

HP Business Service Management

For the Windows, Linux operating systems

Software Version: 9.20

BSM - Operations Orchestration Integration Guide

Document Release Date: August 2012

Software Release Date: August 2012



Legal Notices

Warranty

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

The information contained herein is subject to change without notice.

Restricted Rights Legend

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

Copyright Notice

© Copyright 2005-2012 Hewlett-Packard Development Company, L.P.

Trademark Notices

Adobe® and Acrobat® are trademarks of Adobe Systems Incorporated.

AMD and the AMD Arrow symbol are trademarks of Advanced Micro Devices, Inc.

Google™ and Google Maps™ are trademarks of Google Inc.

Intel®, Itanium®, Pentium®, and Intel® Xeon® are trademarks of Intel Corporation in the U.S. and other countries.

iPod is a trademark of Apple Computer, Inc.

Java is a registered trademark of Oracle and/or its affiliates.

Microsoft®, Windows®, Windows NT®, Windows® XP, and Windows Vista® are U.S. registered trademarks of Microsoft Corporation.

Oracle is a registered trademark of Oracle Corporation and/or its affiliates.

UNIX® is a registered trademark of The Open Group.

Acknowledgements

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

This product includes software developed by the JDOM Project (www.jdom.org).

This product includes software developed by the MX4J project (mx4j.sourceforge.net).

Documentation Updates

The title page of this document contains the following identifying information:

- Software Version number, which indicates the software version.
- Document Release Date, which changes each time the document is updated.
- Software Release Date, which indicates the release date of this version of the software.

To check for recent updates or to verify that you are using the most recent edition of a document, go to:

<http://h20230.www2.hp.com/selfsolve/manuals>

This site requires that you register for an HP Passport and sign in. To register for an HP Passport ID, go to:

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

Or click the **New users - please register** link on the HP Passport login page.

You will also receive updated or new editions if you subscribe to the appropriate product support service. Contact your HP sales representative for details.

This document was last updated: Tuesday, August 07, 2012

Support

Visit the HP Software Support Online web site at:

<http://www.hp.com/go/hpsoftwaresupport>

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

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

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

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

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

To find more information about access levels, go to:

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

Contents

BSM - Operations Orchestration Integration Guide	1
Contents	5
BSM - Operations Orchestration (OO) Integration Overview	6
How to Integrate BSM and OO	7
Examples of BSM and OO Integrations	11
Predefined Mappings	12
OO Integration Administration User Interface	13
Run Books Configuration Page	13
Run Book Mapping Configuration Wizard	14
Select CI Type Page	14
Select Run Books Page	15
Configure Parameters Page	16
Summary Page	17
Select Topology Dialog Box	18

BSM - Operations Orchestration (OO) Integration Overview

HP Operations Orchestration (OO) provides a simple way for customers to run scripts for automatic actions. The integration with Business Service Management (BSM) uses the OO capabilities for building investigation tools or service remediation scripts, providing the operators with a simple way to validate a problem, investigate it, or automatically correct it. A run book can be executed manually.

OO run books can be launched from the Service Health and Event Browser applications.

The integration of BSM and OO provides the capability of mapping CI types to OO run books.

After you create such mappings, you can run the mapped OO run books:

- **On CIs, using the Invoke Run Books CI context menu option in Service Health.** The OO run book parameters are populated using the map to the CI attributes defined in the ["Run Book Mapping Configuration Wizard" on page 14](#).
- **At the event level in Operations Management.** Operations Management opens an event and checks if the CI for this event has a run book assigned to it, and if the run book is set to run automatically. The OO run book parameters are populated using the map to the CI or event attributes defined in the ["Run Book Mapping Configuration Wizard" on page 14](#).

BSM provides a number of predefined mappings between CIs and OO run books. For details on this topic, see ["Predefined Mappings" on page 12](#).

How to Integrate BSM and OO

This task describes the working order required to integrate BSM and OO.

