CISCO SYSTEMS

Doc. No.: 78-5659-01

How to Download Portware

This document contains information about downloading portware. The document contains two main sections:

- Cisco AS5200 and Cisco AS5300
- Cisco AS5800

Cisco AS5200 and Cisco AS5300

Use this section when you upgrade a Cisco AS5300\5200 access server in a PC environment. If you are upgrading in a UNIX environment, the steps are similar; so use this document for general guidelines.

The upgrade procedure includes the tasks summarized below:

- Prepare your System to Receive the Portware

  — Install TFTP Application on PC

  — Connect PC and Access Server

  — Establish HyperTerminal Session

  — Ping PC and Access Server

- Download Portware to Access Server

Prepare your System to Receive the Portware

Because the upgrade uses a TFTP server to transfer files, this section begins with instructions for setting up a PC as a TFTP server. You can also use a remote host which has a TFTP server application running. TFTP programs are available as shareware from Cisco's web site and public sources on the Web. You can also use an rcp application available from independent software vendors.

If you are using a UNIX environment, use the procedures as guidelines for the download process.

Install TFTP Application on PC

Step 1   Use the Microsoft Windows 95 Explorer program to create a directory labeled tftp on your hard disk.

Step 2   Download the TFTP server application from the Cisco web site to the directory created in Step 1. Use the following URL:

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

From Software Center, click on "Other Software," "Other Software Products," and then on "TFTP Server for Windows 95."

Note   The TFTP program at this URL is provided as a courtesy of Cisco Systems and is not an officially supported product.

Step 3   Make sure that all TFTP files reside in the directory created in Step 1. The TFTP files include tftpserv.exe, tftpserv.dll, mfc42.dll, and msvcrt.dll.

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.

Step 4   Double-click **tftpsrv.exe** in the Microsoft Windows 95 Explorer program to launch the TFTP application.

Step 5   Set your TFTP server root directory:

(a)   Choose **Server Root Directory** from the **Options** menu.

(b)   Double-click **tftpboot** in **[...]** list box. If necessary, choose drive **c** from the Drives list box.

(c)   Click **OK**. The status bar below the menu bar displays c:\tftpboot as the TFTP server root directory.

Step 6   Continue with the following section "Connect PC and Access Server."

Connect PC and Access Server

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

Figure 1   **Connecting PC and Access Server**
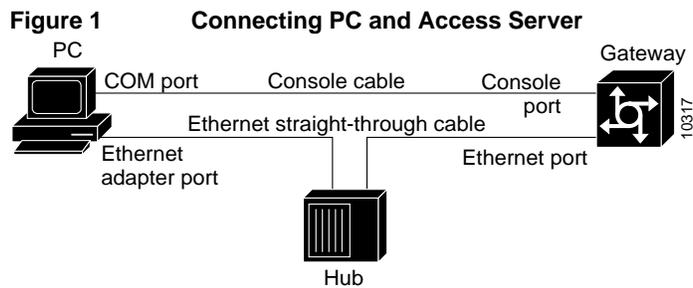
Note   You can also connect your PC's Ethernet port to the Cisco AS5300 Ethernet port using the 10BaseT crossover cable provided.

Step 2   Connect your PC's COM port to the Cisco AS5300 console port using the standard Cisco console cable, as shown in Figure 1.

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

Step 4   Continue with the following section "Establish HyperTerminal Session."

Establish HyperTerminal Session

Use the steps in this section to establish a HyperTerminal session from your local PC to the Cisco AS5300. You will use the HyperTerminal session to talk to the access server.

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

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

Step 3   Enter a name for your connection, for example, **AS5300** and then 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 5300> 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.

Step 9   Enter enable mode by entering the **enable** command and the password:

```
5300> enable
Password: <password>
5300#
```

Step 10   Continue with the following section "Ping PC and Access Server."

Ping 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's IP address:

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

    (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)   Note the PC IP address, and then click **OK**.

Note   Enter the **show running-configuration** command at the 5300# 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 section "Establish HyperTerminal Session" for details), make sure you are at the 5300# prompt.

Step 3   Enter the **ping** command with your PC's IP address.

```
5300# ping XXX.XXX.XXX.XXX
```

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

Step 4   Continue with the following section "Download Portware to Access Server."

