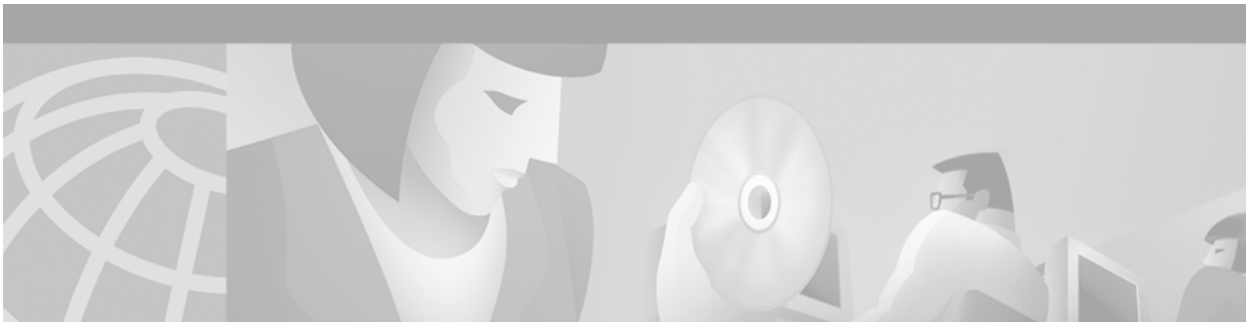


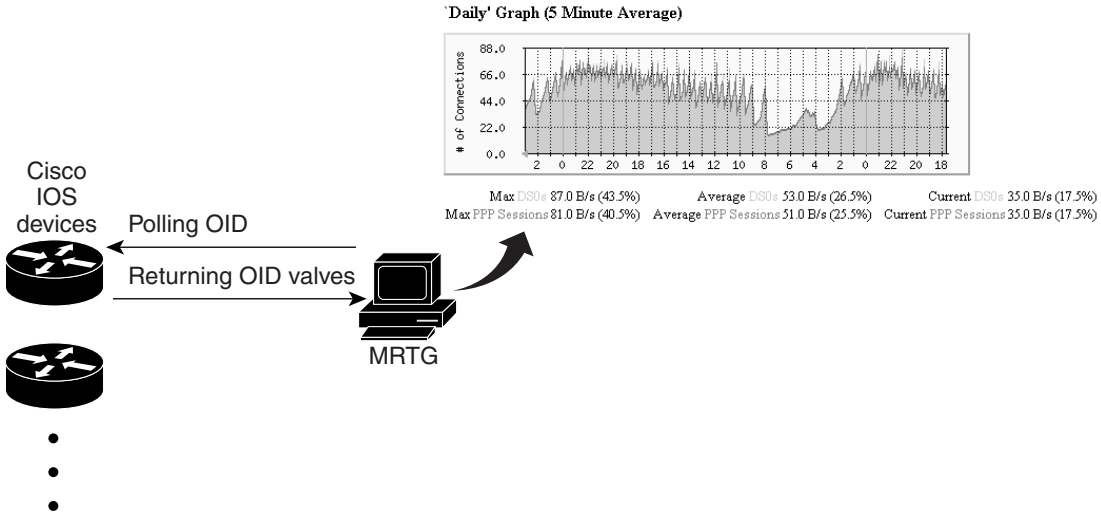
Task 3—Using MRTG to Monitor and Graph Traffic Loads

About MRTG

Multi Router Traffic Grapher (MRTG) is a free performance management application for Unix; it monitors SNMP statistics from any SNMP-capable device on your network and:

- Captures, stores, and graphically presents SNMP data. By default, a web page with four graphs per MIB object (OID) is created by MRTG. The graphs show the variation of MIB data over time.
- Runs from the crontab. Every five minutes, a cron job runs MRTG to query a user-configured list of OIDs and network devices. After each data collection cycle, the MRTG perl script posts updated graphs to a web page.
- Efficiently compresses and archives data samples to create graphs.
- Enables you to determine if trending data is useful for monitoring your environment before you invest in costly network performance software. If trending data is critical to manage your network, it may be necessary to purchase a commercial network performance package, such as Concord Network Health. However, you may find that MRTG is all you need.
- Is available from http://ee-staff.ethz.ch/~oetiker/webtools/mrtg/mrtg.html

Figure 10 MRTG Polls for OIDs; OID Values that Are Returned to MRTG



For each OID referenced in the configuration file, MRTG creates the following graphs:

- **Daily graph**—5 minute average data points with approximately 33 hours of data presented.
- **Weekly graph**—30 minute average data points with approximately 8 days of data presented.
- **Monthly graph**—2 hour average data points with approximately 5 weeks of data presented.
- **Yearly graph**—1 day average data points with approximately 1 year of data presented.

To quickly create images by using the GD graphics library, go to http://www.boutell.com/gd

About Selecting Dial OIDs

To select which dial OIDs to query when monitoring dial-up activity, see the OIDs listed in the following tables:

- Circuit utilization OIDs (Table 14)
- Modem information OIDs (Table 15)
- User information OIDs (Table 16)

Caution Be cautious when polling network elements. Polling OIDs that retrieve large amounts of data can cause CPU problems on a Cisco IOS device. For example, do not get 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. For example, a Cisco 7200 may have 10 interfaces; whereas, a Cisco AS5800 may have 3,000 interfaces.

In this case study, the tools UCD-SNMP and SNMP Commander were used to inspect and understand the MIBs. Based on this research, the network engineers at THEnet identified the OIDs in the following tables to program in to MRTG.

To see the complete structure of the CISCO-POP-MGMT-MIB and CISCO-MODEM-MGMT-MIB, See the Appendix at the end of this document. For further MIB information, refer to the following links:

- For descriptions of supported MIBs and how to use MIBs, see the Cisco MIB web site on Cisco.com at the following URL: http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml.
- To obtain lists of MIBs supported by platform and Cisco IOS release and to download MIB modules, go to the Cisco MIB web site on Cisco.com at the following URL: http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml.

Table 14 Circuit Utilization OIDs

Variable	Base MIB and OID	Description
Analog calls	CISCO-POP-MGMT-MIB 1.3.6.1.4.1.9.10.19.1.1.2	The number of analog calls connected.
Active DS0s	CISCO-POP-MGMT-MIB 1.3.6.1.4.1.9.10.19.1.1.4	The total number of calls connected.
Call count	CISCO-POP-MGMT-MIB 1.3.6.1.4.1.9.10.19.1.1.1.1.7	The number of calls that have occupied a specific DS0.

Table 14 Circuit Utilization OIDs (continued)

Variable	Base MIB and OID	Description
Time in use	CISCO-POP-MGMT-MIB 1.3.6.1.4.1.9.10.19.1.1.1.1.8	The time for each DS0.
PPP calls	CISCO-POP-MGMT-MIB 1.3.6.1.4.1.9.10.19.1.1.5	The number of active PPP calls.
DS0 high water mark	CISCO-POP-MGMT-MIB 1.3.6.1.4.1.9.10.19.1.1.8	The maximum number of DS0s ever used simultaneously.

Table 15 Modem Information OIDs

Variable	Base MIB and OID	Description
Modems available	CISCO-MODEM-MGMT-MIB 1.3.6.1.4.1.9.9.47.1.1.7	The number of modems currently available to take calls.
Average call duration	CISCO-MODEM-MGMT-MIB 1.3.6.1.4.1.9.9.47.1.3.1.1.9	The average call duration for each modem in the NAS.
No answers	CISCO-MODEM-MGMT-MIB 1.3.6.1.4.1.9.9.47.1.3.3.1.1	The number of calls not answered by a modem.
Failed Train	CISCO-MODEM-MGMT-MIB 1.3.6.1.4.1.9.9.47.1.3.3.1.2	The number of modem calls that failed to train up. It's normal behavior for most modems to not have a 100 percent success rate.
Successful train	CISCO-MODEM-MGMT-MIB 1.3.6.1.4.1.9.9.47.1.3.3.1.3	The number of modem calls that successfully trained up. It's normal for most modems to not have a 100 percent success rate.
TX speed	CISCO-MODEM-MGMT-MIB 1.3.6.1.4.1.9.9.47.1.3.1.1.14	The current transmit speed (TX) of all the modems in the NAS. If a modem does not have an active call, zero is returned.
RX speed	CISCO-MODEM-MGMT-MIB 1.3.6.1.4.1.9.9.47.1.3.1.1.15	The current receive speed (RX) of all the modems in the NAS. If a modem does not have an active call, zero is returned.

Table 16 User Information OIDs

Variable	*Base MIB and OID*	Description
Active user ID	CISCO-MODEM-MGMT-MIB .1.3.6.1.4.1.9.10.19.1.3.1.1.3	List of users currently connected and authenticated.
Active call duration	CISCO-MODEM-MGMT-MIB .1.3.6.1.4.1.9.10.19.1.3.1.1.8	Call durations for currently connected and authenticated users.
User CLID	CISCO-MODEM-MGMT-MIB .1.3.6.1.4.1.9.10.19.1.3.1.1.2	List of user Caller IDs (CLID).
DNIS phone number	CISCO-MODEM-MGMT-MIB .1.3.6.1.4.1.9.10.19.1.3.1.1.13	List of called Dialed Number Information Service (DNIS) phone numbers.
Active TTY	CISCO-MODEM-MGMT-MIB .1.3.6.1.4.1.9.10.19.1.3.1.1.14	List of asynchronous terminal lines (TTY) in use.
Active modem slot	CISCO-MODEM-MGMT-MIB .1.3.6.1.4.1.9.10.19.1.3.1.1.6	List of which user is using which modem slot.
Active modem port	CISCO-MODEM-MGMT-MIB .1.3.6.1.4.1.9.10.19.1.3.1.1.7	List of which user is using which modem port.
Active user IP	CISCO-MODEM-MGMT-MIB .1.3.6.1.4.1.9.10.19.1.3.1.1.4	List of which IP addresses are currently in use.

