

HP Network Node Manager i Software Step-by-Step Guide to Using NNMi Import and Export Tools

NNMi 9.1x Patch 1

This document describes applications for using the NNMi import and export tools, provides helpful examples, and suggests some best practices for using the tools.

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Introduction

This document describes some common usage scenarios for using NNMi's import and export tools, provides some helpful examples, and offers some best practices for using the tools.

The import and export commands are: nnmconfigimport.ovpl and nnmconfigexport.ovpl.

Usage Scenarios

Use the NNMi export/import tools when you want to:

- make substantial changes to the NNMi configuration and be able to revert back to a known good state, if needed
- move the configuration of a lab's test server to a production server
- move one production server configuration to another production server configuration (overwriting the current configuration)
- merge changes from one NNMi management server to another NNMi management server

Note: The NNMi import tool performs database merges, updates, and insertions.

Tip: Use NNMi's backup and restore tools (nnmbackup.ovpl and nnmrestore.ovpl) to perform migrations involving the overwriting of data (from one computer to another). If you create a full backup with nnmbackup.ovpl, this backup can be restored to another NNMi station (assuming it has the same version and patch level) or to the same server. Note that all of the data is restored including nodes, incidents, and configuration.

Tip: Use nnmnodedelete.ovpl and nnmtrimincidents.ovpl to remove nodes and incidents.

Best Practices

Note the following best practices when exporting and importing a configuration:

- See *Export/Import Behavior and Dependencies* in the NNMi help to learn about the specific behaviors of the configuration item you are interested in. Especially note whether the import overwrites or merges the configuration. Also note the dependencies on other configurations.
- Avoid conflicts in the Ordering field.
- Avoid name conflicts in Node Groups, Interface Groups, and their universally unique identifiers (UUIDs).
- Import the configuration files in the correct order based on dependencies.

Learning the Specific Export/Import Behaviors

Consider the three export/import behavior choices:

- Replaces all-replaces the entire existing configuration during the import
- Incremental—updates all object instances with matching key identifiers during the import
- Incremental (subset)—includes configuration changes that were made by one Author

Configuration files can have dependencies. For example, the Node Group Map Settings configuration area has a dependency on Node Groups.

Before proceeding on to the following examples, refer to *Export/Import Behavior and Dependencies* in the NNMi help.

Incremental (Merge) Import Example

For this example, remember that Node Groups have an "Incremental" import behavior.

1. Create a Node Group called node group 1.

Figure 1: Configuration: Create Node Group 1

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📑 Status Configuration		0	Networking Infrastructure Devices	~				Includes those device catego
📑 Global Network Management			Non-SNMP Devices	~			'	Nodes which have never res

2. Export the configuration using the following command:

nnmconfigexport.ovpl -c nodegroup -f nodegroup.1.xml

You should see a message similar to the following:

Successfully exported /var/tmp/config/nodegroup.1.xml.

3. Delete node group 1 and create node group 2.

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Figure 2: Configuration: Create Node Group 2

4. Export the configuration again using the following command (so this export does not contain node group 1):

nnmconfigexport.ovpl -c nodegroup -f nodegroup.2.xml

You should see a message similar to the following:

Successfully exported /var/tmp/config/nodegroup.2.xml.

There are now two different configuration files for Node Groups—one file contains node group 1 and the other contains node group 2.

5. Delete node group 2.

Now neither node group 1 nor node group 2 exists in the database.

6. Perform an import of node group 1 using the following command:

nnmconfigimport.ovpl -f nodegroup.1.xml

You should see a message similar to the following:

Successfully imported nodegroup.1.xml.

7. Perform an import of node group 2 using the following command:

```
nnmconfigimport.ovpl -f nodegroup.2.xml
```

You should see a message similar to the following:

Successfully imported nodegroup.2.xml.

On importing the two configurations, the data is merged, as opposed to overwritten. The database contains both node group 1 and node group 2.

Figure 3: Configuration: Both Node Groups Displayed

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📑 Monitoring Configuration	•	8	My Network	~	-	~	May 4, 2011 4:41:51 PM	
📑 Custom Poller Configuration	4	<u> </u>	My Important Subnets	~	-	~	May 4, 2011 1:29:29 PM	
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 Global Network Management User Interface 	(0	Networking Infrastructure Devices	~	2	-	Mar 23, 2011 4:04:53 PM	Includes those device
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"Replaces All" Import Example

The Discovery configuration import uses the "Replaces all" import behavior. So instead of a merge, the import performs a replacement of data.

