Advantech

SNMP Subagent

User Guide

For Linux

Version <1.00>

Revision History

Date	Version	Description	Author
2017/3/10	1.00	1.Support preference settings. 2.Support the judgment threshold. 3.Strengthen the stability of the SNMP-subagent about getting/setting a value.	zhang.yang
2017/2/28	0.01	Initial draft	zhang.yang

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User Guide

1. Introduction

1.1 Advantech SNMP Subagent

The Advantech SNMP Subagent allows you to communicate Simple Network Management Protocol (SNMP) with the common or platform Subagent on the managed system. With the Advantech SNMP Subagent, you can use SNMP SETs, GETs, and TRAPs to manage supported platforms.

1.2 Supported Advantech Platforms

The current version of Advantech SNMP Subagent supports the Advantech ECU-4784 hardware platform products.

1.3 Supported Operating Systems

The Advantech SNMP Subagent supports the following operating systems:

- Centos 6.7

1.4 System Requirements

1. SNMP Master Agent

The Advantech SNMP Subagent is based on the Linux SNMP service. You must install the Linux SNMP service on the supported operating systems(Please see README for more details).

2. Latest Drivers

The Advantech SNMP Subagent requires the latest Advantech drivers including the following.

- Advantech Hwmon Drivers
- Advantech PSU Drivers (If applicable)

2. Advantech SNMP Subagents Overview

Advantech SNMP Subagents are SNMP extension agents that provide interfaces for retrieving Advantech x86 hardware and software information and monitoring the health status on the network using the SNMP protocol. Table 2- 1 is the basic information of Advantech SNMP Subagents.

Table 2- 1 Advantech SNMP Subagents

Name	MIB file	Supported Region
ADVANTECH Platform Agent	ADVANTECH-PLATFORMS-MIB.mib	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).advantech(10297).advantechPlatformsMIB(200)

2.1 MIB and OID

SNMP works with basic components OIDs (Object Identifier) and MIBs (Management Information Base). User gets information by querying “Objects”. A MIB (Management Information Base) is a database including many objects and it is as a tree structure shown as Figure 2- 1; each node is addressed through an object identifier (OID) and it maps to an entity in a communications network. OIDs are always written in a numerical form instead of a text one. Therefore, the top three object levels are written as “1.3.1” rather than “iso\org\dod” and the OIDs of Advantech is *1.3.6.1.4.1.10297*

