knowledge14®

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Lab Guide

Orchestration 203:

Cloud Provisioning

Christian Challenger-Lee & Shawn Turnbow

Lab instance: https://<<name>>.lab.service-now.com

Login / Passwords:

admin / Knowledge14

Lab Goal

Lab 1
Setup Cloud users

As a ServiceNow Administrator be able to setup users with the right roles and responsibilities in the system to perform Cloud provisioning activities.

You would configure a cloud administrator who typically owns the cloud provisioning solution end to end.

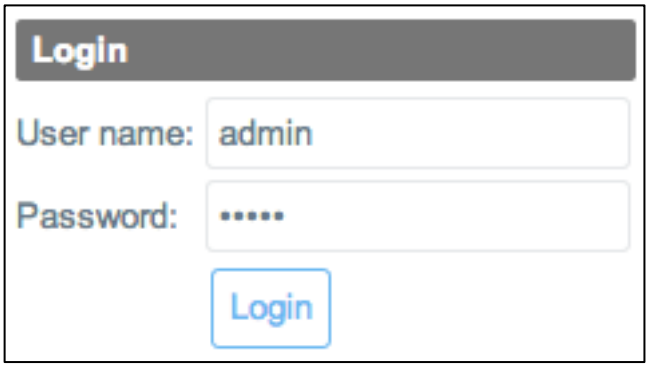
You would create a cloud operator who will be responsible for ensuring the health of the orchestrations and will help troubleshoot and remediate any issues that arise.

You would then create a cloud approver which would typically be someone within a business unit who approves spend for these activities.

Log on to Your Training Instance

1. The instructor provides you will provide you with your own instance URL.

2. Log into your instance, using the username **admin** and the password **Knowledge14**.



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User Groups and Roles

NOTE: For this lab, the users have already been configured.

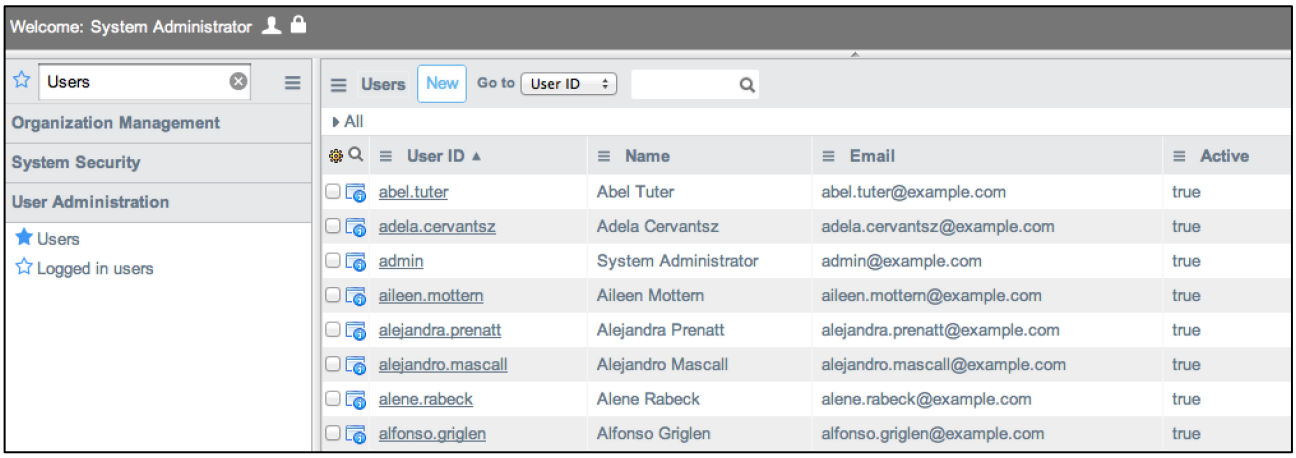
To configure available Service Catalog offerings a user requires membership in the Virtual Provisioning Cloud Administrators group.

In order to view and respond to the VM operational tasks and approvals created as part of Cloud Provisioning; a user requires membership to the corresponding operator group; either the VMware Operators or EC2 Operators group.

Let's review the user and roles for an admin to perform the operational tasks and approvals for automated cloud provisioning requests from the service catalog user:

1. In the **Left Navigation Pane**, click **User Administration** to expand the User Administration application.

2. Click the **Users** module to display this application in the main pane of the browser.



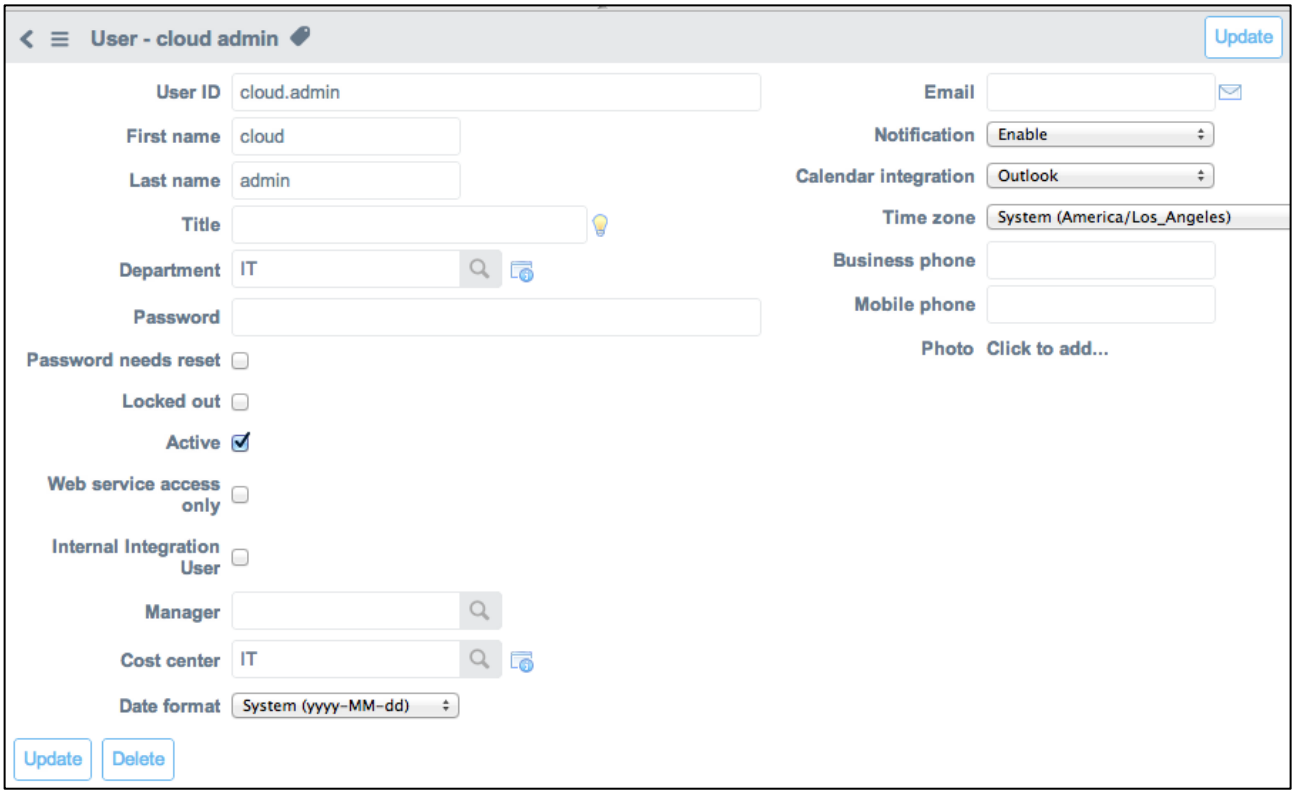
NOTE: In subsequent labs, these steps are abbreviated to **Application Name > Module Name**.

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3. Search for User Id ***cloud**.

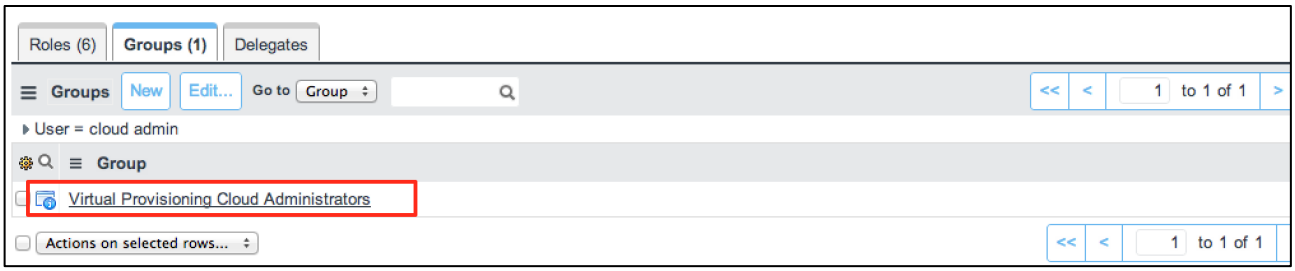
4. Click **cloud.admin.** Note the following criteria:

   User Id: **cloud.admin**
   First name: **cloud**
   Last name: **admin**
   Cost Center: **IT**
   Department: **IT**



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5. Click the **Groups** related list**.** Note that the cloud.admin user is assigned to the **Virtual Provisioning Cloud Administrators** group.



6. Click **Back**.

7. Click **cloud.approver.** Note the following criteria:

   User Id: **cloud.approver**
   First name: **cloud**
   Last name: **approver**
   Cost Center: **IT**
   Department: **IT**

8. Click the **Groups** related list**.** Note that the cloud.approver user is assigned to the **EC2 Approvers** and **VMware Approvers** groups.

9. Click **Back**.

10. Click **cloud.operator.** Note the following criteria:

    User Id: **cloud.operator**
    First name: **cloud**
    Last name: **operator**
    Cost Center: **IT**
    Department: **IT**

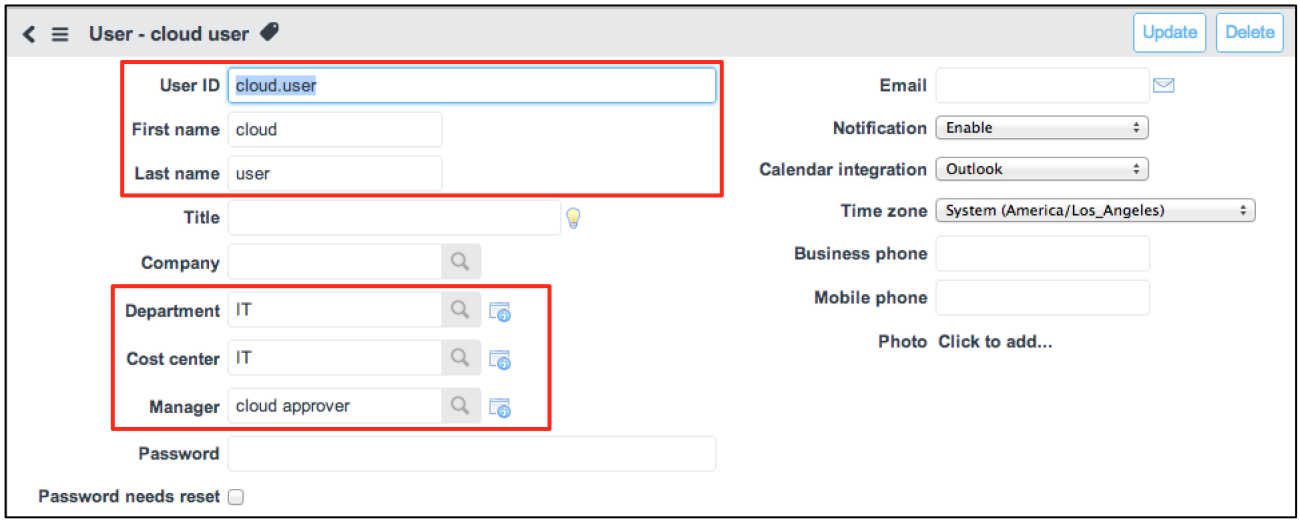
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11. Click the **Groups** related list**.** Note that the **cloud.operator** user is a member of the **EC2 Operators** and **VMware Operators** groups.

