SNMP Tester Manual
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# Table of contents

**Part 1**  
Introduction ........................................................................................................................................................................ 4

1. About SNMP Tester ................................................................................................................................................................. 6
2. Introduction to SNMP ................................................................................................................................................................. 7
3. Monitoring SNMP devices .......................................................................................................................................................... 9

**Part 2**  
Download and getting started .................................................................................................................................................... 11

**Part 3**  
Quick SNMP test with system uptime request ...................................................................................................................... 15

**Part 4**  
Using SNMP Tester ............................................................................................................................................................. 20

1. SNMP settings ........................................................................................................................................................................ 23
2. Request type ............................................................................................................................................................................. 26
3. Run SNMP Tester ................................................................................................................................................................. 28

**Part 5**  
Notes .................................................................................................................................................................................. 30
Part 1
Introduction
1 Introduction

Welcome to SNMP Tester, a free network tool for PRTG Network Monitor. This tool is a test program for debugging Simple Network Management Protocol (SNMP) activities. It supports you in finding SNMP-related issues when you monitor network devices with PRTG. This document describes the underlying concepts and applications of SNMP Tester. It also explains how to use SNMP Tester in detail.

Why SNMP Tester?

Monitoring via SNMP is the most basic method of gathering bandwidth and network usage data. However, SNMP as the basis for extensive monitoring often poses problems. In many cases, the reasons for these issues are not immediately obvious.

SNMP Tester supports debugging steps for SNMP monitoring with PRTG. You can test various configurations to communicate with an SNMP device. SNMP Tester records every step of this communication so that you can check the functionality of your SNMP device and the corresponding SNMP settings.
1.1 About SNMP Tester

SNMP Tester is a free network tool provided by Paessler. It enables you to debug Simple Network Management Protocol (SNMP) activities down to the protocol level. The program is very useful if you encounter issues with PRTG and SNMP, in particular when you contact the Paessler support team about these problems.

With SNMP Tester, you can run simple SNMP requests against an SNMP-supporting device in your network to debug your configuration. For this purpose, the tool tries to establish an SNMP connection with the target device—if this works, monitoring this device via SNMP is possible in PRTG as well.

SNMP Tester is based on the SNMP technologies implemented in PRTG Network Monitor. It comes with various customizable settings so that you can test different configurations for SNMP monitoring.

SNMP Tester can optionally log packets of an SNMP request into a text file. This approach supports you in finding communication and/or data issues regarding SNMP monitoring configurations. With the created logfile, you can analyze SNMP communication issues in more detail. In addition, you can log raw data packets for troubleshooting purposes.
1.2 Introduction to SNMP

SNMP stands for Simple Network Management Protocol. Monitoring with this technology is the most basic method of gathering bandwidth and network usage data. When using SNMP, PRTG sends small data packages to devices—for example, routers, switches, and servers—to query traffic counters of each port. Furthermore, SNMP enables PRTG to monitor other network parameters, including CPU load, disk usage, or temperature, depending on your device.

SNMP was developed as a standard for monitoring various devices. All available SNMP objects must have clear IP addresses so that they can be accessed—the so-called object identifiers (OID) that are stored in Management Information Base (MIB) files. SNMP requests are sent to these addresses to retrieve the desired information.

For more information, see section More.

About OIDs and MIB files

To access values on a network device, the managing software needs to know their addresses. These addresses are called OIDs. They are organized in a hierarchical tree structure and are defined in MIB files. The nodes are defined by decimal numbers, separated by dots. A typical OID looks like this example from an ISDN-MIB: 1.3.6.1.2.1.10.20.1.3.1. With SNMP Tester, you can directly access these addresses if you provide specific OIDs.

More

PRTG MANUAL

Monitoring via SNMP

KNOWLEDGE BASE

How do SNMP, MIBs and OIDs work?

How do I install the SNMP service on Windows systems?


**PAESSLER WHITE PAPER**

Quo Vadis SNMP?

1.3 Monitoring SNMP devices

Every so often, customers using PRTG Network Monitor report issues when they try to monitor their systems via the Simple Network Management Protocol (SNMP). In most cases, these issues result from a malfunctioning SNMP configuration or installation. The following section provides basic information for monitoring via SNMP.

![SNMP CPU Load Sensor](image)

Malfunctioning SNMP sensor in a Down status

Before going any deeper into troubleshooting, a good knowledge of the principles and functions of SNMP is necessary. For reference, see section [Introduction to SNMP](#).