How to Inspect and Interpret Data

Internet users spend approximately 80 percent of their time reading information—not downloading data. Modem traffic is very limited on a per user basis. People cannot read as fast as modems can download. Therefore, watch for the following types of trends and performance data on the access servers:

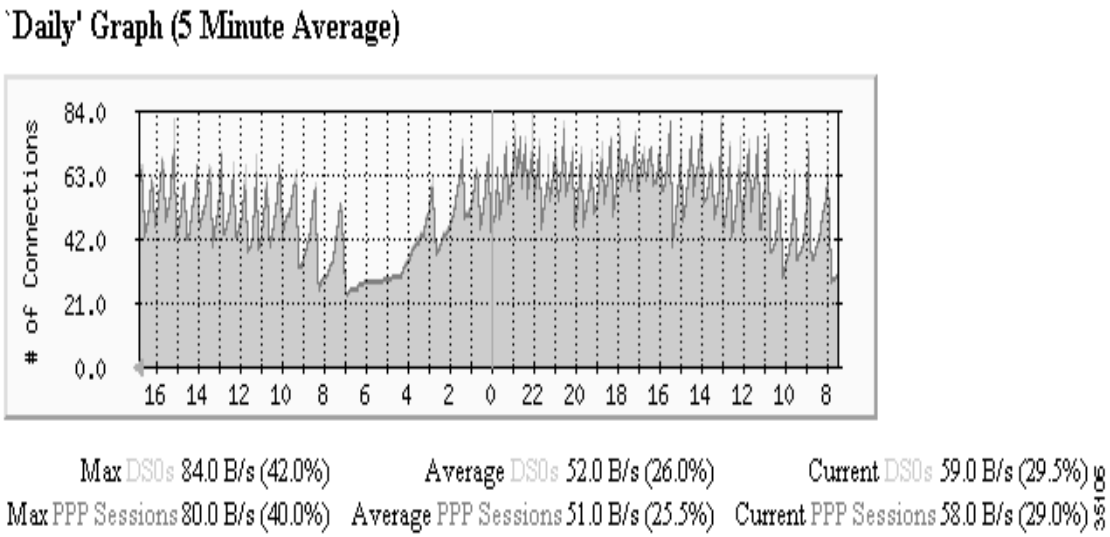
- PPP sessions in use.
- DS0s in use.
- Modem calls that have been rejected.
- The number of calls coming in to the access server and at what time.
- Spikes or dips in total calls connected outside the normal call pattern.
- Long-term trends that may mean that you need to upgrade components in your network.
- Throughput that has been reduced to unacceptable levels (potential bottlenecks).
- For disaster recovery purposes, when fail over events and routing swaps occur, look for drops in the primary data path and jumps in the backup path.
- The utilization of the IP backbone, such as a Frame Relay link or Ethernet campus.

The Connection Success Rate (CSR) is an important metric for tracking and measuring the stability of a dial service. The CSR is defined by the number of modems that successfully train up and go in to connected state. In addition to the CSR, you must track and analyze additional areas. For example, SNMP MIBs can be used to measure the success rate for items such as PPP, AAA, and IP negotiation.

To collect the CSR service level counters, inspect the connection success and failure rate by using modem OIDs or the **show modem** Cisco IOS command. SNMP, rather than the Cisco IOS CLI, is the preferred method to collect these counters. SNMP can scale to support large numbers of access servers.

The following graphs show the DS0s and PPP sessions in use for 70,000 modem users calling in to a dial-up service at a large university. The graphs are taken from one Cisco AS5300 in a large dial-up modem pool.

Figure 11 Daily Graph: DS0s and PPP Sessions in Use



The jagged saw-tooth pattern at the top of the graph indicates a telephone-switch hunt group for the dial lines passing by the access servers. A “jump up” occurs each time the hunt group passes by a different T1 line. For a hunt group that rotates in a round-robin fashion, a jagged saw-tooth pattern is normal.

Figure 12 Weekly Graph: DS0s and PPP Sessions in Use

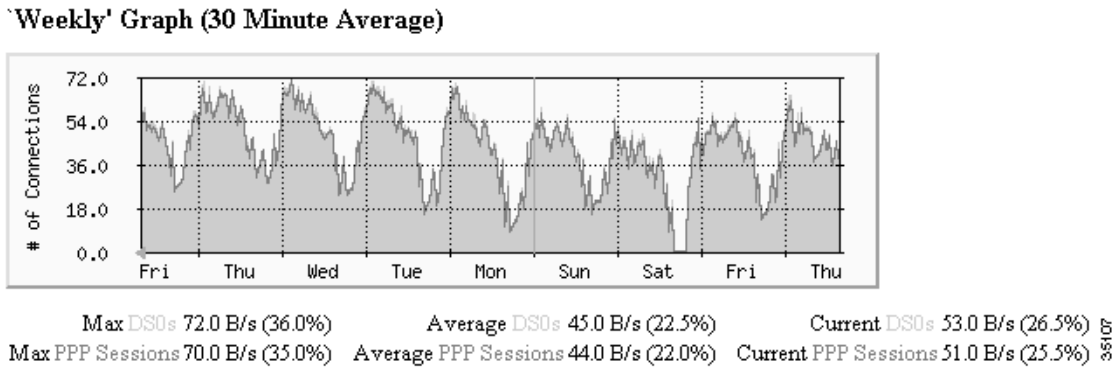
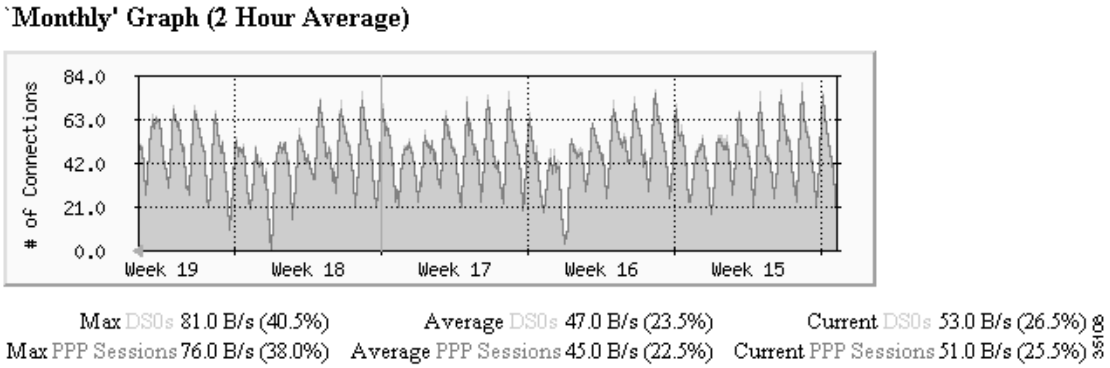
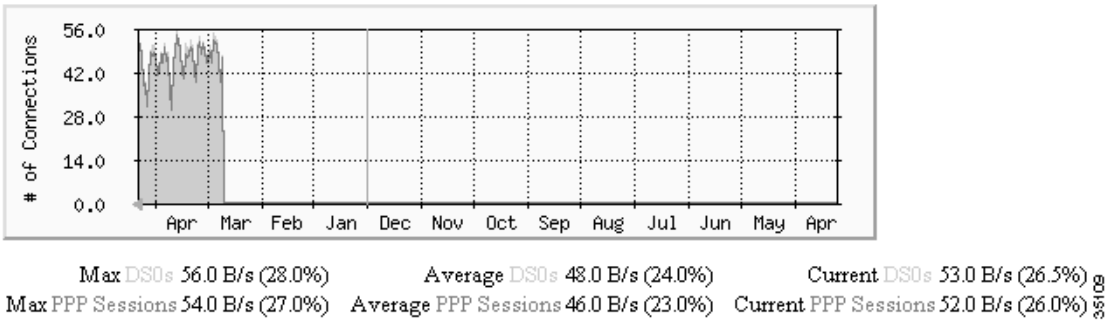


Figure 13 Monthly Graph: DS0s and PPP Sessions in Use



MRTG efficiently compresses and archives data to create graphs. For example, you can keep information for an entire year on a server without using much disk space.

Figure 14 Yearly Graph: DS0s and PPP Sessions in Use



The following is configuration file used to create these graphs. Note the numeric OIDs in the configuration file.

```
WorkDir: /opt/mrtg-2.8.8/output

Options[_]: bits
######################################################################
# Description: Cisco Internetwork Operating System Software <BR>IOS (tm) 5300 Software
(C5300-JS-M), Version 11.3(6)T1,  RELEASE SOFTWARE (fc1) <BR>Copyright (c) 1986-1998 by
Cisco Systems, Inc.<BR>Compiled Fri 16-Oct-98 03:37 by ccai
# Contact: coe-iae@cisco.com
# System Name: Travis53
#    Location:
#---------------------------------------------------------------
#This is the configuration for the Fast Ethernet port
#
Target[travis-as5800-01.the.net]: 2:public@travis-as5800-01.the.net
MaxBytes[travis-as5800-01.the.net]: 12500000
Title[travis-as5800-01.the.net]: Travis53 (travis-as5800-01.the.net): FastEthernet0
PageTop[travis-as5800-01.the.net]: <H1>Traffic Analysis for FastEthernet0 </H1>
 <TABLE>
   <TR><TD>System:</TD><TD>Travis53 </TD></TR>
   <TR><TD>Maintainer:</TD><TD></TD></TR>
   <TR><TD>Interface:</TD><TD>FastEthernet0 (2)</TD></TR>
   <TR><TD>IP:</TD><TD>travis-as5800-01.the.net (209.165.202.128)</TD></TR>
   <TR><TD>Max Speed:</TD>
       <TD>12.5 MBytes/s (ethernetCsmacd)</TD></TR>
  </TABLE>

#---------------------------------------------------------------
#This is the configuration to get DSOs and PPP Sessons
#
Target[travis53_active_connections]:1.3.6.1.4.1.9.10.19.1.1.4.0&1.3.6.1.4.1.9.10.19.1.1.5
.0:public@travis-as5800-01.the.net
Maxbytes[travis53_active_connections]: 200
Ylegend[travis53_active_connections]: # of Connections
LegendI[travis53_active_connections]: DS0s
LegendO[travis53_active_connections]: PPP Sessions
Title[travis53_active_connections]: DS0s and PPP sessions in Use
PageTop[travis53_active_connections]: <H1>DS0s and PPP sessions in Use</H1>
 <TABLE>
   <TR><TD>System:</TD><TD>Travis53</TD></TR>
   <TR><TD>MRTG by coe-iae@cisco.com</TD><TD></TD></TR>
   <TR><TD>DS0s and PPP sessions in Use</TD><TD></TD></TR>
  </TABLE>
Options[travis53_active_connections]: gauge

#---------------------------------------------------------------
# Monitoring Modem calls_rejected and Modem calls_rejected_for_no_modem
#---------------------------------------------------------
Target[travis53_calls_rejected]:1.3.6.1.4.1.9.10.19.1.2.2.0&1.3.6.1.4.1.9.10.19.1.2.6.0:p
ublic@travis-as5800-01.the.net
Maxbytes[travis53_calls_rejected]:2000
Ylegend[travis53_calls_rejected]: # Modem calls
LegendI[travis53_calls_rejected]:Rejected
LegendO[travis53_calls_rejected]:Rejected for no modem
Title[travis53_calls_rejected]:Number of modem calls rejected and rejected_for_no_modem
PageTop[travis53_calls_rejected]: <H1>Number of modem calls calls_rejected and
rejected_for_no_modem</H1>
 <TABLE>
   <TR><TD>System:</TD><TD>Travis53</TD></TR>
   <TR><TD>MRTG by coe-iae@cisco.com</TD><TD></TD></TR>
   <TR><TD>Number of modem calls calls_rejected and
calls_rejected_for_no_modem</TD><TD></TD></TR>
```

```
</TABLE>
```

Creating and Editing a Configuration File

Because dial interfaces normally go up and down as calls connect and disconnect, monitor counters such as:

- PPP sessions in use
- DS0s in use
- Modem calls that have been rejected

Depending on how the dial interfaces are used on a access server, different types of counters may not be valuable to monitor, such as byte-packet counters on the interfaces in Table 17.

