

# HP 00-00 Integration

For the Windows and Linux operating systems

Software Version: Content 2013-12 (10.x)

## 00 to 00 Integration Guide

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# Contents

Contents .....	4
Overview .....	5
Purpose .....	5
Audience .....	5
Prerequisites .....	5
Supported Versions .....	5
Downloading OO Releases and Documents on HP Live Network .....	6
Getting Started with the OO-OO Integration .....	8
What You Need to Know About OO Before Using the Integration .....	8
OO-OO Use Cases .....	8
HP OO-OO Architecture .....	9
OO-OO Terminology .....	10
Location of OO-OO Integration Operations and Flows in OO Studio .....	11
Troubleshooting .....	13
Known Issues and Workarounds .....	13
Upgrade Issues .....	14

# Overview

HP Operations Orchestration Integration has operations that interact over web services with an 10x Central or a 9x Central. Due to the change of concepts and architecture between OO 9 and OO 10, in version 10x, you can only find a subset of the OO 9 OO-OO operations.

## Purpose

The OO-OO integration allows you to retrieve information and perform specific OO Central tasks such as setting up system accounts, acquiring locks, launching flows and scheduling flows.

These tasks mainly use the OO 10 REST API, OO 9 REST API or OO 9 SOAP API to interact with OO Central.

**Note:** The following tasks do not use the REST or SOAP APIs:

- Acquire/Release Lock operations that work as built-in plugins.
- Set System Account/Property operations when run with 'persistInDatabase=false'. These operations have this additional feature to modify the current flow's context regardless the program from which it is run (OO Studio or OO Central).

When using this integration, it is important to understand the main conceptual changes between OO 9 and OO 10, as these affect how the operations can be used.

This document provides details about how this integration can be used. In ["Troubleshooting" on page 13](#) you can find information on troubleshooting if you are migrating from OO 9 to OO 10.

## Audience

This guide is intended for content developers who establish, implement and maintain the integration between OO content and OO platform. This guide assumes that you have administrative access to OO Central.

## Prerequisites

To use this integration successfully, you should have administrator-level knowledge of OO 10 or OO 9. If you plan to extend this integration, you need knowledge of the REST or SOAP API provided by the OO platform.

## Supported Versions

Operations Orchestration Content Version	Operations Orchestration Central Version
OO Content 2013-12	10x, 9x

## Downloading OO Releases and Documents on HP Live Network

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3. From the **Content Catalog** tab, select **Operations Orchestration Content Packs**.
4. Select the Downloads link.

5. Click **Downloads > HP Operations Orchestration 10.00**.
6. Search for the required HP Operations Orchestration Content Pack in which the integration can be found (oo10-hp-solutions-cp).

## Getting Started with the OO-OO Integration

This chapter includes:

What You Need to Know About OO Before Using the Integration .....	8
OO-OO Use Cases .....	8
HP OO-OO Architecture .....	9
OO-OO Terminology .....	10
Location of OO-OO Integration Operations and Flows in OO Studio .....	11

## What You Need to Know About OO Before Using the Integration

If you plan to use this integration to interact with both OO 9 or OO 10 or if you plan to migrate existing flows from OO 9 to OO 10, you must understand the architectural changes between these versions regarding repositories, content packs, clusters, workers, credential inputs.

## OO-OO Use Cases

The most common use cases of this integration are:

### Configuration Items

- **Set System Account** - This works for integrating with OO 10. The operation can create or update the system account (SA) in OO Central's database (using REST calls) and in the current flow's context (using the context API). You also have the option not to persist the SA in database and only set it in context. When not persisting the SA you may debug flows using this operation in a standalone Studio (without connecting to a Central).
- **Set System Property** - This works with OO 10 in the same way as the above Set System Account but for a system property (SP).
- **Store System Account in Flow Variables** - This works with OO 10 and is used to read a SA and create two flow variables with the "Username" and "Password" suffix. Only the context API will be used and no REST calls are performed.

### Flow Execution

- **Launch Flow** - This works for integrating with OO 10 or OO 9. You can launch a specified flow with the needed parameters and have the option to run it asynchronous or wait for the flow to finish. This operation uses REST API to interact with OO Central.