Download Portware to Access Server

This section describes how to download the portware to your hard drive and then copy the file to the access server Flash memory (or to boot Flash memory in the case of the Cisco AS5200).

Step 1   Open your TFTP server or rcp application on your PC.

Step 2   Download the portware from the Cisco web site or from a Cisco FTP server. You can use the MS-DOS Prompt application that comes on your PC as an FTP download program or an application like Reflection FTP Client to access the Cisco FTP server and copy the image to your PC.

Make sure files are copied into the c:\tftpboot directory.

Step 3   From the HyperTerminal prompt, check the access server Flash memory (enter **show boot** if using the Cisco AS5200).

```
5300# show flash
System flash directory:
File Length   Name/status
  1   4530624   images/c5300-js-mz.113-3.2.AA
 [498776 bytes used, 16278440 available, 16777216 total]
16384K bytes of processor board System flash (Read/Write)
```

Step 4   When prompted, enter the **copy tftp flash** command to download the modem code file from c:\tftpboot directory on your PC into the access server Flash memory. (If you are using a Cisco AS5200, enter the command **copy tftp boot**.)

You are prompted for the source and destination filename and the remote host name. Make sure you get the correct portware filename (check your c:\tftpboot directory) to enter when prompted for source and destination filename. The remote host name is the IP address of your PC.

Note   For rcp applications, use the **copy rcp flash** command (Cisco AS5300) or the **copy rcp bootflash** command (Cisco AS5200).

```
5300# copy tftp flash
System flash directory:
File  Length   Name/status
  1   4530624   images/c5300-js-mz.113-3.2.AA
[498776 bytes used, 16278440 available, 16777216 total]
Address or name of remote host [255.255.255.255]?
Source file name? c5300_portware1-1
Destination file name [images/c5300_portware1-1]?
Accessing file 'c5300_portware1-1' on 255.255.255.255...
Loading images/c5300_portware1-1 from 2.2.0.1 (via Ethernet0): ! [OK]
Erase flash device before writing? [confirm] no
Copy 'images/c5300_portware1-1' from server
  as 'images/c5300_portware1-1' into Flash WITHOUT erase? [yes/no] yes
Loading images/c5300_portware1-1 from 2.2.0.1 (via Ethernet0):
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
[OK - 249108/16278440 bytes]
Verifying checksum...  OK (0xE009)
Flash device copy took 00:00:02 [hh:mm:ss]
```

Note   When using the Cisco AS5300, if the system Flash memory on your access server is partitioned, the access server prompts you to choose the partition for the upload. The default is partition 1, which you should use.

Step 5   Verify the file has been copied into the access server Flash memory (use the **show boot flash** command to check the boot Flash in a Cisco AS5200).

```
5300# show flash
System flash directory:
File  Length   Name/status
  1   4530624   images/c5300-js-mz.113-3.2.AA
  2   210104   images/c5300_portware1-1
  [747948 bytes used, 16029268 available, 16777216 total]
16384K bytes of processor board System flash (Read/Write)
```

Copy Portware to Modems

Copy the modem code file from the access server Flash memory (or boot Flash in the case of the Cisco AS5200) to the modems by entering **copy flash modem**. If you are using a Cisco AS5200, enter the command **copy boot modem**.

```
5300# copy flash modem
Modem Numbers (<slot>/<port> | group <number> | all)? all
```

```
System flash directory:
File  Length   Name/status
  1   4530624  images/c5300-js-mz.113-3.2.AA
  2   210104   images/c5300_portware1-1
[747948 bytes used, 16029268 available, 16777216 total]
Name of file to copy? images/c5300_portware1-1
Type of service [busyout/reboot] busyout
Copy 'flash:images/c5300_portware1-1' from Flash to modems? [yes/no] yes

*Feb 28 21:17:43.574: %MODEM-5-DL_START: Modem (2/0) started portware download
.
.
.
*Feb 28 21:17:43.598: %MODEM-5-DL_START: Modem (2/13) started portware download
*Feb 28 21:17:53.598: %MODEM-5-DL_GOOD: Modem (2/14) completed portware download:
```

Note   The modem code is downloaded to the module, not the individual slots as shown.

After you copy the modem code file into system Flash or boot Flash memory for the first time, you should not have to do these steps again. Because the modem code runs from modem RAM, the Cisco IOS software must automatically copy the modem code to each modem each time the access server power cycles.

