

Description: Guide to configure the machine and the SNMP servers to receive SNMP Traps as OPC AE alarms in the AlarmWorX64 Viewer

OS Requirement: Windows Server 2003 x64/Vista x64/ Server 2008 x64/Windows 7 x64/ Server 2008 R2 x64

General Requirement: SNMP Service Installed and running, SNMP Trap Server installed

Introduction

SNMP Traps are special events generated by devices that are sent over the network. They can be compared to OPC Alarms. In GENESIS64 10.7 we included a special OPC AE server that receives SNMP Traps and converts them into OPC Alarms such that they can be visualized in AlarmWorX64 Viewer as well as logged by AlarmWorX64 Logger. In this guide we will cover the following

- Setup the machine to receive traps
- Setup the SNMP Configuration to filter SNMP Traps
- Configure SNMP traps and SNMP variables
- Create a subscription to the SNMP Trap AE Server

Setup the Machine to Receive Traps

1. Open the Windows Services Control Panel and double-click on the SNMP Service element. If SNMP Service is not found, you can enable it in Windows Programs and Features. Having added the service you may additionally need to restart the machine in order to see the tabs used in the following steps.

To enable the SNMP Service, go to Start => Control Panel => Programs and Features => Turn Windows features on or off => Add features => SNMP Services => Install

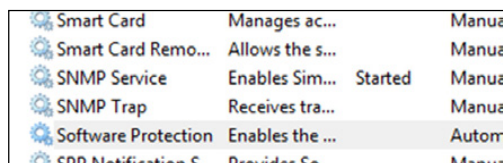


Figure 1 - Windows Services Manager

2. Click on the Security tab and select "Accept packets from any host".

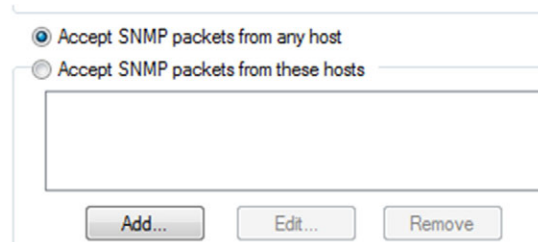


Figure 2 - SNMP Server Properties

3. If you want, you can also configure the machine to send traps to the machine itself. You can use the same method to configure other machines to send traps to the server. Go in the Traps tab and specify an SNMP community as well as the list of devices where you want to send the trap

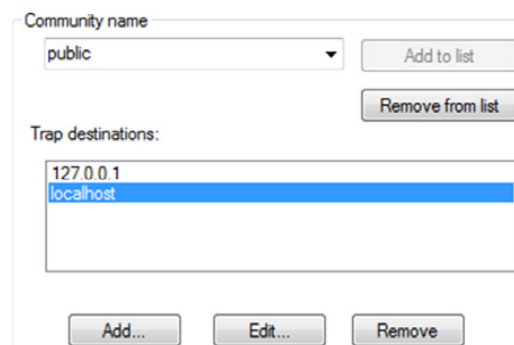


Figure 3 - SNMP Properties: Community

4. Go back in the services list and make sure that the SNMP Trap Service is stopped and disabled. The SNMP uses the default UDP port 161 for receiving general SNMP messages and UDP port 162 for receiving SNMP Traps, thus if it's already used by the Windows SNMP Trap service, the ICONICS SNMP Trap Server will not be able to receive the traps.

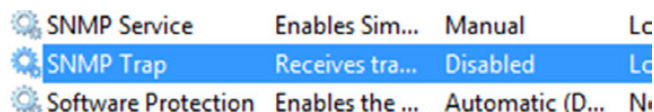


Figure 4 - Disable the Windows SNMP Trap Service

Setup SNMP Configuration to Filter SNMP Traps

1. Open the SNMP Configurator in Workbench. Expand the "SNMP" tree. Here you will find a list of networks and for each network a list of devices. If you want to receive traps from a device you must add it to the configuration, specifying its IP Address.

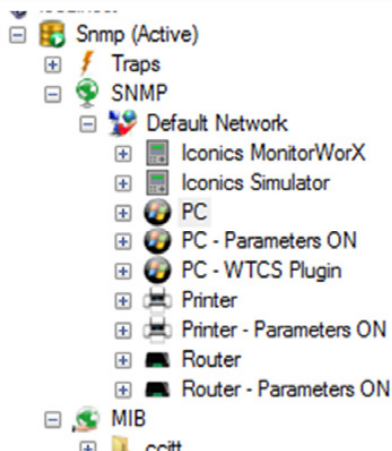


Figure 5 - SNMP Provider in the Project Explorer

- You can use SNMP Explorer to import the devices automatically in the configuration. Once the devices are added to the configuration, double-click on each one of them. A configuration form will open. You can check the "Receive Traps Checkbox".

