

vRealize Automation and Storage Policy Based Management Framework Integration Installation and Configuration Guide

Deliverables:

- This Documentation
- vCenter Orchestrator workflow package

Terminology:

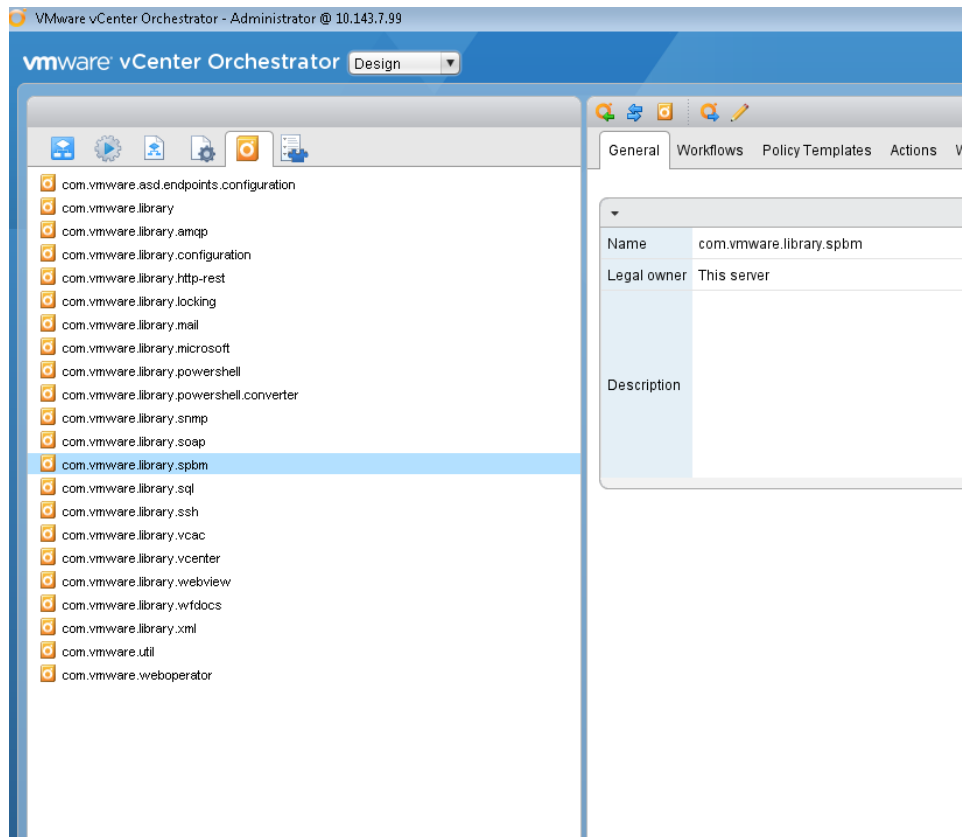
- vCAC: vRealize Automation (vCloud Automation Center)
- vCO: vCenter Orchestrator

Pre-requisite:

1. Have vCAC 6.0 installed
2. Have IAAS Server Installed
3. Have vCO 5.5 installed(if use standalone vCO server)
4. Have vCAC Tenant configured
5. Have vCO Plug-in for vCAC 6.0.1 installed
(https://my.vmware.com/web/vmware/details?downloadGroup=VCO_VCAC_PLUGIN_601&productId=353)
6. Have vCO Plug-In for VMware vSphere 5.5.2 installed
(<https://communities.vmware.com/servlet/JiveServlet/download/25307-9-124990/o11nplugin-vsphere.vmoapp.zip>)
7. Have vCO Plug-In for HTTP-REST 1.02 installed
(https://my.vmware.com/group/vmware/details?downloadGroup=VCO_REST_PLUGIN_102&productId=285)
8. License:
 - a. vCAC Advanced license

Solution Installation and configuration procedures:

1. Connect to vCO client, go to **Design -> Packages**
 - a. Import com.vmware.library.spbm package



- b. Go back to Workflows, and expand workflow folder: **Library** -> **vCloud Automation Center** -> **Configuration** and run **Add a vCAC host**, input vCAC Host Name, Host URL and Tenant Name, then go **Next**, Choose **Shared Session** and input Tenant Service Architect's Credential to add vCAC host into vCO as an inventory object.

Start Workflow: Add a vCAC host

1 Add a vCAC host
1a Host Properties
2 Host Authentication
2a User credentials

Properties to create a new host. The name is the host's unique identifier.