Basic requirements

To get monitoring via SNMP to work with PRTG, and to receive any results with SNMP Tester, ensure the following:

- **Enable SNMP** on the target device. For more information, see the Knowledge Base: [How do I install the SNMP service on Windows?](#)
- **Allow access to SNMP** for the machine that runs PRTG Network Monitor in the device’s security settings.
- **Allow User Data Protocol (UDP) packages** to travel from the machine that runs PRTG to the device you want to monitor and back. If the device and your PRTG installation are on different sides of a firewall, make sure that **UDP access to port 161** (SNMP) is allowed.
- **Important for firewall settings**: SNMP requires the use of UDP ports >1023 to the PRTG client side.
- **PRTG supports SNMP v1, SNMP v2c, and SNMP v3**. You have to select a version in your PRTG installation (and in SNMP Tester) that is supported by the device as well.
- **Authentication must match**: You have to provide the correct community strings (SNMP v1 and v2c), usernames (SNMP v3), and passwords (SNMP v3) in SNMP Tester, respectively in your PRTG installation, to connect to an SNMP device.
Debugging SNMP activities

If you encounter any issues with your SNMP sensors, the first step after checking basic requirements is to debug SNMP activities, for example with SNMP Tester.

For more information, see section Using SNMP Tester.

More

**KNOWLEDGE BASE**

My SNMP sensors don't work. What can I do?

How do I install the SNMP service on Windows systems?
Part 2
Download and getting started
2 Download and getting started

To install and run SNMP Tester, take the following steps:

2. Confirm the Windows User Account Control dialog with Yes.
3. Accept the License Agreement and click Next to continue.

4. Select the Destination Location where SNMP Tester should be installed. The default installation path is C:\Program Files (x86)\Paessler SNMP Tester. Click Browse to select a different installation path. Click Next to continue.
5. Select if you want to perform **Additional Tasks**. You can **Create a Desktop Icon** and/or **Create a Quick Launch Icon**. Click **Next** to continue.

6. SNMP Tester is now installed on your system. Click **Finish** to exit the setup.
Part 2: Download and getting started

Finish setup
Part 3
Quick SNMP test with system uptime request
3 Quick SNMP test with system uptime request

With SNMP Tester, you can run a quick Simple Network Management Protocol (SNMP) request test against the device you want to monitor. For example, you can request the system uptime of the target device from the machine that runs PRTG. If successful, the target device is accessible via SNMP and is ready to be monitored by PRTG. If not, you have to check the SNMP settings of the device.

Follow these steps:

1. Download and run SNMP Tester on the probe system to which you want to add an SNMP sensor.
2. Enter the IP address of the target device into the Device IP/Port field. The default port for SNMP requests is 161. Try this port first.
3. Select the SNMP Version that the target device supports. When using SNMP v1 and SNMP v2c, you have to provide the correct Community string. A community string is similar to a user ID or password allowing access to a device’s statistics. PRTG and SNMP Tester send it along with all SNMP requests. The default SNMP community string is public. If you select SNMP v3, you have to provide the correct credentials. Enter the SNMP User and the Password. If the community string is incorrect, the device discards the requests and not respond. This value is case sensitive.
4. You can leave all other settings unchanged. For more information, see section SNMP settings.
5. In section 2. Select Request Type, select Read Device Uptime. This request type reads out the standard system uptime from the target device.
6. In section 3, **Run Test**, click the **Start** button.

SNMP Tester now tries to get access to your target device. If it can access the device, SNMP Tester reads out the system uptime and report the result in the log section. Check if you get any values.
Part 3: Quick SNMP test with system uptime request

SNMP Tester shows system uptime of target device

Have a look at the following line:


You can see that the system uptime request gets a response that includes the uptime value from the target device. This means that your target device is reachable via SNMP. You can assume that your PRTG installation can monitor this device via SNMP from the same machine on which SNMP Tester runs.

In the log section, SNMP Tester also informs you if it does not get a response from the target device:
If the target device is not reachable via SNMP, the message you get most probably looks as follows:


You can see that the system uptime request did not get a response from the target device. Consequently, SNMP Tester cannot access the target device via SNMP with the SNMP settings you provided. Your PRTG installation cannot monitor this device via SNMP from the machine on which SNMP Tester runs if you use the same SNMP settings. Make sure that you meet the prerequisites for SNMP monitoring as described in section Monitoring SNMP devices.
Part 4
Using SNMP Tester
4 Using SNMP Tester

Launch SNMP Tester by opening Paessler SNMP Tester Setup.exe. The main window appears.