Table 17 Dial Interface Types on a Cisco AS5800

Interface Type	Syntax Example
Asynchronous	Async1/2/00
B-channel serial	Serial1/0/0:1
D-channel serial	Serial1/0/0:23
Group asynchronous	Group-Async0
T1/E1 controllers	T1 1/0/0

To enable MRTG to locate a device and poll it for network statistics, follow these steps:

Step 1 Collect the hostnames, IP address, and read only (RO) SNMP community strings for the devices to be monitored.

Step 2 Download, compile, and install MRTG on to a Solaris workstation:

- For the source code, go to http://ee-staff.ethz.ch/~oetiker/webtools/mrtg/pub/
- For the documentation, see the section "Getting and Installing MRTG on a UNIX System" at http://ee-staff.ethz.ch/~oetiker/webtools/mrtg/mrtg.html

Step 3 Create a configuration file.

There are two basic ways to create the file:

- Manually create it by using the MRTG files config.text and sample-mrtg.config. These files are in the /mrtg/doc directory.

  or

- Use the configuration maker (cfgmaker) in the /mrtg/run directory. MRTG creates a basic configuration file for you. The default configuration file made with cfgmaker automatically polls for a standard set of MIBs and pre-defined values.

  Generic command syntax:

  ```
  ./cfgmaker communitystring@hostname-or-ipaddress >> outputfilename.cfg
  ```

Example:

```
./cfgmaker 5urf5h0p@travis-nas-01 >> travis-nas-01.cfg
```

In the previous example:

5urf5h0p is the SNMP community string.

travis-nas-01 is the hostname of the managed device.

travis-nas-01.cfg is the configuration file that MRTG reads each time it starts up.

Note If the domain name server (DNS) is not working, MRTG cannot use a hostname. You must use an IP address instead.

Step 4 By using a text editor, edit the configuration file (.cfg) to enable polling of dial variables and OIDs. For a complete list of OIDs to poll, see the "About Selecting Dial OIDs" section on page 54.

The following configuration file is from a Cisco AS5300. This file can be used as a configuration template for your environment, but use your own community string, work directory, and device name.

The following definitions are used in the example:

- The RO community string is `5urf5h0p`
- The work directory is `WorkDir: /export/home/www/mrtg/travis-nas-01/dial`
- The device name is `travis-nas-01`

```
WorkDir: /export/home/www/mrtg/travis-nas-01/dial
# set defaults
Options[_]: growright
# make legends reflect these are call counters
YLegend[_]: Active Calls
ShortLegend[_]: calls
LegendI[_]:  calls:
LegendO[_]:  calls:

######################################################################
#-------------------------------------------------------------------------------------------
------
# purpose: DS0s and PPP Sessions.
#-------------------------------------------------------------------------------------------
------
Target[travis-nas-01_DS0PPP]:
1.3.6.1.4.1.9.10.19.1.1.4.0&1.3.6.1.4.1.9.10.19.1.1.5.0:5urf5h0p@travis-nas-01
MaxBytes1[travis-nas-01_DS0PPP]: 200
MaxBytes2[travis-nas-01_DS0PPP]: 200
Title[travis-nas-01_DS0PPP]: DS0s and PPP sessions in Use
PageTop[travis-nas-01_DS0PPP]: <H2>DS0s and PPP sessions in Use</H2>
 <TABLE>
   <TR><TD>Device:</TD><TD>travis-nas-01</TD></TR>
   <TR><TD><a href="/mrtg/mrtg.html">HOME</a></TD></TR>
  </TABLE>
Options[travis-nas-01_DS0PPP]: gauge

#-------------------------------------------------------------------------------------------
# purpose: DS0s and Analog
#-------------------------------------------------------------------------------------------
Target[travis-nas-01_DS0ANALOG]:
1.3.6.1.4.1.9.10.19.1.1.4.0&1.3.6.1.4.1.9.10.19.1.1.2.0:5urf5h0p@travis-nas-01
MaxBytes1[travis-nas-01_DS0ANALOG]: 200
MaxBytes2[travis-nas-01_DS0ANALOG]: 200
```

```
Title[travis-nas-01_DS0ANALOG]: DS0s and Analog in Use
PageTop[travis-nas-01_DS0ANALOG]: <H2>DS0s and Analog in Use</H2>
 <TABLE>
   <TR><TD>Device:</TD><TD>travis-nas-01</TD></TR>
   <TR><TD><a href="/mrtg/mrtg.html">HOME</a></TD></TR>
  </TABLE>
Options[travis-nas-01_DS0ANALOG]: gauge

#--------------------------------------------------------------------------------------------
------
# purpose: DS0s and SerialX:Y
#--------------------------------------------------------------------------------------------
------
Target[travis-nas-01_DS0SERIAL]:
1.3.6.1.4.1.9.10.19.1.1.4.0&1.3.6.1.4.1.9.10.19.1.1.3.0:5urf5h0p@travis-nas-01
MaxBytes1[travis-nas-01_DS0SERIAL]: 200
MaxBytes2[travis-nas-01_DS0SERIAL]: 200
Title[travis-nas-01_DS0SERIAL]: DS0s and SerialX:Y in Use
PageTop[travis-nas-01_DS0SERIAL]: <H2>DS0s and SerialX:Y in Use</H2>
 <TABLE>
   <TR><TD>Device:</TD><TD>travis-nas-01</TD></TR>
   <TR><TD><a href="/mrtg/mrtg.html">HOME</a></TD></TR>
  </TABLE>
Options[travis-nas-01_DS0SERIAL]: gauge

#--------------------------------------------------------------------------------------------
------
# purpose: DS0s and Sw56
#--------------------------------------------------------------------------------------------
------
Target[travis-nas-01_DS0Sw56]:
1.3.6.1.4.1.9.10.19.1.1.4.0&1.3.6.1.4.1.9.10.19.1.1.10.0:5urf5h0p@travis-nas-01
MaxBytes1[travis-nas-01_DS0Sw56]: 200
MaxBytes2[travis-nas-01_DS0Sw56]: 200
Title[travis-nas-01_DS0Sw56]: DS0s and Sw56 in Use
PageTop[travis-nas-01_DS0Sw56]: <H2>DS0s and Sw56 in Use</H2>
 <TABLE>
   <TR><TD>Device:</TD><TD>travis-nas-01</TD></TR>
   <TR><TD><a href="/mrtg/mrtg.html">HOME</a></TD></TR>
  </TABLE>
Options[travis-nas-01_DS0Sw56]: gauge

#--------------------------------------------------------------------------------------------
------
# purpose: cpmISDNCallsRejected and cpmModemCallsRejected
#--------------------------------------------------------------------------------------------
------
Target[travis-nas-01_callrejects]:
1.3.6.1.4.1.9.10.19.1.2.1.0&1.3.6.1.4.1.9.10.19.1.2.2.0:5urf5h0p@travis-nas-01
MaxBytes1[travis-nas-01_callrejects]: 200
MaxBytes2[travis-nas-01_callrejects]: 200
Title[travis-nas-01_callrejects]: travis-nas-01 cpmISDNCallsRejected and
cpmModemCallsRejected
PageTop[travis-nas-01_callrejects]: <H2>cpmISDNCallsRejected and
cpmModemCallsRejected</H2>
 <TABLE>
   <TR><TD>Device:</TD><TD>travis-nas-01</TD></TR>
   <TR><TD><a href="/mrtg/mrtg.html">HOME</a></TD></TR>
  </TABLE>

#--------------------------------------------------------------------------------------------
------
# purpose: cpmISDNCallsClearedAbnormally and cpmModemCallsClearedAbnormally
```

```
#-------------------------------------------------------------------------------------------
------
Target[travis-nas-01_clearAbnormal]:
1.3.6.1.4.1.9.10.19.1.2.3.0&1.3.6.1.4.1.9.10.19.1.2.4.0:5urf5h0p@travis-nas-01
MaxBytes1[travis-nas-01_clearAbnormal]: 200
MaxBytes2[travis-nas-01_clearAbnormal]: 200
Title[travis-nas-01_clearAbnormal]: travis-nas-01 cpmISDNCallsClearedAbnormally and
cpmModemCallsClearedAbnormally
PageTop[travis-nas-01_clearAbnormal]: <H2>cpmISDNCallsClearedAbnormally and
cpmModemCallsClearedAbnormally</H2>
 <TABLE>
   <TR><TD>Device:</TD><TD>travis-nas-01</TD></TR>
   <TR><TD><a href="/mrtg/mrtg.html">HOME</a></TD></TR>
  </TABLE>

#-------------------------------------------------------------------------------------------
------
# purpose: cpmISDNNoResource and cpmModemNoResource
#-------------------------------------------------------------------------------------------
------
Target[travis-nas-01_callNoResource]:
1.3.6.1.4.1.9.10.19.1.2.5.0&1.3.6.1.4.1.9.10.19.1.2.6.0:5urf5h0p@travis-nas-01
MaxBytes1[travis-nas-01_callNoResource]: 200
MaxBytes2[travis-nas-01_callNoResource]: 200
Title[travis-nas-01_callNoResource]: travis-nas-01 cpmISDNNoResource and
cpmModemNoResource
PageTop[travis-nas-01_callNoResource]: <H2>cpmISDNNoResource and cpmModemNoResource</H2>
 <TABLE>
   <TR><TD>Device:</TD><TD>travis-nas-01</TD></TR>
   <TR><TD><a href="/mrtg/mrtg.html">HOME</a></TD></TR>
  </TABLE>

#-------------------------------------------------------------------------------------------
------
# purpose: cmSystemModemsInUse and cmSystemModemsAvailable
#-------------------------------------------------------------------------------------------
------
Target[travis-nas-01_modemcount]:
1.3.6.1.4.1.9.9.47.1.1.6.0&1.3.6.1.4.1.9.9.47.1.1.7.0:5urf5h0p@travis-nas-01
MaxBytes1[travis-nas-01_modemcount]: 200
MaxBytes2[travis-nas-01_modemcount]: 200
Title[travis-nas-01_modemcount]: cmSystemModemsInUse and cmSystemModemsAvailable
PageTop[travis-nas-01_modemcount]: <H2>cmSystemModemsInUse and
cmSystemModemsAvailable</H2>
 <TABLE>
   <TR><TD>Device:</TD><TD>travis-nas-01</TD></TR>
   <TR><TD><a href="/mrtg/mrtg.html">HOME</a></TD></TR>
  </TABLE>
Options[travis-nas-01_modemcount]: gauge

#-------------------------------------------------------------------------------------------
------
# purpose: cvpdnTunnelTotal and cvpdnDeniedUsersTotal
#-------------------------------------------------------------------------------------------
------
Target[travis-nas-01_vpdn_tunnelanddenied]:
1.3.6.1.4.1.9.10.24.1.1.1.0&1.3.6.1.4.1.9.10.24.1.1.3.0:5urf5h0p@travis-nas-01
MaxBytes1[travis-nas-01_vpdn_tunnelanddenied]: 200
MaxBytes2[travis-nas-01_vpdn_tunnelanddenied]: 200
Title[travis-nas-01_vpdn_tunnelanddenied]: cvpdnTunnelTotal and cvpdnDeniedUsersTotal
PageTop[travis-nas-01_vpdn_tunnelanddenied]: <H2>cvpdnTunnelTotal and
cvpdnDeniedUsersTotal</H2>
 <TABLE>
   <TR><TD>Device:</TD><TD>travis-nas-01</TD></TR>
```

```
   <TR><TD><a href="/mrtg/mrtg.html">HOME</a></TD></TR>
  </TABLE>
Options[travis-nas-01_vpdn_tunnelanddenied]: gauge

#------------------------------------------------------------------------------------------
------
# purpose: activeDS0s and cvpdnSessionTotal
#------------------------------------------------------------------------------------------
------
Target[travis-nas-01_activeDS0vpdnSession]:
1.3.6.1.4.1.9.10.19.1.1.4.0&1.3.6.1.4.1.9.10.24.1.1.2.0:5urf5h0p@travis-nas-01
MaxBytes1[travis-nas-01_activeDS0vpdnSession]: 200
MaxBytes2[travis-nas-01_activeDS0vpdnSession]: 200
Title[travis-nas-01_activeDS0vpdnSession]: activeDS0s and cvpdnSessionTotal
PageTop[travis-nas-01_activeDS0vpdnSession]: <H2>activeDS0s and cvpdnSessionTotal</H2>
 <TABLE>
   <TR><TD>Device:</TD><TD>travis-nas-01</TD></TR>
   <TR><TD><a href="/mrtg/mrtg.html">HOME</a></TD></TR>
  </TABLE>
Options[travis-nas-01_activeDS0vpdnSession]: gauge
```