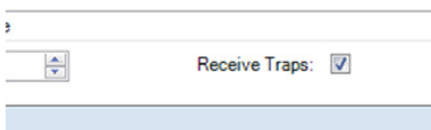


Figure 6 - Receive Traps Option

- If you don't want to setup each device individually, it's possible to receive traps from all the devices in a network. In this case double-click on the network. Then select the "Receive SNMP Traps from all devices in this Network" checkbox.

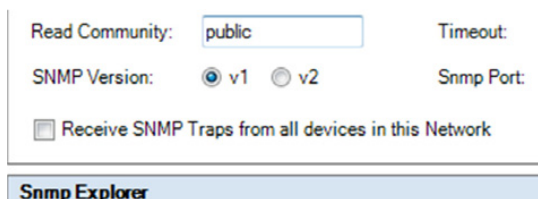


Figure 7 - Receive SNMP Traps from All Devices in the Network

- You can create different networks and use them to organize your devices.

Configure SNMP Traps and SNMP Variables

Now that we have specified from whom we want to receive the traps we can specify which traps we want to receive. Usually traps are defined in MIB files. MIB Files are usually delivered

by the company that produces the machine. It's possible to import them automatically using the MIB parser.

- Double-click on the MIB node. A dialog will appear. Click on the "Add" button and select the MIB Files where the traps are defined.

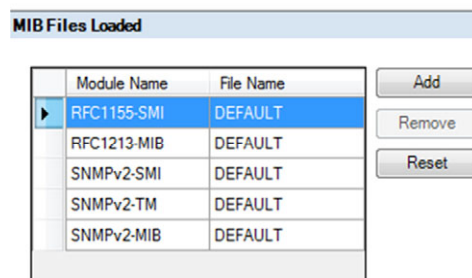


Figure 8 - MIB Files

- Traps will be automatically imported in the database. You can also create your own traps if you don't have the MIB file. In this case right click on the "Trap" node and select "Add Trap".

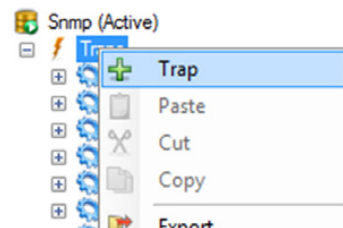


Figure 9 - Manual Creation of Traps

- The trap is identified by an OID. The device will send a message containing the OID, a timestamp, and a list of variables. The purpose of the SNMP Trap AE Server is to get the OID, translate it into a Human Readable name and add some information such as the severity or a useful description. In the Trap Form it's possible to specify all these parameters.

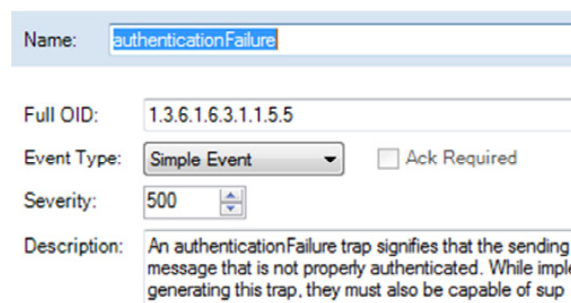


Figure 10 - Trap Definition

4. If you imported the trap using MIB Files, all the fields will be automatically filled for you. It's up to you to specify a different Severity depending on your settings, or to put a different name.
5. As stated before, the device sends together with the trap a list of variables. What we are going to do is to show these variables in the "Attributes" of the Alarm or Event. It's possible to add custom Trap Variables by right-clicking on the trap node and selecting "Add Trap Variable".

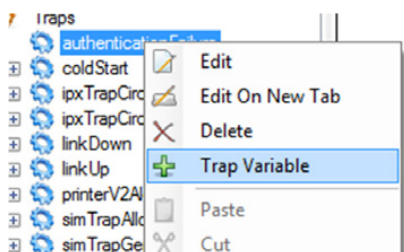


Figure 11 - Define Custom Trap Variable

6. Also in this case, Trap Variables are automatically imported into the database if you imported your traps from MIB Files.
7. It's also possible to edit trap variables by double-clicking on them. A special form will appear.

