Doc. No. 78-3910-01

How to Update Modem Firmware on a Cisco AS5200 Universal Access Server

This document describes how to update modem firmware in the Cisco AS5200 Universal Access Server.

Use this document in conjunction with the *Cisco AS5200 Universal Access Server Installation Guide*, *Cisco AS5200 Universal Access Server Software Configuration Guide*, *Cisco AS5200 Universal Access Server Installation* (job aid), *Cisco AS5200 Universal Access Server Configuration* (job aid), and the *Cisco AS5200 Safety and Regulatory Compliance*.

This document includes the following sections:

- Requirements
- Update Modem Firmware
- New Features
- Revision History
- Command Reference

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Requirements

To upgrade modem firmware to 1.0.37, you must be running Cisco IOS 11.1(7)AA or later, or Cisco IOS 11.2(2)P.

When running modem firmware Update 1.0.37, you must set modem line speed to 11500 bits per second (refer to the **speed** command); set flow control to hardware (refer to the **flowcontrol** command); set stopbits to 1 (refer to the **stopbits** command); set parity to none (refer to the **parity** command); set modem to inout (refer to the **modem inout** command).

Update Modem Firmware

To update modem firmware in the Cisco AS5200 Universal Access Server, use the following two procedures:

- Download the Modem Firmware File from the CCO TFTP Server
- Copy the Modem Firmware Update to the Cisco AS5200 Modems

Download the Modem Firmware File from the CCO TFTP Server

To download the modem firmware file, access the Cisco Systems online support channel, Cisco Connection Online (CCO), formerly Cisco Information Online (CIO).

You can connect in one of the following ways:

- CCO Registered User
- CCO Guest User

CCO Registered User

If you are already registered, enter the following URL:

```
http://www.cisco.com/kobayashi/Library_root.shtml
```

This takes you to the Software Image Library. In the Access Products section, select Cisco AS5200 Series Software.

From the Cisco Access AS5200 Series Software Images page, click the radio button next to mcom-modem-firmware. 1.0.37 and click the Execute dialog. Follow the instructions to download the firmware to your local TFTP server.

If you are not registered on CCO, enter the following URL into your WWW browser to register:

```
http://www.cisco.com
```

FTP User

If you prefer to download firmware by using FTP and you have a SmartNet contract, enter the following URL into your WWW browser:

```
ftp://[userid]@www.cisco.com
```

After entering your password, click on the Cisco folder, then the Access folder, then the 5200 folder.

CCO Guest User

If you are not registered on CCO or do not have a SmartNet contract, you will need a special access code to access the software library. To get a special access code, phone the Technical Support team for CiscoView at 800 553-2447 or 408 526-7209, or e-mail tac@cisco.com; then enter:

```
http://www.cisco.com/public/library/spc_req.shtml
```

FTP User

If you are not registered on CCO or do not have a SmartNet contract, you need a special access code. Phone the Technical Support team for CiscoView at 800 553-2447 or 408 526-7209, or e-mail tac@cisco.com; then enter:

```
ftp://[special_access_code]@www.cisco.com/coded/
```

For FTP server access, enter your e-mail address as the password. For example, enter yourname@net.com.

Copy the Modem Firmware Update to the Cisco AS5200 Modems

This section describes how to download the new modem firmware from your local server to the Cisco AS5200 Universal Access Server using the **copy tftp modem** command, and includes the following tasks:

- Prepare the Target Router
- Download Modem Firmware
- Download Firmware Examples

This section assumes you have saved the new modem firmware file to a local TFTP server.

Prepare the Target Router

Before you copy the update firmware to your Cisco AS5200 modems, connect to the target router via Telnet to the Ethernet, console, or auxiliary management ports and enable privilege EXEC mode. Complete the following tasks:

Step 1 Down the active T1 or E1 lines from the configuration editor using either **shut** or **loop** commands for controller t/e1 0 and controller t/e1 1.

Step 2 Use the **show running-config** command to verify that the line is configured as follows:

```
modem inout
stopbits 1
speed 115200
flowcontrol hardware
parity none
```

If the line does not have these configuration parameters, enter line configuration mode and type the following commands:

```
AS5200(config-line)# modem inout
AS5200(config-line)# stopbits 1
AS5200(config-line)# speed 115200
AS5200(config-line)# flowcontrol hardware
AS5200(config-line)# parity none
```

Step 3 Store the line parameters to NVRAM using the **copy running-config** command.

Step 4 Use the **reload** command to clear all lines, resynchronize all modems, and ensure that all modem out-of-band (OOB) ports are polling.

