



COMSOFT

SatelliteServices

SNMP Workshop

Topics

- Generals SNMP
- Software SNMP
- SkyWAN – Work on redundant unit (Aruba)
- FAD – Work on redundant unit (Aruba)
- Graphs

Topic

- Generals SNMP

SNMP

Simple Network Management Protocol (SNMP) is an "Internet-standard protocol for managing devices on IP networks".

Devices that typically support SNMP include routers, switches, servers, workstations, printers, modem racks and more.

SNMP is widely used in network management systems to monitor network-attached devices for conditions that warrant administrative attention.

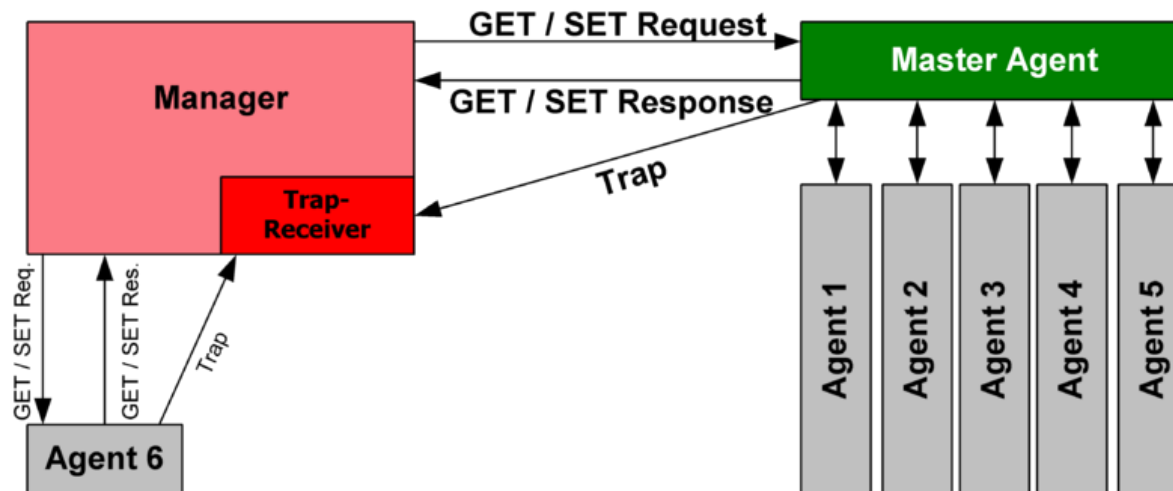
SNMP is a component of the Internet Protocol Suite as defined by the Internet Engineering Task Force (IETF). It consists of a set of standards for network management, including an application layer protocol, a database schema, and a set of data objects.

SNMP exposes management data in the form of variables on the managed systems, which describe the system configuration.

These variables can then be queried (and sometimes set) by managing applications.

SNMP

In typical uses of SNMP one or more administrative computers, called managers, have the task of monitoring or managing a group of hosts or devices on a computer network. Each managed system executes, at all times, a software component called an agent which reports information via SNMP to the manager.



Management information base (MIB)

SNMP itself does not define which information (which variables) a managed system should offer.

Rather, SNMP uses an extensible design, where the available information is defined by management information bases (MIBs).

MIBs describe the structure of the management data of a device subsystem; they use a hierarchical namespace containing object identifiers (OID).

Each OID identifies a variable that can be read or set via SNMP. MIBs use the notation defined by Structure of Management Information Version 2.0

Hints

COMSOFT grants in its tender response, that the management bandwidth will not exceed 7% of the overall bandwidth.

Any required additional data traffic generated by SNMP requests send through the network to gather network VSAT stations parameter of measures will increase management bandwidth to a higher figure than the guaranteed 7%.

The exact amount of increasing cannot be named at this stage, since it is hardly related to the depth of information every single MEVA III Member state would like to receive

Worst case scenario is that the additional management bandwidth adds again 7% of traffic, where the overall network management bandwidth will consume 14% of the overall available bandwidth.

COMSOFT explicite recommends to use further SNMP requests (COMSOFT already made all its network parameters available on the MEVA III web page) generated by individual member states only on local units.

Topic

- Software SNMP

Software SNMP

There are a lot of free SNMP tools available on the web.

As a selection of the following „winows“ based tools can be used.

SNMP_grapher

- STG (<http://www.chat.ru/~leonidvm/1.4.5/stg.zip>)
- Solarwinds Real-Time Bandwidth Monitor
(<http://downloads.solarwinds.com/solarwinds/Release/FreeTool/SolarWinds-Realtime-Bandwidth-Monitor.zip>)

SNMP MIB Browser

- Paessler SNMP Tester (<https://www.paessler.com/tools/snmptester>)

Software STG

STG allows monitoring of one SNMP device with different update periods starting from 0.01s so you could see what's happening right now.

