N-TRON
THE INDUSTRIAL NETWORK COMPANY

iSNMP Suite

User Manual

iSNMP Suite Help

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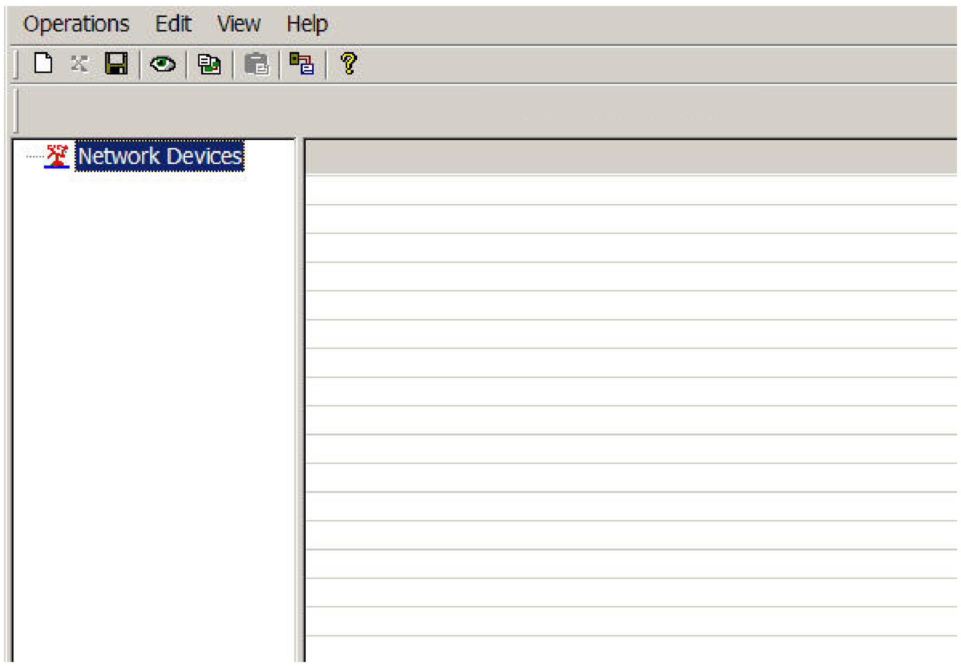
Chapter 1 - Getting Started with iSNMP Editor

Before you can begin to monitor the health and performance of your Ethernet network, IndustrialSNMP must first be made aware of the network devices that you wish to monitor. Setting up a database of network data is easy and quick with IndustrialSNMP Editor. The procedure is as follows:

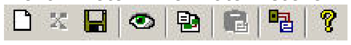
1. Auto-discover or manually define the network devices that you have.
2. Define the data points that you want to read from the network devices.
3. Monitor the configured devices in the iSNMP DataViewer, or
4. Set up your HMI to read the OPC tags from the IndustrialSNMP OPC server.

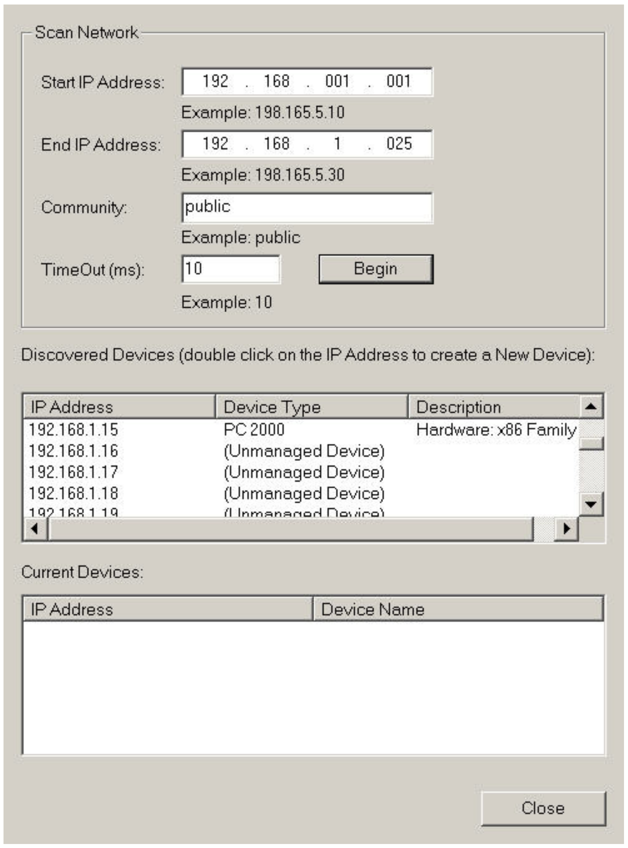
When you first start IndustrialSNMP Editor, you will see the Explorer-like screen as shown below:



To define the devices in your network, you have two choices. You can either Auto-Discover the network devices (easiest way), or you can define the network devices manually (harder way).

1.1 Auto-Discovery of Network Devices

1. Make sure that the iSNMP computer is connected to the Ethernet network that you want to Auto-Discover network devices on!
2. Press the Auto-Discover button on the taskbar or select Auto-Discover from the Operations menu. *Note: The Auto-Discover button is the green eye on the iSNMP menu bar.*

3. The Search Network dialog box should appear. In order to search the network, you will need to tell IndustrialSNMP the range of IP addresses to search. Enter the starting and ending IP address range of the Ethernet devices in your network and press the Begin button. *Note: If you haven't defined an IP range, IndustrialSNMP won't allow you to search the network.*
4. After iSNMP has searched the network, a list of both SNMP manageable and unmanaged devices will be shown in the New Devices dialog box, as shown below. *Note: If you have already defined or auto-discovered a device before, it will not appear in the New Devices dialog box, but instead will appear in the lower Current Devices dialog box.*


Scan Network

Start IP Address: 192 . 168 . 001 . 001
Example: 198.165.5.10
End IP Address: 192 . 168 . 1 . 025
Example: 198.165.5.30
Community: public
Example: public
TimeOut (ms): 10
Example: 10

Discovered Devices (double click on the IP Address to create a New Device):

IP Address	Device Type	Description
192.168.1.15	PC 2000	Hardware: x86 Family
192.168.1.16	(Unmanaged Device)	
192.168.1.17	(Unmanaged Device)	
192.168.1.18	(Unmanaged Device)	
192.168.1.19	(Unmanaged Device)	

Current Devices:

IP Address	Device Name

Using the Auto-Discovery feature of IndustrialSNMP assumes that you have already configured the IP address(es) of your network devices. Most manufacturers ship their devices without an IP address pre-assigned. For help on how to configure your network devices, please consult the network management manual for the device, or contact your supplier for the hardware. Additionally, while most Windows 2000 and XP Professional operating systems have SNMP Services enabled by default, monitoring SNMP data from Windows NT workstations often requires that the SNMP services be installed. Detailed instructions are available from the Microsoft help files.

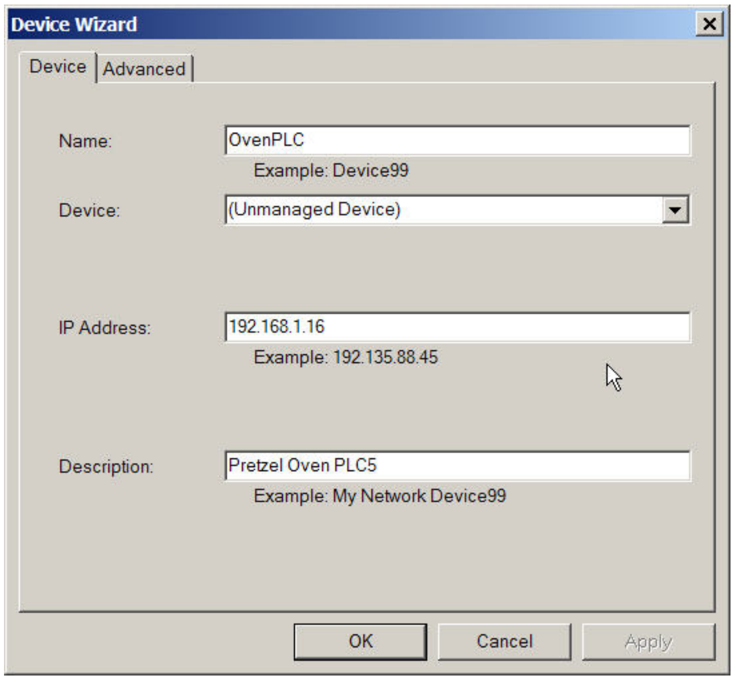
If you wish to add any of the devices that the auto-discovery tool has found into the IndustrialSNMP editor, then double-click on the device's IP address in the New Devices dialog box. If the device is unmanaged, follow this link to the un-managed device Help file section. If the device is SNMP manageable, then turn to the **Managed Device Setup** Help section.

1.11 Auto Discovering Unmanaged Device Setup

If you have auto-discovered an unmanaged device, by default the Device name that iSNMP will assign it will be *(Unmanaged Device) - xxx.xxx.xxx.xxx.*

1. Replace the default device name with a brief logical **Name**.
2. Leave the **Device** field as *(Unmanaged Device).*
3. Leave the IP address field unchanged!
4. Type a brief description of the device in the **Description** field if you wish.

Below is a screen capture of an example completed Device Wizard screen:



Name: OvenPLC
Example: Device99
Device: (Unmanaged Device)
IP Address: 192.168.1.16
Example: 192.135.88.45
Description: Pretzel Oven PLC5
Example: My Network Device99

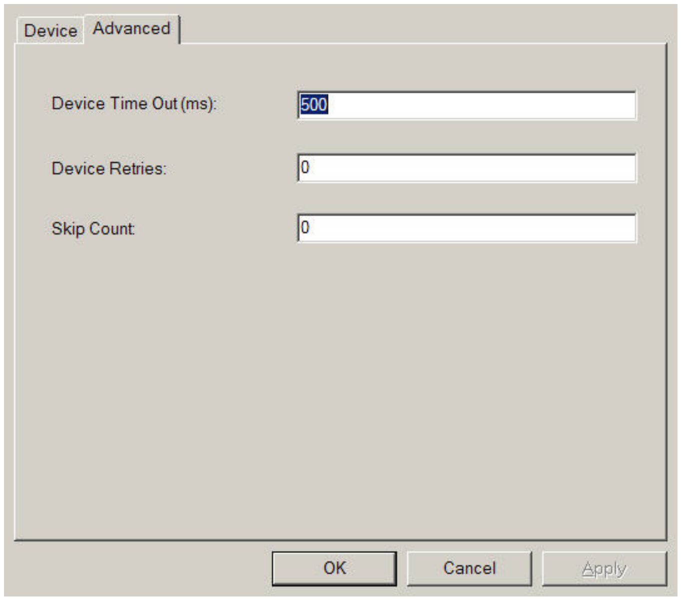
ADVANCED TAB

The advanced tab includes advanced settings primarily concerned with how IndustrialSNMP reacts if a field device is not responding promptly. If you are having problems communicating with a field device adjusting some of these settings may resolve your issues. It is recommended that the settings are left at the default values unless you are asked to make changes by an iSNMP tech support engineer!

The following is a list of definitions for the selections on the Advanced Tab:

1. **Device Timeout** (ms): This value is the amount of time allowed to complete an SNMP get. In situations where there may be a lot of traffic on the network, a longer timeout before iSNMP assumes a communication failure has occurred might be helpful. The default setting of 500 ms has been found to be suitable for most applications.
2. **Device Retries**: After an attempt to get data has timed out, the **Device Retries** value represents the number of times that iSNMP will attempt to retrieve the data before deciding that the device has failed.
3. **Skip Count**: This is the amount of time that iSNMP will wait before attempting another GET from a device that has failed. The time unit

is defined in the Device timeout setting. *Example (800 ms device timeout with 30 skip count =2400ms before new attempt)*



Device Time Out (ms): 500

Device Retries: 0

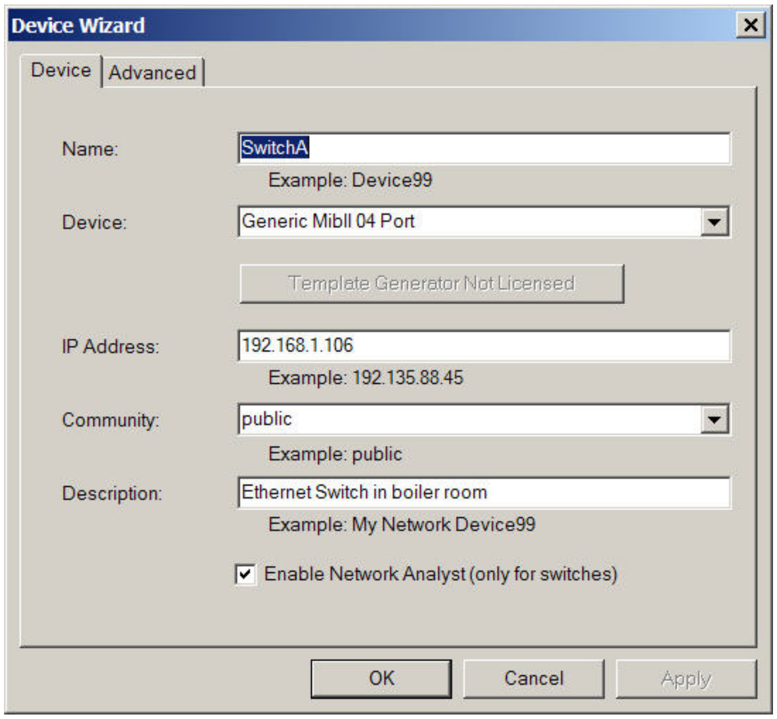
Skip Count: 0

1.12 Auto-Discovered SNMP-Managed Device Setup

In addition to the “Heartbeat” data that iSNMP makes available for all network devices, SNMP-manageable devices have a wealth of additional detailed network data that can be accessed. This section will help you configure your SNMP manageable devices:

DEVICE TAB

If IndustrialSNMP recognizes the managed device from our pre-defined list of supported network devices, much of the information required will be filled in, as illustrated below.



Name: SwitchA
Example: Device99
Device: Generic MibII 04 Port
IP Address: 192.168.1.106
Example: 192.135.88.45
Community: public
Example: public
Description: Ethernet Switch in boiler room
Example: My Network Device99
[✓] Enable Network Analyst (only for switches)

If not, follow the steps below to complete the device configuration:

1. By default, IndustrialSNMP creates a default device name by merging the type of network device that it discovered with the device’s IP address. Since the device name often is used as part of an OPC address string in your HMI, it is a good idea to now change the Device Name to a shorter unique string.

2. The second field in the Device Wizard is a drop-down **Device** menu, which allows you to select from a list of predefined SNMP-manageable devices. If the network device that you are configuring is one of the devices that IndustrialSNMP has in its predefined device list, this field should already be auto-populated with the type of network device that iSNMP detected. If the network device that you are setting up is not part of the predefined list, you have three choices:

   a. You can leave the Device field blank, in which case you will have to create each SNMP data tag individually (the most difficult route.)
   b. You can scroll down the list and select from the list of *Generic x-port MIBII* devices (x being the number of Ethernet ports that the device has.) For example: let’s assume that IndustrialSNMP has discovered a network switch, but it is not one of the predefined devices in the iSNMP database. If the field device happens to be a 24 port Ethernet switch, you can select the *Generic 24port MIBII device* from the drop-down device menu. Most Ethernet devices support MIBII, which is an industry-standard list of SNMP “tags”. Using the generic MIB template, you should

be able to have iSNMP create a large number of useful tags for the device without having to create each data point individually. You can add unique system device tags to the predefined MIBII tags later. (See the **SNMP Tag Setup** section of Help explaining how to do this.)

c. If you purchased iSNMP Expert Edition, you can use the MIB Template Generator to automatically create a unique template for the device you are configuring. Please read the Using MIB template Generator Help file.

3. The third field that should be auto-populated is the **IP Address** for the device. Since you have auto-discovered the device, you should not change this address (unless you like to create trouble for yourself!) This address follows standard IP addressing format (for example: 192.168.0.30).

4. The fourth field is the **Community** field. The "community" is actually the control access level that you will be using when communicating to the network device. In an SNMP-manageable device, you can limit the access that an SNMP manager application(such as iSNMP) can have, based on the manager software's password level. There are generally two default "password" (community) levels; Read and Read/Write. In most SNMP devices, the default community for Read-only privileges is called "Public," and the default community for Read/Write privileges is "Private." Some SNMP-manageable devices can be configured to have custom levels of access. Please make sure that the community level you choose is in accordance with the access privileges that you need. If you want only to limit access on a few SNMP tags, you can select the highest access level for the device, and then limit the access level for specific SNMP tags within IndustrialSNMP Editor.(See the Tag Configuration help for more details on how to limit access on a tag-by-tag basis.)

5.The fifth field is the **Description** field. It is not necessary to have a description, but in larger networks, it may help to sort out which device you are looking at in the IndustrialSNMP Editor.

6. The sixth field is the **Network Analyst** selection. Network Analyst is only available with iSNMP Expert Edition. When the Network analyst box is selected, iSNMP will create extra OPC tags that represent calculations such as bandwidth utilization and device status. These Network analyst tags are available only when monitoring a network switch. (There is detailed information about the configuration of these points in the Network Analyst Tag Set-up.)

