# SATEL
Mission-Critical Connectivity

SIMPLE NETWORK MANAGEMENT PROTOCOL
SATELLAR MONITORING WITH SNMP NOTIFICATIONS

SMART RADIO

THE SNMP PROTOCOL

The Simple Network Management Protocol, SNMP is a widely used management protocol that operates on top of IP and UDP protocols. In the basic mode of operation the SNMP is a Request / Response protocol. Please refer to SATEL Technical Bulletin 1/14 for more information about Get /Set operation. SNMP also supports unsolicited notifications, or traps, that are sent by the device (SNMP Agent) to the server (SNMP Manager). These notifications could be about configuration or state changes, alarms about critical event or monitored value exceeding the threshold.
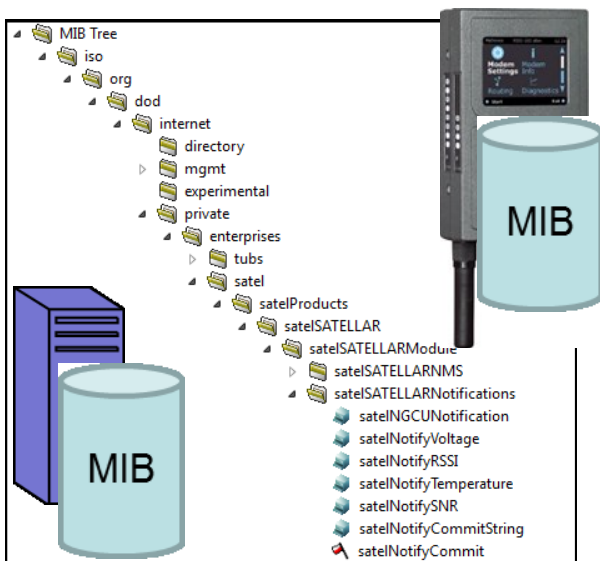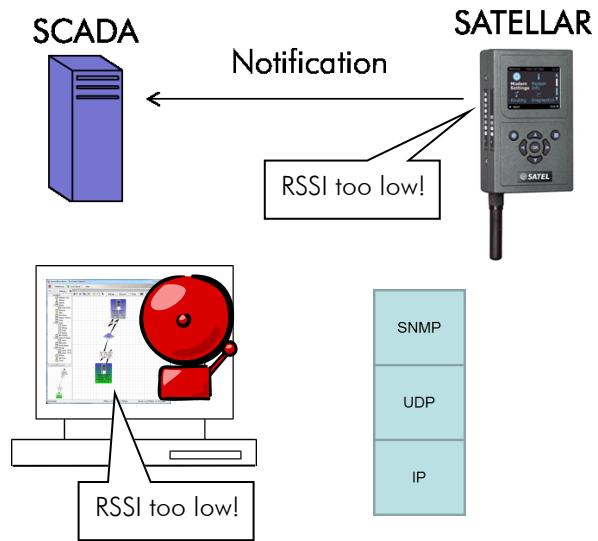

MIB

Mappings between OID numbers and parameters are stored in a tree formatted hierarchical database called Management Information Base, MIB. To enable SNMP notifications of a certain parameter, both the Manager and the Agent must have respective OID available in their MIB. The MIB database contents for SATELLAR related parameters are available for download at SATEL web pages. After download, they can be installed or imported to the Manager MIB.

THE SNMP NOTIFICATION

The unsolicited messages sent by the agent to the server are called notifications in SNMP version 2 and 3. The original SNMP version 1 has a bit different format for these messages, so they are called traps. In SNMPv2/3 the notifications are identified similarly to Get / Set procedure: with OID (Object Identifier). For example, notification about temperature would be identified by the OID: 1.3.6.1.4.1.30306.1.1.1.5.4. The SNMPv2/3 notifications also include a notification text, for example: "RSSI has dropped to -128, it is below the set minimum -110!"
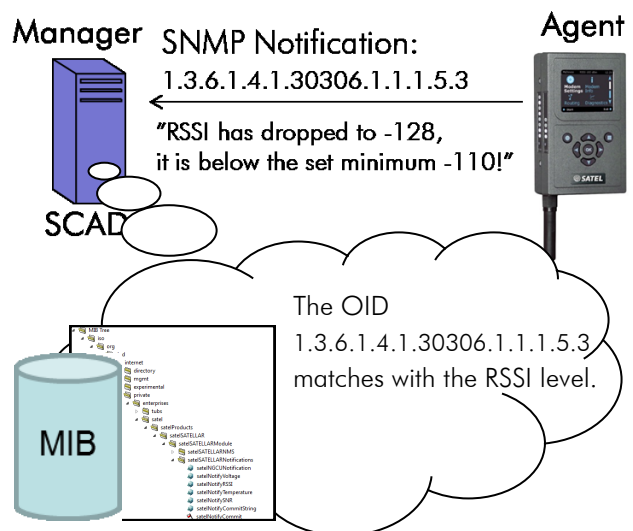
AVAILABLE MEASUREMENTS

