TechNote

XCAPI SNMP Support

October 14, 2014

XCAPI voiceoverIP

Contents

Abstract

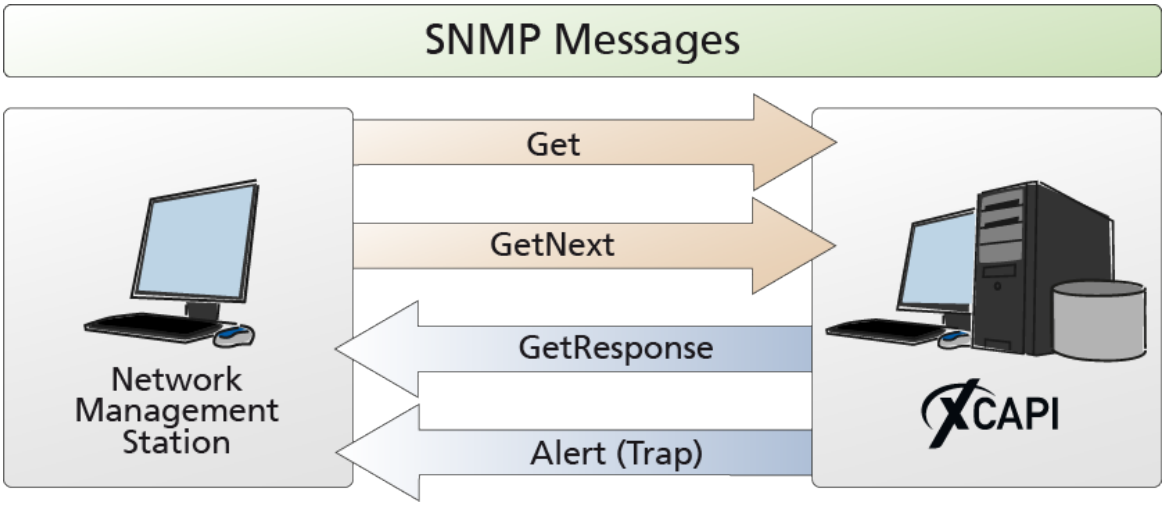
Simple Network Management Protocol (SNMP) is an standard protocol for managing devices on IP networks.

SNMP exposes management data in the form of variables on the managed systems, which describe the system configuration. These variables can then be queried (and sometimes set) by managing applications.

Both agents and management systems use SNMP messages to inspect and communicate information about managed objects. SNMP messages are sent via the User Datagram Protocol (UDP). IP is used to route messages between the management system and host.

When a SNMP management station send requests to a network device, the agent program (**XCAPI**) on the device receives the requests and retrieves the requested information from the MIBs. The agent sends the requested information back to the initiating SNMP management application. An SNMP agent sends information:

- When it responds to a request for information from a management system
- When a trap event occurs

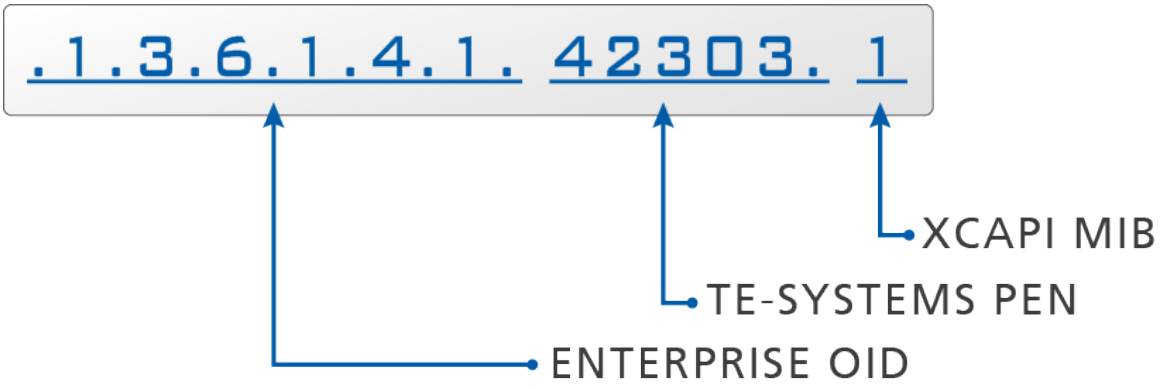


XCAPI MIB Definition

The **XCAPI** MIB is defined under the enterprise OID as private MIB. The private enterprise number for TE-SYSTEMS GmbH is 42303. This number is registered in the IANA PEN registry at:

http://www.iana.org/assignments/enterprise-numbers

The OID for the **XCAPI** MIB starts with



THE INFORMATION IS HANDLED IN GROUPS, THE FOLLOWING GROUPS AND THEIR OIDS ARE:

SYSTEM	.1.3.6.1.4.1.42303.1.1
CONTROLLER	.1.3.6.1.4.1.42303.1.2
LICENSES	.1.3.6.1.4.1.42303.1.3
CONFIGURATION	.1.3.6.1.4.1.42303.1.4

In general the information of the **XCAPI** MIB can be queried by the OID, e.g. **.1.3.6.1.4.1.42303.1.1.5.0** to get the **XCAPI** driver state. To assign symbolic names to the OID a MIB definition file exists. This allows a MIB Browser to obtain all available OIDs and display them with a name and an optional description. The MIB definition file for **XCAPI** is called **XCAPI.MIB** and is located in the **XCAPI** installation directory. The default installation directory is **%PROGAMFILES%\TE-SYSTEMS\XCAPI**.

2.1 Installation

Currently, the XCAPI SNMP DLL has to be loaded manually once after running the XCAPI setup. This can be accomplished using this command: **C:\Program Files (x86)\TE-SYSTEMS\XCAPI\XSnmpRegister.exe**.

2.2 SNMP Applications

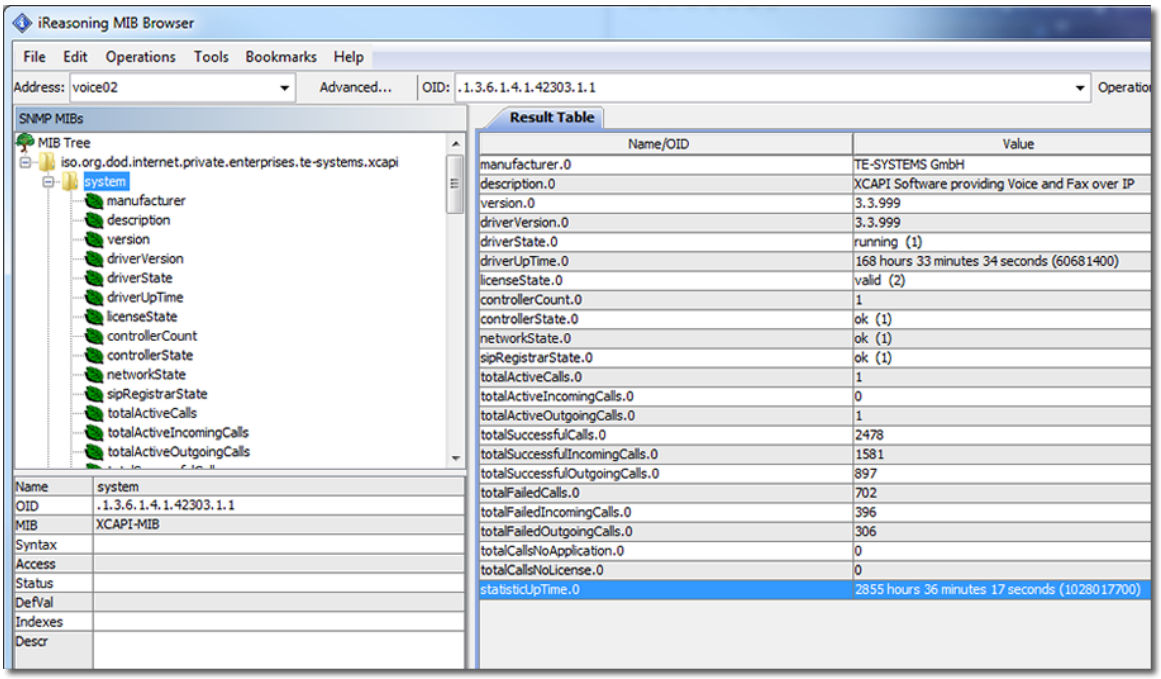
The **XCAPI** SNMP interface can be used from all applications supporting SNMP v1. Here you will find an extract of available applications. For more information refer to the Software User Guide, usually available on the manufacturer's web site.