ADVANCED TAB

The Device Wizard advanced tab includes advanced settings primarily concerned with how iSNMP reacts if a field device does not respond. If you are having problems communicating with a field device adjusting some of these settings might resolve your issues. It is recommended that the settings are left at the default values unless you are asked to make changes by a iSNMP tech support engineer!

The following is a list of definitions for the selections on the Advanced Tab:

1. **Device Timeout** (ms): This value is the amount of time allowed to complete an SNMP get. In situations where there might be a lot of traffic on the network, a longer time before a communication failure might be helpful. The default setting of 800 ms has been found to be suitable for most applications.

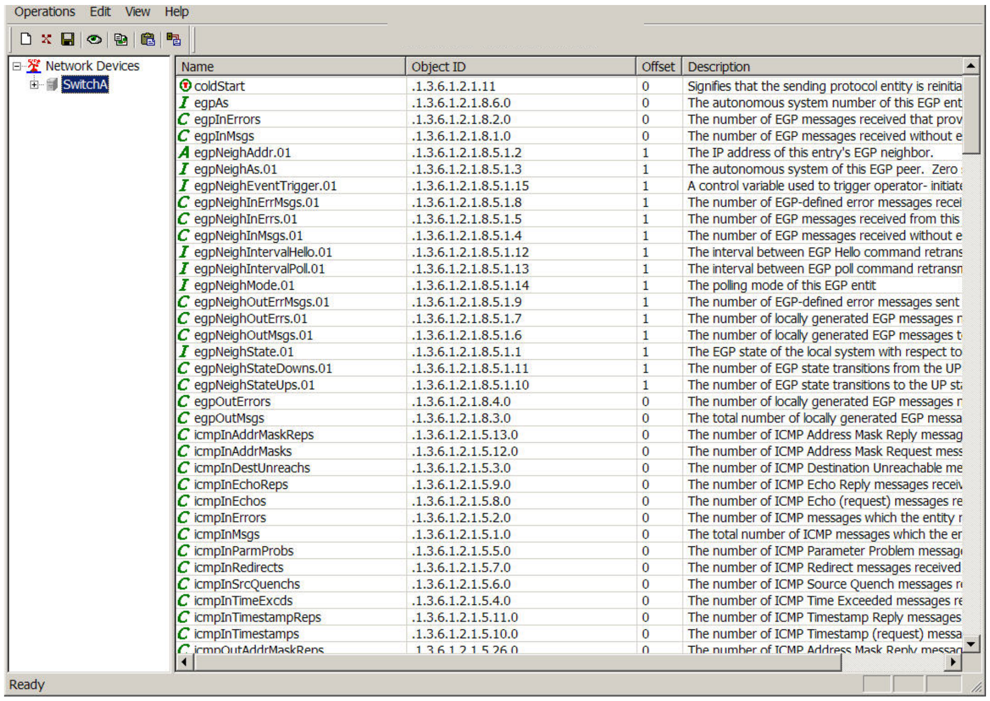
2. **Device retries**: After an attempt to get data has timed out, the device retries value is the amount of times the SNMP manager will attempt to retrieve the data before failing.

3. **Skip Count**: This is the time that the manager will wait before attempting another GET from a device that has failed. The time unit is defined in the Device timeout setting. *Example (800 ms device timeout with 30 skip count =2400ms before new attempt)*

4. **No. of Items/ Message**: The IndustrialSNMP software requests data in groups of OID's. The number of items / messages refers to the numbers of OID's requested in one SNMP GET. For most networks, 25 items has been found to be the ideal size of message for the best performance.

After you have finished filling out the field definitions, press the OK button. At this point if you selected a predefined tag database from the drop-down menu, IndustrialSNMP will ask you if you want to auto-import the tag database for the defined network device. Press OK.

If you selected a predefined tag database, iSNMP will auto-populate the tag list for the device, as seen in the example below:



Name	Object ID	Offset	Description
coldStart	.1.3.6.1.2.1.11	0	Signifies that the sending protocol entity is reinitia
I egpAs	.1.3.6.1.2.1.8.6.0	0	The autonomous system number of this EGP ent
C egpInErrors	.1.3.6.1.2.1.8.2.0	0	The number of EGP messages received that prov
C egpInMsgs	.1.3.6.1.2.1.8.1.0	0	The number of EGP messages received without e
A egpNeighAddr.01	.1.3.6.1.2.1.8.5.1.2	1	The IP address of this entry's EGP neighbor.
I egpNeighAs.01	.1.3.6.1.2.1.8.5.1.3	1	The autonomous system of this EGP peer. Zero
I egpNeighEventTrigger.01	.1.3.6.1.2.1.8.5.1.15	1	A control variable used to trigger operator- initiate
C egpNeighInErrMsgs.01	.1.3.6.1.2.1.8.5.1.8	1	The number of EGP-defined error messages recei
C egpNeighInErrs.01	.1.3.6.1.2.1.8.5.1.5	1	The number of EGP messages received from this
C egpNeighInMsgs.01	.1.3.6.1.2.1.8.5.1.4	1	The number of EGP messages received without e
I egpNeighIntervalHello.01	.1.3.6.1.2.1.8.5.1.12	1	The interval between EGP Hello command retrans
I egpNeighIntervalPoll.01	.1.3.6.1.2.1.8.5.1.13	1	The interval between EGP poll command retransn
I egpNeighMode.01	.1.3.6.1.2.1.8.5.1.14	1	The polling mode of this EGP entit
C egpNeighOutErrMsgs.01	.1.3.6.1.2.1.8.5.1.9	1	The number of EGP-defined error messages sent
C egpNeighOutErrs.01	.1.3.6.1.2.1.8.5.1.7	1	The number of locally generated EGP messages r
C egpNeighOutMsgs.01	.1.3.6.1.2.1.8.5.1.6	1	The number of locally generated EGP messages t
I egpNeighState.01	.1.3.6.1.2.1.8.5.1.1	1	The EGP state of the local system with respect to
C egpNeighStateDowns.01	.1.3.6.1.2.1.8.5.1.11	1	The number of EGP state transitions from the UP
C egpNeighStateUps.01	.1.3.6.1.2.1.8.5.1.10	1	The number of EGP state transitions to the UP st
C egpOutErrors	.1.3.6.1.2.1.8.4.0	0	The number of locally generated EGP messages r
C egpOutMsgs	.1.3.6.1.2.1.8.3.0	0	The total number of locally generated EGP messa
C icmpInAddrMaskReps	.1.3.6.1.2.1.5.13.0	0	The number of ICMP Address Mask Reply messag
C icmpInAddrMasks	.1.3.6.1.2.1.5.12.0	0	The number of ICMP Address Mask Request mess
C icmpInDestUnreachs	.1.3.6.1.2.1.5.3.0	0	The number of ICMP Destination Unreachable me
C icmpInEchoReps	.1.3.6.1.2.1.5.9.0	0	The number of ICMP Echo Reply messages receiv
C icmpInEchos	.1.3.6.1.2.1.5.8.0	0	The number of ICMP Echo (request) messages re
C icmpInErrors	.1.3.6.1.2.1.5.2.0	0	The number of ICMP messages which the entity r
C icmpInMsgs	.1.3.6.1.2.1.5.1.0	0	The total number of ICMP messages which the er
C icmpInParmProbs	.1.3.6.1.2.1.5.5.0	0	The number of ICMP Parameter Problem messag
C icmpInRedirects	.1.3.6.1.2.1.5.7.0	0	The number of ICMP Redirect messages received
C icmpInSrcQuenchs	.1.3.6.1.2.1.5.6.0	0	The number of ICMP Source Quench messages r
C icmpInTimeExcds	.1.3.6.1.2.1.5.4.0	0	The number of ICMP Time Exceeded messages re
C icmpInTimestampReps	.1.3.6.1.2.1.5.11.0	0	The number of ICMP Timestamp Reply messages
C icmpInTimestamps	.1.3.6.1.2.1.5.10.0	0	The number of ICMP Timestamp (request) messa
C icmpOutAddrMaskReps	.1.3.6.1.2.1.5.26.0	0	The number of ICMP Address Mask Reply messag

The Auto-import function will automatically populate your tag database with all the SNMP data that can be accessed from the device. *Note: In some cases there may be many tags imported, and in other cases there may be only a few tags*. If you have a predefined device tag database, then you are finished with this device! You can proceed to add additional network devices or simply save your configuration and exit the IndustrialSNMP Editor. If you need to define the MIB data for the device, please reference the SNMP Tag Data Setup Help file section of Help.

Chapter 2 - Manual Network Device Configuration

If you are trying to define a device that has not yet been installed on the network or if you want to create a device without using Auto-Discovery, you will need to use the following procedure:

First place the mouse over the Network Devices tab in iSNMP Editor, and right-click the mouse. Select the **New Device** selection. You will be given the choice to either select a managed or unmanaged device. *If you are setting up a SNMP-manageable device, skip below to the Help section for the Manual device setup - Managed.*

2.1 Manual Network Device Setup- Unmanaged

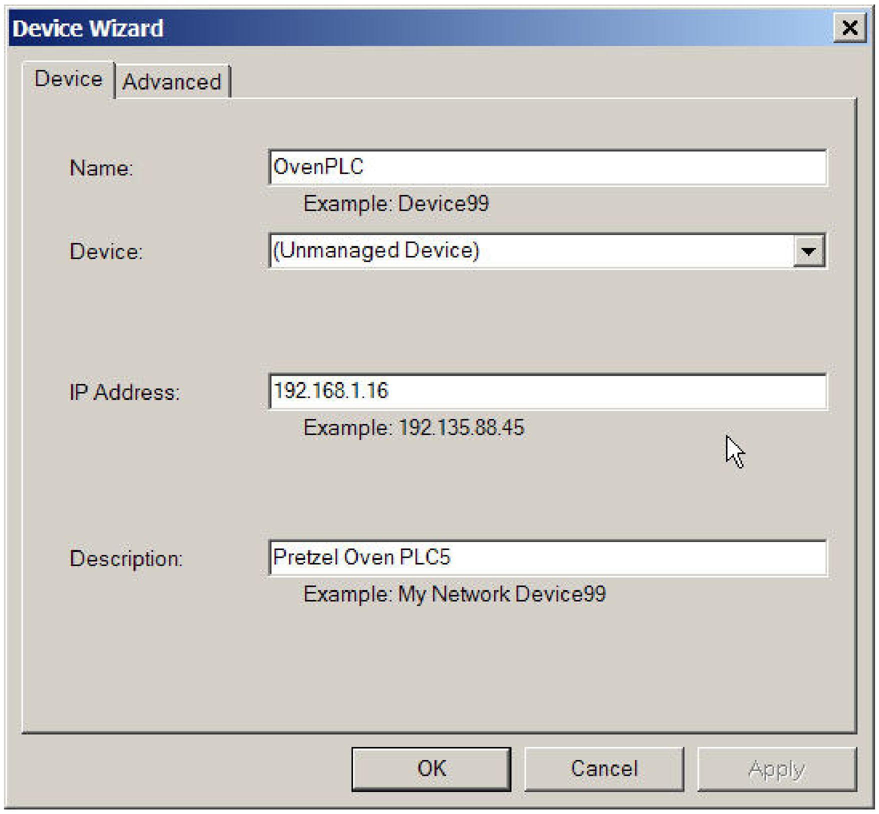
1. In the Device Wizard name field, type a brief logical alias for the device.

2. In the **Device** Field, use the drop-down menu to select *(Unmanaged Device).*

3. Type the IP address of the unmanaged device into the **IP Address** field.

4. Type a brief description of the device in the **Description** field if you wish.

Below is a screen capture of a completed Device Wizard screen:



Name: OvenPLC
Example: Device99
Device: (Unmanaged Device)
IP Address: 192.168.1.16
Example: 192.135.88.45
Description: Pretzel Oven PLC5
Example: My Network Device99

Unmanaged device Advanced tab

The advanced tab includes advanced settings primarily concerned with how IndustrialSNMP reacts if a field device does not respond. If you are having problems communicating with a field device adjusting some of these settings might help resolve your issues. It is recommended that the settings are left at the default values unless you are asked to make changes by a iSNMP tech support engineer!

For advanced users the following is a list of definitions for the selections on the Advanced Tab:

Device Timeout (ms): This value is the amount of time allowed to complete an SNMP get. In situations where there might be a lot of traffic on the network, a longer time out setting might be helpful. The default setting of 500 ms has been found to be suitable for most applications.

Device Retries: After an attempt to get data has timed out, the device retries value is the amount of times the SNMP manager will attempt to retrieve the data before failing.

Skip Count: This is the time that the manager will wait before attempting another GET from a device that has failed. The time unit is defined in the Device timeout setting. *Example (800 ms device timeout with 30 skip count =2400ms before new attempt)*

2.2 - Manual Network Device Setup- Managed

1. In the Device Wizard **Name** field, type a brief logical alias for the device.

2. The second field is a drop-down **Device** menu, which allows you to view and select from a list of predefined SNMP-manageable devices. If the network device that you are configuring is one of the predefined devices that IndustrialSNMP supports, then select it from the list and proceed to the **IP Address** field. If the network device that you are setting up is not part of the predefined list, then you have three choices:

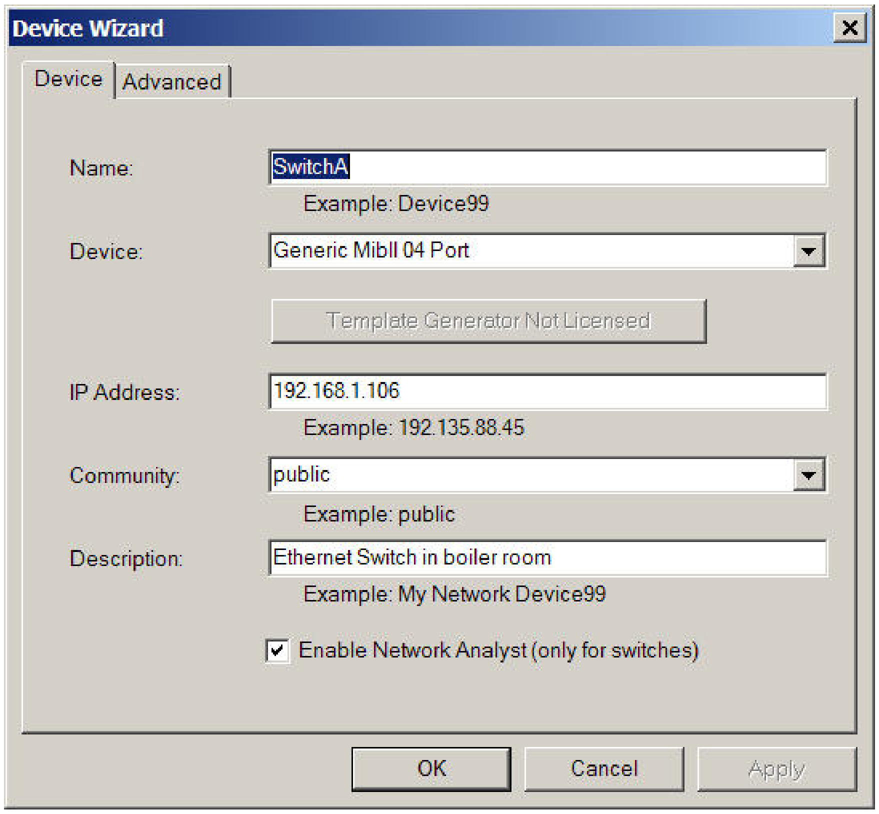
   a. You can simply leave the Device field blank, in which case you will have to create each SNMP data tag individually (the most difficult route.)
   b. You can scroll down the list and select from the list of *Generic x-port MIBII* devices (x being the number of Ethernet ports that the device has.) For example: let's assume that IndustrialSNMP has discovered a network switch, but it is not one of the predefined devices in the IndustrialSNMP database. If the field device happens to be a 24 port Ethernet switch, you can select the *Generic 24port MIBII device* from the drop-down Device menu. Most Ethernet devices support MIBII, which is an industry-standard list of SNMP "tags". Using the generic MIB template, you should be able to have iSNMP create a large number of useful tags for the device without having to create each data point individually. You can add unique system device tags to the predefined MIBII tags later. (See the **SNMP Tag Setup** section of Help explaining how to do this.)
   c. If you have iSNMP Expert Edition you can use the MIB Template Generator to create a unique template for the actual device you are configuring. Read the How to use

3. Type the new device's address in the **IP Address** field.

4. Select the appropriate SNMP access level in is the **Community** field. The SNMP community is actually the control access level that you will be using when communicating to the network device. In an SNMP- manageable device, you can limit the access that an SNMP manager (such as IndustrialSNMP) can have, based on the manager software's password level. There are generally two default "password" (community) levels; Read and Read/Write. In most SNMP devices, the default community for Read-only privileges is called "Public," and the default community for Read/Write privileges is "Private." Some SNMP-manageable devices can be configured to have custom levels of access. Please make sure that the community level you choose matches the device configuration for the access privileges you expect. If you want only to limit access on a few SNMP tags, you can select the highest access level for the device, and then limit the access level on each SNMP tag within IndustrialSNMP Editor.(See the Tag Configuration help for more details on how to limit access on a tag-by-tag basis.)

5. Type a brief description of the network device in the **Description** field. It is not necessary to have a description, but in larger networks, it may help to sort out which device you are looking at in the IndustrialSNMP Editor.

