HP Operations Orchestration Software

Software Version: 7.51

HP Universal Configuration Management Database Integration Guide

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Finding or updating documentation on the Web

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

To obtain HP OO documentation and tutorials

1. Go to the HP Software Product Manuals web site (*http://support.openview.hp.com/selfsolve/manuals*).

2. Log in with your HP Passport user name and password.

   OR

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

   If you need help getting an HP Passport, see your HP OO contact.

3. In the **Product** list box, scroll down to and select **Operations Orchestration**.

4. In the **Product Version** list, click the version of the manuals that you're interested in.

5. In the **Operating System** list, click the relevant operating system.

6. Click the **Search** button.

7. In the **Results** list, click the link for the file that you want.

Where to find Help, tutorials, and more

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

- Help for Central

  Central Help provides information to the following:

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

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

- Help for Studio

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

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

- Animated tutorials for Central and Studio

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

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

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

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

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

Support

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

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

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

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

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

Table of Contents

Overview of the HP UCMDB integration

With the HP Universal Configuration Management Database (UCMDB) integration, administrators can build HP Operations Orchestration (OO) flows that are integrated with HP UCMDB.

This document explains how this integration has been implemented and how the integration OO operations communicate between OO and UCMDB.

Use cases and scenarios

5. Execute a Topology Query and obtain a Topology Map:
   - Get Topology Map by Query Name
   - Get Topology Map by Query Name with Parameter
   - Get Topology Map by View Name
   - Get Query Name of View
6. Manage Configuration Items and relationships:
   - Add Object/Delete Object
   - Add Relationship/Delete Relation
   - Get Neighboring Objects
   - Get Filtered Object List by Type
   - Get Object List by Type
   - Get Object Attributes by Id
   - Modify Object Attribute(s)

Versions and components

Operations Orchestration Version	HP Universal CMDB Version
7.50.02	7.0, 8.0

Architecture
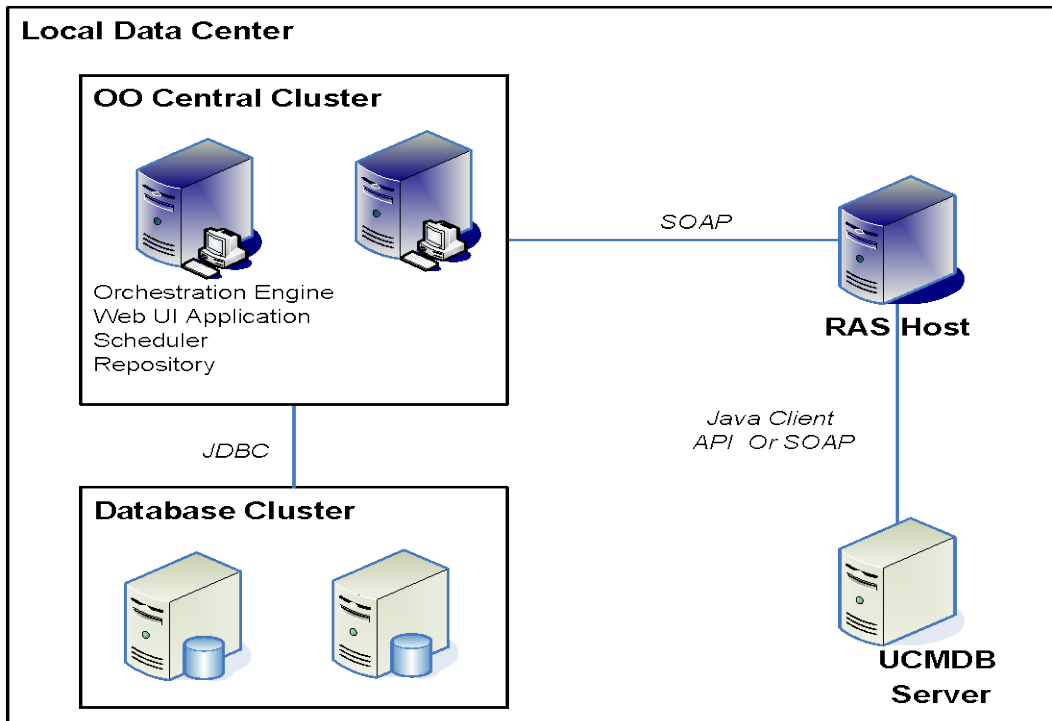
Installation and configuration instructions

There is no special integration installation and configuration needed for the HP UCMDB integration. Just make sure that the system that has the RSJRAS service running on it can access the UCMDB server.