- **Get Run Status** - This works for integrating with OO 10 or OO 9. Note that the runs statuses (running, completed, paused, etc.) and responses (resolved, error, etc.) format is different between OO9 and oo10. For getting the information in OO 10 Central REST API is used and for OO9 SOAP API is used.
- **Pause Flow Run** - This works for integrating with OO 10. REST API is used.
- **Resume Flow Run** - This works for integrating with OO 10. The operation can resume paused flows. REST API is used.

### Scheduling

- **Schedule Flow** - This works for integrating with OO 10 or OO 9. To retrieve the information in OO 10 Central REST API is used , and for OO9 SOAP API is used.
- **Delete Schedule** - Same as above.

### Workers

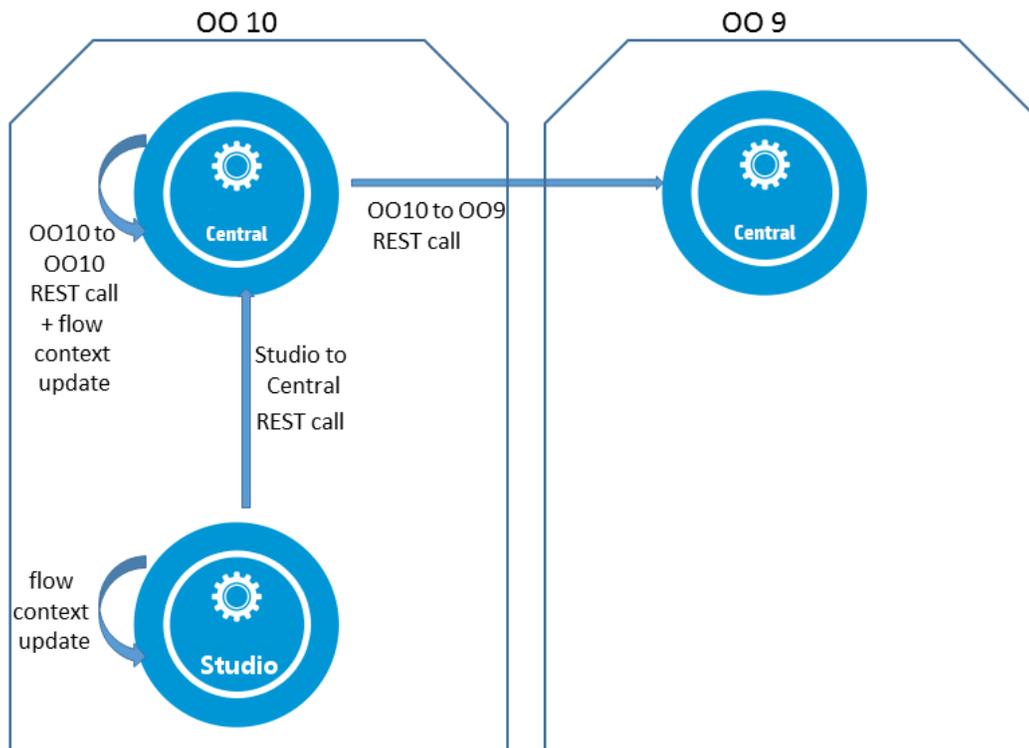
- **Assign Workers to Group** - This works for integrating with OO 10. Assigns one or more workers to a worker group. REST API is used.
- **Remove Workers from Group** - Same as above.

### Locking

- **Acquire Lock** - This works for integrating with OO 10. Attempts acquisition of a lock with an id given by the value of the lockId input. Once a run terminates, all the locks that were acquired during its execution are automatically released. This operation works as a plugin in OO Central.
- **Release Lock** - This works for integrating with OO 10. Releases a lock with an id given by the value of the lockId input. The operation only releases locks acquired by the current run. It cannot release another run's locks. This works as a plugin in OO Central.

## HP OO-OO Architecture

The following topology illustrates a sample interaction between OO2OO operations and OO components.



## OO-OO Terminology

The following terms are used in the OO Integration Guide.

**Context.** This refers to the flow context. More specifically it refers to the flow context variables and configuration items that are visible to the current flow.

**OO.** Operations Orchestration.

**OO2OO.** Represents operations in this integration, also referred to as OO-OO. It can stand for both the operations that integrate OO10 with OO10 and the operations that integrate OO10 with OO9.