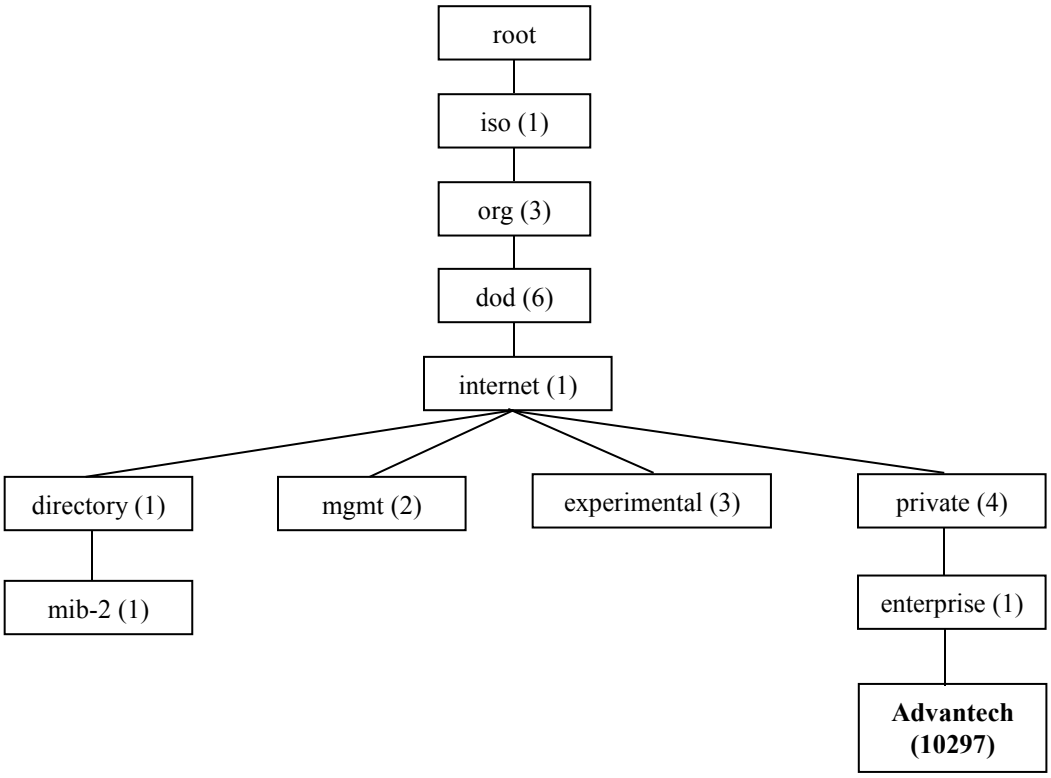


Figure 2- 1 OIDs tree

2.2 Community Strings

Community Strings are similar to passwords. They are used to allow authorized you to access the SNMP agent on a device.

Community Strings can be configured as read-only (RO) or read-write (RW). As the name implies, read-only strings only allow information to be pulled from the agent. However, read-write strings are much more powerful and can allow re-configuration of many device properties. In general, the default community strings are set to be “public” for read-only (RO), and “private” for read-write (RW).

2.3 Architecture

Network Management Station (NMS) can communicate with subagents by the OIDs defined in the MIB files.

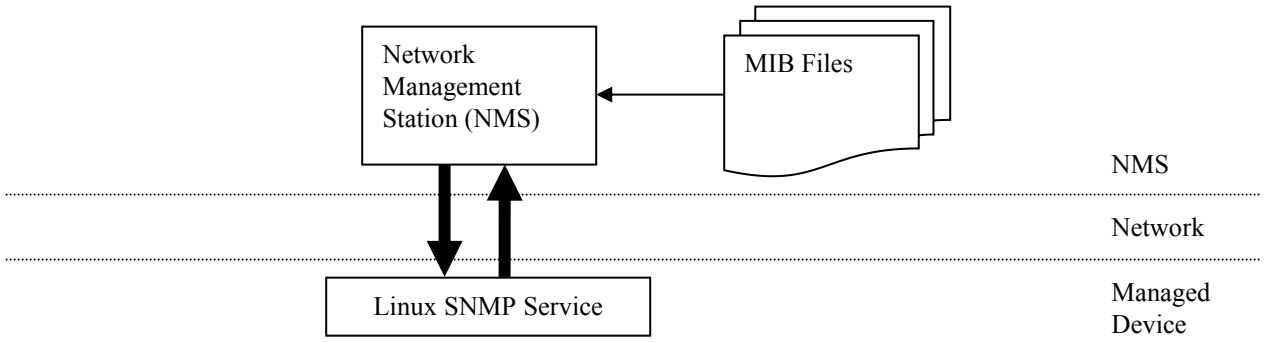


Figure 2- 2 Architecture

2.4 Advantech SNMP Subagents

The Advantech SNMP Subagents provides the functions as listed.

1. Monitor Group: temperature, voltage, memory, cpuloading, power state.

- You can **get** the *Temperature*, *Voltage* which are handled by *Advantech Driver*.
- You can **set** *high*, *low, high-high, and low-low* threshold values of each Temperature, Voltage.
  You can also set a **null** value to disable the threshold.
  When the threshold has been set, the monitored *value* will be divided into **5** levels, cleared(1), critical-low(2), low(3), high(4), and critical-high(5).
  - If the *Value* is greater than *high-high* threshold and *high-high* threshold is not disabled (null), the level is **critical-high**(5).
  - If the *Value* is greater than *high* threshold and less than or equal to *high-high* threshold and *high* threshold is not disabled (null), the level is **high**(4).
  - If the *Value* is greater than *low-low* threshold and less than or equal to *low* threshold and *low* threshold is not disabled (null), the level is **low**(3).If the *Value* is less than *low-low* threshold and *low-low* threshold is not disabled (null), the level is **critical-low**(2).
  - Otherwise, the level is **cleared**(1).
- You can also enable monitoring state when the value is out of bound, it will send a trap to NMS.
- You can **get** the current *CPU Loading*, current *CPU Speed*, *CPU Maximum Speed*, *memory size ,* and *memory usage percentage* of the managed device.
  There are **4** threshold values UsageTh1 ~ UsageTh4 which splits the usage into **5** severities, cleared(1), notice(2), warning(3), critical(4), and emergency(5) if the threshold value is not disabled (**-1**).
  - If the *usage* is greater than *UsageTh1* and less than or equal to *Usage Th2* and *UsageTh1* is not disabled(-1), the severity is **notice**(2)
  - If the *usage* is greater than *UsageTh2* and less than or equal to *Usage Th3* and *UsageTh2* is not disabled(-1), the severity is **warning**(3)
  - If the *usage* is greater than *UsageTh3* and less than or equal to *Usage Th4* and *UsageTh3* is not disabled(-1), the severity is **critical**(4)
  - If the *usage* is greater than *UsageTh4* and *UsageTh4* is not disabled(-1), the severity is **emergency**(5)
  - Otherwise, the severity is **cleared**(1)
- You can **get** the power state **pwr_normal**(1) or **pwr_redundancylost** (2) and the power state severity including **cleared**(1), **notice**(2), **warning**(3), **critical**(4), and **emergency**(5) if the target platform support these features. You can also enable the power monitoring state when the power state changed, it will send a trap to the NMS.

