NuDesign SNMP/HTTP/CLI Evaluation Agent
for
QNX Neutrino

Technical Notes

NuDesign Team, Inc.

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1 Evaluation Agent Version History

1. Ver 6.3 - October 22, 2004 – Initial NuDesign Evaluation Agent for QNX Neutrino release, based on rev 6.3 SNMPv3/HTTP libraries.

2   Introduction

This document describes where to install and how to execute NuDesign MultiProtocol (SNMP/HTTP/CLI) Agent Evaluation on QNX Neutrino RTOS v6.3 x86 target platform.

NuDesign MultiProtocol Agent includes a fully functional V1, V2c, V3 SNMP agent, as well as a Web and command line interface to the agent.

To completely access this Evaluation Agent, it should be evaluated in conjunction with NuDesign Visual Embedded xAgentBuilder for C++. This product generates extension sub agent C++ source code for any MIB (user or standard) along with project build files and optionally MIB based Web pages (see http://www.ndt-inc.com for an evaluation version of this software).

3   Requirements

The software in this distribution is intended to be installed and executed on QNX Neutrino RTOS v6.3 x86 runtime.

The information provided by the software may be accessed by software as defined by the following.

- A SNMP management application, such as NuDesign Visual MIBrowser Professional. (see http://www.ndt-inc.com for an evaluation version of this software).
- A web browser capable of executing javascript, such as Internet Explorer, Netscape or Mozilla.

4   Installation

This evaluation release comes in the form of a tar-ball file named "`ndagde-qnx-x86.tar`".

Extract the file in the `/tmp` directory on QNX machine. Run installer and select `/tmp` directory as repository, select `NuDesign Multiprotocl Agent (Eval)(x86)` and click "Install". The "`ndagde`" agent application will be installed in `/opt/bin`. Configuration file (`ndagde.xnv`) will be copied to `/etc` and web pages to `/opt/ndt/ndagde/web`.

5   MuliProtocol Agent Daemon (ndagde)

5.1.1 Description:

This is the evaluation version of the NuDesign MultiProtocol (SNMP/HTTP/CLI) agent. It should reside in the `/opt/bin` directory or any directory on the execution path. It is the core agent, including the `system`, `interfaces` and `snmp` groups from MIB-II and all `SNMPv3 MIBs` (excluding `SNMP-PROXY-MIB`, see Evaluation Agent Limitations section in this file).

5.1.2 Command Line Options:

When executed without command line options, it displays a short help and exits. The following command line options are recognized.

With no options, the executable prints a short help message.

       -c, run the agent in the console.

       -d, run the agent as a background process/service (daemon).

5.1.3 Configuration

`ndagde` utilizes two files for nonvolatile storage. These are `/etc/ndagde.xnv` and `/etc/ndagdeext.xnv` (the latter is not used with this evaluation software). The former controls global configuration items and the latter is used to manage loadable sub agents.

The file, `ndagde.xnv` has a wide range of configurable options. See xAgentBuilder documentation for more information. The following is taken from a sample XNV file:

```
[Web Agent]
Port=8080
Root=/web
HomePage=Home.htm

[Web VACM]
SecurityName=private
SecurityModel=secSNMPv2c(2)
SecurityLevel=noAuthNoPriv(1)
ContextName=""

[SNMP Agent]
Version=SNMPv3(3)
Port=161
```

Where:

`[Web Agent]`   identifies the section associated with the HTTP server.

`Port=`   is the TCP port number on which the HTTP server responds to requests. By default, this is set to TCP port `8080`, to avoid port conflicts with a possibly resident web server.

`Root=`   is the path to the root directory for the server's HTML pages.

`HomePage=`   identifies the specific default HTML page.

`[Web VACM]`   identifies the VACM section associated with the HTTP server. This specifies the MIB "view" available to web server. Objects requested in pages that are "in view" will return results. Those outside will not. Changing this configuration should generally not be necessary unless the default configuration provided is invalided by administrative changes to the V3 configuration of the agent.

`SecurityName=`   is the V3 security name the web server uses when accessing MIB objects. This may be any `usmUserSecurityName` currently in the `usmUserTable`. By default '`private`' is specified. An entry in the `usmUserTable` for this name is also default.

`SecurityModel=`   is the V3 security model the web server uses when accessing MIB objects. This may be one of `secSNMPv1(0),` `secSNMPv2c(1)` or `secSNMPv3(3)`.

