

***Midra™ 4K series:
SNMPv2-MIB architecture presentation***

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Introduction

The main goal of this application note is to help IT teams to go through Analog Way' MIB architecture allowing them to monitor efficiently the devices of the Midra 4K series.

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Reference List

- Global OID reference database - oidref.com

1. Basic knowledge

1.1. SNMP

Simple Network Management Protocol is an IP based protocol allowing network administrator to manage and monitor their network equipment. The implementation of Analog Way's SNMP agent is based on the version 2 of SNMP Standard.

The SNMP protocol is using 2 ports:

- 161 for information management
- 162 for traps (alert notification)

1.2. MIB

A Management Information Base (MIB) is a database used for managing the entities in a communication network. This database is accessible via SNMP and is organized as a hierarchical tree structure. Each entry of this database is addressed through an object identifier (OID).

Analog Way's MIB is available on the downloading section of the Midra 4K under the "Third Party Integration" sub-section.

2. Analog Way MIB

Analog Way MIB is split into 2 parts:

- Integration into the Standardize MIB
- Integration of Analog Way's proprietary MIB under Analog Way's Private Enterprise Number 60391

2.1. Standardized MIB

2.1.1. System Node

The system group includes information about the system on which the entity resides.

OID	OID Name	Syntax	Access	Comments
1.3.6.1.2.1.1.1	sysDescr	OCTET STRING (SIZE (0..255))	read-only	Textual description of the entity.
1.3.6.1.2.1.1.2	sysObjectID	OBJECT IDENTIFIER	read-only	Analog Way
1.3.6.1.2.1.1.3	sysUpTime	TimeTicks	read-only	The time (in hundredths of a second) since the network management portion of the system was last re-initialized.
1.3.6.1.2.1.1.4	sysContact	OCTET STRING (SIZE (0..255))	read-write	The textual identification of the contact person for this managed node, together with information on how to contact this person. If no contact information is known, the value is the zero-length string.
1.3.6.1.2.1.1.6	sysLocation	OCTET STRING (SIZE (0..255))	read-write	The physical location of this node (e.g., 'telephone closet, 3rd floor'). If the location is unknown, the value is the zero-length string.

2.1.2. Interface Node

The interfaces object group contains information about each interface on a network device.

OID	OID Name	Syntax	Access	Comments
1.3.6.1.2.1.2.1	ifNumber	INTEGER	read-only	The number of network interfaces (regardless of their current state) present on this system.
1.3.6.1.2.1.2.2	ifTable	SEQUENCE OF IfEntry	not-accessible	A list of interface entries. The number of entries is given by the value of ifNumber.
1.3.6.1.2.1.2.2.1	ifEntry	IfEntry	not-accessible	An entry containing management information applicable to a particular interface.
1.3.6.1.2.1.2.2.1.1	ifIndex	INTEGER	read-only	A unique value, greater than zero, for each interface.
1.3.6.1.2.1.2.2.1.6	ifPhysAddress	PhysAddress	read-only	The PhysAddress Syntax is an OCTET STRING. This data type is used to model media addresses. For many types of media, this will be in a binary representation; for example, an ethernet address would be represented as a string of 6 Bytes.
1.3.6.1.2.1.2.2.1.7	ifAdminStatus	INTEGER	read-write	The desired state of the interface. As no reactivation is possible, Analog Way devices do not react to this command.
1.3.6.1.2.1.2.2.1.8	ifOperStatus	INTEGER	read-only	The current operational state of the interface.

2.1.3. IP Node

The IP object group contains information about each IP Address on a network device.

OID	OID Name	Syntax	Access	Comments
1.3.6.1.2.1.4.34	ipAddressTable	SEQUENCE OF IpAddressEntry	not-accessible	This table contains addressing information relevant to the entity's interfaces. Only the ipAddressTable will be implemented since Midra 4K may have some other interfaces due to the DANTE audio cards.
1.3.6.1.2.1.4.34.1	ipAddressEntry	IpAddressEntry	not-accessible	An address mapping for a particular interface.
1.3.6.1.2.1.4.34.1.1	ipAddressAddrType	InetAddressType	not-accessible	The address type of ipAddressAddr. The possible values are: {0} unknown. {1} IPv4. {2} IPv6.
1.3.6.1.2.1.4.34.1.2	ipAddressAddr	InetAddress	not-accessible	The IP address to which this entry's addressing information pertains.
1.3.6.1.2.1.4.34.1.3	ipAddressIfIndex	InterfaceIndex	read-create	This index is the same as the one filled in the ifIndex in the ifTable.