12. Click **Back**.

13. Click **cloud.user.** Note the following criteria:

    User Id: **cloud.user**
    First name: **cloud**
    Last name: **user**
    Cost Center: **IT**
    Department: **IT**
    Manager: **cloud approver**

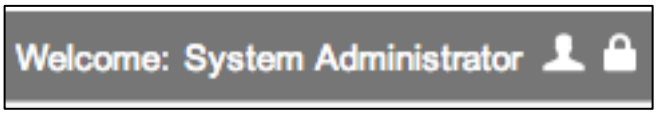


14. Click the **Groups** related list**.** Note that the **cloud.user** user belongs to the **Virtual Provisioning Cloud Users** group.

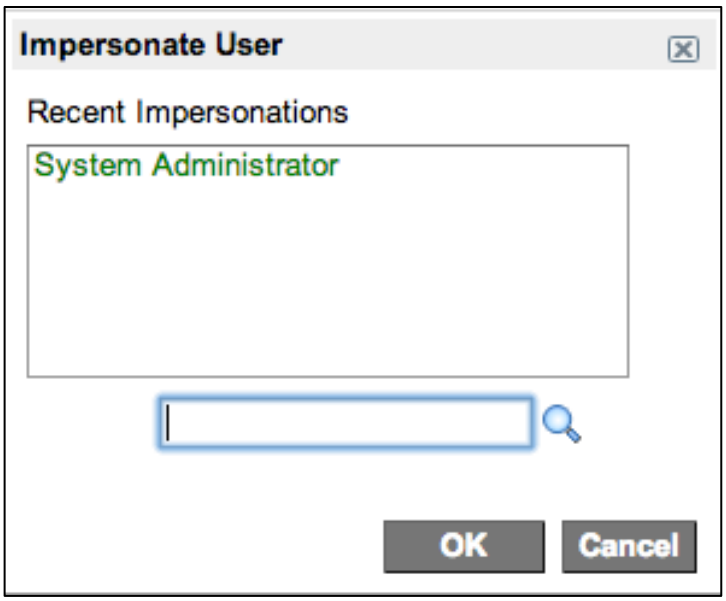
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Lab Success Verification

1. Click the **Person** icon next **Welcome: System Administrator** to impersonate another user.



2. Type **cloud** and select the **cloud admin** user.

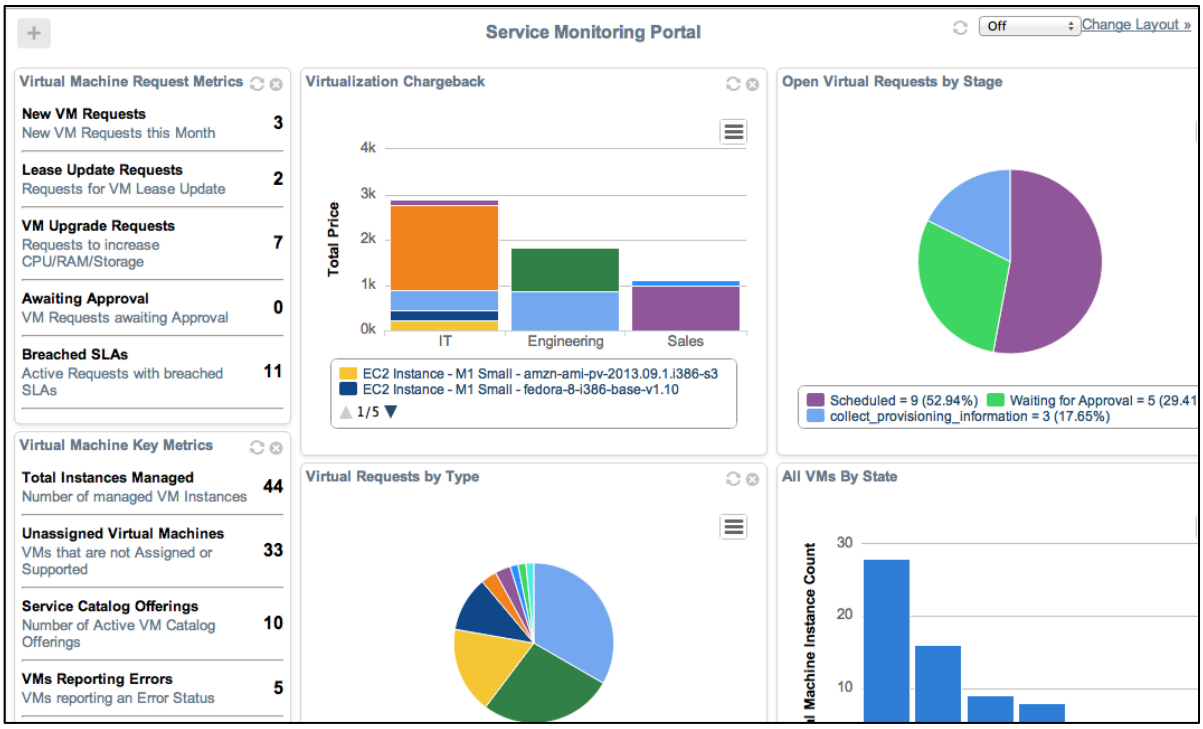


3. Click **OK**.

NOTE: In subsequent labs these steps will be abbreviated to **Impersonate <user>**

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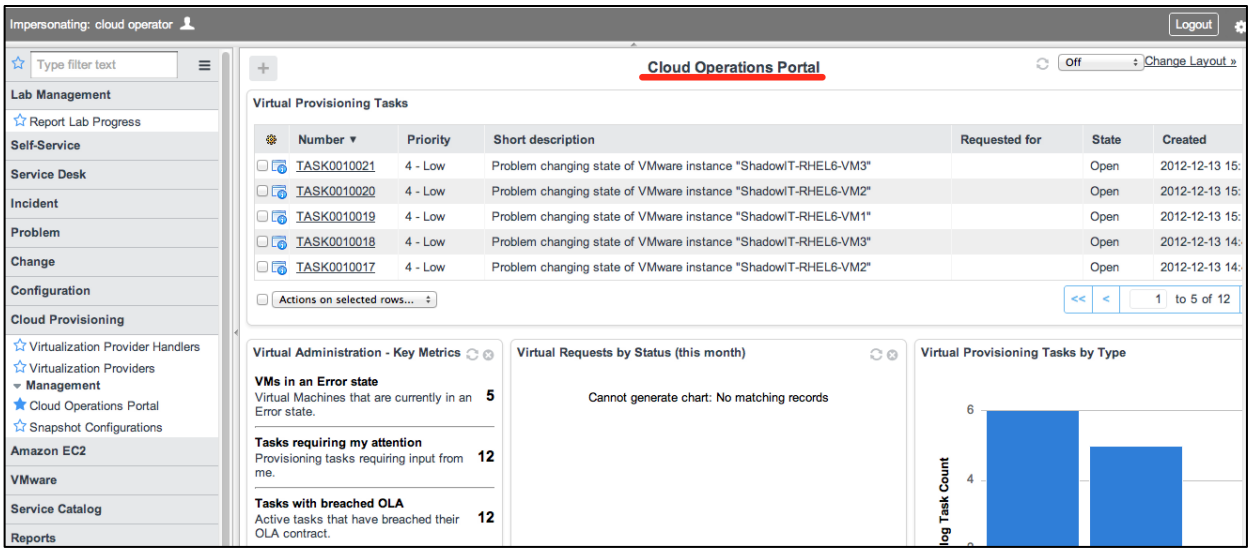
4. **Cloud Provisioning > Service Monitoring Portal.** Only members of the Virtual Provisioning Administrators group can view this dashboard. Your screen should look like this:



5. **Impersonate <cloud operator>**.

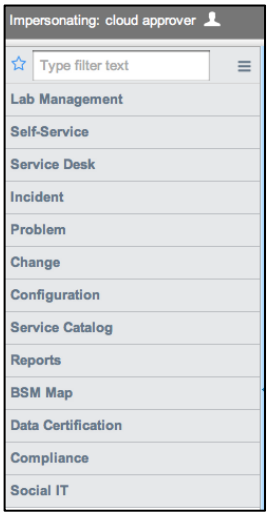
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6. **Cloud Provisioning > Cloud Operations Portal.** Verify that you can see Virtual Provisioning tasks at the top of the portal. Only members of the VM/EC2 Operator groups can view these tasks. Your screen should look like this



7. **Impersonate <cloud approver>**.

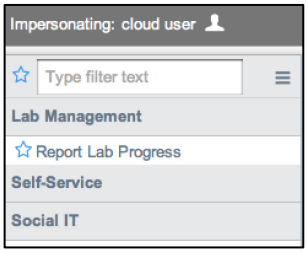
8. Verify that no Cloud Provisioning modules are available.



9. **Impersonate <cloud user>**.

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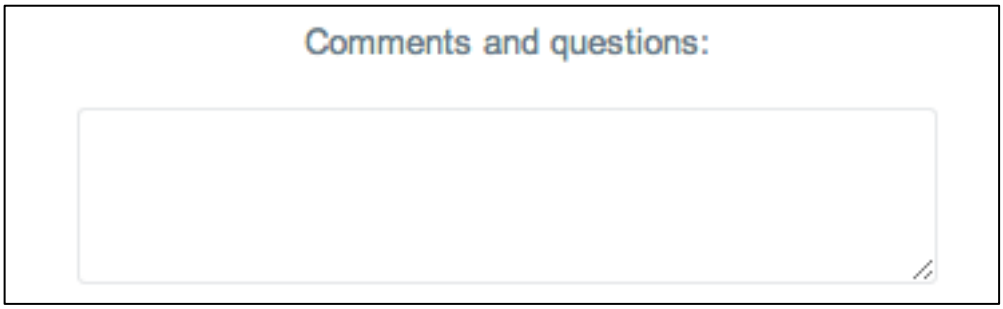
10. Verify that no Cloud Provisioning modules are available.



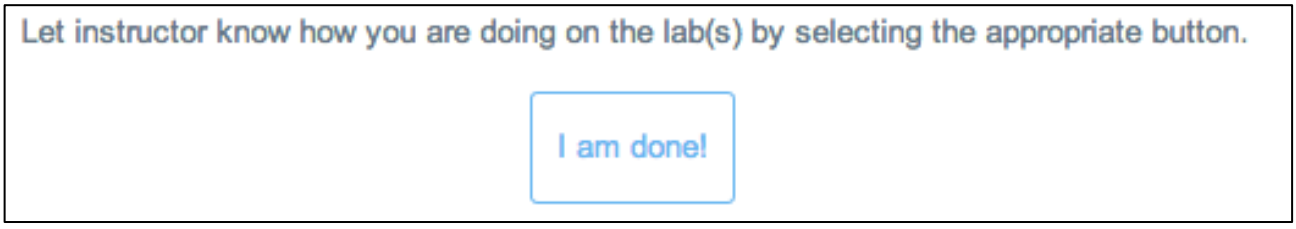
Report Lab Progress

1. Click the **Lab Management > Report Lab Progress** icon.

2. Enter any comments regarding this lab.



3. In the main window, click the **I am done!** button.



NOTE: In subsequent labs, use **Report Lab Progress** to inform the instructors when you need assistance or when you have completed a lab. Feedback is encouraged and appreciated!

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Lab Goal

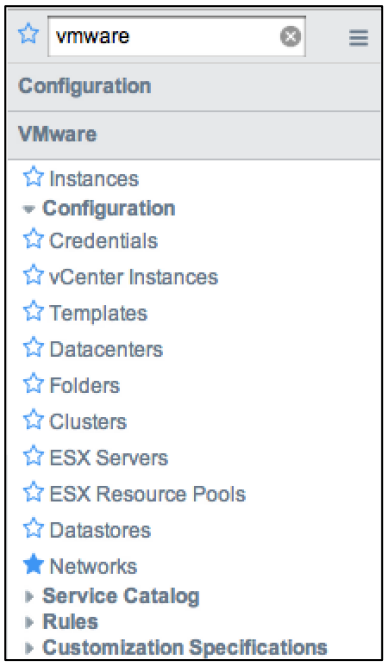
Interact directly with Cloud Provisioning discovered VMs, from the CMDB. This streamlines automated procedures like power on/off, terminate, extend lease, modify CPU/MEM/HDD, etc.

