GENESYS™

Framework Management Layer User's Guide

SNMP Managed Objects

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SNMP Managed Objects

Contents

This section describes the MIB file and the SNMP objects and tables used in the Management Layer to support SNMP.

MIB File

The Genesys MIB file, located in the root of the directory in which SCS is installed, contains all SNMP objects available to the NMS. Genesys MIB utilizes the SMI-v2 Row-Status mechanism and the control/data-tables concept to facilitate management of multiple Genesys servers simultaneously.

RowStatus—a TEXTUAL-CONVENTION defined in IETF's SNMPv2-TC—is commonly used to control the dynamic creation and deletion of rows in SMIv2 defined tables. A conceptual SMIv2 table using RowStatus also acts as a control table or configuration table. Using the control table, the NMS application configures the information to be monitored. A separate data table holds the information that is gathered. One control entry (one row) is linked to the data that is gathered. Each control entry contains control parameters that specify which data or statistics you want to access and collect.

Genesys MIB uses one control table and several data tables. Data tables are organized based on their functional areas and divided into two main groups: *server-generic* data tables and *server-specific* data tables. Each data table, whether it is server-generic or server-specific, is assigned a unique identifier. (See TableID ::= Textual Convention in the Genesys MIB file, for the complete list of tables and their identifiers.) This table identifier, along with the Genesys server identifier (server DBID number), is used as an index in the control table. Thus, each row in the control table gathers particular data from a particular Genesys server.

You can enable an automatic refresh of MIB tables. When you set up a row to gather data from a particular table, you have a choice of automatic or manual refresh for the table. If you select Automatic Refresh mode, specify the time period, in seconds, after which Solution Control Server is to refresh the table.

In addition to control and data tables, you can access a group of server standard objects independently of the control/data-table mechanism.

The following sections present information about each object set:

- Standard SNMP Objects describes the standard Genesys SNMP objects.
- gServerControlTable describes the Control Table objects.
- T-Server-Specific SNMP Objects describes the SNMP objects specific to T-Server.

For information about supported traps, see SNMP Traps.

Standard SNMP Objects

The tables in this section describe standard Genesys SNMP objects by object group, as follows:

- **gServersTable**—Contains information about server environments. The following table describes

objects that belong to gServersTable. **[+] Show table**

gServersTable Table of Standard SNMP Objects

Object Name	Value Type	Access Level	Description
gsCleanupTimeout	Unsigned 32	read/write	The time, in minutes, the agent should keep rows in the gsControlTable and consequently in related data tables if there were no requests to objects of this row or corresponding rows from data table(s). After the timeout, the agent should automatically delete unattended rows. A value of 0 (zero) specifies that MIB clean up should not be performed.
gServersTable	sequence	read	Specifies a sequence of the following objects.
gServerId	integer	read	Uniquely identifies a Genesys server. Corresponds to the number assigned to an object in the Configuration Database to identify the object among all objects of the same type. The gpServerCurrent object uses this value to switch from one Genesys server to another.
gServerName	string	read	Specifies the application name of a server application as configured in the Configuration Database.
gServerStatus	string	read	Specifies the current operational status of a server. The possible settings are UP or DOWN, which indicates if the server is running or not.
gServerType	string	read	Indicates the type of a server; that is, the application type

			specified for this application in the Configuration Database.
gServerVersion	string	read	Specifies the current version of the running server; that is, the application version specified for this application in the Configuration Database.
gServerWorkDir	string	read	Specifies the server's working directory; that is, the working directory specified for this application in the Configuration Database.
gServerCommandLine	string	read	Indicates the full command line used to start this server, as specified in the Configuration Database. For example: `scs -host host1 -port 4135 -app SCS_Primary`
gServerPID	string	read	Specifies the process ID of the server that is currently running.
gServerCommand	integer	read/write	Specifies the command to start, shut down or gracefully shut down a server. Accepts the following values: • 1 start • 2 shutDown • 3 shutDownGracefully
gServerDeleteClient	integer	read/write	Sends a delete-client command to the server. Enter the socket number of a client as the value.

