MIB Browser Version 8.0 User Guide

The iReasoning MIB browser is a powerful and easy-to-use tool powered by iReasoning SNMP API. MIB browser is an indispensable tool for engineers to manage SNMP enabled network devices and applications. The iReasoning MIB browser allows users to load standard, proprietary MIBs, and even some mal-formed MIBs. It also allows them to issue SNMP requests to retrieve SNMP agents' data, or make changes to agents. A built-in trap receiver can receive SNMP traps and handle trap storm.

Major features:

- Intuitive GUI
- Complete SNMPv1, v2c and v3 (USM and VACM) support
- Complete SNMPv3 USM support, including HMAC-MD5, HMAC-SHA, CBC-DES, CFB128-AES-128, CFB128-AES-192, CFB128-AES-256 algorithms
- Robust and powerful SMIv1/SMIv2 MIB parser
- IPv6 support
- Trap Receiver
- Trap Sender
- Log window to display application log and SNMP packets exchanged between browser and agents
- Table view for MIB tables
- SNMPv3 USM user management
- Port view for network interface cards
- Switch port mapper for mapping switch ports
- Performance graph tool for monitoring of numerical OID values
- Device snapshot
- Cisco device snapshot
- Ping and traceroute tools
- Network discovery tool
- SNMP Agents Comparison
- Bookmarks
- Runs on Windows, Mac OS X, Linux and other UNIX platforms

Requirements

- Windows, Mac OS X, Linux and other UNIX platforms.
- If on Linux/UNIX, the SUN JRE 1.5 or a later version must be installed and *java* command must be in the system path.

Download and Run MIB Browser

1. Download MIB browser installer or zip file. On Windows, run setup.exe to install MIB browser. On Mac OS X, Linux and other UNIX platforms, unzip it to the desired directory.

2. Run MIB Browser:

- On **Windows**, click on the MIB browser icon to start browser.
- On **Linux/UNIX**, enter MIB browser home directory and run ***browser.sh*** to start browser.
- On **Mac OS X**, enter ireasoning/mibbrowser directory and double click on the ***browser or browser.command*** icons to start MIB browser.

On Linux/UNIX/MAC OS X, if you login as a non-root user and need to run trap receiver at UDP port 162, start MIB browser using the following command:

sudo browser.sh

Enterprise Edition

Trap receiver and watches functions run as a system service. Watches function supports action, which means you can configure actions (sending email) when a MIB object's value violates a pre-configured threshold.

On Windows platform, the service starts up automatically. On Linux/MAC OS X, you need to configure system to execute *$INSTALL_DIR/lib/runserver.sh* on startup.

The Browser GUI

✧ Menu

■ File menu

- **Load MIB**

  Launch a file dialog for picking one or multiple MIB files. You need to hold CTRL key if you want to select multiple files.

- **MIB Modules**

  List properties of all loaded MIB modules.

- **Server Address (Enterprise Edition Only)**

  By default, MIB browser connects to a local server to get trap and watches data. However, you can change the server address so that it can get the data from somewhere else.

- **Open Session**

  Open a previously saved session file.

- **Open Graph Data**

  Open a previously saved graph data file.

- **Save Session**

  Save current settings of open tabs to a session file, which can be opened later to restore tabs.

- **Exit**

  Exit browser.

- **Edit menu**

  - Find in MIB Tree

    Find a node in the MIB tree.

  - Find in Result Table

    Find a string in the result table.

- **Operations menu**

  - **Get**

    Issue SNMP GET request against current agent.

  - **Get Next**

    Issue SNMP GET-NEXT request against current agent.

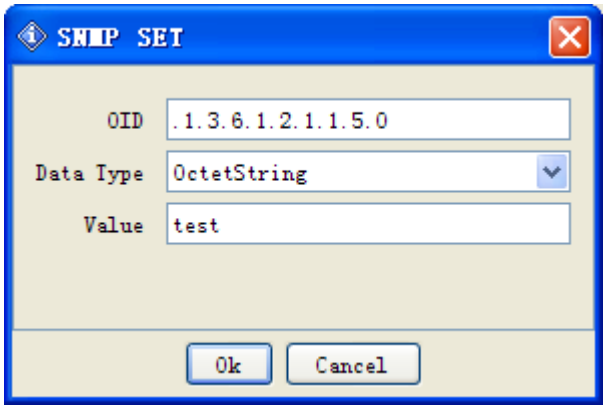
  - **Get Bulk**

    Issue SNMPv2c or SNMPv3 GET-BULK request against current agent. If the SNMP agent only supports SNMPv1, then this command will time out.

- **Set**

  Issue SNMP SET request against current agent.

  The following window will show up:



  Enter a new value in the *"Value"* field then click "Ok" button.

  To set multiple variables, you can hold CTRL key and select multiple rows in the result pane, then choose SET operation.

  Note:

  1. For *BITS* data type, you need to use mathematical notation for a set of integers, that is, something like *{1, 3, 8}*.
  2. The format for hexadecimal string is (0x[0-9A-Fa-f][0-9A-Fa-f])+. For instance, 0x12 0xA1 0x30

- **Get Subtree**

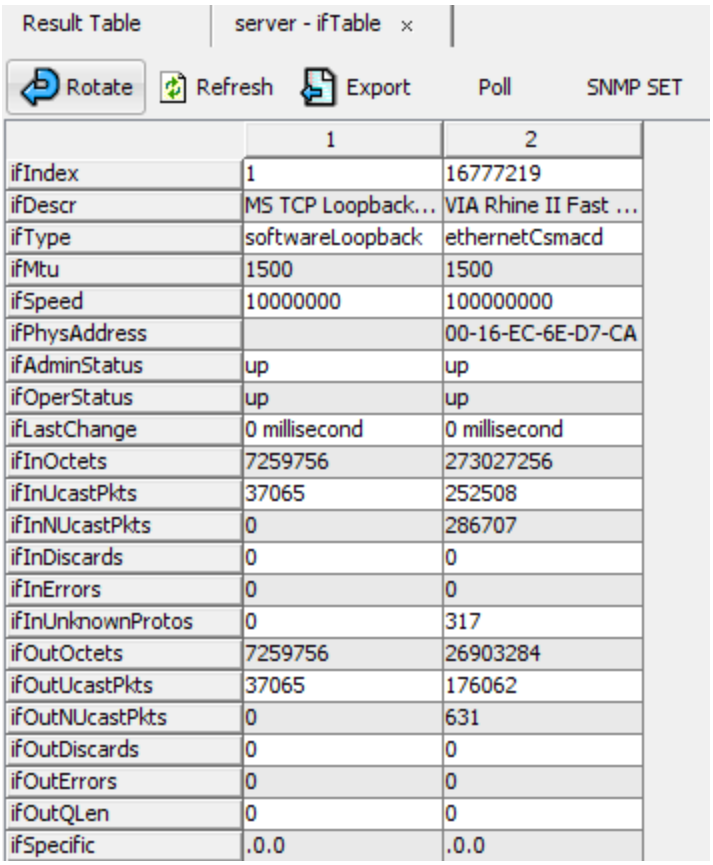
  Issue SNMP GET-NEXT requests to get the whole subtree against current agent.

- **Walk**

  Do SNMP walk against current agent.

- **Table View**

  Show MIB table data.



	1	2
ifIndex	1	16777219
ifDescr	MS TCP Loopback...	VIA Rhine II Fast ...
ifType	softwareLoopback	ethernetCsmacd
ifMtu	1500	1500
ifSpeed	10000000	100000000
ifPhysAddress		00-16-EC-6E-D7-CA
ifAdminStatus	up	up
ifOperStatus	up	up
ifLastChange	0 millisecond	0 millisecond
ifInOctets	7259756	273027256
ifInUcastPkts	37065	252508
ifInNUcastPkts	0	286707
ifInDiscards	0	0
ifInErrors	0	0
ifInUnknownProtos	0	317
ifOutOctets	7259756	26903284
ifOutUcastPkts	37065	176062
ifOutNUcastPkts	0	631
ifOutDiscards	0	0
ifOutErrors	0	0
ifOutQLen	0	0
ifSpecific	.0.0	.0.0

  Clicking on this menu item will bring up a new table view window. But first, OID field needs to be an OID of a table or entry nodes. For example, it can be *ifTable, ifEntry* etc.

  You can press CTRL key and select multiple tabular variables of the same table, then click “Table View”. In this way, table view only shows the tabular variables you selected rather than the whole table.

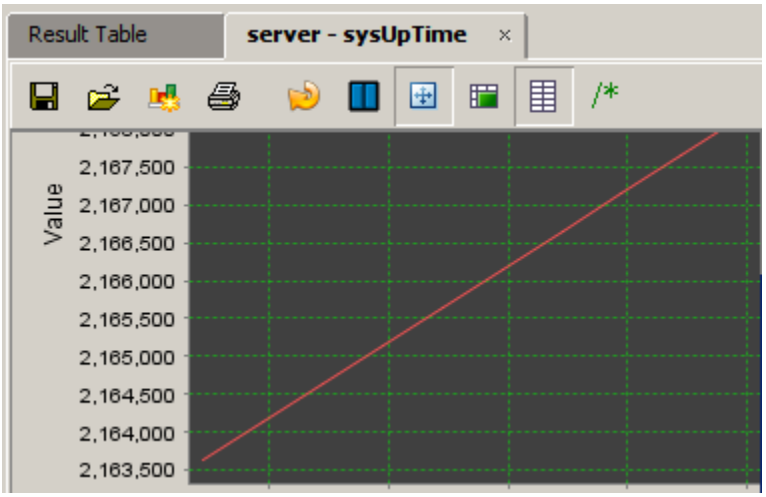
  Buttons on the toolbar of table view window:

Rotate button	Rotate table 90 degrees.
Refresh button	Refresh table now.
Export	Export table data to a CSV file.
Poll button	Refresh table periodically.