Lab 2
Power on VM

Power On a Virtual Machine

1. **Impersonate <cloud admin>**.

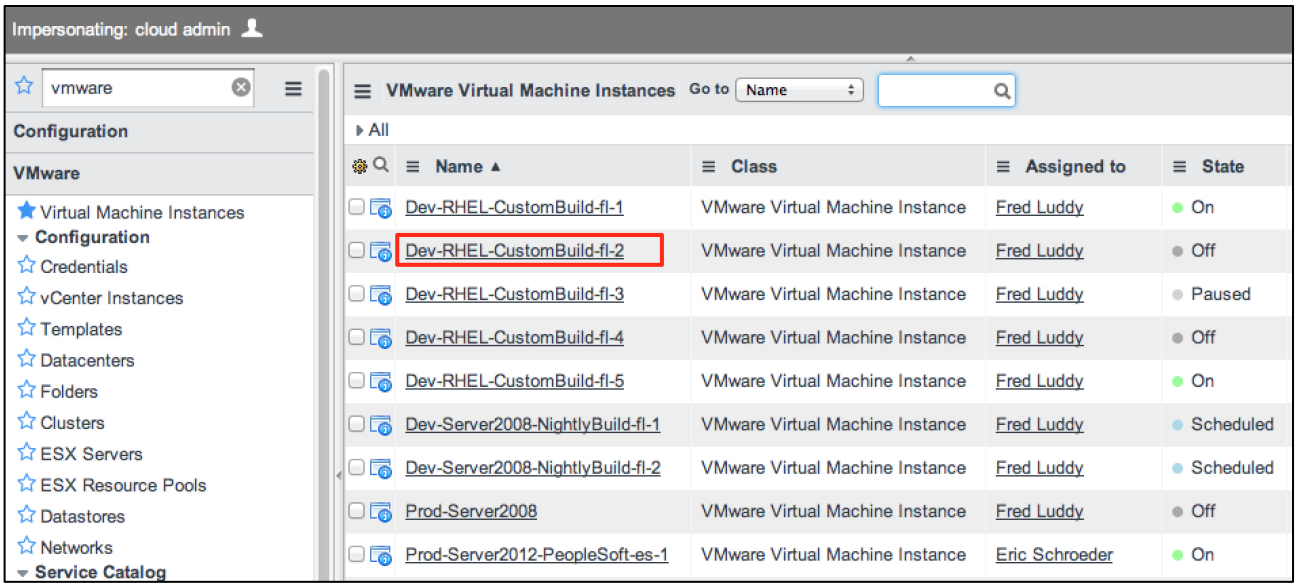
2. Type **VMware** into the type filter text. Explore the data that Orchestration discovered by clicking through each table below. Be sure to drill into items like Datacenters to see the relationships that were created.



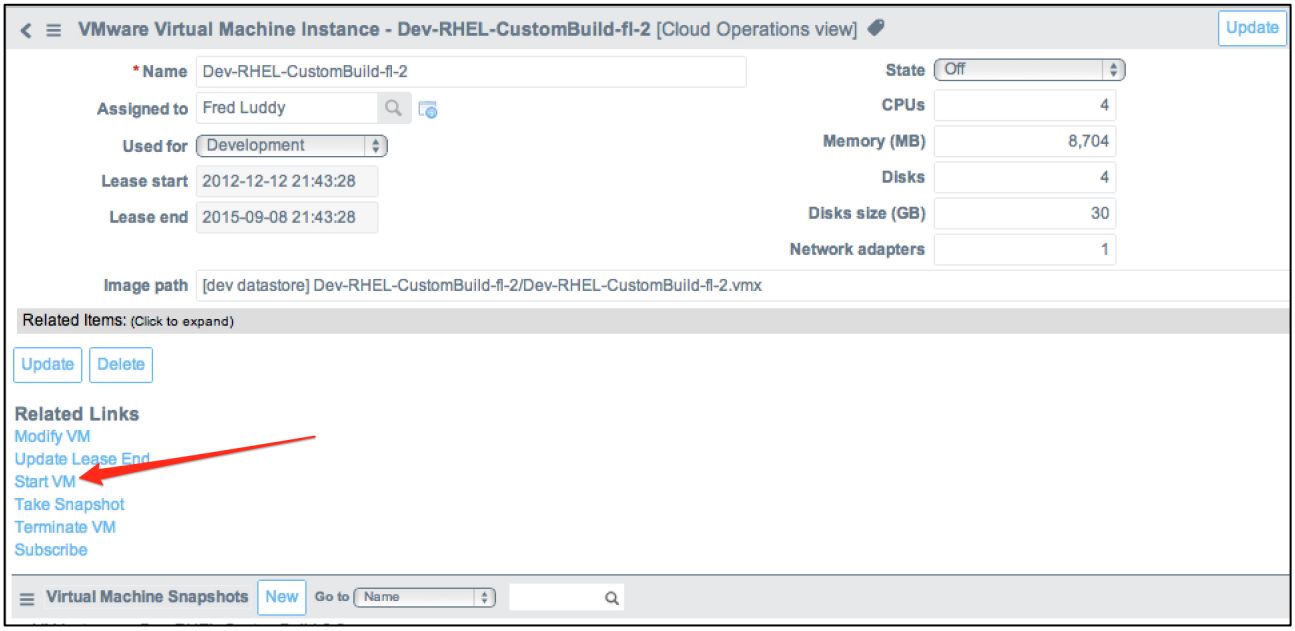
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3. **VMware > Virtual Machine Instances.**

4. Click **Dev-RHEL-CustomBuild-fl-2.**

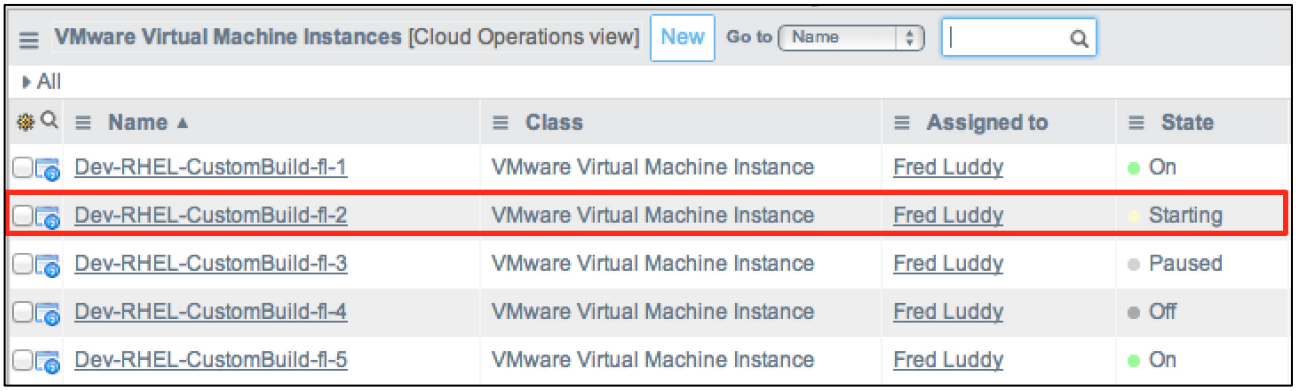


5. Under Related Links, click **Start VM.**



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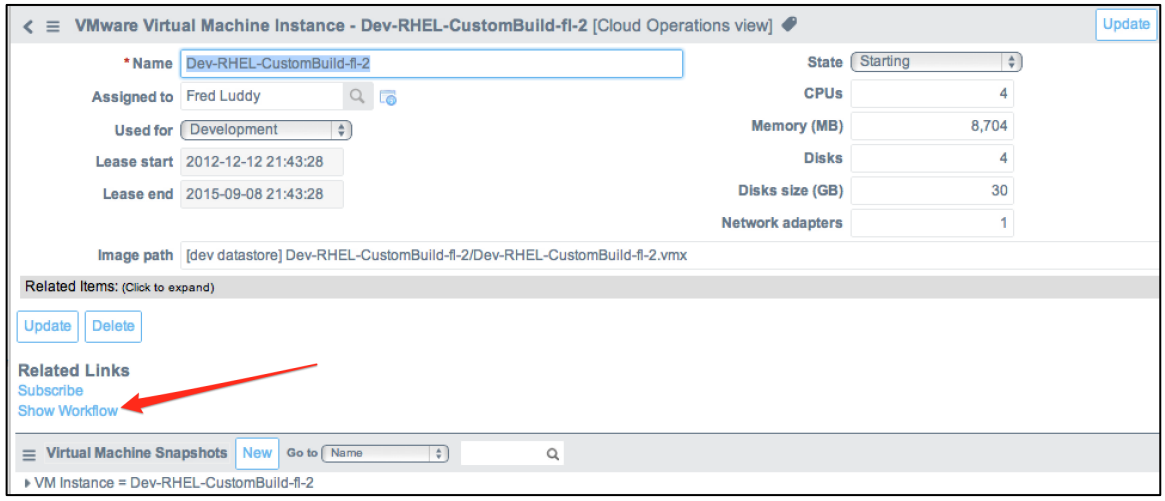
6. This changes the state of the VM to **Starting.**



7. Click **Dev-RHEL-CustomBuild-fl-2** again.

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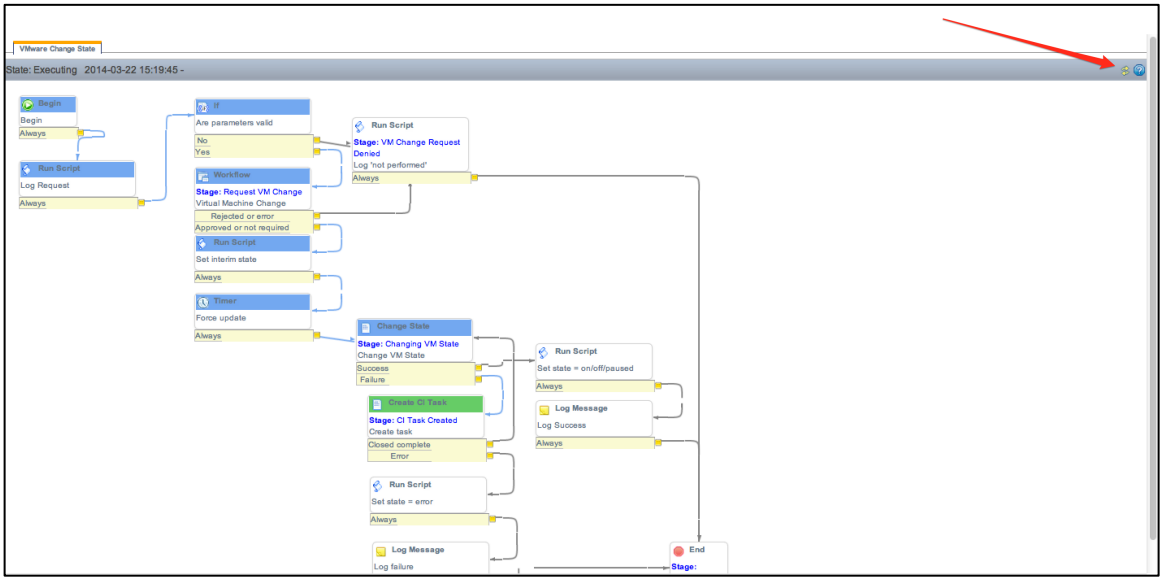
8. Under Related Links, click **Show Workflow** to view the Orchestration Workflow that is attempting to start the VM.



NOTE: Workflow opens in new window.

The **VMWare Change State** workflow activity attempted to start the VM but failed. A task was automatically created and assigned to the VMware Operators group. In order to triage this issue, you need view the task from the Cloud Operations portal.

NOTE: If you do not see the workflow below, click refresh on the top right of the window to update the workflow image. It may take a minute or two to fail.



