

Technical Document

Configuring SolarWinds NMS for SNMPv3 communications with NuDesign Master Agent Service

NuDesign Technologies, Inc.



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Document History

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Introduction

This document explains how to set up SNMPv3 credentials on Orion SolarWinds products for communications with NuDesign SNMPv3 Agent service.

Configuration

Orion requires 2 SNMPv3 users, one for Read-only access (section labelled "SNMPv3 Credentials"), and one for Read-write access (section labelled "Read/Write SNMPv3 Credentials") .

SNMP Info

SNMP Version: SNMPv3 is a secure version of the SNMP protocol, adding authentication and encryption. SNMPv3 may require configuration on your network devices. Orion NPM can store SNMPv3 credential sets in the Orion database.

SNMP Port:

Allow 64 bit counters

SNMPv3 Credentials

SNMPv3 Username:

SNMPv3 Context:

SNMPv3 Authentication

Method:

Password / Key:

SNMPv3 Privacy / Encryption

Method:

Password / Key:

Credential Set Library

Name:

Saved Credential Sets:

Read / Write SNMPv3 Credentials

SNMPv3 Username:

SNMPv3 Context:

SNMPv3 Authentication

Method:

Password / Key:

SNMPv3 Privacy / Encryption

Method:

Password / Key:

Credential Set Library

Name:

Saved Credential Sets:

The example NMS configuration is based on default configuration fro NuDesign SNMPv3 agent service.

NuDesign agent ships with the following preconfigured USM users:

Name	Authentication		Privacy	
	Protocol	Password	Protocol	Password
public	none		none	
md5	MD5	md5auth	none	
md5nopriv	MD5	md5noprivauth	none	
sha	SHA	shaauth	none	
shanopriv	SHA	shanoprivauth	none	
md5des	MD5	md5desauth	DES	md5despriv
shades	SHA	shadesauth	DES	shadespriv
md5aes	MD5	md5aesauth	AES	md5aespriv
shaaes	SHA	shaaesauth	AES	shaaespriv

User "public" is "read-only" user (it is mapped to "grpReadOnly" in VacmSecurityToGroupTable. Other users are "read-write" (mapped to "grpAll").

SNMPv3 Credentials:

```
SNMPv3 Username: public
SNMPv3 Context:
SNMPv3 Authentication
    Method: None
    Password | Key:
SNMPv3 Privacy/Encryption
    Method: None
    Password | Key:
```

Read/Write SNMPv3 Credentials:

```
SNMPv3 Username: shaaes
SNMPv3 Context:
SNMPv3 Authentication
    Method: SHA
    Password | Key: shaaesauth
SNMPv3 Privacy/Encryption
    Method: AES128
    Password | Key: shaaespriv
```

Context is zero length string, i.e. leave SNMPv3 Context field empty.

Click "Validate SNMP", SolarWinds sends SNMPv3 Get request (using "read-only" credentials) and SNMPv3 Set request (using "read-write" credentials). Both requests must succeed in order for Validate to report success.

A little background on SNMPv3

Sending SNMPv3 requestst (Get, Set, GetNext, GetBulk) cause multiple packets to be exchanged between manager (Orion) and agent (NuDesign agent service). Namely, SNMPv3 has concept of authoritative entity in each exchange. In this case agent is authoritative entity. Manager has to specify "authoritative engineid" (i.e. engineid of authoritative entity) in each request, so the sequence of exchange for Get request looks like

M1: sends discovery Get request (engineid is empty field)
A1: sends Report back, this report contains agent's engine id
M2: uses agent's engine id from received report, and sends Get request
A2: sends Response to manager

Step A2 may contain proper response (value requested), but may also contain error indication, e.g.

noSuchObject (agent does not implement requested MIB object), noSuchInstance (agent does implement requested MIB object but not requested instance), endOfMib (this only in case of GetNext request). A2 can be Report as well: unknownEngineid (manager specified engineid that does not match agent's engineid), unknownUserName (user name specified in request is unknown to the agent), etc.

When USM user to be used in request is configured to use authentication (MD5 or SHA) or authentication and privacy (MD5/DES, MD5/AES128, SHA/DES, SHA/AES128), the manager must include agent's time and boot count in the request (TIMELINES mechanism). Sequence of exchanges in this case look like

M1: sends discovery Get request (engineid is empty field)
A1: sends unknownEngineid Report back, this report contains agent's engine id
M2: uses agent's engineid from received report, and sends Get request with time=0, boot=0
A2: sends notInTimeWindow Report to manager, this report contains agent's boot and time
M3: uses agent's engineid, boot and time from received reports, and sends Get request
A3: sends Response to manager

Again, A3 may be response containing value of requested object, or error response, or report.

SNMPv3 is specified in RFC 3411 to RFC 3415.

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.