



Technical Document

Receiving SNMP Traps Using NuDesign Visual MIBrowser Pro

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1. Document History

Date	Rev.	Remarks	Author
2008-8-26	A01	Created	Shehzad Haq, NDT
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2. Introduction

This document shows how to receive SNMP traps using NuDesign products (Visual MIBrowser Pro and NuDesign Master Agent Service).

3. Trap Reception

For the purposes of this exercise, NuDesign Visual MIBrowser Pro is used to receive SNMP v1/v2 and SNMPv3 traps. NuDesign Master Agent Service is used for sending traps.

3.1. *SNMPv1/v2 Traps*

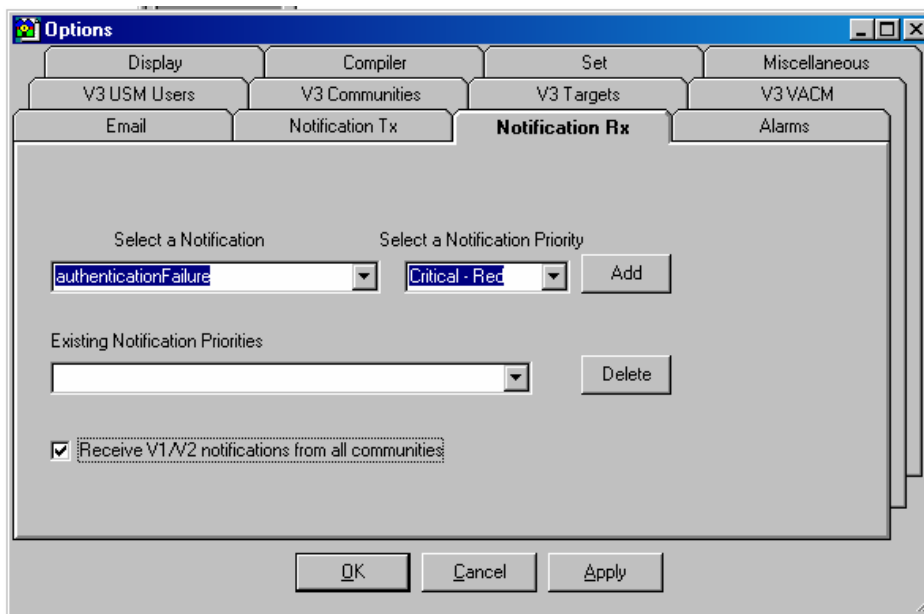
1. Open NuDesign Visual MIBrowser Pro and click on the “Trap Rx” button.



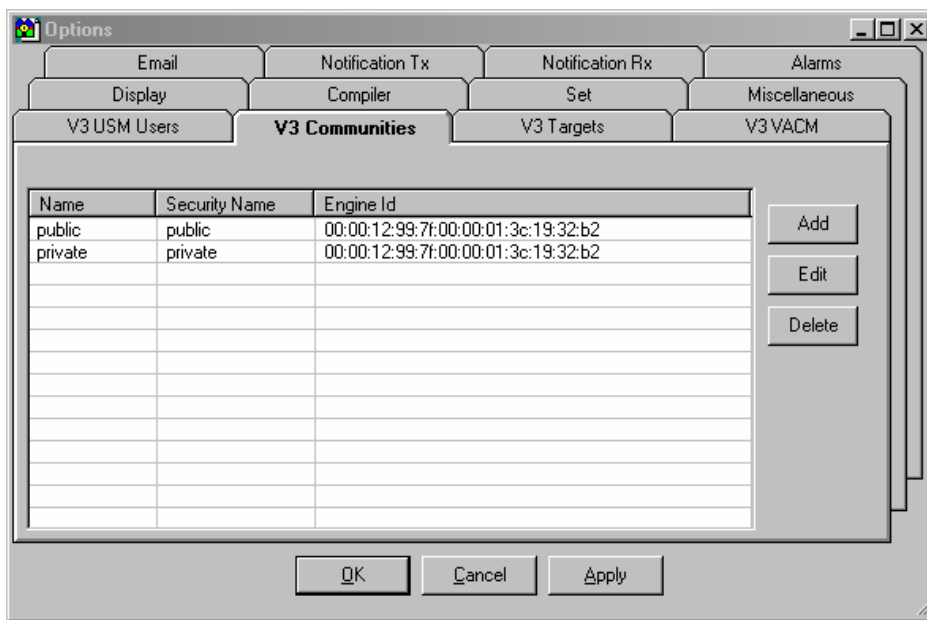
2. Notification Receiver window will open up. It is showing that the traps will be received on port 162.



