Technical white paper

Troubleshooting Guide for Device Discovery

Network Node Manager i Software

March 2014

Contents

Purpose

Use this whitepaper to troubleshoot problems related to device support and discovery. It will also help you to collect the data required for HP to better assist you with troubleshoot a device-related problem.

Note: HP updates the *HP Network Node Manager i Software (NNMi) Device Support Matrix* document for every major and minor release. This document is available at: h20230.www2.hp.com/selfsolve/manuals

Sections of the Device Support Matrix that Assist with Troubleshooting

The *HP Network Node Manager i Software (NNMi) Device Support Matrix* provides an overview of the network devices supported by HP NNMi for each major release and minor patch release.

The following sections of the *HP Network Node Manager i Software (NNMi) Device Support Matrix* help to identify typical discovery and topology connectivity related symptoms that are commonly seen on customer systems:

- Supported Devices
- Supported SNMP MIBs

Supported Devices

The "Supported Devices" table includes the following information for each supported device:

- Vendor
- Family
- Model
- SNMP sysOID

This table also includes the corresponding support level in NNMi for each device. Possible support levels include basic IP discovery (Ipv4 or Ipv6), L2 connectivity, and VLAN discovery information.

Use the Supported Devices table to help answer the following questions:

- Is this device supported by NNMi?
- Can NNMi do basic discovery?
- Can NNMi retrieve Layer-2 connectivity information?
- Is VLAN discovery supported for this device?

If the answer is "Yes" to these questions, refer to the "Supported SNMP MIBs" section of the NNMi Device Support Matrix.

Note: If a device is not listed in the *HP Network Node Manager i Software (NNMi) Device Support Matrix*, it might still be discovered if it responds to certain standard MIBs that NNMi queries for basic discovery, connectivity and VLANs. See "Supported SNMP MIBs" to help you identify the set of MIBs that NNMi queries on different devices.

.

Supported SNMP MIBs

Use the "Supported SNMP MIBs" table to determine the required MIB or MIBs that must be enabled for the device type to be properly discovered and monitored.

The “Supported SNMP MIBs” section of the *HP Network Node Manager i Software (NNMi) Device Support Matrix* helps you to answer the following kinds of questions:

- What MIB must be enabled if I do not see Layer-2 connectivity for my devices?
- What MIB must be enabled if I am expecting VLANs, but I don’t see any in NNMi for this device?

For each vendor device, the “Supported SNMP MIBs” section provides the MIBs that are used in querying different discovery attributes.

