Managing Modems

The Cisco AS5200 universal access servers support Microcom or MICA modem carrier cards. For details on the carrier cards, refer to the *Cisco AS5200 Universal Access Server Hardware Installation Guide*.

You can manage your modems using monitoring, polling, and troubleshooting commands. For both Microcom and MICA modems, most of the modem management functions are identical. This appendix discusses procedures and commands common to both types of modems as well as procedures and commands that apply to only one type of modem. Sections or commands that apply to only one type of modem are clearly indicated.

This appendix includes the following sections:

- Monitoring Modems
- Managing Modems
- Polling Modems
- Troubleshooting Modems
- Upgrading Modem Code

Monitoring Modems

This section describes how to send AT commands to Microcom and MICA modems.

For a list and description of AT commands, refer to the *AT Command Set and Register Summary for MICA Six-Port Modules* or *AT Command Set* and *Register Summary for V.34 and 56K 12-Port Modules* publications.

Configuring Microcom Modems for Monitoring

To monitor Microcom (V.34 and 56K) modems you must perform two main configuration tasks:

- Configure a modem to permit a direct-connect session
- Establish the session

Table B-1 describes all the steps necessary to enter AT command mode on the access server.

Table B-1 Entering AT Command Mode for Microcom Modems

Step	Command	Purpose

1	`5200> enable`
	`Password: <password>`
	`5200#`
		Enter enable mode.
		Enter the password.
		You have entered enable mode when the `5200#` prompt appears.

2	`5200# configure terminal`
	`Enter configuration commands, one per line. End with CNTL/Z.`
	`5200(config)#`
		Enter global configuration mode.You have entered global configuration mode when the `5200(config)#` prompt appears.

3	`5200(config)# line 1` `5200(config-line)#`	Enter line configuration mode. In this example, line 1 is specified. You have entered line configuration mode when the `5200(config-line)#` prompt appears.
4	`5200(config-line)# modem at-mode-permit`	Configure a Microcom modem to permit a direct-connect session.

5	`5200 (config-if)# end`
	`5200#`
	`%SYS-5-CONFIG_I: Configured from console by console`
		Return to privileged EXEC mode.
		This message is normal and does not indicate an error.

6	`5200# modem at-mode 1/1` `You are now entering AT command mode on modem (slot 1 / port 1). Please type CTRL-C to exit AT command mode.`	Enter a direct-connect session with a modem. In this example, a direct connect session is established with the modem in slot 1, port 1. Enter the modem slot number first, followed by the modem port number. Now you are in AT command mode and can enter the AT commands described in this document.
7	`Ctrl-C` `5200#`	When done entering AT commands, press **Ctrl-C** to return to enable mode.

Configuring MICA Modems for Monitoring

To send AT commands to a MICA modem involves a reverse Telnet procedure. Table B-2 shows how to enter AT command mode from EXEC mode using reverse Telnet.

Note MICA modems do not support the **modem at-mode** commands available in Cisco IOS line configuration mode.

Table B-2 Entering AT Command Mode for MICA Modems

Step	Command	Purpose
1	`5200> telnet ip-address line#`	Open a reverse Telnet connection to the modem. In the command shown here, *ip-address* is the IP address of the access server and *line#* is the two-digit line number of the modem, prefixed by 20. (For example, enter **telnet 172.0.0.1 2001** if the IP address is 172.0.0.1 and the modem line number is 1.)
		If you do not know which line number to use, enter the **show line** command and check the resulting display for tty numbers that have `inout` in the Modem column.
	`Trying 172.0.0.1, 2001 ... Open`	The Telnet connection is open when the word `Open` appears.
2	**at** `OK`	There is no command prompt in AT command mode. To confirm that you are able to enter AT commands, type **at** and press **Return**. If you are in AT command mode, the modem returns `OK`.
3	**Ctrl-Shift-6 X**	To exit AT command mode and return to privileged EXEC mode, enter **Ctrl-Sh-6 X** (hold down the **Control** and **Shift** keys and press **6**, then release everything and press **X**).
	`5200# disconnect`	Enter **disconnect** to end the Telnet connection.

Modem Performance Statistics Commands

You can view modem statistics and configure modem events using the Cisco IOS software with the Cisco AS5200 access server. To view performance statistics for the Microcom and MICA modems, enter one or more of the following commands in enable mode (the prompt is displayed as `5200#`):

- **show modem** [*slot/modem* | **group** *number*]—Show various performance statistics for a modem or group of modems.
- **show modem at-mode**—Display all directly connected AT sessions active on the access server. This command applies to Microcom modems only.
- **show modem call-stats**—Display the calling statistics for all the modems in the system.

- **show modem mapping**—List all Cisco IOS software and modem code files (bundled and unbundled) and their versions in the boot Flash and system Flash memory. This will help you decide if you need to update your modem code files.
- **show modem configuration** [*slot/modem-port* | **group** *number*]—Display the modem configuration for a single or group of modems. This command applies to MICA modems only.
- **show modem connect-speeds**—Display the connection speeds for all the modems in the system.
- **show modem csm** [*slot/modem-port* | **group** *number*]—Show the call-switching module status for a single or group of modems.
- **show modem group**—Display group information for the modems.
- **show modem log** [*slot/modem-port* | **group** *number*]—Show the event log status for a modem or group of modems. This command applies to Microcom modems only.
- **show modem operational-status** [*slot/modem* | **group** *number*]—Display the operational status for all the modems in the system. This command applies to MICA modems only.
- **show modem summary**—Display the cumulative system statistics for all installed modems.
- **show modem test**—Display the modem test log, which is the result of the modem configuration command.
- **show modem version**—Display version information for all the modems in the system.

To view additional performance statistics for MICA modems only, enter one or more of the following commands in EXEC mode:

- **show modem mica slot**—Show information for all installed MICA boards.
- **show modem mica slot** *number*—Show information about a specific MICA board.
- **show modem mica** [*slot/modem-port*]—Show information for a specific modem on a specific slot.
- **show modem mica all**—Show information for all installed modems including the pseudo channels.

Note The first three channels displayed for each board are the DC session (#60), Status polling (#61), and the control (#62) channel.

Managing Modems

This section describes how to manage modems by checking the type of modem connected to the access server, removing inoperable modems from service, disabling a modem from dial-up service, and setting modem recovery times and event buffers. For details on disabling a modem from dial-up services, see the section, “Troubleshooting Modems,” later in this appendix.

Check Modem Type

To check the type of modem connected to the access server and to configure the modem automatically, enter the following command in global configuration mode [the prompt is displayed as `5200(config)#`]:

- **modem autoconfigure discovery**—Check the modem type and configure the modem automatically.

The modem is identified each time the line is reset. If a modem cannot be detected, the line continues retrying for 10 seconds. After the modem type is determined, this information remains stored until the modem is recycled or disconnected. Discovery mode is much slower than configuring a line directly.

Each time the modem is reset (every time a chat reset script is executed), a string of commands is sent to the modem, the first one being "return to factory-defaults."

Set Modem Event Buffer

This section applies to Microcom modems only. To configure the size of the history event queue buffer for manageable modems in the access server, enter the following command in global configuration mode [the prompt is displayed as `5200(config)#`]:

- **modem buffer-size** *number*—Define the number of modem events that each modem is able to store. The default is 100 events per modem.

Note Use the **show modem log** command to view modem events.

Set Modem Recovery Time

This section applies to Microcom modems only. To set the maximum amount of time the call-switching module waits for a local modem to respond to a request before it is considered locked in a suspended state, enter the following command in global configuration mode [the prompt is displayed as `5200(config)#`]:

- **modem recovery-time** *minutes*—Set maximum time local modems will wait for a response. The default is 5 minutes.