The default UCMDB access URL is:

```
http://<ucmdbserver>:8080/ucmdb
```

using the default username **admin** and the default password **admin**.

HP UCMDB Integration operations

The HP UCMDB integration includes the following operations in the Studio Library, in the \Library\Integrations\Hewlett-Packard\Universal CMDB\ folder.

- Universal CMDB
    - Add Object
    - Add Relationship
    - Delete Object
    - Delete Relation
    - Get Filtered Object List by Type
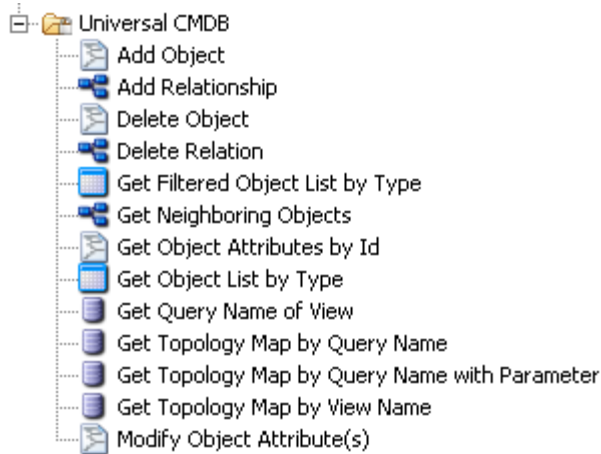   - Get Neighboring Objects
    - Get Object Attributes by Id
    - Get Object List by Type
    - Get Query Name of View
    - Get Topology Map by Query Name
    - Get Topology Map by Query Name with Parameter
    - Get Topology Map by View Name
    - Modify Object Attribute(s)

The operations support the following types of tasks:

- Add, remove, and update Configuration Items in the UCMDB.
- Add, remove, and update Relations in the UCMDB.
- Retrieve information about Configuration Items and Relationships in the UCMDB.

Common inputs in the integration

The following inputs are used consistently throughout the HP UCMDB integration's operations.

cmdbHost

The host of the UCMDB server. You can specify it as an IP address or DNS name.

cmdbPort

The port of the UCMDB server on which the CMDB is running. The default port is **8080**.

username

The username to connect to the UCMDB server. The default **username** is **admin**.

password

The password for the username.

cmdbVersion

The major version number of UCMDB; for example, 7 for UCMDB 7.0 or 8 for UCMDB 8.0. The default is **7**.

Operation Specifics

Add Object operation

This operation adds a Configuration Item to the UCMDB that has the key property or other properties specified in the **objectType** input. It returns the ID of the created Configuration Item.

objectType

> The Configuration Item Type of the UCMDB. For example, you can specify an **objectType** of **host**, which is the class name for the Configuration Item Type with the display name **Host**. You can find the class name in the **class_name** column in the **dbo.ccm_classes** table of *<CMDB Schema>*.

prop

> A property for the **objectType** to add (*name=value*). For the **Add Object** operation, the key property for the type of Configuration Item to add must be entered. For example, if you add a Configuration Item with Configuration Item Type **ip, ip_address=19.35.55.34** must be entered. The **ip_address** has to be unique in UCMDB. The type of the property is determined automatically. You can add additional properties by creating extra **prop** inputs, each with a number appended to it, such as **prop1**. For example, **prop ip_domain=battleground.ad** or **prop1 isvirtual=false**. You can find the property names in the **attribute_name** column in the **dbo.ccm_attributes** table of *<CMDB Schema>*.