- To receive v1/v2 traps, we need to ensure that the community strings specified in the traps are configured in MIBBrowser. This can be done in two different ways. The first is to configure MIBBrowser to receive trap for all community strings. This is done in the “Notification Rx” tab of the “Tools/Options” dialogue by checking off the “Receive V1/V2 notifications from all communities” check box at the bottom of the tab.



The second way is to configure individual community strings in the “V3 Communities” tab of the “Tools/Options” dialogue.



- Now that Visual MIBrowser Pro ready to receive, let's configure NuDesign Master Agent Service to send to traps. From the Control Panel click on the NuDesign SNMPv3HTTP Agent icon to start the agent configuration applet.



NuDesign
SNMPv3 /
HTTP Agent

Choose SNMPv2c in the SNMP version.

Version

SNMP v1
 SNMPv2c
 SNMPv3

- Now look at the Target Address table where it is specified which address the trap is supposed to go to and what the community string is. We are using the loop back address for this exercise since the source and target are both on the same machine.

NuDesign SNMPv3/HTTP Agent Service Configuration

- mib-2.system
 - VACM
 - Subagents
 - Dynamic Loading
 - Agents Control
 - SNMP
 - Authentication
 - Community
 - Notify
 - HTTP
 - Remote Subagent
 - About

Target Addresses Table

Row#	Address	Timeout	Retry	Community	Version	Tag List
0	127.0.0.1:162	5	0	public	SNMPv1(0)	tag1

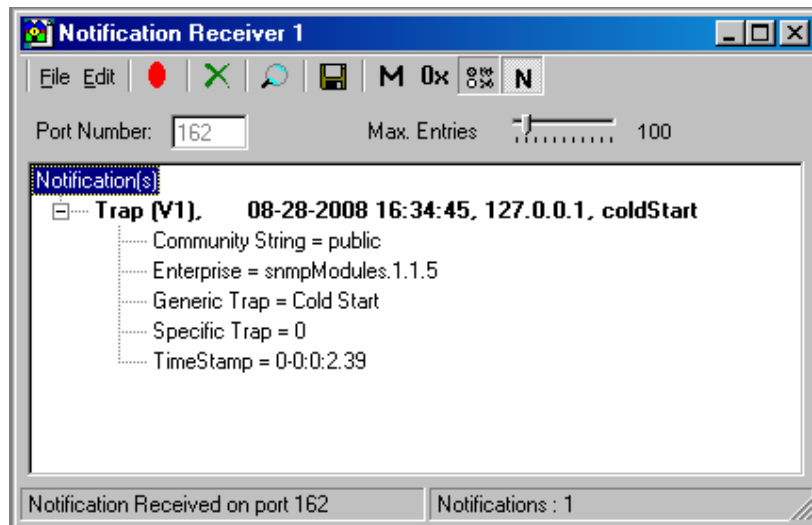
Address: (eg. 127.0.0.1:162)
 Tag List:
 Timeout: RetryCount:
 Community: Version:

Notify Table

Row#	Tag	Type
0	tag1	trap(1)
1	tag2	inform(2)

Tag:
 NotifyType:

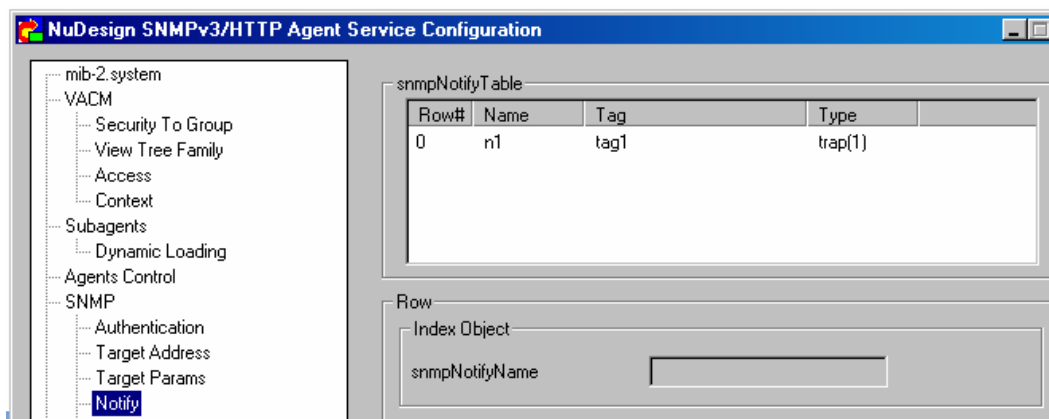
- Now close this applet and it will ask to restart the agent. When the agent is restarted it will send out a cold start trap which we should see in the MIBBrowser Pro Notification Receiver.



