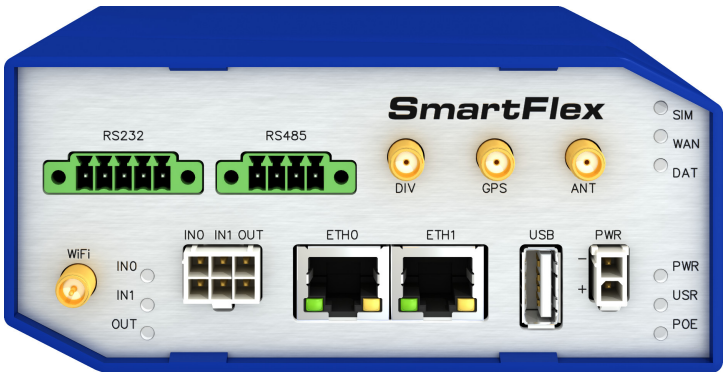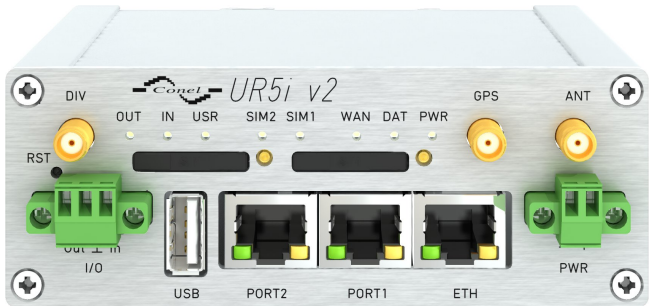# SNMP Object Identifier

## APPLICATION NOTE



**ADVANTECH**

# Used symbols

*Danger* – Information regarding user safety or potential damage to the router.

*Attention* – Problems that can arise in specific situations.

*Information, notice* – Useful tips or information of special interest.

*Example* – Example of function, command or script.

# Open Source Software License

The software in this device uses various pieces of open source software governed by following licenses: GPL versions 2 and 3, LGPL version 2, BSD-style licenses, MIT-style licenses. The list of components together with complete license texts can be found on the device itself: See *Licenses* link at the bottom of the router's main Web page (*General Status*) or point your browser to address DEVICE_IP/licenses.cgi. If you are interested in obtaining the source, please contact us at:

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# Contents

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# 1. Basics and MIB Files

OID (Object Identifier) is the name for a numeric identifier that is unique for every value in SNMP. This identifier consists of a numbers separated by points. 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.

> Information about the router can be found in the *mgmt* and *private* parts of the tree. The private tree for Advantech routers is defined by MIB files accessible in the public repository here: https://bitbucket.org/bbsmartworx/snmp-mib/ (Requires RFC1155-SMI and RFC-1212 modules). These files are up-to-date and determinant. They are readable by any SNMP MIB browser and can be analysed for exact information on carried Base Types (data format) of OIDs etc.

SNMP v1/v2 or v3 is supported. All the SNMP values are *read-only*, except for the binary outputs: *ioOut0* (.1.3.6.1.4.1.30140.2.3.2.0) and *xccntOut1* (.1.3.6.1.4.1.30140.2.1.9.0). These two OIDs are *read-write* and can be set via SNMP according to write settings on *SNMP* configuration page in the router.

## 1.1 Tree Structure

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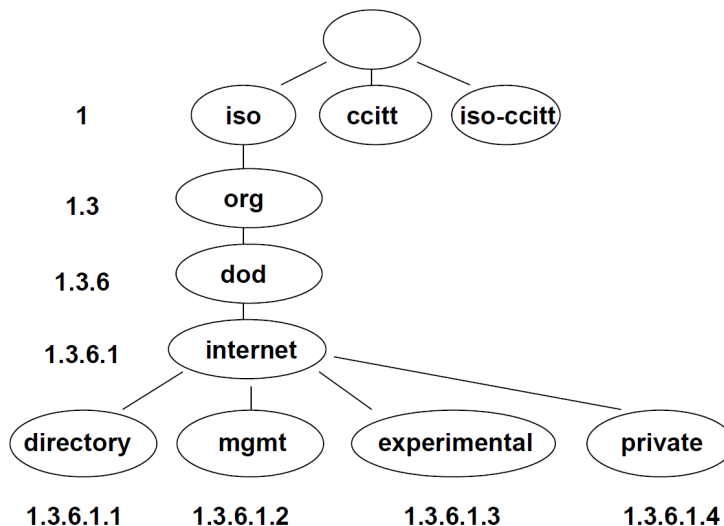