• **gServerControlTable**—Configures the information to be monitored and controls the data-refresh process. The following table describes objects that belong to gServerControlTable. **[+] Show table**

gServerControlTable Table of Standard SNMP Objects

Object Name	Value	Access Level	Description
gServerControlTable	sequence	read	Specifies a sequence of the following objects.
gsCtrlServerID	integer	not-accessible	An index. Specifies the DBID of the server to be managed by this control row. The valid DBID number used to set rows in this control table is retrieved from gServersTable.
gsCtrlTableID	integer	not-accessible	An index. Specifies the data to be gathered for this server. Valid values and the tables they represent are as follows: • 1 – gsLogTable • 2 – gsInfoTable • 3 – gsClientTable • 4 – gsPollingTable • 5 – tsInfoTable • 6 – tsCallTable • 7 – tsDtaTable • 8 – tsLinkTable • 9 – tsCallFilterTable • 10 – tsCallInfoTable • 11 – tsLinkStatsTable Follow the links for detailed information about these tables.
gsCtrlRefreshStatus	integer	read-only	Indicates refresh status of corresponding data table as specified by gsCtrlTableID. The following refresh statuses are reported: • 1 – dataNotReady • 2 – dataRefreshInProgress • 3 – dataReady

			• 4 – mgmtIsNotAvailable • 5 – dataRefreshFailed *Refer to the Genesys MIB file for detailed descriptions of these statuses.*
gsCtrlLastRefreshed	timetick	read-only	Specifies the time in hundredths of seconds since the row was last successfully refreshed.
gsCtrlRowStatus	RowStatus	read/create	Controls and manages row creation and row deletion. Initiates data-refresh process for a data table managed by this control row, and reports the status of this row. Refer to the Genesys MIB file for a detailed description of the way this object is manipulated.

- **gsInfoTable**—Contains miscellaneous statistics and data about a managed server. The following table describes objects that belong to gsInfoTable. **[+] Show table**

gsInfoTable Table of Standard SNMP Objects

Object Name	Value	Access Level	Description
gsInfoTable	sequence	read	Specifies a sequence of the following objects. Indexed by gsCtrlServerID.
gsClientsExistNum	Unsigned32	read	Indicates the number of clients currently connected to a server.
gsClientsTotalNum	Unsigned32	read	Indicates the total number of clients connected so far to a server.
gsServerConfigFile	string	read	Indicates configuration file name, if any, used to start a server.

- **gsPollingTable**—Specifies a heart-beat feature; that is, a periodic signal sent over a network to the NMS. The following table describes objects that belong to gsPollingTable. **[+] Show table**

gsPollingTable Table of Standard SNMP Objects

Object Name	Value	Access Level	Description
gsPollingTable	sequence	read	Specifies a sequence of the following objects.

			Indexed by gsCtrlServerID.
gsPollingID	Unsigned32	read/write	Specifies the amount by which each polling signal increases over the last one. The initial polling event equals the same integer. For more information about this variable, see Table 19 on page 106.
gsPollingInterval	Unsigned32	read/write	Specifies the interval, in seconds, between two subsequent polling signals sent from a server. Can be set to any integer.
gsPollingLastTrap	string	read	Specifies the last trap value of a polling signal sent to the NMS. For more information about this variable, see Table 19 on page 106.
gsPollingStatus	string	read/write	Activates or deactivates the server polling feature. Values are ON and OFF. Value ON causes a server to send periodic SNMP signals to SCS, which, in turn, converts these signals into SNMP traps.

- **gsLogTable**—Contains information about log option settings. Values of the SNMP objects in this table correspond to values of configuration options specified in the log section in an Application object's Options. The following table describes objects that belong to gsLogTable; check information in the Description column for the name of the particular option to which an object corresponds. **[+] Show table**

gsLogTable Table of Standard SNMP Objects

Object Name	Value	Access Level	Description
gsLogTable	sequence	read	Specifies a sequence of the following objects. Indexed by gsCtrlServerID.
logVerbose	string	read/write	Log level. Filters output of messages by their priorities. Corresponds to the verbose log option.
logTrace	string	read/write	Lists the set of log outputs for the log messages of the Trace

			level. Corresponds to the **trace** log option.
logStandard	string	read/write	Lists the set of log outputs for the log messages of the Standard level. Corresponds to the `standard` log option.
logDebug	string	read/write	Lists the set of log outputs for the log messages of the Debug level. Corresponds to the `debug` log option.
logAll	string	read/write	Lists the set of log outputs for the log messages of all levels. Corresponds to the `all` log option.
logBuffering	string	read/write	Turns on/off OS file buffering. Buffering increases performance of file output; however, log messages may appear in the log with a delay after they have been logged. Corresponds to the `buffering` log option.
logSegment	string	read/write	Sets the mode of log output segmentation. Currently implemented only for the file output. When a currently opened log segment exceeds the size set by this option, the current segment is closed and a new one is created (an empty new segment). Corresponds to the **segment** log option.
logExpire	string	read/write	Sets the expiration mode for old files (segments); that is, specifies whether to remove old files when new ones are created. Corresponds to the `expire` log option.
logMessageFile	string	read/write	Sets the name of the file that defines log messages specific to

