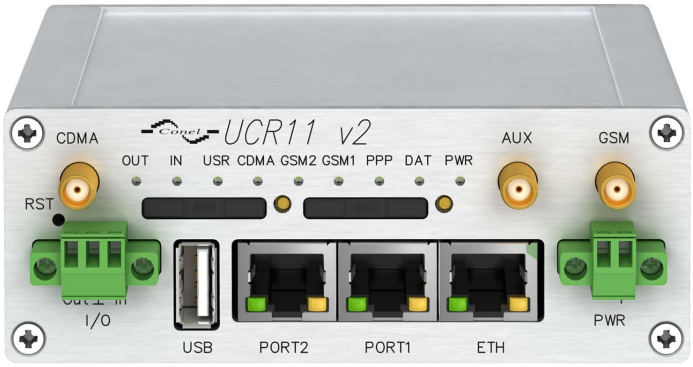
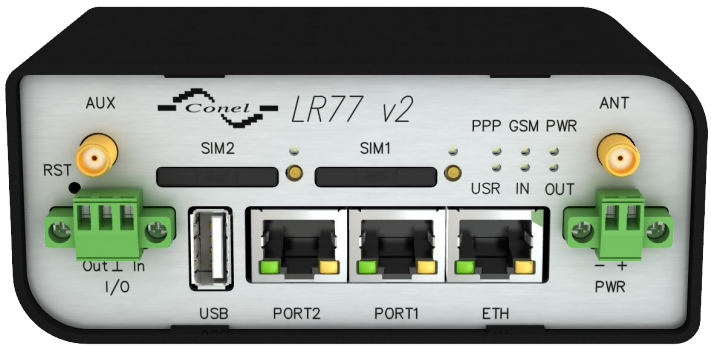
SNMP Object Identifier

APPLICATION NOTE





Symbols used

Danger – important notice, which may have an influence on the user's safety or the function of the device.

Attention – notice on possible problems, which can arise in specific cases.

Information, notice – information, which contains useful advice or special interest.

Example – example of function, command, or script.

GPL licence

Source codes under GPL licence are available free of charge by sending an email to info@conel.cz.

Declared quality system
ISO 9001

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1. Basic characteristics

OID (Object Identifier) is the designation for a numeric identifier that unambiguously identifies each value in SNMP. This identifier consists of a progression of numbers separated by a point. The shape of each OID is determined by the identifier value of the parent element and then this value is complemented by a point and current number. So it is obvious that there is a tree structure. It is stored in the MIB (Management Information Base) that contains names and descriptions of numeric identifiers.

1.1. Tree structure

The following figure shows the basic tree structure that is used for creating all of OIDs.

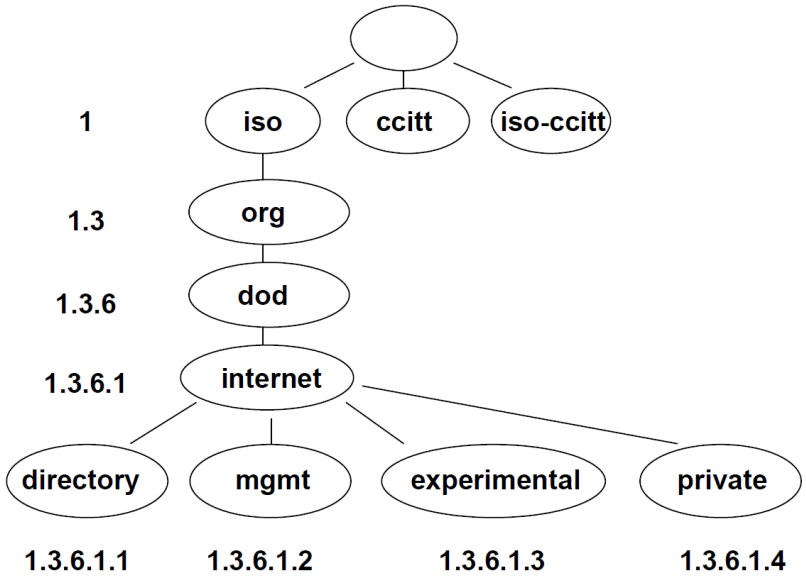

Fig. 1: Basic structure

In the standard MIB table the ***mgmt*** item is further devided into the following groups:

OID	Group name	Note
.1.3.6.1.2.1.1	system	See section 1.2
.1.3.6.1.2.1.2	interfaces	See section 1.3
.1.3.6.1.2.1.3	*at*	*Not supported by Conel routers*
.1.3.6.1.2.1.4	ip	See section 1.4
.1.3.6.1.2.1.5	icmp	See section 1.5
.1.3.6.1.2.1.6	tcp	See section 1.6
.1.3.6.1.2.1.7	udp	See section 1.7
.1.3.6.1.2.1.8	*egp*	*Not supported by Conel routers*
.1.3.6.1.2.1.9	*transmission*	*Not supported by Conel routers*
.1.3.6.1.2.1.10	*snmp*	*Not supported by Conel routers*

Table 1: Basic groups

An example of OID value can be .1.3.6.1.2.1.4. This value corresponds to text version of the MIB *iso.org.dod.internet.mgmt.mib-2.ip* (provides inforamation about IP addresses).

