# Lab goal

Deploy a Tomcat Server on the vCenter Provider by creating a Service Design from an empty Design Canvas

High Level Steps to complete the Lab:

# Create vCenter Provider

# Create Resource Offering

# Create Design Component(s)

# Create Service Design

# Create Service Offering

# Create a Subscription using the Service Offering

# Test Tomcat Access

Log in to the HCM Admin Portal

* <https://itom1.hcm.demo.local:8444/csa>
* User:admin
* Password: Cloud\_123

# Create vCenter Provider

# Go to Administration 🡪 Providers

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In the Left Browser Frame, drag to the bottom until you see VMware vCenter

Click on VMware vCenter

In the Right Browser Frame click on the 1st listed vCenter

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Click on the A close up of a sign

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For the Access Point enter – 10.0.46.10

For the User ID and Password, Refer to your System Accounts Spreadsheet under the CAPA1 Column

Make sure to check Enabled

Click Save

**If the System reports it can not validate the Inputs Click Yes – you want to continue (we are not exchanging Certificates)**

Return to the Administration 🡪 Providers 🡪 VMware vCenter screen

Ensure that the vCenter you just defined is the only Enabled vCenter Provider

If another one is Enabled, select it – Click on the A close up of a sign

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Scroll to the Bottom of the Definition Screen and Un-Check Enabled

# Create Resource Offering

First we will be creating the Resource Offering we will use to create a Tomcat Server in vCenter

From the HCM Menu – Go to Services 🡪 Design Services 🡪 Resource Offerings

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In the Left-Hand Frame, Scroll to the bottom and select the vCenter Provider Type to display all of the available vCenter RO’s

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Select the VMware Advanced Virtual Machine Management with User Actions Offering

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Click on the Gear Icon and select Save As

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Name the Resource Offering to include your Student # - Click Save

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Let’s look at the internals of the resource Offering and this is not part of the lab exercise but only to make

you understand what this resource is offering about.

=================================starting of the learning================================

1. Choose the Lifecycle Menu option
2. Click on the vCenter Deploy VM Action “Sun” Icon
3. Choose Edit

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Notice the definition. The Resource Offering is associated with an OO flow

To look at what OO is doing we are going to Open a Browser Tab and log into the OO server and drill down into the Flow associated with this resource Offering

In a new Tab (if there is an exception open it in different browser than HCM)

Go to <https://itom1.hcm.demo.local:8444/oo>

If it asks for a login:

Admin/Cloud\_123

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Drill down to the Flow listed above – Then Click on the A close up of a sign

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The actual Cloning of the Server Template happens in the Highlighted Step – The previous Steps gather and set propertied for:

1. Set the User Identifier (Marketplace Portal User)
2. What Provider to use – in this case vCenter
3. Set the VM name
4. If a VM Folder was given – Create the Folder if necessary

Once the Cloning is complete, the Flow continues and checks to see if there is a Customization defined (How do we name this VM), then collects data about this VM to populate the Marketplace Portal with information about this particular Service and verifies there is an IP Address assigned to the VM.

Using the Design Palette in HCM you can use multiple Design Objects – They in turn relate to an OO Flow.

Close this Browser Tab

=================================End of learning=======================================

Return to the Resource Offering Tab in your Browser

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Choose the User Operations Menu Item

These are Actions the End User can take once the System is Operational - again each of these represents an OO flow.

To make this Resource Offering Different than the Out-of-the-Box Offering, we will be removing the Snapshot Items from the User Actions. The original Resource Offering would allow the Consumer of this Offering to:

Create a VM Snapshot

Delete a VM Snapshot

Refresh a VM Snapshot (Overwrite)

Restart the Server

Revert the VM to a previous Snapshot

Start the Server

Stop the Server

Suspend (Pause) the Server

We will be removing the ability of the Consumer of the Offering to do ANY Snapshot actions.

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Once Complete – the User Actions will look like the above. We have limited the end User to just the Server Actions.