Step 5 Open the crontab file in your system by entering **crontab -e**. The **-e** enables edit mode. You can run crontab from any directory.

```
igloo:/ ->crontab -e
"/tmp/crontabmMaqZd" 14 lines, 610 characters
#ident  "@(#)root       1.19    98/07/06 SMI"   /* SVr4.0 1.1.3.1       */
#
# The root crontab should be used to perform accounting data collection.
#
# The rtc command is run to adjust the real time clock if and when
# daylight savings time changes.
#
10 3 * * 0,4 /etc/cron.d/logchecker
10 3 * * 0   /usr/lib/newsyslog
15 3 * * 0 /usr/lib/fs/nfs/nfsfind
1 2 * * * [ -x /usr/sbin/rtc ] && /usr/sbin/rtc -c > /dev/null 2>&1
30 3 * * * [ -x /usr/lib/gss/gsscred_clean ] && /usr/lib/gss/gsscred_clean
```

Caution Although the crontab file is a flat text file, do not manually edit it by using **vi crontab**. vi can corrupt the crontab, which causes all cron jobs to stop working. You must use the **crontab -e** command, which synchronizes and updates all the crontab daemons accordingly.

Step 6 Insert the directory path for the MRTG configuration file (.cfg) you created. At the bottom of the file, enter a line similar to this one:

```
0,5,10,15,20,25,30,35,40,45,50,55 * * * * /opt/mrtg/run/mrtg
/opt/mrtg/run/conf/travis-nas-01.cfg
```

Note Do not forget to include a space between */mrtg* and */opt*

```
"/tmp/crontabmMaqZd" 14 lines, 610 characters
#ident  "@(#)root       1.19    98/07/06 SMI"   /* SVr4.0 1.1.3.1       */
#
# The root crontab should be used to perform accounting data collection.
#
# The rtc command is run to adjust the real time clock if and when
```

```
# daylight savings time changes.
#
10 3 * * 0,4 /etc/cron.d/logchecker
10 3 * * 0   /usr/lib/newsyslog
15 3 * * 0 /usr/lib/fs/nfs/nfsfind
1 2 * * * [ -x /usr/sbin/rtc ] && /usr/sbin/rtc -c > /dev/null 2>&1
30 3 * * * [ -x /usr/lib/gss/gsscred_clean ] && /usr/lib/gss/gsscred_clean
0,5,10,15,20,25,30,35,40,45,50,55 * * * * /opt/downloads/mrtg/mrtg-2.8.8/run/mrtg
/opt/downloads/mrtg/mrtg-2.8.8/run/travis-nas-01.cfg
```

On a 5-minute time interval, MRTG will start up, read the configuration file, and re-generate performance graphs.

Sending MRTG Graphs to a Web Server

MRTG builds all the graphs and web pages.

To browse and view the graphs produced by MRTG, make sure the web server is running. For information on how to set up a web server, go to http://www.apache.org/

To send MRTG graphs to a web server, follow these steps:

Step 1 Verify that the configuration file points to the correct working directory (WorkDir:) on your web server by entering the **more** command. See WorkDir: in the following example.

```
igloo:/opt/downloads/mrtg/mrtg-2.8.8/run ->more travis-nas-01.cfg
WorkDir: /export/home/www/mrtg/travis-nas-01/dial
# set defaults
Options[_]: growright
# make legends reflect these are call counters
YLegend[_]: Active Calls
ShortLegend[_]: calls
LegendI[_]:  calls:
LegendO[_]:  calls:
.
.
.
```

Step 2 To send the web pages and graphs to the web-server directory, enter the following command:

```
igloo:/opt/downloads/mrtg/mrtg-2.8.8/run ->./mrtg travis-nas-01.cfg
igloo:/opt/downloads/mrtg/mrtg-2.8.8/run ->
```

Now, the crontab will automatically perform this function every five minutes.

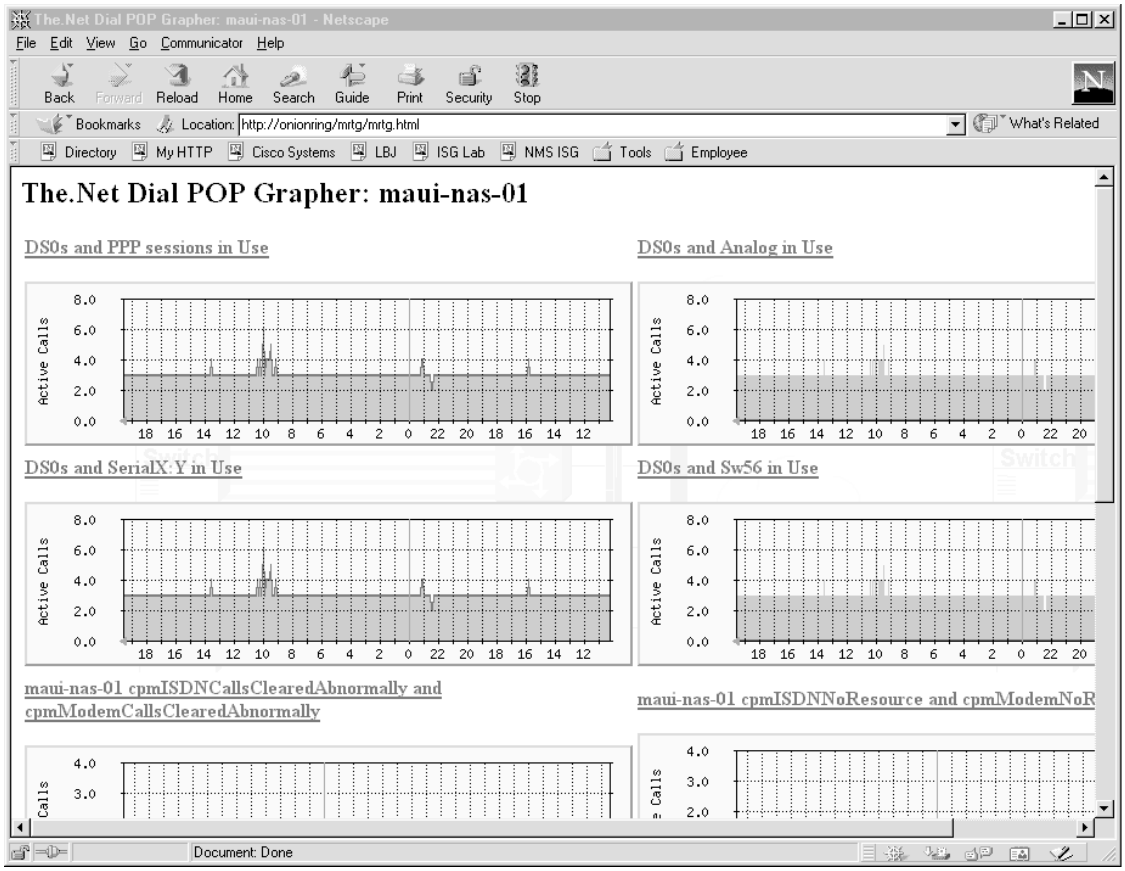
Ignore any Rateup WARNING errors, which means that crontab is working in the background.

```
Rateup WARNING: .//rateup The backup log file for 172.21.101.20.178 was invalidl
Rateup WARNING: .//rateup Can't remove 172.21.101.20.178.old updating log file
Rateup WARNING: .//rateup Can't rename 172.21.101.20.178.log to 172.21.101.20.1e
Rateup WARNING: .//rateup could not read the primary log file for 172.21.101.209
```

Step 3 Use a web browser to view the MRTG output files in the web page directory.

Note If the domain name server (DNS) is not working, a hostname cannot be used by MRTG. Use the IP address instead.