Figure 1: Basic structure

In the standard MIB tree, the *mgmt* item is further divided into the following groups:

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

Table 1: Basic groups of *mgmt*

## 1.2 System

| OID | Object | Description |
|---|---|---|
| .1.3.6.1.2.1.1.1 | sysDescr | A textual description of the entity. Name of product and version of firmware in case of Advantech routers. |
| .1.3.6.1.2.1.1.2 | sysObjectID | Identification of the network management subsystem contained in the entity. Contains OID of the product type in private tree from table 8. |
| .1.3.6.1.2.1.1.3 | sysUpTime | The time (in hundredths of a second) since the device was last re-initialized. |
| .1.3.6.1.2.1.1.4 | sysContact | The textual identification of the contact person, taken from router *Configuration* (page *Services*, *SNMP*). If it is unknown, the value is a zero-length string. |
| .1.3.6.1.2.1.1.5 | sysName | System name (from *SNMP* configuration page). Otherwise a zero-length string. |
| .1.3.6.1.2.1.1.6 | sysLocation | The physical location (from *SNMP* configuration page). Otherwise 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. Value 4 for Advantech routers. |

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. Table with properties for every interface. The number of tables 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. **Note:** There are not all interfaces of the router available as the table! Only the first Ethernet interface and the Mobile WAN interface is available.

## 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. |

Continued from previous page

| OID | Object | Description |
|---|---|---|
| .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 userprotocols (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 reassembled. |
| .1.3.6.1.2.1.4.16 | ipReasmFails | The number of failures detected by the IP reassembly algorithm (for whatever reason: timed out, errors, etc). |

Continued from previous page

| OID | Object | Description |
|-----|--------|-------------|
| .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 | *Not supported by Advantech routers.* |
| .1.3.6.1.2.1.4.21 | ipRouteTable | *Not supported by Advantech routers.* |
| .1.3.6.1.2.1.4.22 | ipNetToMediaTable | *Not supported by Advantech routers.* |
| .1.3.6.1.2.1.4.23 | ipRoutingDiscards | *Not supported by Advantech routers.* |

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. |

Continued from previous page

| OID | Object | Description |
|---|---|---|
| .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. |
| .1.3.6.1.2.1.6.13 | tcpConnTable | *Not supported by Advantech routers.* |
| .1.3.6.1.2.1.6.14 | tcpInErrs | *Not supported by Advantech routers.* |
| .1.3.6.1.2.1.6.15 | tcpOutRsts | *Not supported by Advantech routers.* |

Table 6: TCP

## 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. |
| .1.3.6.1.2.1.7.5 | udpTable | *Not supported by Advantech routers.* |

Table 7: UDP

# 2. Private Tree for Advantech Routers

This chapter describes the SNMP values that are specific for the Advantech B+B Smart-Worx company (formerly Conel). The tree starts at OID = .1.3.6.1.4.1.30140. It can be inter-preted as:

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

The following figure shows the tree that is used for creating conel OIDs for Advantech routers.
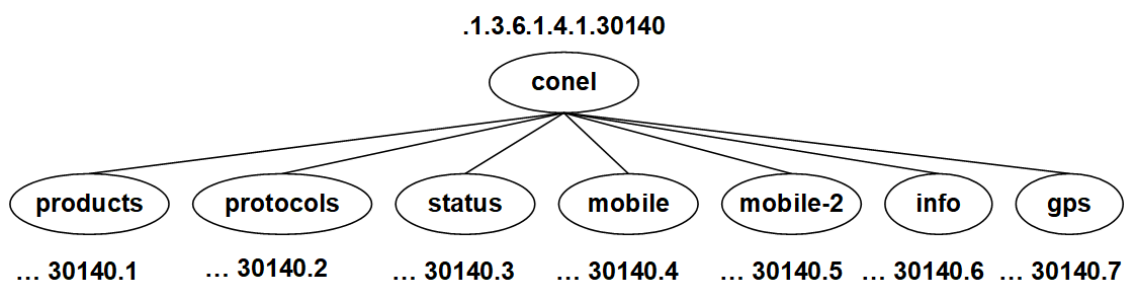