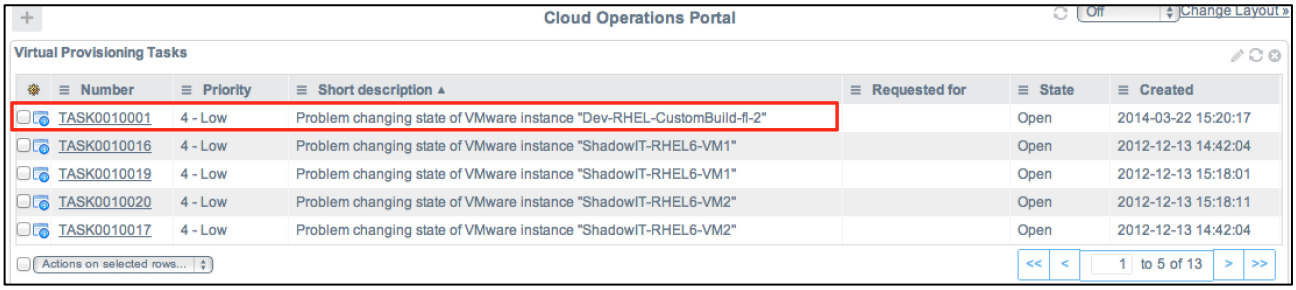
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9. **Impersonate <cloud operator>**.

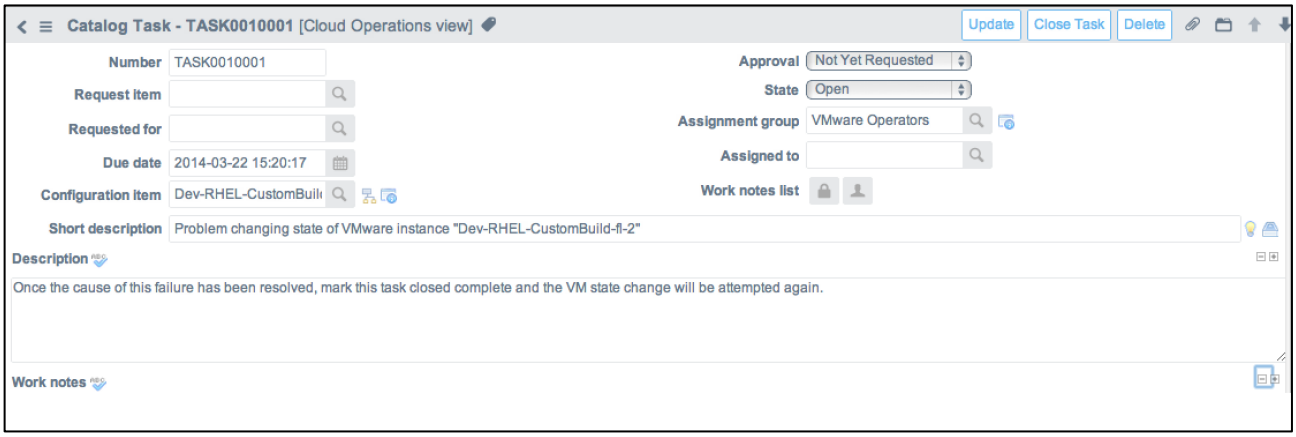
10. **Cloud Provisioning > Cloud Operations Portal.**

11. Observe that there is a new Virtual Provisioning task that requires your attention with a description of **Problem changing state of VMware instance "Dev-RHEL-CustomBuild-fl-2**".

    NOTE: You may need to sort the table by Created date



12. Click the task **Number** to review it. Note that the affected CI, assignment group, and description were automatically set in the task.



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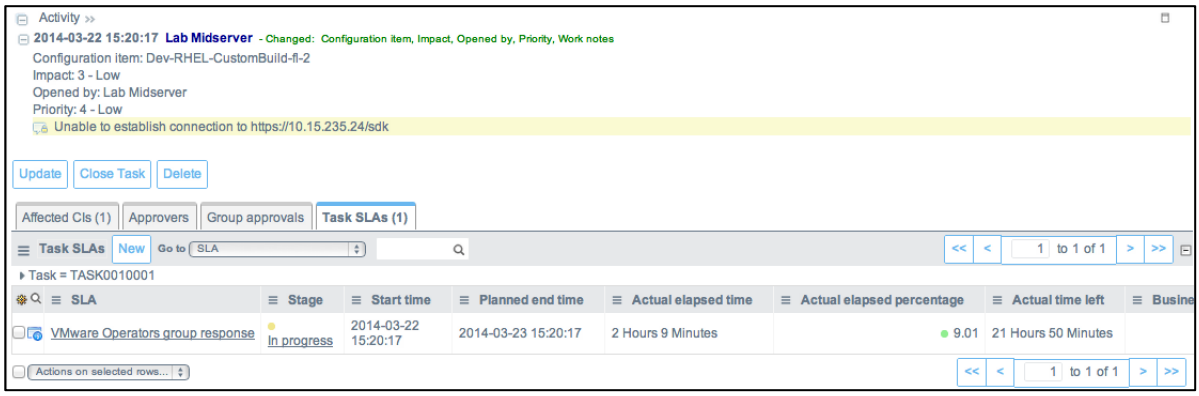
Lab Success Verification

1. Scroll down to the bottom of the task to see the details of the error:

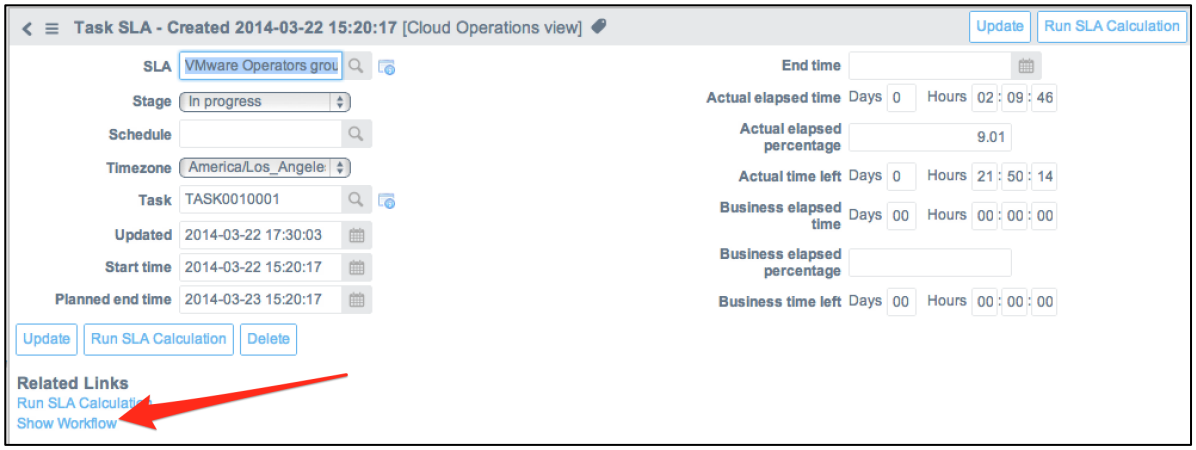
   Unable to establish connection to https://10.15.235.24/sdk:

   This error is direct from the VMware vSphere API when connection to vCenter fails. This is accurate since the Lab instance is not actually connected to a live vCenter environment.

2. Click the **Task SLAs** related list. This shows the automatic SLA/OLA that is generated to ensure that the VMware Operator team responds to this task within 1 day by default. You can drill into the SLA record to see what prompts it to fire.

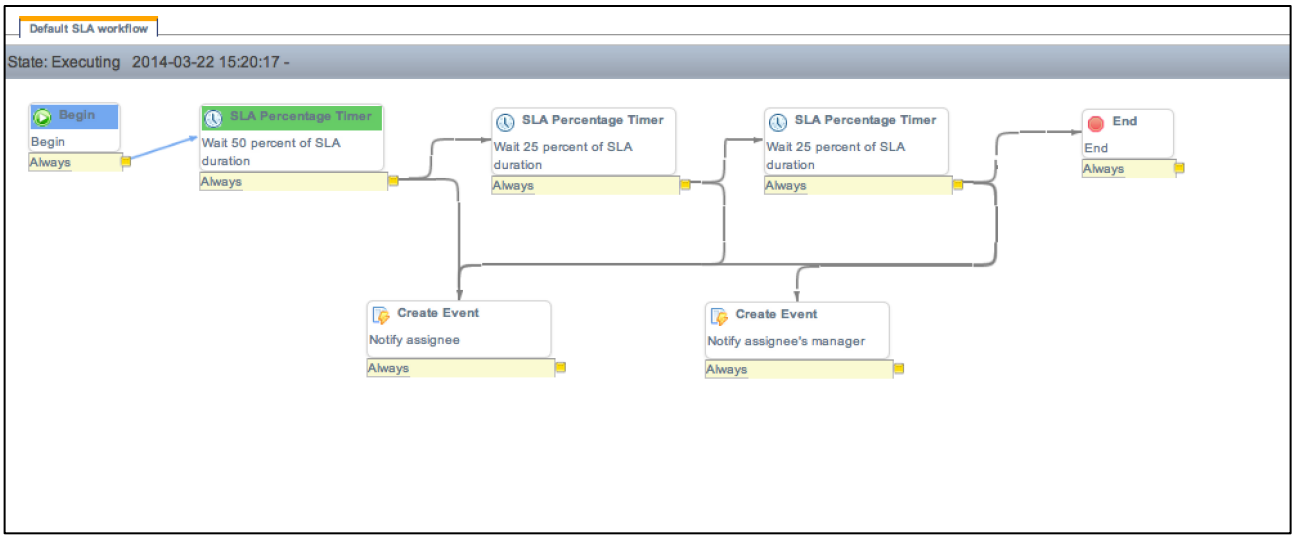


3. Click the Task SLA for **VMWare Operators group response**.



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4. Click **Show Workflow**.
   Default SLA workflow fired for the VMware Operators group response SLA/OLA:



5. Report lab status using **Lab Management > Report Lab Progress**.

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Lab Goal

Easily provision and manage VM instances in multiple EC2 accounts.

Lab 3
Setup an Amazon EC2 Account

Setup an Amazon EC2 Account

NOTE: For this lab, you use a shared EC2 Account that will be disabled after the lab.

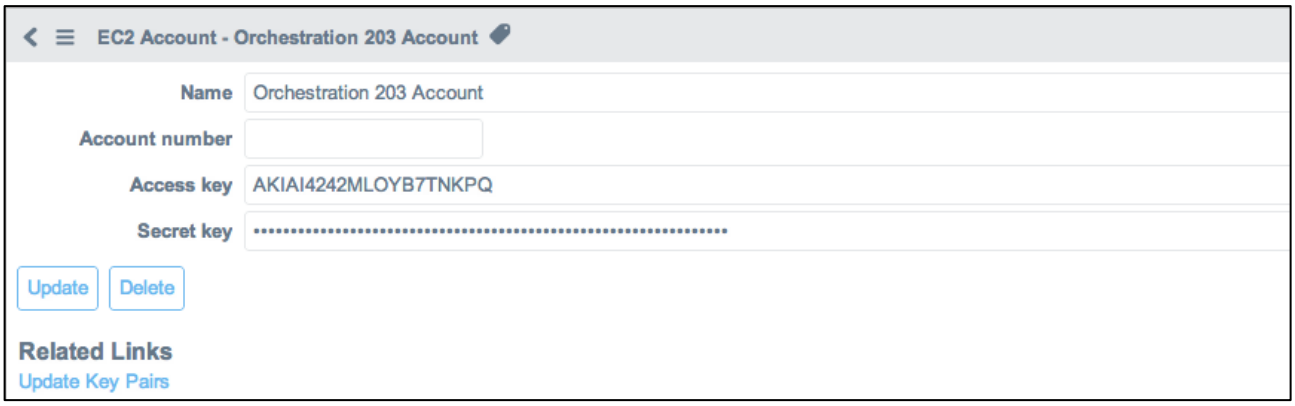
1. **Impersonate <cloud admin>**.

2. **Amazon EC2 > Account**.