**OO9, OO10.** Operations Orchestration 9x or 10x platform version. This notation is needed in order not to be confused with the 9.x or 10.x folders under the integration's root folder.

**OO Integration.** OO to OO integration. This term is used in the context of OO10 integrating with OO10 or OO9 or, when talking about upgrade, in the context of OO9 integrating with OO9.

**10.x.** This term is used when referring to the out of the box operations OO10 is using to integrate with OO10.

**9.x.** This term is used when referring to the out of the box operations OO10 is using to integrate with OO9.

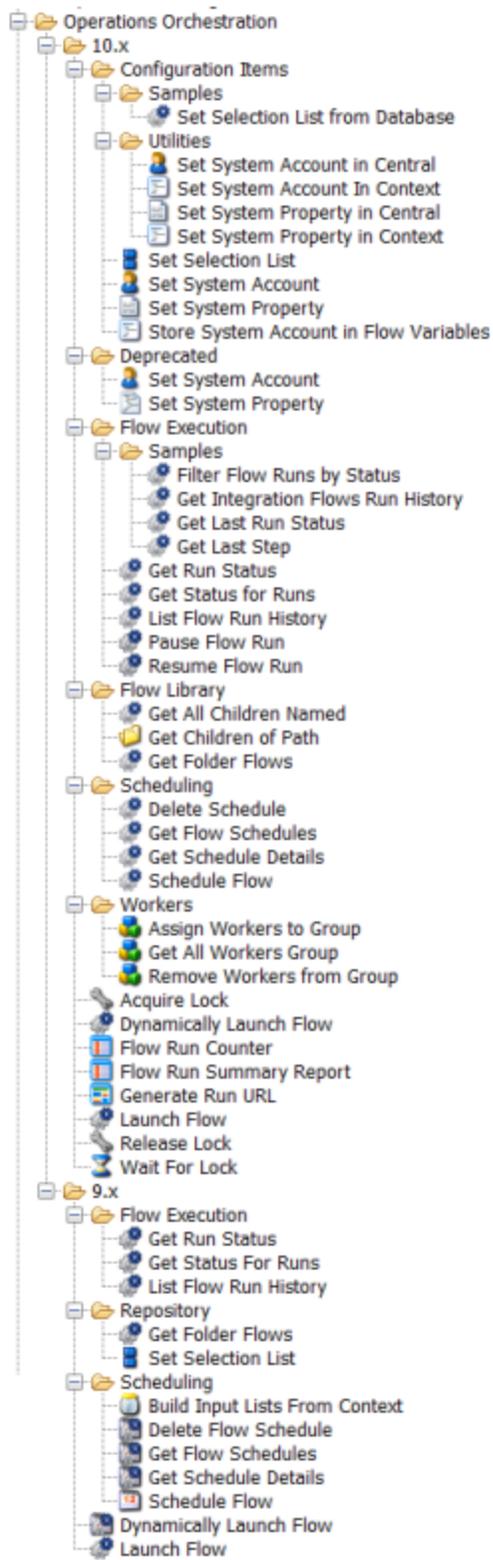
**SA.** System Account

**SP.** System Property

## **Location of OO-OO Integration Operations and Flows in OO Studio**

The OO integration includes the following operations and flows under the content pack HP Solutions under the folder: Library/Integrations/Hewlett-Packard

The Content located under this folder can be used to integrate with HP Operations Orchestration 10 and 9. With the exception of the synchronization mechanism which is based on plugins, and the configuration items operations that have the ability to interact with the current flow's context, the operations under the 10.x folder use REST API to interact with a 10x Central.



# Troubleshooting

Known Issues and Workarounds ..... 13  
 Upgrade Issues ..... 14

## Known Issues and Workarounds

The following are issues that you may encounter when running the OO2OO operations on the 10.01.0001 platform.