* Host Name
vCAC-Cafe

* Host URL
https://vcac-60.storage.local

* Tenant
vmw

Automatically install SSL certificates
☐ Yes ☒ No

Connection timeout (seconds)
30.0

Operation timeout (seconds)
60.0

Cancel Back Next Submit

- c. Run **Add the IaaS host of a vCAC host** in the same directory, get the vCAC Server just added into inventory and input IaaS Host information including Hostname, Host URL and Credential

Start Workflow : Add the IaaS host of a vCAC host

✓ 1 Common parameters

2 Add an IaaS host

2a Host Properties

3 Host Authentication

3a User Credentials

3b Domain and Workstation

* Host Name
IaaS host for vcac-cafe

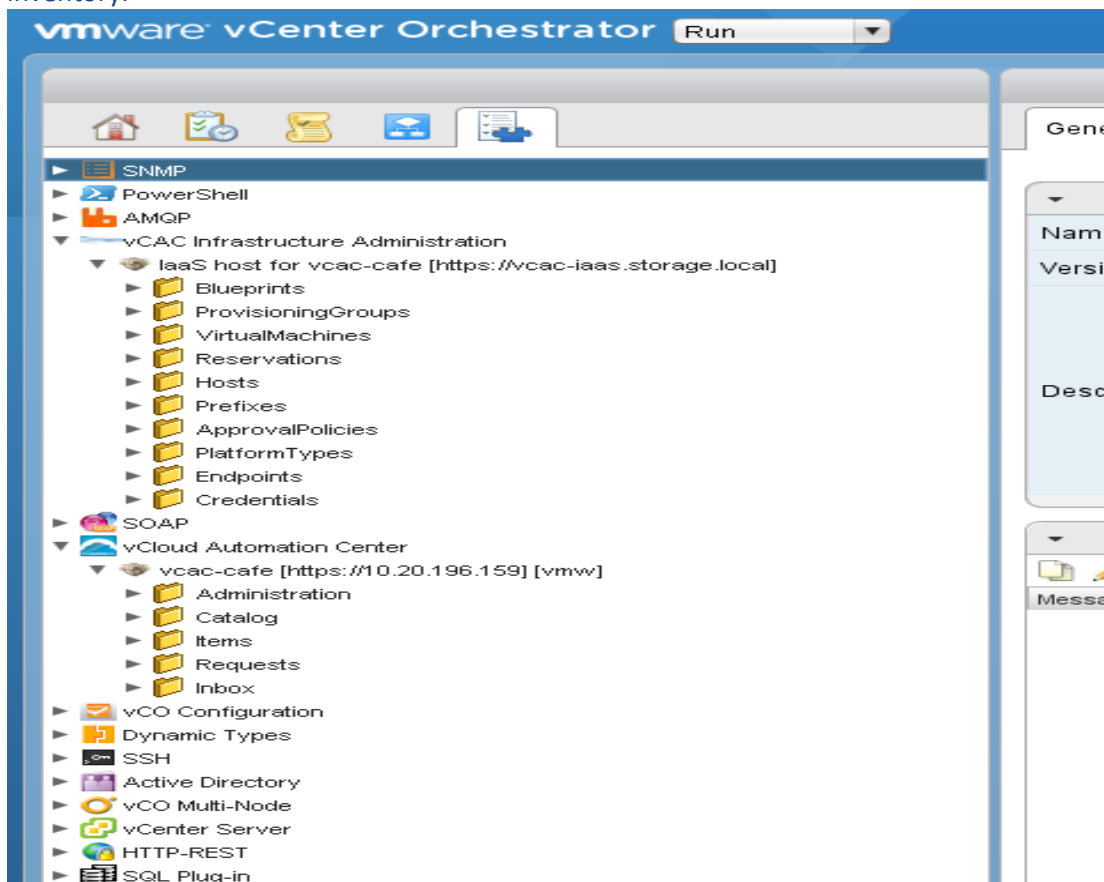
* Host URL
https://vcac-iaas.storage.local

