the ATM Module CLI” section on page 2-2) and use these Cisco IOS procedures to copy the Cisco IOS software image: http://www.cisco.com/univercd/cc/td/doc/product/software/ios121/121cgr/fun_c/fcprt2/fcd203.htm

Downloading ATM Module Images

Use this procedure to download a software image to an intelligent module on a Catalyst 5000 family switch:

- Step 1** Copy the software image file to the appropriate directory on the workstation.
- Step 2** Log into the switch through the console port or a Telnet session. If you log in using Telnet, your Telnet session might disconnect when you reset modules to run the new software.
- Step 3** Use the command appropriate for your switch and supervisor engine to download the software image from the TFTP server:
 - **Catalyst 5000 family Supervisor Engine III and III F**
 - If there is only one module of the type appropriate for the image, or if there are multiple modules of the same type and you want to update the image on all of them, enter the **copy tftp | rcp flash** command. When prompted, enter the IP address or host name of the TFTP server, the name of the file to download, the Flash device to which to copy the file, and the destination filename.
 - If there are multiple modules of the type appropriate for the image but you only want to update a single module, enter the **copy tftp m/bootflash: | rcp m/bootflash:** command, where *m* is the number of the module to which to download the software image.

- **Catalyst 5000 family Supervisor Engine II, II G, and III G**

- If there is only one module of the type appropriate for the image, or if there are multiple modules of the same type and you want to update the image on all of them, enter the **download** *host file* command, where *host* is the IP address or host name of the server and *file* is the name of the file to download.
- If there are multiple modules of the type appropriate for the image but you only want to update a single module, enter the **download** *host file mod_num* command, where *mod_num* is the slot in which the module is installed.



Note If you do not specify a module number, the switch examines the header of the image file to determine to which modules the software is downloaded. The image is then downloaded to all the modules of that type.

The switch downloads the image file, erases the Flash memory on the appropriate modules, and reprograms the Flash memory with the downloaded Flash code.



Note All modules in the switch remain operational while the image downloads.

Step 4 Reset the appropriate modules using the **reset** *mod_num* command. If you are connected through Telnet, your Telnet session disconnects if you reset the module through which your connection was made.

Step 5 When the upgraded modules come online, enter the **show version** [*mod_num*] command to check the version of the code on the switch.



Note For examples that show complete procedures for downloads to intelligent modules, see the “Example Single Intelligent Module Image Download (Catalyst 5000 Family Supervisor II, II G, or III G)” section on page 2-9, the “Example Multiple Module Image Download (Supervisor II, II G, or III G)” section on page 2-11, the “Example Single Module Image Download (Supervisor III or III F)” section on page 2-9 and the “Example Multiple Module Image Download (Supervisor III or III F)” section on page 2-10.

Example Download Procedures

These sections show example download procedures:

- Example Single Module Image Download (Supervisor III or III F), page 2-9
- Example Single Intelligent Module Image Download (Catalyst 5000 Family Supervisor II, II G, or III G), page 2-9
- Example Multiple Module Image Download (Supervisor II, II G, or III G), page 2-11

Example Single Module Image Download (Supervisor III or III F)



Note

For a step-by-step procedure for downloading software images to ATM modules on a Catalyst 5000 family switch with a Supervisor Engine III or III F, see the “Downloading ATM Module Images” section on page 2-7.