# Create Design Component

Next we will be associating Design Components with the Resource Offering just created

Go to Services 🡪 Design Services 🡪 Components

Scroll down to the Server Component and Click on “Server”

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Choose Templates from the Menu options

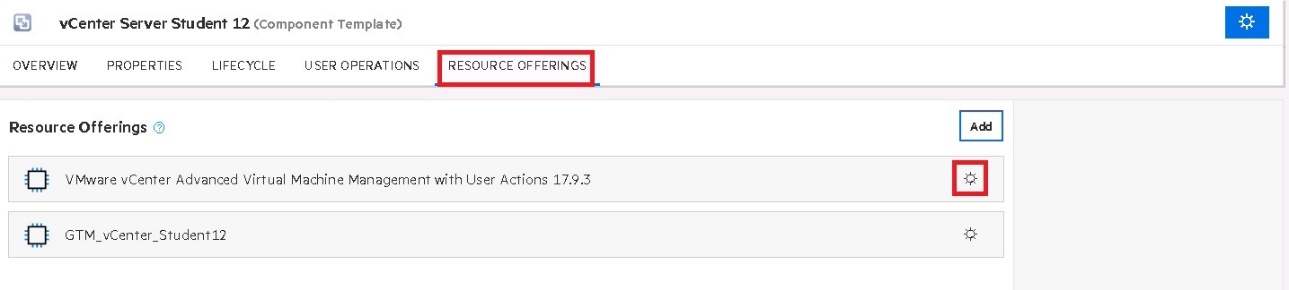
Click on the vCenter Advanced Template 18.0.0

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1. Click on the A close up of a sign

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2. Select Save As
3. Name the New Template with a Name that Denotes it is a Server Object and your Student # (vCenter Server Student12)



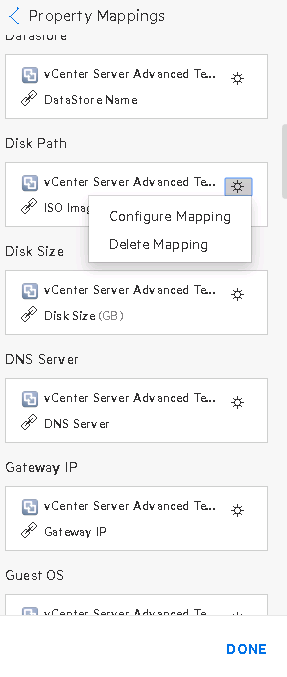
1. Choose the Resource Offering menu option
2. Click on the “Sun” icon
3. Choose Replace Resource Offering to replace the Out-of-the-Box offering
4. Select the Offering we created in the steps above (GTM Summit\_Student#)
5. At the Bottom Right corner of the Browser choose Property Mappings
6. We are going to Map the Properties of the resource Offering to Properties defined for this Resource type

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Select Auto-Configure

This option will Map the Properties for *almost all* of the Properties, we need to scroll through and ensure all of the Mappings are correct



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Check the Property Disk Path – if it isn’t Mapped to ISO Images, click on the “sun” icon and choose Configure Mapping. and choose ISO Images from the list

Click Save

The Resource Offering we created is now associated directly to a Design Component

# Create Service Design

At this point, we need to create a Service Design that will use this Resource Offering to Create a vCenter Server limiting the User Actions to what we just finished editing.

1. Go to 🡪 Services 🡪 Design Services 🡪 Designer
2. Click on the A close up of a sign

   Description automatically generated and choose Create Design
3. Name the Design with a unique name (GTM-Summit-Student#)
4. If you want a different icon image to appear next to the Offering in the Consumer Catalog – click Change Image
   1. This design will ultimately deploy a Tomcat Server – the Tomcat Icon is available in the image library
5. Choose the Designer Menu option
6. Drag and Drop 2 items to the Design Workspace:

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**From Server Group – vCenter Server Group Advanced Template**

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From Server – the Component Template you created (vCenter Server Student #) – There WILL be a Red Circle around this Object in the Design Workspace – we will fix it in the next step

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**Note :** The image has default template “vCenter Advanced Template” name so ignore that and drag-n-drop the template that you created with the student name.

