HP Network Automation

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NNMi Integration User's Guide

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Getting Started

This guide provides information on integrating HP Network Node Manager (NNMi) with HP Network Automation (NA) on Windows, Linux, and Solaris platforms. The guide is intended for network engineers and network administrators. The information presented assumes that the reader is familiar with both NNMi and NA.

Features and Benefits

NNMi integration provides the following features and benefits in a system already running both NNMi and NA software:

- **Alarm integration** — NNMi integration communicates NA configuration change information to the NNMi console, enabling you to quickly identify whether configuration changes may have caused network problems. From within NNMi, you can quickly access NA functionality to view specific configuration changes and device information, identify who made the change, and roll back to the previous configuration to restore network operation. Because a majority of network outages are caused by device configuration errors, this feature can enhance both problem identification and response time in resolving network downtime.
- **Access to NA configuration history from NNMi** — From NNMi, a device-level menu provides access to NA features for reviewing configuration changes. For any device in the NA database, this feature displays configuration changes side-by-side so you can easily view changes. You can also view configuration history.
- **Operations efficiency** — Network operations personnel can monitor and investigate information from two data sources from within a single screen.

NA Documentation

The core NA Documentation Set includes:

- *HP Network Automation 9.0 User's Guide*
- Online Help Files — To view the online Help files, after logging in, click the Help link at the top of any NA page.
- *HP Network Automation 9.0 Upgrade and Installation Guide*
- *HP Network Automation 9.0 Release Notes*

If you are interested in additional NA publications, including the documentation listed below, please navigate to the HP manuals site:

- *NA 9.0 Multimaster Distributed System on Oracle User's Guide*
- *NA 9.0 Multimaster Distributed System on SQL Server User's Guide*
- *NA 9.0 Horizontal Scalability User's Guide*
- *NA 9.0 Satellite User's Guide*

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Chapter 1: Installation

This chapter provides information on installing the HP Network Automation (NA)/HP Network Node Manager (NNMi) Connector on Windows, Solaris, and Linux platforms.

Use the following table to quickly locate information.

Topic	Refer to:
Installation Executables	"Installation Executables" on page 6
Installation Types	"Installation Types" on page 6
Installation Requirements	"Installation Requirements" on page 7
Credential Requirements	"Credential Requirements" on page 7
NA and NNMi Co-residency	"NA and NNMi Co-residency" on page 8
Installation Steps	"Installation Steps" on page 8
Upgrading the NA/NNMi Connector	"Upgrading the NA/NNMi Connector" on page 11

Installation Executables

The NA/NNMi Connector installation executables include the version number and the date and time of the software build. For example, the following NA/NNMi installation executables were built on July 18, 2010 with version number 6333:

na_nnm_connector_linux_6333-071810.bin
na_nnm_connector_linux_64_6333-071810.bin
na_nnm_connector_solaris_6333-071810.bin
na_nnm_connector_windows_6333-071810.exe
na_nnm_connector_windows_64_6333-071810.exe
na_nnm_coresidency_linux_6333-071810.bin
na_nnm_coresidency_linux_64_6333-071810.bin
na_nnm_coresidency_solaris_6333-071810.bin
na_nnm_coresidency_windows_6333-071810.exe
na_nnm_coresidency_windows_64_6333-071810.exe

Note: *The Windows and Linux builds include both 32-bit and 64-bit versions. Solaris builds include only a 64-bit version.*

Installation Types

NA and NNMi can be integrated in two ways:

- NA and NNMi are installed on separate servers (Standalone Mode)
- NA and NNMi are installed in the same server (Co-residency Mode)

If you are using Standalone Mode, you need to install one of the following Connector components:

- na_nnm_connector_windows_xxxx_xxxxxx.exe
- na_nnm_connector_windows_64_xxxx_xxxxxx.exe
- na_nnm_connector_solaris_xxxx_xxxxxx.bin
- na_nnm_connector_linux_xxxx_xxxxxx.bin
- na_nnm_connector_linux_64_xxxx_xxxxxx.bin

If you are using Co-residency Mode, you need to install one of the following Connector components:

- na_nnm_ coresidency _windows_xxxx_xxxxxx.exe
- na_nnm_ coresidency _windows_64_xxxx_xxxxxx.exe
- na_nnm_ coresidency _solaris_xxxx_xxxxxx.bin
- na_nnm_ coresidency _linux_xxxx_xxxxxx.bin
- na_nnm_ coresidency _linux_64_xxxx_xxxxxx.bin

Note: *Windows and Linux builds include both 32-bit and 64-bit versions. Solaris includes only a 64-bit version. The NA/NNMi Connector version should match the corresponding NA version. Keep in mind that HP NNMi runs on 64-bit platforms.*

Installation Requirements

The NA/NNMi Connector executable installs the NA Client software on the server running NNMi and the NA/NNMi Connector components. The NA/NNMi Connector Installer automatically configures NA to:

- Send SNMP traps to the NNMi server
- Configure integration features
- Import devices from NNMi to the NA server

The hardware and software requirements for the Windows, Solaris, and Linux platforms are the same as the NNMi requirements. Refer to the *HP Network Automation (NA) 9.0 Support Matrix* for information.

Credential Requirements

You must have Administrator privileges on both the NA and NNMi servers to complete the NA/NNMi Connector installation.

NA and NNMi Co-residency

For NA and NNMi co-residency, NNMi must be installed first, otherwise NA will not know which ports to use so as to avoid conflicts with NNMi. In addition, the NA installation will fail.

The hardware and software requirements for NA and NNMi co-residency include both NA and NNMi requirements in terms of how many devices NA and NNMi are managing. Co-residency server sizing is a combination of both NA and NNMi as if they were separate installs.

Installation Steps

The NA/NNMi Connector Installer detects where NNMi is located and installs the necessary components into different locations on NNMi, including:

- Configuration files
- Java libraries
- Scripts

Device import is done during the installation, if selected. You can also choose if NA should immediately discover drivers after NA imports devices from NNMi. If you choose not to discover drivers, you must manually run the Discover Driver task from NA so as to be able to use some of the NA functions.

After installation, additional URL actions from the NNMi context menus are displayed.

After the NA/NNMi integration is installed, the NNMi context-sensitive menu to launch NA does not appear until you re-login to NNMi. In addition, when the NA/NNMi Connector Installer prompts you for the NNMi HTTP Port, it is referring to the HTTP port to which the NNMi client connects. By default, this is port 80. Note that the port can be changed during NNMi installation.

On a Windows platform, when you start the installation, the NA/NNMi Connector Install Wizard opens. The following table guides you through the installation steps.

Note: *If the NA/NNMi Connector Installer cannot find an existing version of NNMi, it will quit. As a result nothing is installed.*

Step	Install Wizard Page	Action
1	Introduction	Review the information and click [Next]. The Install Wizard guides you through the installation. Note that as part of the integration package, the NA client is installed.
2	HP NNM Found	The Installer attempts to detect the location where NNMi is installed on your system. If the displayed location is correct, click [Next]. Note that NA works with HP Network Node Manager 6.4 and higher on Windows 2000/2003, Solaris, and Linux platforms. If the Installer was unable to detect the version of NNMi you are running, click [Cancel] to exit.
3	Choose NA Client Install Folder	The Installer installs the NA client. You are prompted to provide the location into which the Installer will install the NA client. Click [Next] to accept the default location, *C:\NA*. Be sure the directory does not contain existing files. In addition, the directory path must not contain spaces.
4	NA Server	Enter the hostname of the NA server and your valid NA credentials, including the following, and click [Next]. • Hostname • Username • Password • Confirm Password
5	NA Server Platform	Confirm the NA server platform and click [Next]. Options include: • Windows • Solaris • Linux

Step	Install Wizard Page	Action
6	Execute import	You are prompted as to if you want the Installer to run the Import task immediately after the installation is complete. Select one of the options below and click [Next]. • Yes (default) • No
7	Discover drivers	You are prompted as to if you want the imported devices to run a Discover Driver task. Select one of the options below and click [Next]. • Yes • No (default)
8	NNMi Server	Enter the following information and click [Next]. • Hostname • Http port of the NNMi server • Password • Confirm Password
9	Choose Shortcut Folder	The NA/NNMi Connector is saved as a new Program Group called **HP Network Automation**. Click [Next].
10	Pre-installation Summary	Review the pre-installation summary and click [Install]. The installation could take a few minutes.
11	File install and the configuration	If the installation is successful, "Install Complete" is displayed. Click [Done]. If the installation was not successful, an error message is displayed.