Notification sending in SATELLAR is available for the following measured values:

- **Voltage**
- **RSSI** (Received Signal Strength Indication)
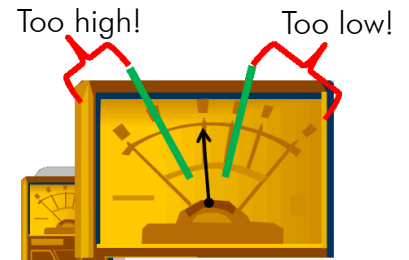- **Temperature**
- **SNR** (Signal to Noise Ratio)

Also, a notification of user committing the configuration changes (**Commit**) is available.

*Note! The **temperature** reading will result non-zero value only **after the first radio transmission**. Furthermore, the temperature operations with SNMP are always in **Celsius**.*
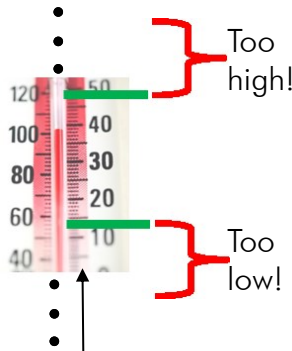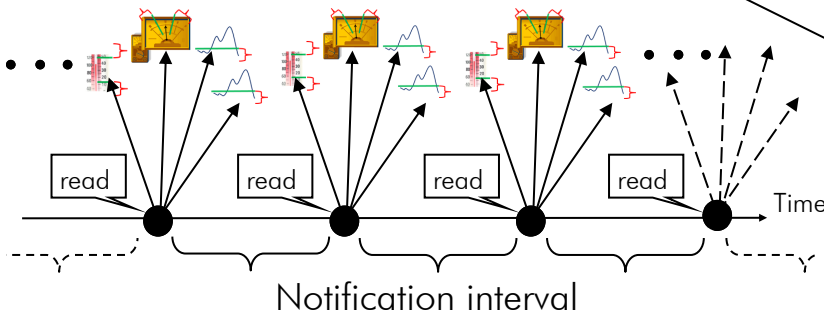
MEASUREMENT RESULT READING

Measurement results are read and checked with configurable intervals. Checking is done against user-configured thresholds. If any reading is exceeding (or being below) the threshold a SNMP notification is sent. It is also sent when the measurement reading is returned back to the allowed range.

SNMP MANAGER SOFTWARE EXAMPLE

snmpb

- Easy and simple to use
- Allows easy testing of Notifications
- Listing of received traps
- Easy browsing of MIBs
- SNMP Get / Set queries available
- Supports SNMPv3 with enhanced security
- No visual network monitoring

ENABLING SNMP NOTIFICATIONS

First step to enable SNMP operation in SATELLAR is to download the MIB files from the SATEL web pages, from Support, Downloads, Firmware section (August, 2014: http://www.satel.com/support/downloads/firmware). Import all the MIB files to the Manager application. The details on how this is done fully depend on the selected manager application. Files needed are:

- SATEL-MIB.txt
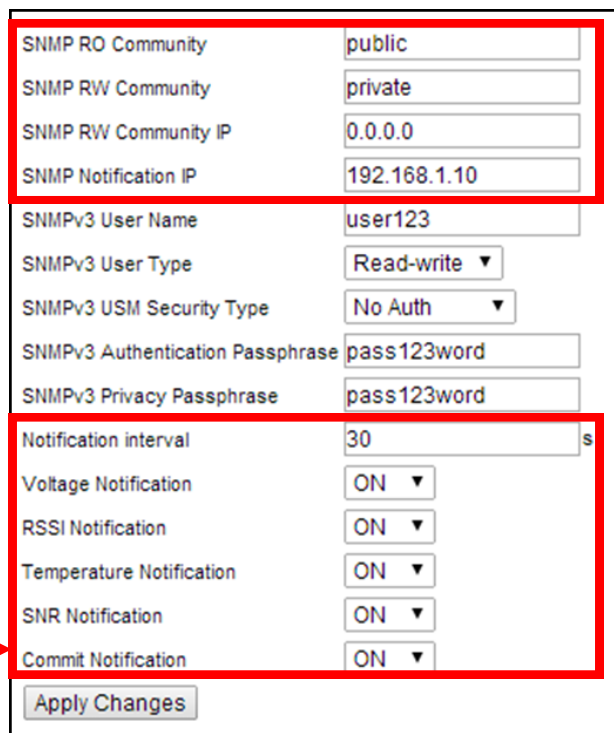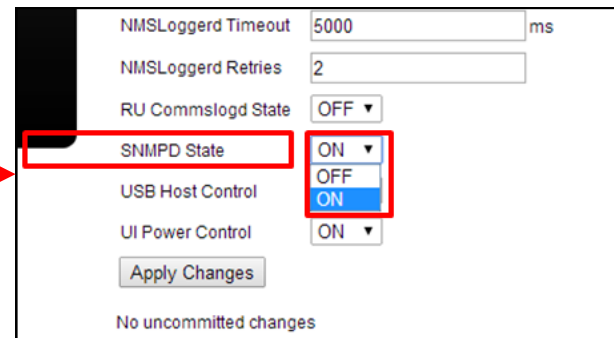- SATEL-PRODUCTS-MIB.txt
- SATEL-SATELLAR-MIB.txt