SNMP SET	Perform SNMP SET for selected table cells.
Create Row	Dynamically create a row. The table must support dynamic row creation, that is, it has a RowStatus or EntryStatus column.
Delete Row	Dynamically delete the selected row. The table must support dynamic row creation, that is, it has a RowStatus or EntryStatus column.

- **Graph**

  Plot graph for selected OID. If there is already one graph tab, you will be asked to re-use this tab or open a new tab.



  Clicking on this menu item will bring up performance graph window. But first, OID field needs to be a numerical OID value or a table column node whose instances are numerical values. For example, it can be *sysUpTime, ifOutOctets, and ifOutOctets.1*, etc.

  Buttons on the toolbar:

Export to CSV file	Export chart data to a CSV file.
Import from CSV file	Import data from a CSV file.
Save as PNG	Save chart data to a PNG format file.
Print	Print out the chart.
Restart	Restart plotting chart.
Pause	Pause plotting chart.
Switch	Switch between current view and global view.
Display trace	Display trace lines.

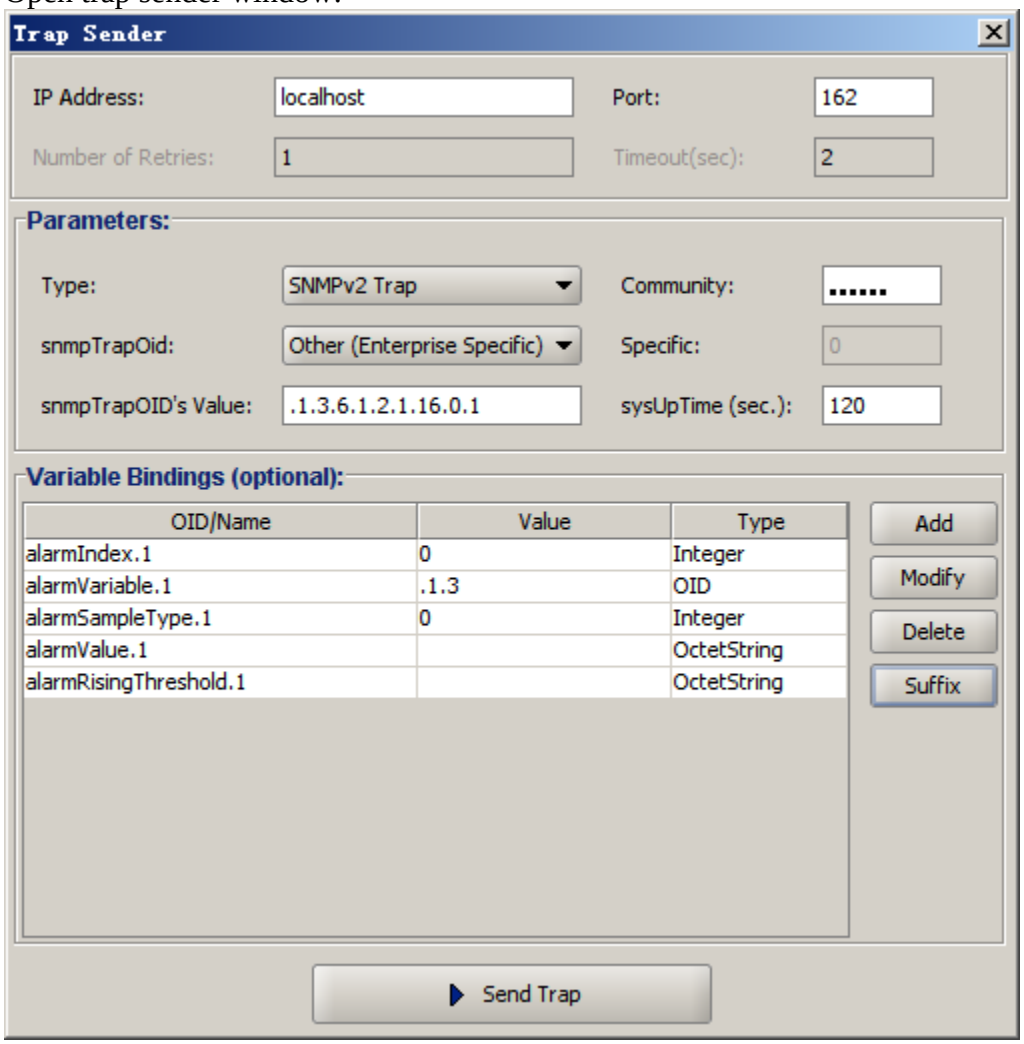
Grid	Display grid lines.
Rate	Display delta instead of raw values.

The polling interval can be changed by clicking the “Set” button.

■ Tools menu

▪ Trap Sender

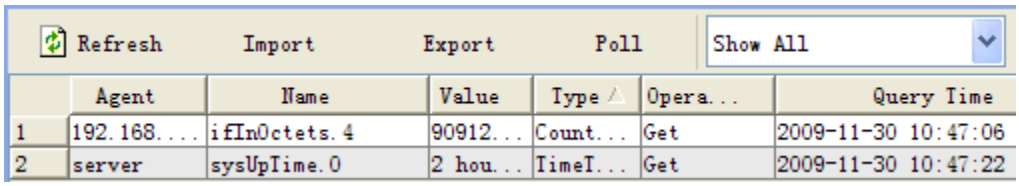
Open trap sender window:



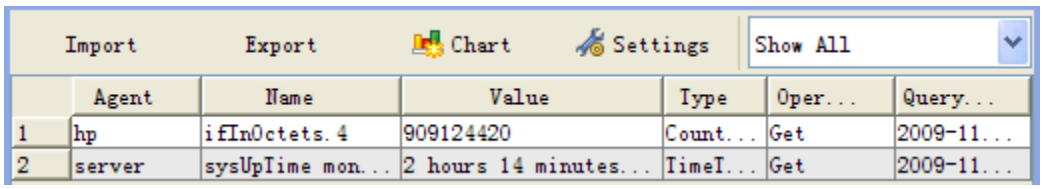
This window allows user to send out SNMPv1/v2c traps or informs. For SNMPv1/v2 trap nodes in the MIB tree, you can right click on them and select “Send Trap” context menu to bring up this window, and the information from the trap node will be used to fill out the default values.

- **Watches**

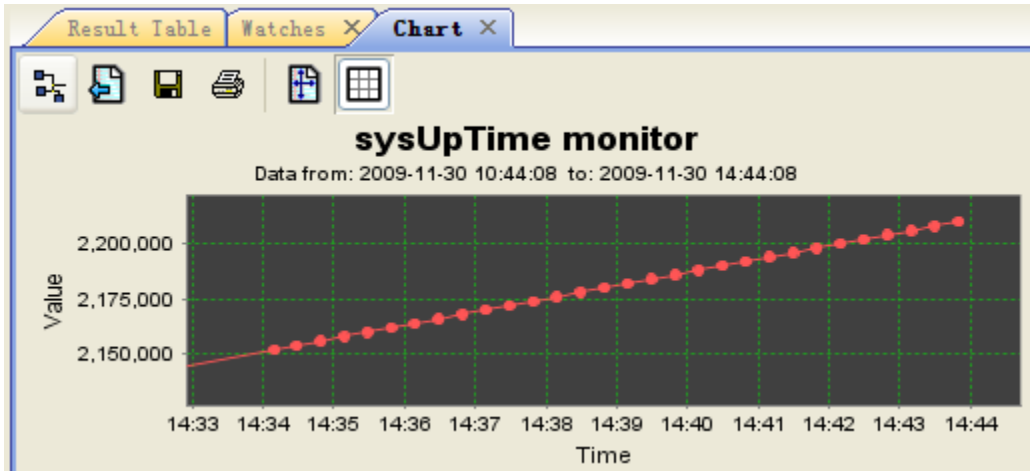
  Displays a table of variables being watched.



(Professional Edition)



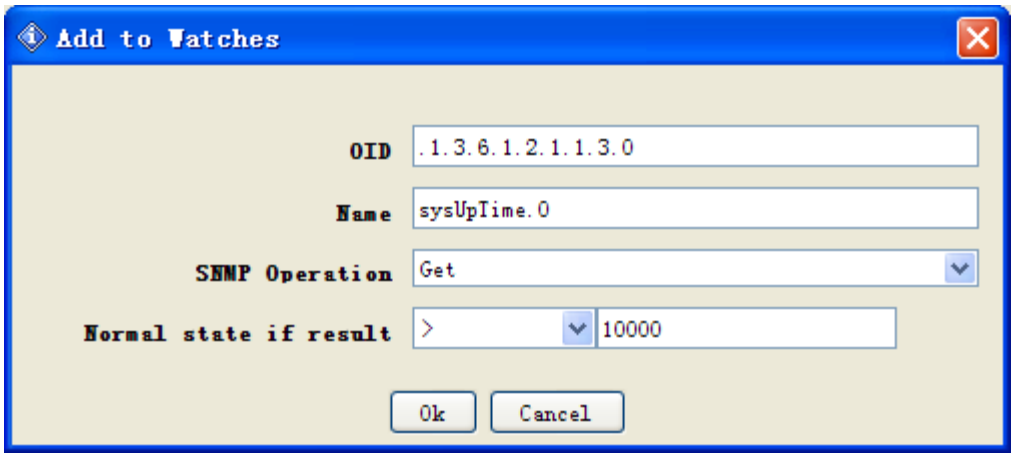
(Enterprise Edition)