### Set System Account

1. Creating a new SA in the current flow's context is possible but this new account cannot be updated or used by the "Store System Account in Flow Variables" operation (ISSUE QCCR8C22122). In particular, when running the operation from Studio (with persistInDatabase=true) and connecting to a Central the operation will create the SA in Central but update the Studio's context. As a workaround for using a newly created SA in context named 'myacc' you may use these system variables that the 'Set System Account' operation creates: 'SYSACC\_OVERRIDE\_myacc\_USERNAME' and 'SYSACC\_OVERRIDE\_myacc\_PASSWORD', or use the operation Store System Account in Context from 10.x/Configuration Items/Deprecated/Utilities
2. If persistInDatabase and the host, port, protocol inputs are left empty the operation will try to connect by default to this central url: http://localhost:8080/oo

### Set System Property

The screenshot shows the 'Inspector' window for the 'Set System Property' operation. The 'Inputs Summary' section is expanded, showing a table of inputs. The table has columns for 'Input', 'Required', 'Type', and 'Prompt User'. The 'propertyName' input is checked as required, while others are not. All inputs are of type 'Single Value'.

Input	Required	Type	Prompt User
username	<input type="checkbox"/>	Single Value	Prompt User
password	<input type="checkbox"/>	Single Value	Prompt User
propertyName	<input checked="" type="checkbox"/>	Single Value	Prompt User
propertyValue	<input type="checkbox"/>	Single Value	Prompt User
createNewProperty	<input type="checkbox"/>	Single Value	Prompt User
host	<input type="checkbox"/>	Single Value	Prompt User
port	<input type="checkbox"/>	Single Value	Prompt User
protocol	<input type="checkbox"/>	Single Value	Prompt User
persistInDatabase	<input type="checkbox"/>	Single Value	Prompt User

1. 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).
2. If **persistInDatabase=true** and the host, port, 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).

### Store System Account in Flow Variables

This operation does not work after creating a System Account in context only. Check the explanation in **Set System Account** above.

### Generate Run URL

When run in OO Central, this operation uses the context variables "CENTRAL\_URL" and "run\_id" to create the drilldown url for the current run. If run from OO Studio, it returns "http://localhost:8080/oo".

### 9.x/Scheduling/Schedule Flow

The operation (b1a1ae96-0e32-4325-af4b-119b60dbe89a) fails if run against a 9.06 OO Central or previous versions with the following error message:

```
"faultString: org.xml.sax.SAXException: Invalid element in  
com.iconclude.dharma.services.wscentralservice.client.ScheduleInfo - internalUser". (ISSUE  
QCCR1D167576)
```

**Workaround:** Upgrade to 9.07.0002 or higher.

### 10.x/ (Dynamically) Launch Flow

1. This operation will just return a java exception stacktrace if the given UUID or flow path (for input 'flow') is not found in Central (issue QCCR8C22226). As a workaround, make sure the flow is deployed in Central.
2. The operation will not work if authentication is disabled in Central (issue QCCR8C22236). As a workaround, enable authentication in Central.

## Upgrade Issues

The following are issues that you may encounter when upgrading using the Content Upgrade Utility delivered with platform version 10.01.0001.

### Legacy operations are moved to the 9.x folder

You can find the "Library/Integrations/Hewlett-Packard/Operations Orchestration" operations from the old repository in the "Library/Integrations/Hewlett-Packard/Operations Orchestration/9.x" folder from the HP Solutions content pack.

Example: /Library/Integrations/Hewlett-Packard/Operations Orchestration/Launch Flow (611ee86d-249e-41e2-b464-fef310ecb492) from an OO Content Pack becomes

/Library/Integrations/Hewlett-Packard/Operations Orchestration/9.x/Launch Flow in the HP Solutions CP.

## References replaced with OO 10 equivalents

Your flows using operations from '/Library/Integrations/Hewlett-Packard/Operations Orchestration' will have their step reference replaced with corresponding operations from the 'Library/Integrations/Hewlett-Packard/Operations Orchestration/10.x' folder. This means that as part of the OO 10.0 upgrade process the steps that were referenced operations from the '/Library/Integrations/Hewlett-Packard/Operations Orchestration' folder are replaced automatically with steps from under the 'Library/Integrations/Hewlett-Packard/Operations Orchestration/10.x' folder.

Example: If you migrate a flow that uses Launch Flow (611ee86d-249e-41e2-b464-fef310ecb492), 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 UUIDs correspondences as below:

```
#9.x/Dynamically Launch Flow > 10.x/Dynamically Launch Flow
```

```
#0e227211-ffe5-4b24-8dd2-84071e3efa92=98102ebe-7a26-4398-afde-e01756578879
```

## Supported operations

Some operations from the previous versions are still available but the Upgrade Utility cannot automatically complete the migration of the flows containing references to them. The flows containing references to these operations have to be manually configured after upgrade. The steps need to be added inputs for connecting to a Central and if you are using copies of these operations you need to add these missing inputs on the copies as well.