1.2. System

OID	Object	Description
.1.3.6.1.2.1.1.1	sysDescr	A textual description of the entity.
.1.3.6.1.2.1.1.2	sysObjectID	Identification of the network management subsystem contained in the entity.
.1.3.6.1.2.1.1.3	sysUpTime	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	The textual identification of the contact person. If it is unknown, the value is a zero-length string.
.1.3.6.1.2.1.1.5	sysName	System name. If it is unknown, the value is a zero-length string.
.1.3.6.1.2.1.1.6	sysLocation	The physical location (e.g. 2nd floor). If it is unknown, the value is a zero-length string
.1.3.6.1.2.1.1.7	sysServices	A value which indicates the set of services that this entity primarily offers.

Table 2: System

1.3. Interfaces

OID	Table	Description
.1.3.6.1.2.1.2.1	ifNumber	The number of network interfaces (regardless of their current state).
.1.3.6.1.2.1.2.2	ifTable	A list of interface entries. The number of entries is given by the value of *ifNumber*.

Table 3: Interfaces

IfTable is the parent element for a group *ifEntry* (OID .1.3.6.1.2.1.2.2.1). This group includes scalar objects that store information relating to a particular interface.

1.4. IP

OID	Object	Description
.1.3.6.1.2.1.4.1	ipForwarding	The indication of whether this entity is acting as an IP gateway in respect to the forwarding of datagrams received by, but not addressed to, this entity.
.1.3.6.1.2.1.4.2	ipDefaultTTL	The default value inserted into the Time-To-Live field of the IP header of datagrams originated at this entity, whenever a TTL value is not supplied by the transport layer protocol.
.1.3.6.1.2.1.4.3	ipInReceives	The total number of input datagrams received from interfaces, including those received in error.
.1.3.6.1.2.1.4.4	ipInHdrErrors	The number of input datagrams discarded due to errors in their IP headers, including bad checksums, version number mismatch, other format errors, etc.
.1.3.6.1.2.1.4.5	ipInAddrErrors	The number of input datagrams discarded because the IP address in their IP header's destination field was not a valid address to be received at this entity.
.1.3.6.1.2.1.4.6	ipForwDatagrams	The number of input datagrams for which this entity was not their final IP destination, as a result of which an attempt was made to find a route to forward them to that final destination.

.1.3.6.1.2.1.4.7	ipInUnknownProtos	The number of locally-addressed datagrams received successfully but discarded because of an unknown or unsupported protocol.
.1.3.6.1.2.1.4.8	ipInDiscards	The number of input IP datagrams for which no problems were encountered to prevent their continued processing, but which were discarded (e.g., for lack of buffer space).
.1.3.6.1.2.1.4.9	ipInDelivers	The total number of input datagrams successfully delivered to IP user-protocols (including ICMP).
.1.3.6.1.2.1.4.10	ipOutRequests	The total number of IP datagrams which local IP user-protocols (including ICMP) supplied to IP in requests for transmission. Note that this counter does not include any datagrams counted in *ipForwDatagrams*.
.1.3.6.1.2.1.4.11	ipOutDiscards	The number of output IP datagrams for which no problem was encountered to prevent their transmission to their destination, but which were discarded (e.g., for lack of buffer space). Note that this counter would include datagrams counted in *ipForwDatagrams* if any such packets met this (discretionary) discard criterion.
.1.3.6.1.2.1.4.12	ipOutNoRoutes	The number of IP datagrams discarded because no route could be found to transmit them to their destination. Note that this counter includes any packets counted in *ipForwDatagrams* which meet this “no-route“ criterion.
.1.3.6.1.2.1.4.13	ipReasmTimeout	The maximum number of seconds which received fragments are held while they are awaiting reassembly at this entity.
.1.3.6.1.2.1.4.14	ipReasmReqds	The number of IP fragments received which needed to be reassembled atthis entity.
.1.3.6.1.2.1.4.15	ipReasmOKs	The number of IP datagrams successfully re-assembled.
.1.3.6.1.2.1.4.16	ipReasmFails	The number of failures detected by the IP re-assembly algorithm (for whatever reason: timed out, errors, etc).
.1.3.6.1.2.1.4.17	ipFragOKs	The number of IP datagrams that have been successfully fragmented at this entity.
.1.3.6.1.2.1.4.18	ipFragFails	The number of IP datagrams that have been discarded because they needed to be fragmented at this entity but could not be.
.1.3.6.1.2.1.4.19	ipFragCreates	The number of IP datagram fragments that have been generated as a result of fragmentation at this entity.
.1.3.6.1.2.1.4.20	ipAddrTable	The table of addressing information relevant to this entity's IP addresses.
.1.3.6.1.2.1.4.21	ipRouteTable	This entity's IP Routing table.
.1.3.6.1.2.1.4.22	ipNetToMediaTable	The IP Address Translation table used for mapping from IP addresses to physical addresses.
.1.3.6.1.2.1.4.23	ipRoutingDiscards	The number of routing entries which were chosen to be discarded even though they are valid.