Add Relationship operation

This operation adds a Relation between two Configuration Items to the UCMDB based on the type of relation specified in the **relationType** input. It returns the ID of the created relationship.

relationType

> The Configuration Item Type of the relation in the UCMDB. For example, **relationType member** is the class name for the relation type with the display name **Member**.

fromId

> The ID of the Configuration Item the relationship is from in the UCMDB.

fromType

> The Configuration Item Type the relationship is from in the UCMDB.

toId

> The ID of the Configuration Item the relationship is to in the UCMDB.

toType

> The Configuration Item Type the relationship is to in the UCMDB.

prop

> A property for **relationType** to add (*name=value*). For example, you can specify **display_label=MyMember** for **relationType member.** The type of the property is determined automatically. You can add additional properties by creating extra **prop** inputs, each with a number appended to it, such as **prop1**. You can find the property names in the **attribute_name** column in the **dbo.ccm_attributes** table of *<CMDB Schema>*.

Delete Object operation

This operation deletes a Configuration Item from the UCMDB based on the Configuration Item ID specified in the **objectId** input and the Configuration Item Type specified in the **objectType** input.

objectId

The Configuration Item ID in the UCMDB.

objectType

The Configuration Item Type of the UCMDB. For example, you can specify an **objectType** of **host**, which is the class name for the Configuration Item Type with the display name **Host**. You can find the class name in the **class_name** column in the **dbo.ccm_classes** table of *<CMDB Schema>*.

Delete Relation operation

This operation deletes a Relation between two Configuration Items from the UCMDB.

relationId

The Configuration Item ID for the Relation in the UCMDB.

relationType

The Configuration Item Type of the relation in the UCMDB. For example, **relationType member** is the class name for the relation type with the display name **Member**.

fromId

The ID of the Configuration Item the relationship is from in the UCMDB.

fromType

The Configuration Item Type the relationship is from in the UCMDB.

toId

The ID of Configuration Item the relationship is to in the UCMDB.

toType

The Configuration Item Type the relationship is to in the UCMDB.

Get Filtered Object by Type operation

This operation retrieves all of the UCMDB Configuration Items that match the conditions specified in the **objectType** input. It returns a list of the IDs of the Configuration Items.

objectType

The Configuration Item Type of the UCMDB. For example, you can specify an **objectType** of **host**, which is the class name for the Configuration Item Type with the display name **Host**. You can find the class name in the **class_name** column in the **dbo.ccm_classes** table of *<CMDB Schema>*.

logicalOperator

Specify **AND** if all conditions must be matched or **OR** if only one or more of conditions must match.

conditionAttributes

A comma-delimited list of the attribute names of the Configuration Item that the conditions test. For example, **ip_ismanaged,isvirtual** are the attributes for the Configuration Item Type **IP** (or **ip** as class name) with the display attribute names **IP Is Managed** and **Is Virtual**.

conditionOperators

A comma-delimited list of the comparisons to do, corresponding to the input **conditionAttributes**. For example, **==,!=,like**.

conditionValues

A comma-delimited list of the values to compare the property to, corresponding to the input **conditionOperators**. For example, **true,true**.

Get Neighboring Objects operation

This operation retrieves all of the related Configuration Items in the UCMDB based on the Configuration Item ID and Configuration Item Type specified in the **objectId** and **objectType** inputs. It returns the IDs of all the related Configuration Items, their relation types, and a topology map of the related Configuration Items in XML format.

objectId

The Configuration Item ID in the UCMDB.

objectType

The Configuration Item Type of the UCMDB. For example, you can specify an **objectType** of **host**, which is the class name for the Configuration Item Type with the display name **Host**. You can find the class name in the **class_name** column in the **dbo.ccm_classes** table of *<CMDB Schema>*.

Get Object Attributes by Id operation

This operation retrieves from the UCMDB the list of attributes specified in the **attributeList** input for the Configuration Item ID and Configuration Item Type specified in the **objectId** and **objectType** inputs. It returns the Configuration Item attributes in the format of a *<name=value>* list.

objectId

The Configuration Item ID in the UCMDB.

objectType

The Configuration Item Type of the UCMDB. For example, you can specify an **objectType** of **host**, which is the class name for the Configuration Item Type with the display name **Host**. You can find the class name in the **class_name** column in the **dbo.ccm_classes** table of *<CMDB Schema>*.

attributeList

A comma-delimited list of attributes to retrieve in the UCMDB. For example, **attributeList host_key,root_lastaccesstime** contains the attributes for the Configuration Item Type **Host** (or **host** as class name) with display attribute names **Host Key** and **Last Access Time**. If you specify **none** for **attributeList**, no attributes are retrieved. If you leave **attributeList** blank,

all of the attributes of that Configuration Item Type are retrieved. You can find the attribute names in the **attribute_name** column in the **dbo.ccm_attributes** table of *<CMDB Schema>*.