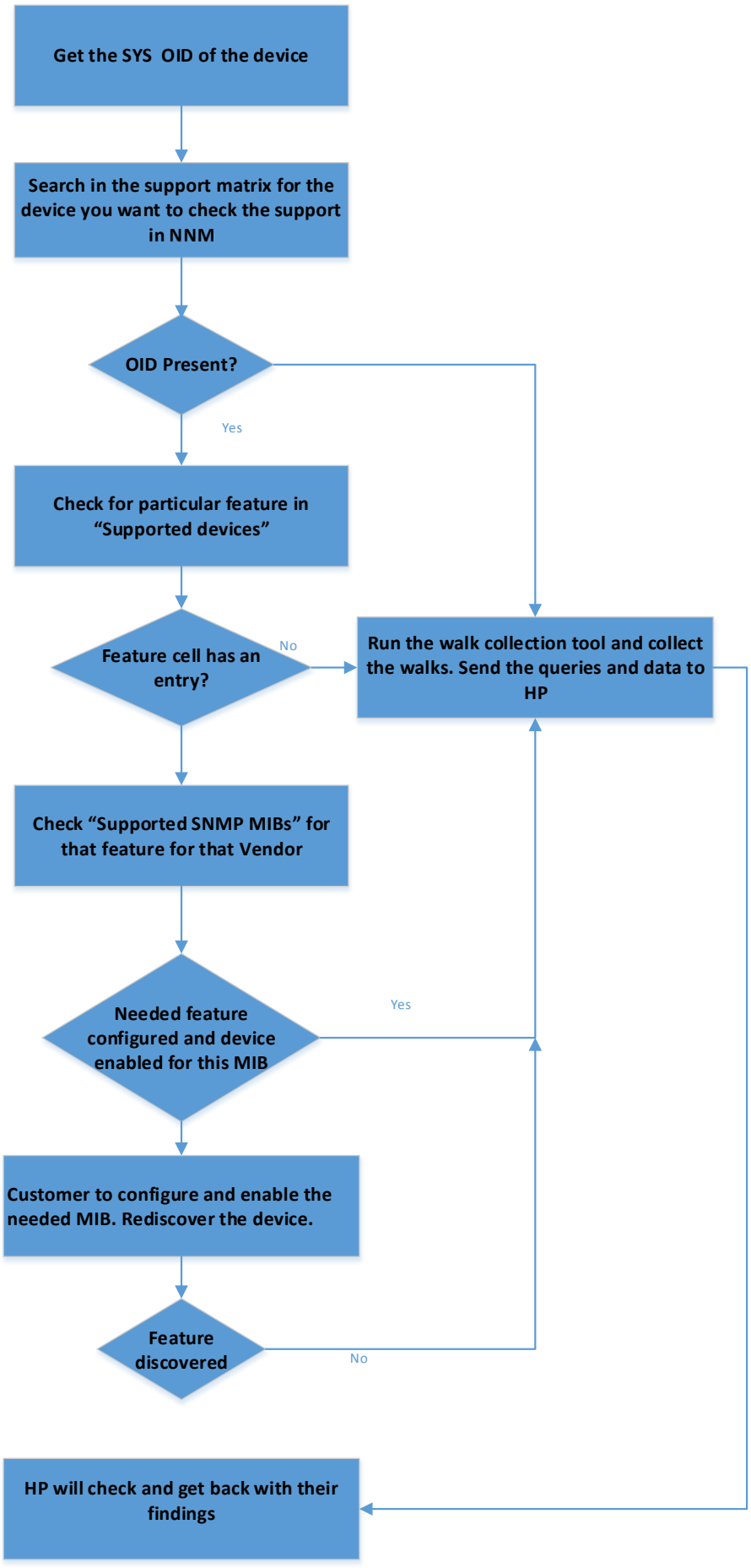
You can usually expect the device to be properly discovered and monitored by NNMi as long as the device supports either the Standard or relevant Vendor-specific MIBs specified for the associated NNMi feature.

See the next section, “Troubleshooting Workflow for Device Support and Discovery” for more information about how to determine the cause of device discovery problems and the steps required toresolve the problem.

Troubleshooting Workflow for Device Support and Discovery

Use the following workflow to troubleshoot device support and discovery problems:

Figure 1: Troubleshooting Workflow for Device Support and Discovery

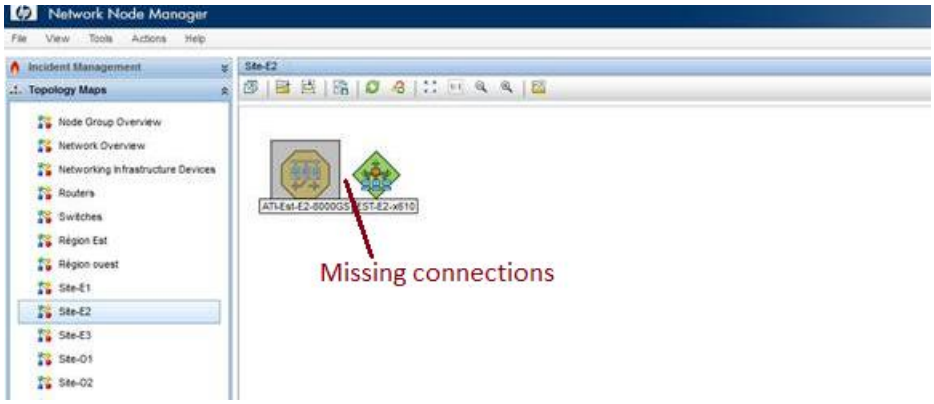

Get the SYS OID of the device
Search in the support matrix for the device you want to check the support in NNM
OID Present?
Yes
Check for particular feature in "Supported devices"
Feature cell has an entry?
No
Run the walk collection tool and collect the walks. Send the queries and data to HP
Check "Supported SNMP MIBs" for that feature for that Vendor
Needed feature configured and device enabled for this MIB
Yes
Customer to configure and enable the needed MIB. Rediscover the device.
Feature discovered
No
HP will check and get back with their findings

Example Troubleshooting Workflow Use Case

This section describes a use case to assist you in understanding how to use the troubleshooting workflow contained in Figure 1: Troubleshooting Workflow for Device Support and Discovery.