Table 4: IP

1.5. ICMP

OID	Object	Description
.1.3.6.1.2.1.5.1	icmpInMsgs	The total number of ICMP messages which the entity received. Note that this counter includes all those counted by icmpInErrors.
.1.3.6.1.2.1.5.2	icmpInErrors	The number of ICMP messages which the entity received but determined as having ICMP-specific errors (bad ICMP checksums, bad length, etc.).
.1.3.6.1.2.1.5.3	icmpInDestUnreachs	The number of ICMP Destination Unreachable messages received.
.1.3.6.1.2.1.5.4	icmpInTimeExcds	The number of ICMP Time Exceeded messages received.
.1.3.6.1.2.1.5.5	icmpInParmProbs	The number of ICMP Parameter Problem messages received.
.1.3.6.1.2.1.5.6	icmpInSrcQuenchs	The number of ICMP Source Quench messages received.
.1.3.6.1.2.1.5.7	icmpInRedirects	The number of ICMP Redirect messages received.
.1.3.6.1.2.1.5.8	icmpInEchos	The number of ICMP Echo (request) messages received.
.1.3.6.1.2.1.5.9	icmpInEchoReps	The number of ICMP Echo Reply messages received.
.1.3.6.1.2.1.5.10	icmpInTimestamps	The number of ICMP Timestamp (request) messages received.
.1.3.6.1.2.1.5.11	icmpInTimestampReps	The number of ICMP Timestamp Reply messages received.
.1.3.6.1.2.1.5.12	icmpInAddrMasks	The number of ICMP Address Mask Request messages received.
.1.3.6.1.2.1.5.13	icmpInAddrMaskReps	The number of ICMP Address Mask Reply messages received.
.1.3.6.1.2.1.5.14	icmpOutMsgs	The total number of ICMP messages which this entity attempted to send. Note that this counter includes all those counted by icmpOutErrors.
.1.3.6.1.2.1.5.15	icmpOutErrors	The number of ICMP messages which this entity did not send due to problems discovered within ICMP such as a lack of buffers.
.1.3.6.1.2.1.5.16	icmpOutDestUnreachs	The number of ICMP Destination Unreachable messages sent.
.1.3.6.1.2.1.5.17	icmpOutTimeExcds	The number of ICMP Time Exceeded messages sent.
.1.3.6.1.2.1.5.18	icmpOutParmProbs	The number of ICMP Parameter Problem messages sent.
.1.3.6.1.2.1.5.19	icmpOutSrcQuenchs	The number of ICMP Source Quench messages sent.
.1.3.6.1.2.1.5.20	icmpOutRedirects	The number of ICMP Redirect messages sent. For a host, this object will always be zero, since hosts do not send redirects.
.1.3.6.1.2.1.5.21	icmpOutEchos	The number of ICMP Echo (request) messages sent.
.1.3.6.1.2.1.5.22	icmpOutEchoReps	The number of ICMP Echo Reply messages sent.
.1.3.6.1.2.1.5.23	icmpOutTimestamps	The number of ICMP Timestamp (request) messages sent.

.1.3.6.1.2.1.5.24	icmpOutTimestampReps	The number of ICMP Timestamp Reply messages sent.
.1.3.6.1.2.1.5.25	icmpOutAddrMasks	The number of ICMP Address Mask Request messages sent.
.1.3.6.1.2.1.5.26	icmpOutAddrMaskReps	The number of ICMP Address Mask Reply messages sent.

Table 5: ICMP

1.6. TCP

OID	Object	Description
.1.3.6.1.2.1.6.1	tcpRtoAlgorithm	The algorithm used to determine the timeout value used for retransmitting unacknowledged octets.
.1.3.6.1.2.1.6.2	tcpRtoMin	The minimum value permitted by a TCP implementation for the retransmission timeout, measured in milliseconds.
.1.3.6.1.2.1.6.3	tcpRtoMax	The maximum value permitted by a TCP implementation for the retransmission timeout, measured in milliseconds.
.1.3.6.1.2.1.6.4	tcpMaxConn	The limit on the total number of TCP connections the entity can support. In entities where the maximum number of connections is dynamic, this object should contain -1.
.1.3.6.1.2.1.6.5	tcpActiveOpens	The number of times TCP connections have made a direct transition to the SYN-SENT state from the CLOSED state.
.1.3.6.1.2.1.6.6	tcpPassiveOpens	The number of times TCP connections have made a direct transition to the SYN-RCVD state from the LISTEN state.
.1.3.6.1.2.1.6.7	tcpAttemptFails	The number of times TCP connections have made a direct transition to the CLOSED state from either the SYN-SENT state or the SYN-RCVD state, plus the number of times TCP connections have made a direct transition to the LISTEN state from the SYN-RCVD state.
.1.3.6.1.2.1.6.8	tcpEstabResets	The number of times TCP connections have made a direct transition to the CLOSED state from either the ESTABLISHED state or the CLOSE-WAIT state.
.1.3.6.1.2.1.6.9	tcpCurrEstab	The number of TCP connections for which the current state is either ESTABLISHED or CLOSE-WAIT.
.1.3.6.1.2.1.6.10	tcpInSegs	The total number of segments received, including those received in error. This count includes segments received on currently established connections.
.1.3.6.1.2.1.6.11	tcpOutSegs	The total number of segments sent, including those on current connections but excluding those containing only retransmitted octets.
.1.3.6.1.2.1.6.12	tcpRetransSegs	The total number of segments retransmitted - that is, the number of TCP segments transmitted containing one or more previously transmitted octets.
.1.3.6.1.2.1.6.14	tcpInErrs	The total number of segments received in error (e.g., bad TCP checksums).
.1.3.6.1.2.1.6.15	tcpOutRsts	The number of TCP segments sent containing the RST flag.