After the call-switching module resets a suspended modem, the module recovers to a default call-switching module state.

Remove Inoperable Modems from Service

To remove modems from service and indicate them as suspected or proven to be inoperable, enter the following command in line configuration mode [the prompt is displayed as `5200(config-line)#`]:

- **modem bad**—Specify a modem as inoperable.

If you mark a *single* modem as inoperable using this command, it appears as *Bad*—without the asterisk (*)—in the *Status* column of the **show modem** command's output for that particular modem. A modem marked inoperable by the **modem startup-test** command appears as *Bad** in the **show modem** command output for that particular modem. Use the **no modem bad** command to unmark a modem as *Bad** or *Bad* and restore it for dial-up connection services.

Polling Modems

This section describes polling modems for statistics, including setting the time interval between polls and the maximum number of polling attempts.

Set Polling Attempts

To set the maximum number of polling attempts used to retrieve a local modem's status or statistics, enter the following command in global configuration mode [the prompt is displayed as `5200(config)#`]:

- **modem poll retry** *number*—Set maximum number of polling attempts. The default is three polling attempts. The configuration range is from 0 to 10 attempts.

If the number of attempts to retrieve modem status or statistics exceeds the *number* you define, the out-of-band port is removed from operation. In this case, you must reset the modem hardware using the **clear modem** command.

Set Time Interval between Polls

To set the time interval between the polls that are sent to the local modems for reporting modem status and statistics, enter the following command in global configuration mode [the prompt is displayed as `5200(config)#`]:

- **modem poll time** *seconds*—Specify the number of seconds between polls. The default is 12 seconds. The configuration range is from 2 to 120 seconds.

Poll for Modem Statistics

To poll for a modem's status and statistics through its out-of-band port, enter the following command in line configuration mode [the prompt is displayed as `5200(config-line)#`]:

- **modem status-poll**—Poll for a modem's status and statistics.

The **no modem status-poll** command disables status polling through the out-of-band port for a specified modem.

Troubleshooting Modems

This section describes how to perform diagnostic testing on installed modems, test two modems back-to-back, disable modems from service, reset a modem, and debug a modem.

Perform a Modem Startup Test

To perform diagnostic testing on all the installed modems during the system's initial startup or rebooting process, enter the following command in global configuration mode [the prompt is displayed as `5200(config)#`]:

- **modem startup-test**—Perform diagnostic testing for all modems.

The results of the modem startup test are displayed in the *Status* column of the **show modem** command's output. Modems that pass the diagnostic test are marked as *Idle*, *Busy*, *Downloading*, and *Reset*. Modems that fail the diagnostic test are marked as *Bad**. These modems cannot be used for call connections. Depending on how many modems are installed, this diagnostic test may take from 5 to 15 minutes to complete. Perform additional testing on an inoperative modem by executing the **test modem back-to-back** command. The **no modem startup-test** command disables startup testing.

Test Two Modems Back-to-Back

Perform additional testing on a modem suspected of being inoperable by conducting a series of internal back-to-back connections and data transfers between two modems. All modem test connections occur inside the access server. For example, if mobile users cannot dial into modem 2/5 (which is the sixth modem port on the modem board in the second chassis slot), attempt a back-to-back test with modem 2/5 and a known-functioning modem such as modem 2/6. Enter the following command in enable mode (the prompt is displayed as `5200#`) to perform internal back-to-back modem tests between two modems:

- **test modem back-to-back** *first-slot/modem-number second-slot/modem-number*—Perform internal back-to-back modem tests between two modems.

You might need to enable this command on several different combinations of modems to determine which one is not functioning properly. A pair of operable modems successfully connect and complete transmitting data in both directions. An operable modem and an inoperable modem do not successfully connect with each other.

Hold and Reset a Modem (Microcom Modems Only)

This section applies to Microcom modems only. To reset and isolate the modem hardware for extensive troubleshooting, enter the following command in line configuration mode [the prompt is displayed as `5200(config-line)#`]:

- **modem hold-reset**—Reset and isolate the modem hardware.

Use this command if you are experiencing extreme modem behavior (for example, the modem is uncontrollably dialing into the network). This command prevents the modem from establishing software relationships such as those created by the **test back-to-back modem** and **modem startup-test** commands. The modem is unusable while the this ommand is configured.

This command is also used to reset a modem that is frozen in a suspended state. Disable the suspended modem with the **modem hold-reset** command, and then restart hardware initialization with the **no modem hold-reset** command. A modem decommissioned by the **modem hold-reset** command does not accept modem firmware upgrades using the **copy modem** command.

Disable a Modem from Dial-Up Services

To disable modems from dialing or answering calls, enter one of the following commands in line configuration mode [the prompt is displayed as `5200(config-line)#`]:

- **modem busyout**—Gracefully disable a modem from dial-up services.
- **modem shutdown**—Abruptly shut down a modem from dial-up services.

The **modem busyout** command is not executed until the active modem is idle. No active connections are interrupted when you use this command. In contrast, the **modem shutdown** command immediately terminates all active connections on the specified modem. The resulting modem status for both these commands is the same. Enable the **no** form of these commands to restore a modem for dial-up services.

You can still configure the following commands on a disabled modem:

- **test modem back-to-back**
- **clear modem**
- **modem bad**
- **copy modem**

Debug a Modem

To debug a modem or group of modems, enter the following commands in enable mode (the prompt is displayed as `5200#`):

- **debug modem oob** [*slot/modem-port* | **group** *group-number*]—Debug a modem's out-of-band port, which is used to poll modem events.
- **debug modem csm** [*slot/modem-port* | **group** *group-number*]—Debug a call-switching module, which is used to connect calls.
- **debug modem trace** [**normal** | **abnormal** | **all**] [*slot/modem-port* | **group** *group-number*]—Debug the call trace, which determines why calls are terminated. Use this keyword only with manageable modems. Upload the call trace on **normal**, **abnormal**, or **all** call terminations.

Upgrading Modem Code

Modem code is a generic term applied to a modem code file, which is also called portware for MICA modems and firmware for Microcom modems.

With new systems, Cisco loads a Cisco IOS software-compatible version of modem code and copies the version to the installed modem modules. A map of the version(s) of modem code copied to the modem RAM for each modem module is stored in nonvolatile random-access memory (NVRAM) so that it is retained over power cycles.

Note You do not have to take any action to use the pre-installed version of modem code with new systems.

You can acquire new modem code in several ways:

- Cisco periodically releases new modem code versions (with bug fixes or new modem features) that improve your system's overall modem performance.
- Cisco also might ship modem code on diskette with spare boards or offer modem code for purchase with spare boards.
- Modem code is also available on the Cisco Software Center for owners of SMARTnet contracts.

This section describes how to upgrade modem code on your access server modems by:

1. Understanding the modem code scenarios possible for your access server.
2. Choosing an upgrade strategy.
3. Finding out the modem code version installed on your access server.
4. Upgrading the modem code.

Caution Cisco ships the access server with the latest version of modem code installed in the boot Flash memory and mapped to the modems. If you choose to use the modem code bundled with your installed Cisco IOS software, you could be reverting to a previous version of modem code. Also note that once you map the bundled modem code (using the **copy system:/ucode/***filename* **modem** or **copy ios-bundled modem** command) to your modems, each time you upgrade the Cisco IOS software, the new bundled modem code is automatically mapped to your modems. See "Displaying Modem Code Versions," later in this appendix, for details on displaying mode code versions mapped to modems, installed in boot Flash memory, and bundled with the Cisco IOS software on your access server.