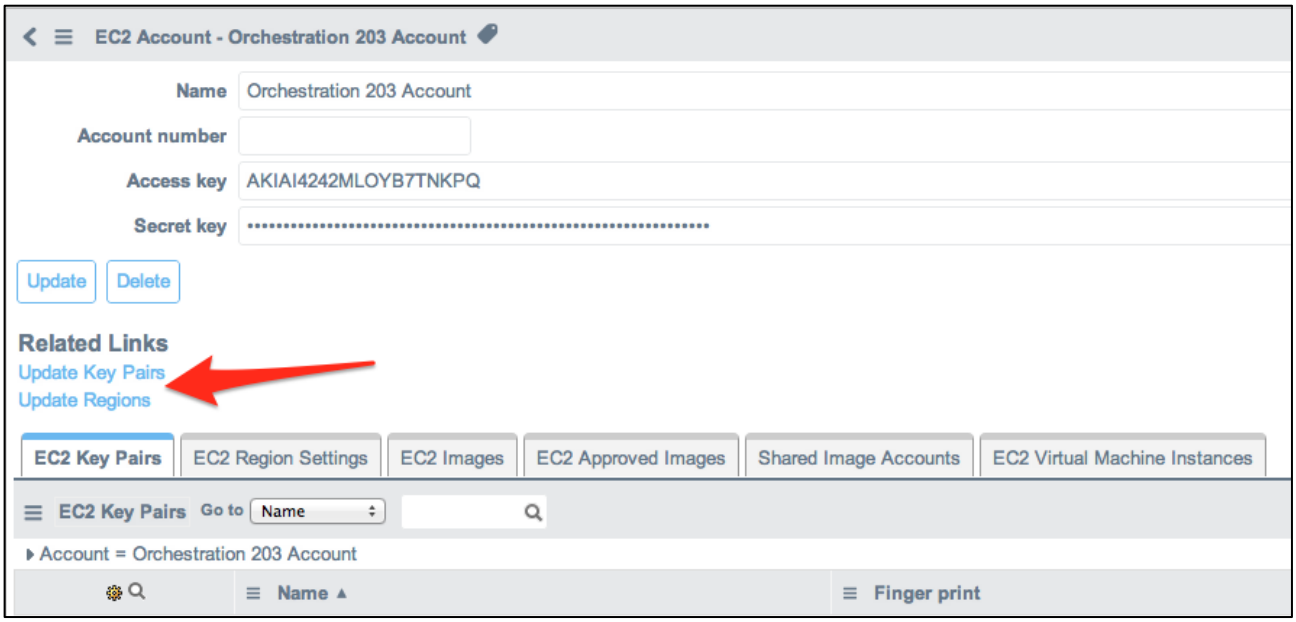
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3. Click **Orchestration 203 Account**.

NOTE: The account has already been set up with the Access Key and Secret Key provided by Amazon. Account number can be used to distinguish the account. It is optional.



NOTE: You see a new set of Related Links and lists associated with the account. Throughout the EC2 Account setup process, you see other Related Links become available prompting that additional actions can be performed.

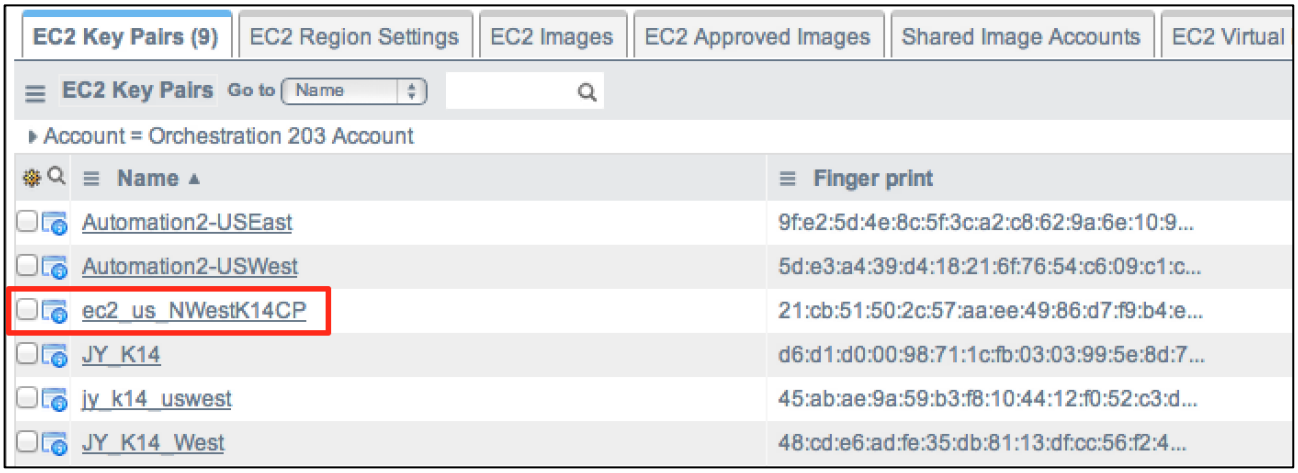


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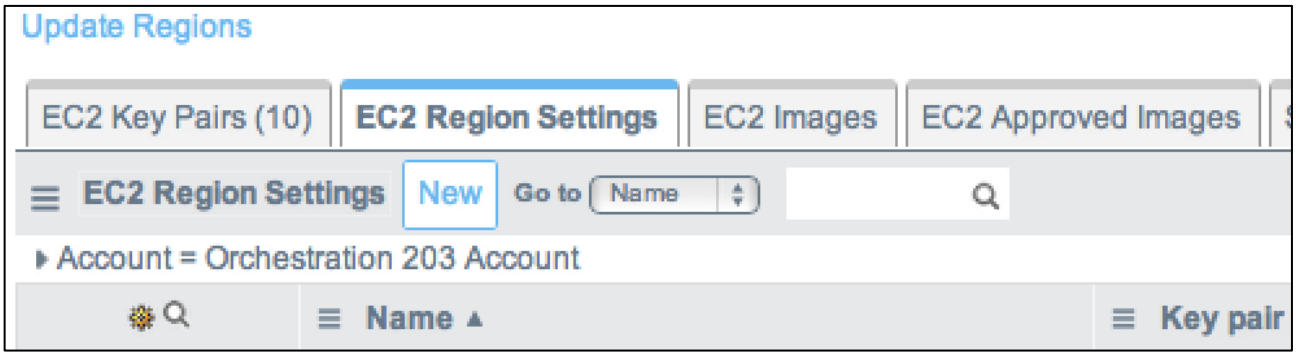
4. Click the **Update Key Pairs** link and **WAIT** for the form to refresh.

   This invokes an Orchestration Workflow that connects to the EC2 account to discover regional Key Pairs associated with the account. EC2 key pairs allow secure access into VM instances within the Amazon EC2 cloud. You need to have key pairs configured in each of the EC2 regional datacenters you want to provision instances in with Cloud Provisioning

   NOTE: In this lab, you provision instances into the **US-West (Oregon)** EC2 region and leverage the **ec2_us_NWestK14CP** key pair.



5. Under the EC2 Region Settings related list, click **New.**



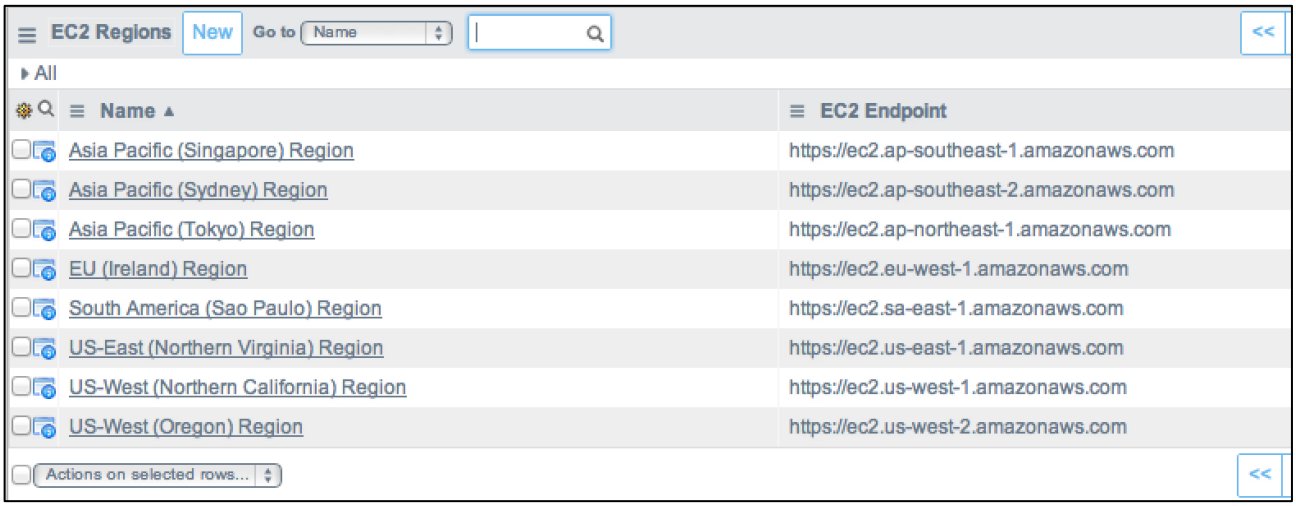
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6. Set up the EC2 Region Setting as follows:

   Name: **EC2 Lab NWest**
   Region: **US-West (Oregon) Region**
   Key pair: **ec2_us_NWestK14CP**



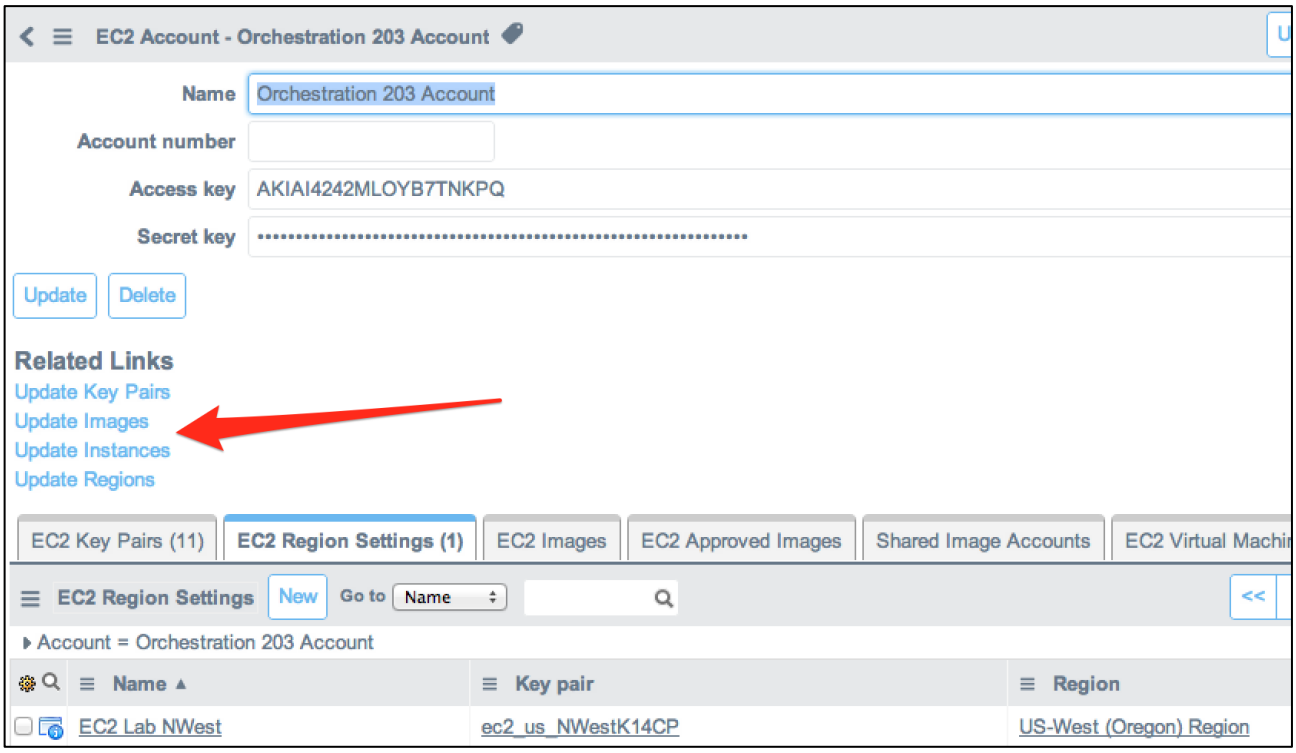
NOTE: EC2 Regions are maintained within the EC2 Regions table and can be updated from the EC2 Account's **Update Regions** Related Link. You can update your EC2 Regions if Amazon deploys a new Region and you want to manage it with ServiceNow.