Get Object List by Type operation

This operation retrieves all of the Configuration Items in the UCMDB that match the Configuration Item Type specified in the **objectType** input. It returns a list of Configuration Item IDs for the given Configuration Item Type.

objectType

The Configuration Item Type of the UCMDB. For example, you can specify an **objectType** of **host**, which is the class name for the Configuration Item Type with the display name **Host**. You can find the class name in the **class_name** column in the **dbo.ccm_classes** table of *<CMDB Schema>*.

Get Query Name of View operation

This operation retrieves the query name from the UCMDB specified in the **viewName** input.

viewName

The view name in the UCMDB. For example, **NetworkTopoloy** is one of the default views in the UCMDB.

Get Topology Map by Query Name operation

This operation retrieves the Topology Map, in XML format, from the UCMDB for the query name specified in the **queryName** input.

queryName

The query name in the UCMDB. For example, **NetworkTopoloy** is one of the default queries in the UCMDB.

Get Topology Map by Query Name with Parameter operation

This operation retrieves the Topology Map, in XML format, from the UCMDB for the given query name with filtering parameters.

queryName

The query name in the UCMDB. For example, You can set up a query called **NetworkTopoloyWithParameters** which allow filtering parameters in the UCMDB.

parameterName
The parameter name to filter on the attributes of in the UCMDB.

stringProp

A property to filter on (*name=value*). The type of the property is determined by the input with the type name in it. **stringProp** means that the property is a string. Other **prop** inputs are the same for their given type, such as **integerProp**, **integerListProp**, **bytesProp**, **booleanProp**, **string_listProp**, **doubleProp**, l**ongProp**, **floatProp**, **dateProp**, or **xmlProp**. For example, **stringProp ip_domain=battleground.ad**

Get Topology Map by View Name operation

This operation retrieves the Topology Map, in XML format, from the UCMDB for the view name specified in the **viewName** input.

viewName

The view name in the UCMDB. For example, **NetworkTopoloy** is one of the default views in the UCMDB.

Modify Object Attribute(s) operation

This operation modifies the attributes of the UCMDB Configuration Item based on the Configuration Item ID and the Configuration Item Type specified in the **objectId** and **objectType** inputs.

objectId

The Configuration Item ID in the UCMDB.

objectType

The Configuration Item Type of the UCMDB. For example, you can specify an **objectType** of **host**, which is the class name for the Configuration Item Type with the display name **Host**. You can find the class name in the **class_name** column in the **dbo.ccm_classes** table of *<CMDB Schema>*.

prop

A property for the **objectType** to modify (*name=value*). The type of the property is determined automatically. You can add additional properties by creating extra **prop** inputs, each with a number appended to it, such as **prop1**. For example, **prop ip_domain=battleground.ad** or **prop1 isvirtual=false**. You can find the property names in the **attribute_name** column in the **dbo.ccm_attributes** table of *<CMDB Schema>*.

Troubleshooting

General troubleshooting procedures and tools

If a run of a flow in OO Central fails

1. In Central, expand the **History Tree** of the flow execution and click the **expand details** ( ) icon for a failed step.

History Tree

The run has ended. No update available.