Next connect the 2 Objects by Clicking in the Yellow Dot of the vCenter Server Group Object and Dragging to the Yellow Dot in the vCenter Server object

At this point we have a Service Design with NO Subscription Time options defined. Click on the vCenter Server Advanced Template icon in the Design Workspace to view the Properties of the Object.

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# Creating Subscriber Options

The necessary Properties may be set here as “static” Properties that will be part of ANY Subscription using this Design Template – OR – they can be set in Subscriber Options and the Consumer of this Design Template can set them when the Subscription is requested. Remember to Click Save after each item you create to ensure everything is saved. If you inadvertently click Back on your Browser of some other action that leaves the current screen – you may lose the changes just made

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1. Click on the Subscriber Options menu item.
2. As there are no Options set, click on Add Option Set

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Name the Options Set – This Option will determine the Number of Servers that will be Created when a Subscription in initiated. Make sure to Check the box Modifiable during Service Modification.

1. Click Save to Save your work
2. Click on 0 options.
3. Click on Add Option

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1. Give the Property a Name (one that relates to what it is for – Server Count, Number of Servers...)
2. Provide a Description of the Option
3. Click Add Property

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1. Choose Integer as Property Type as it is a Numeric Property
2. Name the Property and Description
3. Click on the Editable Box (The required Box will be checked)
4. Set the Range of Values (from 1 to 3) – essentially putting Guard Rails around the property – a User will NOT be able to request 100 Servers.
5. Set the Default Values
6. Click Done

Your Screen will look like:

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Notice that the Property has No Bindings – Bindings “STRAP” the Option to the Properties we viewed in the Design Workspace. To set the binding between this Option and the Property in the Service Design, Click on the Icon that looks like a Chain.

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Select the vCenter Server Group Object

1. In the list to the right Click on the “+” next to Number of Servers
2. Click Done

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In the next step, we will be setting the Bindings both statically and to a list, multiple Properties will be listed under this Option Set.

HCM can read JSP files that are created whenever HCM and the target Provider synchronize information. Having this ability allows HCM to present Templates or Options automatically when they are added to the Provider. The Properties defined as JSP, will be a list of Options on the User Subscription screen. Click ***Save after Each Task*** to ensure you don’t inadvertently lose work