This example shows a complete TFTP download procedure of an ATM software image to a single ATM module in a Catalyst 5000 family switch with a Supervisor Engine III or III F module:

```

Console> (enable) show version 4
Mod Port Model      Serial #  Versions
-----
4   1   WS-X5155   003414855 Hw : 1.2
                                   Fw : 1.3
                                   Fw1: 1.3
                                   Sw : 3.2(6)

Console> (enable) copy tftp 4/flash
IP address or name of remote host []? 172.20.52.3
Name of file to copy from []? cat5000-atm.3-2-7.bin
Download image tftp:cat5000-atm.3-2-7.bin to Module 4 FLASH (y/n) [n]? y
This command will reset Download Module(s) you selected.

Do you wish to continue download flash (y/n) [n]? y
-
Download done for module 4, please wait for it to come online

File has been copied successfully.
Console> (enable) 07/21/1998,13:13:54:SYS-5:Module 4 is online

Console> (enable) show version 4
Mod Port Model      Serial #  Versions
-----
4   1   WS-X5155   003414855 Hw : 1.2
                                   Fw : 1.3
                                   Fw1: 1.3
                                   Sw : 3.2(7)

Console> (enable)

```

Example Single Intelligent Module Image Download (Catalyst 5000 Family Supervisor II, II G, or III G)



Note

For a step-by-step procedure for downloading software images to intelligent modules on a Catalyst 5000 family switch with a Supervisor Engine II, II G, or III G, see the “Downloading ATM Module Images” section on page 2-7.

This example shows a complete TFTP download procedure of an FDDI software image to a single ATM module in a Catalyst 5000 family switch with a Supervisor Engine II, II G, or III G module:

```

Console> (enable) show version 3
Mod Port Model                               Serial # Versions
-----
3   2   WS-X5155  003414855 Hw : 1.2
                               Fw : 1.3
                               Fw1: 1.3
                               Sw : 3.2(6)

Console> (enable) download 172.20.52.3 cat5000-fddi.3-1-1.bin 3
This command will reset module 3.
Download image cat5000-fddi.3-1-1.bin from 172.20.52.3 to Module 3 FLASH (y/n) [
n]? y
|
Finished network single module download. (1060456 bytes)
.....
.....
.....
.....
.....
SCP download checksum ok
SCP download done.
Please wait until module 3 comes online before resetting.
(Approximately 5 minutes)
Console> (enable) Console> (enable) 07/21/1998,11:23:36:SYS-5:Module 3 FLASH pro
gramming complete
07/21/1998,11:24:59:SYS-5:Module 3 is online
07/21/1998,11:25:00:DTP-5:Port 3/1-2 has become dot10 trunk

Console> (enable) show version 3
Mod Port Model       Serial # Versions
-----
3   2   WS-X5155  003414855 Hw : 1.2
                               Fw : 1.3
                               Fw1: 1.3
                               Sw : 3.2(7)

Console> (enable)

```

Example Multiple Module Image Download (Supervisor III or III F)



Note

For a step-by-step procedure for downloading software images to intelligent modules on a Catalyst 5000 family switch with a Supervisor Engine III or III F, see the “Downloading ATM Module Images” section on page 2-7.

This example shows a complete TFTP download procedure of an ATM software image to multiple ATM modules in a Catalyst 5000 family switch with a Supervisor Engine III or III F module:

```

Console> (enable) show version 4
Mod Port Model       Serial # Versions
-----
4   1   WS-X5155  003414855 Hw : 1.2
                               Fw : 1.3
                               Fw1: 1.3
                               Sw : 3.2(6)

Console> (enable) show version 5
Mod Port Model       Serial # Versions
-----
5   1   WS-X5155  003414463 Hw : 1.2

```

```

Fw : 1.3
Fw1: 1.3
Sw : 3.2(6)
Console> (enable) copy tftp flash
IP address or name of remote host []? 172.20.52.3
Name of file to copy from []? cat5000-atm.3-2-7.bin
Download image tftp:cat5000-atm.3-2-7.bin to Module 4 FLASH (y/n) [n]? y
Download image tftp:cat5000-atm.3-2-7.bin to Module 5 FLASH (y/n) [n]? y
This command will reset Download Module(s) you selected.

Do you wish to continue download flash (y/n) [n]? y
-
Download done for module 4, please wait for it to come online

Download done for module 5, please wait for it to come online

File has been copied successfully.
Console> (enable) 07/21/1998,12:25:10:SYS-5:Module 4 is online
07/21/1998,12:25:10:SYS-5:Module 5 is online

Console> (enable) show version 4
Mod Port Model      Serial #  Versions
-----
4   1   WS-X5155   003414855 Hw : 1.2
                                   Fw : 1.3
                                   Fw1: 1.3
                                   Sw : 3.2(7)

Console> (enable) show version 5
Mod Port Model      Serial #  Versions
-----
5   1   WS-X5155   003414463 Hw : 1.2
                                   Fw : 1.3
                                   Fw1: 1.3
                                   Sw : 3.2(7)

Console> (enable)