How to Obtain Modem Code

You can obtain modem code in one of two ways:

- **Bundled** in regular Cisco IOS releases. See "Using the Modem Code Bundled with Cisco IOS Software" for details.
- **Unbundled** from Cisco Connection Online (CCO) or supplied on diskette. This can be either a more up-to-date version of modem code released before the next Cisco IOS release (when the modem code will be bundled with the Cisco IOS release), or a special version of modem code shipped with a new board. See "Upgrading Modem Code from the Cisco CCO TFTP Server" and "Upgrading Modem Code from Diskettes" for details.

Note You must be a registered Cisco user to log into Cisco Connection Online (CCO).

Important Modem Upgrade Commands

There are several commands you use to upgrade modem code. For examples on using the commands, see "Upgrading Modem Code from the Cisco CCO TFTP Server," "Upgrading Modem Code from Diskettes," and "Using the Modem Code Bundled with Cisco IOS Software," later in this appendix, for details.

- Use the **copy tftp flash** *filename* command to copy any version of modem code (no matter how it is obtained) into boot Flash memory. You can store several versions of the modem code in boot Flash memory under different filenames.
- Use the **copy bootflash modem** command to transfer a specified version (*filename*) of modem code from boot Flash memory to the modem RAM and map that version to the modem modules (slots/ports) specified in response to the modem range query.
- Use the **copy system:/ucode/***filename* **modem** command (or, for Cisco IOS releases earlier than 11.3AA and 12.0, the **copy ios-bundled** command) to transfer the version of modem code bundled with Cisco IOS software release to the modem RAM and map that version to the modem modules (slots/ports) specified in response to the modem range query. To view a list of microcode filenames, use the **dir system:/ucode** command.

Choosing an Update Strategy

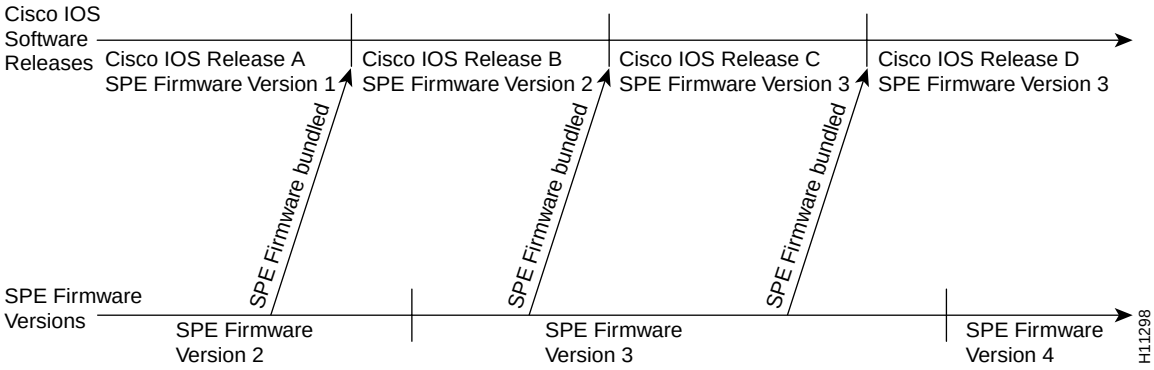
Because of multiple versions of modem code and the way Cisco IOS software processes these versions, Cisco suggests that you choose one of the following two strategies:

- Always allow Cisco IOS software to select the version of modem code.
- Always control the version of modem code used by the modules, independent of Cisco IOS selections.

Caution Cisco ships the access server with the latest version of modem code installed in the boot Flash memory and mapped to the modems. If you choose to use the modem code bundled with your installed Cisco IOS software, you could be reverting to a previous version of modem code. Also note that once you map the bundled modem code (using the **copy system:/ucode/***filename* **modem** or **copy ios-bundled modem** command) to your modems, each time you upgrade the Cisco IOS software, the new bundled modem code is automatically mapped to your modems. See "Displaying Modem Code Versions," later in this appendix, for details on displaying mode code versions mapped to modems, installed in boot Flash memory, and bundled with the Cisco IOS software on your access server.

To help with the decision, Figure B-1 shows a hypothetical release process. Using the modem code bundled with Cisco IOS software is the easier strategy and enables you to take advantage of new modem code whenever you upgrade your Cisco IOS software. Note that you can also control the modem code by reverting to previous versions using the **copy** command as discussed later.

Figure B-1 Release Timeline for Cisco IOS Software and Modem Code



Modem Code Scenarios

Table B-3 provides scenarios that can occur when you upgrade Cisco IOS software or modem code.

Table B-3 Modem Code Scenarios—Cisco IOS Software or Modem Code Upgrades

No.	Scenario	Update Process
1	You receive a new access server from the Cisco factory.	• No action needed. The factory loads and maps a compatible version of modem code.[1]
2	You update Cisco IOS software, and decide to use the version of modem code selected by Cisco IOS software.	• Update Cisco IOS software. • No further action needed—Cisco IOS software automatically downloads either its bundled version or a mapped version from boot Flash memory.[2]
3	You update Cisco IOS software, and decide *not* to use the modem code selected by Cisco IOS software.	• Update Cisco IOS software. • Copy the desired version of modem code file to boot Flash memory, then copy that file to the integrated modems on the 6-port module. See “Copy the Modem Code File from the Local TFTP Server to Modems,” later in this appendix, for details.
4	The modems are running a version of modem code from boot Flash memory that is different than the version bundled with Cisco IOS software. You decide to revert to the bundled version.	• Use the **copy system:/ucode/***filename* **modem** command (or, for Cisco IOS releases earlier than 11.3AA or 12.0, the **copy ios-bundled modem** command). Note that, once you map the bundled modem code to your modems, each time you upgrade the Cisco IOS software, the new bundled modem code is automatically mapped to your modems. See “Using the Modem Code Bundled with Cisco IOS Software” for details.
5	Cisco releases new modem code, which is a later version than the version currently running on the modems. You decide to use the new Cisco modem code.[3]	• Copy the desired version of modem code file to boot Flash memory, then copy that file to the integrated modems on the 6-port module. See “Copy the Modem Code File from the Local TFTP Server to Modems,” later in this appendix, for details.

1. To find out the version of modem in your system, use the **show modem mapping** command. This command displays the versions bundled with Cisco IOS (copied into Flash memory) and running on the modems.
2. In part, Cisco IOS software bases this decision on the last **copy** command issued. For more details about mapping, see Table B-5.
3. Cisco might ship this modem code on a diskette packed with the 6-port module.

Figure B-2 shows a release timeline and Table B-4 explains the resulting versions of Cisco IOS software and modem code.