1. Create an Auto-Discovery Rule called discorange1.



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2. Perform an export of the discorange1 configuration using the following command:

```
nnmconfigexport.ovpl -c disco -f disco.1.xml
```

You should see a message similar to the following:

Successfully exported /var/tmp/config/disco.1.xml.

- 3. Delete the discorange1 Auto-Discovery Rule.
- 4. Create a new Auto-Discovery Rule called discorange2.

Figure 5: Discovery Configuration: Create discorange2 Auto-Discovery Rule

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Sweep Interval 1.00 Days 👻		₽		
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First Choice IP Address 👻				
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5. Perform an import of the discorange1 configuration using the following command:

```
nnmconfigimport.ovpl -f disco.1.xml
```

You should see a message similar to the following:

Successfully imported disco.1.xml.

Even though there was not a conflict with discorange2, the disco.1.xml configuration overwrote the configuration.

Figure 6: Discovery Configuration: disco.1.xml File Overwrote Configuration

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Avoid Conflicts in the Ordering Fields

Many configurations, such as Monitoring Configuration, have an Ordering field.

Note: While the Monitoring Configuration import has a "Replaces all" behavior, it only replaces all if there are no conflicts in the Ordering field.

The following figure shows the default configuration of Monitoring Configuration.

For this example, start by exporting this default configuration so that you can revert back to it if necessary.

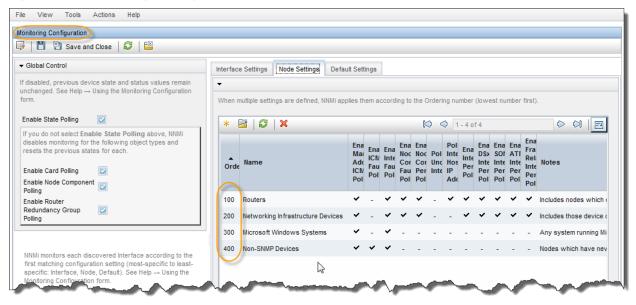
1. Perform an export of the monitoring1 configuration using the following command:

nnmconfigexport.ovpl -c monitoring -f monitoring.1.xml

You should see a message similar to the following:

Successfully exported /var/tmp/config/monitoring.1.xml.

Figure 7: Monitoring Configuration: Default



- 2. Delete the Monitoring policy based on Routers (Ordering 100).
- 3. Create a Monitoring policy based on Data Center and reuse the Ordering value of 100.

Figure 8: Monitoring Configuration: Replace Routers with Data Center

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		400	Nee Cl	IMP Devices		~	~	~	_									Nodes which have ne

4. Assuming that you want to revert back to the original configuration, perform an import using the following command:

nnmconfigimport.ovpl -f monitoring.1.xml

You should see the following error message:

```
Configuration Import Error:
Database constraint violation: Could not execute JDBC batch update
```

The import fails because the original configuration had Routers at 100 and the new configuration has Data Center at 100. To resolve this problem, you need to remove the conflict, save the configuration, and then re-import. To remove the conflict, you can either change the Ordering number of the current configuration (change Data Center to 99) or you can completely remove the policy for Data Center if you no longer need it.

Tip: When you change Data Center to 99, you avoid the Ordering conflict but the Data Center policy is deleted when you import the previous Monitoring Configuration. This result is because the Monitoring Configuration import has a "Replaces all" behavior.

Avoid Name Conflicts in Node Groups, Interface Groups, and Assigned UUIDs

NNMi includes a default Node Group called Routers with an assigned UUID.