- Netcrunch - http://www.adremsoft.de/netcrunch
- AKCess Pro Server - http://www.akcp.com
- Cacti - http://www.cacti.net
- HP OpenView - http://www.managementsoftware.hp.com
- IBM Tivoli - http://ibm.com/software/tivoli
- MRTG - http://oss.oetiker.ch/mrtg
- Nagios - http://www.nagios.org
- OpenNMS - http://www.opennms.org
- Opsview - http://www.opsview.com

2.3 Browsing XCAPI MIB

There are several tools to browse **XCAPI** MIB. In this example we used MIB Browser from iREASONING.

You can download the personal edition from **http://www.ireasoning.com**



Description of XCAPI OID

3.1 The system group

The following tables contain the OIDs and the corresponding name for the "system" group. The table lists the valid actions for the OIDs and the descriptions. The request type GET implies the support of the GETNEXT request.

OID Name	Request Type	Description
.1.3.6.1.4.1.42303.1.1.1.0 manufacturer	Get	Provides the name of the manufacturer of this MIB. The format is "DisplayString".
.1.3.6.1.4.1.42303.1.1.2.0 description	Get	Provides the name of the product that this MIB is designed for. The format is "DisplayString".
.1.3.6.1.4.1.42303.1.1.3.0 version	Get	Provides the version number of the installed software. The format is "DisplayString"
.1.3.6.1.4.1.42303.1.1.4.0 driverVersion	Get	Provides the version number of the running **XCAPI** driver core software. The format is "DisplayString"

.1.3.6.1.4.1.42303.1.1.5.0
driverState
	Get	Provides the information if the driver is running. The data type is integer, possible values are:
		`running (1)`
		`stopped (2)`

.1.3.6.1.4.1.42303.1.1.6.0 driverUpTime	Get	The time (in hundredths of a second) since the **XCAPI** driver was last re-initialized. The format is TimeTicks.

.1.3.6.1.4.1.42303.1.1.7.0
licenseState
	Get	The overall state of the installed licenses. The data type is integer, possible values are:
		`none (0)`
		`demo (1)`
		`valid (2)`
		`expiresWarning (3)`
		`expiredCritical (4)`
		`expired (5)`
		`expiredUsingDemo (6)`
		`invalid (7)`
		`invalidUsingDemo (8)`

.1.3.6.1.4.1.42303.1.1.8.0 controllerCount	Get	Provides the number of available controller.

.1.3.6.1.4.1.42303.1.1.9.0
controllerState
	Get	Provide the information if all controller are running well. The data type is integer, possible values are:
		`ok (1)`
		`error (2)`
		In case an error is indicated refer to the details for each controller to get detailed information.

.1.3.6.1.4.1.42303.1.1.10.0
networkState
	Get	Provides the information if the network connection for all controllers is available. The data type is integer, possible values are:
		`ok (1)`
		`error (2)`
		In case an error is indicated refer to the details for each controller to get detailed information.

.1.3.6.1.4.1.42303.1.1.11.0
sipRegistrarState
	Get	Provides the information if the SIP registration for all controllers is working. The data type is integer, possible values are:
		`ok (1)`
		`error (2)`
		In case an error is indicated refer to the details for each controller to get detailed information.

