



Application notes



RAY SNMP

version 1.0
12/29/2017

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1. Simple Network Management Protocol in RAY2 Units

RAY2 utilises SNMP versions **SNMPv1** and **SNMPv2c** – using a **community string** for authentication, which is by default “**snmp-racom**“, but can be changed. SNMP uses UDP protocol for communication; delivery checks are implemented from version 2 onwards.



Note

The RAY2 MIB module complies with Severity level 3 validation.

By default RAY2 uses UDP port 161 (SNMP) for queries. The manager, which sends the query, dynamically chooses the source port. The use of destination port 161 is fixed. RAY2 replies from port 161 to the port dynamically selected by the manager.

RAY2 launches the SNMP agent automatically on start-up if enabled. RAY2 also sends alarm states (traps) to the manager via the port 162 (SNMPTRAP).



Note

To see the RAY2 MIB table, download it from the RAY2 web interface (**Maintenance** → **Backup** → **SNMP MIB** → **Download**) and use any document reader you prefer.

1.1. RAY2 SNMP Settings

The SNMP agent is switched off by default. You can enable or disable it in the **Link Settings** → **Service access** → **Services** menu.

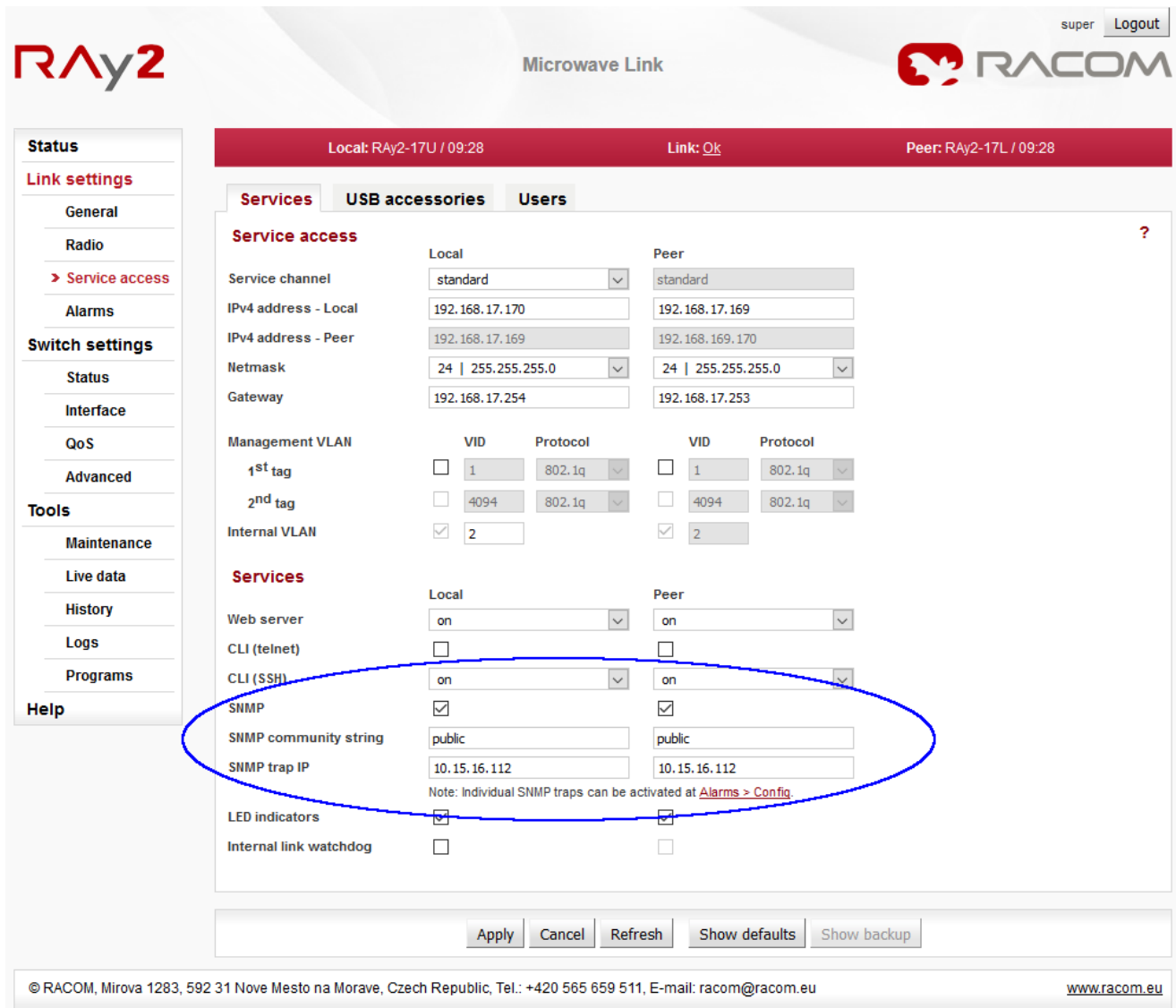


Fig. 1.1: RAY2 SNMP settings

The SNMP community string is "racom-snm" by default, but can be changed to another string.

