HP Network Node Manager i Software

For the Windows® and Linux® operating systems

Software Version: NNMi 10.10

HP Network Node Manager i Software—HP Operations Manager Integration Guide

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November 2015

Acknowledgements

This product includes software developed by the Apache Software Foundation.(http://www.apache.org).

This product includes software developed by the Visigoth Software Society (http://www.visigoths.org/).

Available Product Documentation

For a complete list of the documentation that is available for NNMi, see the *HP Network Node Manager i Software Documentation List*. This document is available on the HP manuals web site. Use this file to track additions to and revisions within the NNMi documentation set for this version of NNMi. Click a link to access a document on the HP manuals web site.

Also available on the HP manuals web site are `.zip` files of the complete documentation set for NNMi, NNMi Premium, and NNMi Ultimate. Access these documentation packages from the *HP Network Node Manager i Software Documentation List* or directly from the HP manuals web site.

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http://h20230.www2.hp.com/sc/solutions/index.jsp

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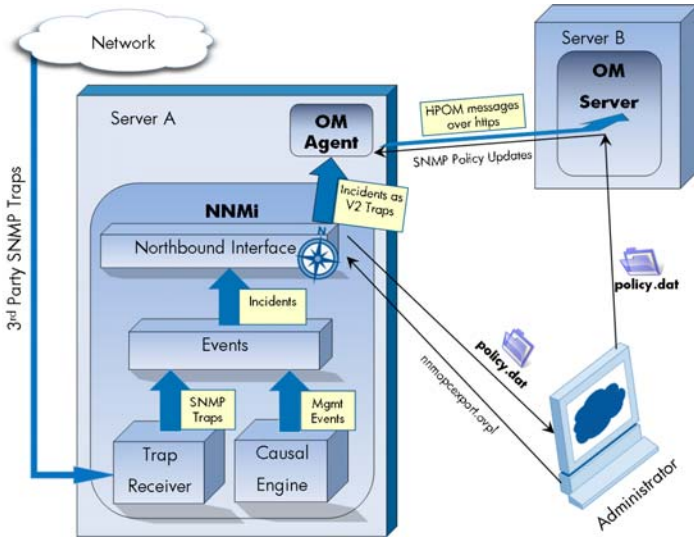
HP Operations Manager



HP Operations Manager (HPOM) provides comprehensive event management; proactive performance monitoring; and automated alerting, reporting, and graphing for management operating systems, middleware, and application infrastructure. HPOM consolidates events from a wide range of sources into a single view.

For information about purchasing HPOM, contact your HP sales representative.

This chapter describes the available integrations:

- HP NNMi—HPOM Integration (Agent Implementation)
- HP NNMi—HPOM Integration (Web Services Implementation)

HP NNMi—HPOM Integration (Agent Implementation)

The agent implementation of the HP NNMi—HPOM integration is the preferred solution for integrating HPOM with HP NNMi.

If the agent and the web services implementations of the HP NNMi—HPOM integration both forward messages to the same HPOM management server, you might not see all messages from both implementations in the HPOM active messages browser. For this reason, HP does not support running both implementations of the HP NNMi—HPOM integration from one NNMi management server to the same HPOM management server concurrently.

This section contains the following topics:

- About the HP NNMi—HPOM Integration (Agent Implementation) on page 8
- Enabling the HP NNMi—HPOM Integration (Agent Implementation) on page 9
- Configuring HP NNMi to Forward HP ArcSight Logger Syslog Messages on page 13
- Using the HP NNMi—HPOM Integration (Agent Implementation) on page 15
- Changing the HP NNMi—HPOM Integration Configuration (Agent Implementation) on page 17

- Disabling the HP NNMi—HPOM Integration (Agent Implementation) on page 18
- Troubleshooting the HP NNMi—HPOM Integration (Agent Implementation) on page 19
- HP NNMi—HPOM Agent Destination Form Reference (Agent Implementation) on page 21

About the HP NNMi—HPOM Integration (Agent Implementation)

The agent implementation of the HP NNMi—HPOM integration forwards NNMi management events as SNMPv2c traps to an HP Operations agent on the NNMi management server. The agent filters the NNMi traps and forwards them to the HPOM active messages browser. The agent configuration determines the HPOM management server receiving the forwarded incident.

If you upgrade from NNM 7.x, or if you transfer all of your SNMP trap handling from HPOM to NNMi (due to license issues, scalability, or other reasons), and you have invested in HPOM policies, you might want to consider trap forwarding as an alternative to the HP NNMi—HPOM integration. Note that trap forwarding does not provide any NNMi Incident enrichment when processing traps. For more information, see *Trap and Incident Forwarding* in the *NNMi Deployment Reference*. Another option is to use the nnmopcexport.ovpl script to read the NNMi management event and SNMP trap configurations and export these configurations into an HPOM policies file. You could then continue to use the HP NNMi—HPOM integration using these policies. For more information, see the *nnmopcexport.ovpl* reference page, or the Linux manpage.

The HP NNMi—HPOM integration can also forward the SNMP traps that HP NNMi receives to the agent.

The HP NNMi—HPOM integration also provides for accessing the NNMi console from within HPOM.

The agent implementation of the HP NNMi—HPOM integration is a specific implementation of the NNMi northbound interface, which is described in the *NNMi Northbound Interface* chapter of the *NNMi Deployment Reference*.

The agent implementation of the HP NNMi—HPOM integration consists of the following components:

- nnmi-hpom agent integration module
- nnmopcexport.ovpl script

Value

The HP NNMi—HPOM integration provides event consolidation in the HPOM active messages browser for the network management, system management, and application management domains, so that HPOM users can detect and investigate potential network problems.

The primary features of the integration are as follows:

- Automatic incident forwarding from HP NNMi to the HP Operations agent. Forwarded incidents appear in the HPOM active messages browser.
- Access to the NNMi console from HPOM.
  - HPOM users can open the NNMi **Incident** form in the context of a selected message.

— HPOM users can launch an NNMi view (for example, the Layer 2 Neighbor view) in the context of a selected message and node.

— HPOM users can launch an NNMi tool (for example, status poll) in the context of a selected message and node.

Integrated Products

The information in this section applies to the following products:

- HPOM for Windows
- HPOM for Linux

For the list of supported versions, see the *NNMi System and Device Support Matrix*.

- NNMi 10.10

HP NNMi and HPOM must be installed on separate computers. The NNMi management server and the HPOM management server computer can be of the same or different operating systems.

The HP Operations agent requires a license and must be installed on the NNMi management server computer *after* installing HP NNMi.

For the most recent information about supported hardware platforms and operating systems, see the support matrices for all products.

Documentation

This chapter describes how to configure HP NNMi to communicate with HPOM.

The HPOM documentation describes how to install and use the HPOM applications that access the NNMi console from the HPOM active messages browser.

- For HPOM for Windows, see the information for the HP NNMi Adapter in the HPOM help.
- For HPOM for Linux version 9.xx, see the *Integrating NNMi into HPOM* section in the *HP Operations Manager for UNIX or Linux Administrator's Reference*.

Enabling the HP NNMi—HPOM Integration (Agent Implementation)

It is recommended that an experienced HPOM administrator complete the procedure for enabling the agent implementation of the HP NNMi—HPOM integration.

When HP NNMi integrates with the HP Business Service Management (BSM) topology database, the agent implementation of the HP NNMi—HPOM integration can associate incidents regarding NNMi-managed devices with BSM configuration items (CIs). This information is not available with the standard NNMi northbound interface. For more information, see Configuration Item Identifiers on page 15.

To enable agent implementation of the HP NNMi—HPOM integration, follow these steps:

1 On the NNMi management server, generate an SNMP trap policy file:

a Verify that the NNMi services are running:

```
ovstatus -c
```

All NNMi services should show the state RUNNING.

b Generate the SNMP trap policy file by entering the following command:

```
nnmopcexport.ovpl -u <username> -p <password> \
-template "NNMi Management Events" -application "NNMi" \
-file NNMi_policy.dat
```

The values for **<username>** and **<password>** correspond to an NNMi console user with the Administrator role.

If HPOM will forward the NNMi incidents to the HP OMi event browser or to the BSM Operations Management event browser, also use the `-omi_hi` option to add health indicators to the management event policy conditions. For more information, see Health Indicators on page 15.

The SNMP trap policy file includes a policy condition for each management event and SNMP trap configuration in the current NNMi incident configuration. For information about customizing the output of this command, see the *nnmopcexport.ovpl* reference page, or the Linux manpage.

For information about the default policy conditions and customizing conditions, see Using the HP NNMi—HPOM Integration (Agent Implementation) on page 15.

2 On the HPOM management server, configure HPOM to receive messages from NNMi:

a In the HPOM console, add a node for the NNMi management server

b Install the HP Operations agent on the NNMi management server.

c Transfer the `NNMi_policy.dat` file created in step 1 of this procedure from the NNMi management server to the HPOM management server.

`Import the NNMi_policy.dat file into HPOM.`

— *HPOM for Windows*: Use the `ImportPolicies` command.

