

HP Operations Orchestration

Software Version: 10.20

Windows and Linux Operating Systems

Upgrading to HP 00 10.20 from HP 00 9.x

Document Release Date: November 2014

Software Release Date: November 2014



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 2005-2014 Hewlett-Packard Development Company, L.P.

Trademark Notices

Adobe™ is a trademark of Adobe Systems Incorporated.

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

UNIX® is a registered trademark of The Open Group.

This product includes an interface of the 'zlib' general purpose compression library, which is Copyright © 1995-2002 Jean-loup Gailly and Mark Adler.

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.

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

HP Software Solutions Now accesses the HPSW Solution and Integration Portal Web site. This site enables you to explore HP Product Solutions to meet your business needs, includes a full list of Integrations between HP Products, as well as a listing of ITIL Processes. The URL for this Web site is <http://h20230.www2.hp.com/sc/solutions/index.jsp>

Contents

Introduction	6
Planning the Upgrade	7
Phase 1: Installation of HP OO 10.20	10
Prerequisites	10
Installing HP OO 10.x	10
Data Upgraded During Installation	12
Upgrading Clustering	16
Phase 2: Content Upgrade	17
Main Steps	17
Getting Started with Content Upgrade	18
Locating the Content Upgrade Utility	18
Preparing for Content Upgrade	18
Handling HP OO and HP OO Partner Content	20
Excluding Content from Upgrade	22
Upgrading Custom Content	24
Extra Step for CP 13 Users	25
Upgrading Operations Linked to Action Plugins	25
Hard Copy	25
Upgrading Content with the Content Upgrade Utility	27
Command Line Options	30
Viewing Information about the Content Upgrade	34
Console	34
Log File	35
Upgrade Report	35
Reviewing, Fixing, and Deploying Content After Upgrading	36
Invalid Content	36
The Content Upgrade Report	37
Contents of the Report - Examples	40
Known Issues and Troubleshooting	42
Automatic Update of the HP OO to HP OO 10.x Integration	51

Differences in Behavior After Upgrading	56
Phase 3: Synchronization of Content Data	66
Synchronizing Scheduling Data	67
Synchronizing Content Permissions Data	67
Synchronizing History	68
Synchronizing Studio Data	69

Introduction

This document is relevant for customers who are upgrading from HP OO 9.x to HP OO 10.20.

- If you are upgrading to HP OO 10.20 from an earlier version of HP OO 10.x, see *Upgrading to a New Version of HP OO 10.x*.
- If you have the HP OO Community Edition, see the *HP OO 10.20 Installation Guide*.

The upgrade procedure supports HP OO 9.03 and later.

Upgrading from HP OO 9.x to HP OO 10.20 consists of three main phases:

1. Install HP OO 10.20
2. Upgrade the repository (content upgrade)
3. Synchronize the content data

Scenario: Upgrading Central, Studio, and one RAS

This section provides an overview of the major steps. For more detailed information, see the links to other topics.

Install HP OO 10.20

1. In Studio 9.x, check in all open flows to the shared repository. If there are multiple authors, make sure that all authors have checked in all files.
2. Install HP Operations Orchestration 10.20, as described in the *HP OO 10.20 Installation Guide*.
3. For each RAS host, install RAS 10.20.
4. For each additional Studio host, install Studio 10.20.

Note: Every author needs to install HP OO Studio 10.20.

For more information about installation, see ["Phase 1: Installation of HP OO 10.20" on page 10](#).

Upgrade the 9.x content repository

1. For customers who have developed iActions, copy all the iActions jars/dlls (for customer iActions) from the RASes to a local folder, which you will use in the upgrade.
2. Run the Content Upgrade Utility to create a content pack for HP OO 10.20.
3. Open the resulting Studio project in Studio 10.20, and fix any flows with errors.

4. (Optional) To share the project with other authors, check the upgraded Studio project into the source code version control repository. Then, check out the project in all instances of Studio.
5. Load the upgraded content pack to Central 10.20.

For more information about upgrading content, see ["Phase 2: Content Upgrade" on page 17](#).

Synchronize content data

1. Synchronize schedulers.
2. Synchronize flow permissions.
3. Synchronize system account permissions.
4. Synchronize the historical data of valid flows.

For more information about synchronizing content data, see ["Phase 3: Synchronization of Content Data" on page 66](#).

Enable the Central schedules

1. Disable the Central 9.x scheduled triggers.
2. Enable the Central 10.x scheduled triggers.

Uninstall the 9.x components

1. For each RAS host, remove RAS 9.x.
2. For each Studio host, remove Studio 9.x.
3. Uninstall Central 9.x.

Planning the Upgrade

Before starting the upgrade from HP OO 9.x to HP OO 10.x, you should take into account that there are many changes between the versions. Take a good look at these differences, as described in the *HP OO 10.x Release Notes* and in this document, under ["Differences in Behavior After Upgrading" on page 56](#).

Take into account that there are manual modifications that you will need to do, in order to get everything running smoothly after the upgrade.

For example, you may need to:

- Modify/test the flows after upgrading, to make sure there is no incompatibility.
- Redesign and update your original operation manual, because some functions have been

discontinued, some have changed their behavior, and some have a different appearance in the UI.

- Reconfigure your high availability model, because HP OO 10.x does not include the Terracotta clustering solution as part of the application. For information about high availability in HP OO 10.x, see the *HP OO Architecture Guide*.
- Redesign/test client applications to call HP OO flows, because of the discontinuation of RSFlowInvoke.
- Redesign your workflow for sharing files, because HP OO 10.x uses source control management instead of a public repository.
- Change the communication direction of firewall/reverse proxy on RASes, because on HP OO 9.x, Central is a client and RAS is a server, while on HP OO 10.x, RAS is a client and Central is a server.

For example, if Central exists inside the firewall/reverse proxy, and RAS exists outside, and you have a communication policy that only allow the communication direction from inside to outside, HP OO 10.x will violate your policy.

You may find that you require new software for the firewall/reverse proxy .

- Check whether you need additional hardware for the upgrade. HP OO 10.x does not overwrite the existing installation of HP OO 9.x, but expects the previous version to remain as it is during the upgrade phase. This means if you want to continue to use the same hardware, versions 9.x and 10.x are installed on the same hardware. This could mean that the system requirements for memory cannot be achieved.
- Redesign/implement/test the monitoring system on HP OO 9.x, because the log messages in log files have changed.
- Redesign some of your flows, because of differences in behavior. For example, in HP OO 9.x, if a RAS is unavailable when the flow is invoked, the step using the target RAS fails. In HP OO 10.x, the flow gets the status **Paused - No Workers in Group** at the step.

For example, you may have a flow in your 9.x repository with a RAS override to access to the remote RAS, and a step using the RAS override expects "failure" at the step if the RAS is unavailable, and the flow sends an email when it fails. This scenario (flow logic) does not work on HP OO 10.x, because the step does not fail and will only be **Paused - No Workers in Group**.

For more information about differences in flow behavior, which might require you to redesign some flows, see ["Differences in Behavior After Upgrading" on page 56](#).

- In order to estimate the effort that will need to be invested in the content upgrade, it is recommended to do a test run of the Content Upgrade Utility on your repository, before upgrading your installation of HP OO. The **content-upgrade-report.html** file in the **Output \ Upgrade** folder will give you a detailed list of items that require action, and suggestions about how to resolve each type of problem. For more information about the report, see ["Viewing Information about the Content Upgrade" on page 34](#).

- .NET is required for a RAS and Central installation and not only for RAS.

Phase 1: Installation of HP OO 10.20

The first step in the upgrade process is to install HP OO 10.20.

Prerequisites

The prerequisites for upgrading to HP OO 10.20 are the following:

- The HP OO 9.x server (9.03 and later) must be up during the upgrade.
- The HP OO 10.x installation can be either on the HP OO 9.x machine or on a different machine.
- The HP OO 9.x database should be accessible from the machine where the installation is occurring. There should be remote access from the 10.x machine.
- If the HP OO 10.x installation is on the same machine as the HP OO 9.x installation, the administrator should define different ports for the HTTP/ HTTPs/AJP connectors.

Note: The upgrade procedure does not modify the HP OO 9.x database and file system. HP OO version 10.10 or later requires a new schema during installation.

- All local changes should be published to the 9.x shared repository as this is the repository that is going to be upgraded.

Local changes that were not committed will not be upgraded to HP OO 10.x.

- If the database is MySQL, the administrator should provide the database driver for the upgrade procedure. HP cannot provide the MySQL driver as part of the upgrade procedure, because of legal restrictions.
- The upgrade can be done on the Windows and Linux platforms.
- Microsoft .NET Framework 4.5 or later, full installation. This is required for RAS installations and for debugging .NET operations in Studio. For more information on the supported environments see the System Requirements document.

Installing HP OO 10.x



During the installation process, the system administrator performs the following tasks:

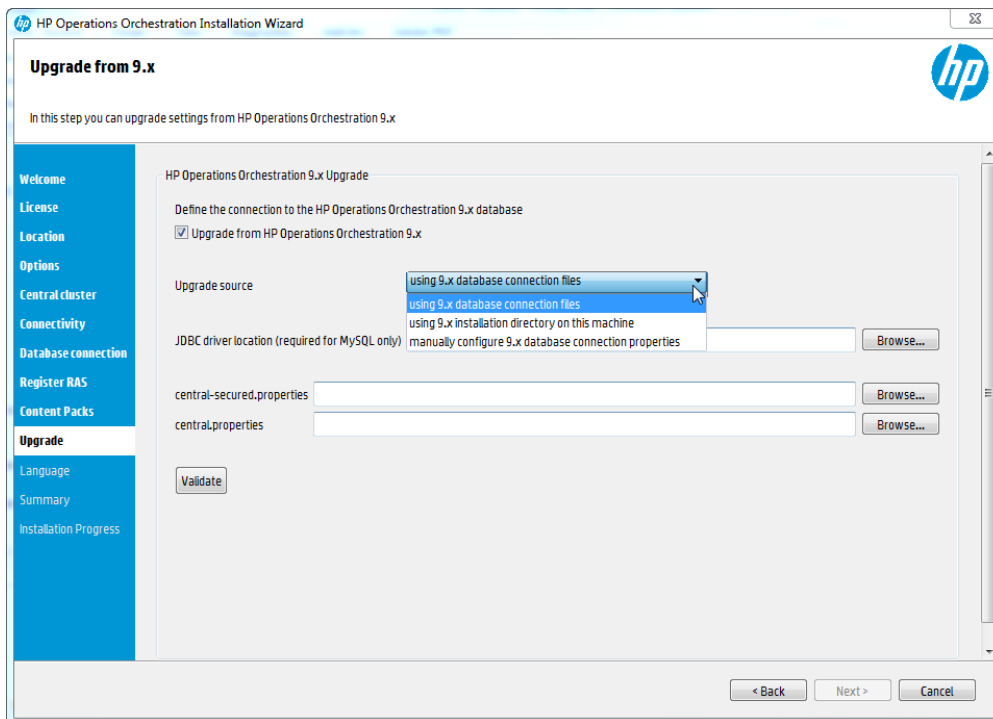
- Installs HP OO 10.x
- Defines the database connection (SQL Server, Oracle, MySQL or Postgresql)
- Defines the Tomcat ports
- Starts the Tomcat server

In the Installation wizard, on the **Upgrade from 9.x** page, select **Upgrade from HP Operations Orchestration 9.x**.

1. From the **Upgrade source** list, select how to identify the 9.x installation.
2. Enter the locations of the JDBC driver, the **central-secured.properties** file, and the **central.properties** file for 9.x.

This extracts and loads the system configuration information, such as users, LDAP, LWSSO, security data, system properties, system accounts.

3. Click **Validate** to verify your 9.x version.



For more detailed information about installing HP OO, see the *HP OO Installation Guide*.

The installation process installs HP OO 10.x in addition to your installation of 9.x, and does not overwrite it.

Data Upgraded During Installation

When you upgrade to HP OO 10.x, the installation process automatically extracts most of the data that you need. Some data needs to be extracted manually, as described in ["Phase 3: Synchronization of Content Data" on page 66](#).

Upgraded Security Data

The installation procedure extracts and loads the following LDAP parameters:

- LDAP URL
- List of LDAP contexts containing user groups
- LDAP search filter to match the user groups
- List of LDAP contexts containing users
- List of context attribute names that can be used as group
- LDAP search filter used in user search
- The default group that an LDAP authenticated user gets when there is no group matching
- If all enabled LDAPs have the same default role, this will be used as the default role. Otherwise, there will be a warning in the installer and no default role will be set.
- An internal HP OO account representing a user that has search capabilities under LDAP
- Active Directory domains (for AD only)

Note: The installation automatically generates domains for non-AD configurations.

The LDAP credentials are encrypted in the upgrade files and in the HP OO 10.x database.

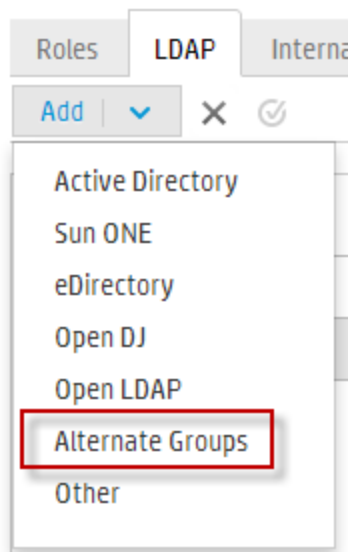
If there are issues with upgrading an LDAP configuration, an error message appears in the installer.

The installation also upgrades the LWSSO parameters.

Any 9.x LDAP configuration that is not Microsoft Active Directory will be migrated in 10.x as **Type: Other**.

Notes About Upgrading LDAP Information

- In HP OO 9.x, there was no option to enter a failover for an LDAP server. The workaround was to create another identical configuration with a different host and port. In HP OO 10.x, there is failover support, so there is no need for multiple configurations with the same domain name. Therefore, during upgrade, if there are multiple LDAP configurations where all parameters except host and port are identical, these are merged. A message appears, saying that the configurations are merged. In such a case, if you want to keep the multiple LDAP configurations with the same details, you will need to go to the **LDAP Configuration** tab in Central, check which configuration is missing, and add it manually.
- The installation procedure does not copy the 9.x **key.store**, and does not extract and load the Secure Reverse Proxy parameters. The **key.store** is ignored and Trust all is supported.
- The following are not upgraded:
 - Referrals (these are not supported)
 - Deprecated AD settings in an LDAP configuration
- If you use LDAP settings in HP OO 9.x and have configured something in the **List of LDAP contexts containing user groups** field, this causes the upgrade to import the LDAP type to **Alternate Groups** in HP OO 10.x.