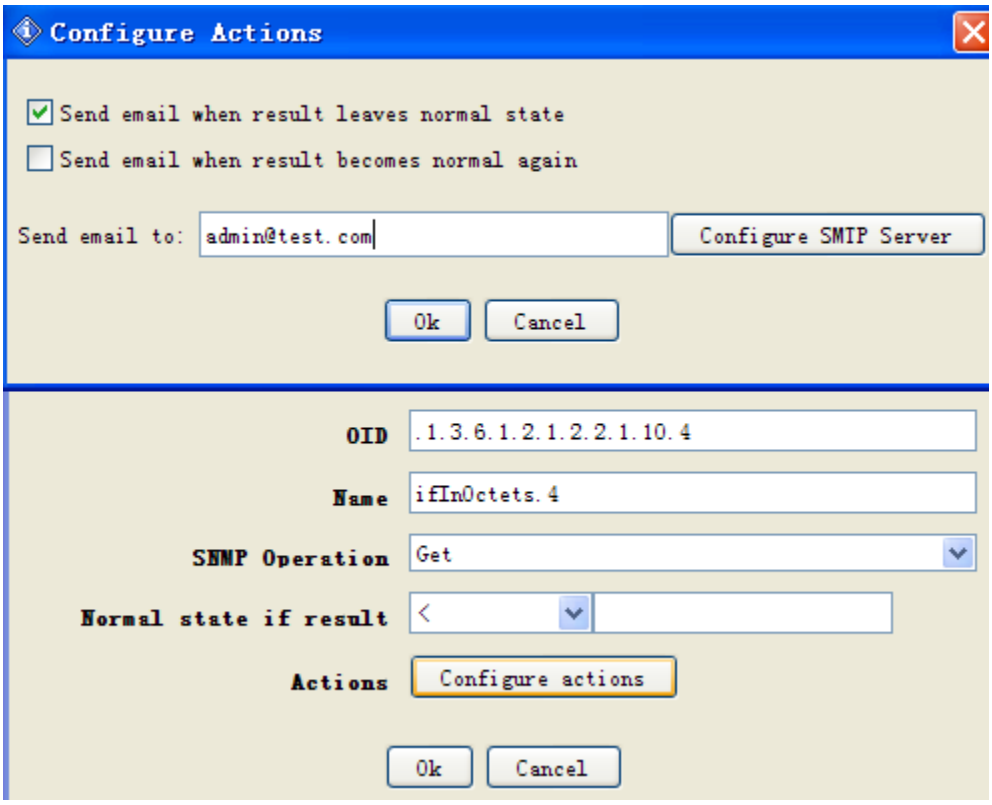
(Enterprise Edition. Watch's historical data)

- **Add Watch**

  Add watch item.



(Professional Edition)



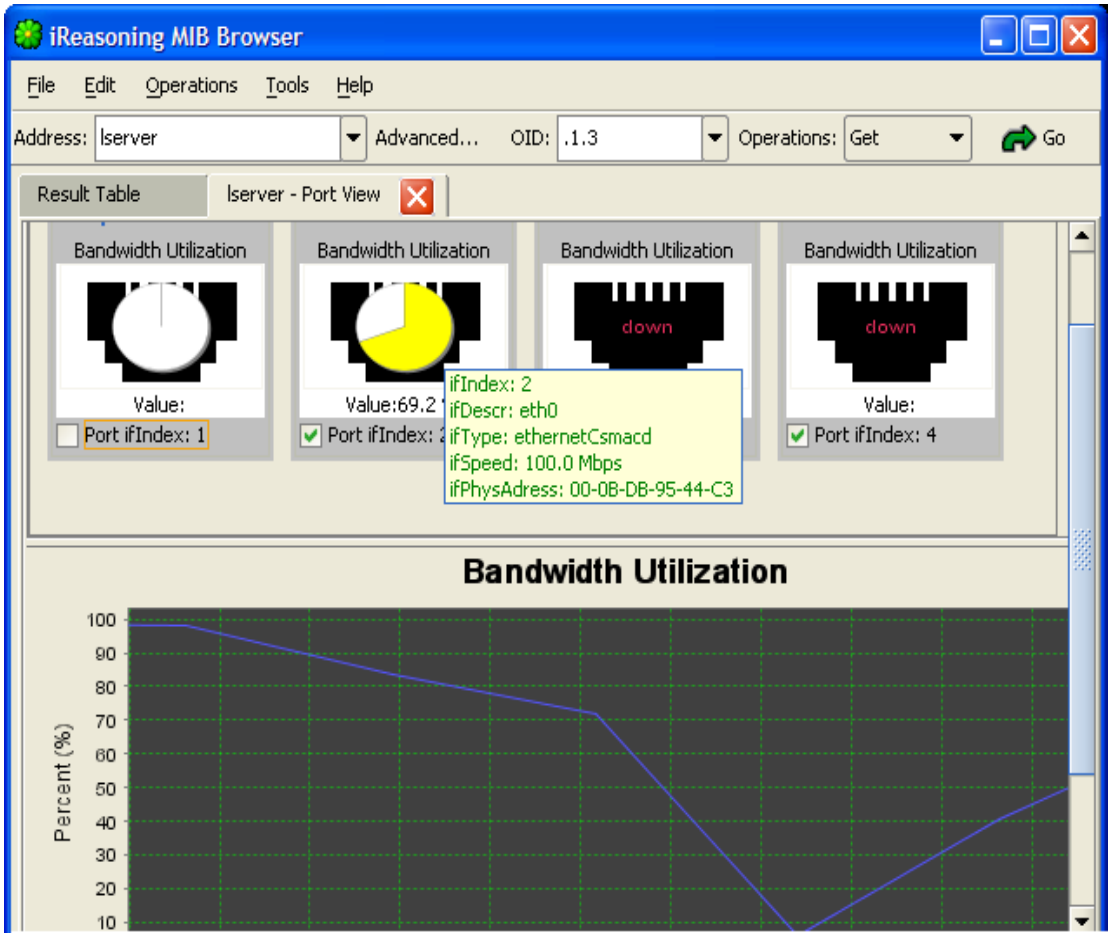
(Enterprise Edition)

In enterprise edition, you can configure actions for each watch. Current actions include sending out email when the watch is in alarm or rearm states.

- **Port View**

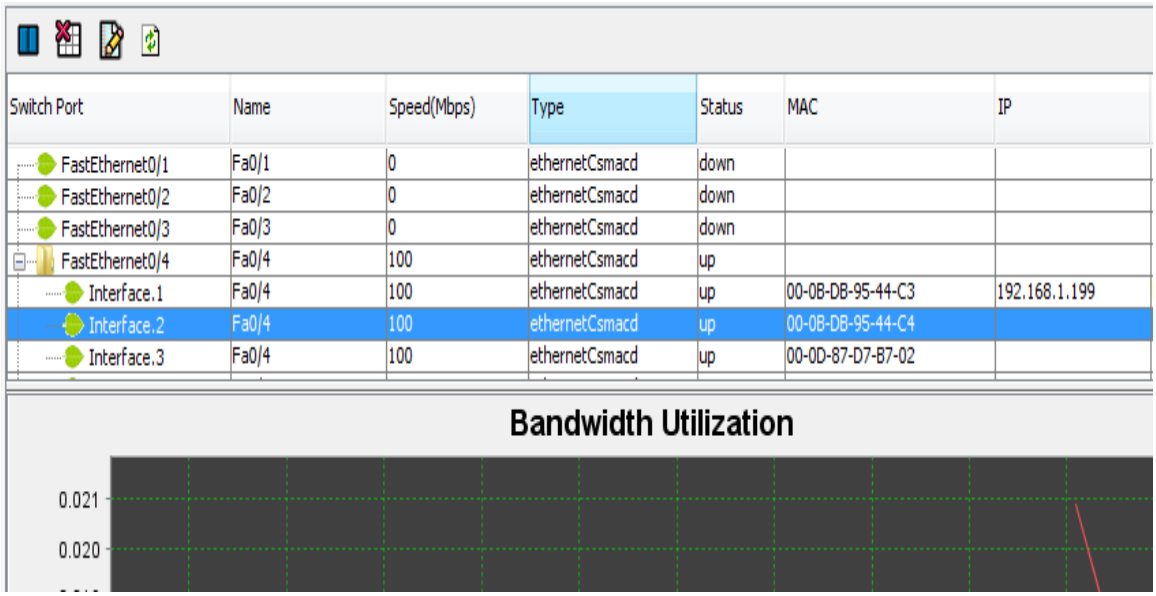
  It shows input/output bandwidth utilization and error percentage of all ports of a node. The tooltips of pie charts show port properties. You can uncheck the checkbox near port's name to ignore its values.

  The color of pie charts indicates severity levels, and it can be customized on the settings page.



- **Switch Port Mapper**

  It shows mapping of the devices connected to a managed switch, and similar to the port view, bandwidth utilization of ports is displayed.