As of 11:17:05 PDT 2009-05-01
☐ **Generate docs 2**
    1 **Generate Documentation** 📄 *success*
    2 **List Iterator** 📄 *has more*
    3 **FS Get Children** 📄 *success*
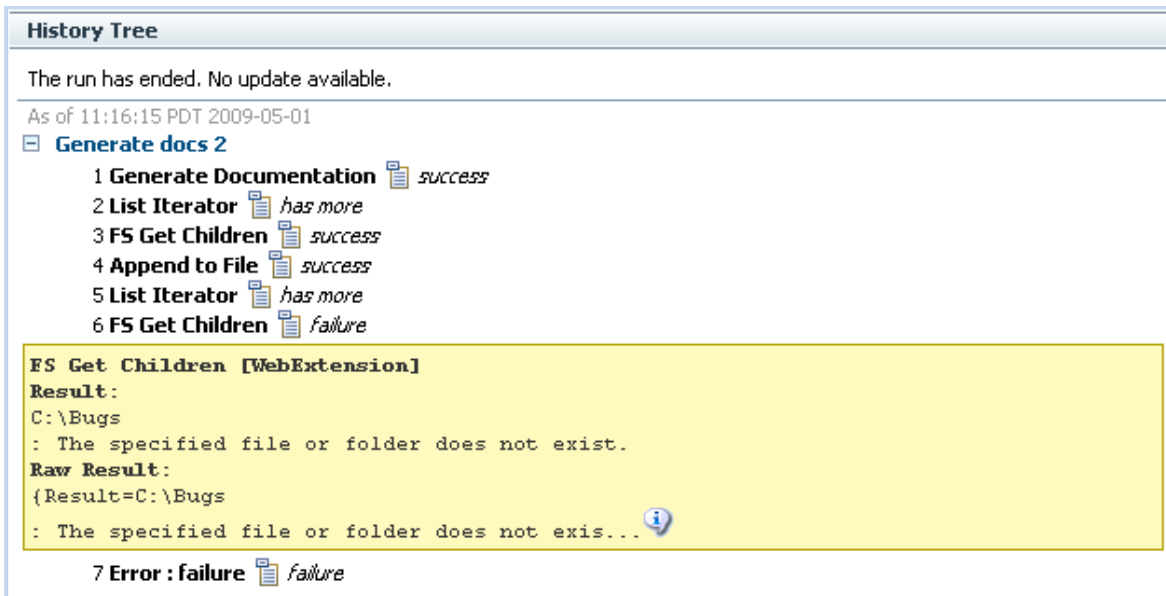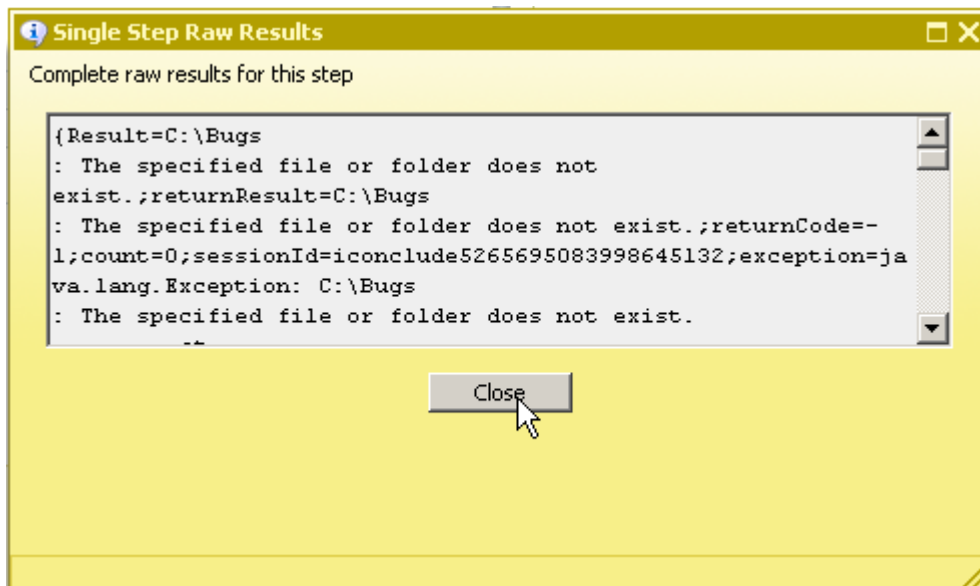   4 **Append to File** 📄 *success*
    5 **List Iterator** 📄 *has more*
    6 **FS Get Children** 📄 *failure*
    7 **Error : failure** 📄 *lure*
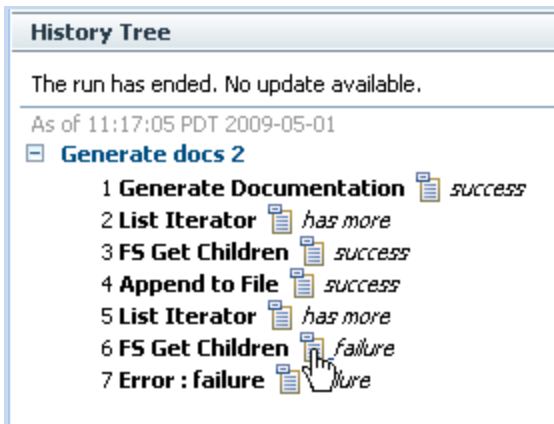
A yellow text box opens to show the execution result of the failed step.