This feature module describes the Cisco AS5800 External Portware Download feature first introduced for the Cisco AS5800 for Cisco IOS Release 11.3(5)AA.

Cisco AS5800

The External Portware Download feature modifies the existing **firmware** command by adding the capability of upgrading modem firmware independently from an externally sourced file without upgrading either the router shelf or dial shelf image(s). The **firmware** command now enables the user to copy non-bundled modem firmware out of Cisco AS5800 Flash memory down to the modems in the system shelf. The modified **firmware** command still retains the original capability of downloading firmware from an onboard bundled source, such as a Cisco IOS image.

The External Portware Download feature consists of one new config-modem-pool subcommand that allows the router to recognize the Cisco AS5800 Flash memory device that contains the external firmware upgrade file. The use of the command assumes that the user previously has already copied the firmware from a TFTP server to Flash memory in the Cisco AS5800. The external firmware upgrade file (portware) can be acquired from a variety of media or network sources, such as CCO or a floppy disk. The firmware is copied to a local Flash device, such as a PCMCIA Flash card in the Cisco AS5800.

Upgrading Modem Firmware in a Cisco AS5800

Upgrading the Cisco AS5800 modem firmware from an external flash memory device is summarized as follows:

1   The download image is copied to the router Flash memory from a TFTP server, or, if the download is to be from the bundled image, the download file is identified.

2 The **modem-pool** is created and its range specified.

3 The form of the **firmware** command is specified and the download is initiated.

The table below lists modem firmware upgrade commands to help you configure or overwrite the default modem firmware image with another specified firmware image.

Step	Command	Purpose
1	`5800# `**`show modem version`**	Determine the firmware version currently running on the modem card. If the version needs to be upgraded, proceed.
2	`5800# `**`show modem bundled-firmware`** `[or]` `5800# `**`copy tftp flash`**	Determine the available bundled modem firmware images per slot. Copy the portware from a TFTP server to Flash memory in the Cisco AS5800.
3	`5800# `**`configure terminal`** `Enter configuration commands, one per line. End with CNTL/Z.`	Enter global configuration mode. You are prompted to enter the commands.
4	`5800(config)# `**`modem-pool`** `pool-name`	You are in global configuration mode as indicated by the prompt. Enter modem pool configuration mode and create a modem pool.
5	`5800(config-modem-pool)#` **`pool-range`** `shelf/slot/port shelf/slot/port`	Create the range (from, up to and including) of modems whose firmware you want to overwrite. A modem range must be coextensive with the boundaries of each group of six modems on a modem SIMM. Thus, numbering range examples might include: *shelf/slot/***0** *shelf/slot/***5** (port 0 to port 5 of the first SIMM) or *shelf/slot/***0** *shelf/slot/***11** (the first two SIMMs) or *shelf/slot/***6** *shelf/slot/***23** (the last three SIMMs), etc.
6	`5800(config-modem-pool)#` **`firmware`** `file_specifier_string`	Enter the string identifying the portware file copied to the Cisco AS5800 Flash memory, such as an (IFS) file system specifier, as in the example: **slot0:mica-firmware.2222.bin**

7	`5800(config-modem-pool)# `**`Ctrl-Z`**
	`5800 #`
	`Slot 8: Firmware being upgraded to slot0:portware.2222.ios for modems in modem-pool range `*n n*
	
	`%SYS-5-CONFIG_I: Configured from console by console`
		Press **Return** to verify your command registers, then type **Ctrl-Z** to exit the modem-pool configuration mode and return to privileged EXEC mode.
		
		The router prompt returns. A confirmation messages indicates the firmware file used as the download file and range of modems being downloaded to. (In this case, the external portware form of the command is used as an example.)
		
		After the displaying the confirmation message, a "Configured from console" message is displayed. This is expected and does not indicate an error.

8	`5800# # `**`copy running-config startup-config`**	Save your configuration when ready.