Table 6: TCP

TCP also includes *tcpConnTable* table (.1.3.6.1.2.1.6.13) that is the parent element for *tcpConnEntry* table. It is a table containing information about existing TCP connections and TCP listeners. This table is considered to be outdated and now is usually replaced by *tcpConnectionTable* and *tcpListenerTable* tables.

1.7. UDP

OID	Object	Description
.1.3.6.1.2.1.7.1	udpInDatagram	The total number of UDP datagrams delivered to UDP users.
.1.3.6.1.2.1.7.2	udpNoPorts	The total number of received UDP datagrams for which there was no application at the destination port.
.1.3.6.1.2.1.7.3	udpInErrors	The number of received UDP datagrams that could not be delivered for reasons other than the lack of an application at the destination port.
.1.3.6.1.2.1.7.4	udpOutDatagrams	The total number of UDP datagrams sent from this entity.

Table 7: UDP

This group also includes *udpTable* table that is the parent element for *udpEntry* table. It is a table containing information about a particular current UDP listener. There are two scalar objects *udpLocalAddress* (.1.3.6.1.2.1.7.5.1.1) and *udpLocalPort* (.1.3.6.1.2.1.7.5.1.2). The first gives the local address for UDP listener and the second gives the local port number for UDP listener.

2. Conel tree

This chapter describes the SNMP values that are specific for the Conel company. The tree starts at OID = .1.3.6.1.4.1.30140. It can be interpreted as

iso.org.dod.internet.private.enterprises.conel

The following figure shows the tree that is used for creating Conel OIDs.

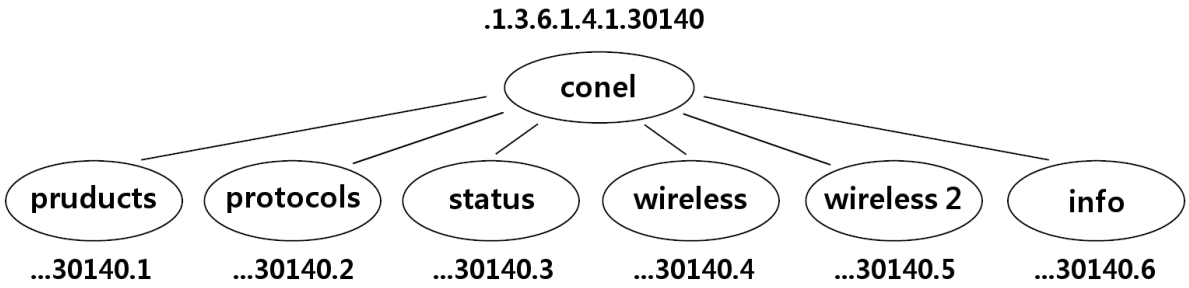

Fig. 2: OID tree for Conel company

Subtrees Wireless and Wireless 2 are not available for routers XR5i and XR5i v2.

2.1. Products

For the products that are manufactured in the Conel company, the following range of OID is used:

OID	Designation	Product
.1.3.6.1.4.1.30140.1.1	routerER75	EDGE router ER75
.1.3.6.1.4.1.30140.1.2	routerER75i	EDGE router ER75i / ER75i SL
.1.3.6.1.4.1.30140.1.3	routerUR5	UMTS router UR5 / UR5 SL
.1.3.6.1.4.1.30140.1.4	routerUR5i	UMTS router UR5i / UR5i SL
.1.3.6.1.4.1.30140.1.5	routerXR5i	Industrial router XR5i / XR5i SL
.1.3.6.1.4.1.30140.1.6	routerER75iV2	EDGE router ER75i v2 / ER75i v2
.1.3.6.1.4.1.30140.1.7	routerUR5V2	UMTS router UR5 v2 / UR5 v2 SL
.1.3.6.1.4.1.30140.1.8	routerUR5iV2	UMTS router UR5i v2 / UR5i v2 SL
.1.3.6.1.4.1.30140.1.9	routerXR5iV2	Industrial router XR5i v2 / XR5i v2 SL
.1.3.6.1.4.1.30140.1.10	routerLR77V2	LTE router LR77 v2 / LR77 v2 SL
.1.3.6.1.4.1.30140.1.11	routerCR10V2	CDMA router CR10 v2 / CR10 v2 SL
.1.3.6.1.4.1.30140.1.12	routerUCR11V2	CDMA/UMTS router UCR11 v2 / UCR11 v2 SL

