



# CHAPTER 4

## Managing the Cisco HSI

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### Introduction

This chapter provides information about operation and management tasks for the Cisco H.323 Signaling Interface (HSI) application. This chapter contains the following sections:

- [Restarting the Cisco HSI Application, page 4-1](#)
- [Stopping Call Processing, page 4-1](#)
- [Starting Call Processing, page 4-2](#)
- [Stopping the Call Processing Application, page 4-2](#)
- [Starting the Call Processing Application, page 4-2](#)
- [Reporting the Cisco HSI Status, page 4-2](#)
- [Measurements, page 4-2](#)
- [Overload, page 4-7](#)
- [Logging, page 4-9](#)
- [Gapping, page 4-15](#)

### Restarting the Cisco HSI Application

To restart the Cisco HSI at the MML command prompt, use the **restart-softw** MML command. For more information about this command, see [Appendix A, “MML User Interface and Command Reference.”](#)

To start the Cisco HSI application, see the [“Installing the Cisco HSI”](#) section on page 2-2.

### Stopping Call Processing

To stop call processing, use the **stp-callproc** MML command. This command causes the handling of new call requests to cease immediately, and, if no timeout period is specified, all existing calls are released immediately. If a timeout period is specified, existing calls are released after the specified amount of time has elapsed. For more information about the **stp-callproc** command, see [Appendix A, “MML User Interface and Command Reference.”](#)

## Starting Call Processing

To start call processing, use the **sta-callproc** MML command. For more information about this command, see [Appendix A, “MML User Interface and Command Reference.”](#)

## Stopping the Call Processing Application

To stop the call processing application, use the **stp-softw** MML command. For more information about this command, see [Appendix A, “MML User Interface and Command Reference.”](#)

## Starting the Call Processing Application

To start the call processing application, use the **sta-softw** MML command. For more information about this command, see [Appendix A, “MML User Interface and Command Reference.”](#)

## Reporting the Cisco HSI Status

To display the status of the Cisco HSI, use the **rtrv-softw** MML command. For more information about this command, see [Appendix A, “MML User Interface and Command Reference.”](#)

## Measurements

The following sections describe two measurement categories:

- System-related measurements
- Call-related measurements

### System-Related Measurements

The CIagent is a Simple Network Management Protocol (SNMP) subagent. It handles the collection and storage of the following system performance measurements:

- CPU occupancy
- RAM occupancy
- Disk occupancy
- TCP usage

Use the CIAGENTSCANPERIOD parameter to define the period that the CIagent polls the CPU for utilization (see [Chapter 3, “Provisioning the Cisco HSI”](#)).

## Call-Related Measurements

The Cisco HSI application handles all call-related measurements. An SNMP MIB handles the collection of call-related measurement data.

The call-related measurements are organized into counter groups. The following MML counter groups are required:

- RAS (see [Table 4-1 on page 4-3](#))
- Q.931 (see [Table 4-2 on page 4-4](#))
- H.245 (see [Table 4-3 on page 4-5](#))

The measurements in these groups are written to a file on disk every 30 minutes. The file name includes the date and time that measurements were written to disk.

**Table 4-1 RAS Counter Group**

Counter Name	Measurement	Type	Comments
GK_DISC_ATT_TOT	Gatekeeper discovery attempts	Integer	Incremented for every unicast gatekeeper request (GRQ) sent or for every multicast operation
GK_REG_ATT_TOT	Registration request attempts	Integer	Incremented for every registration request (RRQ) sent
GK_REG_SUCC_TOT	Registration request successes	Integer	Incremented for every registration confirmation (RCF) received
GK_RCV_UNR_ATT_TOT	GK-initiated unregistration attempts	Integer	Incremented for every unregistration request (URQ) received from a gatekeeper (GK)
GK_XMIT_UNR_SUCC_TOT	GK-initiated unregistration successes	Integer	Incremented for every unregistration confirmation (UCF) sent to a GK
GK_XMIT_UNR_ATT_TOT	T-initiated unregistration attempts	Integer	Incremented for every URQ sent to a GK
GK_RCV_UNR_SUCC_TOT	T-initiated unregistration successes	Integer	Incremented for every UCF received from a GK
GK_RLS_ATT_TOT	Disengage attempts	Integer	Incremented for every disengage request (DRQ) sent to a GK
GK_RLS_SUCC_TOT	Disengage successes	Integer	Incremented for every disengage confirmation (DCF) returned by a GK
GK_INFO_REPORT_TOT	Information reports	Integer	Incremented for every information request (IRQ) sent to the GK