			applications of this type. Corresponds to the `messagefile` log option.
logMessageFormat	string	read/write	Specifies the format of log record headers that an application uses when writing logs in the log file. Corresponds to the `message_format` log option.
logTimeFormat	string	read/write	Specifies how to represent in a log file the time when an application generates log records. Corresponds to the `time_format` log option.
logTimeConvert	string	read/write	Specifies in which system an application calculates the log record time when generating a log file. Corresponds to the `time_convert` log option.

Warning

To change log option settings for a particular application via SNMP, you must first associate both the Application object and the Solution Control Server Application object with the account in the Configuration Database having permissions to modify configuration object properties. In other words, the account must have Change permissions for Application objects. Do the following steps:

1. Associate Solution Control Server with an account that has permissions to change Application objects. This association will enable you to change log option settings via SNMP. **[+] Show steps**

Prerequisites

- Management Layer components are installed and running.
- The Solution Control Server Application object has been installed and configured.
- Genesys Administrator is started.

Start

a. Log into Genesys Administrator under a user account having Full Control permissions.

b. Go to `Provisioning` tab > `Applications`, and click the SCS application to open its properties.

c. In the `Server Info` section of the `Configuration` tab:

i. If the Log On As SYSTEM checkbox is checked, clear it.

ii. In the Log On Account field, click the Search icon and select any user account (Person object) from the Browse window. This can be one of the following:

- An account that belongs to the Administrators default access group.

- An account that belongs to the role-specific Access Group with the Change permissions you have created for this purpose.

- An individual account to which you will grant Change permissions in any Access Group.

d. Click Save or Save and Close to save configuration changes.

2. Associate applications with the same account you designated in Step 1 for SCS. **[+] Show steps**

Prerequisites

- Management Layer components are installed and running.

- The Solution Control Server Application object has been associated with an account with application change permissions. See step 1 above.

- You are logged in to Genesys Administrator.

Start

a. Select the Application object which you will be associating with the account you selected in Step 1. You can also select a folder or subfolder that contains Application objects, in which case permissions change for all Application objects in the selected folder.

b. Open the properties of the Application object and click the Permissions tab.

c. Add the user account you designated as This Account for SCS as follows:

a. Click Add User in the toolbar, and select the user from the Browse window.

b. Click the entry in the Access column for this user and select Change.

d. Click Save or Save and Close to save your changes.

You could grant change permissions for Application objects to the SYSTEM account, but doing so (and making all servers connect to Configuration Server with change permissions) might impact data security.

- **gsClientTable**—Gathers statistics about server clients. The following table describes objects that belong to gsClientTable. **[+] Show table**

gsClientTable Table of Standard SNMP Objects

Object Name	Value	Access Level	Description
gsClientTable	sequence	read	Specifies a sequence of the following objects. Indexed by gsCtrlServerID.
gsClientAppName	string	read	Specifies the client's application name.
gsClientAuthorized	string	read	Specifies the client's level of authorization.
gsClientGotEvents	Unsigned32	read	Specifies the number of events the client has

			received.
gsClientSentReqs	Unsigned32	read	Specifies the number of requests the client has sent.
gsClientSocket	Unsigned32	read	Specifies the socket number through which the client is connected to the server.
gsClientType	integer	read	Specifies the client's type.

- **gsAlarmObjectsTable**—Specifies how the Management Layer converts the alarms it generates to SNMP traps and sends them to the NMS. The following table describes objects that belong to gsAlarmObjectsTable. The following lists Genesys application types as they appear in alarm-related traps. **[+] Show table**

gsAlarmObjectsTable Table of Standard SNMP Objects

Object Name	Value	Access Level	Description
gsServersLastAlarm	string	read	Specifies the last trap value sent to the NMS. For information about traps that use this variable, see the table in Application-Generated SNMP Traps.
gsServersLastTrap	string	read	Specifies the last server-status (server up or down) trap sent to NMS.
gsAlarmID	Unsigned32	read	The unique identifier of the Alarm Condition name as configured in the Configuration Database.
gsAlarmLogText	string	read	The text of the log event that triggered this alarm.
gsAlarmMessagesIds	string	read	The unique identifier of the log event that triggered or removed this alarm.
gsAlarmApplicationName	string	read	The name of the application that reported this alarm as specified in the Configuration Database.
gsAlarmApplicationType	string	read	The type of application that reported this alarm as specified in the Configuration Database.

gsAlarmCategory	string	read	The alarm category as specified in the Configuration Database: Critical, Major, or Minor.

