



Red Hat CloudForms Advanced Workshop

Workshop's Guide
(Open Hybrid Cloud Orchestration)

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REVIEW

Change's log

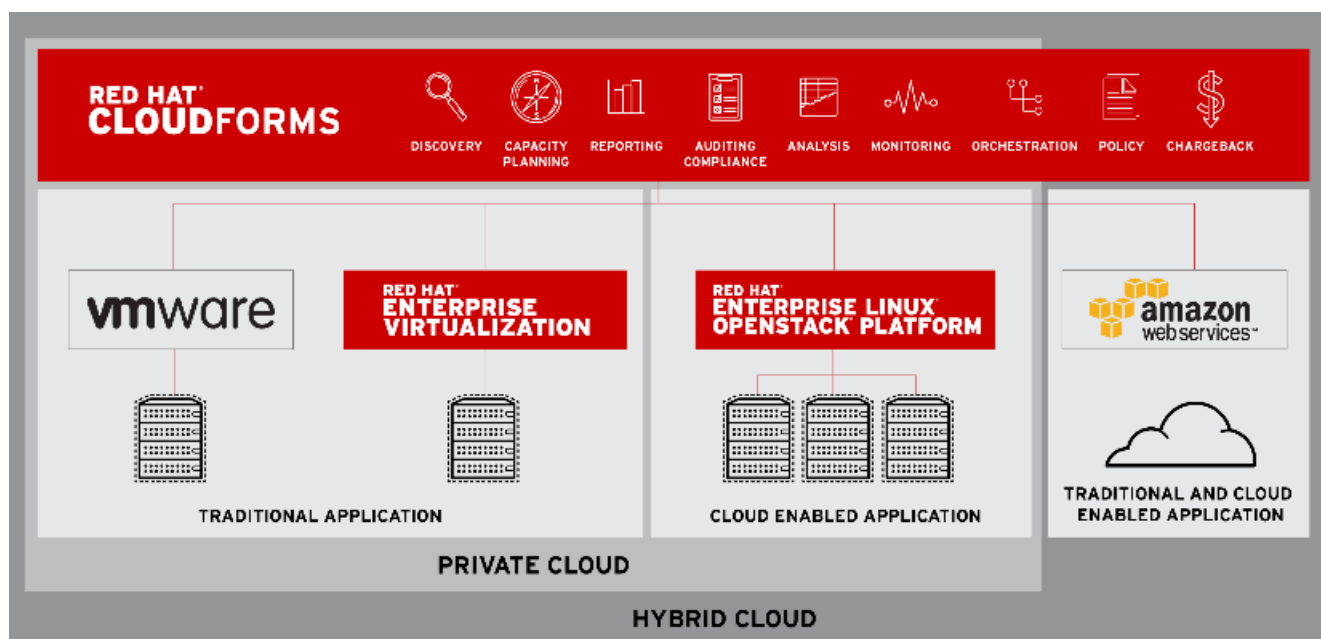
Fecha	Autor	Versión	Referencias
10/26/16	Roberto J. Calva	2.0	Version 1.4
12/12/16	Roberto J. Calva	2.1	Version 2.0
12/18/16	Roberto J. Calva	2.1	Version 2.1
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SUMMARY

Business Scenario

The aim of this workshop is to provide a first approach to our customers regarding Red Hat CloudForms, showing how to create reports, manage users and groups, implement policies and provisioning virtual machines and services, showing the benefits of Red Hat CloudForms as an Open Hybrid Cloud Management and Orchestration Console, managing technologies such as VMware, RHEV, Microsoft Hyper-V, OpenStack, OpenShift Docker Container Platform, Amazon AWS, Microsoft Azure and Google Cloud Engine.