Figure 15 MRTG Graphs Viewed by Using a Web Browser



Appendix

CISCO-MODEM-MGMT-MIB

The output below shows the CISCO-MODEM-MGMT-MIB structures. First just the MIB structure, followed by description and examples of each of the tables in the MIB. For descriptions of the individual OIDs, refer to the following link
ftp://www.cisco.com/pub/mibs/v2/CISCO-MODEM-MGMT-MIB.my

Note ciscoMgmt = .1.3.6.1.4.1.9.9

For ease of reading, the Tables (marked with **) are documented after initially showing the basic structure.

```
           ciscoMgmt.47                      ciscoModemMgmtMIB
           ciscoMgmt.47.1                    ciscoModemMgmtMIBObjects
           ciscoMgmt.47.1.1                  cmSystemInfo
           ciscoMgmt.47.1.1.1                cmSystemInstalledModem
           ciscoMgmt.47.1.1.2                cmSystemConfiguredGroup
           ciscoMgmt.47.1.1.3                cmSystemWatchdogTime
           ciscoMgmt.47.1.1.4                cmSystemStatusPollTime
           ciscoMgmt.47.1.1.5                cmSystemMaxRetries
           ciscoMgmt.47.1.1.6                cmSystemModemsInUse
           ciscoMgmt.47.1.1.7                cmSystemModemsAvailable
           ciscoMgmt.47.1.1.8                cmSystemModemsUnavailable
           ciscoMgmt.47.1.1.9                cmSystemModemsOffline
           ciscoMgmt.47.1.1.10               cmSystemModemsDead
           ciscoMgmt.47.1.2                  cmGroupInfo
           ciscoMgmt.47.1.2.1                cmGroupTable              **
           ciscoMgmt.47.1.2.2                cmGroupMemberTable        **
           ciscoMgmt.47.1.3                  cmLineInfo
           ciscoMgmt.47.1.3.1                cmLineStatusTable         **
           ciscoMgmt.47.1.3.2                cmLineConfigTable         **
           ciscoMgmt.47.1.3.3                cmLineStatisticsTable     **
           ciscoMgmt.47.1.3.4                cmLineSpeedStatisticsTable   **


Tables:

cmGroupTable
------------
Defined by Group-Async configuration

           ciscoMgmt.47.1.2.1                cmGroupTable
           ciscoMgmt.47.1.2.1.1              cmGroupEntry
           ciscoMgmt.47.1.2.1.1.1            cmGroupIndex
           ciscoMgmt.47.1.2.1.1.2            cmGroupTotalDevices

example:

UCD-SNMP: snmptable -ib -m all maui-nas-01 comm-string .1.3.6.1.4.1.9.9.47.1.2.1
2>/dev/null

SNMP table:
enterprises.cisco.ciscoMgmt.ciscoModemMgmtMIB.ciscoModemMgmtMIBObjects.cmGroupInfo.cmGrou
pTable.cmGroupEntry

index Index TotalDevices
1     ?           48

cmGroupMemberTable
------------------

             ciscoMgmt.47.1.2.2                cmGroupMemberTable
             ciscoMgmt.47.1.2.2.1              cmGroupMemberEntry
             ciscoMgmt.47.1.2.2.1.1            cmSlotIndex
             ciscoMgmt.47.1.2.2.1.2            cmPortIndex

Query was: snmptable -ib -m all maui-nas-01 comm-string .1.3.6.1.4.1.9.9.47.1.2.2
2>/dev/null

SNMP table:
enterprises.cisco.ciscoMgmt.ciscoModemMgmtMIB.ciscoModemMgmtMIBObjects.cmGroupInfo.cmGrou
pMemberTable.cmGroupMemberEntry
```

```
 index SlotIndex PortIndex
 1.2.0         ?         0
 1.2.1         ?         1
 1.2.2         ?         2
 1.2.3         ?         3
 1.2.4         ?         4
 1.2.5         ?         5
 1.2.6         ?         6
 1.2.7         ?         7
 1.2.8         ?         8
 1.2.9         ?         9
1.2.10         ?        10
1.2.11         ?        11
1.2.12         ?        12
1.2.13         ?        13
1.2.14         ?        14
1.2.15         ?        15
1.2.16         ?        16
1.2.17         ?        17
1.2.18         ?        18
1.2.19         ?        19
1.2.20         ?        20
1.2.21         ?        21
1.2.22         ?        22
1.2.23         ?        23
1.2.24         ?        24
1.2.25         ?        25
1.2.26         ?        26
1.2.27         ?        27
1.2.28         ?        28
1.2.29         ?        29
1.2.30         ?        30
1.2.31         ?        31
1.2.32         ?        32
1.2.33         ?        33
1.2.34         ?        34
1.2.35         ?        35
1.2.36         ?        36
1.2.37         ?        37
1.2.38         ?        38
1.2.39         ?        39
1.2.40         ?        40
1.2.41         ?        41
1.2.42         ?        42
1.2.43         ?        43
1.2.44         ?        44
1.2.45         ?        45
1.2.46         ?        46
1.2.47         ?        47
```

```
          ciscoMgmt.47.1.3.1                cmLineStatusTable
           ciscoMgmt.47.1.3.1.1              cmLineStatusEntry
            ciscoMgmt.47.1.3.1.1.1            cmInterface
            ciscoMgmt.47.1.3.1.1.2            cmGroup
            ciscoMgmt.47.1.3.1.1.3            cmManufacturerID
            ciscoMgmt.47.1.3.1.1.4            cmProductDetails
            ciscoMgmt.47.1.3.1.1.5            cmManageable
            ciscoMgmt.47.1.3.1.1.6            cmState
            ciscoMgmt.47.1.3.1.1.7            cmCallDirection
            ciscoMgmt.47.1.3.1.1.8            cmDisconnectReason
            ciscoMgmt.47.1.3.1.1.9            cmCallDuration
            ciscoMgmt.47.1.3.1.1.10           cmCallPhoneNumber
            ciscoMgmt.47.1.3.1.1.11           cmCallerID
```

```
             ciscoMgmt.47.1.3.1.1.12           cmModulationSchemeUsed
             ciscoMgmt.47.1.3.1.1.13           cmProtocolUsed
             ciscoMgmt.47.1.3.1.1.14           cmTXRate
             ciscoMgmt.47.1.3.1.1.15           cmRXRate
             ciscoMgmt.47.1.3.1.1.16           cmTXAnalogSignalLevel
             ciscoMgmt.47.1.3.1.1.17           cmRXAnalogSignalLevel
example:

UCD-SNMP query: snmptable -ib -m all maui-nas-01 comm-string .1.3.6.1.4.1.9.9.47.1.3.1
2>/dev/null

SNMP table:
enterprises.cisco.ciscoMgmt.ciscoModemMgmtMIB.ciscoModemMgmtMIBObjects.cmLineInfo.cmLineS
tatusTable.cmLineStatusEntry

index Interface Group   ManufacturerID
ProductDetails Manageable  State CallDirection     DisconnectReason CallDuration
CallPhoneNumber CallerID ModulationSchemeUsed ProtocolUsed TXRate RXRate
TXAnalogSignalLevel RXAnalogSignalLevel
  2.0       111     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming              dtrDrop 0:0:26:10.60
"81560"      ""            v34plus reliableLAPM  33600  33600               0
-14
  2.1       112     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming              dtrDrop 0:0:38:24.03
"81560"      ""            v34plus reliableLAPM  33600  33600               0
-14
  2.2       113     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming              dtrDrop 0:0:16:28.21
"81560"      ""            v34plus reliableLAPM  33600  33600               0
-14
  2.3       114     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming              dtrDrop 0:0:02:15.46
"81560"      ""            v34plus reliableLAPM  33600  33600               0
-14
  2.4       115     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming              dtrDrop 0:0:07:58.01
"81560"      ""            v34plus reliableLAPM  33600  33600               0
-14
  2.5       116     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming              dtrDrop 0:0:13:06.73
"81560"      ""            v34plus reliableLAPM  33600  33600               0
-14
  2.6       117     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming              dtrDrop 0:0:18:27.16
"81560"      ""            v34plus reliableLAPM  33600  33600               0
-14
  2.7       118     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming              dtrDrop 0:0:13:50.93
"81560"      ""            v34plus reliableLAPM  33600  33600               0
-14
  2.8       119     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming              dtrDrop 0:0:05:12.52
"81560"      ""            v34plus reliableLAPM  33600  33600               0
-14
  2.9       120     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming              dtrDrop 0:0:00:08.72
"81561"      ""            v34plus reliableLAPM  33600  33600               0
-14
 2.10       121     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming              dtrDrop 0:0:00:08.56
"81561"      ""            v34plus reliableLAPM  33600  33600               0
-14
 2.11       122     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
```

```
50.54.50.48"       true onHook      incoming              dtrDrop 0:0:16:28.41
"81560"      ""           v34plus reliableLAPM  33600  33600               0
-14
 2.12       123     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming remoteLinkDisconnect 0:0:05:39.64
"81560"      ""              v90 reliableLAPM  42666  21600               0
-30
 2.13       124     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming remoteLinkDisconnect 0:0:35:44.57
"81560"      ""              v90 reliableLAPM  37333  21600               0
-30
 2.14       125     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming remoteLinkDisconnect 0:0:45:52.68
"81560"      ""              v90 reliableLAPM  37333  19200               0
-30
 2.15       126     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming remoteLinkDisconnect 0:0:15:08.74
"81560"      ""              v90 reliableLAPM  37333  19200               0
-30
 2.16       127     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming remoteLinkDisconnect 0:0:17:55.96
"81560"      ""           v34plus reliableLAPM  26400  26400               0
-18
 2.17       128     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming remoteLinkDisconnect 0:0:05:43.36
"81560"      ""           v34plus reliableLAPM  26400  26400               0
-18
 2.18       129     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming         remoteHangup 0:0:28:45.36
"81560"      ""           v34plus reliableLAPM  26400  26400               0
-19
 2.19       130     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming remoteLinkDisconnect 0:0:24:18.44
"81560"      ""              v90 reliableLAPM  44000  21600               0
-30
 2.20       131     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming       trainupFailure 0:0:00:19.12
"81560"      ""              v90 reliableLAPM  45333  12000               0
-30
 2.21       132     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming            noCarrier 0:0:00:21.18
"81560"      ""           v34plus reliableLAPM  26400  26400               0
-22
 2.22       133     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming         remoteHangup 0:0:00:11.13
"81560"      ""           v34plus reliableLAPM  33600  33600               0
-14
 2.23       134     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming remoteLinkDisconnect 0:0:03:44.39
"81560"      ""              v90 reliableLAPM  46666  19200               0
-30
 2.24       135     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming remoteLinkDisconnect 0:0:14:39.06
"81560"      ""              v90 reliableLAPM  45333  24000               0
-28
 2.25       136     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming remoteLinkDisconnect 0:0:23:17.87
"81560"      ""              v90 reliableLAPM  44000  21600               0
-30
 2.26       137     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming remoteLinkDisconnect 0:0:11:03.71
"81560"      ""           v34plus reliableLAPM  28800  24000               0
-26
 2.27       138     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
```

```
50.54.50.48"       true onHook      incoming remoteLinkDisconnect 0:0:21:12.99
"81560"      ""              v90 reliableLAPM  37333  21600               0
-30
 2.28       139     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming            noCarrier 0:0:00:21.28
"81560"      ""           v34plus reliableLAPM  33600  33600               0
-14
 2.29       140     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming              dtrDrop 0:0:00:56.30
"81560"      ""           v34plus reliableLAPM  33600  33600               0
-14
 2.30       141     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming              dtrDrop 0:0:01:40.98
"81560"      ""           v34plus reliableLAPM  33600  33600               0
-14
 2.31       142     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming              dtrDrop 0:0:01:07.99
"81560"      ""           v34plus reliableLAPM  33600  33600               0
-14
 2.32       143     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming              dtrDrop 0:0:00:08.62
"81560"      ""           v34plus reliableLAPM  33600  33600               0
-14
 2.33       144     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming              dtrDrop 0:0:51:05.39
"81560"      ""           v34plus reliableLAPM  33600  33600               0
-14
 2.34       145     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming              dtrDrop 0:0:00:05.68
"81561"      ""           v34plus reliableLAPM  33600  33600               0
-14
 2.35       146     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming              dtrDrop 0:0:01:30.74
"81560"      ""           v34plus reliableLAPM  33600  33600               0
-14
 2.36       147     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming              dtrDrop 0:0:13:18.80
"81560"      ""           v34plus reliableLAPM  33600  33600               0
-14
 2.37       148     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming              dtrDrop 0:0:04:40.66
"81560"      ""           v34plus reliableLAPM  33600  33600               0
-14
 2.38       149     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming              dtrDrop 0:0:00:18.44
"81560"      ""           v34plus reliableLAPM  33600  33600               0
-14
 2.39       150     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming              dtrDrop 0:0:21:17.14
"81560"      ""           v34plus reliableLAPM  33600  33600               0
-14
 2.40       151     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming              dtrDrop 0:0:22:52.13
"81560"      ""           v34plus reliableLAPM  33600  33600               0
-14
 2.41       152     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming              dtrDrop 0:0:07:59.35
"81560"      ""           v34plus reliableLAPM  33600  33600               0
-14
 2.42       153     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming              dtrDrop 0:1:38:48.66
"81560"      ""           v34plus reliableLAPM  33600  33600               0
-14
 2.43       154     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
```

```
50.54.50.48"       true onHook      incoming              dtrDrop 0:0:00:53.01
"81560"      ""           v34plus reliableLAPM  33600  33600               0
-14
 2.44       155     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming              dtrDrop 0:0:09:13.37
"81560"      ""           v34plus reliableLAPM  33600  33600               0
-14
 2.45       156     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming              dtrDrop 0:0:24:08.74
"81560"      ""           v34plus reliableLAPM  33600  33600               0
-14
 2.46       157     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming              dtrDrop 0:0:54:00.28
"81560"      ""           v34plus reliableLAPM  33600  33600               0
-14
 2.47       158     1 "Mica Hex Modem" "Modem (Managed Option), Firmware Rev:
50.54.50.48"       true onHook      incoming              dtrDrop 0:1:01:29.14
"81560"      ""           v34plus reliableLAPM  33600  33600               0
-14

cmLineConfigTable
-----------------

           ciscoMgmt.47.1.3.2                 cmLineConfigTable
            ciscoMgmt.47.1.3.2.1               cmLineConfigEntry
             ciscoMgmt.47.1.3.2.1.1             cmATModePermit
             ciscoMgmt.47.1.3.2.1.2             cmStatusPolling
             ciscoMgmt.47.1.3.2.1.3             cmBusyOutRequest
             ciscoMgmt.47.1.3.2.1.4             cmShutdown
             ciscoMgmt.47.1.3.2.1.5             cmHoldReset
             ciscoMgmt.47.1.3.2.1.6             cmBad
example
UCD-SNMP query was: snmptable -ib -m all maui-nas-01 comm-string
.1.3.6.1.4.1.9.9.47.1.3.2 2>/dev/null

SNMP table:
enterprises.cisco.ciscoMgmt.ciscoModemMgmtMIB.ciscoModemMgmtMIBObjects.cmLineInfo.cmLineC
onfigTable.cmLineConfigEntry

index ATModePermit StatusPolling BusyOutRequest Shutdown HoldReset   Bad
  2.0            ?          true          false    false         ? false
  2.1            ?          true          false    false         ? false
  2.2            ?          true          false    false         ? false
  2.3            ?          true          false    false         ? false
  2.4            ?          true          false    false         ? false
  2.5            ?          true          false    false         ? false