2. Peripheral Group: Hard Disk

You can **get** the *hard disk information* and the *S.M.A.R.T.* (Self-Monitoring, Analysis and Reporting Technology) information of it.

3. Trap

The *Advantech SNMP Subagents* currently support 7 types of Traps.

- Temperature is out of range
- Temperature becomes normal

- Voltage is out of range
- Voltage becomes normal
- Memory Usage exceeds the threshold value
- Memory Usage becomes normal
- Power State is changed

4. SNMP Configuration

The *Trap Community* will be applied to the *Traps* tab of *SNMP Service Properties* as shown in Figure 2- 3. In the /etc/snmp/snmpd.conf you can add more *Trap destinations* in the *Traps* tab of *SNMP Service Properties* if need.

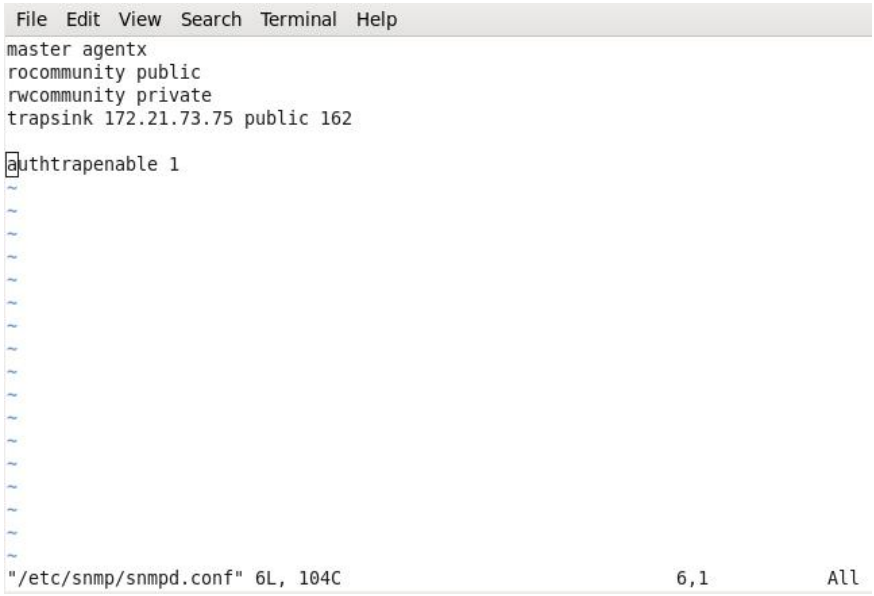


Figure 2- 3 Community for Traps of SNMP service

3. Appendix

3.1 Third-Party MIB Browser

The Advantech SNMP Subagent has been tested with the following MIB Browser.