General layout

The general layout of SNMP Tester is organized as follows:

<table>
<thead>
<tr>
<th>Screen number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The global header bar containing the main menu.</td>
</tr>
</tbody>
</table>
### Screen number | Description
--- | ---
2 | Simple Network Management Protocol (SNMP) settings and request type for running SNMP tests.
3 | Start button for running SNMP tests and log section.

### Main menu
From the main menu, you can access general functions:

- **File**
  - **Exit**: Closes SNMP Tester.

- **Help**
  - **Online Help**: Opens a new browser window with the Free network tools from Paessler page on the Paessler website. Click **SNMP Tester** to find general information about this tool.
  - **About**: Opens a window with general information about SNMP Tester.

### How to use
Before performing a test run, you have to set **SNMP settings** such as IP addresses and credentials. Furthermore, you can specify a **request type** such as uptime, specific counters, and walks. After this you can **run SNMP Tester** and analyze the log.
4.1 SNMP settings

In this section of SNMP Tester, you can define Simple Network Management Protocol (SNMP) settings.

![Setting section]

**General settings**

The settings you provide here are the general SNMP settings for connecting to a specific device, such as credentials and SNMP version.

- **Local IP**
  
  In some cases—usually concerning multi-homed systems—it is necessary to select a specific local IP address for the SNMP request. The default is **Any**.

- **Device IP/Port**
  
  Enter the IP address of the device you want to communicate with. Define the port used for SNMP communication. This is usually port **161**. Specify whether to use an IPv4 or an IPv6 address by selecting **v4** or **v6**.

- **SNMP Version**
  
  Select the SNMP version:
  
  - **SNMP v1**: This is the standard and most common version with limited security.
  - **SNMP v2c**: Supports 64-bit counters in addition to SNMP v1.
  - **SNMP v3**: Supports authentication and encryption

  Make sure that the target device supports this version.
General settings

The settings you provide here are the general SNMP settings for connecting to a specific device, such as credentials and SNMP version.

**Community**
This field is only visible if you select SNMP v1 or SNMP v2c above. Enter the SNMP community string. A community string is similar to an ID or clear-text password and allows access to the statistics of a device. Default is public.

**SNMP User**
This field is only visible if you select SNMP v3 above. Provide the username for the SNMP device.

**Authentication**
This field is only visible if you select SNMP v3 above. Specify the authentication type:
- MD5: Use the message-digest algorithm 5 (MD5) for authentication.
- SHA: Use the Secure Hash Algorithm (SHA) for authentication.

**Password**
This field is only visible if you select SNMP v3 above. Enter the password for the SNMP device.

**Encryption**
This field is only visible if you select SNMP v3 above. Select the encryption type:
- DES: Use the Data Encryption Standard (DES) for encryption.
- AES: Use the Advanced Encryption Standard (AES) for encryption.

**v3 Encryption Key**
This field is only visible if you select SNMP v3 above. Enter the encryption key. If you provide an encryption key, SNMP packets are encrypted using the algorithm selected under Encryption.

**Context**
Enter a context name if the configuration of the device requires it.

**Timeout**
Enter a timeout in seconds for the request. If the reply takes longer than this value defines, the request is canceled.

Advanced settings

With these settings, you can test several more detailed aspects of an SNMP connection.

**Force 32-bit**
Check this option to search for 32-bit counters only, even if the device reports 64-bit counters.

- For some devices, monitoring is more reliable when using 32-bit counters only.
## Advanced settings

With these settings, you can test several more detailed aspects of an SNMP connection.

### "Slow" Tweak
- Requests are sent more slowly.
- Some devices might have problems with the speed at which requests are usually sent. Check this option to slow down requesting.

### Single Get
- Check this option to send a single SNMP GET request for each SNMP value.
- This can be useful for older devices to reduce the load on the system.

### Signed
- Check this option to interpret returning numbers as signed.

### Use GetNext
- Check this option to perform an SNMP GETNEXT request instead of a GET request.

### Hide SNMP Datatype from Walk
- By default, SNMP Tester shows the data type of returned values, for example, integer. Check this option to not show the data type.