Table 8: Object identifier for products

2.2. Protocols

2.2.1. XC-CNT

For the expansion port CNT the following range of OID is used:

OID	Designation	Description
.1.3.6.1.4.1.30140.2.1.1.0	An1	Analogy input AN1 (range 0-4095)
.1.3.6.1.4.1.30140.2.1.2.0	An2	Analogy input AN2 (range 0-4095)
.1.3.6.1.4.1.30140.2.1.3.0	Cnt1	Counter input CNT1 (range 0-4294967295)
.1.3.6.1.4.1.30140.2.1.4.0	Cnt2	Counter input CNT2 (range 0-4294967295)
.1.3.6.1.4.1.30140.2.1.5.0	Bin1	Binary input BIN1 (values 0,1)
.1.3.6.1.4.1.30140.2.1.6.0	Bin2	Binary input BIN2 (values 0,1)
.1.3.6.1.4.1.30140.2.1.7.0	Bin3	Binary input BIN3 (values 0,1)
.1.3.6.1.4.1.30140.2.1.8.0	Bin4	Binary input BIN4 (values 0,1)
.1.3.6.1.4.1.30140.2.1.9.0	Out1	Binary output OUT1 (values 0,1)

Table 9: Object identifier for CNT port

2.2.2. M-BUS

For the expansion port M-BUS the following range of OID is used:

OID	Designation	Description
.1.3.6.1.4.1.30140.2.2.<adresa>.1.0	IdNumber	Number of meter
.1.3.6.1.4.1.30140.2.2.<adresa>.2.0	Manufacturer	Manufacturer
.1.3.6.1.4.1.30140.2.2.<adresa>.3.0	Version	Specified meter version
.1.3.6.1.4.1.30140.2.2.<adresa>.4.0	Medium	Type of metered medium
.1.3.6.1.4.1.30140.2.2.<adresa>.5.0	Status	Errors report
.1.3.6.1.4.1.30140.2.2.<adresa>.6.0	VIF00	Value information field
.1.3.6.1.4.1.30140.2.2.<adresa>.7.0	Value00	Out
.1.3.6.1.4.1.30140.2.2.<adresa>.8.0	VIF01	1. VIF – value information field
.1.3.6.1.4.1.30140.2.2.<adresa>.9.0	Value01	1. measured value
…		
.1.3.6.1.4.1.30140.2.2.<adresa>.100.0	VIF2F	47. VIF – value information field
.1.3.6.1.4.1.30140.2.2.<adresa>.101.0	Value2F	47. measured value

Table 10: Object identifier for M-BUS port

The meter address can be from range 0..254 when 254 is broadcast.

2.2.3. Binary input and output

For binary input and output the following range of OID is used:

OID	Designation	Description
.1.3.6.1.4.1.30140.2.3.1.0	Bin0	Binary input BIN0 (values 0,1)
.1.3.6.1.4.1.30140.2.3.2.0	Out0	Binary output OUT0 (values 0,1)

Table 11: Object identifier for binary input and output

2.3. Status

OID	Designation	Description
.1.3.6.1.4.1.30140.3.1.0	MBusOverload1	M-BUS overload 1 (values 0,1)
.1.3.6.1.4.1.30140.3.2.0	MBusOverload2	M-BUS overload 2 (values 0,1)
.1.3.6.1.4.1.30140.3.3.0	Temperature	Internal temperature
.1.3.6.1.4.1.30140.3.4.0	Voltage	Power voltage

Table 12: Object identifier for Status

Information about power voltage and internal temperature are available only for routers with firmware 3.0.4 and later. It is also necessary to have router with a board RB-v2-6 and later.

2.4. Wireless

OID	Designation	Description
.1.3.6.1.4.1.30140.4.1.0	Status	*Values 0-16, see Table 13 below*
.1.3.6.1.4.1.30140.4.2	PLMN	Operator code
.1.3.6.1.4.1.30140.4.3	Cell	Cell
.1.3.6.1.4.1.30140.4.4	Channel	Channel
.1.3.6.1.4.1.30140.4.5	Level	Signal strength for cell
.1.3.6.1.4.1.30140.4.6	ChannelN1	Adjacent channel No. 1
.1.3.6.1.4.1.30140.4.7	LevelN1	Signal strength for a cell of adjacent channel No. 1
.1.3.6.1.4.1.30140.4.8	ChannelN2	Adjacent channel No. 2
.1.3.6.1.4.1.30140.4.9	LevelN2	Signal strength for a cell of adjacent channel No. 2
.1.3.6.1.4.1.30140.4.10	ChannelN3	Adjacent channel No. 3
.1.3.6.1.4.1.30140.4.11	LevelN3	Signal strength for a cell of adjacent channel No. 3
.1.3.6.1.4.1.30140.4.12	ChannelN4	Adjacent channel No. 4
.1.3.6.1.4.1.30140.4.13	LevelN4	Signal strength for a cell of adjacent channel No. 4
.1.3.6.1.4.1.30140.4.14	ChannelN5	Adjacent channel No. 5
.1.3.6.1.4.1.30140.4.15	LevelN5	Signal strength for a cell of adjacent channel No. 5
.1.3.6.1.4.1.30140.4.16	UpTime	Period of time when connection is established
.1.3.6.1.4.1.30140.4.17	Connect	Time stamp of last connection (otherwise 0)
.1.3.6.1.4.1.30140.4.18	Disconnect	Time stamp of last moment when the connection fell apart
.1.3.6.1.4.1.30140.4.19	Card	SIM card number
.1.3.6.1.4.1.30140.4.20	IPAddress	Assigned IP address (or zeros)
.1.3.6.1.4.1.30140.4.21	Latency	Response time – keep a valid value only when sending trap (otherwise the value is 0)
.1.3.6.1.4.1.30140.4.22	ReportPeriod	Period of sending reports to the R-SeeNet