Up to three SNMP trap IP addresses can be defined. The IP addresses must be delimited with a comma, e.g. "192.168.1.1, 192.168.20.8". All traps are then sent to all defined IP addresses.

1.1.1. Alarm Status

All system alarms are listed on this screen. Inactive alarms are colored white with an "OK" text label. Active alarms are colored according to the severity of the alarm with a text message describing the measured value status.

	Local	Peer
Inside temperature	45.5 °C is over limit 20 °C	OK
Voltage min	OK	OK
Voltage max	54.6 V is over limit 42 V	54.6 V is over limit 42 V
RSS	-65.3 dBm is under limit -50 dBm	-63.6 dBm is under limit -50 dBm
SNR	30.9 dB is under limit 35 dB	OK
BER	OK	OK
Net bitrate	170.69 Mbps is under limit 200 Mbps	OK
Air link	OK	OK
Eth1 link	down	disabled
Eth2 link	disabled	disabled
RF power	OK	OK

Fig. 1.2: Alarms – Status screen

Alarm severity scale:

- critical
- major
- minor
- warning
- OK (cleared)
- acknowledged (confirmed)



Note

If you click on the "Alarm" text (if any Alarm is UP) on the top of the screen (next to the exclamation mark), you will be redirected to this Alarms – Status screen.

1.1.2. Alarm Acknowledge

Alarm acknowledgement is a way to let the operator confirm the system is in alarm state. Only an active alarm can be acknowledged.

Multiple selection of active alarms (to acknowledge groups of alarms) can be performed using Shift or Ctrl keys.

