



# **Dialogic® Vision™ SNMP Reference Manual**

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## Revision history

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Revision	Release date	Notes
64-0408-03 Rev A	January 2011	BK, Dialogic® Vision™ 1000 Video Gateway 5.1 and Dialogic® Vision™ 1000 Programmable Media Platform 5.1.
64-0408-02 Rev A	December 2009	BK, Dialogic® Vision™ CX Video Gateway 4.2 and Dialogic® Vision™ VX Integrated Media Platform 4.2.
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Last modified: 2011-1-13		

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# 1. Introduction

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The *Dialogic® Vision™ SNMP Reference Manual* describes the management information bases (MIBs) that support SNMP on the Dialogic® Vision™ 1000 Programmable Media Platform and Dialogic® Vision™ 1000 Video Gateway. Except when explicitly referenced, these products will be referred to collectively as Vision Server in this manual.

This manual assumes that you are familiar with Linux and SNMP.

**Note:** Product names have been changed. The table below indicates terminology that was formerly associated with the products, as well as the new terminology by which the products are now known.

Former terminology	Current terminology
Dialogic® Vision™ CX Video Gateway	Dialogic® Vision™ 1000 Video Gateway Also referred to as "Video Gateway" in this manual
Dialogic® Vision™ VX Integrated Media Platform	Dialogic® Vision™ 1000 Programmable Media Platform Also referred to as "Programmable Media Platform" in this manual

## 2. The SNMP Interface

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### Overview of the SNMP interface

Use SNMP with the Vision Server to monitor performance, view statistics, and receive alarms. To use SNMP, you must have a computer that is connected to the Vision Server through a common LAN. The computer must be running a standard SNMP client.

The Vision Server uses Net-SNMP version 5.4.1 as a master agent and the following subagents: DS1, RAID, Call Server, Signaling Server, VoiceXML Interpreter, Video Transcoder, Gateway, and Node. The master agent supports SNMPv1, SNMPv2c, and SNMPv3. For more information about Net-SNMP, refer to <http://www.net-snmp.org>.

By default, the master agent listens on port 161 for SET and GET operations, and sends traps on port 162. The read community is public by default, the default write community is visionsnmp, and the trap community is public by default. Up to five managers of the trap receiver are supported. See [Configuring the master agent](#) for more information.

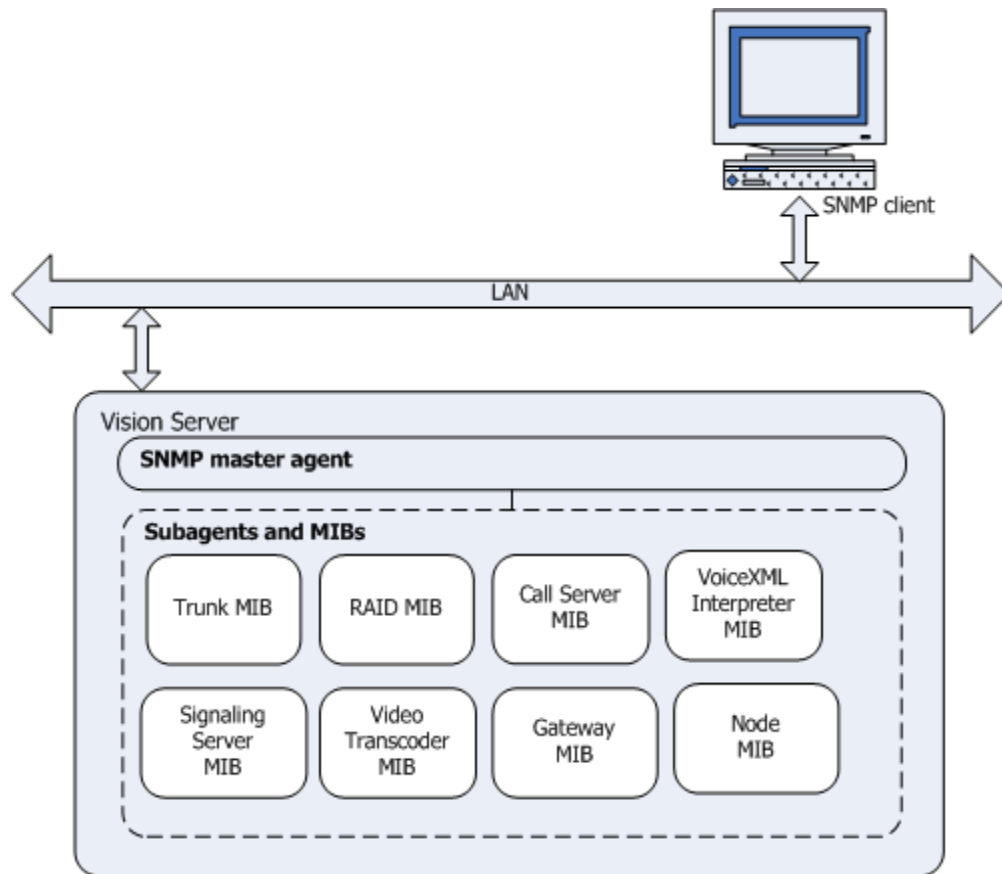
### Supported MIBs

The following table describes the supported MIBs:

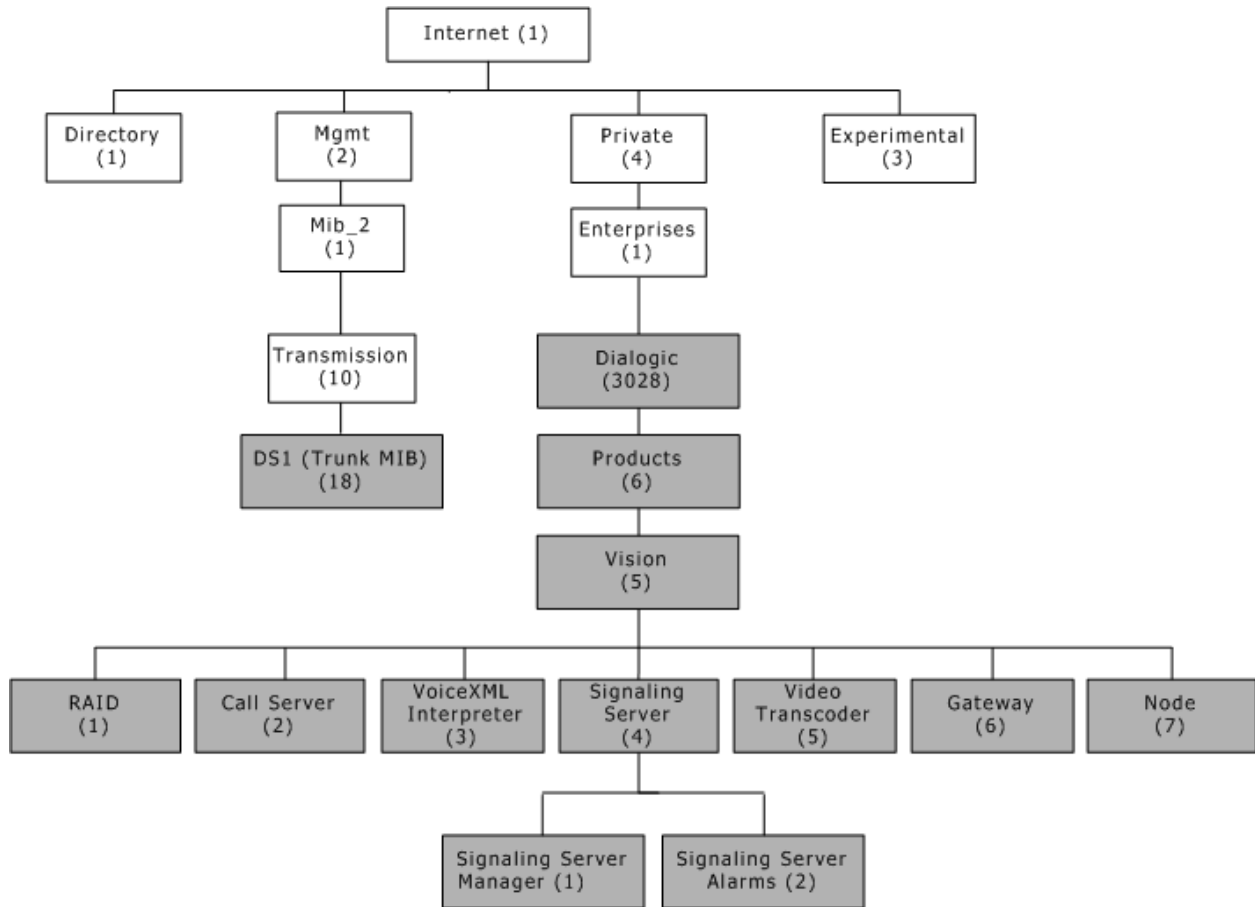
MIB	Applicability	Description
DS1 or Trunk (RFC 2495)	Vision Servers with T1/E1 trunks	Contains configuration information about the DS1 interfaces and statistics collected from the near end interface (the interface on the board that the agent is monitoring.)  The Trunk MIB is defined by the IETF and is also called the DS1 MIB. See <a href="#">Trunk MIB description</a> for information.
RAID	Vision Servers on RAID platforms	Obtains information about a RAID array. See <a href="#">RAID MIB description</a> for information.
Call Server	Vision Servers with a Call Server	Queries and sets values for the Call Server. See <a href="#">Call Server MIB description</a> for information.
VoiceXML Interpreter	Programmable Media Platform	Queries and sets values for the full set of management information for the VoiceXML Interpreter. See <a href="#">VoiceXML Interpreter MIB description</a> for information.

MIB	Applicability	Description
Signaling Server SMI	Vision Servers with a Signaling Server	Contains the Signaling Server Manager MIB and the Signaling Server Alarms MIB.
Signaling Server Manager	Vision Servers with a Signaling Server	Queries and sets values for Signaling Servers. See <a href="#">Signaling Server Manager MIB description</a> for information.
Signaling Server Alarms	Vision Servers with a Signaling Server	Sets traps and receives SS7 notifications. See <a href="#">Signaling Server Alarms MIB description</a> for information.
Video transcoder	Vision Servers with a Video Transcoder	Queries and sets values for the Video Transcoder. See <a href="#">Video Transcoder MIB description</a> for information.
Gateway	Vision Servers	Queries and sets values for Vision Servers that use gateway processes. See <a href="#">Gateway MIB description</a> for information.
Node	Vision Servers	Contains information about a Vision node and its members. See <a href="#">Node MIB description</a> for information.

The following illustration shows the supported MIBs:



Dialogic is assigned a namespace under the Enterprises MIB. The OID for Dialogic® Vision™ products is 1.3.6.1.4.1.3028.6.5. The various MIBs such as RAID, Call Server, and VoiceXML Interpreter reside under this OID. The Dialogic hierarchy is defined in the DLGC-GLOBAL-REG MIB. The following illustration shows the SNMP subagents with their major tables. MIBs in gray are currently implemented.



The Dialogic subtree consists of all MIBs defined by Dialogic. MIB description files for the Signaling Server subagents are in the `/opt/net-snmp/share/mibs` directory. MIB description files for the Video Transcoder subagents are in the `/opt/nms/trc/snmp` directory. MIB description files for the other subagents are in the `/opt/nms/vx/snmp/mibs` directory.

The following table lists the MIB description files:

MIB description file	Description
<i>ds1-mib.txt</i>	Trunk MIB (DS1)
<i>Vision-RAID.mib</i>	RAID MIB
<i>Vision-CallServer.mib</i>	Call Server MIB
<i>Vision-VxmlInterpreter.mib</i>	VoiceXML Interpreter
<i>Vision-SignalingServer-SMI.mib</i>	Vision Signaling Server SMI, which contains two Signaling Server MIBs: Signaling Server Manager MIB, and SS7 alarms and notifications MIB.
<i>Vision-SignalingServer-Manager.mib</i>	Signaling Server Manager MIB

MIB description file	Description
<i>Vision-SignalingServer-Alarms.mib</i>	SS7 alarms and notifications MIB
<i>Vision-VideoTranscoder.mib</i>	Video Transcoder MIB
<i>Vision-Gateway.mib</i>	Gateway MIB
<i>Vision-Node.mib</i>	Node MIB

These files require other MIB description files documented in RFCs (such as SNMPv2-TC, SNMPv2-CONF, and SYSAPPL-MIB). These other MIB description files can be found on the internet.

## Configuring the master agent

Typically you will configure the SNMP master agent using the Vision Console, as described in the *Dialogic® Vision™ 1000 Video Gateway Administration Manual* and the *Dialogic® Vision™ 1000 Programmable Media Platform User's Manual*.

To manually configure the master agent for your site, modify the *snmpd.conf* configuration file, which is located in the *vx/snmp/conf* directory. This file contains configuration information for SNMPv1, SNMPv2c, and SNMPv3.

## Master agent settings

The following table describes the main master agent settings in the *snmpd.conf* file:

Setting	Description
sysDescr	Describes the system.
sysLocation	Describes the system location.
sysContact	Whom to call when the system needs attention.
rocommunity	Defines a read-only community name for SNMPv1 and SNMPv2c.
rwcommunity	Defines a read-write community name for SNMPv2 and SNMPv2c.
rwuser	Defines a read-write user for SNMPv3 (optional).
createUser	Creates the read-write user defined with <i>rwuser</i> for SNMPv3 (optional).
trapsink	Defines an SNMPv1 trap receiver (optional).
trap2sink	Defines an SNMPv2c trap receiver.
informsink	Defines SNMPv2c inform (acknowledged trap) receiver (optional).

Setting	Description
trapcommunity	Defines a default trap sink community to use.

**Note:** You should remove users you will not use, and modify the default values for the keys.

## Adding target addresses for SNMP notifications

Add one or more target addresses for SNMP notifications. These are the IP addresses and port numbers of the listening manager applications to which the Vision Server sends notifications.

To add an SNMPv1 target address, use the following syntax to add a trapsink entry to the *snmpd.conf* file:

```
trapsink HOST [COMMUNITY [PORT]]
```

To add an SNMPv2c trap or inform target address, use trap2sink or informsink instead of trapsink.

The following example adds an SNMPv2c trap receiver to the *snmpd.conf* file. This target application is listening at address 10.0.25. It uses port 162 (the default) as the trap destination port. The trap will be sent using community "public":

```
Trap2sink 10.0.0.25 public 162
```

## Adding an SNMPv2c community string

**Note:** SNMPv1 and SNMPv2c are not secure protocols. The appropriate function of SNMPv1 and SNMPv2c configurations for a managed device is to enable public read-only access.

To add an SNMPv2c read-only community, use a rocommunity entry:

```
rocommunity COMMUNITY [SOURCE [OID | -V VIEW [CONTEXT]]]
```

By default, this entry provides access to the full OID tree, regardless of where the requests were sent from. The SOURCE token can be used to restrict access to requests from specified systems. The OID field restricts access for that community to the subtree rooted at the given OID, or named view. For more information, refer to the Net-SNMP documentation at <http://www.net-snmp.org>.

## Adding an SNMPv3 user

To add an SNMPv3 user named NetworkAdmin, follow these steps:

Step	Action
1	<p>Add an rwuser entry for NetworkAdmin:</p> <pre>rwuser NetworkAdmin</pre> <p>To give the user read-only privileges, use rouser instead.</p> <p>When the master agent is restarted, the authentication and privacy keys are localized, and are no longer stored in plain text.</p>
2	<p>Add a createUser entry to assign security keys to NetworkAdmin:</p> <pre>createUser NetworkAdmin MD5 authpassphrase</pre>
3	Restart the master agent.

## Changing the default UDP listen port for the master agent

The default UDP port on which the master agent listens for SNMP requests is 161. You can change the default UDP port by adding an agentaddress entry to the *snmpd.conf* file:

```
Agentaddress 49212
```

## Communicating with the master agent

The master agent is installed as a daemon during the Vision Server installation. Typically the SNMP daemon is started by the Vision Console. You can make SNMP requests on a subagent once the server is up and running.

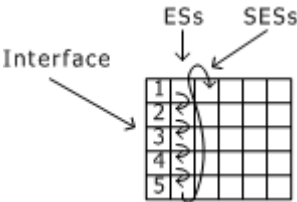
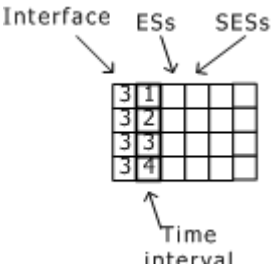
To test communications after the Vision Server is started, send various SNMP GET/SET requests from the manager and force the agent to send traps to the manager by quiescing and unquiescing the channels. You can quiesce and unquiesce the channels on the Services page of the Operations menu in the Vision Console.

For more information about using the Vision Console, see the *Dialogic® Vision™ 1000 Video Gateway Administration Manual* and the *Dialogic® Vision™ 1000 Programmable Media Platform User's Manual*.

## Accessing MIB objects

The following table describes the ways you can access objects in a MIB:

Access method	Description
Single	Contains a single value. Getting the value for an instance of this object type requires adding a 0 to the end of the OID. For example, if the OID to a single object type is <b>p</b> , then use <b>p.0</b> to get its value.
Indexed table	The column is the type of item and the row (index) is the instance of that item type. The OID of the start of the table is <b>p</b> , and <b>p.column.index</b> describes a field, where index specifies the row.

Access method	Description
Doubly indexed table	<p>Uses two indices to specify a row. The column is the type of item and the row is defined by two indices that further define the meaning of that row. The OID of the start of the table is <b>p</b>.</p> <p><b>p.column.index1.index2</b> specifies a field, where the GET-NEXT command finds the next object in the current MIB that has a value. The GET-NEXT command returns the value of the object and its OID. If the current object is in a table, it returns the next column, which is the last digit in the OID. These actions represent reading the table from top to bottom, then left to right.</p> <p>For example, the Trunk MIB has an indexed table called the Current table, in which each row is the index of the interface and each column represents a statistic. If you use the GET command to retrieve errored seconds (ESs) for interface 1, then each time you use the GET-NEXT command this retrieves ESs for the next interface. When GET-NEXT has retrieved ESs for interface 5, the next GET-NEXT command retrieves severely errored seconds (SESSs) for interface 1, as shown in the following illustration:</p>  <p>The OID to a field in a doubly indexed table is <b>p.column.index1.index2</b>. The field is grouped by index1, and the particular field in that group is specified by using GET for the ES for the first time interval of the third interface. Using GET-NEXT retrieves ES for the next time interval, as shown in the following illustration:</p>  <p>When GET-NEXT has retrieved ES for all intervals of interface 3, the next GET-NEXT command either retrieves the ES for the first interval of the next interface (if there is one), or the SES for the first interval of interface 3.</p> <p>For more information, refer to <a href="#">Current table</a> and <a href="#">Interval table</a>.</p>

## Troubleshooting

For troubleshooting purposes, you may need to disable, or stop and restart SNMP support in the VoiceXML Interpreter and Call Server subagents.

To...	Do the following...
Disable SNMP	<p>For the Video Gateway, set the value of the <code>SNMPEnabled</code> setting in the <code>vx/callserver/conf/callserver.conf</code> file to <code>false</code>.</p> <p>For the Programmable Media Platform, set the value of the <code>SNMPEnabled</code> setting in the <code>vx/callserver/conf/callserver.conf</code> file and the <code>vx/vxmlinterpreter/conf/vxmlinterpreter.conf</code> file to <code>false</code>.</p>
Enable SNMP	<p>For the Video Gateway, set the value of the <code>SNMPEnabled</code> setting in the <code>vx/callserver/conf/callserver.conf</code> file to <code>true</code>.</p> <p>For the Programmable Media Platform, set the value of the <code>SNMPEnabled</code> setting in the <code>vx/callserver/conf/callserver.conf</code> file and the <code>vx/vxmlinterpreter/conf/vxmlinterpreter.conf</code> file to <code>true</code>.</p>
Stop the master agent	Use the Vision Console to stop the master agent.
Restart the master agent	Use the Vision Console to restart the master agent.

## 3. Trunk MIB

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### Using the Trunk MIB

Use the Trunk MIB with the master agent to configure and view trunk settings on the Vision Server. You can look at the current line status by viewing the dsx1LineStatus object.

The Trunk MIB also lets you set a trap that notifies you when there is a change in the line status. To set a trap for a change in line status, set the dsx1LineStatusChangeTrapEnable object to 1 (enabled). If you receive an alarm, check the E1/T1 connectivity, including connectivity at the switch.

The following example uses SNMP commands from the Net-SNMP toolkit to set and enable traps with the Trunk MIB. The toolkit is available from <http://www.net-snmp.org>.

Step	Action
1	<p>Configure a target address for the SNMP trap notification. Use 127.0.0.1 as the trap address. For more information, see <a href="#">Adding target addresses for SNMP notifications</a>.</p> <p>For example:</p> <pre>trap2sink 127.0.0.1 public 162</pre>
2	<p>Restart the SNMP daemon from the Services page of the Operations menu in the Vision Console.</p>
3	<p>Start the trap receiver.</p> <pre>snmptrapd -f -Lo 2009-06-17 17:08:09 NET-SNMP version 5.1.2 Started.</pre>
4	<p>Enable traps for trunks by setting dsx1LineStatusChangeTrapEnable to 1 in the Trunk MIB.</p> <pre>snmpset -v2c -c visionsnmp 127.0.0.1 1.3.6.1.2.1.10.18.6.1.17.1 i 1 SNMPv2-SMI::transmission.18.6.1.17.1 = INTEGER: 1</pre>
5	<p>Unplug the E1 or T1 cable.</p>
6	<p>View the trap information in the SNMP trap daemon.</p>

## Sample SNMP commands for the Trunk MIB

The following examples use SNMP commands from the Net-SNMP toolkit to query the Trunk MIB. The toolkit is available from <http://www.net-snmp.org>.

Task	Example
Doing a full MIB walk	<code>snmpwalk -v2c 127.0.0.1 1.3.6.1.2.1.10.18</code>
Retrieve dsx1LineStatusChangeTrapEnable	<code>snmpget -v2c 127.0.0.1 1.3.6.1.2.1.10.18.6.1.17.1</code>
Enable dsx1LineStatusChangeTrapEnable	<code>snmpset -v2c 127.0.0.1 1.3.6.1.2.1.10.18.6.1.17.1 i 1</code>

## Trunk MIB description

This topic describes the Dialogic implementation of the Trunk MIB (RFC 2495).

RFC 2495 defines the near end and far end of each DS1 interface. The near end is the interface on the board that the agent is monitoring. The far end is the remote end of the trunk connected to that interface. This topic defines the near end.

The RFC 2495 MIB defines the following groups:

Group	Description
DS1 near end group	Contains configuration information about the DS1 interfaces and statistics collected from the near end interface.
DS1 far end group	Optional and not supported.
Fractional table	Optional and not supported.
Channel mapping table	Optional and not supported.
Trap group	Enables a trap to be sent when the status of the interface changes.

## Trunk MIB structure

RFC 1573 defines an ifTable for all the interfaces in the system as part of MIB2. The Dialogic SNMP agent cannot access the ifTable; therefore, some portions of the RFC 2495 MIB are not supported.

