



Wholesale Dial SNMP MIBs

This section describes the MIBs and OIDs used to manage the dial Internet access service in the case study. See the following tables and choose the variables you want to use in your network.



Caution

Polling OIDs that retrieve large amounts of data can cause CPU problems on a Cisco IOS device. For example, do not retrieve the ARP table, walk large portions of a MIB tree, poll the wrong OID too frequently, or get statistics that have an entry for every interface.

Table B-1 lists key MIBs that apply to dial environments.

Table B-1 MIBs to Consider Using for the Dial NMS

Dial Related	System Management	MIB II / Interfaces
CISCO-POP-MGMT-MIB ¹	OLD-CISCO-CHASSIS	RFC1213-MIB
CISCO-MODEM-MGMT-MIB	CISCO-MEMORY-POOL-MIB	IF-MIB
CISCO-VPDN-MGMT-MIB	CISCO-SYSTEM-MIB	CISCO-CAS-IF-MIB
CISCO-AAA-SESSION-MIB	CISCO-FLASH-MIB	CISCO-ISDN-MIB
CISCO-AAA-SERVER-MIB	CISCO-CONFIG-MAN-MIB	
CISCO-CALL-HISTORY-MIB	CISCO-PROCESS-MIB	
CISCO-DIAL-CONTROL-MIB		
CISCO-CALL-RESOURCE-POOL-MIB		

1. This MIB was enhanced in Cisco IOS Release 12.1(2)XH and later releases.

Additional information:

- For a complete list of available Cisco MIBs, go to <http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>
- For a list of Cisco-supported traps, go to <http://www.cisco.com/public/mibs/traps>
- For more information about other NMS enhancements for dial, see *Call Tracker plus ISDN and AAA Enhancements for the Cisco AS5300 and Cisco AS5800* at http://www.cisco.com/univercd/cc/td/doc/product/software/ios121/121newft/121limit/121x/121xh/121xh_2/dt_cltrk.htm

**Note**

To protect a network access server from over polling, use the SNMP get bulk feature. It's available in SNMP v2 in CISCO-BULK-FILE-MIB.

Table B-2 and Table B-3 identify useful OIDs and variables within selected MIBs from Table B-1. Equivalent Cisco IOS commands are shown where applicable. Sometimes data is more clearly inspected by using OIDs and a graphing tool instead of CLI commands.

To see the complete structure of the CISCO-POP-MGMT-MIB and CISCO-MODEM-MGMT-MIB, go to the following URLs:

- CISCO-POP-MGMT-MIB
<http://www.cisco.com/univercd/cc/td/doc/cisintwk/intsolns/dialnms/popmgt.txt>
- CISCO-MODEM-MGMT-MIB
<http://www.cisco.com/univercd/cc/td/doc/cisintwk/intsolns/dialnms/modemmgt.txt>

Table B-2 Description of CISCO-POP-MGMT-MIB

Description	OID	Equivalent Cisco IOS Command
Number of analog calls connected	cpmISDNCfgBChanInUseForAnalog .1.3.6.1.4.1.9.10.19.1.1.2	show modem summary
Number of active DS0s in use	cpmActiveDS0s .1.3.6.1.4.1.9.10.19.1.1.4	show controllers t1 call-counters show isdn memory (See the number of call control blocks, CCBs, in the command output.)
Total call count per DS0	cpmCallCount .1.3.6.1.4.1.9.10.19.1.1.1.7	show controllers t1 call-counters
Total time in use for each DS0	cpmTimeInUse .1.3.6.1.4.1.9.10.19.1.1.1.8	show controllers t1 call-counters
Total octets received on a DS0	cpmInOctets .1.3.6.1.4.1.9.10.19.1.1.1.9	None available
Total octets transmitted on a DS0	cpmOutOctets .1.3.6.1.4.1.9.10.19.1.1.1.10	None available
Total packets received on a DS0	cpmInPackets .1.3.6.1.4.1.9.10.19.1.1.1.11	None available
Total packets transmitted on a DS0	cpmOutPackets .1.3.6.1.4.1.9.10.19.1.1.1.12	None available
Number of active PPP calls	cpmPPPCalls .1.3.6.1.4.1.9.10.19.1.1.5	None available
Number of active V120 calls	cpmV120Calls .1.3.6.1.4.1.9.10.19.1.1.6	None available

Table B-2 Description of CISCO-POP-MGMT-MIB (continued)

Description	OID	Equivalent Cisco IOS Command
Number of active V110 calls	cpmV110Calls .1.3.6.1.4.1.9.10.19.1.1.7	None available
Maximum number of DS0s used simultaneously	cpmActiveDS0sHighWaterMark .1.3.6.1.4.1.9.10.19.1.1.8	show controllers t1 call-counters
Type of call currently connected to each DS0	cpmDS0CallType .1.3.6.1.4.1.9.10.19.1.1.1.5	None available