For more information about the **Alternate Groups** configuration, see the *HP OO Central User Guide* > "Setting Up Security - LDAP Authentication > Configure a list of attributes whose values will be used as groups".

Upgraded User Management Data

Upgraded Permissions for System Accounts

When you upgrade from 9.x to 10.20, the ADMINISTRATOR and PROMOTER roles are automatically entitled to view and use all system accounts. You can remove these default permissions in Central once the upgrade is complete.

Note: These default permissions are added on top of the ones you import from 9.x. See "[Phase 3: Synchronization of Content Data](#)" on page 66.

Upgraded Role Aliases

After an upgrade from HP OO 9.x, if a content pack contains the following role aliases (under **Configuration/Role Aliases**) ADMINISTRATOR, EVERYBODY, PROMOTER, SYSTEM_ADMIN, and END_USER, these are mapped to the corresponding HP OO 10.x roles in Central.

Note that some of the role aliases in the Base content pack (AUDITOR, LEVEL_ONE, LEVEL_TWO, and LEVEL_THREE) do not have a corresponding role in Central. After an upgrade to HP OO 10.x, these role aliases are considered deprecated.

Upgraded Permissions

After upgrade, the following permissions are mapped between HP OO 9.x and HP OO 10.x.

Note that in 9.x, roles were not case-sensitive and in 10.x, they are. After upgrading, you may see a message warning that the upgraded roles, which appear in upper case, are not consistent with the roles in 10.x. If this occurs, you may need to adjust the names of the roles.

HP OO 9.x Permission	HP OO 10.x Permission
MANAGE_USERS	View Security Configuration, Manage Security Configuration
MANAGE_GROUPS	View Security Configuration, Manage Security Configuration
AUTHOR	View Content Packs, Manage Content Packs, Manage Flow Permissions, Remote Debugging
SCHEDULE	Manage Schedules
MANAGE_RUNS	Manage Others' Runs
MANAGE_CONF	Manage Configuration Items, View Configuration Items, Manage System Settings, View System Settings, Manage Topology, View Topology, View Security Configuration, Manage Security Configuration, View Audit, Manage Data Cleanup
VIEW_SCHEDULES	View Schedules

Note: The 9.x permissions HEADLESS_FLOWS and RUN_REPORTS are not mapped to any 10.x permissions.

Upgraded System Settings Data

The installation procedure extracts and loads the system settings, such as:

- Whether Return on Investment (ROI) reporting is visible.
- When using a URL to start flow runs in Central, the prefix, if any, that is required to start flow input names.

The following system settings are not upgraded, because they are not relevant in HP OO 10.x:

- Whether only administrators can author in the Central repository.
- The maximum number of versions of an object that are kept in the repository.
- Whether only members of the PROMOTER or ADMINISTRATOR group can publish.
- How frequently the Dashboard charts refresh.
- Whether to automatically resume headless runs that were interrupted by a Central server failure.
- How to enable load balancer management for a Central cluster.

Upgraded Configuration (Run Time Environment) Data

The installation procedure extracts and loads the system accounts and system properties that were configured in Central.

Note: Configuration items that were created in earlier versions of Central are upgraded and can be edited, even though it is no longer possible to create configuration items in Central.

Run time environment configuration data relating to Remote Action Services (RAS) is not upgraded, because it is not relevant in HP OO 10.x.

Upgraded RAS Data

In HP OO 9.x, an author could direct Central to a RAS by creating a RAS reference in Studio. The RAS reference had a name and a URL that accessed the RAS.

In HP OO 10.x, an author can create a RAS alias in Studio, and the administrator needs to map the RAS alias to a RAS group in Central.

During content upgrade, the RAS data is upgraded, and every RAS from the repository is upgraded to a new alias in the Studio project. For each RAS that existed for HP OO 9.x, you will need to manually install the RAS. Then, you will need to map the RAS alias to a RAS group in Central.

In HP OO 10.x, there is no need for two separate RASes for dot-net and another for Java. One RAS is enough for the same machine.

Upgraded LWSSO Settings

When you install HP OO 10.x, if you choose to upgrade the LWSSO settings from HP OO 9.x, these LWSSO settings will be upgraded, but LWSSO will be disabled in HP OO 10.x (even if it was previously enabled in HP OO 9.x).

Upgrading Clustering

Clustering provides high availability and scalability to enhance throughput.

In previous versions of HP OO, a clustering solution called Terracotta was provided as part of the application. In HP OO 10.x, this is no longer the case—there is no need for external clustering software, nor is there a requirement for a shared file system. To create a cluster, you simply install one Central, and then add another node pointing to the same database schema, and this creates a cluster.

When you upgrade from 9.x, you need to recreate the cluster, by installing each node separately using the Installation wizard, making sure that all nodes point to the same database schema.

For more information about clustering, see the *HP OO Architecture Guide*.

Phase 2: Content Upgrade

The second major step in the upgrade procedure is to upgrade the HP OO 9.x content to content in HP OO 10.x format. The Content Upgrade Utility is a tool that extracts specified content from an existing HP OO 9.x repository, and upgrades the extracted content into a content pack that can be deployed in HP OO 10.00 and later.

Note: A **content pack** is a collection of operations, flows, actions (Java-based or .Net based), and configuration items (such as selection lists, domain terms, and so on). For more information about content packs, see the *HP OO Studio Authoring Guide*.

After you upgrade content from HP OO 9.x, the resulting Studio project will include repository content (operations, flows, configuration items), IAction jars, dlls, third party dependencies, and resource bundle (localization) files. This project can be opened in OO Studio and exported to a content pack that can be deployed in OO Central.

All content packs that are supported by HP OO 9.3 and later are supported for upgrade.

Main Steps

The main steps in content upgrade are the following:

1. Prepare for upgrade. See ["Getting Started with Content Upgrade" on the next page](#).
2. Run the Content Upgrade Utility. See ["Upgrading Content with the Content Upgrade Utility" on page 27](#).
3. Open the report to check which content packs your content is dependent upon. See ["Reviewing, Fixing, and Deploying Content After Upgrading" on page 36](#).
4. Open HP OO Studio, and import the content packs that your content is dependent upon.
5. Open the two projects that were created by the Content Upgrade Utility, and go through them to make sure that all your important content is valid.
6. Fix whatever needs fixing in the invalid project, and move anything that was fixed to the valid project.
7. Create a content pack from the valid project.
8. Deploy to Central the content packs that your content is dependent upon.
9. Deploy the content pack with the upgraded, valid content.

Important! Make sure that you deploy the content pack that you created from Studio, from the project with the valid content. We do not recommend directly deploying the content pack that was created by the Content Upgrade Utility.

Getting Started with Content Upgrade

Locating the Content Upgrade Utility

The Content Upgrade Utility is included as part of the Central and Studio installations.

After installation, the utility can be found under:

- `<OO Installation Directory>\Central\bin\upgrade-content.bat` for Windows
- `<OO Installation Directory>\Studio\bin\upgrade-content.bat` for Windows
- `<OO Installation Directory>/Central/bin/upgrade-content.sh` for Linux

The Content Upgrade Utility configuration files are located under:

- `<OO Installation Directory>\central\cmu\` for Windows
- `<OO Installation Directory>\studio\cmu\` for Windows
- `<OO Installation Directory>/central/cmu/` for Linux

Preparing for Content Upgrade



Before upgrading content, the flow author should prepare the content for upgrade.

- Make sure that the content does not include invalid data. Invalid data will not be upgraded.
- Sleep scripts are not supported as scriptlets in HP OO 10.x. For example, under the **Scriptlet** tab or in the **Results** filter. It is recommended to rewrite these scripts in JavaScript before upgrading.
- Make sure that domain terms do not have more than 255 characters. Domain terms with too many characters can cause the upgraded content pack to fail deployment.
- Multi-instance steps work differently in HP OO 10.x. For more information about how to prepare MI steps for upgrade, see ["Known Issues and Troubleshooting" on page 42](#).

- If you have multiple custom operations that are linked to the same iAction, consider changing these to soft copies before upgrading. For more information, see "[Upgrading Operations Linked to Action Plugins](#)" on page 25.

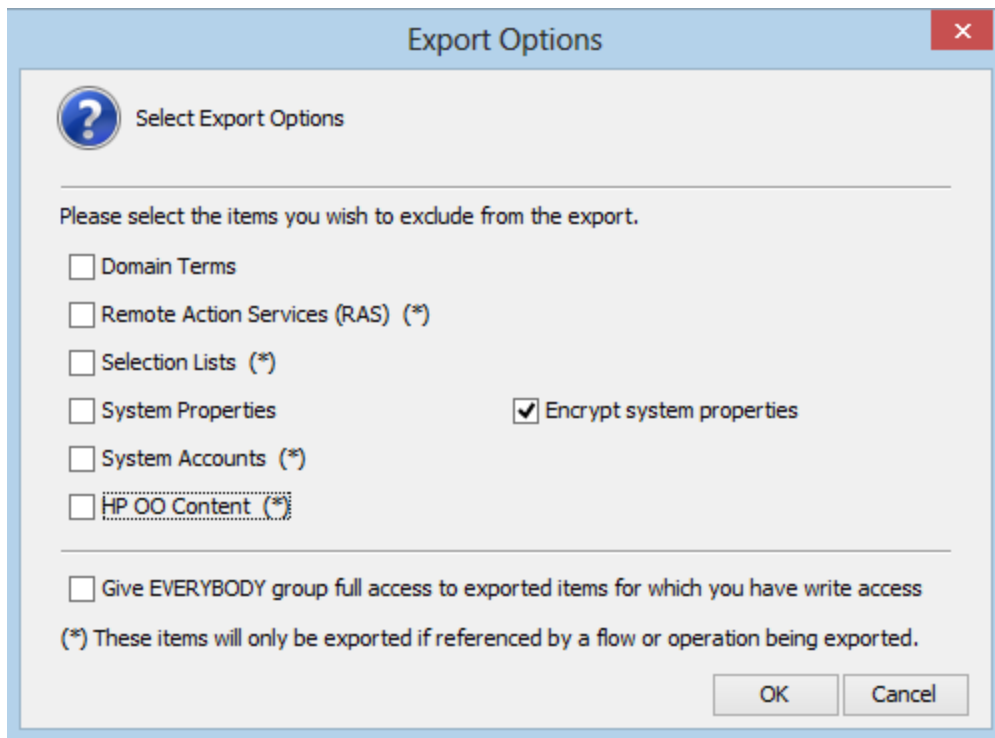


Before upgrading, the op admin should prepare for upgrade.

- It is recommended to consolidate all content into one repository, to be used for the upgrade. Make sure that all items are checked in.
- Export your HP OO 9.x repository from Studio 9.x:
 - a. Right-click **Library**, and select **Export as New Repository**.

Important Note: In order to upgrade the system accounts with a password, you must not perform an export on the repository, but rather create a file system copy of it and perform the content upgrade on that copy. For example, for a simple Central installation, use a copy of the `<OO_9_install_path>\Central\rcrepo` folder as the repository for content upgrade.

- b. In the file explorer dialog box, select the output path for the repository.
- c. In the Export Options page, make sure that all the check boxes are cleared (not selected) apart from the **Encrypt system properties** check box. Checking the **Encrypt system properties** check box is optional. However, note that after content upgrade, the system properties will be obfuscated with the 10.x mechanism.



- Make sure you know the path to the exported repository, which is to be upgraded, and where you want to store the content pack result after the upgrade.
- If the repository includes custom .NET iActions, note that third party DLL dependencies for 32-bit platforms in the client RAS may cause problems. For example, **Microsoft.GroupPolicy.Management.dll** and **Microsoft.GroupPolicy.Management.Interop.dll**.

It is recommended to clean your RAS folder copy and leave only the DLLs that are required for your iActions before upgrading content.

Note: Make sure to copy the RAS lib directories to a different location before deleting anything from them and upgrading them.

- In Linux, run the following commands from the installation root directory:

```
find . -name \*.sh -exec chmod 755 {} \;  
find . -name \*java -exec chmod 755 {} \;
```

Note: If you have modified out-of-the-box flows and operations, after you upgrade, those changes will not be reflected in the resulting content packs.

However, it is possible to keep modifications that you made to out-of-the-box configuration items. To do this, you need to use the `-nine,--nine-cp-version` argument during the content upgrade. For more information, see ["Command Line Options" on page 30](#).

Handling HP OO and HP OO Partner Content

Partner content is content that is not owned and distributed by the HP OO product team. It is developed and owned by other HP product teams or by non-HP companies.

During the content upgrade process, the Content Upgrade Utility excludes HP OO out-of-the-box content from the upgrade. The Content Upgrade Utility also recognizes the HP partner content packs listed in the following table and excludes their content from the upload, making sure that only your custom content is upgraded.

Content Pack Name	Availability / Location
HP out-of-the-box content packs	
Base content pack	Available on the HP OO 10.x DVD and on HPLN under https://hpln.hp.com/group/operations-orchestration-content-packs .
Business Applications content pack	
Cloud content pack	
Databases content pack	
HP Solutions content pack	
IT Operations content pack	
Middleware content pack	
Operating Systems content pack	
Virtualization content pack	
Cloud Orchestration content pack	
Infrastructure Orchestration content pack	
Partner content packs	
Server Automation content pack	This content pack is not included in the HP OO 10.x DVD. Please check availability in HPLN, under: https://hpln.hp.com/group/operations-orchestration-content-hp-server-automation
Storage Essentials content pack	This content pack is not included in the HP OO 10.x DVD. Please check availability in HPLN, under: https://hpln.hp.com/group/operations-orchestration-content-hp-storage-essentials
NonStop content pack	This content pack is not included in the HP OO 10.x DVD. Please check availability in HPLN, under: https://hpln.hp.com/group/operations-orchestration-content-hp-integrity-nonstop-computing
Cloud Services Automation content pack	This content pack is not included in the HP OO 10.x DVD. Please check availability in HPLN, under: https://hpln.hp.com/group/cloud-service-automation

Content Pack Name	Availability / Location
Service Manager content pack	This content pack is not included in the HP OO 10.x DVD. Please check availability in HPLN, under: https://hpln.hp.com/group/operations-orchestration-content-hp-service-manager
HP Community content packs	
BMC content packs (Atrium, Patrol, Remedy)	HP community content packs are available for download on HPLN, under: https://hpln.hp.com/group/community-contributed-content-operations-orchestration
Cisco content pack	
Citrix Presentation Server content pack	
Computer Associates content pack	
F5 content pack	
HP Peregrine Service Center content pack	
IBM content packs (Netcool, Tivoli)	
ITIL content pack	
Microsoft Operation Manager content pack	
Symantec content packs (Altiris, Backup Exec)	
VMware Server content pack	

If you use content that is not listed above, refer to the HP OO HPLN community at <https://hpln.hp.com/node/21/contentfiles> in order to download the Content Upgrade Utility plugin along with the content pack itself.