.1.3.6.1.4.1.42303.1.1.12.0 totalActiveCalls	Get	The amount of currently active calls on all controllers.
.1.3.6.1.4.1.42303.1.1.13.0 totalActiveIncomingCalls	Get	The amount of currently active incoming calls on all controllers.
.1.3.6.1.4.1.42303.1.1.14.0 totalActiveOutgoingCalls	Get	The amount of currently active outgoing calls on all controllers.
.1.3.6.1.4.1.42303.1.1.15.0 totalSuccessfulCalls	Get	The amount of successful calls on all controllers since the last reset of the statistics.
.1.3.6.1.4.1.42303.1.1.16.0 totalSuccessfulIncomingCalls	Get	The amount of successful incoming calls on all controllers since the last reset of the statistics.
.1.3.6.1.4.1.42303.1.1.17.0 totalSuccessfulOutgoingCalls	Get	The amount of successful outgoing calls on all controllers since the last reset of the statistics.
.1.3.6.1.4.1.42303.1.1.18.0 totalFailedCalls	Get	The amount of failed calls on all controllers since the last reset of the statistics.
.1.3.6.1.4.1.42303.1.1.19.0 totalFailedIncomingCalls	Get	The amount of failed incoming calls on all controllers since the last reset of the statistics.
.1.3.6.1.4.1.42303.1.1.20.0 totalFailedOutgoingCalls	Get	The amount of failed outgoing calls on all controllers since the last reset of the statistics.
.1.3.6.1.4.1.42303.1.1.21.0 totalCallsNoApplication	Get	The amount of incoming calls that could not be answered because there was no application. Value since the last reset of the statistics.
.1.3.6.1.4.1.42303.1.1.22.0 totalCallsNoLicense	Get	The count of incoming or outgoing calls that could not be handled because not enough licenses were available. Value since the last reset of the statistics.
.1.3.6.1.4.1.42303.1.1.23.0 statisticUpTime	Get	The time (in hundredths of a second) since the last reset of the statistics. The format is TimeTicks.
.1.3.6.1.4.1.42303.1.1.24.0 statisticReset	Set	Writing the value 1 to this OID resets all statistic counters to zero. Note the OID is write only.

3.2 The controller group

The following tables contain the OIDs and the corresponding name for the "controller" group. The table lists the valid actions for the OIDs and the descriptions. The request type GET implies the support of the GETNEXT request.

OID Name	Request Type	Description
.1.3.6.1.4.1.42303.1.2.1.0 controllerNumber	Get	Contains the amount of entries in the following controller table.
.1.3.6.1.4.1.42303.1.2.2 controllerTable	Get	The table with controller information.
.1.3.6.1.4.1.42303.1.2.2.1 controllerEntry	Get	The definition of the information for one controller. The following OIDs in this table are available for each controller. The <index> at the end of the OID selects the controller instance.
.1.3.6.1.4.1.42303.1.2.2.1.1.<index> controllerIndex	Get	The table index which is implicitly the controller number.

.1.3.6.1.4.1.42303.1.2.2.1.2.<index>
controllerState
	Get	The state of this controller instance. The data type is integer, possible values are:
		`disabled (0)`
		`running (1)`
		`failed (2)`
		`failedBadConfig (3)`
		`failedNoMemory(4)`
		`failedNetworkMismatch (5)`
		`failedPortError (6)`

.1.3.6.1.4.1.42303.1.2.2.1.3.<index>
controllerNetworkState
	Get	The state of the network interface used by this controller instance. The data type is integer, possible values are:
		`ok (1)`
		`error(2)`

.1.3.6.1.4.1.42303.1.2.2.1.4.<index>
controllerSipRegistrarState
	Get	The state of the SIP registration if used by this controller instance. For H.323 based controller `notSupported(0)` is shown. For SIP based controller that do not use a registrar `notUsed(1)` is shown.
		The data type is integer, possible values are:
		`notSupported (0)`
		`notUsed (1)`
		`registering (2)`
		`registered (3)`
		`unregistering (4)`
		`unregistered (5)`

.1.3.6.1.4.1.42303.1.2.2.1.5.<index> controllerChannels	Get	The amount of parallel connections this controller instance can handle.

.1.3.6.1.4.1.42303.1.2.2.1.6.<index> controllerProtocol	Get	The signaling protocol used by this controller instance. The data type is integer, the following options are available:
		`sip(1)`
		`h323(2)`

.1.3.6.1.4.1.42303.1.2.2.1.7.<index> controllerIPAddressType	Get	The signaling protocol used by this controller instance. The type of the IP address assigned to this controller instance. The data type is integer, the following options are available: unknown(0) ipv4(1) ipv6(2) dns(16)
.1.3.6.1.4.1.42303.1.2.2.1.7.<index> controllerIPAddress	Get	The IP Address assigned to this controller instance.
.1.3.6.1.4.1.42303.1.2.2.1.8.<index> controllerSipUdpPort	Get	The SIP UDP Port configured for this controller instance.
.1.3.6.1.4.1.42303.1.2.2.1.9.<index> controllerSipTcpPort	Get	The SIP TCP Port configured for this controller instance.