Please note that even if the two first OID are indexes as not-accessible, they can still be visible by the users. For example, they can be displayed with the -Ci argument of the snmptable command.

2.2. Proprietary Analog Way MIB

2.2.1. Device Node

This is a list of basic information about the device.

OID	OID Name	Syntax	Access	Comments
1.3.6.1.4.1.60391.1	awDevice	OBJECT IDENTIFIER	not-accessible	
1.3.6.1.4.1.60391.1.1	awReference	OCTET STRING (SIZE (0..255))	read-only	The type or reference of the machine.
1.3.6.1.4.1.60391.1.2	awSerialNumber	OCTET STRING (SIZE (0..255))	read-only	The serial number of the machine.
1.3.6.1.4.1.60391.1.3	awSoftwareVersion	OCTET STRING (SIZE (0..255))	read-only	The firmware version of the device.
1.3.6.1.4.1.60391.1.4	awLabel	OCTET STRING (SIZE (0..255))	read-write	The device label.

2.2.2. System Node

This is a list of information about the system.

OID	OID Name	Syntax	Access	Comments
1.3.6.1.4.1.60391.2	awSystem	OBJECT IDENTIFIER	not-accessible	
1.3.6.1.4.1.60391.2.1	awDateAndTime	DateAndTime	read-only	The time of the machine, including offset. A documentation can be found in the SNMPV2-TC MIB.
1.3.6.1.4.1.60391.2.2	awNtpStatus	INTEGER	read-only	Return the status of the NTP server. The possible values are: {0} if NTP is enabled and valid. {1} if NTP is enabled but not valid. {2} if NTP is disabled.

2.2.3. Hardware Node

This is a list of information about the hardware.

OID	OID Name	Syntax	Access	Comments
1.3.6.1.4.1.60391.3	awHardware	OBJECT IDENTIFIER	not-accessible	
1.3.6.1.4.1.60391.3.1	awGlobalStatus	INTEGER	read-only	Return the status of the NTP server. The possible values are: {0} if there is no hardware issue. {1} if there is a hardware issue.
1.3.6.1.4.1.60391.3.2	awHardwareTable	SEQUENCE OF AwHardwareEntry	not-accessible	A table containing hardware status for all cards.
1.3.6.1.4.1.60391.3.2.1	awHardwareEntry	AwHardwareEntry	not-accessible	An entry containing all information about a specific Card.
1.3.6.1.4.1.60391.3.2.1.1	awCardName	OCTET STRING (SIZE (0..255))	read-only	The label of the card for each entry.
1.3.6.1.4.1.60391.3.2.1.2	awCardStatus	INTEGER	read-only	The hardware status of the card. The possible values are: {0} if there is no hardware issue. {1} if there is a hardware issue.
1.3.6.1.4.1.60391.3.2.1.3	awCardId	INTEGER	read-only	The internal ID of the card.
1.3.6.1.4.1.60391.3.2.1.4	awCardRef	INTEGER	read-only	The internal Reference of the card.
1.3.6.1.4.1.60391.3.2.1.5	awCardRev	INTEGER	read-only	The revision of the card.
1.3.6.1.4.1.60391.3.2.1.6	awCardSerialNumber	OCTET STRING (SIZE (0..255))	read-only	The Serial Number of the card.
1.3.6.1.4.1.60391.3.3	awStorageStatus	INTEGER	read-only	N/A for Midra 4K range.

2.2.4. Fans Node

This is a list of information about the Fans.

