

show modem

To display a high-level performance report for all the modems or a single modem inside Cisco AS5200 and Cisco AS5300 access servers, use the **show modem** command in EXEC mode.

show modem [*slot/port* | *group number*]

Syntax Description	
<i>slot/port</i>	(Optional) Specifies the location of a slot and modem port. Remember to include the forward slash (/) when entering this variable.
<i>group number</i>	(Optional) Specifies a modem group to which a specified modem belongs. The group number range is 1 to 200.

Command Modes EXEC

Command History	Release	Modification
	11.2	This command was introduced.

Examples

The following display shows output information for the **show modem** command for two V.34 modem cards inserted in a Cisco AS5200:

```
router# show modem
          Inc calls      Out calls      Busied      Failed      No          Succ
          Mdm  Usage    Succ   Fail    Succ   Fail    Out      Dial      Answer    Pct.
* 1/0    17%     74     3      0      0      0        0         0         96%
* 1/1    15%     80     4      0      0      0        1         1         95%
* 1/2    15%     82     0      0      0      0        0         0        100%
  1/3    21%     62     1      0      0      0        0         0         98%
  1/4    21%     49     5      0      0      0        0         0         90%
* 1/5    18%     65     3      0      0      0        0         0         95%
* 1/6    19%     58     2      0      0      0        0         0         96%
* 1/7    17%     67     5      0      0      0        1         1         93%
* 1/8    20%     68     3      0      0      0        0         0         95%
  1/9    16%     67     2      0      0      0        0         0         97%
  1/10   18%     56     2      0      0      0        1         1         96%
* 1/11   15%     76     3      0      0      0        0         0         96%
* 1/12   16%     62     1      0      0      0        0         0         98%
  1/13   17%     51     4      0      0      0        0         0         92%
  1/14   16%     51     5      0      0      0        0         0         91%
  1/15   17%     65     0      0      0      0        0         0        100%
  1/16   15%     73     3      0      0      0        0         0         96%
  1/17   17%     67     2      0      0      0        0         0         97%
  1/18   17%     61     2      0      0      0        0         0         96%
* 1/19   17%     74     2      0      0      0        0         0         97%
  1/20   16%     65     1      0      0      0        0         0         98%
* 1/21   16%     58     3      0      0      0        0         0         95%
* 1/22   18%     56     4      0      0      0        0         0         93%
* 1/23   20%     60     4      0      0      0        0         0         93%
```

The following display shows output information for the **show modem** command for two V.110 modem cards inserted in a Cisco AS5200:

```
router# show modem
      Inc calls      Out calls  Busied  Failed  No      Succ
Mdm  Usage  Succ  Fail  Succ  Fail  Out  Dial  Answer  Pct.
0/0  0%    -    -    -    -    0    0    0    -
0/1  0%    -    -    -    -    0    0    0    -
0/2  0%    -    -    -    -    0    0    0    -
0/3  0%    -    -    -    -    0    0    0    -
0/4  0%    -    -    -    -    0    0    0    -
0/5  0%    -    -    -    -    0    0    0    -
0/6  0%    -    -    -    -    0    0    0    -
0/7  0%    -    -    -    -    0    0    0    -
0/8  0%    -    -    -    -    0    0    0    -
0/9  0%    -    -    -    -    0    0    0    -
0/10 0%    -    -    -    -    0    0    0    -
0/11 0%    -    -    -    -    0    0    0    -
1/0  0%    -    -    -    -    0    0    0    -
1/1  0%    -    -    -    -    0    0    0    -
1/2  0%    -    -    -    -    0    0    0    -
1/3  0%    -    -    -    -    0    0    0    -
1/4  0%    -    -    -    -    0    0    0    -
1/5  0%    -    -    -    -    0    0    0    -
1/6  0%    -    -    -    -    0    0    0    -
1/7  0%    -    -    -    -    0    0    0    -
1/8  0%    -    -    -    -    0    0    0    -
1/9  0%    -    -    -    -    0    0    0    -
1/10 0%    -    -    -    -    0    0    0    -
1/11 0%    -    -    -    -    0    0    0    -
```

Table 76 describes the fields shown in the previous displays of the **show modem** command.

Table 76 *show modem Field Descriptions*

Field	Description
Mdm	Slot and modem port number. Also, the following modem states can appear to the left of a slot/modem port number: b—Modem was removed from service with the modem shutdown command or the modem busyout command. B—Modem is suspected to be inoperable or bad. No calls can be made with this modem. The letter B can also mean that a modem firmware download failed for the specified modem. In this case, try unmarking the modem as bad with the no modem bad command and upgrading the modem firmware again. d—The RAM-based DSP code, which supports K56flex, is not configured. The modem will revert to transmitting at 33.6 kbps. D—Modem is currently downloading firmware. p—Firmware download is pending. Typically because one or more modems is active. R—Modem is held and isolated in a suspended state by the modem hold-reset command. T—Modem is conducting a back-to-back test with another modem. *—Modem is connected or dialing.
Usage	Percentage of the total system uptime that all modems are in use.

Table 76 show modem Field Descriptions (continued)

Field	Description
Inc calls	Number of incoming calls that successfully and unsuccessfully connected to a modem.
Out calls	Number of outgoing calls that successfully and unsuccessfully dialed out from an available modem.
Busied Out	Number of modems that have been manually removed from service.
Failed Dial	Number of modems that attempted to dial into the network but failed to make a connection.
No Answer	Number of modems that detected an incoming ring but failed to answer the call.
Succ Pct.	Successful connection percentage of total available modems.

The following example shows the statistics and current configurations for the manageable modem 2/10, which exists on a V.34 modem card in a Cisco AS5200. A dash (-) indicates a field that is not available on basic modems. An *x* indicates a field that is available and active on manageable modems. See Table 77 for a description of the fields displayed by the **show modem** command.

```

router> show modem 2/10
Mdm Typ Status Tx/Rx G Duration TX RX RTS CTS DSR DCD DTR
2/10 V34 Idle 33600/33600 1 00:00:00 x x x x

Modem 2/10, Microcom MNP10 V34 Modem (Select), Async35, TTY35
Firmware (Boot) Rev: 2.1(9) (1.0(5))
Modem config: Incoming and Outgoing
Protocol: reliable/MNP, Compression: V42bis
Management port config: Status polling and AT session
Management port status: Status polling and AT session
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, 0 busied outs
 0 no dial tones, 0 dial timeouts, 0 watchdog timeouts
 0 no carriers, 0 link failures, 0 resets 0 recover oob
 0 protocol timeouts, 0 protocol errors, 0 lost events

Connection Speeds 75 300 600 1200 2400 4800
# of connections 0 0 0 0 0 0
Connection Speeds 7200 9600 12000 14400 16800 19200
# of connections 0 0 0 0 0 0
Connection Speeds 21600 24000 26400 28800 31200 33600
# of connections 0 0 0 0 0 1

```

The following is an output example for a basic V.34 modem module. Notice that unavailable fields are marked with dashes (-):

```
router# show modem 1/1
Mdm Typ Status Tx/Rx G Duration TX RX RTS CTS DSR DCD DTR
1/1 - Idle 19200/19200 0 00:01:05 - - - - - - -

Modem 1/1, AS5200 Non-Manageable Modem
Firmware (Boot) Rev: Unknown
Modem config: Unknown
Management config: Not Manageable Modem

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

Connection Speeds 75 300 600 1200 2400 4800
# of connections 0 0 0 0 0 0
Connection Speeds 7200 9600 12000 14400 16800 19200
# of connections 0 0 0 0 0 0
Connection Speeds 21600 24000 26400 28800 31200 33600
# of connections 0 0 0 0 0 0
```

The following display shows output information for the **show modem slot/port** command for V.110 modem cards:

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

Modem 0/1, V.110 Terminal Adaptor (Unmanaged), Async2, TTY2
Firmware (Boot) Rev: Unmanaged (Unmanaged)
Modem config: Incoming and Outgoing
Management config: Unmanaged

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

Connection Speeds 75 300 600 1200 2400 4800
# of connections - - - - - -
Connection Speeds 7200 9600 12000 14400 16800 19200
# of connections - - - - - -
Connection Speeds 21600 24000 26400 28800 31200 32000
# of connections - - - - - -
Connection Speeds 33600 34000 36000 38000 40000 42000
# of connections - - - - - -
Connection Speeds 44000 46000 48000 50000 52000 54000
# of connections - - - - - -
Connection Speeds 56000
# of connections -
```

The type of display output generated from the **show modem slot/port** command depends on the version of Cisco IOS software running on the router or access server. For example, the following shows example output for a 56K modem card, which carries digital modems that transmit at 56 kbps. (In truth, 56K modems do not modulate or demodulate data. A pure digital-to-digital connection is made.) See Table 77 for a description of the fields displayed by this modem card.

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

```
Modem 0/0, Microcom MNP10 K56 Modem (Select), TTY1
Firmware (Boot) Rev: 3.1(16) (3.0(4))
DSP Controller (SPX) Rev: 1.1(0) (1.1(0))
Modem config: Incoming and Outgoing
Protocol: Normal, Compression: None
Management port config: Status polling and AT session
Management port status: Status polling and AT session
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, 0 busied outs
 0 no dial tones, 0 dial timeouts, 0 watchdog timeouts
 0 no carriers, 0 link failures, 1 resets 0 recover oob
 0 protocol timeouts, 0 protocol errors, 0 lost events
```

Transmit Speed Counters:

Connection Speeds	75	300	600	1200	2400	4800
# of connections	0	0	0	0	0	0
Connection Speeds	7200	9600	12000	14400	16800	19200
# of connections	0	0	0	0	0	0
Connection Speeds	21600	24000	26400	28800	31200	32000
# of connections	0	0	0	0	0	0
Connection Speeds	33600	34000	36000	38000	40000	42000
# of connections	0	0	0	0	0	0
Connection Speeds	44000	46000	48000	50000	52000	54000
# of connections	0	0	0	0	0	0
Connection Speeds	56000					
# of connections	0					

Receive Speed Counters:

Connection Speeds	75	300	600	1200	2400	4800
# of connections	0	0	0	0	0	0
Connection Speeds	7200	9600	12000	14400	16800	19200
# of connections	0	0	0	0	0	0
Connection Speeds	21600	24000	26400	28800	31200	32000
# of connections	0	0	0	0	0	0
Connection Speeds	33600	34000	36000	38000	40000	42000
# of connections	0	0	0	0	0	0
Connection Speeds	44000	46000	48000	50000	52000	54000
# of connections	0	0	0	0	0	0
Connection Speeds	56000					
# of connections	0					

Table 77 describes the fields in the previous four displays, which were created using the **show modem slot/port** command. This table applies to all modem module types.

Table 77 show modem slot/port Field Descriptions

Field	Description
Mdm	Slot and modem number.
Typ	Modulation type, which can be any of the following values: Bel103, Bel212, V21, V22, V22bis, V23, V32, V32bis, VFC, V34, V17, V27, V33 and K56Flx
Status	Current status of the modem. Possible values include: <ul style="list-style-type: none"> • Conn—Modem is connected to a remote host. • B—Inoperable state, which is configured by the modem bad command. • B*—Inoperable state, which is configured by the modem startup-test command during initial power-up testing. • b—Modem is busied out. This can be manually configured by the modem busyout line configuration command. • Reset—Modem is in reset mode. • D/L—Modem is downloading firmware. • Bad FW—Downloaded modem firmware is not operational. • Busy—Modem is out of service and not available for calls. • Idle—Modem is ready for incoming and outgoing calls.
Tx/Rx	Transmission and receiving speed for the most recently connected call.
G	Modem group number assigned to the modem. The group number 0 means the modem is not part of any group.
Duration	Time duration of the current call or the last call.
Modem functions	The following modem functions are displayed on manageable modems. A field that is available and turned on is marked with an <i>x</i> . An unavailable field is marked with a dash (-). <p>TX—Transmit Data. The DTE device transmits data to the DCE device.</p> <p>RX—Receive Data. The DCE device receives data from the DTE device.</p> <p>RTS—Request To Send. The DTE device signals to the DCE device that the DTE device accepts data into its buffers.</p> <p>CTS—Clear To Send. The DCE device signals to the DTE device that the DCE device accepts data into its buffers.</p> <p>DSR—Data Set Ready. The modem is ready to start communication.</p> <p>DCD—Data Carrier Detect. The DCE device indicates to the DTE device that a call is present and established with a remote modem. Dropping the DCD function terminates the session.</p> <p>DTR—Data Terminal Ready. The DTE device indicates to the DCE device that it accepts calls.</p>
Firmware	Installed modem firmware.
Modem config	Current modem configuration, which includes the fields Incoming, Outgoing, Incoming and Outgoing, and Unknown.
Protocol	Protocol the modem is running such as Normal, Direct, reliable/MNP4, and reliable/LAPM (Link Access Procedure for Modems).

Table 77 *show modem slot/port Field Descriptions (continued)*

Field	Description
Compression	Compression algorithm running on the modem, such as None, V42bis, and MNP5.
Management config	Indicates if the modem is configured for out-of-band feature polling.
TX signals	Transmit signal levels. For modulations that do not support signal to noise calculations, the ratio is 0.
RX signals	Transmit signal levels.
Last clearing of "show modem" counters	<p>Last time the modem's counters were cleared using the clear modem counters command. A summary of modem events also appears.</p> <ul style="list-style-type: none"> • Incoming completes and failures—Total number of incoming connection requests that the modem answered and successfully or unsuccessfully connected with the remote DCE device. • Outgoing completes and failures—Total number of outgoing connection requests that the modem dialed and successfully or unsuccessfully connected with the remote DCE device. • Failed dial attempts—Number of times the modem attempted to dial out but the call failed to leave the modem. • Ring no answers—Number of times the integrated modem detected ringing but did not answer the incoming call. • Busyed outs—Number of times the integrated modem was intentionally taken out of service (for example, the modem busyout command was enabled on the modem). • No dial tones—Number of times the dial-out attempt failed because the modem failed to detect a dial tone. • Dial timeouts—Number of times the modem has timed out while attempting to dial. • Watchdog timeouts—Number of times the modem internal watchdog timer has expired. • No carriers—Number of times the modem disconnected because no carrier was present. • Link failures—Number of times the modem has detected a link failure. • Resets—Number of times the modem has been reset. • recover oob—Number of times the out-of-band feature has been cleared and re-initialized. • Protocol timeouts and errors—Number of times the modem protocol failed to make a call connection. • Lost events—Number of incomplete modem events performed by the modem.
Transmit Speed Counters:	List of connection speeds that were sent by the modem.

Table 77 show modem slot/port Field Descriptions (continued)

Field	Description
Receive Speed Counters:	List of connection speeds that were received by the modem.
Connection Speeds # of connections	A complete summary of possible connection speeds and the actual number of connections that occurred at those speeds. Depending on which modem port module and version of software you are running, possible connection speeds range from 75 to 56,000 bps. The number of successful connections are displayed directly beneath the connection speed identifier. For example, the following output shows that three connections were made at 56 kbps. Connection Speeds 56000 # of connections 3

The following example shows the output for modem group 1, which is composed of modem 1/0 through modem 1/23:

```
router# show modem group 1
          Incoming calls      Outgoing calls  Busied  Failed  No  Succ
Grp Usage Succ  Fail Avail  Succ  Fail Avail  Out    Dial  Ans  Pct.
1   0%  0    0   24    0    0   24    0     0    0   0%

Modem Group 1: 1/0, 1/1, 1/2, 1/3, 1/4, 1/5, 1/6, 1/7, 1/8, 1/9, 1/10, 1/11, 1/12, 1/13,
1/14, 1/15, 1/16, 1/17, 1/18, 1/19, 1/20, 1/21, 1/22, 1/23
```

Related Commands

Command	Description
show modem version	Displays version information about the modem firmware, controller and DSP code (for 56-kbps modems only), and boot code.

show modem at-mode

To display a list of the manageable Microcom modems that have open AT sessions and a list of users logged in to those sessions, use the **show modem at-mode** command in EXEC mode.

show modem at-mode

Syntax Description This command has no arguments or keywords.

Command Modes EXEC

Command History	Release	Modification
	11.2	This command was introduced.

Examples The following output shows that modem 1/1 has one open AT directly connected session:

```
router# show modem at-mode
Active AT-MODE management sessions:
Modem      User's Terminal
1/1 0 cty 0
```

show modem call-stats

To display the local disconnect reasons for all modems inside an access server or router, use the **show modem call-stats** command in EXEC mode.

