



Configuration Management System (CMS)

Software Version: 2018.08

End-to-End Workflow Walkthrough Guide

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Chapter 1: How to Deal with License Upgrade from a Previous Version to UCMDB 2018.08?

This end-to-end use case describes how to deal with license upgrade from an earlier version to UCMDB 2018.08.

This use case includes the following tasks.

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Task 5. Review the units of licenses consumed in the detailed License Consumption Report	13
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Task 1. Upgrade UCMDB to version 2018.08

For detailed instructions about upgrading UCMDB, see the interactive *Universal CMDB Deployment Guide*.


Important: During the upgrade, when you select **Update from 10.x or 10.x CUP** on the Select Installation Type wizard page, a message window pops up, reminding you that upgrading to version 2018.08 requires migration of existing Universal Discovery license to Units.

Before you can proceed with the upgrade, you must do the following:

- Access the Support Entitlement Portal to convert any MDR and ACM licenses you own to the format required by 2018.08 or later. This can be done by you and does not require any help from Micro Focus teams.
- Contact the Software Sales Assist team (sw_ssa@microfocus.com) to begin the migration of your UD Full and UD Inventory OSI licenses to units.

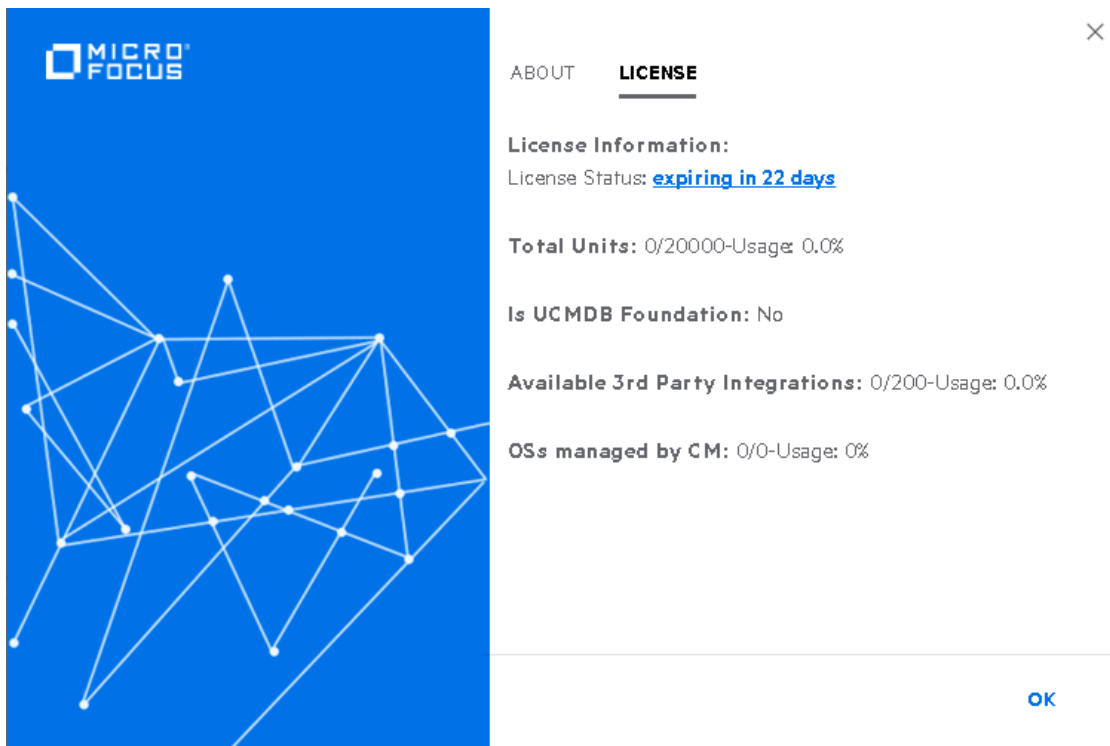
Task 2. Check the license summary report

The permissive Instant-On License is installed by default and is going to expire in 22 days.

1. Launch CMS UI as Admin user.
2. Click the **Help**  button in the top right corner of the window, and then select **About**.

The About window opens.

3. Go to the **LICENSE** tab.



4. Click the link after **License Status**.

The License Summary Report page opens.


5. Check the license summary report.
 - Only **Instant-On license** is listed even though you have had some licenses installed when you worked with the previous version. The license issued for previous versions are not compatible with UCMDB 2018.08 and they are not visible.

- The **Advanced UD** license usage is not displayed if you have not migrated to the new license key.
- **OSs managed by CM** usage displays the number of OSIs belonging to the results of the managed in CM views.
- The Managed Data Repository (MDR) usage is displayed according to the **Available 3rd Party Integrations** you have in UCMDB.



LICENSE SUMMARY REPORT

x

LICENSE CONSUMPTION SUMMARY

Export License Consumption Details Report 

License	Servers	Workstations	Network Devices	Storage Devices	Containers
Advanced UD	0	0	0	0	0
Basic UD	0				
Total Units		Available 3rd Party Integrations		OSs managed by CM	
0.2/20000 - Usage : 0.0%		0/200 - Usage : 0.0%		0/5000 - Usage : 0.0%	

AVAILABLE LICENSES

#	Status	License Description	Type	Expiring Date	Starting Date	Remaining Days	License Capacity
1	Active	UCMDB Instant On for 90 days	INSTANT_ON	4/4/18 11:59 PM	N/A	91	1

Task 3. Apply the new UCMDB 2018.08 licenses, check licenses details and license capacity using JMX console

1. Install the converted MDR and ACM licenses into UCMDB, and also install the migrated Units into UCMDB.

When you access UCMDB server from web browser after upgrading UCMDB to 2018.08, you may see a message resembling the following on the UCMDB splash screen:

UCMDB 2018.08 requires a new license key migrated from your previous version. [Click here](#) to apply the new license

If you have not yet migrated your license, contact Software Sales Assist at [sw_ssa@microfocus.com](mailto:ssa@microfocus.com) and request a migrated license key.

Warning: If 2018.08 license is not applied, you will be provided a limited time trial license. Production usage of UCMDB with this trial license is not allowed.

Click the link in the message to apply the new license according to the contract you already have, by using **JMX Console > Licensing Services**:

- Use the **addLicense** method to install the Raw License Key
- Use the **addLicenseFromFile** method to install licenses from a file

Important: If you have not yet migrated your licenses, contact the Software Sales Assist team (sw_ssa@microfocus.com) to begin the migration of your UD Full and UD Inventory OSI licenses to units. Then return to this step to apply the migrated license key or license file.

When installing licenses, the Instant-On is overwritten.

For details, see the *How to Manage UCMDB Licenses Using the JMX Console* section in the *JMX Reference section of the UCMDB Help*.

UCMDB:service=Licensing Services

Operations:	
addLicense	Install License
addLicenseFromFile	Install License from File
getAllActiveLicenses	Show All Active Licenses
getAllLicenses	Show All Licenses Including Expired and Invalid
getLicenseSummary	Show the License Summary of all Active Licenses
invokeLicenseCalculation	Calculate License instantly
removeAllLicenses	Remove All the Installed Licenses (BACK UP FIRST!)

addLicense

Install License

Name	Type	Value	Description
customerID	java.lang.Integer	<input type="text"/>	Customer ID
licenseKey	java.lang.String	<input type="text"/>	Raw License Key

addLicenseFromFile

Install License from File

Name	Type	Value	Description
customerID	java.lang.Integer	<input type="text"/>	Customer ID
licenseFilePath	java.lang.String	<input type="text"/>	License file (.dat) path

Mbean: UCMDB:service=Licensing Services. Method: addLicense

Successfully Added:

Feature	Value
License	UCMDB Foundation
Type	TERM
Start Time	Tue Dec 05 05:30:00 IST 2017
End Time	Thu Feb 01 05:29:00 IST 2018
Capacity	100
License	UCMDB-CM - Advanced Configuration Manager per OS Instance
Type	TERM
Start Time	Tue Dec 05 05:30:00 IST 2017
End Time	Thu Feb 01 05:29:00 IST 2018
Capacity	100
License	UCMDB Third Party Integration per MDR
Type	TERM
Start Time	Tue Dec 05 05:30:00 IST 2017
End Time	Thu Feb 01 05:29:00 IST 2018
Capacity	100
License	Universal Discovery per Unit
Type	TERM
Start Time	Tue Dec 05 05:30:00 IST 2017
End Time	Thu Feb 01 05:29:00 IST 2018
Capacity	100
License	UCMDB Third Party Integration 200-MDR
Type	TERM
Start Time	Tue Dec 05 05:30:00 IST 2017
End Time	Thu Feb 01 05:29:00 IST 2018
Capacity	100

2. Check information about licensed capacity by using the **getLicenseSummary** method from the **Licensing Services** category from the JMX console.

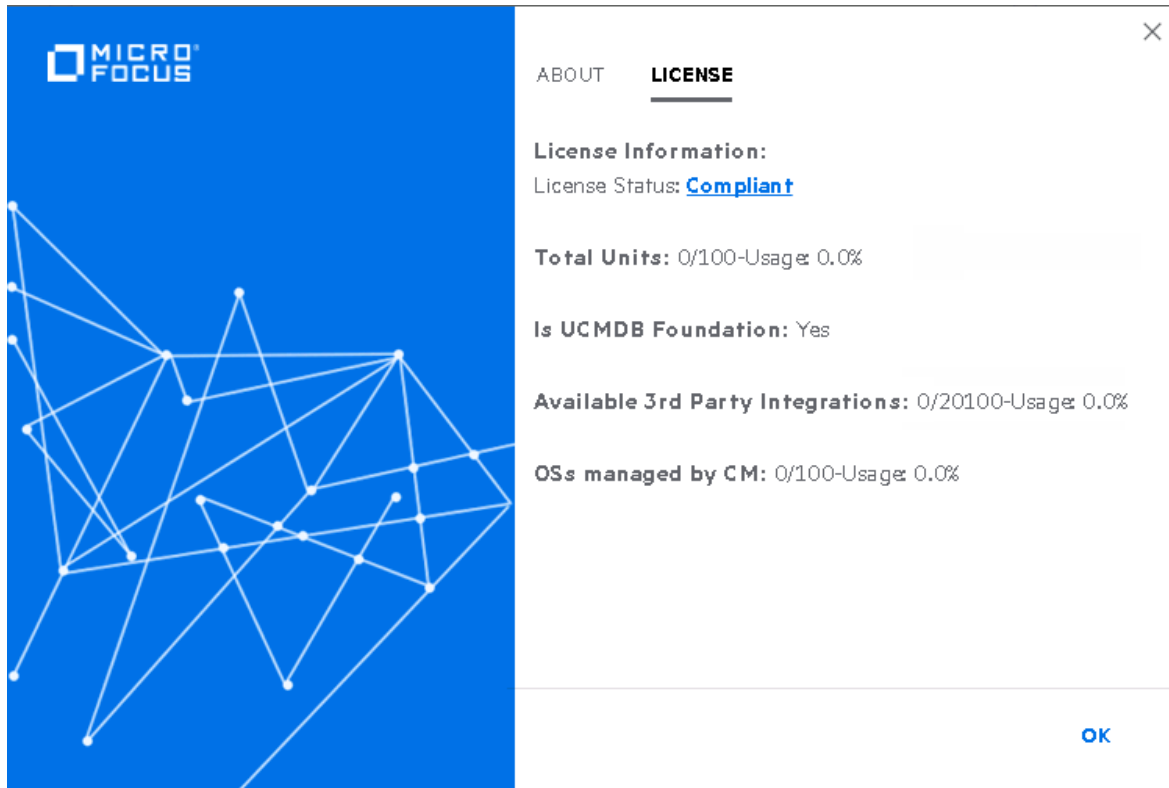
Mbean: UCMDB:service=Licensing Services. Method: getLicenseSummary

Feature	Value
Third Party MDR	20100
Advanced Configuration Manager	100
UCMDB Foundation	true
Total License unit	100
Customer Type	ENTERPRISE

Task 4. Launch License summary report and check license usage

Launch license summary report from CMS UI (**Help > About > LICENSE**, then click the link after **License Status**) and check the license usage, according to what capacity you are licensed for:


- The installed licenses details are displayed in Available Licenses section.
- **License Status** - Now the license status is compliant.
- **Total Units** usage provides data about units of licenses consumed and units of licenses available, as well as the units consumption rate.
- **Advanced UD** usage – Units of resources discovered by the Advanced Discovery jobs
- **Basic UD** usage – Units of resources discovered by the Basic Discovery jobs
- **OSIs managed by CM** usage – Number of OSIs that are managed by CM
- **Available third party integrations** usage – Number of integrations with non Micro Focus products
- **Is UCMDB Foundation** – Indicates whether you have Foundation license or not.



LICENSE SUMMARY REPORT

x

LICENSE CONSUMPTION SUMMARY

Export License Consumption Details Report 

License	Servers	Workstations	Network Devices	Storage Devices	Containers		
Advanced UD	20000	1000	0	0	0		
Basic UD	0						
Total Units		Available 3rd Party Integrations		OSs managed by CM			
20100/300100 - Usage : 6.7%		0/20100 - Usage : 0.0%		0/100 - Usage : 0.0%			

AVAILABLE LICENSES

▼ ☰

#	Status	License Description	Type	Expiring Date	Starting Date	Remaining Days	License Capacity
1	Active	Universal Discovery Units	TERM	2/1/18 7:59 AM	12/5/17 8:00 AM	28	100
2	Active	UCMDB-CM - Advanced Configuration Manager per OS Instance	TERM	2/1/18 7:59 AM	12/5/17 8:00 AM	28	100
3	Active	UCMDB Third Party Integration per MDR	TERM	2/1/18 7:59 AM	12/5/17 8:00 AM	28	100
4	Active	UCMDB Foundation	TERM	2/1/18 7:59 AM	12/5/17 8:00 AM	28	100
5	Active	Universal Discovery Units	TERM	3/22/18 7:59 AM	1/3/18 8:00 AM	77	300000
6	Active	UCMDB Third Party Integration 200-MDR	TERM	2/1/18 7:59 AM	12/5/17 8:00 AM	28	100

Task 5. Review the units of licenses consumed in the detailed License Consumption Report

1. In the License Summary Report window, click **Export License Consumption Details Report**.

The license consumption details are exported to an Excel spreadsheet.

2. Open the Excel spreadsheet and review the consumed units in the report:
 - The **instance_type** column indicates the instance type of the resource. Valid values include server, workstation, network and storage devices, and docker container.
 - The **node_role** column indicates whether the resource is of node type, but not of network or storage device, and what node type the resource is: server or workstation. Value example: **[server, virtualized_system]** or **[virtualized_system]** for a server resource; **[desktop, virtualized_system]** for a workstation resource.