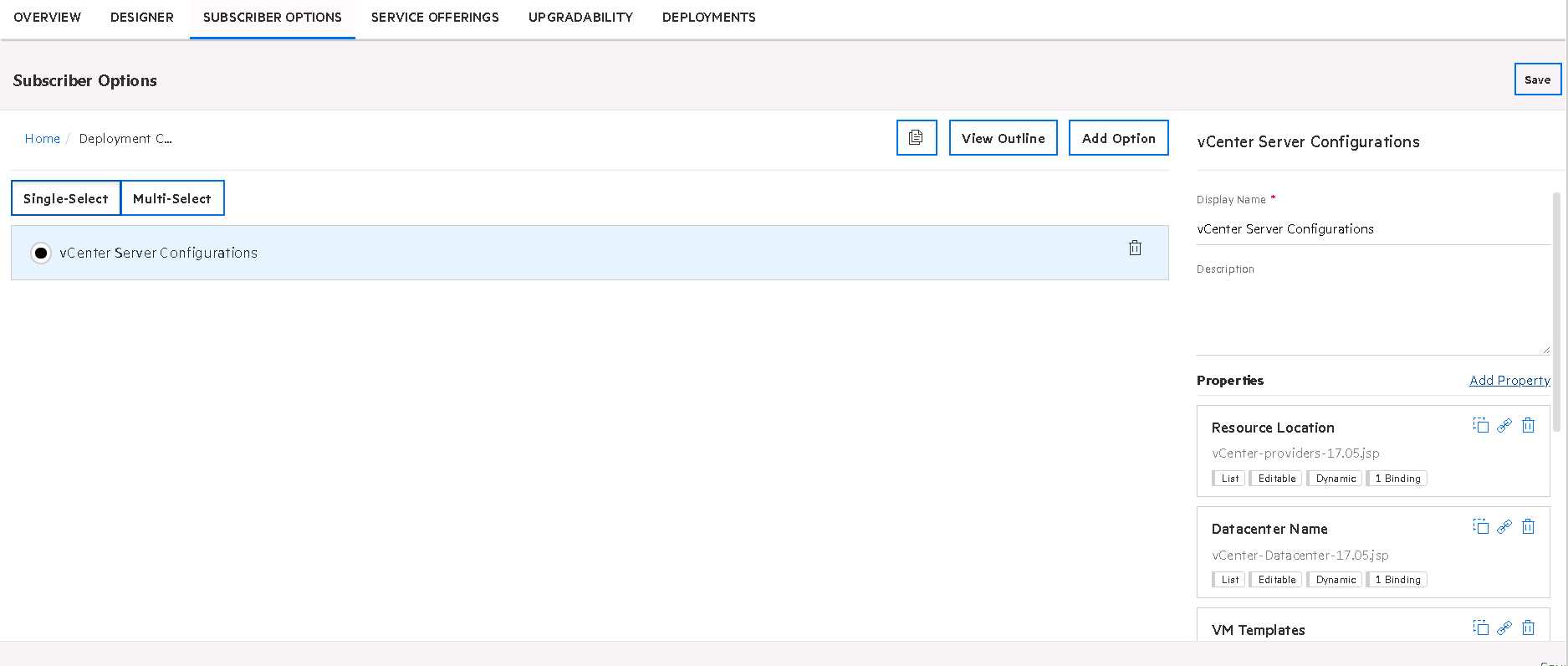
1. Click on Home under Subscriber Options to return to the screen where we Define different Option Sets (Groupings of Properties that are related)
2. Add a New Options Set
3. Enter the Display Name and Description that refers to the **“Deployment Configuration”** (refer to the Tables below) – Check the Modifiable during Service Modification (refer to the previous steps is necessary)
4. Click on 0 Options in that Option box

This Option Set will “Strap” multiple Properties to a Single Option Set

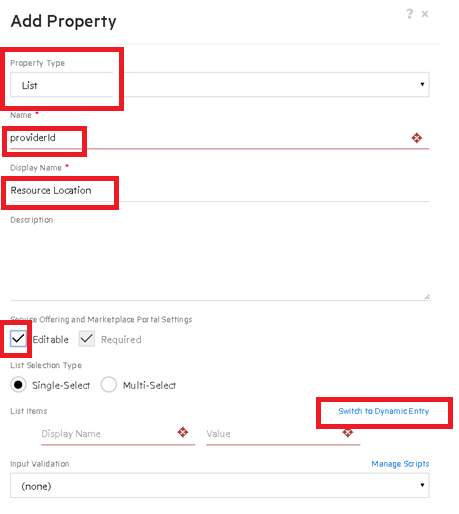
Add Options (the Add Option box will be in the right 1/3 of the screen near the top:

Name the Option Set with a descriptive name (**vCenter Server Configurations**)