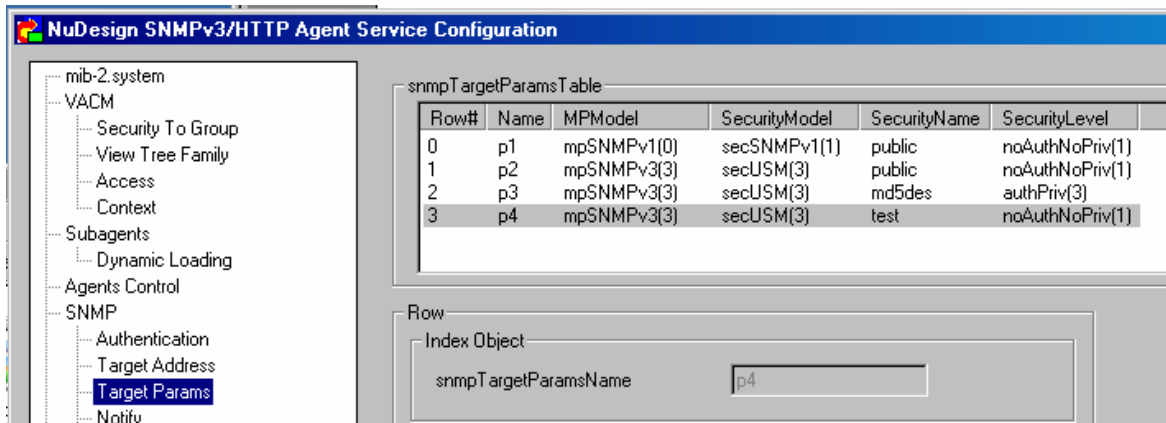
3.2. SNMPv3 Traps

To send out SNMPv3 Traps a number of tables in the agent need to be configured.

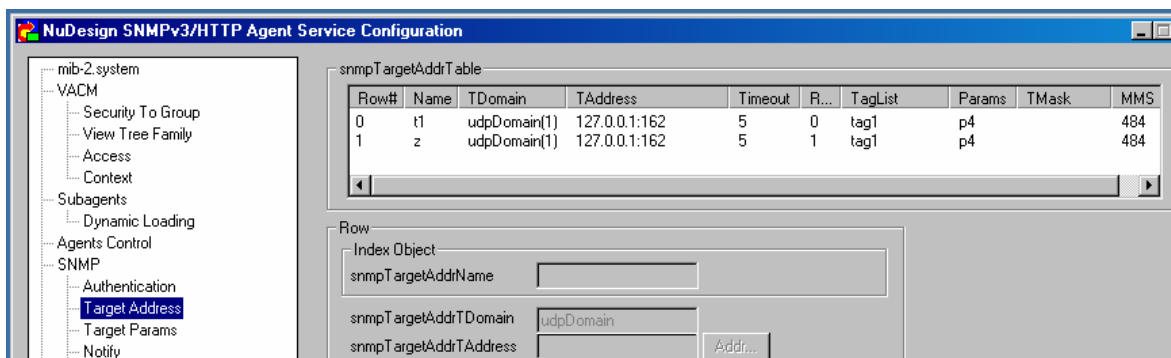
- From the agent configuration applet, choose the SNMPv3 for the SNMP version.
- Go to the Notify table and create a row that tells the agent that you want to send a trap. This row has a tag and specifies whether a trap or an inform will be sent out. Make sure that the Notify Filter Table and Notify Filter Profile Tables are empty. We will not be dealing with filtering in this tutorial.



- We will configure the Target Params Table next. In this table you should create a new row 'p4'. Its MPMModel is SNMPv3 and the security model being used is secUSM. We call it 'test' and its security level chosen is NoAuthNoPriv.



- The Target Address Table will tie the rows in the above two tables together. In this table you will specify the address to which the trap/inform is sent to (specified in the Notify table as 'tag1') and what security is to be used (specified in the Target Params table as 'p4').