— HPOM for Linux version 9.x: Use the `opcpolicy` command.

d Deploy the `NNMi Management Events` policy to the NNMi managed node.

e In the HPOM console, add an external node to catch all forwarded NNMi incidents.

For initial testing, set the node filter to <*>.<*>.<*>.<*> (for an IP filter) or <*> (for a name filter). After you validate the integration, restrict the external node filter to match your network.

If you do not set up an HPOM managed node for an NNMi incident source node, the HPOM management server discards all incidents regarding that node.

For more information, see the following references:

- *HPOM for Windows*:

— *Configuring external nodes* in the HPOM help

- *HPOM for Linux*:
  - — *HP Operations Manager for UNIX HTTPS Agent Concepts and Configuration Guide*
  - — *HP Operations Manager for UNIX Concepts Guide*
  - — *HP Operations Manager for UNIX Administrator's Reference*
  - — *HP Operations Manager for UNIX Developer's Toolkit Developer's Reference*
  - — *opcnode(1M)*, *opcbbcdist(1M)*, *opcragt(1M)*, *opccfgupl(1M)*, *opcpolicy(1M)* (version 9.xx)

3 Identify an available port for SNMP communications between HP NNMi and the HP Operations agent.

The HP Operations agent will listen on this port for the SNMP traps that HP NNMi forwards to this port. While enabling the integration, this port number is used in both step 4 (for the HP Operations agent) and step 5 (for HP NNMi) of this procedure.

Because the HP Operations agent is installed on the NNMi management server, this port number must be different from the port HP NNMi uses to receive SNMP traps.

a From the NNMi management server, run the **`nnmtrapconfig.ovpl -showProp`** command. Look for the current `trapPort` value in the command output. This value is typically 162, which is the standard UDP port for receiving SNMP traps. Do not use this `trapPort` value when configuring SNMP communications between HP NNMi and the HP Operations agent.

b Select a port for configuring SNMP communications between HP NNMi and the HP Operations agent. A good practice is to use a port number similar to the value of `trapPort`. For example, if port 162 is not available, try port 5162.

c From the NNMi management server, run the **`netstat -a`** command and search the output for the port you selected in step b. If that port number does not appear in the output, it is probably available for the HP Operations agent to use.

4 On the NNMi management server configure the HP Operations agent with a custom port for receiving SNMP traps from HP NNMi by entering the following commands:

- Configure the agent:

```
ovconfchg -ns eaagt -set SNMP_TRAP_PORT <custom_port> \
-set SNMP_SESSION_MODE NETSNMP
```

- Restart the agent:

```
ovc -restart opctrapi
```

For *<custom_port>*, use the port that you identified in step 3 of this procedure.

5 On the NNMi management server, configure NNMi incident forwarding to the HP Operations agent:

a In the NNMi console, open the **HP NNMi—HPOM Integration Selection** form (**Integration Module Configuration > HPOM**).

b Click **HPOM agent implementation**, and then click **New**.

(If you have selected an available destination, click **Reset** to make the **New** button available.)

c On the **HP NNMi—HPOM Agent Destination** form, select the **Enabled** check box to make the remaining fields on the form available.

d Enter the information for connecting to the HP Operations agent on the NNMi management server. The trap destination port is the port that you identified in step 3 of this procedure.

For information about these fields, see HP Operations Agent Connection on page 22.

e Specify the sending options. Select the **HTTP** option for the **NNMi Console Access** field.

For information about these fields, see HPOM Integration Content on page 23.

f Click **Submit** at the bottom of the form.

A new window opens, showing a status message. If the message indicates a problem with the settings, click **Return**, and then adjust the values as suggested by the text of the error message.

6 *Optional*. In HPOM, add the custom message attributes for NNMi incidents to the active messages browser. Follow the appropriate steps:

- *HPOM for Windows*:
  - In the browser, right-click any column heading, then click **Options**.
  - In the **Enter Custom Message Attributes** list, select an attribute, then click **Add**.
- *HPOM for Linux*:
  - In the Java Interface Message Browser, right-click any column heading, and then click **Customize Message Browser Columns**.
  - On the **Custom** tab, select from the **Available Custom Message Attributes**, and then click **OK**.

Note the following information:

- Most of the custom message attributes for NNMi incidents begin with the text `nnm`.
- For the agent implementation of the HP NNMi—HPOM integration, some interesting attributes for NNMi incidents are as follows:

  ```
  nnm.name
  nnm.server.name
  ```

  For information about other interesting CMAs, see Using the HP NNMi—HPOM Integration (Agent Implementation) on page 15.
- To change the order the custom message attributes appear in the messages browser, drag a column heading to the new location.

7 *Optional*. On the HPOM management server, enable contextual launching of the NNMi views.

- *HPOM for Windows*: Associate the NNMi source nodes with the HP NNMi Web Tools group.

For information, see *Enable tools in the By Node tool group* in the HPOM help.

HPOM for Linux version 9.xx automatically installs the basic NNMi applications.

For information, see the section on installing and configuring the HP NNMi—HPOM integration in the *HP Operations Manager for UNIX and Linux Administrator's Reference* (version 9.xx).

Configuring HP NNMi to Forward HP ArcSight Logger Syslog Messages

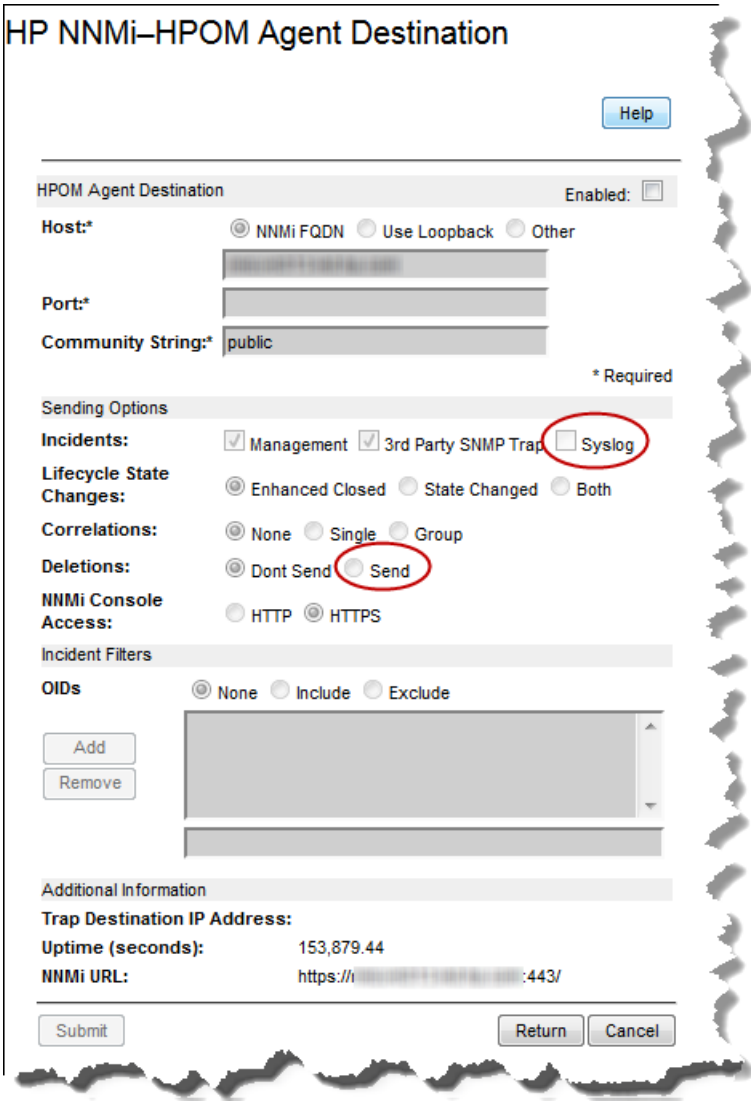
You can configure HP NNMi to forward HP ArcSight Logger Syslog messages to HPOM using NNMi's Northbound Interface. The result is in HP ArcSight Logger Syslog messages being sent to HPOM management server.

To configure the HP NNMi—HPOM (Agent Implementation) to forward Syslog messages to NNMi's Northbound Interface, do the following.

1. Review the information in the HP NNMi—HPOM Agent Destination Form Reference (Agent Implementation) on page 21.
2. Follow the enabling instructions shown in Enabling the HP NNMi—HPOM Integration (Agent Implementation) on page 9.
3. From the NNMi console, click **Integration Module Configuration** > **HPOM**. HP NNMi opens the **HP NNMi—HPOM Integration Selection** screen.
4. Click the **HPOM agent implementation**.
5. Click **Edit**.
6. Modify the form to match the highlighted fields shown in Figure 1. Completing the following configuration steps are important:
   - In the **Incidents** Field, select the **Syslog** check box.

— In the **Deletions** Field, select the **Send** check box.

Figure 1 Important Fields



7 Configure HPOM to include an SNMP trap policy that matches traps with the OID for `nnmiSyslog` incidents. The `nnmiSyslog` incident OID to listen for is .1.3.6.1.4.1.11.2.17.19.2.0.4000.

After completing step 1 through step 7, the HPOM management server will be able to receive HP ArcSight Logger Syslog messages.