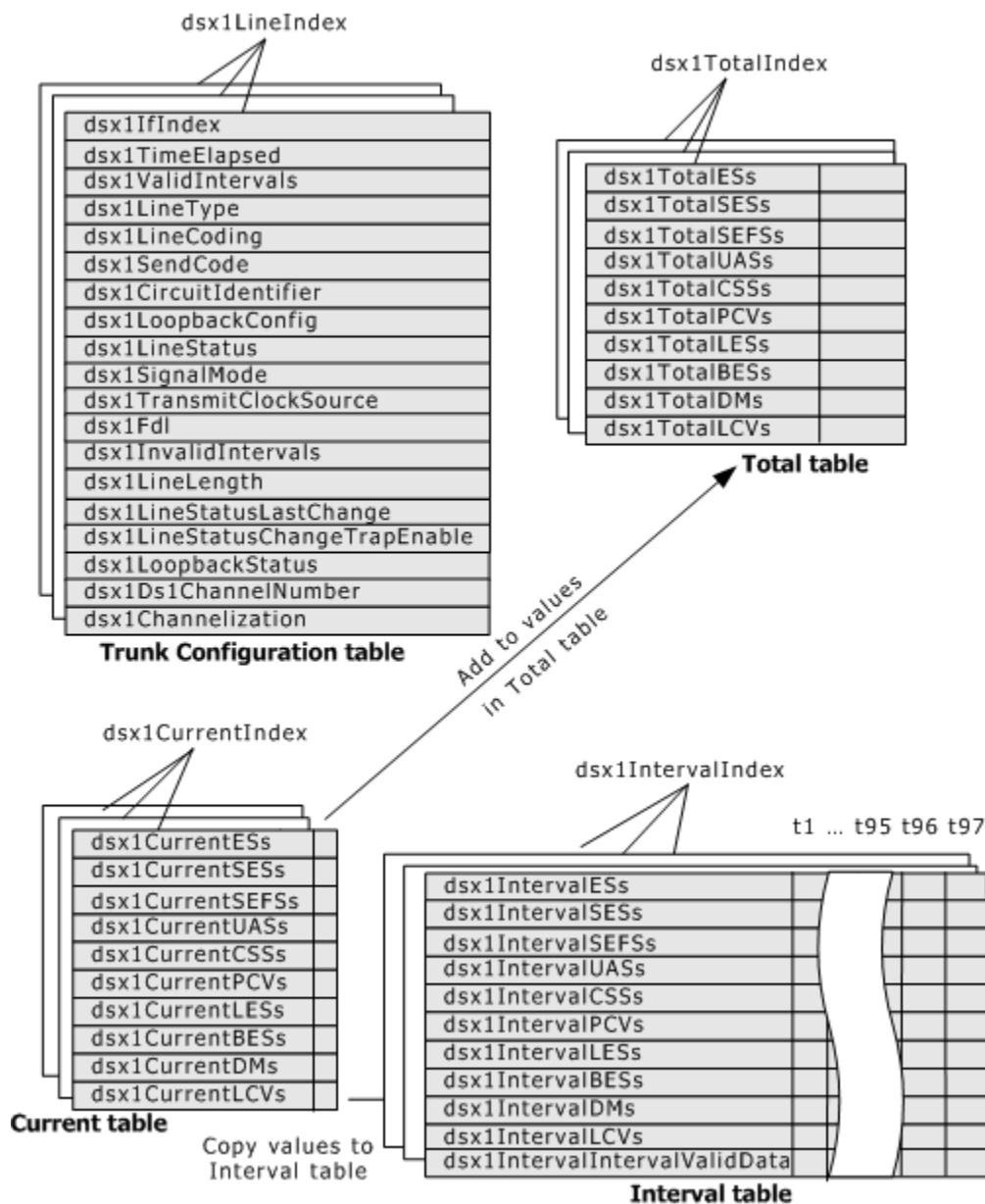
The Dialogic trunk agent does not have access to remote information. Only the near end tables are supported. The dsx1ChannelMappingTable is also not available.

The DS1 near end group consists of the following tables:

Table	Contains...
Trunk Configuration	Information about each DS1 interface such as the number of bits per second that the circuit can reasonably carry, variety of zero code suppression, and the vendor's circuit identifier. Refer to <a href="#">Trunk Configuration table</a> for information.
Current	Statistics for the current 15-minute interval. Refer to <a href="#">Current table</a> for information.
Interval	Statistics collected by each DS1 interface for the last 24 hours of operation. The past 24 hours are broken into 96 15-minute intervals. After 24 hours, the next interval pushes the oldest one out of the table. Refer to <a href="#">Interval table</a> for information.
Total	Cumulative sum of the various statistics for the 24 hour period preceding the current interval. Each field in this table contains the sum of the fields in the Current table for a particular interface. Refer to <a href="#">Total table</a> for information.

The information in the Current table refreshes continuously. Every 15 minutes, the current table's contents are copied to the Interval table.

The following illustration shows the relationship among the DS1 tables:

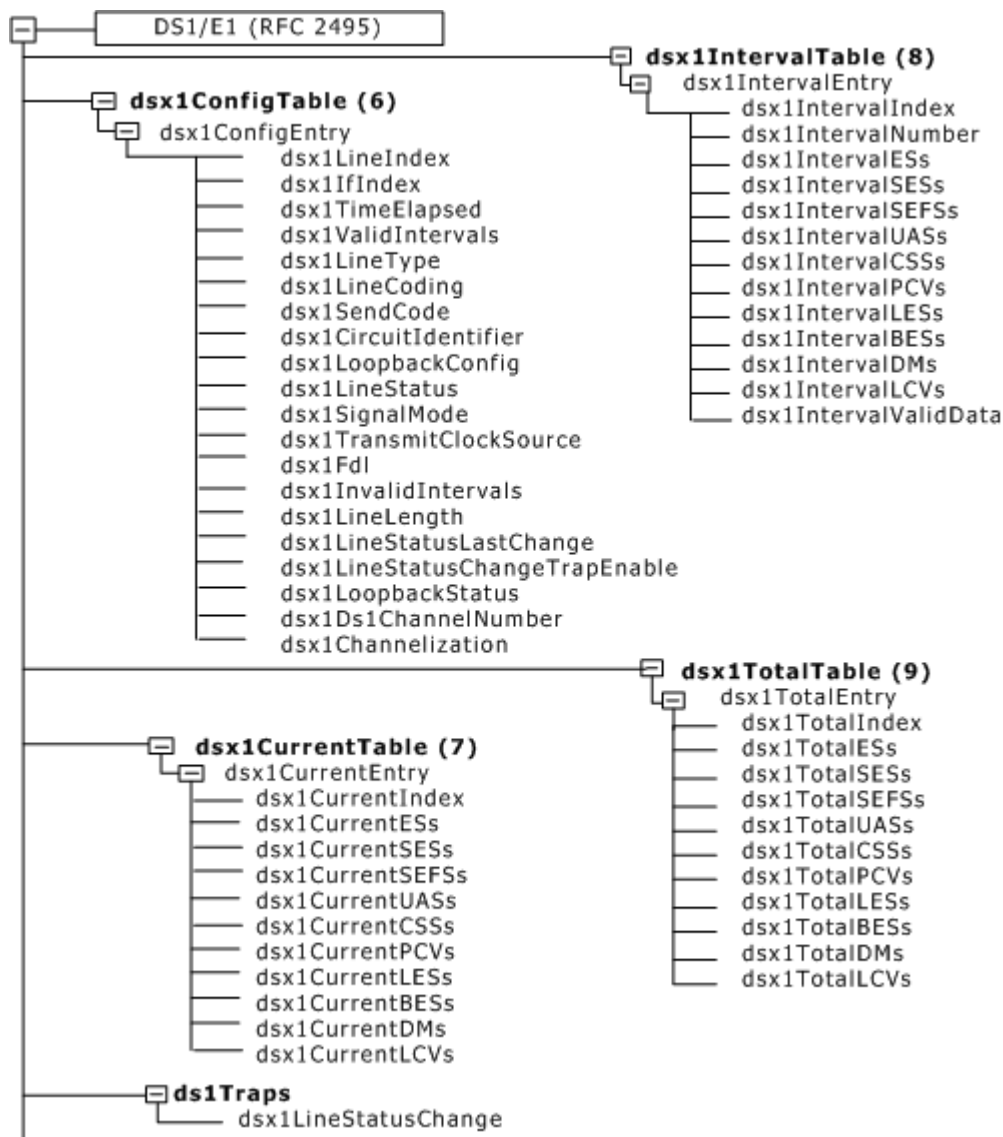


The illustration shows a logical view of the tables for three DS1 interfaces. The Configuration table has an entry for each DS1 interface, which is identified by `dsx1LineIndex`. This index corresponds to the index in the other tables, such that all table entries with the same index number are for the same DS1 interface. Three DS1 interfaces are represented, so each table has three pages. An entry object starts each column of values.

Every 15 minutes, the values in the Current table are copied to the next available time slot (for example, if `t1` was filled 15 minutes ago, `t2` is filled next) in the Interval table. The Current table values are added to the values in the Total table and continue to add up until the agent is restarted.

If the Interval table is full when a new timeslot is added to the table, the last time slot (`t97`) is discarded and the rest of the timeslots slide forward to make room for the new `t1` timeslot.

The following illustration shows a tree view of the sequence of objects in the Trunk MIB:



## Trunk Configuration table

The Trunk Configuration table (dsx1ConfigTable) starts a sequence of dsx1ConfigEntry objects describing the configuration of the DS1 interface identified by dsx1LineIndex.

The following table summarizes the objects in the Trunk MIB Configuration table, also known as the dsx1ConfigEntry block of variables:

Object	Syntax	Description
dsx1LineIndex	Integer (0x1.. 0x7FFFFFFF)	Equal to ifIndex. Making the object equal to ifIndex allows proper use of ifStackTable and ds0/ds0bundle MIBs.

Object	Syntax	Description
dsx1IfIndex	Integer (0x1..0x7FFFFFFF)	Equal to the value of ifIndex from the Interfaces table of MIB II (RFC 1213).
dsx1TimeElapsed	Integer (0..899)	Number of seconds elapsed since the beginning of the near end, current error measurement period.
dsx1ValidIntervals	Integer (0..96)	Number of previous near end 15-minute intervals for which data was collected.  The value is always 96 unless the interface was brought online within the last 24 hours. In this case, the value indicates the number of complete 15 minute near end intervals since the interface has been online minus 1 (because the time period starts with 1).
dsx1LineType	Integer	Type of DS1 interface implementing the circuit. Type of circuit affects the number of bits per second that the circuit can reasonably carry, as well as the interpretation of the usage and error statistics. For more information, refer to <a href="#">dsx1LineType</a> .
dsx1LineCoding	Integer	Type of zero code suppression used on the interface. For more information, refer to <a href="#">dsx1LineCoding</a> .
dsx1SendCode	Integer	Type of code sent across the DS1 interface by the device. For more information, refer to <a href="#">dsx1SendCode</a> .  The master agent returns dsx1SendNoCode (normal data). Loopback is not supported.
dsx1CircuitIdentifier	DisplayString (SIZE 0..255)	Transmission vendor's circuit identifier for troubleshooting purposes.
dsx1LoopbackConfig	Integer	Loopback configuration of the DS1 interface.  badValue is returned in response to a requested loopback state that the interface does not support. For more information, refer to <a href="#">dsx1LoopbackConfig</a> .
dsx1LineStatus	Integer (1..131071)	Interface status. For more information, refer to <a href="#">dsx1LineStatus</a> .

Object	Syntax	Description
dsx1SignalMode	Integer	Circuit's signal mode. For more information, refer to <a href="#">dsx1SignalMode</a> .
dsx1TransmitClockSource	Integer	Source of the transmit clock used for synchronization. For more information, refer to <a href="#">dsx1TransmitClockSource</a> .
dsx1Fdl	Integer	Use of the facilities data link and the sum of its capabilities. For more information, refer to <a href="#">dsx1Fdl</a> . The master agent always returns dsx1Fdl - none (8). Facilities data link is not supported.
dsx1InvalidIntervals	Integer	Number of intervals with invalid data (always 0, not supported).
dsx1LineLength	Integer	Length of the DS1 line in meters (always 0, not supported).
dsx1LineStatusLastChange	TimeStamp	Time the status of the interface last changed.
dsx1LineStatusChange-TrapEnable	Integer	Whether dsx1LineStatusChange traps are generated for this interface. 1 = Enabled 2 = Disabled (default)

Object	Syntax	Description																
dsx1LoopbackStatus	Integer (1...127)	<p>Current state of the loopback on the DS1 interface.</p> <p>This value contains information about loopbacks established by a manager and remotely from the far end.</p> <p>dsx1LoopbackStatus is a bit map represented as a sum; therefore, it can represent multiple loopbacks simultaneously.</p> <p>The bit positions are:</p> <table border="1" data-bbox="776 621 1406 1171"> <thead> <tr> <th data-bbox="776 621 857 688">Bit</th> <th data-bbox="857 621 1406 688">Value</th> </tr> </thead> <tbody> <tr> <td data-bbox="776 688 857 756">1</td> <td data-bbox="857 688 1406 756">dsx1NoLoopback</td> </tr> <tr> <td data-bbox="776 756 857 823">2</td> <td data-bbox="857 756 1406 823">dsx1NearEndPayloadLoopback</td> </tr> <tr> <td data-bbox="776 823 857 890">4</td> <td data-bbox="857 823 1406 890">dsx1NearEndLineLoopback</td> </tr> <tr> <td data-bbox="776 890 857 957">8</td> <td data-bbox="857 890 1406 957">dsx1NearEndOtherLoopback</td> </tr> <tr> <td data-bbox="776 957 857 1024">16</td> <td data-bbox="857 957 1406 1024">dsx1NearEndInwardLoopback</td> </tr> <tr> <td data-bbox="776 1024 857 1092">32</td> <td data-bbox="857 1024 1406 1092">dsx1FarEndPayloadLoopback</td> </tr> <tr> <td data-bbox="776 1092 857 1159">64</td> <td data-bbox="857 1092 1406 1159">dsx1FarEndLineLoopback</td> </tr> </tbody> </table> <p>The master agent always returns dsx1NoLoopback because loopback is not supported.</p>	Bit	Value	1	dsx1NoLoopback	2	dsx1NearEndPayloadLoopback	4	dsx1NearEndLineLoopback	8	dsx1NearEndOtherLoopback	16	dsx1NearEndInwardLoopback	32	dsx1FarEndPayloadLoopback	64	dsx1FarEndLineLoopback
Bit	Value																	
1	dsx1NoLoopback																	
2	dsx1NearEndPayloadLoopback																	
4	dsx1NearEndLineLoopback																	
8	dsx1NearEndOtherLoopback																	
16	dsx1NearEndInwardLoopback																	
32	dsx1FarEndPayloadLoopback																	
64	dsx1FarEndLineLoopback																	
dsx1Ds1ChannelNumber	Integer (0...28)	<p>Channel number of the DS1/E1 on its parent DS2/E2 or DS3/E3.</p> <p>A value of 0 indicates this DS1/E1 does not have a parent DS3/E3.</p> <p>The master agent always returns 0.</p>																

Object	Syntax	Description								
dsx1Channelization	Integer	Whether this DS1/E1 is channelized or unchannelized: <table border="1" data-bbox="776 352 1409 632"> <thead> <tr> <th>Value</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>disabled</td> </tr> <tr> <td>2</td> <td>enabledDs0</td> </tr> <tr> <td>3</td> <td>enabledDs1</td> </tr> </tbody> </table> <p>The master agent always returns enabledDs0.</p>	Value	Description	1	disabled	2	enabledDs0	3	enabledDs1
Value	Description									
1	disabled									
2	enabledDs0									
3	enabledDs1									

### dsx1LineType

The following table lists the valid values for dsx1LineType:

Type	Value	Description
Other	1	Unlisted
dsx1ESF	2	Extended SuperFrame DS1
dsx1D4	3	AT&T D4 format DS1
dsx1E1	4	CCITT Recommendation G.704 (Table 4a)
dsx1E1-CRC	5	CCITT Recommendation G.704 (Table 4a)
dsx1E1-MF	6	G.704 (Table 4a) with TS16 multiframing enabled
dsx1E1-CRC-MF	7	G.704 (Table 4b) with TS16 multiframing enabled

Values 3 and 4 are the only options the agent can return. For example, E1 interfaces return dsx1E1, and T1 interfaces return dsx1D4.

### dsx1LineCoding

The following table lists the valid values for dsx1LineCoding:

Type	Description
dsx1JBZS	Jammed bit zero suppression, in which the AT&T specification of at least one pulse every 8-bit period is implemented by forcing a pulse in bit 8 of each channel. Only seven bits per channel, or 1.344 Mbps, is available for data.

Type	Description
dsx1B8ZS	Specified pattern of normal bits and bipolar violations that replace a sequence of eight zero bits.
dsx1HDB3	E1 links, with or without CRC, use dsx1HDB3 or dsx1AMI.
dsx1ZBTSI	ANSI clear channels can use dsx1ZBTSI or zero byte timeslot interchange.
dsx1AMI	Mode where no zero code suppression is present and the interface encoding does not solve the problem directly. In this application, the higher layer must provide data that meets or exceeds the pulse density requirements, such as inverting HDLC data.
other	Unlisted (default).

### dsx1SendCode

The following table lists the valid values for dsx1SendCode:

Type	Value	Description
dsx1SendNoCode	1	Sending looped or normal data.
dsx1SendLineCode	2	Sending a request for a line loopback.
dsx1SendPayloadCode	3	Sending a request for a payload loopback.
dsx1SendResetCode	4	Sending a loopback termination request.
dsx1SendQRS	5	Sending a quasi-random signal (QRS) test pattern.
dsx1Send511Pattern	6	Sending a 511 bit fixed test pattern.
dsx1Send3in24Pattern	7	Sending a fixed test pattern of 3 bits set in pattern of 24.
dsx1SendOtherTestPattern	8	Sending a test pattern other than those described by this object.

### dsx1LoopbackConfig

The following table lists the valid values for dsx1LoopbackConfig:

Type	Value	Description
dsx1NoLoop	1	Not in the loopback state. A device that is not capable of performing a loopback on the interface always returns this value.
dsx1PayloadLoop	2	Received signal at this interface is looped through the device. Typically, the received signal is looped back for re-transmission after it passes through the device's framing function.
dsx1LineLoop	3	Received signal at this interface does not go through the device.
dsx1OtherLoop	4	Loopbacks that are not defined.

The master agent always returns dsx1NoLoop (1) because loopback is not supported.

### dsx1LineStatus

The following table lists the valid values for dsx1LineStatus:

Status	Value	Description
dsx1NoAlarm	1	No alarm present.
dsx1RcvFarEndLOF	2	Yellow alarm. Not supported.
dsx1XmtFarEndLOF	4	Near end sending LOF indication. Not supported.
dsx1RcvAIS	8	Far end sending AIS (blue). Not supported.
dsx1XmtAIS	16	Near end sending AIS.
dsx1LossOfFrame	32	Near end LOF (red alarm).
dsx1LossOfSignal	64	Near end loss of signal.
dsx1LoopbackState	128	Near end is looped.
dsx1T16AIS	256	E1 TS16 AIS.
dsx1RcvFarEndLOMF	512	Far end sending TS16 LOMF. Not supported.
dsx1XmtFarEndLOMF	1024	Near end sending TS16 LOMF. Not supported.
dsx1RcvTestCode	2048	Near end detects a test code.

Status	Value	Description
dsx1OtherFailure	4096	Interface status not defined.

### dsx1SignalMode

The following table lists the valid values for dsx1SignalMode:

Type	Value	Description
none	1	No bits are reserved for signaling on this channel.
robbedBit	2	T1 robbed bit signaling is in use.
bitOriented	3	E1 channel associated signaling is in use.
messageOriented	4	Common channel signaling is in use either on channel 16 of an E1 link or on channel 24 of a T1 link.
other	5	

### dsx1TransmitClockSource

The following table lists the valid values for dsx1TransmitClockSource:

Type	Value	Description
loopTiming	1	Recovered receive clock of this interface is used as the transmit clock. Also known as a slave.
localTiming	2	Recovered receive clock from another interface is used as the transmit clock. Also known as the master.
throughTiming	3	A local clock source is used.

### dsx1Fdl

The following table lists the valid values for dsx1Fdl:

Type	Value	Description
other	1	Unknown protocol used.
dsx1Ansi-T1-403	2	FDL exchange recommended by ANSI.
dsx1Att-54016	4	ESF FDL exchanges.
dsx1Fdl-none	8	Device does not use the FDL.

## Current table

The Current table (dsx1CurrentTable) contains various statistics collected for the current 15 minute interval.

dsx1CurrentEntry starts a group of objects that make up a table for the DS1 interface identified by dsx1CurrentIndex. Each DS1 interface has one entry object. The following table summarizes the objects in the Trunk MIB Current table, also known as the dsx1CurrentEntry block of variables. All objects are read-only.

Object	Syntax	Description
dsx1CurrentIndex	Integer	Number of the DS1 interface to which a block of variables apply. This variable is the same as <a href="#">dsx1LineIndex</a> in the Trunk Configuration table.
dsx1CurrentESs	Gauge	Number of errored seconds. For ESF and E1-CRC links, an errored second is a second with one or more path code violations, one or more out-of-frame defects, one or more controlled slip events, or a detected AIS defect. For D4 and E1-noCRC links, the presence of bipolar violations also triggers an errored second. This value is not incremented during an unavailable second.

Object	Syntax	Description										
dsx1CurrentSEs	Gauge	<p>Number of severely errored seconds. This value is defined differently for different signal types:</p> <table border="1" data-bbox="626 354 1386 989"> <thead> <tr> <th data-bbox="626 354 846 457">Signal type</th> <th data-bbox="846 354 1386 457">Definition of a severely errored second</th> </tr> </thead> <tbody> <tr> <td data-bbox="626 457 846 621">ESF signals</td> <td data-bbox="846 457 1386 621">Second with 320 or more path code violation error events, one or more out-of-frame defects, or a detected AIS defect.</td> </tr> <tr> <td data-bbox="626 621 846 756">E1-CRC signals</td> <td data-bbox="846 621 1386 756">Second with 832 or more path code violation error events or one or more out-of-frame defects.</td> </tr> <tr> <td data-bbox="626 756 846 858">E1-no CRC signals</td> <td data-bbox="846 756 1386 858">Second with 2048 line code violations or more.</td> </tr> <tr> <td data-bbox="626 858 846 989">D4 signals</td> <td data-bbox="846 858 1386 989">Count of one-second intervals with framing error events, an OOFdefect, or 1544 line code violations or more.</td> </tr> </tbody> </table> <p>Controlled slips are not included in this parameter. This value is not incremented during an unavailable second.</p>	Signal type	Definition of a severely errored second	ESF signals	Second with 320 or more path code violation error events, one or more out-of-frame defects, or a detected AIS defect.	E1-CRC signals	Second with 832 or more path code violation error events or one or more out-of-frame defects.	E1-no CRC signals	Second with 2048 line code violations or more.	D4 signals	Count of one-second intervals with framing error events, an OOFdefect, or 1544 line code violations or more.
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D4 signals	Count of one-second intervals with framing error events, an OOFdefect, or 1544 line code violations or more.											
dsx1CurrentSEFSs	Gauge	Number of severely errored framing seconds. A severely errored framing second is a second with one or more out-of-frame defects or a detected AIS defect.										