6. The sixth field is the **Network Analyst** selection. When the Network analyst box is selected iSNMP will create extra OPC tags that create derived calculations such as bandwidth utilization and device status. These Network analyst tags are available only when monitoring a network switch. (There is detailed information about the configuration of these points in the Network Analyst Tag Set-up.)



Name: SwitchA
Example: Device99
Device: Generic MibII 04 Port
IP Address: 192.168.1.106
Example: 192.135.88.45
Community: public
Example: public
Description: Ethernet Switch in boiler room
Example: My Network Device99
[✓] Enable Network Analyst (only for switches)

Managed Device Advanced tab

The Advanced tab includes advanced settings primarily concerned with how IndustrialSNMP reacts if a field device does not respond. If you are having problems communicating with a field device adjusting some of these settings might help resolve your issues. It is recommended that the settings are left at the default values unless you are asked to make changes by a iSNMP Software tech support engineer!

Device Timeout (ms): This value is the amount of time allowed to complete an SNMP get. In situations where there might be a lot of traffic on the network, a longer time out setting might be helpful. The default setting of 500 ms has been found to be suitable for most applications.

Device Retries: After an attempt to get data has timed out, the device retries value is the amount of times the SNMP manager will attempt to retrieve the data before failing.

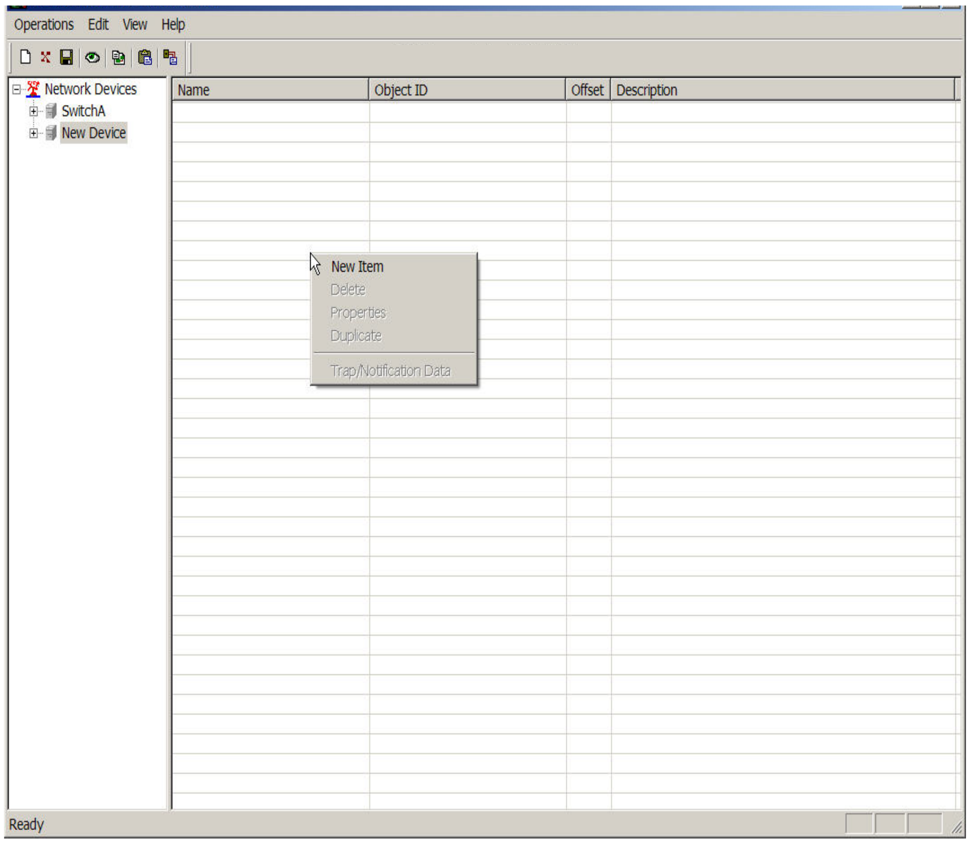
Skip Count: This is the time that the manager will wait before attempting another GET from a device that has failed. The time unit is defined in the Device timeout setting. *Example: (800 ms device timeout with 30 skip count =2400ms before new attempt)*

Chapter 3 - Tag Configuration

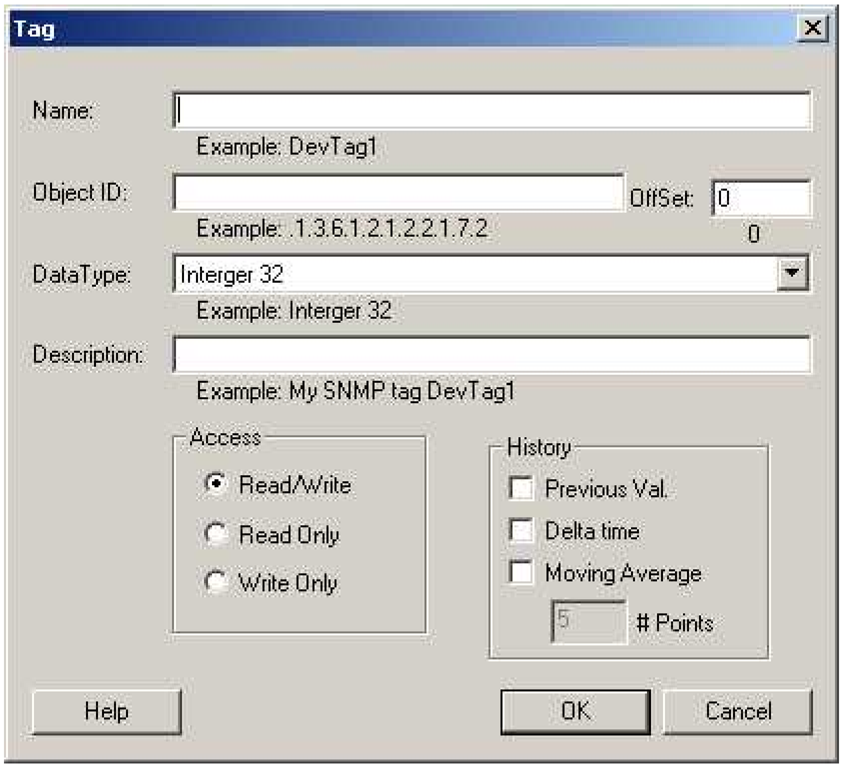
There are two major types of tags that can be created within iSNMP. Polled tags are tags that iSNMP actively “gets” from network devices on a regular basis. Traps tags are tags that iSNMP is configured to receive from devices that will not be polled, but instead will broadcast alarm messages whenever alarm conditions occur.

3.1 Polled tag Configuration

You can define your polled tags manually if you are not auto-discovering your network devices or if auto-discovery did not find an OID that you need. To manually define an SNMP OID, first highlight the network device that you want to add an SNMP tag to in the iSNMP Editor left screen frame. With the correct device highlighted, move your mouse to the right screen frame, right-click, and select **New Item**, as shown below:



The dialog box for creating a new SNMP database tag will appear, as seen below:



Name:

Example: DevTag1

Object ID:

OffSet: 0

Example: .1.3.6.1.2.1.2.2.1.7.2

0

DataType: Interger 32

Example: Interger 32

Description:

Example: My SNMP tag DevTag1

Access

● Read/Write

○ Read Only

○ Write Only

History

☐ Previous Val.

☐ Delta time

☐ Moving Average

5 # Points

To configure the tag, you must do the following:

1. Give the data point a **Name**. The tag name should be a logical and brief description of the MIB object data being read. (*For example, if the MIB data represents the current link status for Port Number 1 on a network switch, a brief tag name would be PortLink1.)*

2. The second field is the **ObjectID** for the tag. The ObjectID is the specific data address for the information that you are requesting from the SNMP agent. Most MIB addresses follow an Object ID nomenclature that has a series of whole numbers separated by periods. (For example: .1.3.6.1.2.1.2.2.1.7.1*) Note: You can find the MIB Object ID addresses and descriptions in the network management manual supplied with your SNMP-manageable device. Be aware that some network component vendors have two product manuals – one for installing and operating the network device, the other detailing network management information.* If the ObjectID for the tag does not reference a table, the offset is 0. In those cases where the ObjectID references a table, the offset is the number of SNMP get calls needed to access all the data of the table. The information detailing the structure of a MIB is available from the manufacturer of the device you are monitoring.

3. The third field is the **Data Type** for the MIB data you are going to be requesting. By pressing the drop-down arrow on the right side of this dialog box, you will be able to choose the data type from a pre-defined list. The Data Type for MIB data can be found in the management manual for your network device.

4. The fourth field is the **Description** field. It is not necessary to have a tag description, but in larger networks it may help to sort out which tag you are looking at in the IndustrialSNMP editor.

5. The next choice you must make is the **Access** selection for the tag. If you click in this box, you can limit any communication to this tag to allow only reading of the data. Some MIB data can be set, such as a System Contact field or to reset a counter in the SNMP agent. Leaving this box un-checked will allow write commands to be sent to the MIB data point. *Note: The SNMP agent residing on the network device may just support Read-Only for all or some tags, and selecting write privileges from within IndustrialSNMP does not guarantee that write commands will be executed. Please consult the network management manual for your network device to be sure of the functionality supported.*

6. The last section allows you to create some additional OPC tags that can help in network **History** applications. Selecting the previous value box creates an OPC tag that holds the previous SNMP get value in an OPC tag. The Delta Time box creates a tag based on the delta in time between the values of the current and last SNMP Object ID. The Moving Average section creates an OPC tag for a moving average of a particular SNMP value. *Note: In most applications it will not be necessary to select any of the History options. Please consult a iSNMP tech support engineer for assistance with these tags.*

After you have filled out the field definitions, press the **OK** button. At this point you should see the tag that you just created appear on the first line on the right frame of the IndustrialSNMP interface, as seen in the example below:

To add additional tags for this device, right click on the right frame of the iSNMP Editor interface and follow the preceding procedure again.

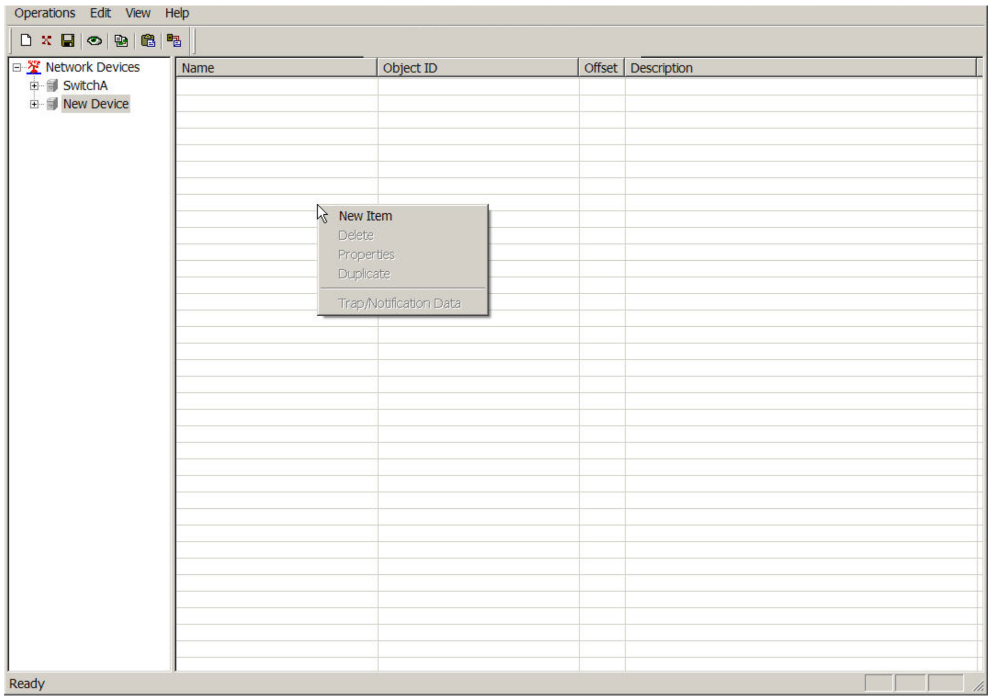
Once you have created all the tags that you want for the network device, you can either add another network device or you can close IndustrialSNMP Editor and begin to view the SNMP data from your OPC client program. IndustrialSNMP includes a powerful network visualization tool called IndustrialSNMP Dataviewer. You can use this tool quickly and easily to view the SNMP and RMON data in your configured system. Please refer to the IndustrialSNMP Dataviewer Help file to learn how to use this powerful tool.

3.2 - Creating Trap tags within iSNMP

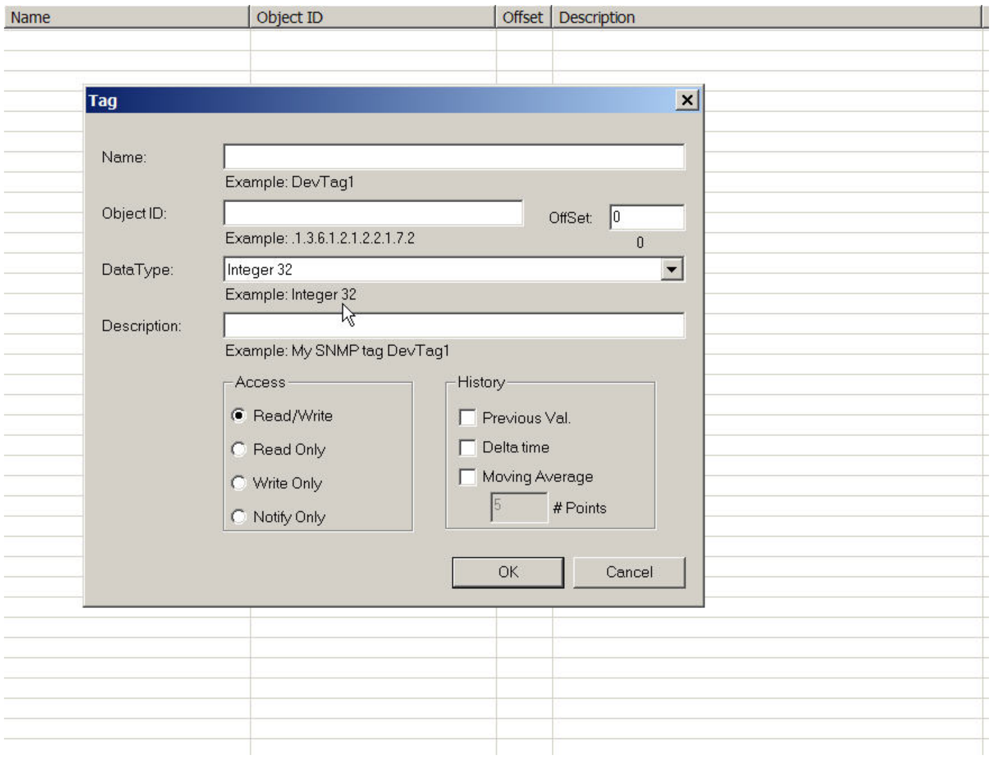
If a network agent has been configured to generate traps, the network agent broadcasts a string of data to all configured SNMP manager applications whenever specified trap conditions occur. The trap string includes the unique SNMP object identifier (OID) address of the trap condition. When iSNMP receives a trap from a field device, it compares the incoming trap string to the defined Trap tags for that field device. For traps that have been defined within iSNMP Editor, the incoming OID string is converted from the raw x.x.x.x.x.x format into the associated OPC tag name for the trap. iSNMP makes the trap name available as part of the Event string to be displayed within your HMI. If a matching OID address for an incoming trap cannot be found, iSNMP displays the raw OID in the trap string alongside the timestamp and trap condition value.

If you do not want to receive a raw OID in the Event string from a trap, and want a Tag name instead, then you can define the Trap tag manually by:

1. First highlight the network device that you want to add an SNMP trap tag to in the iSNMP Editor left screen frame. With the correct device highlighted, move your mouse to the right screen frame, right-click, and select New Item, as shown below:



The dialog box for creating a new SNMP database tag will appear, as seen in the example below:



Name:
Example: DevTag1
Object ID:
OffSet: 0
Example: .1.3.6.1.2.1.2.2.1.7.2
0
DataType: Integer 32
Example: Integer 32
Description:
Example: My SNMP tag DevTag1

Access
[✓ Read/Write]
Read Only
Write Only
Notify Only

History
Previous Val.
Delta time
Moving Average
5 # Points

To configure the trap, you must do the following:

1. Give the trap a **Name**. The tag name should be a logical and brief description of the trap condition. (*For example, if the MIB data represents an overheat sensor, a simple name could be Overheat.)*

2. The second field is the **ObjectID** for the tag. The ObjectID is the specific data address for the information that you are requesting from the SNMP agent. Trap addresses follow an OID nomenclature that has a series of whole numbers separated by periods. (For example: .1.3.6.1.2.1.2.2.1.7.1*) Note: You can find the MIB Object ID addresses and descriptions in the network management manual supplied with your SNMP-manageable device. Be aware that some network component vendors have two product manuals – one for installing and operating the network device, the other detailing network management information.* If the ObjectID for the tag does not reference a table, the offset is 0. In those cases where the OID references a table, the offset is the number of SNMP get calls needed to access all the data in the table. The information detailing the structure of a MIB is available from the manufacturer of the device you are monitoring.