Excluding Content from Upgrade

If you have partner content that does not appear in the list above, you will need to tell the Content Upgrade Utility to exclude this content. Follow this procedure to get the Content Upgrade Utility to recognize partner content and exclude it from the upgrade process.

Note: The Content Upgrade Utility can read more than one properties file. This enables partners to supply a properties file, which you can place in the folder, as described below.

After the content upgrade is done, deploy the partner content pack before deploying the upgraded content pack.

Working with the Content Upgrade Utility on a Central Installation

1. Go to HPLN and locate the relevant content provider.

Note: Try starting at the content catalog, under <https://hpln.hp.com/node/21/contentfiles>.

2. Download the content pack, making sure to download the file **<CP Name>_oo10cuu-plugins.zip**. If this file does not exist, contact the partner to ask for it.
3. Unzip the **<PARTNER PLUGINS ZIP FILE NAME>** to a temporary folder on your file system (for example, **C:\Temp**).
4. From the temporary folder, copy the file **<PARTNER CP NAME>** to the following location:
 - Windows: **<OO Installation Directory>\central\cmu\exclusions**
 - Linux: **<OO Installation Directory>/central/cmu/exclusions**

Note: Before you copy the file, check if there is an older version of the file and delete it.

5. From the temporary folder, copy the file **<PARTNER CP NAME>_Conversions.properties** to the following location:
 - Windows: **<OO Installation Directory>\central\cmu\plugin-mappings**
 - Linux: **<OO Installation Directory>/central/cmu/plugin-mappings**

Note: Before you copy the file, check if there is an older version of the file and delete it.

6. From the temporary folder, copy the file **<PARTNER CP NAME>_plugin2oo.properties** to the following location:
 - Windows: **<OO Installation Directory>\central\cmu\plugin2op_mappings**
 - Linux: **<OO Installation Directory>/central/cmu/ plugin2op_mappings**

Note: Before you copy the file, check if there is an older version of the file and delete it.

7. Run the Content Upgrade Utility, now that it recognizes the partner content.

Working with the Content Upgrade Utility on a Studio Installation

1. Go to HPLN and locate the relevant content provider.

Note: Try starting at the content catalog under <https://hpln.hp.com/node/21/contentfiles>.

2. Download the content pack, making sure to download the file **<CP Name>_oo10cuu-plugins.zip**. If this file does not exist, contact the partner to ask for it.
3. Unzip the **<PARTNER PLUGINS ZIP FILE NAME>** to a temporary folder on your file system (for example, **C:\Temp**).
4. From the temporary folder, copy the file **<PARTNER CP NAME>** to the following location:

- **<OO Installation Directory>\studio\cmu\exclusions**

Note: Before you copy the file, check if there is an older version of the file and delete it.

5. From the temporary folder, copy the file **<PARTNER CP NAME>_Conversions.properties** to the following location:

- **<OO Installation Directory>\studio\cmu\plugin-mappings**

Note: Before you copy the file, check if there is an older version of the file and delete it.

6. From the temporary folder, copy the file **<PARTNER CP NAME>_plugin2oo.properties** to the following location:

- **<OO Installation Directory>\studio\cmu\plugin2op_mappings**

Note: Before you copy the file, check if there is an older version of the file and delete it.

7. Run the Content Upgrade Utility, now that it recognizes the partner content.

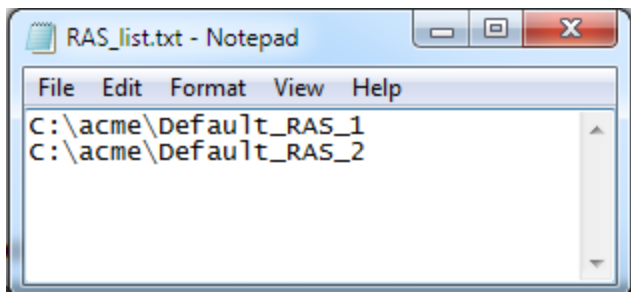
Upgrading Custom Content

This section is only relevant for the upgrade of a repository that also contains custom operations that point to IActions you have developed, whether in Java or .Net.

When you upgrade your repository, the upgraded content pack contains custom flows and operations, and a populated **Lib** folder containing custom IActions JARs/dlls, Maven plugins (wrappers for each custom JAR/dll) and third party dependencies in Maven repository format. For details on the Maven repository, see "Create a Local Maven Repository" in the *Action Developers Guide*.

1. If you have more RASes that are installed on different machines, copy the binaries onto your local machine, into different folders corresponding to the RASes.
2. Create a file containing the paths to these local folders. On each line of the file, write the path to a local folder that contains the content of `%ICONCLUDE_HOME%\RAS\Java\Default` for each of your RASes.

For example:



3. Add this file as input to the Content Upgrade Utility, using the argument `-rf, --rases-file`.

For example, if the file with the path to the RAS folders is called **RAS_list.txt** and is stored in the **C:/acme** folder:

```
--rases-file c:/acme/RAS_list.txt
```

Extra Step for CP 13 Users

Before the upgrade, make sure to delete the following empty jar files (size 0) from the main **lib** directory in your RAS:

- **httpclient-4.1.2.jar**
- **httpcore-4.1.2.jar**
- **httpmime-4.1.2.jar**

These files cause a known issue after content upgrade. This workaround applies only to content upgrade from CP13. In all other content pack versions, the files are not 0 bytes.

Upgrading Operations Linked to Action Plugins

Hard Copy

In versions of HP OO prior to 10.00, when you copied an operation linked to an action plugin, this created a **hard copy**. The copied operation was directly linked to the action plugin in the same way that

the original was. When the action was updated—for example if the name of the JAR or the class was changed—this had to be updated in all the hard copied operations.

In HP OO 10.x, hard copies are not created by default, as they were in previous versions. To create a hard copy, you need to create a new operation and select the relevant plugin. This method creates a new operation according to the `IAction getTemplate` or the `@Action` metadata.

Soft Copy

In HP OO 10.x, when you copy an operation linked to an action plugin, this creates a **soft copy**. This means that the copied operation continues to reference the original operation. If the action plugin is upgraded, when you update the original operation to call the new version, the copied operations are all updated automatically.

How Operations are Upgraded

When content is upgraded from 9.x, operations linked to action plugins are upgraded as follows, by default:

Type of Operation	Upgraded As
Copies of out-of-the-box operations	Soft copy
Custom operations	Hard copy
Operations linked to out-of-the-box JARs that were copied and renamed	Hard copy

For hard copied operations:

- When a plugin gets a new version (for example, after a bug fix), this plugin version must be updated in all hard copies.
- If the original operation resides in content pack 1 and the hard copy resides in content pack 2, the plugin shared by the two copies will be duplicated and placed in both content packs. This results in some redundancy.

Upgrading Custom Operations as Soft Copies

If you have multiple custom operations that are linked to the same action plugin, you might prefer to upgrade these as soft copies. To do so, you can add your own mappings to the **plugin2op.properties** file.

1. Open the `\plugins_mapping\plugin2op.properties` in a text editor.
2. Add a line to the file, identifying the Jar name and version, the action class name, and the UUID of the parent operation.

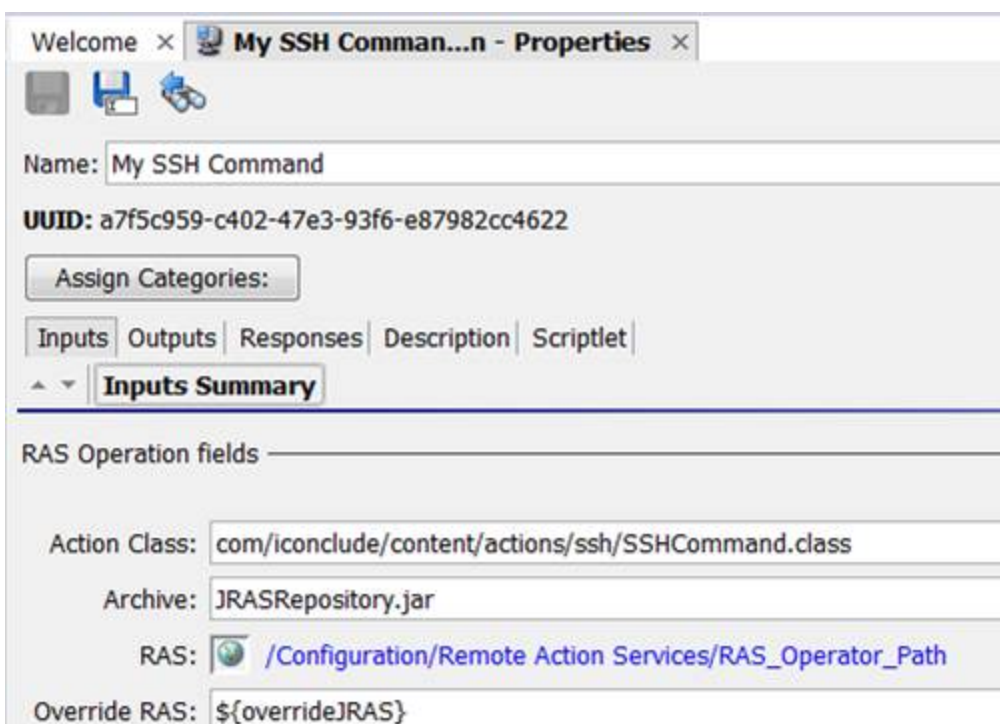
```
com\:<jar file name>\:<jar file version>\:<action class name>=<UUID of the  
parent operation>
```

For example, if the operations you want to upgrade as soft copies are linked to an action plugin called **Custom.jar**, the line would be as follows:

```
com\Custom\1.0 \:com.hp.oo.content.actions.xen.tasks.FindTasks=09b0041d-e190-  
4fae-8b4e-6f112cb99e3e
```

- Custom is the name of the Jar file
- 1.0 is the version of the Jar file
- com.hp.oo.content.actions.xen.tasks.FindTasks is the action class name
- 09b0041d-e190-4fae-8b4e-6f112cb99e3e is the UUID of the parent operation

To locate the UUID, check the **Inputs Summary** of the parent operation.



Upgrading Content with the Content Upgrade Utility

The administrator runs the Content Upgrade Utility to upgrade the content and supplies the path to the exported repository.

Tip: In order to avoid errors, we recommend consolidating all content into one repository, to be used for the upgrade.

1. Run the bat/sh script that launches the Content Upgrade Utility.

For Windows: `>upgrade-content.bat`

For Linux: `>./upgrade-content`

2. Specify the upgrade options in the command line.

For example, in Windows:

```
>upgrade-content.bat --name AcmeContent --publisher Acme --repo  
C:\old\OldRepositories --output D:\NewRepositories
```

For example, in Linux:

```
>./upgrade-content --name AcmeContent --publisher Acme --repo  
/old/OldRepositories --output /NewRepositories
```

In the example above:

- `AcmeContent` is the name given to the new content pack
- `Acme` is the name of your company
- `C:\old\OldRepositories` (Windows) or `/old/oldRepositories` (Linux) is the location of the 9.x repository
- `D:\NewRepositories` (Windows) or `/newRepositories` (Linux), is the location where the content pack will be stored.

The Content Upgrade Utility console displays the progress of the upgrade.

```
Content Upgrade

Upgrading content
Reading items from the repository - 898
Preparing items for upgrade - Done
Initial upgrade tasks - Done
Reading converted items - Done
Continuing upgrade tasks - Done
Collecting invalid items - Done
Archiving files - Done

Content upgrade took 0 minutes and 55 seconds

Summary
Upgraded repository - c:\Temp\CUU\dina\in\
Output directory - c:\Temp\CUU\dina\out\
Total converted - 525
    Flows - 402
    Operations - 109
    Configuration items - 14
Converted with errors - 152
    Flows - 117
    Operations - 35
    Configuration items - 0

A detailed report can be found at c:\Temp\CUU\dina\out\content-upgrade-report.html
Press Enter to quit
```

Note: If you provide a wrong (non-existent) folder in the `--repo` parameter, the Content Upgrade Utility displays an error message.

For more detail about upgrade options and more examples of how to enter the upgrade options under different circumstances, see ["Command Line Options" on the next page](#).

When the upgrade is complete, an HP OO 10.x user content pack and Studio project is generated and stored in the output location that you specified.

Note: Make sure not to delete the output files (user content pack and Studio project) during the upgrade procedure. This output is required by Studio.

In our example, all the content that can be deployed and run is stored in a Studio project called **AcmeContent**. The **AcmeContent-cp.jar** file is created as an archive in the **AcmeContent** directory. Any invalid content is stored in a Studio project called **AcmeContent-invalid**. Both the **AcmeContent** and **AcmeContent-invalid** projects can be opened and edited in Studio.

3. To see more details about the upgrade, view the **content-upgrade-report.html** file.
4. If there are multiple repositories, repeat the upgrade process for each repository (shared or local). However, we recommend consolidating all content into one repository, to be used for the upgrade.

After upgrading, you should open the upgraded projects in Studio, check if you need to fix any invalid content, and then export the project into a new content pack from Studio. Deploy the content pack that you created from the valid project in Studio and not the one that was created by the Content Upgrade Utility. See ["Reviewing, Fixing, and Deploying Content After Upgrading" on page 36](#).

Note: After content upgrade, the valid project and the resulting content pack will have duplicated configuration items with the same UUIDs. Therefore, you will not be able to import the project and the content pack at the same time into the Studio workspace.

Command Line Options

While running the Content Upgrade Utility, you need to define the details of your content upgrade. For example, which repository to upgrade, what to name it, where to store it, and other details.

Use the following command line options:

-d, --desc <arg>

Use `--desc` to include brief description of the content pack. The description is used in the content pack meta data properties file.

For example:

```
--desc Content pack containing Acme flows and operations
```

The default value is "Upgraded content pack".

-h, --help

Displays help information about the different command line options.

-i, --repo <arg>

Use `--repo` to specify the folder containing the HP OO 9.x repository. Point to the root directory of the HP OO 9.x project.

If `--repo` is not defined correctly, there will be problems with the upgrade.