- iReasoning MIB browser
  http://ireasoning.com

iReasoning MIB browser

Download Link: http://ireasoning.com/mibbrowser.shtml

1. Once running iReasoning MIB browser in the *client platform*, please load MIB files first.

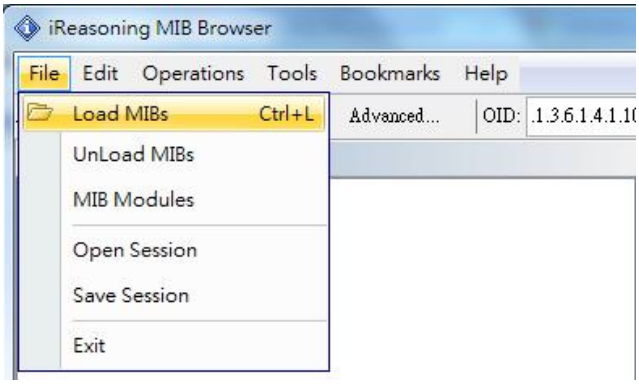


Figure 3- 1 Load MIBs

Load ADVANTECH-PLATFORMS-MIB.mib. They are available after you installed the *Advantech SNMP Subagent*. (e.g., /usr/src/advantech/advSNMPsubagent/mib/). Copy these the files to your *client platform* in advance.

2. Enter the IP address of the *target platform* where *Advantech SNMP Subagent* was installed.

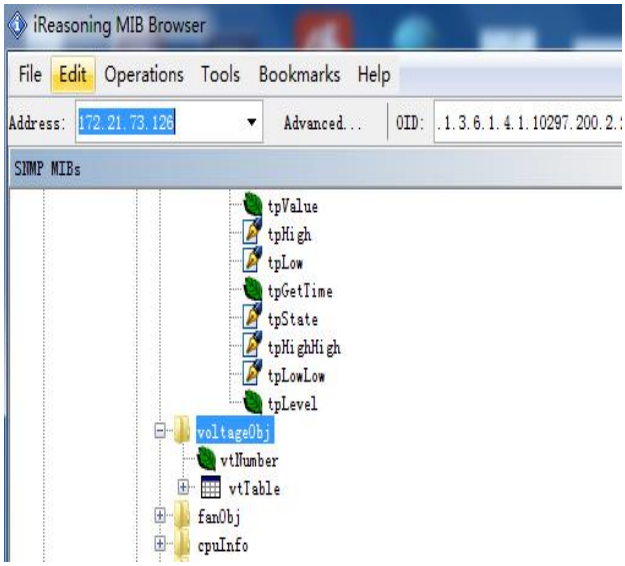


Figure 3- 2 Enter IP address

3. You can enter the *Read-Only*, *Read-Write Community* which will be matched to the SNMP service.

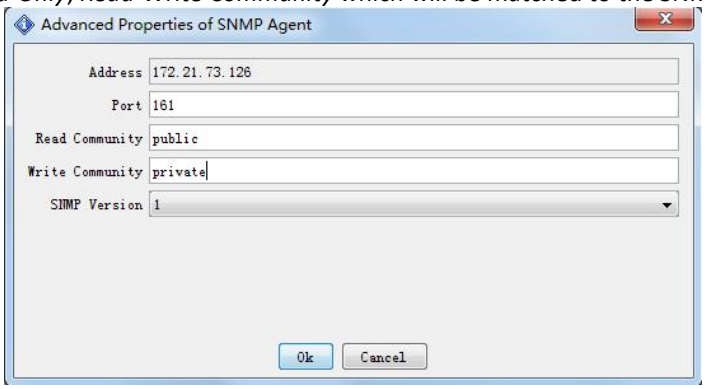


Figure 3- 3 SNMP Configuration

4. And then, you can find vtName as following Figure 3- 4, and there is also a description at the bottom of window.

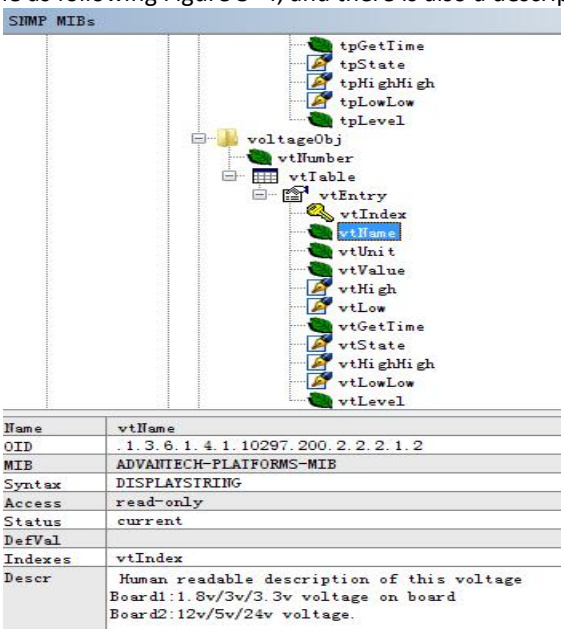


Figure 3- 4 vtName

5. Double click on vtName. *Target platform* will reply the voltage name message at the right side of window.

Name/OID	Value	Type	IP:Port
vtName.1	VBAI	OctetString	172.21.73...
vtName.2	5VSB	OctetString	172.21.73...
vtName.3	VIN	OctetString	172.21.73...
vtName.4	VCORE	OctetString	172.21.73...