* Connection timeout
30.0

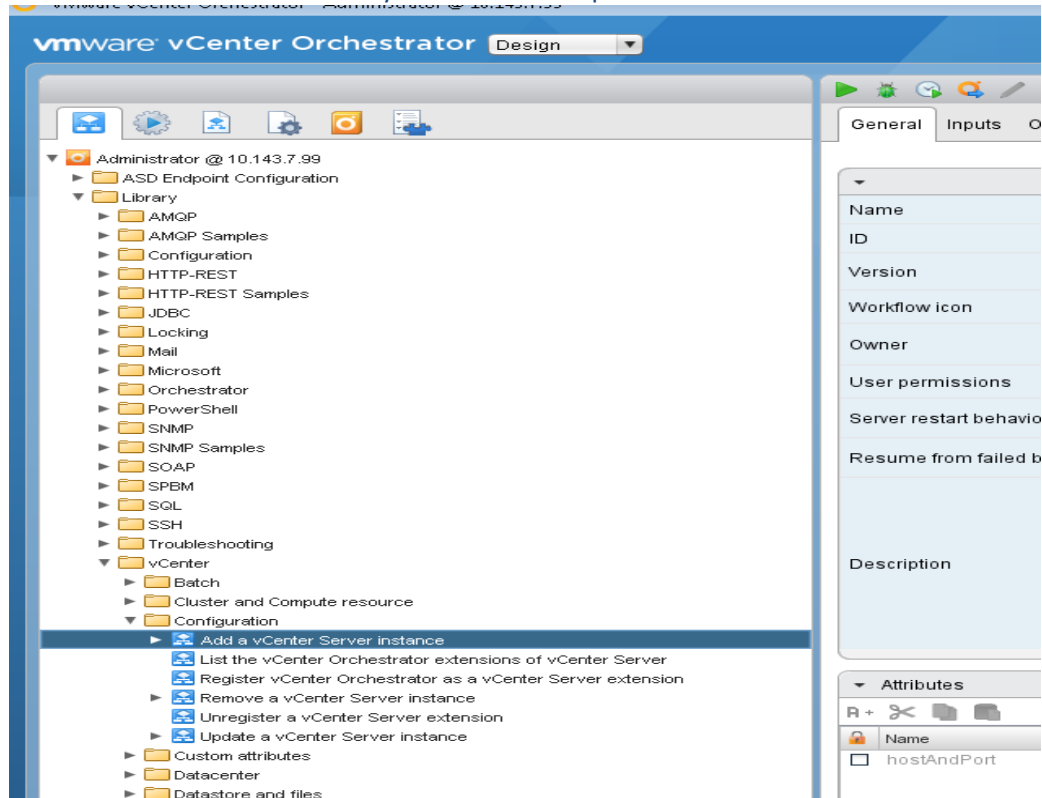
* Operation timeout
60.0

Cancel Back Next Submit

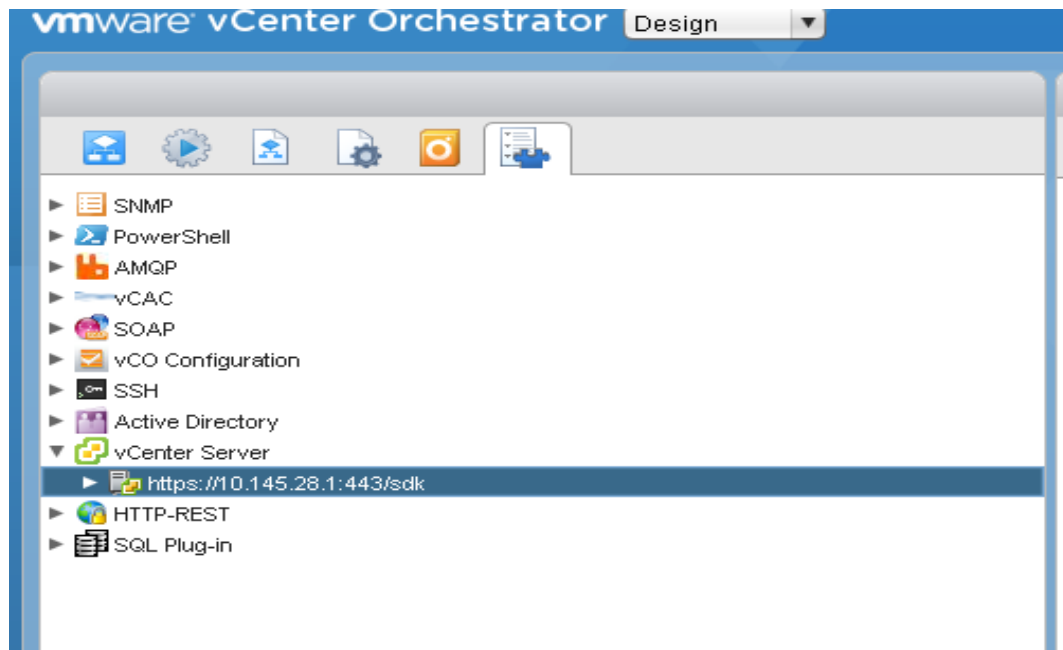
after running successfully , you can find the IaaS Server Entity has been added to the object inventory.



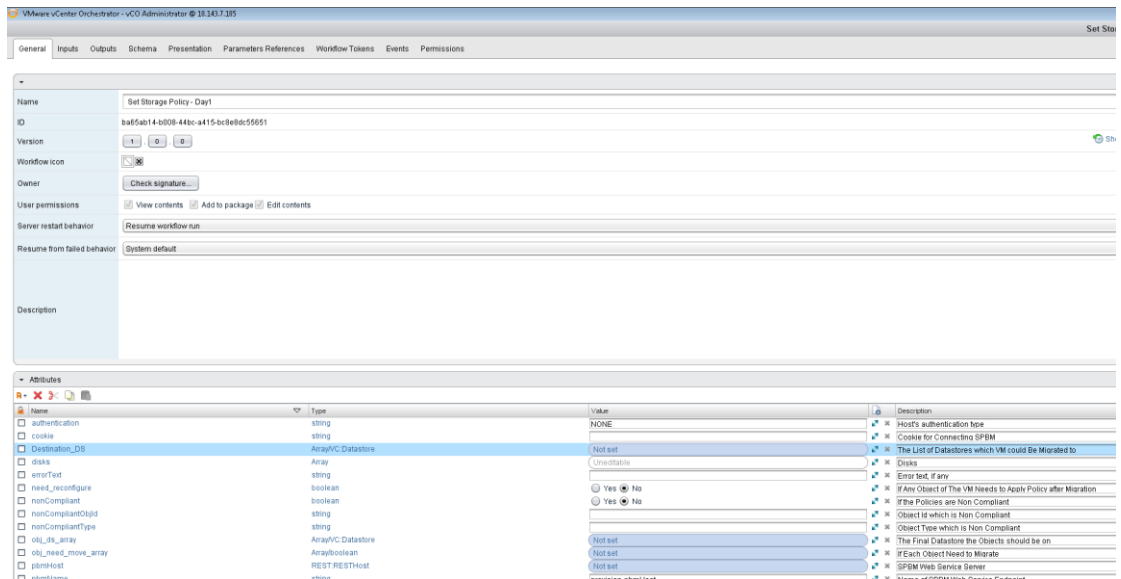
- d. Find at **Library -> vCenter -> Configuration -> Add a vCenter Server instance** and run workflow with the vCenter information which you added as Endpoint in vCAC