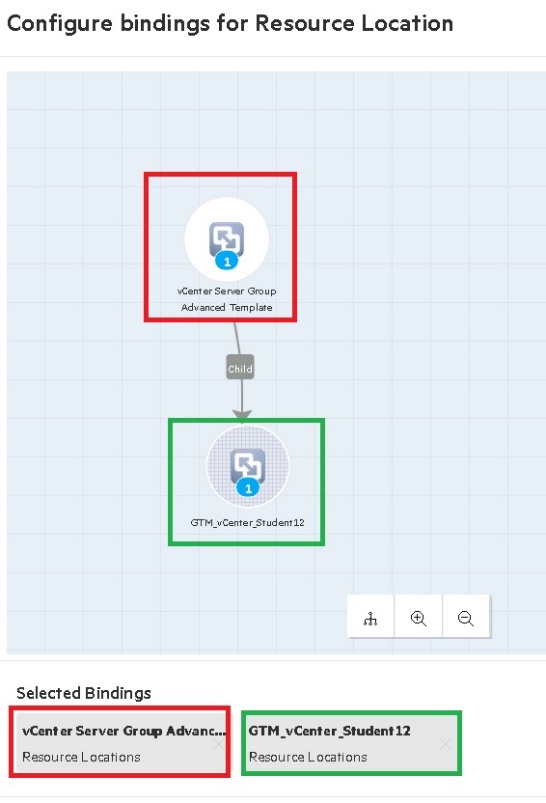
Next we will be adding **multiple Properties** to this Option. Several of the Properties will populate dynamically from JSP file, the remainder will be Static Properties that can be modified when the Service is provisioned



For any Property that is a JSP, the Property Type is “List”, the Properties that we are Statically setting the Property Type is “String”. All need to have the Editable box checked. If necessary, refer to the Property Binding performed previously.



1. Add 6 **Properties** [not subscriber option or set] – The Table below gives the Resource Location, Property Type, Name, Display Name, the JSP file for the List items and the correct Binding for the Property
2. Make sure the Editable box is checked
3. One Property will have 2 Bindings 🡪 the image below shows the Binding for Resource Location



The Table below lists the Properties to be created and the Binding parameters. Add a Property for each (Note the Double Binding for Resource Location)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Property Display Name | Property Type (Interger/List/String) | Property Name | List Items Parameter | Property Binding |
| Resource Location | List | providerId | vCenter-providers-17.05.jsp | Mapping 1. vCenter Server Group Advanced – Resource Locations  Mapping 2. vCenter Server Student # - Resource Locations |
| Datacenter Name | List | datacenterName | vCenter-datacenter-17.05.jsp | vCenter Server Student # – Datacenter Name |
|  |  |  |  |  |
| VM Templates | List | virtualMachine | vCenter-Template-17.05.jsp | vCenter Server Student # - Base Virtual Machine |
| Custom Specifications | List | customizationTemplateName | vCenter-Customspecs-17.05.jsp | vCenter Server Student # – Customization Spec Name |
| Vm Name Prefix | String | vmNamePrefix | Default Value : VM | vCenter Server Student # - VM Name Prefix |
| VM Folder | String | vmFolder | Default Value : / | vCenter Server Student # - Vm Folder |

