HP Operations Orchestration Software

Software Version: 7.51

HP Network Node Manager (i series) Integration

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Documentation enhancements are a continual project at Hewlett-Packard Software. You can obtain or update the HP OO documentation set and tutorials at any time from the HP Software Product Manuals web site. You will need an HP Passport to log in to the web site.

To obtain HP OO documentation and tutorials

1. Go to the HP Software Product Manuals web site (*http://support.openview.hp.com/selfsolve/manuals*).
2. Log in with your HP Passport user name and password.

   OR

   If you do not have an HP Passport, click **New users – please register** to create an HP Passport, then return to this page and log in.

   If you need help getting an HP Passport, see your HP OO contact.
3. In the **Product** list box, scroll down to and select **Operations Orchestration**.
4. In the **Product Version** list, click the version of the manuals that you're interested in.
5. In the **Operating System** list, click the relevant operating system.
6. Click the **Search** button.
7. In the **Results** list, click the link for the file that you want.

Where to find Help, tutorials, and more

The HP Operations Orchestration software (HP OO) documentation set is made up of the following:

- Help for Central

  Central Help provides information to the following:

  - Finding and running flows
  - For HP OO administrators, configuring the functioning of HP OO
  - Generating and viewing the information available from the outcomes of flow runs

  The Central Help system is also available as a PDF document in the HP OO home directory, in the \Central\docs subdirectory.

- Help for Studio

  Studio Help instructs flow authors at varying levels of programming ability.

  The Studio Help system is also available as a PDF document in the HP OO home directory, in the \Studio\docs subdirectory.

- Animated tutorials for Central and Studio

  HP OO tutorials can each be completed in less than half an hour and provide basic instruction on the following:

  - In Central, finding, running, and viewing information from flows
  - In Studio, modifying flows

  The tutorials are available in the Central and Studio subdirectories of the HP OO home directory.

- Self-documentation for operations and flows in the Accelerator Packs and ITIL folders

  Self-documentation is available in the descriptions of the operations and steps that are included in the flows.

Support

For support information, including patches, troubleshooting aids, support contract management, product manuals and more, visit the following site: *http://www.hp.com/go/bsaessentialsnetwork*

This is the **BSA Essentials Network** Web page. To sign in:

1. Click **Login Now**.
2. On the **HP Passport sign-in** page, enter your HP Passport user ID and password and then click **Sign-in**.
3. If you do not already have an HP Passport account, do the following:
   a. On the **HP Passport sign-in** page, click **New user registration**.
   b. On the **HP Passport new user registration** page, enter the required information and then click **Continue**.
   c. On the confirmation page that opens, check your information and then click **Register**.
   d. On the **Terms of Service** page, read the Terms of use and legal restrictions, select the **Agree** button, and then click **Submit**.
4. On the **BSA Essentials Network** page, click **Operations Orchestration Community.**

   The Operations Orchestration Community page contains links to announcements, discussions, downloads, documentation, help, and support.

Note: Contact your OO contact if you have any difficulties with this process.