Table B-3 Description of CISCO-MODEM-MGMT-MIB

Variable Description	OID	Equivalent Cisco IOS Command
Modems available to take calls	cmSystemModemsAvailable .1.3.6.1.4.1.9.9.47.1.1.7	show modem summary
Average call duration for each modem	cmCallDuration .1.3.6.1.4.1.9.9.47.1.3.1.9	show modem
Number of times each modem failed to answer	cmRingNoAnswers .1.3.6.1.4.1.9.9.47.1.3.3.1.1	show modem
Number of times each modem failed to train up successfully	cmIncomingConnectionFailures .1.3.6.1.4.1.9.9.47.1.3.3.1.2	show modem
Number of times each modem successfully trained up	cmIncomingConnectionCompletions .1.3.6.1.4.1.9.9.47.1.3.3.1.3	show modem
Current TX speed for all the modems	cmTXRate .1.3.6.1.4.1.9.9.47.1.3.1.1.14	show modem connect-speeds
Current RX speed for all the modems	cmRXRate .1.3.6.1.4.1.9.9.47.1.3.1.1.15	show modem connect-speeds
List of users currently connected and authenticated	cpmActiveUserID .1.3.6.1.4.1.9.10.19.1.3.1.1.3	show caller
Call durations for currently connected and authenticated users	cpmActiveCallDuration .1.3.6.1.4.1.9.10.19.1.3.1.1.8	show caller
List of user CLIDs	cpmActiveRemotePhoneNumber .1.3.6.1.4.1.9.10.19.1.3.1.1.2	show caller ip show isdn history
List of called DNIS phone numbers	cpmActiveLocalPhoneNumber .1.3.6.1.4.1.9.10.19.1.3.1.1.13	show caller ip
List of TTY interfaces in use	cpmActiveTTYNumber .1.3.6.1.4.1.9.10.19.1.3.1.1.14	show caller ip

Table B-3 Description of CISCO-MODEM-MGMT-MIB (continued)

Variable Description	OID	Equivalent Cisco IOS Command
List of which user is using which modem slot	cpmActiveModemSlot .1.3.6.1.4.1.9.10.19.1.3.1.1.6	show caller user
List of which user is using which modem port	cpmActiveModemPort .1.3.6.1.4.1.9.10.19.1.3.1.1.7	show caller user
List of which IP addresses are currently in use	cpmActiveUserIpAddr .1.3.6.1.4.1.9.10.19.1.3.1.1.4	show caller ip

SNMP OIDs and MIBs

SNMP uses *Object Identifiers* (OIDs) to represent managed system variables. OIDs must be known to the management station as well as the managed agent that resides on the managed device. A defined collection or group of OIDs makes up a *Management Information Base* (MIB). A MIB is generally grouped by its area of management. For example, Cisco's CISCO-ISDN-MIB-V1SMI.my MIB provides objects or OIDs to manage ISDN connections.

The construction of SNMP OIDs and MIBs are defined in the SNMP Structure of Management Information (SMI). The SMI is defined in RFC 1155, RFC 1212, and RFC 1215. The SNMP SMI states that each managed object must have a *name*, a *syntax*, and an *encoding*. The name (corresponding to the OID) uniquely identifies the object. The syntax defines the type of data. The encoding defines how the data associated with the OID is serialized for transmission.



Note

You can download Cisco SNMP MIBs from the following FTP server location:
<ftp://ftp.cisco.com/pub/mibs/>

Each object's unique OID is written as a sequence of integers separated by periods. For example, the numeric OID `.1.3.6.1.2.1.1.5` corresponds to the OID name `sysName`. From an operational perspective, a management station sends a `Get` request with this (or some other) OID. The managed device receives the request and returns an appropriate response (in this case the host name of the device) back to the management station. If the managed device does not know the OID, it replies with no information.

OIDs are organized into a tree structure. For more information on this tree structure go to:

- http://www.cisco.com/univercd/cc/td/doc/cisintwk/ito_doc/snmp.htm

Within this tree structure, each level (or branch) of the tree is assigned a unique mnemonic name—down to the object itself. These names directly correspond to the OID. For example, using the `sysName` example, the OID `.1.3.6.1.2.1.1.5` can be expressed as follows:

- `.ios(1).org(3).dod(6).internet(1).mgmt(2).mib-2(1).system(1).sysName(5)`

Each object is assigned a unique mnemonic name to simplify identification. This OID can be referred to as `sysName`, because no other object possesses the same name.

The leading point (or dot) at the beginning of an OID asserts that the name of the OID starts at the *root* of the respective MIB. With a Cisco MIB, the first integer is always the integer 1 and corresponds to `ios`. In some cases, an OID is written with the first few integers removed because these integers are the same for every OID; however, this document uses the full numeric OID, but refers its unique mnemonic name—such as `sysName`.