Workshop's Architecture



Workshop's Design

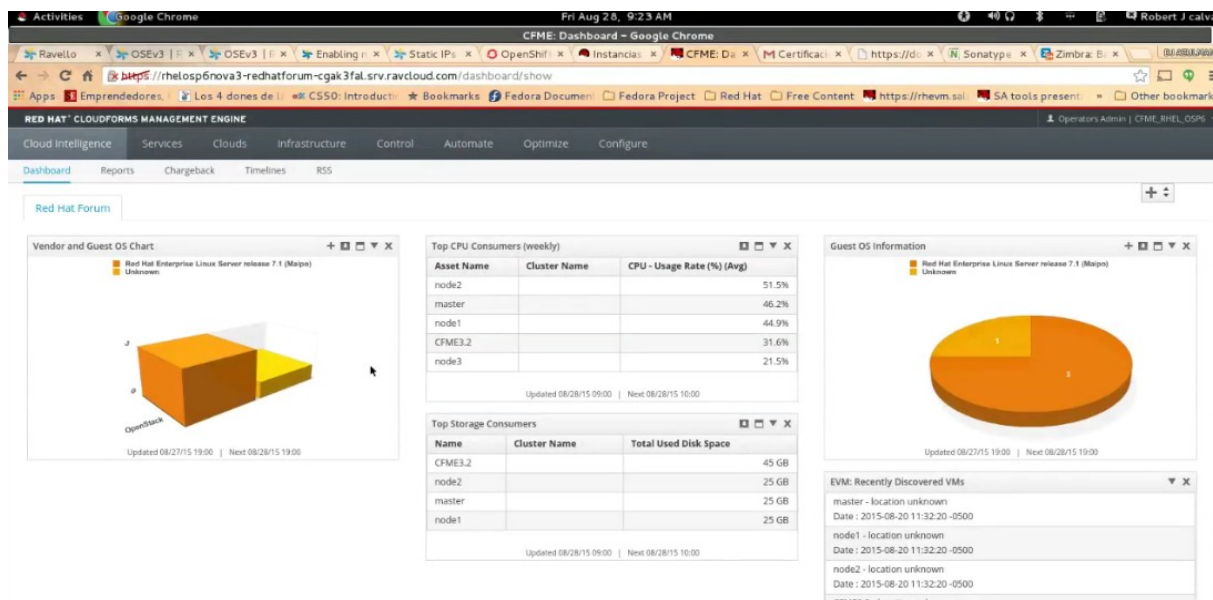
This workshop has hands-on labs and presentations to provide a basic first-hand contact with the product:

- Introductions ~ 20 min
- CloudForms General Presentation ~ 40 min
- Managing Existing Resources **(with Lab)** ~ 60 min
- Discovering New Resources ~ 10 min
- Provisioning Self-Service Resources **(with Lab)** ~ 60 min
- Catalogs and Services **(with Lab)** ~ 60 min
- Roadmap ~ 30 min
- Wrap up/Q&A ~ 20 min

WORKSHOP: RED HAT CLOUDFORMS

Access to CloudForms Cloud Management Engine Portal,

User: cloudadmin / Password: r3dh4t1!



Lab 1: Managing Existing Resources

A huge part of the *CloudForms* value proposition is being able to limit what resources certain end users have access to via tagging. Being able to manage multiple environments from a single pane of glass, as the admin user, but still limit what other end users can access is a major selling point for *CloudForms*. Another advantage is being able to utilize *CloudForms* to control and manage.

1.A: Explore Discovered Infrastructure as the cloudadmin User

This lab will mainly be used as an introduction to the structure of the product, where users can find information about existing Providers/Hosts/Clusters.

In preparation for this lab, simply navigate to the tabs to become familiar with the different portions of the *CloudForms* appliance and where information for each resource is located.

We will be focusing on being able to, among other things:

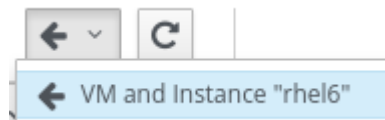
1. Navigate within the tabs to become familiar with the different portions of the CloudForms Management Engine Appliance. Navigate into the **Cloud Intelligence**, **Red Hat Insights**, **Services**, **Compute**, **Configurations**, **Networks**, **Middleware**, **Storage**, **Control**, **Automate**, **Optimize** and **Settings**.
2. Demonstrate the power controls of existing virtual machines:
 - Go to **Compute** → **Infrastructure** → **Virtual Machines**, click on Virtual Machine: **rhel6** and then click on: **Power** → **Power On**. Click on **Refresh** Button until Power State = **on**
3. Adding a new disk to a virtual machine:
 - Using the same **rhel6** virtual machine, make sure **rhel6** only has 2 Disks (1 Serial (SIO) device and 1 hard disk of 5 GB), taking a look at "**Datastore Allocation Summary**" section
 - Click on **Number of Disks** section to make sure of that:

Datastore Allocation Summary	
Number of Disks	2

"Number of Disks" for Virtual Machine "rhel6"

Device Type	Type	Mode	Partitions Aligned	Provisioned Size
sio 0:0			Unknown	
Hard Disk (SCSI 0:0)	thin	persistent	Unknown	5 GB

- Click on **Back** button selecting **VM and Instance "rhel6"**



- Click on **Configuration** → **Reconfigure this VM**
- Click on **Add Disk** to create a new disk of **2 GB**. Then click on **Add** button on your right:

Size	
2	GB
5	GB

Actions
Add

- Finally click on **Submit** to apply the changes.
- Then click on **Reload** until you see a **Finished** task. If so, then your new disk for **rhel6** was created successfully.

Last Message
VM Reconfigure complete

- Go back to **Compute** → **Infrastructure** → **Virtual Machines** and see that now you have 3 Disks within **"Datastore Allocation Summary"** section:

Datastore Allocation Summary	
Number of Disks	3

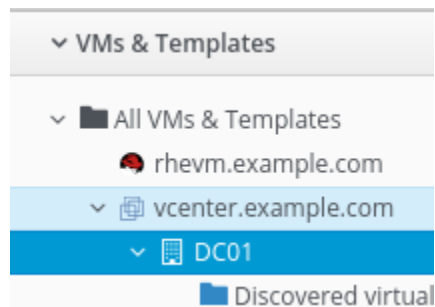
- Click on **Number of Disks** section to make sure of that:

"Number of Disks" for Virtual Machine "rhel6"

Device Type	Type	Mode	Partitions Aligned	Provisioned Size
sio 0:0			Unknown	
Hard Disk (SCSI 0:0)	thin	persistent	Unknown	5 GB
Hard Disk (SCSI 0:1)	thin	persistent	Unknown	2 GB

4. Modifying CPU and Memory to a virtual machine:

- Go to **Compute** → **Infrastructure** → **Virtual Machines**, and click on “**Vms & Templates**” → “**vcenter.example.com**”. Then, select the **rhel7-vmw** virtual machine



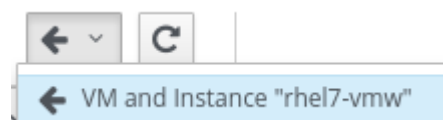
- Make sure **rhel7-vmw** has 1 CPU (1 socket x 1 core) and 1GB (1024MB) of RAM, taking a look at “**Properties**” section:

Properties	
Name	rhel7-vmw
Hostnames	
IP Addresses	
Container	vmware: 1 CPU (1 socket x 1 core), 1024 MB
Parent Host Platform	ESXi

- Click on **Container** section to make sure of that:

Devices	
Processors	1 (1 socket x 1 core)
Memory	1024 MB
Sio 0:0, Connect at Power On = No	

- Click on **Back** button selecting **VM and Instance “rhel7-vmw”**



- Click on **Configuration** → **Reconfigure this VM**
- Click on **Memory** and **Processors** to activate the changes:

Reconfigure Virtual Machine

Options

Memory ☐ No

Processors ☐ No

- Reconfigure the virtual machine with 2 GB and 1 Socket / 2 Cores Per Socket as follows:

Reconfigure Virtual Machine

Options

Memory	<input checked="" type="checkbox"/> Yes	<input type="text" value="2"/>	<div>GB</div> <div>Between 4MB and 1011GB</div>
Processors	<input checked="" type="checkbox"/> Yes		

Processor Options


Sockets	<input type="text" value="1"/>
Cores Per Socket	<input type="text" value="2"/>
Total Processors	<input type="text" value="2"/>

- Click on **Submit** to apply the changes.
- Then click on **Reload** until you see a **Finished** task. If so, then your new disk for **rhel6** was created successfully.