Figure B-2 Release Timeline for Cisco IOS Software and Modem Code

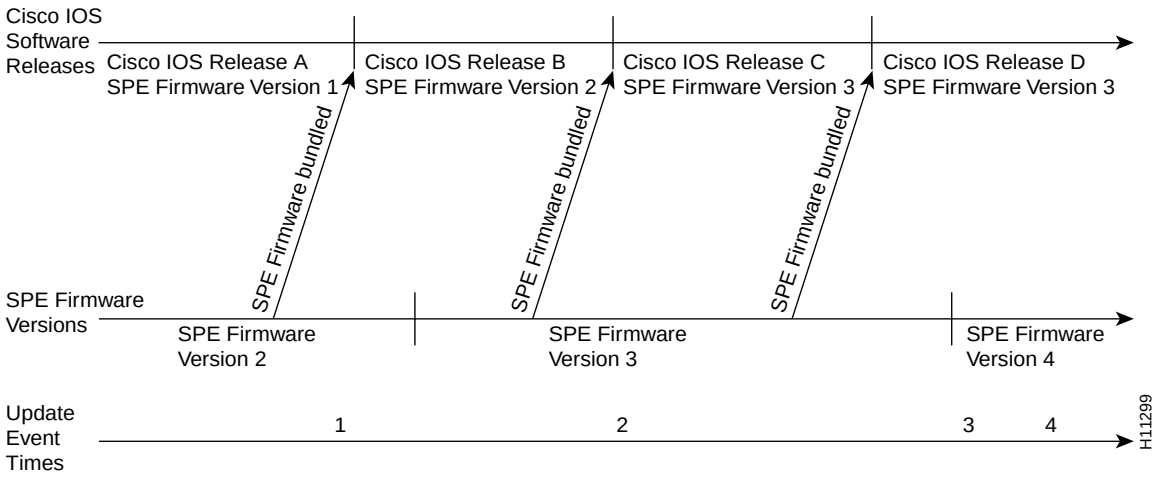


Table B-4 Resulting Versions of Cisco IOS Software and Modem Code

Update Event Time	Update Event	Resulting Version of Cisco IOS Software and Modem Code
1	You upgrade Cisco IOS software to Release B.	
	• If there is no previous **copy** command, Cisco IOS software uses the bundled version.	• Cisco IOS Release B modem code Version 2
	• If invalid mapping, Cisco IOS software uses the bundled version.	• Cisco IOS Release B Modem Code Version 2
	• If last copy command was **copy system:/ucode/***filename* **modem** (or, for Cisco IOS releases earlier than 11.3AA or 12.0, **copy ios-bundled modem**), Cisco IOS software uses the bundled version.	• Cisco IOS Release B Modem Code Version 2
	• If last copy command was **copy bootflash modem** and Modem Code Version 1 was specified, Cisco IOS copies the modem code from the boot Flash to the modems.	• Cisco IOS Release B Modem Code Version 1
2	You upgrade Cisco IOS software to Release C. (Cisco IOS software uses mapping from last **copy** command at Time 1).[1]	Cisco IOS Release C Modem Code Version 1
	You enter the **copy system:/ucode/***filename* **modem** command (or, for Cisco IOS releases earlier than 11.3AA or 12.0, the **copy ios-bundled modem** command).	Cisco IOS Release C Modem Code Version 3
3	New Modem Code Version 4 is released, you copy the file to boot Flash memory, enter **copy bootflash modem,** and specify Modem Code Version 4.	Cisco IOS Release C Modem Code Version 4
4	You upgrade Cisco IOS software to Release D.	Cisco IOS Release D Modem Code Version 4
	You enter the **copy system:/ucode/***filename* **modem** command (or, for Cisco IOS releases earlier than 11.3AA or 12.0, the **copy ios-bundled modem** command).	Cisco IOS Release D Modem Code Version 3

1. This example assumes the last copy command was **copy bootflash modem**, and Modem Code Version 1 was specified.

Table B-5 provides a list of modem code terminology and a description of how the terms are used in the modem code update process.

Table B-5 Modem Code Terminology and Commands

Term	Description
Modem Code	Modem code resides in and runs out of modem RAM. Cisco IOS software transfers a version of modem code to modem RAM on each reboot and reload. Boot Flash memory can contain several versions of modem code: a version bundled with Cisco IOS software and multiple versions that resulted from previous **copy tftp bootflash** commands.
copy system:/ucode/*filename* **modem** command (or, for Cisco IOS releases earlier than 11.3AA or 12.0, **copy ios-bundled modem** command)	This command transfers the version of modem code bundled with Cisco IOS software to the modem RAM and maps that version to the modem modules specified by the modem range. This command does not affect any existing versions of modem code that reside in boot Flash memory. After one such command, future Cisco IOS upgrades will potentially result in the downloading of new Cisco IOS bundled firmware to the modems. (If the new Cisco IOS image contains the same modem code as the old one, no new code will be downloaded to the modems.)
copy tftp bootflash *filename* command	Places a copy of the modem code in boot Flash memory.
copy bootflash modem command	This command transfers the version of modem code in boot Flash memory to the modem RAM and maps that version to the modem modules specified by the modem range.
Mapping commands	The copy commands map a specific version of modem code to a group of modem slots/ports. The **copy system:/ucode/***filename* **modem** (or, for Cisco IOS releases earlier than 11.3AA or 12.0, the **copy ios-bundled modem**) command maps the slots/ports to the bundled version, and the **copy bootflash modem** command maps the slots/ports to the boot Flash memory version. Cisco IOS software uses the mapping to determine which version of modem code should be downloaded to the modems. If Cisco IOS software finds no mapping or invalid mapping, it downloads the bundled version. Although modem ranges are specified as slot/port, the modem code is downloaded on a per module basis. The **show modem mapping** command lists all Cisco IOS software and modem code files (bundled and unbundled) and their versions in the boot Flash memory and system Flash memory. This will help you decide if you need to update your modem code files.[1]

1. This command is supported in Cisco IOS Releases 11.2(11)P and 11.3(2)T.

Displaying Modem Code Versions

Use the **show modem mapping** command to list all modem code files in the boot Flash memory, system Flash memory, and the modem code files bundled with Cisco IOS software. This will help you decide if you need to update your modem code files.

This is an example for Microcom modems.

```
5200# show modem mapping

Slot 1 has Microcom Carrier card.
```

```
      Module  Firmware     Firmware
Mdm   Number  Rev          Filename
1/0      0    3.1(30)      mcom-modem-fw-dsp-3.1.30.bin
1/1      0    3.1(30)      mcom-modem-fw-dsp-3.1.30.bin
1/2      0    3.1(30)      mcom-modem-fw-dsp-3.1.30.bin
1/3      0    3.1(30)      mcom-modem-fw-dsp-3.1.30.bint
.
.
.
1/20     1    3.1(30)      mcom-modem-fw-dsp-3.1.30.bin
1/21     1    3.1(30)      mcom-modem-fw-dsp-3.1.30.bin
1/22     1    3.1(30)      mcom-modem-fw-dsp-3.1.30.bin
1/23     1    3.1(30)      mcom-modem-fw-dsp-3.1.30.bin
.
.
.

IOS Bundled Firmware Information:

Microcom Firmware Version : 3.1.30
Microcom DSP Software Version : 1.01


Firmware files on Boot Flash:

Firmware-file                                    Version  Firmware-Type
=============                                    =======  =============
bootflash:mcom                                   3.1.30   Microcom F/W and DSP

Firmware files on System Flash:

Firmware-file                                    Version  Firmware-Type
=============                                    =======  =============
flash:digital_fw_file                            3.1.23   Microcom Firmware
flash:dsp_file                                   1.01     Microcom DSP
flash:mcom-modem-fw-dsp-3.1.30.bin               3.1.30   Microcom F/W and DSP
```

This is an example for MICA modems.

```
5200# show modem mapping

Slot 1 has Mica Carrier card.


        Modem      Firmware   Firmware
Module  Numbers    Rev        Filename
  0   1/0  - 1/5   2.2.3.0    bootflash:mica-modem-portware.2.2.3.0.bin
  1   1/6  - 1/11  2.2.3.0    mica-modem-portware.2.2.3.0.bin
  2   1/12 - 1/17  2.2.3.0    mica-modem-portware.2.2.3.0.bin
  3   1/18 - 1/23  2.2.3.0    mica-modem-portware.2.2.3.0.bin
  4   1/24 - 1/29  2.2.3.0    mica-modem-portware.2.2.3.0.bin

Slot 2 has Mica Carrier card.


        Modem      Firmware   Firmware
Module  Numbers    Rev        Filename
  0   2/0  - 2/5   2.2.3.0    flash:1:mica-modem-portware.2.2.3.0.bin
  1   2/6  - 2/11  2.2.3.0    mica-modem-portware.2.2.3.0.bin
  2   2/12 - 2/17  2.2.3.0    mica-modem-portware.2.2.3.0.bin
  4   2/24 - 2/29  2.2.3.0    mica-modem-portware.2.2.3.0.bin

IOS Bundled Firmware Information:

Mica Boardware Version : 1.0.0.0
```

```
Mica Portware Version : 2.2.30


Firmware files on Boot Flash:

Firmware-file                              Version  Firmware-Type
=============                              =======  =============
bootflash:mica-modem-portware.2.2.3.0.bin  2.2.3.0  Mica Portware
```

Upgrading Modem Code from the Cisco CCO TFTP Server

Upgrading modem code from the Cisco CCO TFTP server is a two-step process:

- Downloading the modem code from Cisco CCO TFTP server to a local TFTP server
- Copying the modem code file to the access server and modems

---

Note Cisco IOS software contains bundled modem code, which might differ from the version of modem code you download. For more information about how Cisco IOS software processes multiple modem code versions, refer to the earlier sections "Choosing an Update Strategy" and "Modem Code Scenarios" for details.