Figure 9: Node Group: Routers

Node Groups 🔷 Node Group 👌						
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▼ Basics	Device Filters	Additional Filters	Additional No	odes Child Node G	roups Status	
Name Routers	-					
Calculate Status						amily, or Device Profile. If you
Status No Status Add to View Filter List	configure multi to this Node Gr		Nodes must mate	ch at least one of the	Device Filters and pas	s any Additional Filters to belong
Notes	* 🖬 🕯	3 🛛 🗙			1 - 3 of 3	
Includes nodes which do routing. For routers, the monitoring settings will by default monitor both connected interfaces and interfaces hosting addresses.	Device Cate	egory 🔺 Dev	ce Vendor	Device Family	Device Model	
You can filter Node Groups using Device Filters, Additional Filters, Additional Filters, Nodes, and Child Node Groups. If you use Device Filters and Additional Filters, Nodes must match at least one Device Filter and the Additional Filters, Specifications to belong to this Node Group. Nodes that are specified as Additional Nodes and Child Node Groups always are members of this Node Group. See Help → Using the Node Group definition, select File → Save, then Actions → Node Group Details → Show Members. ▼ NNM ISPI Performance Used by NNM ISPI Performance for Metrics and NNM ISPI for Traffic. Add to Filter List	्मे Gateway ''' Router क्रैंड Switch-R					

Consider the following scenario. You perform the following steps:

- 1. Export the original configuration.
- 2. Delete the default Routers Node Group.
- 3. Create a new Node Group called Routers.

The newly created Routers Node Group has a different UUID than that of the original Routers Node Group. If you were to attempt to import the configuration that has the original definition of Routers in it, the import will fail because of the conflict between the Node Group name and the UUID.

Tip: Avoid naming customer-built Node Groups with the same names as default Node Groups, in case you later want to revert back to the original product settings.

A similar issue occurs when you try to move configurations from one NNMi management server to another.

Consider the following scenario. You perform the following steps:

- 1. Create a Node Group called NetBotz on Server A (Server A assigns a UUID for this Node Group).
- 2. On Server B, create the same Node Group, NetBotz (Server B assigns a UUID to this Node Group that is different from the one created on Server A).
- 3. Import the configuration from Server A to Server B.

The import fails because of the conflict between the Node Group name and the UUID.

Tip: To avoid Node Group name and UUID conflicts as the one previously described, rather than creating the same configuration on two different servers, create the configuration on one server and move it to the other server using a configuration import.

Conflict Example

Tip: If you are planning to replace a configuration on a server, then first delete the configuration from that server.

Consider the following example:

- 1. Export the current default Monitoring Configuration.
- 2. Delete the Monitoring Configuration based on Routers (Ordering 100).
- 3. Create a Monitoring Configuration in Node Settings called My Favorite Routers, with Ordering set to 100.

Assuming you want to revert back to the previous configuration, delete the entire configuration and then reimport:

- 4. From the workspace navigation panel, select the **Configuration** workspace, and then click **Monitoring Configuration**.
- 5. Click the **Node Settings** tab.
- 6. Select all of the configurations and delete them.
- 7. Click the Interface Settings tab.
- 8. Select all of the configurations and delete them.

Figure 10: Monitoring Configuration: Delete Node Settings

File View Tools Actions Help	
Monitoring Configuration	
🗊 💾 🔛 Save and Close 💋 🔛	
✓ Global Control	Interface Settings Node Settings Default Settings
If disabled, previous device state and status values remain unchanged. See Help \rightarrow Using the Monitoring Configuration form.	·
Enable State Polling	When multiple settings are defined, NNMi applies them according to the Ordering number (lowest number first).
If you do not select Enable State Polling above, NNMi disables monitoring for the following object types and resets the previous	* 🖻 🖉 🎇 🔯 🖓 🖂 🖂
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Enable Node Component	Orde Hante Pau Fau Fau Fau Fau Fau Fau Fau Fau Fau F
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Polling	200 Networking Infrastructure 🗸 - 🗸 🗸 🖌 🗸 🗸 🗸 🖌 Includes the
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NNMi monitors each discovered Interface according to the first matching configuration setting (most-specific to least-specific: Interface, Node, Default). See Help → Using the Monitoring Configuration form.	400 Non-SNMP Devices 🛩 🛩 Nodes whic
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Figure 11: Monitoring Configuration: Delete Interface Settings

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If disabled, previous device state and status values remain unchanged. See Help \rightarrow Using the Monitoring Configuration form.	
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NNMi monitors each discovered Interface according to the first matching configuration setting (most-specific to least-specific: Interface, Node, Default). See Help → Using the Monitoring Configuration form.	
Registration	

Tip: Disable State Polling when you delete the current Monitoring Configuration to avoid generating unexpected alarms (because no monitoring policies are in place) between the time that you delete the current configuration and the time the replacement configuration is loaded. This principle is true for other configurations, such as Node Groups, because of the references to Node Groups in Monitoring Configuration.