```
show modem call-stats [slot]
```

Syntax Description

<i>slot</i>	(Optional) Specifies the slot number, which limits the display output to a particular range of modems in the system.
-------------	--

Command Modes

EXEC

Command History

Release	Modification
11.3	This command was introduced.

Usage Guidelines

Use this command to find out why a modem ended its connection or why a modem is not operating at peak performance.

Local disconnect reasons for a particular modem are listed across the top of the screen display. For example, see `lostCarr`, `dtrDrop`, `rmtLink`, `wdogTimr`, `compress`, `retrain`, `inacTout`, and `linkFail` in the following output:

```
router# show modem call-stats

dial-in/dial-out call statistics

      lostCarr  dtrDrop  rmtLink  wdogTimr  compress  retrain  inacTout  linkFail
Mdm
* 0/0
* 0/1
```

In the body of the screen display, the number of times an error occurred on a specific modem is displayed (see the # column). The % column shows the total running percent that a modem was logged for the specified disconnect reason with respect to the entire modem pool. For example, out of all the times the `lostCarr` error occurred on all the modems in the system, the `lostCarr` error occurred 2% of the time on modem 0/0.

```
router# show modem call-stats

dial-in/dial-out call statistics

      lostCarr  dtrDrop  rmtLink  wdogTimr  compress  retrain  inacTout  linkFail
Mdm   #   %   #   %   #   %   #   %   #   %   #   %   #   %
* 0/0   6   2   2   3   1   0   0   0   0   0   0   0   0   0
* 0/1   5   2   2   3   2   1   0   0   0   0   0   0   0   0
```

Bad or malfunctioning modems are detected by an unusually high number of disconnect counters for a particular disconnect reason. For example, if modem 1/0 had an astronomically high number of compression errors compared to the remaining modems in system, modem 1/0 would probably be bad or inoperable.

To reset the counters displayed by the **show modem call-stats** command, issue the **clear modem counters** command.

**Note**

Remote disconnect reasons are not described by this command.

Examples

The following example shows call statistics for the **show modem call-stats** command. Due to the screen size limitation of most terminal screen displays, all the possible disconnect reasons cannot be displayed at the same time. Only the top eight most frequently experienced disconnect reasons are displayed.

```
router# show modem call-stats

dial-in/dial-out call statistics

      lostCarr  dtrDrop  rmtLink  wdogTimr  compress  retrain  inacTout  linkFail
Mdm   #    %    #    %    #    %    #    %    #    %    #    %    #    %
* 0/0   6    2    2    3    1    0    0    0    0    0    0    0    0    0    0
* 0/1   5    2    2    3    2    1    0    0    0    0    0    0    0    0    0
  0/2   5    2    2    3    4    3    0    0    0    0    0    0    0    0    0
* 0/3   5    2    2    3    2    1    0    0    0    0    0    0    0    0    0
* 0/4   5    2    1    1    1    0    0    0    0    0    0    0    0    0    0
* 0/5   5    2    2    3    2    1    0    0    0    0    0    0    0    0    0
* 0/6   4    1    2    3    2    1    0    0    0    0    0    0    0    0    0
* 0/7   4    1    2    3    4    3    0    0    0    0    0    0    0    0    0
* 0/8   6    2    1    1    3    2    0    0    0    0    0    0    0    0    0
* 0/9   5    2    1    1    1    0    0    0    0    0    0    0    0    0    0
* 0/10  5    2    1    1    2    1    0    0    0    0    0    0    0    0    0
* 0/11  5    2    1    1    2    1    0    0    0    0    0    0    0    0    0
  0/12  5    2    2    3    2    1    0    0    0    0    0    0    0    0    0
* 0/13  5    2    1    1    1    0    0    0    0    0    0    0    0    0    0
* 0/14  5    2    1    1    1    0    0    0    0    0    0    0    0    0    0
* 0/15  5    2    1    1    1    0    0    0    0    0    0    0    0    0    0
* 0/16  5    2    1    1    1    0    0    0    0    0    0    0    0    0    0
* 0/17  5    2    1    1    2    1    0    0    0    0    0    0    0    0    0
* 0/18  5    2    1    1    2    1    0    0    0    0    0    0    0    0    0
* 0/19  5    2    1    1    3    2    0    0    0    0    0    0    0    0    0
* 0/20  5    2    1    1    1    0    0    0    0    0    0    0    0    0    0
* 0/21  5    2    1    1    1    0    0    0    0    0    0    0    0    0    0
* 0/22  5    2    1    1    11   10   0    0    0    0    0    0    0    0    0
* 0/23  5    2    1    1    2    1    0    0    0    0    0    0    0    0    0
* 2/0   4    1    2    3    2    1    0    0    0    0    0    0    0    0    0
* 2/1   5    2    1    1    2    1    0    0    0    0    0    0    0    0    0
* 2/2   5    2    2    3    0    0    0    0    0    0    0    0    0    0    0
* 2/3   5    2    1    1    2    1    0    0    0    0    0    0    0    0    0
* 2/4   5    2    1    1    2    1    0    0    0    0    0    0    0    0    0
* 2/5   5    2    1    1    2    1    0    0    0    0    0    0    0    0    0
* 2/6   4    1    1    1    1    0    0    0    0    0    0    0    0    0    0
* 2/7   5    2    1    1    1    0    0    0    0    0    0    0    0    0    0
* 2/8   5    2    1    1    1    0    0    0    0    0    0    0    0    0    0
* 2/9   4    1    1    1    2    1    0    0    0    0    0    0    0    0    0
* 2/10  5    2    1    1    0    0    0    0    0    0    0    0    0    0    0
* 2/11  5    2    1    1    5    4    0    0    0    0    0    0    0    0    0
* 2/12  5    2    1    1    2    1    0    0    0    0    0    0    0    0    0
* 2/13  5    2    1    1    1    0    0    0    0    0    0    0    0    0    0
* 2/14  5    2    1    1    2    1    0    0    0    0    0    0    0    0    0
* 2/15  4    1    1    1    3    2    0    0    0    0    0    0    0    0    0
* 2/16  4    1    1    1    3    2    0    0    0    0    0    0    0    0    0
* 2/17  5    2    2    3    9    8    0    0    0    0    0    0    0    0    0
* 2/18  4    1    1    1    1    0    0    0    0    0    0    0    0    0    0
* 2/19  3    1    1    1    2    1    0    0    0    0    0    0    0    0    0
```

show modem call-stats

```

* 2/20  7  3  1  1  8  7  0  0  0  0  0  0  0  0  0  0
* 2/21  5  2  1  1  1  0  0  0  0  0  0  0  0  0  0
* 2/22  4  1  1  1  2  1  0  0  0  0  0  0  0  0  0
* 2/23  5  2  1  1  2  1  0  0  0  0  0  0  0  0  0
Total  233      59      110      0      0      0      0

```

dial-out call statistics

Mdm	noCarr		noDitone		busy		abort		dialStrg		autoLgon		dialTout		rmtHgup	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
* 0/0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 0/1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0/2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 0/3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 0/4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 0/5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 0/6	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 0/7	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 0/8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 0/9	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 0/10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 0/11	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 0/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 0/14	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 0/15	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 0/16	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 0/17	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 0/18	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 0/19	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 0/20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 0/21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 0/22	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 0/23	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 2/0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 2/1	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 2/2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 2/3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 2/4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 2/5	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 2/6	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 2/7	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 2/8	7	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 2/9	4	1	1	1	2	1	0	0	0	0	0	0	0	0	0	0
* 2/10	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 2/11	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 2/12	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 2/13	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 2/14	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 2/15	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 2/16	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 2/17	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 2/18	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 2/19	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 2/20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 2/21	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 2/22	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* 2/23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	84		0		0		0		0		0		0		0	

Table 78 describes the **show modem call-stats** fields.

Table 78 *show modem call-stats Field Descriptions*

Field	Description
dial-in/dial-out call statistics	This category of disconnect reasons can happen only in dial-in or dial-out scenarios.
wdogTimr	Watchdog timeout. An obscure firmware problem occurred. This is a rare disconnect reason.
compress	Compression. An error was detected during decompression, which caused the internal decompression dictionary to overflow. This could be caused by a modem dialing in that is using a slightly different compression algorithm.
retrain	Retrain failure. A connection was lost and not re-established after three attempts.
inacTout	Inactivity timeout. The time specified in the AT/T command has expired. No modem data transfers were detected during that period.
linkFail	Link failure. The protocol level link failed while using MNP-10 or LAPM in reliable mode.
moduFail	Modulation error. An error was detected at the DSP chip level, which caused a disconnect.
mnpProto	MNP10 protocol error. An uncorrectable error occurred during a MNP-10 connection.
lapmProt	LAPM protocol error. An uncorrectable error occurred during a LAPM connection.
lostCarr	Lost carrier. The modem firmware detected a carrier drop during a connection. The cause for the carrier drop could be the loss of signal from the remote modem or the result of a error detection.
dtrDrop	DTR drop. The modem disconnected because the DTR signal from the host became inactive.
userHgup	User hang up. The modem disconnected because a command such as ATH was detected.
rmtlink	Remote link disconnect. If an MNP-10 reliable link is established, the remote modem sends the disconnect reason across the link before disconnecting. The disconnect reason displayed is LOCAL (remote link disconnect) and REMOTE (the reason the remote modem disconnected).
trminate	Terminate. A password security error occurred in the Microcom HDMS. This error occurs only with Microcom modems.
callBkfa	Callback failed. This error applies to leased line connections only. A switched line connection failed and a connection still cannot be made on the leased line.
dial-out call statistics	This category of disconnect reasons can happen only in a dial-out scenario.
noCarr	No carrier. The called number answered, but no answer tone was detected after the appropriate wait.
noDitone	No dialtone. No dial tone was detected after the modem went off hook.

Table 78 *show modem call-stats Field Descriptions (continued)*

Field	Description
busy	Busy. A busy signal was detected while the local modem was attempting to dial.
abort	Abort. A character was received from the remote host after the dial command was issued and before a connection was established.
dialStrg	Dialstring error. An invalid character was detected in the dial string, which forced the dial attempt to terminate.
autoLgon	Autologon error. An autologon sequence did not successfully complete.
dialTout	Dial timeout. When a semicolon is used as a dial modifier, the modem returns to the command state as indicated by an "OK." This allows a continuation of the dial string. If a period of time elapses as specified in the S7 register without the dial string completing, the attempt is aborted with dial timeout as the disconnect reason.
rmtHgup	Remote hang-up. The modem disconnected because the remote modem disconnected the call and dropped DTR.
blacklst	Blacklist. In a country that supports blacklisting, an attempt was made to go off hook with a null dial string (ATD).
ccpNssn	CCP not seen. The credit card prompt (also known as Bong) was not detected.
faxClasz	Fax class 2 error. An abnormal termination to a fax transmission was detected.
Total	Total number of times the disconnect reason occurred among all the modems in the system.

show modem configuration

To display the current modem configuration for digital MICA technologies modems loaded inside an access server or router, use the **show modem configuration** command in EXEC mode.

show modem configuration [*slot/port*]

Syntax Description	<i>slot/port</i>	(Optional) Specifies the location of a slot and modem port. If this number is not specified, statistics for all connected modems are displayed. Remember to include the forward slash (/) when entering this variable.
---------------------------	------------------	--

Command Modes	EXEC
----------------------	------

Command History	Release	Modification
	11.2P	This command was introduced.

Usage Guidelines Maximum and minimum connect rates (as shown in Table 79) correspond to the S30 and S31 S-registers, which have a range of 75 to 33600 bps. PCM rates are controlled by the S50 and S51 S-registers, which have the following connect rates:

- Non-PCM Connect Rate:
 - Max—33600 bps
 - Min—300 bps
- PCM Connect Rate:
 - Max—60000 bps
 - Min—28000 bps

Refer to the S Register Descriptions in the AT Command Set and Register Summary for Cisco MICA Six-Port Modules document.

Examples The following example uses the **show modem configuration** command to display the configuration for modem 0/1, which resides in slot 0/1 of a Cisco AS5300:

```
router> show modem configuration 0/1
Modem(0/1) Configuration Block:
Country Code: 1
Originate/Answer Mode: Answer
Data Bits Selection: 8
Parity Selection: 0
Stop Bits Selection: 1
V.42 ODP generation: Generate ODP sequence when originating a call
Error Correction Autodetect Time-out value: 5000 ms
Protocol Negotiation Time-out value: 10000 ms
Protocol Negotiation Fallback Character:
Protocol Negotiation Retransmission Limit: 12
```