Note: *When installing the NA/NNMi Connector on a Linux or Solaris platform, the Install Wizard is started in Console mode. The steps are identical to installing the NA/NNMi Connector on a Windows Platform.*

Upgrading the NA/NNMi Connector

If you have installed the NA/NNMi Connector and are upgrading to NA 9.0, you must upgrade the NA/NNMi Connector.

To upgrade the NA/NNMi connector on a Windows platform, you must first uninstall the NA/NNMi Connector.

1. In the Control Panel, select "add or remove programs".
2. Select "remove/uninstall the HP NA - HP Network Node Manager connector".
3. Follow the on-screen instructions. Note that some files will remain after uninstalling the NA/NNMi Connector.

On a Linux or Solaris platform, there is no need to uninstall the NA/NNMi Connector.

1. Run the NA 9.0 Service Pack Installer to update NA. Refer to the *NA 9.0 Using the Service Pack Installer* Readme or the *HP Network Automation 9.0 Upgrade and Installation Guide* for instructions on running the NA 9.0 Service Pack Installer.
2. Re-install the updated NA/NNMi Connector.

Note: *If you applied a NNMi patch or hot fix after installing the NA/NNMi Connector, you might need to configure NNMi to re-enable NA/NNMi integration by selecting the checkbox at the top of the form under "Integration Module Configuration -->HP NA" and providing the corresponding NNMi and NA server information.*

Chapter 2: Using NA with NNMi

This chapter provides information on using HP Network Automation (NA) with HP Network Node Manager (NNMi). Use the following table to quickly locate information.

Topic	Refer to:
Overview	"Overview" on page 13
Connecting to NA from NNMi	"Connecting to NA from NNMi" on page 14
Viewing NA Device Information	"Viewing NA Device Information" on page 15
NA/NNMi Integration Inventory Synchronization	"NA/NNMi Integration Inventory Synchronization" on page 17
Using Telnet or SSH to access NA Devices	"Using Telnet or SSH to access NA Devices" on page 17
Launching NA Command Scripts	"Launching NA Command Scripts" on page 17
Launching NA Diagnostics	"Launching NA Diagnostics" on page 17
NA Event Rules	"NA Event Rules" on page 18
Importing NNMi Devices into the NA Database	"Importing NNMi Devices into the NA Database" on page 21

Overview

HP Network Node Manager (NNMi) integration combines the configuration change detection capabilities of HP Network Automation (NA) with the network monitoring capabilities of NNMi, placing more information at your fingertips when problems occur.

Without exiting NNMi, you can connect to NA, login, and view information about NA-managed devices and configuration change events. Once in NA, you can perform any NA functions for which you have the necessary credentials.

NA and NNMi integration adds configuration menu items for opening connections to NA, and adds menu items for viewing configuration information on devices managed by NA. These tools enable you to:

- View detailed device information, including vendor, model, modules, operating system version, and recent diagnostic results
- View device configuration changes and configuration history
- Compare configurations (typically the most recent and last previous configurations) to see what changed, why, and who made the changes
- View device compliance information

Note: *These features are not available for network devices that are not configured in NA or for NA devices for which change detection is disabled. In addition, when prompted for a NA or NNMi hostname during installation, always use the IP address or the actual hostname, not localhost.*

For information on NA/NNM co-residency, refer to "NA and NNMi Co-residency" on page 8.