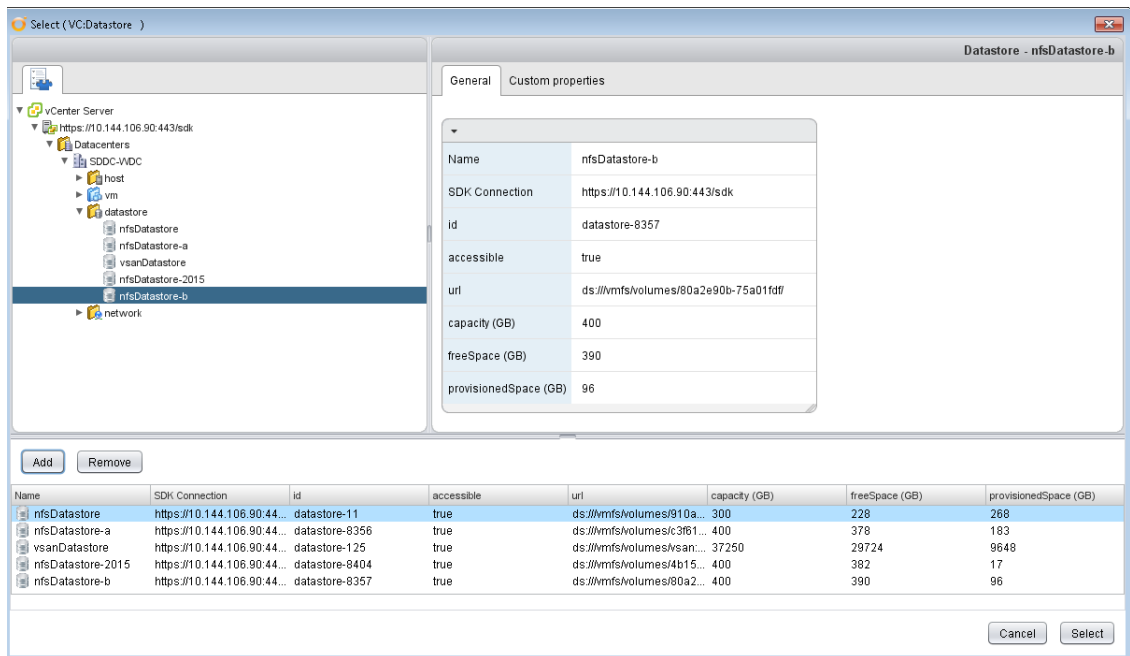
After running successfully, you will find the vCenter Server Entity has been added to the object inventory



- e. Navigate to **Library -> SPBM -> Set Storage Policy When Provisioning -> Set Storage Policy - Day1**, right click on that workflow, and Choose **Edit**, and find Attribute **Destination_DS** in the Attributes list under **General** tab.



Click on **NOT SET**, click on **Insert Value** in the new opening window, and expand the vCenter instance you just added: **vCenter Server** -> **YOUR_VC_SDK** -> **Datacenters** -> **YOUR_DC_NAME** -> **datastores**, select the datastores that user could migrate their VM to, in the example, all the datastores have been selected.



Save and close this workflow.

- f. Navigate to **Library** -> **vCloud Automation Center** -> **Infrastructure Administration** -> **Extensibility** -> **Assign a state change workflow to a blueprint and its virtual machine** and run workflow.
 - i. Select **MachineProvisioned** for vCAC workflow stub to enable
 - ii. Select the IaaS server you just added for vCAC host

Start Workflow : Assign a state change workflow to a blueprint and its virtual machines

- 1 vCloud Automation Center
- 2 Blueprint mapping
- 3 vCenter Orchestrator wor...

vCAC workflow stub to enable

MachineProvisioned

* vCAC host

laaS host for vcac-cafe [https://vcac-iaas.storage.local]

Cancel Back Next Submit

- iii. Click **Next**, select the blueprints of laaS server that would enable user to apply storage policy on VM Home or disks when provisioning, here we only select the blueprint “Basic-Linux-Testing” as an example.