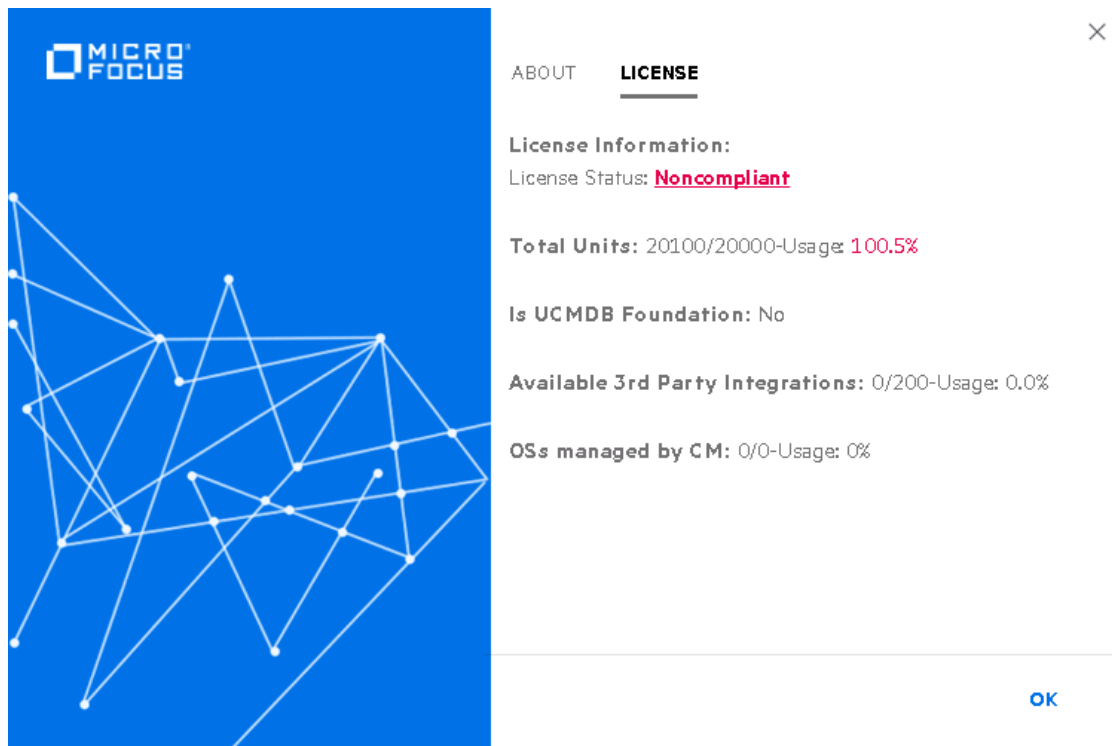
For more details about the columns in the report, see ["Access the new License Summary Report" on page 1.](#)

	A	B	C	D	E	F	G	H	I	J
1	instance_type	Units	CI_type	global_id	name	node_role	os_family	discovered_os	create_time	created_by
2	workstation	0.1	nt	3ade6acf2502d66d891ad	sgdlitvm0672	[virtualized_system, s	windows	6.1.7601	Tue Apr 10 09:3	CallerApplica
3	server	0.2	nt	4a957d754a42738baf077	sgdlitvm0605	[server, virtualized_sy	windows	6.2.9200	Tue Apr 10 11:5	UCMDB_NK0
4	server	0.2	nt	40560096f33ddb8b959d2	sgdlitvm0684	[virtualized_system]	windows	10.0.14393	Tue Apr 10 11:5	UCMDB_NK0
5	server	0.2	nt	4f004cce0c5c2dffa90294	sgdlitvm0643	[virtualized_system]	windows	10.0.14393	Tue Apr 10 11:5	UCMDB_NK0
6	server	0.2	nt	de7d8357514fc3eb7e464	sgdlitvm0664	[server, virtualized_sy	windows	6.3.9600	Tue Apr 10 09:3	CallerApplica
7	server	0.2	nt	4f5431fa7b29d450b60d1	sgdlitvm0600	[server, virtualized_sy	windows	6.3.9600	Tue Apr 10 11:5	UCMDB_NK0
8	workstation	0.1	nt	4cc805c5ffd2b342b3dc1f	sgdlitvm0673	[desktop, virtualized_	windows	6.2.9200	Tue Apr 10 11:5	UCMDB_NK0
9	workstation	0.1	nt	4654774f7431437e89a9f	sgdlitvm0616	[desktop, virtualized_	windows	6.2.9200	Tue Apr 10 11:5	UCMDB_NK0
10	server	0.2	nt	6080e07be58b0c61cha8d	sgdlitvm0623	[server, virtualized_sy	windows	6.1.7600	Tue Apr 10 09:3	CallerApplica

Task 6. Install additional license capacity when you discover more resources than you are licensed for

When discovering more resources than you are licensed for, you are still able to use the UCMDB Server. However, the server status is **Noncompliant**.

1. Launch License summary report from CMS UI (**Help > About > LICENSE**) to check what exceeded capacity is.



- In order to be compliant, you can install additional license capacity using the **addLicense** method (or **addLicenseFromFile** method) from the **Licensing Services** category in the JMX console.

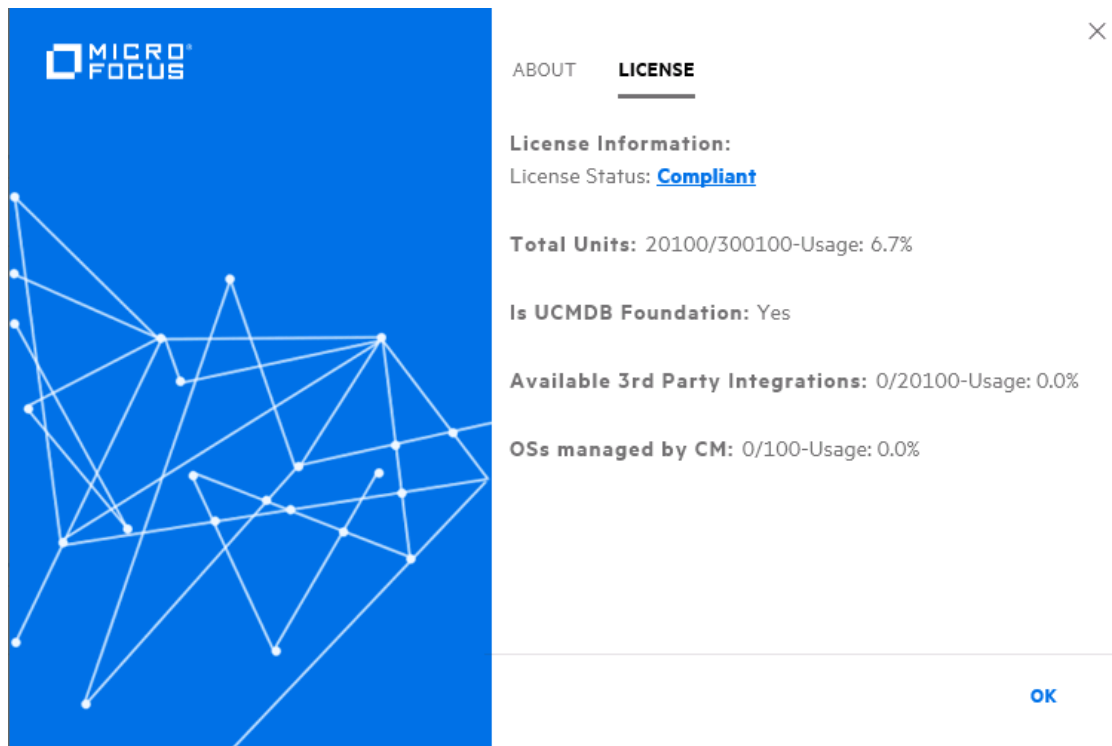
Mbean: UCMDB:service=Licensing Services. Method: addLicense

Successfully Added:

Feature	Value
License	Universal Discovery per Unit
Type	TERM
Start Time	Wed Jan 03 08:00:00 CST 2018
End Time	Thu Mar 22 07:59:00 CST 2018
Capacity	300000

- Calculate licenses immediately by invoking the **invokeLicenseCalculation** method from the **Licensing Services** category from the JMX console. (By default licenses are calculated on daily basis.)
- Launch License summary report again.

Now the UCMDB Server status is **Compliant**.



Chapter 2: How to Create a Dynamic Widget from the UCMDB UI?


This end-to-end use case describes how to create a Dynamic Widget from UCMDB and demonstrates the resulting widget in the UCMDB Browser module.

This use case includes the following tasks:

Task 1. Create a Dynamic Widget by using the Pattern View Editor	17
Task 2. Enable or disable the widget for different roles	19
Task 3. View the resulting widget in the UCMDB Browser module	20

Task 1. Create a Dynamic Widget by using the Pattern View Editor

To create a Dynamic Widget, follow these steps:

1. Log on to UCMDB, and then open the Modeling Studio.
2. Click **New** , and then select **Dynamic Widget**.

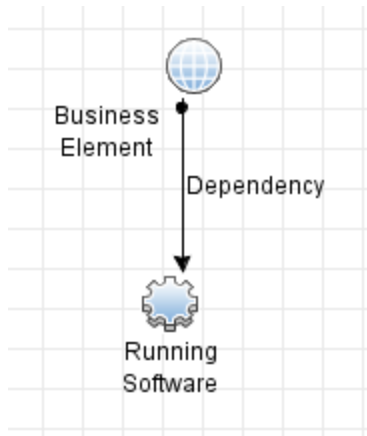
The **New Dynamic Widget** window opens.

3. Select **Create new query**, and then click **OK**.

The Pattern View Editor opens.

4. From the **CI Types** pane, drag and drop the **BusinessElement** and **RunningSoftware** CI types into the **Query Definition** canvas, and then add a Dependency relationship between the two CITs.

For detailed information about how to do this, see ["How to Add Query Nodes and Relationships to a TQL Query" on page 1](#).



5. Right-click the **Business Element** query node in the canvas and then select **Set As Contact Query Node**.
6. Click the **Report** button to switch to the Report Definition mode. For each node, select and add any needed attributes into the **Report Layout** column.

Note: You can also add all the attributes for each node, and then enable the needed attributes in the **Widget** tab.

7. Click the **Widget** button to switch to the Widget Definition mode. Configure the values in the following four columns for each attribute:
 - **Overview:** Defines if the attribute is visible in the preview mode for the widget. Up to six attributes can be visible.
 - **Details:** Defines if the attribute appears after you click the **Details** button.
 - **Refocusable:** Defines if the value of the attribute appears as a link that directs to the CI to which the value belongs.
 - **Group Name:** Categorizes properties in groups.

Note: All the above configurations only apply to the Properties Mode widget type.

8. Select the top level of the tree in the **Hierarchy** pane, and then select one of the following mode in the **Widget Type** field.
 - Properties Mode
 - Topology Map Mode
 - Topology CIT Group Mode
 - Topology Textual Mode

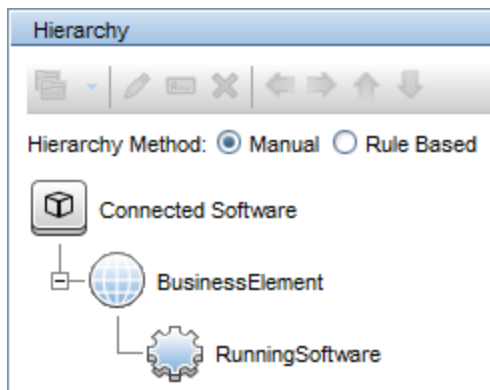
The Properties Mode displays attribute values from the nodes returned by the topology returned by the view that is created. All the other modes display a map of the topology.


Note: If you change the widget type, the UCMDB Browser user need to log off and log on again to see the change in the resulting widget.

9. (Optional) If you set the widget type to Properties Mode, you can also group nodes by CI Type so that the information presentation is more structured.

The following steps demonstrate how to add a grouping on the Running Software node:

- a. Click the **View** button to switch to the View mode. In the **Hierarchy** pane, drag and drop the **RunningSoftware** node under the **BusinessElement** node, as shown in the following screen shot.



- b. Right-click the **RunningSoftware** node, and then select **Add Group By CI Type**.
10. Click **Save** .
11. Enter `Connected Software` in the **View name** field, and then click **OK**.

Task 2. Enable or disable the widget for different roles

You can enable or disable the Dynamic Widget on a role basis. To do this, follow these steps:

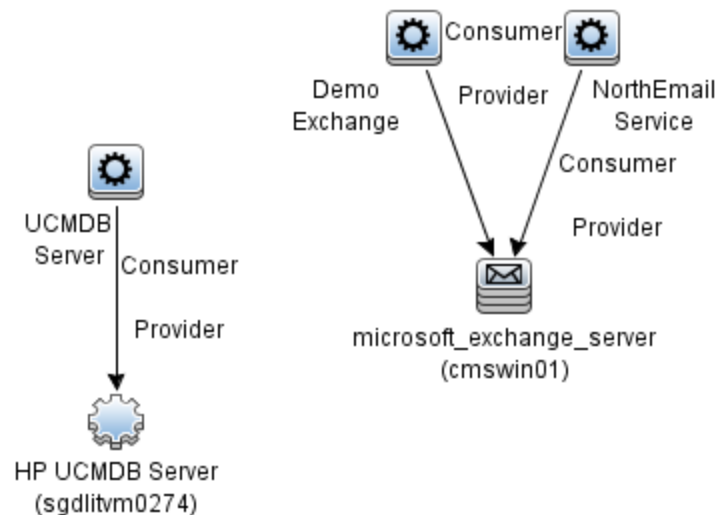
1. Go to **Security > Roles Manager**.
2. Select the role for which you want to enable the Dynamic Widget.
3. In the **Resource** tab, under **Resource Types**, select **UCMDB Browser Widgets**.

You can see the new Connected Software widget under **Available UCMDB Browser Widgets**.

4. Drag and drop the Connected Software widget to the **Selected UCMDB Browser Widgets With Permissions** column.

Task 3. View the resulting widget in the UCMDB Browser module

In the UCMDB Browser module, to view the resulting widget of the Dynamic Widget created above, you need to search for a Business Element that has connected Running Software instances. If you do not know which Business Element has connected Running Software instances, you can preview the result of the Connected Software view from UCMDB and see which CIs have data. For example, the following result indicates that the NorthEmailService CI has data.



Therefore, you can search for NorthEmailService to view the data. The UCMDB Browser module returns the result as shown in the following screen shot.

Note: Make sure that you log on as a user that has the permission to see the widget.

The screenshot shows the UCMDB Browser interface. On the left, there is a search bar with the text 'north' and a magnifying glass icon. Below it, a dropdown menu shows 'All results (1)' with a green checkmark. Further down, under 'Special filters:', there are two sections: 'Main CI Type' with a button 'No CI Type Selected' and a document icon, and 'Name:' with a text input field containing 'Name Attribute (optional)'. Below that, 'Related CI Type' has a button 'No CI Type Selected' and a document icon. At the bottom left is a green button labeled 'Select Attributes for Report'. On the right, the main area displays 'Found 1 result'. Below this, there is a card for 'NorthEmailService' with a gear icon. At the bottom of the card, it says 'Type: Business application > BusinessAp...'.

The UCMDB Browser module presents the information based on the configurations in step 7, 8, and 9 when you create the Dynamic Widget.

The widget type is Properties Mode

When you select the search result, you can see the following new widget.

The screenshot shows a widget titled 'CONNECTED SOFTWARE' with a blue header bar. Below the header, there is a table of properties:

Create Time:	Fri Jan 16 09:30:40 GMT+200 2015	ProductName:	microsoft_exchange_server
Vendor:	microsoft_corp	Version:	2010

At the bottom of the widget is a blue button labeled 'Details'.

If the nodes are not grouped by CI Types, when you click the **Details** button, the detailed information is presented as follows. The attributes are grouped according to the defined group name.

Connected Software

APP INFO

Application IP Routing Domain:	DefaultDomain
Application IP Type:	IPv4
Application IP:	16.155.192.80
Application Version Description:	Version 14.0 (Build 639.21)


ADDITIONAL PROPERTIES

ProductName:	microsoft_exchange_server
Vendor:	microsoft_corp
Version:	2010


If the nodes are grouped by CI Types, when you click the **Details** button, the detailed information is presented as follows.

Connected Software

Filter by CI Type

All	1
Group by CI Type on RunningS	1
 ms_exchange_server	1



ms_exchange_server (1)

 **microsoft_exchange_server (cmswin01)**
Type: MicrosoftExchangeServer

If there are more than one Running Software, they will be listed under the exchange server.

You can select a CI to view its properties, as shown in the following screen shot.

Connected Software

 **microsoft_exchange_server (cmswin01)**
Type: MicrosoftExchangeServer

APP INFO

Application IP Routing Domain:	DefaultDomain
Application IP Type:	IPv4
Application IP:	16.155.192.80
Application Version Description:	Version 14.0 (Build 639.21)

ADDITIONAL PROPERTIES


ProductName:	microsoft_exchange_server
Vendor:	microsoft_corp
Version:	2010

For instructions on how to group nodes by CI Types, see [Step 9 on page 19](#).