Table 13: Object identifier for Wireless

OID	Designation
.1.3.6.1.4.1.30140.4.1.0	noService
.1.3.6.1.4.1.30140.4.1.1	availableGPRS
.1.3.6.1.4.1.30140.4.1.2	attachedGPRS
.1.3.6.1.4.1.30140.4.1.3	availableEDGE
.1.3.6.1.4.1.30140.4.1.4	attachedEDGE
.1.3.6.1.4.1.30140.4.1.5	availableUMTS
.1.3.6.1.4.1.30140.4.1.6	attachedUMTS
.1.3.6.1.4.1.30140.4.1.7	availableHSDPA
.1.3.6.1.4.1.30140.4.1.8	attachedHSDPA
.1.3.6.1.4.1.30140.4.1.9	availableHSUPA
.1.3.6.1.4.1.30140.4.1.10	attachedHSUPA
.1.3.6.1.4.1.30140.4.1.11	availableHSPA
.1.3.6.1.4.1.30140.4.1.12	attachedHSPA
.1.3.6.1.4.1.30140.4.1.13	availableLTE
.1.3.6.1.4.1.30140.4.1.14	attachedLTE
.1.3.6.1.4.1.30140.4.1.15	availableCDMA
.1.3.6.1.4.1.30140.4.1.16	attachedCDMA

Table 14: Values for Status in Wireless group

2.5. Wireless 2

2.5.1. WirelessToday

OID	Designation	Description
.1.3.6.1.4.1.30140.5.1.1	TodayRxPri	Received data – primary SIM card
.1.3.6.1.4.1.30140.5.1.2	TodayRxSec	Received data – secondary SIM card
.1.3.6.1.4.1.30140.5.1.3	TodayTxPri	Sent data – primary SIM card
.1.3.6.1.4.1.30140.5.1.4	TodayTxSec	Sent data – secondary SIM card
.1.3.6.1.4.1.30140.5.1.5	TodayConnectionsPri	Number of connections – primary SIM card
.1.3.6.1.4.1.30140.5.1.6	TodayConnectionsSec	Number of connections – secondary SIM card
.1.3.6.1.4.1.30140.5.1.7	TodayOnlinePri	Time on primary SIM card
.1.3.6.1.4.1.30140.5.1.8	TodayOnlineSec	Time on secondary SIM card
.1.3.6.1.4.1.30140.5.1.9	TodayOffline	Time in offline mode
.1.3.6.1.4.1.30140.5.1.10	TodayCells	Number of cells (during the period)
.1.3.6.1.4.1.30140.5.1.11	TodayLevelAvg	Average signal strength
.1.3.6.1.4.1.30140.5.1.12	TodayLevelMin	Minimum signal strength
.1.3.6.1.4.1.30140.5.1.13	TodayLevelMax	Maximum signal strength
.1.3.6.1.4.1.30140.5.1.14	TodayDateMin	Time stamp for LevelMin (the last moment, when signal strength was minimal)
.1.3.6.1.4.1.30140.5.1.15	TodayDateMax	Time stamp for LevelMax (the last moment, when signal strength was maximal)

Table 15: Object identifier for WirelessToday

2.5.2. WirelessYesterday

The importance of each item corresponds to the items that are listed in table no. 13. However items in this group don't concern current day, but the day that preceded it. So the designation of all items begins with "Yesterday" (not Today). The range of object identifier starts at .1.3.6.1.4.1.30140.5.2.1.

2.5.3. WirelessThisWeek

The importance of each item corresponds to the items that are listed in table no. 13. However items in this group don't concern current day, but current week. So the designation of all items begins with "ThisWeek" (not Today). The range of object identifier starts at value .1.3.6.1.4.1.30140.5.3.1.

2.5.4. WirelessLastWeek

The importance of each item corresponds to the items that are listed in table no. 13. However items in this group don't concern current day, but last week. So the designation of all items begins with "LastWeek" (not Today). The range of object identifier starts at value .1.3.6.1.4.1.30140.5.4.1.

2.5.5. WirelessThisPeriod

The importance of each item corresponds to the items that are listed in table no. 13. However items in this group don't concern current day, but current period. So the designation of all items begins with "ThisPeriod" (not Today). The range of object identifier starts at value .1.3.6.1.4.1.30140.5.5.1.