The operations in this case are:

- Resume Flow Run (fc74bfc4-7a6c-4796-a4c4-2dbe34343dbc) replaced with 10.x/Flow Execution/Resume Flow Run (55188216-67cb-49b2-a522-82667cc4b07d)
- Flow Run Summary Report (374ebf22-51e8-442d-aaeb-7f762a9894e2) replaced with 10.x/Flow Run Summary Report (2e871c48-8073-4c08-ae83-8fa9ccfaf6)
- Flow Run Counter (592493c1-9eb5-4977-be23-5eda23b71e57) replaced with 10.x/Flow Run Counter (6431833f-2f65-4b55-971c-a9b7d8be36ce)
- Get All Children Named (5c2c5851-1d77-4cbd-901c-29f9d034cb6c) replaced with 10.x/Flow Library/Get All Children Named (08571e7b-24ef-4027-858f-619ad36ab36e)
- Get Children of Path (17a63913-58c1-4564-8281-d0bea66b7775) replaced with 10.x/Flow Library/Get Children of Path (5e0e3894-8b18-4a61-9c23-784204f829ad)
- Delete Flow Schedule (c61127ce-44cb-4b50-8fe0-f37b3941b30f) replaced with 10.x/Scheduling/Delete Schedule (49f89d9d-99e2-46f5-8b10-ba878a203303)
- Get Schedule Details (b1a1ae96-0e32-4325-af4b-119b60dbe89a) replaced with 10.x/Scheduling/Get Schedule Details (2316a0c2-5013-4a37-9a93-dae4623c3c17)

- Get Flow Schedules (d52506f8-8992-415c-90a0-9a644f90d0ea) replaced with 10.x/Scheduling/Get Flow Schedules (590cde98-60d5-43e1-b3ed-35e16e8a3075)

### Deprecated operations and flows

Not all operations from the OO 9 HP integration have an equivalent operation in OO 10.

The following out-of-the-box content from the /Library/Integrations/Hewlett-Packard/Operations Orchestration folder are not supported in this version:

- From the Cluster folder: /Samples/Get Cluster Servers, Get Cluster Servers, Get Server Status
- From the Cross Run Data Persistence folder: Get Stored Flow Variable, Store Flow Variable
- From the Deprecated folder
- From the Repository folder: Check In, Delete Path, Get Last Modified By, Get References to Path, Repository Sync
- From the Repository/Samples folder
- From the Samples folder
- From the Scheduling folder: Schedule Flow on OO up to 9.02
- Generate Documentation and Generate Documentation with Hidden Folders

### Set System Account/Property

- A 9x flow using Set System Account or Set System Property will be migrated to an invalid project with the error "Dependent on a flow or operation that has errors" (issue QCCR8C22222). The problematic operations are Set System Account, Set System Property and Generate Run URL.

#### Workaround:

- a. Delete the following uuids from "\cmu\exclusions\oo-unmapped-content-cp\_invalid.txt"  
  
046a86df-3bf4-4e66-aa48-88826e741215  
88991b3a-756d-44b9-9fed-107caf581624  
d3d73a17-7646-4a64-ac7f-5b1bb27a4f5c
  - b. Add the above UUIDs to "\cmu\exclusions\oo10-hp-solutions-cp-uuids.txt"
  - c. Run upgrade-content.bat
- The Set System Account or Set System Property steps in a 9x flow will be upgraded by the migration with equivalent flows. These flows will use the CENTRAL\_URL context property and assume that Central does not have authentication enabled. The corresponding flows are 10.x/Configuration Items/Deprecated/Set System Account and 10.x/Configuration

Items/Deprecated/Set System Property. Deprecated/Set System Account is a flow able to set the system account in both central and studio. But it will only set the system account in the flow context if run from Studio. It will also ignore the 'createNewAccount' input if run from Studio. Deprecated/Set System Property is a flow able to set the system property in both Central and Studio. But it will only set the system property in the flow context if run from Studio.