Connecting to NA from NNMi

To connect to NA from NNMi, do the following:

1. Login to NNMi.
2. Select a node.
3. From Inventory/Node (Nodes view or Incident view), select **Launch NA** from the Actions drop-down menu. The NA Login page opens
4. Enter your NA Username and Password and click Login. The NA About page opens.
5. To view NA device information, after selecting a node, select any of the following options from the Actions drop-down menu:
   - View NA Device Information (refer to "Viewing NA Device Information" on page 15)
   - View NA Device Configuration (refer to "Viewing NA Device Configuration" on page 15)

- View NA Device Configuration Diffs (refer to "Viewing NA Device Configuration Diffs" on page 16)
- View NA Device Configuration History (refer to "Viewing NA Device Configuration History" on page 16)
- View NA Policy Compliance Report (refer to "Viewing the NA Policy Compliance Report" on page 16)

Viewing NA Device Information

When you click the View NA Device Information option, the Device Details page opens. The Device Details page enables you to perform device-specific tasks. For example, if you click the Current Configuration option from the View drop-down menu, the Current Configuration page opens, where you can deploy the configuration to the running configuration on the device. Refer to the *HP Network Automation 9.0 User's Guide* for detailed information.

Viewing NA Device Configuration

When you click the View NA Device Configuration option, the Current Configuration page opens. If you select the "Compare to previous" link, the Compare Device Configurations page opens. The most recent configuration captured by NA is displayed, alongside the previous configuration. As a result, you can easily review line-by-line changes. Selecting the options at the top of the page can help you focus on specific information. Refer to the *HP Network Automation 9.0 User's Guide* for detailed information.

Note: *If real-time change detection is disabled for any device, the most recent configuration will be the configuration captured by NA at the last device polling interval. If configuration changes were made following that interval this may not be the current configuration.*

Viewing NA Device Configuration Diffs

If you click the View NA Device Configuration Diffs option, the Compare Device Configuration page displays two configurations for the same device side-by-side. Additions, deletions, and changes are highlighted in two columns, with line numbers on the left. Each configuration is identified by its unique IP address and the date/time on which the configuration snapshot was taken. Refer to the *HP Network Automation 9.0 User's Guide* for detailed information.

Viewing NA Device Configuration History

If you click the View NA Device Configuration History option, the NA Device Configurations History page opens. On this page, you can view the configuration and compare the configuration to a previous version. Refer to the *HP Network Automation 9.0 User's Guide* for detailed information.

Viewing the NA Policy Compliance Report

If you click the View NA Policy Compliance Report option, the Policy, Rule and Compliance Search Results page opens, where you can view information on:

- Device Hostnames and IP Addresses
- Policies
- Policy Rules
- Device Compliant States

Refer to the *HP Network Automation 9.0 User's Guide* for detailed information.

NA/NNMi Integration Inventory Synchronization

When importing devices from NNMi to NA, each device is assigned a *NNMi NodeUuid*. When a device is deleted from NA, it will trigger an event to remove the device from NNMi. Refer to "NA Event Rules" on page 18 for information on NA Event Rules.

Using Telnet or SSH to access NA Devices

To use Telnet or SSH to access NA devices from NNMi, do the following:

1. Login to NNMi.
2. From Inventory/Node (Nodes view or Incident view), select either the "Telnet to NA Device" option or the "SSH to NA Device" option. A Telnet or SSH window opens.

Refer to the *HP Network Automation 9.0 User's Guide* for detailed information.

Launching NA Command Scripts

If you click the Launch NA Command Scripts option, the New Task - Run Command Script page opens, where you can select command scripts and schedule when the task is to start. Refer to the *HP Network Automation 9.0 User's Guide* for detailed information.

Launching NA Diagnostics

If you click the Launch NA Diagnostics option, the New Task - Run Diagnostics page opens, where you can select diagnostics and schedule when the task will be started. Refer to the *HP Network Automation 9.0 User's Guide* for detailed information.