9. Disable State Polling by ensuring that the **Enable State Polling** check box is cleared.

Figure 12: Monitoring Configuration: Disable State Polling

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Polling	20	0	Point to Point Interfa	-	~	-	-	-	-	-	-	-	Point to Point Interfaces are usua
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NNMi monitors each discovered Interface according to the first matching configuration setting (most-specific to least-specific: Interface, Node, Default). See Help \rightarrow Using the Monitoring Configuration form.						_							

10. Click Save and Close.

11. Perform an import using the following command:

```
nnmconfigimport.ovpl -f monitoring.xml
```

You should see the following message:

Successfully imported monitoring.xml.

The Routers Node Setting has been restored with the Ordering at 100 and State Polling has been re-enabled.

Figure 13: Monitoring Configuration: Routers Stored and State Polling Re-enabled

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INMi monitors each discovered Interface according to the first matching		400	No	n-SNMP Devices	~	~	~	-		-	-	-		-	-	Nodes whic
configuration setting (most-specific to least-specific: Interface, Node, Default). See Help — Using the Monitoring Configuration form.																
Jefault). See Help \rightarrow Using the Monitoring Configuration form.																

Import Files in the Correct Order Based on Dependencies

The nnmconfigimport.ovpl tool allows you to import an entire set of configuration files in a directory; however, you may also load files one at a time. This enables you to see any errors based on individual files. You can then delete the conflict and re-import the file. You may need to load multiple configuration files to satisfy any dependencies. For example, an Interface Group can reference a Node Group in its configuration. To satisfy this dependency, load the Node Group configuration before loading the Interface Group configuration.

Figure 14: Interface Group: Referenced Node Group

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Add to View Filter Lis	t 🔽			lters tab enables yo aces must match at	
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se both ifType Filters Type Filter and the A roup. If you select a	and Additional Filters, Interfaces must match at least one dditional Filters specifications to belong to this Interface	-			
se both ifType Filters Type Filter and the A roup. If you select a ember of that Node C o test your Interface	and Additional Filters, Interfaces must match at least one dditional Filters specifications to belong to this Interface Node Group, the Interface must belong to a Node that is a	-			

Merging Two Server Configurations

To merge two server configurations (to keep both servers synchronized) use any of the following three methods:

Method 1

- 1. Elect one of the servers to be the "master" server where all configuration changes are made.
- 2. Make a full backup of the master server (using nnmbackup.ovpl) and restore it to the "slave" server (using nnmrestore.ovpl) to initialize all the UUIDs to the same values.
- 3. Export your configurations from the master server and then import them onto the slave server.

Method 2

- 1. Use the graphical user interface to manually delete configurations on the slave server that may likely cause a conflict (for example, configurations that you have changed).
- 2. Make sure that you disable State Polling during this period to avoid unexpected alarms.
- 3. Export your configurations from the master server and then import them onto the slave server.

Method 3

- 1. Import configurations one at a time from the master server without deleting anything on the slave server.
- 2. If an import fails, then delete the conflict and re-import.

Caution: You must import configurations within the same NNMi version and patch level. For example, you cannot export a configuration in NNMi 8.x and import it into NNMi 9.x.

Tips:

- Determine which method, import/export or backup/restore, is your best option for moving data based on your goals and configuration.
- Study the NNMi help to determine if the import for a given configuration merges or replaces the current configuration.
- Avoid naming customer-built configurations with the same names as default configurations (such as Node Groups). This will help you avoid conflicts. Remember that you can assign custom configurations a higher priority (lower number) than the default configurations, thereby effectively disabling the default settings.
- Delete configurations that will clash before attempting the import to avoid UUID conflicts.
- Consider completely deleting configurations to ensure a successful import and consider disabling State Polling temporarily.
- Avoid merging between NNMi management servers. If you must use this approach, then elect one of the servers to be the master server where all configuration changes are made. Prepare the servers in advance by making a backup of the master and restoring the backup to the slave server to synchronize UUIDs.
- For simple configurations, consider using the graphical user interface to visually compare servers and re-enter data rather than using the import/export or backup/restore tools.

Conclusion

This document has presented usage scenarios and best practices for NNMi's export and import tools.

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