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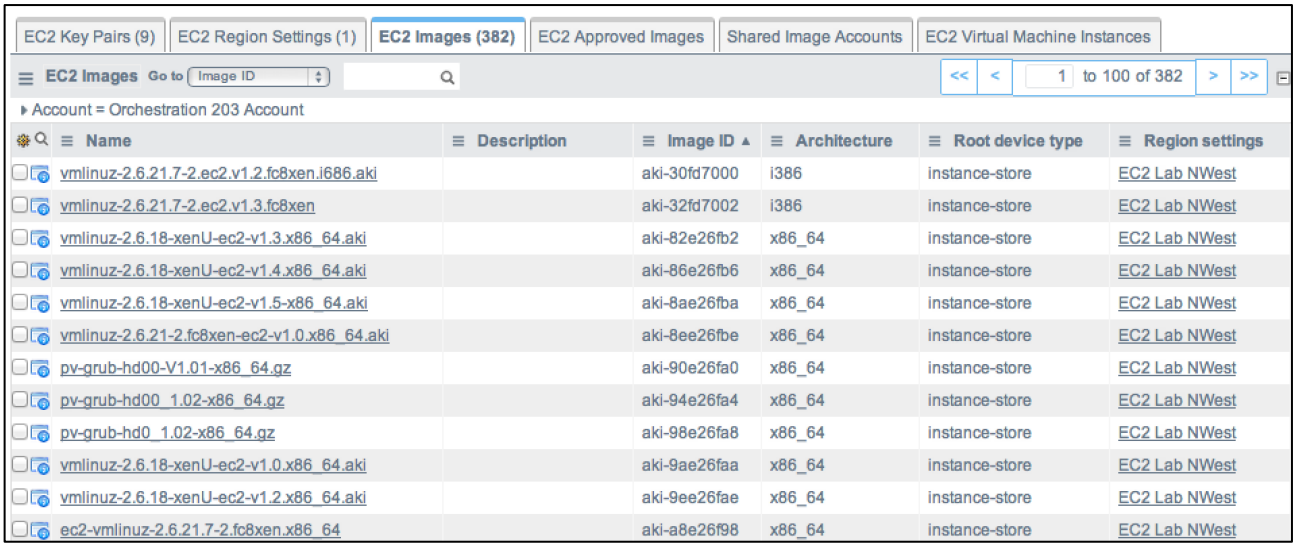
7. Click **Submit**.

Update Images and **Update Instances** are now Related Links on the EC2 Account record after setting up an EC2 Region Setting.

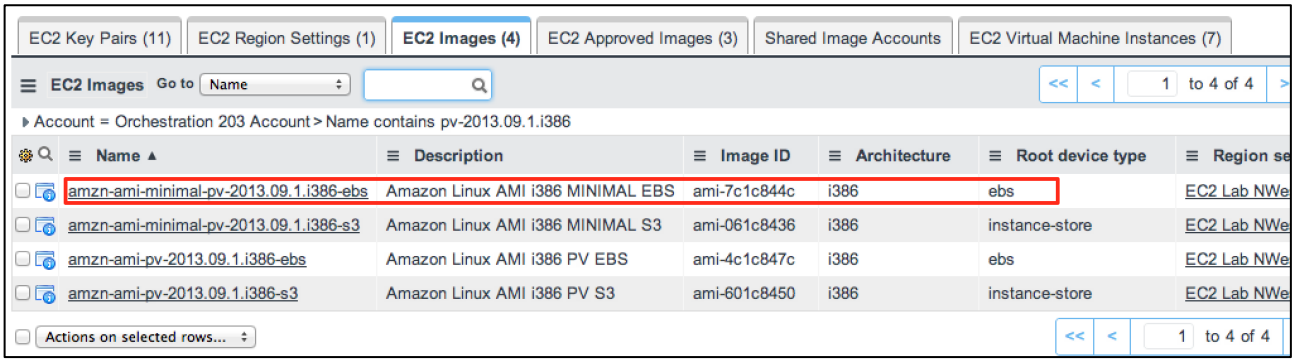


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8. Click the **Update Images** Related Link and **WAIT** for the form to refresh. This invokes another Orchestration Workflow to update the list of available EC2 images that are available in the NW region.

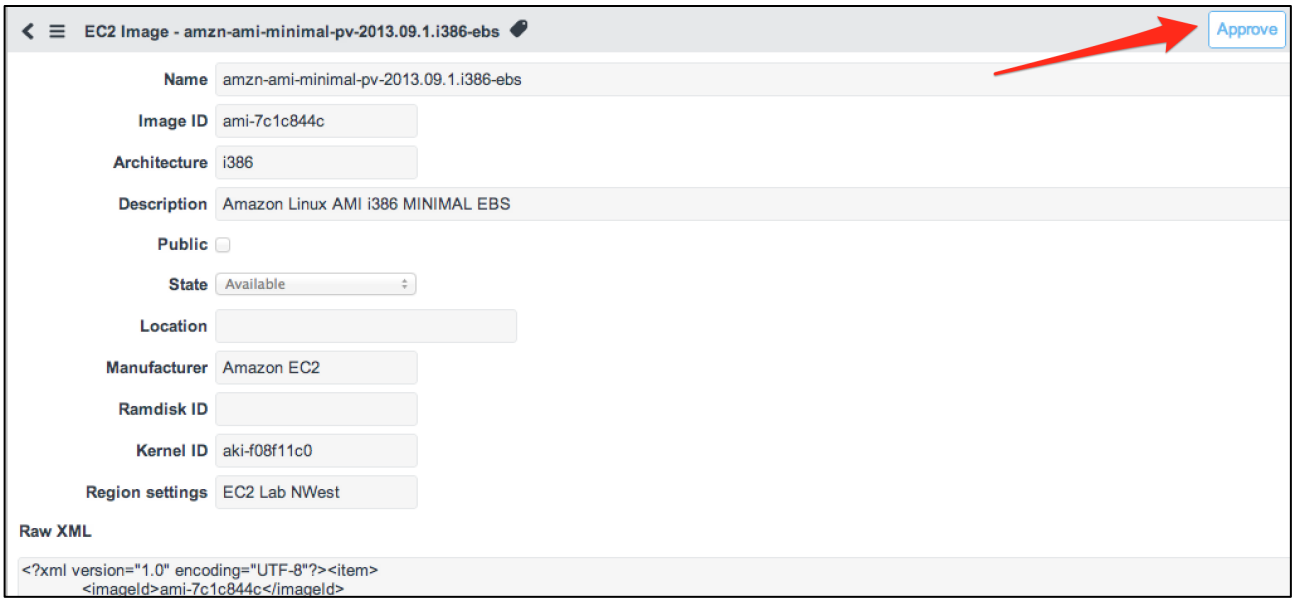


9. Search for the Name ***pv-2013.09.1.i386** to find all Amazon Linux EC2 Images. Click **amzn-ami-minimal-pv-2013.09.1.i386-ebs**.

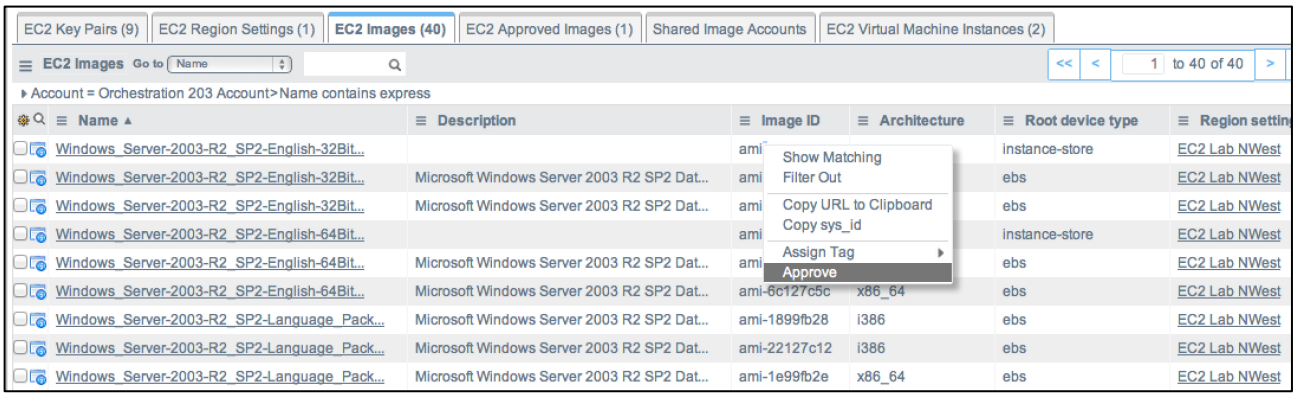


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10. Click the **Approve** button. This adds the Amazon Linux image to the list of EC2 Approved Images. Only approved images can be selected as VM offerings in the Service Catalog.



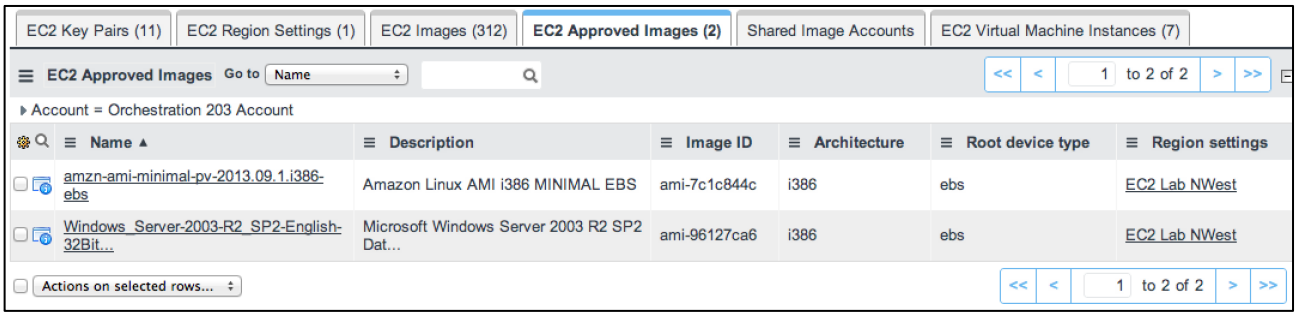
11. Perform the same approval for a **Windows_Server-2003-R2_SP2-English-32Bit-SQL_2005_SP4_Express-2014.04.09** image (Image ID: ami-b2e38882). Search for ***express**. You can also right-click the EC2 Image in the list to approve.