By using the **copy tftp modem** command, you can upgrade a single modem or a range of modems. You should first update the firmware to one of the modems in your Cisco AS5200, then test it to make sure it works before you upgrade the remaining modems.

Download Modem Firmware

To download firmware to modems in the access server, perform the following task in EXEC mode:

Task	Command
Copy modem firmware from a TFTP server to a modem.	**copy tftp modem**

After you enter the command, you are prompted for the download destination, the remote host name, and the path leading to the source modem firmware as requested by the system software.

If a modem you want to upgrade is busy with a call when the **copy tftp modem** command is issued, that modem is passed over until the active call is dropped, then is upgraded. All other idle modems in the upgrade range proceed with the downloading operation.

Download Firmware Examples

This section shows how to copy a modem firmware file from a TFTP server to the modems in a Cisco AS5200 Universal Access Server.

Because it is recommended that you copy the file to one modem first for testing before copying the file to all the modems in the universal access server, this section shows how to update firmware to a single modem, then to all modems in the Cisco AS5200.

This example uses the **show modem** command to display information about the modem at slot 1, port 0 (1/0). (Refer to Table 1 to see associated lines and modem slot and port numbers.) Note that this modem is running firmware version 1.0.23.

```
AS5200# show modem 1/0
 Mdm  Typ  Status     Tx/Rx     G  Duration  TX  RX  RTS  CTS  DSR  DCD  DTR
  1/0       Idle        0/0      1  00:00:00           x    x    x    x    x

Modem 1/0, Microcom MNP10 V34 Modem (Select), Async25, TTY25
Firmware (Boot) Rev: 1.0.23 (1.0.5)
Modem config: Incoming and Outgoing
Protocol: Normal, Compression: None
Management config: status and AT session polling
TX signals: 0 dBm, RX signals: 0 dBm

  Last clearing of "show modem" counters never
    0 incoming completes, 0 incoming failures
    0 outgoing completes, 0 outgoing failures
    0 failed dial attempts, 0 ring no answers, 3 busied outs
    0 no dial tones, 0 dial timeouts, 0 watchdog timeouts
    0 no carriers, 0 link failures, 3 resets
    0 protocol timeouts, 0 protocol errors, 0 lost events

                     2400-      2400-14400     14400+
# of connections         0               0          0
```

Table 1 TTY Lines Associated to Integrated Cisco AS5200 Modems

TTY Line	Slot/ Modem Port Number	TTY Line	Slot/ Modem Port Number
1	1/0	25	2/0
2	1/1	26	2/1
3	1/2	27	2/2
4	1/3	28	2/3
5	1/4	29	2/4
6	1/5	30	2/5
7	1/6	31	2/6
8	1/7	32	2/7
9	1/8	33	2/8
10	1/9	34	2/9
11	1/10	35	2/10
12	1/11	36	2/11
13	1/12	37	2/12
14	1/13	38	2/13
15	1/14	39	2/14
16	1/15	40	2/15
17	1/16	41	2/16
18	1/17	42	2/17
19	1/18	43	2/18
20	1/19	44	2/19
21	1/20	45	2/20
22	1/21	46	2/21
23	1/22	47	2/22
24	1/23	48	2/23

This example uses the **copy tftp modem** command to download firmware to slot 1, port 0 from TFTP server 172.16.2.77; the file name is *updates/as5200-modem-firmware.1.0.37*.

When the modem firmware successfully downloads, a response message reports the new version number of the installed modem firmware—MNPClass10V.34/V.FCModemRev1.0.37/85—as shown the last line of this example.

```
AS5200# copy tftp modem
Modem Numbers (<slot>/<port> | group <number> | all)? 1/0
Address or name of remote host [172.16.2.77]?
Source file name?updates/as5200-modem-firmware.1.0.37
Accessing file 'updates/as5200-modem-firmware.1.0.37' on 172.16.2.77...
Loading updates/as5200-modem-firmware.1.0.37 from 171.69.2.29 (via Ethernet0):
 !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
[OK - 240380/278528 bytes]
AS5200#
%MODEM-5-DL_START: Modem (1/0) started firmware downloadmodem 1/0
%MODEM-5-DL_GOOD: Modem (1/0) completed firmware download: MNPClass10V.34/V.FCMo
demRev1.0.37/85
```