```

Example Multiple Module Image Download (Supervisor II, II G, or III G)



Note

For a step-by-step procedure for downloading software images to intelligent modules on a Catalyst 5000 family switch with a Supervisor Engine II, II G, or III G, see the “Downloading ATM Module Images” section on page 2-7.

This example shows a complete TFTP download procedure of an ATM software image to multiple ATM modules in a Catalyst 5000 family switch with a Supervisor Engine II, II G, or III G module:

```

Console> (enable) show version 8
Mod Port Model      Serial #  Versions
-----
8   1   WS-X5155   003414855 Hw : 1.2
                                   Fw : 1.3
                                   Fw1: 1.3
                                   Sw : 3.2(4)

Console> (enable) show version 9
Mod Port Model      Serial #  Versions
-----
9   1   WS-X5155   003414463 Hw : 1.2
                                   Fw : 1.3
                                   Fw1: 1.3
                                   Sw : 3.2(6)

Console> (enable) download 172.20.52.3 cat5000-atm.3-2-7.bin

```

```

Download image cat5000-atm.3-2-7.bin from 172.20.52.3 to Module 8 FLASH (y/n) [n
] ? y
Download image cat5000-atm.3-2-7.bin from 172.20.52.3 to Module 9 FLASH (y/n) [n
] ? y
This command will reset download module(s) you selected.

Do you wish to continue download to flash (y/n) [n] ? y
-
Download done for module 8, please wait for it to come online

Download done for module 9, please wait for it to come online

Finished network multiple modules download. (2378316 bytes)
Please wait until module(s) come online before resetting.
Console> (enable) 07/21/1998,13:19:54:SYS-5:Module 8 is online
07/21/1998,13:19:54:SYS-5:Module 9 is online
Console> (enable) show version 8
Mod Port Model      Serial #  Versions
-----
8   1   WS-X5155   003414855 Hw : 1.2
                               Fw : 1.3
                               Fw1: 1.3
                               Sw : 3.2(7)

Console> (enable) show version 9
Mod Port Model      Serial #  Versions
-----
9   1   WS-X5155   003414463 Hw : 1.2
                               Fw : 1.3
                               Fw1: 1.3
                               Sw : 3.2(7)

Console> (enable)

```

Performing ATM Module Functions

This section describes how to perform the following functions:

- Getting Context-Sensitive Help, page 2-13
- Checking Command Syntax, page 2-14

- Using the Command History Features, page 2-15
- Using the Editing Features, page 2-17
- Ending a Session, page 2-21

Getting Context-Sensitive Help

You can get a list of the associated keywords and arguments for any command by using the context-sensitive help feature.

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

Task	Command
<ul style="list-style-type: none"> • Obtain a brief description of the help system in any command mode. 	help
<ul style="list-style-type: none"> • Configure a line or lines to receive help for the full set of user-level commands when you enter ?. 	full-help
<ul style="list-style-type: none"> • Configure a line to receive help for the full set of user-level commands for this EXEC session. 	terminal full-help ¹
<ul style="list-style-type: none"> • Obtain a list of commands that begin with a particular character string. 	<i>abbreviated-command-entry?</i>
<ul style="list-style-type: none"> • Complete a partial command name. 	<i>abbreviated-command-entry</i> <Tab>
<ul style="list-style-type: none"> • List all commands available for a particular command mode. 	?
<ul style="list-style-type: none"> • List the associated keywords for a command. 	<i>command ?</i>
<ul style="list-style-type: none"> • List the associated arguments for a keyword. 	<i>command keyword ?</i>

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, enter the characters immediately followed by the question mark (?). Do not include a space. This form of help completes the word for you.