Figure 2: Private tree for Advantech routers – conel tree

Subtrees *mobile* and *mobile-2* are not available for routers with no cellular module (XR5i, XR5i v2, XR5i v2E, SR300, etc.

## 2.1 Products

For the products that are manufactured in the Advantech B+B SmartWorx company (for-merly Conel), the following range of OIDs is used:

| OID | Name | 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 |
| .1.3.6.1.4.1.30140.1.3 | routerUR5 | UMTS router UR5 |
| .1.3.6.1.4.1.30140.1.4 | routerUR5i | UMTS router UR5i |
| .1.3.6.1.4.1.30140.1.5 | routerXR5i | Industrial router XR5i |
| .1.3.6.1.4.1.30140.1.6 | routerER75iV2 | EDGE router ER75i v2 |
| .1.3.6.1.4.1.30140.1.7 | routerUR5V2 | UMTS router UR5 v2 |
| .1.3.6.1.4.1.30140.1.8 | routerUR5iV2 | UMTS router UR5i v2 |
| .1.3.6.1.4.1.30140.1.9 | routerXR5iV2 | Industrial router XR5i v2 |
| .1.3.6.1.4.1.30140.1.10 | routerLR77V2 | LTE router LR77 v2 |
| .1.3.6.1.4.1.30140.1.11 | routerCR10V2 | CDMA router CR10 v2 |
| .1.3.6.1.4.1.30140.1.12 | routerUCR11V2 | CDMA/UMTS router UCR11 v2 |

| OID | Name | Product |
|-----|------|---------|
| .1.3.6.1.4.1.30140.1.13 | routerUR5iV2L | HSPA+ router UR5i v2 Libratum |
| .1.3.6.1.4.1.30140.1.14 | routerSpectre3G | HSPA+ router UR5i v2 SL for US |
| .1.3.6.1.4.1.30140.1.15 | routerSpectreRT | Industrial router XR5i v2 SL for US |
| .1.3.6.1.4.1.30140.1.16 | routerRR75i | GSM-R router RR75i v2 |
| .1.3.6.1.4.1.30140.1.17 | routerSpectreLTEAT | LTE router LR77 v2 SL for US AT&T |
| .1.3.6.1.4.1.30140.1.18 | routerXR5iV2E | Industrial router XR5i v2 Libratum |
| .1.3.6.1.4.1.30140.1.19 | routerBiviasV2HC | Twin cellular module router Bivias v2 HC |
| .1.3.6.1.4.1.30140.1.20 | routerBiviasV2LC | Twin cellular module router Bivias v2 LC |
| .1.3.6.1.4.1.30140.1.21 | routerSpectreLTEVZ | LTE router LR77 v2 SL for US Verizon |
| .1.3.6.1.4.1.30140.1.22 | routerBiviasV2LL | Twin cellular module router Bivias v2 LL |
| .1.3.6.1.4.1.30140.1.23 | routerBiviasV2LH | Twin cellular module router Bivias v2 LH |
| .1.3.6.1.4.1.30140.1.24 | routerBiviasV2HH | Twin cellular module router Bivias v2 HH |
| .1.3.6.1.4.1.30140.1.25 | routerLR77V2L | LTE router LR77 v2 Libratum |
| .1.3.6.1.4.1.30140.1.27 | routerSpectreV3LTE | LTE router SmartFlex |
| .1.3.6.1.4.1.30140.1.29 | routerSpectreV3ERT | Industrial router SmartFlex SR300 |
| .1.3.6.1.4.1.30140.1.32 | routerSpectreV3TLTE | Twin module LTE router SmartMotion |
| .1.3.6.1.4.1.30140.1.35 | routerSpectreV3LTEUS | LTE router SmartFlex for US |
| .1.3.6.1.4.1.30140.1.36 | routerSpectreV3LLTE | LTE router SmartStart |
| .1.3.6.1.4.1.30140.1.37 | routerSpectreV3LLTEUS | LTE router SmartStart for US |