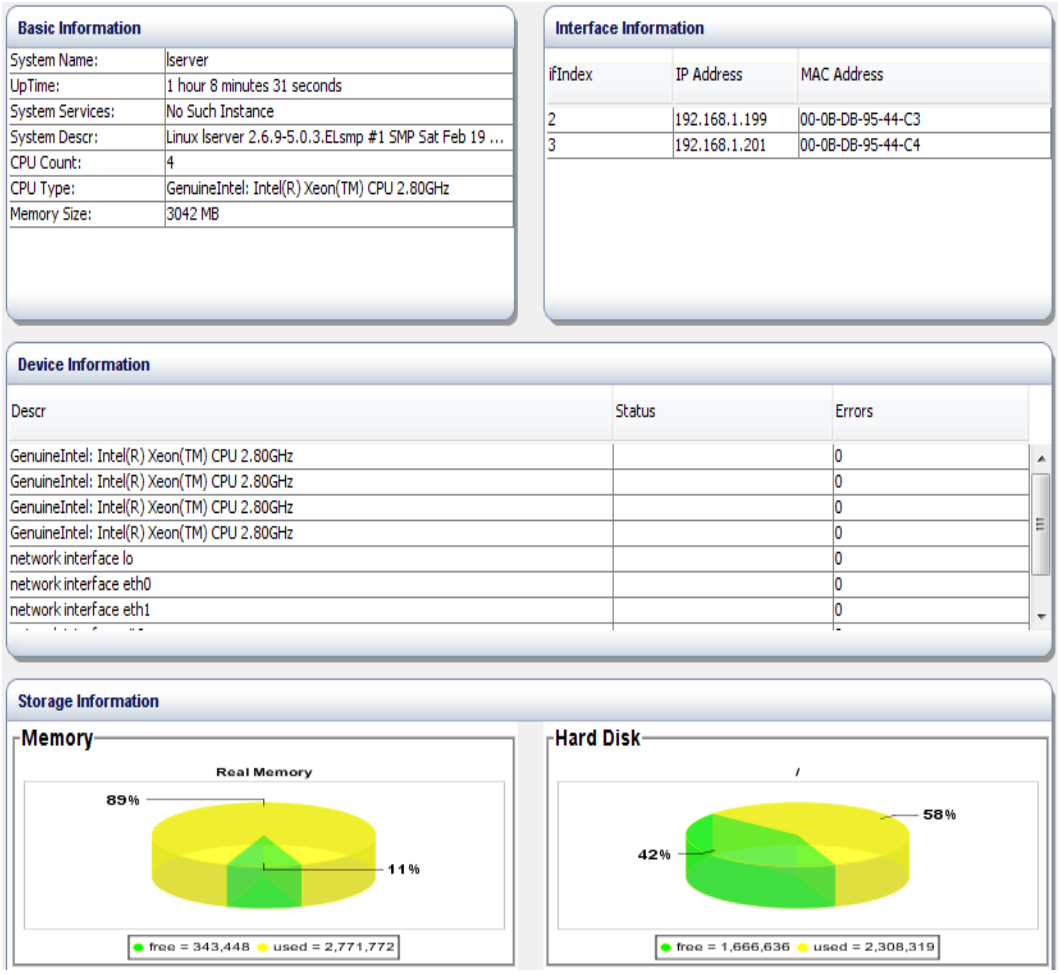
Configure Settings

- **Routers**: IP and community of layer 3 routers, which will be used to retrieve MAC to IP mapping data.

- **Chart Polling Interval**: Data polling interval for plotting charts.

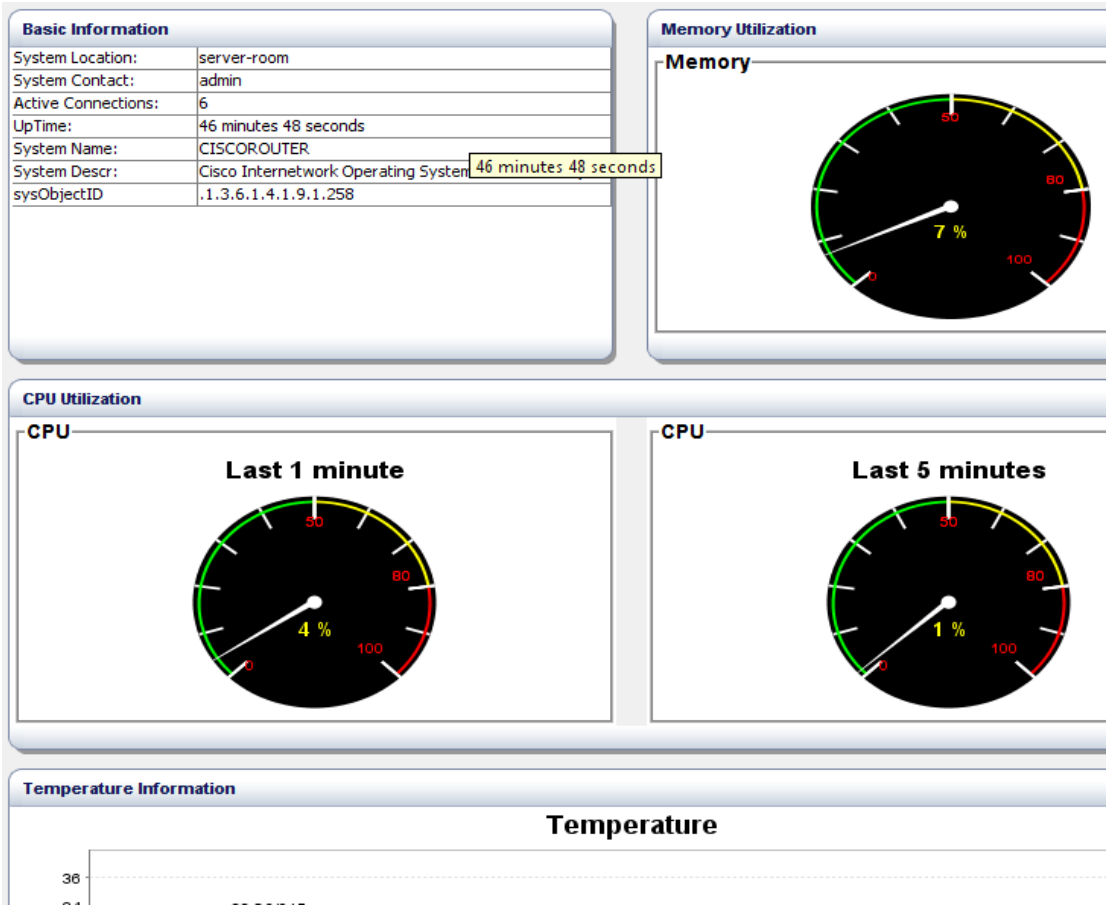
- **Device Snapshot**

  Show a snapshot view of available device data, including system info, interfaces, disks, processes, installed software, etc.



- **Cisco Device Snapshot**

  Show a snapshot view of Cisco devices.



If you have more OIDs to monitor, you can use the settings screen to add additional OIDs. The values of them will be shown in the "Basic Information" panel.

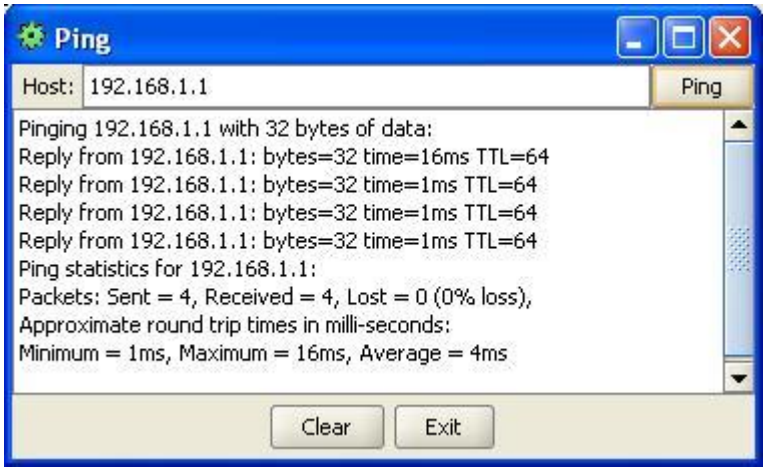
The utilization charts can have two types: meter or pie charts.

- **Log Window**

  Open application log window that displays application's log information. To clear the content, right click on this pane and select "Clear text" menu item.

- **Ping**

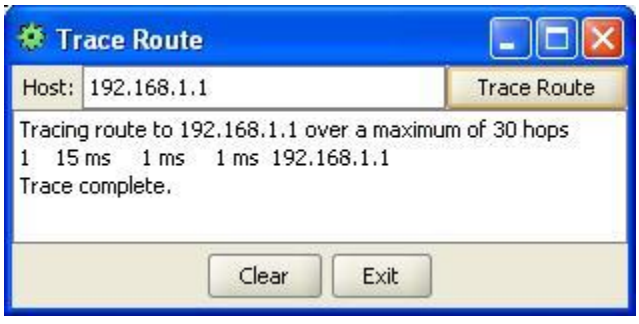
  Open ping tool window:



  Enter an IP address and press "Ping" button. The results will be displayed in the text area.

- **Trace Route**

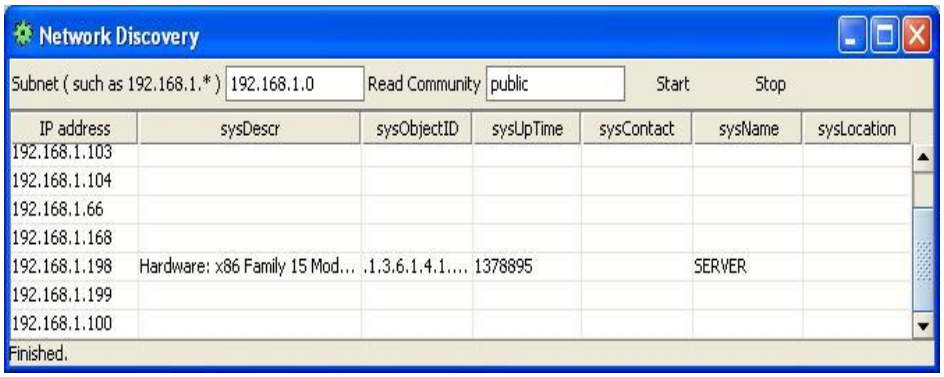
  Open traceroute tool window:



  Enter an IP address and press "Trace Route" button. The results will be displayed in the text area.