Download Modem Code from the Cisco CCO TFTP Server to a Local TFTP Server

---

Note You must be a registered Cisco user to log in to Cisco Connection Online (CCO).

You can download software from the CCO TFTP server using an Internet browser or FTP application. Both procedures are described below.

Note To download modem code from CCO to a PC and then upgrade the modem code to an access server connected to your PC via an Ethernet hub, you need to set up a TFTP application on your PC, establish a HyperTerminal session, and make sure your PC and access server are correctly connected and talking before downloading the modem code from CCO. All these procedures are described in "Upgrading Modem Code from Diskettes," later in this appendix.

Using an Internet Browser

Step 1 Launch an Internet browser.

Step 2 Bring up the Cisco Software Center home page at the following URL (this is subject to change without notice):

http://www.cisco.com/kobayashi/sw-center/

Step 3 Click **Access Products** (under **Cisco Software Products**) to open the **Access Products** window.

Step 4 Click **Cisco AS5200 Series Software**.

Step 5 Click the modem code you want and download it to your workstation or PC. For example, to download modem code for the Microcom modems, click **Download Microcom V.34 Modem Firmware** or **Download Microcom 56K Modem Firmware** under the respective sections.

Step 6 Click the modem code file you want to download, and then follow the remaining download instructions. If you are downloading the modem code file to a PC, make sure you download it to the c:\tftpboot directory; otherwise, the download process will not work.

Step 7 When the modem code is downloaded to your workstation, transfer the file to a TFTP server in your LAN using a terminal emulation software application.

Using an FTP Application

Note The directory path leading to the modem code files on cco.cisco.com is subject to change without notice. If you cannot access the files using an FTP application, try the Cisco Software Center URL http://www.cisco.com/kobayashi/sw-center/.

Step 1 Log in to Cisco CCO FTP server called cco.cisco.com:

```
terminal> ftp cco.cisco.com
Connected to cio-sys.cisco.com.
220-
220-  Cisco Connection Online       |        |      Cisco Systems, Inc.
220-  Email: cco-team@cisco.com   |||      |||  170 West Tasman Drive
220-  Phone: +1.800.553.2447  .:|||||:..:|||||:.  San Jose, CA 95134
220-
220-
220-  NOTE: As of February 1,1997 ftp.cisco.com will now point to this
220-  service. Please be advised. To use the former ftp.cisco.com after
220-  February 1, connect to ftpeng.cisco.com
220-
220-  You may login with:
220- + Your CCO username and password, or
220- + A special access code followed by your e-mail address, or
220- + "anonymous" followed by your e-mail address for guest access.
220-
220 cio-sys FTP server (CIOESD #103 Sun Dec 15 14:43:43 PST 1996) ready.
```

Step 2 Enter your CCO registered username and password (for example, **harry** and **letmein**):

```
Name (cco.cisco.com:harry): harry
331 Password required for harry.
Password: letmein
230-############################################################
230-#  Welcome to the Cisco Systems CCO FTP server.
230-#  This server has a number of restrictions.  If you are not familiar
230-#  with these, please first get and read the /README or /README.TXT file.
230-#  http://www.cisco.com/acs/info/cioesd.html for more info.
230-############################################################
230-
230-  *****  NOTE: As of February 1, 1997, "cco.cisco.com",    *****
230-  *****  "www.cisco.com" and "ftp.cisco.com" are now all   *****
230-  *****  logical names for the same machine.               *****
230-  *****                                                    *****
230-  *****  The old "ftp.cisco.com" is an entirely            *****
```

```
230-  *****  different machine, which is now known as         *****
230-  *****  "ftpeng.cisco.com" or "ftp-eng.cisco.com".       *****
230-  *****                                                   *****
230-  *****  In general, "ftpeng.cisco.com" is used only for  *****
230-  *****  distribution of Cisco Engineering-controlled     *****
230-  *****  projects, such as beta programs, early field     *****
230-  *****  trials, developing standards documents, etc.     *****
230-  *****                                                   *****
230-  *****  Be sure to confirm you have connected to         *****
230-  *****  the machine you need to interact with.           *****
230-
230-  If you have any odd problems, try logging in with a minus sign (-) as
230-  the first character of your password.  This will turn off a feature
230-  that may be confusing your ftp client program.
230-  Please send any questions, comments, or problem reports about this
230-  server to cco-team@cisco.com.
230-
230-  NOTE:
230-  o To download files from CCO, you must be running a *passive-mode*
230-    capable FTP client.
230-  o To drop files on this system, you must cd to the /drop directory.
230-  o Mirrors of this server can be found at
230-
230-     + ftp://www-europe.cisco.com European (Amsterdam)
230-     + ftp://www-fr.cisco.com     France     (Paris)
230-     + ftp://www-au.cisco.com     Australia  (Sydney)
230-     + ftp://www-jp.cisco.com     Japan      (Tokyo)
230-     + ftp://www-kr.cisco.com     Korea      (Seoul)
230-
230-Please read the file README
230-  it was last modified on Sat Feb  1 12:49:31 1997 - 163 days ago
230 User harry logged in.  Access restrictions apply.
Remote system type is UNIX.
Using binary mode to transfer files.
```

Step 3 Specify the directory path that holds the Modem Codem code you want to download. For example, the directory path for the Cisco AS5200 modem code is /cisco/access/5200:

```
ftp> cd /cisco/access/5200
250-Please read the file README
250-  it was last modified on Tue May 27 10:07:38 1997 - 48 days ago
250-Please read the file README.txt
250-  it was last modified on Tue May 27 10:07:38 1997 - 48 days ago
250 CWD command successful.
```

Step 4 View the contents of the directory with the **ls** command:

```
ftp> ls
227 Entering Passive Mode (192,31,7,130,218,128)
150 Opening ASCII mode data connection for /bin/ls.
total 2688
drwxr-s--T   2 ftpadmin ftpcio    512 Jun 30 18:11 .
drwxr-sr-t  19 ftpadmin ftpcio    512 Jun 23 10:26 ..
lrwxrwxrwx  1  root     3          10 Aug   6 1996     README ->README.txt
-rw-rw-r--   1 root     ftpcio   2304 May 27 10:07 README.txt
-r--r--r-- 1 ftpadmin ftpint 377112 Jul 10 18:08
images/mica-modem-portware.2.2.3.0.bin
-r--r--r-- 1 ftpadmin ftpint 635 Jul 10 18:08 images/mica-modem-portware.readme

226 Transfer complete.
```

Step 5 Specify a binary image transfer:

```
ftp> binary
200 Type set to I.
```

Step 6 Copy the modem code files from the Cisco AS5200 to your local environment with the **get** command.

```
ftp> get images/mica-modem-portware.2.2.3.0.bin
PORT command successful.
Opening BINARY mode data connection for images/mica-modem-portware.2.2.3.0.bin
(280208 bytes).
Transfer complete.
local: images/mica-modem-portware.2.2.3.0.bin
remote: images/mica-modem-portware.2.2.3.0.bin
385503 bytes received in 3.6 seconds (1e+02 Kbytes/s)
```

Step 7 Quit your terminal session:

```
ftp> quit
Goodbye.
```

Step 8 Verify you successfully transferred the files to your local directory:

```
5200% ls -al
total 596
-r--r--r-- 1 280208 Jul 10 18:08 images/mica-modem-portware.2.2.3.0.bin
5200% pwd
/auto/tftpboot
```

Step 9 Transfer these files to a local TFTP or RCP server that your access server or router can access.