Object	Syntax	Description						
dsx1CurrentUASs	Gauge	<p>Number of unavailable seconds (UAS) that are calculated by counting the number of seconds the interface is unavailable.</p> <p>The DS1 interface is unavailable from the onset of 10 contiguous SESs or the onset of the condition leading to a failure. If the condition leading to the failure was immediately preceded by one or more contiguous SESs (<a href="#">dsx1CurrentSESs</a>), the DS1 interface unavailability starts from the onset of these SESs.</p> <table border="1" data-bbox="626 594 1383 1262"> <thead> <tr> <th data-bbox="626 594 889 726">Once unavailable, and if...</th> <th data-bbox="889 594 1383 726">The DS1 interface becomes available at the...</th> </tr> </thead> <tbody> <tr> <td data-bbox="626 726 889 827">No failure is present</td> <td data-bbox="889 726 1383 827">Onset of 10 contiguous seconds with no SESs.</td> </tr> <tr> <td data-bbox="626 827 889 1262">A failure is present</td> <td data-bbox="889 827 1383 1262"> <p>Onset of 10 contiguous seconds with no SESs if the failure clearing time is less than or equal to 10 seconds.</p> <p>If the failure clearing time is more than 10 seconds, the DS1 interface becomes available at the onset of 10 contiguous seconds with no SESs, or the onset period leading to the successful clearing condition, whichever occurs later.</p> </td> </tr> </tbody> </table> <p>All DS1 error counts are incremented while the DS1 interface is deemed available. While the interface is deemed unavailable, the only count that is incremented is UASs.</p> <p>A special case exists when the 10 or more second period crosses the 900-second statistics window boundary, because the severely errored second and unavailable second counters must be adjusted when the unavailable signal state is entered. Successive GETS of the affected GET occur during the first few seconds of the window. This is an unavoidable side effect of selecting the managed objects defined by RFC 2495.</p>	Once unavailable, and if...	The DS1 interface becomes available at the...	No failure is present	Onset of 10 contiguous seconds with no SESs.	A failure is present	<p>Onset of 10 contiguous seconds with no SESs if the failure clearing time is less than or equal to 10 seconds.</p> <p>If the failure clearing time is more than 10 seconds, the DS1 interface becomes available at the onset of 10 contiguous seconds with no SESs, or the onset period leading to the successful clearing condition, whichever occurs later.</p>
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Object	Syntax	Description
dsx1CurrentCSSs	Gauge	<p>Number of controlled slip seconds. A controlled slip second is a one-second interval containing one or more controlled slips.</p> <p>A controlled slip is the replication or deletion of the payload bits of a DS1 frame. A controlled slip can occur when there is a difference between the timing of a synchronous receiving terminal and the received signal. A controlled slip does not cause an out-of-frame error.</p>
dsx1CurrentPCVs	Gauge	<p>Number of path coding violations.</p> <p>A path coding violation error event is a frame synchronization bit error in the D4 and E1-noCRC formats or a CRC or frame synch.bit error in the ESF and E1-CRC formats. Also known as CV-P. Refer to ANSI T1.231, Section 6.5.2.1.</p>
dsx1CurrentLEs	Gauge	<p>Number of line errored seconds. A line errored second is a second in which one or more line code violation error events were detected. Refer to T1M1.3.</p>
dsx1CurrentBESs	Gauge	<p>Number of bursty errored seconds (BESs).</p> <p>A bursty errored second (also known as errored second type B) is a second with fewer than 320 and more than 1 path coding violation error events, no severely errored frame defects, and no detected incoming AIS defects. Controlled slips are not included in this parameter.</p> <p>This value is not incremented during an unavailable second (<a href="#">dsx1CurrentUASs</a>).</p>
dsx1CurrentDMs	Gauge	<p>Number of degraded minutes (DMs).</p> <p>A degraded minute is one in which the estimated error rate exceeds 1E-6 but does not exceed 1E-3. Refer to <i>CCITT Specifications Volume III, Recommendation G.821</i>.</p> <p>Degraded minutes are determined by:</p> <ol style="list-style-type: none"> <li>1. Collecting all of the available seconds.</li> <li>2. Removing any severely errored seconds.</li> <li>3. Grouping the result in 60-second long groups.</li> <li>4. Counting a 60-second long group as degraded if the cumulative errors during the seconds present in the group exceed 1E-6.</li> </ol> <p>Available seconds are those seconds that are not unavailable seconds (<a href="#">dsx1CurrentUASs</a>).</p>

Object	Syntax	Description
dsx1CurrentLCVs	Gauge	<p>Number of line code violations (LCVs).</p> <p>A line code violation (LCV) is the occurrence of either a bipolar violation (BPV) or an excessive zeroes (EXZ) error event. This is also known as CV-L. Refer to T1.231 Section 6.5.1.1.</p> <p>An excessive zeroes error event for an AMI-coded signal is the occurrence of more than fifteen contiguous zeroes. Refer to ANSI T1.231 Section 6.1.1.1.2. For a B8ZS coded signal, the defect occurs when more than seven contiguous zeroes are detected.</p>

## Interval table

The Interval Table (dsx1IntervalTable) contains various statistics collected by each DS1 interface over the previous 24 hours of operation. The past 24 hours are broken into 96 completed 15 minute intervals. Each row in this table represents one such interval (identified by dsx1IntervalNumber) for one specific instance (identified by dsx1IntervalIndex).

The Interval table is a doubly indexed table. For information about accessing a doubly indexed table, refer to [Accessing MIB objects](#).

Most of the variables in the Interval table have descriptions that match a variable in the Current table. For example, dsx1IntervalESs in the Interval table matches dsx1CurrentESs in the Current table. Both these variables contain the number of errored seconds for a 15-minute interval. (The dsx1IntervalNumber and the dsx1IntervalValidData variables do not match entries in the Current table.)

The following table summarizes the objects in the Trunk MIB Interval table, also known as the dsx1IntervalEntry block of variables. All objects are read-only.

Object	Syntax	Description
dsx1IntervalIndex	InterfaceIndex	<p>Number of the DS1 interface to which a block of variables apply.</p> <p>This variable is the same as <a href="#">dsx1LineIndex</a> in the Trunk Configuration table.</p>
dsx1IntervalNumber	Integer (1...96)	<p>Number of this dsx1IntervalEntry, where each block of variables covers a 15-minute interval. A number can be between 1 and 96, where 1 is the most recently completed 15 minute interval and 96 is the 15 minutes interval completed 23 hours and 45 minutes prior to interval 1.</p>

Object	Syntax	Description										
dsx1IntervalESs	PerfIntervalCount	<p>Number of errored seconds.</p> <p>For ESF and E1-CRC links, an errored second is a second with one or more path code violations, one or more out-of-frame defects, one or more controlled slip events, or a detected AIS defect.</p> <p>For D4 and E1-noCRC links, the presence of bipolar violations also triggers an errored second.</p> <p>This value is not incremented during an unavailable second.</p>										
dsx1IntervalSEs	PerfIntervalCount	<p>Number of severely errored seconds.</p> <p>This value is defined differently for different signal types:</p> <table border="1" data-bbox="808 831 1386 1627"> <thead> <tr> <th data-bbox="808 831 976 930">Signal type</th> <th data-bbox="976 831 1386 930">Definition of a severely errored second</th> </tr> </thead> <tbody> <tr> <td data-bbox="808 930 976 1129">ESF signals</td> <td data-bbox="976 930 1386 1129">Second with 320 or more path code violation error events, one or more out-of-frame defects, or a detected AIS defect.</td> </tr> <tr> <td data-bbox="808 1129 976 1297">E1-CRC signals</td> <td data-bbox="976 1129 1386 1297">Second with 832 or more path code violation error events or one or more out-of-frame defects.</td> </tr> <tr> <td data-bbox="808 1297 976 1430">E1-no CRC signals</td> <td data-bbox="976 1297 1386 1430">Second with 2048 line code violations or more.</td> </tr> <tr> <td data-bbox="808 1430 976 1627">D4 signals</td> <td data-bbox="976 1430 1386 1627">Count of one-second intervals with framing error events, an OOFdefect, or 1544 line code violations or more.</td> </tr> </tbody> </table> <p>Controlled slips are not included in this parameter.</p> <p>This value is not incremented during an unavailable second.</p>	Signal type	Definition of a severely errored second	ESF signals	Second with 320 or more path code violation error events, one or more out-of-frame defects, or a detected AIS defect.	E1-CRC signals	Second with 832 or more path code violation error events or one or more out-of-frame defects.	E1-no CRC signals	Second with 2048 line code violations or more.	D4 signals	Count of one-second intervals with framing error events, an OOFdefect, or 1544 line code violations or more.
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Object	Syntax	Description
dsx1IntervalSEFSs	PerfIntervalCount	Number of severely errored framing seconds. A severely errored framing second is a second with one or more out-of-frame defects or a detected AIS defect.
dsx1IntervalUASs	PerfIntervalCount	<p>Number of unavailable seconds.</p> <p>This object can decrease if the occurrence of unavailable seconds occurs across an interval boundary.</p> <p>Unavailable seconds (UAS) are calculated by counting the number of seconds the interface is unavailable.</p> <p>The DS1 interface is unavailable from the onset of 10 contiguous SESs or the onset of the condition leading to a failure. If the condition leading to the failure was immediately preceded by one or more contiguous SESs (<a href="#">dsx1IntervalSESs</a>), the DS1 interface unavailability starts from the onset of these SESs.</p>

Object	Syntax	Description	
dsx1IntervalUASs	PerfIntervalCount	<p><b>Once unavailable, and if...</b></p>	<p><b>The DS1 interface becomes available at the...</b></p>
		<p>No failure is present</p>	<p>Onset of 10 contiguous seconds with no SESs.</p>
		<p>A failure is present</p>	<p>Onset of 10 contiguous seconds with no SESs if the failure clearing time is less than or equal to 10 seconds.</p> <p>If the failure clearing time is more than 10 seconds, the DS1 interface becomes available at the onset of 10 contiguous seconds with no SESs, or the onset period leading to the successful clearing condition, whichever occurs later.</p>
		<p>All DS1 error counts are incremented while the DS1 interface is deemed available. While the interface is deemed unavailable, the only count that is incremented is UASs.</p> <p>A special case exists when the 10 or more second period crosses the 900-second statistics window boundary, because the severely errored second and unavailable second counters must be adjusted when the unavailable signal state is entered. Successive GETS of the affected GET occur during the first few seconds of the window. This is an unavoidable side effect of selecting the managed objects defined by RFC 2495.</p>	
dsx1IntervalCSSs	PerfIntervalCount	<p>Number of controlled slip seconds. A controlled slip second is a one-second interval containing one or more controlled slips.</p> <p>A controlled slip is the replication or deletion of the payload bits of a DS1 frame. A controlled slip can occur when there is a difference between the timing of a synchronous receiving terminal and the received signal. A controlled slip does not cause an out-of-frame error.</p>	

Object	Syntax	Description
dsx1IntervalPCVs	PerfIntervalCount	<p>Number of path coding violations.</p> <p>A path coding violation error event is a frame synchronization bit error in the D4 and E1-noCRC formats or a CRC or frame synch.bit error in the ESF and E1-CRC formats. Also known as CV-P. Refer to ANSI T1.231, Section 6.5.2.1.</p>
dsx1IntervalLEs	PerfIntervalCount	<p>Number of line errored seconds.</p> <p>A line errored second is a second in which one or more line code violation error events were detected. Refer to T1M1.3.</p>
dsx1IntervalBESs	PerfIntervalCount	<p>Number of bursty errored seconds (BESs).</p> <p>A bursty errored second (also known as errored second type B) is a second with fewer than 320 and more than 1 path coding violation error events, no severely errored frame defects, and no detected incoming AIS defects. Controlled slips are not included in this parameter.</p> <p>This value is not incremented during an unavailable second (<a href="#">dsx1IntervalUASs</a>).</p>
dsx1IntervalDMs	PerfIntervalCount	<p>Number of degraded minutes (DMs).</p> <p>A degraded minute is one in which the estimated error rate exceeds 1E-6 but does not exceed 1E-3. Refer to <i>CCITT Specifications Volume III, Recommendation G.821</i>.</p> <p>Degraded minutes are determined by:</p> <ol style="list-style-type: none"> <li>1. Collecting all of the available seconds.</li> <li>2. Removing any severely errored seconds.</li> <li>3. Grouping the result in 60-second long groups.</li> <li>4. Counting a 60-second long group as degraded if the cumulative errors during the seconds present in the group exceed 1E-6.</li> </ol> <p>Available seconds are those seconds that are not unavailable seconds (<a href="#">dsx1IntervalUASs</a>).</p>

Object	Syntax	Description
dsx1IntervalLCVs	PerfIntervalCount	<p>Number of line code violations (LCVs).</p> <p>A line code violation (LCV) is the occurrence of either a bipolar violation (BPV) or an excessive zeroes (EXZ) error event. This is also known as CV-L. Refer to T1.231 Section 6.5.1.1.</p> <p>An excessive zeroes error event for an AMI-coded signal is the occurrence of more than fifteen contiguous zeroes. Refer to ANSI T1.231 Section 6.1.1.1.2. For a B8ZS coded signal, the defect occurs when more than seven contiguous zeroes are detected.</p>
dsx1IntervalValidData	TruthValue	If the data for this interval is valid. This variable is not supported.

## Total table

The Total table (dsx1TotalTable) contains the cumulative sum of the various statistics for the 24 hour period preceding the current interval.

All the descriptions match the variables in the Current table, except that for the Total table the values are for the total time the MIB has been written to, and for the Current table the values are for the current 15 minute period.

The following table summarizes the objects in the Trunk MIB Total table, also known as the dsx1TotalEntry block of variables. All objects are read-only.

Object	Syntax	Description
dsx1TotalIndex	InterfaceIndex	<p>Number of the DS1 interface to which a block of variables apply.</p> <p>This variable is the same as <a href="#">dsx1LineIndex</a> in the Trunk Configuration table.</p>
dsx1TotalESs	PerfTotalCount	<p>Sum of errored seconds encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.</p> <p>For ESF and E1-CRC links, an errored second is a second with one or more path code violations, one or more out-of-frame defects, one or more controlled slip events, or a detected AIS defect.</p> <p>For D4 and E1-noCRC links, the presence of bipolar violations also triggers an errored second.</p> <p>This value is not incremented during an unavailable second.</p>

Object	Syntax	Description										
dsx1TotalSESSs	PerfTotalCount	<p>Number of severely errored seconds encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.</p> <p>This value is defined differently for different signal types:</p> <table border="1" data-bbox="686 464 1386 1163"> <thead> <tr> <th data-bbox="686 464 867 562">Signal type</th> <th data-bbox="867 464 1386 562">Definition of a severely errored second</th> </tr> </thead> <tbody> <tr> <td data-bbox="686 562 867 730">ESF signals</td> <td data-bbox="867 562 1386 730">Second with 320 or more path code violation error events, one or more out-of-frame defects, or a detected AIS defect.</td> </tr> <tr> <td data-bbox="686 730 867 863">E1-CRC signals</td> <td data-bbox="867 730 1386 863">Second with 832 or more path code violation error events or one or more out-of-frame defects.</td> </tr> <tr> <td data-bbox="686 863 867 995">E1-no CRC signals</td> <td data-bbox="867 863 1386 995">Second with 2048 line code violations or more.</td> </tr> <tr> <td data-bbox="686 995 867 1163">D4 signals</td> <td data-bbox="867 995 1386 1163">Count of one-second intervals with framing error events, an OOFdefect, or 1544 line code violations or more.</td> </tr> </tbody> </table> <p>Controlled slips are not included in this parameter.</p> <p>This value is not incremented during an unavailable second.</p>	Signal type	Definition of a severely errored second	ESF signals	Second with 320 or more path code violation error events, one or more out-of-frame defects, or a detected AIS defect.	E1-CRC signals	Second with 832 or more path code violation error events or one or more out-of-frame defects.	E1-no CRC signals	Second with 2048 line code violations or more.	D4 signals	Count of one-second intervals with framing error events, an OOFdefect, or 1544 line code violations or more.
Signal type	Definition of a severely errored second											
ESF signals	Second with 320 or more path code violation error events, one or more out-of-frame defects, or a detected AIS defect.											
E1-CRC signals	Second with 832 or more path code violation error events or one or more out-of-frame defects.											
E1-no CRC signals	Second with 2048 line code violations or more.											
D4 signals	Count of one-second intervals with framing error events, an OOFdefect, or 1544 line code violations or more.											
dsx1TotalSEFSs	PerfTotalCount	<p>Number of severely errored framing seconds encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.</p> <p>A severely errored framing second is a second with one or more out-of-frame defects or a detected AIS defect.</p>										

Object	Syntax	Description						
dsx1TotalUASs	PerfTotalCount	<p>Number of unavailable seconds encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.</p> <p>The DS1 interface is unavailable from the onset of 10 contiguous SESs or the onset of the condition leading to a failure. If the condition leading to the failure was immediately preceded by one or more contiguous SESs (<a href="#">dsx1TotalSESs</a>), the DS1 interface unavailability starts from the onset of these SESs.</p> <table border="1" data-bbox="686 625 1386 1297"> <thead> <tr> <th data-bbox="686 625 911 758">Once unavailable, and if...</th> <th data-bbox="911 625 1386 758">The DS1 interface becomes available at the...</th> </tr> </thead> <tbody> <tr> <td data-bbox="686 758 911 863">No failure is present</td> <td data-bbox="911 758 1386 863">Onset of 10 contiguous seconds with no SESs.</td> </tr> <tr> <td data-bbox="686 863 911 1297">A failure is present</td> <td data-bbox="911 863 1386 1297"> <p>Onset of 10 contiguous seconds with no SESs if the failure clearing time is less than or equal to 10 seconds.</p> <p>If the failure clearing time is more than 10 seconds, the DS1 interface becomes available at the onset of 10 contiguous seconds with no SESs, or the onset period leading to the successful clearing condition, whichever occurs later.</p> </td> </tr> </tbody> </table> <p>All DS1 error counts are incremented while the DS1 interface is deemed available. While the interface is deemed unavailable, the only count that is incremented is UASs.</p> <p>A special case exists when the 10 or more second period crosses the 900-second statistics window boundary, because the severely errored second and unavailable second counters must be adjusted when the unavailable signal state is entered. Successive GETS of the affected GET occur during the first few seconds of the window. This is an unavoidable side effect of selecting the managed objects defined by RFC 2495.</p>	Once unavailable, and if...	The DS1 interface becomes available at the...	No failure is present	Onset of 10 contiguous seconds with no SESs.	A failure is present	<p>Onset of 10 contiguous seconds with no SESs if the failure clearing time is less than or equal to 10 seconds.</p> <p>If the failure clearing time is more than 10 seconds, the DS1 interface becomes available at the onset of 10 contiguous seconds with no SESs, or the onset period leading to the successful clearing condition, whichever occurs later.</p>
Once unavailable, and if...	The DS1 interface becomes available at the...							
No failure is present	Onset of 10 contiguous seconds with no SESs.							
A failure is present	<p>Onset of 10 contiguous seconds with no SESs if the failure clearing time is less than or equal to 10 seconds.</p> <p>If the failure clearing time is more than 10 seconds, the DS1 interface becomes available at the onset of 10 contiguous seconds with no SESs, or the onset period leading to the successful clearing condition, whichever occurs later.</p>							

Object	Syntax	Description
dsx1TotalCSSs	PerfTotalCount	<p>Number of controlled slip seconds encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.</p> <p>A controlled slip second is a one-second interval containing one or more controlled slips.</p> <p>A controlled slip is the replication or deletion of the payload bits of a DS1 frame. A controlled slip can occur when there is a difference between the timing of a synchronous receiving terminal and the received signal. A controlled slip does not cause an out-of-frame error.</p>
dsx1TotalPCVs	PerfTotalCount	<p>Number of path coding violations encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.</p> <p>A path coding violation error event is a frame synchronization bit error in the D4 and E1-noCRC formats or a CRC or frame synch.bit error in the ESF and E1-CRC formats. Also known as CV-P. Refer to ANSI T1.231, Section 6.5.2.1.</p>
dsx1TotalLEs	PerfTotalCount	<p>Number of line errored seconds encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.</p> <p>A line errored second is a second in which one or more line code violation error events were detected. Refer to T1M1.3.</p>
dsx1TotalBESs	PerfTotalCount	<p>Number of bursty errored seconds (BESs) encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.</p> <p>A bursty errored second (also known as errored second type B) is a second with fewer than 320 and more than 1 path coding violation error events, no severely errored frame defects, and no detected incoming AIS defects. Controlled slips are not included in this parameter.</p> <p>This value is not incremented during an unavailable second (<a href="#">dsx1TotalUASs</a>).</p>

Object	Syntax	Description
dsx1TotalDMs	PerfTotalCount	<p>Number of degraded minutes (DMs) encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.</p> <p>A degraded minute is one in which the estimated error rate exceeds 1E-6 but does not exceed 1E-3. Refer to <i>CCITT Specifications Volume III, Recommendation G.821</i>.</p> <p>Degraded minutes are determined by:</p> <ol style="list-style-type: none"> <li>1. Collecting all of the available seconds.</li> <li>2. Removing any severely errored seconds.</li> <li>3. Grouping the result in 60-second long groups.</li> <li>4. Counting a 60-second long group as degraded if the cumulative errors during the seconds present in the group exceed 1E-6.</li> </ol> <p>Available seconds are those seconds that are not unavailable seconds (<a href="#">dsx1TotalUASs</a>).</p>
dsx1TotalLCVs	PerfTotalCount	<p>Number of line code violations (LCVs) encountered by a DS1 interface in the previous 24 hour interval. Invalid 15 minute intervals count as 0.</p> <p>A line code violation (LCV) is the occurrence of either a bipolar violation (BPV) or an excessive zeroes (EXZ) error event. This is also known as CV-L. Refer to T1.231 Section 6.5.1.1.</p> <p>An excessive zeroes error event for an AMI-coded signal is the occurrence of more than fifteen contiguous zeroes. Refer to ANSI T1.231 Section 6.1.1.1.2. For a B8ZS coded signal, the defect occurs when more than seven contiguous zeroes are detected.</p>

## 4. RAID MIB

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### Using the RAID MIB

Use the RAID MIB with the master agent to get information about a RAID array for the Vision Server. See the [RAID MIB description](#) for more information.

### Getting RAID array information

Use an SNMP GET request to retrieve the following types of information about a RAID array:

- General information about the process, including configuration and statistical information.
- Information about each physical disk in the array, including the number of calls processed and the current status of the channel; for example, whether the channel is idle or an inbound call.

Information about a RAID array is stored in tabular form. Use the GETNEXT or GETBULK operations to traverse the tables.

### Receiving notifications

The following notification is sent from the RAID MIB:

Notification	Description
raidVolumeStatusChange	Status of the RAID volume changed.