Select (vCAC:Blueprint)

General Custom properties

Blueprint - Basic-Linux-Testing

virtualMachineTemplateID	996ad6bc-4456-46ac-8733-177414235eb6
virtualMachineTemplateName	Basic-Linux-Testing
virtualMachineTemplateDescription	
expireDays	99
leaseDays	0
enabled	true
requiresApproval	false
master	true
memoryMB	256

Basic-Linux-Testing

Cancel Select

Start Workflow : Assign a state change workflow to a blueprint and its virtual machines

✓ 1 vCloud Automation Center
✓ 2 **Blueprint mapping**
✓ 3 vCenter Orchestrator wor...

Select which Blueprint will trigger a workflow for the selected state

* Blueprints
Array [Basic-Linux-Testing]

Apply machine operation changes to existing machines
☐ Yes ☒ No

Cancel Back Next Submit

- iv. Click **Next**, select workflow **Set Storage Policy – Day1** for **End user workflow to run** and **Submit**.

Start Workflow : Assign a state change workflow to a blueprint and its virtual machines

✓ 1 vCloud Automation Center
✓ 2 **Blueprint mapping**
✓ 3 vCenter Orchestrator wor...

Select which Blueprint will trigger a workflow for the selected state

* Blueprints
Array [Basic-Linux-Testing]

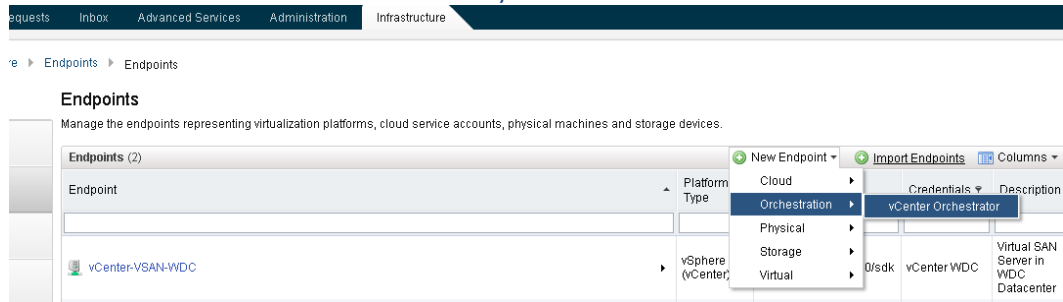
Apply machine operation changes to existing machines
☐ Yes ☒ No

Cancel Back Next Submit

2. Connect to vCAC Server as Service Architect

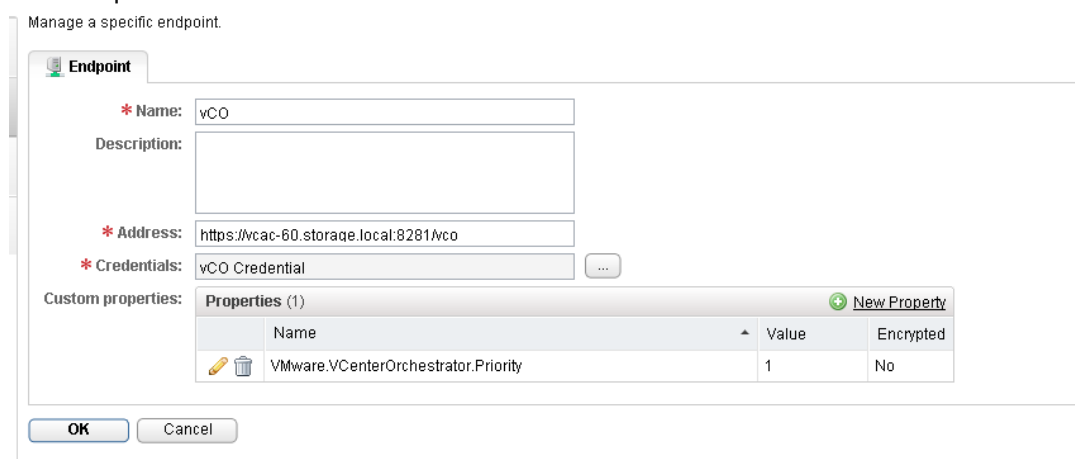
Enable Storage Policy when Provisioning VM.