The **show modem** command provides additional information about the modem in slot 1, port 0. Note that this modem is now running firmware version 1.0..37.

```
AS5200# show modem 1/0

Mdm  Typ  Status     Tx/Rx     G  Duration  TX  RX  RTS  CTS  DSR  DCD  DTR
  1/0       D/L         0/0      1  00:00:00           x    x    x          x

Modem 1/0, Microcom MNP10 V34 Modem (Select), Async25, TTY25
Firmware (Boot) Rev: 1.0.37 (1.0.5)
Modem config: Incoming and Outgoing
Protocol: Normal, Compression: None
Management config: status and AT session polling
TX signals: 0 dBm, RX signals: 0 dBm

  Last clearing of "show modem" counters never
    0 incoming completes, 0 incoming failures
    0 outgoing completes, 0 outgoing failures
    0 failed dial attempts, 0 ring no answers, 5 busied outs
    0 no dial tones, 0 dial timeouts, 0 watchdog timeouts
    0 no carriers, 0 link failures, 5 resets
    4 protocol timeouts, 0 protocol errors, 0 lost events

                     2400-      2400-14400     14400+
# of connections         0               0          0
```

The following example shows how to download the same modem firmware file from the TFTP server 172.16.2.77 to all the modems in the Cisco AS5200.

Note that when you use the **copy tftp modem** command this time, the interactive display shows the name of the previously accessed remote server as the default setting. For example, 172.16.2.77 replaces *UNKNOWN* as shown in this example.

```
AS5200# copy tftp modem
Modem Numbers (<slot>/<port> | group <number> | all)? all
Address or name of remote host [172.16.2.77]?
Source file name?updates/as5200-modem-firmware.1.0.37
Accessing file 'updates/as5200-modem-firmware.1.0.37' on 172.16.2.77...
Loading updates/as5200-modem-firmware.1.0.37 from 171.69.2.29 (via Ethernet0):
 !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
[OK - 240380/278528 bytes]

AS5200#
*Mar  3 00:32:15.943 UTC: %MODEM-5-DL_START: Modem (1/0) started firmware download
*Mar  3 00:32:16.047 UTC: %MODEM-5-DL_START: Modem (1/1) started firmware download
*Mar  3 00:32:16.147 UTC: %MODEM-5-DL_START: Modem (1/2) started firmware download
*Mar  3 00:32:16.251 UTC: %MODEM-5-DL_START: Modem (1/3) started firmware download
*Mar  3 00:32:16.355 UTC: %MODEM-5-DL_START: Modem (1/4) started firmware download
.
.
.
*Mar  3 00:32:18.459 UTC: %MODEM-5-DL_START: Modem (1/23) started firmware download
*Mar  3 00:32:18.563 UTC: %MODEM-5-DL_START: Modem (2/0) started firmware download
*Mar  3 00:32:18.667 UTC: %MODEM-5-DL_START: Modem (2/1) started firmware download
*Mar  3 00:32:18.771 UTC: %MODEM-5-DL_START: Modem (2/2) started firmware download
*Mar  3 00:32:18.963 UTC: %MODEM-5-DL_START: Modem (2/3) started firmware download
*Mar  3 00:32:19.067 UTC: %MODEM-5-DL_START: Modem (2/4) started firmware download
```

```
.
.
.
*Mar  3 00:32:21.223 UTC: %MODEM-5-DL_START: Modem (2/23) started firmware download
*Mar  3 00:32:57.187 UTC: %MODEM-5-DL_GOOD: Modem (1/2) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.37/85
*Mar  3 00:32:57.191 UTC: %MODEM-5-DL_GOOD: Modem (1/3) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.37/85
*Mar  3 00:32:57.195 UTC: %MODEM-5-DL_GOOD: Modem (1/7) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.37/85
*Mar  3 00:32:57.475 UTC: %MODEM-5-DL_GOOD: Modem (1/0) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.37/85
*Mar  3 00:32:57.479 UTC: %MODEM-5-DL_GOOD: Modem (1/1) completed firmware download:
.
.
.
*Mar  3 00:33:01.363 UTC: %MODEM-5-DL_GOOD: Modem (2/20) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.37/85
*Mar  3 00:33:01.919 UTC: %MODEM-5-DL_GOOD: Modem (2/18) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.37/85
*Mar  3 00:33:01.927 UTC: %MODEM-5-DL_GOOD: Modem (2/21) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.37/85
Bell_Stress_2#
*Mar  3 00:33:25.959 UTC: %MODEM-1-DL_FAIL: Modem (2/13) failed firmware download (136):
timed-out
*Mar  3 00:33:31.203 UTC: %MODEM-5-DL_START: Modem (2/13) started firmware download
*Mar  3 00:34:05.631 UTC: %MODEM-5-DL_GOOD: Modem (2/13) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.37/85
```