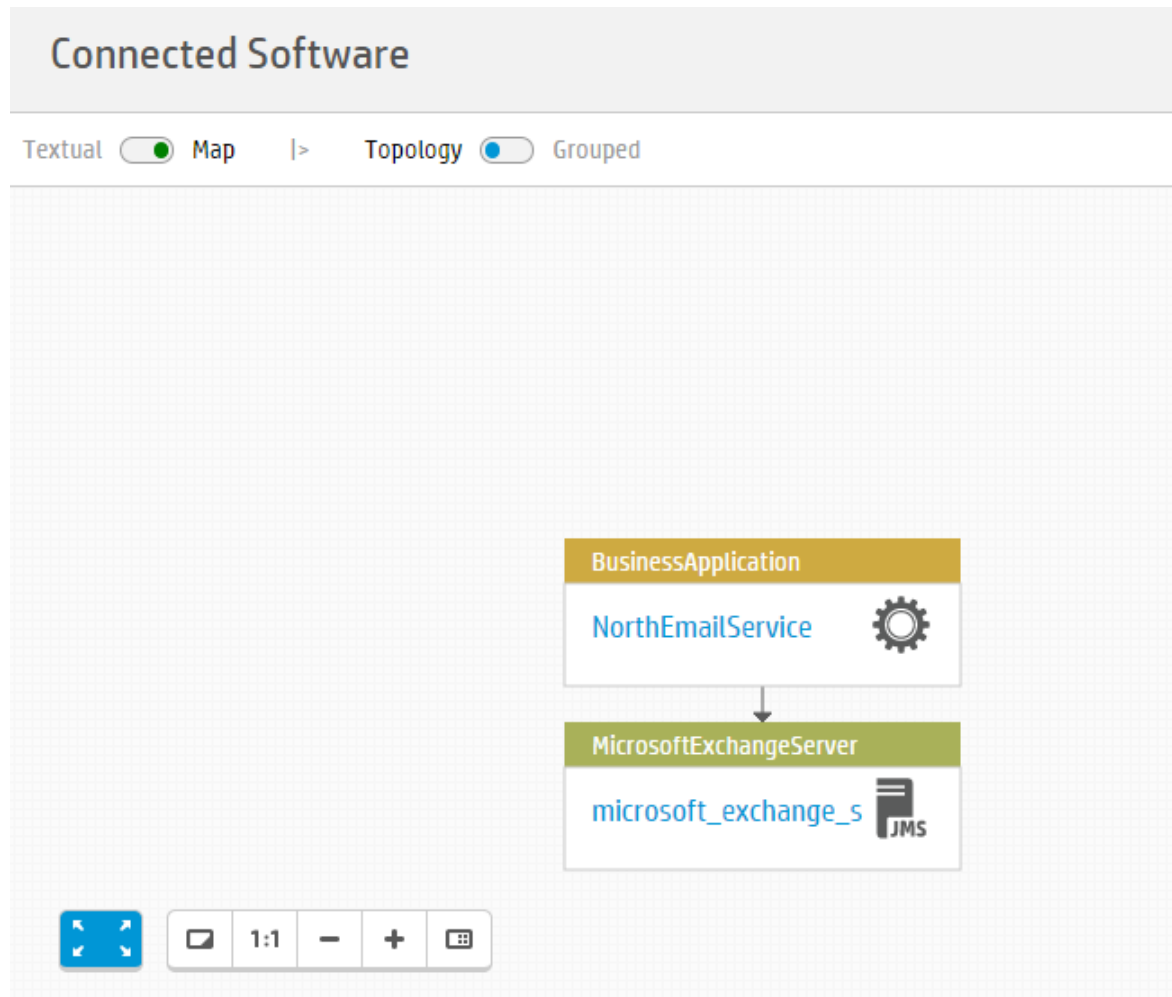
The widget type is Topology Mode

When you click the search result, the new widget appears as follows.

CONNECTED SOFTWARE

 Mail 1

When you hover the mouse over the widget and then click the **Details** button, the following map appears.



Chapter 3: How to Use the Generic Adapter Mapping UI to integrate UCMDB with Service Manager and Import CIs?


This end-to-end use case describes how to integrate UCMDB with Service Manager in order to import the newly discovered 3D Printer CIs into Service Manager.

This use case includes the following tasks:

Task 1. Create the new CI Type in UCMDB	25
Task 2. Import the new CIs into UCMDB	25
Task 3. Create the TQL query to view all the 3D Printer instances	26
Task 4. Create the integration point with the Service Manager server	27
Task 5. Create the new CI Type and the mapping for the new CI Type in Service Manager	29
Task 6. Create the push job for the new CI Type and push the CIs to Service Manager	34

Task 1. Create the new CI Type in UCMDB

Follow these steps to create the new 3D Printer CI Type in UCMDB:

1. Log on to UCMDB, and then open the CI Type Manager.
2. Select the **Node** element in the CI Types tree, and then click **New** .

The new 3D Printer CI Type will be a child of the existing Node CI type.

3. Follow the Create CI Type Wizard to create the new CI Type.

For more information about how to create a new CI Type, refer to the *How to Create a CI Type* section in the *Modeling section of the UCMDB Help*.


Task 2. Import the new CIs into UCMDB


Import the new CIs into UCMDB either by integration population or by discovery. For more information about how to do this, see the following topics:

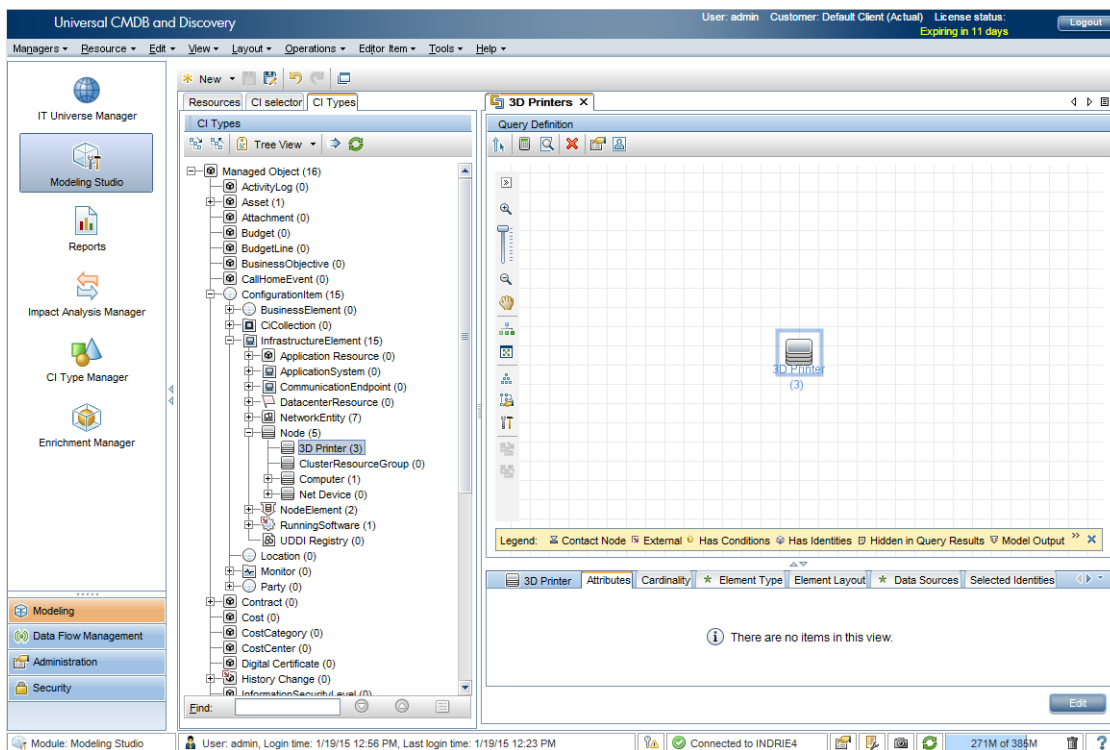
- *How to Work with Population Jobs*
- *How to Run Module/Job-based Discovery*

Task 3. Create the TQL query to view all the 3D Printer instances

Follow these steps to create the TQL query and view all the 3D Printer instances:

1. Go to the Modeling Studio, click **New** , and then click **Query**.
2. From the **CI Types** pane, locate the **3D Printer** CI type, and then drag and drop the **3D Printer** CI type into the **Query Definition** canvas.

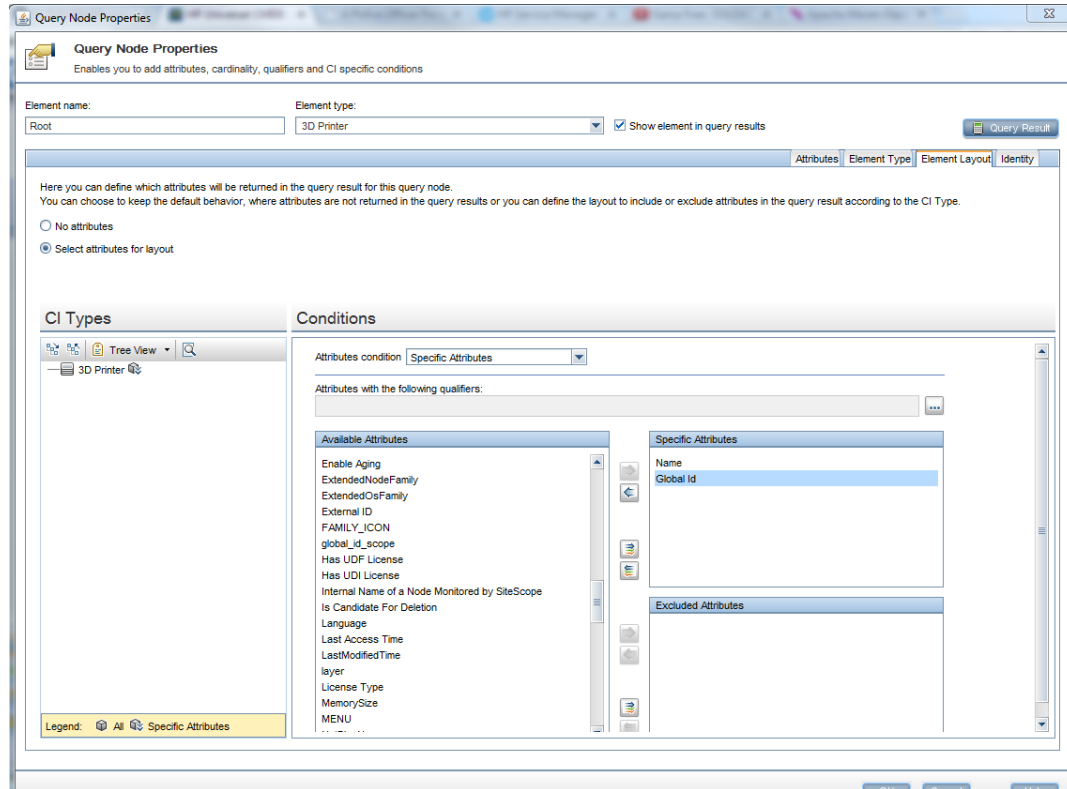
Note: To preview the query result, click the **Preview** button .



3. Right-click the 3D Printer query node, and then click **Query Node Properties**.
4. In the **Query Node Properties** window, make the following changes so that this TQL query can be used to push data to the Service Manager server.



- a. Change the element name to Root to indicate the root of the TQL query.
- b. In the **Element Layout** tab, select the **Select attributes for layout** option, add the **Name** and **Global Id** attributes to the **Specific Attributes** column.

These attributes will be pushed to Service Manager. You can add other attributes if you want.



Task 4. Create the integration point with the Service Manager server

Follow these steps to create the integration point from UCMDDB to the Service Manager server:

1. Go to the Integration Studio, and then click **New Integration Point** .
2. Specify the integration name.
3. Click **Select Adapter** , and then Select **ServiceManagerEnhancedAdapter9.x**.
4. Enter the required information. The following screen shot shows an example.

New Integration Point

Integration Properties

- * Integration Name: Service Manager
- Integration Description:
- Adapter: ServiceManagerEnhancedAdapter9.x
- Is Integration Activated: ☐

Adapter Properties

- * Hostname/IP: 16.187.189.245
- * Port: 13080
- URL Override:
- * Credentials ID: Generic Protocol: sm
- Development Mode: False
- * Data Flow Probe: INDRIE4
- Additional Probes:

* Mandatory Properties


Test connection

OK Cancel

5. Click the **Test connection** button to verify the connectivity to the Service Manager server.
6. Click **OK**.


Task 5. Create the new CI Type and the mapping for the new CI Type in Service Manager

Follow these steps to create the new CI Type in Service Manager by using UCMDB's Mapping Tool and to create a mapping for the new 3D Printer CI Type:

1. Right-click the newly created integration point, and then click **Go to Adapter**.
The **ServiceManagerEnhancedAdapter9.x** adapter opens in Adapter Management.
2. To create the mapping file, make sure the **ServiceManagerEnhancedAdapter9-x** adapter is selected, click **New** , and then click **New Configuration File**.
3. Enter the mapping file name in the **Name** field.

Note: Include the full path in the **Name** field, for example:

ServiceManagerEnhancedAdapter9-x/mappings/push/SM 3D Printer Push.xml

4. Click **OK**, and then click **Yes** if you are prompted with the following message:
Do you want to open the configuration file with the new mapping tool editor?
The UI Mapping Tool opens.
5. Click **Add New CI Type to External Class Model** .
6. Enter the required information for the new CI Type, and then click **OK**.

Add new node

You must define a new node's properties for an external class model.

General

* Name: 3DPrinter


Description: A new type of printer.

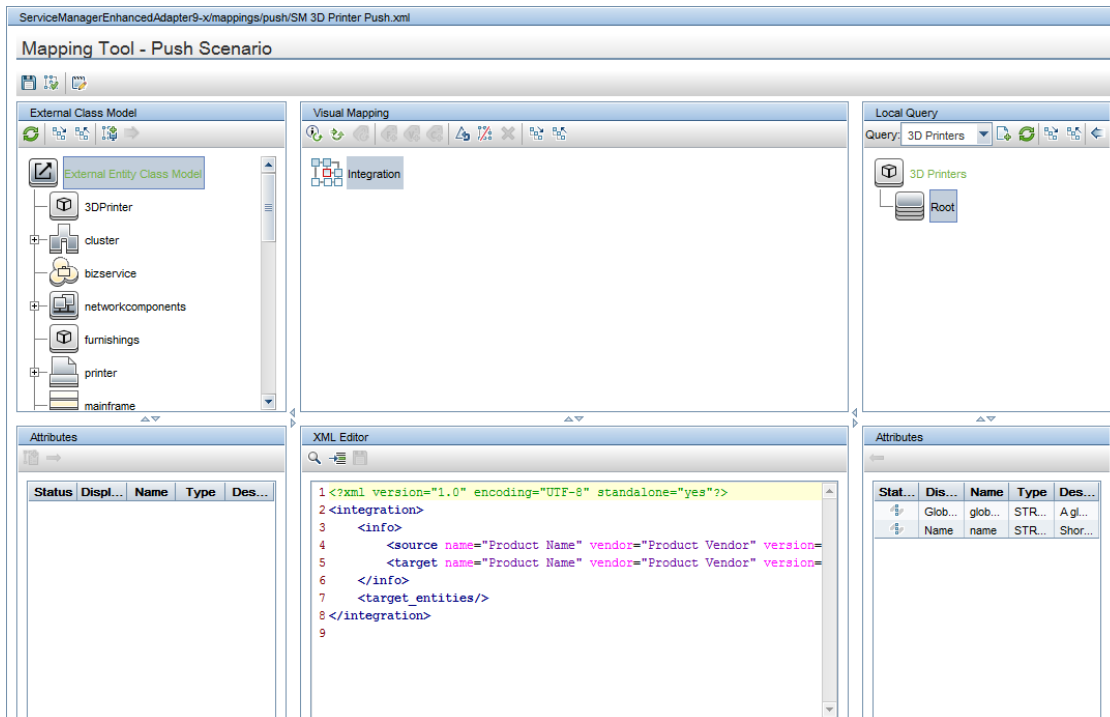
Metadata

table

subtype

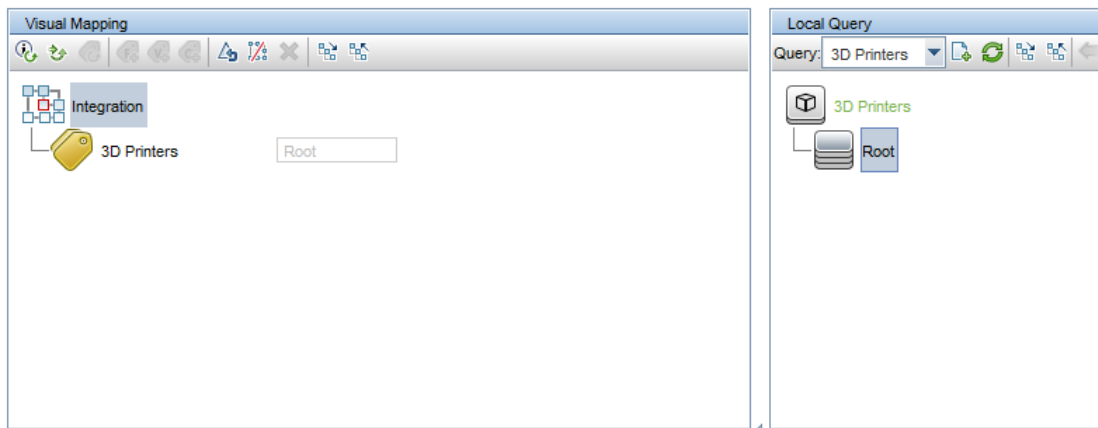
OK Cancel

7. Define the TQL query that provides the CIs need be pushed to Service Manager. To do this, click **Add TQL Queries**  in the **Local Query** pane, and then select the previously created 3D Printers TQL query.