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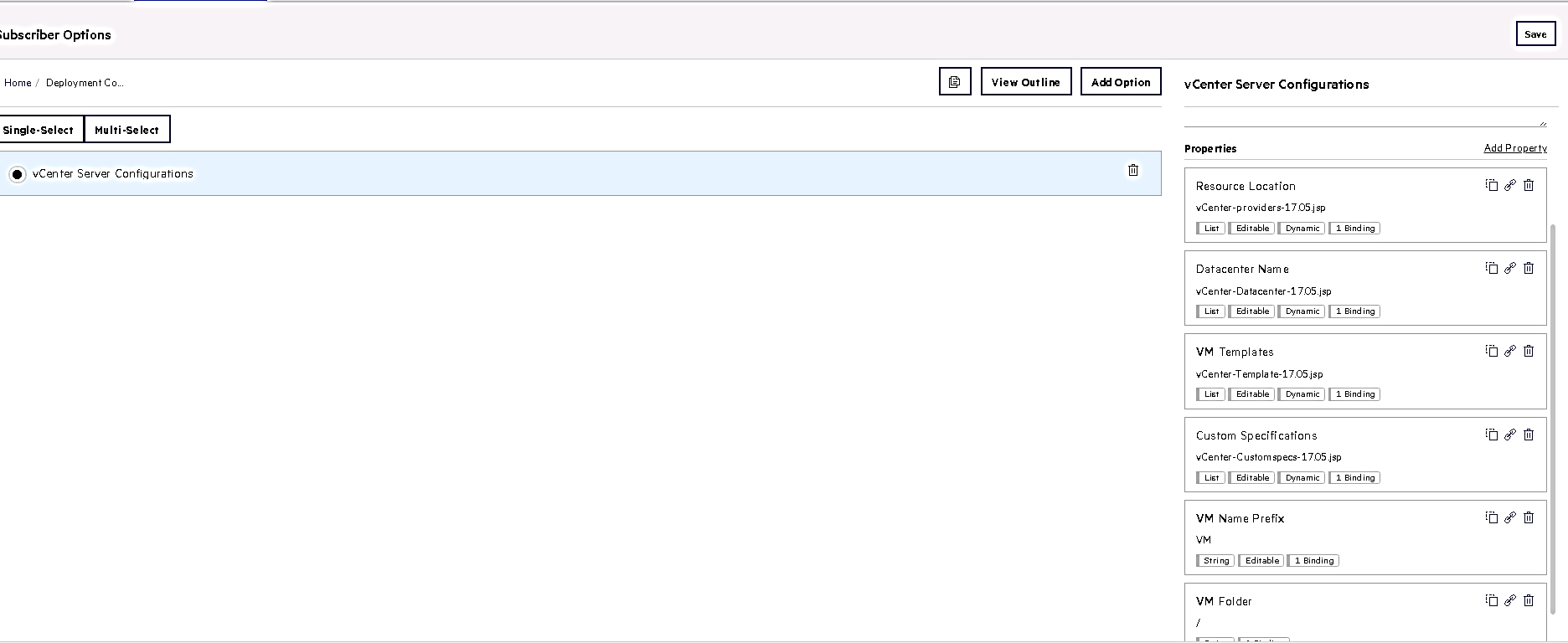
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For each Property type of “List” in the table, click on “Switch to Dynamic Entry” and select the list item from the Drop-Down shown in the Table. This is where the Property will read the JSP file.

For each Property type of “String” in the table, set a default value for the property from the Table

If you use a different name for “Property Name” – The Option in the upcoming step Setting JSP Properties for Dynamic Entry will be the Name of that Property

When you are done the Properties should look like:

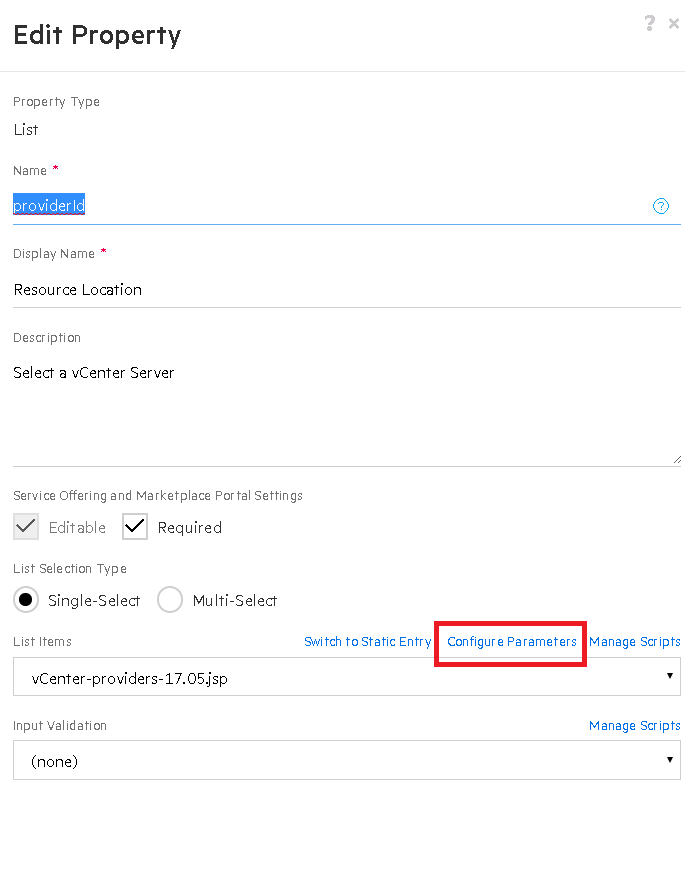


# Setting JSP Properties for Dynamic Entry

The Dynamic (JSP) Properties have Parameters that need to be set for the JSP script to provide required input.