.1.3.6.1.4.1.42303.1.2.2.1.10.<index> controllerSoftfax	Get	The usage of SoftFax over G.711 for this controller instance. The data type is integer, the following options are available:
		`disabled (1)`
		`enabled (2)`

.1.3.6.1.4.1.42303.1.2.2.1.11.<index> controllerEctSimulation	Get	The usage of ECT simulation over G.711 for this controller instance. The data type is integer, the following options are available:
		`disabled (1)`
		`enabled (2)`

.1.3.6.1.4.1.42303.1.2.2.1.12.<index> controllerActiveCalls	Get	The total count of currently active calls on this controller instance.
.1.3.6.1.4.1.42303.1.2.2.1.13.<index> controllerActiveIncomingCalls	Get	The total count of currently active incoming calls on this controller instance.
.1.3.6.1.4.1.42303.1.2.2.1.14.<index> controllerActiveOutgoingCalls	Get	The total count of currently active outgoing calls on this controller instance.
.1.3.6.1.4.1.42303.1.2.2.1.15.<index> controllerSuccessfulCalls	Get	The count of successful calls on this controller instance since the last reset of the statistics.
.1.3.6.1.4.1.42303.1.2.2.1.16.<index> controllerSuccessfulIncomingCalls	Get	The count of successful incoming calls on this controller instance since the last reset of the statistics.
.1.3.6.1.4.1.42303.1.2.2.1.17.<index> controllerSuccessfulOutgoingCalls	Get	The count of successful outgoing calls on this controller instance since the last reset of the statistics.
.1.3.6.1.4.1.42303.1.2.2.1.18.<index> controllerFailedCalls	Get	The count of failed calls on this controller instance since the last reset of the statistics.
.1.3.6.1.4.1.42303.1.2.2.1.19.<index> controllerFailedIncomingCalls	Get	The count of failed incoming calls on this controller instance since the last reset of the statistics.

.1.3.6.1.4.1.42303.1.2.2.1.20.<index> controllerFailedOutgoingCalls	Get	The count of failed outgoing calls on this controller instance since the last reset of the statistics.
.1.3.6.1.4.1.42303.1.2.2.1.21.<index> controllerCallsNoApplication	Get	The count of incoming calls that could not be answered because there was no application listening on this controller instance. Value since the last reset of the statistics.
.1.3.6.1.4.1.42303.1.2.2.1.23.<index> controllerSoftfaxFallback	Get	The usage of fallback from T.38 to SoftFax over G.711 for this controller instance. The data type is integer, the following options are available: disabled (1) enabled (2)
.1.3.6.1.4.1.42303.1.2.2.1.24.<index> controllerV34Fax	Get	The usage of V.34 for T.38 connections for this controller instance. The data type is integer, the following options are available: disabled (1) enabled (2)

3.3 The license group

The following tables contain the OIDs and the corresponding name for the "license" group. The table lists the valid actions for the OIDs and the descriptions. The request type GET implies the support of the GETNEXT request.

OID Name	Request Type	Description
.1.3.6.1.4.1.42303.1.3.1.0 licenseNumber	Get	Contains the amount of entries in the following license table.

.1.3.6.1.4.1.42303.1.3.2.0
licenseDemoMode
	Get	The mode configured for using demo licenses in the **XCAPI** configuration. The data type is integer, the following options are available:
		`disabled (1)`
		`enabled (2)`