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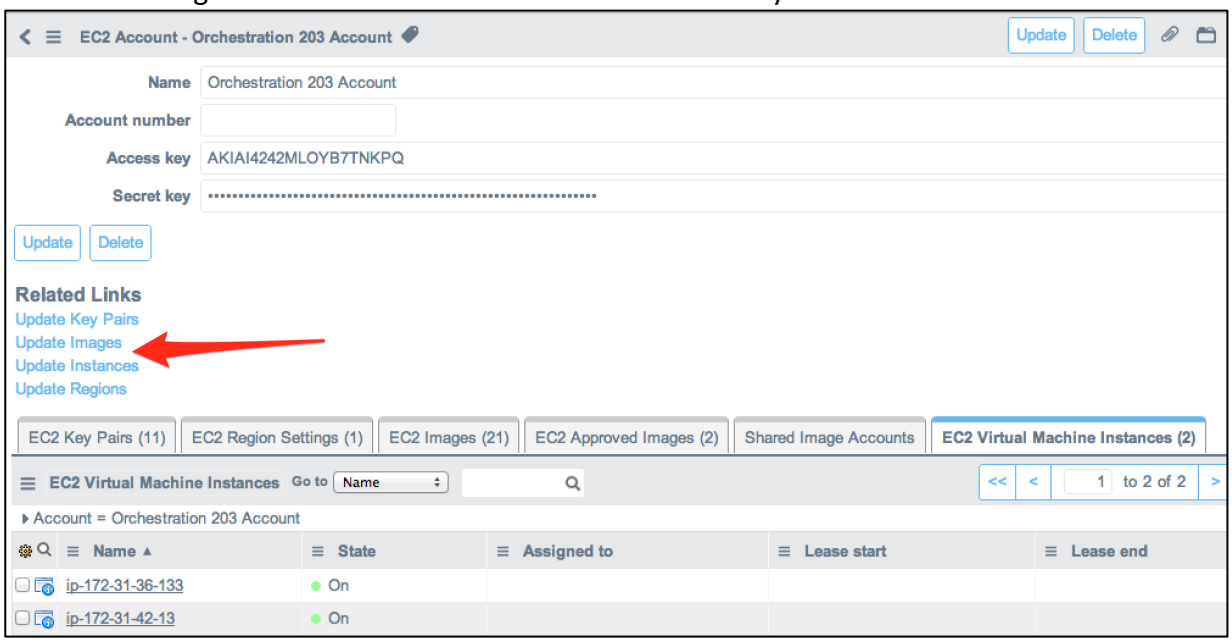
Lab Success Verification

1. You should now have 2 EC2 Approved Images in your EC2 Account's related list.



2. Under Related Links, click **Update Instances** and **WAIT** for the form to refresh.

   This updates the list of EC2 Virtual Machine Instances that are deployed in any of the regions setup for the EC2 Account. As lab members provision or terminate instances, the list of instances changes. There should be a few instances there by default**.**



   NOTE: that once the VM instances are in the CMDB, you can start to manage them with Cloud Provisioning. Similarly to VMware, you can start, stop, and terminate EC2 instances directly from the Instance record. **DO NOT TERMINATE any of the Instances** in this list as you might interrupt another student's instance. You will provision your own EC2 instance in the next Lab section.

3. Report lab status using **Lab Management > Report Lab Progress**

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Lab Goal

The Service Catalog is the store front for all IT offerings. Decide which VMs can be ordered with Cloud Provisioning by easily creating Catalog Offerings for EC2.

Lab 4
Create an EC2 Service Catalog offering

Create a Service Catalog offering for Auto Provisioning: EC2

1. **Amazon EC2 > Approved Images**.

2. Click **amzn-ami-minimal-pv-2013.09.1.i386-ebs**.



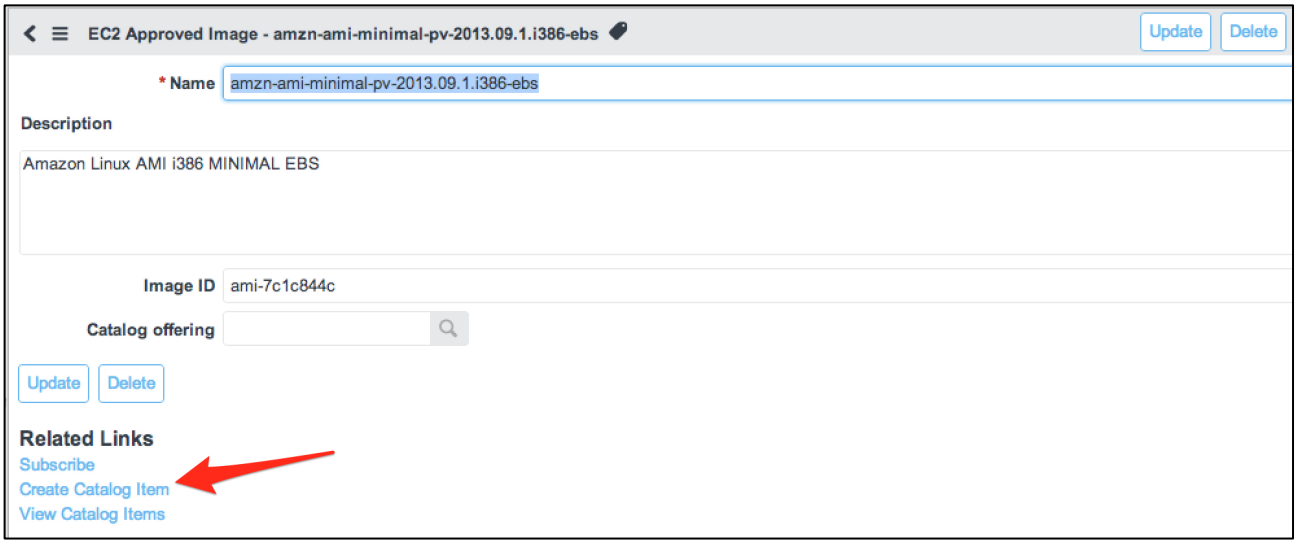
3. Set: Catalog offering: **Linux**.

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4. **Save** the record.

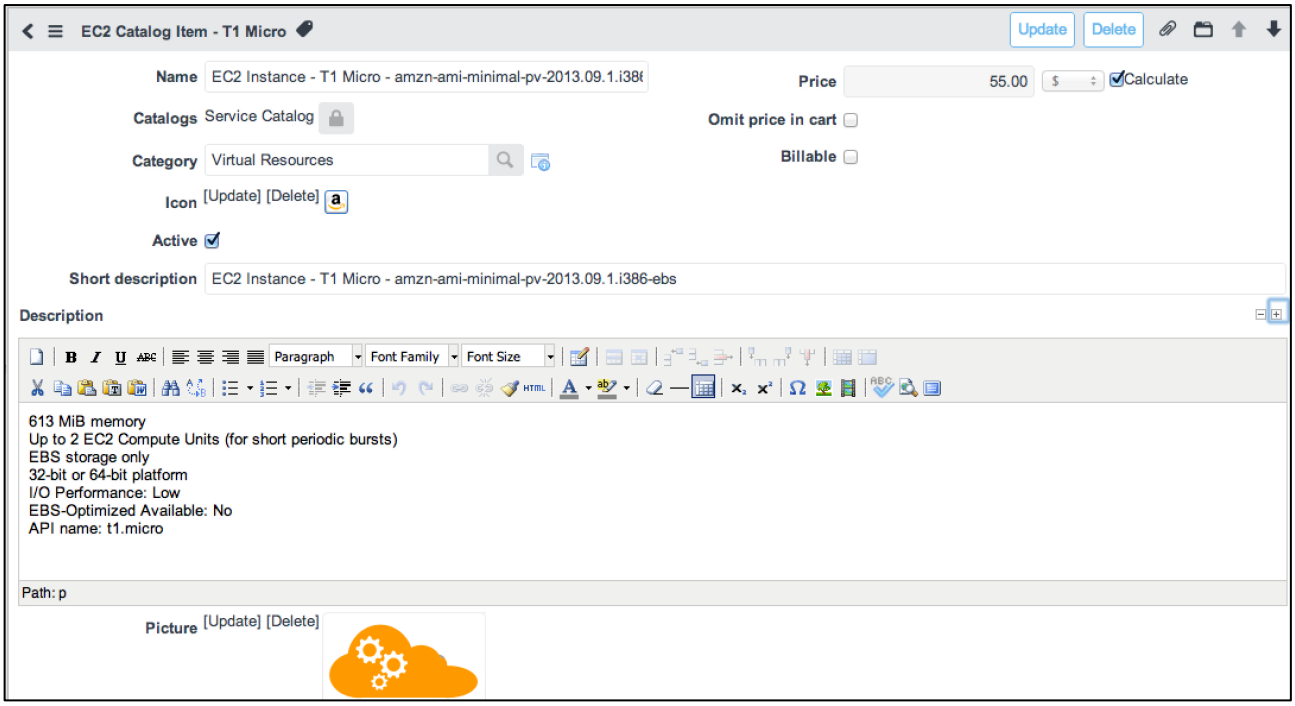
   Setting the Catalog offering facilitates general EC2 orders where cloud users simply select the operating system they want and an EC2 Operator receives a task to select which EC2 image to use. This exercise assumes that the end users know exactly what they want, so you create a catalog offering allowing them to automatically order the VM without creating any manual tasks.

5. Click the **Create Catalog Item** Related Link.



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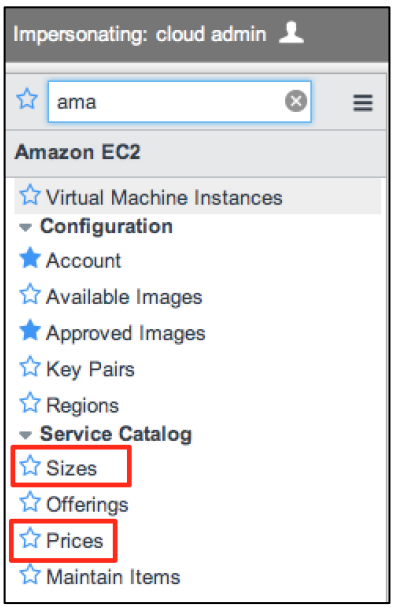
6. An EC2 Catalog Item is automatically created and placed in the Service Catalog in the Virtual Resources category. In this screen you can modify what is presented to the end user when they order this Amazon Linux EC2 instance.



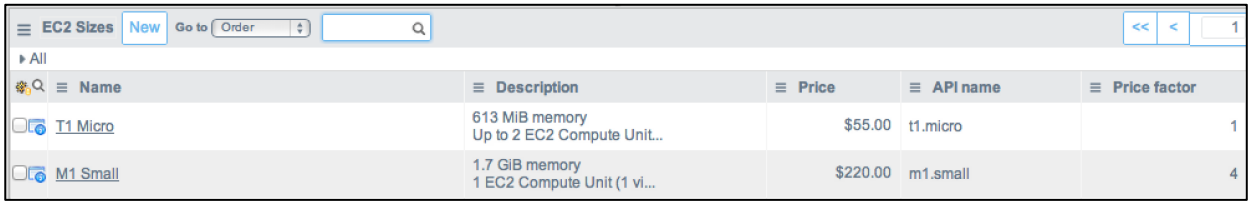
The price is calculated by multiplying the EC2 Size price factor and the Catalog EC2 Element Price. These are options that can be modified based on your cost structure. In this example, the T1 Micro size has a price factor of 1 and the default element price is $55, resulting in one time calculated price of $55.

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NOTE: You can view these settings in the Amazon EC2 module within Prices and Sizes.