In the STG setup screen, you simply enter the target device parameters as described below:

The 'Set Parameters' dialog box is divided into two main sections: 'Graph' and 'Log File'.
Graph Section:
- 'Target Address': Text field containing '192.168.200.10'.
- 'Community': Text field containing 'cibup'.
- '"Green" OID': Text field containing '1.3.6.1.4.1.9600.1.2.44.1.23.2.67.58' with a checked 'Gauge' checkbox.
- '"Blue" OID1': Text field containing '1.3.6.1.4.1.9600.1.2.44.1.23.2.67.58' with a checked 'Gauge' checkbox.
- 'Request timeout': Spin box set to '3000' ms.
- 'Update Period': Spin box set to '5000' ms.
- 'Max. Rate': Spin box set to '28000' Bytes, with a checked 'Fix rate' checkbox.
- 'Show Traffic in': Radio buttons for 'Bytes' (selected) and 'Bits'.
- 'Reverse' checkbox is unchecked.
- 'Graph Direction' checkbox is unchecked.
Log File Section:
- 'Write Data' checkbox is unchecked.
- 'To Log File': Text field containing 'untitled.csv'.
- 'Rotate': Spin box set to '10'.
- 'Log Files Every': Spin box set to '1'.
- Rotation frequency radio buttons: 'Hour(s)' (selected), 'Day(s)', 'Week(s)', and 'Month(s)'.
At the bottom are 'OK' and 'Cancel' buttons.

STG Settings:

Target Address: The IP address of the device you want to monitor

Community: Straight forward. Enter the target community name here

Green OID: The OID that will be used to draw the green chart line

Blue OID: The OID that will be used to draw the blue chart line

Request Timeout: How long STG will try to connect to the target device before timing out (3000 = 3 seconds)

Update Period: How often STG will update the graph

Max Rate: Similar to MRTG's MaxBytes option. Set the maximum Byte value here. Example shoes 28000 for 28GB hard drive size

Log File Parameters: If you want, you can specify a log file to be created with the data collected by STG. You can also specify how often to rotate the files.

Software Real-Time Bandwidth Monitor (recommended)

The “Real-Time Bandwidth Monitor” software automatically detects available SNMP readouts of the network units.

SolarWinds Real-Time Bandwidth Monitor

Enter Device Information

Create Monitor

DEVICE INFO SELECT INTERFACE ALL DONE

Get started monitoring your bandwidth in real-time. Enter device information below. You will be able to select an interface to monitor on the following screen. We will graph bandwidth utilization for that interface, and show both the traffic in and traffic out.

IP Address or Hostname

SNMP Version

Community string [Show](#)

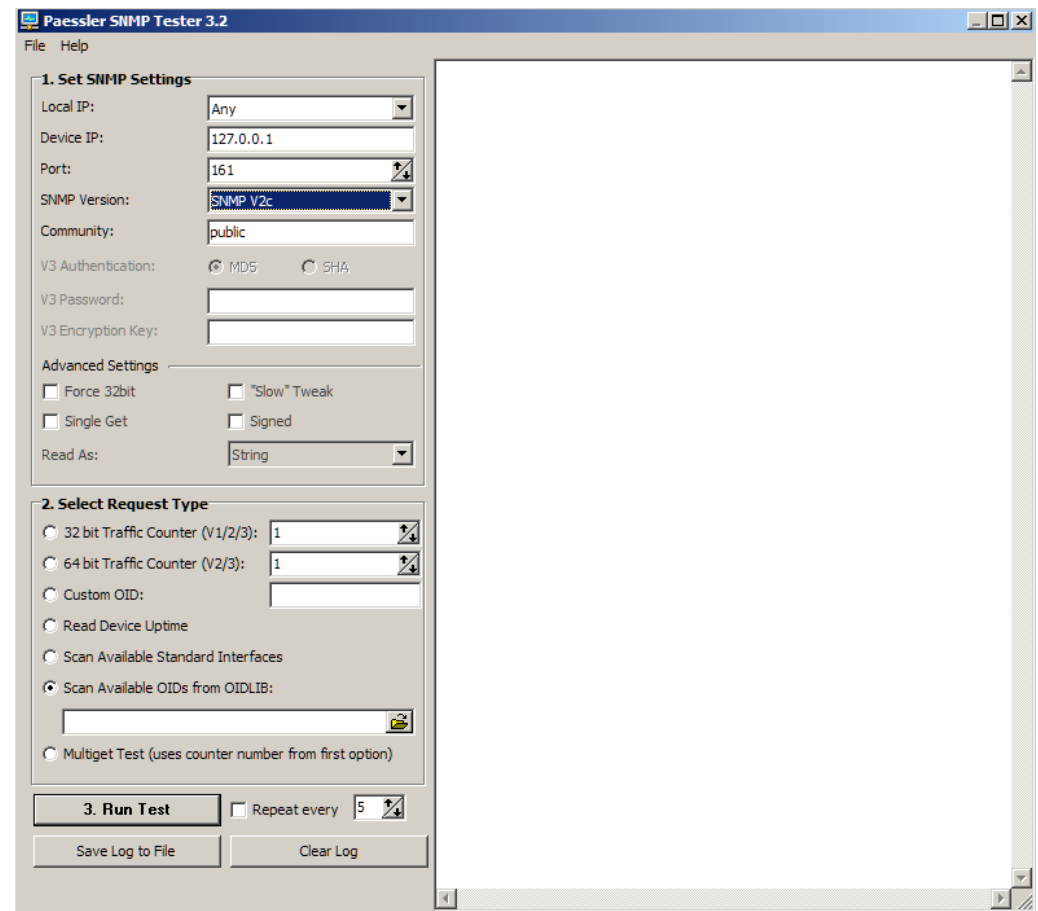
⚠ Credential Test Failed

Share

solarwinds

Software SNMP Tester

The “Paessler SNMP Tester” software is a Simple Debugging Tool for Monitoring Configurations that use SNMP.