Example Symptom: Some Allied Telesis devices that are physically connected are not shown connected in NNMi. (See Figure 2: Devices are not shown as connected in NNMi.)

Figure 2: Devices are not shown as connected in NNMi



Step One: Determine whether NNMi supports Layer 2 connectivity for the device type

First, look in the "Supported Devices" table to determine whether NNMi discovery supports Layer 2 connectivity for the Allied Telesis device type.

As shown in the example table in Figure 3, NNMi device discovery supports Layer 2 connectivity for Allied Telesis devices.

Figure 3: Determine whether L2 connectivity is supported

Allied Telesis	Top of Table					
Allied Telesis	Allied Telesis	alliedAT-8000S	1.3.6.1.4.1.207.1.4.128	IPv4	L2	
Allied Telesis	Allied Telesis	alliedAT-8350GB	1.3.6.1.4.1.207.1.4.74	IPv4	L2	
Allied Telesis	Allied Telesis	alliedAT-x900-24XS	.1.3.6.1.4.1.207.1.14.76	IPv4	L2	VLAN
Allied Telesis	Allied Telesis	alliedAT-x900-12XT/S	.1.3.6.1.4.1.207.1.14.70	IPv4	L2	VLAN
Allied Telesis	Allied Telesis	alliedAT-8524POE	.1.3.6.1.4.1.207.1.4.113	IPv4	L2	VLAN
Allied Telesis	Allied Telesis	alliedAT-9924Ts	.1.3.6.1.4.1.207.1.14.57	IPv4	L2	VLAN
Allied Telesis	Allied Telesis	alliedAT-9924SP	.1.3.6.1.4.1.207.1.14.50	IPv4	L2	VLAN

Step Two: Determine the MIB required to calculate Layer 2 connectivity

Next, determine the MIB that NNMi requires to calculate Layer 2 connectivity.

As shown in the example table in Figure 4, NNMi uses the LLDP MIB to calculated Layer 2 connectivity for Allied Telesis devices.

As also shown in the example table, if that MIB does not respond, NNMi uses Standard Bridge MIB Forwardig Database (FDB) table.

Ensure that LLDP is enabled on the network devices and that the devices respond to the LLDP MIB.

Figure 4: Determine the MIB required to calculate Layer 2 connectivity

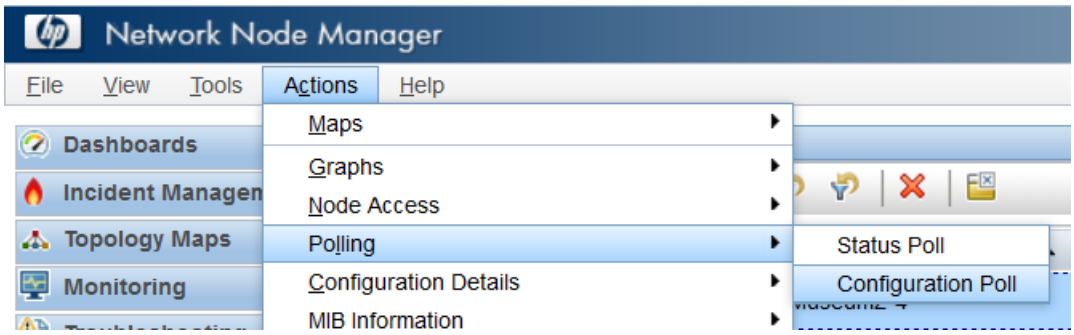
AlliedTelesis										
	(Std)	(std)LLDP	(Std)	(Std)				AT-INTERFACE-MIB		AT-INTERFACE-MIB
			AtiL2-MIB	AT-SYSINFO-MIB						ATISWITCH-STACK-MIB
			ATISWITCH-STACK-MIB	AT-ENVMONv2-MIB						Atil2-MIB
				AT-ENVMON-MIB						IF-MIB

Note: LLDP or CDP (for Cisco devices) is often NOT enabled on the network devices, which affects the NNMi Layer 2 connectivity discovery.

Step Three: Run a configuration poll on each device

After LLDP is enabled on each device and each device responds to SNMP queries, manually run the configuration poll on each of the affected devices as shown in the example in Figure 5.