To list keywords or arguments, enter command syntax help by entering a question mark (?) in place of a keyword or argument. Include a space before the ?. This form of help 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 a 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?'.)

You can enter a partial command name and a question mark (?) to obtain a list of commands beginning with a particular character set. See the “Completing a Partial Command Name” section on page 2-18 for more details.

This example shows how context-sensitive help enables you to create an access list from configuration mode. Enter **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>
```

Checking Command Syntax

An error indicator (^) 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.

This example shows how to use context-sensitive help to determine how to clear an ATM interface.

First, check the syntax for the command:

```
ATM#clear ?
counters  Clear counters on one or all interfaces
interface Clear the hardware logic on an interface
lane      lane
line      Reset a terminal line
logging   Clear logging buffer
tcp       Clear a TCP connection or statistics
```

```
ATM#
```

The help output shows that **clear interface** is the syntax for clearing an interface. Next, check the syntax for specifying the type of interface:

```
ATM#clear interface ?
ATM      ATM interface
Ethernet IEEE 802.3
Null     Null interface
```

```
ATM#clear interface
```

The help output shows that **clear interface atm** is the syntax for clearing an ATM interface. Next, check the syntax for specifying the specific ATM interface:

```
ATM#clear interface atm ?
<0-0>   ATM interface number
```

```
ATM#clear interface atm
```

The help output shows you must specify the ATM interface number. When you specify the interface correctly, the ATM interface is cleared:

```
ATM#clear interface atm 0
ATM#
```

Using the Command History Features

The command history feature keeps a record of commands you have entered and allows you to recall these commands. The functions of the command history feature are as follows:

- Setting the Command History Buffer Size, page 2-15
- Recalling Commands, page 2-16
- Disabling the Command History Feature, page 2-16

Setting 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 records during the current terminal session, perform this task in user EXEC mode:

Task	Command
Enable the command history feature for the current terminal session.	terminal history [<i>size number-of-lines</i>] 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 ten lines.

To configure the number of command lines the system records, perform this 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.

Recalling Commands

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

Task	Key Sequence/Command
<ul style="list-style-type: none"> 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 .
<ul style="list-style-type: none"> 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 .
<ul style="list-style-type: none"> 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.

Disabling the Command History Feature

The command history feature is enabled automatically. To disable it during the current terminal session, perform this task in user 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, perform this task in line configuration mode:

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

Using the Editing Features

Catalyst 5000 family ATM software release 2.3 and above 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.

Enabling Enhanced Editing Mode

Although enhanced editing mode is enabled automatically, you can disable it and revert to the editing mode of previous software releases. For more information, see the “Ending a Session” section on page 2-21.

To reenable the enhanced editing mode for the current terminal session, perform this task in user 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 in enhanced editing mode, perform this task in line configuration mode:

Task	Command
Enable the enhanced editing features.	editing

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
<ul style="list-style-type: none"> Move the cursor back one character. 	Press Ctrl-B or press the left arrow key ¹ .
<ul style="list-style-type: none"> Move the cursor forward one character. 	Press Ctrl-F or press the right arrow key ¹ .
<ul style="list-style-type: none"> Move the cursor to the beginning of the command line. 	Press Ctrl-A .
<ul style="list-style-type: none"> Move the cursor to the end of the command line. 	Press Ctrl-E .
<ul style="list-style-type: none"> Move the cursor back one word. 	Press Esc B .
<ul style="list-style-type: none"> Move the cursor forward one word. 	Press Esc F .

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

Completing a Partial Command Name

If you cannot remember a complete command name, press the **Tab** key to allow the system to complete a partial entry. To do so, perform this 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, three commands in privileged mode start with **co**. To see what they are, enter **co?** at the privileged EXEC prompt. The system displays all commands that begin with **co**, as follows:

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

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	Command
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 cycle back to the first buffer entry.

Editing Command Lines That Wrap

The 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.

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