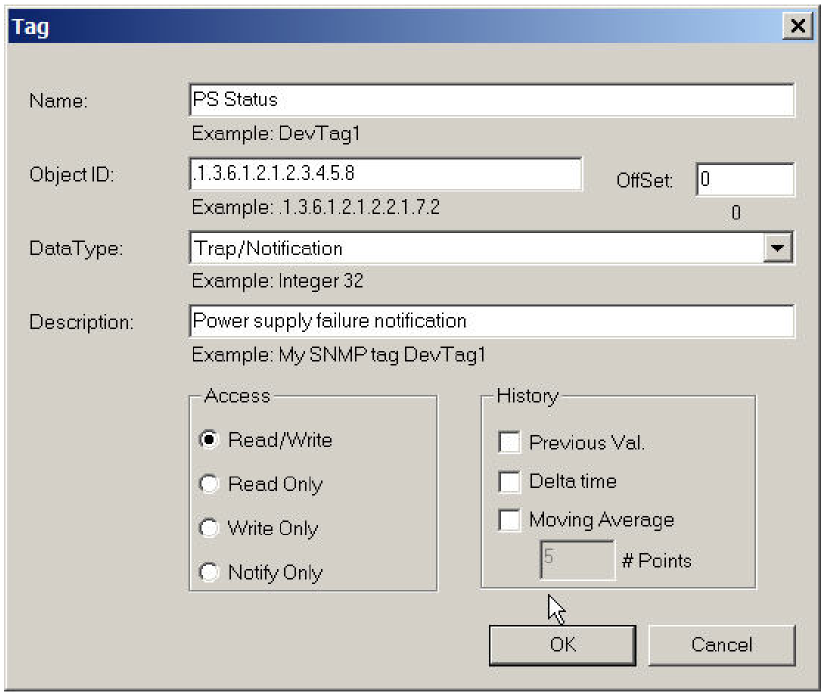
3. The third field is the **Data Type** for the MIB data you are going to be requesting. Select **Trap/Notification**.

4. The fourth field is the **Description** field. It is not necessary to have a trap description, but in larger networks it may help to sort out which tag you are looking at in the IndustrialSNMP Editor.

5. The next choice you make is the **Access** selection for the tag. If you click in this box, you can limit any communication to this tag to allow only reading of the data. Some MIB data can be set, such as a System Contact field or to reset a counter in the SNMP agent. Since you are receiving traps, you cannot write to the device, but you can write to the iSNMP value to clear the strings. Leaving this box un-checked will allow write commands to be sent to the MIB data point.

6. The last section allows you to create some additional OPC tags that can help in network **History** applications. The **History** section is not applicable to SNMP Traps.

After you have filled out the field definitions as illustrated in the screenshot below, press the **OK** button.


Tag

Name: PS Status
Example: DevTag1

Object ID: .1.3.6.1.2.1.2.3.4.5.8
OffSet: 0
Example: .1.3.6.1.2.1.2.2.1.7.2
0

DataType: Trap/Notification
Example: Integer 32

Description: Power supply failure notification
Example: My SNMP tag DevTag1

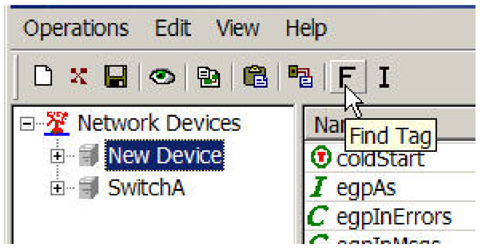
Access: [✓ Read/Write] Read Only Write Only Notify Only

History: Previous Val. Delta time Moving Average
5 # Points

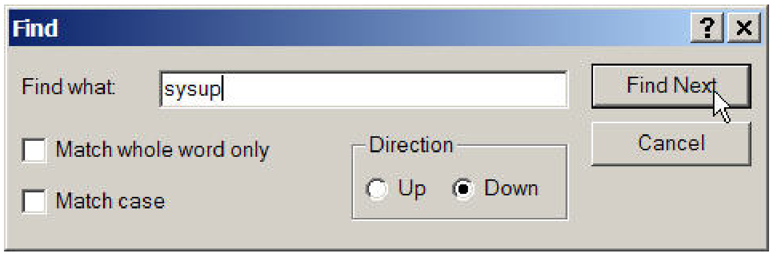
1. To add additional traps for this device, right click on the right frame of the iSNMP Editor interface and follow the preceding procedure again.

3.3 – Finding tags

If you have an OID that you wish to quickly find in the complete list of tags for that device, you can use the ***FIND*** tag feature. Press the Find Tag button, as shown below:

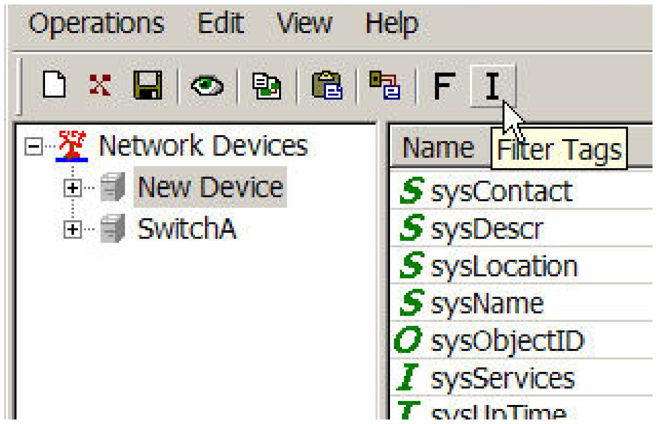


A Dialog window will pop-up that will allow you to find any tag in the list by typing in the OID name. For example, if you wish to find the sysUptime tag (A counter that continually increments to display device uptime), you can type in a portion of the OID name and press the **Find Next** button. The find feature will take you to all tags which include the string of characters that you typed.

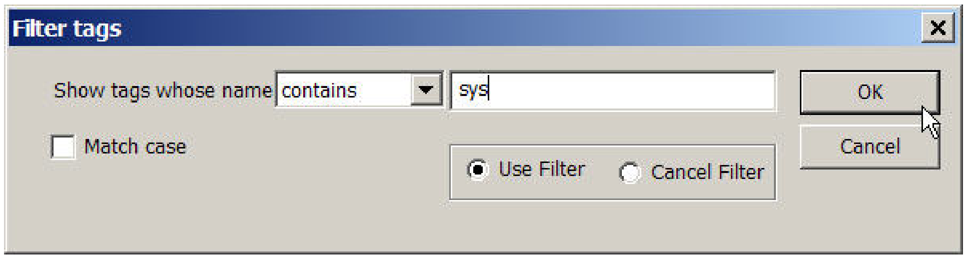


3.4 – Filtering tags

SNMP-manageable network devices often have a large number of OIDs that can be cumbersome to navigate. If you wish to find a group of OIDs which include a specific string of characters, you can select the Filter tags feature by pressing the Filter button on the iSNMP Editor interface, as shown below:



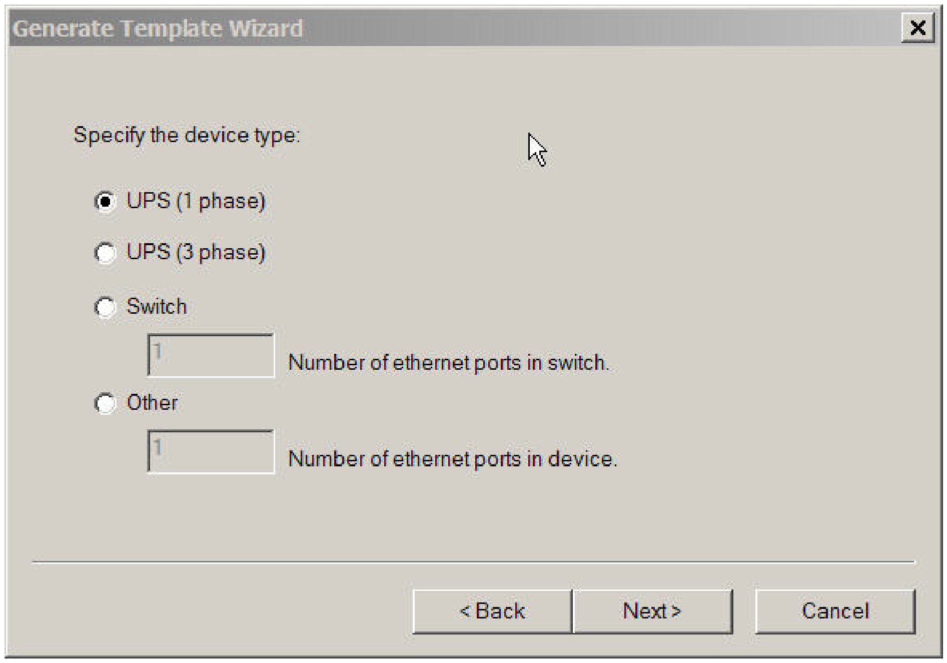
Once you have the Filter dialog box, type the string that you wish to filter by into the text box. For example, to find all OIDs that include the string “sys”, type the string into the text box and press the OK button.



iSNMP will return all tags for that device that include the string.

Chapter 4 - Using the MIB Template Generator

To generate a custom template for the device selected in the device wizard press the **Generate Device Template** button. The screen below will appear:



Generate Template Wizard

Specify the device type:

[✓ UPS (1 phase)]

UPS (3 phase)

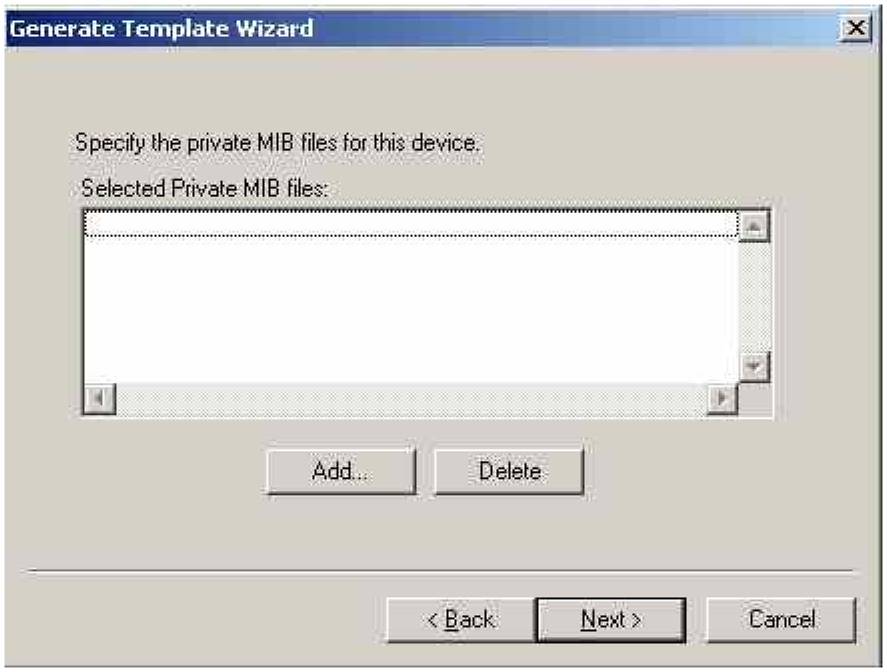
Switch

1 Number of ethernet ports in switch.

Other

1 Number of ethernet ports in device.

1. Select the appropriate device type and number of Ethernet ports on the device.
2. Press the next button to advance to the next step.
3. The next screen asks the user to designate the location of the private MIB data file(s) to be integrated into the custom iSNMP device template, as seen below:



Generate Template Wizard

Specify the private MIB files for this device.

Selected Private MIB files:

Press the **ADD…** button to browse the file system to locate the private MIBs related to the network device. If you do not have any private MIB data press the **Next** button to proceed to the next step, since IndustrialSNMP has the ability to create a basic template for the network device despite having no private MIB data. It should be noted that some templates require multiple MIB documents, and some MIBs are dependent on the inclusion of other MIB documents to be functional. Make sure that you include all necessary private MIB files! *Note: In the process of generating a template, iSNMP MIB Template Generator will identify missing MIB files. If files are missing you can continue with the generation process, but the template created may not be complete. In some applications this might not be a problem. If the template is non-functional after finishing the process, run the generator again and include the missing MIB files.*

4. Once iSNMP MIB template generator has completed parsing the private MIB files, you will be prompted to give the newly created template a name*. Note: Sometimes iSNMP MIB template generator will be working for a minute or two parsing the files*. *Please be patient!*
5. When the file parsing is completed, you will be prompted to give the newly created template a name. It is a good idea to choose a template name that describes both the model number and manufacturer of the device, since many manufacturers have unique MIBs for their different product lines. The template file that you have created will be installed in the iSNMP template file with the pre-existing templates provided with IndustrialSNMP. With the new template now "learned" by iSNMP, it will not be necessary to run the MIB template generator again for similar devices to be discovered!
6. After pressing OK, you will return to the Device Wizard. Select the template you have created and proceed to the next field.

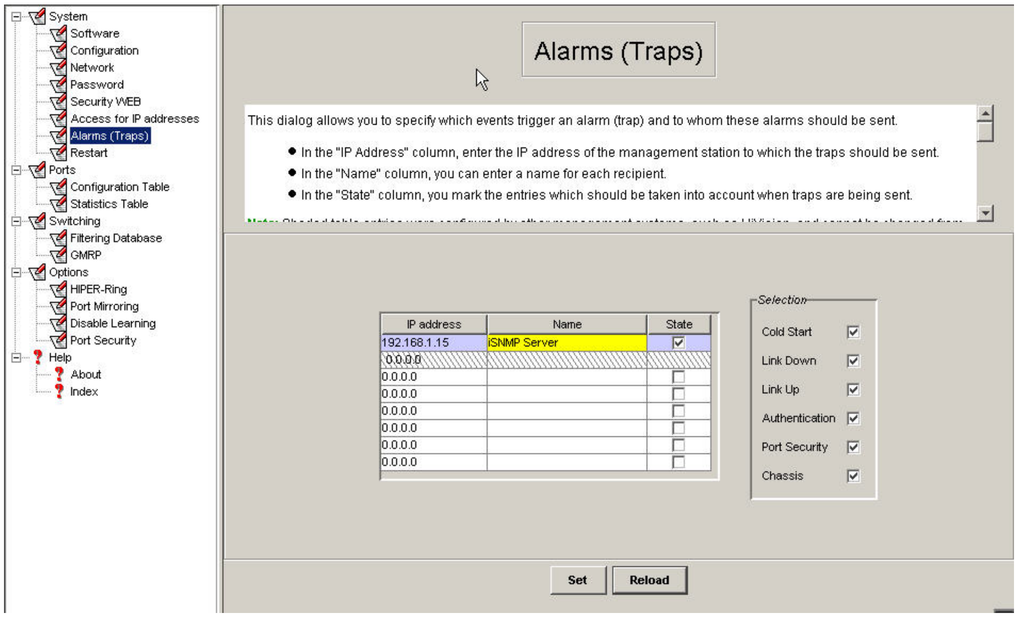
Chapter 5 - SNMP Traps and Event Notification

Note: If you plan to configure iSNMP to receive traps, then Windows 'SNMP Trap Service' on the same PC must be disabled. Running both iSNMP trap reception and Windows Trap reception will cause traps not to be received.

iSNMP supports both active polling of SNMP Agents and the receipt of unsolicited event messages from SNMP agents. Unsolicited event messages sent by network agents to network manager applications are commonly called "traps". A network agent transmits traps whenever a configured event, such as a link up/down change occurs. *Note: SNMP Agents can be configured to send traps to more than one network agent, so if you are sharing network hardware with your IT department, traps can be sent to both iSNMP and the IT network management application simultaneously!*

To configure an SNMP Agent and receive SNMP traps from it within iSNMP you should:

1. **Configure the SNMP agents on the network manager(s) to send SNMP traps to the network manager application**. The network device should be powered up, and its management menu accessed. All devices are configured slightly differently, but the example shot screen below shows an Ethernet switch being configured via it's web browser interface to send traps to an iSNMP application running on a PC with IP address 192.168.1.15.



This dialog allows you to specify which events trigger an alarm (trap) and to whom these alarms should be sent.

- In the "IP Address" column, enter the IP address of the management station to which the traps should be sent.
- In the "Name" column, you can enter a name for each recipient.
- In the "State" column, you mark the entries which should be taken into account when traps are being sent.