Use the **show modem version** command, after the modem upgrade reports are displayed, to verify that all modems have been updated.

```
AS5200# show modem version

Modem module                  Firmware         Boot

Mdm               Number       Rev             Rev
1/0               0            1.0.37          1.0.5
1/1               0            1.0.37          1.0.5
1/2               0            1.0.37          1.0.5
1/3               0            1.0.37          1.0.5
1/4               0            1.0.37          1.0.5
.
.
.
1/23              1            1.0.37          1.0.5
2/0               0            1.0.37          1.0.5
2/1               0            1.0.37          1.0.5
2/2               0            1.0.37          1.0.5
2/3               0            1.0.37          1.0.5
2/4               0            1.0.37          1.0.5
.
.
.
2/23              1            1.0.37          1.0.5

Modem board HW version info:

 Slot 1:
   Carrier card:
     hw version= 15, number_of_ports= 24, max_modules= 2, max_oob_ports= 2
   Modem Module 0:
     number_of_modems= 12, option_bits= 1,
     rev_num= 03.00, vendor_model_number= 01,
     vendor_banner= Microcom MNP10 V34 Modem
```

```
    Modem Module 1:
      number_of_modems= 12, option_bits= 1,
      rev_num= 03.00, vendor_model_number= 01,
      vendor_banner= Microcom MNP10 V34 Modem

  Slot 2:
    Carrier card:
      hw version= 15, number_of_ports= 24, max_modules= 2, max_oob_ports= 2
    Modem Module 0:
      number_of_modems= 12, option_bits= 1,
      rev_num= 01.07, vendor_model_number= 01,
      vendor_banner= Microcom MNP10 V34 Modem
    Modem Module 1:
      number_of_modems= 12, option_bits= 1,
      rev_num= 02.00, vendor_model_number= 01,
      vendor_banner= Microcom MNP10 V34 Modem
```

It is not unusual for one or more modems to fail and retry automatically to complete the upgrade. If a particular modem fails consistently to reload, use the **clear modem** command to clear that modem slot and port. For example, type the following command to clear modem ports 13 and 14 on slot 2:

```
AS5200# clear modem 2/13 2/14
```

Then use the **copy tftp modem** command to copy the firmware to that particular modem slot and port. If it still fails, perform a diagnostic (back to back) test using the **test modem back-to-back** command, as shown in the following example:

```
AS5200# test modem back-to-back 2/13 2/14
Repetitions (of 10-byte packets) [1]:
Bell_Stress_2#
*Mar  3 00:50:55.803 UTC: %MODEM-5-B2BCONNECT: Modems (2/13) and (2/14) connected in
back-to-back test: CONNECT28800/REL-MNP
*Mar  3 00:50:57.179 UTC: %MODEM-5-B2BMODEMS: Modems (2/14) and (2/13) completed
back-to-back test: success/packets = 2/2
```

Restore the T1 interfaces to the active state using the **no shut** or **no loop** commands.

New Features

The 1.0.37 firmware includes the following new features:

- S8 register now defaults to 2
- The ";" dial modifier is added to operate like the "{" dial modifier

Default changes made in 1.0.37 include the following:

- at:t26=9—Enable digital ring, disable billing delay
- Disable "+++"—Escape to command mode (in answer mode only)
- at%u1—Lock serial speed
- at$b115200—Set serial line speed to 115200
- at&d3—Reset on DTR
- at#E1 is now displayed with at\S results. By default, this feature disables the modem command escape sequence in answer mode for the duration of the connection. The escape sequence remains active in dialer/origination mode.
- at#E0 disables the at#E1 feature, permitting escape sequence recognition in answer mode

Revision History

This section details changes and bug fixes in modem firmware Update 1.0.37.

- MABP now confirms the CRC of each message and ignores messages with incorrect CRCs.
- CSCD: 55716—resolved

  Modems no longer show V.32 modulation when in IDLE state as reported by the **at@e** command. IDLE states are properly reported as IDLE.
- The End Connection Event poll reply frame now reports the correct number of Tx and Rx characters (rather than always reporting 0 characters).
- The End Connection Event reported via the Refresh Poll command contains the total number of transmitted/received characters accumulated since the last poll. It now returns the number of Tx/Rx characters for the last connection only (which is what Event Poll does).
- EIA/TIA-232 signals (reported via a poll message) do not work properly. Lower the DTR signal and EIA/TIA-232 event will always report that the DTR signal has been changed. It will be cleared on the subsequent poll.
- Issue ATH in an OOB DC session and the modem is expected to hang up and clear the line DTE interface. It formally would not accept subsequent AT commands, and reconnected the next call forwarding characters queued from the host in the previous session.
- CSCD: 58420

  When a call stays up for some time, we no longer get analog signal event updates unless the event data shows changes in values.
- While connected, polling after sending or receiving data was reported incorrectly. Sending and receiving are now reported correctly.
- When DSR is lowered, polling no longer indicates that DSR has changed but it is still reported as high.
- CSCD: 55742

  When you entered the **@E** or **/S** commands through the OOB port, if the OOB port session is terminated in the middle of the output the remainder of the output was seen in the next OOB session. The output queue is now flushed on OOB port session termination.
- When both modems are forced to 2400 V.22 BIS, normal and Lapm connections are at 1200 bps.