### Sample SNMP commands for the RAID MIB

The following examples use SNMP commands from the Net-SNMP toolkit to query the RAID MIB. The toolkit is available from <http://www.net-snmp.org>.

Task	Example
Doing a full MIB walk	<pre>[root@localhost root]# snmpwalk -v 1 -c public 127.0.0.1 raidObjects VISION-RAID-MIB::raidVolumeStatus.0 = INTEGER: OPTIMAL(1) VISION-RAID-MIB::raidVolumeStatusLastChange.0 = Timeticks: (0) 0:00:00.00 VISION-RAID-MIB::raidVolumeRebuildPercentage.0 = INTEGER: 100 VISION-RAID-MIB::raidNumberOfDisks.0 = INTEGER: 2 VISION-RAID-MIB::raidDiskStatus.0 = INTEGER: ONLINE(1) VISION-RAID-MIB::raidDiskStatus.1 = INTEGER: ONLINE(1)</pre>

Task	Example
Obtaining trap information	<pre>[root@localhost root]# snmptrapd -P 2007-10-19 09:55:11 NET-SNMP version 5.0.9 Started. 2007-10-19 09:55:35 localhost.localdomain [127.0.0.1]:     RFC1213-MIB::sysUpTime.0 = Timeticks: (24) 0:00:00.24  SNMPv2- MIB::snmp TrapOID.0 = OID: SNMPv2-MIB::coldStart  SNMPv2- MIB::snmpTrapEnterprise.0 = OID: NET-SNMP-TC::linux  2007-10-19 09:56:08 localhost.localdomain [127.0.0.1]:     RFC1213-MIB::sysUpTime.0 = Timeticks: (3251) 0:00:32.51  SNMPv2- MIB::snmp TrapOID.0 = OID: VISION-RAID-MIB::raidVolumeStatusChange  VISION-RAID- MIB: :raidVolumeStatus.0 = INTEGER: UNKNOWN(4)  VISION-RAID- MIB::raidVolumeStatu sLastChange.0 = Timeticks: (3251) 0:00:32.51</pre>

## RAID MIB description

The RAID MIB module is called *Vision-RAID.mib*. It has an OID of 1.3.6.1.4.1.3028.6.5.1.

The following table describes the objects and tables in the RAID Server MIB. To see the OIDs associated with these elements, access the *Vision-RAID.mib* file in the */opt/nms/vx/snmp/mibs* directory.

**Note:** All objects in the RAID MIB are read-only.

Objects and tables	Syntax	Description
raidVolumeStatus	Integer	<p>Status of the RAID volume in the hardware.</p> <p>Values are:</p> <p>OPTIMAL (1) All disks in the RAID volume are fully synchronized.</p> <p>DEGRADED (2) At least one disk failed or is missing, but the RAID volume is still functioning.</p> <p>FAILED (3) RAID volume failed.</p> <p>UNKNOWN (4) Other error conditions.</p>
raidVolumeStatusLastChange	TimeTicks	<p>Value of the MIB II sysUpTime object at the time the RAID volume entered its current status state.</p> <p>If the current state was entered prior to the last re-initialization of the agent, then this object contains a zero value.</p>

Objects and tables	Syntax	Description
raidVolumeRebuildPercentage	Integer	Progress of the RAID array re-synchronization progress. Values are 0 - 100.
raidNumberOfDisks	Integer	Number of hard disks in the RAID array. This value is always 2.
raidDiskTable	N/A	Table of RAID disk statuses and flags. Refer to <a href="#">raidDiskTable</a> for information.
raidNotificationsGroup	N/A	Table of RAID notifications. Refer to <a href="#">raidNotificationsGroup</a> for information.

## raidDiskTable

The following table describes the objects in `raidDiskTable`. There is one row for each RAID disk.

Object	Syntax	Description
raidDiskTable	N/A	Table of RAID disk statuses and flags.
raidDiskEntry	N/A	A row in <code>raidDiskTable</code> .
raidDiskIndex	Integer	Index of the physical hard disk in the RAID array.

Object	Syntax	Description
raidDiskStatus	Integer	<p>Status of the physical hard disk in the RAID array.</p> <p>Values are:</p> <p>ONLINE (1) Normal status.</p> <p>MISSING (2) Controller cannot detect the presence of the physical disk.</p> <p>NOT-COMPATIBLE (3) Disk is not compatible with the RAID subsystem.</p> <p>FAILED (4) RAID controller failed.</p> <p>INITIALIZING (5) Disk is booting up.</p> <p>OFFLINE-REQUESTED (6) User issued an offline request.</p> <p>FAILED-REQUESTED (7) User forced the disk to fail.</p> <p>OTHER-OFFLINE (8) Disk is in an offline state for other reasons.</p> <p>UNKNOWN (9) Any other error conditions.</p>
raidDiskFlag	Integer	<p>Indicates whether the contents of the hard disks in the RAID array are out of synch.</p> <p>Values are:</p> <p>None (1) No additional flag information.</p> <p>OUT-OF-SYNC (2) Contents are out of synch.</p>

## raidNotificationsGroup

The RAID MIB reports the raidVolumeStatusChange notification when the status of the RAID volume changes.

## 5. Call Server MIB

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### Using the Call Server MIB

The Call Server MIB queries and sets values for Vision Servers that have a Call Server. Use the Call Server MIB with the master agent to:

- [Get management information](#) about a Call Server process.
- [Set management information](#) for a Call Server process.
- [Receive SNMP notifications](#) for a Call Server process.

See the [Call Server MIB description](#) for more information.

### Getting Call Server management information

Use an SNMP GET request to retrieve general information about a Call Server process that is running, including configuration and statistical information. The configuration information includes the Call Server version, process name, configuration file used, and number of channels. The statistical information includes the process up-time, number of calls processed, and maximum concurrent calls.

- General information about the process, including configuration and statistical information. The configuration information includes the Call Server version, process name, configuration file used, and number of channels. The statistical information includes the process up-time, number of calls processed, and maximum concurrent calls.
- Information about each channel, including the number of calls processed and the current status of the channel; for example, whether the channel is idle or in inbound call state.
- Information about each PSTN route and circuit, including the idle circuits for a route and the current status of a circuit.
- HTTP cache information, including the current size and limit for the CCXML cache.

**Note:** You can also display this information in the Vision Console, as described in the *Dialogic® Vision™ 1000 Programmable Media Platform User's Manual* and the *Dialogic® Vision™ 1000 Video Gateway Administration Manual*.

Channel, PSTN route/circuit, and cache information is stored in tabular form. Use the GETNEXT or GETBULK operations to traverse the tables.

### Setting management information

You can perform the following tasks using SNMP SET requests:

- Clear the HTTP cache.
- Quiesce and unquiesce the Call Server.
- Set the system log level to a new value.
- Refresh the newly deployed licenses.

This causes the Vision Server to update its status and open more channels, if possible.

- Add or remove CCXML applications.

**Note:** You can also perform these tasks on the Vision Console, as described in the *Dialogic® Vision™ 1000 Programmable Media Platform User's Manual* and the *Dialogic® Vision™ 1000 Video Gateway Administration Manual*.

## Receiving notifications

You can receive the following notifications from the Call Server MIB:

Notification	Description
csAlarmInfoIndex	Index of the alarm.
csAlarmSeverity	Severity of the alarm.
csAlarmOrigin	Component that triggered the alarm.
csAlarmCode	Alarm index for a given origin.
csAlarmMessage	Alarm message.
csAlarmStarted	Generated at Call Server startup to indicate that the Call Server is ready to accept calls.
csAlarmQuiesced	Call Server is in a quiesced state and does not accept calls.
csAlarmShutdown	Call Server has shut down.
csAlarmLicenseCheck	Generated at Call Server startup to indicate that a Call Server license is not valid.
csAlarmConfigurationError	Generated at Call Server startup to indicate that the Call Server configuration is inconsistent.
csAlarmInitializationError	Generated at startup to indicate that the Call Server cannot initialize one of its components.
csAlarmSoftwareException	Call Server experienced a software exception.
csAlarmInternalError	Call Server experienced an internal error.
csAlarmResourceLimitation	Call Server experienced a resource limitation.
csAlarmCommunicationFailure	Call Server experienced a communications failure.
csAlarmProcessingFailure	Call Server experienced a processing failure.
csAlarmInvalidArgument	(Programmable Media Platform INAP SRF model only) A parameter is out of range in a Call Server script.

Notification	Description
csAlarmUnexpectedEvent	An unexpected event occurred; for example, a telephony event for which there is no handler.
csAlarmNotificationDiscarded	An event was discarded.
csAlarmWatchdog	A watchdog timer expired. A watchdog timer is called a defense timer in some telephony protocols.
csAlarmTimeout	A timer expired.

Events that trigger these SNMP notifications include:

- Channel exceptions, channels not responding, and no-resource errors.
- Call Server being quiesced or unquiesced.

## Sample SNMP commands for the Call Server MIB

The following examples use SNMP commands from the Net-SNMP toolkit to query the Call Server MIB. The toolkit is available from <http://www.net-snmp.org>.

Task	Example
Doing a full MIB walk	<code>snmpwalk -v3 -u public 127.0.0.1 enterprises.3028.6.5.2</code>
Getting the total number of calls	<code>snmpget -v2c -c public 127.0.0.1 enterprises.3028.6.5.2.101.0</code>
Setting two integer values	<code>snmpset -v3 -u Administrator -l authPriv -A "authpass" -X "privpass" 127.0.0.1 enterprises.3028.6.5.2.201.0 i 2 enterprises.3028.6.5.2.202.0 i 31</code>

## Call Server MIB description

The Call Server MIB module is called *Vision-CallServer.mib*. It has an OID of 1.3.6.1.4.1.3028.6.5.2.

The following table describes the objects and tables in the Call Server MIB. To see the OIDs associated with these elements, access the *Vision-CallServer.mib* file in the */opt/nms/vx/snmp/mibs* directory.

Objects and tables	Access	Syntax	Description
csCfgProcessName	Read-only	DisplayString	Name of the gateway process.
csCfgCallServerVersion	Read-only	DisplayString	Call Server version.
csCfgCallServerProductID	Read-only	DisplayString	Call Server product identifier.

<b>Objects and tables</b>	<b>Access</b>	<b>Syntax</b>	<b>Description</b>
csCfgConfigurationFile	Read-only	DisplayString	URI of the loaded configuration file.
csCfgOrateurNumInstances	Read-only	Unsigned32	Not applicable.
csCfgCcxmlChannels	Read-only	Unsigned32	Maximum number of CCXML sessions that can execute simultaneously.
csCfgStatsSysUpTime	Read-only	TimeTicks	System up-time in hundredths of a second.
csStatsTotalCalls	Read-only	Unsigned32	Total number of calls processed since startup.
csStatsConcurrentCallsMax	Read-only	Unsigned32	Maximum number of concurrent calls since startup.
csStatsActiveCalls	Read-only	Unsigned32	Total number of active calls.
csStatsConcurrentConnectionsMax	Read-only	Unsigned32	Maximum number of concurrent connections since startup.
csStatsActiveConnections	Read-only	Unsigned32	Total number of active connections.
csStatsConcurrentDialogsMax	Read-only	Unsigned32	Maximum number of concurrent dialogs since startup.
csStatsActiveDialogs	Read-only	Unsigned32	Total number of active dialogs.
csStatsConcurrentConferencesMax	Read-only	Unsigned32	Not applicable.
csStatsActiveConferences	Read-only	Unsigned32	Not applicable.

Objects and tables	Access	Syntax	Description
csStatsChannelTable	N/A	N/A	Table of CCXML channel entries. See <a href="#">csStatsChannelTable</a> for information.
csStatsCacheTable	N/A	N/A	Table of HTTP cache information. See <a href="#">csStatsCacheTable</a> for information.
csStatsBoardRouteTable	N/A	N/A	Table of board route information. See <a href="#">csStatsBoardRouteTable</a> for information.
csStatsBoardCircuitTable	N/A	N/A	Table of board circuit information. See <a href="#">csStatsBoardCircuitTable</a> for information.
csActProcessState	Read/write	Integer	General state of the gateway. Values are: initializing (1) initializationError (2) started (3) quiescing (4) quiesced (5) goQuiesced (100) goStarted (101) The system starts up with initializing (1). The values goQuiesced(100) and goStarted (101) are values that control the Call Server.
csActClearCache	Read/write	Integer	Clear HTTP cache action. Values are: null (1) clear (2) The value clear (2) is a value that controls the Call Server.

Objects and tables	Access	Syntax	Description
csActLogLevel	Read/write	Integer	Controls the logging level of the gateway. Values are: operational (15) normal (31) informative (127) debug (511)
csActLicRefresh	Read/write	Integer	Specifies the license refresh action. Values are: null (1) refresh (2) Null (1) is a value that controls the Call Server.
csNotifications	N/A	N/A	Table of gateway notifications. See <a href="#">csNotifications</a> for information.
csNotifTrapObjects	N/A	N/A	Table of gateway trap objects. See <a href="#">csNotifTrapObjects</a> for information.

## csStatsChannelTable

The following table describes the objects in the csStatsChannelTable. There is one row for each CCXML channel.

Object	Access	Syntax	Description
csStatsChannelTable	N/A	N/A	Table of CCXML channels.
csStatsChannelEntry	N/A	N/A	A row in csStatsChannelTable.
csStatsChannelIndex	Read-only	Unsigned32	CCXML channel.
csStatsChannelStatus	Read-only	Integer	Current status of an individual channel.

Object	Access	Syntax	Description
csStatsChannelCallId	Read-only	DisplayString	Call ID of the call, or blank if there is no call in progress.
csStatsChannelCallDurationMs	Read-only	Unsigned32	Duration of the call in ms, or 0 if there is no call in progress.
csStatsChannelTotalCalls	Read-only	Unsigned32	Total number of calls processed by this channel since startup.

## csStatsCacheTable

The following table describes the objects in the csStatsCacheTable. There is one row for each cache type.

Object	Access	Syntax	Description
csStatsCacheTable	N/A	N/A	Table of HTTP cache information.
csStatsCacheEntry	N/A	N/A	A row in csStatsCacheTable.
csStatsCacheIndex	Read-only	Unsigned32	Index of the cache.
csStatsCacheType	Read-only	DisplayString	Type of cache. Values are: CCXML Script VoiceXML (Programmable Media Platform only)
csCacheMemoryUsedKB	Read-only	Unsigned32	Current size of the memory cache in KB.
csStatsMemoryLimitKB	Read-only	Unsigned32	Size limit of the memory cache in KB.
csStatsCacheSizeUsedKB	Read-only	Unsigned32	Current size of the disk cache in KB.
csStatsCacheSizeLimitKB	Read-only	Unsigned32	Size limit of the disk cache in KB.

## csStatsBoardRouteTable

The following table describes the objects in the csStatsBoardRouteTable. There is one row for each route:

Object	Access	Syntax	Description
csStatsBoardRouteTable	N/A	N/A	Table of board route information.
csStatsBoardRouteEntry	N/A	N/A	A row in csStatsBoardRouteTable.
csStatsBoardRouteIndex	Read-only	Unsigned32	Index of the route.
csStatsBoardRouteTotalCircuits	Read-only	Unsigned32	Total number of circuits on the route.
csStatsBoardRouteIdleCircuits	Read-only	Unsigned32	Total number of idle circuits on the route.
csStatsBoardRouteInCircuits	Read-only	Unsigned32	Number of seized-in circuits on the route.
csStatsBoardRouteOutCircuits	Read-only	Unsigned32	Number of seized-out circuits on the route.
csStatsBoardRouteUnavailableCircuits	Read-only	Unsigned32	Number of unavailable circuits on the route.
csStatsBoardRouteUnequippedCircuits	Read-only	Unsigned32	Number of unequipped circuits on the route.
csStatsBoardRouteCongestedCircuits	Read-only	Unsigned32	Number of congested circuits on the route.
csStatsBoardRouteTrunkDownCircuits	Read-only	Unsigned32	Number of circuits located on down trunks.
csStatsBoardRouteLocalMaintCircuits	Read-only	Unsigned32	Number of circuits blocked locally for maintenance on the route.

Object	Access	Syntax	Description
csStatsBoardRouteRemoteMaintCircuits	Read-only	Unsigned32	Number of circuits blocked on the remote side for maintenance on the route.
csStatsBoardRouteLocalHardCircuits	Read-only	Unsigned32	Number of circuits blocked locally for hardware reasons on the route.
csStatsBoardRouteRemoteHardCircuits	Read-only	Unsigned32	Number of circuits blocked on the remote side for hardware reasons on the route.

## csStatsBoardCircuitTable

The following table describes the objects in the csStatsBoardCircuitTable. There is one row for each circuit:

Object	Access	Syntax	Description
csStatsBoardCircuitTable	N/A	N/A	Table of board circuit information.
csStatsBoardCircuitEntry	N/A	N/A	A row in csStatsBoardCircuitTable.
csStatsBoardCircuitIndex	Read-only	Unsigned32	Index of the circuit.
csStatsBoardCircuitRouteIndex	Read-only	Unsigned32	Index of the route associated with the circuit.
csStatsBoardCircuitState	Read-only	Integer	State of the circuit. Values are: idle (1) seizedin (2) seizedout (3)

Object	Access	Syntax	Description
csStatsBoardCircuitLine	Read-only	Integer	State of the line associated with the circuit. Values are: available (1) unavailable (2) unequipped (3) congested (4) trunkdown (5)
csStatsBoardCircuitBlockedState	Read-only	Integer	Blocked state of the circuit. Values are: Not blocked (1) localmaintenance (2) remotemaintenance (3) localhardware (4) remotehardware (5)

## csNotifications

The following table describes the Call Server notifications:

Notification	Description
csAlarmStarted	Generated at Call Server startup to indicate that the Call Server is ready to accept calls.
csAlarmQuiesced	Call Server is in a quiesced state and does not accept calls.
csAlarmShutdown	Call Server shut down.
csAlarmLicenseCheck	Generated at Call Server startup to indicate that a Call Server license is not valid.
csAlarmConfigurationError	Call server configuration is inconsistent.
csAlarmInitializationError	Generated at startup to indicate that the Call Server cannot initialize one of its components.
csAlarmSoftwareException	Call Server experienced a software exception.
csAlarmInternalError	Call Server experienced an internal error.
csAlarmResourceLimitation	Call Server experienced a resource limitation.

Notification	Description
csAlarmCommunicationFailure	Call Server experienced a communications failure.
csAlarmProcessingFailure	Call Server experienced a processing failure.
csAlarmInvalidArgument	(Programmable Media Platform INAP SRF model only) Parameter is incorrect in a Call Server script.
csAlarmUnexpectedEvent	An unexpected event occurred; for example, a telephony event for which there is no handler.
csAlarmNotificationDiscarded	An event was discarded.
csAlarmWatchdog	A watchdog timer expired. A watchdog timer is called a defense timer in some telephony protocols.
csAlarmTimeout	A timer expired.

## csNotifTrapObjects

The following table describes the notification in the csNotifTrapObjects table:

Notification	Description
csAlarmInformation	Table of alarm notifications.

The following table describes the notifications in the csAlarmInformation table, which is a sub-table in the csNotifTrapObjects table:

Notification	Description
csAlarmInfoIndex	Index of the alarm.
csAlarmSeverity	Severity of the alarm.
csAlarmOrigin	Component that triggered the alarm.
csAlarmCode	Alarm index for a given origin.

## 6. SS7 Signaling Server MIBs

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### Using the Signaling Server Manager MIB

The Signaling Server Manager MIB queries and sets values for Vision Servers that have a Signaling Server or Signaling Server pair. Use the Signaling Server Manager MIB with the master agent to get management information about a Signaling Server process.

See the [Signaling Server Manager MIB description](#) for more information. See the [Signaling Server Alarms MIB description](#) for more information about SS7 traps and notifications.

### Getting management information

Use an SNMP GET request to retrieve information about Signaling Server processes that are running. This information varies depending on whether the Signaling Server is configured for a TDM or SIGTRAN network. The following table describes this information:

Configuration type	Information retrieved
TDM or SIGTRAN	General information about the Signaling Server process (SSP), including configuration and status information. The configuration information includes the SSP state, redundancy manager process (RMG) state, and high availability state. The status information includes the status of connections to other SS7 layers (ISUP, MTP, M3UA, and SCTP).
TDM	General MTP information including the local point code, whether the local MTP is currently restarting, and number of messages dropped because there was no route defined for sending the messages.
	Information about each configured link, linkset, route, circuit, and NSAP, including the entity's state and protocol variant (where applicable).
SIGTRAN	General M3UA configuration and status information. The configuration information includes the node type, maximum number of specified configured objects (such as peer servers and peer server processes), and congestion level thresholds. The status information includes the memory size and high level access state.
	Information about each NSAP and SAP in the M3UA layer, including the local and remote NSAP identifiers, NSAP high level state, SAP high level state, SAP endpoint identifier, and number of active associations.
	General information about the SCTP layer, including the SCTP host name and configuration limits, such as the maximum number SCTP associations the service user can open simultaneously.
	Information about each SCT SAP and association in the SCTP layer. SCT SAP information includes the protocol switch and high level state. SCT association information includes the association state, source and destination network addresses, and endpoint port numbers.

## Sample SNMP commands for the Signaling Server Manager MIB

The following examples use SNMP commands from the Net-SNMP toolkit to query the Signaling Server Manager MIB. The toolkit is available from <http://www.net-snmp.org>.