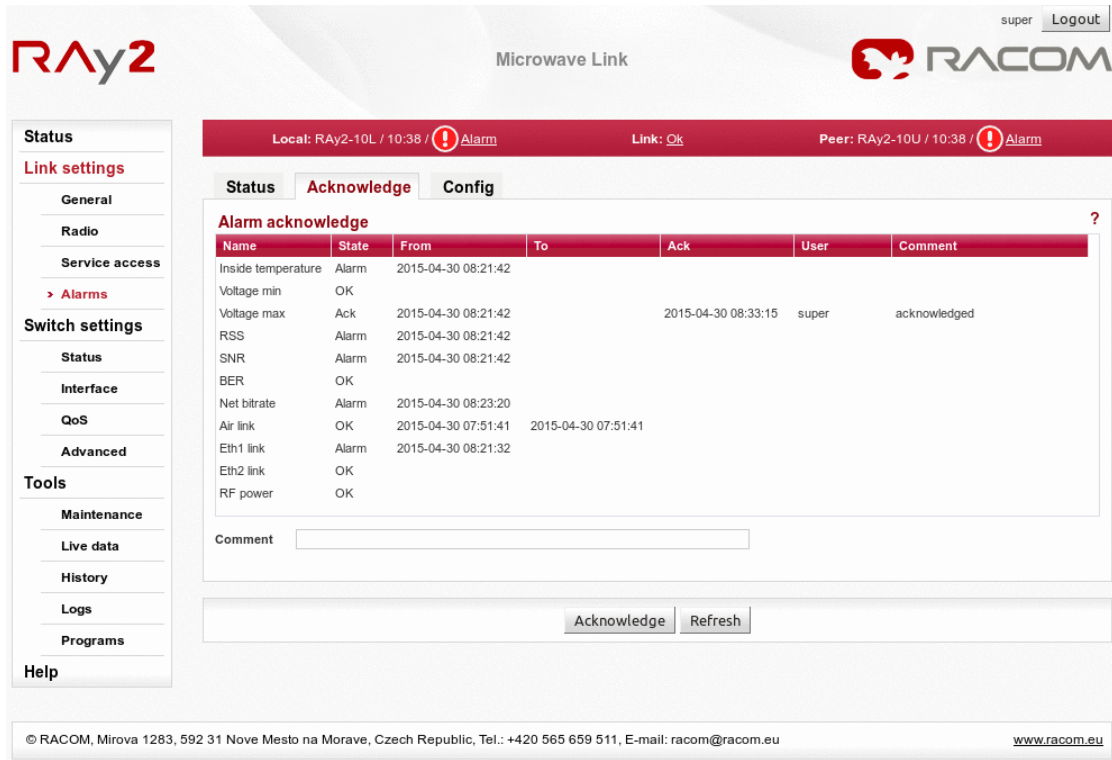


Fig. 1.3: Alarm Acknowledge screen

1.1.3. Alarm Config

The link diagnostic system monitors the operation of the unit. It generates various output of events - system warnings and alarms. The event is always written to the system log and indicated in the status bar and Alarm – Status screen. Some events have adjustable thresholds. Events with no adjustable thresholds may either be Enabled or Disabled. If they are Disabled, the system event is not activated even if the system status is changed. For each event you can choose whether the SNMP trap should be sent if the event occurs.

The screenshot shows the 'Alarm Config' screen for a RAY2 unit. The interface includes a sidebar with navigation options: Status, Link settings (General, Radio, Service access, Alarms), Switch settings (Status, Interface, QoS, Advanced), Tools (Maintenance, Live data, History, Logs, Programs), and Help. The main content area is titled 'Microwave Link' and shows configuration for Local (RAY2-10L) and Peer (RAY2-10U) units. A table lists various traps with their limits and enablement status. Buttons for Apply, Cancel, Refresh, Show defaults, and Show backup are at the bottom.

	Local Limit / Enable	SNMP trap	Peer Limit / Enable	SNMP trap
Inside temperature [°C]	> 20	<input checked="" type="checkbox"/>	80	<input checked="" type="checkbox"/>
Voltage min [V]	< 40	<input checked="" type="checkbox"/>	40	<input checked="" type="checkbox"/>
Voltage max [V]	> 42	<input checked="" type="checkbox"/>	42	<input checked="" type="checkbox"/>
RSS [dBm]	< -50	<input checked="" type="checkbox"/>	-50	<input checked="" type="checkbox"/>
SNR [dB]	< 35	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>
BER [-]	> 10e-6	<input checked="" type="checkbox"/>	10e-6	<input checked="" type="checkbox"/>
Net bitrate [Mbps]	< 200	<input checked="" type="checkbox"/>	100	<input checked="" type="checkbox"/>
Air link down	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Eth1 link down	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Eth2 link down	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
RF power fail	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Fig. 1.4: Alarm Config screen

Configurable traps:

- Inside temperature [°C] - Temperature inside the unit (on the modem board)
- Voltage min [V] - Supply voltage Lower threshold
- Voltage max [V] - Supply voltage Upper threshold
- RSS [dBm] - Received Signal Strength
- SNR [dB] - Signal to Noise Ratio
- BER [-] - Bit Error Rate is registered at the receiving end; instantaneous value
- Net bitrate [Mbps] - The system warning is generated when the radio channel current transfer capacity drops below the set threshold
- Air link down - Radio link interruption
- Eth1/Eth2 link down - Corresponding user Eth link (Eth1/Eth2) on station interrupted
- RF Power fail - Loss of transmit power (not applicable for RAY2-17 and RAY2-24)

**Note**

For all these traps, there are also special OIDs for the alarm states. The states can be one of "n/a", "up", "down", "ack". See the Application "Alarms" within the RAY2 template.

Appendix A. Revision History

Revision 1.0	2017-11-28
First issue	