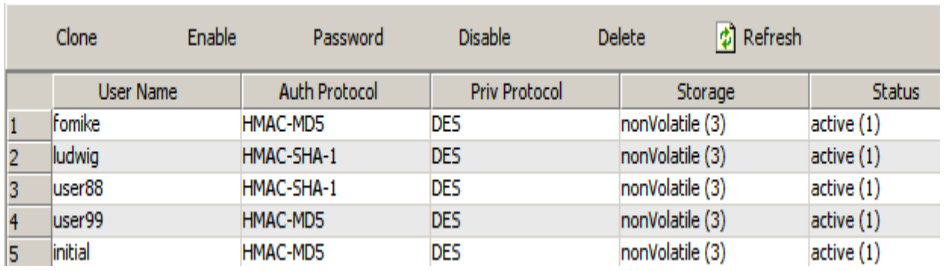
- **Network Discovery**

  Open LAN discovery tool window:



  Enter a subnet IP address such as 192.168.1.0 and then press “Start” button. It can discover all hosts in the subnet. And if SNMP agent is running on a host, its system table will be queried as well.

- **Manage SNMPv3 USM Users**

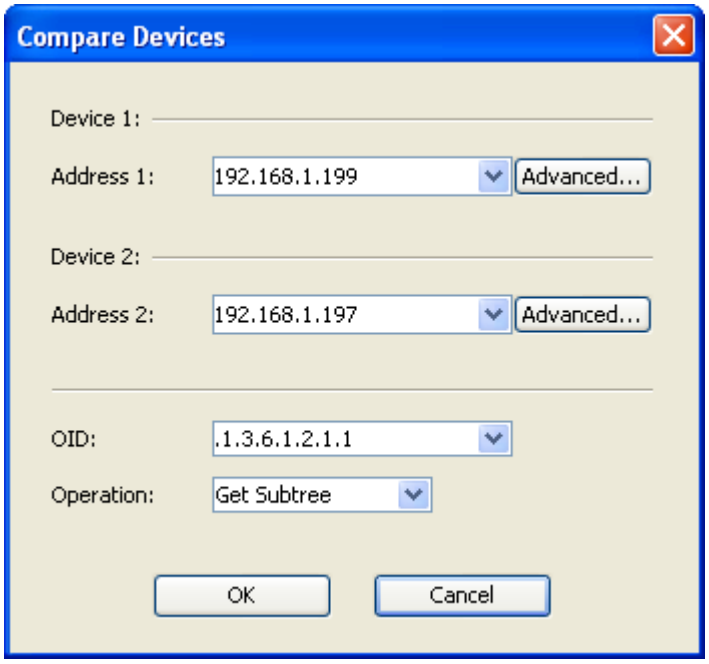


	User Name	Auth Protocol	Priv Protocol	Storage	Status
1	fomike	HMAC-MD5	DES	nonVolatile (3)	active (1)
2	ludwig	HMAC-SHA-1	DES	nonVolatile (3)	active (1)
3	user88	HMAC-SHA-1	DES	nonVolatile (3)	active (1)
4	user99	HMAC-MD5	DES	nonVolatile (3)	active (1)
5	initial	HMAC-MD5	DES	nonVolatile (3)	active (1)

  The initial window displays a list of existing SNMPv3 users. You then can edit user’s properties or delete it.

- **Compare Devices**

  Compare the SNMP values of two devices:

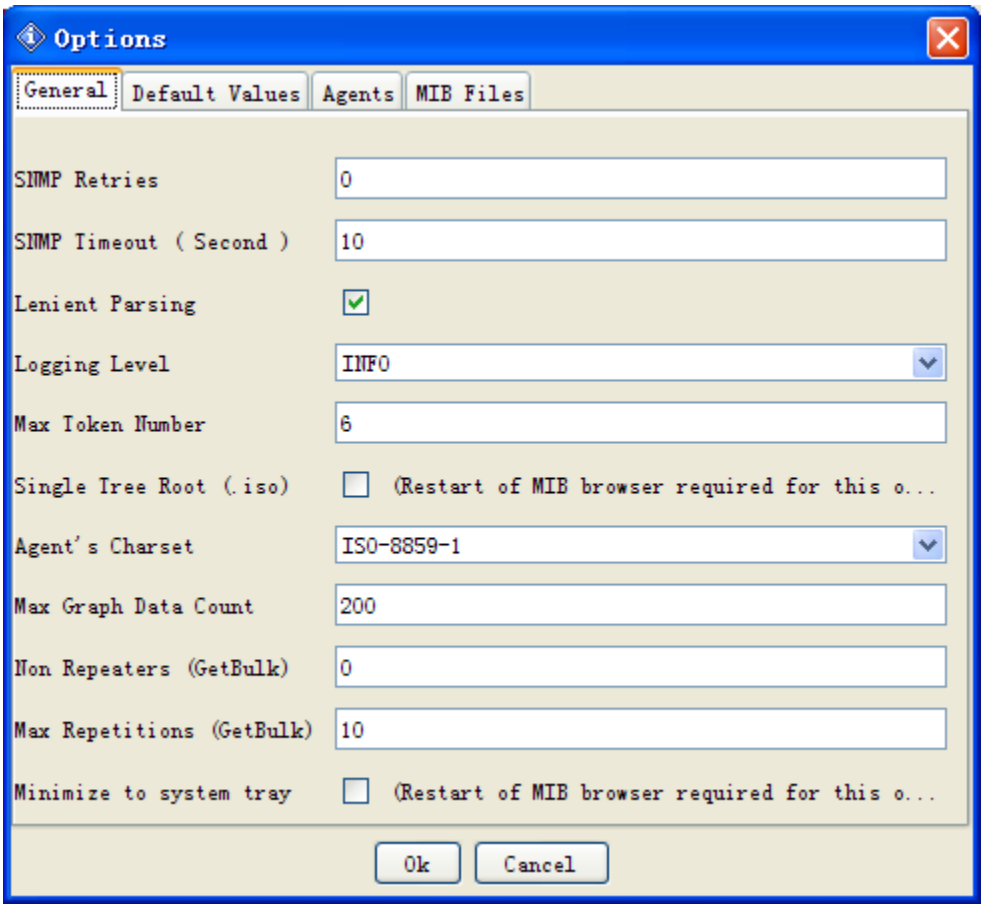


  If the values of them are different, the font color is changed to blue:

Name/OID	Value (192.168.1.199)	Value (192.168.1.197)
sysDescr.0	Linux lserver 2.6.9-5.0.3.ELs...	Windows XP (Build Number: ...
sysObjectID.0	.1.3.6.1.4.1.8072.3.2.10	.1.3.6.1.4.1.99.1.1.3.11
sysUpTime.0	2936216	2952313

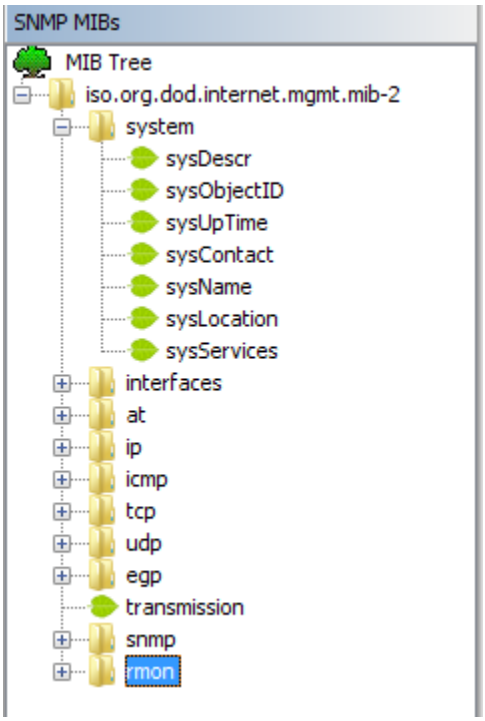
- **Options**

  Open options window for customizing MIB browser:

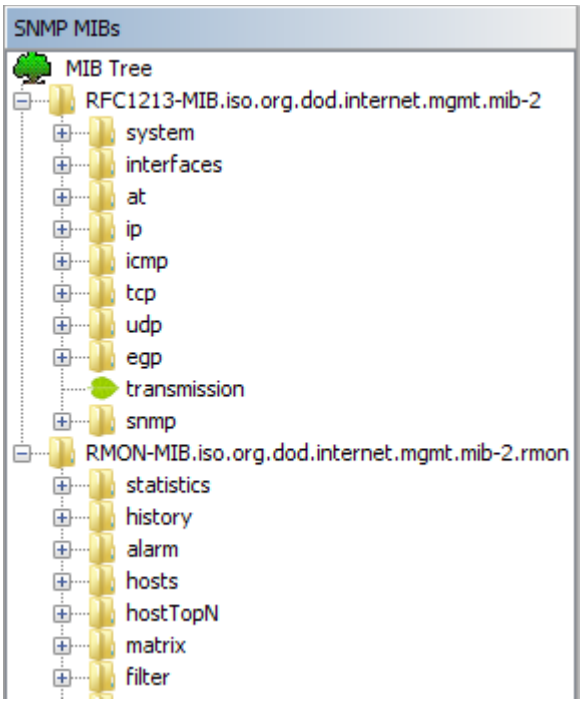


- **General tab**

SNMP Retries	Number of retries for SNMP queries.
SNMP Timeout	Timeout value for SNMP queries, in seconds.
Lenient Parsing	If checked, MIB parser will ignores some syntax errors in MIB files.
Logging Level	Logging level of the logger. If it is "DEBUG", the SNMP PDU will be printed in the Log window, but it may degrade the performance of the MIB browser.
Trap Port	The port number of trap receiver.
Max Token Number	The maximum number of tokens allowed in the description field of trap receiver. For instance, if the value is 6, then the message ".iso.org.dod.internet.mgmt.mib-2.interfaces.ifTable.ifEntry.ifAdminStatus.3" will be truncated to "….mib-2.interfaces.ifTable.ifEntry.ifAdminStatus.3".
Single Tree Root	If checked, MIB tree will have a single root node, that is, the *.iso* node. Otherwise, each MIB module has its own root node. MIB browser needs to be restarted for this option to take effect.
Agent's Character Encoding	For an SNMP agent on a non western language OS, it may return values in a different character encoding. You can change the charset in order to correctly display values returned from the agent.
Max Graph Data Count	Maximum number of data in memory of a graph.
Non Repeaters	Non repeaters value for SNMP GET-BULK requests.
Max Repetitions	Max repetitions value for SNMP GET-BULK requests.
Minimize to system tray	If checked, the MIB browser will be minimized to the system tray when you close it.



Single tree root

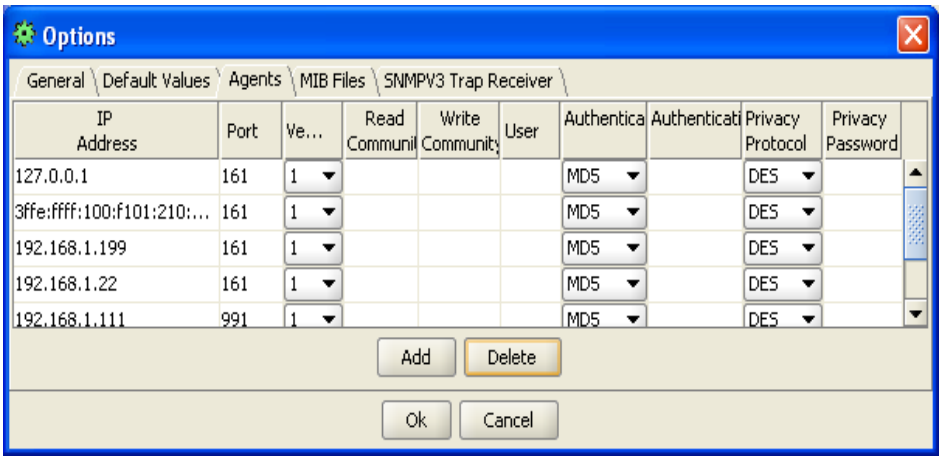


Each Module has its own root node

- **Default Values tab**

  This tab allows the user to set default properties for new SNMP agents.

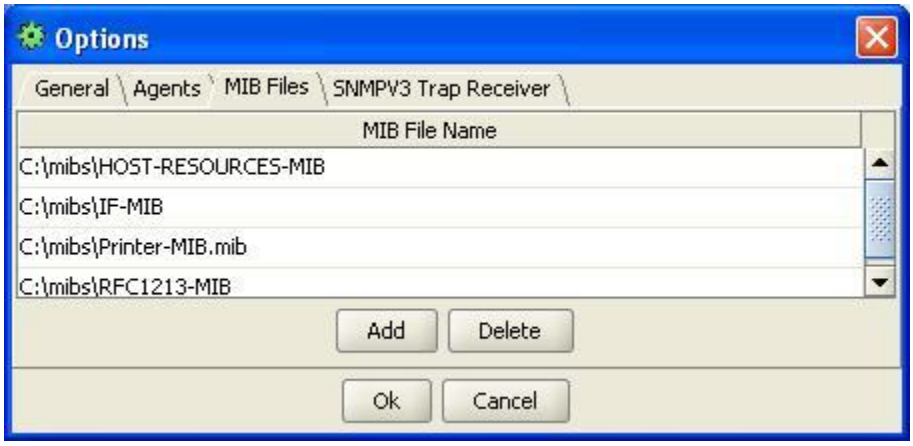
- **Agent tab**



This table stores the properties of visited SNMP agents. You can add or delete agents from this table.

For SNMPv1/v2c agents, values of User, Authentication Protocol, Authentication Password, Privacy Protocol and Privacy Password, are ignored. For SNMPv3 agents, values of Read Community and Write Community are ignored.

- **MIB Files tab**

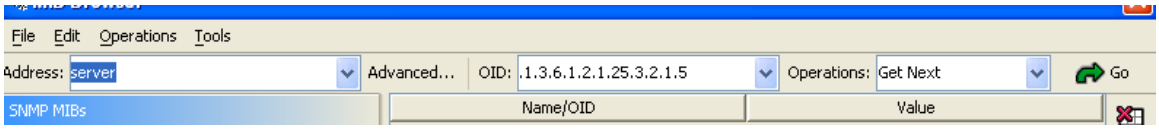


This table stores file names of loaded MIBs. You can add or delete MIBs from this table.

- **Bookmarks menu**

This menu contains all your stored bookmarks. Bookmarks are links to OIDs and their associated operations that you use frequently. By adding an OID to your bookmarks, you can use it by simply clicking its name, instead of having to type it again.

✧ Toolbar



- **Address field**

  Enter the IP address and port number of SNMP agent, in the format of "ipAddress@port" or "ipAddress:port" (IPv4 only). The "@port" or ":port" are not necessary if the port number is 161.

  Address Group is a group of IP addresses, including their port numbers. It starts with "g " in the address field. Address group makes it much easier to perform SNMP operations against multiple agents. An example:

  192.168.1.1, 192.168.1.2:1611, 192.168.2.1

  Other properties of an SNMP agent, such as community, SNMPv3 parameters, cannot be specified in the group address dialog. To change these properties, you can enter the IP address into the address field, and press "Advanced" button to change other properties. Then the IP address in the group will automatically reflect the changes.

- **Advanced button**

  Customize the properties of current SNMP agent, such as community names, SNMPv3 USM parameters, etc.

  For an SNMPv3 agent, its engineID, authKey and privKey properties will be updated after first successful query.

- **OID field**

  Object identifier to be used for SNMP queries. This field is updated when the user selects a node in MIB tree or a row in the result table. You can also type new value directly in this field.

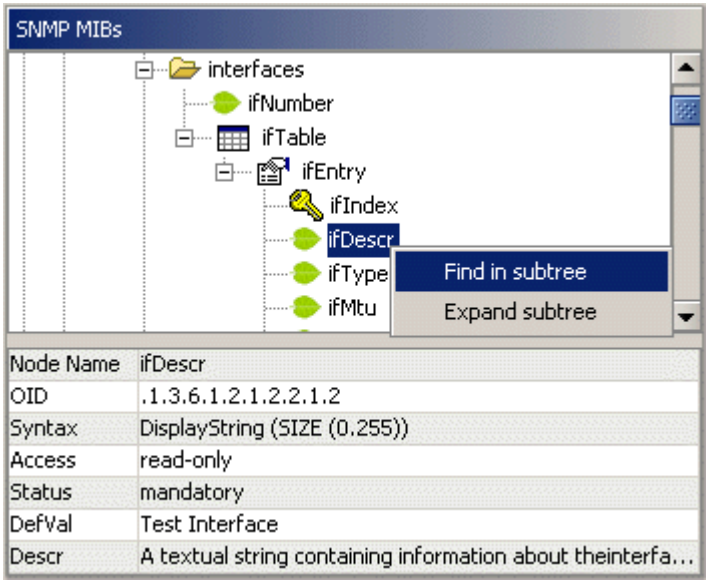
- **Operations**

  Select one of the SNMP operations from the list. Operation will be performed immediately when it is selected.

- **Go button**

  Press this button to perform the selected operation.

✧ MIB Tree Pane



It is divided into two panes: Tree pane on the top and properties pane on the bottom.

- **Tree Pane**

  Display MIB trees. Right click on a node, a popup menu shows up. Depending on the node properties, if right clicking on a root node of a MIB module, popup menu includes three menu items: *Find, Expand and Unload MIB*. On other nodes, their respective popup menus have only two menu items: *Find and Expand*.

	Table node
	Table entry node
	Read-write node
	Read-create node
	Index node
	Leaf node, usually read-only

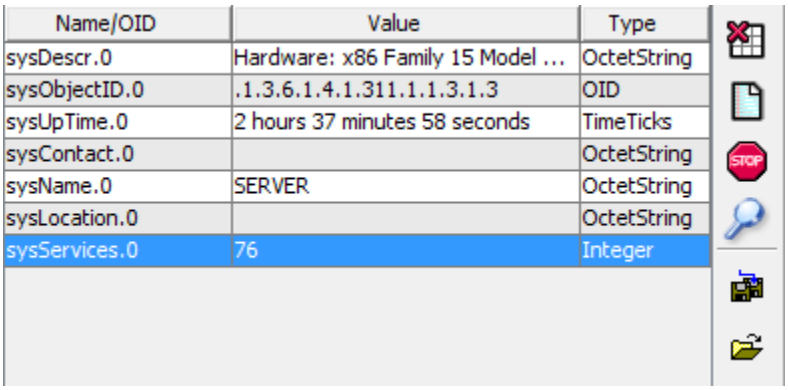
Table: Icon descriptions

  Double click on a scalar node, its value will be queried against the agent specified on the toolbar. If double click on a tabular node (such as ifSpeed), then its subtree values will be queried against the agent.