Table 4-2 Q.931 Counter Group

Counter Name	Measurement	Type	Comments
FC_INC_CALL_ATT_TOT	H.225 Incoming Fast Connect Call Attempts	Integer	Incremented when a setup containing the fastStart element is received.
FC_INC_CALL_SUCC_TOT	H.225 Incoming Fast Connect Call Successes	Integer	Incremented when the Fast Connect procedure is used to establish an incoming H.323 call.
FC_OTG_CALL_ATT_TOT	H.225 Outgoing Fast Connect Call Attempts	Integer	Incremented when a setup containing the fastStart element is sent to an H.323 endpoint. Decrementd when you revert to Version 1 signaling (another measurement incremented).
FC_OTG_CALL_SUCC_TOT	H.225 Outgoing Fast Connect Call Successes	Integer	Incremented when the Fast Connect procedure is used to establish an outgoing H.323 call.
V1_INC_CALL_ATT_TOT	H.225 Incoming Version 1 Call Attempts	Integer	Incremented when an incoming H.323 Version 1 Setup is received (that is, no fastStart element or H.245 tunneling).
V1_INC_CALL_SUCC_TOT	H.225 Incoming Version 1 Call Successes	Integer	Incremented when an incoming H.323 Version 1 call is established.
V1_OTG_CALL_ATT_TOT	H.225 Outgoing Version 1 Call Attempts	Integer	Incremented when an outgoing H.323 call reverts to Version 1 signaling.
V1_OTG_CALL_SUCC_TOT	H.225 Outgoing Version 1 Call Successes	Integer	Incremented when an outgoing H.323 call using Version 1 is established.
INC_NORM_REL_TOT	H.225 Incoming Call Normal Releases	Integer	Incremented when an established incoming H.323 call is taken down due to user on-hook.
INC_ABNORM_REL_TOT	H.225 Incoming Call Abnormal Releases	Integer	Incremented when an established incoming H.323 call is taken down due to anything other than user on-hook.
OTG_NORM_REL_TOT	H.225 Outgoing Call Normal Releases	Integer	Incremented when an established outgoing H.323 call is taken down due to user on-hook.
OTG_ABNORM_REL_TOT	H.225 Outgoing Call Abnormal Releases	Integer	Incremented when an established outgoing H.323 call is taken down due to anything other than user on-hook.
PGW_T38_FAX_ATT_TOT	Q931	Integer	Incremented for each T.38 Fax Call request from the PGW. Collection Intervals are provisionable (default is 12 hours).
PGW_T38_FAX_SUCC_TOT	Q931	Integer	Incremented for each T.38 Fax Call request from the PGW that is successfully reconfigured for T.38. Collection Intervals: Provisionable (default 12 hours)
H323_INTERWORK_SUCC_	Q931	Integer	Incremented for each successful H.323-H.323 interworking condition. Collection Intervals are provisionable (default is 12 hours).
INC_ANNEX_M1_REJ_TOT	Q931	Integer	Incremented each time an incoming H.323 call using Annex M.1 is rejected by the HSI because it is disabled.

Table 4-2 Q.931 Counter Group (continued)

Counter Name	Measurement	Type	Comments
OTG_ANNEX_M1_REJ_TOT	Q931	Integer	Incremented each time an outbound H.323 call using Annex M.1 is rejected by the destination.
INC_ANNEX_M1_TOT	Q931	Integer	Incremented each time an incoming H.323 call using Annex M.1 is rejected by the HSI because it is disabled.
OTG_ANNEX_M1_TOT	Q931	Integer	Incremented each time an incoming H.323 call using Annex M.1 is rejected by the HSI because it is disabled.