Topic

- SkyWAN – Work on redundant unit (Aruba)

SkyWAN – Using “Real-Time Bandwidth Monitor”

This examples show the usage of the software at the Aruba SkyWAN nodes.

First step is to readout the related IP addresses of the units > read information from the printing of the SkyWAN IDUs front printed label or SDD provided network diagram.

For Aruba the SkyWANs IP address are:

- 192.168.102.1 (2570-1)
- 192.168.102.65 (2570-2)

Please remember to connect your local LAN to a MEVA III rack switch port. At redundant sites port 1-8 belongs to VLAN1 (192.168.102.63 / 26) and ports 9-16 belongs to VLAN2 (192.168.102.126 / 26)

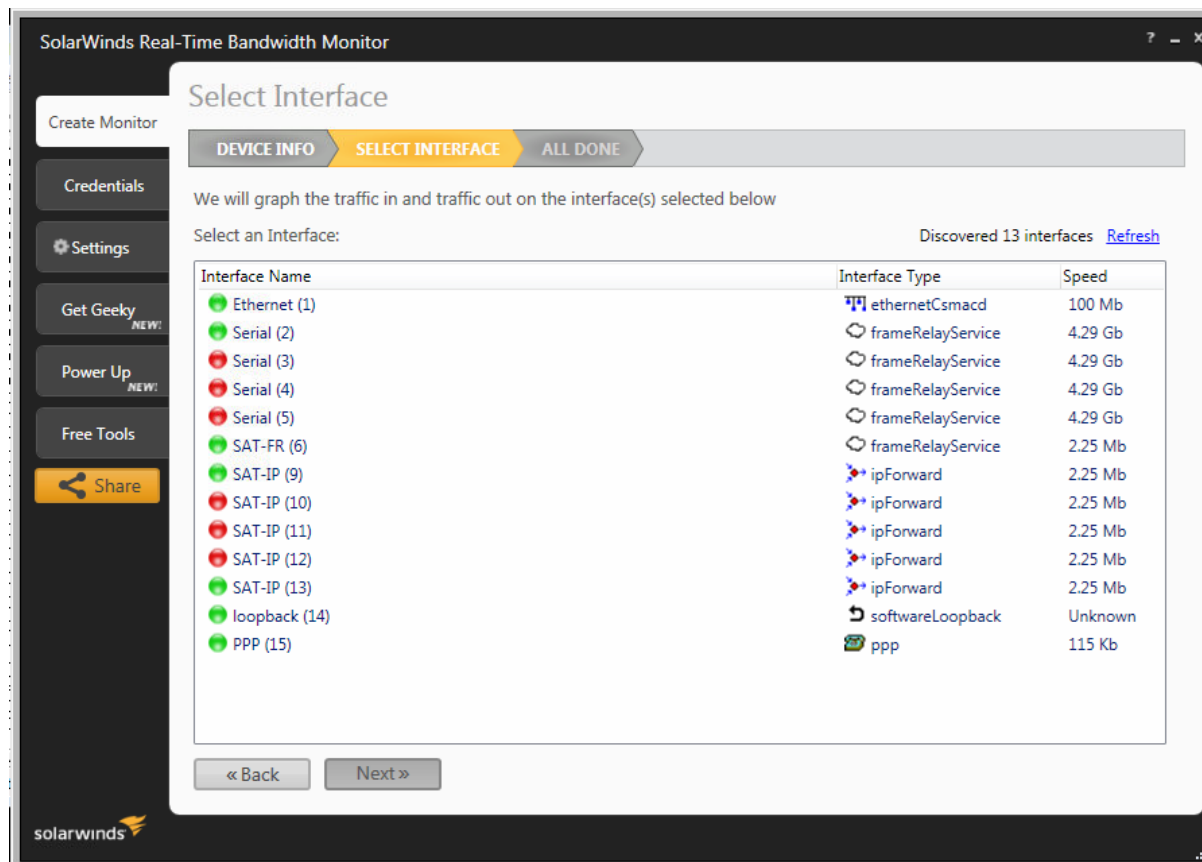
SkyWAN – Using “Real-Time Bandwidth Monitor”

After starting the software, the device has to be configured by entering the related IP address, SNMP version and community string.

The screenshot shows the 'SolarWinds Real-Time Bandwidth Monitor' application window. The main title bar reads 'SolarWinds Real-Time Bandwidth Monitor'. On the left is a dark sidebar with navigation links: 'Create Monitor', 'Credentials', 'Settings', 'Get Geeky' (with a 'NEW!' badge), 'Power Up' (with a 'NEW!' badge), 'Free Tools', and a 'Share' button with a share icon. The main content area is titled 'Enter Device Information' and features a progress bar with three steps: 'DEVICE INFO' (highlighted in orange), 'SELECT INTERFACE', and 'ALL DONE'. Below the progress bar, a text block states: 'Get started monitoring your bandwidth in real-time. Enter device information below. You will be able to select an interface to monitor on the following screen. We will graph bandwidth utilization for that interface, and show both the traffic in and traffic out.' The form contains three input fields: 'IP Address or Hostname' with the value '192.168.102.65', 'SNMP Version' with a dropdown menu showing 'SNMP v1/2c', and 'Community string' with the value 'public' and a 'Hide' link to its right. Below these fields, a green checkmark icon is followed by the text 'Credential Test Passed'. A yellow 'Next >>' button is positioned to the right of the 'Credential Test Passed' text. The SolarWinds logo is visible in the bottom left corner of the window.