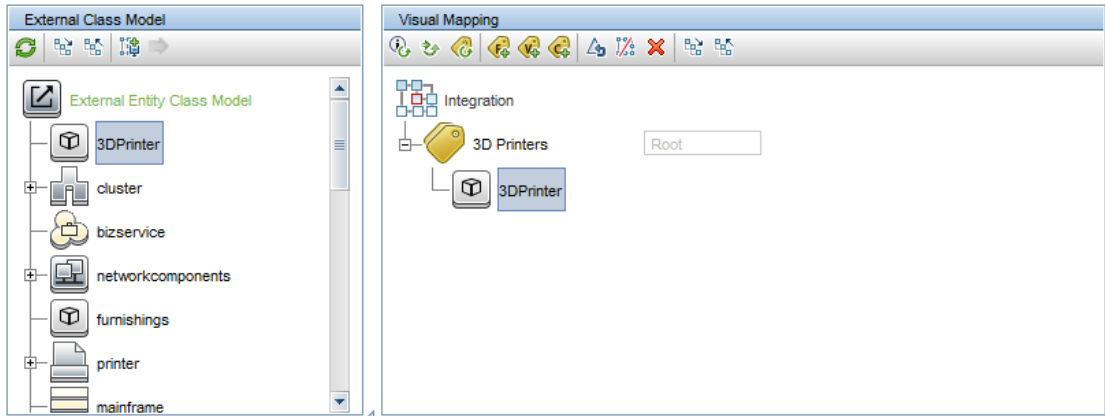


8. Select the Root node under the 3D Printers TQL query node in the **Local Query** pane, and then drag it onto the **Integration** node in the **Visual Mapping** pane.

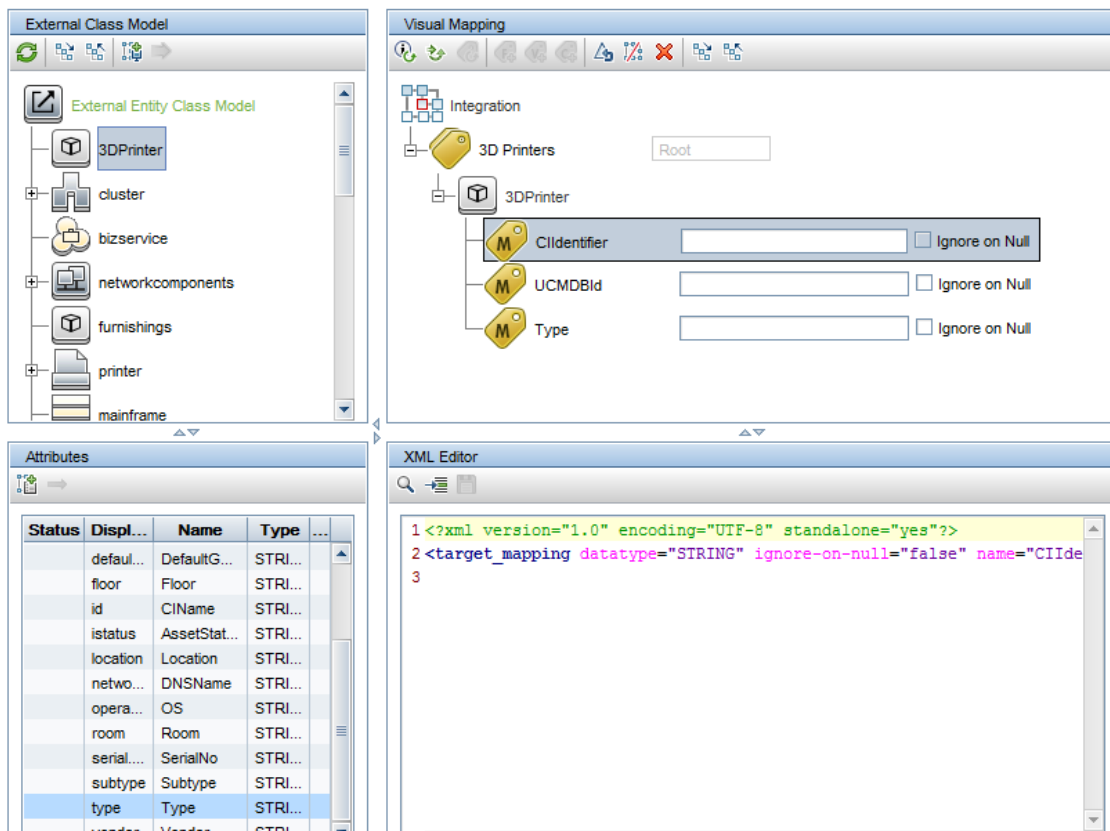
This configuration indicates that the data source for this mapping is the 3D Printers TQL query rooted in the Root element.



9. Select the Service Manager entities that will be created as a result of the mapping process. To do this, drag the 3DPrinter type from the **External Class Model** pane onto the 3D Printer TQL query node in the **Visual Mapping** pane.



10. Drag the needed attributes of the Service Manager 3DPrinter type from the **Attributes** pane onto the 3DPrinter node in the **Visual Mapping** pane. In this case, the Type attribute and two mandatory attributes: CIIdentifier and UCMBId.



11. Double click each of the three attributes and enter the values as follows:

- **Type:** '3dprinter'

The Type attribute need be passed to Service Manager as a string. Don not miss the single quotes, which are needed to differentiate a string constant from a variable.

- **UCMDBId:** Use the Global Id attribute from UCMDB.

To do this, drag the Global Id attribute from the **Attributes** pane onto the **UCMDBId** element in the **Visual Mapping** pane.

- **CIIdentifier:** Use the Name attribute from UCMDB and make a small customization.

To do this, follow these steps:

- Double-click the **CIIdentifier** element in the **Visual Mapping** pane, and then type `Root` [. A drop-down box appears and shows the available attributes for the Root TQL query element of the 3D Printer CI Type.
- Select **Root['name']**.
- Continue type + ' - ucmdb imported'.

The final value is `Root['name'] + ' - ucmdb imported'`.

The following screen shot shows the result of the mapping process.

The screenshot displays the 'Mapping Tool - Push Scenario' window. The 'Visual Mapping' pane shows the following mappings:

- CIIdentifier:** `Root['name'] + ' - ucmdb imported'` (Ignore on Null checkbox is unchecked)
- UCMDBId:** `Root['global_id']` (Ignore on Null checkbox is unchecked)
- Type:** `'3dprinter'` (Ignore on Null checkbox is unchecked)

The 'External Class Model' pane on the left shows a tree structure with '3DPrinter' as the selected entity. The 'Attributes' pane at the bottom left lists various attributes like Status, Displ..., Name, Type, etc. The 'XML Editor' pane at the bottom center shows the generated XML snippet:

```

1 <?xml version="1.0" encoding="UTF-8" standalone="yes"?>
2 <source_instance root-element-name="Root" query-name="3D Printers">
3   <target_entity name="3DPrinter">
4     <target_mapping datatype="STRING" ignore-on-null="false" name="CIIdentifier">
5       <target_mapping datatype="STRING" ignore-on-null="false" name="UCMDBId">
6         <target_mapping datatype="STRING" ignore-on-null="false" name="Type">
7           </target_mapping>
8         </target_mapping>
9       </target_mapping>
10    </target_entity>
11  </source_instance>

```

The 'Local Query' pane on the right shows a query named '3D Printers' with a 'Root' element. The 'Attributes' pane at the bottom right shows a table with columns: Stat..., Dis..., Name, Type, Des... and rows for 'Glob...' and 'Name'.


12. Click **Save** .

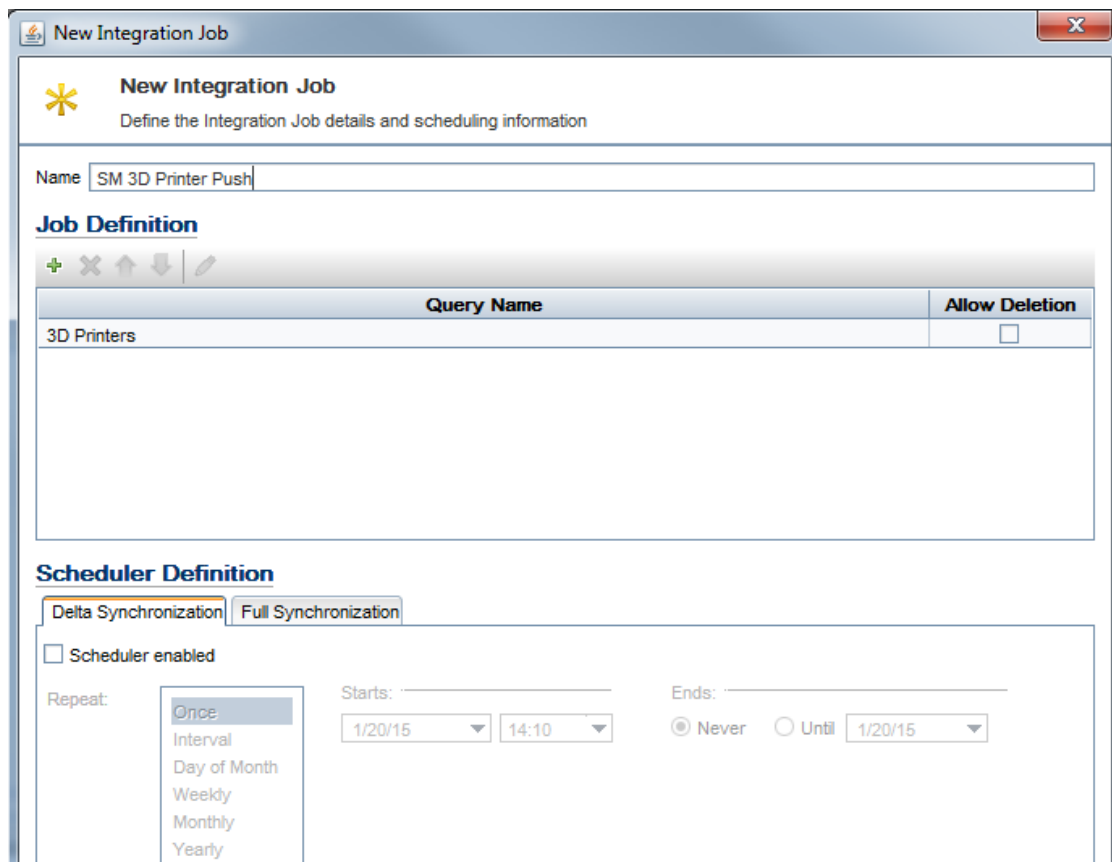
Task 6. Create the push job for the new CI Type and push the CIs to Service Manager

Follow these steps to create the push job for the newly created 3D Printer CI Type and push the CIs to Service Manager:

1. Go to Adapter Management.
2. Right-click the **ServiceManagerEnhancedAdapter9-x** adapter, click **Go to Integration Point**, and then click the newly created integration point for Service Manager.

The Integration Studio opens.

3. Make sure the Service Manager integration point is selected, and then open the **Data Push** tab.
4. Click **New Integration Job** , and add the 3D Printers TQL query as follows.



Query Name	Allow Deletion
3D Printers	<input type="checkbox"/>

Scheduler Definition

Delta Synchronization | **Full Synchronization**


☐ Scheduler enabled

Repeat: **Once** (selected)
Interval
Day of Month
Weekly
Monthly
Yearly

Starts: 1/20/15 14:10

Ends: ☒ Never ☐ Until 1/20/15








5. Click **Save Integration Point** .

6. Select the newly created SM 3D Printer Push job, and then click **Full Synchronization**  in the **Integration Jobs** section.

Service Manager Population Federation Data Push


Data Push Jobs copy or update CI Types and attributes from the local CMDB to an external data repository

Integration Jobs


Job	Full Synchronization - Runs the selected job, synchronizing all of the data	Last Synchronization Type
SM Push job	- Did not run	None
SM 3D Printer Push	- Did not run	None

Statistics Query Status










Query Name	Created	Updated	Deleted	Failed
Total	0	0	0	0

Last Updated: Never (Valid to: 01/20/2015 02:12:55 PM)

7. Click **Refresh**  to check if the job is finished.

Integration Jobs

Job Name	Status	Last Synchronization Type
SM 3D Printer Push	✔ Completed successfully	Full
SM Push job	- Did not run	None

Chapter 4: How to Use Assisted Modeling in the UCMDB Browser module to Manage All Your Site Services

This end-to-end use case describes how a site manager can organize all services in the site by using the UCMDB Browser module.

The use case assumes that all services follow this organization scheme: BusinessFunction [contains] BusinessService [contains] BusinessApplication.

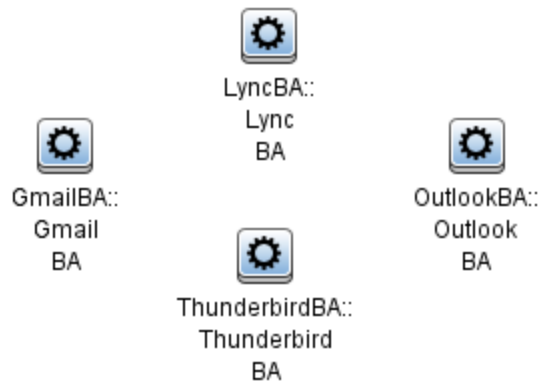
This workflow includes the following tasks:

- Task 1. Create BusinessApplications CIs36
- Task 2. Create a New Modeling Query37
- Task 3. Assign the MODELING_ENABLED Qualifier to the BusinessFunction and BusinessService CI Types38
- Task 4. Organize Services by Using Assisted Modeling 39
- Task 5. Verification 43

Task 1. Create BusinessApplications CIs

Follow these steps to create BusinessApplications CIs:

1. Log in to UCMDB, and then go to **Modeling > IT Universal Manager**.
2. Create the following CIs if they do not exist:
 - OutlookBA
 - GmailBA
 - ThunderbirdBA
 - LyncBA



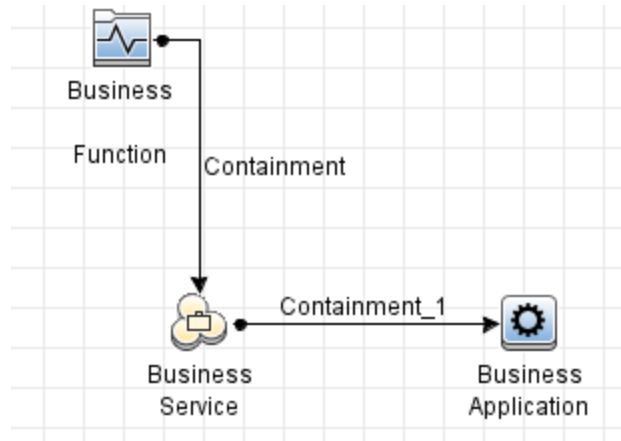
For more information about how to create a CI, refer to *Modeling section of the UCMDB Help> Modeling > IT Universe Manager> Working with CIs*.