Copy the Modem Code File from the Local TFTP Server to Modems

The procedure for copying the modem code file from your local TFTP server to the modems involves two steps. First, you need to transfer the code to the access server's boot Flash memory. Then, you need to transfer the code to the modems.

These two steps are performed only once. After you copy the modem code file into boot Flash memory for the first time, you should not have to perform these steps again. Because the modem code runs from modem RAM, the Cisco IOS software automatically copies the modem code to each modem each time the access server power cycles.

Perform the following steps to download modem code to MICA modems:

Step 1 Establish an xterm session to the access server if using a UNIX workstation, or a HyperTerminal session to the access server if using a PC. For details on establishing a HyperTerminal session, see "Upgrading Modem Code from Diskettes," later in this appendix, for details.

Step 2 Enter the access server enable mode (the prompt is displayed as `5200#`):

```
5200> enable
Password: <password>
5200#
```

Step 3 Check the files in the access server boot Flash memory:

```
5200# show bootflash

Boot flash directory:
File  Length   Name/status
  1   3405148  c5200-boot-l
[3405148 bytes used, 4983460 available, 8388608 total]
8192K bytes of processor board Boot flash (Read/Write)
```

Step 4 Download the modem code file from TFTP server into the access server boot Flash memory using the **copy tftp bootflash** command. After you enter the command, you are prompted for the download destination and the remote host name as requested by the system software.

This is a Microcom modem example.

```
5200# copy tftp bootflash

Boot flash directory:
File  Length   Name/status
  1   3405148  c5200-boot-l
[3405148 bytes used, 4983460 available, 8388608 total]
Address or name of remote host [255.255.255.255]? jurai
Source file name? mcom-modem-code-3.2.10.bin
Destination file name [mcom-modem-code-3.2.10.bin]? mcom-modem-code-3.2.10.bin
Accessing file 'mcom-modem-code-3.2.10.bin' on jurai...
Loading mcom-modem-code-3.2.10.bin .from 223.255.254.254 (via Ethernet0): ! [OK]

Erase flash device before writing? [confirm] no
Copy file? [confirm]

Copy 'mcom-modem-code-3.2.10.bin' from server
  as 'mcom-modem-code-3.2.10.bin' into Flash WITHOUT erase? [yes/no] yes
Loading mcom-modem-code-3.2.10.bin from 223.255.254.254 (via Ethernet0):
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
[OK - 371202/4397036 bytes]

Verifying checksum...  OK (0xE50F)
Flash device copy took 00:00:13 [hh:mm:ss]
```

This is a MICA modem example.

```
5200#copy tftp bootflash

Boot flash directory:
File  Length   Name/status
  1   3405148  c5200-boot-l
[3405212 bytes used, 4983396 available, 8388608 total]
Address or name of remote host [jurai]? jurai
Source file name? mica-modem-portware.2.2.3.0.bin
Destination file name [mica-modem-portware.2.2.3.0.bin]?
mica-modem-portware.2.2.3.0.bin
Accessing file 'mica-modem-portware.2.2.3.0.bin' on jurai...
Loading mica-modem-portware.2.2.3.0.bin from 223.255.254.254 (via Ethernet0): !
[OK]

Erase flash device before writing? [confirm] no
Copy file? [confirm] yes

Copy 'mica-modem-portware.2.2.3.0.bin' from 5200
  as 'mica-modem-portware.2.2.3.0.bin' into Flash WITHOUT erase? [yes/no] yes
Loading mica-modem-portware.2.2.3.0.bin from 223.255.254.254 (via Ethernet0):
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
[OK - 209118/4983396 bytes]

Verifying checksum...  OK (0xBFC6)
Flash device copy took 00:00:07 [hh:mm:ss]
5200#
```

Step 5 Verify the file has been copied into the access server boot Flash memory:

```
5200# show bootflash

Boot flash directory:
```

```
File  Length   Name/status
  1   3405148  c5200-boot-l
  2   209118   mica-modem-portware.2.2.3.0.bin
  3   371202   mcom-modem-code-3.2.10.bin
[3985468 bytes used, 4403140 available, 8388608 total]
8192K bytes of processor board Boot flash (Read/Write)
```

Step 6 Copy the modem code file from the access server boot Flash memory to the modems by entering the **copy bootflash modem** command:

This is a Microcom modem example.

```
5200# copy bootflash modem
Modem Numbers (<slot>/<port> | group <number> | all)? all

Boot flash directory:
File  Length   Name/status
  1   3405148  c5200-boot-l
  2   209118   mica-modem-portware.2.2.3.0.bin
  3   371202   mcom-modem-code-3.2.10.bin
[3985468 bytes used, 4403140 available, 8388608 total]
Name of file to copy? mcom-modem-code-3.2.10.bin
Copy 'mcom-modem-code-3.2.10.bin' from Flash to modems? [yes/no] yes
[OK - 371202/278528 bytes]

5200#
*Mar  1 00:09:17: %MODEM-5-DL_START: Modem (1/0) started firmware download
*Mar  1 00:10:45: %MODEM-5-DL_GOOD: Modem (1/0) completed firmware download:
MNPClass10K56flexModemRev3.2.10/85
```

This is a MICA modem example.

```
5200# copy bootflash modem
Modem Numbers (<slot>/<port> | group <number> | all)? all

Boot flash directory:
File  Length   Name/status
  1   3405148  c5200-boot-l
  2   209118   mica-modem-portware.2.2.3.0.bin
  3   371202   mcom-modem-code-3.2.10.bin
[3985468 bytes used, 4403140 available, 8388608 total]
Name of file to copy?  mica-modem-portware.2.2.3.0.bin

Type of service [busyout/reboot] busyout
Copy 'bootflash:mica-modem-portware.2.2.3.0.bin' from Bootflash to modems?
[yes/no] yes

5200#

*Mar  1 00:10:03.159: %MODEM-5-DL_START: Modem (1/0) started firmware download
*Mar  1 00:10:03.159: %MODEM-5-DL_START: Modem (1/1) started firmware download
*Mar  1 00:10:03.163: %MODEM-5-DL_START: Modem (1/2) started firmware download
.
.
.
*Mar  1 00:10:13.823: %MODEM-5-DL_GOOD: Modem (1/2) completed firmware download:
*Mar  1 00:10:13.823: %MODEM-5-DL_GOOD: Modem (1/3) completed firmware download:
*Mar  1 00:10:13.827: %MODEM-5-DL_GOOD: Modem (1/4) completed firmware download:
*Mar  1 00:10:13.831: %MODEM-5-DL_GOOD: Modem (1/5) completed firmware download:
```

Note The modem code is downloaded to the module, not the individual slot/ports as indicated by the screen display.