```

Error Correction Frame Length: 256 bytes
Data Compression: V.42bis and MNP5
ARA Error Correction: ARA1.0 & ARA2.0 Enabled for Answer only
V.42 Error Correction: V.42(LAP-M) Originate&Answer enabled
MNP Error Correction: MNP Originate&Answer enabled
Link Protocol Fallback: Asynchronous Framing (Start/Stop/Parity)
DSP processor MVIP TDM slice: 0
Calling Tone: Disabled
Guard Tone: Disabled
Modem Standard: V.34bis Automode, with terbo
Max. Connect Rate: 33600 bps
Min. Connect Rate: 75 bps
Signal Quality Threshold: Bit Errors >=1:1000 cause recovery
Fallback/Fallforward Squelch Timer: 500 ms
Fall Forward Timer: 10000 ms
Fall Back Timer: 500 ms
Terminate Time-out: 20 second(s)
Wait For Data Mode Time-out: 40 second(s)
Lost Carrier To Hang-up Delay: 1400 ms
Transmit Level Setting: -13 dBm
Retrain Limit: 4
V.34 Max. Symbol Rate: 3249 Baud
V.34 Min. Symbol Rate: 2400 Baud
V.34 Carrier Frequency: Auto Carrier Selection
V.34 Preemphasis Filter Selection: 11
Tx and RX Signaling Type: NULL signaling
Call Progress Tone Detection: No tone detection
+++ Escape Detection: Enabled-Originate-Mode-Only
AT Command Processor: Enabled
Call Set Up Delay: no delay before link initiation
Automatic Answer: delay 1 second(s)
Escape Detection Character: ASCII 43 ('+')
Carriage Return Character: ASCII 13 (CR)
Line Feed Character: ASCII 10 (LF)
Backspace Character: ASCII 8 (BS)
Pause Before Blind Dialing: 2 second(s)
Wait For Carrier After Dial: 40 second(s)
Comma Dial Modifier Time: 2 second(s)
Bit-mapped Register(S9=0x13D): E1Q2V1&D3X4
Delay For Hangup After Carrier Loss: 1400 ms

```

Table 79 describes the fields in the above display:

Table 79 *show modem configuration Field Descriptions for MICA Modems*

Field	Description
Modem slot/port	Slot and port for the specified modem.
Country code:	Transmit level limits with respect to the S39 register. Default is 1 (U.S. domestic).
Originate/Answer Mode:	Answer or originate. Default is answer.
Data Bits Selection:	7, 8, or 9 data bits. Default is 8.
Parity Selection:	0 = no parity, 1 = even parity, 2 = odd parity. Default is no parity.
Stop Bits Selection:	1 or 2 stop bits. Default is 1 stop bit.
V.42 ODP generation:	Disabled or generate ODP sequence when originating a V.42 call. Default is Generate ODP sequence when originating a V.42 call
Error Correction Autodetect Time-out value:	Maximum period during which the modem will run an automated detection machine upon the incoming data. Default is 5000 ms.

Table 79 *show modem configuration Field Descriptions for MICA Modems (continued)*

Field	Description
Protocol Negotiation Time-out value:	Maximum wait for error correction protocol negotiation before fallback. Default is 10000 ms.
Protocol Negotiation Fallback Character:	0 to 127. Default is 13.
Protocol Negotiation Retransmission Limit:	0 = Do not disconnect on excessive retransmission; 1 to 255 = number of successive retransmissions to cause disconnect. Default is 12.
Error Correction Frame Length:	Buffer length; 64 to 1024 octets of data. Default is 256.
Data Compression:	Disabled, V.42bis, MNP5, or V.42bis or MNP5 (V.42 has precedence). Default is V.42bis or MNP5 (V.42 has precedence).
ARA Error Correction:	ARA1.0 & ARA2.0 Disabled, Enabled for Answer only, Enabled for Answer originate ARA1.0, and Enabled for Answer originate ARA2.0. Default is Enabled for Answer only.
V.42 Error Correction:	V.42(LAP-M) Disabled, V.42(LAP-M) Originate & Answer enabled. Default is disabled.
MNP Error Correction:	MNP Disabled or MNP Originate and Answer enabled. Default is MNP Originate and Answer enabled.
Link Protocol Fallback:	Asynchronous framing (Start/Stop/Parity), Synchronous framing (Raw 8 bits to DSP), or Disconnect (Hang-up). Default is Asynchronous framing (Start/Stop/Parity).
DSP processor MVIP TDM slice:	0 to 15.
Calling Tone:	Disable or Send calling tone. Default is disable.
Guard Tone:	Guard tone disabled, Use Guard tone (V.22 & V.22bis only). Default is disabled.
Modem Standard:	V.34bis Automode with terbo, V.34bis Automode skip terbo, V.32 terbo Automode, V.32bis Automode, V.22bis Automode, or K56Flex 1.1. Default is V.34bis Automode with terbo.
Max. Connect Rate ¹ :	33600 bps.
Min. Connect Rate:	75 bps.
Signal Quality Threshold:	No action on bit errors, Bit Errors >=1:100 cause recovery, Bit Errors >=1:1000 cause recovery, Bit Errors >=1:10000 cause recovery, Bit Errors >=1:100000 cause recovery, or Bit Errors >=1:1000000 cause recovery. Default is 1:1000.
Fallback/Fallforward Squelch Timer:	Time to delay after a speed shift before allowing another speed shift. Default is 500 ms.
Fall Forward Timer:	Elapsed time with continuous good signal quality to cause a fall forward. Default is 10000 ms.
Fall Back Timer:	Elapsed time with bad signal quality to cause a fallback. Default is 500 ms.

Table 79 *show modem configuration Field Descriptions for MICA Modems (continued)*

Field	Description
Terminate Time-out:	Elapsed time after a disconnect request before forcing a link disconnect. During this period, the modem sends buffered data and then clears down the link. Default is 20 seconds.
Wait for Data Mode Time-out:	Maximum time during link establishment before disconnection. Default is 40; 60 for K56Flex.
Lost Carrier To Hang-up Delay:	Maximum time without a carrier to cause the link disconnect. Default is 1400 ms.
Transmit Level Setting:	6dBm, 7dBm, 8dBm, -20dBm, or -21dBm. Default is 9 dBm.
Retrain Limit:	Maximum successive failed retrains to cause the link to disconnect. Default is 4.
V.34 Max. Symbol Rate:	2400 baud, 2743 baud, 2800 baud, 3000 baud, 3200 baud, or 3429 baud. Default is 3429 baud.
V.34 Min. Symbol Rate:	2400 baud, 2743 baud, 2800 baud, 3000 baud, 3200 baud, or 3429 baud. Default is 2400 baud.
V.34 Carrier Frequency:	Low Carrier, High Carrier, or Auto Carrier Selection. Default is High Carrier.
V.34 Preemphasis Filter Selection:	0 to 10 = a selected filter; 11 = Automatic Preemphasis Selection. Default is 11.
Tx and Rx Signaling Type:	NULL signaling, MF signaling, DTMF signaling, Lower band R2 signaling, Upper band R2 signaling, or R1 signaling. Default is NULL signaling.
Call Progress Tone Detection:	No tone detection, Dial tone detection, Ring-Back tone detection, or Busy tone detection. Default is no tone detection.
+++ Escape Detection:	Disabled, Enabled, or Enabled-in-Originate-Mode-Only. Default is Enabled-in-Originate-Mode-Only.
AT Command Processor:	Disabled or Enabled. Default is disabled.
Call Set Up Delay:	No delay before link initiation, delay value (1 to 255). Default is no delay.
Automatic Answer:	Answer immediately, delay value (1 to 255 seconds). default is 1 second.
Escape Detection Character:	ASCI value (0 to 127). Default is 43.
Carriage Return Character:	ASCI value (0 to 127). Default is 13.
Line Feed Character:	ASCI value (0 to 127). Default is 10.
Backspace Character:	ASCI value (0 to 127). Default is 8.
Pause Before Blind Dialing:	2 to 255 seconds. Default is 2.
Wait For Carrier After Dial:	Wait for data mode timeout.
Comma Dial Modifier Time:	2 to 255 seconds. Default is 2.
Bit-mapped Register(S9=0x13D):	Bit mapped register.
Delay For Hang-up After Carrier Loss:	Lost carrier to hang-up delay.

1.

Related Commands	Command	Description
	show modem log	Displays the modem history event status performed on a manageable modem or group of modems.
	show modem mica	Displays information about MICA digital modems.
	show modem operational-status	Displays the current modem operational status for MICA digital modems loaded in access servers or routers.

show modem connect-speeds

To display connection speed statistics for all the modems running in an access server or router, use the **show modem connect-speeds** command in EXEC mode.

show modem connect-speeds [*max-speed* [*slot*]]

Syntax Description	
<i>max-speed</i>	(Optional) Maximum speed you want displayed in the shifting speed window. You can specify from 12,000 to 56,000 bps.
<i>slot</i>	(Optional) Specifies the slot number, which limits the display output to a particular range of modems in the system.

Defaults The maximum speed displayed is 12,000 bps.

Command Modes EXEC

Command History	Release	Modification
	11.3	This command was introduced.

Usage Guidelines Because most terminal screens are not wide enough to display the entire range of connection speeds at one time (for example, 75 to 56000 bps), the *max-speed* variable is used. This variable specifies the contents of a shifting baud-rate window, which provides you with a snap shot of modem connection speeds for your system. If you want to see a snap shot of lower baud rates, specify a lower connection speed. If you want to see a snap shot of higher baud rates, specify a higher connection speed.

The *max-speed* variable also rounds up to the nearest recognizable baud rate by the software, so you do not need to memorize or enter exact connection speeds. For example, if you enter a maximum baud rate of 22059, the system software automatically rounds the value up to 24000.

To display a complete picture of all the connection speeds and counters on the system, you must enter a series of commands. Each time you issue the **show modem connect-speeds max-speed** command, only nine baud rate columns can be displayed at the same time.

Table 80 shows a range of commands that you can issue, one at a time, to see a complete picture of the total possible connection speeds on your access server.

Table 80 Connect Speed Displays for the show modem connect-speeds Command

Command	Connect Speed Range Displayed
show modem connect-speeds 56000	40,000 to 56,000 bps
show modem connect-speeds 38000	24,000 to 38,000 bps
show modem connect-speeds 21600	2,400 to 21,600 bps
show modem connect-speeds 1200	75 to 1200 bps

**Note**

The Cisco IOS software does not accept commas (,) in the connect speed field. For example, enter **28000** not **28,000**.

The **show modem connect-speeds** command displays a log of connection speed statistics starting from the last time the access servers or router was power cycled or the **clear modem counters** command was issued. If you want to create a monthly report of the connection speeds achieved by the modems, issue the **clear modem counters** command at the beginning of the month and issue the **show modem connect-speeds** command at the end of the month.

Examples

The following example shows connection speed statistics up to 28000 bps:

```
router# show modem connect-speeds 28800
```

```
transmit connect speeds
```

Mdm	9600	12000	14400	16800	19200	21600	24000	26400	28800	TotCnt
* 1/0	0	0	0	0	3	4	6	37	23	74
* 1/1	0	0	3	1	0	4	9	41	20	80
* 1/2	0	0	2	0	1	3	10	37	26	82
1/3	1	0	0	0	0	3	15	35	7	62
1/4	0	0	0	0	4	2	8	20	13	49
* 1/5	0	0	4	0	1	0	4	38	17	65
* 1/6	0	0	2	1	0	1	9	32	11	57
* 1/7	1	0	2	0	0	5	10	31	18	67
* 1/8	0	0	0	1	1	1	10	42	11	68
1/9	0	0	2	1	2	4	4	30	23	67
1/10	0	0	0	0	0	2	5	26	22	56
* 1/11	0	0	0	0	3	1	16	38	17	76
* 1/12	0	0	0	0	0	3	7	40	12	62
1/13	0	0	0	1	2	3	11	20	14	51
1/14	0	0	2	0	0	2	7	26	12	51
1/15	0	0	1	1	1	2	6	29	25	65
1/16	2	0	2	0	1	5	10	37	15	73
1/17	0	0	0	0	0	2	10	33	22	67
1/18	0	0	2	2	0	2	12	17	25	61
* 1/19	2	0	3	0	1	2	9	35	20	74
1/20	0	0	2	2	2	2	8	28	21	65
* 1/21	0	1	2	0	1	2	5	23	21	58
* 1/22	0	0	1	0	1	1	5	27	21	56
* 1/23	0	0	2	0	0	4	8	30	15	60
Tot	6	1	32	10	24	60	204	752	431	1546
Tot %	0	0	2	0	1	3	13	48	27	

```
receive connect speeds
```

Mdm	9600	12000	14400	16800	19200	21600	24000	26400	28800	TotCnt
* 1/0	0	0	1	0	1	2	9	35	25	74
* 1/1	0	0	3	0	1	3	10	42	18	80
* 1/2	0	0	2	0	1	4	8	40	26	82
1/3	1	0	0	0	0	1	10	36	14	62
1/4	0	0	1	0	2	2	8	22	8	49
* 1/5	0	1	4	0	0	0	9	32	17	65
* 1/6	0	0	2	0	0	0	7	33	14	57
* 1/7	0	0	2	1	1	0	6	39	18	67
* 1/8	0	0	0	0	1	0	11	43	12	68
1/9	1	0	3	0	0	0	8	33	22	67
1/10	0	0	0	0	1	1	6	31	17	56
* 1/11	0	0	0	1	1	1	14	43	16	76

show modem connect-speeds

* 1/12	0	0	0	0	0	0	5	43	12	62
1/13	0	0	0	0	0	2	10	26	13	51
1/14	0	0	2	1	0	0	5	27	14	51
1/15	0	0	1	0	1	2	3	36	22	65
1/16	1	0	3	1	2	0	8	37	20	73
1/17	0	0	0	0	0	0	8	36	22	67
1/18	0	1	1	0	0	2	4	30	20	61
* 1/19	0	0	3	2	1	1	6	42	18	74
1/20	0	1	2	1	2	1	2	37	18	65
* 1/21	0	0	3	3	1	2	2	28	18	58
* 1/22	0	0	1	0	1	0	5	32	16	56
* 1/23	0	0	2	0	0	1	8	35	13	60
Tot	3	3	36	10	17	25	172	838	413	1546
Tot %	0	0	2	0	1	1	11	54	26	

The following example shows connection speed statistics up to 56000 bps:

```
router# show modem connect-speeds 56000
```

```
transmit connect speeds
```

Mdm	40000	42000	44000	46000	48000	50000	52000	54000	56000	TotCnt
1/0	0	0	0	0	0	0	0	0	0	0
1/1	0	0	0	0	0	0	0	0	0	0
1/2	0	0	0	0	0	0	0	0	0	0
1/3	0	0	0	0	0	0	0	0	0	0
1/4	0	0	0	0	0	0	0	0	0	0
1/5	0	0	0	0	0	0	0	0	0	0
1/6	0	0	0	0	0	0	0	0	0	0
1/7	0	0	0	0	0	0	0	0	0	0
1/8	0	0	0	0	0	0	0	0	0	0
1/9	0	0	0	0	0	0	0	0	0	0
1/10	0	0	0	0	0	0	0	0	0	0
1/11	0	0	0	0	0	0	0	0	0	0
1/12	0	0	0	0	0	0	0	0	0	0
1/13	0	0	0	0	0	0	0	0	0	0
1/14	0	0	0	0	0	0	0	0	0	0
1/15	0	0	0	0	0	0	0	0	0	0
1/16	0	0	0	0	0	0	0	0	0	0
1/17	0	0	0	0	0	0	0	0	0	0
1/18	0	0	0	0	0	0	0	0	0	0
1/19	0	0	0	0	0	0	0	0	0	0
1/20	0	0	0	0	0	0	0	0	0	0
1/21	0	0	0	0	0	0	0	0	0	0
1/22	0	0	0	0	0	0	0	0	0	0
1/23	0	0	0	0	0	0	0	0	0	0
Tot	0	0	0	0	0	0	0	0	0	0
Tot %	0	0	0	0	0	0	0	0	0	0

```
receive connect speeds
```

Mdm	40000	42000	44000	46000	48000	50000	52000	54000	56000	TotCnt
1/0	0	0	0	0	0	0	0	0	0	0
1/1	0	0	0	0	0	0	0	0	0	0
1/2	0	0	0	0	0	0	0	0	0	0
1/3	0	0	0	0	0	0	0	0	0	0
1/4	0	0	0	0	0	0	0	0	0	0
1/5	0	0	0	0	0	0	0	0	0	0
1/6	0	0	0	0	0	0	0	0	0	0
1/7	0	0	0	0	0	0	0	0	0	0
1/8	0	0	0	0	0	0	0	0	0	0
1/9	0	0	0	0	0	0	0	0	0	0
1/10	0	0	0	0	0	0	0	0	0	0
1/11	0	0	0	0	0	0	0	0	0	0

```

1/12      0      0      0      0      0      0      0      0      0      0
1/13      0      0      0      0      0      0      0      0      0      0
1/14      0      0      0      0      0      0      0      0      0      0
1/15      0      0      0      0      0      0      0      0      0      0
1/16      0      0      0      0      0      0      0      0      0      0
1/17      0      0      0      0      0      0      0      0      0      0
1/18      0      0      0      0      0      0      0      0      0      0
1/19      0      0      0      0      0      0      0      0      0      0
1/20      0      0      0      0      0      0      0      0      0      0
1/21      0      0      0      0      0      0      0      0      0      0
1/22      0      0      0      0      0      0      0      0      0      0
1/23      0      0      0      0      0      0      0      0      0      0
Tot       0      0      0      0      0      0      0      0      0      0
Tot %     0      0      0      0      0      0      0      0      0      0

```

Table 81 describes of the fields shown in the above displays.

Table 81 *show modem connect-speeds Field Descriptions*

Field	Description
transmit connect speeds	Connection speeds for calls initiated by the system.
Mdm <i>slot/port</i>	Specified slot and port number assigned to the modem.
speed counters	The transmit and receive speed counters are 75, 300, 600, 1200, 2400, 4800, 7200, 9600, 12000, 14400, 16800, 19200, 21600, 24000, 26400, 28800, 31200, 33600, 32000, 34000, 36000, 38000, 40000, 42000, 44000, 46000, 48000, 50000, 52000, 54000, and 56000 bps.
TotCnt	For the specified modem, the sum of the number of times a connection was initiated or received at one of the specified connection rates (75 to 56,000 bps).
Tot	For all modems loaded in the system, the total number of times a call was initiated or received at the specified speed.
Tot %	Percentage of the total number of calls that were initiated or received at the specified speed.
receive connect speeds	Connection speeds for incoming calls.

show modem cookie

To display information about the modem cookie, use the **show modem cookie** command in EXEC mode.

show modem cookie

Syntax Description This command has no arguments or keywords.

Command Modes EXEC

Command History	Release	Modification
	11.2	This command was introduced.

Examples The following example shows output information for the **show modem cookie** command for a V.34 carrier card and two modem cards:

```
router# show modem cookie

Hex dump of modem board HW version info:

Slot 1:
Carrier card:
0000: 1802 0200 0000 0000 0000 0000 0000 0000
0010: 0000 0000 0000 0000 0000 0000 0000 0000
Modem Module 0:
0000: 0C01 3033 3030 3031 4D69 6372 6F63 6F6D
0010: 204D 4E50 3130 2056 3334 204D 6F64 656D
Modem Module 1:
0000: 0C01 3033 3030 3031 4D69 6372 6F63 6F6D
0010: 204D 4E50 3130 2056 3334 204D 6F64 656D
```

Table 82 describes significant fields in the previous display.

Table 82 *show modem cookie Field Descriptions*

Field	Description
Slot 1:	The slot carrying the carrier and modem card.
Carrier card:	Carrier card and its cookie parameters.
Modem Module 0:	Modem card and its cookie parameters.

show modem csm

To display the internal status of the call switching module for modems inside access servers or routers, use the **show modem csm** command in EXEC mode.

show modem csm [*slot/port* | *group number*]

Syntax Description		
	<i>slot/port</i>	(Optional) Specifies the location of a slot and modem port. If this number is not specified, statistics for all connected modems are displayed. Remember to include the forward slash (/) when entering this variable.
	<i>group number</i>	(Optional) Specifies the location of a specific group of modems. If this number is not specified, statistics for all modems in the access server are displayed. The group number range is between 1 and 200.

Command Modes	
	EXEC

Command History	Release	Modification
	11.2	This command was introduced.

Examples

The following example displays the call switching module information for modem 1/2 on a Cisco AS5200:

```
router# show modem csm 1/2

MODEM_INFO: slot 1, port 2, unit 130, modem_mask=0x0004, modem_port_offset=0
tty_hwidb=0x00000000, modem_tty=0x004370A8, mgmt_tty=0x004370A8, modem_pool=0x0041D99C
csm_status(0): CSM_STATUS_UNLOCKED
csm_state(0x00000000)=CSM_OC_STATE, csm_event_proc=0x0005B448
invalid_event_count=0, wdt_timeout_count=0
wdt_timestamp_started is not activated
wait_for_dialing:False, wait_for_bchan:False
pri_chnl=TDM_ISDN_STREAM(s0, c0), modem_chnl=TDM_ISDN_STREAM(s0, c0)
dchan_idb_start_index=0, dchan_idb_index=0, call_id=0x0000, bchan_num=0
csm_event=CSM_EVENT_NONE, cause=0x0000, phone_num=
ring_indicator=0, oh_state=0, oh_int_enable=0, modem_reset=0
ring_no_answer=0, ic_failure=0, ic_complete=0
dial_failure=0, oc_failure=0, oc_complete=0
oc_busy=0, oc_no_dial_tone=0, oc_dial_timeout=0
remote_link_disc=0, busyout=0, modem_reset=0
call_duration_started=00:00:00, call_duration_ended=00:00:00,
total_call_duration=00:00:00
The calling party phone number = 4082968388
The called party phone number = 4085267406
```

Table 83 describes significant fields in the previous display.

Table 83 *show modem csm Field Descriptions*

Field	Description
MODEM_INFO	Displays internal data structure information.
csm_status	Displays the status of the call switching module. Possible displays include unlocked, active call, busyout req, shutdown, bad modem, modem hold, back-to-back, file downloading, and reset.
csm_state	Displays the current state of the call switching module. Possible states include idle and connected. Incoming calls are marked <i>IC</i> and outgoing calls are marked <i>OC</i> .
Modem counters	Counters for different modem events.
The calling party phone number The called party phone number	Phone numbers for the dialing integrated modem and the remote modem.

show modem log

To display the modem history event status performed on a manageable modem or group of modems, use the **show modem log** command in EXEC mode.

```
show modem log [slot/port | group number]
```

Syntax Description	
<i>slot/port</i>	(Optional) Specifies the location of a slot and modem port. If this number is not specified, statistics for all connected modems are displayed. Remember to include the forward slash (/) when entering this variable.
group number	(Optional) Specifies the location of a specific group of modems. If this number is not specified, statistics for all modems in the access server are displayed. The group number range is between 1 and 200.

Command Modes	
	EXEC

Command History	Release	Modification
	11.2	This command was introduced.

Examples

The following is an output example of the **show modem log** command issued on a Cisco AS5300, which is loaded with MICA digital modems. See Table 84 for MICA modem field descriptions.

```
router# show modem log 1/0
Modem 1/0 Events Log:
 01:54:02:Startup event:MICA Hex modem (Select)
  Modem firmware = 2.0.0.9
 01:54:02:RS232 event:
   noRTS, noDTR, CTS, noDCD
 01:54:02:RS232 event:
   RTS, DTR, CTS, noDCD
 01:54:02:RS232 event:
   RTS, DTR, CTS, noDCD
 01:54:02:RS232 event:
   noRTS, DTR, CTS, noDCD
 01:54:02:RS232 event:
   RTS, DTR, CTS, noDCD
 01:54:02:RS232 event:
   noRTS, noDTR, CTS, noDCD
 01:54:02:RS232 event:
   RTS, DTR, CTS, noDCD
 01:54:03:RS232 event:
   RTS, DTR, CTS, noDCD
 00:01:09: ISDN outgoing called number: 1000
 00:01:04:RS232 event:
   noRTS, DTR, CTS, noDCD
 00:01:04:RS232 event:
   RTS, DTR, CTS, noDCD
 00:01:06:Modem State event:
   State: Open
```

■ show modem log

```

00:01:06:Modem State event:
    State: Connect
00:01:06:Modem State event:
    State: Link
00:00:54:Modem State event:
    State: Training
00:00:32:Modem State event:
    State: EC Correction
00:00:32:Modem State event:
    State: Steady
00:00:32:RS232 event:
    RTS, DTR, CTS, DCD
00:00:32:Static event:
    Connect Protocol: LAP-M
    Compression: (invalid#3)
    Connected Standard: Bell212
    TX,RX Symbol Rate: 3429, 3429
    TX,RX Carrier Frequency: 1959, 1959
    TX,RX Trellis Coding: 16, 16
    Frequency Offset: 0 Hz
    Round Trip Delay: 1 msec
    TX,RX Bit Rate: 16800, 16800
00:00:33:Dynamic event:
    Sq Value: 7
    Signal Noise Ratio: 35 dB
    Receive Level: -8 dBm
    Phase Jitter Frequency: 0 Hz
    Phase Jitter Level: 0 degrees
    Far End Echo Level: -73 dBm
    Phase Roll: -98 degrees
    Total Retrans: 0
    EC Retransmission Count: 0
    Characters received, transmitted: 0, 32
    Characters received BAD: 0
    PPP/SLIP packets received, transmitted: 0, 0
    PPP/SLIP packets received (BAD/ABORTED): 0
    EC packets transmitted, received: 0, 0
    EC packets (Received BAD/ABORTED): 0

```

Table 84 describes the most useful fields in the previous MICA modem display.

Table 84 show modem log Field Descriptions for MICA Modems

Field	Event State	Description
Modem <slot/port> Events Log:		The modem for which log events are currently displayed.
00:00:00:		Identifies the time elapsed since each MICA modem event was performed (for example, 01:02:41 means the modem event occurred 1 hour, 2 minutes, and 41 seconds ago).
Startup event:		Type of specified MICA modem.
Modem firmware:		Modem firmware version.
RS232 event:		Detected modem signaling event.
ISDN outgoing called number:		Outgoing ISDN phone number dialed by the specified MICA modem.

Table 84 show modem log Field Descriptions for MICA Modems (continued)

Field	Event State	Description
Modem State Event	Current state of the MICA modem, which can be any of the following:	
	Connect	Modem is connected to a remote host.
	Open	Open modem event.
	Link	Link protocol event occurred.
	Training	Modem retraining event.
	EC correction	Error correction frames transmitted or received.
	Steady	Steady modem event.
	Bad	Inoperable state, which is configured by the modem bad command.
	Bad*	Inoperable state, which is configured by the modem startup-test command during initial power-up testing.
	Reset	Modem is in reset mode.
	D/L	Modem is downloading firmware.
	Bad FW	Downloaded modem firmware is not operational.
	Busy	Modem is out of service and not available for calls
	Idle	Modem is ready for incoming and outgoing calls.
Static event:	Current static event of the MICA modem, which can be any of the following:	
	Connect protocol	Connection protocol used for the current session, which can be SYNC mode, ASYNC mode, ARA1.0, ARA2.0, LAP-M, or MNP.
	Compression	Type of compression used for the current session, which can be None, V.42bis TX, V.42bis RX, V.42bis both, or MNP5 data compression.
	Connected standard	Standards protocol used to connect, which can be V.21, Bell103, V.22, V.22bis, Bell212, V.23, V.32, V.32bis, V.32terbo, V.34, V.34+, or K56Flex 1.1.
	TX, RX symbol rate	Symbol rate used to send samples to the line or receive samples off of the line.
	TX, RX carrier frequency	Carrier frequency used by the remote service provider.
	TX, RX trellis coding	Trellis coding received and transmitted.
	Frequency offset	+/-32 in 1/8 Hx steps.
	Round trip delay	Total round trip propagation delay of the link, which is expressed in milliseconds.
	TX, RX bit rate	For RX, the bit rate from the remote service provider to the local service provider. For TX, the bit rate from the local service provider to the remote service provider.

Table 84 show modem log Field Descriptions for MICA Modems (continued)

Field	Event State	Description
Dynamic event:	Current dynamic event	of the MICA modem, which can be any of the following:
	Sq value	Signal quality value, which can be between 0 and 7 (0 is the worst possible quality).
	Signal noise ratio	Expressed in decibels, which can be between 0 and 70 dB steps.
	Receive level	Expressed in decibels, which can be between 0 and -128 dBm steps.
	Phase jitter frequency	+/-32 in 1/8 Hz steps.
	Phase jitter level	0 to 90 degrees.
	Far end echo level	0 to -90 in dBm of far end echo level (that portion of the transmitted analog signal that has bounced off the remote modem's analog front end).
	Phase roll	+/-32 in 1/8 Hz steps.
	Total retrains	Count of total retrains.
	EC retransmission	Count of total error correction retransmissions that occurred during the duration of the link.
	Characters received, transmitted	Count of total characters received and transmitted.
	Characters received BAD	A subset of the above total (Characters received, transmitted). Represents the total number of parity error characters.
	PPP/SLIP packets received, transmitted	Total count of PPP/SLIP packets transmitted and received. This total could include all PPP/SLIP packets, including BAD/ABORTED packets.
	PPP/SLIP packets received, (BAD/ABORTED)	Total count of the bad or aborted PPP/SLIP packets, which is a subset of the above (PPP/SLIP packets received, transmitted).
	EC packets transmitted, received	Count of total error correction frames transmitted or received. This total could include all error correction packets, including BAD/ABORTED packets.
	EC packets (received BAD/ABORTED)	Total count of the bad or aborted error correction packets, which is a subset of the above (EC packets transmitted, received).

The following example shows the event log status for a V.34 Microcom manageable modem installed in a Cisco AS5200. To escape from the log display mode, press the keys **Ctrl-c**. See Table 86 for Microcom field descriptions.

```

router# show modem log 1/0
Modem 1/0 Events Log:
 04:58:33: End connection event: Retransmits for EC block (TX/RX) = 86/33
          Duration = 0:10:21, Number of TX/RX char = 100183/34307
          Local Disc Reason = Remote Link Disc
          Remote Disc Reason = Unknown
 04:58:33: Modem State event: Idle
 04:58:33: DTR event: DTR Off
          04:58:33: RS232 event: RTS noDTR* CTS* DSR* noDCD* noRI* noTST*
 04:58:21: DTR event: DTR On
          04:58:21: RS232 event: RTS* DTR* CTS DSR noDCD noRI noTST
 04:56:27: ISDN incoming calling number: 7039687666
 04:56:27: ISDN incoming called number: 8366
 04:56:21: Modem State event: Dialing/Answering
 04:56:21: Modem State event: Incoming ring
 04:56:21: Modem State event: Waiting for Carrier
          04:56:21: RS232 event: RTS DTR CTS DSR noDCD noRI* noTST
 04:56:09: Modem State event: Connected
 04:56:09: Connection event: TX/RX Speed = 24000/26400, Modulation = V34
          Direction = Answer, Protocol = reliable/LAPM, Compression = V42bis
          04:56:09: RS232 event: RTS DTR CTS DSR DCD* noRI noTST
 04:55:57: Modem Analog signal event: TX = -13, RX = -17, Signal to noise = 40
 04:55:21: Modem State event: Disconnecting
 04:55:21: End connection event: Retransmits for EC block (TX/RX) = 0/0
          Duration = 0:00:46, Number of TX/RX char = 8911/7732
          Local Disc Reason = Remote Link Disc
          Remote Disc Reason = Unknown
 04:55:23: Modem State event: Idle
 04:55:23: DTR event: DTR Off
          04:55:23: RS232 event: RTS noDTR* CTS* DSR* noDCD* noRI* noTST*
 04:55:11: DTR event: DTR On
          04:55:11: RS232 event: RTS DTR* CTS DSR noDCD noRI noTST
 04:53:23: ISDN incoming calling number: 8477262725
 04:53:23: ISDN incoming called number: 8366
 04:53:22: Modem State event: Dialing/Answering
 04:53:22: Modem State event: Incoming ring
          04:53:22: RS232 event: RTS DTR CTS DSR noDCD noRI* noTST
 04:53:10: Modem State event: Waiting for Carrier
          04:53:10: RS232 event: RTS DTR CTS DSR noDCD noRI* noTST
 04:52:58: Modem State event: Connected
 04:52:58: Connection event: TX/RX Speed = 24000/24000, Modulation = V34
          Direction = Answer, Protocol = reliable/LAPM, Compression = V42bis
 04:52:58: Modem Analog signal event: TX = -13, RX = -19, Signal to noise = 40
          04:52:58: RS232 event: RTS DTR CTS DSR DCD* noRI noTST
 04:52:46: Modem State event: Retrain Initiated
 04:52:34: Connection update event: TX/RX Speed = 24000/24000, Modulation = V34
 04:52:34: Modem State event: Connected
 04:52:22: Modem Analog signal event: TX = -13, RX = -17, Signal to noise = 40
          04:52:12: RS232 event: RTS DTR CTS* DSR DCD noRI noTST
          04:49:24: RS232 event: RTS DTR CTS* DSR DCD noRI noTST
          04:49:12: RS232 event: RTS DTR CTS* DSR DCD noRI noTST
          04:19:14: RS232 event: RTS DTR CTS* DSR DCD noRI noTST
 03:46:29: Modem State event: Disconnecting
 03:46:29: End connection event: Retransmits for EC block (TX/RX) = 6/8
          Duration = 1:06:31, Number of TX/RX char = 114943/29854
          Local Disc Reason = Remote Link Disc
          Remote Disc Reason = Unknown

```

```

03:46:29: Modem State event: Idle
03:46:29: DTR event: DTR Off
03:46:29: DTR event: DTR On
      03:46:29: RS232 event: RTS DTR* CTS* DSR* noDCD* noRI* noTST*
03:45:35: ISDN incoming calling number: 5124745911
03:45:35: ISDN incoming called number: 8366
03:45:29: Modem State event: Dialing/Answering
03:45:29: Modem State event: Incoming ring
03:45:29: Modem State event: Waiting for Carrier

```

Table 85 describes the most useful fields in the previous Microcom modem display.

Table 85 *show modem log Field Descriptions for Microcom Modems*

Field	Description
Modem <slot/port> Events Log:	The modem for which log events are currently displayed.
00:00:00:	Identifies the time elapsed since each Microcom modem event was performed (for example, 01:02:41 means the modem event occurred 1 hour, 2 minutes, and 41 seconds ago).
Startup Response:	List of information describing the modem type, modem firmware, and DSP controller version (for 56K modems only).
Control Reply	Indicates the events the modem will be monitoring.
RS232 event	Detected modem signaling.
Modem State event	Current state of the modem, which can be any of the following: <ul style="list-style-type: none"> • Conn—Modem is connected to a remote host. • Bad—Inoperable state, which is configured by the modem bad command. • Bad*—Inoperable state, which is configured by the modem startup-test command during initial power-up testing. • Reset—Modem is in reset mode. • D/L—Modem is downloading firmware. • Bad FW—Downloaded modem firmware is not operational. • Busy—Modem is out of service and not available for calls. • Idle—Modem is ready for incoming and outgoing calls.

Table 85 *show modem log Field Descriptions for Microcom Modems (continued)*

Field	Description
End connection event	Descriptions or reasons why a connection was terminated: <ul style="list-style-type: none"> • Duration—Time a connection was up between the local and remote devices. • Number of TX/RX char—Transmit and receive characters exchanged during the connection time. • Local or remote disc reason—Reason why the local or remote modem disconnected: <ul style="list-style-type: none"> – Lost Carrier—The modem firmware detects a drop in Carrier Detect during a connection. – DSP Task Hung—The DSP chip malfunctioned and failed to reset. – LAPM Timeout: Timed out waiting for a reply from remote. – Reliable link transmit timeout: Have not received a link Acknowledgment in the first 30 seconds of the connection. – DSP access failure: Timed out trying to access the DSP chip. – CD off timeout: Timed out waiting for carrier to return after a retrain/rate renegotiation. – Code word size mismatched: The codeword size are mismatched. – DSP code download Error: Error during the dsp code download. The time taken to recover and repeat the download would take too long to complete the handshake.
Phone number event	Descriptive information about the last dialed or current phone number.

The following example shows the event log status for a manageable modem. It also identifies the time elapsed since each modem event was performed (for example, 01:02:41 means the modem event occurred 1 hour, 2 minutes, and 41 seconds ago). To escape from the log display mode, press the keys **Ctrl-c**.