- **Node Properties Pane**

  Display properties of selected node. Tooltips of second column show more information.

✧ Result Pane



Display the result of SNMP queries in a table.

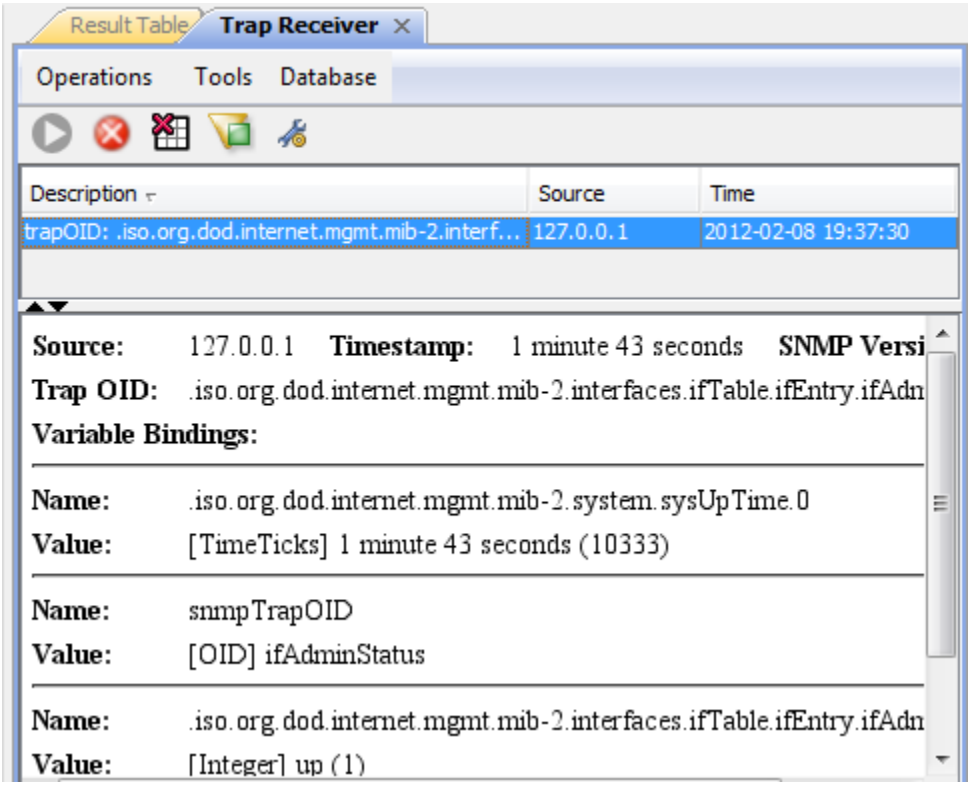
There are three buttons on the right toolbar:

Stop button	Stop pending SNMP queries.
Clear Table button	Clear the result table.
Raw Data button	Launch a new dialog window showing the raw results of SNMP queries.
Find button	Find strings in the result pane.
Save button	Save values in result pane to an XML file.
Open button	Load values from an XML file to the result pane.

Trap Receiver

✧ Main Window

Trap receiver can be opened from MIB browser window or started independently.



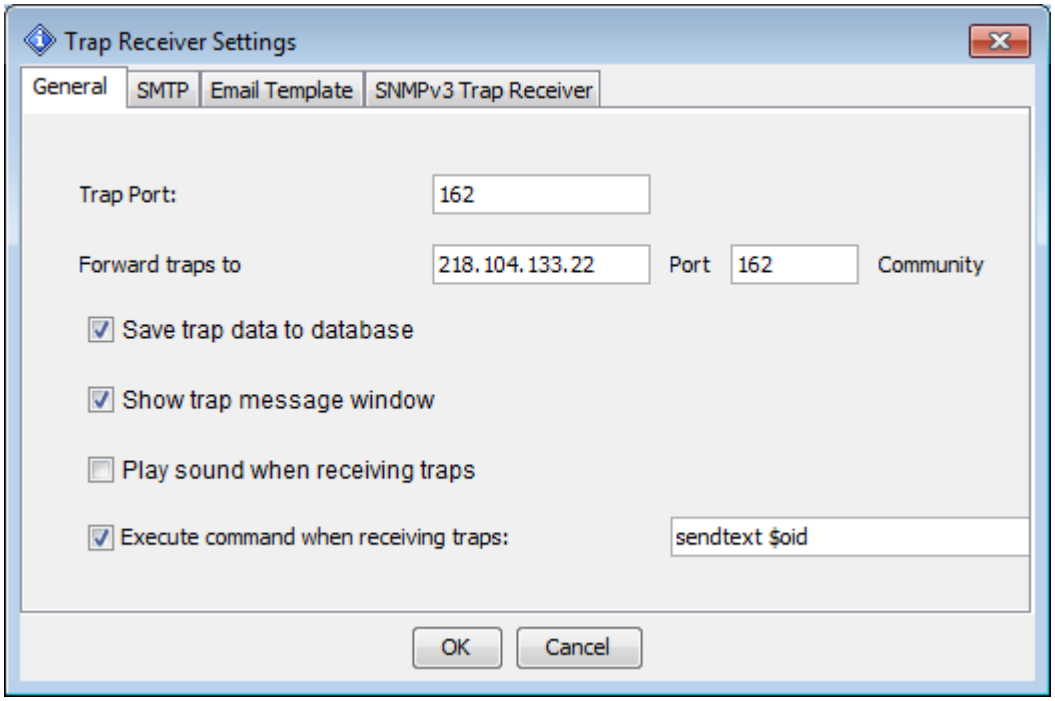
Trap receiver window is divided into two panels. The upper panel displays summaries of traps. The lower panel displays details of selected trap.

There are three buttons on the right side toolbar:

Trap Filter button	Apply filter to all received traps. A trap can be blocked based on its IP address and OID.
Start Trap Receiver button	Start the trap receiver. It'll be grayed out if trap receiver is running. Trap receiver is not started automatically when the window is opened.
Stop button	Stop the trap receiver.
Clear Table button	Clear the content of the trap table.
Export Table to CSV	Export table data to a CSV file.
Options	Trap receiver's settings.

✧ Options

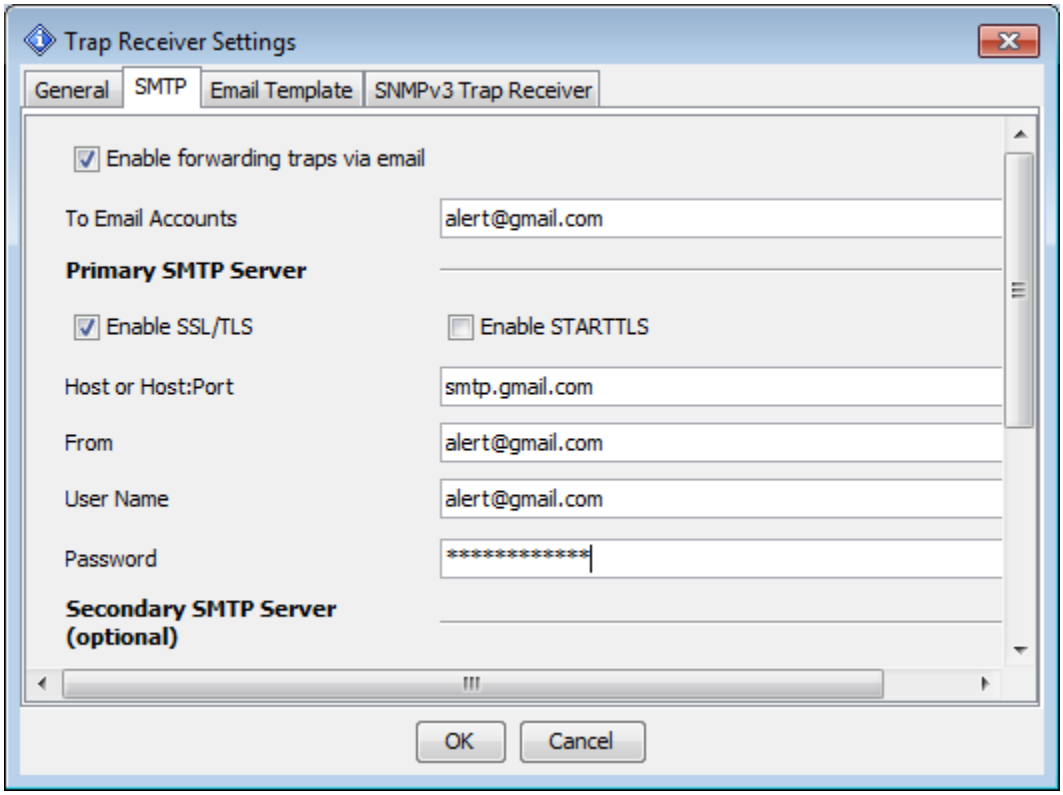
▪ General Tab



Trap Port	The port number of trap receiver.
Forward Trap To	Forward traps to another trap receiver in SNMPv1 PDUs.
Save trap data to database	If enabled, received traps will be saved to the bundled database. Then they can be loaded again.
Show trap message window	If enabled, a trap message window will show up around system tray when a new trap is received.
Play sound	Play sound when a trap is received.
Execute command	Execute a command when a trap is received.