### Read As
- Select the format in which the returning values are interpreted:
  - **String**: The returning value is interpreted as a string.
  - **Integer**: The returning value is interpreted as an integer.
  - **Float**: The returning value is interpreted as a float, with a dot . between pre-decimal position and decimal places.
  - **Hex Bytes** (for example, for MAC addresses): The returning value is interpreted as a hex byte.
### 4.2 Request type

In this section of SNMP Tester, you can select the request type of the Simple Network Management Protocol (SNMP) test. You can use SNMP request types to describe the nature of the request.

<table>
<thead>
<tr>
<th>Request Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Read Device Uptime</strong></td>
<td>Reads the standard system uptime value from the device.</td>
</tr>
<tr>
<td><strong>32-bit Traffic Counter</strong></td>
<td>Reads the traffic counter of a port according to the MIB-II object identifier (OID). Enter an integer to specify the interface (port).</td>
</tr>
<tr>
<td><strong>64-bit Traffic Counter</strong></td>
<td>The 64-bit traffic counter is only available for SNMP v2c and SNMP v3. Enter an integer to specify the interface (port).</td>
</tr>
<tr>
<td><strong>Scan Interfaces</strong></td>
<td>Enumerates all interfaces (ports) of the device.</td>
</tr>
<tr>
<td><strong>Custom OID</strong></td>
<td>Enter a custom OID to access a specific OID value on the device.</td>
</tr>
<tr>
<td><strong>Walk</strong></td>
<td>In general, a walk sends an SNMP request to all OIDs starting with the OID part you enter here. This retrieves a subtree of the values using SNMP GETNEXT requests.</td>
</tr>
<tr>
<td><strong>Scan OIDLIB</strong></td>
<td>Loads a Paessler SNMP library file and checks all OIDs from this library. You can create an SNMP library by using the free MIB Importer tool of Paessler.</td>
</tr>
<tr>
<td><strong>Scan Script</strong></td>
<td>With a script, you can test a number of OIDs without entering each of them individually. A script is a common text file with commands. Create such a file and provide the path to it by clicking the Browse button 📦. Currently, the following commands are supported (replace the brackets and included terms with the corresponding desired values):</td>
</tr>
</tbody>
</table>
Select request type

- get = [OID]
- multiget = [OID],[OID],[...]
- walk = [startOID]
- sleep = [milliseconds]
- **Comments**: Anything other than a command is handled as a comment.

**Multiget Test**

Sends multiple SNMP requests bundled into one request to the device. Enter an integer to specify the counter.
4.3 Run SNMP Tester

In this section of SNMP Tester, you can run a test with your individual configuration. To troubleshoot Simple Network Management Protocol (SNMP) communication, the results in the log section show if a connection to a specific device is possible with the current settings, and if returning values are printed, if these can be read out. You can store the resulting log for further analysis.

**Run test**

1. Click the **Start** button to send requests against the SNMP device according to your settings. If you want to continuously run the test, enable **Repeat every** and enter the number of seconds to define a time interval for the test run repetitions.
2. After starting the test run, SNMP Tester communicates with the SNMP device. We recommend that you scan for device uptime first and for other values later on. SNMP Tester displays the results in the log section, depending on the specified request type. Check if any values are returned.

3. Click **Save Log to File** to save the log for detailed troubleshooting purposes. This way, you can also send the log to the Paessler support team. In the **Save** dialog, specify the folder where to store the text file containing the log.

4. Click **Clear Log** to discard the scanning results.

Log raw packets

You can also log raw data packets to a text file. These raw binary data packets are directly registered by the Net-SNMP library and stored on the hard disk. You can find the corresponding logfile **packets.log** in your local Windows user account under `\AppData\Roaming\snmptest`.

The **AppData** folder is hidden by default. To show it, open the Windows Explorer, select the **View** tab, and click **Hidden items** (on Windows 10 and Windows Server 2012. This works similarly on other Windows versions).

This approach is a further troubleshooting option to investigate corrupted data as returned by a device, for example.

You can import the result into a network protocol analyzer like Wireshark for a more detailed analysis. If you know the respective credentials, Wireshark can also decode SNMP v3 in a way that you can analyze these packets.

You cannot use this log option for the request types **Scan Interfaces** and **Walk**.
5 Notes

SNMP Tester is a freeware program provided for Paessler customers. It is mainly a diagnostic tool for users of PRTG Network Monitor. Note that Paessler does not provide support for this free program.

However, when contacting the Paessler support team regarding Simple Network Management Protocol (SNMP) sensor issues, it is very useful to send logfiles created by SNMP Tester—using the configuration as set up in PRTG—with your support request.