OID	OID Name	Syntax	Access	Comments
1.3.6.1.4.1.60391.4	awFans	OBJECT IDENTIFIER	not-accessible	
1.3.6.1.4.1.60391.4.1	awFanTable	SEQUENCE OF AwFanEntry	not-accessible	A table containing the information for all fans.
1.3.6.1.4.1.60391.4.1.1	awFanEntry	AwFanEntry	not-accessible	An entry containing all information about a specific fan.
1.3.6.1.4.1.60391.4.1.1.1	awFanId	OCTET STRING (SIZE (0..255))	read-only	The ID or label of the fan for each entry.
1.3.6.1.4.1.60391.4.1.1.2	awFanAlarm	INTEGER	read-only	The status of the fan for each entry. The possible values are: {0} if there is no fan issue. {1} if there is a fan issue.
1.3.6.1.4.1.60391.4.1.1.3	awFanSpeed	INTEGER	read-only	The fan revolution per minute for each entry.

2.2.5. Temperature Node

This is a list of information about the different temperature measured into the device.

OID	OID Name	Syntax	Access	Comments
1.3.6.1.4.1.60391.5	awTemperature	OBJECT IDENTIFIER	not-accessible	
1.3.6.1.4.1.60391.5.1	awTempTable	SEQUENCE OF AwTempEntry	not-accessible	A table containing the information for all temperature sensors.
1.3.6.1.4.1.60391.5.1.1	awTempEntry	AwTempEntry	not-accessible	An entry containing all information about a specific temperature sensor.
1.3.6.1.4.1.60391.5.1.1.1	awTempId	OCTET STRING (SIZE (0..255))	read-only	The ID or label of the temperature sensor for each entry.
1.3.6.1.4.1.60391.5.1.1.2	awTempAlarm	INTEGER	read-only	The status of the temperature for each entry. The possible values are: {0} if there is no temperature issue. {1} if there is a temperature issue.
1.3.6.1.4.1.60391.5.1.1.3	awTempTemperature	INTEGER	read-only	The temperature in Celsius degree for each entry.

2.2.6. Power Supply Node **N/A for Midra 4K range**

This is a list of information about the power supply.

OID	OID Name	Syntax	Access	Comments
1.3.6.1.4.1.60391.6	awPowerSupply	OBJECT IDENTIFIER	not-accessible	
1.3.6.1.4.1.60391.6.1	awPowerTable	SEQUENCE OF AwPowerEntry	not-accessible	
1.3.6.1.4.1.60391.6.1.1	awPowerEntry	AwPowerEntry	not-accessible	
1.3.6.1.4.1.60391.6.1.1.1	awPowerId	OCTET STRING (SIZE (0..255))	read-only	N/A for Midra 4K range
1.3.6.1.4.1.60391.6.1.1.2	awPowerAlarm	INTEGER	read-only	The possible values are: {-1} if there is no tracking (Only possible value for Midra 4K range). {0} if there is no power supply issue. {1} if there is a power supply issue.
1.3.6.1.4.1.60391.6.1.1.3	awPowerTemperature	INTEGER	read-only	N/A for Midra 4K range

2.2.7. Input Node

This is a list of information about the video inputs of the devices.

OID	OID Name	Syntax	Access	Comments
1.3.6.1.4.1.60391.11	awInput	OBJECT IDENTIFIER	not-accessible	
1.3.6.1.4.1.60391.11.1	awInputNumber	INTEGER	read-only	The number of inputs available on the device.
1.3.6.1.4.1.60391.11.2	awInputTable	SEQUENCE OF AwInputEntry	not-accessible	Table containing information about all the inputs. The number of entries is given by the value of inputNumber.
1.3.6.1.4.1.60391.11.2.1	awInputEntry	AwInputEntry	not-accessible	An entry containing management information applicable to a particular input.
1.3.6.1.4.1.60391.11.2.1.1	awInputId	OCTET STRING (SIZE (0..255))	read-only	The ID of the input.
1.3.6.1.4.1.60391.11.2.1.2	awInputEnable	INTEGER	read-only	The state of the input. The possible values are: {0} disabled. {1} enabled.
1.3.6.1.4.1.60391.11.2.1.3	awInputLabel	OCTET STRING (SIZE (0..255))	read-write	The Label of the input. On Midra 4K, the size of Inputs labels is limited to 16 characters
1.3.6.1.4.1.60391.11.2.1.4	awInputPlugType	OCTET STRING (SIZE (0..255))	read-only	The active plug type of the input.
1.3.6.1.4.1.60391.11.2.1.5	awInputStatus	INTEGER	read-only	The status of the video signal for the input. The possible values are: {0} if the signal is ok {1} if the signal is detected but is invalid {2} if the signal is not detected {3} if the signal is displayed but issues detected (ex: NDI with frame drop)