Verify

To verify you have configured downloaded the firmware to the modems:

- After you typed the **firmware** command, check to see that the router prompt returns and you get a message similar to this example:

  ```
  Slot 8: Firmware being upgraded to slot0:portware.2222.ios for modems in modem-pool x
  ```

- To verify a download has succeeded, use the **show modem version** command.

```
5800# > show modem version
 Modem Range            Module   Firmware Rev
    1/6/00 1/6/05          0      2.2.2.2
    1/6/06 1/6/11          1      2.2.2.2
    1/6/12 1/6/17          2      2.2.2.2
    1/6/18 1/6/23          3      2.2.2.2
    1/6/24 1/6/29          4      2.2.2.2
    1/6/30 1/6/35          5      2.2.2.2
    1/6/36 1/6/41          6      2.2.2.2
    1/6/42 1/6/47          7      2.2.2.2
    1/6/48 1/6/53          8      2.2.2.2
    1/6/54 1/6/59          9      2.2.2.2
    1/6/60 1/6/65         10      2.2.2.2
    1/6/66 1/6/71         11      2.2.2.2
Modem board HW version info:

Modem Range:    1/6/00 1/6/05       Modem Module:  0
Manufacture Cookie Info:
 EEPROM Type 0x0101, EEPROM Version 0x01, Board ID 0x06,
 Board Hardware Version 1.0, Item Number 73-2522-2,
 Board Revision 051, Serial Number 06298557,
 PLD/ISP Version 255.255, Manufacture Date 17-Jul-1997.

Modem Range:    1/6/06 1/6/11       Modem Module:  1
Manufacture Cookie Info:
 EEPROM Type 0x0101, EEPROM Version 0x01, Board ID 0x06,
 Board Hardware Version 1.0, Item Number 73-2522-2,
 Board Revision 051, Serial Number 06298553,
 PLD/ISP Version 255.255, Manufacture Date 17-Jul-1997.

Modem Range:    1/6/12 1/6/17       Modem Module:  2
Manufacture Cookie Info:
 EEPROM Type 0x0101, EEPROM Version 0x01, Board ID 0x06,
 Board Hardware Version 1.0, Item Number 73-2522-2,
 Board Revision 051, Serial Number 06298017,
 PLD/ISP Version 255.255, Manufacture Date 17-Jul-1997.

Modem Range:    1/6/18 1/6/23       Modem Module:  3
Manufacture Cookie Info:
 EEPROM Type 0x0101, EEPROM Version 0x01, Board ID 0x06,
 Board Hardware Version 1.0, Item Number 73-2522-2,
 Board Revision 051, Serial Number 06298019,
 PLD/ISP Version 255.255, Manufacture Date 17-Jul-1997.

Modem Range:    1/6/24 1/6/29       Modem Module:  4
Manufacture Cookie Info:
 EEPROM Type 0x0101, EEPROM Version 0x01, Board ID 0x06,
 Board Hardware Version 1.0, Item Number 73-2522-2,
 Board Revision 051, Serial Number 06298200,
 PLD/ISP Version 255.255, Manufacture Date 17-Jul-1997.
Modem Range:    1/6/30 1/6/35       Modem Module:  5

Manufacture Cookie Info:
 EEPROM Type 0x0101, EEPROM Version 0x01, Board ID 0x06,
 Board Hardware Version 1.0, Item Number 73-2522-2,
 Board Revision 051, Serial Number 06298590,
 PLD/ISP Version 255.255, Manufacture Date 17-Jul-1997.
```

```
Modem Range:    1/6/36 1/6/41       Modem Module:  6
Manufacture Cookie Info:
 EEPROM Type 0x0101, EEPROM Version 0x01, Board ID 0x06,
 Board Hardware Version 1.0, Item Number 73-2522-2,
 Board Revision 051, Serial Number 06298446,
 PLD/ISP Version 255.255, Manufacture Date 17-Jul-1997.

Modem Range:    1/6/42 1/6/47       Modem Module:  7
Manufacture Cookie Info:
 EEPROM Type 0x0101, EEPROM Version 0x01, Board ID 0x06,
 Board Hardware Version 1.0, Item Number 73-2522-2,
 Board Revision 051, Serial Number 06298593,
 PLD/ISP Version 255.255, Manufacture Date 17-Jul-1997.

Modem Range:    1/6/48 1/6/53       Modem Module:  8
Manufacture Cookie Info:
 EEPROM Type 0x0101, EEPROM Version 0x01, Board ID 0x06,
 Board Hardware Version 1.0, Item Number 73-2522-2,
 Board Revision 051, Serial Number 06298233,
 PLD/ISP Version 255.255, Manufacture Date 17-Jul-1997.

Modem Range:    1/6/54 1/6/59       Modem Module:  9
Manufacture Cookie Info:
 EEPROM Type 0x0101, EEPROM Version 0x01, Board ID 0x06,
 Board Hardware Version 1.0, Item Number 73-2522-2,
 Board Revision 051, Serial Number 06298309,
 PLD/ISP Version 255.255, Manufacture Date 17-Jul-1997.

Modem Range:    1/6/60 1/6/65       Modem Module: 10
Manufacture Cookie Info:
 EEPROM Type 0x0101, EEPROM Version 0x01, Board ID 0x06,
 Board Hardware Version 1.0, Item Number 73-2522-2,
 Board Revision 051, Serial Number 06297954,
 PLD/ISP Version 255.255, Manufacture Date 17-Jul-1997.

Modem Range:    1/6/66 1/6/71       Modem Module: 11
Manufacture Cookie Info:
 EEPROM Type 0x0101, EEPROM Version 0x01, Board ID 0x06,
 Board Hardware Version 1.0, Item Number 73-2522-2,
 Board Revision 051, Serial Number 06298008,
 PLD/ISP Version 255.255, Manufacture Date 17-Jul-1997.
```