Task 2. Create a New Modeling Query

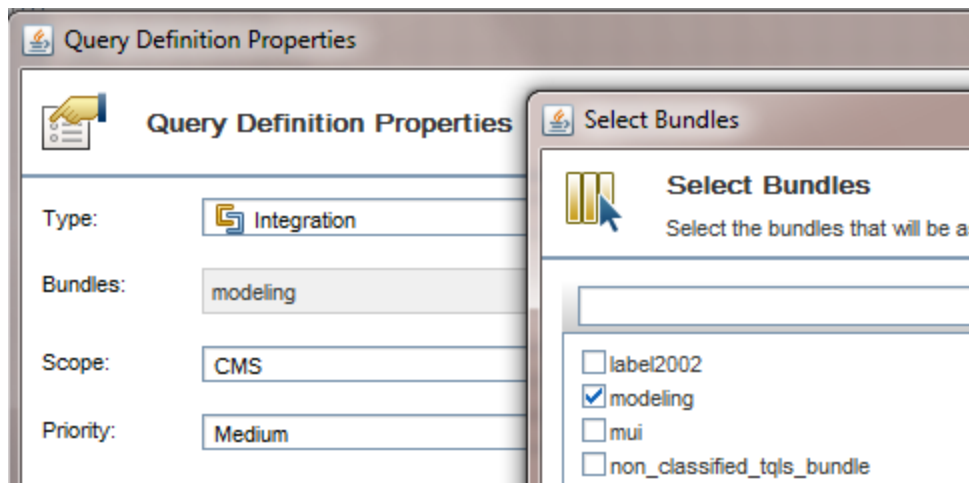
Follow these steps to create a new modeling query:

1. Log in to UCMDB, and then go to **Modeling > Modeling Studio**.
2. Create a new query with the following content and relationship:

BusinessFunction [contains] BusinessService [contains] BusinessApplication



3. Add the query to the **modeling** bundle.



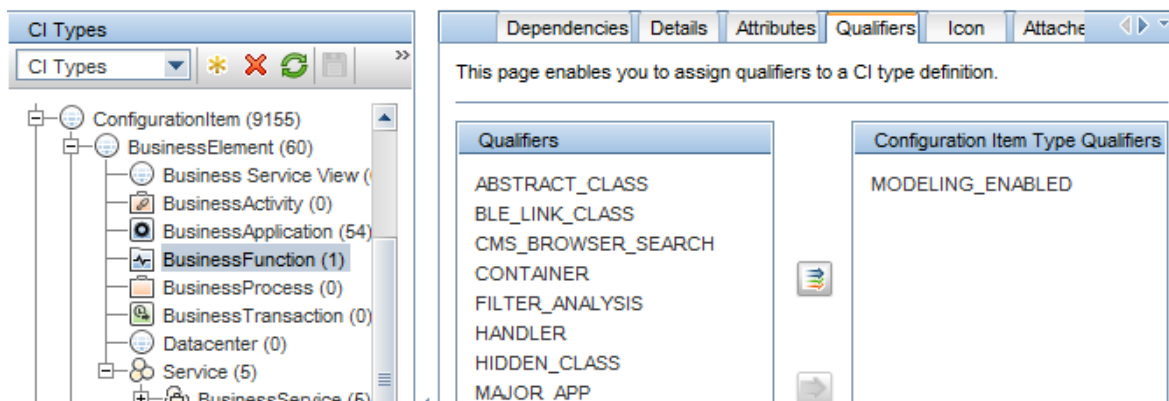
4. Save the query and name it as **ServiceHierarchy**.

For more information about how to create a TQL Query, see [How to Define a TQL Query](#).

Task 3. Assign the MODELING_ENABLED Qualifier to the BusinessFunction and BusinessService CI Types


Make sure both the **BusinessFunction** and **BusinessService** CI Types have the **MODELING_ENABLED** qualifier, so that you can create these CI types by using the Assisted Modeling feature in the UCMDDB Browser module.

To do this, go to **Modeling > CI Type Manager**, select the CI Type, and then go to the **Qualifiers** tab. The **MODELING_ENABLED** qualifier should be in the right column.

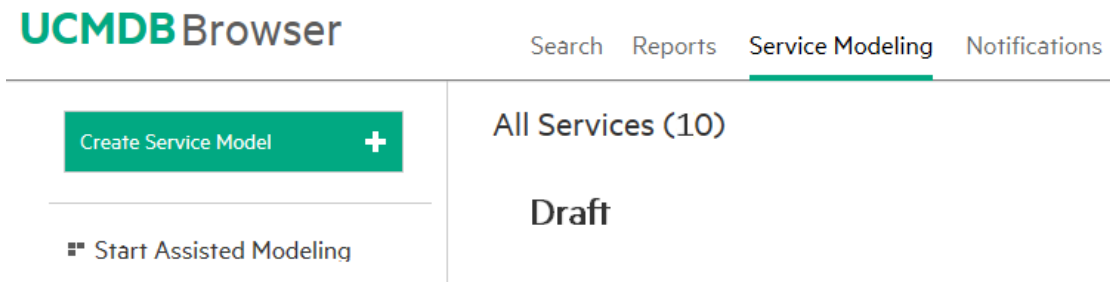


Task 4. Organize Services by Using Assisted Modeling

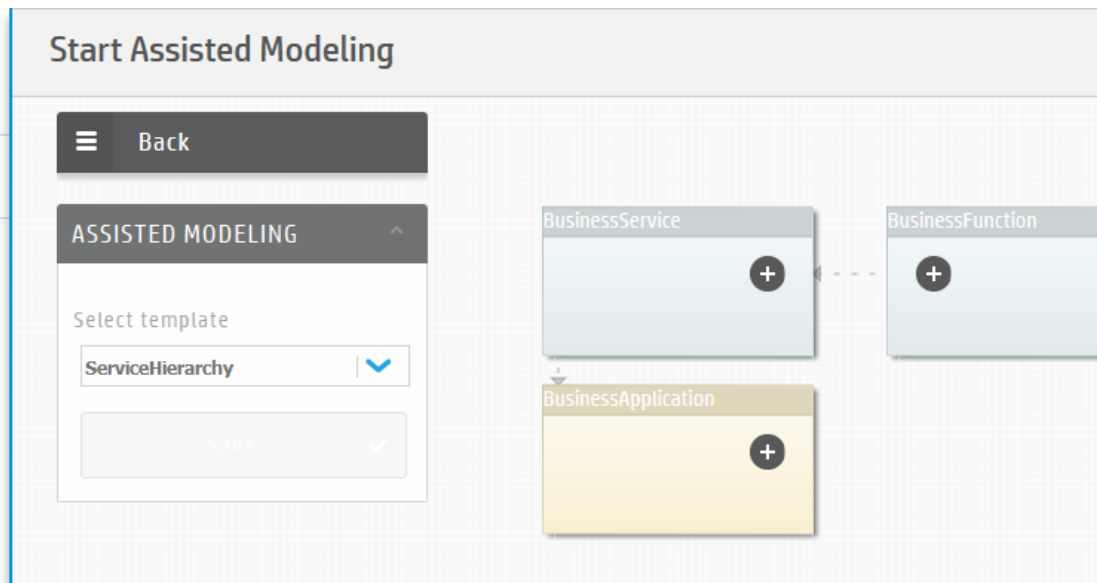
Follow these steps to organize services by using Assisted Modeling in the UCMDB Browser module:


1. In CMS UI, click the **Menu** icon () to expand the CMS Modules pane, and then click **UCMDB Browser**.
2. Select the **Service Modeling** tab, and then click the **Start Assisted Modeling** link.

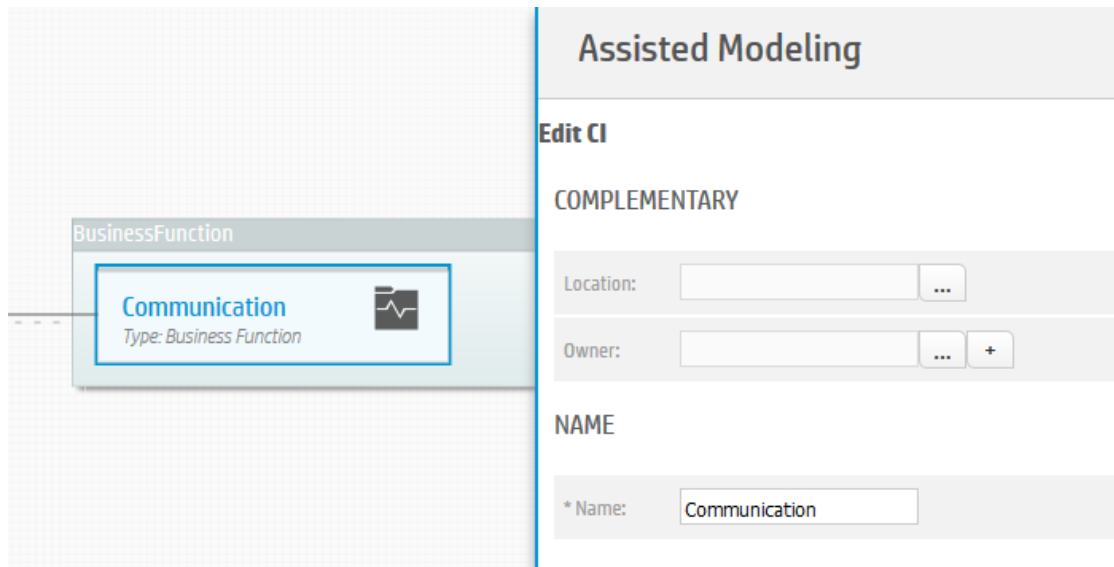
Note: If Service Modeling is not enabled, the **Assisted Modeling** tab appears. Select the **Assisted Modeling** tab.



3. From the **Select template** drop-down list, select **ServiceHierarchy**, which is the query just created.

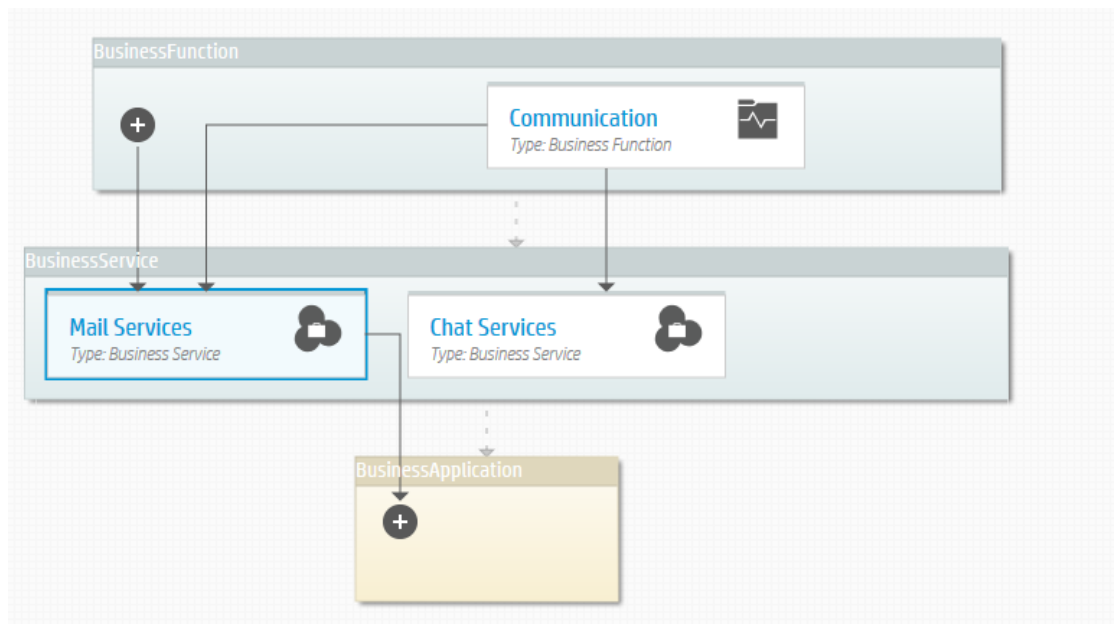



4. Create a new **Communication** CI of the BusinessFunction type. To do this, click the  icon in the **BusinessFunction** node, and then click the **Create New BusinessFunction** link. Name the CI as **Communication** and then click **Apply**.

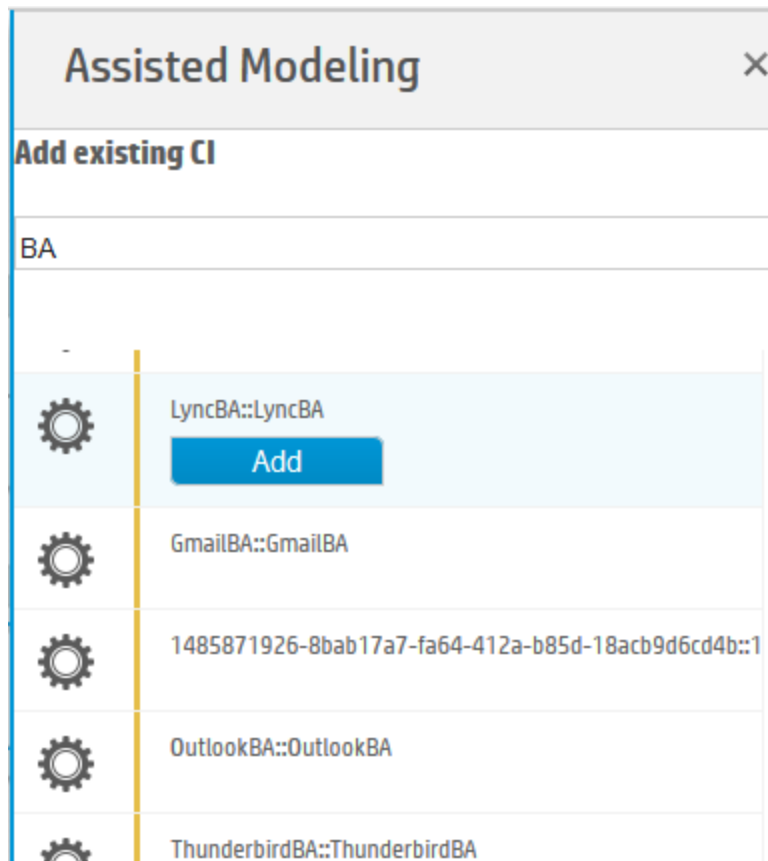


5. Create **Mail Services** and **Chat Services** CIs of the BusinessService type. To do this, follow the similar process as the previous step.
6. Examine if the topology graph now resembles the following example:

Note: The following example uses the **Hierarchical: vertical** layout.