1. Prerequisites

Details about the supported versions of BSM and HP Operations Orchestration are provided in the [HP Software Integrations site](http://support.openview.hp.com/sc/solutions/index.jsp#tab=tab3) (<http://support.openview.hp.com/sc/solutions/index.jsp#tab=tab3>).

2. Configure the link between BSM and OO

To configure the integration between BSM and OO, in BSM select **Admin > Platform > Setup and Maintenance > Infrastructure Settings**:

- Select **Foundations**.
- Select **Integrations with other applications**.
- In the **HP Operation Orchestration** table, locate **Operation Orchestration application URL**. Modify the setting to the URL used to access the OO application. For example, `https://<fully qualified server name>:8443`.
- If you want to enable run books to be invoked automatically, you must enter a User Name and Password in the same table. In this case, the user should be defined in OO as **internal**.

3. Configure Lightweight Single Sign-On (LW-SSO) authentication

Configure Lightweight Single Sign-On (LW-SSO) authentication between BSM and OO. You must configure LW-SSO in both BSM and OO.

To configure LW-SSO:

- a. In BSM, select **Admin > Platform > Users and Permissions > Authentication Management**, and copy the **Token Creation Key** (the `initString`) to OO, and replace, in OO, all the `initStrings` in the `lwssofmconf.xml` file located in the `<OO installation directory>\Program Files\Hewlett-Packard\Operations Orchestration\Central\conf` directory.
- b. In OO, in the `web.xml` and `applicationContext.xml` files located in the `<OO installation directory>\Program Files\Hewlett-Packard\Operations Orchestration\Central\WEB-INF` directory, enable all filters and mappings between `LWSSO_SECTION_BEGIN` and `LWSSO_SECTION_END`.
- c. In OO, in the `<OO installation directory>\jetty\resources\log4j.properties` file, uncomment the line that appears under the LW-SSO comment.
- d. Restart the following OO services: **RSCentral**, **RSJRAS**, and **RSScheduler**.
- e. If OO and BSM are in different domains in the Windows operating system, you must make sure that the **Trusted Hosts/Domains** parameter is the same in OO and BSM. To set the parameter in BSM, select **Admin > Platform > Users and Permissions > Authentication Management**, and configure the **Trusted Hosts/Domains** parameter.

For further details on configuring LW-SSO in BSM, see Authentication Strategy Page in the *BSM Platform Administration Guide*.

4. In Windows - export OO server certificates to BSM

To export server certificates from OO and import them into BSM in a Windows environment, you use the **keytool** utility, which is included in Sun JRE, to export and import certificates.

- a. **Export the OO Server Certificate.** To export the OO server certificate, on the OO server enter:

```
C:\> "%JAVA_HOME%\jre\bin\keytool" -keystore "%ICONCLUDE_
HOME%\Central\conf\rc_keystore" -export -alias pas -file "C:\
<Operations Orchestration server fully qualified host name>.cer"
```

Tip: If your **%JAVA_HOME%** environment variable points to the JRE directory instead of the JDK directory, remove **jre** from the keystore path (C: \> "%JAVA_HOME%\bin\keytool" -keystore) in the command.

- b. When prompted for passwords enter: bran507025.

5. In Windows - import OO server certificates to BSM

Import the server certificate from the OO server to the BSM Gateway Server so that the two systems can communicate with each other securely.

Tip: If your **%JAVA_HOME%** environment variable points to the JRE directory instead of the JDK directory, remove **jre** from the keystore path (C: \> "%JAVA_HOME%\bin\keytool" -keystore) in the commands.

- a. **Import the Server Certificate to BSM.** To import the server certificate you exported from OO to the BSM cacerts keystores, on the BSM Gateway Server enter:

- o C:\> "%JAVA_HOME%\jre\bin\keytool" -keystore "%TOPAZ_HOME%\JRE\lib\security\cacerts" -import -alias "<Operations Orchestration fully qualified host name>" -file "<Operations Orchestration fully qualified host name>.cer"
- o C:\> "%JAVA_HOME%\jre\bin\keytool" -keystore "%TOPAZ_HOME%\JRE64\lib\security\cacerts" -import -alias "<Operations Orchestration fully qualified host name>" -file "<Operations Orchestration fully qualified host name>.cer"

- b. When prompted for password, enter: changeit.