SecurityLevel= is the V3 security level the web server uses when accessing MIB objects. Default is `noAuthNoPriv(1)`. It could also take the values `authNoPriv(2)` or `authPriv(3)`

[Snmp Agent] identifies the section associated with the SNMP component.

Port= is the UDP port number on which the SNMP agent responds to requests.

Version= is the maximum SNMP version number the SNMP agent will respond to. Default is `SNMPv3(3)`. `SNMPv1(1)` or `SNMPv2c(2)` may also be used.

(Skip this section when using evaluation software)

As a means of illustrating the information in the `ndagdeext.xnv` file, following is the taken from the default content of the file.

```
[ExtensionAgents]
1=NDMib2
2=NDHost

[NDMib2]
Load=0
Path=/lib/libNDMIB2.so.1
Web=/mnt/Dev/MultiProtocol/NDMIB2/web

[NDHost]
Load=0
Path=/lib/libNDHost.so.1
Web=/mnt/Dev/MultiProtocol/NDHost/web
```

The section identified by `[ExtensionAgents]` is used to enumerate the sub agents that are available to load or unload. In this case, two are defined, one each for `NDMib2` and `NDHost`.

The right side of the expression defines a section name in which sub agent specific information is found. In each such named section are three expressions defined as follows:

1. `Load=`, takes a value of '`0`' or '`1`'. When the value is '`1`', it indicates that the sub agent is to be loaded the next time the file is evaluated, otherwise it is unloaded. (See the –r command line option for the (daemon) agent)
2. `Path=`, specifies the path to the sub agent shared object library.
3. `Web=`, specifies to path to the HTML files associated with this sub agent.

(Note: the Web path examples above will likely need to be set appropriate for the target configuration. Also note the above examples happen to be NFS mounts from a development host station.)

Default V3 SNMP Community/USM Configuration

By default, the following configurations are available for accessing the agent.

Note: the configuration provided is the default configuration for all NuDesign SNMP products and as a result is more or less public information. As such it should only be used for a test and or development deployment. Deploying this configuration in a production environment is **NOT** recommended.

public	V1/V2c read-only community string with access to all implemented MIB objects.
private	V1/V2c read-write community string with access to all implemented MIB objects.

public	**noAuthNoPriv**, V3 read-only USM User with access to all implemented MIB objects. No authorization or privacy passwords.
md5	**authNoPriv** (MD5), V3 read-write USM User with access to all implemented MIB objects. Auth password: **md5auth**, privacy password: none.
sha	**authNoPriv** (SHA), V3 read-write USM User with access to all implemented MIB objects. Auth password: **shaauth**, privacy password: none.
md5des	**authPriv** (MD5, DES), V3 read-write USM User with access to all implemented MIB objects. Auth password: **md5desauth**, privacy password: **md5despriv**.
shades	**authNoPriv** (SHA, DES), V3 read-write USM User with access to all implemented MIB objects. Auth password: **shadesauth**, privacy password: **shadespriv**.
private	**authPriv** (MD5, DES), V3 read-write USM User with access to all implemented MIB objects. Auth password: **privateauth**, privacy password: **privatepriv**.

5.1.4 Command Line UI

The following are the commands available from both the agent console. Note: details about parameter use are available via the '?' and 'help' commands.

```
Command         Function
---------   ---------------------------------------------------------
q               Stops the agent.
?               Displays a list of command options.
help            Displays help on a specific command.
clivacm         Displays or modifies the command line's VACM configuration.
agents          Displays, suspends or resumes the SNMP or HTTP agents.
agparams        Displays current agent operations parameters.
get             Performs a get on an object.
getnext         Performs a get-next on an object.
gget            Performs a group get of a scalar group of objects. E.g. gget SNMPv2-MIB.system.
mib             Displays the list of MIB objects currently available in the agent.
rget            Performs a get of a row of a table.
set             Performs a set on an object.
setti           Performs a set and increment on an object. (For "Spinlock" variables.)
tget            Performs a get of a table. E.g. tget RFC1213-MIB.ifTable.
walk            Walk some or all objects in the agent.
```

Additionally, there is a circular command history buffer of the last 10 commands executed, available by using the up or down cursor keys.

6 Evaluation Agent Limitations

The following are the limitations for this evaluation software.

1. Only the `system`, `interfaces` and `snmp` MIB groups from MIB-II are accessible. (Full MIB implementation is available with the retail version).

2. The evaluation software does not support dynamically loadable sub agents, from either the command line or the console interface, produced by xAgentBuilder.

3. The evaluation software does not support V3 proxying (as defined by the `snmpProxyMIB`)

7 About NuDesign Team

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.