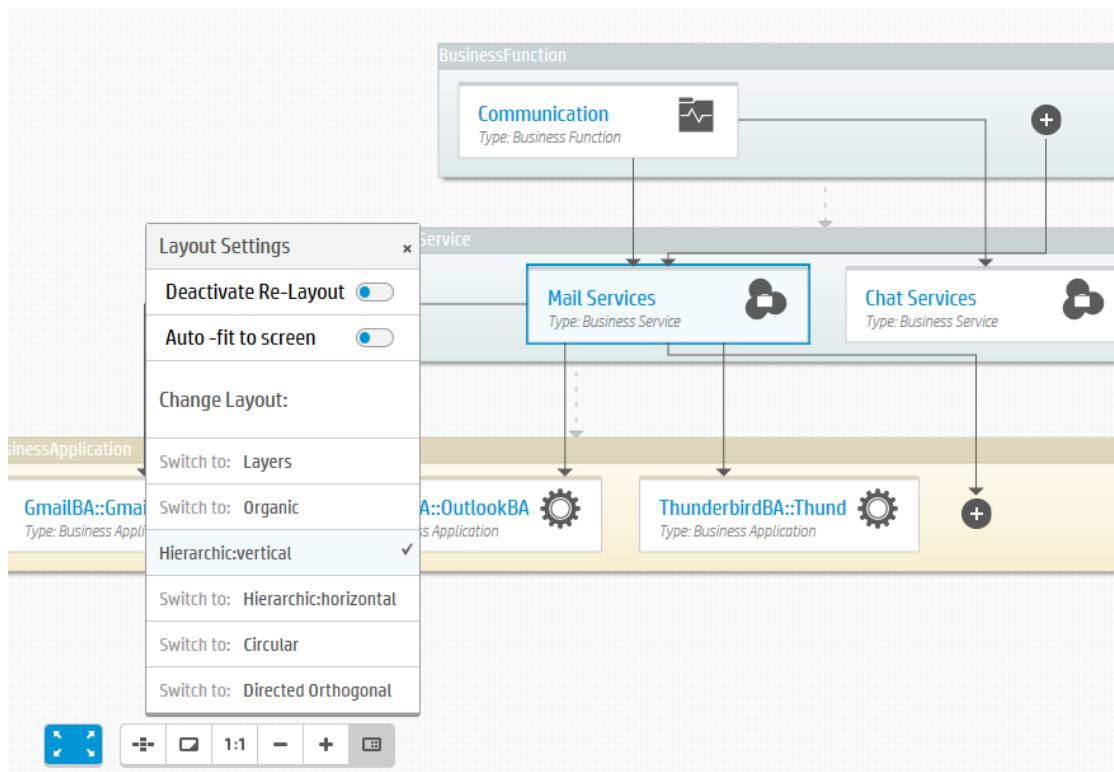


7. Select **Mail Services**, click the  icon inside the **BusinessApplication** node, and then click the **Add existing BusinessApplication** link.
8. Type BA in the text field and then press **Enter** to filter the result (because the business application names end with BA). The result should be similar with the following example:



9. Point to **GmailBA**, **OutlookBA**, and **ThunderbirdBA**, and then click the **Add** button that appears under each item.
10. Check whether the topology graph now resembles the following example:

Note: The following example uses the **Hierarchical: vertical** layout.

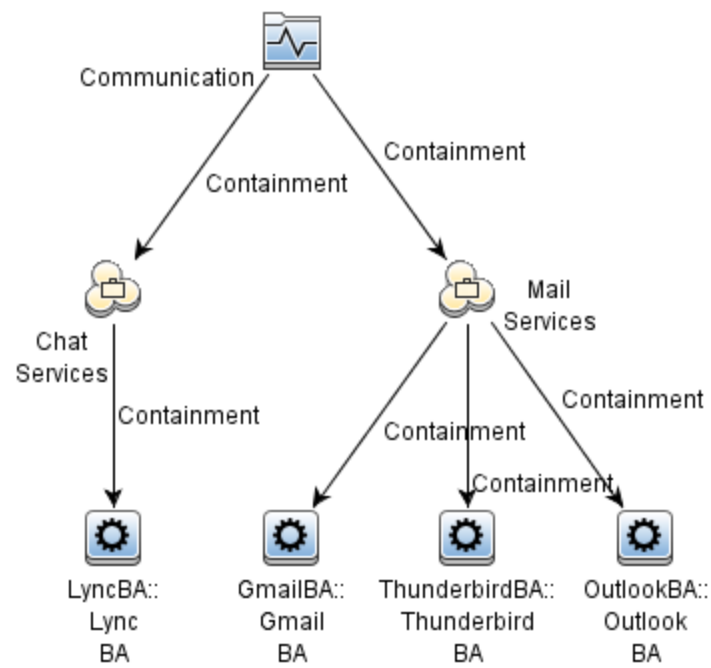


11. Add the **LyncBA** CI inside the **BusinessApplication** node and links to **Chat Services**. To do this, follow the similar procedure as Step 7 to 9.
12. Click the **Save** button. The following message is displayed:

Topology saved successfully

Task 5. Verification

Log in to UCMDB and check if the created links and CIs are displayed as expected:



Chapter 5: How to Perform Daily Monitoring?

This end-to-end use case describes how to perform the daily monitoring process.

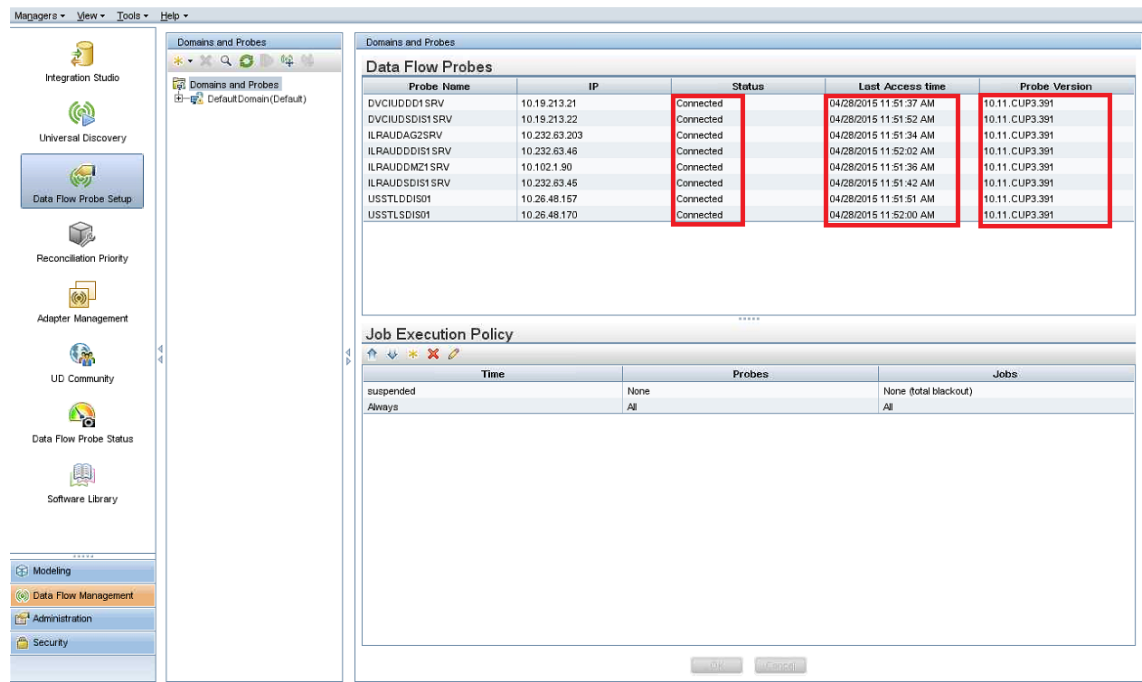
This workflow includes the following tasks:

Task 1. Check the UCMDB UI	45
Task 2. Check UCMDB Server	47
Task 3. Check the Probes	48

Task 1. Check the UCMDB UI

Check the following items:

- The status of each probe:
 - The status should be **Connected**.
 - The last access time should be within 30 seconds.
 - The probe version should be up to date.

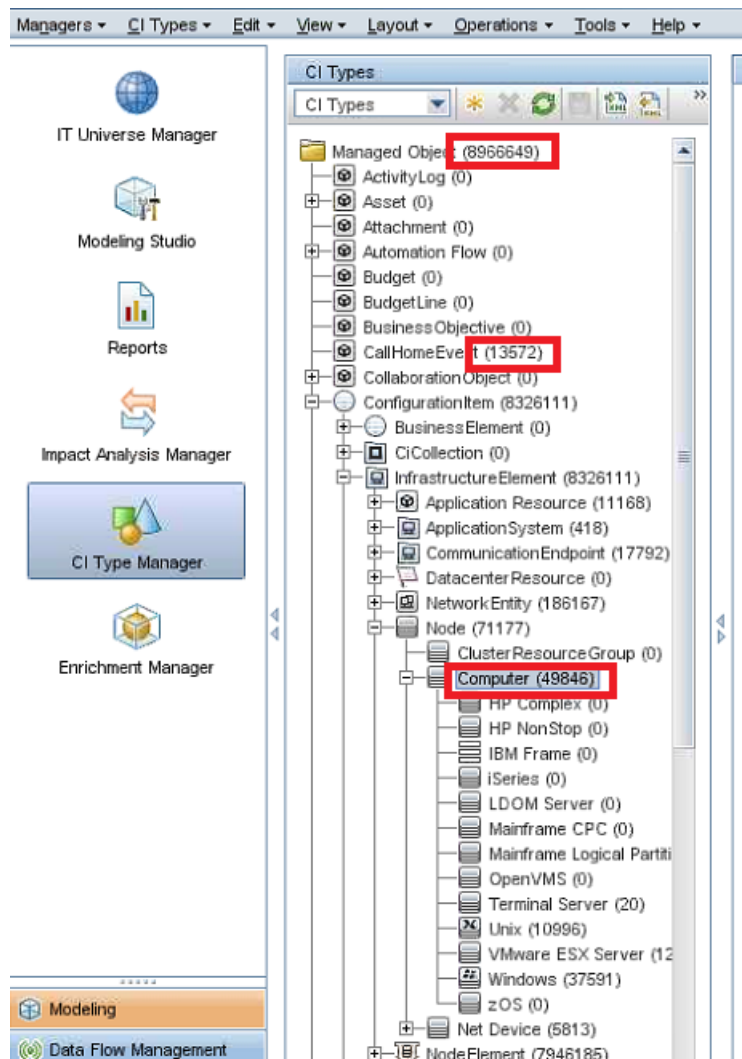


- The status of the jobs on each probe:
 - The status of each probe should be **Connected**.
 - The running job number and thread number should be as expected and will not cause performance issue. For more information, contact Micro Focus Support.
 - Sending queue should not be accumulating.

The screenshot displays the CMS interface with the following components:

- Left Navigation Panel:** Includes icons for Integration Studio, Universal Discovery, Data Flow Probe Setup, Reconciliation Priority, Adapter Management, UD Community, Data Flow Probe Status, and Software Library.
- Domains Browser:** Shows a tree structure of domains, including DefaultDomain, DVCIUDD1SR, DVCIUDD1S1S, ILRAUDAG2SR, ILRAUDCM21S, ILRAUDSDIS1S, IntegrationService, USSTLDDIS01, and USSTLSDIS01.
- ILRAUDSDIS1SRV Details:**
 - Status:** Connected (highlighted with a red box).
 - Probe IP:** 10.232.63.46.
 - Running Jobs:** 18 (highlighted with a red box).
 - Scheduled Jobs:** 18.
 - Threads:** 39 (highlighted with a red box).
 - Total Discovered CIs in sending queue:** 0 (highlighted with a red box).
- Progress Table:** A table showing the progress of various jobs, including MZ_DMZ_SERVE..., MZ_EMEA_DESK..., and MZ_EMEA_SERV... with columns for Job, Progress, Next invocation, Previous invocation, Triggered CIs, Thread count, and Discovered CIs in Sen.
- Discovery Results Table:** A table showing the results of a discovery operation, with columns for Filter, Time Range, CIT, Created, Updated, Deleted, and Discovered CIs. The table includes data for CallHomeEvent, Chassis, Client Server, and Cluster Software.

- The total CI number:
 - The total CI number should not exceed the limitation.
 - The **CallhomeEvent** CI number should not be accumulating.
 - The total Computer CI number should be as expected.



Task 2. Check UCMDB Server

Check the following items:

- Regular CPU and memory usage of the UCMDB server.
- Regular CPU, memory, and Disk I/O usage of the server database.
- Confirm no Java dump file exists in the following folder:

<UCMDBServer_Installation_Folder>\bin

Task 3. Check the Probes

Check the following items:

- Regular CPU and memory usage of the probe service.
- Regular CPU and memory usage of the ProbeDB service.
- Regular CPU and memory usage of the XMLEnricher service.
- The probe server has enough disk space.
- Confirm no Java dump file exists in the following folder:

<DataFlowProbe_Installation_Folder>\bin

- Check scan files if the **Inventory Discovery by Scanner** job is running:
 - All the files in the following folder should be updated within one hour:

<DataFlowProbe_Installation_Folder>\runtime\xmlenricher\Scans\incoming

- All the files in the following folder should be updated within eight hours:

<DataFlowProbe_Installation_Folder>\runtime\xmlenricher\Scans\sending

A few files that were updated eight hours ago might be caused by system glitch and should be deleted.

- The **Corrupt**, **Delta**, or **Error** subfolder of the following folder should not contain any files:

<DataFlowProbe_Installation_Folder>\runtime\xmlenricher\Scans\failed

Such a file can be caused by exception in the xml enricher. Try to reprocess the scan file by copying it to the **incoming** folder.

Chapter 6: How to Relate Two CIs from the UCMDB Browser module

This end-to-end workflow walkthrough scenario describes how to relate two CIs from the UCMDB Browser module. This walkthrough is based on UCMDB Browser 4.04, however, the instruction applies for other UCMDB Browser versions.

This document provides step-by-step instructions for two different approaches to relate two CIs:

Relate Two CIs by Using the Properties Widget	49
Relate CIs by Using Assisted Modeling	50

Relate Two CIs by Using the Properties Widget

You can relate two CIs by using the Properties widget. For any selected CI, you can relate Owner CIs and Location CIs. To do this, follow these steps:

1. Make sure the **Show Location Details** and **Show Owner Details** options are set to true.
You can find these options in **UCMDB UI > Administration > Infrastructure Settings Manager**. The default values are true.
2. Go to the UCMDB Browser module, select a CI, click **PROPERTIES** to expand the widget, and then switch to the edit mode.
3. Edit the corresponding fields to create relationships:
 - To create a Membership relationship between the Locations and the selected CI, select one or more Locations.
 - To create an Ownership relationship between the Owners and the selected CI, select one or more Owners (which are all Party CI Types).

Note: If the selected CI is a Node, then, similar with Owner and Location, you will also be able to select IP Addresses. In this case, Containment relationships will be created between the selected CI and the entered IP Addresses.

4. Click **Save changes**.

Relate CIs by Using Assisted Modeling


As you see, there are many limitations when relating CIs through the Properties widget. If your needs cannot be fulfilled because of these limitations, you can use Assisted Modeling.

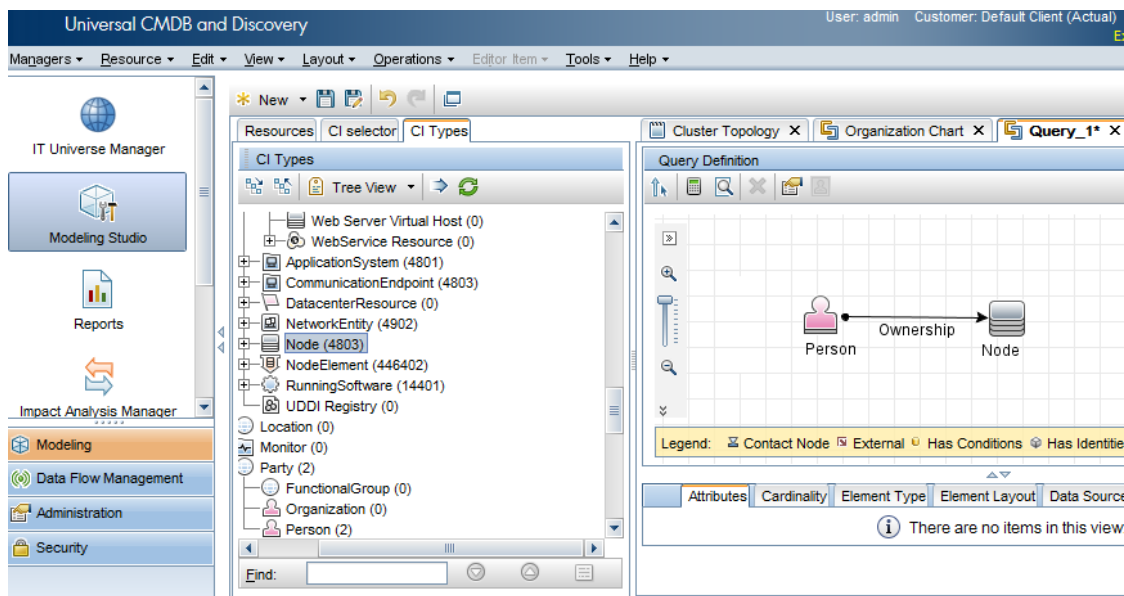
Through Assisted Modeling, you can relate any kind of CIs; you can relate two or more existing CIs, or even create new CIs related to existing CIs.

There are already some OOTB modeling queries that you can use to create and relate CIs. In addition, you can create and use any number of custom modeling queries.