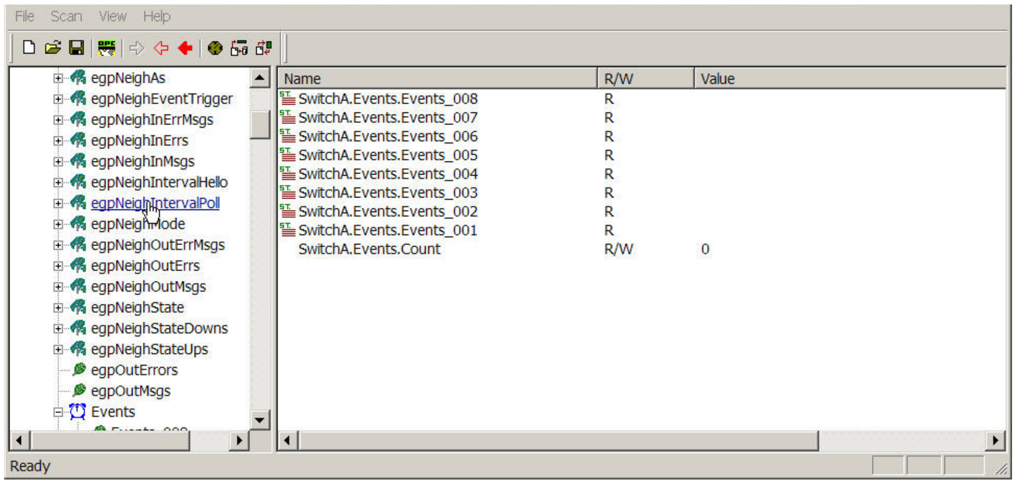
IP address	Name	State
192.168.1.15	iSNMP Server	✓
0.0.0.0		
0.0.0.0		☐
0.0.0.0		☐
0.0.0.0		☐
0.0.0.0		☐
0.0.0.0		☐
0.0.0.0		☐

Selection

Cold Start	✓
Link Down	✓
Link Up	✓
Authentication	✓
Port Security	✓
Chassis	✓

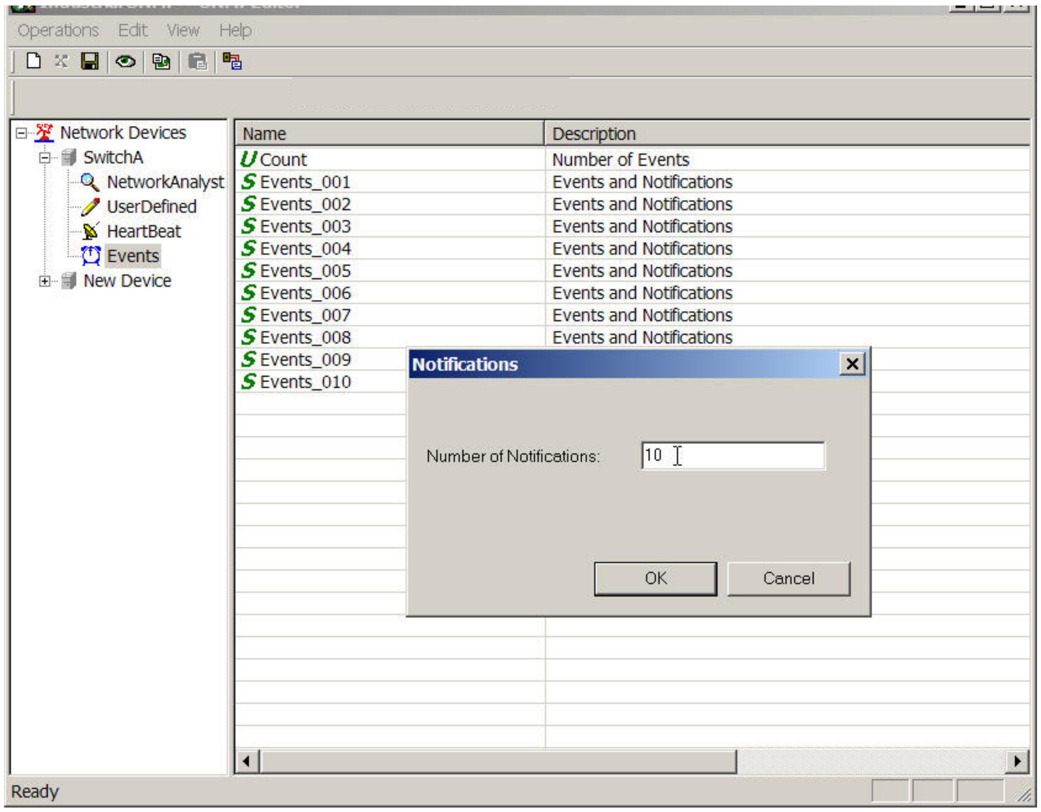
2. **Verify that the network device is connected onto the same network as the iSNMP server. Launch iSNMP Editor and run the auto-discovery tool** (if you cannot run the Auto-discovery tool, then skip to the manual trap configuration screen below.) Assuming that the network device has been correctly configured with an IP address, it should appear in the **Discovered Devices window.** If the device has a pre-defined iSNMP MIB template, iSNMP should recognize it, and pre-build the tag database, including trap data. If the device is not supported as a predefined iSNMP device, then you will have to manually define the traps you wish to receive, which you can verify by following step 3 below. *Note: The manual trap definition procedure is described in Events Advanced Settings section below.*

3. **Verify that iSNMP is receiving the trap data from the target device.** If you still have open the iSNMP Editor Application, save and close now. Launch the iSNMP Dataviewer application from Start > Programs > IndustrialSNMP > Tools > iSNMP Dataviewer. "Explode" the tree next to the device that you wish to test, and scroll down until you see the Events group. *Note: There are often many tags, iSNMP Dataviewer lists the tags and groups alphabetically, so scroll down until you find **Events.*** Select and move the *Events Count* and *Event_xxx* tags over to the active monitoring portion of the screen as shown below:



Name	R/W	Value
SwitchA.Events.Events_008	R	
SwitchA.Events.Events_007	R	
SwitchA.Events.Events_006	R	
SwitchA.Events.Events_005	R	
SwitchA.Events.Events_004	R	
SwitchA.Events.Events_003	R	
SwitchA.Events.Events_002	R	
SwitchA.Events.Events_001	R	
SwitchA.Events.Count	R/W	0

Initially, you may not have any values in the trap tags to view. Begin to create trap conditions. For example, if the network device is a switch, and it is configured to send Link up and Link Down traps, then you can connect and disconnect devices from the switch to create trap conditions. As trap conditions occur, you should see the trap counter increment, and the traps string sent by the network agent will be displayed in the value column of the Events detail tags. As SNMP traps are received from the network, iSNMP places the most current trap in the Events_001 field, and moves the previous traps down by one on the range. This way you can have a "first-in first-out" alarm log history easily displayed in your HMI. *Note: The default number of Event strings is 10. If you wish to increase or decrease the number of Event strings available, open iSNMP Editor, and right click on the Events tab under the target device, as shown below:*



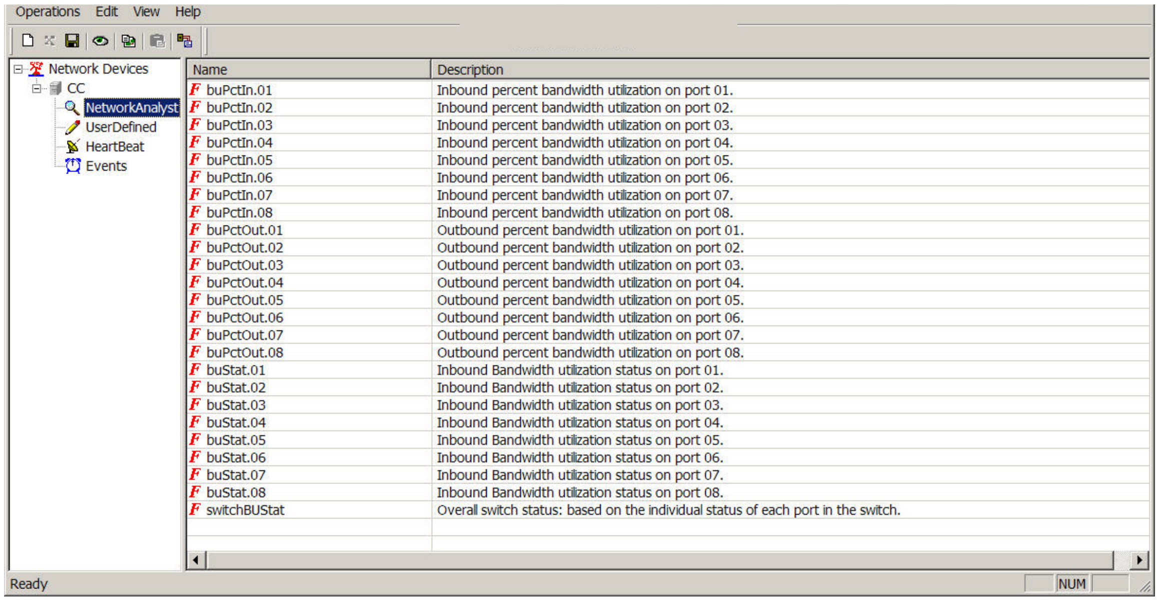
Name	Description
Count	Number of Events
Events_001	Events and Notifications
Events_002	Events and Notifications
Events_003	Events and Notifications
Events_004	Events and Notifications
Events_005	Events and Notifications
Events_006	Events and Notifications
Events_007	Events and Notifications
Events_008	Events and Notifications
Events_009	
Events_010	

Number of Notifications: 10

4. If you are receiving traps, you can now repeat the process for any other network devices that you wish to receive traps from.

Chapter 6 - Network Analyst Tag Set-up

Network Analyst tags are derived tags based on the raw data provided from certain SNMP Object IDs. To activate this feature the **Network Analyst** check box must be selected on the Device Wizard box. *Note: Network Analyst functionality is only available on Ethernet Switches*. To adjust some of the variables associated with the Network Analyst tags, open up the tree structure under the switch on the left side of the screen. Highlight the Network Analyst and the available tags will appear on the right side of the screen. Double clicking on a specific tag will bring up a properties box. For the individual port bandwidth utilization (*buPctIn.nn*), *(buPctOut.nn)* or port status (*buStat.nn*) a read-only properties box will display the current settings of the user definable variables. The *switchBUStat* tag has a properties box that allows you to adjust the thresholds for the 3-level status tags as well as the multipoint average of the inbound bandwidth utilization percentage.



Name	Description
buPctIn.01	Inbound percent bandwidth utilization on port 01.
buPctIn.02	Inbound percent bandwidth utilization on port 02.
buPctIn.03	Inbound percent bandwidth utilization on port 03.
buPctIn.04	Inbound percent bandwidth utilization on port 04.
buPctIn.05	Inbound percent bandwidth utilization on port 05.
buPctIn.06	Inbound percent bandwidth utilization on port 06.
buPctIn.07	Inbound percent bandwidth utilization on port 07.
buPctIn.08	Inbound percent bandwidth utilization on port 08.
buPctOut.01	Outbound percent bandwidth utilization on port 01.
buPctOut.02	Outbound percent bandwidth utilization on port 02.
buPctOut.03	Outbound percent bandwidth utilization on port 03.
buPctOut.04	Outbound percent bandwidth utilization on port 04.
buPctOut.05	Outbound percent bandwidth utilization on port 05.
buPctOut.06	Outbound percent bandwidth utilization on port 06.
buPctOut.07	Outbound percent bandwidth utilization on port 07.
buPctOut.08	Outbound percent bandwidth utilization on port 08.
buStat.01	Inbound Bandwidth utilization status on port 01.
buStat.02	Inbound Bandwidth utilization status on port 02.
buStat.03	Inbound Bandwidth utilization status on port 03.
buStat.04	Inbound Bandwidth utilization status on port 04.
buStat.05	Inbound Bandwidth utilization status on port 05.
buStat.06	Inbound Bandwidth utilization status on port 06.
buStat.07	Inbound Bandwidth utilization status on port 07.
buStat.08	Inbound Bandwidth utilization status on port 08.
switchBUStat	Overall switch status: based on the individual status of each port in the switch.

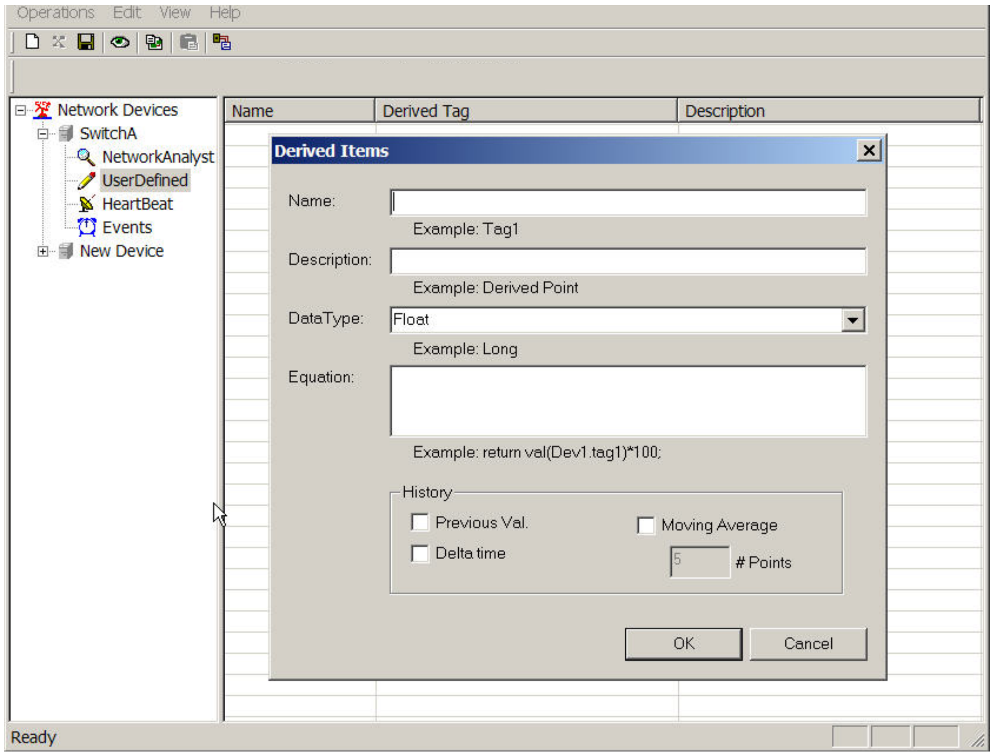
The value for the buPct tags is a moving point average of the raw inbound or outbound bandwidth utilization calculated by iSNMP. You will notice when you browse the available tags in the OPC Server that there are more Network Analyst tags available to use in your OPC client application. iSNMP also makes the raw bandwidth utilization value available. It is not recommended that the raw bandwidth utilization value be used in an alarming application. The inherent behavior of network traffic on an Ethernet network involves momentary spikes in bandwidth utilization. Typically, network administrators should be concerned with high network traffic loads for an extended period of time. A more appropriate "tag" to monitor for network load alarm purposes would be the rolling average tag. *Note: Within iSNMP the default sampling rate for the average bandwidth utilization tag is 30 seconds.*

Chapter 7 – User-Defined Tag Set-up

iSNMP User-Defined iSNMP tags are derived OPC tags that require the user to define a new tag by manipulating the value of existing iSNMP tags.

To add a user-defined tag:

Expand the device detail view of the target device on the left hand window in iSNMP Editor, highlight the User-Defined icon, move your mouse to the right screen frame, right-click, and select **New Item**, and the dialog box for creating a new SNMP database derived tag will appear, as seen below:



Derived Items

Name:

Example: Tag1

Description:

Example: Derived Point

DataType: Float

Example: Long

Equation:

Example: return val(Dev1.tag1)*100;

History

Previous Val.

Delta time

Moving Average

5 # Points

OK

Cancel

iSNMP uses Microsoft JScript as the syntax for derived tags that offers tremendous flexibility for creating derived tag equations. iSNMP has added an extension to Jscript in order to use the current values of certain OPC tags in the Jscript equations. To use the iSNMP Jscript extension:

The **Val ( )** function takes the name of an iSNMP OPC tag and returns the value of that tag into the equation variable.

Example: x = val(ifOutUcastPkts.01);

If the input to the **Val ( )** variable is a valid OPC tag name, Val ( ) returns the current value of that OPC tag into the equation.

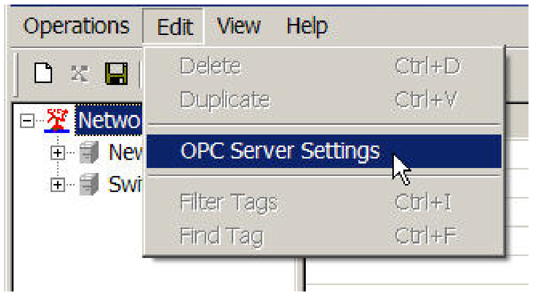
If the equation that is created in the derived tag includes tags from multiple devices the full OPC tag name (*<device>.< tag name>)* will bring in the current values from multiple devices.

For information on the syntax for Jscript please visit the Microsoft website and search for Jscript. Below is the most current link to the section of the Microsoft website with instructions on Jscript.