- Flows using copies of the Set System Account or Set System Property operations are migrated as invalid. After migration replace the corresponding copies and steps with 10.x/Configuration Items/Set System Account or 10.x/Configuration Items/Set System Property. Add these inputs to the copies and steps: host,username,password,port,protocol,persistInDatabase

### **Generate Run URL**

Flows using Generate Run URL are migrated to the invalid project (issue QCCR8C22222). This is a CUU issue, however, you can use these flows as valid flows.

### **Get All Children Named**

- The OO10 operation will only return flows unlike the OO9 operation that also returns operations.
- After migration, add these inputs to this operation's steps: host, username, password, port, protocol

### **Get Children of Path**

- The OO10 operation will only return flows unlike the OO9 operation that also returns operations.
- After migration, add these inputs to this operation's steps: host, username, password, port, protocol

### **Delete Flow Schedule**

- The 'Result' and 'result' outputs were empty in OO9 but in OO10 contain a string indicating the success or failure of the operation.
- After migration, add these inputs to this operation's steps: username, password

### **Get Flow Schedules**

- After migration, add these inputs to this operation's steps: username,password

### **Get Schedule Details**

- Missing outputs (in oo10 compared to oo9): executing, runsLeft
- The oo10 'repeatInterval' output is in cron format (e.g. \*/3600000) while in OO9 it is in milliseconds (e.g. 300000)
- The oo10 'endTime' output value is 0 in OO10 if no endTime was set for the schedule and is empty in OO9 for the same situation.
- After migration, add these inputs to this operation's steps: username, password

### Flow Run Summary Report

- After migration, add these inputs to this operation's steps: host, username, password, port, protocol

### Flow Run Counter

- After migration, add these inputs to this operation's steps: runId, host,username,password,port,protocol
- In addition to the non-deprecated operation, there is a Deprecated/Flow Run Counter operation. This operation is will not migrate 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 OO10).
- After migration, add these inputs to this operation's steps: host,username,password,port,protocol

### List Flow Run History

- The input 'startIndex' is missing in oo10
- The OO9 'Result' and 'returnResult' contain a json field named 'status' that is a capitalized string (e.g. 'Resolved') while the OO10 equivalent field is output is all caps (e.g. RESOLVED)
- The OO9 'Result' and 'returnResult' contain a json field named 'flowRevision'. This field is missing in OO10

### Set Selection List

- The input 'description' is missing in oo10
- The OO10 'returnResult' output has the selection's list uuid while the oo9 'returnResult' has a descriptive text indicating success or failure.

### Get Run Status

- The OO9 'runResponse' output is a capitalized string (e.g. 'Resolved') while the OO10 'runResponse' output is all caps (e.g. RESOLVED)
- The OO10 'status' output can take values from (RUNNING, COMPLETED, SYSTEM\_FAILURE, PAUSED, PENDING\_PAUSE, CANCELED, PENDING\_CANCEL) while the OO9 'status' output takes values from (Unknown, Running, Paused, EndedOrFinished, Canceled)

### Get Status For Runs

- The OO10 'Result' and 'returnResult' contain a json field named 'status' that takes values from (RUNNING, COMPLETED, SYSTEM\_FAILURE, PAUSED, PENDING\_PAUSE, CANCELED, PENDING\_CANCEL) while the OO9 'status' takes values from (Unknown, Running, Paused, EndedOrFinished, Canceled)
- The OO10 'Result' and 'returnResult' contain a json field named 'runResumeUrl'. This field is missing in OO10 equivalent outputs

#### **Store System Account in Flow Variable**

- The credential input/flow variable is no longer supported in OO10 so this operation will actually assign the account to two separate variables. So if the input flowVar was "sysAcct" then two flow vars will be created "sysAcctUsername" and "sysAcctPassword". Your flow steps have been migrated to use these two flow variables.
- The 'returnResult' and 'response' output fields are missing in OO10. Please 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', 'result' and 'returnResult' contain an xml that has the tags 'flow-response' and 'flow-return-code' among others. The 'flow-response' from the oo10 operation takes values from (RESOLVED, DIAGNOSED, ERROR, NO\_ACTION\_TAKEN) while the oo9 operation takes values from (success, failure, diagnosed, no action). The 'flow-return-code' also changes from oo9 (e.g. FINISHED) to oo19 (e.g. Resolved)