HP NNMi takes varbinds from the `ArcSightEvent` trap (OID is .1.3.6.1.4.1.11937.0.1) and forwards these varbinds northbound in another trap (from the **`hp-nnmi-nbi.mib`**). You can see the trap's Custom Incident Attributes (CIAs) by viewing the 20th varbind (`nnmiIncidentCias`) in the comma-separated list from the `nnmiSyslog` incident (OID is .1.3.6.1.4.1.11.2.17.19.2.0.4000).

Using the HP NNMi—HPOM Integration (Agent Implementation)

The agent implementation of the HP NNMi—HPOM integration provides a one-way flow of NNMi management events and SNMP traps to the HP Operations agent. The SNMP trap policy conditions determine how HPOM treats and shows the incoming traps. For example, you can change a policy condition to include the value of a trap custom message attribute (CMA) in the message text.

View the forwarded NNMi incidents in the HPOM active messages browser. HPOM menu commands provide access to NNMi views in the context of the selected message. Information embedded in each message supports this cross-navigation:

- The `nnmi.server.name` and `nnmi.server.port` CMAs in the message identify the NNMi management server.
- The `nnmi.incident.uuid` CMA identifies the incident in the NNMi database.

The original source object appears in the **Object** column of the HPOM active messages browser and in the `nnm.source.name` CMA. (In the web services implementation of the HP NNMi—HPOM integration, the original source object is only available in `nnm.source.name` CMA.)

Configuration Item Identifiers

In HP Business Service Management (BSM) and HP Universal CMDB Software (UCMDB), a configuration item (CI) is a database representation of a component in the IT environment. A CI can be a line of business, business process, application, server hardware, or a service.

When HP NNMi integrates with the BSM topology database or UCMDB, HP NNMi shares CI information with BSM or UCMDB for the devices that HP NNMi manages. In this case, the agent implementation of the HP NNMi—HPOM integration can associate incidents regarding NNMi-managed devices with BSM or UCMDB CIs. The SNMP trap policy conditions enable this association.

For information about the integrations with BSM and UCMDB, see the *HP NNMi—HP Business Service Management Integration Guide*.

Health Indicators

If the NNMi SNMP trap policy file was created with the `-omi_hi` option to `nnmopcexport.ovpl`, the policy file associates a health indicator with each standard NNMi management event in the SNMP trap policy file, as appropriate. (Not all management event types have health indicators.) The health indicator is available in the `EtiHint` CMA.

For the specific health indicators, see the SNMP trap policy file.

Default Policy Conditions

The default integration behavior varies with the integration content, as described here:

- NNMi management event incidents
  - The NNMi SNMP trap policy file includes conditions for all NNMi management event configurations defined in the NNMi incident configuration when the file was generated.
  - The messages created from NNMi management events appear in the HPOM active messages browser.
  - These traps include the CI information described in Configuration Item Identifiers on page 15.
  - The messages created from these traps might include health indicators described in Health Indicators on page 15.
- Third-party SNMP traps
  - The NNMi SNMP trap policy file includes conditions for all SNMP trap configurations defined in the NNMi incident configuration when the file was generated.
  - The messages created from third-party traps appear in the HPOM active messages browser.
  - These traps include the CI information described in Configuration Item Identifiers on page 15.
  - The messages created from these traps do not include health indicators.
  - If you configure the integration to forward all received SNMP traps and the HPOM management server receives SNMP traps directly from devices that HP NNMi manages, HPOM receives duplicate device traps. You can set the policies to correlate SNMP traps from HP NNMi with those that HPOM receives directly from managed devices.
- Syslog messages
  - HP NNMi forwards ArcSight Syslog messages to the northbound application using the NorthBound Integration module.
    HP NNMi begins forwarding incidents as soon as you enable the destination.
- EventLifecycleStateClosed traps
  - The HP Operations agent logs the messages created from these traps. Generally, they do not appear in the HPOM active messages browser.
  - The NNMi SNMP trap policy file causes the HP Operations agent to acknowledge the message that corresponds to the closed NNMi incident in the HPOM active messages browser.
- LifecycleStateChangeEvent traps
  - The NNMi SNMP trap policy file does not include conditions for processing these traps. The HP Operations agent does not forward these traps to the HPOM active messages browser.
- EventDeleted traps
  - The NNMi SNMP trap policy file does not include conditions for processing these traps. The HP Operations agent does not forward these traps to the HPOM active messages browser.

- Correlation notification traps
  - The HP Operations agent logs the messages created from these traps. They do not appear in the HPOM active messages browser.
  - These traps have no impact on the HPOM active messages browser.

Customizing Policy Conditions

To customize the default policy conditions, edit the conditions on the HPOM management server, and then re-deploy the policy to the HP Operations agent on the NNMi management server. For more information, see the following reference:

- *HPOM for Windows*: *SNMP Interceptor Policies* (version 9.0x) in the HPOM help
- *HPOM for Linux* (version 9.xx): *HP Operations Manager for UNIX and Linux Concepts Guide*

More Information

For more information about the agent implementation of the HP NNMi—HPOM integration, see the following references:

- For descriptions of the trap types that the integration sends to the HP Operations agent, see the *NNMi Northbound Interface* chapter of the *NNMi Deployment Reference*.
- For information about the format of the traps that HP NNMi sends to the HP Operations agent, see the `hp-nnmi-nbi.mib` file.
- For detailed information about using the HP NNMi—HPOM integration, see the HPOM documentation.
  - *HPOM for Windows*: See *Agent implementation of the NNMi Adapter* in the HPOM help.
  - *HPOM for Linux*: See the section on installing and configuring the HP NNMi—HPOM integration in the *HP Operations Manager for UNIX and Linux Administrator's Reference* (version 9.xx).

Changing the HP NNMi—HPOM Integration Configuration (Agent Implementation)

Update the SNMP Trap Policy Conditions for New NNMi Traps

If new SNMP trap incident configurations have been added to HP NNMi since the integration was configured, follow these steps:

1. On the NNMi management server, use the `nnmopcexport.ovpl` script to create an SNMP trap policy file for the new traps.

   For the `-template` option, specify a name that is different from the names of the existing SNMP trap policy files.

   You can limit the file contents to a specific author or OID prefix value. For more information, see the *nnmopcexport.ovpl* reference page, or the Linux manpage.

2. Transfer the new SNMP trap policy file from the NNMi management server to the HPOM management server, and then import it into HPOM.

3 On the HPOM management server, deploy the new policy to the NNMi managed node.

Alternatively, you can re-create the SNMP trap policy file for all NNMi management events and SNMP traps. If you take this approach, importing the new policy file into HPOM overwrites any existing policy customizations.

Change the Configuration Parameters

To change the integration configuration parameters, follow these steps:

1 In the NNMi console, open the **HP NNMi—HPOM Selection** form (**Integration Module Configuration > HPOM**).

2 Click **HPOM agent implementation**.

3 Select a destination, and then click **Edit**.

4 Modify the values as appropriate.

For information about the fields on this form, see HP NNMi—HPOM Agent Destination Form Reference (Agent Implementation) on page 21.

5 Verify that the **Enable Integration** check box at the top of the form is selected, and then click **Submit** at the bottom of the form.

The changes take effect immediately.

Disabling the HP NNMi—HPOM Integration (Agent Implementation)

No SNMP trap queuing occurs while a destination is disabled.

To discontinue the forwarding of NNMi incidents to the HP Operations agent, follow these steps:

1 In the NNMi console, open the **HP NNMi—HPOM Integration Selection** form (**Integration Module Configuration > HPOM**).

2 Click **HPOM agent implementation**.

3 Select a destination, and then click **Edit**.

Alternatively, click **Delete** to entirely remove the configuration for the selected destination.

4 Clear the **Enable Integration** check box at the top of the form, and then click **Submit** at the bottom of the form.

The changes take effect immediately.

Optionally, deactivate or delete the SNMP trap policy as described in the HPOM documentation.