Table 4-3 H.245 Counter Group

Counter Name	Measurement	Type	Comments
MASTER_SLAVE_ATT_TOT	H.245 Master Slave Determination Attempts	Integer	Incremented whenever either side of the call initiates the master slave determination procedure (using either H.245 tunneling or a separate H.245 signaling path).
MASTER_SLAVE_SUCC_TOT	H.245 Master Slave Determination Successes	Integer	Incremented whenever a master slave determination procedure is completed.
TERM_CAP_XCHG_ATT_TOT	H.245 Terminal Capability Exchange Attempts	Integer	Incremented whenever either side of the call initiates the capability exchange procedure (using either H.245 tunneling or a separate H.245 signaling path).
TERM_CAP_XCHG_SUCC_TOT	H.245 Terminal Capability Exchange Successes	Integer	Incremented whenever a capability exchange procedure is completed.
OPEN_CH_ATT_TOT	H.245 Open Logical Channel Attempts	Integer	Incremented whenever either side of the call initiates the open logical channel procedure (using either H.245 tunneling or a separate H.245 signaling path).
OPEN_CH_SUCC_TOT	H.245 Open Logical Channel Successes	Integer	Incremented whenever an open logical channel procedure is completed.
CLOSE_CH_ATT_TOT	H.245 Close Logical Channel Attempts	Integer	Incremented whenever either side of the call initiates the close logical channel procedure (using either H.245 tunneling or a separate H.245 signaling path).
CLOSE_CH_SUCC_TOT	H.245 Close Logical Channel Successes	Integer	Incremented whenever a close logical channel procedure is completed.
AVG_ROUND_TRIP_DELAY	H.245 Round Trip Delay Determination	Average (ms)	The average time in milliseconds (ms) for round trip delay measured as a result of successful round trip delay determination procedures.

Table 4-3 H.245 Counter Group (continued)

Counter Name	Measurement	Type	Comments
EMPTY_CAP_SET_TOT	H245	Integer	Incremented each time an empty cap set request is received from the remote peer. Collection intervals are provisionable (default is 12 hours).
H323_T38_FAX_ATT_TOT	H245	Integer	Incremented for each T.38 Fax Call request from the remote peer. Collection intervals are provisionable (default is 12 hours)
H323_T38_FAX_SUCC_TOT	H245	Integer	Incremented for each T.38 Fax Call request from the remote peer that is successfully reconfigured for T.38 fax working. Collection intervals are provisionable (default is 12 hours).
ASYMMETRIC_TOT	H245	Integer	Incremented for each asymmetric condition encountered. Collection intervals are provisionable (default is 12 hours).
DTMF_RELAY_TOT	H245	Integer	Incremented for each call where DTMF relay is used. Collection intervals are provisionable (default is 12 hours).

## Resetting Measurements

The **clr-meas** MML command resets the measurement counters. This command resets an individual counter or all counters in a counter group. The following are valid counter groups:

- RAS
- Q.931
- H.245

For more information about the **clr-meas** command, see [Appendix A, “MML User Interface and Command Reference.”](#)

## Retrieving Counters

Use the **rtrv-ctr** MML command to retrieve measurement counters. This command displays the measurements for a counter group. Valid counter groups are RAS, Q.931, and H.245. For more information about the **rtrv-ctr** command, see [Appendix A, “MML User Interface and Command Reference.”](#)

# Overload

The system continuously checks call totals and CPU utilization. Each of these values is compared to predefined limits. Three call total limits are available. Each limit has a hysteresis value and an alarm associated with it. When the call total reaches the limit, an alarm is raised. When the call total falls below the limit minus the hysteresis value, the alarm is cleared after the appropriate recovery action is taken.