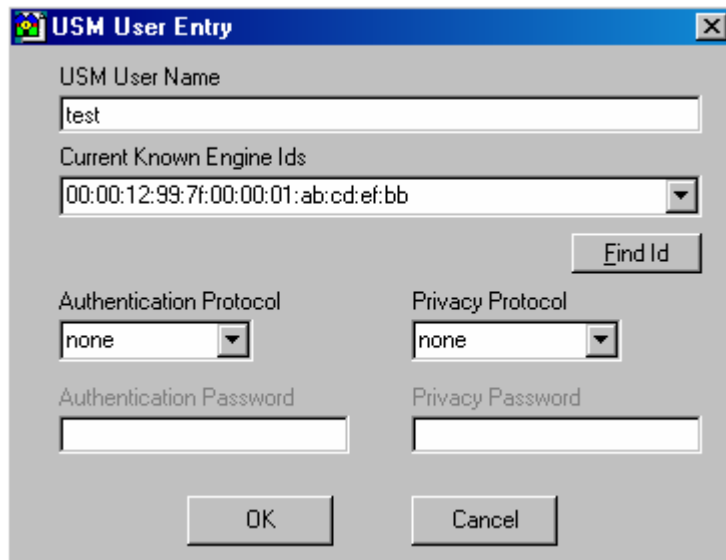


- Now close this applet and a v3 trap will be sent by the agent service when it restarts.

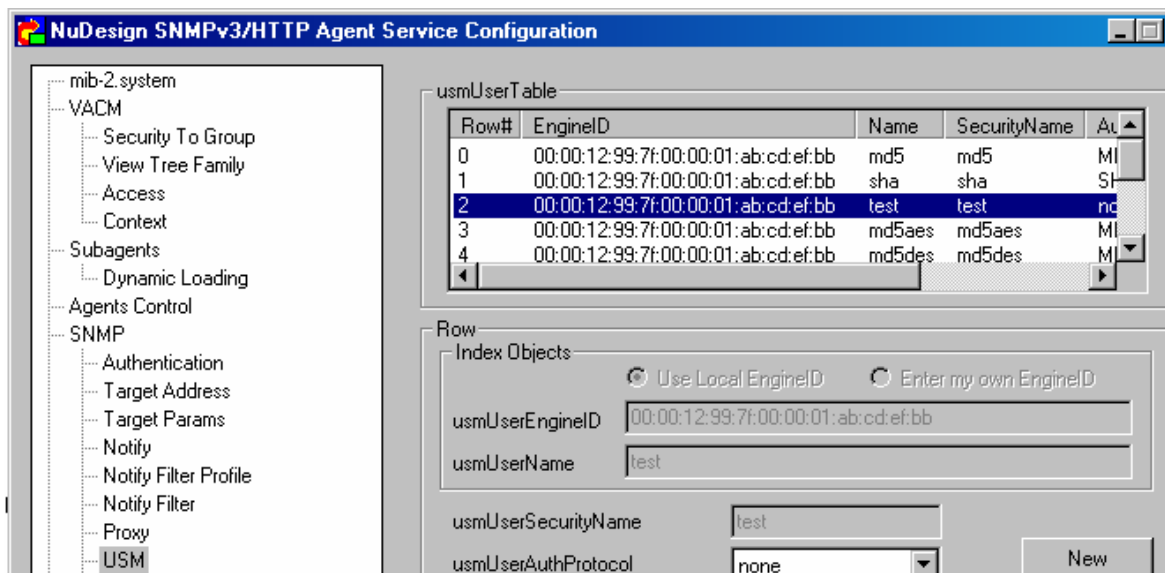
We notice that the trap was not received by the Notification Receiver.

- At this point we need to review what we have done to make sure all the parameters were configured properly. We will notice that in the Target Params table the security name is 'test' and its securityLevel is noAuthnoPriv. We need to make sure that the MIBrowser Pro has a

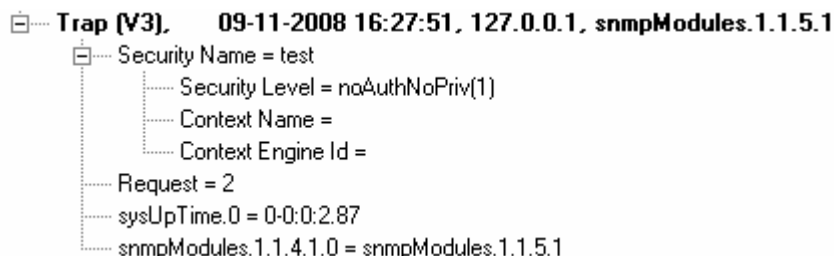
corresponding security name in the USM table with the correct authentication and privacy and corresponding engine id.