Troubleshooting the HP NNMi—HPOM Integration (Agent Implementation)

HPOM Active Messages Browser Does Not Receive Any Forwarded Incidents

In the following procedure, the `OVBIN` environment variable refers to the `bin` directory for the HP Operations agent commands, which defaults to the following value:

- *Windows*: `<drive>\Program Files (x86)\HP\HP BTO Software\bin`
- *Linux*: `/opt/OV/bin`

If the HPOM active messages browser does not contain any incidents from HP NNMi, follow these steps:

1. On the NNMi management server, verify the HP Operations agent configuration:
   - *Windows* NNMi management server:

     `%OVBIN%\ovconfget eaagt`
   - *Linux* NNMi management server:

     `$OVBIN/ovconfget eaagt`

   The command output should include the following information:
   - *Windows*: `SNMP_SESSION_MODE=NNM_LIBS`
   - *Linux*: `SNMP_SESSION_MODE=NO_TRAPD`
   - `SNMP_TRAP_PORT=<custom_port>`

     The value of `<custom_port>` should *not* be 162 and should match the value of the **Port** field on the **HP NNMi—HPOM Agent Destination** form.
2. Evaluate the HP Operations agent configuration by considering the results from step 1:
   - If the HP Operations agent configuration is as expected, continue with step 3 of this procedure.
   - If the `SNMP_SESSION_MODE` parameter is not set correctly, repeat step 4 on page 11 until the `ovconfget` command returns the expected results.
   - If the value of `<custom_port>` is 162 or does not match the value of the **Port** field on the **HP NNMi—HPOM Agent Destination** form, repeat step 3 on page 11 through step 5 on page 11, as appropriate, until the `ovconfget` command returns the expected results.
3. On the NNMi management server, verify that the HP Operations agent is running:
   - *Windows* NNMi management server:

     `%OVBIN%\ovc -status`
   - *Linux* NNMi management server:

     `$OVBIN/ovc -status`

   The command output should include an opctrapi entry similar to the following example:

   ```
   opctrapi  OVO SNMP Trap Interceptor  AGENT,EA  (4971)  Running
   ```

If the output is not as expected, restart the HP Operations agent:

```
ovc -restart opctrapi
```

4 On the NNMi management server, verify that the HP Operations agent is listening on the expected SNMP trap port:

a Run the following command:

— *Windows*: **`netstat -an | findstr <custom_port>`**

— *Linux*: **`netstat -an | grep <custom_port>`**

Where <*custom_port*> is the value of SNMP_TRAP_PORT from step 1 of this procedure.

b Verify that the output includes the state LISTENING or LISTEN.

If the output is not as expected, restart the HP Operations agent:

```
ovc -restart opctrapi
```

5 On the HPOM management server, verify the external node filter for the NNMi management server node.

The HPOM management server must be configured to accept incidents from the devices that HP NNMi manages. HPOM ignores any forwarded incident from an NNMi source node that is not configured as a managed node or included in an external node filter, as described in step 2 on page 10.

6 On the NNMi management server, verify that the SNMP trap policy file for HP NNMi has been deployed to the HP Operations agent on the NNMi management server:

- *Windows* NNMi management server:

  ```
  %OVBIN%\ovpolicy -list
  ```

- *Linux* NNMi management server:

  ```
  $OVBIN/ovpolicy -list
  ```

The command output should include an entry similar to the following example:

```
Type     Name                          Status     Version
-------------------------------------------------------------------
trapi    "NNMi Management Events"      enabled    0001.0000
```

The value of the Name field is the name of the SNMP trap policy file from the -template option to nnmopcexport.ovpl in step 1 on page 10.

7 Verify that the HP Operations agent is receiving traps:

a Verify that the HP Operations agent can send messages to the HPOM management server.

b Enable tracing of the HP Operations agent to determine whether the traps arrive at the HP Operations agent.

For information about troubleshooting the HP Operations agent, see the following reference:

- *HPOM for Windows*: HPOM help
- *HPOM for Linux*: *HP Operations Manager for UNIX and Linux HTTPS Agent Concepts and Configuration Guide*

8 Verify that HP NNMi is forwarding management events to the HP Operations agent.

For more information, see the *Troubleshooting the NNMi Northbound Interface* Chapter of the *NNMi Deployment Reference*.

HPOM Active Messages Browser Does Not Receive Some Forwarded Incidents

If one or more NNMi incidents do not appear in the HPOM active messages browser, follow these steps:

1. On the NNMi management server verify that the SNMP trap policy does not suppress the trap.
2. On the HPOM management server, verify the external node filter for the NNMi management server node.

   The HPOM management server must be configured to accept incidents from the devices that HP NNMi manages. HPOM ignores any forwarded incident from an NNMi source node that is not configured as a managed node or included in an external node filter, as described in step 2 on page 10.
3. On the HPOM management server, verify that HPOM is running.

   If the HPOM management server shuts down, the HP Operations agent queues received traps. The HP Operations agent forwards the queued traps when the HPOM management server becomes available.

   If the HP Operations agent shuts down, the forwarded traps are lost. HP NNMi does not resend traps.
4. On the NNMi management server, verify that the NNMi processes are running:

   ```
   ovstatus -c
   ```

   Any traps sent to HP NNMi while it is shut down are lost.

HP NNMi—HPOM Agent Destination Form Reference (Agent Implementation)

The **HP NNMi—HPOM Agent Destination** form contains the parameters for configuring communications between HP NNMi and the HP Operations agent. This form is available from the **Integration Module Configuration** workspace. (On the **HP NNMi—HPOM Integration Selection** form, click **HPOM agent implementation**. Click **New**, or select a destination, and then click **Edit**.)

Only NNMi users with the Administrator role can access the **HP NNMi—HPOM Agent Destination** form.

The **HP NNMi—HPOMAgent Destination** form collects information for the following areas:

- HP Operations Agent Connection on page 22
- HPOM Integration Content on page 23
- HP Operations Agent Destination Status Information on page 25

To apply changes to the integration configuration, update the values on the**HP NNMi—HPOM Agent Destination** form, and then click **Submit**.

HP Operations Agent Connection

Table 1 lists the parameters for configuring the connection to the HP Operations agent. To configure the parameters explained in Table 1, make changes to the **HPOM Agent Destination** options on the **HP NNMi—HPOM Agent Destination** form

Table 1 HP Operations Agent Connection Information

Field	Description
Host	The fully-qualified domain name (preferred) or the IP address of the NNMi management server. The HP Operations agent receives SNMP traps from HP NNMi on this server. The integration supports the following methods for identifying the HP Operations agent host: • **NNMi FQDN** HP NNMi manages the connection to the HP Operations agent on the NNMi management server and the **Host** field becomes read-only. This is the default and recommended configuration. • **Use Loopback** Do not use this option. • **Other** Do not use this option. **NOTE:** If the NNMi management server participates in NNMi application failover, see the *NNMi Deployment Reference* for information about the impact of application failover on the integration module.
Port	The UDP port where the HP Operations agent receives SNMP traps. Enter the port number specific to the HP Operations agent. This value is the port that you identified in step 3 on page 11. To determine the port, run the **`ovconfget eaagt`** command on the NNMi management server. The trap port is the value of the `SNMP_TRAP_PORT` variable. **NOTE:** This port number must be different from the port HP NNMi uses to receive SNMP traps, as set in the **SNMP Port** field on the **Communication Configuration** form in the NNMi console.
Community String	A read-only community string for the HP Operations agent to receive traps. For the HP NNMi—HPOM integration, use the default value, which is `public`.

HPOM Integration Content

Table 2 lists the parameters for configuring the content HP NNMi sends to the HP Operations agent. To configure the parameters explained in Table 2, make selections to the **Sending Options** on the **HP NNMi—HPOM Agent Destination** form.

Table 2 HPOM Integration Content Configuration Information

Field	Description
Incidents	The incident forwarding specification. • **Management** HP NNMi forwards only NNMi-generated management events to the HP Operations agent. • **SNMP 3rd Party Trap** HP NNMi forwards only SNMP traps that HP NNMi receives from managed devices to the HP Operations agent. • **Syslog** HP NNMi forwards ArcSight Syslog messages to the northbound application using the NorthBound Integration module. HP NNMi begins forwarding incidents as soon as you enable the destination. For more information, see the *NNMi Northbound Interface* chapter of the *NNMi Deployment Reference*.
Lifecycle State Changes	The incident change notification specification. • **Enhanced Closed** HP NNMi sends an incident closed trap to the HP Operations agent for each incident that changes to the CLOSED lifecycle state. This is the default configuration. • **State Changed** HP NNMi sends an incident lifecycle state changed trap to the HP Operations agent for each incident that changes to the IN PROGRESS, COMPLETED, or CLOSED lifecycle state. • **Both** HP NNMi sends an incident closed trap to the HP Operations agent for each incident that changes to the CLOSED lifecycle state. Additionally, the integration sends an incident lifecycle state changed trap to the HP Operations agent for each incident that changes to the IN PROGESS, COMPLETED, or CLOSED lifecycle state. **NOTE:** In this case, each time an incident changes to the CLOSED lifecycle state, the integration sends two notification traps: an incident closed trap and an incident lifecycle state changed trap. For more information, see *Incident Lifecycle State Change Notifications* in the *NNMi Deployment Reference*.

Table 2 HPOM Integration Content Configuration Information (cont'd)

Field	Description
Correlations	The incident correlation notification specification. • **None** HP NNMi does not notify the HP Operations agent of incident correlations resulting from NNMi causal analysis. This is the default configuration. • **Single** HP NNMi sends a trap for each parent-child incident correlation relationship resulting from NNMi causal analysis. • **Group** HP NNMi sends one trap per correlation that lists all child incidents correlated to a parent incident. For more information, see *Incident Lifecycle State Change Notifications* in the *NNMi Deployment Reference*.
Deletions	The incident deletion specification. • **Don't Send** HP NNMi does not notify the HP Operations agent when incidents are deleted in HP NNMi. This is the default configuration. • **Send** HP NNMi sends a deletion trap to the HP Operations agent for each incident that is deleted in HP NNMi. For more information, see *Incident Deletion Notifications* in the *NNMi Deployment Reference*.
NNMi Console Access	The connection protocol specification in the URL for browsing to the NNMi console from the HPOM message browser. The traps that HP NNMi sends to the HP Operations agent include the NNMi URL in the NmsUrl varbind (1.3.6.1.4.1.11.2.17.19.2.2.2). The integration requires an HTTP connection to the NNMi console. Select the **HTTP** option.