Cisco HSI supports the following three levels of overload:

- Overload level 1
- Overload level 2
- Overload level 3

The following factors can trigger any one of the overload levels:

- CPU usage (the OVLDSAMPLERATE parameter defines the frequency of CPU sampling and threshold checking)
- Maximum calls allowed

Disk usage can trigger a LOW\_DISK\_SPACE alarm. For more information about this alarm, see [Chapter 5, “Troubleshooting Cisco HSI Alarms.”](#)

## Overload Level 1

Use the following configuration parameters for overload level 1 (see [Chapter 3, “Provisioning the Cisco HSI”](#)):

- OVLLEVEL1PERCENT
- OVLLEVEL1FILTER
- OVLLEVEL1THRESHLOWERCALLS
- OVLLEVEL1THRESHUPPERCALLS
- OVLLEVEL1THRESHLOWERCPU
- OVLLEVEL1THRESHUPPERCPU

## Overload Level 2

Use the following configuration parameters for overload level 2 (see [Chapter 3, “Provisioning the Cisco HSI”](#)):

- OVLLEVEL2PERCENT
- OVLLEVEL2FILTER
- OVLLEVEL2THRESHLOWERCALLS
- OVLLEVEL2THRESHUPPERCALLS
- OVLLEVEL2THRESHLOWERCPU
- OVLLEVEL2THRESHUPPERCPU

## Overload Level 3

Use the following configuration parameters for overload level 3 (see [Chapter 3, “Provisioning the Cisco HSI”](#)):

- OVLLEVEL3PERCENT
- OVLLEVEL3FILTER
- OVLLEVEL3THRESHLOWERCALLS
- OVLLEVEL3THRESHUPPERCALLS
- OVLLEVEL3THRESHLOWERCPU
- OVLLEVEL3THRESHUPPERCPU

## Setting Overload Data

The following MML commands set overload data:

**set-overload:level1|level2|level3:cpu, lower=*number*, upper=*number***

**set-overload:level1|level2|level3:calls, lower=*number*, upper=*number***

**set-overload:level1|level2|level3:gap, filter=*normal|all*, percent=*number***

The upper parameter specifies the threshold for overload detection, and the lower parameter specifies the hysteresis point at which the overload condition is removed.

The lower value should be greater than the upper value of the next lower severity level.

For example:

**set-overload:level1:cpu, lower=45, upper=50**

**set-overload:level1:gap, filter=normal, percent=50**

**set-overload:level2:cpu, lower=63, upper=70**

**set-overload:level2:gap, filter=normal, percent=75**

**set-overload:level3:cpu, lower=81, upper=90**

**set-overload:level3:gap, filter=normal, percent=95**

These values mean that:

- At less than 50 percent CPU usage, no call is gapped.
- From 50 percent to 70 percent CPU usage, 50 percent of calls are gapped.
- From 70 percent to 90 percent CPU usage, 75 percent of calls are gapped.
- At more than 90 percent CPU usage, 95 percent of calls are gapped.
- Before the overload level returns from level 3 to level 2, the CPU usage must fall to less than 81 percent.

**Note**

The HSI sends a release message to the PGW when gapping calls. The cause value is derived from the property `CCPackage,A_CC_GAPPEDCALLCAUSE`, which is set to 60 (Congestion) in the default configuration. We recommend configuring the Cisco PGW2200 dial plan to reroute the call when it receives this release cause.

Refer to the *Cisco Media Gateway Controller Software Release 9 Provisioning Guide* for further information.