T-Server-Specific SNMP Objects

The tables in this section summarize the SNMP objects specific to T-Server. These objects give you access to internal T-Server tables that contain information about call states, addresses, and CTI links.

- **tsInfoTable**—Collects miscellaneous data and statistics specific to T-Server. The following table describes objects that belong to tsInfoTable. **[+] Show table**

tsInfoTable Table of T-Server-Specific SNMP Objects

Object Name	Value	Access Level	Description
tsInfoTable	sequence	read	Specifies a sequence of the following objects. Indexed by gsCtrlServerID.
tsCallsExistNum	Unsigned32	read	Specifies the current number of calls being handled by T-Server.
tsCallsTotalNum	Unsigned32	read	Specifies the number of calls T-Server has handled since it started.
tsLinksCommand	string	read/write	Specifies the command to be sent to T-Server. **Note:** Reserved for future use.
tsLastChangedLink-Status[a]	string	read	Specifies the server name, link name, and link's new status. **Note:** Reserved for future use.

[a] This object is specific to environments with X.25 links.

- **tsCallFilterTable**—Supports stuck calls functionality by providing the interface for setting call filter criteria for the tsCallInfoTable table, and for cleaning calls by their ConnectionID. The following table describes objects that belong to tsCallFilterTable. **[+] Show table**

tsCallFilterTable Table of T-Server-Specific SNMP Objects

Object Name	Value	Access Level	Description
gsCtrlServerId	ServerDBID	not-accessible	Uniquely identifies a T-Server application.

Object Name	Value	Access Level	Description
fltCallCreatedBefore	Unsigned32	read-write	Reports the calls that were created earlier than a specified number of seconds counting from the time of the request. A 0 (zero) value means the filter is not used.
fltCallCreatedAfter	Unsigned32	read-write	Reports the calls that were created later than a specified number of seconds counting from the time of the request.
fltCallUpdatedBefore	Unsigned32	read-write	Reports the calls that were last time updated earlier than a specified number of seconds counting from the time of the request.
fltCallUpdatedAfter	Unsigned32	read-write	Reports the calls that were last time updated later than a specified number of seconds counting from the time of the request.
clearCallByConnId	DisplayString	read-write	Connection ID (converted to string by `connid_to_str` function) of the call to be cleared.

- **tsCallInfoTable**—Supports stuck calls functionality by storing the latest snapshot of active calls from a given T-Server, and contains a set of attributes that facilitates the discovery of stuck calls. The following table describes objects that belong to tsCallInfoTable. **[+] Show table**

tsCallInfoTable Table of T-Server-Specific SNMP Objects

Object Name	Value	Access Level	Description
gsCtrlServerId	ServerDBID	not-accessible	Uniquely identifies a T-Server application.
callInfoInstanceID	Unsigned32	not-accessible	Reports the call instance ID.
callInfoType	Unsigned32	read-only	Reports a call type.
callInfoCreationTimestamp	Unsigned32	read-only	Reports a call creation timestamp.
callInfoLastUpdatedTimestamp	Unsigned32	read-only	Reports a timestamp of the last update on this call.
callInfoInternalParties	DisplayString	read-only	Reports an Internal DN.

- **tsLinkStatsTable**—Stores information about the current statistics for messages sent and received over a T-Server link. The following table describes objects that belong to tsLinkStatsTable. **[+] Show table**

tsLinkStatsTable Table of T-Server-Specific SNMP Objects

Object Name	Value	Access Level	Description
gsCtrlServerId	ServerDBID	not-accessible	Uniquely identifies a T-Server application.
LinkID	Unsigned32	read-only	Uniquely identifies a T-server link to which these statistics apply.
timeElapsedSec	Unsigned32	read-only	The time (in seconds) that have elapsed since the last statistics were measured.
numberMessagesTx	Unsigned32	read-only	The number of CTI messages that have been sent by T-Server over this link since the last statistics were measured.
rateMessagesTx	Unsigned32	read-only	The rate at which CTI messages are sent by T-Server over this link. Literally, the ratio of numberMessagesTx to timeElapsedSec.
numberMessagesRx	Unsigned32	read-only	The number of CTI messages that have been received by T-Server over this link since the last statistics were measured.
rateMessagesRx	Unsigned32	read-only	The rate at which CTI messages are received by T-Server over this link. Literally, the ratio of numberMessagesRx to timeElapsedSec.