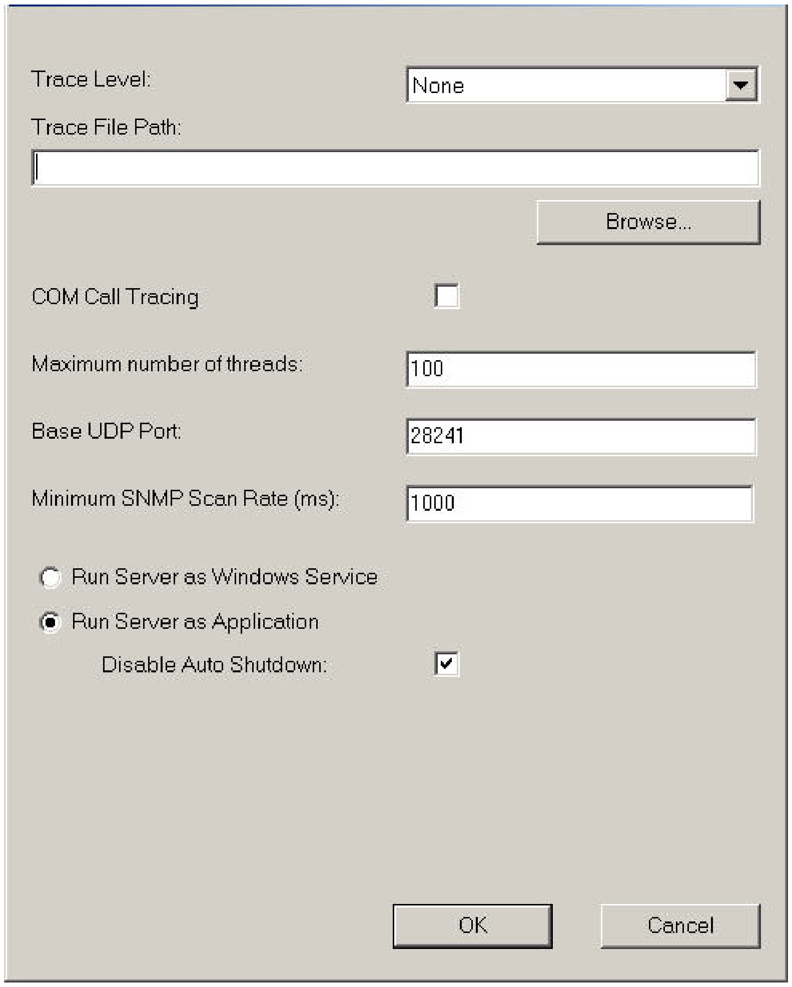
http://msdn.microsoft.com/library/default.asp?url=/library/en-us/script56/html/js56jsoriJScript.asp

Chapter 8 – Advanced iSNMP Features

Every network is different, and occasionally you must tune the iSNMP engine to best perform on your network. Advanced polling features are detailed on the OPC Server Settings page. Select the OPC Server Settings button from the EDIT menu item:



The OPC Server settings page will appear:



Trace Level: None

Trace File Path:

COM Call Tracing ☐

Maximum number of threads: 100

Base UDP Port: 28241

Minimum SNMP Scan Rate (ms): 1000

○ Run Server as Windows Service

● Run Server as Application

Disable Auto Shutdown: ☑

Do not change the default settings on the OPC Server Settings page unless you are experiencing problems with polling devices on your network. A brief description of OPC server settings:

Trace Level: In cases where you wish to maintain a log file of server operations, you can select the level of Server Operating Tracing. The different levels of Server Operating Tracing in the drop-down are:

- **None** – (Default) No trace messages are output.

- **Connect** - Log trace messages associated with client connectivity and
- server activation.

- **Group** - Log trace messages associated with creating / deleting / modifying OPC groups.

- **Item** - Log trace messages associated with item transactions. For example: read, write, and subscription transactions.

- **All** - Log all message types.

Trace File Path: Select the destination where the server operation log file is stored.

COM Call tracing: Turns COM call tracing on and off. Default is *OFF*. Go to Appendix A for more details.

Base UDP port: This is the first port that the server uses for multithreaded polling. The server will use this port and the next 100 ports above it (if needed) to execute the multi-threaded poling of network devices.

Run Server as Windows Service: By selecting this option, iSNMP will run as a Windows service, which can be configured to start automatically when Windows starts.

All: Log all message types.

Run Server as application: By selecting this option, iSNMP will run whenever an OPC client requests data, and will shutdown within seconds of no demand. This is the default setting.

Disable Auto shutdown: By selecting this checkbox, if iSNMP is running as an application, the OPC server will not shutdown once started, even if no OPC clients are requesting data.

Enable initial polling: By selecting this checkbox the iSNMP OPC server will not display a value to an OPC client application until a verified value has been returned. This can increase server startup time greatly. Default setting is *OFF*

Note: COM Call tracing is distinct from server operation tracing. COM Call tracing is lower-level than server operation tracing and sends its output to a different log file. See Appendix A for Comm. call tracing functionality.

Chapter 9 - IndustrialSNMP Communicator

During system troubleshooting, you may wish to communicate to your SNMP-manageable network devices without having to start the IndustrialSNMP OPC Server. One advantage to the Communicator is that you do not have to configure your SNMP database using the IndustrialSNMP Editor. This allows you to verify any SNMP data directly from the PC Network Interface Card. If you have an existing IndustrialSNMP Editor configuration set up, then you will be able to browse the tag database you have already set up.

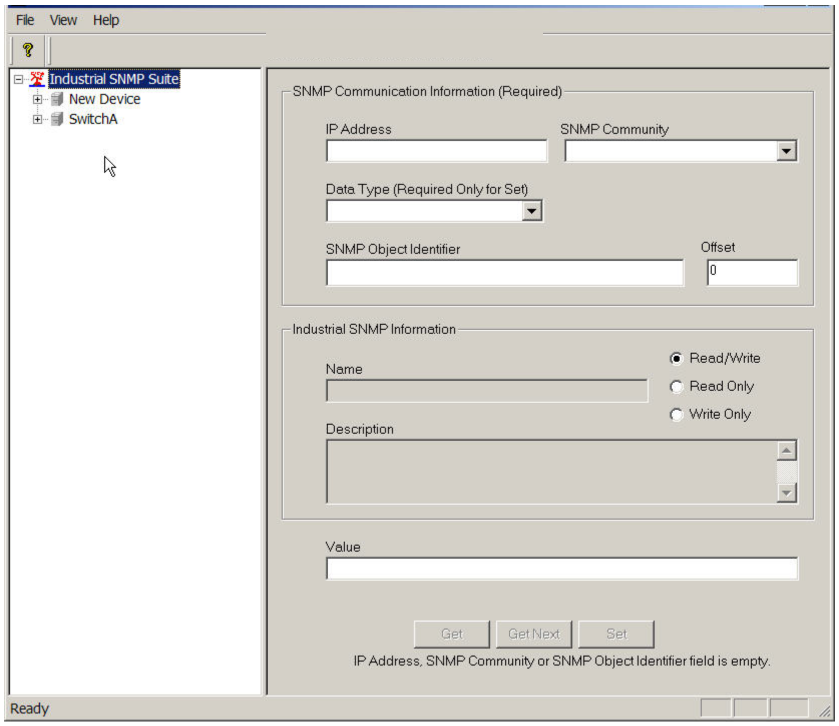
When you first start IndustrialSNMP Communicator, you should notice that the IndustrialSNMP OPC Server screen does not open. This is normal. IndustrialSNMP Communicator is a stand-alone SNMP communication product, and it accesses the PC's Network Interface Card directly.

There are two ways to use Communicator. One is to browse a network that has already been configured using IndustrialSNMP Editor. The other is to manually fill in the required SNMP MIB data fields. We will cover browsing an existing configuration first. To use IndustrialSNMP Communicator without browsing, please jump ahead to **Spot Checking SNMP Data**

Browsing an Existing IndustrialSNMP Database

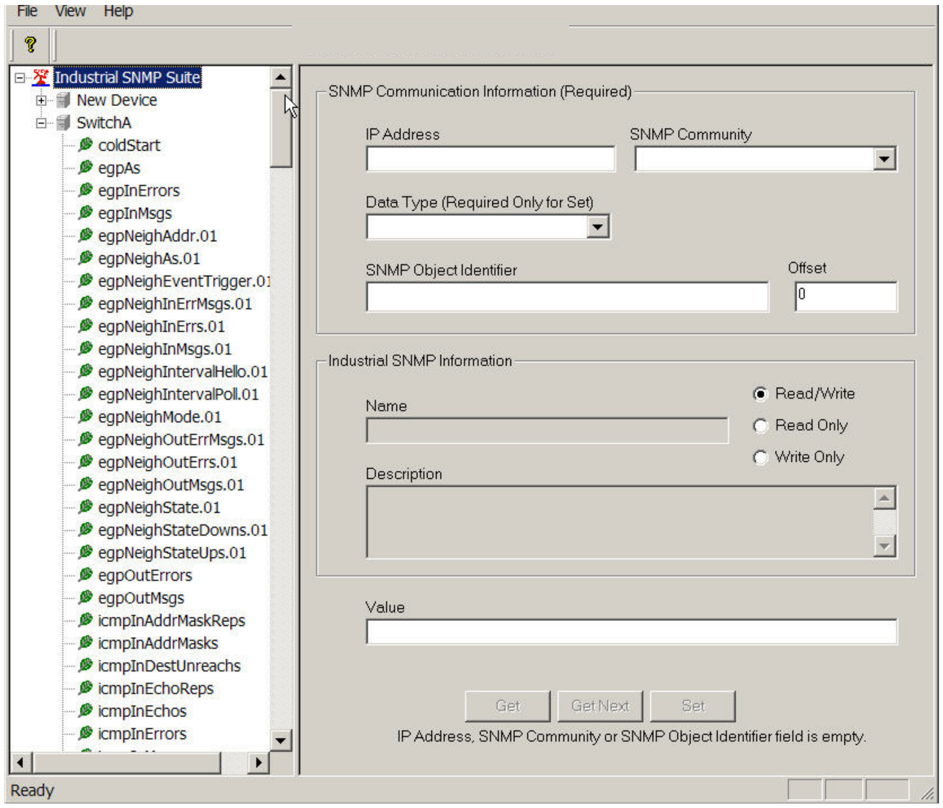
The Communicator screen is split into two major parts. The left screen is the device browser area. This area will show a list of the available network devices and the tags that you have configured in IndustrialSNMP Editor. The right part of the screen is where you can view real-time data from any of the configured tags or from any tag for which you have the correct MIB address data.

To begin, you can browse the SNMP "tree" in the left screen. Start by left-clicking the mouse over the + sign to the left of the IndustrialSNMP Suite "tree" icon on the OPC Data Tree screen, as shown below: *Note: If there is no + or – sign to the left of the "tree," then you probably have not configured any devices from within IndustrialSNMP Editor. Please exit IndustrialSNMP Communicator and configure the devices in your network first, or skip ahead to the Spot Checking SNMP Data section of this Help manual.*



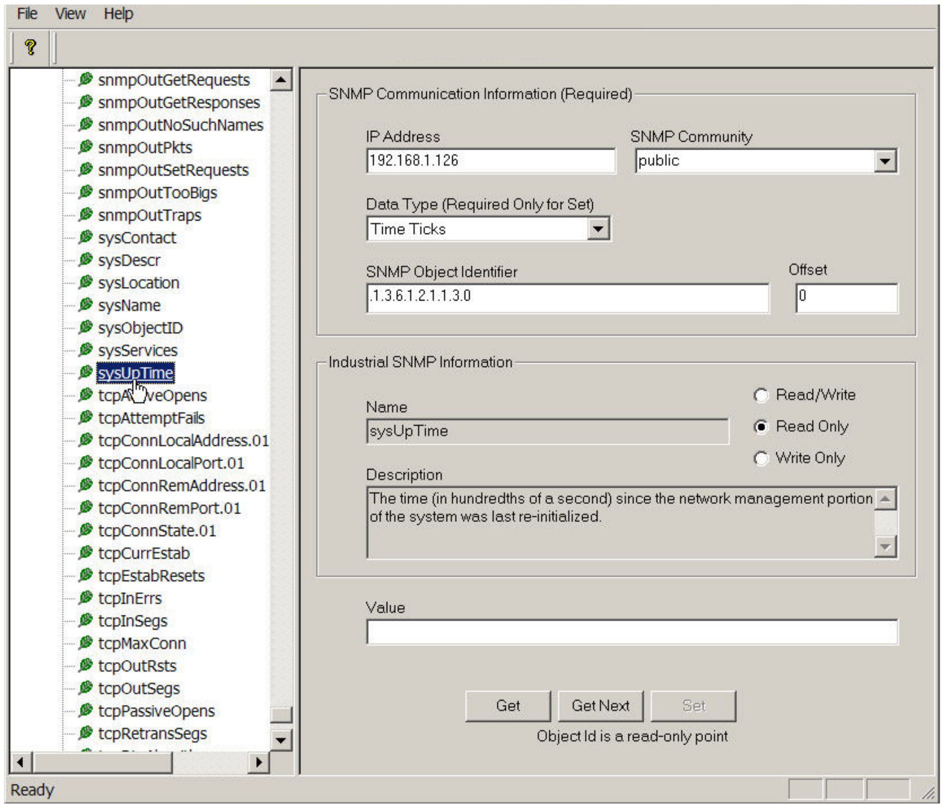
IP Address, SNMP Community or SNMP Object Identifier field is empty.

In the network shown, a device called SwitchA has been configured. By left clicking on the "+" sign to the left of the SwitchA network device, a listing of all the tags configured for that device should appear, as shown below:



IP Address, SNMP Community or SNMP Object Identifier field is empty.

Now that all the tags that have been configured are displayed, it is possible to add individual tags into the Communicator real-time view area. To begin viewing any tag, first simply highlight it by left clicking on the individual tag in the **IndustrialSNMP Suite** window. The MIB data for that "tag" will be automatically entered into the data fields on the right-hand side of the screen. In the screen below, a tag has been highlighted, and the MIB data automatically filled in. *Note: IndustrialSNMP Communicator allows access to one tag at a time. IndustrialSNMP Communicator is meant as a troubleshooting tool primarily. If you need to view multiple "tags" concurrently, use the IndustrialSNMP Dataviewer utility.*



snmpOutGetRequests
snmpOutGetResponses
snmpOutNoSuchNames
snmpOutPkts
snmpOutSetRequests
snmpOutTooBigs
snmpOutTraps
sysContact
sysDescr
sysLocation
sysName
sysObjectID
sysServices
sysUpTime
tcpActiveOpens
tcpAttemptFails
tcpConnLocalAddress.01
tcpConnLocalPort.01
tcpConnRemAddress.01
tcpConnRemPort.01
tcpConnState.01
tcpCurrEstab
tcpEstabResets
tcpInErrs
tcpInSegs
tcpMaxConn
tcpOutRsts
tcpOutSegs
tcpPassiveOpens
tcpRetransSegs

SNMP Communication Information (Required)

IP Address: 192.168.1.126
SNMP Community: public
Data Type (Required Only for Set): Time Ticks
SNMP Object Identifier: .1.3.6.1.2.1.1.3.0
Offset: 0

Industrial SNMP Information

Name: sysUpTime
( ) Read/Write [✓ Read Only] ( ) Write Only
Description: The time (in hundredths of a second) since the network management portion of the system was last re-initialized.

Value:

Object Id is a read-only point

You will note that there are six items of information displayed about each tag within the IndustrialSNMP Communicator display windows:

1. The first Window is the IP address of the SNMP agent that is being polled. *Note: It is necessary to have configured an SNMP address in the manageable network device to communicate to it. If you are unsure whether this has been done, please refer to the management manual for your network device.*

2. The second text box is the **Community** field. The Community field is essentially a password field. The community setting in this field must match the community that is set in the SNMP-manageable switch. *Note: Many device manufacturers will have a default community setting of Private for full access privileges to their network device. Often there is also a default Public community, which will allow read-only privileges from the SNMP agent. Many network devices will allow you to create a number of communities, all of which have varying levels of access to that device's MIB data. If an IT group maintains the network device that you are communicating to you should coordinate with them to determine the correct community to use.*

3. The third field is the **SNMP Object Identifier** for the tag. The **SNMP Object Identifier** is the specific data address for the information you are requesting from the SNMP agent embedded in your manageable network device. Most MIB addresses follow an Object ID nomenclature that has a series of whole numbers separated by periods (for example: .1.3.6.1.2.1.2.2.1.7.1.) *Note: You can find the MIB Object ID addresses and descriptions in*

the network management manual supplied with your SNMP-manageable device. Be aware that some network component vendors have two product manuals–one for installing and operating the network device, the other detailing network management information.

4. The fourth field is the **Data Type** for the MIB data you are going to be requesting. MIB data is stored in a number of formats. Some data is stored in various types of integers, others in strings, and so on. By pressing the drop-down arrow on the right side of this dialog box, you will be able to choose the data type from a pre-defined list. *Note: The Data Type for your specific MIB data can be found in the management manual or in the MIB definition file for your network device.*

5. The fifth field of data is the **Current Value** of the tag. This column displays the data in real-time as often as it is updated by the SNMP driver. *Note: IndustrialSNMP Communicator only retrieves data from the manageable network device when you press the trigger button. It is normal to see a line of question marks until the Trigger button is pressed.*

6. The sixth field is the **Description** field. This field will be populated with the text that was set in the Description field of IndustrialSNMP Editor. If there is no text, IndustrialSNMP Communicator will still work!

Reading SNMP Data

To initiate a poll of the SNMP MIB data click on the GET button to poll the SNMP agent in the selected device. The GET NEXT button will increment through the MIB and retrieve the data. The Current Value text box will now reflect the state of the requested SNMP MIB Object Identifier. The read function is only triggered once at the moment that the GET or GET NEXT button is pressed. To update the data, you must press the GET or GET NEXT button again.