NA Event Rules

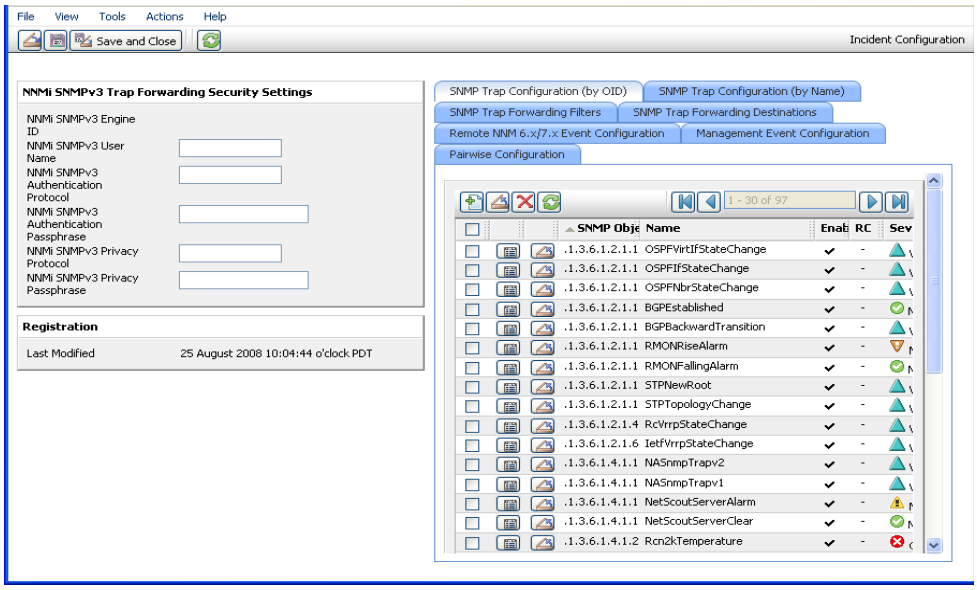
NNMi can receive the following event rules from NA:

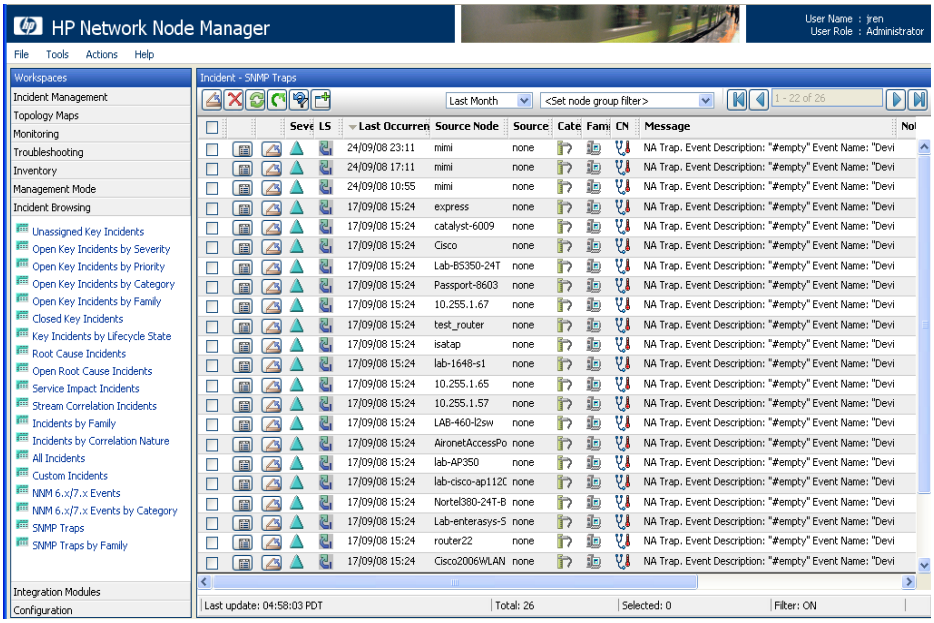
- NA/NNM Integration via SNMP traps — This event rule triggers events when a new device is added or a device configuration is changed. The event will send an SNMP v1 trap to NNMi.
- INT_NNM_AsyncAddSeed — This event rule triggers events when a new device is added. This event calls NNMi Web service AddSeed and adds a new device to NNMi.
- INT_NNM_AsyncRediscoverHost — This event rule triggers events when a device configuration is changed. This event calls NNMi Web service RediscoverHost to get the latest status for the device.
- INT_NNM_SyncOutOfService — This event rule triggers events when a task is started and sets the device in the 'out of service' state. After the task completes, it sets the device back to the 'in service' state. This event calls the NNMi Web service. Be default, Reboot Device, Update Software, and Password Change trigger this event and should be selected from the 3rd Party Integrations page. Refer to the *HP Network Automation 9.0 User's Guide* for information.
- INT_NNM_SyncSnmpCommunityStringPropagate — This event rule triggers events when the 'Last Used Device Password Changed' is changed. This event calls the NNMi Web service to update NNMi with the community strings NA is using to manage the device. Be default, SNMP community string propagate option is disabled from 3rd Party Integration page. Refer to the H*P Network Automation 9.0 User's Guide* for information.
- INT_NNM_SyncDeleteNode — This event rule triggers events when a device is deleted. This event calls the NNMi Web service to delete the device from the NNMi server.