Table 2 HPOM Integration Content Configuration Information (cont'd)

Field	Description
Incident Filters	A list of object identifiers (OIDs) the integration uses to filter the events sent to the HP Operations agent. Each filter entry can be a valid numeric OID (for example, .1.3.6.1.6.3.1.1.5.4.1.3.6.1.4.1.9) or OID prefix (for example, .1.3.6.1.6.3.1.1.5.*). Select one of the following options: • **None** HP NNMi sends all events to the HP Operations agent. This is the default configuration. • **Include** HP NNMi sends only the specific events that match the OIDs identified in the filter. • **Exclude** HP NNMi sends all events except for the specific events that match the OIDs identified in the filter. Specify the incident filter: • To add a filter entry, enter the text in the lower text box, and then click **Add**. • To delete a filter entry, select that entry from the list in the upper box, and then click **Remove**. For more information, see *Event Forwarding Filter* in the *NNMi Deployment Reference*.

HP Operations Agent Destination Status Information

Table 3 lists the read-only status information for the HP Operations agent. This information is useful for verifying that the integration is working correctly.

Table 3 HP Operations Agent Destination Status Information

Field	Description
Trap Destination IP Address	The HP Operations agent destination host name resolves to this IP address. This value is unique to this HP Operations agent destination.
Uptime (seconds)	The time (in seconds) since the northbound component was last started. The traps that HP NNMi sends to the HP Operations agent include this value in the sysUptime field (1.3.6.1.2.1.1.3.0). This value is the same for all integrations that use the NNMi northbound interface. To see the latest value, either refresh or close and re-open the form.
NNMi URL	The URL for connecting to the NNMi console. The traps that HP NNMi sends to the HP Operations agent include this value in the NmsUrl varbind (1.3.6.1.4.1.11.2.17.19.2.2.2). This value is unique to this northbound destination.

HP NNMi—HPOM Integration (Web Services Implementation)

The agent implementation of the HP NNMi—HPOM integration is the preferred solution for integrating HPOM with HP NNMi.

If the agent and the web services implementations of the HP NNMi—HPOM integration both forward messages to the same HPOM management server, you might not see all messages from both implementations in the HPOM active messages browser. For this reason, HP does not support running both implementations of the HP NNMi—HPOM integration from one NNMi management server to the same HPOM management server concurrently.

This section contains the following topics:

- About the HP NNMi—HPOM Integration (Web Services Implementation) on page 26
- Enabling the HP NNMi—HPOM Integration (Web Services Implementation) on page 28
- Using the HP NNMi—HPOM Integration (Web Services Implementation) on page 32
- Changing the HP NNMi—HPOM Integration Configuration (Web Services Implementation) on page 33
- Disabling the HP NNMi—HPOM Integration (Web Services Implementation) on page 34
- Troubleshooting the HP NNMi—HPOM Integration (Web Services Implementation) on page 34
- HP NNMi—HPOM Web Services Integration Configuration Form Reference on page 38

About the HP NNMi—HPOM Integration (Web Services Implementation)

The web services implementation of the HP NNMi—HPOM integration forwards NNMi incidents to the HPOM active messages browser. The integration synchronizes incidents between HP NNMi and HPOM. It also provides for accessing the NNMi console from within HPOM.

The HP NNMi—HPOM integration supports a “many-to-many” arrangement. Each NNMi management server can forward incidents to multiple HPOM management servers. Likewise, each HPOM management server can receive incidents from multiple NNMi management servers. The integration interprets the unique identifier of an incident to determine the source NNMi management server.

The HP NNMi—HPOM integration consists of the following components:

- **HP NNMi—HPOM Integration Module**

  The HP NNMi—HPOM integration module forwards incidents from HP NNMi to HPOM. It is installed and configured on the NNMi management server.

- **HP Operations Manager Incident Web Service**

  HPOM uses the HP Operations Manager Incident Web Service (IWS) to receive the incidents that are forwarded from HP NNMi.

- **HPOM applications for contextual access of the NNMi console**

  HPOM provides applications for accessing forms, views, and tools in the NNMi console. For example, you can open an NNMi incident directly from the HPOM active messages browser. The specific application determines the context the NNMi console opens to. You need to configure the applications before you can use them.

Value

The HP NNMi—HPOM integration provides event consolidation in the HPOM active messages browser for the network management, system management, and application management domains, so that HPOM users can detect and investigate potential network problems.

The primary features of the integration are as follows:

- Automatic incident forwarding from HP NNMi to HPOM.
  - Forwarded incidents appear in the HPOM active messages browser.
  - You can create filters that limit the incidents HP NNMi forwards.
- Synchronization of Incident updates between HP NNMi and HPOM as described in the following table.

Trigger	Result
In HPOM, the message is acknowledged.	In HP NNMi, the corresponding incident's lifecycle state is set to Closed.
In HPOM, the message is unacknowledged.	In HP NNMi, the corresponding incident's lifecycle state is set to Registered.
In HP NNMi, the incident's lifecycle state is set to Closed.	In HPOM, the corresponding message is acknowledged.
In HP NNMi, the incident's lifecycle state is changed from Closed to any other state.	In HPOM, the corresponding message is unacknowledged.

- Access to the NNMi console from HPOM.
  - HPOM users can open the NNMi **Incident** form in the context of a selected message.
  - HPOM users can launch an NNMi view (for example, the Layer 2 Neighbor view) in the context of a selected message and node.
  - HPOM users can launch an NNMi tool (for example, status poll) in the context of a selected message and node.
  - When HPOM is consolidating NNMi incidents from multiple NNMi management servers, the integration interprets the unique identifier of each incident to access the correct NNMi management server.

Integrated Products

The information in this section applies to the following products:

- HPOM for Windows
- HPOM for Linux

For the list of supported versions, see the *NNMi System and Device Support Matrix*.

- NNMi 10.10

HP NNMi and HPOM must be installed on separate computers. The NNMi management server and the HPOM management server can be of the same or different operating systems.

For the most recent information about supported hardware platforms and operating systems, see the support matrices for both products.

Documentation

This chapter describes how to configure HP NNMi to communicate with HPOM.

The HPOM documentation describes how to configure HPOM to communicate with HP NNMi. It also describes how to use the HP NNMi—HPOM integration.

- For HPOM for Windows, see the information for the HP NNMi Adapter in the HPOM help.
- HPOM for Linux version 9.xx, see the *Integrating NNMi into HPOM* section in the *HP Operations Manager for UNIX and Linux Administrator's Reference*.

Enabling the HP NNMi—HPOM Integration (Web Services Implementation)

This section describes the procedure for enabling the HP NNMi—HPOM integration. For each NNMi management server and each HPOM management server that you want to include in the integration, complete the appropriate steps in the procedure for the version of HPOM that you are using.

HPOM for Windows

1. On the NNMi management server, configure NNMi incident forwarding to HPOM:
   a. In the NNMi console, open the **HP NNMi—HPOM Integration Selection** form (**Integration Module Configuration > HPOM**).
   b. Click **web services implementation**.
   c. On the **HP NNMi—HPOMWeb Services Integration Configuration** form, select the **Enable Integration** check box to make the remaining fields on the form available.
   d. Enter the information for connecting to the NNMi management server.

The integration requires an HTTP connection to the NNMi console. Leave the **NNMi SSL Enabled** check box cleared.

For information about these fields, see NNMi Management Server Connection on page 38.

e Enter the information for connecting to the HPOM management server.

For information about these fields, see HPOM Management Server Connection on page 39.

f Enter values for the following fields:

- **Forward Only**
- **Holding period (minutes)**
- **Incident Filter**

For information about these fields, see Integration Behavior on page 40.

g If you want HP NNMi to forward incidents to multiple HPOM management servers, click **Add another HPOM server**, and then enter the information for the next HPOM management server in the HPOM fields.

The information for the first server appears in the **Additional HPOM Servers** list.

h Click **Submit** at the bottom of the form.

A new window opens, showing a status message. If the message indicates a problem with connecting to the HPOM management server, re-open the **HP NNMi—HPOM Web Services Integration Configuration** form (or press **ALT+LEFT ARROW** in the message window), and then adjust the values for connecting to the HPOM management server as suggested by the text of the error message.

2 In HPOM, configure the NNMi adapter for connecting to the NNMi management server as described in *Configure the NNMi Management Server Name and Port* of the HPOM help.

3 In HPOM, add a managed node for each NNMi node that will be named as a source node in the NNMi incidents that are forwarded to this HPOM management server. Also add a managed node for each NNMi management server that will forward incidents to this HPOM management server.

Alternatively, you can create one external node to catch all forwarded NNMi incidents. For initial testing, set the node filter to <*>.<*>.<*>.<*> (for an IP filter) or <*> (for a name filter). After you validate the integration, restrict the external node filter to match your network.