Table 8: Product OIDs

## 2.2 Protocols

### 2.2.1 XC-CNT

To use the *xccnt* part of the tree, you have to use the v2 router with XC-CNT interface (expansion board) installed and activated on *SNMP* configuration page in the router. See the *Configuration Manual for v2 Routers* [1] for more details. It is possible to set the binary output *xccntOut1* (.1.3.6.1.4.1.30140.2.1.9.0) via SNMP. Other values are read-only. The following range of OIDs is used for the CNT expansion port:

| OID | Name | Description |
|-----|------|-------------|
| .1.3.6.1.4.1.30140.2.1.1.0 | xccntAn1 | Analogy input AN1 (range 0-4095) |
| .1.3.6.1.4.1.30140.2.1.2.0 | xccntAn2 | Analogy input AN2 (range 0-4095) |
| .1.3.6.1.4.1.30140.2.1.3.0 | xccntCnt1 | Counter input CNT1 (range 0-4294967295) |
| .1.3.6.1.4.1.30140.2.1.4.0 | xccntCnt2 | Counter input CNT2 (range 0-4294967295) |

Continued from previous page

| OID | Name | Description |
|-----|------|-------------|
| .1.3.6.1.4.1.30140.2.1.5.0 | xccntBin1 | Binary input BIN1 (values 0,1) |
| .1.3.6.1.4.1.30140.2.1.6.0 | xccntBin2 | Binary input BIN2 (values 0,1) |
| .1.3.6.1.4.1.30140.2.1.7.0 | xccntBin3 | Binary input BIN3 (values 0,1) |
| .1.3.6.1.4.1.30140.2.1.8.0 | xccntBin4 | Binary input BIN4 (values 0,1) |
| .1.3.6.1.4.1.30140.2.1.9.0 | xccntOut1 | Binary output OUT1 (values 0,1) |

Table 9: OIDs for XC-CNT

### 2.2.2 M-BUS

The following range of OIDs is used for M-BUS expansion port. It can be used only in v2 routers and it is necessary to enable sending SNMP values on *SNMP* Configuration page in the router (*Enable M-BUS extension*). There 255 branches in mbus tree. Every branch is defined by mbus device address in hexadecimal format. Textual names of branches (adresses) are *mbus00* to *mbusFF*, which is equivalent to addresses 0 to 255. Every address branch carries the following range of OIDs:

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

Table 10: OIDs for M-BUS

Where <address> is a number from range 0 to 255 (address of MBUS device). Usable are addresses 0 to 250, the rest is reserved or used by broadcast.

### 2.2.3 Binary input and output

**Note:** It is necessary to activate I/O reading on *SNMP* page in the router's configuration Web interface. It is possible to set one binary output *ioOut0* (.1.3.6.1.4.1.30140.2.3.2.0) via SNMP. Other values are read-only. The following range of OID is used for binary input and output:

| OID | Name | Description |
| --- | --- | --- |
| .1.3.6.1.4.1.30140.2.3.1.0 | ioBin0 | Binary input BIN0 (values 0,1) |
| .1.3.6.1.4.1.30140.2.3.2.0 | ioOut0 | Binary output OUT0 (values 0,1) |
| .1.3.6.1.4.1.30140.2.3.3.0 | ioBin1 | Binary input BIN1 (values 0,1), v3 routers only |

Table 11: Object identifiers for binary input and output

## 2.3 Status

| OID | Name | Description |
| --- | --- | --- |
| .1.3.6.1.4.1.30140.3.1.0 | statusMBusOverload1 | M-BUS overload 1 (values 0,1) |
| .1.3.6.1.4.1.30140.3.2.0 | statusMBusOverload2 | M-BUS overload 2 (values 0,1) |
| .1.3.6.1.4.1.30140.3.3.0 | statusTemperature | Internal temperature |
| .1.3.6.1.4.1.30140.3.4.0 | statusVoltage | Power voltage (input power supply) |
| .1.3.6.1.4.1.30140.3.5.0[1] | statusRTCBattery | RTC backup battery state: 0 = unknown 1 = ok 2 = empty |

Table 12: Status OIDs

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

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[1]Supported on routers of v3 platform only.