Task	Example
Retrieving contents of ss7MtpLinkTable (MTP transport)	<pre>snmpwalk -c public -v 2c localhost SNMPv2-SMI::enterprises.3028.6.5.4.1.1.4</pre>
Retrieving contents of ss7SctpAssocStatusTable (SIGTRAN transport)	<pre>snmpwalk -c public -v 2c localhost SNMPv2-SMI::enterprises.3028.6.5.4.1.1.40</pre>
Retrieving circuit 1 status	<pre>snmpget -c public -v 2c localhost SNMPv2-SMI::enterprises.3028.6.5.4.1.1.9.1.3.1.1</pre>
Inhibiting link 1	<p><b>Step 1: Set SS7 ME Index = 1.</b></p> <pre>snmpset -c visionsnmp localhost SNMPv2-SMI::enterprises.3028.6.5.4.1.1.12.0 i 1</pre> <p><b>Step 2: Set the MTP link number = 1 (i.e. first link).</b></p> <pre>snmpset -c visionsnmp localhost SNMPv2-SMI::enterprises.3028.6.5.4.1.1.13.0 i 1</pre> <p><b>Step 3: Perform link inhibit operation.</b></p> <pre>snmpset -c visionsnmp localhost SNMPv2-SMI::enterprises.3028.6.5.4.1.1.16.0 i 1</pre> <p><b>OR in a single step, combine the above three steps:</b></p> <pre>snmpset -c visionsnmp localhost SNMPv2-SMI::enterprises.3028.6.5.4.1.1.12.0 i 1 SNMPv2-SMI::enterprises.3028.6.5.4.1.1.13.0 i 1 SNMPv2-SMI::enterprises.3028.6.5.4.1.1.16.0 i 1</pre>
Blocking a circuit (circuit #1)	<p><b>Step 1: Set SS7 ME Index = 1.</b></p> <pre>snmpset -c visionsnmp localhost SNMPv2-SMI::enterprises.3028.6.5.4.1.1.12.0 i 1</pre> <p><b>Step 2: Set the circuit number = 1.</b></p> <pre>snmpset -c visionsnmp localhost SNMPv2-SMI::enterprises.3028.6.5.4.1.1.22.0 i 1</pre> <p><b>Step 3: Perform circuit block operation.</b></p> <pre>snmpset -c visionsnmp localhost SNMPv2-SMI::enterprises.3028.6.5.4.1.1.24.0 i 1</pre> <p><b>OR in a single step, combine the above three steps:</b></p> <pre>snmpset -c visionsnmp localhost SNMPv2-SMI::enterprises.3028.6.5.4.1.1.12.0 i 1 SNMPv2-SMI::enterprises.3028.6.5.4.1.1.22.0 i 1 SNMPv2-SMI::enterprises.3028.6.5.4.1.1.24.0 i 1</pre>

Task	Example
Unblocking a circuit (circuit #1)	<p>Step 1: Set SS7 ME Index = 1.</p> <pre>snmpset -c visionsnmp localhost SNMPv2-SMI::enterprises.3028.6.5.4.1.1.12.0 i 1</pre> <p>Step 2: Set the circuit number = 1.</p> <pre>snmpset -c visionsnmp localhost SNMPv2-SMI::enterprises.3028.6.5.4.1.1.22.0 i 1</pre> <p>Step 3: Perform circuit unblock operation.</p> <pre>snmpset -c visionsnmp localhost SNMPv2-SMI::enterprises.3028.6.5.4.1.1.25.0 i 1</pre> <p>OR in a single step, combine the above three steps:</p> <pre>snmpset -c visionsnmp localhost SNMPv2-SMI::enterprises.3028.6.5.4.1.1.12.0 i 1 SNMPv2-SMI::enterprises.3028.6.5.4.1.1.22.0 i 1 SNMPv2-SMI::enterprises.3028.6.5.4.1.1.25.0 i 1</pre>
Halting the TX board on the server chassis	<p>Step 1: Set SS7 ME Index = 1.</p> <pre>snmpset -c visionsnmp localhost SNMPv2-SMI::enterprises.3028.6.5.4.1.1.12.0 i 1</pre> <p>Step 2: Halt the TX board on the server chassis.</p> <pre>snmpset -c visionsnmp localhost SNMPv2-SMI::enterprises.3028.6.5.4.1.1.31.0 i 1</pre> <p>OR in a single step, combine all the above two steps:</p> <pre>snmpset -c visionsnmp localhost SNMPv2-SMI::enterprises.3028.6.5.4.1.1.12.0 i 1 SNMPv2-SMI::enterprises.3028.6.5.4.1.1.31.0 i 1</pre>
Loading the TX board on the server chassis	<p>Step 1: Set SS7 ME Index = 1</p> <pre>snmpset -c visionsnmp localhost SNMPv2-SMI::enterprises.3028.6.5.4.1.1.12.0 i 1</pre> <p>Step 2: Load the TX board on the server chassis</p> <pre>snmpset -c visionsnmp localhost SNMPv2-SMI::enterprises.3028.6.5.4.1.1.32.0 i 1</pre> <p>OR in a single step, combine the above two steps:</p> <pre>snmpset -c visionsnmp localhost SNMPv2-SMI::enterprises.3028.6.5.4.1.1.12.0 i 1 SNMPv2-SMI::enterprises.3028.6.5.4.1.1.32.0 i 1</pre>

## Signaling Server Manager MIB description

The Signaling Server Manager MIB description module is called *Vision-SignalingServer-Manager.mib*. It has an OID of 1.3.6.1.4.1.3028.6.5.4.1.

This section describes the objects and tables in the Signaling Server Manager MIB. To see the OIDs associated with these elements, access the *Vision-SignalingServer-Manager.mib* file in the */opt/net-snmp/share/mibs* directory.

Use the Signaling Server Manager MIB to view:

- General Signaling Server properties
- MTP properties (in a TDM configuration)

- ISUP properties (in a TDM configuration)
- M3UA properties (in a SIGTRAN configuration)
- SCTP properties (in a SIGTRAN configuration)

The Signaling Server Manager MIB has the following components:

Object type	Description
ss7StateTable	Table containing basic properties and state information for Signaling Servers. This table is used for both TDM and SIGTRAN configurations. For more information, see <a href="#">ss7StateTable</a> .
TDM configuration tables	Tables containing properties and state information for Signaling Servers configured as TDM. For more information, see <a href="#">TDM configuration tables</a> .
TDM configuration actions	Configuration actions on Signaling Servers configured for the TDM network; for example, enable and disable an MTP link. For more information, see <a href="#">TDM configuration actions</a> .
SIGTRAN configuration tables	Tables containing properties and state information for Signaling Servers configured for the IP network. For more information, see <a href="#">SIGTRAN configuration tables</a> .

## ss7StateTable

ss7StateTable contains basic properties and state information for a Signaling Server. All information in this table is read-only.

The following table describes the objects in ss7StateTable:

Object	Syntax	Description
ss7StateTable	N/A	Table of basic properties and state information for co-located Signaling Servers.
ss7StateEntry	N/A	A row in ss7StateTable.
ss7MEIndex	Integer32	Index of the instance of the Signaling Server managed element. This variable is always set to 1.

Object	Syntax	Description
ss7State	INTEGER	Current state of the Signaling Server. Values are: starting (1) inservice (2) stopping (3) outofservice (4)
ss7StateInfo	DisplayString	When ss7State is inservice, this field lists any minor errors that occurred, such as the logging service not being available. If ss7State is outofservice, this field is blank.
ss7RedundancyMgrConnection	INTEGER	Status of the remote procedure call (RPC) connection to the redundancy manager process (RMG). Values are: available (1) unavailable (2) - RMG is not running. unknown (3)
ss7SvrConnection	INTEGER	Status of the remote procedure call (RPC) connection to the signaling server process (SSP). Values are: available (1) unavailable (2) - SSP process is not running. unknown (3)
ss7MtpLayerConnection	INTEGER	Status of the Signaling Server connection to MTP. Values are: available (1) unavailable (2) unknown (3)
ss7IsupLayerConnection	INTEGER	Status of the Signaling Server connection to ISUP. Values are: available (1) unavailable (2) unknown (3)

Object	Syntax	Description
ss7SspState	INTEGER	Current state of the Signaling Server process (SSP). Values are: starting (1) inservice (2) stopping (3) outofservice (4)
ss7SspStateInfo	DisplayString	When ss7SspState is inservice, this field lists any minor errors that occurred in the SSP process. If ss7SspState is outofservice, this field is blank.
ss7RmgState	INTEGER	Current state of the redundancy manager process (RMG). Values are: starting (1) inservice (2) stopping (3) outofservice (4)
ss7RmgStateInfo	DisplayString	When ss7RmgState is inservice, this field lists any minor errors that occurred in the RMG process. If ss7RmgState is outofservice, this field is blank.
ss7RmgBoardHaState	INTEGER	SS7 board high availability (redundant) state. Values are: starting (1) standalone (2) primary (3) backup (4) unknown (5)

Object	Syntax	Description
ss7RmgBoardInterConnectState	INTEGER	Status of the Ethernet link between the primary Signaling Server and the backup Signaling Server. This link allows each Signaling Server to determine the state of the other. Values are: available (1) unavailable (2) unknown (3)
ss7SctpLayerConnection	INTEGER	Status of the Signaling Server connection to the SCTP layer. Values are: available (1) unavailable (2) unknown (3)
ss7M3uaLayerConnection	INTEGER	Status of the Signaling Server connection to the M3UA layer. available (1) unavailable (2) unknown (3)

## TDM configuration tables

The following table describes the tables in the Signaling Server MIB that apply to Signaling Servers configured for the TDM network. To see the OIDs associated with these elements, access the *Vision-SignalingServer-Manager.mib* file in the */opt/net-snmp/share/mibs* directory.

For information about tables that apply to the SIGTRAN configuration, see [SIGTRAN configuration tables](#).

Table	Contents	For object descriptions, see...
ss7MtpGenTable	General MTP properties, such as the local point code.	<a href="#">ss7MtpGenTable</a> .
ss7MtpLinkTable	MTP link properties, such as the protocol variant used, link status, and various statistics.	<a href="#">ss7MtpLinkTable</a> .

Table	Contents	For object descriptions, see...
ss7MtpLinksetTable	MTP linkset properties, such as the adjacent point code and linkset state.	<a href="#">ss7MtpLinksetTable</a> .
ss7MtpLinksetRouteTable	MTP routes available over a given linkset.	<a href="#">ss7MtpLinksetRouteTable</a> .
ss7MtpRouteTable	MTP route properties, such as the route state and destination point code.	<a href="#">ss7MtpRouteTable</a> .
ss7IsupCircConfTable	ISUP circuit configuration properties, such as the circuit number and CIC.	<a href="#">ss7IsupCircConfTable</a> .
ss7IsupCircStatusTable	ISUP circuit status properties, such as the circuit state and call state.	<a href="#">ss7IsupCircStatusTable</a> .
ss7IsupNsapTable	ISUP network service access point (NSAP) properties. These properties are related to an upper layer's connection with ISUP.	<a href="#">ss7IsupNsapTable</a> .

### ss7MtpGenTable

ss7MtpGenTable contains general MTP properties for a Signaling Server. All information in this table is read-only. Statistics in this table are reset when:

- The Signaling Server is restarted, or
- Statistics are reset using the [ss7ApplyActionClearGenStats](#) action.

The following table describes the objects in ss7MtpGenTable:

Object	Syntax	Description
ss7MtpGenTable	N/A	Table of MTP settings for each Signaling Server.
ss7MtpGenEntry	N/A	A row in ss7MtpGenTable.
ss7MtpGenMEIndex	Integer32	Index of the instance of the Signaling Server managed element. This variable is set to 1 for a standalone Signaling Server, and to 1 or 2 for the Signaling Servers in a redundant pair.

Object	Syntax	Description
ss7MtpGenOPC	DisplayString	Origination (local) point code, which is the point code assigned to this node in the SS7 network.
ss7MtpGenRestarting	INTEGER	Indicates whether the local MTP is currently restarting. Values are: true (1) false (2)
ss7MtpGenRouteError	Integer32	Number of messages dropped because there was no route defined for sending the messages.

### ss7MtpLinkTable

ss7MtpLinkTable contains MTP link properties. All information in this table is read-only. Statistics in this table are reset whenever the Signaling Server is restarted. Statistics on particular links can be reset using the [ss7ApplyActionClearLinkStats](#) action.

The following table describes the objects in ss7MtpLinkTable:

Object	Syntax	Description
ss7MtpLinkTable	N/A	Table of MTP link properties for each Signaling Server.
ss7MtpLinkEntry	N/A	A row in ss7MtpLinkTable.
ss7MtpLinkMEIndex	Integer32	Index of the instance of the Signaling Server managed element. This variable is set to 1 for a standalone Signaling Server, and to 1 or 2 for the Signaling Servers in a redundant pair.
ss7MtpLinkIndex	Integer32	SS7 link index.
ss7MtpLinkAdjDpc	DisplayString	Point code in the SS7 network of the signaling point (SP) at the other end of this link.
ss7MtpLinkVariant	INTEGER	SS7 protocol variant used on this link. Values are: ansi (1) itu (2) jntt (3) jttc (4)

Object	Syntax	Description
ss7MtpLinkServer	DisplayString	Name of the Signaling Server where the link is physically present.
ss7MtpLinkPortNumber	Integer32	TDM port number, which must correspond to an assigned port number in the TDM configuration file ( <i>txcfg1.txt</i> ). For more information, see the <i>Dialogic® Vision™ Signaling Server Administration Manual</i> .
ss7MtpLinkCongested	INTEGER	Indicates whether the link is in a congested state based on the number of messages in the links transmit queue and the configured threshold values. Values are: true (1) false (2)
ss7MtpLinkL3State	INTEGER	Layer 3 link state. Values are: inactive (1) connecting (2) active (3): This is the desired state failed (4) waitcon (5) binding (6) unbinding (7) unbound (8)
ss7MtpLinkLocInhib	INTEGER	Indicates whether the link has been locally inhibited by operator command. Values are: true (1) false (2)
ss7MtpLinkRemInhib	INTEGER	Indicates whether the link has been inhibited by the adjacent signaling point. Values are: true (1) false (2)

Object	Syntax	Description
ss7MtpLinkLocBlocked	INTEGER	Indicates whether the link is in local processor outage; local MTP is sending SIPOs. Values are: true (1) false (2)
ss7MtpLinkRemBlocked	INTEGER	Indicates whether the link is in remote processor outage; remote MTP is sending SIPOs. Values are: true (1) false (2)
ss7MtpLinkL2FicLvl	INTEGER	Layer 2 flow control level based on the number of messages in the MTP2 transmit queue and the thresholds configured for this link. Values are: 0: No flow control. 1: Layer 2 is entering congestion and layer 3 must reduce transmissions. 2: MTP3 stops transmitting to MTP2 and begins queuing itself.
ss7MtpLinkTxDrop	Integer32	Total number of dropped transmit messages.
ss7MtpLinkTxCongDrop	Integer32	Number of transmit messages dropped due to outbound congestion.
ss7MtpLinkMsuTx	Integer32	Number of message signal units (MSU) transmitted.
ss7MtpLinkMsuRx	Integer32	Number of message signal units (MSU) received.
ss7MtpLinkL3TxCnt	Integer32	Current number of messages in the layer 3 transmit queue.
ss7MtpLinkL3HiTxCnt	Integer	Maximum number of messages in the layer 3 transmit queue.
ss7MtpLinkL2TxCnt	Integer32	Current number of messages in the layer 2 transmit queue.

Object	Syntax	Description
ss7MtpLinkL2HiTxCnt	Integer32	Maximum number of messages in the layer 2 transmit queue.
ss7MtpLinkL2SapCnt	Integer32	Current number of messages in the layer 2 SAP queue (inbound).
ss7MtpLinkL2HiSapCnt	Integer32	Maximum number of messages in the layer 2 SAP queue (inbound).

### ss7MtpLinksetTable

ss7MtpLinksetTable contains MTP linkset properties for each Signaling Server. All information in this table is read-only. Statistics in this table are reset whenever the Signaling Server is restarted.

The following table describes the objects in ss7MtpLinksetTable:

Variable	Syntax	Description
ss7MtpLinksetTable	N/A	Table of MTP linkset properties for each Signaling Server.
ss7MtpLinksetEntry	N/A	A row in ss7MtpLinksetTable.
ss7MtpLinksetMEIndex	Integer32	Index of the instance of the Signaling Server managed element. This variable is set to 1 for a standalone Signaling Server, and to 1 or 2 for the Signaling Servers in a redundant pair.
ss7MtpLinksetIndex	Integer32	SS7 MTP linkset index.
ss7MtpLinksetAdjDpc	DisplayString	Point code of the adjacent signaling point (SP) on this linkset.
ss7MtpLinksetState	INTEGER	Current state of the linkset. Values are: active (1)- At least one link in the linkset is available. inactive (2) - No links in the linkset are available.

Variable	Syntax	Description
ss7MtpLinksetCong	INTEGER	Indicates whether the linkset is congested (all links congested). Values are: true (1) false (2)
ss7MtpLinksetNmbActLinks	Integer32	Current number of active links in the linkset.
ss7MtpLinksetNmbCongLinks	Integer32	Current number of congested links in linkset.

### ss7MtpLinksetRouteTable

ss7MtpLinksetRouteTable contains properties for MTP routes available over a given linkset. All information in this table is read-only. Statistics in this table are reset whenever the Signaling Server is restarted.

The following table describes the objects in ss7MtpLinksetRouteTable:

Object	Syntax	Description
ss7MtpLinksetRoute	N/A	Table of MTP linkset route properties for each Signaling Server.
ss7MtpLinksetRouteEntry	N/A	A row in ss7MtpLinksetRoute table.
ss7MtpLinksetRouteMEIndex	Integer32	This variable is set to 1 for a standalone Signaling Server, and to 1 or 2 for the Signaling Servers in a redundant pair.
ss7MtpLinksetRouteLinksetIndex	Integer32	SS7 linkset index.
ss7MtpLinksetRouteIndex	Integer32	SS7 linkset route index.
ss7MtpLinksetRouteNumber	Integer32	Route number that can be reached with this linkset.
ss7MtpLinksetRoutePriority	Integer32	Priority of using this linkset to reach the destination specified by ss7MtpLinksetRouteNumber as compared to other linksets that can reach the destination. Values are 0 - 3, with 0 being the highest priority.

## ss7MtpRouteTable

ss7MtpRouteTable contains MTP route properties. All information in this table is read-only. All statistics in this table are reset whenever the Signaling Server is restarted. Statistics on particular routes can be reset using the [ss7ApplyActionClearRouteStats](#) action variable.

The following table describes the objects in ss7MtpRouteTable:

Object	Syntax	Description
ss7MtpRouteTable	N/A	Table of MTP route properties for each Signaling Server.
ss7MtpRouteEntry	N/A	A row in ss7MtpRouteTable.
ss7MtpRouteMEIndex	Integer32	Index of the instance of the Signaling Server managed element. This variable is set to 1 for a standalone Signaling Server, and to 1 or 2 for the Signaling Servers in a redundant pair.
ss7MtpRouteIndex	Integer32	SS7 MTP route index.
ss7MtpRouteDPC	DisplayString	Destination point code of this route.
ss7MtpRouteVariant	INTEGER	SS7 protocol variant used on this route. Values are: ansi (1) itu (2) jntt (3) jttc (4)
ss7MtpRouteRteState	INTEGER	Current state of the route. Values are: unavailable (1): No linksets are available. available (2): At least one linkset is available.
ss7MtpRouteCongested	INTEGER	Indicates whether the route is congested. Values are: true (1) false (2)

Object	Syntax	Description
ss7MtpRouteNmbCongLnkSets	Integer32	Number of congested linksets toward this destination.
ss7MtpRouteNmbActLnkSets	Integer32	Number of active linksets toward this destination.
ss7MtpRouteAdjSpRst	INTEGER	Indicates whether the adjacent signaling point is restarting. Values are: true (1) false (2)
ss7MtpRouteTfpRx	Integer32	Number of transfer prohibited messages received.
ss7MtpRouteTfrRx	Integer32	Number of transfer restricted messages received.

### ss7IsupCircConfTable

ss7IsupCircConfTable contains ISUP circuit configuration properties. All information in this table is read-only.

The following table describes the objects in ss7IsupCircConfTable:

Object	Syntax	Description
ss7IsupCircConfTable	M/A	Table of ISUP circuit configuration properties for each Signaling Server.
ss7IsupCircConfEntry	N/A	A row in ss7IsupCircConfTable.
ss7IsupCircConfMEIndex	Integer32	Index of the instance of the Signaling Server managed element. This variable is set to 1 for a standalone Signaling Server, and to 1 or 2 for the Signaling Servers in a redundant pair.
ss7IsupCircConfIndex	Integer32	SS7 ISUP circuit index.
ss7IsupCircConfCircuit	Integer32	Circuit number as defined in the configuration.
ss7IsupCircConfDPC	DisplayString	Point code of the adjacent signaling point (SP).

Object	Syntax	Description
ss7IsupCircConfCIC	Integer32	Identification code for this circuit (or for the first one in the group).
ss7IsupCircConfVariant	INTEGER	SS7 protocol variant used by the adjacent switch. Values are: ansi88 (1) ansi92 (2) ansi95 (3) itu (4) ituwhite (5) itublue (6) itu97 (7) q767 (8) etsiv2 (9) etsiv3 (10) jntt (11) jttc (12)
ss7IsupCircConfDirection	INTEGER	Direction of calls allowed on circuit. Values are: incoming (1) outgoing (2) bothway (3)

### ss7IsupCircStatusTable

ss7IsupCircStatusTable contains ISUP circuit status properties. All information in this table is read-only.

The following table describes the objects in ss7IsupCircStatusTable:

Object	Syntax	Description
ss7IsupCircStatusTable	N/A	Table of ISUP circuit status properties for each Signaling Server.
ss7IsupCircStatusEntry	N/A	A row in ss7IsupCircStatusTable.

Object	Syntax	Description
ss7IsupCircStatusMEIndex	Integer32	Index of the instance of the Signaling Server managed element. This variable is set to 1 for a standalone Signaling Server, and to 1 or 2 for the Signaling Servers in a redundant pair.
ss7IsupCircStatusIndex	Integer32	SS7 circuit status index.
ss7IsupCircStatusCircuitState	INTEGER	Current circuit state. Values are: idle (1) unequipped (2) locblkd (3) waitforblkack (4) waitforunblkack (5) lwaitforblkresp (6) lwaitforunblkresp (7) bwaitforblkack (8) rwaitforunblkack (9) bothblkd (10) waitforblkackandalkresp (11) waitforunblkackandunblkresp (12) waitforblkackandunblkresp (13) waitforunblkackandblkresp (14) waitforblkresp (15) waitforunblkresp (16) remblkd (17)
ss7IsupCircStatusCallState	INTEGER	Current call state for a call on this circuit. Values are: transient (1) idle (2) busyout (3) busyin (4)

### ss7IsupNsapTable

ss7IsupNsapTable contains ISUP network service access point (NSAP) properties. All information in this table is read-only.

The following table describes the objects in ss7IsupNsapTable:

Object	Syntax	Description
ss7IsupNsapTable	N/A	Table of ISUP NSAP properties for each Signaling Server.
ss7IsupNsapEntry	N/A	A row in IsupNsapTable.
ss7IsupNsapMEIndex	Integer32	Index of the instance of the Signaling Server managed element. This variable is set to 1 for a standalone Signaling Server, and to 1 or 2 for the Signaling Servers in a redundant pair.
ss7IsupNsapIndex	Integer32	SS7 ISUP NSAP index.
ss7IsupNsapVariant	INTEGER	SS7 protocol variant used by adjacent switch. Values are: ansi88 (1) ansi92 (2) ansi95 (3) itu (4) ituwhite (5) itublue (6) q767 (7) etsiv2 (8) etsiv3 (9) jntt (10) jttc (11) itu97 (12)
ss7IsupNsapSsf	INTEGER	Value used in the sub-service field (SSF) of the outgoing ISUP messages on this MTP interface. Values are: national (1) international (2) spare (3) reserved (4)

## TDM configuration actions

Use the TDM configuration actions to:

- Enable and disable an MTP link.
- Inhibit and uninhibit an MTP link.
- Reset MTP statistics.
- Block, unblock, and reset circuits.
- Swap primary and backup Signaling Servers.
- Stop and restart a Signaling Server.

**Note:** When performing any of these actions on a redundant pair, always perform the action on the primary (active) Signaling Server. For more information, see the *Dialogic® Vision™ Signaling Server Administration Manual*.