7. Also the USM table in agent should have a corresponding entry for 'test'.



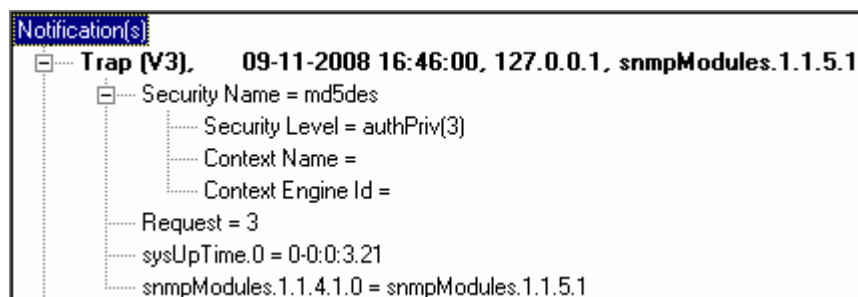
8. Now when we close this application and a trap is sent, it is received in Notification receiver.



9. The next step is to try to send an AuthPriv trap and see if we receive it. We review the USM and Target Params tables in the agent and find 'md5des' already defined and it is AuthPriv. Next we go to the TargetAddress table and specify 'p3' which is the row in the TargetParams table with the securityName of 'md5des'.

We also have to make sure that MIBrowser Pro USM table also has an entry for 'md5des'.

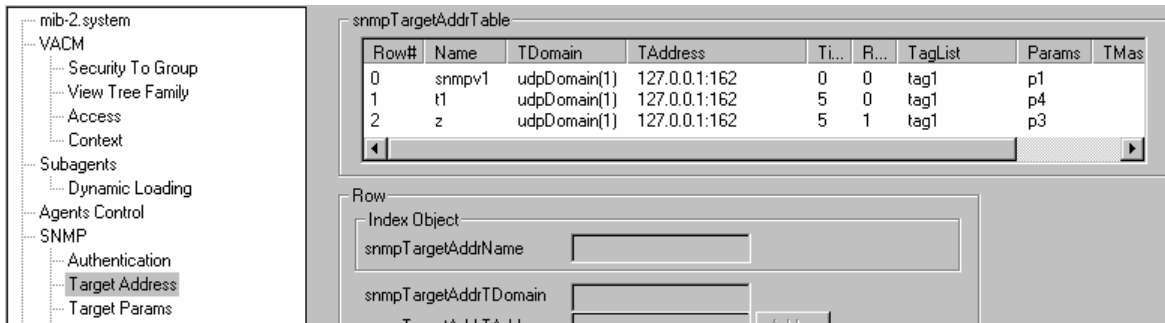
Once, this is done we are ready to send the trap again by closing the application.



To recap, we were able to send v1/v2, v3 noAuthnoPriv, v3 AuthPriv traps, individually, from the Agent Service and receive them in NuDesign Visual MIBrowser Pro.

3.3. *SNMPv1 & SNMPv3 Traps Together*

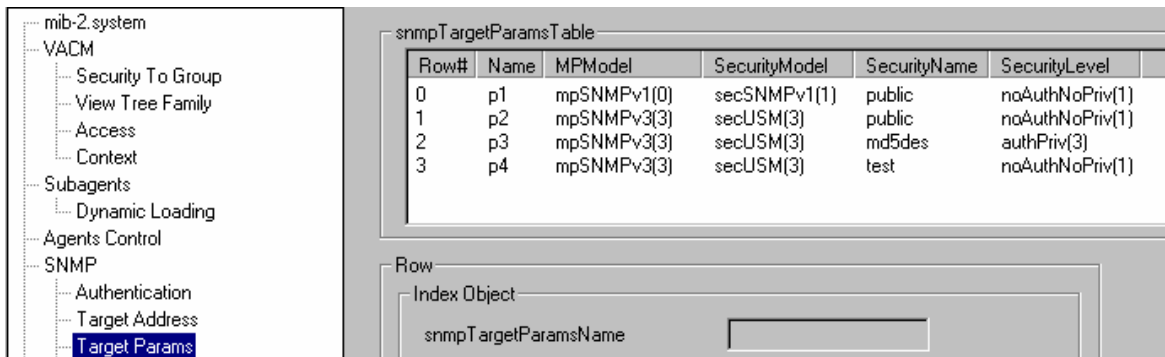
An agent can send any version of a trap (SNMPv1, v2 and / or v3) to as many locations as specified in the TargetAddress Table.