## 2.4 Mobile

| OID | Name | Description |
| --- | --- | --- |
| .1.3.6.1.4.1.30140.4.1 | mobileTechnology | *Values 0–24, see table below* |
| .1.3.6.1.4.1.30140.4.2 | mobilePLMN | Operator code |
| .1.3.6.1.4.1.30140.4.3 | mobileCell | Cell |
| .1.3.6.1.4.1.30140.4.4 | mobileChannel | Channel |
| .1.3.6.1.4.1.30140.4.5 | mobileSignalStrength | Signal strength for cell (dBm) |
| .1.3.6.1.4.1.30140.4.6 | mobileChannelN1 | Adjacent channel No. 1 |
| .1.3.6.1.4.1.30140.4.7 | mobileSignalStrengthN1 | Signal strength, cell of adjacent chann. No. 1 |
| .1.3.6.1.4.1.30140.4.8 | mobileChannelN2 | Adjacent channel No. 2 |
| .1.3.6.1.4.1.30140.4.9 | mobileSignalStrengthN2 | Signal strength, cell of adjacent chann. No. 2 |
| .1.3.6.1.4.1.30140.4.10 | mobileChannelN3 | Adjacent channel No. 3 |
| .1.3.6.1.4.1.30140.4.11 | mobileSignalStrengthN3 | Signal strength, cell of adjacent chann. No. 3 |
| .1.3.6.1.4.1.30140.4.12 | mobileChannelN4 | Adjacent channel No. 4 |
| .1.3.6.1.4.1.30140.4.13 | mobileSignalStrengthN4 | Signal strength, cell of adjacent chann. No. 4 |
| .1.3.6.1.4.1.30140.4.14 | mobileChannelN5 | Adjacent channel No. 5 |
| .1.3.6.1.4.1.30140.4.15 | mobileSignalStrengthN5 | Signal strength, cell of adjacent chann. No. 5 |
| .1.3.6.1.4.1.30140.4.16 | mobileUpTime | Period of time from the moment when connection was established |
| .1.3.6.1.4.1.30140.4.17 | mobileConnect | Time stamp of last connection (otherwise 0) |
| .1.3.6.1.4.1.30140.4.18 | mobileDisconnect | Time stamp of last moment when the connection fell apart |
| .1.3.6.1.4.1.30140.4.19 | mobileCard | SIM card number: primary (0), secondary (1) or tertiary (2) |
| .1.3.6.1.4.1.30140.4.20 | mobileIPAddress | Assigned IP address (or zeros) |
| .1.3.6.1.4.1.30140.4.21 | mobileLatency | Response time – keeps a valid value only when sending trap (otherwise the value is 0) |
| .1.3.6.1.4.1.30140.4.22 | mobileReportPeriod | Period of sending reports to the R-SeeNet |
| .1.3.6.1.4.1.30140.4.23 | mobileRegistration | State of the network registration: unknown (0), idle (1), search (2), denied (3), home (4) or foregien (5) |
| .1.3.6.1.4.1.30140.4.24 | mobileOperator | Mobile network (operator) the router is connected to |
| .1.3.6.1.4.1.30140.4.25 | mobileLAC | Location Area Code |
| .1.3.6.1.4.1.30140.4.26 | mobileSignalQuality | Signal quality of the selected cell |
| .1.3.6.1.4.1.30140.4.27 | mobileCSQ | Signal strength number (0 to 31) |