- a. Navigate to **Infrastructure -> Endpoints -> Endpoints**, create vCO endpoint(you have to have vCAC Advanced license to enable this selection)

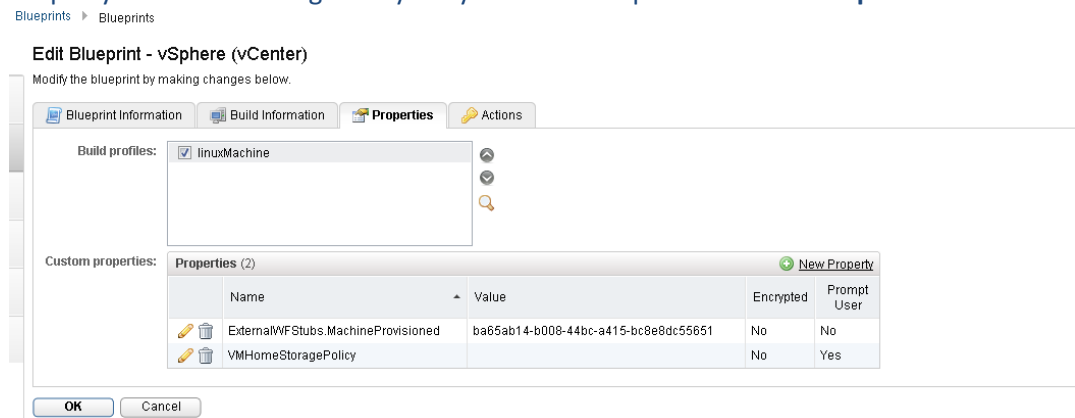


- b. Put name, address (https://YOUR_VCO_IP:8281/vco), and add credential information for it.

- c. Add the property “VMware.VCenterOrchestrator.Priority” and set the **Value** to 1, then click **OK**.

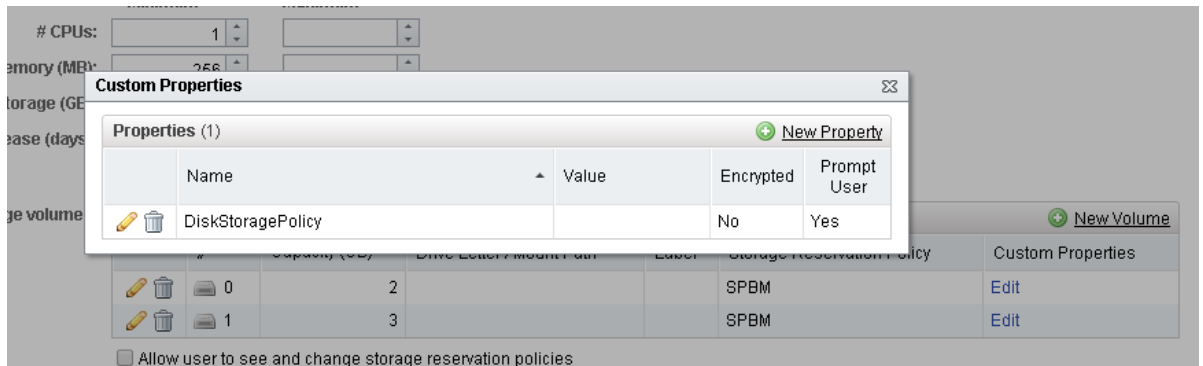


- d. Navigate to **Infrastructure -> Blueprints -> Blueprints**, open the Blueprint you just used when running vCO workflow **Assign a state change workflow to a blueprint and its virtual machine**. Add Property “VMHomeStoragePolicy” to your IAAS blueprint and set **Prompt User** to **Yes**

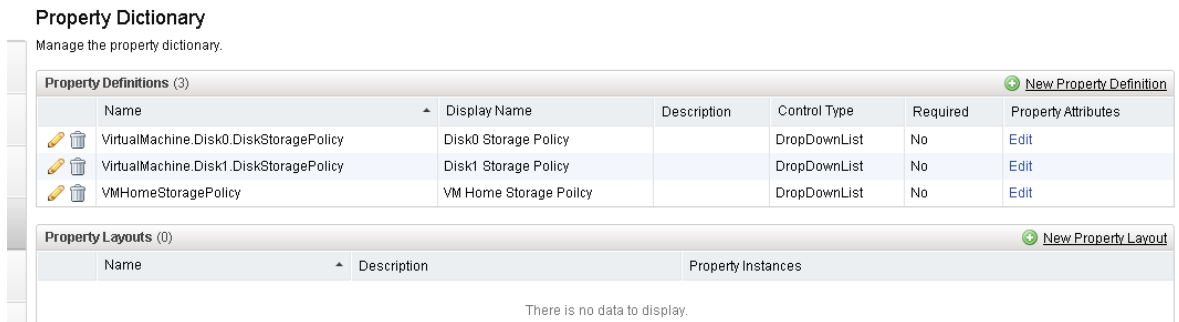


And you will find the property “ExternalWFStubs.MachineProvisioned” which is generated by running workflow **Assign a state change workflow to a blueprint and its virtual machine** in vCO

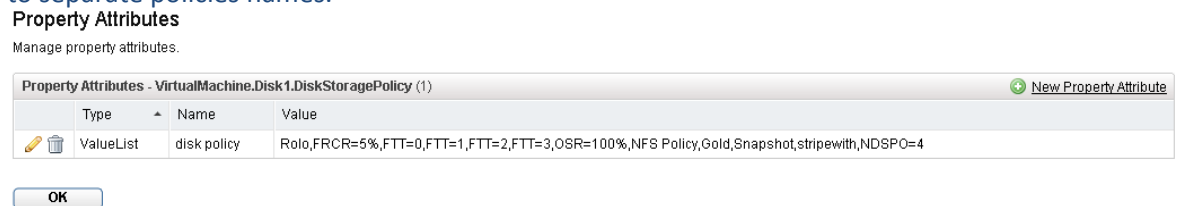
- e. Also, you may want to set “DiskStoragePolicy” to each volume’s property and set the **Prompt User** to **Yes** to enable the feature of applying the storage policy to disks when provisioning a VM.