The following table describes the TDM configuration actions:

Action	Description
ss7ActionMEIndex	Index of the instance of the Signaling Server managed element. This variable is set to 1 for a standalone Signaling Server, and to 1 or 2 for the Signaling Servers in a redundant pair.
ss7ActionParameterLinkNumber	MTP link number for any of the link actions.
ss7ApplyActionEnableLink	Set to enablelink (1) to enable the MTP link identified in ss7ActionParameterLinkNumber.
ss7ApplyActionDisableLink	Set to disablelink (1) to disable the MTP link identified in ss7ActionParameterLinkNumber.
ss7ApplyActionInhibitLink	Set to inhibitlink (1) to inhibit the MTP link identified in ss7ActionParameterLinkNumber.
ss7ApplyActionUninhibitLink	Set to uninhibitlink (1) to uninhibit the MTP link identified in ss7ActionParameterLinkNumber.
ss7ApplyActionClearGenStats	Set to cleargenstats (1) to reset all MTP general statistics in <a href="#">ss7MtpGenTable</a> to 0.
ss7ApplyActionClearLinkStats	Set to clearlinkstats (1) to reset the link statistics in <a href="#">ss7MtpLinkTable</a> to 0 for the MTP link identified in ss7ActionParameterLinkNumber.
ss7ActionParameterRouteDpc ss7ApplyActionClearRouteStats	Set to clearroutestats (1) to reset the route statistics in <a href="#">ss7MtpRouteTable</a> to 0 for the route identified in ss7ActionParameterRouteDpc.
ss7ActionParameterCircuitNumber	Circuit number for the circuit actions, or the starting circuit number for a circuit group. Use this variable with action variables to block, unblock, or reset circuits or circuit groups.

Action	Description
ss7ActionParameterCount	Number of consecutive circuits on which to perform the circuit actions. Use this variable with action variables to block, unblock, or reset circuit groups.
ss7ApplyActionBlockCircuit	Set to blockcircuit (1) to block the circuit identified by ss7ActionParameterCircuitNumber.
ss7ApplyActionUnblockCircuit	Set to unblockcircuit (1) to unblock the circuit identified by ss7ActionParameterCircuitNumber.
ss7ApplyActionBlockCircuitGroup	Set to blockcircuitgroup (1) to block the circuit group identified by ss7ActionParameterCircuitNumber and ss7ActionParameterCount.
ss7ApplyActionUnblockCircuitGroup	Set to unblockcircuitgroup (1) to unblock the circuit group identified by ss7ActionParameterCircuitNumber and ss7ActionParameterCount.
ss7ApplyActionResetCircuit	Set to resetcircuit (1) to reset the circuit identified by ss7ActionParameterCircuitNumber.
ss7ApplyActionResetCircuitGroup	Set to resetcircuitgroup (1) to reset the circuit group identified by ss7ActionParameterCircuitNumber and ss7ActionParameterCount.
ss7ApplyActionSwitchover	Set to switchover (1) to swap the primary and backup Signaling Servers.
ss7ApplyActionHalt	Set to halt (1) to stop the Signaling Server.
ss7ApplyActionLoad	Set to load (1) to restart the Signaling Server.

## SIGTRAN configuration tables

The following table describes the tables in the Signaling Server MIB that apply to Signaling Servers configured for the SIGTRAN network. To see the OIDs associated with these elements, access the *Vision-SignalingServer-Manager.mib* file in the */opt/net-snmp/share/mibs* directory.

For information about tables that apply to the TDM configuration, see [TDM configuration tables](#).

<b>Table</b>	<b>Contents</b>	<b>For object descriptions, see...</b>
ss7M3uaGenTable	General M3UA properties, such as the node type, maximum number of specified objects, and congestion level thresholds.	<a href="#">ss7M3uaGenTable</a> .
ss7M3uaGenStatusTable	General status information for the M3UA layer, such as the memory size and high level access state.	<a href="#">ss7M3uaGenStatusTable</a> .
ss7M3uaNsapStatusTable	NSAP status information, such as the local and remote SAP identifiers, and the high level access state.	<a href="#">ss7M3uaNsapStatusTable</a> .
ss7M3uaSapStatusTable	SAP status information, such as the high level state, endpoint identifier, and number of active associations.	<a href="#">ss7M3uaSapStatusTable</a> .
ss7SctpGenTable	General SCTP properties, such as the maximum number of specified objects and SCTP host name.	<a href="#">ss7SctpGenTable</a> .
ss7SctpSctSapStatusTable	SCTP SAP status information, such as the SS7 protocol switch and high level state.	<a href="#">ss7SctpSctSapStatusTable</a> .
ss7SctpAssocStatusTable	SCTP association status information, such as the state, source and destination network addresses, and endpoint port numbers.	<a href="#">ss7SctpAssocStatusTable</a> .

### **ss7M3uaGenTable**

ss7M3uaGenTable contains general M3UA properties. All information in this table is read-only. Statistics in this table are reset whenever the Signaling Server is restarted.

The following table describes the objects in ss7M3uaGenTable:

Object	Syntax	Description
ss7M3uaGenTable	N/A	Table of M3UA general configuration properties for each Signaling Server.
ss7M3uaGenEntry	N/A	A row in ss7M3uaGenTable.
ss7M3uaGenMEIndex	Integer32	Index of the instance of the Signaling Server managed element. This variable is set to 1 for a standalone Signaling Server, and to 1 or 2 for the Signaling Servers in a redundant pair.
ss7M3uaNodeType	DisplayString	M3UA node type.
ss7M3uaMaxNsap	Integer32	Maximum number of configured NSAPs.
ss7M3uaMaxNetwork	Integer32	Maximum number of configured networks.
ss7M3uaMaxRoute	Integer32	Maximum number of routes.
ss7M3uaMaxDpc	Integer32	Maximum number of destination point codes.
ss7M3uaMaxPs	Ineger32	Maximum number of peer servers.
ss7M3uaMaxPsp	Integer32	Maximum number of peer server processes.
ss7M3uaMaxMsg	Integer32	Maximum number of messages in transit.
ss7M3uaMaxRoundRobinLs	Integer32	Maximum number of peer servers that can use round-robin load sharing.
ss7M3uaMaxSlsLs	Integer32	Maximum number of peer servers that can use SLS-based load sharing
ss7M3uaMaxSls	Integer32	Maximum number of SLS values used by all peer servers.
ss7M3uaQueueSize	Integer32	Maximum queue size.
ss7M3uaCongLevel1	Integer32	Congestion level 1 threshold.
ss7M3uaCongLevel2	Integer32	Congestion level 2 threshold.
ss7M3uaCongLevel3	Integer32	Congestion level 3 threshold.

## ss7M3uaGenStatusTable

ss7M3uaGenStatusTable contains status information for the M3UA layer of all Signaling Servers. All information in this table is read-only.

The following table describes the objects in ss7M3uaGenStatusTable:

Object	Syntax	Description
ss7M3uaGenStatusTable	N/A	Table of M3UA general status properties for each Signaling Server.
ss7M3uaGenStatusEntry	N/A	A row in ss7M3uaGenStatusTable.
ss7M3uaGenStatusMEIndex	Integer32	Index of the instance of the Signaling Server managed element. This variable is set to 1 for a standalone Signaling Server, and to 1 or 2 for the Signaling Servers in a redundant pair.
ss7M3uaGenStatusMemSize	Integer32	Memory size.
ss7M3uaGenStatusMemAlloc	Integer32	Amount of allocated layer memory, in bytes.
ss7M3uaGenStatusHaState	INTEGER	High level access state. Values are: standalone (1) starting (2) primary (3) backup (4)

## ss7M3uaNsapStatusTable

ss7M3uaNsapStatusTable contains status information for the NSAPs in the M3UA layer of the Signaling Servers. All information in this table is read-only.

The following table describes the objects in ss7M3uaNsapStatusTable:

Object	Syntax	Description
ss7M3uaNsapStatusTable	N/A	Table of M3UA NSAP status properties for each Signaling Server.
ss7M3uaNsapStatusEntry	N/A	A row in ss7M3uaNsapStatusTable.
ss7M3uaNsapStatusMEIndex	Integer32	Index of the instance of the Signaling Server managed element. This variable is set to 1 for a standalone Signaling Server, and to 1 or 2 for the Signaling Servers in a redundant pair.

Object	Syntax	Description
ss7M3uaNsapStatusIndex	Integer32	M3UA NSAP status index.
ss7M3uaNsapStatusLocalSapId	Integer32	NSAP local SAP identifier.
ss7M3uaNsapStatusRemoteSapId	Integer32	NSAP remote sap identifier.
ss7M3uaNsapStatusHIState	INTEGER	NSAP high level state. Values are: unknown (0) unbound (1) waitBound (2) bound (3) waitOpen (4) ready (5)

### ss7M3uaSapStatusTable

ss7M3uaSapStatusTable contains status information for the SAPs in the M3UA layer of the Signaling Servers.

The following table describes the objects in ss7M3uaSapStatusTable:

Object	Syntax	Description
ss7M3uaSapStatusTable	N/A	Table of M3UA SAP status properties for each Signaling Server.
ss7M3uaSapStatusEntry	N/A	A row in ss7M3uaSapStatusEntryTable.
ss7M3uaSapStatusMEIndex	Integer32	Index of the instance of the Signaling Server managed element. This variable is set to 1 for a standalone Signaling Server, and to 1 or 2 for the Signaling Servers in a redundant pair.
ss7M3uaSapStatusIndex	Integer32	M3UA SAP status index.

Object	Syntax	Description
ss7M3uaSapStatusHIState	INTEGER	SAP high level state. Values are: unknown (0) unbound (1) waitBind (2) bound (3) waitOpen (4) ready (5)
ss7M3uaSapStatusEndpointsSpId	Integer32	SAP endpoint SP identifier.
ss7M3uaSaspStatusNmbActAssoc	Integer32	Number of active associations.

### ss7SctpGenTable

ss7SctpGenTable contains general SCTP information for the M3UA layer of Signaling Servers.

The following table describes the objects in ss7SctpGenTable:

Object	Syntax	Description
ss7SctpGenTable	N/A	Table of general SCTP properties for each Signaling Server.
ss7SctpGenEntry	N/A	A row in SctpGenTable.
ss7SctpGenMEIndex	Integer32	Index of the instance of the Signaling Server managed element. This variable is set to 1 for a standalone Signaling Server, and to 1 or 2 for the Signaling Servers in a redundant pair.
ss7SctpMaxAssoc	Integer32	Maximum number of SCTP associations the service user can open simultaneously. Valid range is 1 - 65535.
ss7SctpMaxDestAddr	Integer32	Maximum number of destination addresses that can be active simultaneously in SCTP. Valid range is 1 - 65535.
ss7SctpMaxTxQueue	Integer32	Maximum number of datagrams that can be queued for sending to the peer. Valid range is 1 - the result of $(2^{32}-1)$ .
ss7SctpMaxRxQueue	Integer32	Maximum number of datagrams received from the peer that can be queued before being sent up to the service user.

Object	Syntax	Description
ss7SctpMaxInStream	Integer32	Maximum number of incoming streams per association. Valid range is 1 - 65545.
ss7SctpMaxOutStream	Integer32	Maximum number of outgoing streams per association. Valid range is 1 - 65545.
ss7SctpMtuInitial	Integer32	Initial path max transmit unit (MTU) in bytes. Valid range is 1 - the result of $(2^{32}-1)$ .
ss7SctpMtuMax	Integer32	Maximum value in bytes when searching for an optimal MTU size using the midpoint algorithm. This field is mandatory if the value of the ss7SctpPerformMtu field is true (1). Valid range is 1 - the result of $(2^{32}-1)$ .
ss7SctpMtuMin	Integer32	Minimum value in bytes when searching for an optimal MTU size using the midpoint algorithm. This field is mandatory if the value of the ss7SctpPerformMtu field is true (1) field is TRUE. Valid range is 1 - the result of $(2^{32}-1)$ .
ss7SctpPerformMtu	INTEGER	Indicates whether or not to perform MTU discovery. Values are: true (1) false (2)
ss7SctpHostName	DisplayString	SCTP host name.
ss7SctpUseHostName	INTEGER	Indicates whether to use the host name in the message. Values are: true (1) false (2)
ss7SctpMaxInitRetry	Integer32	Maximum INIT retry count. Set to 0 for infinite retries. Valid range is 0 - 255.
ss7SctpMaxAssocRetry	Integer32	Maximum association retry count. Set to 0 for infinite retries. Valid range is 0 - 255.
ss7SctpMaxDestRetry	Integer32	Maximum destination retry count. Set to 0 for infinite retries. Valid range is 0 - 255.

Object	Syntax	Description
ss7SctpAcceptAlt	INTEGER	Indicates whether to accept an additional parameter from the peer to extended cookie lifetime. Valid values: true (1) false (1)
ss7SctpTmrMd5Key	Integer32	Lifetime of an MD5 key. A new private key is generated when this timer expires. Valid range is 1 - 65535.
ss7SctpRttAlpha	Integer32	SCTP retransmit timeout calculation parameter.
ss7SctpRttBeta	Integer32	SCTP retransmit calculation parameter.

### ss7SctpSctSapStatusTable

ss7SctpSctSapStatusTable contains status information for the SAPs in the M3UA layer of the Signaling Servers.

The following table describes the objects in ss7SctpSctSapStatusTable:

Object	Syntax	Description
ss7SctpSctSapStatusTable	N/A	Table of SCTP status properties for each Signaling Server.
ss7SctpSctSapStatusEntry	N/A	A row in sctpSctSapTable.
ss7SctpSctSapStatusMEIndex	Integer32	Index of the instance of the Signaling Server managed element. This variable is set to 1 for a standalone Signaling Server, and to 1 or 2 for the Signaling Servers in a redundant pair.
ss7SctpSctSapIndex	Integer32	SCTP SAP index.
ss7SctpProtoSwitch	Integer32	SS7 SCTP SAP protocol switch. The value should be always 1 which indicates the version number of SCTP stack layer.
ss7SctpHighLevelState	INTEGER	SCTP SAP high level state. Values are: unbound (1) bound (2)

## ss7SctpAssocStatusTable

ss7SctpAssocStatusTable contains status information for SCTP associations on all Signaling Servers. All information in this table is read-only.

The following table describes the objects in ss7SctpAssocStatusTable:

Object	Syntax	Description
ss7SctpAssocStatusTable	N/A	Table of SCTP association status properties for each Signaling Server.
ss7SctpAssocStatusEntry	N/A	A row in ss7SctpAssocStatusTable.
ss7SctpAssocStatusMEIndex	Integer32	Index of the instance of the Signaling Server managed element. This variable is set to 1 for a standalone Signaling Server, and to 1 or 2 for the Signaling Servers in a redundant pair.
ss7SctpAssocIndex	Integer32	SCTP association index.

Object	Syntax	Description
ss7SctpAssocState	INTEGER	<p>Association state. Values are:</p> <p>closed (1) No association is active or open.</p> <p>open (2) Association is capable of accepting association requests from a remote peer.</p> <p>cookieWait (3) Association is waiting for a cookie in an INIT ACK (Initiation Acknowledgement) message from the service user.</p> <p>established (4) Association is established and ready for two-way communication.</p> <p>cookieSend (5) Association sent a cookie message to the service and is waiting for a cookie acknowledgement message.</p> <p>shutdownPend (6) Association received a SHUTDOWN message from the service user.</p> <p>shutdownSent (7) Association sent a SHUTDOWN message to the service and is waiting for a SHUTDOWN ACK (Shutdown Acknowledgement) message.</p> <p>shutdownRcvd (8) Association received a SHUTDOWN message from the service user and is waiting for outstanding data to be acknowledged.</p>
ss7SctpDestAddr	DisplayString	Destination addresses that SCTP uses for this association.
ss7SctpSrcAddr	DisplayString	Source network addresses that SCTP uses for this association.
ss7SctpPrimNetAddr	DisplayString	Primary network address for the association.
ss7SctpSrcPort	Integer32	Port number for the remote SCTP endpoint in the association.

Object	Syntax	Description
ss7SctpDestPort	Integer32	Port number for the local SCTP endpoint in the association.

## Signaling Server Alarms MIB Description

The Signaling Server Alarms MIB description module is called *Vision-SignalingServer-Alarms.mib*. It has an OID of 1.3.6.1.4.1.3028.6.5.4.2.

To see the OIDs associated with the elements in the Signaling Server Alarms MIB, access the *Vision-SignalingServer-Alarms.mib* file in the `/opt/net-snmp/share/mibs` directory.

The following table describes the SS7 traps and notifications. See [Sample SNMP commands for the Signaling Server Manager MIB](#) to see the code for obtaining trap/notification information.

Trap or notification name	Severity	Description
BOARD_FAILURE	MAJOR	Signaling board failed. The notification value changes to OutOfAlarm when the board starts operating.
BOARD_RELOADING	INFORMATIONAL	Software configuration is reloading to the specified signaling board.
CIRCUIT_GROUP_LOCAL_BLOCKED_STATUS	MINOR	Circuit group's locally blocked status changed.
CIRCUIT_GROUP_REMOTE_BLOCKED_STATUS	MINOR	Circuit group's remotely blocked status changed.
CIRCUIT_LOCAL_BLOCKED_STATUS	MINOR	Circuit's locally blocked status changed.
CIRCUIT_REMOTE_BLOCKED_STATUS	MINOR	Circuit's remotely blocked status changed.

Trap or notification name	Severity	Description
CONGESTION_STATUS	MINOR	Route to a remote destination reached level 3 congestion.  The notification value changes to OutOfAlarm when the route is no longer congested (level 0).
CONGESTION_STATUS_LVL1	WARNING	Route to a remote destination has reached level 1 congestion.
CONGESTION_STATUS_LVL2	WARNING	Route to a remote destination has reached level 2 congestion.
DESTINATION_SERVICE	MINOR	Remote destination is unreachable.  The notification value changes to OutOfAlarm when the remote destination becomes reachable.
ISUP_LAYER_CONNECTION	MINOR	Connection to the ISUP layer was lost.  The notification value changes to OutOfAlarm when the connection to the ISUP layer is regained.

Trap or notification name	Severity	Description
LINK_INHIBIT_DENIED	WARNING	A link inhibit request was denied.
LINK_INHIBIT_STATUS	MINOR	Link inhibit status changed.
LINK_LOCAL_BLOCKED_STATUS	MINOR	Link's locally blocked status changed.
LINK_REMOTE_BLOCKED_STATUS	MINOR	Link's remotely blocked status changed.
LINK_SERVICE	MINOR	Link is out of service. The notification value changes to OutOfAlarm when the link comes back into service.
LINK_UNINHIBIT_DENIED	WARNING	Link uninhibit request was denied.
MTP_LAYER_CONNECTION	MINOR	Connection to the MTP layer was lost. The notification value changes to OutOfAlarm when the connection to the MTP layer is regained.
REDUNDANCYMGR_BOARD_HA_STATE	INFORMATIONAL	One of the two redundant SS7 servers has taken over from the other server because the first server failed or shut down.

Trap or notification name	Severity	Description
REDUNDANCYMGR_BOARD_INTERCONNECTION	MINOR	<p>Connection between the two signaling boards in a redundant pair is broken, resulting in a loss of redundancy.</p> <p>The notification value changes to OutOfAlarm when the connection is re-established.</p>
REDUNDANCYMGR_SERVICE	MINOR	<p>Connection to the SS7 redundancy manager process was lost, resulting in a loss of redundancy.</p> <p>The notification value changes to OutOfAlarm when the connection is re-established.</p>
SS7SVR_CONNECTION	MINOR	<p>Connection to the SS7 subsystem was lost.</p> <p>The notification value changes to OutOfAlarm when the connection is re-established.</p>

Trap or notification name	Severity	Description
SS7SVR_SERVICE	MINOR	SS7 subsystem is out of service. The notification value changes to OutOfAlarm when the SS7 subsystem is back in service.
SERVICE	MINOR	SS7 subsystem is out of service. The notification value changes to OutOfAlarm when the SS7 subsystem is back in service.

## 7. VoiceXML Interpreter MIB

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### Using the VoiceXML Interpreter MIB

The VoiceXML Interpreter MIB queries and sets values for the full set of management information for the VoiceXML Interpreter. The VoiceXML Interpreter MIB is used by the Programmable Media Platform.

Use the VoiceXML Interpreter MIB with the master agent to:

- [Get management information](#) about a VoiceXML Interpreter process.
- [Set management information](#) for a VoiceXML Interpreter process.
- [Receive SNMP notifications](#).

See the [VoiceXML Interpreter MIB description](#) for more information.

### Getting management information

Use an SNMP GET request to retrieve the following types of information about a VoiceXML Interpreter process that is running:

- General information about the process, including configuration and statistical information. The configuration information includes the VoiceXML Interpreter version, process name, configuration file used, and number of channels. The statistical information includes the process up-time, number of calls processed, and maximum concurrent calls.
- Information about each channel, including the number of calls processed and the current status of the channel; for example, whether the channel is idle or in inbound call status.
- Information about each managed VoiceXML application, including configuration and statistical information. The configuration information includes the application's number range, initial URI, and maximum call duration. The statistical information includes the total number of calls to the application, average call duration, recognition success/failure rates, and number of errors thrown.
- HTTP cache information, including the current size and limit for each cache type.

**Note:** You can also display this information on the Vision Console, as described in the *Dialogic® Vision™ 1000 Programmable Media Platform User's Manual*.

Channel, application, and cache information is stored in tabular form. Use the GETNEXT or GETBULK operations to traverse the tables.

### Setting management information

You can perform the following tasks using SNMP SET requests:

- Clear the HTTP cache.
- Quiesce and unquiesce interpreter channels.
- Set the system log level to a new value.
- Refresh the newly deployed licenses. This causes the Programmable Media Platform to update its status and open more channels, if possible.
- Add or remove VoiceXML applications.

**Note:** You can also perform these tasks on the Vision Console, as described in the *Dialogic® Vision™ 1000 Programmable Media Platform User's Manual*.

## Receiving notifications

You can receive the following notifications from the VoiceXML Interpreter MIB:

Notification	Description
vxmlNotifChannelNotResponding	A channel does not return to an idle state within the maximum call duration time limit.
vxmlNotifChannelException	A channel generates a software exception.
vxmlNotifChannelsReady	VoiceXML Interpreter is accepting calls.
vxmlNotifChannelsQuiescing	VoiceXML Interpreter is quiescing. It does not accept calls.
vxmlNotifNoResource	A no resource error.

Events that trigger these SNMP notifications include:

- Channel exceptions, channels not responding, and no-resource errors
- Channels being quiesced or unquiesced

## Sample SNMP commands for the VoiceXML Interpreter MIB

The following examples use SNMP commands from the Net-SNMP toolkit to query the VoiceXML Interpreter MIB. The toolkit is available from <http://www.net-snmp.org>.

Task	Example
Doing a full MIB walk	<pre>snmpwalk -v2c -c public 127.0.0.1 enterprises.3028</pre>
Setting the rows of the VoiceXML Applications table	<pre>snmpset -v3 -u Administrator -l authPriv -A "authpass" -X "privpass" 127.0.0.1 enterprises.3028.6.5.3.7.1.8.0 i 4 enterprises.3028.6.5.3.7.1.2.0 s "4[7,8]%.2" enterprises.3028.6.5.3.7.1.3.0 s "http://myserver.com/index.vxml" enterprises.3028.6.5.3.7.1.5.0 s "myAppLogDir" .enterprises.3028.6.5.3.7.1.6.0 i 1 enterprises.3028.6.5.3.7.1.7.0 i 1138</pre>
Deleting row number 5 from the VoiceXML Applications table	<pre>snmpset -v3 -u Administrator -l authPriv -A "authpass" -X "privpass" 127.0.0.1 enterprises.13859.10.1.1.7.1.8.5 i 6</pre>

## VoiceXML Interpreter MIB description

The VoiceXML Interpreter MIB module is called *Vision-VxmlInterpreter.mib*. It has an OID of 1.3.6.1.4.1.3028.6.5.3.