Table of Contents

Overview

This integration allows an administrator to build HP Operations Orchestration (OO) flows that are integrated into HP Network Node Manager i Series (NNMi), and also to launch OO flows via the NNMi Event Console.
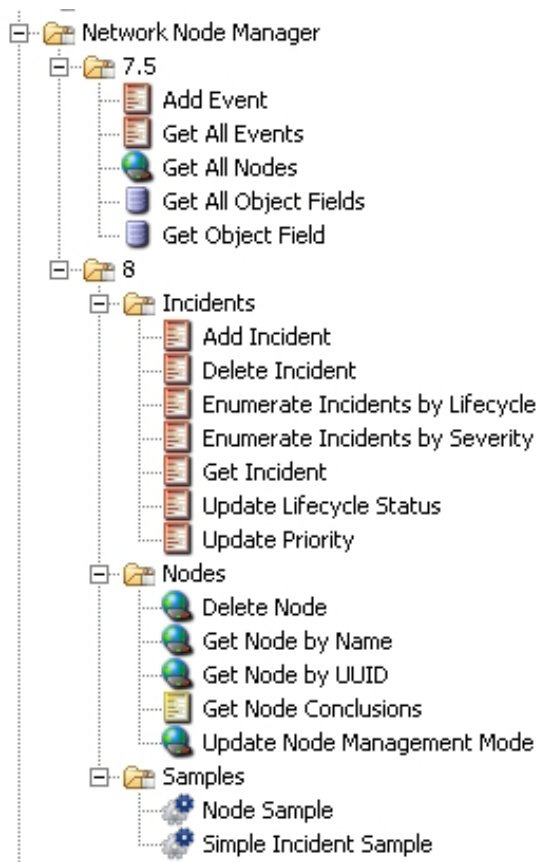
This document will explain how this integration has been implemented and how to launch OO flows from within NNMi. It will also explain the operations that are included for communicating back and forth between OO and NNMi.

Use cases and scenarios

The following are among the possible use cases for which integration of OO with NNMi is well-suited:

1. To launch an OO flow from within the NNMi console.

   This allows administrators to connect specific events to OO flows. This type of integration is a simple Incident Management/Runbook use case, in which the following takes place:

   a. NNMi detects an error and raises an alarm on the console.
   b. Context-sensitive runbook is launched to remediate the fault.
   c. OO automatically acknowledges the event and runs the runbook.
   d. OO remediates the problem.
   e. OO updates and resets the alarm.
2. To create operations that automate the gathering and processing of NNMi node information.

Flows and operations

Network Node Manager
- 7.5
  - Add Event
  - Get All Events
  - Get All Nodes
  - Get All Object Fields
  - Get Object Field
- 8
  - Incidents
    - Add Incident
    - Delete Incident
    - Enumerate Incidents by Lifecycle
    - Enumerate Incidents by Severity
    - Get Incident
    - Update Lifecycle Status
    - Update Priority
  - Nodes
    - Delete Node
    - Get Node by Name
    - Get Node by UUID
    - Get Node Conclusions
    - Update Node Management Mode
  - Samples
    - Node Sample
    - Simple Incident Sample

NNM 7.5 has operations for getting a list of events and for adding events. NNM 7.5 also enables a user to get a list of nodes and to read any information from the NNM Database for a given node.

NNM 8 has a much deeper integration. With the integration's operations, the user can:

- Add, delete, search, and modify NNM incidents.
- Query, delete, and update nodes.

When running the NNM 8 sample flows, you will need to provide the following data to the inputs:

- nnmHost - The host on which you have installed NNM.
- nnmPort - The port on which the NNM Web service is running.
- nnmProtocol - Either HTTP or HTTPS, depending on how NNM is configured.
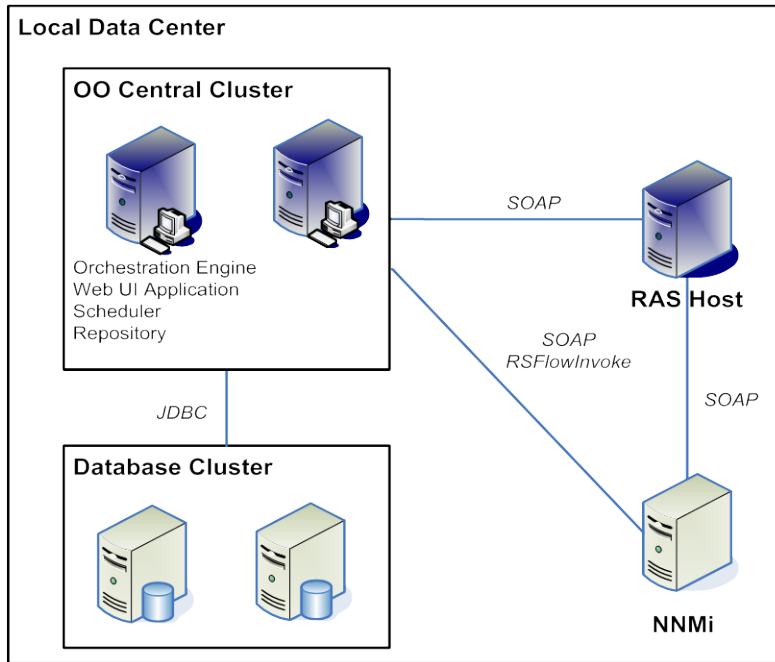- nnmUsername - A username for nnm.
- nnmPassword – The password for nnm.
- name - The name of a node on your network that the sample will take offline briefly.