```
router# show modem log 0/0

Modem 0/0 Events Log:
 01:03:03: Startup Response: Microcom MNP10 K56 Modem (Select)
           Modem (boot) firmware = 3.1(16) (3.0(4))
           DSP Controller (SPX) rev = 204.173(0) (143.191(0))
 01:03:03: Control Reply: 0xFF1F
 01:03:03: RS232 event: RTS  noDTR* CTS* DSR* noDCD* noRI  noTST
 01:03:03: RS232 event: RTS  noDTR CTS  DSR  noDCD  noRI  noTST
 01:03:03: Modem State event: Idle
 01:03:03: End connection event: Retransmits for MNP block (TX/RX) = 0/0
           Duration = 0:00:00, Number of TX/RX char = 0/0
           Local Disc Reason = Lost Carrier
           Remote Disc Reason = Unknown
 01:03:04: Phone number event:
 01:02:51: DTR event: DTR On
 01:02:51: RS232 event: RTS  DTR* CTS  DSR  noDCD  noRI  noTST
 00:39:52: Startup Response: Microcom MNP10 K56 Modem (Select)
           Modem (boot) firmware = 3.1(16) (3.0(4))
           DSP Controller (SPX) rev = 1.1(0) (1.1(0))
 00:39:52: Control Reply: 0xFF1F
 00:39:52: RS232 event: RTS  noDTR* CTS* DSR* noDCD* noRI  noTST
 00:39:52: RS232 event: RTS  noDTR CTS  DSR  noDCD  noRI  noTST
 00:39:53: Modem State event: Idle
 00:39:53: End connection event: Retransmits for MNP block (TX/RX) = 0/0
           Duration = 0:00:00, Number of TX/RX char = 0/0
           Local Disc Reason = Lost Carrier
           Remote Disc Reason = Unknown
 00:39:53: Phone number event:
 00:39:32: DTR event: DTR On
 00:39:32: RS232 event: RTS  DTR* CTS  DSR  noDCD  noRI  noTST
```

Table 86 describes the most useful fields in the previous example.

Table 86 *show modem log* Field Descriptions

Field	Description
Modem <slot/port> Events Log:	The modem for which log events are currently displayed.
Startup Response:	List of information describing the modem type, modem firmware, and DSP controller version (for 56K modems only).
Control Reply	Indicates the events the modem will be monitoring.
RS232 event	Detected modem signaling.

Table 86 *show modem log Field Descriptions (continued)*

Field	Description
Modem State event	<p>Current state of the modem, which can be any of the following:</p> <ul style="list-style-type: none"> • Conn—Modem is connected to a remote host. • Bad—Inoperable state, which is configured by the modem bad command. • Bad*—Inoperable state, which is configured by the modem startup-test command during initial power-up testing. • Reset—Modem is in reset mode. • D/L—Modem is downloading firmware. • Bad FW—Downloaded modem firmware is not operational. • Busy—Modem is out of service and not available for calls. • Idle—Modem is ready for incoming and outgoing calls.
End connection event	<p>Descriptions or reasons why a connection was terminated:</p> <ul style="list-style-type: none"> • Duration—Time a connection was up between the local and remote devices. • Number of TX/RX char—Transmit and receive characters exchanged during the connection time. • Local or remote disc reason—Reason why the local or remote modem disconnected: <ul style="list-style-type: none"> – Lost Carrier—The modem firmware detects a drop in Carrier Detect during a connection. – DSP Task Hung—The DSP chip malfunctioned and failed to reset.
Phone number event	Descriptive information about the last dialed or current phone number.

Related Commands

Command	Description
show modem configuration	Displays the current modem configuration for digital MICA modems loaded inside access servers or routers.
show modem mica	Displays information about MICA digital modems.
show modem operational-status	Displays the current modem operational status for MICA digital modems loaded in access servers or routers.

show modem mapping

To display a snapshot of all the firmware versions running on all the modems in the access server, use the **show modem mapping** command in EXEC mode. This command also shows the source location of each version of firmware (for example, running out of Flash or boot flash, or bundled with Cisco IOS software).

show modem mapping

Syntax Description This command has no arguments or keywords.

Command Modes EXEC

Command History	Release	Modification
	11.3T	This command was introduced.

Usage Guidelines This command is useful for managing and monitoring multiple versions of modem firmware running in an access server.

Modem firmware can reside in the access server's Flash, boot Flash, or bundled with the Cisco IOS software.

Firmware can also be copied from a local TFTP server to the onboard modems. For the Cisco AS5300, issue the **copy tftp flash** command followed by the **copy flash modem** command. The Cisco AS5300 stores individual firmware files that are not bundled with the Cisco IOS software in Flash memory. For the Cisco AS5200, issue the **copy tftp bootflash** command followed by the **copy bootflash modem** command. The Cisco AS5200 stores individual firmware files not bundled with the Cisco IOS software in boot Flash memory.

All the modems in a single MICA modem module run the same version of firmware (for example, modems 1/0 through 1/5 in module 0). However, different versions of modem firmware can exist between different modem modules (for example, module 0 and module 1).

Individual firmware files cannot be erased from Flash or boot Flash memory. The entire contents of Flash or boot Flash memory must be deleted during the erase operation. If you do this, be sure to backup your Cisco IOS software and running configuration *before* you erase your system's Flash or boot Flash memory.



Note

The Cisco AS5800 does not support the **show modem mapping** command. Use the **show modem bundled-firmware** command instead.

Examples

The following is an example of output from the **show modem mapping** command in EXEC mode. This access server is loaded with MICA and Microcom modems. Table 86 describes each field in the display.

```
router# show modem mapping
```

Slot 1 has Mica Carrier card.

Module	Modem Numbers	Firmware Rev	Firmware Filename
0	1/0 - 1/5	2.0.1.7	IOS-Defaults
1	1/6 - 1/11	2.0.1.7	IOS-Defaults
2	1/12 - 1/17	2.0.1.7	IOS-Defaults
3	1/18 - 1/23	2.0.1.7	IOS-Defaults
4	1/24 - 1/29	2.0.1.7	IOS-Defaults
5	1/30 - 1/35	2.0.1.7	IOS-Defaults
6	1/36 - 1/41	2.0.1.7	IOS-Defaults
7	1/42 - 1/47	2.2.3.0	flash:mica-modem-portware.2.2.3.0.bin

Slot 2 has Microcom Carrier card.

Mdm	Module Number	Firmware Rev	Firmware Filename
2/0	0	3.2(10)	flash:mcom-modem-code-3.2.10.bin
2/1	0	3.1(30)	IOS-Defaults
2/2	0	3.1(30)	IOS-Defaults
2/3	0	3.1(30)	IOS-Defaults
2/4	0	3.1(30)	IOS-Defaults
2/5	0	3.1(30)	IOS-Defaults
2/6	0	3.1(30)	IOS-Defaults
2/7	0	3.1(30)	IOS-Defaults
2/8	0	3.1(30)	IOS-Defaults
2/9	0	3.1(30)	IOS-Defaults
2/10	0	3.1(30)	IOS-Defaults
2/11	0	3.1(30)	IOS-Defaults
2/12	1	3.1(30)	IOS-Defaults
2/13	1	3.1(30)	IOS-Defaults
2/14	1	3.1(30)	IOS-Defaults
2/15	1	3.1(30)	IOS-Defaults
2/16	1	3.1(30)	IOS-Defaults
2/17	1	3.1(30)	IOS-Defaults
2/18	1	3.1(30)	IOS-Defaults
2/19	1	3.1(30)	IOS-Defaults
2/20	1	3.1(30)	IOS-Defaults
2/21	1	3.1(30)	IOS-Defaults
2/22	1	3.1(30)	IOS-Defaults
2/23	1	3.1(30)	IOS-Defaults

IOS Bundled Firmware Information:

```
Mica Boardware Version : 1.3.4.5
Mica Portware Version : 2.0.1.7
Microcom Firmware Version : 3.1.30
Microcom DSP Software Version : 1.01
```

show modem mapping

Firmware files on Boot Flash:

```
Firmware-file          Version  Firmware-Type
=====

```

Firmware files on System Flash:

```
Firmware-file          Version  Firmware-Type
=====
flash:mcom-modem-code-3.2.10.bin  3.2.10  Microcom F/W and DSP
flash:mica-modem-portware.2.2.3.0.bin  2.2.3.0  Mica Portware

```

Table 87 describes the most useful fields in the above example.

Table 87 show modem mapping Field Descriptions

Field	Description
Slot x has card	Type of modem card inserted in the specified slot.
Module	Modem module number that corresponds with the specified modem or group of modems.
Modem numbers	Range of specified modems, which are displayed as slot/port.
Mdm	Specified modem number, which is displayed as slot/port.
Firmware Rev	Version of firmware running on the modem or module. Each time the access server reloads, this version of firmware is copied to the specified modem or range of modems. The field display "Unknown" is displayed when a modem is presently upgrading its firmware.
Firmware Filename	Location or filename of the firmware that is downloaded to the modems. A firmware file located in Flash memory begins as flash:filename. A file located in boot Flash memory begins as bootflash:filename. If the firmware is embedded or bundled in the Cisco IOS image, the field IOS-Defaults appears. On the Cisco AS5300, firmware files are stored in the system Flash memory. On the Cisco AS5200, firmware files are stored in boot Flash memory.
IOS Bundled Firmware Information:	List of firmware versions that are bundled with the Cisco IOS software running on the system. If the firmware versions in this section are more current than the firmware running on your modems, you should upgrade the running modem firmware.
Firmware files on Boot Flash:	List of current firmware located on boot Flash memory. The categories are Firmware-file, Version, and Firmware-Type.
Firmware files on System Flash:	List of current firmware located on the system Flash memory. The categories are Firmware-file, Version, and Firmware-Type.

Related Commands	Command	Description
	copy	Copies any file from a source to a destination, including a source or destination URL for a TFTP network server, or for Flash memory.
	copy modem	Copies modem firmware to integrated modems in an access server.

show modem mica

To display information about MICA digital modems, use the **show modem mica** command in EXEC mode.

```
show modem mica {slot/port | all | slot [number]}
```

Syntax Description	
<i>slot/port</i>	Specifies the display for a single modem in a MICA digital modem board.
all	Displays output for all the MICA modems in the system.
slot number	(Optional) Displays output for a particular slot, which is mainly used for debugging purposes. The optional <i>number</i> variable allows you to specify a slot number.

Command Modes	
EXEC	

Command History	Release	Modification
	11.2P	This command was introduced.

Usage Guidelines

Each MICA modem has its own data channel port, which is tied to its own TTY line. For example, modem 0/1 is tied to TTY line 2. To display data channel information for a single MICA modem, issue the **show modem mica slot/port** command.

All the modems on each MICA modem card share three pseudo channels for modem management functions, for example the DC session channel, status polling channel, and controlling channel. To view statistics for each modem management channel, issue the **show modem mica all** command. The first channel you see displayed is the status polling channel (shown as `SLOT/PORT (0/61) TTYNUM=-1 (MM Status Port)`). The second displayed channel is the DC session channel (shown as `SLOT/PORT (0/60) TTYNUM=-1 (MM DC Port)`). The third displayed port is the controlling channel (shown as `SLOT/PORT (0/62) TTYNUM=-1 (Control Port)`). No TTY lines are associated with the modem management ports, as indicated by the field display `TTYNUM=-1`. Finally, an extensive list of all the data channels for each MICA modem is displayed.

Examples

The following example displays the data port channel for modem 0/1. For a description of the significant fields in this display, see Table 88.

```
router# show modem mica 0/1

SLOT/PORT (0/1) TTYNUM=2 (Data Port)
Modem hardware state: CTS noDSR DTR RTS
RX Queue count is 0
TX Queue count is 1
TTY outpak is 0
TX pending FALSE
RX pending FALSE
RX ring with 4 entries at 0x40093184, (RX_AVAILABLE) rx_count=4
Rx_pak_head=0x6082B030 Rx_BD_head=0x4009318C Rx_BD_base=0x40093184
INPUT count = 12
```

```

00 pak=0x60753064 buf=0x40067514 status=8000 pak_size=0
01 pak=0x6082B030 buf=0x4013F948 status=8000 pak_size=0
02 pak=0x60A4323C buf=0x4021A214 status=8000 pak_size=0
03 pak=0x60A32DA0 buf=0x40208E9C status=8800 pak_size=0

TX ring with 4 entries at 0x400943F0, (TX_READY) tx_count = 0
tx_head = 0x400943F0 , head_txp = 0x0
Tx_bd_tail=0x400943F0 , Tx_bd_base=0x400943F0
OUTPUT count = 12
00 pak=0x00000000 buf=0x00000000 status=0000 pak_size=0
01 pak=0x00000000 buf=0x00000000 status=0000 pak_size=0
02 pak=0x00000000 buf=0x00000000 status=0000 pak_size=0
03 pak=0x00000000 buf=0x00000000 status=0800 pak_size=0

```

The following example shows output from the **show modem mica all** command. For a description of the significant fields in this display, see Table 88.

```

router# show modem mica all
SLOT/PORT (0/60) TTYNUM=-1 (MM DC Port)
Modem hardware state: CTS DSR DTR RTS
Board is running boardware version 1.3.2.0
Boardware redirect state = DISABLE size=4520 location=0x400968A8
Board INTR ON
RX[0]=0x0 RX[1]=0x0 RX[2]=0x0 RX[3]=0x0
TX[0]=0x0 TX[1]=0x0 TX[2]=0x0 TX[3]=0x0
Next Modem service is 0
Throttle count is 0, Throttle state is OFF
Data channel no buffer count is 0
Boardware crash count is 0
No crash dump available
Board state is RUNNING
Modules state are: R R R R R R R R
Modules crash count are: 0 0 0 0 0 0 0 0
Interval timer is 16

RX Queue count is 0
TX Queue count is 0
TTY outpak is 0
TX pending FALSE
RX pending FALSE
RX ring with 4 entries at 0x400938E4, (RX_AVAILABLE) rx_count=4
Rx_pak_head=0x60761CE0 Rx_BD_head=0x400938F4 Rx_BD_base=0x400938E4
INPUT count = 2
00 pak=0x60761920 buf=0x4009025C status=8000 pak_size=0
01 pak=0x60761740 buf=0x4008FBA4 status=8000 pak_size=0
02 pak=0x60761CE0 buf=0x40090FCC status=8000 pak_size=0
03 pak=0x6084311C buf=0x40150608 status=8800 pak_size=0

TX ring with 4 entries at 0x40094B50, (TX_READY) tx_count = 0
tx_head = 0x40094B60 , head_txp = 0x0
Tx_bd_tail=0x40094B60 , Tx_bd_base=0x40094B50
OUTPUT count = 2
00 pak=0x00000000 buf=0x00000000 status=0000 pak_size=0
01 pak=0x00000000 buf=0x00000000 status=0000 pak_size=0
02 pak=0x00000000 buf=0x00000000 status=0000 pak_size=0
03 pak=0x00000000 buf=0x00000000 status=0800 pak_size=0

SLOT/PORT (0/61) TTYNUM=-1 (MM Status Port)
Modem hardware state: CTS DSR DTR RTS
Board is running boardware version 1.3.2.0
Boardware redirect state = DISABLE size=4520 location=0x400968A8
Board INTR ON
RX[0]=0x0 RX[1]=0x0 RX[2]=0x0 RX[3]=0x0
TX[0]=0x0 TX[1]=0x0 TX[2]=0x0 TX[3]=0x0

```

show modem mica

```

Next Modem service is 0
Throttle count is 0, Throttle state is OFF
Data channel no buffer count is 0
Boardware crash count is 0
No crash dump available
Board state is RUNNING
Modules state are: R R R R R R R R
Modules crash count are: 0 0 0 0 0 0 0 0
Interval timer is 16

```

The following is an example of output from the **show modem mica slot** command. For a description of the significant fields in this display, see Table 88.