This section provides step-by-step instructions on how to relate an Owner and a Node through Assisted Modeling. Even though you can do the same task through the Properties widget, using Assisted Modeling is highly configurable and you can relate any kind of CIs in an identical manner.


Task 1. Create the modeling query from the UCMDB UI

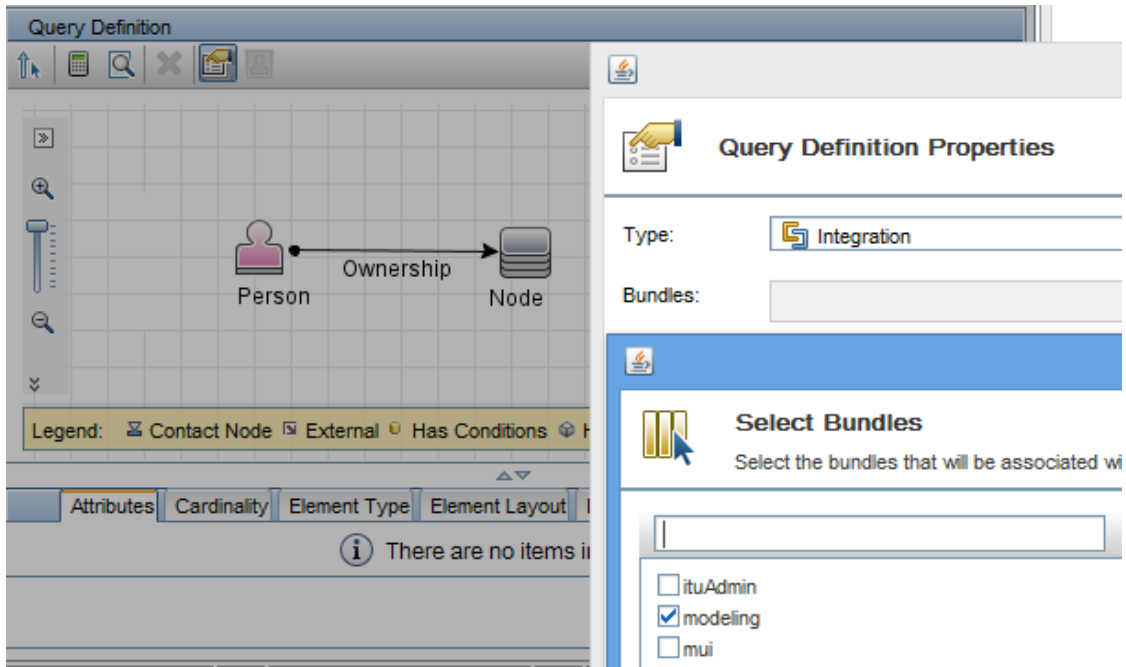
1. Go to **UCMDB UI > Modeling Studio**, click the **New**  button, and then select **Query**.
2. Create a query that resembles the following example:




This query defines the kinds of CIs you want to relate. In this case, the query defines a Person CI and a Node CI with the Ownership relationship. For more information about how to create a query, see "How to Define a TQL Query" in the *Modeling section of the UCMDB Help*.

3. Add the query to the modeling bundle so that you can use it in Assisted Modeling. To do this, click

the **Query Definition Properties**  button, select **modeling** for the **Bundles** field, and then click **OK**.



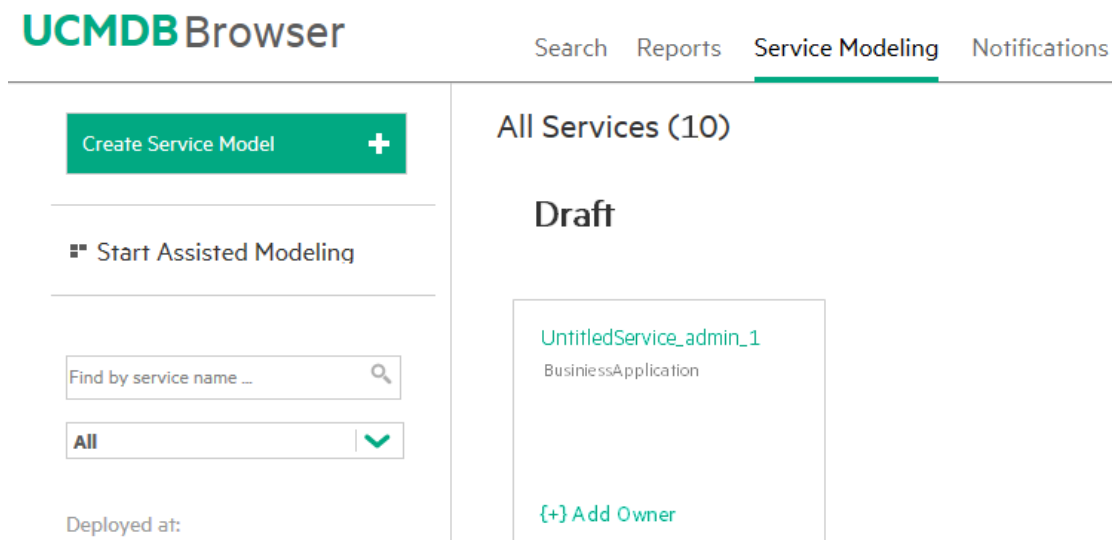
4. Click the **Save**  button, type the name of the query, and then click **OK**.

Task 2. Relate CIs

Before you continue, keep in mind that the modeling queries are cached. You need to wait for a while before you can see the query you just created in the UCMDB Browser module. The amount of time is specified in **Infrastructure Setting Manager > Time for which information in the Browser cache is valid**, which by default is 5 minutes.

Follow the steps below to relate CIs:

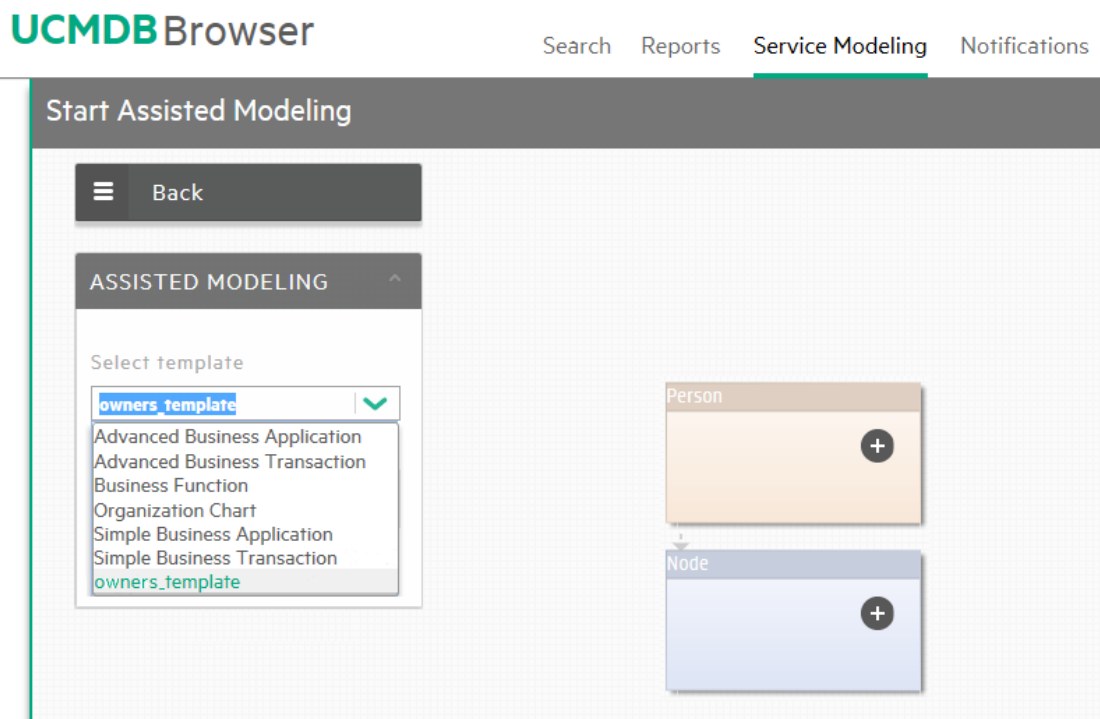
1. Open the UCMDB Browser module, and then do one of the following according to what you see:
 - Go to the **Service Modeling** tab, and then click **Start Assisted Modeling**.
 - Go to the **Assisted Modeling** tab.





Note:

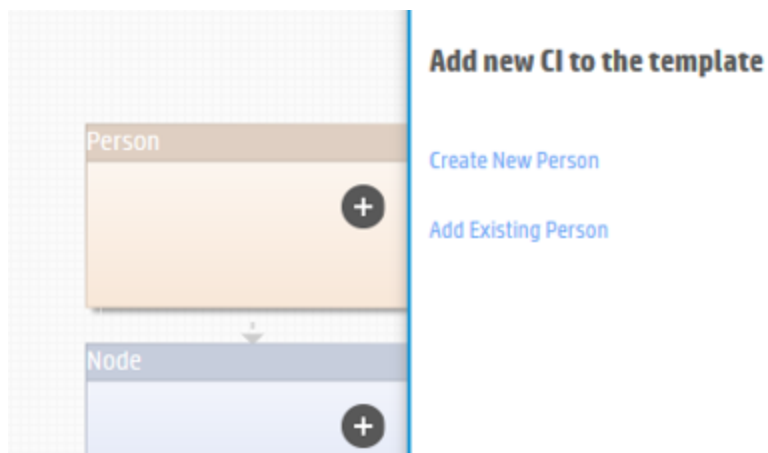
- If you do not have the access right to the Service Modeling feature, you do not see the **Service Modeling** tab. Instead, you see the **Assisted Modeling** tab.
- You must have the View right to at least one modeling query (one query added to the modeling bundle) in order to see the link to access Assisted Modeling.

2. In the **Select template** drop-down list, select the query you just created.



The topology map then loads the query. Both nodes have the Plus  icon.

3. Click the Plus  icon in the Person CI Type.
4. In the **Add new CI to the template** panel, click **Add Existing Person**.

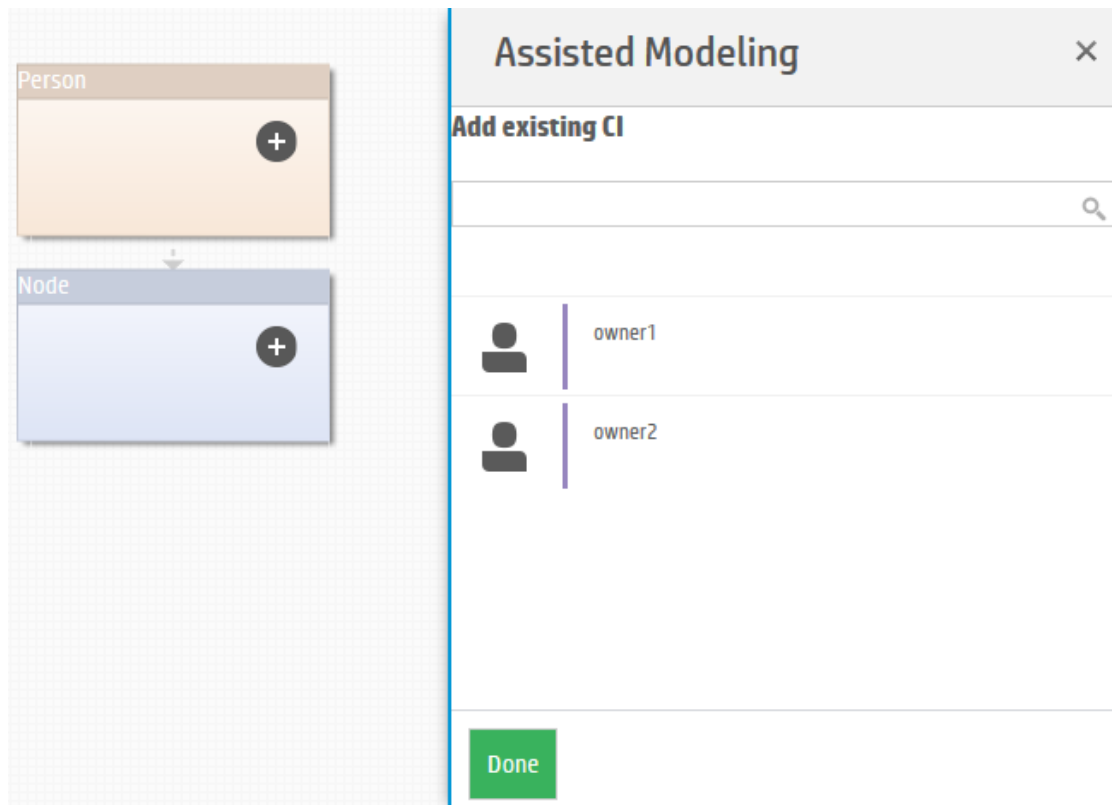


Note: In this panel, a **Create New Person** link is also available to create a Person CI. If you do not see this link, you need to add the MODELING_ENABLED qualifier to the CI Type. To

do this, go to **UCMDB UI > Modeling > CI Types Manager**, select the Person CI Type, go to the **Qualifiers** tab, and then add the SERVICE_MODEL qualifier to the **Configuration Item Type Qualifiers** pane.

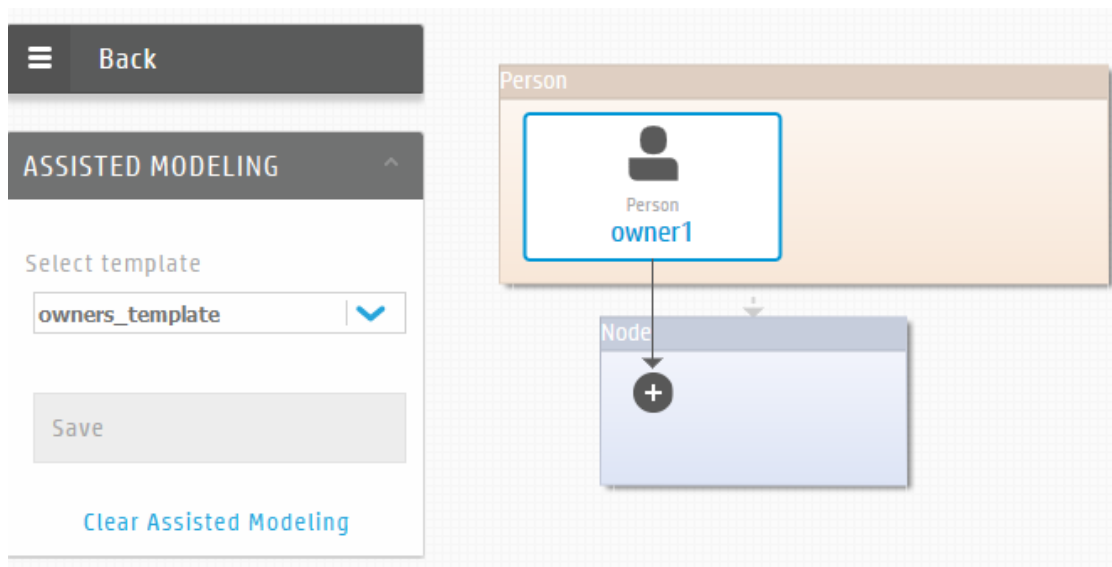
5. In the **Add existing CI** panel, type a keyword in the **Search** field. All the Person CIs with the display name that matches the keyword are displayed below the **Search** field.


If you do not type any keyword, all Person CIs are displayed.