Command Reference

This section contains the **copy modem** command used in this modem firmware update document.

copy modem

To download firmware to modems in the Cisco AS5200, use the **copy modem** EXEC command.

copy {**flash** | **tftp** | **rcp**} **modem**

Syntax Description

flash	Copies firmware from Flash memory to the modem.
tftp	Copies firmware from the TFTP server to the modem.
rcp	Downloads a remote copy of the firmware from a network server to the modem.

Default

Disabled

Command Mode

EXEC

Usage Guidelines

After you enable this command, you are asked to provide the download destination (*slot/modem-port* or **all**), the remote host name, and the path leading to the source modem firmware.

If a modem that you wish to upgrade is busy with a call when the **copy modem** command is issued, that modem is passed over until the active call is dropped, then is upgraded. All other idle modems in the upgrade range proceed with the downloading operation.

Examples

The following example shows how to copy the modem firmware file called *modem_upgrade* from the TFTP server called *Modem_Server* to modem 2/0, which is installed in the Cisco AS5200:

```
AS5200# copy tftp modem
Modem Firmware Download Modem Numbers? 2/0
Address or name of remote host [UNKNOWN]? Modem_Server
Source file name? dirt/elem/modem_upgrade
Accessing file 'dirt/elem/modem_upgrade on Modem_Server...
Loading dirt/elem/modem_upgrade .from 223.255.254.254 (via Ethernet0): ! [OK]

Loading dirt/elem/modem_upgrade from 223.255.254.254 (via Ethernet0):
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
[OK - 237503/278528 bytes]

AS5200#
%MODEM-5-DL_START: Modem (2/0) started firmware download
%MODEM-5-DL_GOOD: Modem (2/0) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.37/85.23/85
```

As shown in the preceding example, you might want to upgrade and test one modem's firmware before upgrading all the modems' firmware on the universal access server, as shown in the next example.

This example shows how to download the same modem firmware file from the TFTP server to all the modems in the Cisco AS5200:

```
AS5200# copy tftp modem
Modem Firmware Download Modem Numbers? all
Address or name of remote host [UNKNOWN]? Modem_Server
Source file name? dirt/elem/modem_upgrade
Accessing file 'dirt/elem/modem_upgrade on Modem_Server...
Loading dirt/elem/modem_upgrade .from 223.255.254.254 (via Ethernet0): ! [OK]

Loading dirt/elem/modem_upgrade from 223.255.254.254 (via Ethernet0):
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
[OK - 237503/278528 bytes]

AS5200#
%MODEM-5-DL_START: Modem (2/0) started firmware download
%MODEM-5-DL_START: Modem (2/1) started firmware download
%MODEM-5-DL_START: Modem (2/2) started firmware download
.
.
.
%MODEM-5-DL_START: Modem (2/22) started firmware download
%MODEM-5-DL_START: Modem (2/23) started firmware download
%MODEM-5-DL_GOOD: Modem (2/2) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.37/85.23/85
%MODEM-5-DL_GOOD: Modem (2/10) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.37/85.23/85
%MODEM-5-DL_GOOD: Modem (2/4) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.37/85.23/85
.
.
.
%MODEM-5-DL_GOOD: Modem (2/18) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.37/85.23/85
%MODEM-5-DL_GOOD: Modem (2/20) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.37/85.23/85
%MODEM-5-DL_GOOD: Modem (2/23) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.37/85.23/85
```

The following example shows how to copy the modem firmware file called STAR.M from Flash memory to the integrated modem 1/2:

```
AS5200# copy flash modem
Modem Numbers (<slot>/<port> | group <number> | all)? 1/2

System flash directory:
File  Length   Name/status
  1   3539820  as5200-i-m.allcookies
  2   239203   STAR.M
  3   23072    BOOT.105 [3802288 bytes used, 4586320 available, 8388608 total]
Source file name? STAR.M
AS5200#
%MODEM-5-DL_START: Modem (1/2) started firmware download
%MODEM-5-DL_GOOD: Modem (1/2) completed firmware download:
MNPClass10V.34/V.FCModemRev1.0.37/85.23/85
AS5200#
```