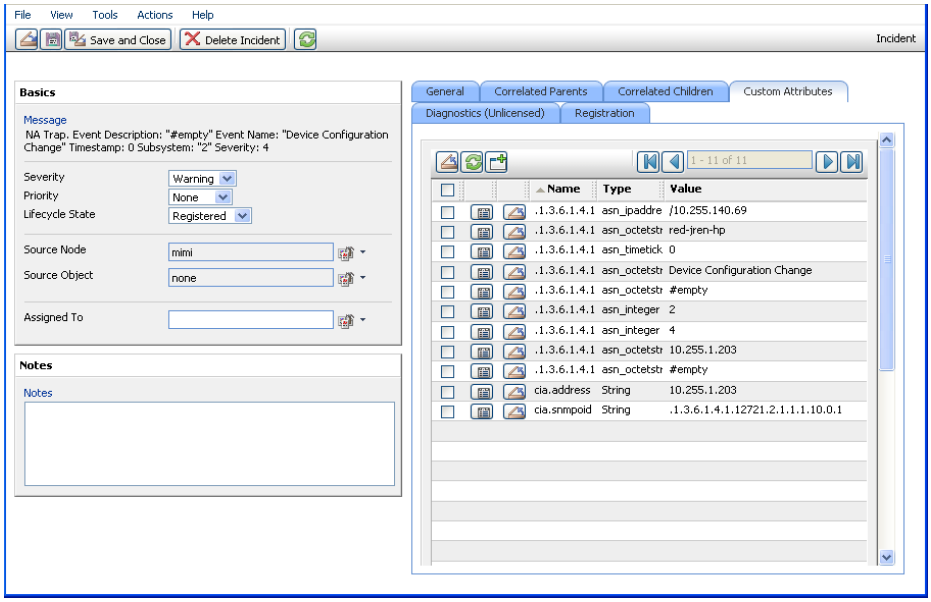
Note: *Do not delete these event rules.*

The following figures show sample NA/NNMi integration pages.

NA/NNM Integration via SNMP traps	**[Shared]**	**Send SNMP Trap**	**Admin**	**Edit | Delete**
INT_NNM_AsynchRediscoverHost	**[Shared]**	**Integration**	**Admin**	**Edit | Delete**
INT_NNM AsynchAddSeed	**[Shared]**	**Integration**	**Admin**	**Edit | Delete**
INT_NNM_SyncOutOfService	**[Shared]**	**Integration**	**Admin**	**Edit | Delete**
INT_NNM_SynchSnmpCommunityStringPropagate	**[Shared]**	**Integration**	**Admin**	**Edit | Delete**
INT_NNM_SyncDeleteNode	**[Shared]**	**Integration**	**Admin**	**Edit | Delete**