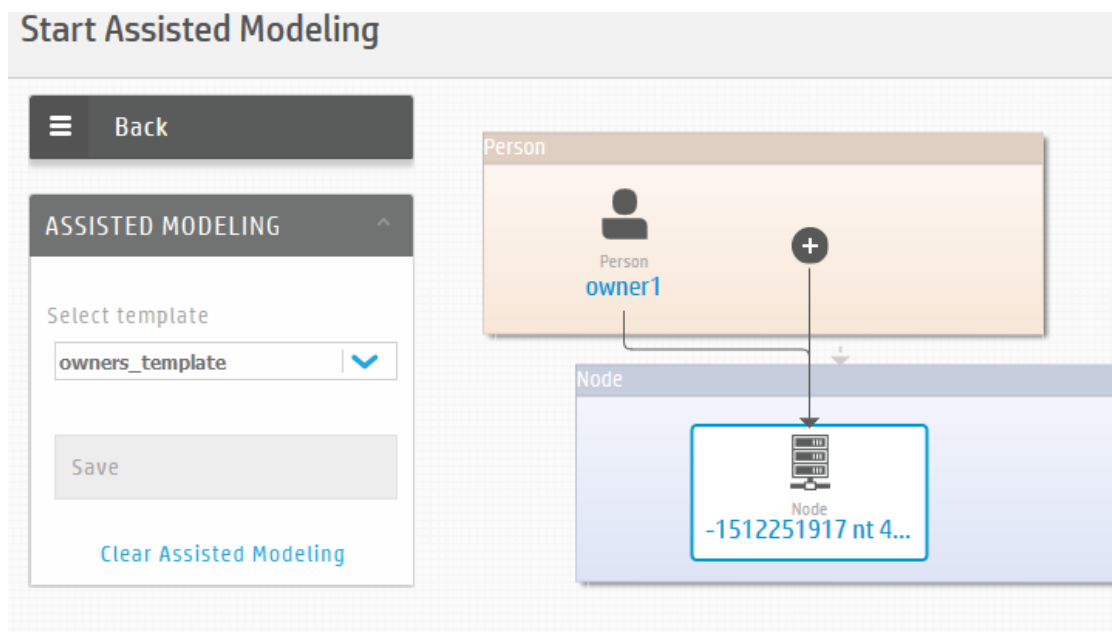
6. Point to the Person CI you want to relate, and then click the **Add** button that appears.

The Person CI is then added to the topology map.




7. Click the Plus  icon in the Node CI Type, and then follow the similar steps (from Step 3 to Step 6) to add a Node CI.

The added Node CI is automatically linked to the Person CI with the relationship that is specified in the query. The resulting topology map resembles the following.



Note: From here, you can do a number of things:

- Relate more CIs to the existing CIs in the map. When you select an existing CI in the topology map, the Plus  icon appears in the other CI Type. You can follow the similar steps to relate CIs.
- Edit the CI (instead of going through the Properties widget). When you select a CI, the panel that opens on the right allows you to edit the CI.

8. Click the **Save** button.

A message pops up and tells you if the template is properly saved.

You have successfully related two CIs using the UCMDB Browser module. You can check the relationship between the two CIs by using one of the following methods:

- Use the Properties widget in the UCMDB Browser module.
- Go to **UCMDB UI > IT Universe Manager > Search CIs**, search for the node you just related, and then click the **Show Related CIs** button.

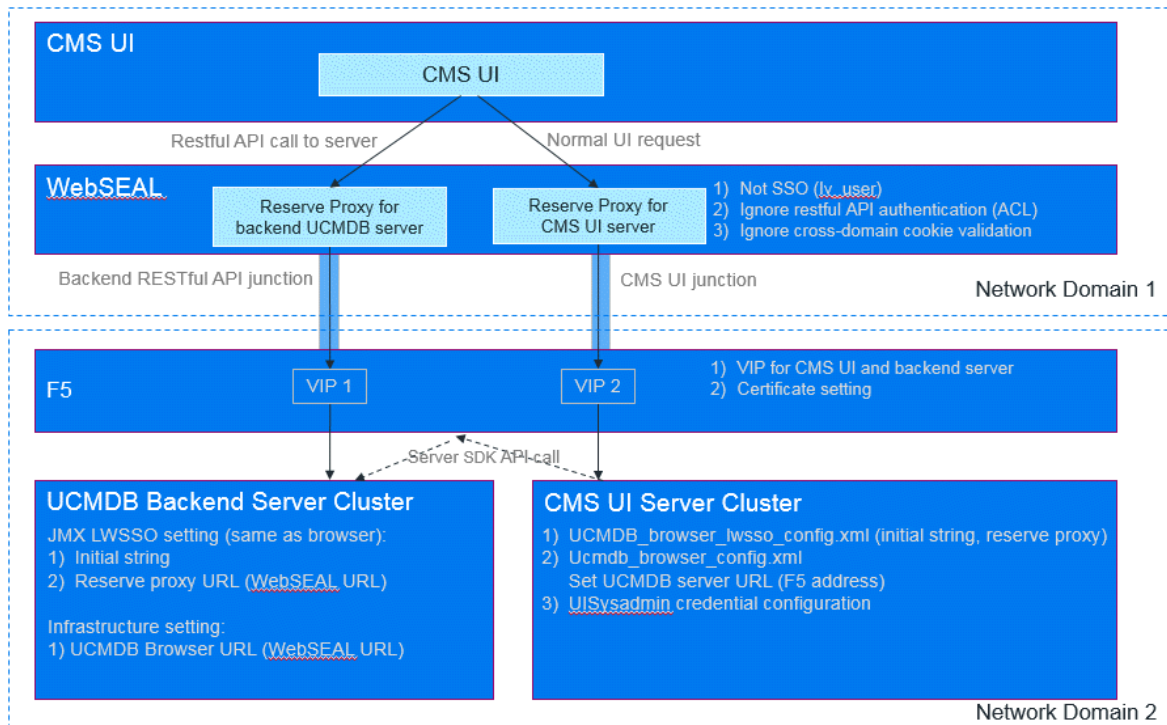
Chapter 7: How to set up UCMDB server and CMS UI environment with F5 BIG-IP load balancer and WebSEAL reserve proxy

This end-to-end use case describes how to set up a high-availability UCMDB and CMS UI environment with F5 BIG-IP load balancer and WebSEAL reverse proxy.

Note: Product versions used in this end-to-end use case:

- F5 BIG-IP version 13.00 Build 0.0.1645 Final
- WebSEAL version 8.0.1.0
- UCMDB version 2018.08
- CMS UI Standalone version 2018.08

The diagram below illustrates the overall architecture of the environment we will set up.



This case contains the following key tasks:

1. [UCMDB Server configuration](#)
2. [F5 load balancer configuration](#)
3. [WebSEAL reverse proxy configuration](#)
4. [CMS UI configuration](#)
5. [Verify the configured environment works](#)

1. UCMDB Server configuration

a. Prerequisites

- i. You have installed the UCMDB Server and CMS UI.
- ii. (Optional) You have set up high availability mode by following the instructions in the Deployment Guide: "Set Up High Availability Mode".

b. Export the out-of-the-box UCMDB server keystore to a cert file

If using the out-of-the-box (OOTB) UCMDB cert, export it for later use.

To export the UCMDB server keystore (**server.keystore**) to a cert file (**server.cert**), do the following:

- i. Open the command prompt and run the following command:

```
C:\UCMDB\UCMDBServer\bin\jre\bin\keytool.exe -export -alias
<certificate alias> -keystore <Keystore file path> -file
C:\UCMDB\UCMDBServer\conf\security\server.cert
```

where:

- **certificate alias** is the name given to the certificate.
- **Keystore file path** is the full path of the location of the keystore file.

For example, for the out-of-the-box **server.keystore** use the following command:

```
C:\UCMDB\UCMDBServer\bin\jre\bin\keytool.exe -export -alias hpcert -
keystore C:\ucmdb\ucmdbserver\conf\security\server.keystore -file
C:\UCMDB\UCMDBServer\conf\security\server.cert
```

Note: If self-signed certificate is not used, but a company generated certificate, use the following command to get the alias for this certificate:

```
C:\UCMDB\UCMDBServer\bin\jre\bin\keytool.exe -list -keystore
c:\ucmdb\ucmdbserver\conf\security\server.keystore
```

Keystore type: JKS

Keystore provider: SUN

Your keystore contains 1 entry.

<alias>, 14 Sept. 2012, PrivateKeyEntry.

Certificate fingerprint (SHA1):

2A:52:DF:17:D9:A5:37:2D:1F:1D:BA:4B:41:46:33:A8:18:42:5B:D7

The alias will look like: {45789-15478-1236-7895}

Use this alias to export the certificate.

- ii. Enter the keystore password.
- iii. Verify that the certificate was created in the following directory:
C:\UCMDB\UCMDBServer\conf\security\server.cert
- iv. Convert the generated JKS file into PKCS12 format using UCMDB key tool **keytool.exe** (located in the <**UCMDBServer**>\bin\jre\bin directory). (WebSEAL requires PKCS12 format cert.)

Run the following command:

```
C:\UCMDB\UCMDBServer\bin\jre\bin\keytool.exe -importkeystore -
srckeystore server.keystore -destkeystore server.p12 -srcalias
<source serverkey> -destalias <target serverkey> -srcstoretype jks -
deststoretype pkcs12 -srcstorepass <keystore password> -
deststorepass <keystore password> -noprompt
```

The server.p12 file is the resulting PKCS12 format cert.

c. (Single Sign-On only) Set IDM User Name

- i. Go to UCMDB server JMX console.
- ii. Locate the **setUserName** JMX operation under the **UCMDB-UI:name=LW-SSO Configuration** category.
- iii. Provide the following parameter values for the **setUserName** JMX method:
 - **Is inbound handler enabled:** True
 - **LW-SSO IDM User Name:** <The real value for the IDM user name>. For example,

iv-user (if you are using LDAP with user **iv-user**).

iv. Click **Invoke**.

d. **Set CMS UI URL**

- i. In UCMDB UI, go to **Administration > Infrastructure Settings Manager**.
- ii. Locate the **UCMDB Browser URL** infrastructure setting, and set the value to your WebSEAL URL.

2. F5 load balancer configuration

- a. Make sure you have a working F5 BIG-IP load balancer environment.
- b. Log in to the F5 BIG-IP load balancer environment.
- c. Make sure you have created the following in the F5 BIG-IP load balancer environment (**Local Traffic > Virtual Servers > Nodes|Pools**):
 - A node for each of the virtual machines on which UCMDB server and/or CMS UI are running.
 - A pool that contains all the above nodes.
- d. Import the UCMDB CA cert/key into F5.
 - i. In the navigation pane, go to **Main > System > Certificate Management**.
 - ii. Click **Import** .
 - iii. In the SSL Certificate/Key Source page, select Import Type:
 - When selecting **Certificate**, do the following:
 - **Certificate Name**: Keep **Create New** selected and provide the certificate name.
 - **Certificate Source**: Keep **Upload File** selected, click **Browse...** to select the UCMDB **server.cert** file you exported earlier.
 - When selecting **Key**, do the following:
 - **Key Name**: Keep **Create New** selected and provide the key name.
 - **Certificate Source**: Keep **Upload File** selected, click **Browse...** to select the UCMDB key file.
 - iv. Click **Import** .
- e. Add UCMDB CA cert/key to Certificate Key Chain.

- i. In F5, go to **Local Traffic > Virtual Servers > Profiles > SSL**.
- ii. Select and click an existing UCMDB cert profile.

Note: Create a SSL profile for HTTPS by clicking **Create** [Create...](#) if you do not have one.

- iii. Go to the Certificate Key Chain configuration setting, click **Add** [Add](#).
- iv. In the Add SSL Certificate to Key Chain dialog, select or provide values for the following settings as appropriate and click **Add** [Add](#):

Certificate: Select the UCMDB certificate file.

Key. Select the UCMDB key.

Chain. Select the UCMDB chain.

Passphrase. Provide a pass phrase.

- f. Create a cookie-based persistence profile.
 - i. In F5, go to **Local Traffic > Virtual Servers > Persistence**, and click **Create** [Create...](#).
 - ii. Select **Cookie** for Persistence Type and provide a name for the persistence profile.
 - iii. Click **Finished**.
- g. Create a virtual server.
 - i. In F5, go to **Local Traffic > Virtual Servers**, and click **Create** [Create...](#).
 - ii. Specify values the following settings:
 - **Configuration > HTTP Profile:** **http**
 - **Configuration > SSL Profile (Client):** Select the UCMDB cert you imported in [step 2.e](#) from the **Available** column and add it into the **Selected** column.
 - **Configuration > Source Address Translation:** **Auto Map** (If you select SNAT, make sure you configure SNAT related settings properly)
 - **Resources > Default Persistence Profile:** Select the persistence profile you created in [step 2.f](#).
 - iii. Provide values for other settings as appropriate.
 - iv. Click **Finished**.

3. WebSEAL reverse proxy configuration

- a. Configure WebSEAL reverse proxy by following IBM official documentation: [IBM Security](#)

[Access Manager \(ISAM\) Reverse Proxy Scenario.](#)

Important: During the configuration, in the Identity tab of the Edit a Standard Junction window, make sure you set the following settings as described below:

- **Junction Cookie:** Leave the checkbox unselected
- **Include session cookie:** Select the checkbox
- **HTTP Basic Authentication Header:** For CMS UI and RESTful API authentication to work properly, select **Ignore** from the dropdown list.
- (Optional) **HTTP Header Identity Information:** Select **IV-USER** if you are using LDAP with user **iv-user**.

b. Import UCMDB cert (OOTB or self-signed).

- i. In IBM Security Access Manager, go to **Manage > Secure Settings > SSL Certificate**.
- ii. Go to **Manage > Edit SSL certificate database** menu option, and select **pdsrv**.
- iii. Go to the **Personal Certificates** tab, check if the OOTB UCMDB cert (for example, **ucmdbcert**) is already listed in this tab.
- iv. If no, select **Manage > Import** from the menu.

Provide the self signed certificate from the CMS UI/UCMDB Server or the OOTB UCMDB cert.

Make sure the cert type is **PKCS12**. If not PKCS12, you may need to convert it to PKCS12 from JKS.

Note: The OOTB UCMDB cert can be converted to PKCS12 using UCMDB key tool **keytool.exe** (located in the **<UCMDBServer>\bin\jre\bin** directory). For the conversion command, see [step 1.b.iv](#) in [UCMDB Server configuration](#).

4. CMS UI configuration

a. Configure the **ucmdb_browser_config.xml** file.

- i. Open the **ucmdb_browser_config.xml** file (located in the **<CMS_UI_install_dir>\conf** folder) using a text editor.
- ii. Set the **<hostname>** parameter value to the VIP that you set in F5.
- iii. Set the **<host_port>** parameter to the Port that you set in F5.
- iv. (Single Sign-on only) If you are using LDAP with user **iv-user**, locate the **<webui>** tags, then the **<validation>** tags, copy and paste the following into the file:

```
<in-ui-identity-management>
  <identity-management>
    <userNameHeaderName>iv-user</userNameHeaderName>
  </identity-management>
</in-ui-identity-management>
```

- v. Save the file.
 - b. Create and configure a credentials file.
 - i. Create a **credentials.txt** file and put it in the same directory as the **ucmdb_browser_config.xml** file.
 - ii. In the file **credentials.txt**, enter the following content:
 - user=UISysadmin
 - password=<your-password>
 - iii. Save the file.
5. Verify the configured environment works

To do so, log in to any of the following:

Environment	Login URL	Remarks
WebSEAL	https://<WebSEAL URL>:<port><WebSEAL Junction>	Including CMS UI, UCMDB server, and API
F5	https://<VIP>:<port>	Including CMS UI and UCMDB server
CMS UI	https://<CMS UI IP address>:<port>	
UCMDB Server	https://<UCMDB Server IP address>:<port>	

Troubleshooting F5 load balancer

Problem: In a very rare case, you might find UCMDB server is displayed as down or not available in F5 monitor.

Workaround: This might be caused by the difference between the F5 interval setting and the duration that garbage collector requires to run on UCMDB server. For example, the default value for the **Interval** setting is **5** seconds in F5 (**Local Traffic > Monitors > Browser > Properties**); on UCMDB server, in a very extreme case, the garbage collector needs more than 5 seconds to complete a run (normally it

takes only 2 seconds or so to complete a run), which makes the UCMDB writer server in the high availability environment busy with garbage collection and F5 monitor fails to detect the UCMDB writer server status.

In case you encounter such extreme case, to resolve the issue, increase the **Interval** setting in F5 environment (**Local Traffic > Monitors > Browser > Properties**) to a desired value. Normally the default **Interval** value of **5** seconds should be sufficient.

To determine the total duration needed for running garbage collector on the UCMDB server, you can check for the longest duration that the garbage collector takes in the **<UCMDBServer>\runtime\log\wrapper.log** file.

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