Figure 3- 5 SNMP GET vtName

6. Advantech SNMP Subagent also provides TRAP functions which will notify the *client platform* if alarm events happened in the *target platform*. For example, if the voltage is abnormal, SNMP will automatically send a trap to notify user. Before start, click **Advanced** button and enter 'private' in the "Write Community" field.

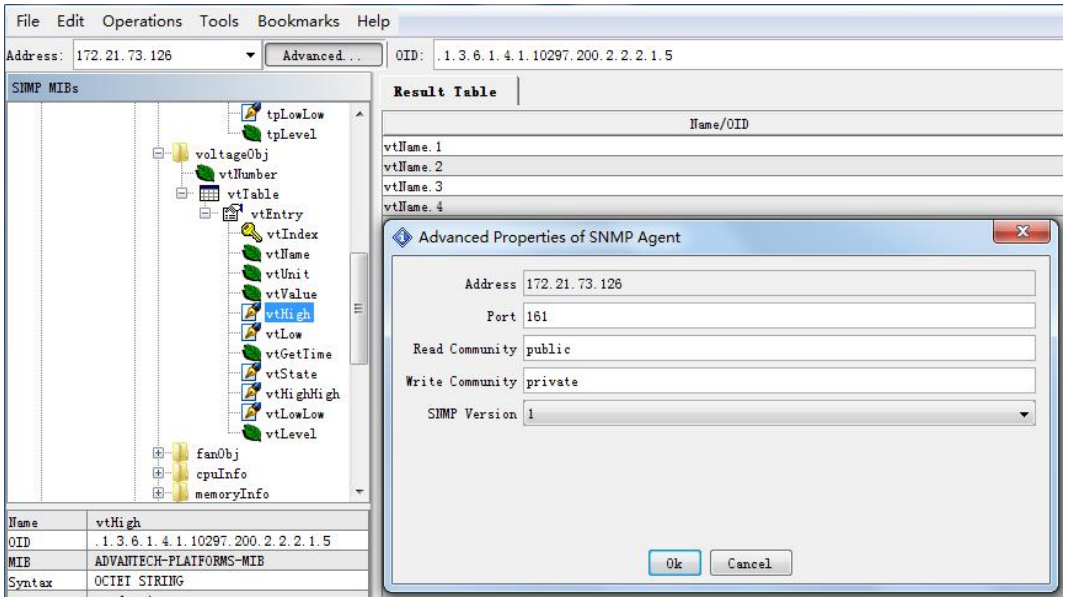


Figure 3- 6 Write Community

7. Find **vtTable**, right-click on it then click **Table View**.

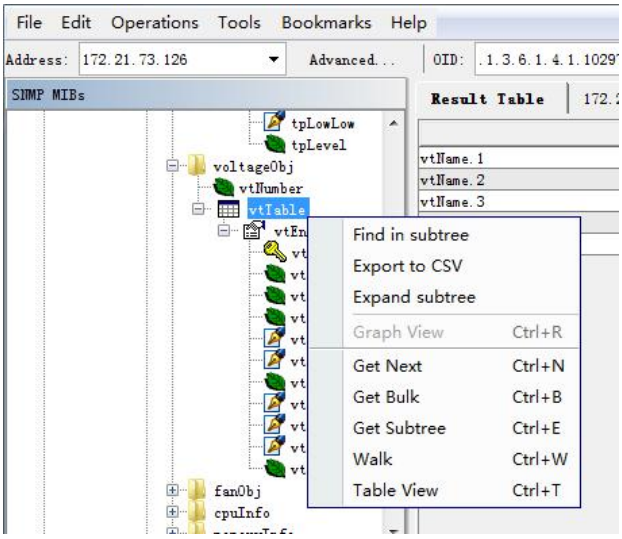
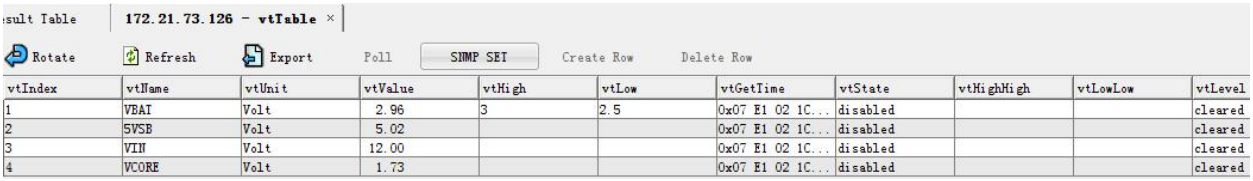