2.5.6. WirelessLastPeriod

The importance of each item corresponds to the items that are listed in table no. 13. However items in this group don't concern current day, but last period. So the designation of all items begins with "Last period" (not Today). The range of object identifier starts at value .1.3.6.1.4.1.30140.5.6.1.

2.6. Info

This group is intended for storage of basic information about a particular product.

OID	Designation	Description
.1.3.6.1.4.1.30140.6.1	Product	Designation of the product
.1.3.6.1.4.1.30140.6.2	Firmware	Information about firmware
.1.3.6.1.4.1.30140.6.3	SN	Serial number of the product
.1.3.6.1.4.1.30140.6.4	IMEI	IMEI number of the product
.1.3.6.1.4.1.30140.6.5	ESN	ESN number of the product

Table 16: Object identifier for Info

2.7. GPS

For sending GPS messages is used the following range of OIDs:

OID	Designation	Description
.1.3.6.1.4.1.30140.7.1	gpsTimeUTC	Current time in hhmmss format (it's patterned on Coordinated Universal Time).
.1.3.6.1.4.1.30140.7.2	gpsLatitude	Geographic coordinate that specifies the north-south position (in degrees).
.1.3.6.1.4.1.30140.7.3	gpsLatitude	Geographic coordinate that specifies the east-west position (in degrees).
.1.3.6.1.4.1.30140.7.4	gpsAltitude	Specifies the height above sea level of a location (in meters).
.1.3.6.1.4.1.30140.7.5	gpsSatellites	Number of satellites that are directly visible for the router.
.1.3.6.1.4.1.30140.7.6	gpsFixStatus	Indicates the availability of data and its quality. If no data is available, the value of this item is 0. A nonzero value indicates the presence of data.
.1.3.6.1.4.1.30140.7.7	gpsSpeedOver Ground	Current speed of the router relative to Earth's surface (in knots).
.1.3.6.1.4.1.30140.7.8	gpsCourseOver Ground	The actual course the router is moving along at the moment relative to Earth's surface (in degrees).
.1.3.6.1.4.1.30140.7.9	gpsDate	Current date in ddmmyy format.

Table 17: GPS OID

3. OIDs contained in trap

Each SNMP trap contains these OIDs:

.1.3.6.1.2.1.2.2.1.6.1 (ifPhysAddress)
.1.3.6.1.2.1.2.2.1.10.2 (ifInOctets)
.1.3.6.1.2.1.2.2.1.16.2 (ifOutOctets)
.1.3.6.1.4.1.30140.4.1.0 (wirelessStatus)
.1.3.6.1.4.1.30140.4.2.0 (wirelessPLMN)
.1.3.6.1.4.1.30140.4.3.0 (wirelessCell)
.1.3.6.1.4.1.30140.4.4.0 (wirelessChannel)
.1.3.6.1.4.1.30140.4.5.0 (wirelessLevel)
.1.3.6.1.4.1.30140.4.6.0 (wirelessChannelN1)
.1.3.6.1.4.1.30140.4.7.0 (wirelessLevelN1)
.1.3.6.1.4.1.30140.4.8.0 (wirelessChannelN2)
.1.3.6.1.4.1.30140.4.9.0 (wirelessLevelN2)
.1.3.6.1.4.1.30140.4.10.0 (wirelessChannelN3)
.1.3.6.1.4.1.30140.4.11.0 (wirelessLevelN3)
.1.3.6.1.4.1.30140.4.12.0 (wirelessChannelN4)
.1.3.6.1.4.1.30140.4.13.0 (wirelessLevelN4)
.1.3.6.1.4.1.30140.4.14.0 (wirelessChannelN5)
.1.3.6.1.4.1.30140.4.15.0 (wirelessLevelN5)
.1.3.6.1.4.1.30140.4.16.0 (wirelessUptime)
.1.3.6.1.4.1.30140.4.17.0 (wirelessConnect)
.1.3.6.1.4.1.30140.4.18.0 (wirelessDisconnect)
.1.3.6.1.4.1.30140.4.19.0 (wirelessCard)
.1.3.6.1.4.1.30140.4.21.0 (wirelessLatency)
.1.3.6.1.4.1.30140.4.22.0 (wirelessReportPeriod)
.1.3.6.1.4.1.30140.5.1.10.0 (wirelessCells)

Every 24 hours these OIDs are also transmited:

.1.3.6.1.4.1.30140.6.3.0 (infoSN)
.1.3.6.1.4.1.30140.6.4.0 (infoIMEI)
.1.3.6.1.4.1.30140.6.5.0 (infoESN)
.1.3.6.1.2.1.1.1.0 (sysDescr)
.1.3.6.1.2.1.1.5.0 (sysName)
.1.3.6.1.2.1.1.6.0 (sysLocation)