Versions and components

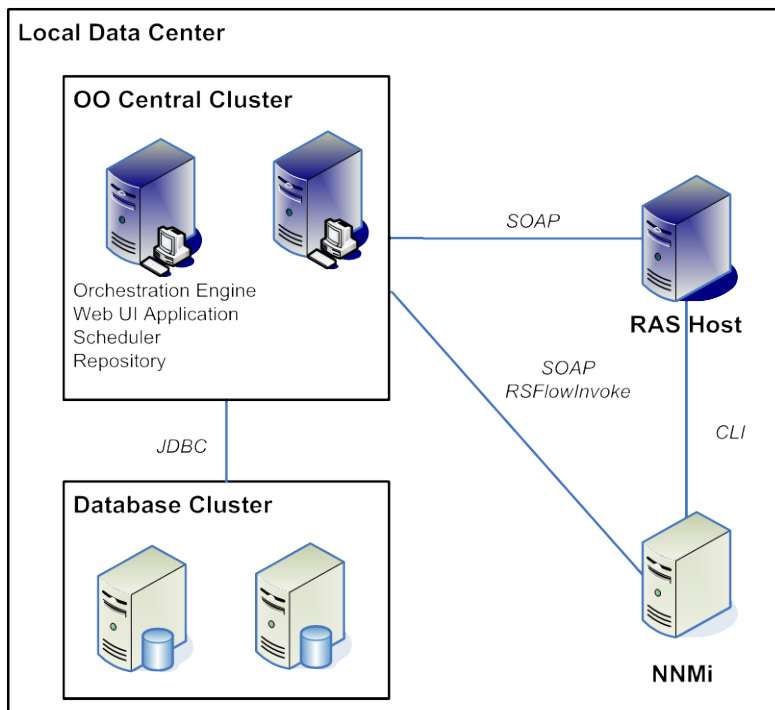| Operations Orchestration Version	NNMi Version
7.51	7.5, 8.x

Architecture

NNMi 8.x

NNMi 7.5

Installation and configuration instructions

For NNM 7.5 you must either install a RAS on your NNM server (Windows), or be able to reach your NNM server by SSH or Telnet (Unix). If integrating to a Unix installation of NNM, you must also update the path to the NNM \bin folder on the steps of your flow. This folder is set correctly for a default Windows installation of NNM.

For NNM 8, you need a RAS that can open up an HTTP or HTTPS command to the port on which the NNM WS-I Web service is running. By default, this is port 8080.

Troubleshooting

General troubleshooting procedures

If this operation is not working, make sure that it can connect to the NNM server, and that you are using valid credentials.

Troubleshooting this operation

There are currently no known frequent issues with these operations.

Errors that the operation returns

Connection refused - The RAS cannot reach the NNM server.

Bad Username or Password - Check your credentials.

Unauthorized -- Ensure that your user has been given access inside NNM.

Customizing the integration

The NNM 7.5 integration uses the following NNM Command Line interfaces:

- ovevent
- ovdumpevents
- ovobjprint

If the operations need to be customized, additional information on these CLIs can be found in the NNM online documentation.

The NNM 8 integration is made through the NNM Web service. This Web service is static and does not change.

Launching flows

You can interact with HP Operations Orchestration (OO) by using the various REST-based services:

- https://ooserver:port/PAS/services/http/list
  Retrieves a list of flows from OO.