Note: If **JAVA_HOME** is not set, use **TOPAZ_HOME**.

- c. In order to prevent a certificate error, place this certificate into the Trusted Root Certificate Authorities on any browser that will be accessing BSM as follows:

- o Click the **Install certificate** button to start the wizard.
- o Click **Next**.
- o Select the **Place all certificates in the following store** radio button.
- o Click **Browse**.

- Select **Trusted root certification authorities**.
 - Click **Next**.
 - Click **Finish**.
- d. Restart BSM on the Gateway server.
- e. Repeat the above steps on the Data Processing Server as well.

6. In Linux - export OO server certificates to BSM

To export server certificates from HP Operations Orchestration (OO) and import them into BSM in a Solaris environment, you use the **keytool** utility, which is included in the Sun Solaris **opt/HP/BSM/JRE64/bin/keytool** directory, to export and import certificates.

- a. To export the OO server certificate, on the OO server enter:
Keytool -keystore "\$ICONCLUDE_HOME/Central/conf/rc_keystore" -export -alias pas -file "<Operations Orchestration fully qualified host name>.cer"
- b. When prompted for passwords, enter: `bran507025`.

7. In Linux - import OO server certificates to BSM

Import the server certificate from the OO server to the BSM Gateway Server so that the two systems can communicate with each other securely.

- a. **Import the Server Certificate to BSM.** To import the server certificate you exported from OO to the BSM cacerts keystores, on the BSM Gateway Server, go to **\$TOPAZ_HOME/jre/bin** and enter the following commands:

Note: If TOPAZ_HOME is not set, use the following script:
/opt/HP/BSM/scripts/topaz_env.sh

- **keytool -keystore "\$TOPAZ_HOME/JRE/lib/security/cacerts" -import -alias "<Operations Orchestration fully qualified host name>" -file "<Operations Orchestration fully qualified host name>.cer"**
 - **keytool -keystore "\$TOPAZ_HOME/JRE64/lib/security/cacerts" -import -alias "<Operations Orchestration fully qualified host name>" -file "<Operations Orchestration fully qualified host name>.cer"**
- b. When prompted for password enter: `changeit`.
- c. In order to prevent a certificate error, place this certificate into the Trusted Root Certificate Authorities on any browser that will be accessing BSM as follows:
- Click the **Install certificate** button to start the wizard.
 - Click **Next**.
 - Select the **Place all certificates in the following store** radio button.
 - Click **Browse**.
 - Select **Trusted root certification authorities**.

- Click **Next**.
- Click **Finish**.
- d. Restart BSM on the Gateway server.
- e. Repeat the above steps on the Data Processing Server as well.

8. Grant permissions

Grant administrator permissions so that users can create, view, and modify the mapping between BSM CI types and OO run books, and invoke OO run books from BSM.

To integrate with OO, you must set up users with specific permissions. Select **Admin > Platform > Users and Permissions**, select the user or create a new user and select the **Operations Orchestration Integration** context. For further details on this topic, see Permissions in the *BSM Platform Administration Guide*.

- To enable a BSM user to start runbooks, the operator must have the same user name in BSM and in OO.
- The user must be defined in OO as **external**. If you want to enable a user to launch run books automatically, you must define an additional user in OO as **internal**.
- Both **internal** and **external** users must have the following capabilities in OO: AUTHOR, SCHEDULE, RUN_REPORTS, and HEADLESS_FLOWS. You can either add the users to groups with these capabilities (for example, the administrator group has these capabilities) or you can create such a group.
- In BSM, the user must have the Execution right in the Operations Orchestration context.
- To enable a BSM user to configure runbook-CI type mappings, you have to setup the following:
 - In BSM, give the user the Administration right in the Operations Orchestration context.
 - Setup the same integration user in OO (for example, BSMOO_integr_user) and in the RTSM.