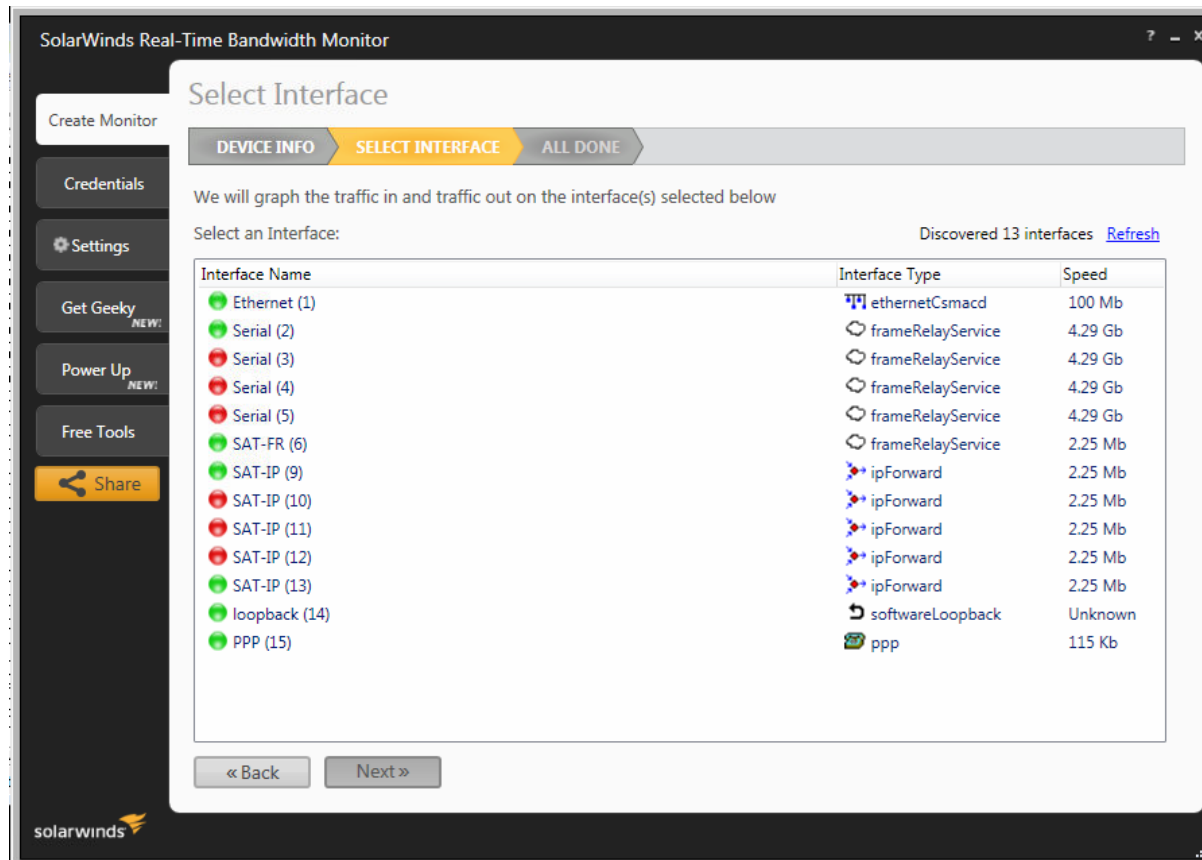
SkyWAN – Using “Real-Time Bandwidth Monitor”

In the next step the software will automatically detect available OIDs able to be graphed.



SkyWAN – Using “Real-Time Bandwidth Monitor”

In our example Serial (2) is the main interface where all FAD traffic is received from (refer to SDD network diagram). Mark Serial (2) and click next.



SkyWAN – Using “Real-Time Bandwidth Monitor”

Make your choices and click „Launch Monitor“.