The following table describes the objects and tables in the VoiceXML Interpreter MIB. To see the OIDs associated with these elements, access the *Vision-VxmlInterpreter.mib* file in the */opt/nms/vx/snmp/mibs* directory.

Objects and tables	Access	Syntax	Description
vxmLCfgProcessName	Read-only	DisplayString	Name of the VoiceXML Interpreter process.
vxmLCfgInterpreterVersion	Read-only	DisplayString	VoiceXML Interpreter version.
vxmLCfgMIOVersion	Read-only	DisplayString	Loaded MIO version.
vxmLCfgConfigurationFile	Read-only	DisplayString	URI of the loaded configuration file.
vxmLCfgChannels	Read-only	Unsigned32	Number of channels.
vxmLCfgAppNextIndex	Read-only	Unsigned32	A hint for the next index to use when adding a row to the vxmLCfgAppTable.
vxmLCfgAppTable	N/A	N/A	Table of settings for each VoiceXML application. Refer to <a href="#">vxmLCfgAppTable</a> for information.
vxmLCfgLicVoiceChannels	Read-only	N/A	Number of licensed voice channels.
vxmLCfgLicVideoChannels	Read-only	N/A	Number of licensed video channels.
vxmLStatsSysUpTime	Read-only	TimeTicks	System up-time in hundreds of a second.
vxmLStatsTotalCalls	Read-only	Unsigned32	Total number of calls processed since startup.
vxmLStatsConcurrentCallsMax	Read-only	Unsigned32	Maximum number of concurrent calls since startup.
vxmLStatsActiveCalls	Read-only	Unsigned32	Total number of active calls.

<b>Objects and tables</b>	<b>Access</b>	<b>Syntax</b>	<b>Description</b>
vxmlStatsAppTable	N/A	N/A	Table of statistics for each VoiceXML application. Refer to <a href="#">vxmlStatsAppTable</a> for information.
vxmlStatsChannelTable	N/A	N/A	Table of statistics for each channel. Refer to <a href="#">vxmlStatsChannelTable</a> for information.
vxmlStatsCacheTable	N/A	N/A	Table of HTTP cache information. Refer to <a href="#">vxmlStatsCacheTable</a> for information.
vxmlActProcessState	Read/write	Integer	Specifies and controls the state of the channels. Values are: ready (1) quiescing (2) quiesced (3) goQuiesced (100) goReady (101) The system starts up with ready (1).
vxmlActClearCache	Read/write	Integer	The clear HTTP cache action. Values are: null (1) clear (2) clear (2) is the control value that controls the call server.

Objects and tables	Access	Syntax	Description
vxmActLogLevel	Read/write	Integer	Controls the logging level of the VoiceXML Interpreter. Values are: fatalError (1) error (2) warning (3) info1 (4) info2 (5) info3 (6) info4 (7) info5 (8)
vxmActLicRefresh	Read/write	Integer	Specifies the license refresh action. Only value is control (2).
vxmNotifications	N/A	N/A	Table of VoiceXML Interpreter notifications. Refer to <a href="#">vxmNotifications</a> for information.
vxmNotifNoResourceError	Read-only	DisplayString	Describes the last no resource error, if any.

## vxmCfgAppTable

The following table describes the objects in the vxmCfgAppTable. There is one row for each defined VoiceXML application.

Object	Access	Syntax	Description
vxmCfgAppTable	N/A	N/A	Table of settings for each VoiceXML application.
vxmCfgAppEntry	N/A	N/A	A row in vxmCfgAppTable.
vxmCfgAppIndex	Read/create	Unsigned32	Arbitrary but unique application index.
vxmCfgAppNumberRange	Read/create	DisplayString	Number range for the application.

Object	Access	Syntax	Description
vxmLCfgAppInitialURI	Read/create	DisplayString	Initial URI for the application.
vxmLCfgAppLogsEnabled	Read/create	Integer	Whether logging is enabled for the VoiceXML application.
vxmLCfgAppLogSubDir	Read/create	DisplayString	Path for VoiceXML application logs.
vxmLCfgAppTransferAllowed	Read/create	Integer	Whether call transfers are allowed for the VoiceXML application.
vxmLCfgAppMaxCallDurationLimitSec	Read/create	Integer32	Maximum call duration limit in seconds, or -1 for no limit.
vxmLCfgAppRowStatus	Read/create	RowStatus	Row status.

## vxmLStatsAppTable

The following table describes the objects in the vxmLStatsAppTable. There is one row for each defined VoiceXML application.

Object	Access	Syntax	Description
vxmLStatsAppTable	N/A	N/A	Table of statistics for each VoiceXML application.
vxmLStatsAppEntry	N/A	N/A	A row in vxmLStatsAppTable.
vxmLStatsAppIndex	Read-only	Unsigned32	Application index.
vxmLStatsAppTotalCalls	Read-only	Unsigned32	Total number of calls processed since startup.
vxmLStatsAppConcurrentCallsMax	Read-only	Unsigned32	Maximum number of concurrent calls since startup.

Object	Access	Syntax	Description
vxmlStatsAppActiveCalls	Read-only	Unsigned32	Number of active calls for this application.
vxmlStatsAppCallDurationAvg	Read-only	Unsigned32	Average call duration in seconds since startup.
vxmlStatsAppCallDurationStd	Read-only	Unsigned32	Call duration standard deviation since startup.
vxmlStatsAppBadFetch	Read-only	Unsigned32	Number of bad fetches since startup.
vxmlStatsAppSemanticError	Read-only	Unsigned32	Number of semantic errors since startup.
vxmlStatsAppGeneralError	Read-only	Unsigned32	Number of non-specific errors since startup.
vxmlStatsAppRecNoMatch	Read-only	Unsigned32	Number of recognition no matches since startup.
vxmlStatsAppRecNoInput	Read-only	Unsigned32	Number of recognition no inputs since startup.
vxmlStatsAppRecSuccess	Read-only	Unsigned32	Number of recognition successes since startup.
vxmlStatsAppRecFail	Read-only	Unsigned32	Number of recognition fails (for reasons other than no match and no input) since startup.
vxmlStatsAppNoResource	Read-only	Unsigned32	Number of no resource errors since startup.

## vxmlStatsChannelTable

The following table describes the objects in the vxmlStatsChannelTable. There is one row for each channel:

Object	Access	Syntax	Description
vxmlStatsChannelTable	N/A	N/A	Table of VoiceXML Interpreter channels.
vxmlStatsChannelEntry	N/A	N/A	A row in vxmlStatsChannelTable.

Object	Access	Syntax	Description
vxmlStatsChannelIndex	Read-only	Unsigned32	The channel.
vxmlStatsChannelStatus	Read-only	Integer	Current status of an individual channel.
vxmlStatsChannelLocalUri	Read-only	DisplayString	Local URI, or an empty string if no call is in progress.
vxmlStatsChannelRemoteUri	Read-only	DisplayString	Remote URI, or an empty string if no call is in progress.
vxmlStatsChannelCallId	Read-only	DisplayString	Call ID for this call, or blank if no call is in progress.
vxmlStatsChannelLastFetchedUri	Read-only	DisplayString	Last fetched URI.
vxmlStatsChannelCallDurationMs	Read-only	Unsigned32	Duration of the call in milliseconds, or 0 if there is no call in progress.
vxmlStatsChannelTotalCalls	Read-only	Unsigned32	Total number of calls processed by this channel since startup.

## vxmlStatsCacheTable

The following table describes the objects in the vxmlStatsCacheTable. There is one row for each cache type.

Object	Access	Syntax	Description
vxmlStatsCacheTable	N/A	N/A	Table of HTTP cache information.
vxmlStatsCacheEntry	N/A	N/A	A row in vxmlStatsCacheTable.
vxmlStatsCacheIndex	Read-only	Unsigned32	Index of the cache.

Object	Access	Syntax	Description
vxmlStatsCacheType	Read-only	DisplayString	Type of cache (VoiceXML, grammar, and so forth).
vxmlStatsCacheSizeMemoryUsedKB	Read-only	Unsigned32	Current size of the memory cache in KB.
vxmlStatsCacheSizeMemoryLimitKB	Read-only	Unsigned32	Size limit of the memory cache in KB.
vxmlStatsCacheSizeDiskUsedKB	Read-only	Unsigned32	Current size of the disk cache in KB.
vxmlStatsCacheSizeDiskLimitKB	Read-only	Unsigned32	Size limit of the memory cache in KB.

## vxmlNotifications

The following table describes the VoiceXML Interpreter notifications:

Notification	Description
vxmlNotifChannelNotResponding	A channel did not return to an idle state within the maximum call duration time limit.
vxmlNotifChannelException	A channel generated a software exception.
vxmlNotifChannelsReady	VoiceXML Interpreter is ready to accept calls.
vxmlNotifChannelsQuiescing	VoiceXML Interpreter is in a quiesced state and does not accept calls.
vxmlNotifNoResource	A no resource error occurred.

## 8. Video Transcoder MIB

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### Using the Video Transcoder MIB

The Video Transcoder MIB queries and sets values for Vision Servers that have video transcoders. Use the Video Transcoder MIB with the master agent to:

- Get management information about a video transcoder process.
- Set management information about a video transcoder process.
- Receive SNMP notifications.

See the [Video Transcoder MIB description](#) for more information.

### Getting management information

Use an SNMP GET request to retrieve the following information about a video transcoder process that is running:

- General information about the process, including configuration and statistical information. The configuration information includes the video transcoder version, process name, and number of licensed channels. The statistical information includes the process up-time, the number of video applications connected to the server, and the number of errors or warnings issued.
- Information about each consumer of the video transcoder (that is, the Video Gateway), including the application name, the host on which the application executes, and the number of full-duplex channels in use.
- Information about each channel, including the state of the channel, the time when it was last started, and the time when it was last stopped.
- Information about endpoint A and endpoint B, including video characteristics in use by endpoint A and endpoint B.

**Note:** You can also display this information in the Vision Console, as described in the *Dialogic® Vision™ 1000 Programmable Media Platform User's Manual* and the *Dialogic® Vision™ 1000 Video Gateway Administration Manual*.

Channel information is stored in tabular form. Use the GETNEXT or GETBULK operations to traverse the tables.

### Setting management information

Use an SNMP SET request to perform tasks such as:

- Quiesce and unquiesce the video transcoder.
- Change the high water mark or low water mark for CPU usage.
- Change the system log level.

**Note:** You can also perform these tasks on the Vision Console, as described in the *Dialogic® Vision™ 1000 Programmable Media Platform User's Manual* and the *Dialogic® Vision™ 1000 Video Gateway Administration Manual*.

### Receiving SNMP notifications

You can receive the following notifications from the Video Transcoder MIB.

Notification	Description
vtVtpErrorNotification	Error notification at the platform level. <b>Note:</b> This notification is used for system debugging by Dialogic Services and Support.
vtChnErrorNotification	Error notification at the channel level. <b>Note:</b> This notification is used for system debugging by Dialogic Services and Support.
vtVtpLicenseNotification	License usage for the given video transcoder system crossed a threshold, such as high water mark or low water mark.
vtVtpUsageNotification	Estimate of total CPU usage required to perform all current transcoding crossed a threshold, such as high water mark or low water mark.

Events that trigger these SNMP notifications include:

- Channel exceptions, channels not responding, and no-resource errors.
- Channels being quiesced or unquiesced.

## Sample SNMP commands for the Video Transcoder MIB

The following examples use SNMP commands from the Net-SNMP toolkit to query the Video Transcoder MIB. The toolkit is available from <http://www.net-snmp.org>.

Task	Example
Doing a full MIB walk	<pre>snmpwalk -v2c -c public 127.0.0.1 enterprises.3028.6.5.5.1 SNMPv2-SMI::enterprises.3028.6.5.5.1.1.0 = STRING: "MyVTSystem" SNMPv2-SMI::enterprises.3028.6.5.5.1.1.2.0 = INTEGER: 81 SNMPv2-SMI::enterprises.3028.6.5.5.1.1.3.0 = INTEGER: 60 SNMPv2-SMI::enterprises.3028.6.5.5.1.1.4.0 = INTEGER: 60 SNMPv2-SMI::enterprises.3028.6.5.5.1.1.5.0 = INTEGER: -1 SNMPv2-SMI::enterprises.3028.6.5.5.1.1.6.0 = INTEGER: 3 SNMPv2-SMI::enterprises.3028.6.5.5.1.1.7.0 = INTEGER: 4 SNMPv2-SMI::enterprises.3028.6.5.5.1.1.8.0 = STRING: "ENABLED" SNMPv2-SMI::enterprises.3028.6.5.5.1.1.9.0 = STRING: "Oct 27 07:00:07 (030)" SNMPv2-SMI::enterprises.3028.6.5.5.1.1.10.0 = INTEGER: 2 SNMPv2-SMI::enterprises.3028.6.5.5.1.1.11.0 = INTEGER: 1 SNMPv2-SMI::enterprises.3028.6.5.5.1.1.12.0 = INTEGER: 60 SNMPv2-SMI::enterprises.3028.6.5.5.1.1.13.0 = INTEGER: 1 SNMPv2-SMI::enterprises.3028.6.5.5.1.1.14.0 = INTEGER: 0 SNMPv2-SMI::enterprises.3028.6.5.5.1.1.15.0 = INTEGER: 0 SNMPv2-SMI::enterprises.3028.6.5.5.1.1.16.0 = INTEGER: 0 SNMPv2-SMI::enterprises.3028.6.5.5.1.1.17.0 = INTEGER: 100 SNMPv2-SMI::enterprises.3028.6.5.5.1.1.18.0 = INTEGER: 10</pre>
Getting VTP usage high water mark	<pre>snmpget -v2c -c public 127.0.0.1 enterprises.3028.6.5.5.1.1.2.0 SNMPv2-SMI::enterprises.3028.6.5.5.1.1.2.0 = INTEGER: 80</pre>
Setting VTP usage high water mark	<pre>snmpset -v2c -c public 127.0.0.1 enterprises.3028.6.5.5.1.1.2.0 i90 SNMPv2-SMI::enterprises.3028.6.5.5.1.1.2.0 = INTEGER: 90</pre>

## Video Transcoder MIB description

The Video Transcoder MIB module is called *Vision-VideoTranscoder.mib*. It has an OID of 1.3.6.1.4.1.3028.6.5.5.

The following table describes the objects and tables in the Video Transcoder MIB. To see the OIDs associated with these elements, access the *Vision-VideoTranscoder.mib* file in the */opt/nms/trc/snmp* directory.

Objects and tables	Access	Syntax	Description
vtSysName	Read-only	DisplayString	Name of the system.
vtSysUsageHighWater	Read-write	Integer	Percentage of estimated usage at which time CPU usage notification is issued on the high end.
vtSysUsageLowWater	Read-write	Integer	Percentage of estimated usage at which time CPU usage notification is issued on the low end.
vtSysSpxMaxChans	Read-write	Integer	Maximum number of simplex transcoding channels to allow.
vtSysDebugLogMask	Read-write	Integer32	Global debug log mask.
vtSysTrcpLogMask	Read-write	Integer32	Global trcp debug log mask.
vtSysSetVT	Read-write	Integer	Set Video Transcoder event. Values are: Abort (1): Terminate all channels. Once all channels are aborted, go to disabled state. Reboot (2): Reboot the Video Transcoder. Restart (3): Stop all transcoder processes and then restart all processes. Enable (4): Enable new channel assignments. Disable (5): Disable new channel assignments. Once idle, go to disabled state.
vtSysState	Read-only	DisplayString	Current overall state.

<b>Objects and tables</b>	<b>Access</b>	<b>Syntax</b>	<b>Description</b>
vtSysStartTime	Read-only	DisplayString	Time when Video Transcoder server started.
vtSysLicenseHighWater	Read-write	Integer	Percentage of estimated usage at which time license usage notification is issued on the high end.
vtSysLicenseLowWater	Read-write	Integer	Percentage of estimated usage at which time license usage notification is issued on the low end.
vtSysLicensedChannels	Read-only	Integer	Number of channel licenses obtained.
vtSysErrorsCount	Read-only	Integer	Count of errors encountered.
vtSysWarningCount	Read-only	Integer	Count of warnings encountered.
vtSysRejectHighWater	Read-write	Integer	Percentage of estimated usage at which time the system issues a CPU usage notification and begins to reject new channel requests.
vtSysRejectLowWater	Read-write	Integer	Percentage of estimated usage at which time the system issues a CPU usage notification and begins to accept new channel requests.
vtSysAppCount	Read-only	Integer	Number of video applications connected to the server.
vtSysUsageLevel	Read-only	Integer	Current usage level of Video Transcoder.
vtAppTable	N/A	N/A	Video Transcoder application table. For more information, see <a href="#">vtAppTable</a> .
vtChnTable	N/A	N/A	Video Transcoder channel table. For more information, see <a href="#">vtChnTable</a> .

Objects and tables	Access	Syntax	Description
vtChnEndPointATable	N/A	N/A	Video Transcoder channel endpoint A table. For more information, see <a href="#">vtChnEndPointATable</a> .
vtChnEndPointBTable	N/A	N/A	Video Transcoder channel endpoint B table. For more information, see <a href="#">vtChnEndPointBTable</a> .

## vtAppTable

The following table describes the objects in vtAppTable. There is one row for each video transcoder application, where each application is a Video Gateway.

Object	Access	Syntax	Description
vtAppTable	N/A	N/A	Video Transcoder application table.
vtAppEntry	N/A	N/A	An entry in the Video Transcoder application table.
vtAppId	Read-only	DisplayString	Unique value identifying the application.
vtAppName	Read-only	DisplayString	Name of application.
vtAppHost	Read-only	DisplayString	Name of host on which the application executes.
vtAppState	Read-only	DisplayString	Current application connection state.
vtAppStartTime	Read-only	DisplayString	Time when the application first connected.
vtAppFdxInUse	Read-only	Integer	Current number of full-duplex channels in use by the application.

## vtChnTable

The following table describes the objects in vtChnTable. There is one row for each channel in a video transcoder application.

Object	Access	Syntax	Description
vtChnTable	N/A	N/A	Video Transcoder channel table.
vtChnEntry	N/A	N/A	An entry in the Video Transcoder channel table.
vtChnId	Read-only	DisplayString	Unique value identifying the channel.
vtChnAppId	Read-only	DisplayString	Unique value identifying the application that owns the channel.
vtChnState	Read-only	DisplayString	Current state of the channel.
vtChnStartTime	Read-only	DisplayString	Time when the channel was last started.
vtChnStopTime	Read-only	DisplayString	Time when the channel was last stopped.

## vtChnEndPointATable

The following table describes the objects in vtChnEndPointATable. There is one row for each channel in a video transcoder application.

Object	Access	Syntax	Description
vtChnEndPointATable	N/A	N/A	Video Transcoder channel endpoint A table.
vtChnEndPointAEntry	N/A	N/A	An entry in the Video Transcoder channel endpoint A table.
vtEndPointAChnID	Read-only	DisplayString	Unique value identifying the channel.
vtEndPointAVType	Read-only	DisplayString	Type of video used by the endpoint.
vtEndPointAProfile	Read-only	DisplayString	Type of profile used by the endpoint.
vtEndPointALevel	Read-only	DisplayString	Profile level used by the endpoint.

<b>Object</b>	<b>Access</b>	<b>Syntax</b>	<b>Description</b>
vtEndPointADataRate	Read-only	DisplayString	Video bit stream data rate in use by the endpoint.
vtEndPointAFrameRate	Read-only	DisplayString	Number of video frames per second in use by the endpoint (being output by or expected to be received by the endpoint).
vtEndPointAFrameRes	Read-only	DisplayString	The pixel resolution of the video frame in use by the endpoint.
vtEndPointAPKMode	Read-only	DisplayString	The method that the endpoint uses for encapsulating video frame data into RTP packets. The packetization mode is specific to the video format in use by the endpoint.
vtEndPointAInJitMode	Read-only	DisplayString	Mode of operation for receive jitter buffer control.
vtEndPointAInJitLatency	Read-only	DisplayString	The jitter buffer latency in milliseconds. This defines the amount of time by which the received packets are delayed to allow for jitter buffer reordering. This field is applicable only when the jitter buffer is in use.
vtEndPointAInRTCPReceiver	Read-only	DisplayString	Mode for handling RTCP communication with the input endpoint.
vtEndPointAInRTCPRxTimeout	Read-only	DisplayString	Maximum time in milliseconds that can pass without receiving RTP or RTCP before considering the endpoint timed out.

Object	Access	Syntax	Description
vtEndPointAOutIpAddr	Read-only	DisplayString	IP address of the endpoint as an ASCII string representation. The transcoder outputs the RTP video bit stream to this address.
vtEndPointAOutRTPPort	Read-only	DisplayString	UDP port number of the endpoint. The transcoder outputs the RTP video bit stream to this RTP port.
vtEndPointAOutPayloadId	Read-only	DisplayString	Payload ID used in outbound RTP packets issued by the transcoder.
vtEndPointAOutRTCPTrans	Read-only	DisplayString	Mode for handling RTCP communication with the output endpoint.
vtEndPointAOutRTCPTimeout	Read-only	DisplayString	Maximum time in milliseconds that can pass without receiving RTCP before considering the endpoint timed out.

## vtChnEndPointBTable

The following table describes the objects in vtChnEndPointBTable. There is one row for each channel in a video transcoder application.

Object	Access	Syntax	Description
vtChnEndPointBTable	N/A	N/A	Video Transcoder channel endpoint B table.
vtChnEndPointBEntry	N/A	N/A	An entry in the Video Transcoder channel endpoint B table.
vtEndPointBChnID	Read-only	DisplayString	Unique value identifying the channel.
vtEndPointBVType	Read-only	DisplayString	Type of video used by the endpoint.
vtEndPointBProfile	Read-only	DisplayString	Type of profile used by the endpoint.

<b>Object</b>	<b>Access</b>	<b>Syntax</b>	<b>Description</b>
vtEndPointBLevel	Read-only	DisplayString	Profile level used by the endpoint.
vtEndPointBDataRate	Read-only	DisplayString	Video bit stream data rate in use by the endpoint.
vtEndPointBFrameRate	Read-only	DisplayString	Number of video frames per second in use by the endpoint (being output by or expected to be received by the endpoint).
vtEndPointBFrameRes	Read-only	DisplayString	The pixel resolution of the video frame in use by the endpoint.
vtEndPointBPKMode	Read-only	DisplayString	The method that the endpoint uses for encapsulating video frame data into RTP packets. The packetization mode is specific to the video format in use by the endpoint.
vtEndPointBInJitMode	Read-only	DisplayString	Mode of operation for receive jitter buffer control.
vtEndPointBInJitLatency	Read-only	DisplayString	The jitter buffer latency in milliseconds. This defines the amount of time by which the received packets are delayed to allow for jitter buffer reordering. This field is applicable only when the jitter buffer is in use.
vtEndPointBInRTCPReceiver	Read-only	DisplayString	Mode for handling RTCP communication with the input endpoint.
vtEndPointBInRTCP RxTimeout	Read-only	DisplayString	Maximum time in milliseconds that can pass without receiving RTP or RTCP before considering the endpoint timed out.