If the repository is stored under a parent folder and `--repo` points to this parent folder rather than to the folder containing the repository itself, the repository will not be upgraded. The following error will appear:

```
Invalid repository input argument. Pathrefs.xml file not found.
```

-ip, --include-passwords

Use `-ip, --include-passwords` to include system account passwords in the content upgrade. When the content is deployed on Central, the user names and passwords will be deployed. Note that the passwords will be obfuscated inside the project/content pack.

Important note: In order to upgrade system accounts with a password, you must not perform an export on the repository, but rather create a file system copy of it and perform the content upgrade on that copy.

For example, for a simple Central installation, use a copy of the `<OO_9_install_path>\Central\crepo` folder as the repository for content upgrade.

-n, --name <arg>

Use `--name` to enter the name that will be used for:

- the directory containing all the content that can be deployed and run
- the content pack archive (jar file)
- the content pack metadata properties file

The default value is "Customer".

-ncp, --nocp

If this option is used, a content pack archive will not be created.

-nine, --nine-cp-version <arg>

Use `-nine, --nine-cp-version` to specify the 9.x content pack version that you have installed on the environment from where the 9.x repository was exported.

If you made changes to any out-of-the-box configuration items (such as selection lists, domain terms, and so on) you must use this argument; otherwise, your changes will be lost. After upgrade, another configuration item is created with a different UUID and with the name changed to "custom_<previousName>".

Note: This additional item is created only for configuration items that have changes, compared to the version specified in the `-nine` argument.

Any use of the original item is replaced with the version with your changes.

Note: If you changed only the name of the configuration item and not the value, this will not be considered as a change and the item will not be duplicated.

For example, the **Character Sets** selection list contains items such as **UTF-8**, **UTF-16**, **UTF-32**, and so on. If you added **UTF-7**, you must use the `-nine` argument in order to avoid losing this item after upgrade. A new selection list with the same name will be created in your repository and any use of the out-of-the-box **Character Sets** list will be replaced with the new **Character Sets** list.

This argument can accept one of the following values:

"7.60.01"

"7.60.02"

"9.00.03"

"9.00.04"

"9.00.05"

"9.00.06"

"Content Pack 7"

"Content Pack 8"

"Content Pack 9"

"Content Pack 10"

"Content Pack 11"

"Content Pack 12"

"Content Pack 13"

-nui, --no-user-interaction

This option disables the console.

-o, --output <arg>

Use `--output` to enter the output location, in which the content pack and the **UUID/jar/dll** mapping XMLfile will be stored.

Note: If there is already an output directory in this location, the Content Upgrade Utility will delete everything that was in it previously. If the directory does not exist, the Content Upgrade Utility will create it.

The default value is the current directory.

-p, --publisher <arg>

Use `--publisher` to enter the name of the customer. The publisher name is used in the content pack meta data properties file.

The default value is "Customer".

-rf, --rases-file <arg>

Use `-rf, --rases-file` to upgrade custom IActions. Indicate the path to a file containing on each line the path to a local or shared network folder that contains the content of `%IINCLUDE_HOME%\RAS\Java\Default` for each of your RASes.

-t, --temp-dir <arg>

Use `--temp-dir` to set the temp directory, overriding the default temp directory.

The default value is the value from `java.io.tmpdir`.

-v, --version <arg>

Use `--version` to enter the version for the content pack. The version is used in the content pack meta data properties file.

The default value is "1.0.0".

Example (Windows)

In this example:

- **9xContent** is the name given to the new content pack
- **MyCompany** is the name of the company
- **C:\temp\repo** is the location of the 9.x repository
- **D:\NewRepositories** is the location where the content pack will be stored.

For the options that have not been specified, the upgrade tool uses the default values.

```
>upgrade-content.bat --name 9xContent --publisher MyCompany --repo C:\temp\repo  
--output D:\NewRepositories
```

Viewing Information about the Content Upgrade

There are a number of ways to view the progress of the content upgrade.

Console

While the content upgrade is running, the Content Upgrade Utility console displays messages, including:

- Warnings and errors
- General messages
- Progress indications

When the upgrade is complete, the console displays a summary of the content that was converted.

```
Content Upgrade  
  
Upgrading content  
Reading items from the repository - 898  
Preparing items for upgrade - Done  
Initial upgrade tasks - Done  
Reading converted items - Done  
Continuing upgrade tasks - Done  
Collecting invalid items - Done  
Archiving files - Done  
  
Content upgrade took 0 minutes and 55 seconds  
  
Summary  
Upgraded repository - c:\Temp\CUU\dina\in\  
Output directory - c:\Temp\CUU\dina\out\  
Total converted - 525  
  Flows - 402  
  Operations - 109  
  Configuration items - 14  
Converted with errors - 152  
  Flows - 117  
  Operations - 35  
  Configuration items - 0  
  
A detailed report can be found at c:\Temp\CUU\dina\out\content-upgrade-report.html  
Press Enter to quit
```

Log File

After the upgrade has run, you can view the **content-upgrade.log** file in the **output** folder. This file includes everything that was written to the console as well as debug messages.

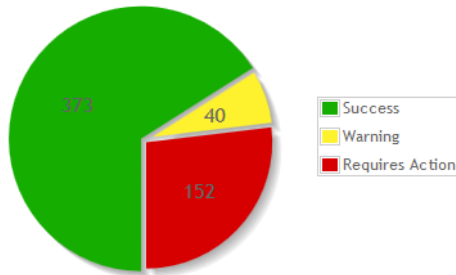
Upgrade Report

After the upgrade has run, you can view the **content-upgrade-report.html** file in the **Output \ Upgrade** folder.



Operations Orchestration - Content Upgrade Report

Converted Objects - 525



Content Pack Dependencies

The following is a list of Content Packs that your content is dependent upon. You must deploy the valid content before attempting to run any flow.

[Show/Hide](#)

Require Action: 152 (Flows: 117, Operations: 35, Configuration Items: 0)

This section shows the items that failed upgrade. For each type of problem there is a suggested solution and a table containing Content project in HP OO Studio 10.

[Show/Hide](#)

Warnings: 40 (Flows: 18, Operations: 22, Configuration Items: 0)

For more information about the Content Upgrade Report, see "[Reviewing, Fixing, and Deploying Content After Upgrading](#)" on the next page.

Reviewing, Fixing, and Deploying Content After Upgrading

After the content upgrade has run, view the two HP OO 10.x projects that were generated and stored in the output location that you specified:

- **Valid:** All the content that can be deployed and run is stored in a project with the valid content.
 - If you have defined a name for the upgraded repository output using the `--name` argument, the valid content is stored in a project of that name.

For example, if the name is defined as `AcmeContent`, the valid content is stored in a directory called **AcmeContent**. The **AcmeContent-cp.jar** file is created as an archive of that directory.
 - If you have not defined a name using the `--name` argument, the project containing the valid content is called **Customer**.
- **Invalid:** Content that cannot be deployed and run is stored in a project for invalid content.
 - If you have defined a name for the upgraded repository output using the `--name` argument, the project containing the invalid content is called **<Name>-invalid**.
 - If you have not defined a name using the `--name` argument, the project containing the invalid content is called **Customer-invalid**.

Invalid Content

Content that is not supported by HP OO 10.x is excluded from the **Valid** project, and stored in a separate HP OO 10.x project. The **Invalid** project can be opened in HP OO 10.x Studio and fixed.

Examples of content that is stored in the **Invalid** project:

- Flows and operations that were also invalid in versions earlier than 10.00.
- Flows and steps that use Sleep scriptlets.
- Flows with a multi-instance step inside a parallel lane.
- Operations that point to missing plugins.
- 9.x integration plugins that are not backward compatible or not supported in 10.x
- Flows and operations with missing dependencies. This includes unresolved domain terms, missing operations used in a step flow, missing subflows, missing system evaluators, missing system filters, missing system properties, missing system accounts, or missing selection lists.

- All flows dependent on content mentioned above.
- Flows containing steps with user and password credential inputs, where in the original operation, they are required but not assigned.
- Content with missing UUIDs, such as out-of-the-box content that is missing the RAS_Operator_Path, system account or system property.

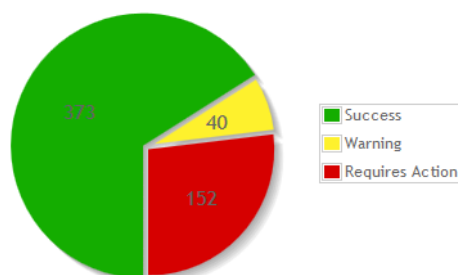
The Content Upgrade Report

After the project has been upgraded, you should check the Content Upgrade report to identify the content that was not upgraded successfully.



Operations Orchestration - Content Upgrade Report

Converted Objects - 525



Content Pack Dependencies

The following is a list of Content Packs that your content is dependent upon.
You must deploy the valid content before attempting to run any flow.

[Show/Hide](#)

Require Action: 152 (Flows: 117, Operations: 35, Configuration Items: 0)

This section shows the items that failed upgrade. For each type of problem there is a suggested solution and a table containing the Content project in HP OO Studio 10.

[Show/Hide](#)

Warnings: 40 (Flows: 18, Operations: 22, Configuration Items: 0)

The report includes:

- The number of converted objects.
- The number of objects that were not upgraded.
- Details of the objects that require action, and suggestions about how to resolve each type of problem.
- The **Requires Action** section lists all the items that failed to be upgraded, and which are stored in the **Invalid** project and suggestions about how to resolve each type of problem.
- The **Warnings** section lists items that may behave differently after the upgrade. These items did not fail to be upgraded. However, it is recommended to check the way that they work, and to see if there are corrections that need to be made.

To review, fix, and deploy the upgraded content:

1. After the upgrade, locate the upgrade report **Output\content-upgrade-report.html**, and open it in a Web browser.
2. In the **Requires Action** and **Warnings** sections, click **Show/Hide** to see tables containing all the items that were not upgraded and suggestions about how to resolve each type of problem.
 - Objects in the **Require Action** section failed the upgrade and were stored in the **Invalid** project. These need to be fixed before you can use them in HP OO 10.x.
 - Objects in the **Warnings** section did not fail the upgrade and were stored in the **Valid** project. It is recommended to check them, because they may work differently from what is expected.

Items are grouped into separate tables according to the type of problem, and sorted according to path. For examples, see [Contents of the Report - Examples](#).

You can click **Show/Hide items** to toggle between showing and hiding individual tables.

Note: Flows that have more than one error (for example, both a Sleep scriptlet and dependency on an invalid item) will appear in more than one table. Flows with a general error or schema error will only appear once.

Requires Action: 52 (Flows: 48, Operations: 4, Configuration Items: 0)

This section shows the items that failed upgrade. For each type of problem there is a suggested solution and a table containing all the items that failed the upgrade. To fix the items, open the Invalid Content project in HP OO Studio 10.

Show/Hide

Referencing a missing item

These flows and operations have a reference to a missing item (flow, operation, selection list, domain term, system filter, scriptlet or RAS).

To fix:

1. Open each original flow or operation in Studio 9.x.
2. Check whether there are missing references (these appear in red).
3. Fix the references so that they refer to existing items.
4. Export the repository again, and then upgrade the fixed repository to HP OO 10.00.

Name	Path
SFTP Get Attributes MissingRas Op	Library\My Ops Flows\CMU Repository\Missing Dependencies\SFTP Get Attributes MissingR
Missing SelectionList Two Levels	Library\My Ops Flows\CMU Repository\Missing Dependencies\Missing SelectionList Two Lev
Missing SelectionList Three Levels 2	Library\My Ops Flows\CMU Repository\Missing Dependencies\Missing SelectionList Three L
Missing SelectionListThree Levels	Library\My Ops Flows\CMU Repository\Missing Dependencies\Missing SelectionListThree L
Missing SelectionList	Library\My Ops Flows\CMU Repository\Missing Dependencies\Missing SelectionList.xml
Missing Ras Four Levels	Library\My Ops Flows\CMU Repository\Missing Dependencies\Missing Ras Four Levels.xml
Missing Ras Three Levels	Library\My Ops Flows\CMU Repository\Missing Dependencies\Missing Ras Three Levels.xml
Missing Ras Two Levels	Library\My Ops Flows\CMU Repository\Missing Dependencies\Missing Ras Two Levels.xml
MissingSubflow	Library\My Ops Flows\CMU Repository\Missing Dependencies\MissingSubflow.xml
Missing Domain Term	Library\My Ops Flows\CMU Repository\Missing Dependencies\Missing Domain Term.xml
Missing Op	Library\My Ops Flows\CMU Repository\Missing Dependencies\Missing Op.xml

3. In Studio 10.x, import the HP OO 10.x out-of-the-box Base content pack and all content packs that are mentioned in the report.
4. Open both the **Invalid** and **Valid** content packs in Studio 10.x.
5. In Studio, fix any content that needs fixing.

In some cases, the content that was not upgraded is content that is not yet supported by HP OO 10.x, and you may prefer to keep it as it, while waiting for the features to be supported in later versions.

In other cases, you may prefer to modify the content so that it can be used in HP OO 10.x. You may want to save a copy of the original content and create a duplicate that is modified.

Note: For information about how to fix specific upgrade problems, see "[Known Issues and Troubleshooting](#)" on page 42.

6. We recommend dragging each fixed item from the **Invalid** project to the **Valid** project, after it is fixed. This way, you can more easily identify what is left to fix.
7. After making adjustments to the content in Studio 10.x, repackage the fixed content in the **Valid** project as a content pack, for deployment. For more information about creating content packs, see the *HP OO Studio Authoring Guide*.
8. In Central, deploy the out-of-the-box Base Content Pack that is shipped with HP OO 10.x, and

deploy all the content packs that your content is dependent upon to run.

Note: Do not deploy the upgraded content pack until after you have deployed these content packs.

9. Deploy the content pack containing the upgraded content.

Important! Do not directly deploy the content pack that was created by the Content Upgrade Utility. Make sure to use the content pack that you created in Studio, from the **Valid** project.

For information about deploying content in Central, see the *HP OO Central User Guide*.