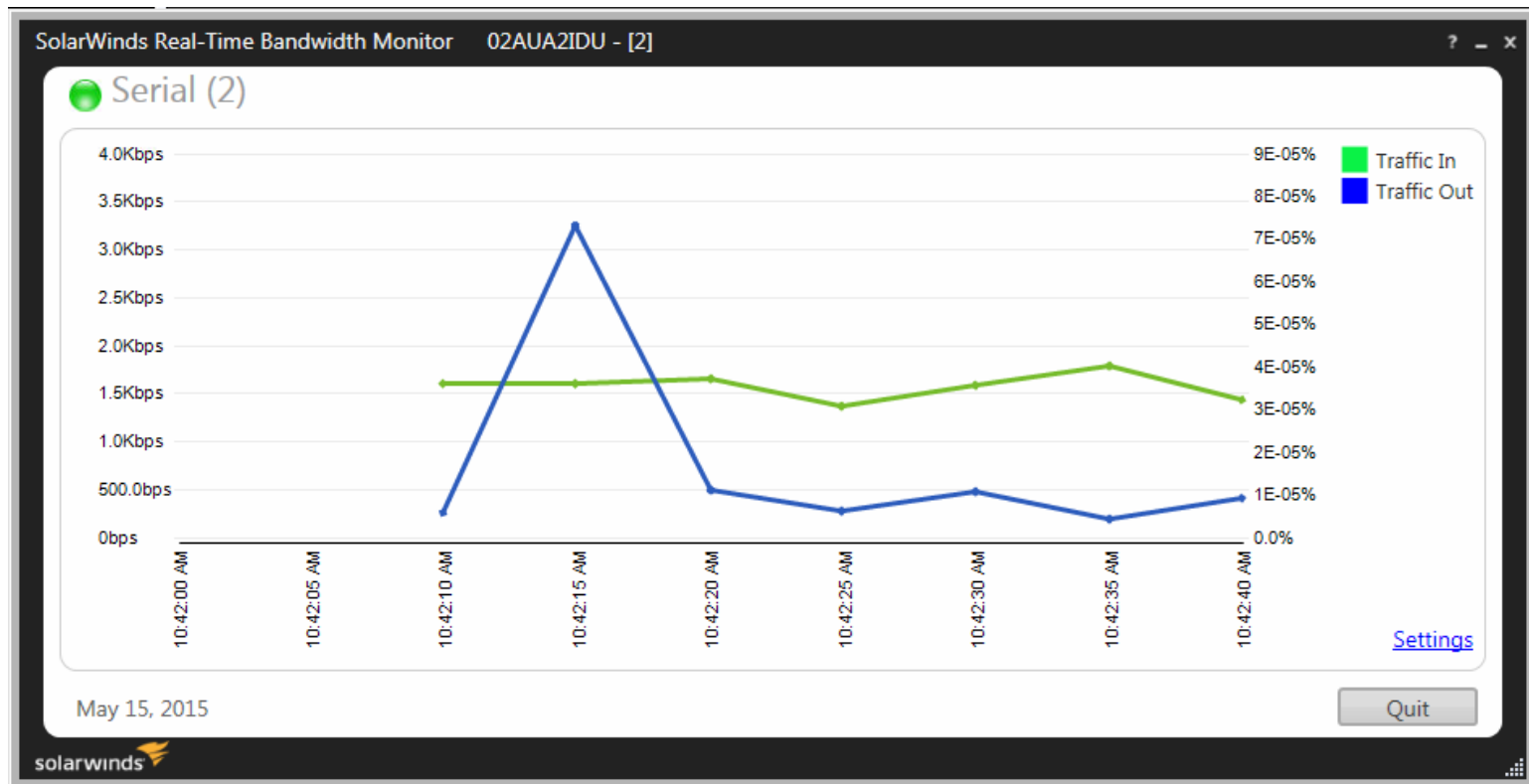
The screenshot shows the 'SolarWinds Real-Time Bandwidth Monitor' configuration window. The window has a dark sidebar on the left with buttons: 'Create Monitor', 'Credentials', 'Settings', 'Get Geeky', 'Power Up', 'Free Tools', and a 'Share' button. The main area is titled 'Bandwidth Monitor Configured' and has three tabs: 'DEVICE INFO', 'SELECT INTERFACE', and 'ALL DONE'. The 'ALL DONE' tab is active. The main content area displays the following information:

- Display the bandwidth graph in a new window.
- Device: 02AUA2IDU [192.168.102.65]
- Interface(s): Serial (2)
- Warning thresholds: 85 %
Will appear on graph.
- Critical thresholds: 90 %
Will appear on graph.
- ☒ Limit the chart data by time
10 minutes
- ☐ Limit the chart to a specific number of points
50 data points

At the bottom of the main area are three buttons: « Back, Launch Monitor, and Start Over.

SkyWAN – Using “Real-Time Bandwidth Monitor”

Related graph will be presented. You can open as much graphs as you like in parallel by repeating previous steps.



Topic

- FAD – Work on redundant unit (Aruba)

FAD – Using “Real-Time Bandwidth Monitor”

This examples show the usage of the software at the Aruba FAD nodes.

First step is to readout the related IP addresses of the units > read information from the printing of the FADs front printed label or SDD provided network diagram.