<b>Object</b>	<b>Access</b>	<b>Syntax</b>	<b>Description</b>
vtEndPointBOutIpAddr	Read-only	DisplayString	IP address of the endpoint as an ASCII string representation. The transcoder outputs the RTP video bit stream to this address.
vtEndPointBOutRTPPort	Read-only	DisplayString	UDP port number of the endpoint. The transcoder outputs the RTP video bit stream to this RTP port.
vtEndPointBOutPayloadId	Read-only	DisplayString	Payload ID used in outbound RTP packets issued by the transcoder.
vtEndPointBOutRTCPTrans	Read-only	DisplayString	Mode for handling RTCP communication with the output endpoint.
vtEndPointBOutRTCPTimeout	Read-only	DisplayString	Maximum time in milliseconds that can pass without receiving RTCP before considering the endpoint timed out.

## 9. Gateway MIB

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### Using the Gateway MIB

The Gateway MIB queries and sets values for Vision Servers that use gateway processes. Use the Gateway MIB with the master agent to:

- Get management information about a gateway process.
- Set management information about a gateway process.
- Receive SNMP notifications.

See the [Gateway MIB description](#) for more information.

### Getting gateway management information

Use an SNMP GET request to retrieve general information about a gateway process that is running, including configuration and statistical information.

### Setting gateway management information

Use an SNMP SET request to perform the following tasks:

- Change the high call volume notification threshold.
- Change the high call volume notification period.
- Clear or reset all gateway counters.

### Receiving notifications

The following notification may be sent from the Gateway MIB:

Notification	Description
gwUsageNotification	Gateway usage crossed the configured threshold; that is, the gwCurrentCalls value exceeds the gwSimultaneousThreshold value.

### Sample SNMP commands for the Gateway MIB

The following examples use SNMP commands from the Net-SNMP toolkit to query the Gateway MIB. The toolkit is available from <http://www.net-snmp.org>.

Task	Example
Doing a full MIB walk	<pre>snmpwalk -v3 -u public 127.0.0.1 enterprises.3028.6.5.6</pre>
Getting the total number of calls	<pre>snmpget -v2c -c public 127.0.0.1 enterprises.3028.6.5.6.3</pre>

Task	Example
Clearing the counters	<pre>snmpset -v2c -c public 127.0.0.1 enterprises.3028.6.5.6.17</pre>

## Gateway MIB description

The Gateway MIB module is called *Vision-Gateway.mib*. It has an OID of 1.3.6.1.4.1.3028.6.5.6.

The following table describes the objects in the Gateway MIB. To see the OIDs associated with these objects, access the *Vision-Gateway.mib* file in the */opt/nms/vx/snmp/mibs* directory.

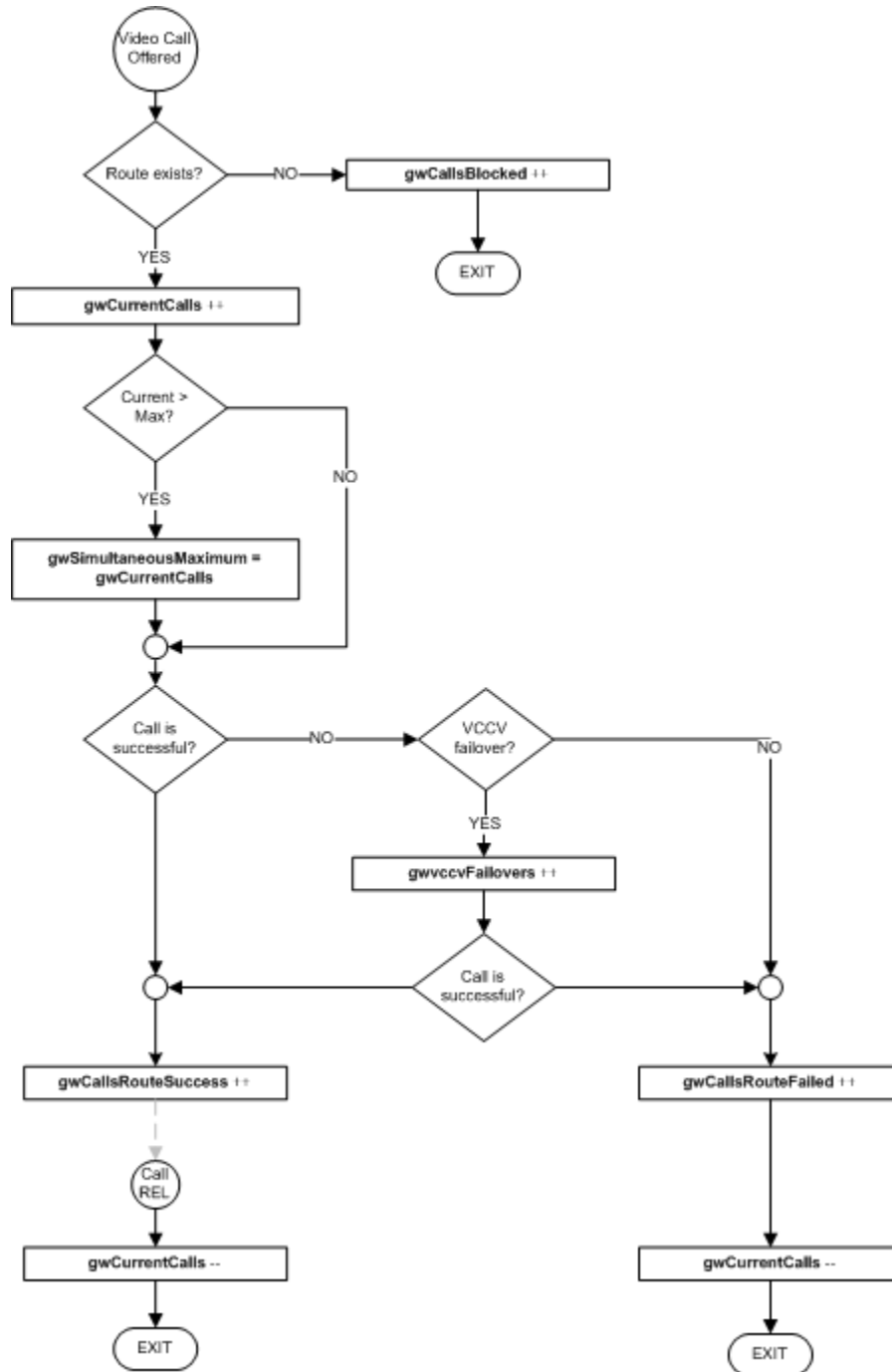
Objects	Access	Syntax	Description
gwCountersStartTime	Read-only	DisplayString	Time when the counters started (last time the counters were cleared).
gwCountersCurrentTime	Read-only	DisplayString	Current time. Used with gwCountersStartTime to define the range of applicability of the timers.
gwCallsTotal	Read-only	Unsigned32	Total number of calls that arrived on the gateway since gwCountersStartTime.
gwCallsRouteFailed	Read-only	Unsigned32	Total number of calls on the gateway that failed since gwCountersStartTime.
gwCallsRouteSuccess	Read-only	Unsigned32	Total number of routed calls on the gateway that succeeded since gwCountersStartTime.
gwCallsBlocked	Read-only	Unsigned32	Total number of calls not routed by the gateway since gwCountersStartTime.

Objects	Access	Syntax	Description
gwCurrentCalls	Read-only	Unsigned32	Current number of calls active or in progress on the gateway.  Incremented for incoming calls for which ACM was sent; decremented on REL.
gwSimultaneousMaximum	Read-only	Unsigned32	Maximum number of simultaneous calls (active or in progress) since gwCountersStartTime; that is, the largest number that gwCurrentCalls reached during the period.
gwSimultaneousThreshold	Read-write	Unsigned32	Configured notification threshold for simultaneous calls (active or in progress).
gwSimultaneousThresholdPeriod	Read-write	Unsigned32	Configured minimum minutes between threshold notifications. After a notification is made, another notification is not made until this time expires.
gwvccvFailovers	Read-only	Unsigned32	Number of Video Call Completion to Voice (VCCV) call attempts as a result of failover since gwCountersStartTime.
gwvccvCallAttempts	Read-only	Unsigned32	Number of VCCV call attempts since gwCountersStartTime. Includes failover attempts and routed calls.  <b>Note:</b> For systems performing VCCV routing only, this number will be the same as gwCallsTotal.
gwvccvOptInCallAttempts	Read-only	Unsigned32	Number of VCCV opt-in call attempts since gwCountersStartTime.

<b>Objects</b>	<b>Access</b>	<b>Syntax</b>	<b>Description</b>
gwvccvOptInSuccessful	Read-only	Unsigned32	Number of VCCV opt-in calls that were successful since gwCountersStartTime. Successful is defined by answered (ANM).
gwvccvOptInUnsuccessful	Read-only	Unsigned32	Number of VCCV opt-in calls that were unsuccessful since gwCountersStartTime. Unsuccessful is defined by not answered.
gwvccvOptOutCallAttempts	Read-only	Unsigned32	Number of VCCV opt-out call attempts since gwCountersStartTime. Opt-out is defined by user selection, hang-up or timeout.
gwvccvMinutes	Read-only	Unsigned32	Number of connected (successfully routed) minutes via VCCV, from destination ANM to REL.
gwCountersReset	Read-write	Unsigned32	When written with a value of 1, all counters are cleared. After clearing, this item is reset to 0.

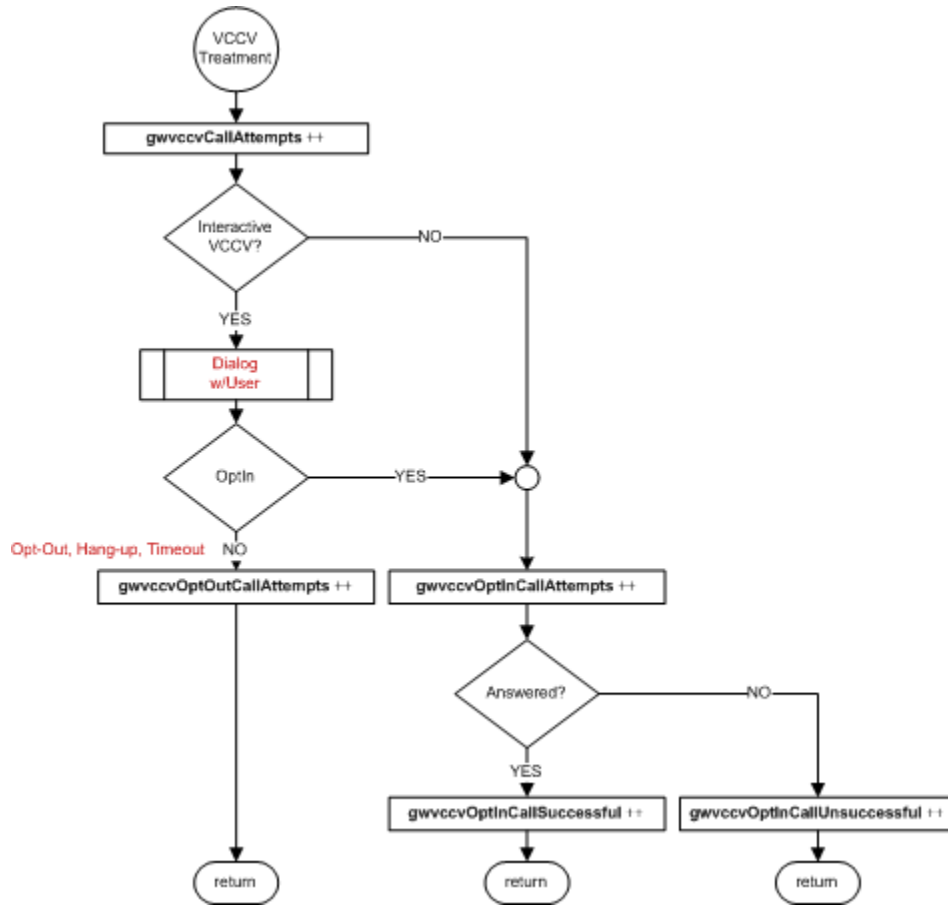
### Gateway MIB flowchart

The following flowchart illustrates the interrelationship between objects in the Gateway MIB.



### Gateway MIB flowchart with VCCV

The following flowchart illustrates the interrelationship between objects in the Gateway MIB when the VCCV option is in use.



## 10. Node MIB

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### Using the Node MIB

The Node MIB provides information about Vision Servers when multiple servers are configured as a Vision node. Use the Node MIB with the master agent to get the node name and IP addresses of the node members.

See the [Node MIB description](#) for more information.

### Sample SNMP commands for the Node MIB

The following examples use SNMP commands from the Net-SNMP toolkit to query the Node MIB. The toolkit is available from <http://www.net-snmp.org>.

Task	Example
Doing a full MIB walk	<pre>snmpwalk -v3 -u public 127.0.0.1 enterprises.3028.6.5.7</pre>
Getting the table of node members	<pre>snmpget -v2c -c public 127.0.0.1 enterprises.3028.6.5.7.2</pre>

### Node MIB description

The Node MIB module is called *Vision-Node.mib*. It has an OID of 1.3.6.1.4.1.3028.6.5.7.

The following table describes the objects in the Node MIB. To see the OIDs associated with these objects, access the *Vision-Node.mib* file in the */opt/nms/vx/snmp/mibs* directory.

Objects and table	Access	Syntax	Description
vnodeNodeName	Read-only	DisplayString	Name of the node.
vnodeMemberTable	N/A	N/A	Table of node members. For more information, see <a href="#">vnodeMemberTable</a> .

### vnodeMemberTable

The following table describes the objects in the vnodeMemberTable.

Object	Access	Syntax	Description
vnodeMemberTable	N/A	N/A	Table of node members.
vnodeMemberEntry	N/A	N/A	A row in the vnodeMemberTable.

<b>Object</b>	<b>Access</b>	<b>Syntax</b>	<b>Description</b>
vnodeMemberIndex	Read-only	Integer	Index of node member entry.
vnodeMemberName	Read-only	DisplayString	Node member name.
vnodeMemberAddress	Read-only	DisplayString	Node member IP address.

## 11. Glossary

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### A

**ADTCP:** An audio driver that provides a TCP interface to MIOSIP for rendering SSML fragments.

**AMR:** Adaptive multi-rate; an audio data compression scheme optimized for speech coding. This scheme was adopted by 3GPP and is used in video services.

**ASR:** Automatic speech recognition; ASR resources, called ASR engines in the MRCP framework, typically enable users of information systems to speak entries rather than punching numbers on a keypad. See also MRCP.

**Authorization and Usage Indication interface:** XML-over-HTTP mechanism that authorizes call sessions and gathers information for call detail reports.

### B

**blind transfer:** A call transfer in which the originating caller is not announced and is connected directly to destination. In a blind transfer the Vision Server redirects the caller to the callee without remaining in the connection and does not monitor the outcome.

**bridge transfer:** A blind transfer in which the Vision Server redirects the caller to the callee and remains as a listener.

### C

**Call Server:** Component of the Vision Server that manages call control and routing capabilities.

**CallPlacer interface:** XML-over-HTTP mechanism for initiating outbound sessions or calls for VoiceXML applications.

**CCXML:** Call Control Extensible Markup Language; a W3C Working Draft standard language for providing telephony call control support for dialog systems, gateways, and conferencing services.

**CCXML application definition file:** A file that maps individual CCXML applications to number ranges that trigger the execution of those applications.

**clock:** A periodic reference signal used for synchronization on a transmission facility, such as a telephony bus. See also clock master, clock slave, clock fallback.

**clock master:** A board that drives the clock signal for a system of boards connected by a bus cable. See also clock slave.

**clock slave:** A board that derives its clock signal from a bus cable; the clock signal is driven by the bus clock master. See also clock master.

**consultation transfer:** A call transfer in which the Vision Server initiates a transfer between two parties, but does not stay attached to the call once it is successfully established. The caller remains connected to the Vision Server if the transfer fails.

## D

**DTMF:** Dual tone multi frequency; an inband signaling system that uses two simultaneous voiceband tones for dialing. Also called touchtone. Some times DMTF is used to generally describe any telephony keypad press, even if tones are not generated.

## G

**G.711:** An ITU PCM encoder/decoder specification for mu-law and A-law encoding.

## H

**H.100 bus:** A TDM telephony bus standard for integrating hardware from various PC board vendors. The H.100 specification defines a ribbon cable bus that transports telephony voice data and signaling data across PCI boards. The H.100 bus is an interoperable superset of the H-MVIP and MVIP-90 telephony buses.

**H.223:** A protocol used to multiplex control and audio and video media on and off of a single DS0 within a trunk.

**H.263:** An ITU video compression standard. H.263 supports CIF, QCIF, SQCIF, 4CIF and 16CIF resolutions.

**H.264:** An ITU and ISO video compression standard that compresses video into lower bandwidth compared to H.263 and MPEG-4. H.264 is also called MPEG-4 Part 10.

## I

**INAP:** Intelligent Network Application Part; an SS7 protocol that facilitates building platform-independent, transport-independent, and vendor-independent applications. Such applications include service switching points (SSPs), internet protocol (IP) applications, service control points (SCPs), enhanced services platforms, service circuit nodes, and other custom applications.

**ISDN:** Integrated services digital network; a standard for providing voice and data telephone service with all digital transmission and message-based signaling.

**ISUP:** ISDN user part; the SS7 protocol layer that allows for the establishment, supervision, and clearing of circuit-switched connections between two SS7 signaling points, such as central office switches. Despite its name, the ISUP layer is not unique to interconnecting. It is used to manage all types of circuit-switched connections.

**ITU:** International Telecommunications Union; an international standards body for telecommunications.

**IVR:** Interactive voice response; a telephony application in which callers interact with programs using recorded or synthesized voice prompts, DTMF digits, or speech recognition to query or deliver information.

## M

**Media Resource Function:** Component of the Programmable Media Platform that provides media processing including record, playback, and interfaces to speech recognition resources. The Media Resource Function is implemented by MIOSIP.

**MIB:** Management information base; an SNMP collection of objects that represent a managed node. Physically, a list of variables. Logically, a table with rows of variables.

**MIOSIP:** Implements the Media Resource Function of the Programmable Media Platform. MIOSIP provides SIP call control, media processing over RTP, DTMF generation and recognition, and an MRCP client to automatic speech recognition (ASR) resources.

**MPEG-4:** An ISO/IEC standard for compressing multimedia data (video, audio, and speech).

**MRCP:** Media Resource Control Protocol; an application protocol for implementing automatic speech recognition (ASR) and text-to-speech services (TTS). MRCP provides a distributed system of ASR and TTS engines connected over an IP network.

**MTP:** Message transfer part; the SS7 protocol layers responsible for the reliable, in-sequence delivery of packets between two SS7 signaling points. The MTP functions include message routing, signaling link management, signaling route management, and congestion control.

**MVIP-95:** Device driver specification for H-MVIP, H.100, and H.110 telephony buses.

## N

**NETANN:** Basic Network Media Services with SIP; an interface that enables applications in a SIP network to locate and invoke basic services on a media server. These services include network announcements, user interaction, and conferencing services. Also called RFC 4240.

## O

**OSP:** Open Settlement Protocol; a European Telecommunications Standards Institute (ESTI) protocol used to exchange authorization, accounting, and usage information for IP telephony.

## P

**PSTN:** Public switched telephone network; a public telephone network.

## R

**route:** A connection path. On the PSTN network, a route is a logical collection of trunks. On the IP network, a route is a destination URL.

**RTP:** Real time transport protocol; a layer added to the internet protocol (IP) that addressed problems caused when real-time interactive exchanges (such as audio data) are conducted over lines designed to carry packet-switched (connectionless) data.

## S

**SCCP:** Signaling connection control part; an SS7 protocol that provides both connection-oriented and connectionless data transfer over an SS7 network. It extends the service provided by the SS7 MTP layers by adding extended addressing capabilities and multiple classes of service. The SCCP addressing capabilities allow a message to

be addressed to an individual application or database within a signaling point. See also SS7.

**SDP:** Session description protocol, a protocol that defines a text-based format for describing streaming media sessions and multicast transmissions.

**Signaling Server:** An optional component of the Vision Server that provides redundant and scalable ISUP signaling.

**SIP:** Session initiation protocol. An IP signaling and telephony control protocol used mainly for voice over IP calls and multimedia communications. SIP relies on the session description protocol (SDP) for session description and the Real Time Transport Protocol (RTP) for actual transport.

**SRGS:** Speech Recognition Grammar Specification (SRGS); a syntax for representing the grammars used in speech recognition.

**SS7:** Signaling system 7; an out-of-band signaling system that provides fast call setup using circuit-switched connections and transaction capabilities for remote database interactions.

**SSML:** Speech Synthesis Markup Language; a proposed standard for enabling access to the internet using speech. SSML provides a standard way to control various aspects of speech (such as pronunciation, volume, pitch, and rate) over a variety of platforms.

**SSML Processor:** Component of the Programmable Media Platform that processes SSML requests for audio and text-to-speech.

## T

**T.38 fax:** A standard for real-time fax over IP that makes it possible for fax machines from different vendors to talk to each other over IP networks. The T.38 standard defines how to conduct group 3 facsimile transmission between terminals in which a portion of the transmission path between terminals includes (besides the PSTN or ISDN) an IP network such as the internet.

**TCAP:** Transaction capabilities application part; an SS7 protocol that provides applications with transaction support over the SS7 network. It enables the exchange of non-circuit related data, such as database queries and responses and remote feature invocation requests between SS7 signaling points. The TCAP layer relies on both the MTP and SCCP layers for message addressing and delivery.

**TDM:** Time division multiplexing; a technique for transmitting a number of separate data, voice, or video signals simultaneously over one communications medium by quickly interleaving a piece of each signal one after another.

**telecom configuration file:** File that provides information about the resources that interface with the Call Server and about other elements, such as the number of routes and the circuit selection.

**trunk:** The physical interface between the telephone network and the Vision Server. In telephone networks, a trunk is a shared connection between two switches. It differs from a line in that it is not dedicated to one subscriber or extension. T1 and E1 trunks carry 24 and 31 circuits, respectively.

**TTS:** Text-to-speech; a system that converts written language to speech.

## V

**Vision Console:** Web-based configuration tool that configures the Vision Server.

**VoiceXML:** Voice Extensible Markup Language; a language that enables users to interact with the internet through voice recognition technology.

**VoiceXML application configuration file:** A file that maps individual VoiceXML applications to number ranges that trigger the execution of those applications.

**VoiceXML Interpreter:** Component of the Programmable Media Platform that interprets VoiceXML dialogs.

**VoiceXML Subsystem:** Component of the Programmable Media Platform that provides media processing for VoiceXML applications. The VoiceXML Subsystem consists of the VoiceXML Interpreter, SSML Processor, and Media Resource Function.



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