Writing SNMP Data

To initiate a write to the SNMP MIB database, use the SET button on the bottom of the screen. You can change the value of an Object ID only if it is permitted by the configuration of the SNMP agent in the device you are interrogating. You also have to configure the tag for write ability in the IndustrialSNMP Editor. You can view the status of the tag in the IndustrialSNMP Information section of the Communicator. *Note: When attempting to SET a value in the SNMP MIB, you must be at the proper community (Read/Write or Write only) setting for the ability to set a value. This community setting is configured when setting up the device.*

Spot-Checking SNMP Data

You do not have to have set up a device in IndustrialSNMP Editor to be able to communicate to any SNMP- manageable device using IndustrialSNMP Communicator. To spot-check SNMP MIB data on a network, you will need four pieces of information from the SNMP agent about the MIB data item that you want to read:

1. The IP address of the SNMP agent that is being polled. Enter this data in the SNMP Agent field on the right side of the Communicator interface. There are four boxes, one for each of the four sections of the SNMP agent IP address. *Note: It is necessary to have configured an SNMP address in the manageable network device to communicate to it. If you are unsure whether this has been done, please refer to the network manual for the device and configure it before attempting to use IndustrialSNMP Communicator.*

2. The **Community** for which that the managed network device is configured. The Community is essentially a password field. The community setting in this field must match the community that is set in the SNMP manageable switch. *Note: Many device manufacturers will have a default community setting of Private for full access privileges to their network device. Often there is also a default Public community, which will allow read-only privileges from the SNMP agent. Many network devices will allow you to create a number of communities, all of which have varying levels of access to the device's MIB data. If the network device that you are communicating to is maintained by an IT group, you should coordinate with them to determine the correct community to use.*

3. The **SNMP Object Identifier** for the tag. The **SNMP Object Identifier** is the specific data address for the information you are requesting from the SNMP agent embedded in your manageable network device. Most MIB addresses follow an Object ID nomenclature that has a series of whole numbers separated by periods (for example: .1.3.6.1.2.1.2.2.1.7.1.) *Note: You can find the MIB Object ID addresses and descriptions in the network management manual supplied with your SNMP-manageable device. Be aware that some network component vendors have two product manuals–one for installing and operating the network device, the other detailing network management information.*

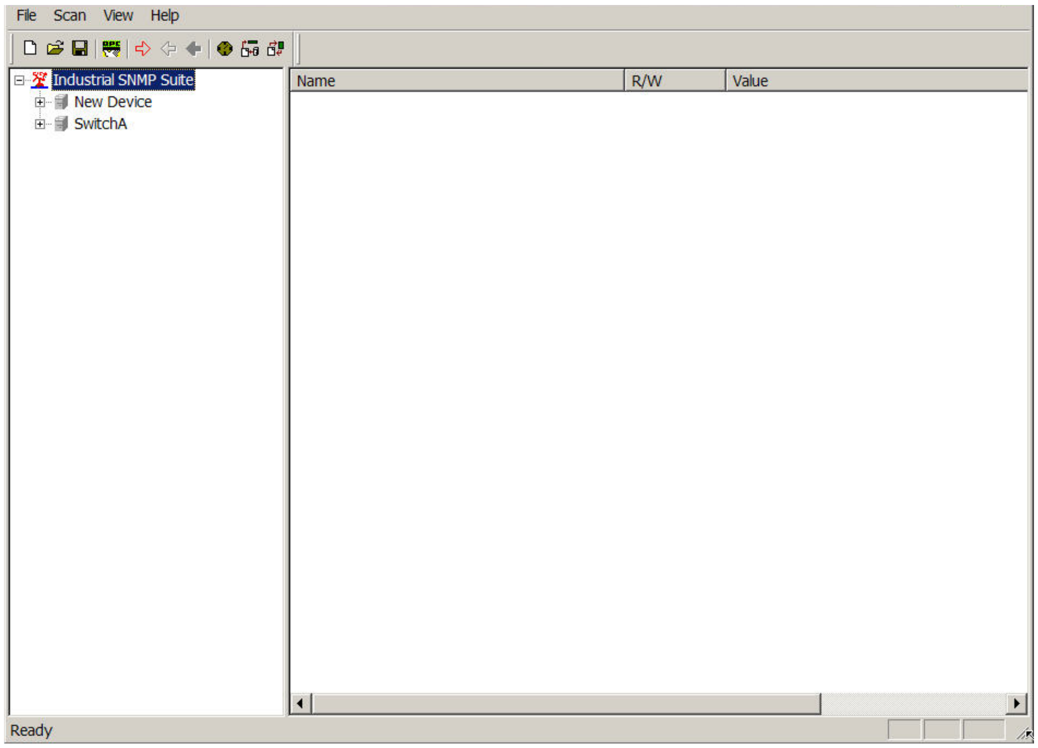
4. The **Data Type** for the MIB data you are going to be requesting. MIB data is stored in a number of formats. Some data is stored in various types of integers, others in strings, and so on. By pressing the drop-down arrow on the right side of this dialog box, you will be able to choose the data type from a pre-defined list. *Note: The Data Type for your specific MIB data can be found in the management manual or in the MIB definition file for your network device.*

Chapter 10 - IndustrialSNMP DataViewer

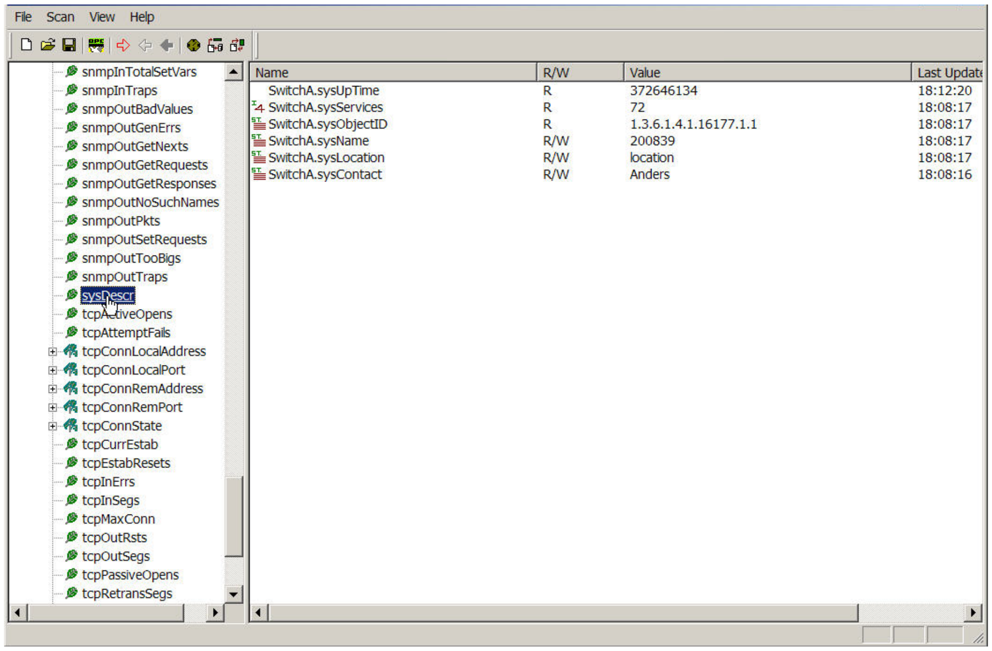
IndustrialSNMP DataViewer is an OPC client application designed to assist iSNMP users in verifying that the iSNMP OPC Server is collecting and sharing data properly. iSNMP DataViewer can be a useful tool in troubleshooting potential problems with OPC communication. When you first start IndustrialSNMP DataViewer, you should notice that the IndustrialSNMP OPC Server screen will flash open and then will minimize to run as a service on your computer. *Note: Before using IndustrialSNMP DataViewer, you must configure your SNMP database using the IndustrialSNMP Editor. Please refer to IndustrialSNMP Editor in the Help menu for instructions.*

Reading Data

The DataViewer screen is split into two "windows". The left screen is the device browser area. This area will show a list of the available network devices and the tags that you have configured in IndustrialSNMP Editor. The right part of the screen is where you can view real-time data from any of the configured tags. To begin, you must browse the SNMP "tree" in the left screen. Begin by left-clicking the mouse over the + sign to the left of the IndustrialSNMP Suite "tree" icon on the OPC Data Tree screen, as shown below. *Note: If there is no + or – sign to the left of the "tree", then you probably have not configured any devices from within IndustrialSNMP Editor. Please exit IndustrialSNMP DataViewer, and launch IndustrialSNMP Editor to configure the devices in your network first!*



In the network shown, two devices have been configured. We will work with the device called SwitchA. By left clicking on the "+" sign to the left of the SwitchA network device a listing of all the tags configured for that device should appear. It is now possible to add individual tags into the DataViewer real-time view area. To view any tag, first left-click on the individual tag in the OPC Data Tree window, then press the -> in the taskbar. In the screen below, six data tags that have been moved into the real-time data window: (Double clicking on the tag will also move the tag into the real time viewing area)*Note: To "clean up" the OPC Data tree window, you can press the "-"button to the left of any device's icon. This will hide the list of tags from this device, and help to navigate to other network devices more easily.*



Name	R/W	Value	Last Update
SwitchA.sysUpTime	R	372646134	18:12:20
SwitchA.sysServices	R	72	18:08:17
SwitchA.sysObjectID	R	1.3.6.1.4.1.16177.1.1	18:08:17
SwitchA.sysName	R/W	200839	18:08:17
SwitchA.sysLocation	R/W	location	18:08:17
SwitchA.sysContact	R/W	Anders	18:08:16

You will note that there are four items of information displayed about each tag within the Real-time display window:

1. First is the Tag name of the data. *Note: The tag name from within the real-time window is displayed in OPC naming format. In this case, it shows the OPC name as <Device>.<Tag name>.*

2.The second column is the Read/Write column. This column displays whether the tag is configured for read-only, or read/write privileges. If the device has read/write privileges, then you can actually set the tag value from within IndustrialSNMP DataViewer. *See the **Writing Data** section of Help below for details.*

3.The third column of data is the current value of the tag. This column displays the data in real-time, as often as it is updated by the SNMP driver. *Note: If you are only getting "0"s or "*******" values, you probably have a problem communicating to your SNMP manageable network devices. Verify that you are attached to the network and then verify that the network device you have configured is powered.*

4.The fourth column shows the timestamp for the last update time for data being retrieved from the SNMP manageable device. To increase or decrease the frequency of the data update, go to the **Advanced Setting** section below.

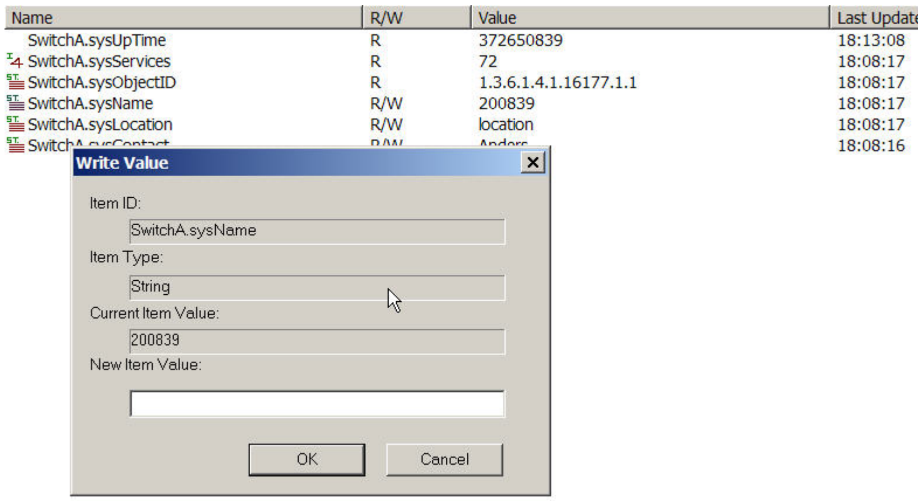
Now that you have begun to gather real-time data, you can easily change the data points that you are monitoring. To add a tag from another device, simply open the tag listing for that device by left-clicking o n the "+" sigh to the left of the device name, as you did for the first device, highlight the tag that you want to monitor, and press the **->** button on the taskbar above the DataViewer windows.

To remove a tag from the real-time window, highlight it by left-clicking on it and then press the **<-** button on the taskbar. . If you want to remove multiple tags, you can hold down the **Ctrl** key on your keyboard, and then select each desired tag with the left mouse button. When you press the **<-** button on the taskbar, all highlighted tags will be moved out of the real-time DataViewer window.

Writing Data

To write data to a manageable network device from within IndustrialSNMP DataViewer, you should check that the point is read/write able in the first place. You can do this by looking at the R/W column in DataViewer. If the column has a R/W by the tag, then the tag was configured in IndustrialSNMP Editor to be able to be written to. *Note: The SNMP agent residing on the network device may only support read-only for all or some tags, and selecting write privileges from within IndustrialSNMP Editor does not guarantee that write commands will be executed. Another factor that affects read/write privileges is the community "password" that you defined during the* ***Network Device*** *setup. Please consult the network management manual for your network device to be sure of the functionality supported).*

Assuming that you have configured the tag to be write-able, you can write a value by simply double clicking on the tag from within the real-time Dataviewer window. When you double click on the point, a **Write Value** pop-up window will appear, as seen below:



Name	R/W	Value	Last Updat
SwitchA.sysUpTime	R	372650839	18:13:08
SwitchA.sysServices	R	72	18:08:17
SwitchA.sysObjectID	R	1.3.6.1.4.1.16177.1.1	18:08:17
SwitchA.sysName	R/W	200839	18:08:17
SwitchA.sysLocation	R/W	location	18:08:17
Switch			18:08:16

Write Value

Item ID: SwitchA.sysName

Item Type: String

Current Item Value: 200839

New Item Value:

Type the new value that you want in the **New Item Value** text box, and click the **OK** button. Once you have done this, the new value should appear on the next scan of that tag.

Saving and retrieving Data view windows

After you have selected the tags that you want to monitor, you may want to **Save** the list, so that you do not have to re-browse and select the tags every time that you restart IndustrialSNMP DataViewer. To save your list, press the **Save Data view** button (looks like a floppy disk), which is located above the real-time DataViewer window. You will see the pop-up **Save As** window. Type a file name for the DataView that you want to be able to recall and then click the **Save** button. At this point the DataView that you have created will be available any time you restart IndustrialSNMP DataViewer.

To recall a Data view after restarting IndustrialSNMP DataViewer, press the **Open Button**, which is located above the real-time DataViewer window (or select **Open** from the **File** menu). You will see the pop-up **Open** window below. Select the Data view you want from the list and press the **Open** button. Your pre-selected tag database will automatically be loaded.

iSNMP System Tags

iSNMP creates a few “virtual” tags for each SNMP manageable device defined. These tags are not part of the devices MIB table, they are created by iSNMP. A brief description of each follows:

$iSNMPMinimumPollTime: This tag reflects the 'Minimum SNMP Scan Rate (ms)' setting in the iSNMP OPC Server Settings dialog in SNMP Editor.

$iSNMPDeviceTimeout
$iSNMPDeviceRetries
$iSNMPDeviceSkipCount
$iSNMPDeviceNoItems
These tags reflect the device settings on the 'Advanced' tab
of the Device Wizard dialog.

$iSNMPDeviceStatus : This virtual tag is based on the sysObjectID OID (.1.3.6.1.2.1.1.2.0), which every SNMP-manageable device supports. At each polling cycle, $iSNMPDeviceStatus attempts to get the value of the sysObjectID OID. If $iSNMPDeviceStatus does a successful SNMP 'Get' of sysObjectID from the agent, its value is '1'. If $iSNMPDeviceStatus is unable to do a successful SNMP 'Get', its value is '0'.

Advanced Settings

IndustrialSNMP DataViewer allows you to make changes to the base IndustrialSNMP poll rate, as well as the rate of update that IndustrialSNMP DataViewer OPC update rate. The difference between these two poll rates is as follows:

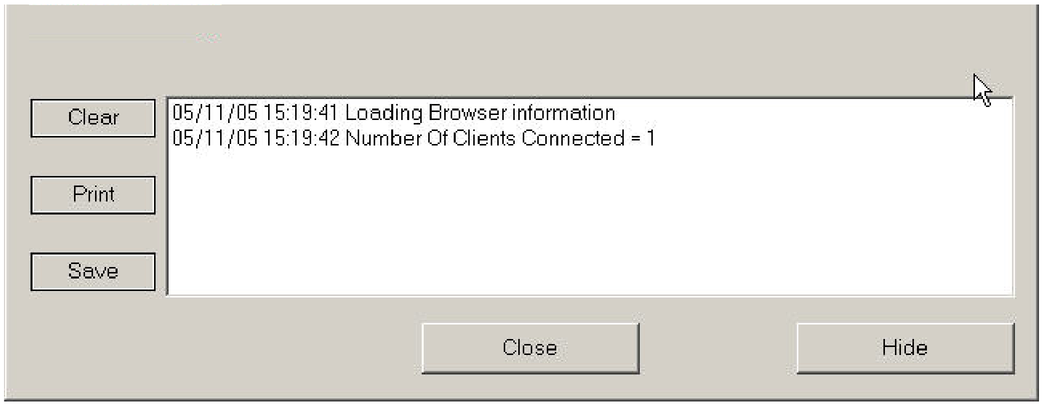
The Base SNMP Poll rate is the frequency with which the IndustrialSNMP driver will make requests of the network device for data. For example, a base SNMP poll rate of 1000ms will ensure that the IndustrialSNMP driver will attempt to poll the network devices that have been configured no more often than once every 1000milliseconds.

The Sync Poll rate is the rate at which IndustrialSNMP DataViewer requests information from the SNMP polling engine. There are two selections within the Sync poll rate, the default is the Cache setting. *In most circumstances, the Cache is the preferred polling method.* This allows the IndustrialSNMP DataViewer to display a cached value if the SNMP polling engine does not have a refreshed value from the manageable network device. Selecting the device polling selection will make DataViewer wait for a refreshed SNMP data value. This can sometimes slow the performance of the application.