.1.3.6.1.4.1.42303.1.3.3 licenseEntry	Get	The table with license information.
.1.3.6.1.4.1.42303.1.3.3.1.1.<index> licenseIndex	Get	A unique value for each license. Its value ranges between 1 and the value of licenseNumber.
.1.3.6.1.4.1.42303.1.3.3.1.2.<index> licenseStatus	Get	The state of the license, e.g. is the system is using this license or not. The data type is integer, the following options are available: `active(1)` - valid and used by the system `inactive(2)` - does not match the hardware id `expired(3)` - time limited and no longer valid
.1.3.6.1.4.1.42303.1.3.3.1.3.<index> licenseExpiresInDays	Get	The amount of days when the license will expire. The value of 0 specifies that the license will never expire.
.1.3.6.1.4.1.42303.1.3.3.1.4.<index> licenseExpires	Get	The date as readable string when the license will expire. If the license is not limited an empty string is displayed.
.1.3.6.1.4.1.42303.1.3.3.1.5.<index> licenseSUSExpiresInDays	Get	The amount of days when the software upgrade service will end.
.1.3.6.1.4.1.42303.1.3.3.1.6.<index> licenseSUSUntil	Get	The date as readable string when the software upgrade service will end.
.1.3.6.1.4.1.42303.1.3.3.1.7.<index> licenseConnetions	Get	The amount of connections granted by this license entry.
.1.3.6.1.4.1.42303.1.3.3.1.8.<index> licenseT38Connections	Get	The amount of T.38 connections granted by this license entry.
.1.3.6.1.4.1.42303.1.3.3.1.9.<index> licenseSoftfaxConnections	Get	The amount of SoftFax connections granted by this license entry.
.1.3.6.1.4.1.42303.1.3.3.1.10.<index> licenseXSSAConnections	Get	The amount of connections for **XCAPI** SIP Security Additions granted by this license entry.
.1.3.6.1.4.1.42303.1.3.3.1.11.<index> licenseAudioPorts	Get	The amount of Audio Ports (Sound card instances) granted by this license entry.

.1.3.6.1.4.1.42303.1.3.3.1.12.<index> licenseG729	Get	Shows if the G.729 codec is included in the connections granted by this license entry. The data type is integer, the following options are available: yes(1) no(2)
.1.3.6.1.4.1.42303.1.3.3.1.13.<index> licenseG722	Get	Shows if the G.722 codec is included in the connections granted by this license entry. The data type is integer, the following options are available: yes(1) no(2)
.1.3.6.1.4.1.42303.1.3.3.1.14.<index> licenseGSM	Get	Shows if the GSM codec is included in the connections granted by this license entry. The data type is integer, the following options are available: yes(1) no(2)
.1.3.6.1.4.1.42303.1.3.3.1.15.<index> licenseILBC	Get	Shows if the iLBC codec is included in the connections granted by this license entry. The data type is integer, the following options are available: yes(1) no(2)
.1.3.6.1.4.1.42303.1.3.3.1.16.<index> licenseSpeex	Get	Shows if the Speex codec is included in the connections granted by this license entry. The data type is integer, the following options are available: yes(1) no(2)
.1.3.6.1.4.1.42303.1.3.3.1.17.<index> licenseMPA	Get	Shows if the MPA codec is included in the connections granted by this license entry. The data type is integer, the following options are available: yes(1) no(2)
.1.3.6.1.4.1.42303.1.3.3.1.18.<index> licenseT38V34Connections	Get	The amount of T.38 connections with V.34 granted by this license entry.

3.4 The configuration group

The following tables contain the OIDs and the corresponding name for the "configuration" group. The table lists the valid actions for the OIDs and the descriptions. The request type GET implies the support of the GETNEXT request.

OID Name	Request Type	Description
.1.3.6.1.4.1.42303.1.4.1.0 cfgLicenseExpiresWarning	Get/Set	Specifies the number of days to start sending the "licenseExpiresWarning" trap before a license will expire. The value zero specifies that no trap will be sent
.1.3.6.1.4.1.42303.1.4.2.0 cfgLicenseExpiresCritical	Get/Set	Specifies the number of days to start sending the "licenseExpiresCritical" trap before a license will expire. The value zero specifies that no trap will be sent
.1.3.6.1.4.1.42303.1.4.3.0 cfgLicenseRepeatWarnings	Get/Set	Specifies the number of days after a license warning is repeated. The value zero specifies that the warning is not repeated

.1.3.6.1.4.1.42303.1.4.4.0
cfgWarnCallNoLicense
	Get/Set	The parameter specifies if traps should be sent when a call could not be served because no more licenses are available. The data type is integer, the following options are available:
		`disable(1)`
		`enable(2)`

.1.3.6.1.4.1.42303.1.4.5.0
cfgWarnCallNoApplication
	Get/Set	The parameter specifies if traps should be sent when an incoming call could not be served because no application was listening. The data type is integer, the following options are available:
		`disable(1)`
		`enable(2)`

3.5 Traps

SNMP traps enable **XCAPI** to notify the management station of significant events by way of an unsolicited SNMP message.