Upgrading Modem Code from Diskettes

This section describes how to copy modem code from diskettes to your hard disk in a PC environment, and then upload the modem code to the modems. The steps are similar if you are using a Macintosh or UNIX workstation.

Note If you loaded Cisco IOS software from a feature pack CD-ROM using Router Software Loader (RSL), note that the CD contains a TFTP server program for PCs using Microsoft Windows 95. Run the TFTP server program from the directory where you installed the RSL program. Remember to set the root directory to the directory where the Cisco AS5200 modem code is located. The RSL and the TFTP applications are also available on CCO in the software library in the Access Products section.

Copy the Modem Code to Your PC Hard Disk

This section describes how to copy the modem code file to your hard disk in a PC environment. The steps are similar if you are using a Macintosh or a UNIX workstation.

Step 1 Insert the modem code diskette in the diskette drive.

Step 2 Use Microsoft Windows 95 Explorer to create a folder named tftpboot at your hard disk root c:.

Step 3 Use the Microsoft Windows 95 Explorer to copy the modem code file into the c:/tftpboot folder.

Copy the Modem Code from Your PC to the Modems

If you are using a PC running Microsoft Windows 95, installing the modem code from a hard drive onto a Cisco AS5200 involves installing a TFTP application on your PC, connecting your PC and the access server, establishing a HyperTerminal session on your PC, pinging the PC and access server to make sure they are talking to each other, copying the modem code from the PC to the access server, and then mapping the modem code to the modems. See the following sections for details.

Note The steps are similar if you are using a Macintosh or a UNIX workstation.

Set up a TFTP Application on the PC

Step 1 Install the TFTP application on the PC.

Note You can use any TFTP or RCP application available from independent software vendors. A number of TFTP programs are also available as shareware from public sources on the World Wide Web. If you are using Microsoft Windows 95, you can also download a TFTP application (as zipped files) from the Cisco Software Center at http://www.cisco.com/public/sw-center.

Step 2 Launch the TFTP application by double-clicking the application icon or its filename.

Step 3 Set your TFTP server root directory:

- Choose **Server Root Directory** from the Options menu.
- Choose **c:\tftpboot** from the **Drives** and **[...]** list boxes.
- Click **OK**.

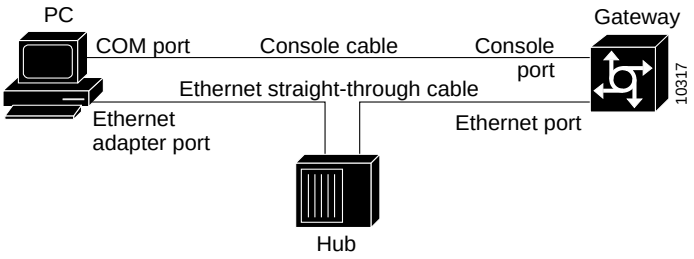
Caution If you do not select the c:\tftpboot directory as your TFTP server directory, you will not be able to perform the copy procedure. This also applies if you are using RCP on your system.

Connect your PC and the Access Server

In this step, you connect your PC and access server.

Step 1 Use straight-through cables to connect the PC and access via a 10BaseT hub, as shown in Figure B-3. Also note that both Ethernet ports must have the same baseband.

Figure B-3 Connecting a PC and the Access Server



Note You can also connect your PC Ethernet port directly to the Cisco AS5200 Ethernet port using the 10BaseT crossover cable provided.

Step 2 Connect your PC COM port to the Cisco AS5200 console port, as shown in Figure B-3.

Step 3 Make sure your PC and access server are powered on.

Establish a HyperTerminal Session

Use the steps in this section to establish a HyperTerminal session from your local PC to the Cisco AS5200. You will use the HyperTerminal session to talk to the access server.

Step 1 In Microsoft Windows 95 on your PC, choose **Start/Programs/Accessories/HyperTerminal**.

Step 2 Double-click **Hypertrm.exe** to display the Connection Description dialog box.

Step 3 Enter a name for your connection (for example, **Console**) and click **OK**. HyperTerminal displays the Phone number dialog box.

Step 4 Choose the COM port connecting the PC and the access server in the Connect using list box. You have options to connect directly to one of four COM ports.

Step 5 Click **OK**. HyperTerminal displays the COM Properties dialog box.

Step 6 Choose these options in the COM Properties dialog box:

- Bits per second: **9600**
- Data bits: **8**
- Parity: **None**
- Stop bits: **1**
- Flow control: **None**

Step 7 Click **OK**. The HyperTerminal dialog box appears.

Step 8 Press **Enter** to display the `as5200#` prompt.

Note If the access server prompt does not appear, you might have selected the wrong COM port, the cable connections could be incorrect or bad, or the access server might not be powered on.

Ping the PC and Access Server

Ping the access server and the PC to make sure they are talking to each other and there are no configuration problems on your access server.

Step 1 Choose the correct Ethernet adapter connecting to the access server and note the PC IP address:

(a) Choose **Start/Run** to display the Run dialog box.

(b) Enter **winipcfg** and click **OK** to display the IP Configuration dialog box.

(c) Choose the PC Ethernet adapter connector used for the connection to the access server if you have more than one Ethernet adapter connector installed on your PC.

(d) Make a note of the PC IP address, and then click **OK**.

Note Enter the **show running config** command at the 5200# prompt to verify the access server has an IP address assigned. If the access server does not have an IP address, assign an IP address before continuing.

Step 2 In the HyperTerminal dialog box (see the previous section "Establish a HyperTerminal Session" for details), enter the access server enable mode (the prompt is displayed as `5200#`):

```
5200> enable
Password: <password>
5200#
```

Step 3 Enter the **ping** command with your PC IP address:

```
5200# ping 131.108.1.1
```

The access server displays five exclamation points (!) if everything is working and it displays five dots (.) if there is a problem. In the latter case, check the cabling between the router and the PC and check the access server configuration

Upload Modem Code to the Access Server

The procedure for copying the modem code file from your PC set up as a local TFTP server to the access server boot Flash memory is a two-step process.

- Transfer the code to the access server.
- Transfer the code to the modems.

These two steps are performed only once. After you copy the modem code file into boot Flash memory for the first time, you should not have to perform these steps again. Since the modem code runs from modem RAM, the Cisco IOS software automatically copies the code to each modem each time the access server power cycles.

Step 1 Check the modem code version in the access server boot Flash memory:

```
5200# show bootflash

Boot flash directory:
File  Length   Name/status
  1   3405148  c5200-boot-l
[3405148 bytes used, 4983460 available, 8388608 total]
8192K bytes of processor board Boot flash (Read/Write)
```

Step 2 Download the modem code file from the TFTP server into the access server boot Flash memory using the **copy tftp bootflash** command. After you enter the command, you are prompted for the download destination and the remote host name as requested by the system software.