For more information, see *Configuring NNMi Management Server Nodes* in the HPOM help.

If you do not set up an HPOM managed node for an NNMi incident source node, the HPOM management server discards all incidents regarding that node.

4 *Optional*. In HPOM, add the custom message attributes for NNMi incidents to the active messages browser:

a In the browser, right-click any column heading, and then click **Options**.

b In the **Enter Custom Message Attributes** list, select an attribute, and then click **Add**.

— The custom message attributes for NNMi incidents begin with the text `nnm`.

— For the web services implementation of the HP NNMi—HPOM integration, the most interesting attributes for NNMi incidents are as follows:

```
nnm.assignedTo
nnm.category
nnm.emittingNode.name
nnm.source.name
```

— To change the order the custom message attributes appear in the messages browser, drag a column heading to the new location.

5 *Optional*. In HPOM, enable contextual launching of the NNMi views by associating the NNMi source nodes with the HP NNMi Web Tools group.

For more information, see *Enable tools in the By Node tool group* in the HPOM help.

HPOM for Linux

1 On the NNMi management server, configure NNMi incident forwarding to HPOM:

a In the NNMi console, open the **HP NNMi—HPOM Integration Selection** form (**Integration Module Configuration > HPOM**).

b Click **web services implementation**.

c On the **HP NNMi—HPOM Web Services Integration Configuration** form, select the **Enable Integration** check box to make the remaining fields on the form available.

d Enter the information for connecting to the NNMi management server.

The integration requires an HTTP connection to the NNMi console. Leave the **NNMi SSL Enabled** check box cleared.

For information about these fields, see NNMi Management Server Connection on page 38.

e Enter the information for connecting to the HPOM management server.

For information about these fields, see HPOM Management Server Connection on page 39.

f Enter values for the following fields:

— **Forward Only**

— **Holding period (minutes)**

— **Incident Filter**

For information about these fields, see Integration Behavior on page 40.

g If you want HP NNMi to forward incidents to multiple HPOM management servers, click **Add another HPOM server**, and then enter the information for the next HPOM management server in the HPOM fields.

The information for the first server appears in the **Additional HPOM Servers** list.

h Click **Submit** at the bottom of the form.

A new window opens, showing a status message. If the message indicates a problem with connecting to the HPOM server, re-open the **HP NNMi—HPOM Web Services Integration Configuration** form (or press **ALT+LEFT ARROW** in the message window), and then adjust the values for connecting to the HPOM management server as suggested by the text of the error message.

i Click **Submit** at the bottom of the form.

2 In HPOM, add a managed node for each NNMi node that will be named as a source node in the NNMi incidents that are forwarded to this HPOM management server. Also add a managed node for each NNMi management server that will forward incidents to this HPOM management server.

Alternatively, you can create one external node to catch all forwarded NNMi incidents. For initial testing, set the node filter to <*>.<*>.<*>.<*> (for an IP filter) or <*> (for a name filter). After you validate the integration, restrict the external node filter to match your network.

For more information, see the *HP Operations Manager for UNIX and Linux Administrator's Reference*.

If you do not set up an HPOM managed node for an NNMi incident source node, the HPOM management server discards all incidents regarding that node.

3 *Optional*. In HPOM, add the custom message attributes for NNMi incidents to the active messages browser:

a In the Java Interface Message Browser, right-click any column heading, and then click **Customize Message Browser Columns**.

b On the **Custom** tab, select from the **Available Custom Message Attributes**, and then click **OK**.

— The custom message attributes for NNMi incidents begin with the text nnm.

— For the web services implementation of the HP NNMi—HPOM integration, the most interesting attributes for NNMi incidents are as follows:

```
nnm.assignedTo
nnm.category
nnm.emittingNode.name
nnm.source.name
```

— To change the order the custom message attributes appear in the messages browser, drag a column heading to the new location.

4 *Optional*. On the HPOM management server, prepare the HPOM applications for accessing the NNMi console.

a *Required*. Install the basic set of HP NNMi applications.

HPOM version 9.00 or higher automatically installs the basic HP NNMi applications.

b *Optional*. Install additional HP NNMi applications.

For information, see the section on installing and configuring the HP NNMi—HPOM integration in the *HP Operations Manager for UNIX and Linux Administrator's Reference* (version 9.xx).

Using the HP NNMi—HPOM Integration (Web Services Implementation)

Usage Example

Figure 2 shows an interface down incident in the NNMi console. The information in the **Source Object** and **Message** columns together describe the situation.

Figure 2 Interface Down Incident in NNMi Console

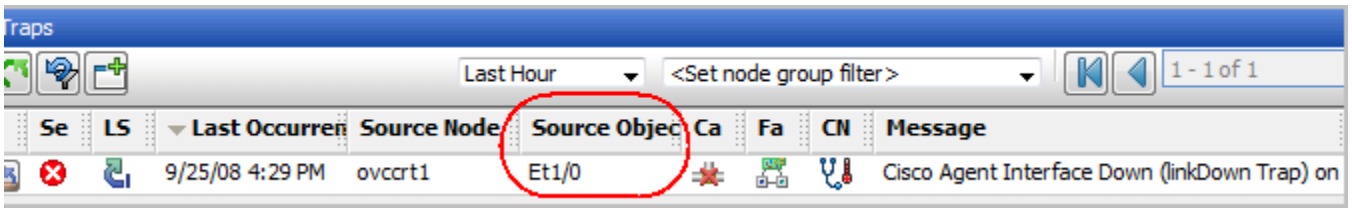


Figure 3 shows the NNMi incident as received by HPOM for Windows. Figure 4 shows the NNMi incident as received by HPOM for Linux. The **nnm.source.name** and **Text** columns are equivalent to the **Source Object** and **Message** columns in the NNMi console.

You must enable the display of the **nnm.source.name** custom message attribute column as described in step 4 on page 30 (for HPOM for Windows) and in step 3 on page 31 (for HPOM for Linux).

Figure 3 Forwarded Incident in HPOM for Windows

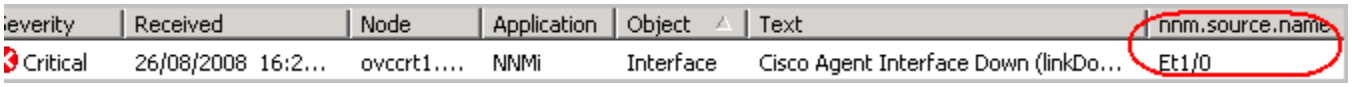


Figure 4 Forwarded Incident in HPOM for Linux

A Normal Situation: Unknown MSI Condition

The HPOM server receives forwarded NNMi incidents through MSI (not a regular trap policy). In the HPOM message browser, the format of the message source is **MSI** followed by the name of the MSI interface. The condition name corresponds to the `condition_id` field in the message, which is unset because there is no associated policy.

- *HPOM for Windows*: The policy type is empty.
- *HPOM for Linux*: The message source is of the format:
  MSI: <*MSI_Interface*>: Unknown Condition.

More Information

For detailed information about using the HP NNMi—HPOM integration, see the HPOM documentation.

- *HPOM for Windows*: See the topics about the HP NNMi adapter in the HPOM help.
- *HPOM for Linux*: See the section on installing and configuring the HP NNMi—HPOM integration in the *HP Operations Manager for UNIX and Linux Administrator's Reference* (version 9.xx).

In the HPOM messages browser, the details for a forwarded NNMi incident are available as custom message attributes.

Changing the HP NNMi—HPOM Integration Configuration (Web Services Implementation)

1. In the NNMi console, open the **HP NNMi—HPOM Integration Selection** form (**Integration Module Configuration > HPOM**).
2. Click **web services implementation**.
3. Modify the values as appropriate.
   - If you know the syntax of the entries in the Incident Filter and Additional HPOM Servers lists, you can modify the entries directly.
   - If you do not know the syntax for a list item, delete that entry and then re-enter it.

   For information about the fields on this form, see HP NNMi—HPOM Web Services Integration Configuration Form Reference on page 38.
4. Verify that the **Enable Integration** check box at the top of the form is selected, and then click **Submit** at the bottom of the form.

   The changes take effect immediately.

Disabling the HP NNMi—HPOM Integration (Web Services Implementation)

For All HPOM Management Servers

To discontinue the forwarding of NNMi incidents to all HPOM management servers, follow these steps:

1. In the NNMi console, open the **HP NNMi—HPOM Integration Selection** form (**Integration Module Configuration > HPOM**).
2. Click **web services implementation**.
3. Clear the **Enable Integration** check box at the top of the form, and then click **Submit** at the bottom of the form.

   The changes take effect immediately.

If necessary, repeat this process for all NNMi management servers.

For One HPOM Management Server

To discontinue the forwarding of NNMi incidents to only one of the HPOM management servers, follow these steps:

1. In the NNMi console, open the **HP NNMi—HPOM Integration Selection** form (**Integration Module Configuration > HPOM**).
2. Click **web services implementation**.
3. In the **Additional HPOM Servers** list, edit the text to delete the entry (or entries) for the HPOM management server to disconnect from the integration.

   Clicking **Clear** removes all HPOM servers from the list.