Contents of the Report - Examples

The **Requires Action** section lists the objects that were not upgraded and suggests action items for fixing them. For example:

- Flows/operations that reference a missing item (flow, operation, selection list, domain term, system filter, scriptlet or RAS). You will need to fix the references in Studio so that they refer to existing items, and then upgrade the repository again.
- Flows/operations containing scriptlets in SLEEP format. You will need to open the flow/operation in Studio and rewrite the scriptlet in Rhino format.
- Flows with a multi-instance step inside a parallel or multi-instance lane. You will need to manually convert the step to a subflow with a multi-instance step.
- Multi-instance flows that are structured in a way that is inconsistent with HP OO 10.x. You will need to fix the multi-instance flow so that it is compatible with HP. For more information about multi-instance flows in HP OO 10.x, see "[Reviewing, Fixing, and Deploying Content After Upgrading](#)" on [page 36](#)
- Operations with missing mappings for IActions. If an operation is missing a mapping, this means it's one of the following:
 - Custom IAction, in which case, you need to provide the jar and upgrade the repository again using the '-rf' argument. For more information, see "[Command Line Options](#)" on [page 30](#).
 - Copy of an IAction that is no longer supported, in which case it cannot be used anymore.
- Flows/operations that reference unsupported flows or operations. Some flows and operations no longer work in HP OO 10.x due to implementation changes. Among these are some scheduling and repository operations.

- Flows/operations that are dependent on a flow or operation that has errors. If you fix the flows and operations that these are dependent upon, these will also be fixed.
- Configuration items, which have updated names or values compared to their out-of-the-box values. These will appear if you modified the out-of-the-box configuration items and didn't use the **--nine-cp-version** argument.
 - For name changes - the item's UUID is replaced and all user content is modified to reference the new UUID.
 - For value changes - the item's UUID is replaced, and its name is added the 'custom_' prefix so as not to collide with the out-of-the-box item. All user content is modified to reference the new UUID.

You may want to update these configuration items.

The **Warnings** section lists objects that were upgraded, but which may behave differently after the upgrade. For example:

- Operations that are copies of HP OO integration operations, which have new inputs. The new inputs for these operations, and any flow using them, were added automatically. However, flows using them may now prompt for input values during execution.
- Flows/operations with input of the type **Credentials: Logged-In User Password**. To improve security, the password is no longer automatically transferred when a **Credentials** input is of the type **Logged-In User Password**. Instead, the user will be asked to enter the password manually in a prompt message.
- Flows/operations with unhandled usage of 'Store system account in flow variable'. The implementation of this operation has changed and not all cases can be handled automatically.

If the **flowVariable** input was not assigned a constant value, this has to be fixed manually. You need to fix all the inputs that use this flow variable. For example, if the system account is assigned to a flow variable named **sysAcct**, then an input assigned from that variable that is supposed to accept the **Username** part of **sysAcct** should now be assigned from **sysAcctUsername**.

For more information about objects that behave differently after upgrade, see ["Differences in Behavior After Upgrading" on page 56](#).

Known Issues and Troubleshooting

Because of the changes in HP OO 10.x, there are some types of flows that may not upgrade properly. In some cases, you will be able to modify the flows, to get them to work properly. In other cases, it is recommended to save the original flow, to be used in later versions of HP OO, and in the meantime, to create a new flow that works differently.

Content that is not supported by HP OO 10.x is stored in a separate project after upgrade, and is not included in the content pack. For more information about what kind of content is not supported, see the *HP OO 10.00 Base Content Pack 1.0 Release Notes*. For more information about features that are not supported in HP OO 10.x, see *Known Issues and Limitations* in the *HP OO 10.x Release Notes*.

Missing System Accounts

Issue: After content upgrade, there may be flows or steps in which inputs reference system accounts that do not exist.

Solution: Open the flow in Studio 10.x and change the input so that it references an existing system account.

In cases such as this, it does not help to go to the original repository in version 9.x to look for the missing reference. It must be fixed in the 10.x project.

Duplicated UUIDs in an Upgraded Project

Issue: If you upgraded content with versions of HP OO prior to 10.02, you may get errors in Studio 10.02 and in Central 10.02 deployment, and you may have problems with installing the out-of-the-box content packs, such as the Base Content Pack 13.

The problems are caused by duplication of configuration items (system properties, system accounts, domain terms, selection lists, and so on). These items were part of the HP out-of-the-box content and there may be duplications of these in your upgraded content. Out-of-the-box content should be treated as read-only. This principle was violated by former versions of the Content Upgrade Utility and version 10.02 fixes this.

Solution:

- Upgrade your repository again, using the Content Upgrade Utility for 10.02 (recommended).
- Fix your repository manually:
 - a. Open your project in Studio, and go to the configuration folders.
 - b. Locate the duplicated items (they have an error indication) and delete them.

Note: The **Category** domain term cannot be deleted from within Studio. If this item is duplicated, you will need to delete it from your file browser, outside of Studio.

For example, right-click on the item, select **Show in Explorer**, delete it from the file system, and then refresh the project in Studio.

- c. Deploy your exported content pack with the HP Base Content Pack (version 12\13).

Note: If you edited selection lists from the out-of-the-box content, you need to create them again, rename, and replace all usages.

Modified OOTB Scriptlets are Overwritten After Upgrade

Issue: If the HP OO 9.x repository contains a copy of an out-of-the-box operation with a scriptlet, and that scriptlet was modified, after content upgrade, the modified scriptlet will be overwritten by the out-of-the-box version.

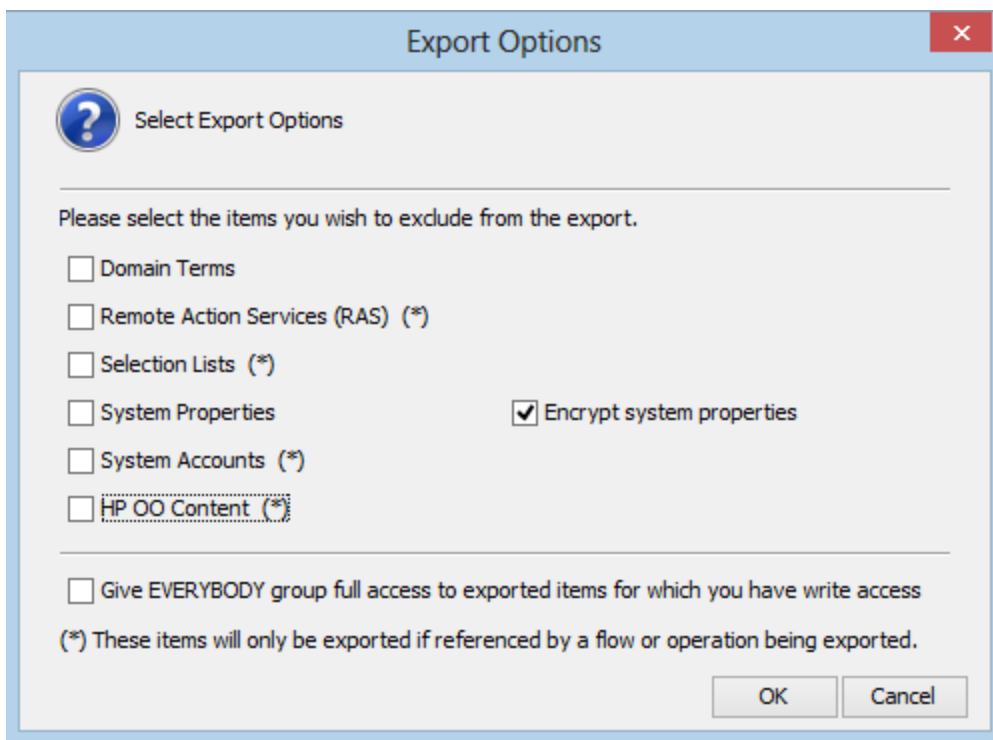
Solution: If the change in the scriptlet is important, you will need to manually edit the scriptlet in the copied operation.

Problems Upgrading Repositories

Issue: When you upgrade a repository that is not fully exported from Studio you may receive a warning, because some data is invalid.

Solution:

1. In HP OO 9.x, export the repository from Studio: Right-click **Repository**, and select **Export as New Repository**.
2. Select a name and location for the repository.
3. In the Export Options page, make sure that all the check boxes are cleared (not selected) apart from the **Encrypt system properties** check box. Checking the **Encrypt system properties** check box is optional. However, note that after content upgrade, the system properties will be obfuscated with the 10.x mechanism.



4. Run the Content Upgrade Utility on that repository.

Note: Exporting a repository fixes the cases of invalid data.

Studio Errors After Upgrading a DotNet iAction

Issue: After you upgrade content that includes .NET iActions, there may be Studio errors because of a third party DLL dependency that is only for 32-bit platforms. For example,

Microsoft.GroupPolicy.Management.dll and **Microsoft.GroupPolicy.Management.Interop.dll**.

Solution: If the repository includes custom .NET iActions, it is recommended to clean your RAS folder copy and leave only the DLLs that are required for your iActions before upgrading content.

Note: Make sure to copy the RAS lib directories to a different location before deleting anything from them and upgrading them.

Backup Corruption

When rolling back the HP OO 10.02 patch, if one of the folders was renamed or if some files were deleted, the rollback will fail and the application (Central\ Studio\ RAS) will not start.

Solution: Save the **backup** folder that is created after the upgrade process as a ZIP file, and extract it to the same location before rolling back the upgrade.

Permission Errors in Linux

Issue: The content upgrade package for Linux does not have execution rights by default for the files **upgrade-content.sh** and **/java/bin/java**. This may cause you to receive error messages like the following:

```
-bash: ./upgrade-content.sh: Permission denied
./upgrade-content.sh: line 5: ../java/bin/java: Permission denied
```

Solution: To avoid this, grant execution rights for the files.

Content Pack Dependencies

Issue: Deployment of upgraded content fails due to a dependency error.

Solution: Review the upgrade report and make sure you have deployed all the content packs that are mentioned in it. See "[Handling HP OO and HP OO Partner Content](#) " on page 20 for more details about the content packs that the Content Upgrade Utility recognizes, and how to handle other content.

Review the deployment error and look for the missing UUIDs in your 9.x Studio content. This will enable you to better identify the missing content.

Sleep Scripts Not Supported

Issue: Sleep scripts are not supported in HP OO 10.x. If you upgrade flows with scriptlets that are written in Sleep, they will be separated to the project containing the invalid content.


Solution: After upgrade, rewrite the Sleep script as JavaScript.

Multi-instance Steps

In HP OO 10.x, multi-instance steps are created in a multi-instance branch. In previous versions, flow authors would use the **Toggle Multi-instance** option to turn a regular step into a multi-instance step, and would create multiple loops for the different targets of the step.

Issue: In HP OO 9.x, a multi-instance step was a single step, with a single set of properties. In HP OO 10.x, there are properties for the MI branch step and also properties for each inner step within the branch. The flow will not work properly after upgrade, unless the properties of the MI branch step and the inner steps are set up correctly.

Solution: Adjust the properties for the MI branch step and the inner steps, so that they correspond with the guidelines in the table below.

Open the Step Inspector for the MI branch step by double-clicking the **Multi-step**  icon at the start of the step.

Open the Step Inspector for each inner step by double-clicking the relevant step icon, inside the branch.

Property	Inner steps	MI branch step
Step UUID	Same as original (before upgrade)	Same as original
Assign Input from	Input name	Same as original
Assign Input to	Not assigned	Same as original
Result - From key name	Same as original	Same as the result name
Result - Assignment	Overwrite	Same as original
Result - Filter	Same as original	None
Scriptlet	Same as original	Upgrade scriptlet - will merge all the global variables of the inner steps.

Multi-instance Steps in a Parallel Lane

Issue: A multi-instance step in a parallel lane will not work after upgrade.

Solution: Replace the multi-instance step in the parallel lane with a subflow step in the parallel lane.

Upgrade Does Not Translate Results of Operations in a Multi-instance Lane as Multi-instance Results

Issue: After upgrade, some OVERWRITE results of operations that were included in a multi-instance lane in 9.x are not translated into multi-instance results in 10.x.

Solution: You will need to add the multi-instance results in 10.x manually. For more information, see the HP OO 10 OnBoarding Kit document "Multi-instance best practices". This document is available on HPLN at <https://hpln.hp.com/node/15962/attachment>.

Multi-instance Steps with Transition to a Parallel Step or Another Multi-instance Step

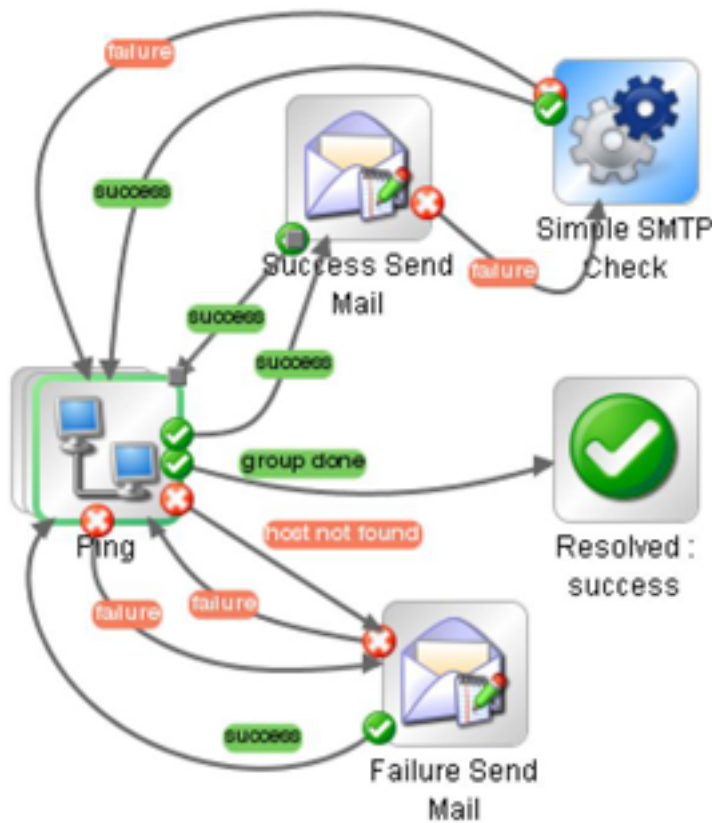
Issue: A multi-instance step that has a transition to a parallel lane step or to another multi-instance step (rather than via a **Group Done** transition) will not work after upgrade.

Solution: Replace the transition with a **Group Done** transition at the end of the multi-instance step.

Multi-instance Steps with Results Inside the Loop

Issue: When you upgrade a flow with a multi-instance loop, if one of the steps in the loop (not the multi-instance step) assigns results to flow variables and/or flow output fields, then these results will not be available outside the multi-instance lane.

For example, see the flow below. If you added results to **Success Send Mail**, **Simple SMTP Check** or **Failure Send Mail**, the flow variables created in those results will not be available after the **Group done** transition.



Solution: To make the results available outside the multi-instance lane, reassign them in the multi-instance step properties after upgrade.