This is a Microcom modem example.

```
5200# copy tftp bootflash

Boot flash directory:
File  Length   Name/status
  1   3405148  c5200-boot-l
[3405148 bytes used, 4983460 available, 8388608 total]
8192K bytes of processor board Boot flash (Read/Write)
Address or name of remote host [255.255.255.255]? jurai
Source file name? mcom-modem-code-3.2.10.bin
Destination file name [mcom-modem-code-3.2.10.bin]? mcom-modem-code-3.2.10.bin
Accessing file 'mcom-modem-code-3.2.10.bin' on jurai...
Loading mcom-modem-code-3.2.10.bin .from 223.255.254.254 (via Ethernet0): ! [OK]

Erase flash device before writing? [confirm] no
Copy file? [confirm]

Copy 'mcom-modem-code-3.2.10.bin' from server
  as 'mcom-modem-code-3.2.10.bin' into Flash WITHOUT erase? [yes/no] yes
Loading mcom-modem-code-3.2.10.bin from 223.255.254.254 (via Ethernet0):
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
[OK - 371202/4397036 bytes]

Verifying checksum...  OK (0xE50F)
Flash device copy took 00:00:13 [hh:mm:ss]
```

This is a MICA modem example.

```
Boot flash directory:
File  Length   Name/status
  1   3405148  c5200-boot-l
[3405212 bytes used, 4983396 available, 8388608 total]
Address or name of remote host [jurai]? jurai
Source file name? mica-modem-portware.2.2.3.0.bin
```

```
Destination file name [mica-modem-portware.2.2.3.0.bin]?
mica-modem-portware.2.2.3.0.bin
Accessing file 'mica-modem-portware.2.2.3.0.bin' on jurai...
Loading mica-modem-portware.2.2.3.0.bin from 223.255.254.254 (via Ethernet0): !
[OK]

Erase flash device before writing? [confirm] no
Copy file? [confirm] yes

Copy 'mica-modem-portware.2.2.3.0.bin' from 5200
  as 'mica-modem-portware.2.2.3.0.bin' into Flash WITHOUT erase? [yes/no] yes
Loading mica-modem-portware.2.2.3.0.bin from 223.255.254.254 (via Ethernet0):
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
[OK - 209118/4983396 bytes]

Verifying checksum...  OK (0xBFC6)
Flash device copy took 00:00:07 [hh:mm:ss]
5200#
```

Step 3 Verify the modem code file has been copied into the access server boot Flash memory:

```
5200# show bootflash

Boot flash directory:
File  Length   Name/status
  1   3405148  c5200-boot-l
  2   209118   mica-modem-portware.2.2.3.0.bin
  3   371202   mcom-modem-code-3.2.10.bin
[3985468 bytes used, 4403140 available, 8388608 total]
8192K bytes of processor board Boot flash (Read/Write)
```

Step 4 Copy the modem code file from the access server boot Flash memory to the modems by entering the **copy bootflash modem** command:

This is a Microcom modem example.

```
5200# copy bootflash modem
Modem Numbers (<slot>/<port> | group <number> | all)? all

Boot flash directory:
File  Length   Name/status
  1   3405148  c5200-boot-l
  2   209118   mica-modem-portware.2.2.3.0.bin
  3   371202   mcom-modem-code-3.2.10.bin
[3985468 bytes used, 4403140 available, 8388608 total]
Name of file to copy? mcom-modem-code-3.2.10.bin
Copy 'mcom-modem-code-3.2.10.bin' from Flash to modems? [yes/no] yes
[OK - 371202/278528 bytes]

5200#
*Mar  1 00:09:17: %MODEM-5-DL_START: Modem (1/0) started firmware download
*Mar  1 00:10:45: %MODEM-5-DL_GOOD: Modem (1/0) completed firmware download:
MNPClass10K56flexModemRev3.2.10/85
```

This is a MICA modem example.

```
5200# copy bootflash modem
Modem Numbers (<slot>/<port> | group <number> | all)? all

Boot flash directory:
File  Length   Name/status
  1   3405148  c5200-boot-l
  2   209118   mica-modem-portware.2.2.3.0.bin
  3   371202   mcom-modem-code-3.2.10.bin
[3985468 bytes used, 4403140 available, 8388608 total]
```

```
Name of file to copy?  mica-modem-portware.2.2.3.0.bin

Type of service [busyout/reboot] busyout
Copy 'bootflash:mica-modem-portware.2.2.3.0.bin' from Bootflash to modems?
[yes/no] yes

5200#

*Mar  1 00:10:03.159: %MODEM-5-DL_START: Modem (1/0) started firmware download
*Mar  1 00:10:03.159: %MODEM-5-DL_START: Modem (1/1) started firmware download
*Mar  1 00:10:03.163: %MODEM-5-DL_START: Modem (1/2) started firmware download
.
.
.
*Mar  1 00:10:13.823: %MODEM-5-DL_GOOD: Modem (1/2) completed firmware download:
*Mar  1 00:10:13.823: %MODEM-5-DL_GOOD: Modem (1/3) completed firmware download:
*Mar  1 00:10:13.827: %MODEM-5-DL_GOOD: Modem (1/4) completed firmware download:
*Mar  1 00:10:13.831: %MODEM-5-DL_GOOD: Modem (1/5) completed firmware download:
```

Note The modem code is downloaded to the module, not the individual slot/ports as indicated by the screen display.

Using the Modem Code Bundled with Cisco IOS Software

Use this procedure to update modem code on the modems in your access server if you decide to use the version of modem code bundled with Cisco IOS software instead of the version already mapped to your modems.

Caution Cisco ships the access server with the latest version of modem code installed in the boot Flash memory and mapped to the modems. If you choose to use the modem code bundled with your installed Cisco IOS software, you could be reverting to a previous version of modem code. Also note that once you map the bundled modem code (using the **copy system:/ucode/***filename* **modem** or **copy ios-bundled modem** command) to your modems, each time you upgrade the Cisco IOS software, the new bundled modem code is automatically mapped to your modems. See "Displaying Modem Code Versions," earlier in this appendix, for details on displaying mode code versions mapped to modems, installed in boot Flash memory, and bundled with the Cisco IOS software on your access server.

To set the modem code mapping to the modem code version bundled with Cisco IOS software, enter the following commands.

Step 1 Enter the access server enable mode (the prompt is displayed as `5200#`):

```
5200> enable
Password: <password>
5200#
```

Step 2 Enter the **copy system:/ucode/***filename* **modem** (or, for Cisco IOS releases earlier than 11.3AA or 12.0, the **copy ios-bundled modem**) command:

```
5200# copy ios-bundled modem
Modem Numbers (<slot/<port | group <number | all)? all
Type of service [busyout/reboot] busyout
Copy bundled firmware from IOS image to modems? [yes/no] yes
5200#
*Dec  1 00:12:02.835: %MODEM-5-DL_START: Modem (1/6) started firmware download
*Dec  1 00:12:02.839: %MODEM-5-DL_START: Modem (1/7) started firmware download
*Dec  1 00:12:02.839: %MODEM-5-DL_START: Modem (1/8) started firmware download
*Dec  1 00:12:02.843: %MODEM-5-DL_START: Modem (1/9) started firmware download
*Dec  1 00:12:02.843: %MODEM-5-DL_START: Modem (1/10) started firmware download
*Dec  1 00:12:02.847: %MODEM-5-DL_START: Modem (1/11) started firmware download
*Dec  1 00:12:13.643: %MODEM-5-DL_GOOD: Modem (1/6) completed firmware
 download:
*Dec  1 00:12:13.647: %MODEM-5-DL_GOOD: Modem (1/7) completed firmware
 download:
*Dec  1 00:12:13.651: %MODEM-5-DL_GOOD: Modem (1/8) completed firmware
 download:
*Dec  1 00:12:13.651: %MODEM-5-DL_GOOD: Modem (1/9) completed firmware
 download:
*Dec  1 00:12:13.655: %MODEM-5-DL_GOOD: Modem (1/10) completed firmware
 download:
*Dec  1 00:12:13.659: %MODEM-5-DL_GOOD: Modem (1/11) completed firmware
 download:
```

The **copy system:/ucode/***filename* **modem** command does not affect any existing modem code that resides in boot Flash memory in case you later want to revert to it. If you decide to delete the code from boot Flash memory, remember that *all* files in boot Flash memory will be deleted, therefore save and restore any important files (for example, the Cisco IOS software image).

Note If the new Cisco IOS image contains the same modem code as the old one, no new code will be downloaded to the modems.