HP Network Node Manager
User Name : jren
User Role : Administrator
File Tools Actions Help
Workspaces
Incident Management
Topology Maps
Monitoring
Troubleshooting
Inventory
Management Mode
Incident Browsing
Unassigned Key Incidents
Open Key Incidents by Severity
Open Key Incidents by Priority
Open Key Incidents by Category
Open Key Incidents by Family
Closed Key Incidents
Key Incidents by Lifecycle State
Root Cause Incidents
Open Root Cause Incidents
Service Impact Incidents
Stream Correlation Incidents
Incidents by Family
Incidents by Correlation Nature
All Incidents
Custom Incidents
NNM 6.x/7.x Events
NNM 6.x/7.x Events by Category
SNMP Traps
SNMP Traps by Family
Integration Modules
Configuration
Incident - SNMP Traps
Last Month
<Set node group filter>
1 - 22 of 26
Sev LS Last Occurren Source Node Source Cate Fami CN Message
24/09/08 23:11 mimi none NA Trap. Event Description: "#empty" Event Name: "Devi
24/09/08 17:11 mimi none NA Trap. Event Description: "#empty" Event Name: "Devi
24/09/08 10:55 mimi none NA Trap. Event Description: "#empty" Event Name: "Devi
17/09/08 15:24 express none NA Trap. Event Description: "#empty" Event Name: "Devi
17/09/08 15:24 catalyst-6009 none NA Trap. Event Description: "#empty" Event Name: "Devi
17/09/08 15:24 Cisco none NA Trap. Event Description: "#empty" Event Name: "Devi
17/09/08 15:24 Lab-BS350-24T none NA Trap. Event Description: "#empty" Event Name: "Devi
17/09/08 15:24 Passport-8603 none NA Trap. Event Description: "#empty" Event Name: "Devi
17/09/08 15:24 10.255.1.67 none NA Trap. Event Description: "#empty" Event Name: "Devi
17/09/08 15:24 test_router none NA Trap. Event Description: "#empty" Event Name: "Devi
17/09/08 15:24 isatap none NA Trap. Event Description: "#empty" Event Name: "Devi
17/09/08 15:24 lab-1648-s1 none NA Trap. Event Description: "#empty" Event Name: "Devi
17/09/08 15:24 10.255.1.65 none NA Trap. Event Description: "#empty" Event Name: "Devi
17/09/08 15:24 10.255.1.57 none NA Trap. Event Description: "#empty" Event Name: "Devi
17/09/08 15:24 LAB-460-l2sw none NA Trap. Event Description: "#empty" Event Name: "Devi
17/09/08 15:24 AironetAccessPo none NA Trap. Event Description: "#empty" Event Name: "Devi
17/09/08 15:24 lab-AP350 none NA Trap. Event Description: "#empty" Event Name: "Devi
17/09/08 15:24 lab-cisco-ap112(none NA Trap. Event Description: "#empty" Event Name: "Devi
17/09/08 15:24 Nortel380-24T-B none NA Trap. Event Description: "#empty" Event Name: "Devi
17/09/08 15:24 Lab-enterasys-S none NA Trap. Event Description: "#empty" Event Name: "Devi
17/09/08 15:24 router22 none NA Trap. Event Description: "#empty" Event Name: "Devi
17/09/08 15:24 Cisco2006WLAN none NA Trap. Event Description: "#empty" Event Name: "Devi
Last update: 04:58:03 PDT
Total: 26
Selected: 0
Filter: ON


File View Tools Actions Help
Save and Close
Delete Incident
Incident
Basics
Message
NA Trap. Event Description: "#empty" Event Name: "Device Configuration Change" Timestamp: 0 Subsystem: "2" Severity: 4
Severity Warning
Priority None
Lifecycle State Registered
Source Node mimi
Source Object none
Assigned To
Notes
Notes
General
Correlated Parents
Correlated Children
Custom Attributes
Diagnostics (Unlicensed)
Registration
1 - 11 of 11
Name Type Value
.1.3.6.1.4.1 asn_ipaddre /10.255.140.69
.1.3.6.1.4.1 asn_octetstr red-jren-hp
.1.3.6.1.4.1 asn_timetick 0
.1.3.6.1.4.1 asn_octetstr Device Configuration Change
.1.3.6.1.4.1 asn_octetstr #empty
.1.3.6.1.4.1 asn_integer 2
.1.3.6.1.4.1 asn_integer 4
.1.3.6.1.4.1 asn_octetstr 10.255.1.203
.1.3.6.1.4.1 asn_octetstr #empty
cia.address String 10.255.1.203
cia.snmpoid String .1.3.6.1.4.1.12721.2.1.1.1.10.0.1

Importing NNMi Devices into the NA Database

To import NNMi device into the NA database:

- On the NNMi server, go to the NA root directory. The defaults are:
  - *C:\NA* (Windows)
  - *opt/NA* (Linux and Solaris)
- On Windows, run *nnmimport.bat*.
- On Linux or Solaris, run *nnmimport.sh*.

Note: *Running this periodically will help ensure your NNMi and NA device inventory is in sync.*

When installing the NA/NNMi Connector, the software creates the *client_nnm.rcx* file. This file exists on the NNMi server and in the NA/NNMi Connector JRE directory. As a result, device imports into NA from NNMi can be initiated from both servers.