Click on the Property Name(s) for each Property defined as “List”

The link to open the Parameter Options is depicted below



The values of this Table link back to the Property Name in the previous step where multiple Properties were defined for Server Configurations

For each JSP Property the values are in the Table below – Some Properties have MORE than 1 Value

|  |  |  |
| --- | --- | --- |
| Property | Parameter Name | Parameter Value/Linking |
| Resource Location | catalogID | [PORTAL:CATALOG\_ID] |
| Datacenter Name | providerId | [CLIENT:providerId] |
| VM Templates (1st Value) | datacenterName | [CLIENT:datacenterName] |
| VM templates (2nd Value) | providerId | [CLIENT:providerId] |
| Custom Specifications (1st Value) | virtualMachine | [CLIENT:virtualMachine] |
| Custom Specifications (2nd Value) | providerId | [CLIENT:providerId] |

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To link the Parameter Name to the parameter Value, Click on the “Sun” Icon on that row and choose “Select Token” and choose the Value from the List

**Note :** Notice the items listed as CLIENT Tokens – The Token Name matches the Names we entered when defining the List Properties – if you entered names that were different than this Document – make sure to Choose the Token name that matches to Named Variable – **for example if you didn’t enter providerId in the Name entry when defining the Property, the Token List will not have a [CLIENT:providerId} Instead it will be [CLIENT:<whatever is in the Name definition> in the Edit Properties screen of that Option**

This completes the Definition for Deployment Configurations

**Save Your Work**

Now we will define the VM Sizes as a selectable value – Go back to the Home area of the Options definitions (You will have the Number of servers and Server Configurations listed on the screen under Subscriber Options from the Home Area)

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From the Subscriber Options screen:

1. Add OptionSet
2. Give the Option a Name that denotes VM Sizing (VM Size, Server Size, CPU/Memory...)
3. Click on the “0 options” in the Option Set you just created

Now we will add several Options that will set the Number of CPUs and amount of Memory for the VM at Subscription Time

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1. Click Add Option
2. Name this Option Small
3. Repeat the Process until you have Small, Medium, Large and X-Large Options listed on the screen

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Next we need to assign Properties to each Option to set the Values for CPU and Memory

1. Select the Small Option
2. Click Add Property
3. Both CPU and Memory will be Integer Property Types
4. Give the CPU Property a Name and Display Name
5. Don’t check the Editable box
6. Click Done
7. Click Add Property again
8. Give the Memory Property a Name and Display Name
9. Don’t check the editable box
10. Click Done

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At this point there are no Bindings for these Properties

1. Click on the Chain icon within the CPU Property
2. Select the "GTM\_vCenter\_Student\_<<id>>” (This is the vCenter template and not Server Group)
3. Click the “+” next to Number of CPU Cores
4. Click Done
5. Click on the Name of the Property (CPU)
6. Set the Default Value to “1”
7. Click Done
8. Click on the Chain icon within the Memory Property
9. Select the vCenter Server Advanced Template
10. Click the “+” next to Memory
11. Click Done
12. Click on the Name of the Property (Memory)
13. Set the Default Value to “1024” (HCM computes Memory in MB not GB
14. Click Done

Click Save to Save your Work

In the Properties box there is an icon that is Square – Click that Icon and Copy the Property to all Options – The Property as well as the Binding to the Service Design are now part of each option under Server Size

Click on the CPU and Memory Property under each option and set them according to the Table below

|  |  |  |
| --- | --- | --- |
| Size | CPU | Memory |
| Small | 1 | 1024 |
| Medium | 2 | 2048 |
| Large | 2 | 4096 |
| X-Large | 4 | 4096 |

Now we have Subscriber Options that configure:

1. The Number of Servers that will be created for a Single Subscription (the remaining parameters will be the same for each Server)
2. The Necessary Information to deploy the Server)s) to vCenter
3. The Size of the Server(s) to deploy

**Click Save to Save your Work**

# Create Service Offering

The next thing we need to do is Publish the Service Design we just completed to the User Catalog.