Figure 3- 7 vtTable

8. The vtTable will show up at the right side of the window. You can update them with your *client platforms or NMS* vtHigh, vtLow, vtHighHigh, vtLowLow by *SNMP SET* command as shown in Figure 3- 8.



vtIndex	vtName	vtUnit	vtValue	vtHigh	vtLow	vtGetTime	vtState	vtHighHigh	vtLowLow	vtLevel
1	VBAT	Volt	2.96	3	2.5	0x07 E1 02 1C...	disabled			cleared
2	5VSB	Volt	5.02			0x07 E1 02 1C...	disabled			cleared
3	VIN	Volt	12.00			0x07 E1 02 1C...	disabled			cleared
4	VCORE	Volt	1.73			0x07 E1 02 1C...	disabled			cleared

Figure 3- 8 Set properties

9. This message box “SET succeeded” is supposed to be showed up.

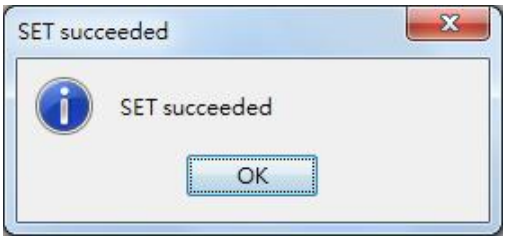


Figure 3- 9 SET succeeded

10. Tools → Trap Receiver.

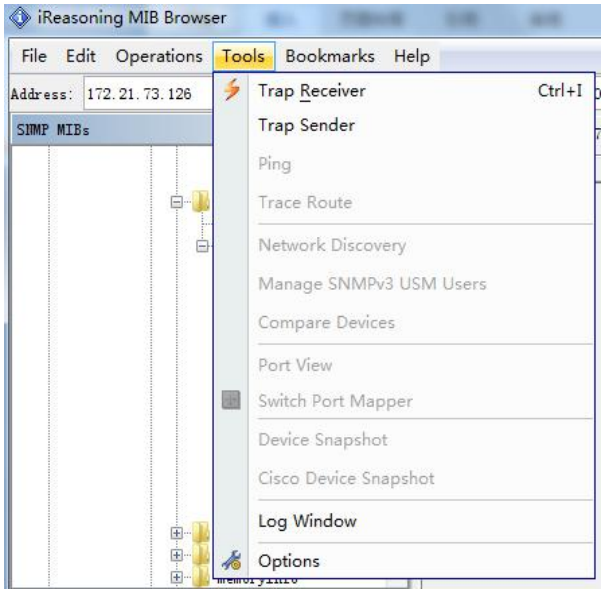


Figure 3- 10 Trap Receiver

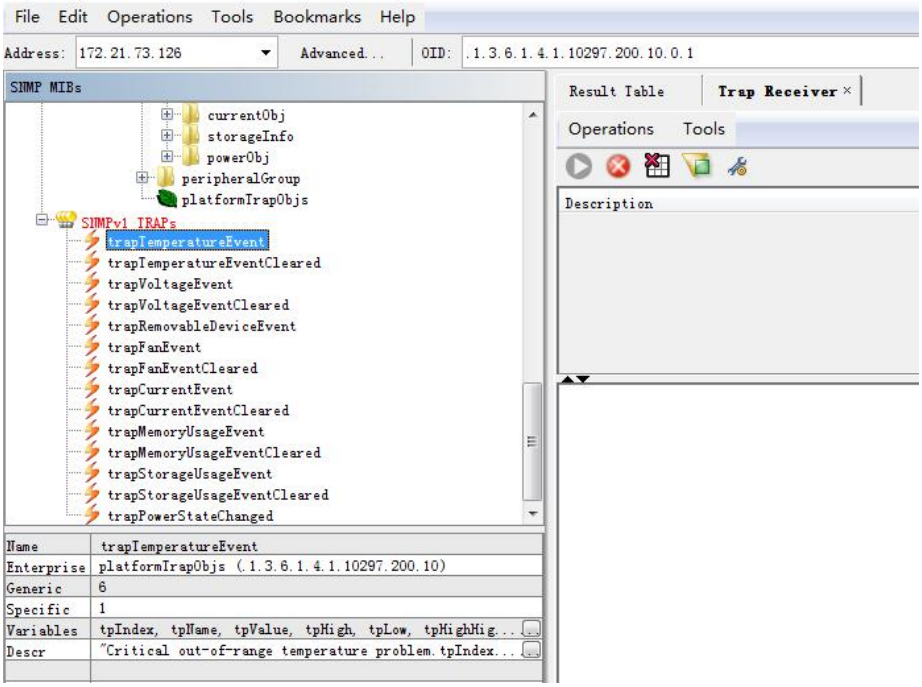


Figure 3- 11 Trap Receiver Window

11. In the example of the voltage trap, set **vtHigh** to **11.99,** set **vtLow** to **11.00,** set **vtState** to be **enabled**.

12 .Now you will receive a trap which notifies you that the voltage is abnormal.

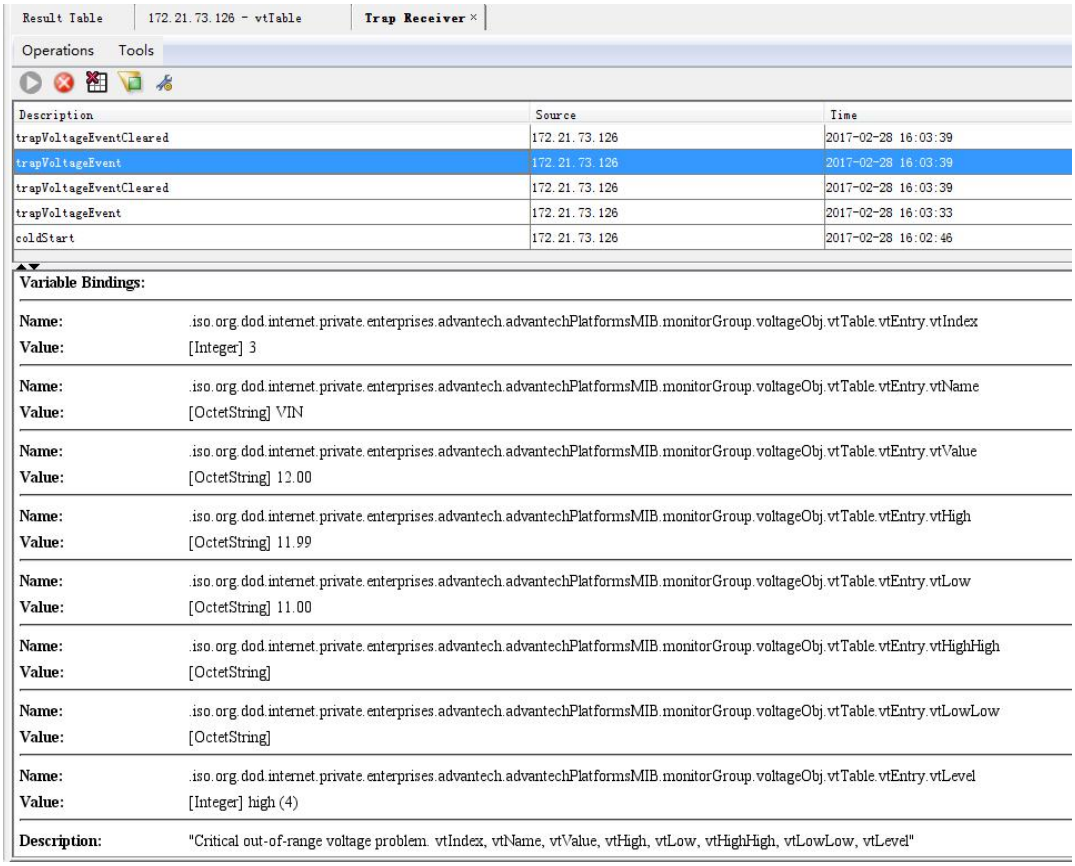


Figure 3- 12 trapVoltageEvent