All traps are sent with the "enterprise" set to:

.1.3.6.1.4.1.42303.1 (.iso.org.dod.internet.private.enterprises.te-systems.xcapi)

---

driverStateChange

The trap is sent when the driver is loaded or unloaded. The following parameter is sent with the trap:

Generic Type	Enterprise specific trap
Specific Type	1
Bindings	The new driver state with OID .1.3.6.1.4.1.42303.1.1.5.0. Refer to driverState in the system group for possible values.

---

controllerStateChange

The trap is sent when the state of the controller is changed, e.g. if the controller is disabled. The following parameters are sent with the trap:

Generic Type	Enterprise specific trap
Specific Type	2
Bindings	The controller index with OID .1.3.6.1.4.1.42303.1.2.2.1.1.<index>. The index specifies the controller. The new state with OID .1.3.6.1.4.1.42303.1.2.2.1.2.<index>. Refer to controllerState in the controller group for possible values.

---

networkStateChange

The trap is sent when the state of the network interface used by a controller is changed, e.g. if the network cable is unplugged. The following parameters are sent with the trap:

Generic Type	Enterprise specific trap
Specific Type	3
Bindings	The controller index with OID .1.3.6.1.4.1.42303.1.2.2.1.1.<index>. The index specifies the controller. The new state with OID .1.3.6.1.4.1.42303.1.2.2.1.3.<index>. Refer to controllerNetworkState in the controller group for possible values.

---

sipRegistrationStateChange

The trap is sent when the state of the SIP registration used by a controller is changed. The following parameters are sent with the trap:

Generic Type	Enterprise specific trap
Specific Type	4
Bindings	The controller index with OID .1.3.6.1.4.1.42303.1.2.2.1.1.<index>. The index specifies the controller. The new state with OID .1.3.6.1.4.1.42303.1.2.2.1.4.<index>. Refer to controllerSipRegistrarState in the controller groups for possible values.

---

licenseExpiresWarning

The trap is sent when a limited license is going to expire and only the amount of days configured via the configuration parameter "cfgLicenseExpiresWarning" is left. The following parameters are sent:

Generic Type	Enterprise specific trap
Specific Type	5
Bindings	The license index with OID .1.3.6.1.4.1.42303.1.3.3.1.1.<index>. The index specifies the license. The amount of days when the license will expire with OID .1.3.6.1.4.1.42303.1.3.3.1.3.<index>.

---

licenseExpiresCritical

The trap is sent when a limited license is going to expire and only the amount of days configured via the configuration parameter "cfgLicenseExpiresCritical" is left. The following parameters are sent with the trap:

Generic Type	Enterprise specific trap
Specific Type	6
Bindings	The license index with OID .1.3.6.1.4.1.42303.1.3.3.1.1.<index>. The index specifies the license. The amount of days when the license will expire with OID .1.3.6.1.4.1.42303.1.3.3.1.3.<index>.

---

statisticsCallNoLicense

The trap is sent when an incoming or outgoing call cannot be handled because no more licenses are available. The sending of the trap depends on the configuration parameter 'cfgWarnCallNoLicense'. The following parameters are sent with the trap:

Generic Type	Enterprise specific trap,
Specific Type:	7
Bindings:	The amount of calls that could not be services with OID .1.3.6.1.4.1.42303.1.1.22.0.

---

statisticsCallNoApplication

The trap is sent when an incoming call cannot be handled because no application was listening. The sending of the trap depends on the configuration parameter 'cfgWarnCallNoApplication'. The following parameters are sent with the trap:

Generic Type	Enterprise specific trap,
Specific Type	8
Bindings	The controller index with OID .1.3.6.1.4.1.42303.1.2.2.1.1.<index>. The index specifies the controller. The amount of calls that could not be handled for this controller with OID .1.3.6.1.4.1.42303.1.2.2.1.22.<index>.

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This product includes cryptographic software written by Eric Young (eay@cryptsoft.com).

This product includes software written by Tim Hudson (tjh@cryptsoft.com).

This product includes source code derived from the RSA Data Security, Inc. MD2, MD4 and MD5 Message Digest Algorithms.

This product includes source code derived from the RFC 4634 Secure Hash Algorithm software.

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