## Retrieving Overload Data

Use the **rtv-overload** MML command to display the overload status and related overload data. For information about this command, see [Appendix A, “MML User Interface and Command Reference.”](#)

## Logging

To set the logging level of one or more service packages, use the **set-log** MML command. For more information about this command, see [Appendix A, “MML User Interface and Command Reference.”](#)

## Rotating Log Files

Log files are rotated at system startup or when either of the following conditions occurs:

- The size limit for the corresponding file is reached. The size of the corresponding log file is equal to or greater than the value that the `LOGFILEROTATESIZE` configuration parameter specifies. The default value for this parameter is 10 Mb (see [Chapter 3, “Provisioning the Cisco HSI”](#)).
- The age limit for the corresponding file is reached. The corresponding log file is equal to or older than the interval that the `LOGFILEROTATEINTERVAL` parameter specifies. The default value for this parameter is 1440 minutes (24 hours). See [Chapter 3, “Provisioning the Cisco HSI,”](#) for more information about this parameter.

## Convention for Naming the Log File

Log rotation occurs when the system ceases to write to the current log file and commences to write to a new log file. The `LOGFILENAMEPREFIX` parameter defines the name of the active log file (see [Chapter 3, “Provisioning the Cisco HSI”](#)). The default is `platform.log`.

When log rotation is triggered, the existing file (for example, `platform.log`) is renamed with the format `platform_yyyymmddhhmmss.log` (see [Table 4-4](#)). For example, a platform error file rotated on September 30, 1999 at 12:36:24 is renamed `platform_19990930123624`.

**Table 4-4 Log Filename Format**

Format	Definition
LOGFILENAMEPREFIX	Provisioned filename (default is <code>platform.log</code> )
yyyy	Year
mm	Month

**Table 4-4 Log Filename Format (continued)**

Format	Definition
dd	Day
hh	Hour
mm	Minute
ss	Second

**Note**

The time stamp is the coordinated universal time (CUT) from the machine at the time of rotation.

## Log File Location

The LOGDIRECTORY parameter defines the directory for active log files and rotated log files (see [Chapter 3, “Provisioning the Cisco HSI”](#)). The default is \$GWHOME/var/log/.

## Log Messages

Log messages have the following format:

*Date and timestamp, Package Name, <log level>, LogID:<text of the message>.*

The following are examples of log messages:

```
Thu Dec 7 03:55:32:837 2000, Infrastructure, <DEBUG>, 205: GWModule Registration -
shutdownList() - NbOfItems 10 - Item 8
Thu Dec 7 03:55:32:837 2000, Infrastructure, <DEBUG>, 206 : GWModuleRegistration -
shutdownList() - NbOfItems 10 - Item 9
Thu Dec 7 03:55:32:838 2000, Infrastructure, <DEBUG>, 207 : GWReactor::thdId() returns 6.
Thu Dec 7 03:55:32:838 2000, Infrastructure, <DEBUG>, 208 : GWReactorModule::shutdown() -
Thread has joined.
```

## Logging Categories

Logging can be enabled on the Cisco HSI for a number of categories. The list below indicates the names of the categories. For each category, 0xffff is the highest log level, and 0x0000 is the lowest log level (the log level is a 16-bit hexadecimal value, which is itself bit-mapped to provide 16 discrete sub-categories per category). The most-significant-bit positions correspond to higher (that is, more processor intensive) levels of debugging. You set logging by using the MML **set-log** command. For testing in a lab network, you can modify the log levels. For a live network, all log levels always should be set to the default 0x0000 setting, unless advised otherwise by Cisco TAC.

The following service packages can log messages:

- Application
- CallControl
- Connection
- DataManager
- Eisup
- FaultManager

- Gapping
- H323
- Infrastructure
- Overload
- ProcessManager
- Provisioning
- Signal
- Snmp
- SnmpSubagent
- Statistics
- Trace
- UserInterface

**Note**

Cisco strongly recommends that you set all packages to log level 0x0000 in a live network. Set them to higher levels only when you debug on an offline network.

## Setting Log Levels

The **set-log** MML command dynamically alters the log level setting while the system is running. For more information about the **set-log** command, see [Appendix A, “MML User Interface and Command Reference.”](#)

**Note**

The enabling of logging severely impacts HSI performance. We recommend that the HSI be running at less than 2 calls per second when you enable logging. Logging is automatically disabled when the HSI enters overload level 3. You can reenale logging when the HSI exits overload.