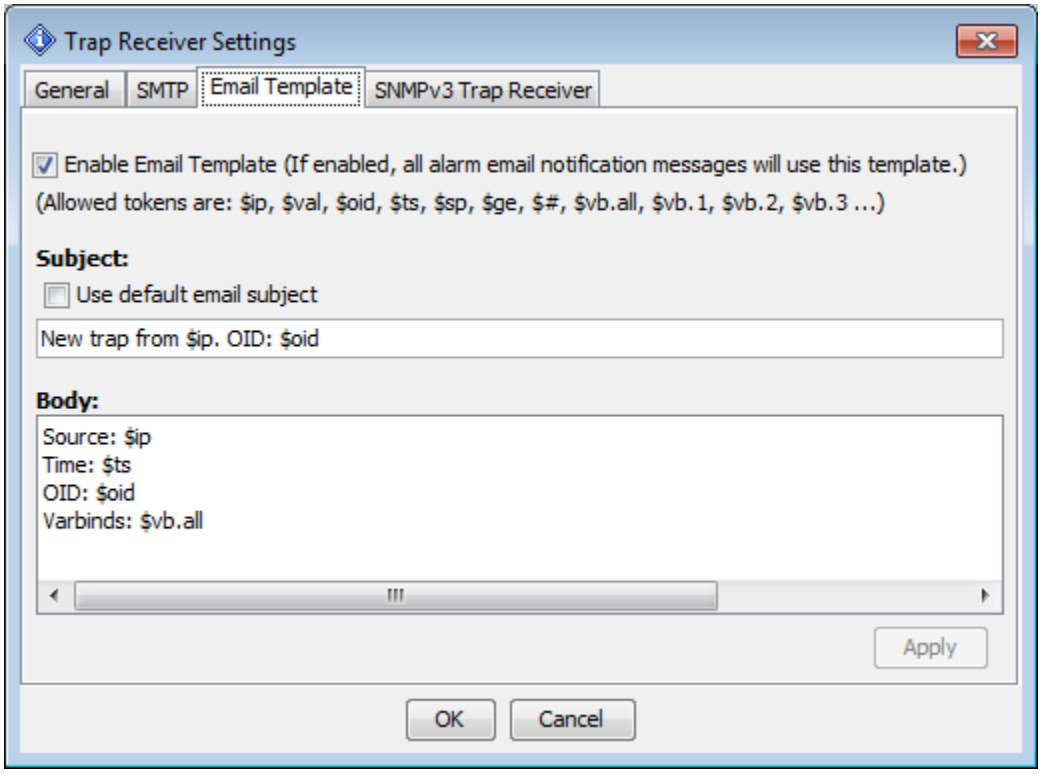
Tokens used in execute command	
$ip	IP address of trap originator
$oid	Trap OID
$ts	Timestamp value
$sp	Value of SNMPv1 trap's specific field
$vb.all	All variable bindings
$vb.n	The *nth* variable binding. For example, $vb.1 is the first variable binding, $vb.2 is the second one.

- **SMTP Tab**



This tab specifies whether to enable forwarding SNMP traps via email. If it is enabled, at lease the primary SMTP server should be configured. If the secondary SMTP server is also configured, it will be used for sending emails when the primary SMTP server fails.

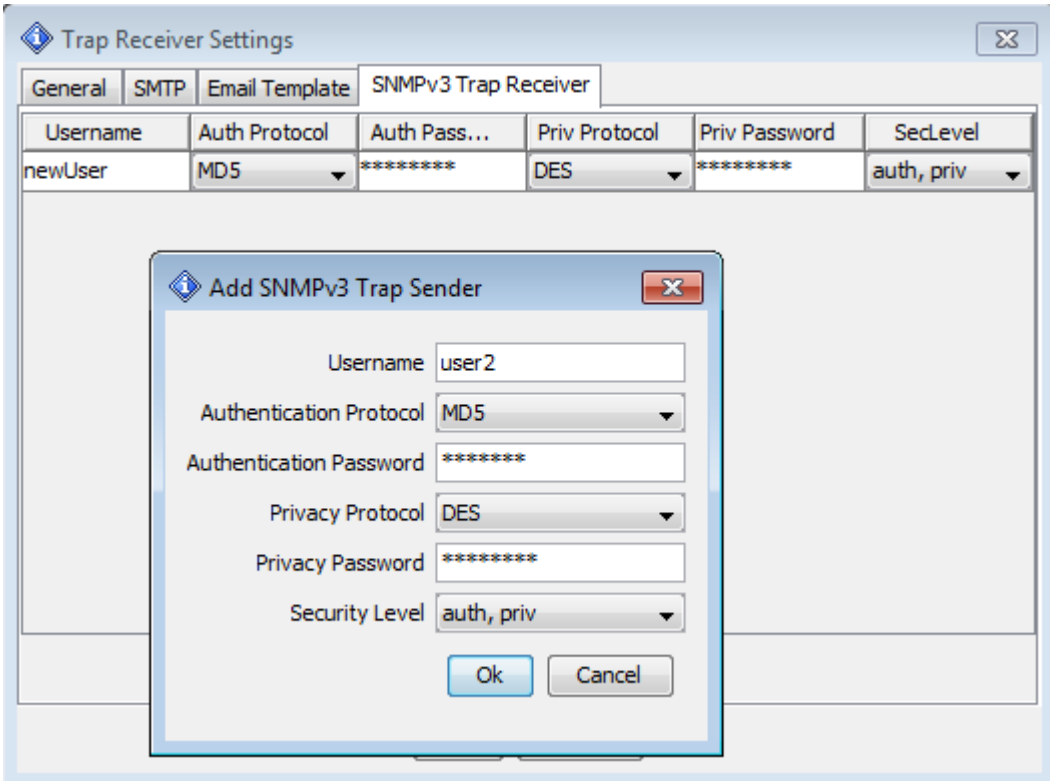
- **Email Template Tab** *(only available in enterprise edition)*



If the email template is enabled, all emails of forwarded traps will use the template.

Tokens used in template	
$ip	IP address of trap originator
$oid	Trap OID
$ts	Timestamp value
$sp	Value of SNMPv1 trap's specific field
$vb.all	All variable bindings
$vb.n	The *nth* variable binding. For example, $vb.1 is the first variable binding, $vb.2 is the second one.

- **SNMPv3 Trap Receiver Tab**



This table stores the properties of SNMPv3 trap senders. You can add or delete items from this table.

Command Line Options

Command line tools are located at $INSTALL_DIR\bin directory.

- MIB browser can be launched from the command line with the following options:

browser.bat -h (or –help, -?)	Print usage
-h <h>	Specify the host name or IP address of SNMP agent.
-p <p>	Specify the port number of the SNMP agent. Default value is 161.

-v <1|2|3>	Specify the SNMP version number. Possible values are 1, 2, and 3.
-c <c>	Specify the SNMP community name. Default value is public.
-o <o>	Specify OID.
-a <a>	Specify the SNMP action. Possible values are (get|getnext|getsubtree|walk|gettable).
-f <filename>	Output CSV file name. Used with gettable action.
-s <filename>	Open a saved session on startup.
-w	Open watch tab on startup.

- Command Line Graph Tool

  graph.bat script is used to record an SNMP agent's values to a file, which can be opened by the MIB browser using the "File/Open Graph Data" menu.

  Running *graph.bat* without any arguments will print usage and examples.

- Command Line SNMP Tools

  snmpget.bat script is used to issue SNMP GET request.
  snmpgetnext.bat script is used to issue SNMP GET-NEXT request.
  snmpset.bat script is used to issue SNMP SET request.

Keyboard Shortcuts

CTRL-L	Load MIB file
CTRL-F	Find a MIB node.
CTRL-G	Perform SNMP GET operation.
CTRL-N	Perform SNMP GET-NEXT operation.
CTRL-E	Perform Get-Subtree operation.
CTRL-S	Perform SNMP SET operation.
CTRL-W	Perform walk operation.
CTRL-P	Stop current operation.
Enter	If Operations or Go button have focus, pressing “Enter” key will repeat last operation.
CTRL-T	Table view
CTRL-R	Plot graph.
CTRL-D	Add to watches
CTRL-O	Open watches panel
CTRL-I	Open trap receiver panel

About different editions

The free personal edition is intended exclusively for private use on a single workstation. You may copy the complete program package and pass it on to others for private use only. The free personal edition may not be used for commercial or professional purposes.

The professional edition has many more features and can be used for commercial or professional purposes.

The enterprise edition has more powerful trap receiver and monitoring features.

Features table

Feature	Personal Edition	Professional Edition	Enterprise Edition
Runs on Windows, Mac OS X, Linux and other UNIX platforms	✔	✔	✔
Supports basic SNMP operations	✔	✔	✔
Table view for MIB tables	✔	✔	✔
SNMPv3 USM user management		✔	✔
Trap Receiver	✔	✔	✔
Trap Sender	✔	✔	✔
Supports IPv6	✔	✔	✔
Supports SNMPv1/v2c	✔	✔	✔
Supports loading any standard or private MIB	✔	✔	✔
Maximum number of MIBs loaded	10	No restrictions	No restrictions
Free	✔		
Supports SNMPv3		✔	✔
Watches		✔	✔
Address Group		✔	✔
Network discovery		✔	✔
ICMP Ping tool		✔	✔
ICMP Traceroute tool		✔	✔
Performance graph		✔	✔
Port view		✔	✔
Switch port mapper		✔	✔
Device snapshot		✔	✔
Cisco device snapshot		✔	✔
Compares devices		✔	✔
Forwards traps via email		✔	✔
Periodically refreshes MIB table		✔	✔
Dynamic table row creation and deletion		✔	✔
Run as service (Trap Receiver & Watches)			✔
Watch actions			✔
Email template			✔