History Tree

The run has ended. No update available.

As of 11:16:15 PDT 2009-05-01
☐ **Generate docs 2**
    1 **Generate Documentation** 📄 *success*
    2 **List Iterator** 📄 *has more*
    3 **FS Get Children** 📄 *success*
    4 **Append to File** 📄 *success*
    5 **List Iterator** 📄 *has more*
    6 **FS Get Children** 📄 *failure*

```
FS Get Children [WebExtension]
Result:
C:\Bugs
: The specified file or folder does not exist.
Raw Result:
{Result=C:\Bugs
: The specified file or folder does not exis... ⓘ
```

    7 **Error : failure** 📄 *failure*

2. Click the **more…** (ⓘ) icon to open the **Single Step Raw Results** window.

ⓘ **Single Step Raw Results**   □ ✕

Complete raw results for this step

```
{Result=C:\Bugs
: The specified file or folder does not
exist.;returnResult=C:\Bugs
: The specified file or folder does not exist.;returnCode=-
1;count=0;sessionId=iconclude5265695083998645132;exception=ja
va.lang.Exception: C:\Bugs
: The specified file or folder does not exist.
```

[Close]

If you run a flow in OO Studio using **Debug Flow in Central**, you can use the Step Result Inspector to check the errors and exceptions in detail.

Similar information can also be found in the OO Central log <%OO_home%>/Central/logs/Central_wrapper.log. For information about the RAS service, check the log <%OO_home%>/RAS/Java/Default/webapp/logs/wrapper.log.

Error messages

org.apache.axis2.AxisFault Transport error: 404 Error: Path+Not+Found
> This message means that the logon information for UCMDB 7.0 may be incorrect. Check the **cmdbHost** and **cmdbPort** inputs to make sure that they are correct.

com.hp.ucmdb.api.CommunicationException: Got response code 404 for URL http://10.51.0.198:8080/ucmdb-api/connect?VERSION=8.0
> This means that the logon information for UCMDB 8.0 may be incorrect. Check the **cmdbHost** and **cmdbPort** inputs to make sure that they are correct.

org.apache.axis2.AxisFault Transport error: 401 Error: Unauthorized
> This means that the logon information for UCMDB 7.0 may be incorrect. Check the **username** and **password** inputs to make sure that they are correct.

Invalid credentials
> This means that the logon information for UCMDB 8.0 may be incorrect. Check the **username** and **password** to make sure that they are correct.

No enum const class com.hp.oo.content.connectors.hp.ucmdb.AbstractUCMDBConnector$versions.v10
> The **cmdbVersion** string is incorrect. The valid strings are **7** and **8**.

class [Windows] not found in CMDB Class Model; nested exception is: java.lang.Exception:
> The **objectType** string is not defined in UCMDB 7.0. Make sure the type is defined as the **class_name** in the **dbo.ccm_classes** table of *<CMDB Schema>*. In the UCMDB GUI, the Configuration Item Type shows the type's display name. For example, for the Configuration Item Type display name **Windows**, the actual class name is **nt**.

com.hp.ucmdb.api.classmodel.ClassDoesNotExistException: Class "Windows" is not defined in the uCMDB class model
> The **objectType** string is not defined in UCMDB 8.0. Make sure the type is defined as the **class_name** in the **dbo.ccm_classes** table of *<CMDB Schema>*. In the UCMDB GUI, the Configuration Item Type shows the type's display name. For example, for the Configuration Item Type display name **Windows**, the actual class name is **nt**.

The received stringec928b8e1398f73b5011067b404088 representation is inconsistent; nested exception is: java.lang.Exception:
> The **objectId** doesn't exist in UCMDB 7.0. Make sure that the ID is valid.

ID 5bf303466b8a982601dd3a9e88ad75 being restored has incorrect length (not 32 characters)
> The **objectId** entered does not exist in UCMDB 8.0. Make sure that the ID is valid.