Next, configure the SNMP notification parameters with a web browser connection to SATELLAR IP-address. Required parameters are in **Modem Settings** tab, on the pages, **Services, SNMP** and **General**.
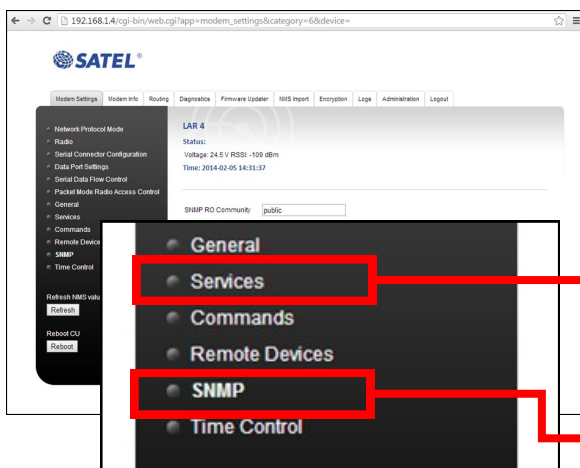
ENABLING SNMP PROCESS

SNMPD State
Sets the SNMP functionality ON or OFF

SNMP PARAMETERS
SNMP RO Community
Password to query values from this device with SNMP Get commands. The Manager side configuration must be set to match with this string.
SNMP RW Community
Password to set values to this device with SNMP Set commands. The Manager side configuration must be set to match with this string.
SNMP RW Community IP
IP address range that is allowed to send Set commands to this device.
SNMP Notification IP
The IP address of the destination that his device sends the SNMP notifications to. The SNMP Manager IP address.

NOTIFICATION SPECIFIC PARAMETERS
Notification interval
Sets how often the measurements results of monitored values are read and checked against the thresholds. Notification is sent immediately when the read value is out of specified range.
Voltage notification
RSSI notification
Temperature notification
SNR notification
Commit notification
Set the SNMP notifications ON or OFF for the specific measured values or for configuration commit events (notification about user committing the configuration changes).

SNMPv3 SECURITY PARAMETERS

SNMP version 3 provide support for advanced security functions in SNMP, such as strong authentication and encryption. SNMPv3 will be enabled, when **SNMPv3 USM Security Type** is set to something else than **No Auth.**

The SNMPv3 parameters are:

SNMPv3 User Name
User name provided for the authentication.

SNMPv3 User Type
Defines wheter the user is allowed to modify the configuration (**read-write**) or just read (**read only**).

SNMPv3 USM Security Type
Defines whether authentication and/or encryption will be applied for the SNMPv3 communication. If **NoAuth** is selected, SATELLAR will use SNMPv2.

SNMPv3 Authentication Passphrase
Password for the selected SNMPv3 user, for authentication purposes. Must match with the Manager side configuration.

SNMPv3 Privacy Passphrase
Password for the selected SNMPv3 user, for encryption purposes. Must match with the Manager side configuration.

CONFIGURING THRESHOLDS

Thresholds to send the notification for configured measurements are set in **Modem Settings → SNMP** page.

UI Voltage Critical Level
Lower threshold for voltage. If the voltage drops below this, a notification will be sent.

UI Voltage Bar Max
Upper threshold for voltage. If the voltage exceeds this, a notification will be sent.

Temperature Max
Upper threshold for temperature. If the temperature exeeds this, a notification will be sent. SNMP operations only support values in Celsius. Temperature measurement returns 0 until the radio transmission starts.

Temperature Min
Lower threshold for temperature. If the temperature drops below this, a notification will be sent. SNMP operations only support values in Celsius. Temperature measurement returns 0 until the radio transmission starts.

UI RSSI Crical Level
Lower threshold for RSSI. If the RSSI drops below this, a notification will be sent. Note that the RSSI values are normally negative.

SNR Crical Level
Lower threshold for SNR If the SNR drops below this, a notification will be sent. Note that the RSSI values are normally negative.