9. Map run books to CI Types

You can map OO run book parameters to the following:

- CI type attributes; for user interface details see "[Run Books Configuration Page](#)" on page 13. Note that the child CIs of a CI, for which you configure a run book, are also assigned that run book.
- The Operations Management event attributes are pre-defined in Operations Management. For details, see Operations Management documentation.

10. Use OO functionality from BSM applications

You can trigger a run book from:

- HPOM (for details, see HPOM documentation).
- Service Health, using the **Invoke Run Books** context menu option.
- Event browser, using the context menu or from the Action panel.

Examples of BSM and OO Integrations

This section describes two possible scenarios to integrate BSM and HP Operations Orchestration (OO).

Use-Case Scenario in Service Health

In OO, the `Restart a Node` run book is associated with a Node CI Type. The parameters of the run book are mapped to the relevant CI attributes of the Node CI.

In Service Health, the operator detects that a host has a system problem. The operator right-clicks the CI to get a list of the run books relevant to the CI. One of the run books is `Restart a Node`. The run book can execute automatically because the values of the parameters, such as host name/IP, are automatically populated by data taken from the CI context.

Use-Case Scenario in Operations Management

In the Operations Management Event Browser, the operator is going through his assigned events. The operator detects an event related to a lack of disk space that causes a database performance issue. From the event context, the operator can get a list of relevant run books. The operator can launch the appropriate run book, manually. The run book continues running without further input from the operator because all run book parameters are extracted from the event or related CI.

Predefined Mappings

BSM provides a number of predefined mappings between CI types and HP Operations Orchestration (OO) run books. The following table lists the CI types and the OO run books that are mapped to them:

BSM CI Type	HP Operations Orchestration Run Books
IIS	Soft Reset IIS
Weblogic AS	Restart Server
Websphere AS	Restart Server
Windows	Restart Windows Server, Restart Windows Server with Wait, Start Automatic Services

Tip: In the predefined mapping, the Restart Server run book runs successfully only for Weblogic and Websphere applications that are discovered by Data Flow Management. For Weblogic and Websphere applications discovered by SiteScope, application credentials are not reported and the run book is unable to run successfully, unless you perform one of the following: (1) manually configure the credentials as default parameters in the Run Book Mapping Configuration wizard, (2) manually change them for a specific invocation of a run book, or (3) enter them when prompted during a run book invocation. For details on the Run Book Mapping Configuration wizard user interface, see ["Configure Parameters Page" on page 16](#).

OO Integration Administration User Interface

If you have set up an integration between BSM and Operations Orchestration (OO), you can configure mappings between CIs and run books, to launch OO run books directly from Service Health.

This section describes:




- "Run Books Configuration Page" below
- "Run Book Mapping Configuration Wizard" on next page
- "Select Topology Dialog Box" on page 18

Run Books Configuration Page

This page displays the mappings between BSM CI types and HP Operations Orchestration (OO) run books, and enables you to create new mappings or edit existing ones.



To access	Admin > Integrations > Operations Orchestration tab
Important information	Click a row in the table to select an existing mapping for editing or deletion.

User interface elements are described below:

UI Element (A-Z)	Description
	New. Opens the Run Book Mapping Configuration wizard, where you configure the mapping between a CI type and OO run books. For details on the user interface, see " Run Book Mapping Configuration Wizard " on next page.
	Edit. Opens the Select CI Type page of the Run Book Mapping Configuration wizard where you can edit the selected mapping. For details on the user interface, see " Select CI Type Page " on next page.
	Delete. Delete the selected mapping.
CI Type	Displays the CI types to which OO run books are already mapped.
Operation Orchestration Flows	Displays the OO run books that are mapped to each CI type.

Run Book Mapping Configuration Wizard

This wizard enables you to create mappings of CI Type attributes, event attributes, or both, and HP Operations Orchestration (OO) run book parameters.