- https://ooserver:port/PAS/services/http/execute/<Library Path>
  Executes a flow by name (waits for flow to finish before returning).

- https://ooserver:port/PAS/services/http/execute/<Flow UUID>
  Executes a flow by UUID (waits for flow to finish before returning).

- https://ooserver:port/PAS/services/http/execute_async/<Library Path>
  Executes a flow by name (returns immediately after the flow is launched).

- https://ooserver:port/PAS/services/http/execute_async/<Flow UUID>
  Executes a flow by UUID (returns immediately after the flow is launched).

Integrating Central into the NNM Actions menu

This integration allows a menu item to be added to the HP Network Node Manager (NNM) interface that launches Central interactively.

To add a command that launches Central

3. Open the NNM Web User Interface.
4. Select **Configuration > URL Actions**.
5. Click **New**.
6. Enter a menu label, such as **Launch Network Diagnostic**.
7. Enter a unique key.

   The recommended format is:

   `com.<Company name/Group>.nnm.urlAction.<MenuLabel>)`

   For example:

   `com.hp.pas.nnm.urlAction.LaunchNetworkDiagnostic`

   The key can be up to 80 characters in length.

8. Specify the allowed target types.

   Each type requires the URL that is launched. This should be:

   `https://<HPOOhost>:8443/PAS/app?service=RCLinkService/FlowLinkDispatch&sp=SAUTOMATIC&sp=uuid&sp=l0&host=${name}&uuid=${uuid}`

   Where `<HPOOhost>` is the name of the HP OO server.

9. Replace the UUID with the UUID of the flow that will be launched.

   The arguments `host=${name}` and `uuid=${uuid}` allow information to be passed from NNM to the flow automatically.

The `host=` and `uuid=` portion of these arguments specify the HP OO input that is being supplied.

To test the integration

1. Open an instance of the object to which you associated the menu.
2. Click **Actions**.
3. Click the action name you specified in step #4 of the preceding procedure.

Automated incident integration

This integration allows a flow to be automatically launched when a specific Incident type changes its lifecycle.

To automatically trigger a flow from an event

1. From the **Configuration** menu, select **Incident Configuration**.
2. Click **Management Event Configuration**.
3. Open the event of interest.
4. Click the **Action Configuration** tab.
5. Click **New**.
6. Specify the triggering lifecycle state.

   The **Registered** lifecycle state triggers on new incidents.

7. Specify **Command Type** as **Script** or **Executable**.
8. Specify the command as being a .bat file that runs RSFlowInvoke.

   The command that makes up the .bat file should be of the following form:

   ```
   RSFlowInvoke.exe –u <username> -ep <encrypted password>
   https://<HPOOserver:port>/PAS/services/http/execute/<full library path for flow>
   ```

   To execute the command using a non-encrypted password, the first part of the command would be as follows:

   ```
   RSFlowInvoke.exe –u <username> –p <password>
   ```

9. To pass the UUID of the incident to the command, add either `%1` or `${uuid}`:

   If the command is in a batch file and you have added `${uuid}` in the run field of the NNM UI as described above, add `%1` to the end of the command. `%1` reads the first argument passed to a batch file:

   ```
   RSFlowInvoke.exe –u <username> -ep <encrypted password>
   https://<HPOOserver:port>/PAS/services/http/execute/<full library path for flow>
   %1
   ```

   If you use the command by itself, add `${uuid}` (note that those are curly braces) to the end of the command:

   ```
   RSFlowInvoke.exe –u <username> -ep <encrypted password>
   https://<HPOOserver:port>/PAS/services/http/execute/<full library path for flow>
   ${uuid}
   ```

The .bat file must be located in the C:\program Files\Hp Openview\data\shared\nnm\actions\ folder.

Security

The username/password used in the flow must have full access to NNM.

Tools

JRSFlowInvoke

A command-line tool with which flows can be started from outside the OO Central Web application.