Table 13: Mobile OIDs

| OID | Name |
|---|---|
| .1.3.6.1.4.1.30140.4.1.0 | none |
| .1.3.6.1.4.1.30140.4.1.2 | gprs |
| .1.3.6.1.4.1.30140.4.1.4 | edge |
| .1.3.6.1.4.1.30140.4.1.6 | umts |
| .1.3.6.1.4.1.30140.4.1.8 | hsdpa |
| .1.3.6.1.4.1.30140.4.1.10 | hsupa |
| .1.3.6.1.4.1.30140.4.1.12 | hspa |
| .1.3.6.1.4.1.30140.4.1.14 | lte |
| .1.3.6.1.4.1.30140.4.1.16 | cdma |
| .1.3.6.1.4.1.30140.4.1.18 | evdo |
| .1.3.6.1.4.1.30140.4.1.20 | evdo0 |
| .1.3.6.1.4.1.30140.4.1.22 | evdoA |
| .1.3.6.1.4.1.30140.4.1.24 | evdoB |

Table 14: Mobile Technology – values

## 2.5 Mobile-2

These OIDs are statistical values for cellular connection. They contain analytic data for cellular connection today, yesterday, this week, last week, etc. The types of SNMP values (OIDs) are the same for every time period. Described in the table below for *mobileToday*.

### 2.5.1 MobileToday

| OID | Name | Description |
|---|---|---|
| .1.3.6.1.4.1.30140.5.1.1 | mobileTodayRxPri | Received data – primary SIM card |
| .1.3.6.1.4.1.30140.5.1.2 | mobileTodayRxSec | Received data – secondary SIM card |
| .1.3.6.1.4.1.30140.5.1.3 | mobileTodayTxPri | Sent data – primary SIM card |
| .1.3.6.1.4.1.30140.5.1.4 | mobileTodayTxSec | Sent data – secondary SIM card |
| .1.3.6.1.4.1.30140.5.1.5 | mobileTodayConnectionsPri | Number of connections – primary SIM card |
| .1.3.6.1.4.1.30140.5.1.6 | mobileTodayConnectionsSec | Number of connections – secondary SIM card |
| .1.3.6.1.4.1.30140.5.1.7 | mobileTodayOnlinePri | Time on primary SIM card |
| .1.3.6.1.4.1.30140.5.1.8 | mobileTodayOnlineSec | Time on secondary SIM card |
| .1.3.6.1.4.1.30140.5.1.9 | mobileTodayOffline | Time in offline mode |

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| OID | Name | Description |
|---|---|---|
| .1.3.6.1.4.1.30140.5.1.10 | mobileTodayCells | Number of cells (during the period) |
| .1.3.6.1.4.1.30140.5.1.11 | mobileTodaySignalAvg | Average signal strength |
| .1.3.6.1.4.1.30140.5.1.12 | mobileTodaySignalMin | Minimum signal strength |
| .1.3.6.1.4.1.30140.5.1.13 | mobileTodaySignalMax | Maximum signal strength |
| .1.3.6.1.4.1.30140.5.1.14 | mobileTodayDateMin | Time stamp for LevelMin (the last moment when signal strength was minimal) |
| .1.3.6.1.4.1.30140.5.1.15 | mobileTodayDateMax | Time stamp for LevelMax (the last moment when signal strength was maximal) |

Table 15: MobileToday OIDs

### 2.5.2 MobileYesterday

The information carried in items correspond to the items that are listed in table 15. The values are for the day before today. So the every name of the item contains "Yesterday" (not Today). The range of object identifiers starts at .1.3.6.1.4.1.30140.5.2.1.

### 2.5.3 MobileThisWeek

The information carried in items correspond to the items that are listed in table 15. The values are for the current week. So the every name of the item contains "ThisWeek" (not Today). The range of object identifiers starts at .1.3.6.1.4.1.30140.5.3.1.

### 2.5.4 MobileLastWeek

The information carried in items correspond to the items that are listed in table 15. The values are for the last week. So the every name of the item contains "LastWeek" (not Today). The range of object identifiers starts at .1.3.6.1.4.1.30140.5.4.1.

### 2.5.5 MobileThisPeriod

The information carried in items correspond to the items that are listed in table 15. The values are for the current period. So the every name of the item contains "ThisPeriod" (not Today). The range of object identifiers starts at .1.3.6.1.4.1.30140.5.5.1.