The screenshot shows the MIB browser interface with the 'Target Address' table selected. The table contains three rows of configuration data.

Row#	Name	TDomain	TAddress	Ti...	R...	TagList	Params	TMas
0	snmpv1	udpDomain(1)	127.0.0.1:162	0	0	tag1	p1	
1	t1	udpDomain(1)	127.0.0.1:162	5	0	tag1	p4	
2	z	udpDomain(1)	127.0.0.1:162	5	1	tag1	p3	

We can see from Target Address Table that three destinations (all loopback addresses) have been configured. Therefore, we should see three different traps being received by MIBrowser Pro.



The screenshot shows the MIB browser interface with the 'Target Params' table selected. The table contains four rows of configuration data.

Row#	Name	MPModel	SecurityModel	SecurityName	SecurityLevel
0	p1	mpSNMPv1(0)	secSNMPv1(1)	public	noAuthNoPriv(1)
1	p2	mpSNMPv3(3)	secUSM(3)	public	noAuthNoPriv(1)
2	p3	mpSNMPv3(3)	secUSM(3)	md5des	authPriv(3)
3	p4	mpSNMPv3(3)	secUSM(3)	test	noAuthNoPriv(1)

Correlating “Params” from Target Address Table to Target Params Table, it can be observed that,

‘p1’s security model is SNMPv1, ‘p3’ is SNMPv3 with security level of ‘authPriv’ and ‘p4’ is also SNMPv3 and it is ‘noAuthnoPriv’.

When this applet is closed, the traps will be sent out. We can observe in Visual MIBrowser Pro the traps received by it.



Notification(s)

- Trap [V1]. 01-27-2009 15:31:43, 127.0.0.1, coldStart**
 - Community String = public
 - Enterprise = snmpTraps
 - Generic Trap = Cold Start
 - Specific Trap = 0
 - TimeStamp = 0-0:0:3.31
- Trap [V3]. 01-27-2009 15:31:43, 127.0.0.1, coldStart**
 - Security Name = md5des
 - Request = 3
 - sysUpTime.0 = 0-0:0:3.31
 - snmpTrapOID.0 = coldStart
- Trap [V3]. 01-27-2009 15:31:43, 127.0.0.1, coldStart**
 - Security Name = test
 - Request = 2
 - sysUpTime.0 = 0-0:0:3.31
 - snmpTrapOID.0 = coldStart



4. About NuDesign Technologies

NuDesign provides software development tools, libraries, components and applications for the management and monitoring of networks, systems, services, applications, desktop and embedded devices. The company also provides professional services to customers requiring specific management solutions.

NuDesign's focus is on industry standard management protocols like SNMP and emerging management protocols using HTTP and XML/SOAP transport.

NuDesign's customers are Original Equipment Manufacturers, System Integrators, Service Providers and End Users worldwide.

The benefits of deploying NuDesign's management software technologies are lower costs and reliable, low risk, quick-to-market solutions:

- The End User management products are feature rich, extensible, yet very easy to use out of a box.
- The middleware components come with easy to understand and re-use coding examples.
- The highly automated agent development tools with associated tutorials enable fast prototyping and development, and facilitate organization and design process while supporting multiple target environments with generation of very complete and immediately compilable agent code.

NuDesign's products and services include:

- SNMP development tools and components - SNMP / WEB / CLI agent code visual generation tools for multiple desktop and embedded targets, with standalone Agent and Master Agent / Extension Subagent architectures.
- SNMP components for development of management applications and SNMP MIB building / browsing, managing and testing applications.
- SNMP Management Applications - supporting SNMPv3 Agent and MIB management features, including Graphing, Get, Set, Walk, SNMP packet Trace and Scripting capabilities, Trap Send / Receive applets.
- Host resource monitoring products, and IP services and infrastructure monitoring products.
- Design and Support Services - specific network / element management & monitoring products, porting SNMP code to custom embedded hardware, developing custom management applications. Developing new products that require SNMP / WEB based management interfaces or adding WEB interfaces to existing products.



For more information please visit www.ndt-inc.com, it contains SNMP and MIB development tools and management product descriptions, tutorials and full feature product evaluations packages or call 416 737 0328 to discuss your specific needs.