The following examples show the MML commands required to enable EISUP and Provisioning logging and how to disable all logging:

**Example 1—Enabling EISUP and provisioning logging**

```
mm1>  
set-log:eisup:level=0xffff  
set-log:provisioning:level=0xffff
```

**Example 2—Disabling all logging**

```
mm1>  
Set-log:all:level=0x0000
```

## Extended H.323 Logging

The Cisco HSI application provides the capability (through MML) to initiate extended H.323 logging call-flow debugging in a test network environment. With extended H.323 logging enabled, the Cisco HSI places H.323 message content into the log file in addition to the standard category logging listed earlier. H.323 messages are large, so this extended logging will consume resources while it is running.

You enable extended H.323 logging by issuing the MML command **radlog::start**. You must set the H.323 category log level to 0xffff for extended logging to operate.

You can switch off extended logging by issuing the command **radlog::stop**; however, you also must set the H.323 category log level to zero. The command **set-log:all:level=0x0000** is not sufficient, you also must execute the command **radlog::stop**.

If overload level 3 occurs, the H.323 category log level is set to zero automatically; however, you still must issue the command **radlog::stop**.



### Caution

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You *never* should issue the command **radlog::start** on a live network.

---

The following examples show the MML commands you issue to start and stop extended H.323 logging.

#### Example 1—Enabling extended H.323 logging

```
mm>  
set-log:h323:level=0xffff  
radlog::start
```

#### Example 2—Disabling extended H.323 logging

```
mm1>  
radlog:stop  
set-log:h323:level=0x0000
```

## Logging Shortcuts

If the Cisco HSI is restarted, all log levels are reset to 0x0000, and extended H323 logging is switched off.

During a test network configuration, it is useful to be able to enable logging rapidly. You can do so from the Unix command line prompt by issuing the **calllog** command (assuming that you have run the script **setup.gw.csh** or sourced the script within the your user **.cshrc** file).

This Unix alias command automatically sets the three most popular log levels to 0xffff, and automatically enables extended H.323 logging.

To disable all logging from the Unix command line prompt, issue the **nolog** command.

## Interpreting the HSI Log File

To debug an individual call (in a test network), enable the following three items of logging: H323, EISUP, and CallControl. In addition, you can issue the command **radlog::start**.

The following commands enable full logging for the three main modules, which are the most useful:

```
set-log: eisup: level=0xffff
set-log: callcontrol: level=0xffff
set-log: h323: level=0xffff
radlog:: start
```

To check that logging has been enabled, enter the command **rtrv-log**.

The **radlog::start** command enables extra logging for the H323 module. If the H323 module level is not 0xffff, radlog will not work. The extra logging provided by this command intersperses H.225/H.245 decode into the log file.



Tip

Instead of issuing the preceding MML commands to obtain logged data, as a shortcut, you can issue the Unix command **callog** from the Unix command line prompt.

The logged information is recorded in a file called platform.log, in the directory /opt/GoldWing/currentPM/var/log. To move to this directory rapidly, issue the Unix command **cdlog**.

The following command are helpful when performing logging tasks:

- **cdlog**—Quickly moves to the log directory
- **cdbin**—Quickly moves puts to the bin directory
- **log\_erase**—Sets the platform.log file size to zero (This is useful when you want to clear out the log file, on a test network only.)
- **miniparse platform.log**—Draws an arrow diagram (similar to PGW **simprint**) of the platform.log file contents, for a test network only. You should not use this command on a live network.



Note

The **miniparse** command will work only if H323, EISUP log levels are enabled as previously described, and you have issued the command **radlog::start**.

## Sample Debugging Session

This section presents a sample debugging session that focuses on helpful aspects of the process.