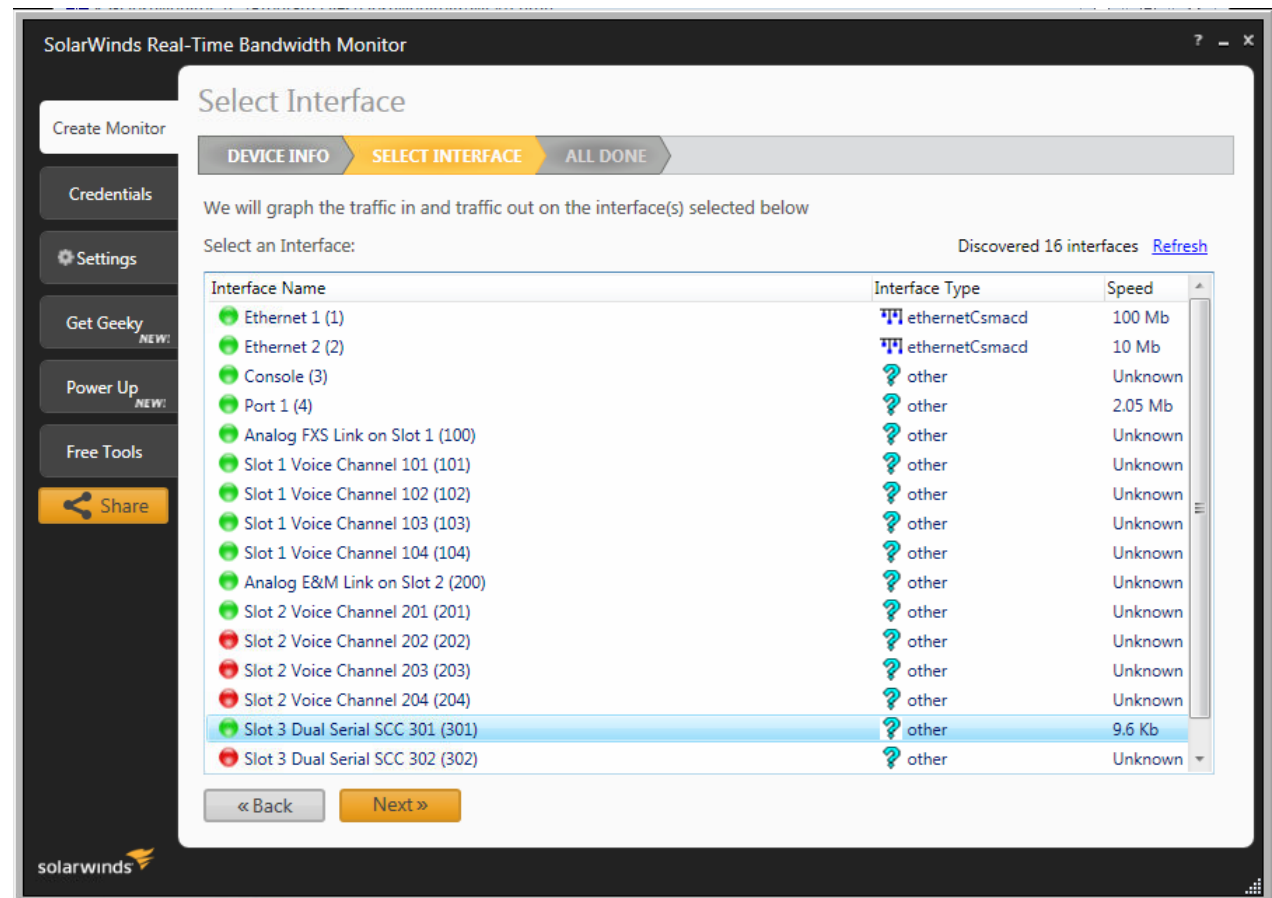
For Aruba the FADs IP address are:

- 192.168.102.2 (AUA1FAD1)
- 192.168.102.66 (AUA2FAD1)

Please remember to connect your local LAN to a MEVA III rack switch port. At redundant sites port 1-8 belongs to VLAN1 (192.168.102.63 / 26) and ports 9-16 belongs to VLAN2 (192.168.102.126 / 26)

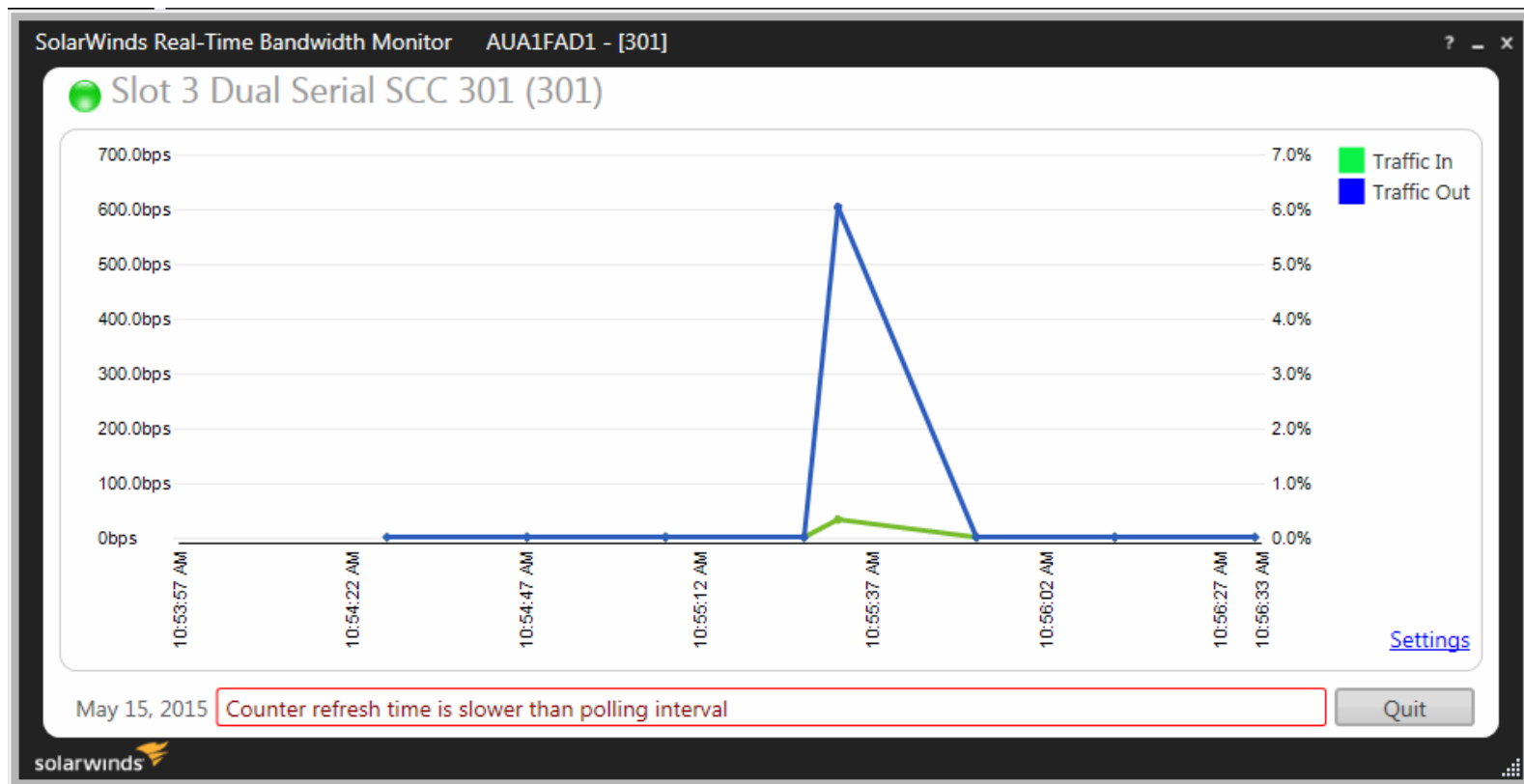
FAD – Using “Real-Time Bandwidth Monitor”