```

router# show modem mica slot

SLOT/PORT (0/62) TTYNUM=-1 (Control Port)
Modem hardware state: CTS DSR DTR RTS
Board is running boardware version 1.3.2.0
Boardware redirect state = DISABLE size=4520 location=0x400968A8
Board INTR ON
RX[0]=0x0 RX[1]=0x0 RX[2]=0x0 RX[3]=0x0
TX[0]=0x0 TX[1]=0x0 TX[2]=0x0 TX[3]=0x0
Next Modem service is 0
Throttle count is 0, Throttle state is OFF
Data channel no buffer count is 0
Boardware crash count is 0
No crash dump available
Board state is RUNNING
Modules state are: R R R R R R R R
Modules crash count are: 0 0 0 0 0 0 0 0
Interval timer is 16

RX Queue count is 0
TX Queue count is 0
TTY outpak is 0
TX pending FALSE
RX pending FALSE
RX ring with 4 entries at 0x40093924, (RX_AVAILABLE) rx_count=4
Rx_pak_head=0x6075D4D8 Rx_BD_head=0x40093934 Rx_BD_base=0x40093924
INPUT count = 1366
00 pak=0x6075CD58 buf=0x4008A2BC status=8000 pak_size=0
01 pak=0x6075D6B8 buf=0x4008C454 status=8000 pak_size=0
02 pak=0x6075D4D8 buf=0x4008BD9C status=8000 pak_size=0
03 pak=0x6075D2F8 buf=0x4008B6E4 status=8800 pak_size=0

TX ring with 4 entries at 0x40094B90, (TX_READY) tx_count = 0
tx_head = 0x40094BA0 , head_txp = 0x0
Tx_bd_tail=0x40094BA0 , Tx_bd_base=0x40094B90
OUTPUT count = 1894
00 pak=0x00000000 buf=0x00000000 status=0000 pak_size=0
01 pak=0x00000000 buf=0x00000000 status=0000 pak_size=0
02 pak=0x00000000 buf=0x00000000 status=0000 pak_size=0
03 pak=0x00000000 buf=0x00000000 status=0800 pak_size=0

```

The first channel you see displayed is the status polling channel (shown as SLOT/PORT (0/61) TTYNUM=-1 (MM Status Port)). The second displayed channel is the DC session channel (shown as SLOT/PORT (0/60) TTYNUM=-1 (MM DC Port)). The third displayed port is the controlling channel (shown as SLOT/PORT (0/62) TTYNUM=-1 (Control Port)). No TTY lines are associated with the modem management ports, as indicated by the field display TTYNUM=-1. Finally, an extensive list of all the data channels for each individual MICA modem is displayed. Table 88 describes the most useful fields in the previous example.

Table 88 *show modem mica Field Descriptions*

Field	Description
SLOT/PORT (0/61) TTYNUM=-1 (MM Status Port)	Status polling channel.
SLOT/PORT (0/60) TTYNUM=-1 (MM DC Port)	DC session channel.
SLOT/PORT (0/62) TTYNUM=-1 (Control Port)	Controlling pseudo channel.
Modem hardware state:	State of the modem hardware, which can be CTS, DSR, DTR, and RTS.
Board is running boardware version	Version of boardware.
Boardware crash count	Number of times the board has crashed since the system was last power cycled.
Modules state are:	State of the modem modules. R means that the specified modem module is running.
Modules crash count are:	Number of times each modem module has crashed since the system was last power cycled.
INPUT count =	Count of packets received since the last power cycle.
OUTPUT count =	Count of packets transmitted since the last power cycle.

Related Commands

Command	Description
show modem configuration	Displays the current modem configuration for digital MICA modems loaded inside access servers or routers.
show modem log	Displays the modem history event status performed on a manageable modem or group of modems.
show modem operational-status	Displays the current modem operational status for MICA digital modems loaded in access servers or routers.

show modem operational-status

To display performance statistics for individual modems, use the **show modem operational-status** command in EXEC mode.

Cisco AS2600, Cisco AS3600, Cisco AS5200, and Cisco AS5300 series access servers

```
show modem operational-status [slot/port]
```

Cisco AS5800 series access servers

```
show modem operational-status [shelf/slot/port]
```

Syntax Description	<i>shelf/slot/port</i>	(Optional) Specifies the location of the shelf (Cisco AS5800 access server only) and slot and modem port. If these numbers are not specified, statistics for all connected modems are displayed. (Remember to include the forward slash (/) when entering these variables.)
--------------------	------------------------	---

Command Modes	User and privileged EXEC
---------------	--------------------------

Usage Guidelines	The show modem operational-status command is supported only on systems with internal MICA technologies or Microcom analog (NM-AM) modems, such as the Cisco AS5200, AS5300, and AS5800 series access servers, but not in systems with internal Microcom digital modems such as those found in Cisco AS5200 and AS5300 series access servers. To display performance statistics for these access servers, use the following command sequence:
------------------	---

```
router# modem at-mode s/p
AT@E1
```

Sample output and explanations of the **AT@E1** modem command are provided in the document *AT Command Set and Register Summary for Analog Modem Network Modules*, found in the Analog Modem Firmware index of the Cisco 3600 Series Router documentation on CCO.

Command History	Release	Modification
	11.2(10)P	This command was introduced.

Examples	The following example shows performance statistics for modem 0/1 inside a Cisco AS5300. This modem is located at slot 0, port 1. For a description of the output fields, refer to Table 89.
----------	---

```
Router> show modem operational-status 0/1
```

```
Modem(0/1) Operational-Status:
  Parameter #0 Disconnect Reason Info: (0xDF00)
    Type (=6 ): Tx (host to line) data flushing, OK
    Class (=31): Requested by host
    Reason (=0 ): non-specific host disconnect
```


Table 89 show modem operational-status Field Descriptions for MICA Modems

Field	Description
Modem (slot/port) Operational-Status:	This parameter identifies the modem.
Parameter #0 Disconnect Reason Info:	This parameter displays reasons for call disconnect.
Parameter #1 Connect Protocol:	This parameter displays the connect protocol for the current session, which can be synchronous (SYNC) mode, asynchronous (ASYNC) mode, AppleTalk Remote Access (ARA) 1.0, ARA 2.0, LAP-M, MNP, FAX mode, Signalling System 7/Continuity Test (SS7/COT), or ISDN mode.
Parameter #2 Compression:	This parameter displays the compression protocol used for the current connection, which can be None, V.42bis TX (transmit), V.42bis RX (receive), V.42bis both, or MNP5 data compression.
Parameter #3 EC Retransmission Count:	This parameter displays the error correction (EC) retransmission count, or the number of times the MICA technologies modem has gone into error recovery in the TX direction for a particular connection. The bigger the number, the worse the connection. However, compare this parameter against the count produced by Parameter #36 (EC packets transmitted, received) to determine if there really is a problem.
Parameter #4 Self Test Error Count:	This parameter displays the total errors generated during a self-test run.
Parameter #5 Call Timer:	This parameter displays the length of the call in seconds. The timer starts when the CONNECT modem state is reached.
Parameter #6 Total Retrains:	This parameter displays the count of total retrains and speed shifts.
Parameter #7 Sq Value:	This parameter displays the measure of the receive signal quality (SQ) bit error rate for the chosen modulation, as estimated by the DSP, where 0 is the highest BER value and 7 the lowest. Depending on the setting of the SQ Threshold (S32), the DSP seeks an SQ value somewhere between the highest and lowest levels. For example, if S32 = 2 (the default), an SQ value of 3 is sought. If the SQ value drops below the threshold for longer than the duration of S35, the DSP attempts a downward speed shift or retrain. Similarly, if the SQ value goes above the threshold for longer than S34, an upward speed shift or retrain is attempted.
Parameter #8 Connected Standard:	This parameter displays the modulation, which can be V.21, Bell03, V.22, V.22bis, Bell212, V.23, V.32, V.32bis, V.32terbo, V.34, V.34+, K56Flex, V.90, or V.110.

Table 89 show modem operational-status Field Descriptions for MICA Modems (continued)

Field	Description
Parameter #9 TX, RX Bit Rate:	<p>This parameter displays the TX bit rate from the local data communication equipment (DCE) to the remote DCE and the RX bit rate from the remote DCE to the local DCE.</p> <p>The following data carrier connect standards support the rates indicated in bits per second (bps):</p> <ul style="list-style-type: none"> • V.21 TX, RX—300 bps • V.22 TX, RX—1200 bps • V.22bis TX, RX—2400 bps • V.23 TX (originate)—1200 bps • V.23 RX (originate)—75 bps • V.32 TX, RX—4800 and 9600 bps • V.32bis TX, RX—4800, 7200, 9600, 12000, and 14400 bps • V.34 TX, RX—2400, 4800, 7200, 9600, 12000, 14400, 16800, 19200, 21600, 24000, 26400, and 28800 bps • V.34+ TX, RX—2400, 4800, 7200, 9600, 12000, 14400, 16800, 19200, 21600, 24000, 26400, 28800, 31200, and 33600 bps • K56Flex TX—32000, 34000, 36000, 38000, 40000, 42000, 44000, 46000, 48000, 50000, 52000, 54000, 56000, 58000, and 60000 bps • K56Flex RX—2400, 4800, 7200, 9600, 12000, 14400, 16800, 19200, 21600, 24000, 26400, 28800, and 31200 bps • V.90 TX—28000, 29333, 30666, 32000, 33333, 34666, 36000, 37333, 38666, 40000, 41333, 42666, 44000, 45333, 46666, 48000, 49333, 50666, 52000, 53333, 54666, and 56000 bps • V.90 RX—2400, 4800, 7200, 9600, 12000, 14400, 16800, 19200, 21600, 24000, 26400, 28800, 31200, and 33600 bps • Bell103 TX, RX—Up to 300 bps • Bell212 TX, RX—0 to 300 and 1200 bps <p>The following fax connect standards support the rates indicated in bits per second (bps):</p> <ul style="list-style-type: none"> • V.17 TX, RX—7200, 9600, 12000, and 14400 bps • V.27ter TX, RX—2400 and 4800 bps • V.29 TX, RX—7200 and 9600 bps

Table 89 show modem operational-status Field Descriptions for MICA Modems (continued)

Field	Description
Parameter #11 TX, RX Symbol Rate:	<p>This parameter displays the TX symbol rate used to transmit samples to the line and the RX symbol rate used to receive samples from the line. The rates are synchronous with each other.</p> <p>The following data carrier connect standards support the indicated baud rates:</p> <ul style="list-style-type: none"> • V.21 TX, RX—300 baud • V.22 TX, RX—600 baud • V.22bis TX, RX—600 baud • V.23 TX (originate)—1200 baud • V.23 RX (originate)—75 baud • V.23 TX (answer)—75 baud • V.23 RX (answer)—1200 baud • V.32 TX, RX—2400 baud • V.32bis TX, RX—2400 baud • V.34 TX, RX—2400, 2743, 2800, 3000, 3200, and 3429 baud • V.34+ TX,RX—2400, 2743, 2800, 3000, 3200, and 3429 baud • K56Flex TX—8000 baud • K56Flex RX—3200 baud • V.90 TX—8000 baud • V.90 RX—3000, 3200, and 3429 baud • Bell103 TX, RX—300 baud • Bell212 TX, RX—600 baud <p>The following fax connect standards support the indicated baud rates:</p> <ul style="list-style-type: none"> • V.17 TX, RX—2400 baud • V.27ter TX, RX—1800 baud • V.29 TX, RX—2400 baud

Table 89 show modem operational-status Field Descriptions for MICA Modems (continued)

Field	Description
Parameter #13 TX, RX Carrier Frequency:	<p>This parameter displays the TX carrier frequency used by the local DCE and the RX carrier frequency used by the remote DCE.</p> <p>Data carrier frequencies are as follows:</p> <ul style="list-style-type: none"> • V.21 TX RX—1080 Hz (originate) and 1750 Hz (answer) • V.22 TX, RX—1200 Hz (originate) and 2400 Hz (answer) • V.22bis TX, RX—1200 Hz (originate) and 2400 Hz (answer) • V.23 TX (originate)—1700 Hz • V.23 RX (originate)—420 Hz • V.23 TX (answer)—420 Hz • V.23 RX (answer)—1700 Hz • V.32 TX, RX—1800 Hz • V.32bis TX, RX—1800 Hz • V.34 TX, RX—1600, 1800, 1646, 1680, 1829, 1829, 1867, 1900, 1920, 1959 Hz • V.34+ TX, RX—1600, 1800, 1646, 1680, 1829, 1829, 1867, 1900, 1920, 1959 Hz • K56Flex TX—N/A • K56Flex RX—1600, 1800, 1646, 1680, 1829, 1829, 1867, 1900, 1920, 1959 Hz • V90 TX—N/A • V90 RX—1600, 1800, 1646, 1680, 1829, 1829, 1867, 1900, 1920, 1959 Hz • Bell103 TX, RX—1080 Hz (originate) and 1750 Hz (answer) • Bell212 TX, RX—1200 Hz (originate) and 2400 Hz (answer) <p>Fax carrier frequencies are as follows:</p> <ul style="list-style-type: none"> • V.17 TX, RX—1800 Hz • V.27ter TX, RX—1200 (originate) and 1600 (answer) • V.29 TX, RX—1700 Hz

Table 89 show modem operational-status Field Descriptions for MICA Modems (continued)



Field	Description
Parameter #15 TX, RX Trellis Coding:	<p>Trellis coding adds dependency between symbols to make the detection in noise more robust (Forward Error Correction). Trellis coding is displayed in values of 0, 8, 16, 32, or 64. Use the following key to correlate the trellis code values with the connection standard:</p> <ul style="list-style-type: none"> • 0—V.22, V.22bis, V.21, Bell212, Bell103, V.29, or V.27 • 8—V.32, V.32bis, or V.17 • 16, 32, 64—V.34, V.34+, V.90, K56Flex <p> Note MICA technologies modems do not support values of 32 or 64 in the RX direction, but do support values of 16, 32, and 64 in the TX direction.</p>
Parameter #16 TX, RX Preemphasis Index:	<p>The preemphasis index involves shaping the raw transmit spectrum to deal with spectrum roll-offs. The preemphasis index can take on the values from 0 to 10. A zero denotes no reshaping. Typical values usually fall in the range from 0 to 2, or 6 to 7. This index is used with V.34 and V.34+ connection standards.</p>
Parameter #17 TX, RX Constellation Shaping:	<p>Constellation shaping is a technique for improving noise immunity by using a probability distribution for transmitted signal points. The signal states are used to predict the sensitivity to certain transmission impairments. Constellation shaping is used with the V.34 and V.34+ connection standards.</p> <p>Values displayed by this parameter are either none or active (Off or On).</p>
Parameter #18 TX, RX Nonlinear Encoding:	<p>Nonlinear encoding occurs during the training phase and moves the outer points of the constellation away to deal with nonlinear distortion. Nonlinear distortion (in the range from 0 to 200 Hz) tends to affect the higher-powered signals. Moving the outer constellation points out reduces the chance of error. Nonlinear encoding is used with the V.34 and V.34+ connection standards.</p> <p>Values displayed by this parameter are either none or active (Off or On).</p> <p> Note MICA technologies modems support nonlinear coding in both directions.</p>
Parameter #19 TX, RX Precoding:	<p>Precoding serves the same purpose as the preemphasis index, but instead manages the bits and not the raw transmit signals. This management is done only when asked for and therefore will occur only in the RX mode. Precoding is used with the V.34 and V.34+ connection standards.</p> <p>Values displayed by this parameter are either none or active (Off or On).</p>

Table 89 show modem operational-status Field Descriptions for MICA Modems (continued)

Field	Description
Parameter #20 TX, RX Xmit Level Reduction:	<p>The Xmit (transmit) level affects the transmit signal with 0 to 15 in dBm of reduction. If nonlinear distortion is detected, the MICA technologies modem will request a lower-powered TX signal. If the remote end detects nonlinear distortion, it will also request a lower-powered TX signal. Xmit level reduction is used with the V.34 and V.34+ connection standards.</p> <p>Values displayed by this parameter are the transmit signal and reduction, in dBm.</p>
Parameter #21 Signal Noise Ratio:	<p>A signal to noise ratio (SNR) is the ratio between the expected signal and the error signal.</p> <p>For example, consider a four-point constellation at $(x,y) = (-1,1), (1,1), (1,-1),$ and $(-1,-1)$. The receive signal comes in at $(x^{\wedge},y^{\wedge}) = (0.5,1.5)$. The expected value, although not guaranteed, is $(1,1)$. The error vector is then calculated as follows:</p> $e = (x - x^{\wedge}, y - y^{\wedge}) = ([1-0.5], [1-1.5]) = (0.5,-0.5)$ <p>and the SNR is calculated as follows:</p> $\text{SNR} = 20 \cdot \log_{10} [\text{magnitude}(\text{expected value } x,y \text{ of constellation}) / \text{magnitude}(\text{error})]$ $\text{SNR} = 20 \log_{10} [\text{magnitude}(1,1) / \text{magnitude}(0.5,-0.5)] = 6.02 \text{ dB}$ <p>This parameter displays the ratio measurement of the desired signal to noise. MICA technologies modems measure the SNR in only the signal band that has a rate equal to the baud rate (that is, 3200 Hz, 2400 Hz, and so on).</p> <p>Note that a 28.8-kbps connection demands an SNR of about 37 dB. If the rate is lower than this, the quality of the connection diminishes. A 33.6-kbps connection demands an SNR of 38 to 39 dB. A clean line has an SNR of about 41 dB.</p> <p>The values displayed by this parameter range from 0 to 70 decibels (dB) and change in 1-dB steps.</p>
Parameter #22 Receive Level:	<p>The receive level is the power of the received signal and ranges from 0 to -128 dBm in 1-dBm incremental steps. The ideal range is about -22 dBm in the United States and -12 dBm in Europe.</p> <p>In theory, MICA technologies modems can handle a receive level up to -4 dBm. However, the receive level they can handle is a function of the echo level. If there is absolutely no echo, the MICA modem should be able to handle a -4 dBm level. As the echo level goes up, the receive level that the MICA modem can handle moves from -4 dBm to -5 dBm, and so on.</p> <p>The optimum range for the receive level displayed by this parameter is from -12 dBm to -24 dBm.</p>

Table 89 show modem operational-status Field Descriptions for MICA Modems (continued)



Field	Description
Parameter #23 Frequency Offset:	<p>Frequency offset is a difference between the modulation carriers—that is, the frequency shift in the receive spectrum between the expected RX carrier frequency and the actual RX carrier frequency.</p> <p>The values displayed by this parameter range from +/-32 in 0.125-Hz steps. The typical value is 0 Hz.</p> <hr/> <p> Note Values of up to +/-7 Hz can be found on analog trunk circuits and will be compensated for by the MICA technologies modems.</p> <hr/>
Parameter #24 Phase Jitter Frequency:	<p>Phase jitter frequency is the peak-to-peak differential between two signal points. The following calculation models a typical RX carrier:</p> $e^{j(wt+a)}$ <p>but when phase jitter is detected, the RX carrier is modeled as follows:</p> $e^{j[wt+a+K \sin(bt+c)]}$ <p>where:</p> <ul style="list-style-type: none"> w = carrier frequency a = carrier phase K = magnitude of sinusoidal phase jitter b = frequency of sinusoidal phase jitter c = phase of sinusoidal phase jitter <p>Uncanceled phase jitter looks like “rocking” of the baseband QAM constellation. The points look like arcs with the outer points having longer arcs.</p> <p>The phase jitter measurements displayed by this parameter range from +/-32 in 0.125-Hz steps. The typical value is 0 degrees (that is, phase jitter is not normally present).</p> <hr/> <p> Note This value is found only on analog trunk circuits. Typical frequencies are power generation frequencies and their harmonics (that is, 60, 120 Hz within the U.S; 50, 100 Hz international). MICA technologies modems cancel all known frequencies.</p> <hr/>

Table 89 show modem operational-status Field Descriptions for MICA Modems (continued)

Field	Description
Parameter #25 Phase Jitter Level:	<p>Phase jitter level is the amount of phase jitter measured and indicates how large the “rocking” is, in degrees. On an oscilloscope, the constellation points would look like crescent moons. The jitter level corresponds to magnitude <i>K</i> as described in Parameter #24.</p> <p>Values displayed by this parameter can range up to 15 degrees. The typical value is 0 degrees (that is, phase jitter is not normally present).</p>
Parameter #26 Far End Echo Level:	<p>Over long connections, an echo is produced by impedance mismatches at 2-wire-to-4-wire and at 4-wire-to-2-wire hybrid circuitry.</p> <p>This parameter displays the far-end echo level (that portion of the transmitted analog signal that has bounced off of the analog front end of the remote modem), which can range from 0 to -90 dBm.</p> <p>A MICA modem cannot handle near-end echo if far-end echo is present and the round-trip delay is greater than 10 microseconds. This constraint comes from the number of taps in the echo canceler of MICA modems.</p> <p>Assuming that there is no near-end echo, the performance of the receiver varies as the ratio of the receive level divided by the far-end echo (RECEIVE LEVEL/FAR END ECHO). As the echo level rises, the receiver performance degrades. (This is why the MICA modem can handle “hotter” receive levels with less echo.)</p> <p>The technical reason for this degradation has to do with <i>dynamic range</i>. Every echo canceler has some residual echo (error) left in the signal. This residual echo adds to the power of the receive signal going through the rest of the MICA modem receiver. With little residual echo, there is more dynamic range for the actual receive signal.</p> <p>For a call to go from the MICA modem to the local switch and back into MICA, the reported far-end echo level must be less than -55 dBm. A greater echo level indicates a digital-to-analog conversion in the path between the MICA modem and the switch. MICA modems are not supported in this topology.</p>
Parameter #27 Phase Roll:	<p>This parameter displays the phase roll, which affects the echo signal coming back to the MICA modem.</p> <p>A certain constellation pattern is transmitted from a MICA modem when the echo signal reaches the central office (CO). Some echoed form of this signal/constellation pattern is sent back to the MICA modem; however, the constellation shape may be rotated from 0 to 359 degrees. This rotation is called the <i>phase roll</i>.</p> <p>The echoed signal consists of a frequency component and a phase component. If the frequency component changes at all, a correction is needed for echo cancellation to work correctly. A slight variance (an unknown amount that would have to be determined through experimentation) in the phase may not affect how the echo canceler performs. Too much change in phase also needs correcting for proper echo cancellation to occur.</p> <p>The phase roll value ranges from +/-32 in 0.125-Hz steps. The typical value is 0 or close to 0.</p>

Table 89 show modem operational-status Field Descriptions for MICA Modems (continued)



Field	Description
Parameter #28 Round Trip Delay:	<p>Round-trip delay is the total round-trip propagation delay of the link in microseconds. This delay is important for proper echo cancellation.</p> <p>This parameter displays the round-trip delay; the amount of delay varies with each network.</p> <p> Note The buffer speed for MICA modems is 4096 baud; therefore, at 2400 baud the delay is 1.7 seconds, and at 3429 baud, 1.19 seconds. Since round-trip delay is measured before the baud rate is chosen, round-trip delay is used to disable those baud rates for which the round-trip delay cannot be supported. For example, if the round trip-delay is 1.25 seconds, 3429 is disabled for that train attempt.</p>
Parameter #30 Characters received, transmitted:	This parameter displays the total count of characters (before modem compression of any type) received and transmitted.
Parameter #32 Characters received BAD:	Not used.
Parameter #33 PPP/SLIP packets received, transmitted:	This parameter displays the total count of Point-to-Point Protocol (PPP) and Serial Line Internet Protocol (SLIP) packets transmitted and received. This total could include all PPP/SLIP packets, including BAD/ABORTED packets.
Parameter #35 PPP/SLIP packets received (BAD/ABORTED):	This parameter displays the total count of the bad or aborted PPP/SLIP packets, and is a subset of the counter shown in Parameter #33 (PPP/SLIP packets received). A counted PPP packet has a bad FCS, or the SLIP packet has a transparency error. Errored PPP frames should be seen only when asynchronous framing (no EC protocol) is being used.
Parameter #36 EC packets transmitted, received OK:	This parameter displays the number of EC packets transmitted (the number of TX frames that the client modem has accepted) and the number of EC packets received (the number of RX frames that the MICA modem has accepted).
Parameter #38 EC packets (Received BAD/ABORTED):	Parameter #38 is identical to Parameter #3 (EC Retransmission Count). It may read differently from Parameter #3, depending on how the software requests the parameter information.
Parameter #39 Robbed bit Signalling (RBS) pattern:	This parameter displays the number of robbed bits detected in the connection. The robbed bits are used for in-band signalling. This information is reported only for K56Flex by the analog modem. The 6 least significant bits of the returned value indicate the periodic RBS pattern, where a 1 denotes a pulse code modulation sample with a robbed bit.

Table 89 show modem operational-status Field Descriptions for MICA Modems (continued)

Field	Description
Parameter #40 Digital Pad, Digital Pad Compensation:	<p>A digital pad can be implemented by the CO to attenuate a “hot” signal. Compensation boosts the signal by the amount of the pad.</p> <p>This parameter displays values that usually range from 0 to 10 dB, with typical values being 0, 3, and 6 dB.</p> <p> Note A digital pad is mandatory for K56Flex, but configurable for V.90 using S52. K56Flex supports only 0, 3, and 6 dB. V.90 supports steps of 1/8192 dB, but it is reported to the host in steps of 0.125-dB granularity.</p>
Line Shape:	<p>The display at the bottom of the report shows line shaping as a frequency-response graph of the channel. The Y (vertical) axis represents frequencies from 150 Hz (top of chart) to 3750 Hz (bottom of chart) in 150-Hz steps. The X (horizontal) axis represents a normalized amplitude. The graph can help identify nulls, bandwidth, and distortion (irregular shape). A flat spectrum plot is best.</p> <p>This display is available only for V.34, V.90, and K56Flex connection standards.</p>

The following Microcom example shows details for an 8-port analog modem module inside a Cisco 3640 router. (For an explanation of the fields seen in this display, see the description of the **AT@E1** modem command in the document *AT Command Set and Register Summary for Analog Modem Network Modules*.)