Flows where Response Destinations are Not Connected Back to Multi-instance Steps

Issue: There are problems with upgrading a flow with a multi-instance step, where a regular step goes directly to the end step, and not back to the multi-instance step. This is considered bad practice in flow

design.

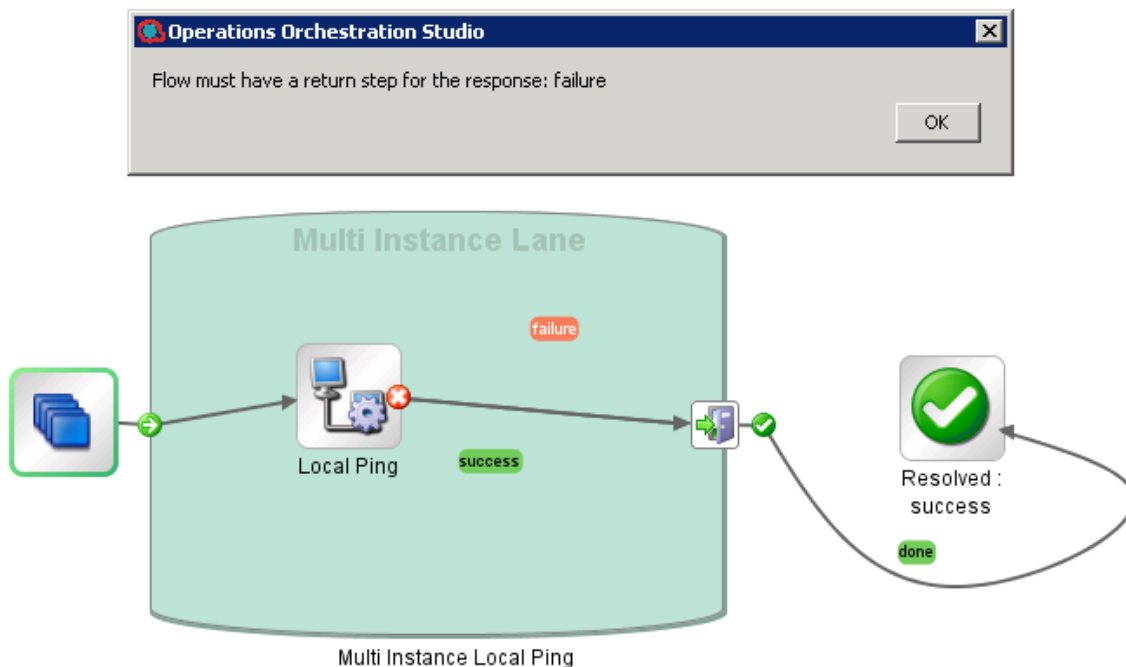


Solution: Fix the flow so that the regular step loops back to the multi-instance step, and only from there goes on to the end step.



Can't Save a Flow with a Multi-instance Step

Issue: After content upgrade to HP OO 10.x, a flow with a multi-instance step goes to the invalid project. After fixing the flow in Studio 10.x, it is not possible to save the flow.



Solution: Delete all return steps and replace them with new return steps in Studio 10.x.

Upgrade Fails for Flows With Input Binding of Type Credential

Issue: Upgrade fails for flows that have input binding of the type **Credential**, which is not assigned to any system account.

Solution: Change these inputs to user prompt inputs.

Long Group Names Not Upgraded

Issue: Groups with names longer than 255 characters are not upgraded to roles, during content upgrade.

Solution: Change the group names to shorter names, before upgrading.

Long Inputs Not Upgraded

Issue: Schedules containing input values longer than 4000 characters are not upgraded, during content upgrade.

Solution: Change the input values so that they are less than 4000 characters, before upgrading.

LDAP Configuration is not Upgraded

Issue: LDAP is not upgraded and a 400 error appears on POST `http://localhost:<port>/oo/rest/authns/ldap-config`.

Solution: This may occur because there are LDAP configurations that are supported in HP OO 9.x but are not supported in HP OO 10.x. In this case, the **User** filter was `(objectClass=*)` and did not contain a user name.

The LDAP upgrade calculates the **User ID** attribute according to the **User** filter.

- If the filter contains one user name, this user name is taken.

For example, if the **User** filter is `(&(objectClass=person)(sAMAccountName={0}))`, the **User ID** attribute is **sAMAccountName**.

- If the filter contains 0 or more than one user name, the **User ID** attribute will be one of the following:
 - **sAMAccountName**, if the LDAP is Active Directory
 - **uid**, otherwise

For example, if the filter is `(&(objectClass=person)(|(sAMAccountName={0})(uid={0})))`, then the **User ID** attribute will be **sAMAccountName** if the LDAP is Active Directory and **uid**, otherwise.

Operations with Missing Responses Not Identified as Invalid

Issue: In some situations, operations with missing responses end up in the valid project instead of the invalid project.

Solution: After upgrading, you will need to manually check the operations to see if they have missing responses. These are not identified as invalid during the upgrade process.

Different Size Limit for Prompts

Issue: The size limit for prompts in a flow is now 255 characters, while in previous versions, the size limit was 1024 characters. After an upgrade, prompts with more than 255 characters will be cut down to the correct size.

Solution: After upgrading, check your prompts and see if there are any that are missing information and need to be rephrased.

Non-completed Flows Not Upgraded

Issue: If there are flows that were not completed before an upgrade (for example, those that are running or paused), they will be canceled during the upgrade.

Solution: Make sure that all flows have finished running before starting the upgrade.

Automatic Update of the HP OO to HP OO 10.x Integration

After upgrade, all flows using operations from **/Library/Integrations/Hewlett-Packard/Operations Orchestration** will have their step references replaced with the corresponding operations from the **Library/Integrations/Hewlett-Packard/Operations Orchestration/10.x** folder.

For example, if you upgrade a flow that uses **Launch Flow** (611ee86d-249e-41e2-b464-fef310ecb492) from Content Pack 11, you will get a flow that uses **Launch Flow** (4556e22b-6acf-47b9-801f-9a1d3615545e) from the **10.x** folder.

If you want to disable this behavior before running the Content Upgrade Utility, open the **/cmu/operation_references/operationReferenceReplacements.properties** file and comment (using #) the lines containing UUID correspondences, as shown below:

```
#9.x/Dynamically Launch Flow > 10.x/Dynamically Launch Flow  
#0e227211-ffe5-4b24-8dd2-84071e3efa92=98102ebe-7a26-4398-afde-e01756578879
```

New Inputs: Host, Port, Protocol, Username, Password

Issue: Some operations worked as plugins in HP OO 9.x and were missing connection and credential inputs. In HP OO 10.x, these operations connect to Central through REST API and therefore need these new inputs.

After upgrade, your copies of these operations and the steps in your flows referencing these operations have been added the new host, port, protocol, username, password inputs automatically, but the **Assign From** is set to **Prompt User**.

These are the operations and the added inputs:

- **Get All Children Named** (08571e7b-24ef-4027-858f-619ad36ab36e): host, username, password, port, protocol
- **Get Children of Path** (5e0e3894-8b18-4a61-9c23-784204f829ad): host, username, password, port, protocol

- **Delete Flow Schedule** (49f89d9d-99e2-46f5-8b10-ba878a203303): username, password
- **Get Flow Schedules** (590cde98-60d5-43e1-b3ed-35e16e8a3075): username, password
- **Get Schedule Details** (2316a0c2-5013-4a37-9a93-dae4623c3c17): username, password
- **Flow Run Summary Report** (2e871c48-8073-4c08-ae83-8fa9ccfafeb6): host, username, password, port, protocol
- **Flow Run Counter** (6431833f-2f65-4b55-971c-a9b7d8be36ce): host, username, password, runId, port, protocol
- **Resume Flow Run** (55188216-67cb-49b2-a522-82667cc4b07d): host, username, password, port, protocol
- **Set System Account** (046a86df-3bf4-4e66-aa48-88826e741215): host, username, password, port, protocol, persistInDatabase
- **Set System Property** (88991b3a-756d-44b9-9fed-107caf581624): host, username, password, port, protocol, persistInDatabase

Solution: Change the default **Assign From** for these inputs as required.

Operations With No Equivalent in HP OO 10.x

Issue: Some operations from previous versions do not have an equivalent in HP OO 10.x. The following legacy out-of-the-box content from the **/Library/Integrations/Hewlett-Packard/Operations Orchestration** folder are not supported in this version:

- **Get Cluster Servers** (7b925f4f-ca85-492f-895c-f0d5477ab0d3)
- **HP Load Balancer admin** (a2888f6b-e860-4370-803c-3a18b0e809e8)
- **Get Cluster Servers** (4b3eed95-c688-4e79-9c52-0ff4d31c3822)
- **Get Server Status** (6e48fd8a-b321-4a61-be78-6e1ccb9eb1f2)
- **Get Stored Flow Variable** (fe7b058d-3925-4447-af51-6f4d178a2a8b)
- **Store Flow Variable** (cb5e7fa1-83f2-4e1d-9ce9-e6f13848fae9)
- **Flow Run Counter** (c2ccf035-fead-4228-a27f-d1f48afcd83a)
- **Publish Master to Slaves** (3fcb2af-eda9-42b8-b8b2-2391c46f31e5)
- **Unlock Repository** (b23f42fa-028a-4e06-ac4e-b6a9b32333c3)
- **Clean Deprecated Library Content** (11fd655a-c254-49e9-9b91-2c22daebc296)

- **Publish Staging to Production Cluster** (595363bb-4334-44e9-ab7b-6a7fb16af608)
- **Publish To Central** (aa682862-187a-4d4a-867c-3da35a875096)
- **Rollback From Snapshot** (c8ec64a3-38a8-460f-b361-c802b2f96145)
- **Set Selection List from Database** (cc11ad02-54ed-48eb-acd8-123b32c0aa8d)
- **Single Pass Delete Unused Content** (7a285270-257e-48b2-9267-0947b0a01415)
- **Snapshot Then Publish** (031449ec-6f99-4fbd-b79f-8a9d74d912fd)
- **Check In** (c2de85be-5b42-44e1-8f01-78fa51de6d54)
- **Create Snapshot** (5364cba6-77f9-4243-ae0f-472ce7895c8e)
- **Delete Path** (0ed348f1-d307-4326-bced-1d9bffceafa1)
- **Delete Snapshot** (10ef3842-5e07-4751-ac0c-582d59c0f0b2)
- **Get Last Modified By** (6172353d-f160-42a6-bb31-5328992ba154)
- **Get References to Path** (4f3970a8-84dd-4934-b21b-35e20a75c4b8)
- **Repository Sync** (592493c1-9eb5-4977-be23-5eda23b72e68)
- **Basic Schedule Sample** (56d68a64-9dfb-4c3c-8073-f48bcc40e70c)
- **Data Persistence Sample** (45a14f1d-1a26-4f15-b60f-a433b896df79)
- **Data Persistence Table Sample** (885ae2d9-20a1-4e59-940d-4a24ffed1bb1)
- **Generate and Send Documentation** (9fb281c9-8732-4fe3-8412-f42ab44c087c)
- **Get New Email Data Persistence Sample** (351d73de-9ca0-48b4-bdb5-419f0e6413ea)
- **Schedule Flow on OO up to 9.02** (8c4f42ca-d3aa-4d3a-8264-388065c50f6c)
- **Generate Documentation** (591cc7f1-1f6d-4999-8e48-46cf227fa6f3)
- **Generate Documentation with Hidden Folders** (7147b4a8-15e6-4f9e-bdd3-ce9f122feb2d)

Other Integration Issues

Get All Children Named

- The HP OO 10.x operation will only return a list of flows unlike the HP OO 9.x operation that also returns operations.

Get Children of Path

- The HP OO 10.x operation will only return a list of flows unlike the HP OO 9.x operation that also returns operations.

Get Schedule Details

- Missing outputs (in HP OO 10.x compared to HP OO 9.x): **executing**, **runsLeft**
- The HP OO 10.x **repeatInterval** output is in cron format (for example, */3600000) while in HP OO 9.x, it is in milliseconds (for example, 300000).
- The HP OO 10.x **endTime** output value is 0 in HP OO 10.x if no **endTime** was set for the schedule and is empty in HP OO 9.x for the same situation.

Deprecated\Flow Run Counter

- In addition to the non-deprecated operation, there is a **Deprecated/Flow Run Counter** operation. This operation will not upgrade correctly. You will need to replace the steps with the valid out-of-the-box operation.

Resume Flow Run

- The outputs **runHistoryId**, **runReturnCode** and **runReportXML** are no longer used (are empty in HP OO 10.x).

List Flow Run History

- The input **startIndex** is missing in HP OO 10.x.
- The HP OO 9.x **Result** and **returnResult** contain a json field named **status** that is a capitalized string (for example, **Resolved**) while the HP OO 10.x equivalent field output is all caps (for example, **RESOLVED**).
- The HP OO 9.x **Result** and **returnResult** contain a json field named **flowRevision**. This field is missing in HP OO 10.x.

Set Selection List

- The input description is missing in HP OO 10.x.
- The HP OO 10.x **returnResult** output contains the selection's list UUID while the HP OO 9.x **returnResult** has a descriptive text indicating success or failure.

Get Run Status

- The HP OO 9.x **runResponse** output is a capitalized string (for example, 'Resolved') while the HP OO 10.x **runResponse** output is all caps (for example, 'RESOLVED').
- The HP OO 10.x **status** output can take values from **RUNNING**, **COMPLETED**, **SYSTEM_FAILURE**, **PAUSED**, **PENDING_PAUSE**, **CANCELED**, and **PENDING_CANCEL**, while the

HP OO 9.x status output takes values from **Unknown, Running, Paused, EndedOrFinished**, and **Canceled**.

Get Status For Runs

- The HP OO 10.x **Result** and **returnResult** contain a json field named **status** that takes values from **RUNNING, COMPLETED, SYSTEM_FAILURE, PAUSED, PENDING_PAUSE, CANCELED**, and **PENDING_CANCEL** while the HP OO 9.x status takes values from **Unknown, Running, Paused, EndedOrFinished**, and **Canceled**.
- The HP OO 10.x **Result** and **returnResult** contain a json field named **runResumeUrl**. This field is missing in the HP OO 10.x equivalent outputs.

Store System Account in Flow Variable

- The credential input/flow variable is no longer supported in HP OO 10.x; therefore, this operation will assign the account to two separate variables. So if the input **flowVar** was **sysAcct**, two flow vars will be created: **sysAcctUsername** and **sysAcctPassword**. Your flow steps have been upgraded to use these two flow variables.
- The **returnResult** and **response** output fields are missing in HP OO 10.x. Use the operation response instead of the output field response and the operation's primary result instead of the **returnResult** output field.