  2.6            ?          true          false    false         ? false
  2.7            ?          true          false    false         ? false
  2.8            ?          true          false    false         ? false
  2.9            ?          true          false    false         ? false
 2.10            ?          true          false    false         ? false
 2.11            ?          true          false    false         ? false
 2.12            ?          true          false    false         ? false
 2.13            ?          true          false    false         ? false
 2.14            ?          true          false    false         ? false
 2.15            ?          true          false    false         ? false
 2.16            ?          true          false    false         ? false
 2.17            ?          true          false    false         ? false
 2.18            ?          true          false    false         ? false
 2.19            ?          true          false    false         ? false
 2.20            ?          true          false    false         ? false
 2.21            ?          true          false    false         ? false
 2.22            ?          true          false    false         ? false
 2.23            ?          true          false    false         ? false
```

```
 2.24            ?          true          false    false         ? false
 2.25            ?          true          false    false         ? false
 2.26            ?          true          false    false         ? false
 2.27            ?          true          false    false         ? false
 2.28            ?          true          false    false         ? false
 2.29            ?          true          false    false         ? false
 2.30            ?          true          false    false         ? false
 2.31            ?          true          false    false         ? false
 2.32            ?          true          false    false         ? false
 2.33            ?          true          false    false         ? false
 2.34            ?          true          false    false         ? false
 2.35            ?          true          false    false         ? false
 2.36            ?          true          false    false         ? false
 2.37            ?          true          false    false         ? false
 2.38            ?          true          false    false         ? false
 2.39            ?          true          false    false         ? false
 2.40            ?          true          false    false         ? false
 2.41            ?          true          false    false         ? false
 2.42            ?          true          false    false         ? false
 2.43            ?          true          false    false         ? false
 2.44            ?          true          false    false         ? false
 2.45            ?          true          false    false         ? false
 2.46            ?          true          false    false         ? false
 2.47            ?          true          false    false         ? false

cmLineStatisticsTable
---------------------

           ciscoMgmt.47.1.3.3                cmLineStatisticsTable
            ciscoMgmt.47.1.3.3.1              cmLineStatisticsEntry
             ciscoMgmt.47.1.3.3.1.1            cmRingNoAnswers
             ciscoMgmt.47.1.3.3.1.2            cmIncomingConnectionFailures
             ciscoMgmt.47.1.3.3.1.3            cmIncomingConnectionCompletions
             ciscoMgmt.47.1.3.3.1.4            cmOutgoingConnectionFailures
             ciscoMgmt.47.1.3.3.1.5            cmOutgoingConnectionCompletions
             ciscoMgmt.47.1.3.3.1.6            cmFailedDialAttempts
             ciscoMgmt.47.1.3.3.1.7            cmNoDialTones
             ciscoMgmt.47.1.3.3.1.8            cmDialTimeouts
             ciscoMgmt.47.1.3.3.1.9            cmWatchdogTimeouts
             ciscoMgmt.47.1.3.3.1.10           cm2400OrLessConnections
             ciscoMgmt.47.1.3.3.1.11           cm2400To14400Connections
             ciscoMgmt.47.1.3.3.1.12           cmGreaterThan14400Connections
             ciscoMgmt.47.1.3.3.1.13           cmNoCarriers
             ciscoMgmt.47.1.3.3.1.14           cmLinkFailures
             ciscoMgmt.47.1.3.3.1.15           cmProtocolErrors
             ciscoMgmt.47.1.3.3.1.16           cmPollingTimeouts
             ciscoMgmt.47.1.3.3.1.17           cmTotalCallDuration

example:
UCD-SNMP query was: snmptable -ib -m all maui-nas-01 comm-string
.1.3.6.1.4.1.9.9.47.1.3.3 2>/dev/null

SNMP table:
enterprises.cisco.ciscoMgmt.ciscoModemMgmtMIB.ciscoModemMgmtMIBObjects.cmLineInfo.cmLineS
tatisticsTable.cmLineStatisticsEntry

index RingNoAnswers IncomingConnectionFailures IncomingConnectionCompletions
OutgoingConnectionFailures OutgoingConnectionCompletions FailedDialAttempts NoDialTones
DialTimeouts WatchdogTimeouts 2400OrLessConnections 2400To14400Connections
GreaterThan14400Connections NoCarriers LinkFailures ProtocolErrors PollingTimeouts
TotalCallDuration
  2.0            0                        1                          1
0                             0                  0           0            0
0                   0                    0                         1          0
```

```
0               0               0               1574
  2.1           0               1               1
0               0               0               0
0               0               0               1               0
0               0               0               2318
  2.2           0               1               1
0               0               0               0
0               0               0               1               0
0               0               0               994
  2.3           0               1               1
0               0               0               0
0               0               0               1               0
0               0               0               135
  2.4           0               0               2
0               0               0               0
0               0               0               2               0
0               0               0               3193
  2.5           0               0               2
0               0               0               0
0               0               0               2               0
0               0               0               1095
  2.6           0               1               1
0               0               0               0
0               0               0               1               0
0               0               0               1128
  2.7           0               0               2
0               0               0               0
0               0               0               2               0
0               0               0               908
  2.8           0               1               1
0               0               0               0
0               0               0               1               0
0               0               0               361
  2.9           0               0               2
0               0               0               0
0               0               0               2               0
0               0               0               499
 2.10           0               0               2
0               0               0               0
0               0               0               2               0
0               0               0               2756
 2.11           0               0               2
0               0               0               0
0               0               0               2               0
0               0               0               1937
 2.12           0               0               2
0               0               0               0
0               0               0               2               0
0               0               0               9091
 2.13           0               0               2
0               0               0               0
0               0               0               2               0
0               0               0               2662
 2.14           0               0               2
0               0               0               0
0               0               0               2               0
0               0               0               4436
 2.15           0               0               2
0               0               0               0
0               0               0               2               0
0               0               0               9541
 2.16           0               0               2
0               0               0               0
0               0               0               2               0
```

```
0               0               0               1211
 2.17           0               0               2
0                       0               0               0
0                       0               0               2               0
0               0               0               413
 2.18           0               0               2
0                       0               0               0
0                       0               0               2               0
0               0               0               4028
 2.19           0               0               2
0                       0               0               0
0                       0               0               2               0
0               0               0               5649
 2.20           0               1               1
0                       0               0               0
0                       0               0               1               0
0               0               0               54
 2.21           0               1               1
0                       0               0               0
0                       0               0               1               0
0               0               0               1781
 2.22           0               1               0
0                       0               0               0
0                       0               0               0               0
0               0               0               11
 2.23           0               0               1
0                       0               0               0
0                       0               0               1               0
0               0               0               224
 2.24           0               0               2
0                       0               0               0
0                       0               0               2               0
0               0               0               2456
 2.25           0               0               2
0                       0               0               0
0                       0               0               2               0
0               0               0               1407
 2.26           0               0               2
0                       0               0               0
0                       0               0               2               0
0               0               0               672
 2.27           0               0               2
0                       0               0               0
0                       0               0               2               0
0               0               0               1283
 2.28           0               1               1
0                       0               0               0
0                       0               0               1               0
0               0               0               30
 2.29           0               0               1
0                       0               0               0
0                       0               0               1               0
0               0               0               56
 2.30           0               0               1
0                       0               0               0
0                       0               0               1               0
0               0               0               100
 2.31           0               0               1
0                       0               0               0
0                       0               0               1               0
0               0               0               67
 2.32           0               0               1
0                       0               0               0
0                       0               0               1               0
```

```
0               0               0               8
 2.33           0                       0                       1
0                       0                       0               0               0
0                       0                       0               1               0
0               0               0               3065
 2.34           0                       0                       1
0                       0                       0               0               0
0                       0                       0               1               0
0               0               0               5
 2.35           0                       0                       1
0                       0                       0               0               0
0                       0                       0               1               0
0               0               0               90
 2.36           0                       0                       2
0                       0                       0               0               0
0                       0                       0               2               0
0               0               0               847
 2.37           0                       0                       2
0                       0                       0               0               0
0                       0                       0               2               0
0               0               0               332
 2.38           0                       0                       1
0                       0                       0               0               0
0                       0                       0               1               0
0               0               0               18
 2.39           0                       0                       1
0                       0                       0               0               0
0                       0                       0               1               0
0               0               0               1277
 2.40           0                       0                       1
0                       0                       0               0               0
0                       0                       0               1               0
0               0               0               1372
 2.41           0                       0                       1
0                       0                       0               0               0
0                       0                       0               1               0
0               0               0               479
 2.42           0                       0                       1
0                       0                       0               0               0
0                       0                       0               1               0
0               0               0               5928
 2.43           0                       0                       1
0                       0                       0               0               0
0                       0                       0               1               0
0               0               0               53
 2.44           0                       1                       1
0                       0                       0               0               0
0                       0                       0               1               0
0               0               0               599
 2.45           0                       1                       1
0                       0                       0               0               0
0                       0                       0               1               0
0               0               0               1455
 2.46           0                       1                       1
0                       0                       0               0               0
0                       0                       0               1               0
0               0               0               3248
 2.47           0                       1                       1
0                       0                       0               0               0
0                       0                       0               1               0
0               0               0               3701

cmLineSpeedStatisticsTable
--------------------------
```