The *client_nnm.rcx* file includes the following configuration options:

- **nnmImportGroup** - Networking Infrastructure Devices
- **nnmImportRequireSysOIDMatch** - false

In the past, NA imported devices from NNMi without a filter. The import program then compared the devices' "sysoid" value with data known to work with NA drivers. This caused issues when importing devices into NA from NNMi.

The "sysoid" match is now ignored, unless the **nnmImportRequireSysOID Match** configuration option is set to true.

Devices in NNMi are now filtered by the group defined in the **nnmImport Group** configuration option. If you want to import devices from another group, you must edit the *client_nnm.rcx* file and change the group name.

Note that the group name is always used even if the **nnmImportRequireSys OIDMatch** value is set to true.

Appendix A: Logs & Troubleshooting

This appendix provides information and procedures on setting the logging level for troubleshooting and provides information on specific issues that could arise during installation.

Setting the Logging Level for Troubleshooting

NNMi integration writes the following log information to the output files specified during installation:

Log type	Log Contents
external/hpov	
api	
device/import	Errors encountered in importing device information from NNMi to NA.

The logging level is set in the configuration options of the *commandline.rcx* file installed at setup. During normal operation, HP recommends that the logging level remain at the default value, 75, which provides error messages. Accepted values are 0 to 100.

During troubleshooting, you can change this value to 0 (zero) to collect trace level debugging information that will assist you and Customer Support in resolving the problem. You may be advised to turn up two or more logging levels in concert depending on the type of problem you are seeing.

To reset the logging level, edit the `commandlineclient.rcx` configuration file. The default location of this file is `C:\NA\jre` on your NNMi server. Each log has a its own "level" variable:

- log/external/connector/hpov/level
- log/api/level
- log/device/import/level

NA and NNMi Credentials

For standalone installation, the *client_nnm.rcx* file in the <NA_INSTALL>/jre directory contains NA and NNMi credentials in either plaintext or encrypted (default) format. If either set of credentials change, you can update the file and reload server options from the NA CLI.

For co-residency, NA and NNMi integration information is saved in the *client_na_nnm.rcx* and *site_options.rcx* files.

Password Encryption

To encrypt a password, using the ConnectorTool utility:

1. Change to the <NA_INSTALL> directory.
2. Run the following command:
   ```
   <NA_INSTALL>/jre/bin/java -cp <NA_INSTALL>/client/truecontrol-client.jar com.rendition.tools.ConnectorTool -encrypt xxxxxxx
   ```

   The following example (Windows platform) shows how to encrypt the 'rendition' password:

   ```
   c:\NA\jre\bin\java -cp
   c:\NA\client\truecontrol-client.jar
   com.rendition.tools.ConnectorTool -encrypt rendition
   ```

   The string 'rendition' is encrypted in single quotation mark:

   ```
   'K2IGjPQjw6/k3tKNW9KFLg=='
   ```
3. Copy the encrypted password to the .rcx file.

Missing Integration URL Actions

If right-click menus do not appear in NNMi after installing the NNMi Integration software:

1. cd to the *c:\Program Files (x86)\HP\HP BTO Software\bin* NNMi directory:
2. Run the following command:
   ```
   nnmconfigimport.ovpl -u xxxx -p xxxx -f urlactions.xml
   ```

Note: *Right-click menus will not work unless devices are imported from NNMi to NA because NA needs the UUID information from NNMi to associate with NA managed devices.*

Launching Driver Discovery

When installing the NNMi connector, you are prompted if you want the newly imported devices to launch driver discovery. If you answered "No" to the prompt, but later want to turn the function on, you can edit the *client_nnm.rcx* file and toggle between 'true' or 'false' depending on your preference.

```
<option name="driverDiscoveryEnabled">false</option>
```

After editing the *client_nnm.rcx* file, re-run *nnmimport.bat/sh* to import the devices. The newly imported devices automatically initiate driver discovery, or not, based on the current setting.

NA Server IP Address

If the NA server changes its IP Address or DNS, do the following to update the information in the NNMi menus:

1. NNMi --> Configuration --> Url Actions --> View
2. Select each NA menu item and change the URL.

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