Run Flow(s) From E-Mail(s)

- These flows have been moved to the Utility Orchestration content pack.

Dynamically Launch Flow

- The output fields **Result** and **returnResult** contain an xml that has the tags **flowresponse** and **flow-return-code** among others. The **flow-response** from the HP OO 10.x operation takes values from **RESOLVED, DIAGNOSED, ERROR**, and **NO_ACTION_TAKEN**, while the HP OO 9.x operation takes values from **success, failure, diagnosed**, and **no action**. The **flow-return-code** also changes from HP OO 9.x (for example, **Finished**) to HP OO 10.x (for example, **RESOLVED**).

Set System Account

- If **persistInDatabase** and the **host, port, and protocol** inputs are left empty, the operation will try to connect by default to this central url: <http://localhost:8080/oo>.

Set System Property

- This operation also has a **persistInDatabase** input field (like **Set System Account**). If this input is set to **false**, the server and authentication inputs are ignored (**host, port, protocol, username, password**).
- If **persistInDatabase=true** and the **host, port, and protocol** inputs are left empty, the operation will try to connect by default to this central url: <http://localhost:8080/oo>.

As a workaround, make sure you set **persistInDatabase** to **false** if you need to run the operation in Studio only (and not connect to Central).

Generate Run URL

- When run in Central, this operation uses the context variables **CENTRAL_URL** and **run_id** to create the drilldown URL for the current run. If run from Studio, it returns "http://localhost:8080/oo".

10.x/ (Dynamically) Launch Flow

- The operation will not work if authentication is disabled in Central. As a workaround, enable authentication in Central.

Differences in Behavior After Upgrading

The following are not issues, but highlight ways that your flows may appear and behave differently after upgrading.

Changes in Behavior for Empty and Encrypted Values

In previous versions, when you use `assign-from`, if the variable is empty, the flow will behave as if the variable does not exist. However, if the variable is empty and encrypted, the input on which the `assign-from` is used will be overridden with an encrypted empty value.

The empty encrypted variable remains empty even if it is used in a sub-flow with: `assign-from: variable, otherwise: any non-empty value, assign-to: variable`.

In HP OO 10.x, the inputs are obfuscated, rather than encrypted. The flow will not initialize the empty obfuscated variable. If it uses the values described above, in the end, the variable will have the value that was initialized in the sub-flow.

Multi-instances and Parallel Split Steps Cannot be Non-blocking

In HP OO 10.02 and later, it is not possible for multi-instance or parallel split steps to be non-blocking. If a flow contained non-blocking multi-instance or parallel split steps, after content upgrade, these steps will no longer be non-blocking.

Deprecated Step Results Converted into Proper Results

If a flow had deprecated step results (under the **Advanced** tab in the Step Inspector), after upgrade, they now appear under the **Results** tab.

Be aware that these results are now located in a different place.

One Interface for all Operations

In previous versions, there were several types of operations with different interfaces. After upgrade, they all have the same interface. In HP OO 10.x, there is a only one type of operation.

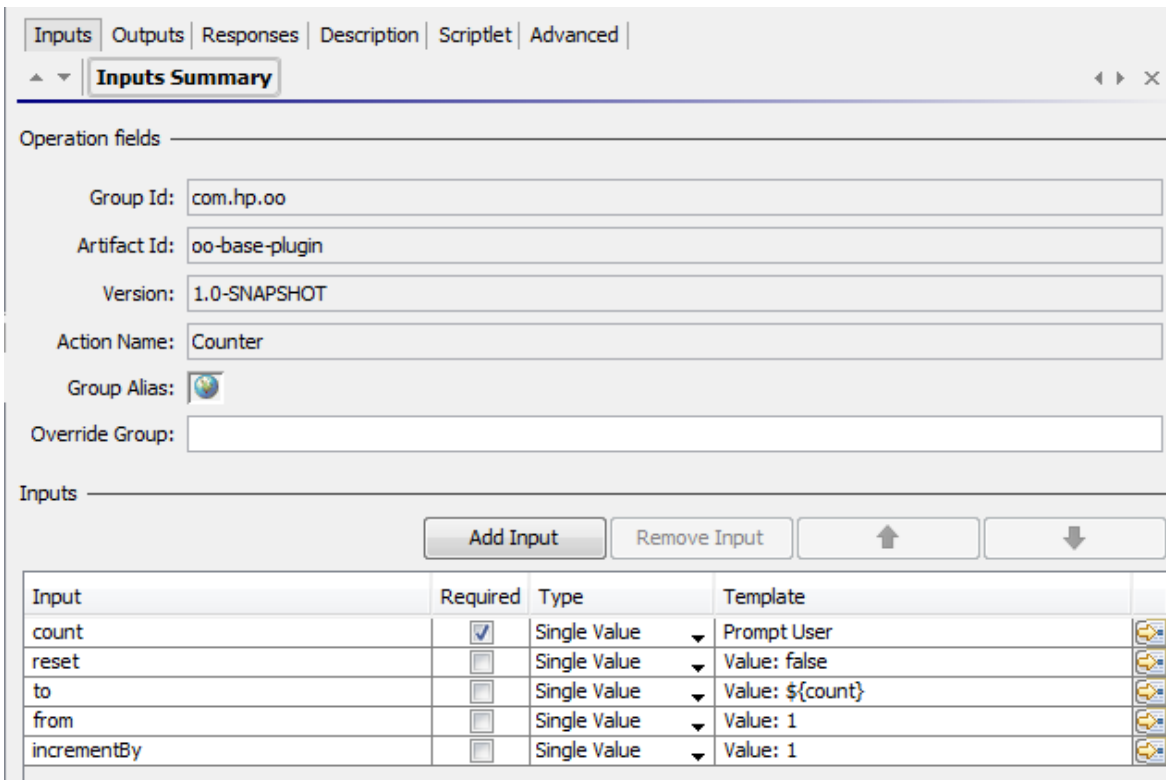
Field Values Converted to Regular Inputs

In previous versions, some operations included field values. For example, the image below shows a loop operation in HP OO 9.x, where there are two inputs, **count** and **reset**, and fields to specify the starting count and increment.

Input	Required	Type	Template
count	<input checked="" type="checkbox"/>	Single Value	Prompt User
reset	<input type="checkbox"/>	Single Value	Value: false

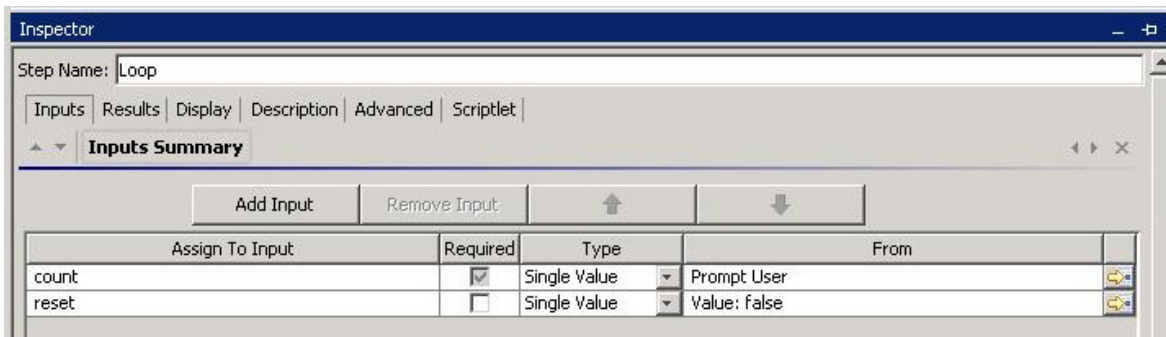
Field values were removed in HP OO 10.x. So, after upgrade, these field values are converted to regular inputs. In the example shown, the field values have been removed and replaced with inputs to control the starting count and increment.

Note: If the original field names included spaces, these spaces are converted to underscores in the input names after upgrade. For example, **Field 1** is changed to **Field_1**.

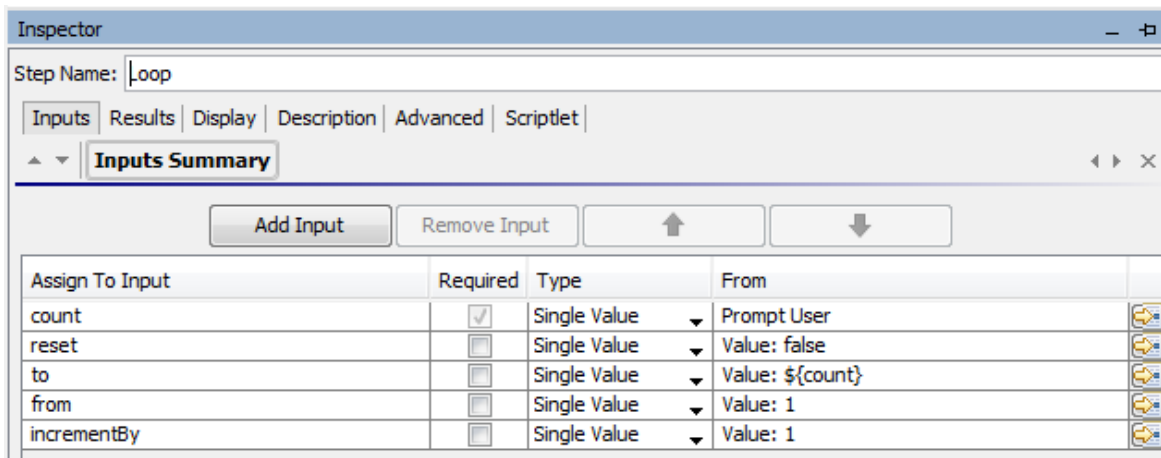


A similar replacement of field values with inputs occurs with steps that reference operations that previously had field values.

In this example of a step created from the loop operation in HP OO 9.x, there are only two inputs, **count** and **reset**.



After upgrade to HP OO 10.x, there are now five inputs in the step, corresponding to the upgraded operation, which has five inputs.

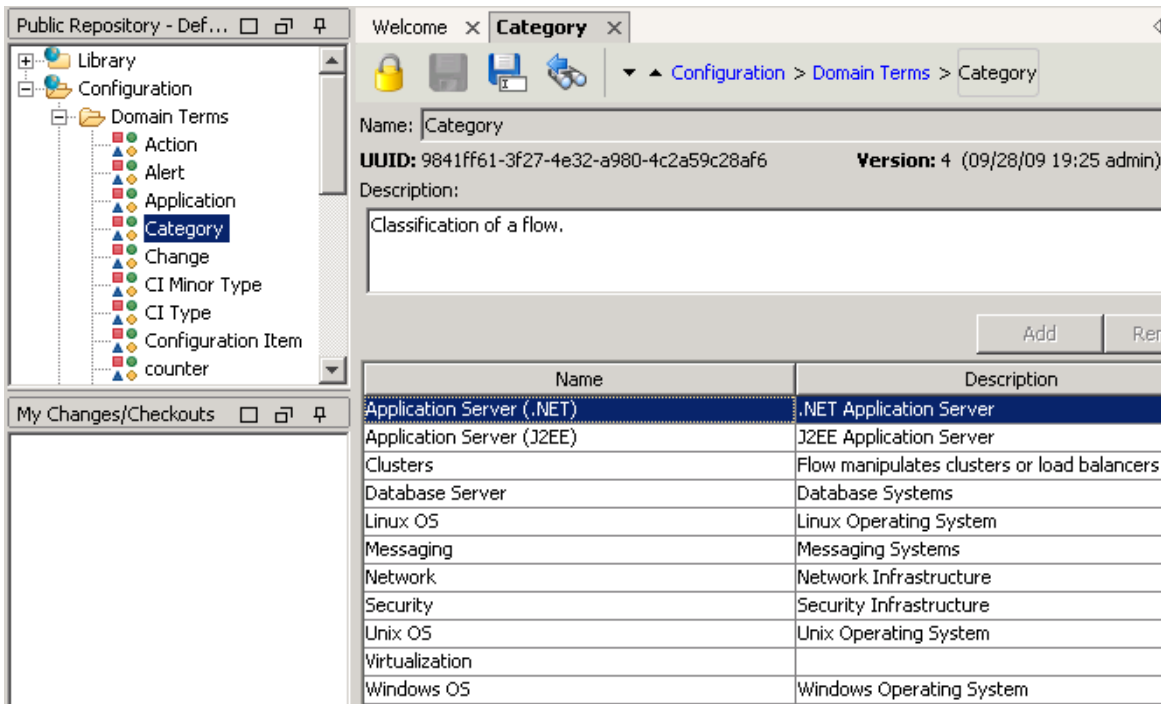


If there are step results based on the original field values, these are converted into results based on the inputs, after upgrade.

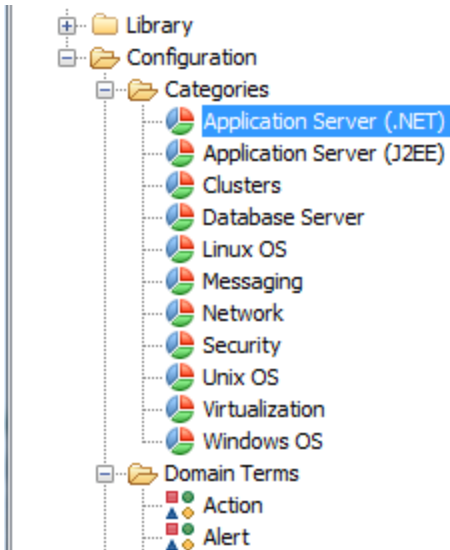
Note: If the original field names included spaces, these spaces are converted to underscores in the input names after upgrade. For example, **Field 1** is changed to **Field_1**. Step results that use such fields are also changed accordingly.

Domain Term Category

In previous versions, there was a domain term called **Category**, which contained different classifications of a flow. In 10.x, there is a new **Categories** folder under **Configuration** folder.



After upgrade, the items that previously appeared as rows in the **Category** domain term now appear as separate items in the **Categories** folder.