Figure 5: Run configuration poll on each device



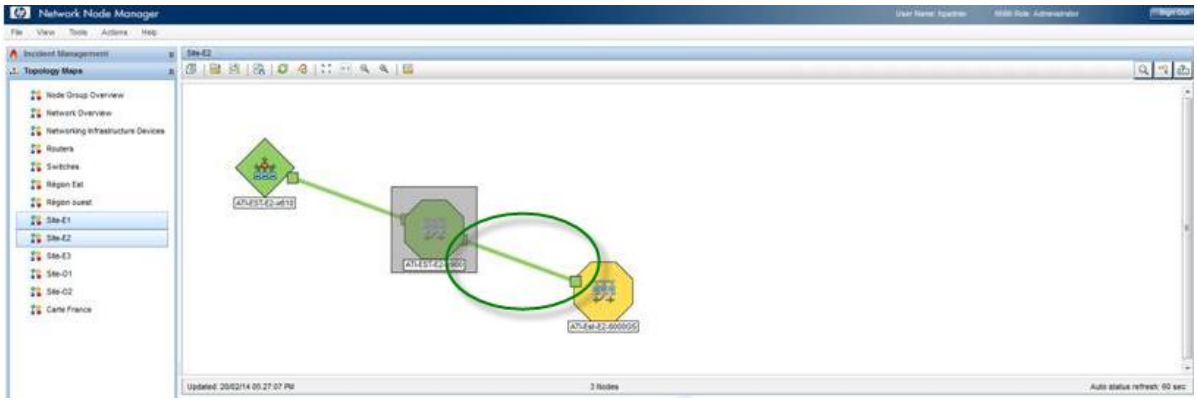
Step Four: Optional. Delete and re-add the device

If the manual configuration poll does not work, delete and re-add the network device in NNMi.

Step Five: Verify that connectivity is displayed on the NNMi map

Finally, verify the connectivity for the devices appears in the NNMi map as shown in the example in Figure 6.

Figure 6: Verify the connectivity for the devices appears in the NNMi map



Device Data Collection Tools for Additional Troubleshooting

If NNMi still does not discover the Layer 2 connectivity between network devices, use the following tools to collect the required data and submit the information returned to HP.

SNMP Data Collection Tool

The SNMP Data Collection Tool is a java-based tool that captures the SNMP walk command output from a device. It does not query the device for a full SNMP walk, but only queries certain specific OIDs that are needed and builds a file which can then be used by HP to simulate the devices. It can easily be configured to collect single or multiple device SNMP walk outputs without user interference or inputs.

Note the following:

- This tool is available on request through HP Support
- This tool can be run without installing NNMi

Juniper devices only. Netconf collection tool

Use the Netconf collection tool to get more device specific information when SNMP does not provide the needed information.

Note: NNMi uses Netconf only to discover Juniper QFabric devices.

Note the following:

- This tool is available on request through HP Support
- For instructions on how to use this tool refer to the Readme file provided with the tool
- This tool can be run without installing NNMi

DSM Tool

Note: The DSM Tool is available with NNMi 9.20 Patch 4 and later releases.

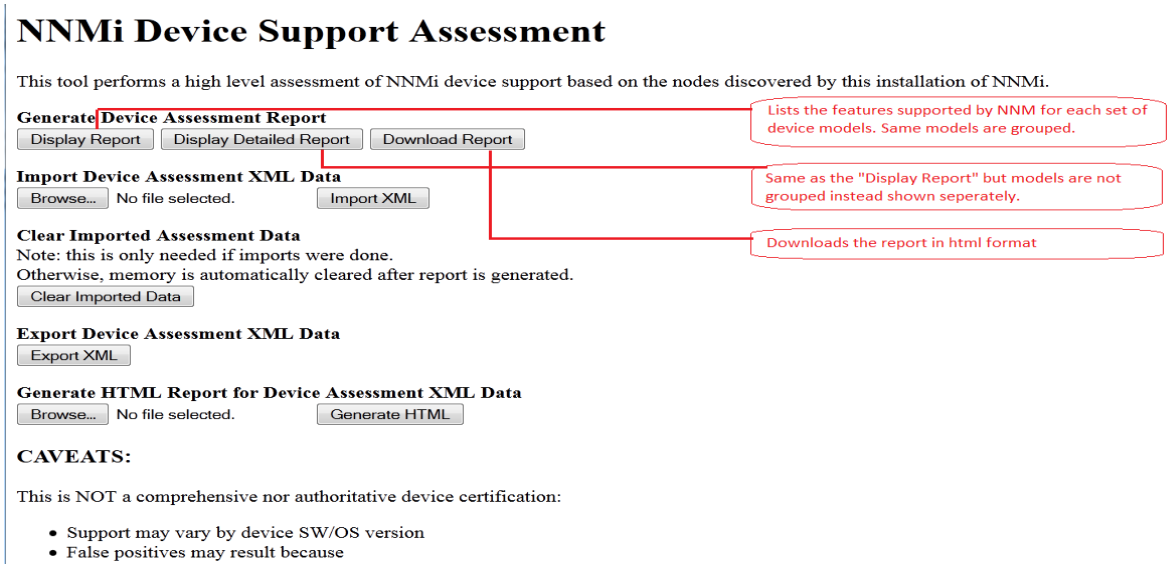
The DSM tool provides details about the different features and functionalities that NNMi supports for a particular device's discovery. This information is similar to what is provided in the *HP Network Node Manager i*