### 2.5.6 MobileLastPeriod

The information carried in items correspond to the items that are listed in table 15. The values are for the last period. So the every name of the item contains "LastPeriod" (not Today). The range of object identifiers starts at .1.3.6.1.4.1.30140.5.6.1.

## 2.6   Info

This group of OIDs stores the basic information about the router.

| OID | Name | Description |
|---|---|---|
| .1.3.6.1.4.1.30140.6.1 | infoProduct | Designation of the product |
| .1.3.6.1.4.1.30140.6.2 | infoFirmware | Information about firmware |
| .1.3.6.1.4.1.30140.6.3 | infoSN | Serial number of the product |
| .1.3.6.1.4.1.30140.6.4 | infoIMEI | IMEI number of the product |
| .1.3.6.1.4.1.30140.6.5 | infoESN | ESN number of the product |
| .1.3.6.1.4.1.30140.6.6 | infoMEID | MEID number of the productu |
| .1.3.6.1.4.1.30140.6.6 | infoICCID | ICCID number of the SIM card in use |

Table 16: Info OIDs

## 2.7   GPS

> **Note**: To use *gps* part of the tree, you need to install the *GPS* user module to the router. The user module is available for download at our Engineering Portal, see the Literature link [6] and *Configuration Manual* on how to upload it to the router.

The following range of OIDs is then used for sending GPS messages:

| OID | Name | 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 specifying the north-south position (in degrees). |
| .1.3.6.1.4.1.30140.7.3 | gpsLongitude | 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). |

Continued from previous page

| OID | Name | Description |
|---|---|---|
| .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 OIDs

# 3. OIDs Contained in SNMP Trap

It is possible to enable continuous regular sending of SNMP traps to any supervisory system. On *SNMP* page in the router, choose *Enable reporting to supervisory system*, fill in the IP Address, time interval and click Apply button. Now the SNMP traps are send regularly in the configured interval. The first SNMP trap is bigger (carries more information) and this bigger trap is sent every 24 hours.

Every 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 (mobileTechnology)
.1.3.6.1.4.1.30140.4.2.0 (mobilePLMN)
.1.3.6.1.4.1.30140.4.3.0 (mobileCell)
.1.3.6.1.4.1.30140.4.4.0 (mobileChannel)
.1.3.6.1.4.1.30140.4.5.0 (mobileSignalStrength)
.1.3.6.1.4.1.30140.4.6.0 (mobileChannelN1)
.1.3.6.1.4.1.30140.4.7.0 (mobileSignalStrengthN1)
.1.3.6.1.4.1.30140.4.8.0 (mobileChannelN2)
.1.3.6.1.4.1.30140.4.9.0 (mobileSignalStrengthN2)
.1.3.6.1.4.1.30140.4.10.0 (mobileChannelN3)
.1.3.6.1.4.1.30140.4.11.0 (mobileSignalStrengthN3)
.1.3.6.1.4.1.30140.4.12.0 (mobileChannelN4)
.1.3.6.1.4.1.30140.4.13.0 (mobileSignalStrengthN4)
.1.3.6.1.4.1.30140.4.14.0 (mobileChannelN5)
.1.3.6.1.4.1.30140.4.15.0 (mobileSignalStrengthN5)
.1.3.6.1.4.1.30140.4.16.0 (mobileUpTime)
.1.3.6.1.4.1.30140.4.17.0 (mobileConnect)
.1.3.6.1.4.1.30140.4.18.0 (mobileDisconnect)
.1.3.6.1.4.1.30140.4.19.0 (mobileCard)
.1.3.6.1.4.1.30140.4.21.0 (mobileLatency)
.1.3.6.1.4.1.30140.4.22.0 (mobileReportPeriod)
.1.3.6.1.4.1.30140.4.26.0 (mobileSignalQuality)
.1.3.6.1.4.1.30140.4.27.0 (mobileCSQ)
.1.3.6.1.4.1.30140.5.1.10.0 (mobileTodayCells)
.1.3.6.1.4.1.30140.3.3.0 (statusTemperature)
.1.3.6.1.4.1.30140.3.4.0 (statusVoltage)

The bigger SNMP trap sent every 24 hours contains also these OIDs:

.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)
.1.3.6.1.4.1.30140.6.6.0 (infoMEID)
.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. SNMP Configuration and Read

This is an example of basic SNMP configuration of the router. You can see the *SNMP Configuration* page on the Figure below. It is accessible in the router's Web interface in the *Configuration* section, *Services*. To enable SNMP for the router, check the *Enable SNMP agent* box and click *Apply* button. Optionally fill in the Name, Location and Contact information and configure other details.