To access	<p>Use one of the following:</p> <ul style="list-style-type: none"> To create a new mapping, select Admin > Integrations > Operations Orchestration tab, and click the New  button. To edit an existing mapping, select Admin > Integrations > Operations Orchestration tab, select the existing mapping, and click the Edit  button.
Important information	<ul style="list-style-type: none"> The child CIs of a CI, for which you configure a run book, are also assigned that run book. When using the Run Book Mapping Configuration wizard to edit a previously configured mapping: <ul style="list-style-type: none"> The Welcome and Summary pages of the wizard are not displayed. You do not have to access the wizard pages in a specific order. Click a wizard page name on the left to go directly to that page. From any of the wizard pages, click the OK button to save the mapping configuration and exit the wizard. The Welcome and Summary pages are displayed only when you create a new run book mapping.
Wizard map	<p>The "Run Book Mapping Configuration Wizard" above contains:</p> <p>Welcome Page > "Select CI Type Page" below > "Select Run Books Page" on next page > "Configure Parameters Page" on page 16 > "Summary Page" on page 17</p>

Select CI Type Page

This page enables you to select a CI type to which to map HP Operations Orchestration (OO) run books.

Important Information	<p>General information about the wizard is available at "Run Book Mapping Configuration Wizard" above.</p>
Wizard map	<p>The "Run Book Mapping Configuration Wizard" above contains:</p> <p>Welcome Page > "Select CI Type Page" above > "Select Run Books Page" on next page > "Configure Parameters Page" on page 16 > "Summary Page" on page 17</p>

User interface elements are described below (unlabeled elements are shown in angle brackets>):



UI Element (A-Z)	Description
<CI type tree>	<p>Displays a list of CI types from which you select the required CI type to which to map OO run books. Click a CI type to select it.</p> <p>Note:</p> <ul style="list-style-type: none"> CI types that already have run books mapped to them appear in the tree, but are disabled. When you edit an existing mapping, only the configured CI type is displayed and you cannot edit it.
<Search string>	<p>You can search for CI types with names containing a specific string that you enter in this field. Click the Search button to run the search. Only matching results are displayed in the tree.</p> <p>Note:</p> <ul style="list-style-type: none"> The search is not case sensitive. You can use the asterisk (*) wildcard in your string to match one or more words of text.
Clear	Click to clear the current search string and display all CI types.
Search	Click to display only CI types that match the search string.



Select Run Books Page

This page enables you to select the HP Operations Orchestration (OO) run books to map to the selected CI type.

Important information	General information about the wizard is available at "Run Book Mapping Configuration Wizard" on previous page.
Wizard map	The "Run Book Mapping Configuration Wizard" on previous page contains: Welcome Page > "Select CI Type Page" on previous page > "Select Run Books Page" above > "Configure Parameters Page" on next page > "Summary Page" on page 17

User interface elements are described below:

UI Element (A-Z)	Description
	Select run book to map. Adds the run book you selected in the Flow Library area to the list in the Selected Run Books area.
	Remove run book from mapping. Removes the run book you selected in the Selected Run Books area from the list and moves it back to the Flow Library area.

UI Element (A-Z)	Description
Flow Library	Displays a tree of the available run books in the OO flow library. Click a run book to select it.
Run Book Description	Displays the description of a selected run book.
Selected Run Books	<p>Displays the run books you select for mapping to the CI type and their path in the OO flow library. Click a run book to select it for removal from the list.</p> <p>Note:</p> <ul style="list-style-type: none"> • A run book that is included in an existing mapping, but that is not found in OO, is denoted by the  icon. Remove the run book from the mapping. • A run book included in an existing mapping that contains different parameters than those defined in the mapping (that is, additional or deleted parameters), is denoted by the  icon.



Configure Parameters Page

This page enables you to configure the settings and default values of the parameters used by the selected HP Operations Orchestration (OO) run books.