```
ATM(config-subif)#lane config-atm-address 39.00000000000014155551211.080020
ATM(config-subif)#$ -atm-address 39.00000000000014155551211.080020c1001.00
```

When you complete the entry, press **Ctrl-A** to check the complete syntax, and then press **Return** to execute the command. The dollar sign (\$) appears at the end of the line to indicate that the line scrolled to the right:

```
ATM(config-subif)#lane config-atm-address 39.00000000000014155551211.080020 $
```

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.

Use line wrapping with the command history feature to recall and modify previous complex command entries. See the “Recalling Commands” section on page 2-16 for information about recalling previous command entries.

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
<ul style="list-style-type: none"> • Scroll down one line. 	Press the Return key.
<ul style="list-style-type: none"> • 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.

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, by performing these tasks:

Task	Keystrokes
<ul style="list-style-type: none"> • Capitalize at the cursor. 	Press Esc C .
<ul style="list-style-type: none"> • Change the word at the cursor to lowercase. 	Press Esc L .
<ul style="list-style-type: none"> • Capitalize letters from the cursor to the end of the word. 	Press Esc U .

Designating a Keystroke as a Command Entry

To 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 .

Ending a Session

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

To end a session, perform this task:

Task	Command
Enter the quit EXEC command.	quit

Configuring PHY Redundancy

The Catalyst 5000 and 6000 families' dual physical-sublayer (dual PHY) ATM modules provide one active connection and one standby connection to the ATM network. You can connect both PHYs to a single ATM switch, or you can connect one PHY to one ATM switch and one PHY to a second ATM switch.

Only one PHY is active at a time. If the active PHY loses its connection, the ATM module switches automatically to the standby PHY. PHY A is the preferred PHY by default. You can change the preferred PHY using the **atm preferred phy** interface configuration command.

Release 12.0(4a)W5(10) and later supports the Fast PHY switchover feature on the ATM modules. Fast switchover reduces the time to restore traffic flow when traffic switches from the active PHY to the redundant PHY.

To change the preferred PHY on the dual PHY ATM modules, perform this task in interface configuration mode:

Task	Command
Change the preferred PHY to the one not currently in use.	atm preferred phy {A B}

This example shows how to change the preferred PHY to PHY B:

```
ATM#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
ATM(config)#interface atm0
ATM(config-if)#atm preferred phy B
ATM(config-if)#^Z
ATM#
```

The **show interface** command displays the preferred and active PHY:

```
ATM#show interface atm0
ATM0 is up, line protocol is up
Hardware is Catalyst 5000 ATM
MTU 1500 bytes, sub MTU 0, BW 156250 Kbit, DLY 80 usec, rely 255/255, load 125
Encapsulation ATM, loopback not set, keepalive not supported
Encapsulation(s): AAL5, PVC mode
4096 maximum active VCs, 1024 VCs per VP, 3 current VCCs
VC idle disconnect time: 300 seconds
Signalling vc = 1, vpi = 0, vci = 5
UNI Version = 3.0, Link Side = user
Preferred Phy : PHY B
Currently Active Phy : PHY B
Link Status : UP
Standby Phy Status : UP
Last input 00:00:00, output never, output hang never
Last clearing of "show interface" counters 1d23h
Queueing strategy: fifo
Output queue 0/40, 0 drops; input queue 0/75, 0 drops
5 minute input rate 1000 bits/sec, 1 packets/sec
5 minute output rate 132043000 bits/sec, 1 packets/sec
 1720746 packets input, 101473920 bytes, 0 no buffer
  Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
  0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
 1720745 packets output, 3872214384 bytes, 0 underruns
  0 output errors, 0 collisions, 0 interface resets
  0 output buffer failures, 0 output buffers swapped out
ATM#
```

Configuring Basic ATM Parameters

These sections describe how to configure basic parameters on the ATM modules:

- Configuring VTP on the ATM Module, page 2-23
- Setting the Clock Source, page 2-23
- Configuring Mode, page 2-24
- Configuring Output Throttling, page 2-24
- Configuring ILMI Keepalives, page 2-25
- Configuring the UNI Signaling Version, page 2-27

Configuring VTP on the ATM Module

To enable VTP on the ATM module, perform this task:

	Task	Command
Step 1	Enter configuration mode.	configure terminal
Step 2	Enable VTP on the ATM module.	vtp enable
Step 3	Exit configuration mode.	Ctrl-Z

This example shows how to enable VTP on the ATM module:

```
ATM#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
ATM(config)#vtp enable
ATM(config)#^Z
ATM#
```

To disable VTP on the ATM module, perform this task:

	Task	Command
Step 1	Enter configuration mode.	configure terminal
Step 2	Disable VTP on the ATM module.	no vtp enable
Step 3	Exit configuration mode.	Ctrl-Z

This example shows how to disable VTP on the ATM module:

```
ATM#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
ATM(config)#no vtp enable
ATM(config)#^Z
ATM#
```

Setting the Clock Source

You can configured the ATM modules on the Catalyst 5000 family and 2926G series switches to generate the transmit clock from its internal source or to set the clock-generation mode to receive timing from an external source. By default, the ATM module generates the transmit clock signal from its internal source. The default is loop-timed clock mode for the ATM dual PHY OC-3 modules (WS-X5167 and WS-X5168).



Note

The **atm clock internal** and the **no atm clock internal** commands are not supported by the ATM dual PHY OC-12 modules.

To change the clock source, perform this task in interface configuration mode:

	Task	Command
Step 1	Enter configuration mode.	configure terminal
Step 2	Select the ATM interface.	interface atm0
Step 3	Set the clock source	[no] atm clock internal
Step 4	Exit configuration mode.	Ctrl-Z

This example shows how to set the ATM module to generate the transmit clock from its internal source:

```
ATM(config-if)#atm clock internal
ATM(config-if)#
```

This example shows how to set the ATM module to generate the transmit clock from an external source:

```
ATM(config-if)#no atm clock internal
ATM(config-if)#
```

Configuring Mode

You can configure the mode of operation and control type for cell-rate decoupling on the SONET PLIM using the **atm sonet** command. The default mode is STS-3c operation for the ATM dual PHY OC-3 modules and STS-12c operation for the ATM dual PHY OC-12 modules.

To configure the mode of operation, perform this task in interface configuration mode:

	Task	Command
Step 1	Enter configuration mode.	configure terminal
Step 2	Select the ATM interface.	interface atm0
Step 3	Set the mode of operation.	atm sonet {stm-1 sts-3c} {stm-4 sts-12c}
Step 4	Exit configuration mode.	Ctrl-Z

This example shows how to set the mode for cell-rate decoupling on the SONET PLIM to stm-1:

```
ATM (config-if)#atm sonet stm-1
ATM (config-if)#
```

Configuring Output Throttling

You can configure output throttling on the ATM modules to control the transmission rate on the ATM interface. Output throttling applies to both LANE and PVCs. Per-VC pacing is not supported on the modules.

To throttle the output of the entire interface, perform this task:

	Task	Command
Step 1	Enter configuration mode.	configure terminal
Step 2	Select the ATM interface.	interface atm0
Step 3	Apply output throttling to the interface.	atm traffic-shape rate <i>peak_rate</i>
Step 4	Exit configuration mode.	Ctrl-Z

This example shows how to throttle the output of the ATM module interface to 100 Mbps:

```
ATM#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
ATM(config)#interface atm0
ATM(config-if)#atm traffic-shape rate 100
ATM(config-if)#^Z
ATM#
```

To return the output rate to the default value for the interface, perform this task:

	Task	Command
Step 1	Enter configuration mode.	configure terminal
Step 2	Select the ATM interface.	interface atm0
Step 3	Apply output throttling to the interface.	no atm traffic-shape rate <i>peak_rate</i>
Step 4	Exit configuration mode.	Ctrl-Z

This example shows how to return the output of the ATM module interface to the default value:

```
ATM#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
ATM(config)#interface atm0
ATM(config-if)#no atm traffic-shape rate 100
ATM(config-if)#^Z
ATM#
```

Configuring ILMI Keepalives

When you enable Integrated Local Management Interface (ILMI) keepalives on a dual PHY ATM module, periodic ILMI keepalive messages are sent to the ATM switch on the active PHY. The ATM switch responds to the ILMI keepalives.

If the ATM switch fails to respond to four consecutive keepalives, the dual PHY module switches from the active PHY to the backup PHY. The ILMI keepalives feature is useful only if the dual PHY module is connected to two different ATM switches. ILMI keepalives are disabled by default.

To enable ILMI keepalives and configure the interval between messages, perform this task:

	Task	Command
Step 1	Enter configuration mode.	configure terminal
Step 2	Select the ATM interface.	interface atm0
Step 3	Enable ILMI keepalives and specify the message interval.	atm ilmi-keepalive [<i>interval</i>]
Step 4	Exit configuration mode.	Ctrl-Z
Step 5	Verify the output rate for the interface.	show atm ilmi-status

**Note**

If you enable ILMI keepalives but do not specify the interval, the default value of 5 seconds applies.

This example shows how to enable ILMI keepalives and configure the interval between messages to 4 seconds:

```
ATM#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
ATM(config)#interface atm0
ATM(config-if)#atm ilmi-keepalive 4
ATM(config-if)#^Z
ATM#
```

The following **show atm ilmi-status** command displays the ILMI keepalive configuration:

```
ATM#show atm ilmi-status

Interface : ATM0 Interface Type : Private UNI (User-side)
ILMI VCC : (0, 16) ILMI Keepalive : Enabled (5 Seconds)
ILMI State: UpAndNormal
Peer IP Addr: 172.20.52.41 Peer IF Name: ATM12/0/0
Peer MaxVPIbits: 8 Peer MaxVCbits: 14
Active Prefix(s) :
47.0091.8100.0000.00e0.4fac.b401
End-System Registered Address(s) :
47.0091.8100.0000.00e0.4fac.b401.00e0.4fac.b091.01 (Confirmed)
47.0091.8100.0000.00e0.4fac.b401.00e0.4fac.b092.01 (Confirmed)
47.0091.8100.0000.00e0.4fac.b401.00e0.4fac.b091.02 (Confirmed)
47.0091.8100.0000.00e0.4fac.b401.00e0.4fac.b092.02 (Confirmed)
47.0091.8100.0000.00e0.4fac.b401.00e0.4fac.b095.00 (Confirmed)
ATM#
```

To disable ILMI keepalives, perform this task:

	Task	Command
Step 1	Enter configuration mode.	configure terminal
Step 2	Select the ATM interface.	interface atm0

	Task	Command
Step 3	Disable ILMI keepalives.	no atm ilmi-keepalive
Step 4	Exit configuration mode.	Ctrl-Z

This example shows how to disable ILMI keepalives on the ATM module:

```
ATM#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
ATM(config)#interface atm0
ATM(config-if)#no atm ilmi-keepalive
ATM(config-if)#^Z
ATM#
```

Configuring the UNI Signaling Version

The ATM modules are backward compatible with ATM switches that support User-Network Interface (UNI) version 3.0. When the ATM module comes online, ILMI negotiates between the UNI version automatically.

If the UNI version is successfully learned through ILMI, the ATM module accepts the UNI version returned from the ATM switch. If ILMI is unable to determine the UNI version, or if ILMI is disabled, the UNI version defaults to version 3.0.

To statically configure the UNI version, perform this task:

	Task	Command
Step 1	Enter configuration mode.	configure terminal
Step 2	Select the ATM interface.	interface atm0
Step 3	Shut down the interface.	shutdown
Step 4	Statically configure the UNI version for the ATM interface.	atm uni-version {3.0 3.1}
Step 5	Bring up the interface.	no shutdown
Step 6	Exit configuration mode.	Ctrl-Z
Step 7	Verify the UNI version.	show interface atm0

This example shows how to statically configure the UNI version to version 3.0 and verify the configuration:

```
ATM#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
ATM(config)#interface atm0
ATM(config-if)#shutdown
ATM(config-if)#atm uni-version 3.0
ATM(config-if)#no shutdown
ATM(config-if)#^Z
ATM#show interface atm0
ATM0 is up, line protocol is up
Hardware is Catalyst 5000 ATM
MTU 1500 bytes, sub MTU 0, BW 156250 Kbit, DLY 80 usec, rely 255/255, load 1/2
55
Encapsulation ATM, loopback not set, keepalive not supported
Encapsulation(s): AAL5, PVC mode
```

```

4096 maximum active VCs, 1024 VCs per VP, 32 current VCCs
VC idle disconnect time: 300 seconds
Signalling vc = 1, vpi = 0, vci = 5
UNI Version = 3.0, Link Side = user
PHY Type : SINGLE PHY;          Link Status: UP
Last input 00:00:00, output never, output hang never
Last clearing of "show interface" counters never
Queueing strategy: fifo
Output queue 0/40, 0 drops; input queue 0/75, 0 drops
5 minute input rate 1000 bits/sec, 1 packets/sec
5 minute output rate 1000 bits/sec, 1 packets/sec
 870851 packets input, 116131392 bytes, 0 no buffer
 Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
 0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
705922 packets output, 83530944 bytes, 0 underruns
 0 output errors, 0 collisions, 8 interface resets
 0 output buffer failures, 0 output buffers swapped out
ATM#

```

To return the UNI version to the default (either the version returned by ILMI or UNI version 3.0, if ILMI cannot learn the UNI version or if ILMI is disabled), perform this task:

	Task	Command
Step 1	Enter configuration mode.	configure terminal
Step 2	Select the ATM interface.	interface atm0
Step 3	Shut down the interface.	shutdown
Step 4	Restore the default UNI version for the ATM interface (learned through ILMI or version 3.0 if ILMI cannot learn the UNI version).	no atm uni-version
Step 5	Bring up the interface.	no shutdown
Step 6	Exit configuration mode.	Ctrl-Z
Step 7	Verify the UNI version.	show interface atm0

This example shows how to return the UNI version on the ATM interface to the default:

```

ATM#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
ATM(config)#interface atm0
ATM(config-if)#shutdown
ATM(config-if)#no atm uni-version
ATM(config-if)#no shutdown
ATM(config-if)#^Z
ATM#

```

Displaying ATM Module Statistics and Information

You can monitor activity on the ATM modules and view configuration information by entering statistics commands. See related chapters for information on how to access statistics output specific to the LANE, MPOA, or PVC protocols.

Currently, the following basic ATM statistics commands are supported:

- **show version**—Displays version information for the ATM module.
- **show atm interface**—Displays information for the interface.
- **show ilmi atm**—Displays ILMI-related information.
- **show atm traffic**—Displays current global ATM traffic information to and from all ATM networks connected to the ATM module.
- **show atm vlan**—Displays the active VLAN to PVC bindings.
- **show atm vc**—Displays the active ATM virtual connections and traffic information.
- **show sscop**—Displays SSCOP details for all ATM interfaces.