Last Message
VM Reconfigure complete

- Go back to **Compute** → **Infrastructure** → **Virtual Machines** and see that now you have 2 CPUs (1 socket x 2 cores) and 2GB (2048 MB) within "**Properties**" section:

VM and Instance "rhel7-vmw"

Properties	
Name	rhel7-vmw
Hostnames	
IP Addresses	
Container	 vmware: 2 CPUs (1 socket x 2 cores), 2048 MB
Parent Host Platform	ESXi

- Click on **Container** section to make sure of that:

Devices	
Processors	 2 (1 socket x 2 cores)
Memory	 2048 MB
Sio 0:0, Connect at Power On = No	

Lab 2: Provisioning Self-Service Resources

2A Creating an Entire Tenant Environment on OpenStack Cloud Provider

Using *CloudForms* as Cloud Management Platform and **OpenStack** as Private Cloud Provider, you can easily create an entire Tenant environment including its own networks, subnets, Floating IPs, Key Pairs, Routers, Instances and so on.

1. Access to **CloudForms Cloud Management Engine Portal**,

User: cloudadmin / **Password:** r3dh4t1!





2. Go to: **Compute** → **Clouds** → **Tenants** and click on **Configuration** → **Create Cloud Tenant**, creating it as follows:

Basic Information

Cloud Provider	osp.example.com
Tenant Name	Test

Click on **Save** to create the new Tenant.

2A. Go to **Compute** → **Clouds** → **Providers** and then click on OpenStack (**osp.example.com**). Then click on **Configuration** → “**Refresh Relationships and Power States**”, until you see **Cloud tenants = 2**:

Relationships	
Network Manager	 osp.example.com Network Manager
Availability zones	 2
Host aggregates	 0
Cloud tenants	 2

3. Go to: **Compute** → **Clouds** → **Key Pairs** and click on **Configuration** → **Add a new Key Pair**, creating it as follows:

Add New Key Pair

Basic Information

Name	test-keypair
Public Key (optional)	
Provider	osp.example.com

NOTE: leave Public Key space in blank.
The new Key Pair will be created automatically.

Click on **Add** to create the new Key Pair.

4. Go to: **Networks** → **Networks** and click on **Configuration** → **Add a new Cloud Network**, creating it as follows:

Network Management Provider	
Network Manager	osp.example.com Network Mana ▾
Network Information	
Network Name	Test Network
External Router	<input type="checkbox"/> No
Administrative State	<input checked="" type="checkbox"/> Up <input type="checkbox"/>
Shared	<input type="checkbox"/> No
Network Provider Information	
Provider Network Type	VXLAN ▾
Placement	
Cloud Tenant	Test ▾

Click on **Add** to create the new Cloud Network.

Then Click on **Networks** → **Networks** until you can see your new **Test Network** network.

5. Go to: **Networks** → **Subnets** and click on **Configuration** → **Add a new Cloud Subnet**, creating it as follows:

Network Provider	
Network Manager	osp.example.com Network Mana ▾
Cloud Subnet details	
Network	Test Network ▾
Subnet Name	Test Subnet
Gateway	10.10.1.1
Enable DHCP	<input checked="" type="checkbox"/> Yes <input type="checkbox"/>
IP Version	4 ▾
Subnet CIDR	10.10.1.0/24
Placement	
Cloud Tenant	Test ▾

Click on **Add** to create the new Cloud Subnet.

6. Wait for a few seconds and Go to: **Networks** → **Network Routers**, and click on the external router named **router**. Then click on **Configuration** → **Add Interface to this Router**, and add a new interface as follows:

Add Interface to Router "router"

Add Interface to Router

Subnet

Test Subnet

Click on **Add** to create the new Router Interface.

Wait for a few seconds and return to **Networks** → **Network Routers** → **router**, and observe that it has 3 Cloud Subnets:

router (Summary)

Properties	
Name	router
Type	Network Router (OpenStack)
Status	ACTIVE
Relationships	
Cloud Provider	osp.example.com
Network Manager	osp.example.com Network Manager
Cloud Tenant	admin
Instances	0
Cloud Subnets	3
Cloud Network	public

Click on **Cloud Subnets** and observe those Cloud Subnets (You can see the new Test Subnet):

Network Routers > router (All Cloud Subnets)

router (All Cloud Subnets)