Object with ID: 5bf303466b8a982601dd3a9e88ad7557 was not found
   The **objectId** entered does not exist in UCMDB 8.0. Make sure that the ID is valid.

Element Number: 1 doesn't exist in the result.; nested exception is: java.lang.Exception:
   When you executed the operation **Get Neighboring Objects**, the **objectId** was not correct in UCMDB 7.0. Make sure that the ID is valid.

CMDB Operation Internal Error:... class name: Windows doesn't exist in class model
   When you executed the operation **Get Neighboring Objects**, the **objectId** was not correct in UCMDB 7.0. Make sure that the ID is valid.

No Error Messages, but Got Empty Topology Map of Neighbors CIs.
   When running the OO operation **Get Neighboring Objects**, the **objectId** was not correct in UCMDB 8.0. Make sure that the ID is valid.

Unable to determine the type of attribute: ip_isManaged because it is not a member of the class: ip
   Make sure that you enter the **conditionAttributes** with valid attribute names. The attribute names can be found in the **attribute_name** in the **dbo.ccm_attributes** table of *<CMDB Schema>*.

Unknown Comparison type: pp
   Make sure that you enter the **conditionOperators** with valid condition operators. Valid condition operators include **==**, **!=**, **<>**, **>**, and **<**.

java.lang.Exception: The specified condition type is not supported for: BooleanCondition, Supported Types are: EqualNotEqual
   Make sure that the **conditionOperators** match with **conditionAttributes** type. For example, **conditionAttributes ip_ismanaged**, should have a **conditionOperator** of **==** or **!=**.

The lists of conditional types, names, operators and values are not of equal length
   Make sure that the **conditionOperators**, **conditionAttributes**, and **conditionValues** are all the same length.

Unable to locate view badViewName
   Make sure to enter a valid view name of the UCMDB in the **viewName** input.

Pattern [badQueryName] doesn't exist
   Make sure to enter a valid query name of the UCMDB in the **queryName** input.

No Error Messages, but Got Empty Topology Map
   If you get an empty topology map based on the **viewName** or **queryName**, the view or query might be empty in UCMDB.

Error occurred while trying to execute operation Data In - Add Data Strict : operation Data In - Add Data Strict....Couldn't append existing object:
   When running the OO operation **Add Object** to create a Configuration Item, the Configuration Item is already in UCMDB 8.0. Make sure that the Configuration Item does not already exist.

the ID property [attribute name='ip_address'] doesn't exist !!!; nested exception is:

java.lang.Exception:
   When running the OO operation **Add Object** to create a Configuration Item in UCMDB 7.0, the **prop** field should be the ID attribute. For example, if you create a type **ip** Configuration Item,

the ID attribute is **ip_address**; if you create a **host** Configuration Item, the ID attribute is **host_key**.

Error occurred while trying to execute operation Data In - Add Data Strict : operation Data In - Add Data Strict…. Can't achieve ID properties: not all the requested ID properties exist

When running the OO operation **Add Object** to create a Configuration Item in UCMDB 8.0, the **prop** field should be the ID attribute. For example, if you create a type **ip** Configuration Item, the ID attribute is **ip_address**; if you create a **host** Configuration Item, the ID attribute is **host_key**.

Error occurred while trying to execute operation Data In - Add Or Ignore Data : operation Data In - Add Or Ignore Data … Caused by: java.lang.NullPointerException

When running the OO operation **Add Relationship** to create a Relation in UCMDB 8.0, the relationship type might be not correct.

Security

UCMDB 7.0 servers are accessed via SOAP over HTTP (or HTTPS, if enabled on the host). UCMDB 8.0 servers are accessed via JAVA Client API. The UCMDB administrator provides logon credentials for connecting with the SOAP or API. The SOAP client or API client needs the username and password of an integration user defined in the UCMDB. These users do not represent actual users of the UCMDB, but rather applications that connect to the UCMDB.

Tools

JRSFlowInvoke.exe

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

Web Service Wizard (wswizard.exe)

A tool that displays a list of the methods in the interface of the specified Web service. In the wizard, you pick the methods that you want to use, and with one click for each method you have selected, the wizard creates an HP OO operation that can execute the method.

These tools are located in the \%OO-home%\Studio\tools\ folder.