1.3.6.1.4.1.60391.11.2.1.6	awInputIsUsed	INTEGER	read-only	The fact the input is used on live. The possible values are: {0} not used. {1} only used at program. {2} only used at preview. {3} used on program and preview.
1.3.6.1.4.1.60391.11.2.1.7	awInputPattern	INTEGER	read-only	The status of the input pattern. The possible values are: {0} disabled. {1} enabled.
1.3.6.1.4.1.60391.11.2.1.8	awInputBackup	INTEGER	read-write	The status of the input backup feature in Auto mode. The possible values are: {0} enabled and active. {1} enabled and not active. {2} not enabled. {3} not available. Feature not available for now on Midra 4K.

2.2.8. Notification Node

This is a list of information about the trap available on the device.

OID	OID Name	Syntax	Access	Comments
1.3.6.1.4.1.60391.12	awNotification	OBJECT IDENTIFIER	not -accessible	
1.3.6.1.4.1.60391.12.0	awNotificationPrefix	OBJECT IDENTIFIER	not -accessible	
1.3.6.1.4.1.60391.12.0.1	awAlarmGlobalHardware	NOTIFICATION-TYPE	N/A	
1.3.6.1.4.1.60391.12.0.2	awAlarmHardware	NOTIFICATION-TYPE	N/A	
1.3.6.1.4.1.60391.12.0.3	awAlarmStorage	NOTIFICATION-TYPE	N/A	
1.3.6.1.4.1.60391.12.0.4	awAlarmFans	NOTIFICATION-TYPE	N/A	
1.3.6.1.4.1.60391.12.0.5	awAlarmTemperature	NOTIFICATION-TYPE	N/A	
1.3.6.1.4.1.60391.12.0.6	awAlarmPowerSupply	NOTIFICATION-TYPE	N/A	
1.3.6.1.4.1.60391.12.2	awNotificationObjects	OBJECT IDENTIFIER	not -accessible	
1.3.6.1.4.1.60391.12.2.1	awAlarmType	AnalogwayAlarmType	accessible-for-notify	Define the type of issue. The possible values are: {0} Hardware. {1} Storage Capacity. N/A for Midra 4K range. {2} Fans. {3} Temperature. {4} Power Supply. N/A for Midra 4K range.
1.3.6.1.4.1.60391.12.2.2	awAlarmSeverity	AnalogwayAlarmSeverity	accessible-for-notify	Define the alarm severity. The possible values are: {0} Cleared. {1} Warning. {2} Fault.
1.3.6.1.4.1.60391.12.2.3	awAlarmCardName	OCTET STRING (SIZE (0..255))	accessible-for-notify	Name of the hardware card with an issue.

1.3.6.1.4.1.60391.12.2.4	awAlarmStorageRemaining	INTEGER	accessible-for-notify	N/A for Midra 4K range.
1.3.6.1.4.1.60391.12.2.5	awAlarmFanName	OCTET STRING (SIZE (0..255))	accessible-for-notify	Name of the fan with an issue.
1.3.6.1.4.1.60391.12.2.6	awAlarmTempSensorName	OCTET STRING (SIZE (0..255))	accessible-for-notify	Name of the temperature sensor with an issue.
1.3.6.1.4.1.60391.12.2.7	awAlarmPowerSupplyName	OCTET STRING (SIZE (0..255))	accessible-for-notify	N/A for Midra 4K range.

The alarms / notifications are composed of multiple objects. Every single alarm has the awAlarmType and the awAlarmSeverity. The alarms are also composed of objects (see table above). The name of the objects composing the alarm should be self-explanatory, and so, it should be easy to know which one composes which alarm.