Setup the software in the same way as described previously and choose graphs to be presented.



FAD – Using “Real-Time Bandwidth Monitor”

In our example we choose “Slot3Dual Serial SCC 301”. Referring to SDD “Port Connections” that port is related to “Atlanta AFTN”.



Using “Paessler SNMP Tester”

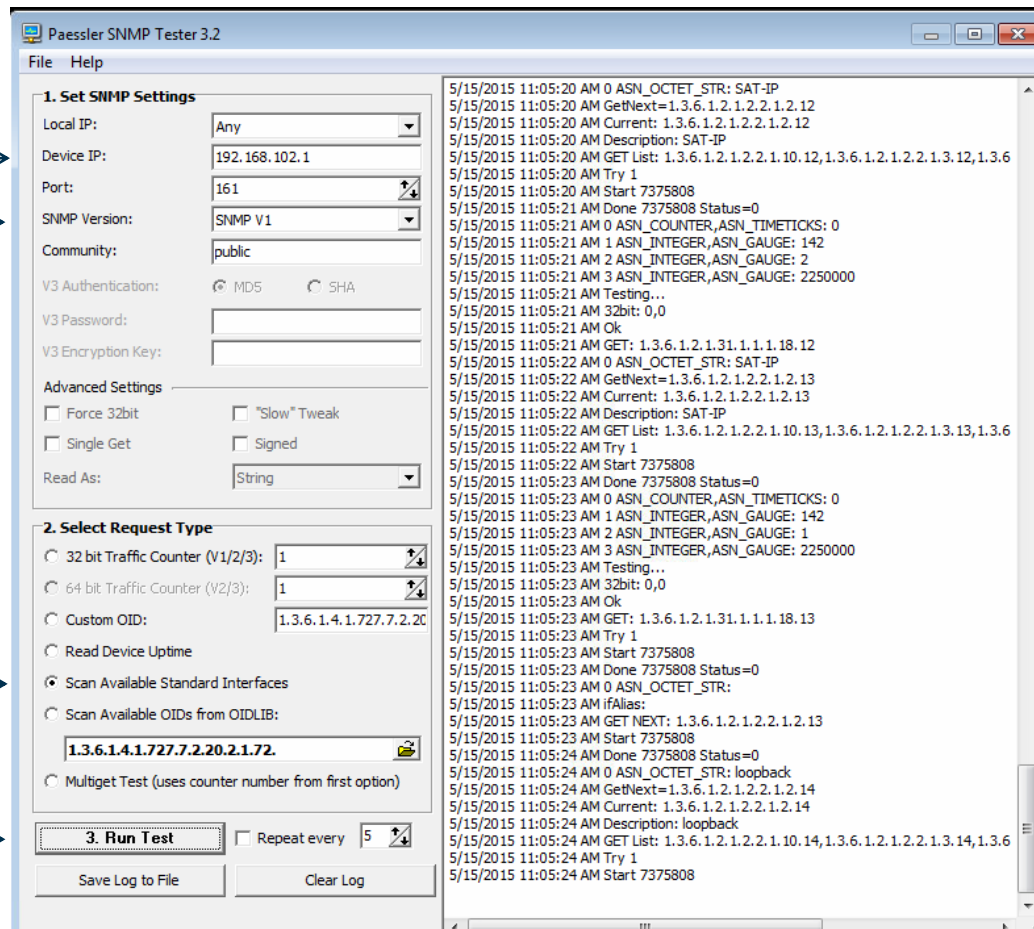
Start the software.

(1) Enter Device IP Address

(2) Choose SNMP Version

(3) Choose

(4) Run Test



(5) Read Out OIDs to
be monitored

Using “Paessler SNMP Tester”

You can use the OIDs to launch STG.

In this example we use the OID
for the serial interface (data from FAD).