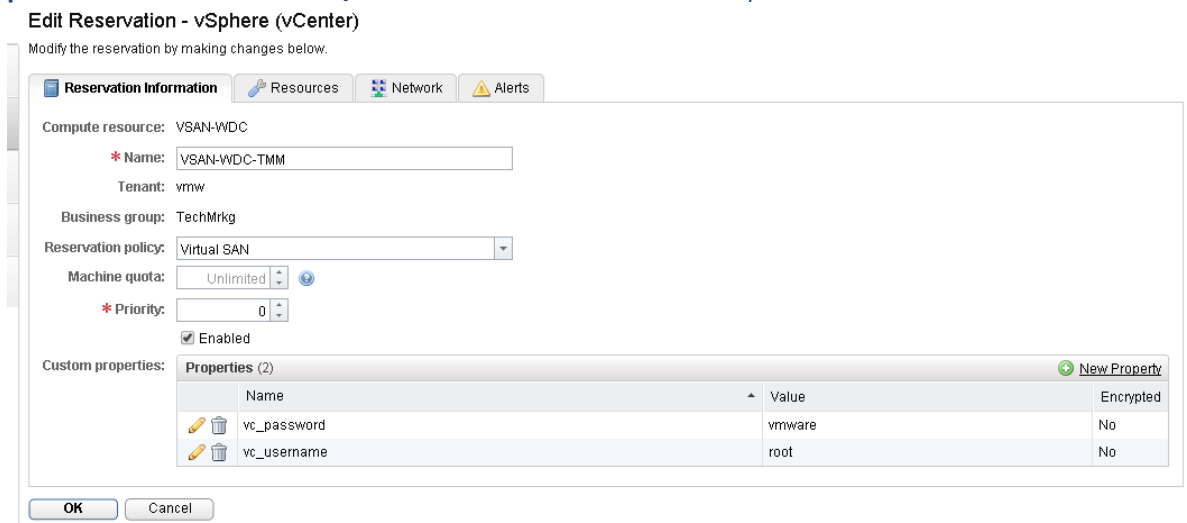
- f. Navigate to **Infrastructure -> Blueprints -> Property Dictionary**, and add property definitions “VMHomeStoragePolicy” and “VirtualMachine.DiskN.DiskStoragePolicy” (**N** is the number of Disk, start from 0) in property dictionary, set the **Control Type** to **DropDownList**.



Within each property, put all the Storage policies names you got from vSphere into **ValueList**, use “,” to separate policies names.



- g. Navigate to **Infrastructure -> Reservations -> Reservations**, select the reservation being used for the Blueprints which have been used when running vCO workflow **Assign a state change workflow to a blueprint and its virtual machine**, add two properties: “vc_username” and “vc_password”, then input the vCenter credential information for the **Value**.(**If you are using SSO to login into vCenter, please use DOMAIN.NAME\USERNAME as username format**)



- h. We are good to go. Let's connect as tenant end-user, request VM, I'm provisioning 3 VMs, with VM Home, Disk0 and Disk1 policies applied.

This request will be provisioned using the **BasicVmWorkflow** workflow.

Blueprint	Description	Machines	Daily Cost
Basic-Linux-Testing		3	\$0.00

Request Information | Storage | Properties

Machines:

CPUs:

Memory (MB):

Storage (GB):

Description:

* Owner:

Disk0 Storage Policy:

Disk1 Storage Policy:

VM Home Storage Policy:

Reason for request:

Save Submit Cancel

In a few minutes, VMs have been created and policies have been applied. VM Home and Disk0 have applied vSAN Policies and stay on vSAN datastore, Disk1 has applied NFS Policy and been migrated to NFS datastore.

vcac-vsan-0255 Actions

Summary Monitor **Manage** Related Objects

Settings Alarm Definitions Tags Permissions **VM Storage Policies** Scheduled Tasks vServices

VM Storage Policy assignments Manage VM Storage Policies...

Filter

Name	VM Storage Policy	Compliance Status
VM home	FTT=2	✓ Compliant
Hard disk 1	OSR=100%	✓ Compliant
Hard disk 2	NFS Policy	✓ Compliant

3 items

Enable Change Storage Policy Day-2 Operation

- Connect vCAC as Tenant Service Architect
- Navigate to **Administration -> Advanced Services -> Server Configuration**, check **Use an external Orchestrator server**, input the vCO information, and click **Update**.
Note: if you are using embedded vCO service, please ignore this step.