4. Click **Submit** at the bottom of the form.

   The changes take effect immediately.

Troubleshooting the HP NNMi—HPOM Integration (Web Services Implementation)

HPOM Does Not Receive Any Forwarded Incidents

If the integration has worked successfully in the past, it is possible that some aspect of the configuration, for example, the HP NNMi or HPOM user password, has changed recently. You might want to update the integration configuration as described in Changing the HP NNMi—HPOM Integration Configuration (Web Services Implementation) on page 33, before walking through this entire procedure.

1. In the NNMi console, open the **HP NNMi—HPOM Integration Selection** form (**Integration Module Configuration > HPOM**).
2. Click **web services implementation**.

   For information about the fields on this form, see HP NNMi—HPOM Web Services Integration Configuration Form Reference on page 38.

3 Check the status of the integration, in the **HP NNMi—HPOM Web Services Integration Configuration** form, by clicking **Submit** at the bottom of the form (without making any configuration changes).

A new window opens, showing a status message.

- If the message indicates success, the problem is most likely that HPOM is not configured to accept incidents from the devices that HP NNMi manages. HPOM ignores any forwarded incident from an NNMi source node that is not configured as a managed node in HPOM, as described in step 3 on page 29 (for HPOM for Windows) and in step 2 on page 31 (for HPOM for Linux). Verify the HPOM configuration, and then test the integration as described in step 10 of this procedure.
- If the message indicates a problem with connecting to the HPOM server, HP NNMi and HPOM are not able to communicate. Continue with step 4 of this procedure.

4 Verify the accuracy and access level of the HPOM credentials by logging in to the HPOM console and opening the HPOM active messages browser:

- *HPOM for Windows*: Log on to the computer as the **HPOM User** from the **HP NNMi–HPOM Web Services Integration Configuration** form, and then start the HPOM console.

  The user name is in the format <*Windows_domain*>\<*username*>.
- *HPOM for Linux*: Log on to the HPOM console with the credentials for the **HPOM User** from the **HP NNMi–HPOM Web Services Integration Configuration** form.

If you cannot log on to the HPOM console, contact the HPOM administrator to verify your logon credentials.

5 Verify that the connection to the HPOM management server is configured correctly:

a In a web browser, enter the following URL:

<*protocol*>://<*omserver*>:<*port*>/opr-webservice//Incident.svc?wsdl

Where the variables are related to values on the **HP NNMi—HPOM Web Services Integration Configuration** form as follows:

— If the **HPOM SSL Enabled** check box is selected, <*protocol*> is `https`.

— If the **HPOM SSL Enabled** check box is cleared, <*protocol*> is `http`.

— <*omserver*> is the value of **HPOM Host**.

— <*port*> is the value of **HPOM Port**.

b When prompted, enter the credentials for the **HPOM User** from the **HP NNMi—HPOM Web Services Integration Configuration** form.

The resulting web page is an XML file that describes the IWS.

— If the XML file appears, the connection to the HPOM management server is configured correctly. Continue with step 6.

— If you see an error message, the connection to the HPOM management server is not configured correctly. Contact the HPOM administrator to verify the information you are using to connect to the HPOM web service. Continue to troubleshoot the connection to HPOM until you see the XML file.

6 Verify that the connection to HP NNMi is configured correctly:

If you used the information described in this step to connect to the NNMi console in step 1 of this procedure, you do not need to reconnect to the NNMi console. Continue with step 7.

a In a web browser, enter the following URL:

<protocol>://<NNMiserver>:<port>/nnm/

Where the variables are related to values on the **HP NNMi—HPOM Web Services Integration Configuration** form as follows:

— If the **NNMi SSL Enabled** check box is selected, <*protocol*> is `https`.

If the **NNMi SSL Enabled** check box is selected, verify that the KeyManager process is running by entering the following command:

```
ovstatus -v ovjboss
```

— If the **NNMi SSL Enabled** check box is cleared, <*protocol*> is `http`.

— <*NNMiserver*> is the value of **NNMi Host**.

Use the fully-qualified domain name or the IP address of the NNMi management server. Do not use `localhost`.

— <*port*> is the value of **NNMi Port**.

To verify the NNMi ports for HTTP or HTTPS, check the `nms-local.properties` file, as described in Table 4 on page 38.

b When prompted, enter the credentials for an NNMi user with the Administrator role.

You should see the NNMi console. If the NNMi console does not appear, contact the NNMi administrator to verify the information you are using to connect to HP NNMi. Continue to troubleshoot the connection to HP NNMi until the NNMi console appears.

You cannot log on to the NNMi console as a user with the Web Service Client role.

c Verify the values of the **NNMi User** and **NNMi Password**.

— If the **NNMi User** listed on the **HP NNMi—HPOM Web Services Integration Configuration** form has the Administrator role and you were able to connect to the NNMi console with this user name, then re-enter the corresponding password on the **HP NNMi—HPOM Web Services Integration Configuration** form.

— If the **NNMi User** listed on the **HP NNMi—HPOM Web Services Integration Configuration** form has the Web Service Client role, contact the NNMi administrator to verify the values of **NNMi User** and **NNMi Password**.

Passwords are hidden in the NNMi console. If you are not sure what password to specify for an NNMi user name, ask the NNMi administrator to reset the password.

7 Update the **HP NNMi—HPOM Web Services Integration Configuration** form with the values that you used for successful connections in step 5 and step 6 of this procedure.

For more information, see HP NNMi—HPOM Web Services Integration Configuration Form Reference on page 38.

8 Click **Submit** at the bottom of the form.

9 If the status message still indicates a problem with connecting to the HPOM server, do the following:

   a Clear the web browser cache.

   b Clear all saved form or password data from the web browser.

   c Close the web browser window completely, and then re-open it.

   d Repeat step 7 and step 8 of this procedure.

10 Test the configuration by generating an incident on the NNMi management server and determining whether it reaches the HPOM management server.

   Alternatively, change the lifecycle state of an NNMi management event to OPEN. (If the lifecycle state is currently OPEN, change the lifecycle state to CLOSED and then back to OPEN.)

HPOM Does Not Receive Some Forwarded Incidents

Verify the HPOM nodes and the incident filter.

The HPOM management server must be configured to accept incidents from the devices that HP NNMi manages. HPOM ignores any forwarded incident from an NNMi source node that is not configured as a managed node in HPOM, as described in step 3 on page 29 (for HPOM for Windows) and in step 2 on page 31 (for HPOM for Linux).

If the NNMi source node is configured as a managed node in HPOM, verify the incident filter configuration on the **HP NNMi—HPOM Web Services Integration Configuration** form. Then test the filter by generating an incident on the NNMi management server and determine whether it reaches the HPOM management server.

NNMi Incident Information Is Not Available in the HPOM Messages Browser

The important information from NNMi incidents is passed to HPOM as custom message attributes. Add one or more custom messages attributes for NNMi incidents as described in step 4 on page 30 (for HPOM for Windows) and in step 3 on page 31 (for HPOM for Linux).

HP NNMi and HPOM Are Not Synchronized

If either of the management servers becomes unreachable, the incidents in the NNMi incident views and the HPOM active messages browser might become mismatched. The HP NNMi—HPOM integration can re-synchronize the incidents as described here.

- If an HPOM management server becomes unavailable to the HP NNMi—HPOM integration module, the integration module periodically checks for the availability of that HPOM management server and resumes incident forwarding when a connection can be re-established. When the connection to the HPOM management server is available, the integration module forwards any incidents that might have been missed while the HPOM management server was down.

- If the NNMi management server is unavailable when an HPOM user acknowledges or unacknowledges a forwarded incident, HP NNMi does not receive the change of state. HP NNMi and HPOM might show different states for this incident.

The Integration Does Not Work Through a Firewall

Ensure that the NNMi management server can directly address the HPOM IWS by host and port.

HP NNMi—HPOM Web Services Integration Configuration Form Reference

The **HP NNMi—HPOM Web Services Integration Configuration** form contains the parameters for configuring communications between HP NNMi and HPOM. This form is available from the **Integration Module Configuration** workspace. (On the **HP NNMi—HPOM Integration Selection** form, click **web services implementation**.)

Only NNMi users with the Administrator role can access the **HP NNMi—HPOM Web Services Integration Configuration** form.

The **HP NNMi—HPOM Web Services Integration Configuration** form collects information for the following general areas:

- NNMi Management Server Connection on page 38
- HPOM Management Server Connection on page 39
- Integration Behavior on page 40
- Incident Filters on page 41

To apply changes to the integration configuration, update the values on the **HP NNMi—HPOM Web Services Integration Configuration** form, and then click **Submit**.

NNMi Management Server Connection

Table 4 lists the parameters for connecting to the NNMi management server. This is the same information that you use to open the NNMi console. You can determine many of these values by examining the URL that invokes an NNMi console session. Coordinate with the NNMi administrator to determine the appropriate values for this section of the configuration form.