At the top right corner of the Screen click on the A close up of a sign

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Choose “Publish” – This sets the Design as a Candidate to be Published to a User Catalog

Go to Services 🡪 Publish Offerings - This is where we can Publish the design to a Specific User Catalog (different organizations can have a Catalog tailored to their needs)

At the Top right corner of the screen click on the A close up of a sign

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Choose Create Offering

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1. Name the Offering (this name will appear in the User Catalog)
2. Give the Offering a Version
3. Click on Select on the Service Design row
4. Choose your Service Design from the List
5. If you want, you can change the Image that displays in the User Catalog for this Offering
6. Click Create

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Look through the various options listed. Some will show Selectable values will be determined at subscription time – these are the Properties that were defined as JSP in the Service Design Subscriber Options, Some will have a value (such as VM Name Prefix – You can set a Default Value here , finally the Instance type you can select a Default Server Size by selecting a Size

If you make any changes make sure to Save your work

On the Pricing menu option, you can assign costs to various items associated with the Subscription

Go to the Publishing menu item

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Here a Category for the Offering can be selected. Once a Catalog Listing grows to multiple Screens, choosing a Category of service desired will reduce the Displayed items to only those associated with the Category.

1. Select a Category
2. Click Publish

The Offering is now in the User Catalog and ready for use.

# Create a Subscription using the Service Offering

Open a Private (incognito) Browser Window (HCM and the User Catalog do not work well in the same browser instance)

Go to <https://itom1.hcm.demo.local:8089>

User: consumer

Pass: Cloud\_123

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From this screen you can click:

All Services and see a complete list of Services in YOUR Organizations Catalog

New releases to see items added recently for use

Let’s choose New releases

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Here is the Offering we just added to the Catalog

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Select Request Service

It may take a few seconds, but the Drop-Down fields will fill in

1. Click on the Drop-Down for VM Templates
2. This is a list of all of the Templates we can choose from – this list was created dynamically from information gathered during the last synchronization between HCM and vCenter.
3. Choose Tomcat\_Template
4. Choose unseVmName\_Linux as the Custom Specification (this will Name the server with a Name that begins with your VM Name Prefix (STU#)
5. Choose Size – Small
6. Click on Checkout

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1. Under Subscription Name – this is the default name – if no descriptive name is entered, you may have multiple subscriptions to this Service and they will all have the Same name. Enter a Name for the Subscription
2. Enter a Description for the Service
3. Click Submit Request

Return to the Marketplace Dashboard and choose All Subscriptions

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The Service is building – refresh the screen every so often

If you would like to watch the OO process build the Service:

Go to your HCM Admin Browser window

Go to Management 🡪 Workflow Management

Once the OO screen opens (if you are prompted for a Login: admin:Cloud\_123)

Click on Run Management

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Your Service is up and running

# Test Tomcat Access

From the Marketplace Portal Browser – return to the Main Dashboard

Choose My Services to list the Active Services

Click on your Service name

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The IP Address of the service is listed – Let’s check Tomcat on the Server

http://<ServerIP>:8080

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To Recap:

You created a Service Design for a Server that Contains Tomcat from an Empty Design Palette

You Defined the necessary Properties for the Service to Successfully build

You Bound values between the Subscriber Options and the Service Design Properties

You added the Service to a User Catalog and requested the Service

You opened the Tomcat Admin page to show that:

The Server was running

The Tomcat Application was active on the Server

When the exercise is complete *PLEASE* Cancel the Service from the Marketplace Portal