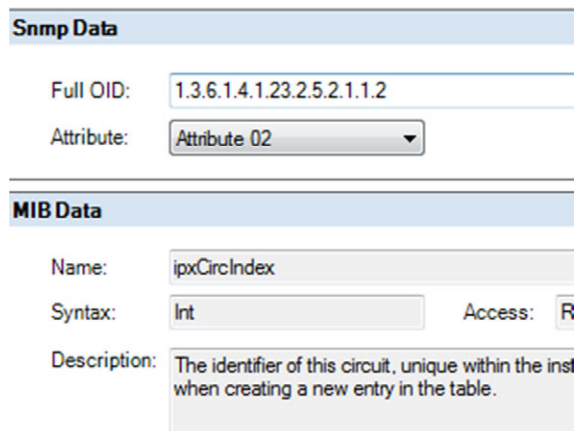


Figure 12 - Trap Variable Configuration Form

8. Trap Variables are also identified by an OID. It's possible to customize the OID in the SNMP Data panel. In the same panel, it's possible to specify in which attribute you want to put the Trap Variable when a Trap is received. You should understand that for each Attribute, one and only one Trap Variable is allowed.
9. In the MIB Data panel, you can see information coming from the MIB tree that explains the Trap Variable. The MIB information is retrieved using the Full OID of the Trap Variable.

Create a Subscription to the SNMP Trap A&E Server

Now that the configuration is completed, we will try to visualize traps in AlarmWorX64 Viewer.

1. Open GraphWorX64 and insert a new AlarmWorX64 Viewer Control in the display.
2. Click on the "Configure Viewer" button in the upper left hand corner.

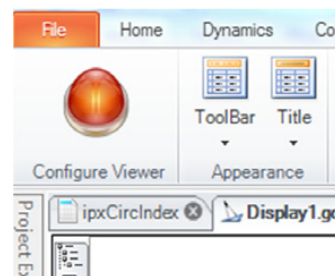


Figure 13 - Configure the AlarmWorX64 Viewer

3. Select the grid node in the tree and select the "Source" tab on the right-hand pane.

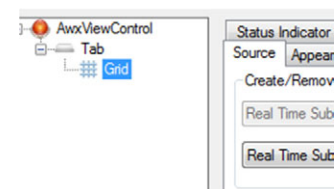


Figure 14 - Alarm Viewer Configuration

4. Create a new Subscription by clicking on the "+" button and choose Real Time Subscription. Insert a name (such as "Trap Subscription").
5. Click on the "Local Alarm Server" point and delete it clicking on the "Minus" button on the left. Then click on the "Plus" button to add a new Event Point. Browse to OPC Classic Servers > My Server for the SNMP Trap Server and press the OK button.

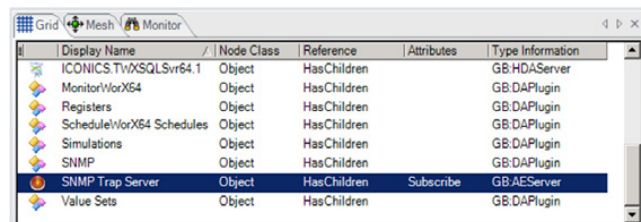


Figure 15 - The ICONICS SNMP Trap Server

6. If you want you may click on “Edit the fields of the subscription” to add or remove fields from the subscription..

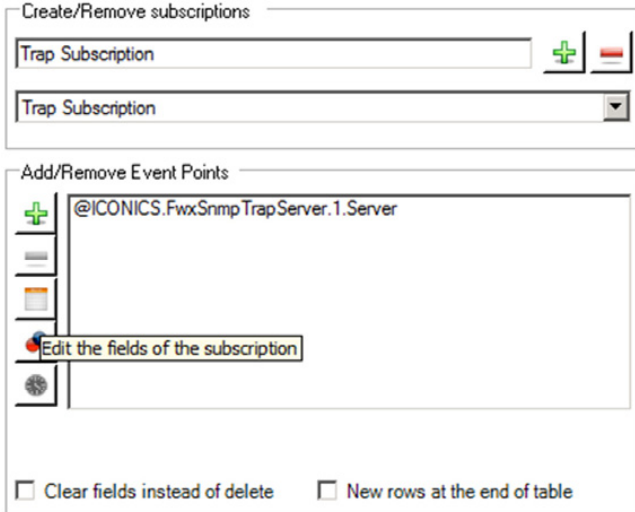
The image shows two overlapping windows from a software application. The top window, titled 'Create/Remove subscriptions', has a text input field containing 'Trap Subscription' and a dropdown menu also showing 'Trap Subscription'. The bottom window, titled 'Add/Remove Event Points', contains a list box with the entry '@ICONICS.FwxSnmpTrapServer.1.Server'. Below the list box is a button labeled 'Edit the fields of the subscription'. At the bottom of this window are two checkboxes: 'Clear fields instead of delete' and 'New rows at the end of table', both of which are currently unchecked.

Figure 16 - Edit Subscription Fields

7. A new dialog will appear. Here you can select all the event server attributes that you need to show the trap variables in the grid.

NOTE: To record the traps, you can create the same subscription in the AlarmWorX64 Logger to log SNMP Traps.

8. Once you are done click on OK, then close the configurator by clicking on the “Close” button.
9. Go into runtime. You will see your traps coming in the AlarmWorX64 Viewer.