4. Example of SNMP settings and readout

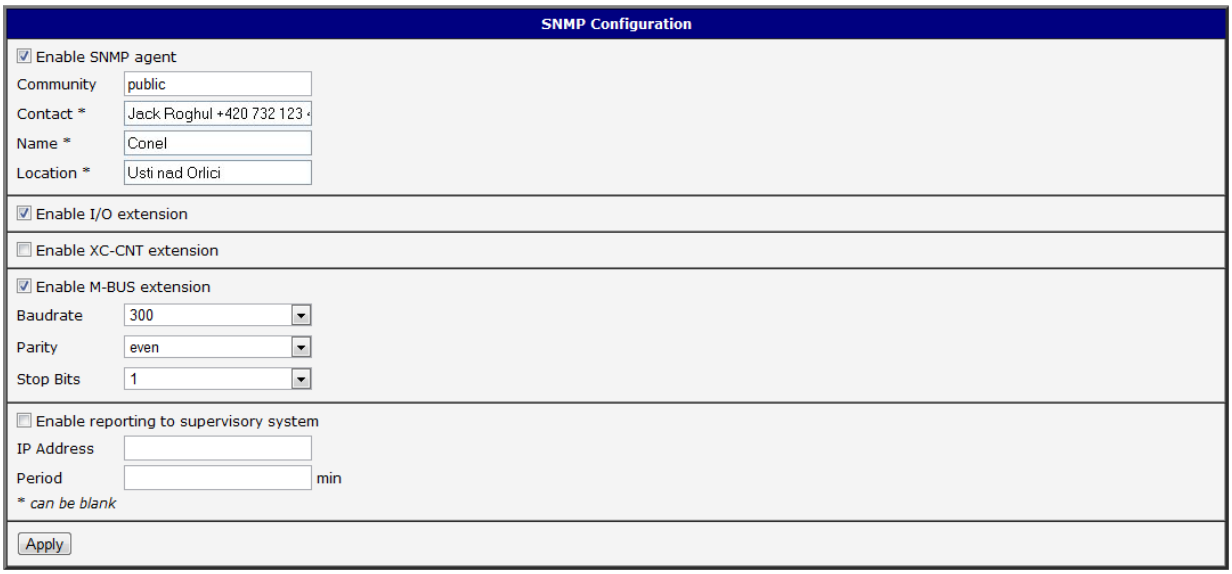

Fig. 3: Example of SNMP configuration

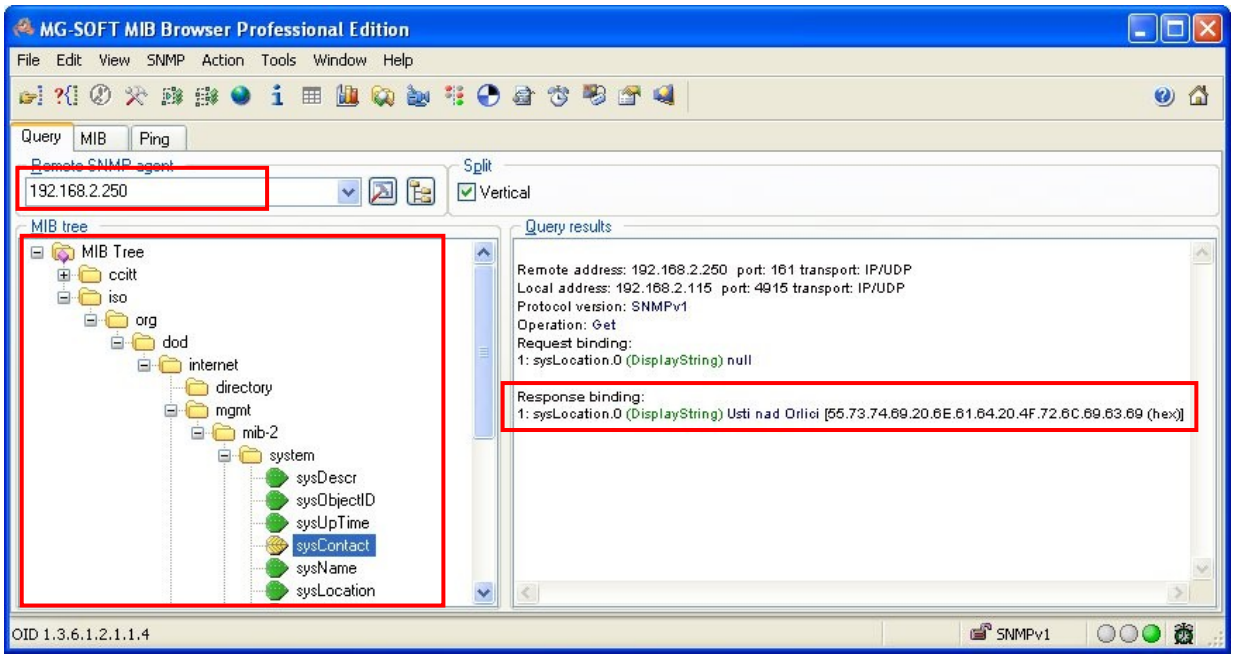

Fig. 4: Example of MIB browser

It is important to set the IP address of the SNMP agent (router) in the *Remote SNMP agent* field. After entering the IP address it can be displayed OIDs in the *MIB tree* part. Then it is also possible to determine the state of object identifier by entering its OID number.

The path to objects is:

iso → org → dod → internet → private → enterprises → conel → protocols

The path to basic information about the router is:

iso → org → dod → internet → mgmt → mib-2 → system