Software (NNMi) Device Support Matrix. However, this tool can be used offline so that the user does not need open the device details form in NNMi.

To launch the tool from the NNMi user interface use the URL: <NNM system>/nnm-dsm/nnm-dsm.jsp

See Figure 7: DSM device support output for example output.

Figure 7: DSM device support output



New Device Support Request

You can submit a request that a device be supported by NNMi in the following cases:

- The device is not listed as supported in the *HP Network Node Manager i Software (NNMi) Device Support Matrix*
- The device does not get discovered as expected by standard SNMP MIB queries

To raise a device support enhancement request, follow the process described in KM1348253, available at: http://support.openview.hp.com/selfsolve/document/KM1348253

Conclusion

In summary, use this whitepaper to assist you in troubleshooting NNMi device support and discovery. It contains several best practices for identifying the cause of device support and discovery problems, as well as the solution for each.

Legal Notices

Warranty

The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

The information contained herein is subject to change without notice.

Restricted Rights Legend

Confidential computer software. Valid license from HP required for possession, use or copying. Consistent with FAR 12.211 and 12.212, Commercial Computer Software, Computer Software Documentation, and Technical Data for Commercial Items are licensed to the U.S. Government under vendor's standard commercial license.

Copyright Notices

Trademark Notices

Adobe® is a trademark of Adobe Systems Incorporated.

HP-UX Release 10.20 and later and HP-UX Release 11.00 and later (in both 32 and 64-bit configurations) on all HP 9000 computers are Open Group UNIX 95 branded products.

Intel® is a trademark of Intel Corporation in the U.S. and other countries.

Microsoft® and Windows® are U.S. registered trademarks of Microsoft Corporation.

Oracle and Java are registered trademarks of Oracle and/or its affiliates.

Red Hat® is a registered trademark of Red Hat, Inc. in the United States and other countries.

UNIX® is a registered trademark of The Open Group.

Oracle Technology — Notice of Restricted Rights

Programs delivered subject to the DOD FAR Supplement are 'commercial computer software' and use, duplication, and disclosure of the programs, including documentation, shall be subject to the licensing restrictions set forth in the applicable Oracle license agreement. Otherwise, programs delivered subject to the Federal Acquisition Regulations are 'restricted computer software' and use, duplication, and disclosure of the programs, including documentation, shall be subject to the restrictions in FAR 52.227-19, Commercial Computer Software-Restricted Rights (June 1987). Oracle America, Inc., 500 Oracle Parkway, Redwood City, CA 94065.

For the full Oracle license text, see the license-agreements directory on the NNMi product DVD.

Acknowledgements

This product includes software developed by the Apache Software Foundation.

(http://www.apache.org)

This product includes software developed by the Indiana University Extreme! Lab.

(http://www.extreme.indiana.edu)

Support

Visit the HP Software Support web site at:

www.hp.com/go/hpsoftwaresupport

This web site provides contact information and details about the products, services, and support that HP Software offers.

HP Software online support provides customer self-solve capabilities. It provides a fast and efficient way to access interactive technical support tools needed to manage your business. As a valued support customer, you can benefit by using the support web site to:

- Search for knowledge documents of interest
- Submit and track support cases and enhancement requests
- Download software patches and associated patch documentation
- Manage support contracts
- Look up HP support contacts
- Review information about available services
- Enter into discussions with other software customers
- Research and register for software training

Most of the support areas require that you register as an HP Passport user and sign in. Many also require a support contract. To register for an HP Passport ID, go to:

http://h20229.www2.hp.com/passport-registration.html

To find more information about access levels, go to:

http://h20230.www2.hp.com/new_access_levels.jsp