Figure 3: Example of SNMP configuration

Now you can access the router's SNMP tree using any available SNMP MIB browser like MG-SOFT (in the Figure below), SnmpB or any other. Set the router's IP address in the browser, load MIB files from the repository and explore the SNMP OIDs and the values they contain.
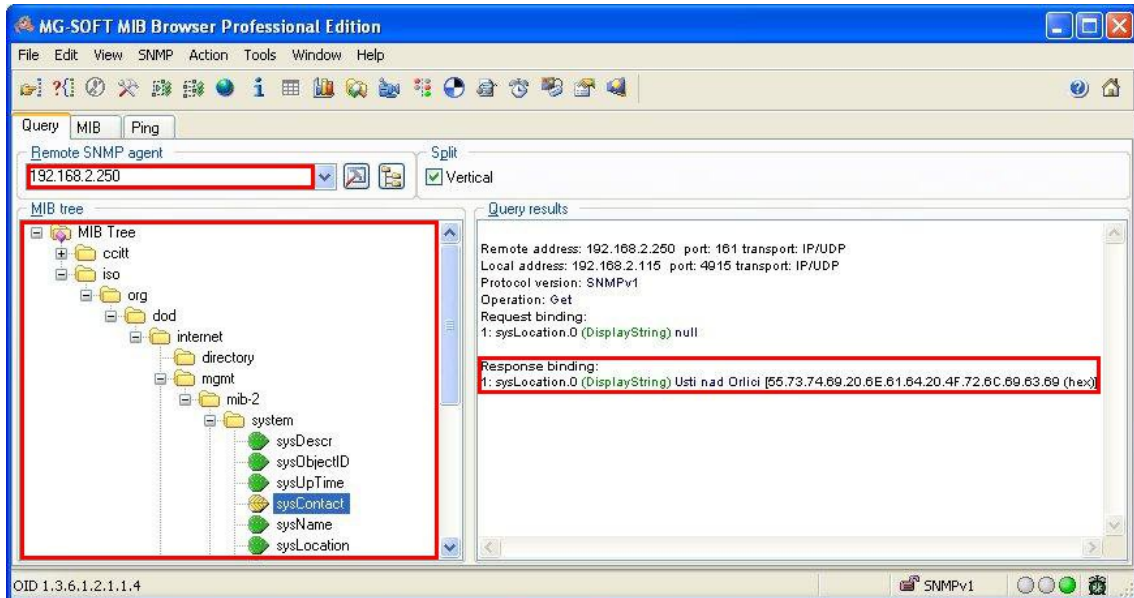


Figure 4: Example of MIB browser

The path to private (Advantech routers) objects is:

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

The path to basic information about the router is:

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

# 5. Recommended Literature

**[1]**   Advantech B+B SmartWorx:   **v2 Routers Configuration Manual** (MAN-0021-EN)
**[2]**   Advantech B+B SmartWorx:   **SmartFlex Configuration Manual** (MAN-0023-EN)
**[3]**   Advantech B+B SmartWorx:   **SmartMotion Configuration Manual** (MAN-0024-EN)
**[4]**   Advantech B+B SmartWorx:   **SmartStart Configuration Manual** (MAN-0022-EN)
**[5]**   Advantech B+B SmartWorx:   **SNMP MIB repository**, available from:
                                    https://bitbucket.org/bbsmartworx/snmp-mib/
**[6]**               Engineering Portal:   **User Modules**
                                    https://ep.advantech-bb.cz/user-modules
**[7]**   Advantech B+B SmartWorx:   **ICR-3200 Configuration Manual** (MAN-0042-EN)