Important information	General information about the wizard is available at "Run Book Mapping Configuration Wizard" on page 14.
Wizard map	The "Run Book Mapping Configuration Wizard" on page 14 contains: Welcome Page > "Select CI Type Page" on page 14 > "Select Run Books Page" on previous page > "Configure Parameters Page" above > "Summary Page" on next page

User interface elements are described below:

UI Element (A-Z)	Description
CI	<p>The default CI from the selected CI type topology to use as the source for the required run book parameter. Click the arrow to open a drop-down list of all the CIs included in the CI type topology. Select a different CI if required.</p> <p>Note: If there is no configured topology for the selected CI type, the CI corresponding to the selected CI type itself is the only available option.</p>
CI Attribute	The default CI attribute, of the selected CI, to use as the source for the required run book parameter. Click the arrow to open a drop-down list of all the attributes for the selected CI. Select a different attribute if required.
Default Value	A default value to be used for the CI attribute, if required.
Enable to run	Select the option when you want to automatically run the run book.

UI Element (A-Z)	Description
automatically	Note: The run book runs automatically only when all the parameters listed in the Configure Parameters page have been assigned a value, and the run book runs without user intervention.
Event Attribute	The default event attributes for events that correspond to the selected CI type. The field automatically lists all the default event attributes and custom attributes that were defined in Operations Management. You can select one of the listed default event attributes or add your own. For details about the attributes, see Operations Management Online Help documentation.
Run Book/Parameter Name	A hierarchical list of the selected run books and the parameters they require. Note: <ul style="list-style-type: none"> Only parameters that are configured as flow input parameters for run books are included. For example, a parameter that is included in an operation configured in a run book is not displayed and cannot be mapped. Mandatory parameters for which settings are required are denoted by a red asterisk. A parameter included in an existing mapping, but that is not found in a run book, is denoted by the  icon. A parameter found in a run book, but not included in an existing mapping, is denoted by the  icon. Additional and deleted parameters are automatically added to or removed from the mapping, when you click the OK button on the wizard page.
To choose an attribute that is not part of the selected CI click here	Click the link to open the Select Topology dialog box, where you can select a CI from a related CI topology to use as the source for the required run book parameter. For details on the user interface, see " Select Topology Dialog Box " on next page.

Summary Page

This page summarizes the configuration of the mapping of the parameters used by the selected HP Operations Orchestration (OO) run books to the CI attributes or to the event attributes, as well as the default values of the attributes.

Important information	General information about the wizard is available at " Run Book Mapping Configuration Wizard " on page 14. This page is displayed only when you create a new run book mapping.
Wizard map	The " Run Book Mapping Configuration Wizard " on page 14 contains:

	Welcome Page > "Select CI Type Page" on page 14 > "Select Run Books Page" on page 15 > "Configure Parameters Page" on page 16 > "Summary Page" on previous page
--	---

Select Topology Dialog Box

This dialog box enables you to select a different CI type or node CI from a topology related to the CI type selected in the **Run Book Mapping Configuration** wizard. This CI is used as the source for a required run book parameter for the CI type selected in the wizard.

To access	Click the Select Related CIs link in the Configure Parameters page in the Run Book Mapping Configuration wizard. For details on the user interface, see "Configure Parameters Page" on page 16.
See also	"Run Book Mapping Configuration Wizard" on page 14

User interface elements are described below (unlabeled elements are shown in angle brackets):

UI Element (A-Z)	Description
<Topology map>	Displays a map of the selected CI topology.
Select the node to which the run books are mapped	Select a specific node from the selected topology to use as the source for a required run book parameter for the CI type selected in the Run Book Mapping Configuration wizard. Available nodes are those applicable for the CI type selected in the wizard, and their descendants.
Select topology	Select a topology from the drop-down list of topologies that are related to the CI type selected in the Run Book Mapping Configuration wizard. Related topologies are those topologies in the Run Book folder in Modeling Studio that include a node for the CI type selected in the wizard. Note: <ul style="list-style-type: none"> • Topology names in the Run Book folder in Modeling Studio cannot contain spaces. • You can create topologies using Query Manager (Admin > RTSM Administration > Modeling > Modeling Studio). For details on the user interface, see Modeling Studio Page in the Modeling Guide.