	Name	CIDR	Gateway	Protocol	DNS Nameservers	Instances	Network Provider
<input type="checkbox"/>	private-subnet	172.16.100.0/24	172.16.100.1	ipv4	192.168.0.1	0	osp.example.com Network Manager
<input type="checkbox"/>	Test Subnet	10.10.1.0/24	10.10.1.1	ipv4		0	osp.example.com Network Manager
<input type="checkbox"/>	workshop-subnet	10.10.10.0/24	10.10.10.1	ipv4		0	osp.example.com Network Manager

7. Go to: **Networks** → **Floating IPs** and click on **Configuration** → **Add new Floating IP**, creating it as follows:

Network Management Provider

Network Manager

osp.example.com Network Mana ▾

External Network

public ▾

Association Information

Associated Port (optional)

Floating IP Address (optional)

Fixed IP Address

Placement

Cloud Tenant

Test ▾

Click on **Add** to create the new Floating IP for our new Test Tenant.

2.B: Provisioning an Instance within the New Tenant Environment

Provisioning refers to the capacity an infrastructure has to deliver a resource and manage its life cycle. Provisionable resources can include virtual machines, Instances, storage space, or any resource a given infrastructure can manage. The web interface on a *CloudForms* appliance provides an easy way for end users and administrators to provision new virtual machines and Instances. Virtual machines can be provisioned from virtual machine templates, PXE boot, or ISO images. Instances can be provisioned from images.

1. Access to **CloudForms Cloud Management Engine Portal**,

User: cloudadmin / **Password:** r3dh4t1!

2. Go to: **Compute** → **Clouds** → **Instances** and click on **Lifecycle** → **+Provision Instances** and Select the Template “rhel7.2” as an Image. Click on **Continue** and select:

Request Tab:

- **Email:** cloudadmin@example.com
- **First/Last Name:** your name

Purpose Tab:

- **Purpose:** Select **Environment** → **Workshop**

Catalog Tab:

- **Number of instances:** 1
- **Instance Name:** test-instance

Environment Tab:

- Set **Placement - Options** as follows:

Request	Purpose	Catalog	Environment	Properties
---------	---------	---------	--------------------	------------

Placement

Choose Automatically ☐

Placement - Options

Cloud Tenant	Test
Availability Zones	nova
Cloud Network *	Test Network
Security Groups	default: Default security group
Public IP Address	192.168.1.9

Properties Tab:

- **Instance Type:** m1.small
- **Guest Access Key Pair:** test-keypair

Customize Tab:

- **Root Password:** Redhat1!
- **Customize Template:** Select the Script Name: **“Basic root pass template”**

Schedule Tab:

- **Time until Retirement:** 1 Month

3. Click on **Submit** to create the new Instance.

4. Switch to **RHEL OpenStack Platform Web Portal** to observe the deployment of the new OpenStack instance. Click on **Project** → **Test** (*upper-right corner*) and then click on **Instances**.

User: admin / **Password:** r3dh4t1!

5. Return to **CloudForms Management Engine Portal**. Go to **Services** → **Requests**. Click on **Reload** button, until the **Last Message** “CF_Worker: VM: workshop-instance Provisioned Successfully” appears and **Request State** is in **Finished** state:

Last Message
[CF_Worker] VM [workshop-instance] IP [10.10.1.3] Provisioned Successfully

	Status	Request State	Request ID	Requester	Request Type
✓	Ok	Finished	1,000,000,000,012	Cloud Administrator	VM Provision

2.C: Provisioning a Service

Access to the **CloudForms Self-Service Portal** (*with a different Web Browser*):

User: clouduser / **Password:** r3dh4t1!