"Assign From Variable" Value

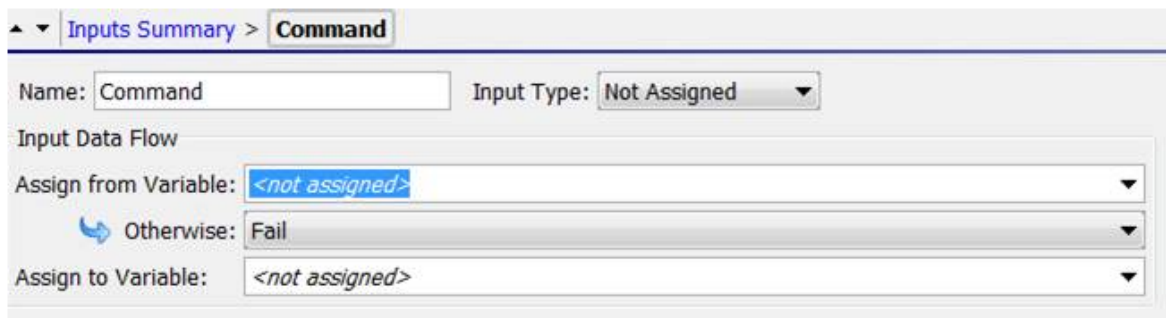
After upgrade, a change is made to flows that have inputs assigned in the following manner:

- **Assign from Variable:** <not assigned>
- **Otherwise:** Fail/Prompt User
- **Assign to Variable:** <not assigned>

Instead of <Not Assigned>, the **Assign from Variable** value will have the same name as the input.

In the example shown below, after the upgrade, the value of **Assign from Variable** is **Command**, like the input name.

Before upgrade:



After upgrade:

The screenshot shows a configuration window for an input type. At the top, 'Name' is set to 'Command' and 'Input Type' is set to 'Single Value'. Below this, 'Assign from Variable' is set to 'Command'. Under the 'Otherwise:' section, 'Use Constant' is selected. To the right, there is a 'Constant Value' text area. At the bottom, 'Assign to Variable' is set to '<not assigned>'. There are also checkboxes for 'Obfuscated' and 'Required', and a 'Validation Format' dropdown set to '<not validated>'. The 'Record Under' dropdown is set to '<run history> 0'.

Credentials Inputs Do Not Exist

In HP OO 10.x, the **Credentials** input type no longer exists. Instead the credentials are subtypes of the **Single Value** type, like **Prompt User** and **Use Constant**.

If the upgraded repository contains **Credentials** inputs, these are converted into input types that are supported in HP OO 10.x.

For example, inputs of the type **System Account** and **Logged-In User Credentials** will be converted to **Single Value**. However **Credentials** inputs that would prompt the user in HP OO 9.x are converted to **Single Value – Prompt User** inputs.

For more details about what happens to **Credentials** inputs after content upgrade, see the use cases below.

When you upgrade content with **Credentials** inputs from earlier versions, these are updated according to the use cases described below.

Use Case 1 - Single Input, No Special Naming

In previous versions, it was possible to create a single input of the type **Credentials**, and assign a system account to that input. The name of the input did not indicate that it was either a user name or a password. This input would receive both the user name and the password of the system account.

The screenshot shows a configuration window for an input type. 'Name' is set to 'something' and 'Input Type' is set to 'Credentials'. Under 'Input Data Flow', 'Assign from Variable' is set to 'something'. Under the 'Otherwise:' section, 'System Account' is selected. 'Assign to Variable' is set to 'something'. On the right, there is a section titled ''Otherwise: System Account' Configuration' with 'Account Named' set to 'LinuxAdmin'.

In HP OO 10.x, an input can no longer be simply attached to a system account. It also has to declare which of the values it is bound to (user name or password).

After upgrade, **Credentials** inputs like these are converted into two separate inputs for user name and password.

For example, if the original input was named **cred**, there will be two inputs named **credUsername** and **credPassword**. This change is also propagated to any steps with inputs that were assigned from **cred** and to subflows and dependent operations.

Use Case 2 - Single Input, No Reference to a System Account

This use case is similar to **Use Case 1**; however, in this case, the credential inputs have no reference to an actual system account.

In previous versions, these kinds of inputs caused the system to prompt the user for the credentials.

After upgrade, these inputs are converted into **Prompt User** inputs.

Use Case 3 - Two Inputs, Using Special Naming

In previous versions, it was possible to create a input of the type **Credentials**, and give it a name that indicated that it was either the user name or password of a system account. This was done by including the word "user" or "pass" in the input name. (For example, "user", "username", "UserName", "identityUser", and so on.)

Note: For more information about this naming convention, see the *HP OO Studio Authoring Guide*.

This input would extract the user name or password from the system account.

When inputs such as these are upgraded, they are converted into either user name or password values.

Note: After content upgrade, an input is considered a user name input if it contains the word "user", regardless of case, and even if it doesn't conform to the exact format that was required by HP OO 9.x ("user", "username", "UserName", "identityUser", and so on.) The same applies for passwords with the word "pass".

Use Case 4 - User Prompts

In previous versions, it was possible to create a single input of the type **Credentials**, where users would be prompted to provide both a user name and a password. This input was regarded as a single object containing both values.

After upgrade, **Credentials** inputs like these are converted into two separate user prompt inputs for user name and password. For example, if the original input was named **cred**, there are now two inputs named **credUsername** and **credPassword**. Both are the type **Single Value** and **credPassword** is marked as **Encrypted**.

Use Case 5 - SSH Operations

In previous versions, in SSH operations, it was possible to create **User** and **Password** inputs that took their values from a third, **Credentials** input, using the **\$\$** convention.

In the example shown below, the **User** and **Password** inputs take their value from **identity**, which is a **Credentials** input. In this example, it is a user prompt.

ssh fields

Command: a

Argument: a

Environment: a

Host: \${host}

User: \${identity}

Password: \${identity}

Private Key File: a

Pty:

Inputs

Input	Required	Type	Template
host	<input checked="" type="checkbox"/>	Not Assigned	No Assignment
identity	<input checked="" type="checkbox"/>	Credentials	Prompt user for credentials
Username	<input type="checkbox"/>	Single Value	Value: \${identity}

Field values were removed in HP OO 10.x, so it is no longer possible to use the **`\${}`** convention.

After upgrade, the **Credentials** input in an SSH operation is separated into two inputs for user name and password.

In our example, the **identity** input is split into two parts: **identityUsername** and **identityPassword**. The **Username** and **Password** inputs that are created from the field values will reference those two new inputs.

Inputs

Add Input Remove Input ↑ ↓

Input	Required	Type	Template
identityUsername	<input checked="" type="checkbox"/>	Single Value	Prompt User
identityPassword	<input checked="" type="checkbox"/>	Single Value	Prompt User

Logged-in User Includes Prompt

In previous versions, it was possible to create an input for **Logged-in User Credentials**.

After upgrade, this input type includes a user prompt, to improve security.

References to Integrations/Hewlett-Packard/Operations Orchestration/9.x Content are Changed to 10.x

After upgrade, the content in the **/Library/Integrations/Hewlett-Packard/Operations Orchestration/** folder is moved into the **/Library/Integrations/Hewlett-Packard/Operations Orchestration/9.x** folder. The operations and flows in this folder can be used to integrate with HP OO 9.x from HP OO 10.x.

As part of the HP OO 10.x upgrade process, any steps that reference legacy OO-to-OO operations from the **/Library/Integrations/Hewlett-Packard/Operations Orchestration/9.x** folder are replaced automatically with references to content from the **/Library/Integrations/Hewlett-Packard/Operations Orchestration/10.x** folder.

If you want to disable this behavior before running the Content Upgrade Utility, open the **/cmu/operation_references/operationReferenceReplacements.properties** file and comment out (using #) any lines containing UUID correspondences. For example:

```
#9.x/Dynamically Launch Flow -> 10.x/Dynamically Launch Flow  
0e227211-ffe5-4b24-8dd2-84071e3efa92=98102ebe-7a26-4398-afde-e01756578879
```

FailureMessage and TimedOut Results

After upgrade, flows no longer have built-in FailureMessage and TimedOut results.

Source Control in Studio

In previous versions, Studio included its own proprietary version control capabilities. HP OO Studio 10.x is integrated with a standard source control application (SVN). Versioning of library items and configuration items is achieved via integration with the source control management system.

The following source control functions from HP OO Studio 9.x are not supported in HP OO Studio 10.x:

- Maintenance of users
- Access control to HP OO content (permission to read/modify HP OO content)
- Automatic backup of the public repository
- Updating the contents of Central with Studio (by direct update and check-in of the public repository or by publishing from the local repository)

Users of HP OO Studio 10.x must learn to achieve these functions using the SCM tools.

No HP OO Portal

HP OO Portal has been discontinued in HP OO 10.x.

Change in Behavior When a RAS is Unavailable

In HP OO 9.x, if a RAS is unavailable when the flow is invoked, the step using the target RAS fails. In HP OO 10.x, the flow gets the status **Paused - No Workers in Group** at the step.

This is a change in behavior, which might require you to change the design of some of your flows during upgrade from HP OO 9.x to HP OO 10.x.

For example, you may have a flow in your 9.x repository with a RAS override to access to the remote RAS, and a step using the RAS override expects "failure" at the step if the RAS is unavailable, and the flow sends an email when it fails. This scenario (flow logic) does not work on HP OO 10.x, because the step does not fail and will only be **Paused - No Workers in Group**.

Scheduled Runs Do Not Automatically Use an Empty Value for Inputs that Use Prompt User

In HP OO 9.x, if you authored a flow with **Prompt User** inputs and then you scheduled it without adding any value to the non-required inputs, the flow would run successfully, without stopping to prompt for values. It behaved as if the inputs were left empty.

In HP OO10.x, this behavior was changed in order to achieve consistency between headless and interactive runs. The run is stopped and prompts for inputs, even if they are not required inputs.

In order to run the old flows in the same way that they ran in HP OO 9.x, you can use the **Use empty value for prompts** check box in the Scheduler. For any prompt that has no value assigned, it will use blank, and the scheduled flow will run exactly as it ran in HP OO 9.x.

Phase 3: Synchronization of Content Data

After you have done the installation, performed the content upgrade, and deployed the content pack to Central, you need to synchronize the content-related data from HP OO 9.x, which was not upgraded automatically.

This includes:

- Schedules
- Studio permissions
- Content permissions - **View** and **Run** permissions for flows and folders
- History

This step may be performed in an iterative manner. You can synchronize different parts of your data separately.

Note: If HP OO 9.x used a MySQL database, but HP OO 10.x uses a different database type, you must do the following before proceeding:

1. Obtain a MySQL JDBC driver (a JAR file used to connect to the MySQL database) and place it in the following two locations:

<installation path>/central/lib

<installation path>/central/tomcat/lib

2. Restart Central.
3. Repeat the steps above for each Central installation in your setup.

Note that synchronization is performed only for deployed content. This means that if you have divided your content into several content packs, you will need to re-synchronize after each deployment. Alternatively, deploy all of them and only then synchronize.

You can perform the synchronizations either via REST API or using the Operations Orchestration Shell (OOSH) utility; however, we recommend using the OOSH utility.

The OOSH utility is located under **<installation path>\central\bin** and **<installation path>\raslbin**. For more information, see the *HP Operations Orchestration Shell User Guide*.

Note: Users who invoke upgrade-related commands from the OOSH utility must have the corresponding permissions.

Synchronizing Scheduling Data

The installation procedure does not extract and load the scheduling configuration, and it does not extract and load flows with overdue schedule time.

The installation procedure disables all scheduled flows in HP OO 10.x.

It is your responsibility to disable the scheduled flows in HP OO 9.x and enable those scheduled flows in HP OO 10.x.

In OOSH, use the command `import-schedules` to import schedules for content that is deployed.

Synchronizing Content Permissions Data

The content upgrade procedure upgrades the following content permissions for flows and folders:

HP OO 9.x	HP OO 10.x:
Read	View
Execute	Run
Write	Not upgraded.
LinkTo	Not upgraded.

Note: The installation procedure does not extract and load content permissions for invalid flows.

Content permissions relating to operations are not upgraded. This remaining data needs to be synchronized.

During the upgrade, a file named **permissions.csv** is created under the **Output** folder. This file contains the read and run permissions of flows and folders from the 9.x repository.

You can synchronize the permissions using the Operations Orchestration Shell (OOSH) utility.

1. Double-click the **oosh.bat** batch file, to start the OOSH utility.

The **oosh.bat** batch file is located under **<installation path>\central\bin** and **<installation path>\ras\bin**.

Note: The user who invokes upgrade-related commands from OOSH must have the corresponding permissions.

2. In the command line, use the following commands:

- `delete-permissions-file` – this deletes the permissions file from Central, enabling you to upload a new file.
- `upload-permissions-file` – this uploads a permissions file from which permissions can be imported. Using this command, you can supply the permission file that was created during upgrade.
- `import-permissions` – this imports the permissions from the file. Only permissions of content that is already deployed are imported.
- `permissions-status` – this displays the imported permissions either on screen or written to a file.

For example:

1. In OOSH, use the command `upload-permissions-file`.
2. Deploy a content pack to Central, with the flow f1.
3. In OOSH, use the command `import-permissions`.

The permissions from f1 are imported.

4. Deploy a content pack to Central, with the flow f2.
5. In OOSH, use the command `import-permissions` again.

The synchronization is executed only on items that were not yet synchronized (for the current upload).

The synchronization overrides previous content permissions if any exist.

If you added new items to an upgraded content pack, after redeploying, if you synchronize again, it will synchronize only the new items that were added.

For more information about OOSH, see the *Operations Orchestration Shell User Guide*.

Note: The `permissions.csv` file created by the Content Upgrade Utility takes into account the flows' paths, to match permissions to flows. If, after upgrade, you split the content into different content packs (thus, changing the flows' paths), the `permission.csv` file will not recognize those new paths, and will not be able to match the permissions.

Synchronizing History

In OOSH, use the following commands to import historical data:

- `historical-data-start-date` – this sets the start date from which synchronization will begin in the format “dd/MM/yyyy”, for example, “13/12/2014”.

- `import-historical-data` – this imports historical data for deployed content.

Note: This process runs in the background, so the fact that this command is finished does not mean that the import has finished.

- `historical-data-status` – this displays the import status.

For example:

1. In OOSH, use the command `historical-data-start-date`.
2. Deploy a content pack.
3. In OOSH, use the command `import-historical-data`.
4. In OOSH, use the command `historical-data-status`.

This command may take several minutes. Check the status until you see that everything is done.

5. Repeat steps 2-4

Synchronizing Studio Data

Studio permission data is not upgraded during the installation of HP OO 10.x. This includes:

- Local settings (user preferences—colors, icons, and so on).
- Copy of the `rc_keystore` for remote repository connection or other authentication data.
- **Studio.properties** configuration. This configuration is not relevant in HP OO 10.x, because source control permissions are managed in the source control management application and not in Studio.

After the upgrade, you need to set up the Studio permissions in the source control management application.