Do not change the base SNMP poll rate below 1000ms, unless you have discussed your application with iSNMP tech support.

Chapter 11 - IndustrialSNMP OPC Server Interface

The IndustrialSNMP OPC driver will be started by any OPC client that requests data from it. If there is not an OPC client requesting information, the IndustrialSNMP OPC Server will be inactive. You can verify that the IndustrialSNMP OPC Server is running by looking for a small SNMP icon in the lower right hand taskbar of your O/S. This icon shows that the OPC driver is running. If you minimize the OPC client software application (And any other software windows you may have opened), you will see the IndustrialSNMP OPC Engine interface as seen below:



```
05/11/05 15:19:41 Loading Browser information
05/11/05 15:19:42 Number Of Clients Connected = 1
```

This interface has a few important tools, as well as an event log, which can assist you in troubleshooting your application. In the window, you will be told how many OPC clients are currently connected to the IndustrialSNMP OPC Server. *Note: Multiple OPC clients can connect to the IndustrialSNMP OPC Server, so it is possible to have both IndustrialSNMP DataViewer and an HMI package communicating simultaneously to the SNMP-manageable device.*

If any polling errors are occurring, they will be listed in the event log screen, with a Date and Time stamp for the event. You can easily view a history of errors (The log can hold up to 100,000 entries, and will then begin to write over the oldest entry.)

If you wish, you can save the event log at any time by pressing the Save button on the left side of the interface. This will save the log file as a text file. This can be helpful to our tech support staff, in the event you are having communication problems.

You can also print the event log out to a printer. Press the Print button on the left side of the interface, and follow up the instructions to print to one of your pre-configured printers.

If the OPC server has been configured to run as a service or not to shutdown automatically, you can shutdown the server by pressing the **Close** button.

Appendix A - COM Call Tracing Using TraceHook Components

COM Call tracing is distinct from server operating tracing. COM Call tracing is lower-level than server operation tracing and sends its output to a different log file.

Introduction

TraceHook components provide a means to record COM method calls to a circular file, at varying levels of detail. The technology is implemented 'out of band' from, or orthogonal to, the actual method call. This means that there is absolutely no tracing code inside the COM method call implementation. Tracing is provided by means of pre and post call hooks that utilize type library data to interpret the stack when generating input and output parameter dumps.
When the TraceHook components are configured to record the greatest level of detail, the trace file will contain particulars of each COM method call just prior to and just after its execution, including full input and output parameter dumps. The following is an excerpt of an actual trace log file generated while the OPC Browser browsed the namespace of the simulation server that is provided with the Toolkit.   This example illustrates the highest level of detail available.

```
2001-07-31 12:58:51.093 LOG FILE OPENED!
12:58:51.213 NDISimServer:OPCServer@bf1450 >> (207-1)
IOPCServer::AddGroup("NDI_Browser", 0, 0, 0, [Ptr] NULL, 0, 2048, [out], [out],
REC<968964692,
286, 4560, >, [out])
12:58:51.233 NDISimServer:OPCServer@bf1450 << (207-1) hr=0x4000d
IOPCServer::AddGroup([in], [in], [in], [in], [in], [in], [in], 12529312, 10, [in], [IUnknown]
0x00148E38)
12:58:51.283 NDISimServer:OPCServer@bf1450 >> (311-2)
IOPCBrowseServerAddressSpace::QueryOrganization([out])
12:58:51.283 NDISimServer:OPCServer@bf1450 << (311-2) hr=0
IOPCBrowseServerAddressSpace::QueryOrganization(ENUM<1>)
12:58:51.283 NDISimServer:OPCServer@bf1450 >> (207-3)
IOPCBrowseServerAddressSpace::BrowseOPCItemIDs(ENUM<1>, "", 0, 0, [out])
12:58:51.303 NDISimServer:OPCServer@bf1450 << (207-3) hr=0
IOPCBrowseServerAddressSpace::BrowseOPCItemIDs([in], [in], [in], [in], [IUnknown]
0x015F0180)
12:58:51.303 NDISimServer:OPCServer@bf1450 >> (311-4) IEnumString::RemoteNext(1, [out],
[out])
12:58:51.303 NDISimServer:OPCServer@bf1450 << (311-4) hr=0
IEnumString::RemoteNext([in], "src", 1)
12:58:51.303 NDISimServer:OPCServer@bf1450 >> (333-5)
IOPCBrowseServerAddressSpace::GetItemID("src", [out])
12:58:51.303 NDISimServer:OPCServer@bf1450 << (333-5) hr=0
IOPCBrowseServerAddressSpace::GetItemID([in], "src")
12:58:51.303 NDISimServer:OPCServer@bf1450 >> (207-6) IEnumString::RemoteNext(1, [out],
[out])
12:58:51.303 NDISimServer:OPCServer@bf1450 << (207-6) hr=0
IEnumString::RemoteNext([in], "trg", 1)
12:58:51.303 NDISimServer:OPCServer@bf1450 >> (311-7)
IOPCBrowseServerAddressSpace::GetItemID("trg", [out])
12:58:51.303 NDISimServer:OPCServer@bf1450 << (311-7) hr=0
IOPCBrowseServerAddressSpace::GetItemID([in], "trg")
```

```
12:58:51.353 NDISimServer:OPCServer@bf1450 >> (146-8) IEnumString::RemoteNext(1, [out],
[out])
12:58:51.353 NDISimServer:OPCServer@bf1450 << (146-8) hr=0x1
IEnumString::RemoteNext([in], [NULL], 0)
12:58:51.353 NDISimServer:OPCServer@bf1450 >> (333-9)
IOPCBrowseServerAddressSpace::BrowseOPCItemIDs(ENUM<2>, "", 0, 0, [out])
12:58:51.373 NDISimServer:OPCServer@bf1450 << (333-9) hr=0x1
IOPCBrowseServerAddressSpace::BrowseOPCItemIDs([in], [in], [in], [in], [IUnknown]
0x015F0180)
12:58:51.373 NDISimServer:OPCServer@bf1450 >> (146-10) IEnumString::RemoteNext(1,
[out], [out])
12:58:51.373 NDISimServer:OPCServer@bf1450 << (146-10) hr=0x1
IEnumString::RemoteNext([in], [NULL], 0)
12:58:53.005 NDISimServer:OPCServer@bf1450 >> (311-11)
IOPCBrowseServerAddressSpace::ChangeBrowsePosition(ENUM<3>, "src")
12:58:53.005 NDISimServer:OPCServer@bf1450 << (311-11) hr=0
IOPCBrowseServerAddressSpace::ChangeBrowsePosition([in], [in])
12:58:53.016 NDISimServer:OPCServer@bf1450 >> (146-12)
IOPCBrowseServerAddressSpace::BrowseOPCItemIDs(ENUM<1>, "", 0, 0, [out])
12:58:53.026 NDISimServer:OPCServer@bf1450 << (146-12) hr=0x1
IOPCBrowseServerAddressSpace::BrowseOPCItemIDs([in], [in], [in], [in], [IUnknown]
0x015F0180)
12:58:53.026 NDISimServer:OPCServer@bf1450 >> (333-13) IEnumString::RemoteNext(1,
[out], [out])
12:58:53.026 NDISimServer:OPCServer@bf1450 << (333-13) hr=0x1
IEnumString::RemoteNext([in], [NULL], 0)
12:58:53.046 NDISimServer:OPCServer@bf1450 >> (207-14)
IOPCBrowseServerAddressSpace::BrowseOPCItemIDs(ENUM<2>, "", 0, 0, [out])
12:58:53.066 NDISimServer:OPCServer@bf1450 << (207-14) hr=0
IOPCBrowseServerAddressSpace::BrowseOPCItemIDs([in], [in], [in], [in], [IUnknown]
0x015F0180)
12:58:53.066 NDISimServer:OPCServer@bf1450 >> (146-15) IEnumString::RemoteNext(1,
[out], [out])
12:58:53.066 NDISimServer:OPCServer@bf1450 << (146-15) hr=0
IEnumString::RemoteNext([in], "Tag01", 1)
12:58:53.066 NDISimServer:OPCServer@bf1450 >> (333-16)
IOPCBrowseServerAddressSpace::GetItemID("Tag01", [out])
12:58:53.066 NDISimServer:OPCServer@bf1450 << (333-16) hr=0
IOPCBrowseServerAddressSpace::GetItemID([in], "src.Tag01")
12:58:53.066 NDISimServer:OPCGroup$NDI_Browser >> (146-17)
IOPCItemMgt::ValidateItems(1,
ARRAY<
ELEM[0] REC<"", "src.Tag01", 0, 0, 0, [Ptr] 0x00000000, 0, 0>
>, 0, [out], [out])
12:58:53.066 NDISimServer:OPCGroup$NDI_Browser << (146-17) hr=0
IOPCItemMgt::ValidateItems([in], [in], [in],
ARRAY<
ELEM[0] REC<0, 11, 47789, 1, 0, [Ptr] 0x00000000>
>,
ARRAY<
ELEM[0] 0
>)
```

```
12:58:53.066 NDISimServer:OPCServer@bf1450 >> (311-18)
IOPCBrowseServerAddressSpace::BrowseAccessPaths("src.Tag01", [out])
12:58:53.086 NDISimServer:OPCServer@bf1450 << (311-18) hr=0
IOPCBrowseServerAddressSpace::BrowseAccessPaths([in], [IUnknown] 0x015F0180)
12:58:53.086 NDISimServer:OPCServer@bf1450 >> (146-19) IEnumString::RemoteNext(1,
[out], [out])
12:58:53.086 NDISimServer:OPCServer@bf1450 << (146-19) hr=0
IEnumString::RemoteNext([in], "Path1", 1)
12:58:53.086 NDISimServer:OPCServer@bf1450 >> (207-20) IEnumString::RemoteNext(1,
[out], [out])
12:58:53.086 NDISimServer:OPCServer@bf1450 << (207-20) hr=0x1
IEnumString::RemoteNext([in], [NULL], 0)
12:58:53.086 NDISimServer:OPCServer@bf1450 >> (207-21) IEnumString::RemoteNext(1,
[out], [out])
12:58:53.086 NDISimServer:OPCServer@bf1450 << (207-21) hr=0
IEnumString::RemoteNext([in], "Tag02", 1)
12:58:53.086 NDISimServer:OPCServer@bf1450 >> (146-22)
IOPCBrowseServerAddressSpace::GetItemID("Tag02", [out])
12:58:53.086 NDISimServer:OPCServer@bf1450 << (146-22) hr=0
IOPCBrowseServerAddressSpace::GetItemID([in], "src.Tag02")
12:58:53.086 NDISimServer:OPCGroup$NDI_Browser >> (333-23)
IOPCItemMgt::ValidateItems(1,
ARRAY<
ELEM[0] REC<"", "src.Tag02", 0, 0, 0, [Ptr] 0x00000000, 0, 0>
>, 0, [out], [out])
12:58:53.086 NDISimServer:OPCGroup$NDI_Browser << (333-23) hr=0
IOPCItemMgt::ValidateItems([in], [in], [in],
ARRAY<
ELEM[0] REC<0, 11, 47789, 1, 0, [Ptr] 0x00000000>
>,
ARRAY<
ELEM[0] 0
>)
_
12:58:55.619 NDISimServer:OPCServer@bf1450 >> (146-1215) IEnumString::RemoteNext(1,
[out], [out])
12:58:55.619 NDISimServer:OPCServer@bf1450 << (146-1215) hr=0x1
IEnumString::RemoteNext([in], [NULL], 0)
12:58:57.652 NDISimServer:OPCServer@bf1450 >> (333-1216)
IOPCServer::RemoveGroup(12529312, 1)
12:58:57.702 NDISimServer:OPCServer@bf1450 << (333-1216) hr=0
IOPCServer::RemoveGroup([in], [in])
2001-07-31 12:59:01.007 LOG FILE CLOSED!
```

Each trace statement in this example contains the following information:

Timestamp	The time at which the trace statement was written. When both pre and post call tracing is enabled call duration can then be determined.
Process	The process name from which the trace output originates. For the OPC Server Toolkit, this will always be the process name of the OPC server on which the COM call is being made. In the example above, we see that *NDISimServer* is the process name from which the trace output originates.
Object ID	A unique identifier for the COM object on which the method call was

	invoked. For the OPC Server Toolkit, this will always be OPCServer@<address> or OPCGroup$<GroupName>. <address> is the actual virtual memory address of an OPCServer object instance, <GroupName> is the name of a particular OPCGroup object instance, so specified by the client that created the group.
Directional Indicator	'>>' indicates a pre-call trace statement and '<<' indicates a post call trace statement.
Call ID	The combination of the ID of the thread from which the call is being made, and a globally unique call sequence number. For example, in the first trace statement we see that the call is made from thread ID #207 and that the call sequence number is 1. For the OPC Server Toolkit, the thread ID will always be that of a thread in the RPC thread pool that services incoming COM calls for the multi-threaded apartment.
Return Value	In post call statements only, the .hr=<HRESULT>. entry appears. The HRESULT value is the actual return value from the COM method call.
Interface Name	The name of the interface to which the COM method call belongs.
Method Name	the name of the method being called.
Parameter Values	A dump of the parameter values. For pre-call trace statements, the '[out]' placeholder marks output parameters. For post call trace statements, the '[in]' placeholder marks input parameters.

Trace Output Configuration

Trace output is configured by means of the 'NDITraceHook.ini' file. This file is installed in the '<CommonFilesDir>\Northern Dynamic\NDITraceHook' directory by the TraceHook Setup (<CommonFilesDir> represents the location for common shared files on the system e.g. C:\ProgramFiles\Common Files).

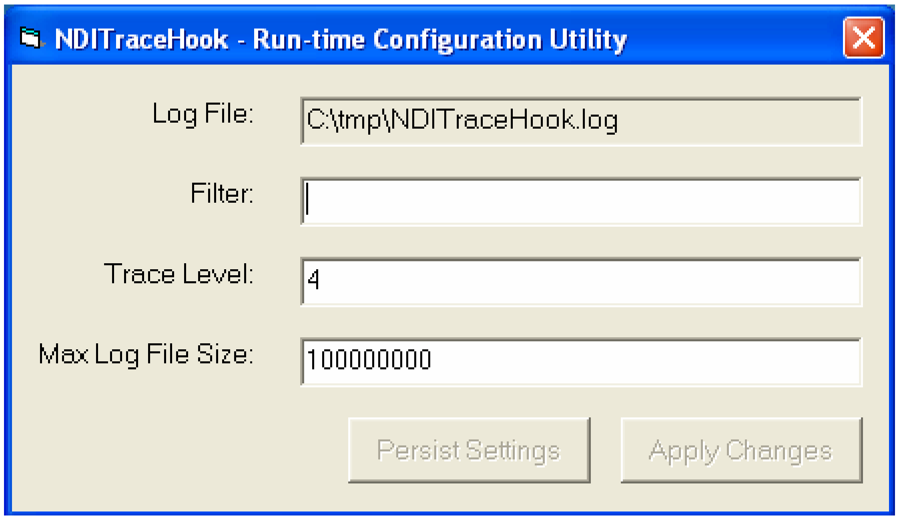
Listed below are the contents of the file, as provided by the TraceHook Setup utility:

```
[Config]
; Full path to the trace log file
LogFile=c:\temp\NDITraceHook.txt

; Maximum trace log file size (in bytes).  It will wrap to the beginning upon reaching this limit
MaxFileSize=10000000

; A trace filter string, using the same syntax as the VB "Like" statement.  Only trace
; messages matching the filter will be written to the trace log file
Filter=

; The trace level setting.  The following values have meaning:
; 0 - no tracing
; 1 - trace only failed method calls
; 2 - trace all method calls (HRESULTs only)
; 3 - provide both pre and post method call trace messages (gives call timing)
; 4 - provide both pre and post method call trace messages, with full parameter dump
TraceLevel=4
; Trace log file truncate flag.  If non-zero, the trace log will be truncated to a zero
; length when it is first opened.
Truncate=0
```

The INI file is read when the TraceHook component DLLs are first loaded by any process. As such, changes will not be recognized until the DLLs are unloaded and reloaded again. A utility is provided, however, to adjust the configuration during run-time (see below).
By specifying a filter string, only events of interest will be captured in the log file. For example, suppose you're only interested in IOPCAsyncIO2 interface method calls. Then setting the Filter value equal to '*IOPCAsyncIO2*' will cause the TraceHook components only to log message strings that match this pattern.

Run-time Configuration Utility

The TraceHook Setup also installs a run-time configuration utility (NDITraceHookCfg.exe) in the '<SystemRoot>\Program Files\Common Files\Northern Dynamic\NDITraceHook' directory. As described earlier, the 'NDITraceHook.ini' configuration file is read when the TraceHook component DLLs are first loaded by any process. NDITraceHookCfg.exe therefore provides a means to change the TraceHook configuration while it is in use.
The following screenshot illustrates the capabilities provided by this simple utility.



Log File: C:\tmp\NDITraceHook.log
Filter:
Trace Level: 4
Max Log File Size: 100000000

Here we see that the filter, trace level, and maximum log file size may be changed at run-time. When any field value is modified the 'Apply Changes' button is enabled. Pressing this button will make the changes take effect immediately. After applying any changes, the 'Persist Settings' button will then be enabled. If this button is pressed, the current settings will also be saved to the NDITraceHook.ini file, thereby making the changes remain in effect the next time the TraceHook components are utilized.