Tips

Error messages result if the following circumstances exist:

- If you issue a firmware command on a modem pool that has no pool range already specified, an error message will result.

- If you issue a firmware command on a modem pool that is neither constrained nor constraint-capable, an error message will result.

- If the firmware specified is not part of the firmware list, a message is printed to the console. The firmware name is stored in the modem pool structures until that modem card is updated with the specified firmware image. The firmware upgrade then occurs when that modem card is rebooted.

- If any modem module has an active call on it, the firmware upgrade request is queued and deferred until the modem module becomes free.

- To deactivate a modem command, type **no** before the command, if applicable:

```
5800# (config)# no modem-pool test
```

Configuration Examples

Command sequence for bundled image:

```
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# modem-pool x
Router(config-modem-pool)# firmware 2.2.2.2
Router(config-modem-pool)# end
Router#
Slot 8: Firmware being upgraded to 2.2.2.2 for modems in modem-pool x
```

Command sequence for external portware:

This sequence would download portware version **2.2.2.2** to all the modems in modem pool **x**.

```
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# modem-pool x
Router(config-modem-pool)# firmware slot0:portware.2222.ios
Router(config-modem-pool)# end
Router#
Slot 8: Firmware being upgraded to slot0:portware.2222.ios for modems in modem-pool x
```

Where **portware.2222.ios** is the modem firmware file the user has already copied to Flash using the **copy tftp flash** command.

Additional Information

Each of the up to ten modem cards installed in your 14-slot Cisco AS5800 access server contains six modem-SIMMs. Each SIMM contains six MICA modems, giving a total of 36 modems per card, or 360 modems per shelf. This **firmware** command allows you to separately upgrade modem firmware for each card group of six modem SIMMs, using the **pool-range** modem configuration subcommand.

The default firmware image is loaded on the modem card Flash memory during system boot-up. Normally, you do not need to change the firmware image; however, you can overwrite the default image with another firmware image.

A valid pool range must exist (that is, the **pool-range** modem pool configuration subcommand must have been configured) for modem overwrites to occur. Modem pooling allows you to define, select, and use separate modem pools within a single access server or router to enable different dial-in services for different customers. In this case, the modem pool specifies which modems are loaded with the new firmware image.

The specified firmware image is loaded on every modem for every slot specified in the pool range. If the modem is busy, the firmware change is deferred until the modem is available. When the modem is available, the firmware change takes place immediately.

If you specify a firmware image that does not exist, the information is stored so that, in the event that the modem card is updated with that firmware image, it will be loaded when the modem card image boots.

Modem Operation at Bootup

When the Cisco 5800 router shelf boots up and parses its NVRAM, the modem cards will not be up. As a result, the overwrite firmware name is stored in the modem pool structures and no action will be taken. At boot-up time, the default firmware image is loaded first. If there is a firmware image specified by the **firmware** command, it is then loaded onto the modem card.

When a modem card becomes active, it sends a startup message to the router shelf. The router shelf then triggers a search in the various modem pools to see if any modem modules on the modem card have a specified firmware overwrite. If yes, the firmware overwrite request is relayed to the modem card, which will load the specified overwrite firmware image on the indicated modem modules.