### Example

```
callog
cdlog
log_erase
<< make the test call >>
nolog
miniparse platform.log
Parsing file : platform.log
          PSTN          H323
          ----          ----
InitialAddress -->
                  --> admissionRequest
                  <-- admissionConfirm
                  --> setup
                  <-- callProceeding
```

```
AddressComplete <--
```

You can record the log for later retrieval by copying it to a different name, for example:

```
cp platform.,log mytest.log
```

You can view the log by issuing the command:

```
miniparse mytest.log
```

If you want to see the messages in detail, then you can view the platform.log file in a text editor and search for specific information. For example, if you want to see EISUP messages, search for three hyphens (that is, ---).

### Example

```
---- InitialAddress -----
incoming InitialAddress.CallId = 00000000000000000000000011010000010
incoming InitialAddress.OriginatingVSCAddress = 00001010001101000100001110000111
incoming InitialAddress.NatureOfConnectionInd.EchoControlDeviceInd = 00000001 0x01 1
incoming InitialAddress.NatureOfConnectionInd.VirtualCallInd = 00000000 0x00 0
incoming InitialAddress.NatureOfConnectionInd.SatelliteInd = 00000000 0x00 0
incoming InitialAddress.NatureOfConnectionInd.ContinuityCheckInd = 00000000 0x00 0
incoming InitialAddress.ForwardCallInd.NationalInternationalCallInd = 00000001 0x01
```

All parameters are displayed and the message ends with many dashes. The parameter values are EISUP Cisco values, which, usually, are not the same as ISUP.

If you want to see H.323 messages, search for New message (with an uppercase N).

### Example

```
: INFO - New message (channel 38) sent --> setup:
: DEBUG - Message:
: DEBUG - 0> <1414> Q931Message . SEQUENCE [PRIVATE 1]
: DEBUG - 1> . <1929> protocolDiscriminator = 8 . INTEGER (0..2

: DEBUG - 1> . <1157> callReferenceValue . CHOICE
: DEBUG - 2> . . <2114> twoBytes = 13446 . INTEGER [EMPTY 2] (0

: DEBUG - 1> . <990> message . CHOICE ...
: DEBUG - 2> . . <1585> setup . SET [EMPTY 5] ...
: DEBUG - 3> . . . <1148> bearerCapability . SEQUENCE [EMPTY 4]

: DEBUG - 4> . . . . <1500> octet3 . SEQUENCE ...
```

You can vary your searches for information. For example, to search for an incoming H.323 message, search for <--.

To search for an outgoing H.323 message, search for -->.

# Gapping

The gapping level can be set from 0 to 100 percent. From 0 to 99 percent, the call type (normal or priority) is checked against the gapping level call status type. At 100 percent gapping, all calls are gapped, regardless of call type.

## Setting Gapping

To activate call gapping, complete the following steps:

- 
- Step 1** Determine the direction of the call to be gapped:
- Incoming (inc) for calls originating from the H.323 network
  - Outgoing (otg) for calls originating from the PSTN Gateway (PGW 2200)
  - Both (both) for calls originating from either side
- Step 2** Determine what type of calls are to be gapped:
- Normal calls (nonpriority calls)
  - All calls
- Step 3** Determine the percentage of calls to be gapped. The percentage can range from 0 to 100 percent. If 100 percent is selected, all calls are gapped, regardless of the type of call.
- Step 4** Enter the **set-gapping** MML command. For example, to gap 60 percent of all calls for both directions, enter:
- ```
set-gapping:both:calltype=all,percent=60
```
- 

## Retrieving Call Gapping Data

To retrieve the current levels of call gapping for all gapping clients, enter the **rtrv-gapping** command. The command displays text similar to the following:

| Client Name | Direction | Level | Call Type | Active |
|-------------|-----------|-------|-----------|--------|
| Overload    | Outgoing  | 10    | Normal    | No     |
| Overload    | Incoming  | 10    | Normal    | No     |
| MML         | Outgoing  | 20    | All       | Yes    |
| MML         | Incoming  | 30    | All       | Yes    |

The output shows the gapping levels set by the overload function and the MML command **set-gapping**. The highest gapping level is used as the level to gap calls, which is indicated as Yes in the column titled Active. In this example, the MML levels for outgoing and incoming calls are active.