A user can provision a service. Here are the steps:

1. Click on **Service Catalog**
2. Click on **RHEL7 Base Service**
3. Enter the **Approval Code:** 1234567890
4. Click on **Add to Shopping Cart** button.
5. Click on your **Shopping Cart** icon and click on **Order** to order your service.
6. Click on **My Requests** until Provisioning Service is Approved
7. Return to the **CloudForms Cloud Management Engine Portal**:

Go to **Services > Requests** and click on **Reload** button until Request State is in **Finished** state

8. Go to the **Red Hat Enterprise Virtualization Web Portal** to observe the automation deployment:


Click on **Administration Portal** (Portals section) and login as follows:

User: admin / **Password:** r3dh4t1! / **Profile:** Internal

After that, return to the **CloudForms Self-Service Portal**:

9. Click on **My Services**. You can see your service. Click on the last/new provisioned service:

[« Back to My Services](#) > Service: RHEL 7 Base Server-20160304-192015



RHEL 7 Base Server-20160304-192015
 A RHEL 7 Base Server

Remove Service

Service Id	10000000000008	CPU	1
Retirement Date	Never	Memory	1 kB
Owner	Cloud User	Disk Count	1
Group	WorkshopGroup-user_self_service	Disk Space Allocated	10 GB
Created On	Mar 4, 2016 7:19:55 PM	Disk Space Used	10 GB
		Memory on Disk	0 Bytes

Virtual Machines (1)

Icon	rhel7_0007	Vendor redhat	Size -	Last Scan	Power
					off

Lab 3: Catalogs and Services

Scenario

In this lab we'll create a Service Catalog Item to provision a VM into **VMware**. We'll use a service dialog that allows the user to specify a name for both the new VM and the Service, and specify the number of CPUs and memory size of the provisioned VM from a drop-down list.

Task

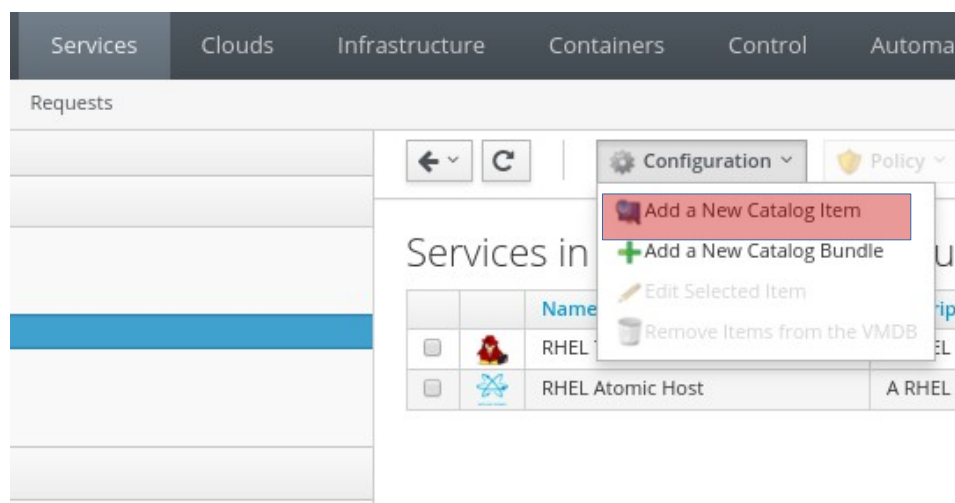
Create a new Service Catalog Item to provision a VM into a **VMware** environment, specifying the *Service Name*, the *Name of the VM*, the *Number of CPUs* and the *Amount of RAM Memory*.

Methodology

CatalogItemInitialization recognizes and special-cases some element names, including **vm_name** and **service_name**, and so we can create two of our elements with these names. If this is all we wish to prompt for, then we can move straight on to creating the service dialog.

3A: Create the Service Catalog Item:

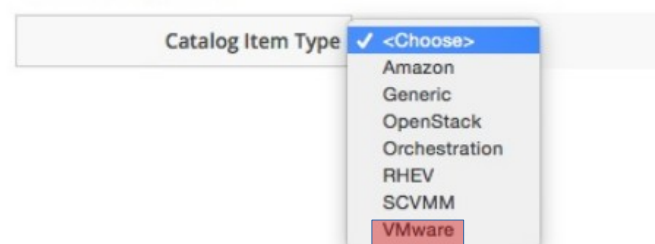
Navigate to the Catalogs section in the accordion, **Services** → **Catalogs** and then **Catalog Items** → **All Catalog Items** → **Infrastructure Catalog** and select **Configuration** → **Add a New Catalog Item**



Select **VMware** from the **drop-down list**:

Adding a new Service Catalog Item

New Catalog Item



Enter and select next information:

Basic Info:

- **Name/Description:** Generic RHEL Server
- **Display in Catalog:** checked
- **Catalog:** Select “*Infrastructure Catalog*” from drop-down list
- **Dialog:** Select “*Custom Provision VM*” from drop-down list

Details:

Click on **Details** Tab and put “My First Service” as Long Description:

Adding a new Service Catalog Item

Basic Info **Details** Request Info

Long Description

1 My First Service

Request Info:

Click on **Request Info** Tab and then:

Catalog:

- **Selected VM:** rhel6-vmw-template
- **Provision Type:** VMware
- **Linked Clone:** unchecked
- **VM Name:** changeme

Adding a new Service Catalog Item

Basic Info **Request Info**

Request Info

Catalog Environment Hardware Network Customize Schedule

Select

Filter <ALL>

Name *	Name ▲	Operating System	Platform	CPUs	Memory	Disk Size	Provider	Snapshots
	<None>							
	rhel6-vmw-templat e	Red Hat Enterprise Linux 6 (64-bit)	linux		2 GB	5 GB	vcenter.example.com	0

Provision Type * VMware

Linked Clone ☐ VM requires a snapshot

Naming

VM Name * changeme

Environment: Check/tick Choose Automatically

Adding a new Service Catalog Item

Basic Info

Details

Request Info

Request Info

Catalog

Environment

Hardware

Network

Customize

Schedule

Placement

Choose Automatically

☒

Hardware: Keep it as is

Network: Select **VM Network** VLAN from the drop-down list

Adding a new Service Catalog Item

Basic Info

Request Info

Request Info

Catalog

Environment

Hardware

Network

Customize

Schedule

Network Adapter Information

vLan *

VM Network

Finally click the **Add** button

Now, we have to tag our new Service to be used by our Cloud User: *clouduser* within the *Workshop* environment. Go to **Services** → **Catalogs** and then **Catalog Items** → **All Catalog Items** → **Infrastructure Catalog** and Select the **Generic RHEL Server** service.

Click on **Policy** → **Edit Tags** and Select **Environment** as Category and **Workshop** as Assigned Value:



Editing Workshop Tags for "Service Catalog Items"

Tag Assignment

Select a customer tag to assign:		Environment *	<Select a value to assign>
Category		Assigned Value	
	Environment *	Workshop	

Click on **Save** to do the changes.

3B: Ordering the Catalog Item:

Access to the CloudForms **Self-Service Portal** (with a different Web Browser):

User: clouduser / **Password:** r3dh4t1!

A user can provision a service. Here are the steps:

1. Click on **Service Catalog**
2. Click on **Generic RHEL Server** Service
3. Enter next information:

- **Service Name:** Web Server (test)
- **VM Name:** webtest001
- **Number of CPUs:** 2 vCPU
- **VM memory:** 2 GB

Custom Provision VM

[Custom Provision VM](#)

Service and VM Names	
Service Name	<input type="text" value="Web Server (Test)"/>
VM Name	<input type="text" value="webtest001"/>

VM Characteristics	
Number of CPUs	<input type="text" value="2 vCPU"/>
VM Memory	<input type="text" value="2 GB"/>

4. Click on **Add to Shopping Cart** button. Click on your **Shopping Cart** icon and click on **Order** to order your service.

5. Return to the **CloudForms Cloud Management Engine Portal**:

Go to **Services** → **Requests** and click on **Reload** button until Request State is in **Finished** state

6. Go to **VMware vSphere Web Client**

Check that the new VM is being created with the selected info. Go to **VMs and Templates** and wait for its creation. Check the **Recent Tasks** and **Work in Progress** as well.

Click on **Log in to vSphere Web Client** (For Administrators section) and login as follows:

User: root / **Password:** r3dh4t1!

7. Return to the **CloudForms Self-Service Portal**:

Click on **My Services**. You can see the “**Web Server (test)**” service. **Click** on it and observe the VM Name, number of CPUs, and amount of RAM memory..

Red Hat - Cloud Management Workshop - Post Survey:

https://docs.google.com/forms/d/e/1FAIpQLSdauHtguNMYICRE5x1nrEOY11ASfDNnptSEqblZi_TCsNgb2g/viewform