Table 4 NNMi Management Server Connection Information

Field	Description
NNMi SSL Enabled	The connection protocol specification for connecting to the NNMi console. The integration requires an HTTP connection to the NNMi console. Leave the **NNMi SSL Enabled** check box cleared.
NNMi Host	The fully-qualified domain name of the NNMi management server. This field is pre-filled with the hostname that was used to access the NNMi console. Verify that this value is the name returned by the **`nnmofficialfqdn.ovpl -t`** command run on the NNMi management server.

Table 4 NNMi Management Server Connection Information (cont'd)

Field	Description
NNMi Port	The port for connecting to the NNMi console. This field is pre-filled with the port that the jboss application server uses for communicating with the NNMi console, as specified in the following file: • *Windows*: `%NnmDataDir%\conf\nnm\props\nms-local.properties` • *Linux*: `$NnmDataDir/conf/nnm/props/nms-local.properties` Use the value of `nmsas.server.port.web.http`, which is `80` or `8004` by default (depending on the presence of another web server when HP NNMi was installed).
NNMi User	The user name for connecting to the NNMi web services. This user must have the NNMi Administrator or Web Service Client role. **NOTE:** The password for this user name is passed in clear text. Best practice: Create and use an `NNMiIntegration` user account with the Web Service Client role.
NNMi Password	The password for the specified NNMi user.

HPOM Management Server Connection

Table 5 lists the parameters for connecting to the web service on the HPOM management server. Coordinate with the HPOM administrator to determine the appropriate values for this section of the configuration.

Table 5 HPOM Management Server Connection Information

HPOM Server Parameter	Description
HPOM SSL Enabled	The connection protocol specification. • If HPOM is configured to use HTTPS, select the **HPOM SSL Enabled** check box. This is the default configuration. • If HPOM is configured to use HTTP, clear the **HPOM SSL Enabled** check box.
HPOM Host	The fully-qualified domain name of the HPOM management server. Verify that this name is resolvable from the NNMi management server by using the `nslookup` or `ping` command. If DNS is questionable, use the IP address of the HPOM management server. If possible, use the `traceroute` command to verify the network path from the NNMi management server to the HPOM management server.
HPOM Port	The port for connecting to the HPOM web service. To determine the port number to specify, do the following on the HPOM management server: • *HPOM for Windows*: Examine the port settings in the IIS Manager, which is available from the **Start** menu, for example, **Start > Administrative Tools > Internet Information Services (IIS) Manager**. • HPOM for *Linux*: Run the following command: **`ovtomcatbctl -getconf`** This field is pre-filled with the value 443, which is the default port for SSL connections to HPOM for Windows. For SSL connections to HPOM for Linux, the default port is 8443 or 8444.

Table 5 HPOM Management Server Connection Information (cont'd)

HPOM Server Parameter	Description
HPOM User	A valid HPOM user account name with the HPOM Administrator role. This user must be permitted to view the HPOM active messages browser and the HPOM incident web service WSDL. *Windows only*: On the Windows operating system, HPOM works through Microsoft Internet Information Services (IIS) to authenticate user credentials. Specify a Windows user in the format `<Windows_domain>\<username>`. Best Practice: • *HPOM for Windows*: Specify a user who is a member of the `HP-OVE-ADMINS` user group. (Verify group membership in the Local Users and Groups area of the Microsoft Management Console, which is available from **Control Panel > Administrative Tools > Computer Management**.) • *HPOM for Linux*: Use the `opc_adm` user account.
HPOM Password	The password for the specified HPOM user.

Integration Behavior

Table 6 lists the parameters that describe the integration behavior. Coordinate with the NNMi administrator to determine the appropriate values for this section of the configuration.

Table 6 Integration Behavior Information

Field	Description
Forward Only	The behavior specification for the HP NNMi—HPOM integration module. By default, the integration module forwards incidents to and receives incident acknowledgements from the HPOM management servers identified on the **HP NNMi—HPOM Web Services Integration Configuration** form. You can disable the receipt of incident acknowledgements. • For one-way communication (forward incidents to HPOM but ignore incident acknowledgements from HPOM), select the **Forward Only** check box. • For two-way communication, leave the **Forward Only** check box cleared. This is the default behavior.
Holding period (minutes)	The number of minutes to wait before forwarding the configured incidents to HPOM. If an incident is closed during this time (for example, an SNMPLinkUp incident cancels an SNMPLinkDown incident), HPOM never receives that incident. If you want HP NNMi to forward incidents immediately, enter the value `0`. The default value is 5 minutes.
Incident Filter	A filter based on NNMi incident attributes that limits incident forwarding. The default filter (`nature=ROOTCAUSE origin=MANAGEMENTSOFTWARE`) specifies all root cause incidents that are generated by HP NNMi. You can modify this filter to change the incidents forwarded to HPOM. **NOTE:** All text (attribute names and values) in the **Incident Filter** field is case-sensitive. For more information, see Incident Filters.

Incident Filters

The incident filter is the combination of all entries in the **Incident Filter** list. Filter entries with the same attribute value expand the filter (logical OR). Filter entries with different attribute values restrict the filter (logical AND). All filter entries work together; you *cannot* create a filter of the format `(a AND b) OR c`. For example filter entries, see Example Incident Filters on page 42.

To create the incident filter, follow these steps:

1. In the NNMi console, open the **HP NNMi—HPOM Integration Selection** form (**Integration Module Configuration > HPOM**).
2. Click **web services implementation**.
3. To delete a filter entry, in the **Incident Filter** list, edit the text to delete the entry (or entries).

   Clicking **Clear** removes all filter entries from the list.

4. To add an incident filter entry:
   a. Select an attribute from the **name** list. For the supported attributes, see the table in step c.
   b. Select the comparison operation to perform. Supported operators are:
      - =
      - !=
      - <
      - <=
      - >
      - >=
   c. Enter a comparison value. The following table lists the supported attributes and the acceptable values for each attribute.

Attribute	Possible Values
name	Examine the incident configuration in the NNMi console to determine the available incident names.
nature	• ROOTCAUSE • SECONDARYROOTCAUSE • SYMPTOM • SERVICEIMPACT • STREAMCORRELATION • INFO • NONE

Attribute	Possible Values
origin	• MANAGEMENTSOFTWARE • MANUALLYCREATED • SYMPTOM • REMOTELYGENERATED • SNMPTRAP • SYSLOG • OTHER
family	• com.hp.nms.incident.family.Address • com.hp.nms.incident.family.Interface • com.hp.nms.incident.family.Node • com.hp.nms.incident.family.OSPF • com.hp.nms.incident.family.HSRP • com.hp.nms.incident.family.AggregatePort • com.hp.nms.incident.family.Board • com.hp.nms.incident.family.Connection • com.hp.nms.incident.family.Correlation
category	• com.hp.nms.incident.category.Fault • com.hp.nms.incident.category.Status • com.hp.nms.incident.category.Config • com.hp.nms.incident.category.Accounting • com.hp.nms.incident.category.Performance • com.hp.nms.incident.category.Security • com.hp.nms.incident.category.Alert
severity	• NORMAL • WARNING • MINOR • MAJOR • CRITICAL

5 Repeat step 4 until all filter entries are defined.

6 Click **Submit** at the bottom of the form.

Example Incident Filters

Forward NodeDown Incidents from NNMi to HPOM

```
name=NodeDown
```

Forward NodeDown and InterfaceDown Incidents from NNMi to HPOM

```
name=NodeDown
name=InterfaceDown
```

Forward CiscoLinkDown Incidents from NNMi to HPOM

```
name=CiscoLinkDown
```

Forward NNMi Incidents with Severity of at least MINOR and nature of ROOTCAUSE or SERVICEIMPACT

```
severity=MINOR
severity=MAJOR
severity=CRITICAL
nature=ROOTCAUSE
nature=SERVICEIMPACT
```

Setting a Filter not to Filter Anything

HP does not recommend configuring a blank filter to configure the integration for no filtering. Configuring a blank filter configures HP NNMi to send *ALL* events and traps using the web-service. Use the NNMi Northbound Interface to achieve that.

If you find you must configure NNMi to NOT filter any NNMi incidents, configure the filter as follows:

```
name!=nonsense
```

Incident Filter Limitations

Because all filter entries combine to create one incident filter for the NNMi management server, the following limitations apply:

- The HP NNMi—HPOM integration processes the filtering of HPOM incident field values by treating the values as an alphabetic string. For example, you would normally expect a CRITICAL value to be greater than a MINOR value. However, as MINOR is greater than CRITICAL alphabetically, applying a filter such as `severity>=MINOR` results in only MINOR, NORMAL, and WARNING incidents being sent to the HPOM message browser. To forward incidents based on severity, you must explicitly include each severity to be forwarded using the = (equal) operator.
- The stated severity applies to all incidents. For example, to forward NodeDown incidents with a severity of MINOR or higher and InterfaceDown incidents with a severity of MAJOR, set the filter severity to `>=MINOR` and use HPOM logic to filter out the unwanted InterfaceDown messages.
- The incident filter does not provide a mechanism for limiting incident forwarding to specific source nodes. The HPOM managed node (or external node) configuration limits the forwarded incidents that HPOM accepts.

We appreciate your feedback!

If an email client is configured on this system, by default an email window opens when you click *here*.

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Product name and version: NNMi 10.10

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