```
Router# show modem operational-status 1/0

MNP Class 10 V.34 Modem
MODEM HW: PC 2W ANALOG United States
Firmware Rev 2.2.48/85
DSP C36 Part/Rev          3635 4241
DSP C58 Part/Rev          3635 2041
DSP Controller Rev        0.0
DSP Data Pump Rev         0.0
Connect Time              000:00:00
- RTS 5 CTS 6 DSR - CD 20 DTR - RI
Disconnect Remote - Local -

Mod Type                  IDLE
TX/RX Spd                 ***** ***** BPS
TX/RX Spd Mask            NA 0000 Hex
Symbol Rate               2400 Hz
TX/RX Carrier Freq       1800 1800 Hz
TX/RX States              16 16
TX/RX NLE                 OFF OFF
TX/RX Precoding           OFF OFF
TX/RX Shaping             OFF OFF
TX Preemphasis Index      0

TX Lvl REG                - 13 dBm
TX Lvl RAM                - 0 dB
TX Lvl Reduct             0 dB
TX Lvl                   - 13 dBm
RX Lvl                   - 57 dBm
```

■ show modem operational-status

```

S/NR                0
S/DR                0
EQM                 0000 Hex
AVG EQM             0000 Hex
Lower/Upper Edge    0      0 Hz
Phase Jitter Freq   0 Hz
Phase Jitter Amp    0.0 deg
Far Echo Lvl        0 N
Round Trip Delay    0 msec
Dropouts > 5dB     0
RTRNs Init/Accept   0      0
RRENs Init/Accept   0      0
BLER                0000 Hex
RBS Counter         0000 Hex
Digital Pad Detected      NA
Max SECRXB          00
Max SECTXB          00
OK

```

Related Commands

Command	Description
show modem configuration	Displays the current modem configuration for digital MICA modems loaded inside access servers or routers.
show modem log	Displays the modem history event status performed on a manageable modem or group of modems.
show modem mica	Displays information about MICA digital modems.

show modem-pool

To display the configuration and connection status for one or more modem pools, use the **show modem-pool** command in EXEC mode.

```
show modem-pool [name]
```

Syntax Description	<i>name</i> (Optional) Modem pool name.				
Command Modes	EXEC				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>11.2P</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	11.2P	This command was introduced.
Release	Modification				
11.2P	This command was introduced.				

Usage Guidelines The counters display by the **show modem-pool** command are cleared with the **copy modem** command.

Examples

In the following example, two modem pools are set up: v90service and v34service. Each pool contains one DNIS number: 1234 and 5678. Each DNIS number is allowed a maximum of 48 simultaneous connections. A total of 96 modems are assigned to the modem pools: 48 and 48. Modems that are left unassigned to modem pools are automatically put into the default modem pool (displayed as System-def-Mpool). The default pool is empty in this example.

```
as5300# show modem-pool
modem-pool: System-def-Mpool
modems in pool: 0   active conn: 0
0 no free modems in pool

modem-pool: v90service
modems in pool: 48   active conn: 46
8 no free modems in pool
called_party_number: 1234
max conn allowed: 48, active conn: 46
8 max-conn exceeded, 8 no free modems in pool

modem-pool: v34service
modems in pool: 48   active conn: 35
0 no free modems in pool
called_party_number: 5678
max conn allowed: 48, active conn: 35
0 max-conn exceeded, 0 no free modems in pool
```

Table 90 describes the modem pool fields.

Table 90 show modem-pool Field Descriptions

Field	Description
modem-pool	Name of the modem pool. In the previous example, there are three modem pools configured: System-def-Mpool, v34service, and v90service. To set modem pool name, see the copy modem command. All the modems not assigned to a modem pool are automatically assigned to the system default pool (displayed as System-def-Mpool).
modems in pool	Number of modems assigned to the modem pool. To assign modems to a pool, see the copy modem command.
active conn	Number of simultaneous active connections for the specified modem pool or called party DNIS number.
no free modems in pool	Number of times incoming calls were rejected because there were no more free modems in the pool to accept the call.
called_party_number	Specified called party DNIS number. This is the number that the remote clients use to dial into the access server. You can have more than one DNIS number per modem pool. To set the DNIS number, see the copy modem command.
max conn allowed	Maximum number of modems that a called party DNIS number can use, which is an overflow protection measure. To set this feature, see the copy modem command.
max-conn exceeded	Number of times an incoming call using this called party DNIS number was rejected because the max-conn number parameter specified by the called-number command was exceeded.

Related Commands

Command	Description
called-number	Assigns a called party number to a pool of modems.
clear modempool-counters	Clears active or running counters associated with one or more modem pools.
modem-pool	Creates a new modem pool or specifies an existing modem pool, which allows you to physically or virtually partition your access server for dial-in and dial-out access.
pool-member	Assigns a range of modems to a modem pool.

show modem summary

To display a high-level report for all manageable modems dialing in to and out of the network, use the **show modem summary** command in EXEC mode.

show modem summary

Syntax Description This command has no arguments or keywords.

Command Modes EXEC

Command History

Release	Modification
11.2	This command was introduced.

Examples The following is an example of output from the **show modem summary** command:

```
router# show modem summary

          Incoming calls      Outgoing calls      Busied   Failed   No   Succ
Usage  Succ  Fail  Avail  Succ  Fail  Avail  Out    Dial   Ans  Pct.
  17%  1547   64   11    0    0   11    0      3     3   96%
```

Table 91 describes the fields in the previous display.

Table 91 *show modem summary Field Descriptions*

Fields	Descriptions
Incoming and Outgoing calls	Calls dialing into and out of the modem. <ul style="list-style-type: none"> Usage—Percentage of the total system uptime that all the modems are in use. Succ—Total calls successfully connected. Fail—Total calls that did not successfully connect. Avail—Total modems available for use in the system.
Busied Out	Total number of times the modems were taken out of service with the modem busy command or the modem shutdown command.
Failed Dial	Total number of attempts the modems did not hang up or there was no dial tone.
No Ans	Total number of times call ringing was detected, but the calls were not answered by a modem.
Succ Pct.	Successful connection percentage of total available modems.

show modem test

To display the modem test log, use the **show modem test** command in EXEC mode.

show modem test

Syntax Description This command has no arguments or keywords.

Command Modes EXEC

Command History	Release	Modification
	11.2	This command was introduced.

Usage Guidelines The modem test log displays the results of the modem diagnostics test, which is issued with the **modem autotest** global configuration command.

Examples The following is an example of output from the **show modem test** command for a V.34 modem card:

```
router# show modem test
Date Time           Modem  Test                Reason              State Result
5/15 07:25:17 AM  1/0    Back-To-Back        TIME INTERVAL      Idle  FAIL
5/15 07:25:17 AM  1/1    Back-To-Back        TIME INTERVAL      Idle  PASS
5/15 07:25:17 AM  1/2    Back-To-Back        TIME INTERVAL      Idle  PASS
5/15 07:25:17 AM  1/3    Back-To-Back        TIME INTERVAL      Idle  FAIL
5/15 07:25:17 AM  1/4    Back-To-Back        TIME INTERVAL      Idle  PASS
5/15 07:25:17 AM  1/5    Back-To-Back        TIME INTERVAL      Idle  PASS
5/15 07:25:17 AM  1/6    Back-To-Back        TIME INTERVAL      Idle  PASS
5/15 07:25:17 AM  1/7    Back-To-Back        TIME INTERVAL      Idle  PASS
5/15 07:25:17 AM  1/8    Back-To-Back        TIME INTERVAL      Idle  PASS
5/15 07:25:17 AM  1/9    Back-To-Back        TIME INTERVAL      Idle  PASS
...
```

Table 92 describes the field in the previous display.

Table 92 *show modem test* Field Descriptions

Fields	Descriptions
Date	Date the back-to-back test occurred for the specified modem.
Time	Time the test occurred.
Modem	Specified modem that performed a back-to-back test.
Test	Operation performed by the specified modem.
Reason	Reason the modem performed a back-to-back test.
State	Current operational state of the modem.
Result	Result of the back-to-back test for the specified modem.

show modem version

To display version information about the modem firmware, controller and Domain Specific Part—ATM address field (DSP) code (for 56K modems only), and boot code, use the **show modem version** command in EXEC mode.

show modem version

Syntax Description This command has no arguments or keywords.

Command Modes EXEC

Command History	Release	Modification
	11.2	This command was introduced.
	12.0(4)XI1	This command was modified to show SPE features. The “-/-” in the DSP REV field indicates that the spe configuration commands for firmware download are unavailable on that modem.

Usage Guidelines This command is useful for verifying the version of modem firmware running on the system before or after a modem firmware upgrade. If there is a “-/-” in the DSP REV field, you cannot use the **spe** configuration commands for firmware download on that modem.

Examples The following example displays information for modem firmware, which includes modem firmware version, boot code version, controller and DSP code version (56K modem modules only), modem board hardware version, and carrier card information. This particular example displays information for Microcom 56K modem cards (modules 0/0, 2/0, and 2/1) and V.34 cards (module 0/1) installed in a Cisco AS5200.

If the version number is displayed as 0.0.0, verify that out-of-band status polling is functioning.

```
router# show modem version
```

```

      Mdm      Modem module   Firmware   Boot      DSP
      0/0      Number           Rev        Rev        Rev
      0/1              0           3.1(21)   3.0(4)     1.1(0)/1.1(0)
      .
      .
      .
0/11              0           3.1(21)   3.0(4)     1.1(0)/1.1(0)
  0/12              1           2.2(8)    1.0(5)
  0/13              1           2.2(8)    1.0(5)
      .
      .
      .
  0/23              1           2.2(8)    1.0(5)
  2/0              0           3.1(21)   3.0(4)     1.1(0)/1.1(0)
  2/1              0           3.1(21)   3.0(4)     1.1(0)/1.1(0)
  2/2              0           3.1(21)   3.0(4)     1.1(0)/1.1(0)

```

show modem version

```

.
.
.
2/21          1          3.1(21)  3.0(4)   1.1(0)/1.1(0)
2/22          1          3.1(21)  3.0(4)   1.1(0)/1.1(0)
2/23          1          3.1(21)  3.0(4)   1.1(0)/1.1(0)

Modem board HW version info:

Slot 0:
Carrier card:
  hw version= 8, number_of_ports= 24, max_modules= 2, max_oob_ports= 2
Modem Module 0:
  number_of_modems= 12, option_bits= 1,
  rev_num= 02.00, vendor_model_number= 02,
  vendor_banner= Microcom MNP10 K56 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= 7, number_of_ports= 24, max_modules= 2, max_oob_ports= 2
Modem Module 0:
  number_of_modems= 12, option_bits= 1,
  rev_num= 02.00, vendor_model_number= 02,
  vendor_banner= Microcom MNP10 K56 Modem
Modem Module 1:
  number_of_modems= 12, option_bits= 1,
  rev_num= 02.00, vendor_model_number= 02,
  vendor_banner= Microcom MNP10 K56 Modem

```

The following example displays modem version information for V.110 terminal adapter modules:

```

router# show modem version

      Modem module      Firmware      Boot
      Mdm               Number        Rev           Rev
0/0              0              Unmanaged    Unmanaged
0/1              0              Unmanaged    Unmanaged
0/2              0              Unmanaged    Unmanaged
.
.
.
0/11             0              Unmanaged    Unmanaged
1/0              0              Unmanaged    Unmanaged
.
.
.
1/11             0              Unmanaged    Unmanaged
1/12             1              Unmanaged    Unmanaged
.
.
.
1/22             1              Unmanaged    Unmanaged
1/23             1              Unmanaged    Unmanaged
2/0              0              Unmanaged    Unmanaged
.
.
.
2/11             0              Unmanaged    Unmanaged
2/12             1              Unmanaged    Unmanaged
.

```

```

.
.
2/22          1          Unmanaged  Unmanaged
Modem board HW version info:

Slot 0:
Carrier card:
  hw version= 3, number_of_ports= 12, max_modules= 1, max_oob_ports= 1
Modem Module 0:
  number_of_modems= 12, option_bits= 1,
  rev_num= 03.01, vendor_model_number= 01,
  vendor_banner= V.110 Terminal Adaptor

Slot 1:
Carrier card:
  hw version= 8, number_of_ports= 24, max_modules= 2, max_oob_ports= 2
Modem Module 0:
  number_of_modems= 12, option_bits= 1,
  rev_num= 03.01, vendor_model_number= 01,
  vendor_banner= V.110 Terminal Adaptor
Modem Module 1:
  number_of_modems= 12, option_bits= 1,
  rev_num= 03.01, vendor_model_number= 01,
  vendor_banner= V.110 Terminal Adaptor

Slot 2:
Carrier card:
  hw version= 8, 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= V.110 Terminal Adaptor
Modem Module 1:
  number_of_modems= 12, option_bits= 1,
  rev_num= 03.00, vendor_model_number= 01,
  vendor_banner= V.110 Terminal Adaptor

```

The following example shows the display from an AS5300:

If there is a “-/-” in the DSP REV field, you cannot use the **spe** configuration commands for firmware download on that modem.

```
Router# show modem version
```

Mdm	Modem module Number	Firmware Rev	Boot Rev	DSP Rev
1/0	0	2.6.1.0		
1/1	0	2.6.1.0		
1/2	0	2.6.1.0		
1/3	0	2.6.1.0		
1/4	0	2.6.1.0		
1/5	0	2.6.1.0		
1/6	1	2.6.1.0		
..				
1/41	6	2.6.1.0		
1/42	7	2.6.1.0		
1/43	7	2.6.1.0		
1/44	7	2.6.1.0		
1/45	7	2.6.1.0		
1/46	7	2.6.1.0		
1/47	7	2.6.1.0		
2/0	0	5.0(40)	3.0(4)	22.0/47.0
2/1	0	5.0(40)	3.0(4)	22.0/47.0

show modem version

```

2/2          0      5.1(9)  3.0(4)  22.0/47.0
.
.
.
2/8          0      5.1(9)  3.0(4)  22.0/47.0
2/9          0      5.0(40) 3.0(4)  22.0/47.0
2/10         0      5.1(9)  3.0(4)  22.0/47.0
2/11         0      5.1(9)  3.0(4)  22.0/47.0
2/12         1      2.3(6)  1.0(5)  -/-
2/13         1      2.3(6)  1.0(5)  -/-
.
.
.

```

Modem board HW version info:

Slot 1:

Carrier card:

number_of_ports= 48, max_modules= 10

Manufacture Cookie Info:

EEPROM Type 0x0001, EEPROM Version 0x01, Board ID 0x47,
Board Hardware Version 1.0, Item Number 73-2393-3,
Board Revision A0, Serial Number 09361116,
PLD/ISP Version 5.9, Manufacture Date 20-Jun-1998.

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 B48, Serial Number 06542204,
PLD/ISP Version 255.255, Manufacture Date 23-Jun-1998.

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 B48, Serial Number 06478113,
PLD/ISP Version 255.255, Manufacture Date 23-Jun-1998.

.
.

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 B48, Serial Number 06478929,
PLD/ISP Version 255.255, Manufacture Date 23-Jun-1998.

Modem Module 8

Modem Module 9

Slot 2:

Carrier card:

hw version= 2, pld= 0, number_of_ports= 24,
max_modules= 2, max_oob_ports= 2

Manufacture Cookie Info:

EEPROM Type 0x0001, EEPROM Version 0x01, Board ID 0x47,
Board Hardware Version 1.0, Item Number 73-2522-2,
Board Revision ^@2, Serial Number 05433763,
PLD/ISP Version 255.255, Invalid Date code.

```

Modem Module 0:
  number_of_modems= 12, option_bits= 1,
  rev_num= 03.30, vendor_model_number= 02,
  vendor_banner= Microcom MNP10 K56 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
Router#

Router# wr t
Building configuration...

Current configuration:
!
version 12.0
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
service internal
!
hostname Router
!
aaa new-model
aaa group server radius aaa-server
  server 1.2.3.4
!
spe 1/0 1/7
  firmware location system:/ucode/mica_port_firmware
spe 2/0 2/1
  firmware location system:/ucode/microcom_firmware
spe 2/2 2/8
  firmware location flash:mcom-fw-dsp.5.1.9_47.22.bin
spe 2/9 2/9
  firmware location system:/ucode/microcom_firmware
spe 2/10 2/11
  firmware location flash:mcom-fw-dsp.5.1.9_47.22.bin
spe 2/12 2/23
  firmware location feature_card_flash
!

Router# termination length 0

```

Table 93 describes the fields shown in the previous displays of the **show modem version** command.

Table 93 *show modem version* Field Descriptions

Fields	Descriptions
Mdm	Slot and port number for the specified modem.
Modem module Number	Card number associated with the carrier card.
Firmware Rev	Modem firmware version, or one of the following: <ul style="list-style-type: none"> Unknown—Indicates that the retrieved version is 0.0.0. Unknown (F)—Indicates that the modem's out-of-band feature has failed. Unknown (NP)—Indicates that the user has disabled the status polling for this modem using the no modem status-polling command.

Table 93 *show modem version Field Descriptions (continued)*

Fields	Descriptions
Boot Rev	Modem boot version, or one of the following: <ul style="list-style-type: none"> Unknown—Indicates that the retrieved version is 0.0.0. Unknown (F)—Indicates that the modem's out-of-band feature has failed. Unknown (NP)—Indicates that the user has disabled the status polling for this modem using the no modem status-polling command.
DSP Rev	Controller and DSP version, which is displayed for the 56K modems only. The first column of numbers correspond to the controller version. The second column of numbers, which begin with a forward slash (/), correspond to the DSP version.
Modem board HW version info:	Modem hardware board information.
Slot	Slot number used for the carrier card.
Carrier card	Modem carrier card.
hw version	Modem carrier card hardware version.
number_of_ports	Maximum number of modem ports that can be installed in the carrier card.
max_modules	Maximum number of modem cards that can be installed in a carrier card.
max_oob_ports	Maximum out-of-band ports used in the carrier card.
Modem Module	Modem card.
number_of_modems	Number of modems installed in the modem card.
option_bits	Signal level of the modem A-law and the U-law.
rev_num	Modem card version number.
vendor_model_number	Vendor modem model number.
vendor_banner	Type of banner displayed by the modem vendor.

show modemcap

To display the values set for the current modem, use the **show modemcap** command in EXEC mode. This display lists the modems for which the router has entries. To display the attributes associated with a specific modem, use the **show modemcap EXEC** command with the optional *modem name* argument.

```
show modemcap [modem-name]
```

Syntax Description	<i>modem-name</i> (Optional) The name of the modem (such as Codex_3260).				
Defaults	The list of modems for which the router has entries.				
Command Modes	EXEC				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>11.1</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	11.1	This command was introduced.
Release	Modification				
11.1	This command was introduced.				

Usage Guidelines When a modem name is supplied, this command displays the available modem values. Table 94 identifies the list of attributes and their description:

Table 94 Modem Attributes

Modem Attribute	Description
Factory defaults (FD)	Returns the modem to factory default configuration. This is commonly "&F."
Autoanswer (AA)	Sets the modem to answer the phone if DTR is high, preferably on the first ring. This is commonly "S0=1."
Carrier detect (CD)	Instructs the modem to raise CD signal when a carrier is detected. Cisco configures modems into auto-answer mode by default. Oddly this is not the default for most modems, which just raise CD and leave it high. This is commonly "&C1." In auto-answer mode, the modem waits until it detects a ring, then responds to the incoming call and negotiates an end-to-end connection with the other modem. At this point, the modem receiving the call informs the router that it has a call ready to be processed; this notification is performed by raising the signal on RS-232 pin 8 (the Data Carrier Detect signal) to high.
Drop with DTR (DTR)	Drops the connection if DTR signal drops. There is frequently an option to reset the configuration while doing this. However, this option should <i>not</i> be used. The connection should only drop. The correct value for this is commonly "&D2."
Set hardware flow control (HFL)	Uses RTS/CTS (out-of-band) flow control.

Table 94 Modem Attributes (continued)

Modem Attribute	Description
Set software flow control (SFL)	Uses XON/XOFF (in-band) flow control.
Lock to maximum DTE speed (SPD)	<p>Instructs the modem to lock the speed at which it communicates to the router to a single rate, preferably the highest. This attribute is important and is often hard to find in manuals.</p> <p>SPD is often linked to the hardware flow control variable. Look for phrases like “bps rate adjust” and “bit rate adjust.”</p> <p>Some modems set the speed to a value that depends on an S-register; other modems simply lock to the speed that was used when the last AT command was issued. Locking to the speed that was last used is handled automatically. To enable the S-register to set the speed, you must include the proper S-register value for the fastest possible DTE speed.</p>
Best error control (BER)	Instructs the modem to negotiate its best error control with remote modems. For ARAP users, this is MNP5/LAPB, but not MNP4.
Best compression (BCP)	Instructs the modem to negotiate its best compression with remote modems.
No error control (NER)	Instructs the modem to negotiate no error control with remote modems. This will be used when placing outgoing (callback) ARAP calls.
No compression (NCP)	Instructs the modem to negotiate no compression with remote modems. This is used when placing outgoing (callback) ARAP calls.
No echo (NEC)	Requests the modem <i>not</i> to echo characters. This is commonly “E0.”
No response codes (NRS)	Requests the modem <i>not</i> to send a response when you issue a command. This is commonly “Q1.”
Set Caller ID (CID)	Requests that Caller ID information be returned when dialin occurs. Currently not used.
Miscellaneous strings (MSC)	Sends any extra commands that are needed for the modem to work (possibly with specific platforms).
Template entry (TPL)	This is the name of another modem type. It is referenced as the value of any of the previously listed attributes if they are not set on the current modem type.

As an alternative to repeatedly entering the same data, use templates as a way to join modemcap entries. For example, consider the following modemcap entries:

```
modemcap entry gv_basics:FD=&F:AA=S0=1:CD=&C1:DTR=&D2:NEC=E0:NRS=Q1
modemcap entry global_village:HFL=&K3\X1:BCP=%C1:NCP=%C0:TPL=gv_basics
modemcap entry gv_teleport:NCP=%C0:TPL=gv_basics
```

To look up the factory default for a global_village modem, perform the following steps:

-
- Step 1** Look at the global_village modemcap entry for the factory default (FD).
 - Step 2** If you fail to find FD in global_village, look at the global_village modemcap entry for a template (TPL).
 - Step 3** Find a TPL called “gv_basics.”
 - Step 4** Look in the gv_basics modemcap entry for the FD.
 - Step 5** Find FD=&F in the gv_basics modemcap entry.
 - Step 6** Use &F as the FD for the global_village.
-

Examples

The following example shows the modem values in a Codex_3260:

```
show modemcap Codex_3260
```

Related Commands

Command	Description
modemcap edit	Changes a modem value that was returned from the show modemcap command.
modemcap entry	Stores and compresses information about the capability of a specified modem.

■ show modemcap