note that this table produces a distinct entry for each TX speed established with each modem.

```
           ciscoMgmt.47.1.3.4                cmLineSpeedStatisticsTable
            ciscoMgmt.47.1.3.4.1              cmLineSpeedStatisticsEntry
             ciscoMgmt.47.1.3.4.1.1             cmInitialLineSpeed
             ciscoMgmt.47.1.3.4.1.2             cmInitialLineConnections
             ciscoMgmt.47.1.3.4.1.3             cmInitialTxLineConnections
      ciscoMgmt.47.1.3.4.1.4      cmInitialRxLineConnections
example:
UCD-SNMP query was: snmptable -ib -m all maui-nas-01 comm-string
.1.3.6.1.4.1.9.9.47.1.3.4 2>/dev/null

SNMP table:
enterprises.cisco.ciscoMgmt.ciscoModemMgmtMIB.ciscoModemMgmtMIBObjects.cmLineInfo.cmLineS
peedStatisticsTable.cmLineSpeedStatisticsEntry

     index LineSpeed LineConnections TxLineConnections RxLineConnections
 2.1.48000         ?               1                 1                 ?
 2.2.45333         ?               1                 1                 ?
 2.3.26400         ?               1                 1                 ?
 2.4.44000         ?               1                 1                 ?
 2.4.45333         ?               1                 1                 ?
 2.5.26400         ?               1                 1                 ?
 2.5.46667         ?               1                 1                 ?
 2.6.44000         ?               1                 1                 ?
 2.7.24000         ?               1                 1                 ?
 2.7.45333         ?               1                 1                 ?
 2.8.44000         ?               1                 1                 ?
 2.9.33600         ?               1                 1                 ?
 2.9.44000         ?               1                 1                 ?
2.10.33600         ?               1                 1                 ?
2.10.46667         ?               1                 1                 ?
2.11.44000         ?               1                 1                 ?
2.11.45333         ?               1                 1                 ?
2.12.26400         ?               1                 1                 ?
2.12.42667         ?               1                 1                 ?
2.13.37333         ?               1                 1                 ?
2.13.44000         ?               1                 1                 ?
2.14.44000         ?               2                 2                 ?
2.15.37333         ?               1                 1                 ?
2.15.44000         ?               1                 1                 ?
2.16.26400         ?               1                 1                 ?
2.16.44000         ?               1                 1                 ?
2.17.26400         ?               2                 2                 ?
2.18.24000         ?               1                 1                 1
2.18.26400         ?               1                 1                 1
2.19.44000         ?               2                 2                 ?
2.20.45333         ?               1                 1                 ?
2.21.26400         ?               1                 1                 ?
2.23.46667         ?               1                 1                 ?
2.24.26400         ?               1                 1                 ?
2.24.45333         ?               1                 1                 ?
2.25.33600         ?               1                 1                 ?
2.25.44000         ?               1                 1                 ?
2.26.33600         ?               1                 1                 ?
2.26.44000         ?               1                 1                 ?
2.27.33600         ?               1                 1                 ?
2.27.37333         ?               1                 1                 ?
2.28.33600         ?               1                 1                 1
2.29.37333         ?               1                 1                 ?
2.30.42667         ?               1                 1                 ?
2.31.42667         ?               1                 1                 ?
2.32.33600         ?               1                 1                 1
```

```
2.33.26400          ?               1               1               ?
2.34.33600          ?               1               1               1
2.35.26400          ?               1               1               ?
2.36.24000          ?               1               1               1
2.36.26400          ?               1               1               1
2.37.26400          ?               1               1               ?
2.37.45333          ?               1               1               ?
2.38.33600          ?               1               1               1
2.39.26400          ?               1               1               1
2.40.26400          ?               1               1               1
2.41.26400          ?               1               1               ?
2.42.50667          ?               1               1               ?
2.43.33600          ?               1               1               1
2.44.45333          ?               1               1               ?
2.45.44000          ?               1               1               ?
2.46.45333          ?               1               1               ?
2.47.48000          ?               1               1               ?
```

CISCO-POP-MGMT-MIB

The output below shows the MIB structures. First just the MIB structure, followed by description and examples of each of the tables in the MIB. For descriptions of the individual OIDs, refer to the following link:
ftp://www.cisco.com/pub/mibs/v2/CISCO-POP-MGMT-MIB.my

Tables (marked with **) are documented after initially showing the basic structure.