Test 2

Found standard interfaces:

```
1: (001) Ethernet,Connected,100 MBit/s,Ethernet,
2: (002) Serial,Connected,0 KBit/s,Frame Relay DCE,
3: (003) Serial,Not Connected,0 KBit/s,Frame Relay DCE,
4: (004) Serial,Not Connected,0 KBit/s,Frame Relay DCE,
5: (005) Serial,Not Connected,0 KBit/s,Frame Relay DCE,
6: (006) SAT-FR,Connected,2 MBit/s,Frame Relay DCE,
9: (009) SAT-IP,Connected,2 MBit/s,IP Forwarding Interface,
10: (010) SAT-IP,Not Connected,2 MBit/s,IP Forwarding Interface,
11: (011) SAT-IP,Not Connected,2 MBit/s,IP Forwarding Interface,
12: (012) SAT-IP,Not Connected,2 MBit/s,IP Forwarding Interface,
13: (013) SAT-IP,Connected,2 MBit/s,IP Forwarding Interface,
14: (014) loopback,Connected,0 KBit/s,Software Loopback,
15: (015) PPP,Connected,115 KBit/s,PPP,
```

Testing standard interfaces...

```
Test 1 (1.3.6.1.2.1.2.2.1.10.1,1.3.6.1.2.1.2.2.1.16.1): in=104822137 out=0
Test 2 (1.3.6.1.2.1.2.2.1.10.2,1.3.6.1.2.1.2.2.1.16.2): in=216956644 out=84028371
Test 3 (1.3.6.1.2.1.2.2.1.10.3,1.3.6.1.2.1.2.2.1.16.3): in=0 out=
Test 4 (1.3.6.1.2.1.2.2.1.10.4,1.3.6.1.2.1.2.2.1.16.4): in= out=
Test 5 (1.3.6.1.2.1.2.2.1.10.5,1.3.6.1.2.1.2.2.1.16.5): in= out=
Test 6 (1.3.6.1.2.1.2.2.1.10.6,1.3.6.1.2.1.2.2.1.16.6): in=204655841 out=65929987
Test 9 (1.3.6.1.2.1.2.2.1.10.9,1.3.6.1.2.1.2.2.1.16.9): in=484593271 out=22841333
Test 10 (1.3.6.1.2.1.2.2.1.10.10,1.3.6.1.2.1.2.2.1.16.10): in=0 out=
Test 11 (1.3.6.1.2.1.2.2.1.10.11,1.3.6.1.2.1.2.2.1.16.11): in= out=
Test 12 (1.3.6.1.2.1.2.2.1.10.12,1.3.6.1.2.1.2.2.1.16.12): in= out=
Test 13 (1.3.6.1.2.1.2.2.1.10.13,1.3.6.1.2.1.2.2.1.16.13): in= out=14215958
Test 14 (1.3.6.1.2.1.2.2.1.10.14,1.3.6.1.2.1.2.2.1.16.14): in=45322512 out=
Test 15 (1.3.6.1.2.1.2.2.1.10.15,1.3.6.1.2.1.2.2.1.16.15): in=0 out=74
```

Using “Paessler SNMP Tester”

Copy OID from Test 2 to STG and setup a new graph and press F9 for settings.

(1) Set unit IP address



(2) Set OID



(3) Set 2nd OID if needed



(4) Update Period



Set Parameters

Graph

Target Address: 192.168.102.1

Community: public

"Green" OID: 1.3.6.1.2.1.2.2.1.10.2 ☒ Gauge

"Blue" OID: 1.3.6.1.2.1.2.2.1.16.2 ☒ Gauge

Request timeout: 3000 ms

Update Period: 1000 ms

Max. Rate: 16384 Bytes

Show Traffic in:
☒ Bytes
☐ Bits

☐ Fix rate

Reverse ☐ Graph Direction

Log File

Write Data ☐ To Log File: ☒ untitled.csv

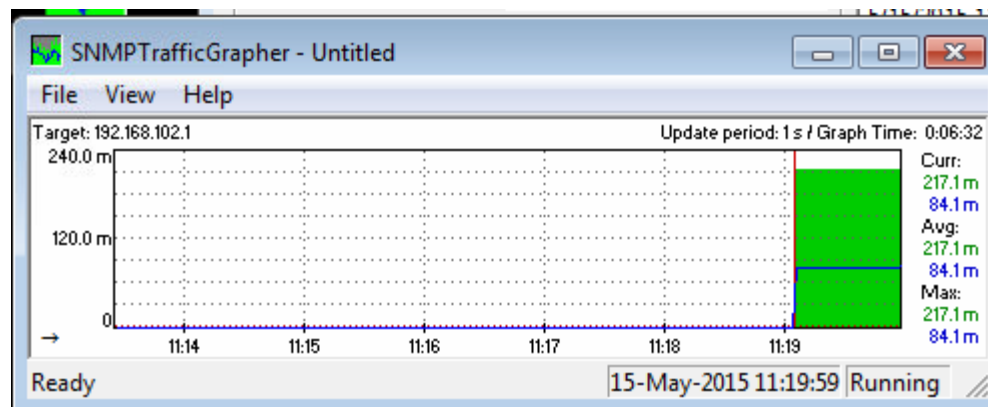
Rotate 10 Log Files Every: 1

☒ Hour(s)
☐ Day(s)
☐ Week(s)
☐ Month(s)

OK Cancel

Using “Paessler SNMP Tester”

This example presents the input/output at SkyWAN IDU serial port connected to FAD..



Topic

- Graphs

Useful Graphs

Bad Dummy Bits Received

- Graphs
- .1.3.6.1.4.1.247.97.5.2.1.1.10.1.2 (2570-1)
- .1.3.6.1.4.1.247.97.5.2.1.1.10.1.102 (2570-2)

Number of bit errors detected in seemingly empty container parts (filled with dummy bits) during the reception of the last ten million dummy bits. This value is updated every 10 million dummy bits received and can be used as a measure for the bit error rate. If the value is 0, the estimated bit error rate would be smaller than 10^{-7} indicating a good quality of the satellite link.



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Thank you for your attention!