As a result, the modem modules that are destined to run an overwrite firmware image will experience two firmware downloads at bootup time. The default modem firmware image is loaded first, followed by the overwrite modem firmware image.

Command Reference

This section is a command reference for the **firmware** command. The new command is modified to allow for downloading external portware files in addition to bundled image files. Therefore, there are two forms of the command: one for downloading a file from the bundled image, the other for downloading an external portware file.

Note This section documents new or modified commands. All other commands used with this feature are documented in the Cisco IOS Release 11.3 command references.

---

firmware

To download a new firmware image to modem-pool range from the Cisco AS5800 Flash memory, use the **firmware** command. To load the default firmware image on a modem card, use the **no** form of the command.

> **firmware** {*file_specifier_string*} {*version*}

> **no firmware** {*file_specifier_string*} {*version*}

Syntax Description

file_specifier_string	string that identifies the external portware file that has previously be loaded in an Cisco AS5800 Flash memory device. For example the string can be an (IFS) file system specifier, as in the example: `slot0:mica-firmware.2222.bin`
version	firmware upgrade file from bundled image

Default

The specified firmware file is downloaded to the modem-pool range.

Command Mode

Modem pool configuration (`config-modem-pool`)

Usage Guidelines

The present form of the command first appeared in Cisco IOS Release 11.3 AA.

A valid pool range must exist (that is, the **pool-range** modem pool configuration command must have been configured). Modem pooling allows service providers to define, select, and use separate pools of modems within a single access server or router to enable different dial-in services for different customers. In this case, the modem pool specifies which modems are loaded with the new firmware image.

The specified firmware image is loaded on every modem specified in the pool-range. If the modem is busy, the firmware change is deferred until the modem is available. When the modem is available, the firmware change takes place immediately.

To determine what firmware image is currently running on the modem card, use the **show modem version** EXEC command.

To determine a list of valid firmware images, use the **show modem bundled-firmware** EXEC command. If you specify a firmware image that does not exist, the information is stored so that if the modem card is updated at a later date with a modem card image that contains that firmware image it will be loaded when the modem card image boots.

At boot-up time, the default firmware image is loaded first. If there is a firmware image specified by the **firmware** command, it is loaded on the modem card following the loading of the default firmware image.

Examples

Command sequence for bundled image file **2.2.2.2**. This sequence identifies and downloads bundled image file **2.2.2.2** to all the modems in modem pool x.

```
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# modem-pool x
Router(config-modem-pool)# firmware 2.2.2.2
Router(config-modem-pool)# end
Router#
Slot 8: Firmware being upgraded to 2.2.2.2 for modems in modem-pool x
```

Command sequence for external portware. This sequence identifies and downloads portware file **2.2.2.2** to all the modems in modem pool x.

```
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# modem-pool x
Router(config-modem-pool)# firmware slot0:portware.2222.ios
Router(config-modem-pool)# end
Router#
Slot 8: Firmware being upgraded to slot0:portware.2222.ios for modems in modem-pool x
```

Where **portware.2222.ios** is the modem firmware file the user has already copied to Flash memory using the **copy tftp flash** command.

Related Commands

show modem bundled-firmware
show modem version
copy tftp flash

Related Documents

For additional *Cisco AS5800* software configuration information, see the following publications:

- *Cisco AS5800 Access Server Software ICG*
- *Dial Solutions Configuration Guide*

If You Need More Information

Cisco documentation and additional literature are available in a CD-ROM package, which ships with your product. The Documentation CD-ROM, a member of the Cisco Connection Family, is updated monthly. Therefore, it might be more current than printed documentation. To order additional copies of the Documentation CD-ROM, contact your local sales representative or call customer service. The CD-ROM package is available as a single package or as an annual subscription. You can also access Cisco documentation on the World Wide Web at http://www.cisco.com, http://www-china.cisco.com, or http://www-europe.cisco.com.

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Cisco Connection Online

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- Telnet: cco.cisco.com

- Modem: From North America, 408 526-8070; from Europe, 33 1 64 46 40 82. Use the following terminal settings: VT100 emulation; databits: 8; parity: none; stop bits: 1; and connection rates up to 28.8 kbps.

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