Note ciscoExperiment = .1.3.6.1.4.1.9.10

```
        ciscoExperiment.19                      ciscoPopMgmtMIB
         ciscoExperiment.19.1                    ciscoPopMgmtMIBObjects
          ciscoExperiment.19.1.1                  cpmDS0Usage
           ciscoExperiment.19.1.1.1                cpmDS0UsageTable         **
           ciscoExperiment.19.1.1.2                cpmISDNCfgBChanInUseForAnalog
           ciscoExperiment.19.1.1.3                cpmISDNCfgBChannelsInUse
           ciscoExperiment.19.1.1.4                cpmActiveDS0s
           ciscoExperiment.19.1.1.5                cpmPPPCalls
           ciscoExperiment.19.1.1.6                cpmV120Calls
           ciscoExperiment.19.1.1.7                cpmV110Calls
           ciscoExperiment.19.1.1.8                cpmActiveDS0sHighWaterMark
           ciscoExperiment.19.1.1.9                cpmDS1DS0UsageTable     **
           ciscoExperiment.19.1.1.10               cpmSW56CfgBChannelsInUse
          ciscoExperiment.19.1.2                  cpmCallFailure
           ciscoExperiment.19.1.2.1                cpmISDNCallsRejected
           ciscoExperiment.19.1.2.2                cpmModemCallsRejected
           ciscoExperiment.19.1.2.3                cpmISDNCallsClearedAbnormally
           ciscoExperiment.19.1.2.4                cpmModemCallsClearedAbnormally
           ciscoExperiment.19.1.2.5                cpmISDNNoResource
           ciscoExperiment.19.1.2.6                cpmModemNoResource
          ciscoExperiment.19.1.3                  cpmActiveCallSummary
           ciscoExperiment.19.1.3.1                cpmActiveCallSummaryTable  **
          ciscoExperiment.19.1.4                  cpmCallHistorySummary
           ciscoExperiment.19.1.4.1                cpmCallHistorySummaryTableMaxLength
           ciscoExperiment.19.1.4.2                cpmCallHistorySummaryRetainTimer
           ciscoExperiment.19.1.4.3                cpmCallHistorySummaryTable  **

Tables:

            ciscoExperiment.19.1.1.1                cpmDS0UsageTable
             ciscoExperiment.19.1.1.1.1              cpmDS0UsageEntry
              ciscoExperiment.19.1.1.1.1.1            cpmDS1SlotIndex
              ciscoExperiment.19.1.1.1.1.2            cpmDS1PortIndex
              ciscoExperiment.19.1.1.1.1.3            cpmChannelIndex
              ciscoExperiment.19.1.1.1.1.4            cpmConfiguredType
              ciscoExperiment.19.1.1.1.1.5            cpmDS0CallType
              ciscoExperiment.19.1.1.1.1.6            cpmL2Encapsulation
              ciscoExperiment.19.1.1.1.1.7            cpmCallCount
              ciscoExperiment.19.1.1.1.1.8            cpmTimeInUse
              ciscoExperiment.19.1.1.1.1.9            cpmInOctets
              ciscoExperiment.19.1.1.1.1.10           cpmOutOctets
              ciscoExperiment.19.1.1.1.1.11           cpmInPackets
              ciscoExperiment.19.1.1.1.1.12           cpmOutPackets
              ciscoExperiment.19.1.1.1.1.13           cpmAssociatedInterface


                    Requested Cmd: table cpmDS0UsageTable
                    Requested Device: maui-nas-01
                    MIB: CISCO-POP-MGMT-MIB
                    OID: Numberic = .1.3.6.1.4.1.9.10.19.1.1.1, Symbolic = cpmDS0UsageTable



                    Query was: snmptable -ib -m all maui-nas-01 comm-string
.1.3.6.1.4.1.9.10.19.1.1.1 2>/dev/null

                    SNMP table:
enterprises.cisco.ciscoExperiment.ciscoPopMgmtMIB.ciscoPopMgmtMIBObjects.cpmDS0Usage.cpmD
```

```
S0UsageTable.cpmDS0UsageEntry

                  index DS1SlotIndex DS1PortIndex ChannelIndex ConfiguredType
DS0CallType L2Encapsulation CallCount      TimeInUse InOctets OutOctets InPackets
OutPackets AssociatedInterface
                  0.0.1            ?            ?            ?           isdn
idle         idle     461  11:1:46:00.97 44982715 176835046   588552    802003
0
                  0.0.2            ?            ?            ?           isdn
idle         idle     526  9:20:33:29.86 36208855 167507646   534831    708102
0
                  0.0.3            ?            ?            ?           isdn
idle         idle     451  11:3:10:36.16 41248252 114100690   582169    674952
0
                  0.0.4            ?            ?            ?           isdn
idle         idle     460 10:21:30:09.28 35820269 134593851   541276    673246
0
                  0.0.5            ?            ?            ?           isdn
idle         idle     456  12:0:42:59.16 36713595 106348001   539414    661495
0
                  0.0.6            ?            ?            ?           isdn
digital         ppp     447  12:5:26:40.81 36252194  97184233   538126    637106
13
                  0.0.7            ?            ?            ?           isdn
digital         ppp     477 10:15:33:05.26 31382442 108382154   498961    611513
14
                  0.0.8            ?            ?            ?           isdn
digital         ppp     517  10:5:00:08.13 41354732 112750451   561400    689899
15
                  0.0.9            ?            ?            ?           isdn
idle         idle     477 10:21:07:34.02 42995378 108258834   591331    707045
0
                 0.0.10            ?            ?            ?           isdn
idle         idle     490  11:3:16:21.31 37089916 112267777   548112    687521
0
                 0.0.11            ?            ?            ?           isdn
idle         idle     459 11:11:48:45.57 48401400 122513022   624014    769786
0
                 0.0.12            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0        0        0         0
0
                 0.0.13            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0        0        0         0
0
                 0.0.14            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0        0        0         0
0
                 0.0.15            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0        0        0         0
0
                 0.0.16            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0        0        0         0
0
                 0.0.17            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0        0        0         0
0
                 0.0.18            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0        0        0         0
0
                 0.0.19            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0        0        0         0
0
                 0.0.20            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0        0        0         0
```

```
0
                0.0.21            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0        0        0         0
0
                0.0.22            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0        0        0         0
0
                0.0.23            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0        0        0         0
0
                0.0.24            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00  1631071   1601699   335265    335265
0
                 0.1.1            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0        0        0         0
0
                 0.1.2            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0        0        0         0
0
                 0.1.3            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0        0        0         0
0
                 0.1.4            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0        0        0         0
0
                 0.1.5            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0        0        0         0
0
                 0.1.6            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0        0        0         0
0
                 0.1.7            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0        0        0         0
0
                 0.1.8            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0        0        0         0
0
                 0.1.9            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0        0        0         0
0
                0.1.10            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0        0        0         0
0
                0.1.11            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0        0        0         0
0
                0.1.12            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0        0        0         0
0
                0.1.13            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0        0        0         0
0
                0.1.14            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0        0        0         0
0
                0.1.15            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0        0        0         0
0
                0.1.16            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0        0        0         0
0
                0.1.17            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0        0        0         0
0
```

```
                0.1.18            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0       0        0         0
0
                0.1.19            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0       0        0         0
0
                0.1.20            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0       0        0         0
0
                0.1.21            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0       0        0         0
0
                0.1.22            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0       0        0         0
0
                0.1.23            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00       0       0        0         0
0
                0.1.24            ?            ?            ?           isdn
idle          idle       0   0:0:00:00.00      12      12        4         4
0
```

```
          ciscoExperiment.19.1.1.9               cpmDS1DS0UsageTable
           ciscoExperiment.19.1.1.9.1             cpmDS1DS0UsageEntry
            ciscoExperiment.19.1.1.9.1.1           cpmDS1UsageSlotIndex
            ciscoExperiment.19.1.1.9.1.2           cpmDS1UsagePortIndex
            ciscoExperiment.19.1.1.9.1.3           cpmDS1ActiveDS0s
            ciscoExperiment.19.1.1.9.1.4           cpmDS1ActiveDS0sHighWaterMark

Requested Cmd: table DS1DS0 Usage Table
Requested Device: maui-nas-01
MIB: CISCO-POP-MGMT-MIB
OID: Numberic = .1.3.6.1.4.1.9.10.19.1.1.9, Symbolic = cpmDS1DS0UsageTable

                Query was: snmptable -ib -m all maui-nas-01 comm-string
.1.3.6.1.4.1.9.10.19.1.1.9 2>/dev/null

                SNMP table:
enterprises.cisco.ciscoExperiment.ciscoPopMgmtMIB.ciscoPopMgmtMIBObjects.cpmDS0Usage.cpmD
S1DS0UsageTable.cpmDS1DS0UsageEntry

                index UsageSlotIndex UsagePortIndex ActiveDS0s ActiveDS0sHighWaterMark
                  0.0              ?              ?          3                       8
                  0.1              ?              ?          0                       0
                  0.2              ?              ?          0                       0
                  0.3              ?              ?          0                       0
```

```
          ciscoExperiment.19.1.3.1               cpmActiveCallSummaryTable
           ciscoExperiment.19.1.3.1.1             cpmActiveCallSummaryEntry
            ciscoExperiment.19.1.3.1.1.1           cpmActiveCallStartTimeIndex
            ciscoExperiment.19.1.3.1.1.2           cpmActiveCallSummaryIndex
            ciscoExperiment.19.1.3.1.1.3           cpmActiveUserID
            ciscoExperiment.19.1.3.1.1.4           cpmActiveUserIpAddr
            ciscoExperiment.19.1.3.1.1.5           cpmActiveCallType
            ciscoExperiment.19.1.3.1.1.6           cpmActiveModemSlot
            ciscoExperiment.19.1.3.1.1.7           cpmActiveModemPort
            ciscoExperiment.19.1.3.1.1.8           cpmActiveCallDuration
            ciscoExperiment.19.1.3.1.1.9           cpmActiveEntrySlot
            ciscoExperiment.19.1.3.1.1.10          cpmActiveEntryPort
            ciscoExperiment.19.1.3.1.1.11          cpmActiveEntryChannel
            ciscoExperiment.19.1.3.1.1.12          cpmActiveRemotePhoneNumber
```

```
             ciscoExperiment.19.1.3.1.1.13          cpmActiveLocalPhoneNumber
             ciscoExperiment.19.1.3.1.1.14          cpmActiveTTYNumber



                  Requested Cmd: table cpmActiveCallSummaryTable
                  Requested Device: maui-nas-01
                  MIB: CISCO-POP-MGMT-MIB
                  OID: Numberic = .1.3.6.1.4.1.9.10.19.1.3.1, Symbolic =
cpmActiveCallSummaryTable



                  Query was: snmptable -ib -m all maui-nas-01 comm-string
.1.3.6.1.4.1.9.10.19.1.3.1 2>/dev/null

                  SNMP table:
enterprises.cisco.ciscoExperiment.ciscoPopMgmtMIB.ciscoPopMgmtMIBObjects.cpmActiveCallSum
mary.cpmActiveCallSummaryTable.cpmActiveCallSummaryEntry

                       index CallStartTimeIndex CallSummaryIndex            UserID
UserIpAddr CallType ModemSlot ModemPort CallDuration EntrySlot EntryPort EntryChannel
RemotePhoneNumber LocalPhoneNumber TTYNumber
                  286967118.0                  ?                ? "rbrown-isdn-rad"
0.0.0.0  digital       -1       -1 0:2:21:51.51        0        0           6
""          "81560"        -1
                  286970118.0                  ?                ? "rbrown-isdn-rad"
0.0.0.0  digital       -1       -1 0:2:21:21.52        0        0           7
""          "81560"        -1
                  286984294.0                  ?                ?   "dleyland-isdn"
0.0.0.0  digital       -1       -1 0:2:18:59.76        0        0           8
""          "81560"        -1



           ciscoExperiment.19.1.4.3               cpmCallHistorySummaryTable
            ciscoExperiment.19.1.4.3.1             cpmCallHistorySummaryEntry
             ciscoExperiment.19.1.4.3.1.1           cpmCallDisconnectTimeIndex
             ciscoExperiment.19.1.4.3.1.2           cpmCallStartTimeIndex
             ciscoExperiment.19.1.4.3.1.3           cpmCallHistorySummaryIndex
             ciscoExperiment.19.1.4.3.1.4           cpmUserID
             ciscoExperiment.19.1.4.3.1.5           cpmUserIpAddr
             ciscoExperiment.19.1.4.3.1.6           cpmCallType
             ciscoExperiment.19.1.4.3.1.7           cpmModemSlot
             ciscoExperiment.19.1.4.3.1.8           cpmModemPort
             ciscoExperiment.19.1.4.3.1.9           cpmCallDuration
             ciscoExperiment.19.1.4.3.1.10          cpmEntrySlot
             ciscoExperiment.19.1.4.3.1.11          cpmEntryPort
             ciscoExperiment.19.1.4.3.1.12          cpmEntryChannel
             ciscoExperiment.19.1.4.3.1.13          cpmRemotePhoneNumber
             ciscoExperiment.19.1.4.3.1.14          cpmLocalPhoneNumber
             ciscoExperiment.19.1.4.3.1.15          cpmTTYNumber
```