Server Configuration

< Back to Administration

Import workflow packages

Endpoints

Server Configuration

Successfully connected to the Orchestrator server.

☐ Use the default Orchestrator server.
☒ Use an external Orchestrator server.

*Name:
 Description:

*Host:
 Authentication: ☐ Single Sign-On ☒ Basic

*Port:
 *User name:

*Password:

Test Connection Update

- k. Navigate to **Advanced Services -> Resource Actions**, click **+** to add an action. Go to **Library -> SPBM -> Change Storage Policy** and select **Change Storage Policy Action**

Resource Actions

New Resource Action

Workflow Input Resource Details Form

Select a Workflow

- Hadoop Cluster As A Service
- HTTP-REST
- HTTP-REST Samples
- JDBC
- Locking
- Mail
- Microsoft
- Orchestrator
- PowerShell
- SNMP
- SNMP Samples
- SOAP
- SPBM
 - Change Storage Policy
 - Change Storage Policy Action**
 - Update Property Value
 - Set Storage Policy When Provisioning
 - SQL
 - SSH

Selected Workflow

Name: Change Storage Policy Action

Description: This Action is for vCenter 5.5u2, as day-2 operation for vCAC Advanced Service Design.

Input parameters:

Name	Type
vc_username	string
vc_password	SecureString
policyName	string
option	string
disk_num	number

Output parameters:

Name	Type
propertyEntities	Array/vCAC:Entity

< Back Next > Cancel

1. Select **IAAS VC VirtualMachine** for Resource type, and select **testVM** for Input Parameter, on the form page, edit **policyName**, input Policy Name in **Value** and click **+** to insert values, and click **Submit**. (For Default vSAN policy, DO NOT input anything, just input "Default" for Label then click **+**).

Edit Form Field - policyName

Details Constraints Values

Predefined values:

Value +

Label

Default

FRCR=5%

FTT=0

FTT=1

Submit Cancel

2. Edit **vc_username** and **vc_password**, click **Constraints** set **Value** to **Constant** and input the **Value**, and make sure **Visible** has been set to **No**.

Edit Form Field - vc_username

Details Constraints

Required: Yes

Read only: Value...

Value: root

Visible: ☐ Not set ☒ Constant ☐ Field ☐ Conditional

Minimum length:

Maximum length:

Submit Cancel

3. Edit **disk_num** and set **Visible** to **Not set**

Edit Form Field - disk_num

Details Constraints

Required: Value...

Read only: Value...

Value: Value...

Visible: Value...

Minimum value: ☒ Not set ☐ Constant

Maximum value: ☐ Field ☐ Conditional

Increment:

Submit Cancel

4. Edit **Destination_DS**, select **Value** tab, input the datastore name you want to add into the datastore list which user could migrate their VM to.

Edit Form Field - Destination_DS

Details Constraints Values

Predefined values:

- nfsDatastore-2015
- nfsDatastore-a
- nfsDatastore-b
- vsanDatastore

Submit Cancel

5. After the datastore list is ready, switch to **Constraints** tab, set **Value** to **constants**, and check all the datastores.

Edit Form Field - Destination_DS

Details Constraints **Values**

Required: Value... ▼

Read only: Value... ▼

Value: nfsDatastore, nfsD... ▼

Visible:

- ☐ Not set
- ☒ Constant
- ☐ Field
- ☐ Conditional

Minimum count:

Maximum count:

- ☒ nfsDatastore
- ☒ nfsDatastore-2015
- ☒ nfsDatastore-a
- ☒ nfsDatastore-b
- ☒ vsanDatastore

Cancel

Make sure **Visible** has been set to **No**.

6. Edit **IAASServer**, go to **Constraints -> Value -> Constant**, select the IAAS entity and **Submit**.

Edit Form Field - IAASServer

Details Constraints

Required: Yes ▼

Read only: Value... ▼

Value: Value... ▼

Visible: No ▼

Submit Cancel

Select values

- ☒ vCAC [https://vcac-iaas.storage.local]

Submit Cancel

7. After submitting the action, publish it and add it to entitlement.
8. Now we are ready for policy change as an end-user, right click on the VM you want to change policy, choose the policy you want to apply as well as the option

Request Information

Step

?

policyName:

FTT=2

▼

?

* option:

Both Disks and VM Home

▼

9. In a minute, the policy has been applied and Disks have been migrated to vSAN datastore.

VM Storage Policy assignments		
<div><div></div><div></div><div></div><div></div></div>		
Name	VM Storage Policy	Compliance Status
<div>VM home</div>	<div>FTT=2</div>	<div>✓ Compliant</div>
<div>Hard disk 1</div>	<div>FTT=2</div>	<div>✓ Compliant</div>
<div>Hard disk 2</div>	<div>FTT=2</div>	<div>✓ Compliant</div>