- **tsCallTable**—Contains data about telephony calls being processed by T-Server. The following table describes objects that belong to tsCallTable. **[+] Show table**

tsCallTable Table of T-Server-Specific SNMP Objects

Object Name	Value	Access Level	Description
tsCallTable	sequence	read	Specifies a sequence of the following objects. Indexed by gsCtrlServerID and callInstanceID.
callANI	string	read	Automatic Number Identification. Provides calling party information (typically,

			the telephone number or billing account number) to the called party.
callCallID	string	read	Specifies the current call identifier that the switch has assigned to a call.
callConnID	string	read	Specifies the identifier that T-Server has assigned to a call.
callCustomerID	string	read	Specifies the Customer (Tenant) identifier used when a call was initiated.
callDNIS	string	read	Directory Number Identification Service. Identifies to the called system the last three or four digits of the number actually dialed by the caller.
callFirstTransferDN	string	read	Specifies the DN on a remote T-Server from which a call was first made.
callFirstTransfer-Location	string	read	Specifies the location of the remote T-Server from which a call was first transferred.
callInstanceID	counter	read	Specifies the instance number for each call.
callLastTransferDN	string	read	Specifies the DN on a remote T-Server from which a call was last transferred.
callLastTransfer-Location	string	read	Specifies the location of the remote T-Server from which a call was last transferred.
callNumParties	string	read	Specifies the number of parties currently involved in a call.
callPartiesList	string	read	Specifies a list of parties involved in a call.
callReferenceID	string	read	Specifies the reference ID of a call.
callTimeStamp	string	read	Specifies the timestamp of when the call was created, in

			seconds starting from January 1, 1970.
callType	string	read	Specifies the type of a call.
callState	string	read	Specifies the current state of the call in question.

- **tsDtaTable**—Stores information about all registered DNs. The following table describes objects that belong to tsDtaTable. **[+] Show table**

tsDtaTable Table of T-Server-Specific SNMP Objects

Object Name	Value	Access Level	Description
tsDtaTable	sequence	read	Specifies a sequence of the following objects. Indexed by gsCtrlServerID and tsDtaInstanceID.
tsDtaDigits	string	read	Specifies the digits field of the DTA structure.
tsDtaInstanceID	counter	read	Specifies the instance field of the DTA structure.
tsDtaMode	string	read	Specifies the mode field of the DTA structure.
tsDtaState	string	read	Specifies the state field of the DTA structure.
tsDtaType	string	read	Specifies the type field of the DTA structure.

- **tsLinkTable**—Contains information about the CTI links that exist between T-Server and switches, and the attributes of those links. The following table describes objects that belong to tsLinkTable. **[+] Show table**

tsLinkTable Table of T-Server-Specific SNMP Objects

Object Name	Value	Access Level	Description
tsLinkTable	sequence	read	Specifies a sequence of the following objects. Indexed by gsCtrlServerID and tsLinkID.
tsLinkAddress	string	read	Specifies the address of the link.
tsLinkDelay[a]	string	read	Specifies a link reconnect delay in the case of an unsuccessful attempt to reconnect to the line.
tsLinkDTEClass[a]	string	read	Specifies the DTE class

			for the X.25 connection.
tsLinkName	string	read	Specifies the name of the link.
tsLinkID[a]	integer	read	Specifies the link identifier. **Note:** Reserved for future use.
tsLinkMode[a]	string	read	Specifies the mode of the link.
tsLinkPID[a]	string	read	Specifies the link's process ID.
tsLinkPort	string	read	Specifies the physical port number of the link.
tsLinkProtocol	string	read	Specifies a protocol type.
tsLinkSocket[a]	string	read	Specifies the socket number through which the server is connected to the link. **Note:** Reserved for future use.
tsLinkStatus	string	read	Specifies the current status of the link. The status property is used in fault monitoring, providing the NMS with information about which links are currently established and which links have lost physical or logical connection. Valid values: • 0 – Link is not configured properly. • 1 – No physical or TCP/IP connection between T-Server and the switch. • 2 – Both physical and logical connections are OK. • 3 – Physical connection exists between T-Server and switch, but the

			logical connection is missing.
tsLinkTemplate	string	read	Specifies a template for the connection.
tsLinkX25Device[a]	string	read	Specifies the X.25 device connected to the link.
tsLinkX25LocalAddress[a]	string	read	Specifies the local address for an X.25 connection.

[a]. This object is specific to environments with X.25 links.