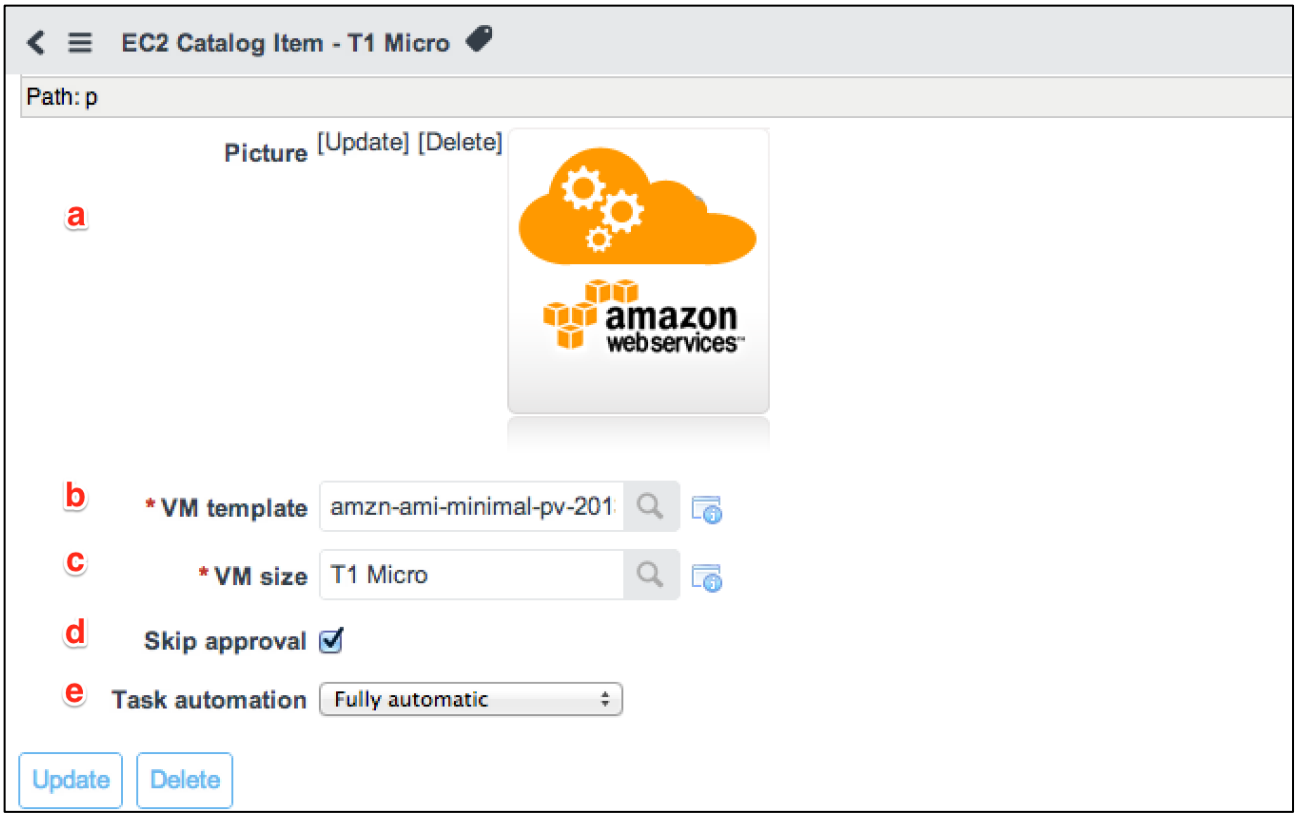






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7. Scroll to the bottom of the Catalog Item to view additional details.
   a. **Picture** can be personalized to provide a unique ordering experience.
   b. **VM template** was automatically selected based on the approved image.
   c. By default, the smallest **VM size** is chosen (in this case, "T1 Micro"). PLEASE keep it at Micro/Small, do not provision anything larger since EC2 charges us for it. Available sizes are determined based on the architecture of the EC2 Image. Not all sizes are available for all instances. Note that if you change the size, the price is automatically updated in the catalog item.
   d. **Skip approval** is set by default. If unchecked, someone in the EC2 Approvers group has to approve request. Leave this checked to expedite the order process
   e. **Task automation** determines if a task is assigned to the EC2 Operators group to verify the order details before provisioning. "Fully Automatic" is the default, bypassing the manual task. Leave this setting at Fully Automatic.



8. Click **Update**

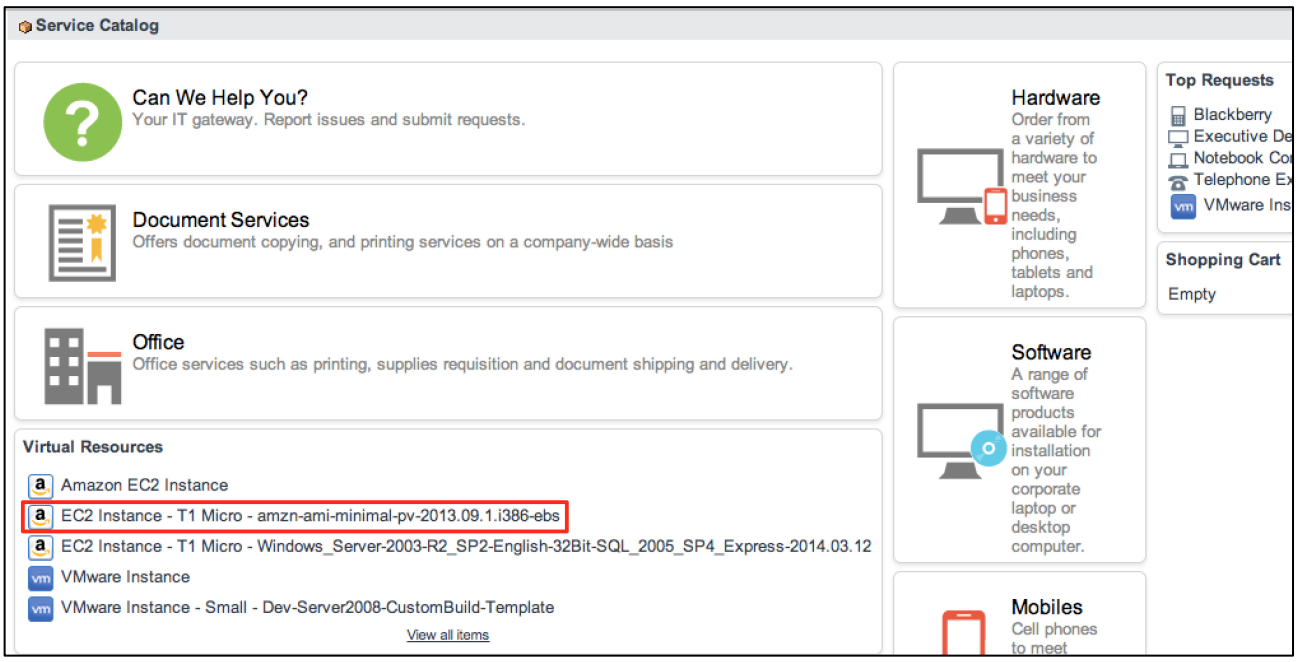
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9. (Optional) Repeat all steps to create an offering for the approved Windows 2003 server..

Lab Success Verification

1. **Self-Service > Service Catalog**.

2. Verify that the new Service Catalog offering was created in Virtual Resources. By default the name is **EC2 Instance - T1 Micro - amzn-ami-minimal-pv-2013.09.1.i386-ebs**.



3. Report lab status using **Lab Management > Report Lab Progress**.

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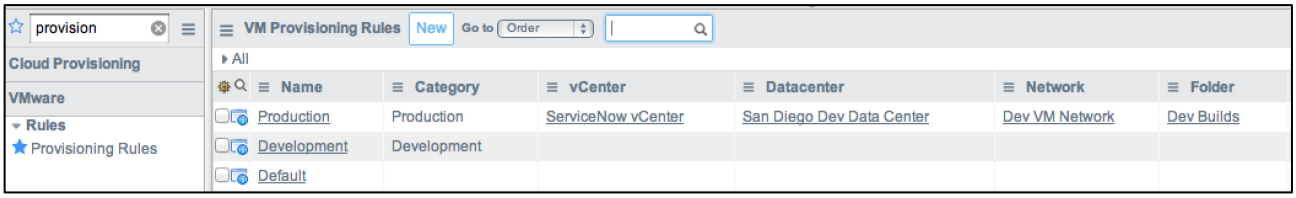
Lab Goal

One of the greatest advantages of Cloud Provisioning is how easy it is to create catalog offerings. Next you see how to create offerings to automatically deploy VMware VMs.

Lab 5 Setup VMware Catalog Offering

Create a Service Catalog offering for Auto Provisioning: VMware

1. **VMware > Provisioning Rules**.



Provisioning rules allow you to predetermine where a VM is deployed within your environment. You are going to create rule to determine how VMs are deployed when a user selects to use a VM for development.

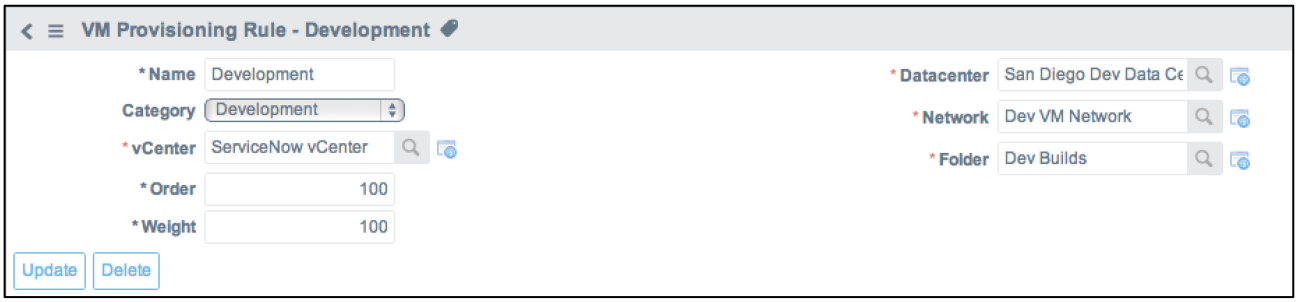
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2. Click the **Development** provisioning rule and set the following criteria:

   NOTE: Each selection guides you to the next one. This ensures that only valid provisioning rules are created based on VMware specifications in the CMDB.

   Name: **Development**
   Category: **Development** (this list references the Used For field within the business service table. This is what the end user sees in the service catalog)
   vCenter: **ServiceNow vCenter**
   Datacenter: **San Diego Dev Datacenter**
   Network: **Dev VM Network**
   Folder: **Dev Builds**

   NOTE: If the Category if left empty, that Provisioning Rule will be applied before any others.

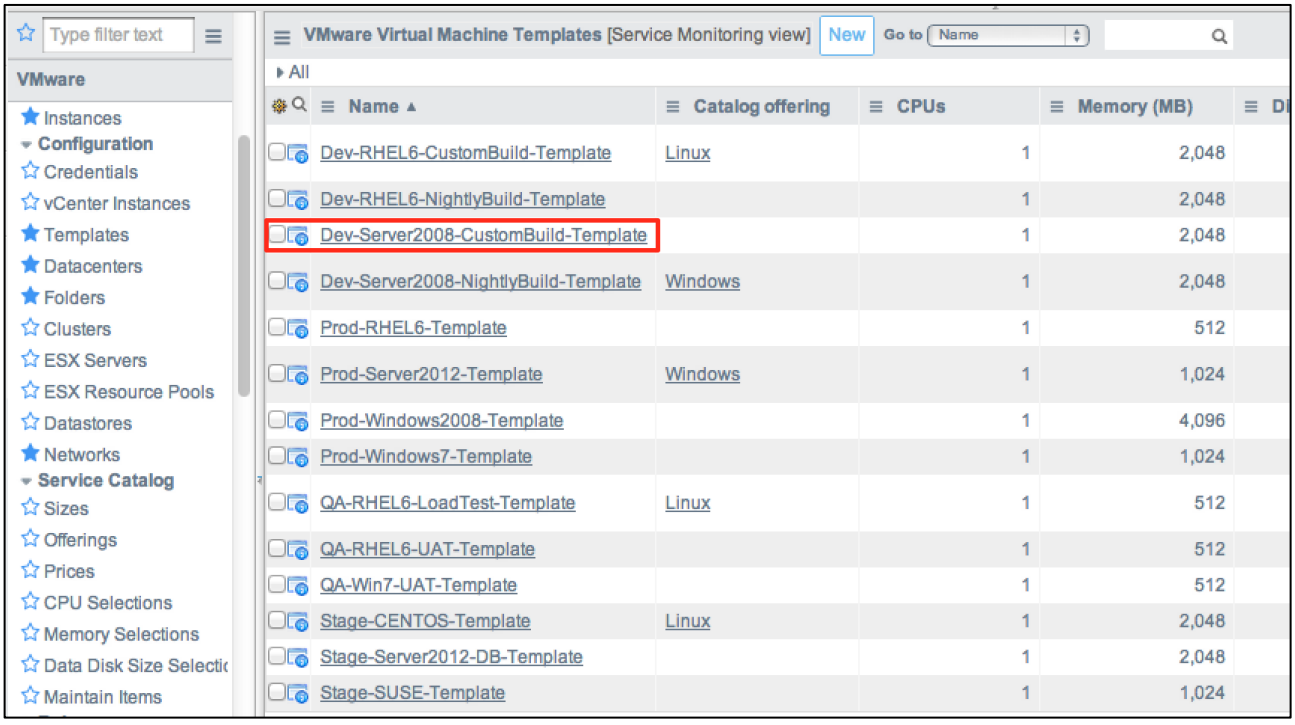


3. Click **Update**.

4. **VMware > Templates**.

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5. Click **Dev-Server2008-CustomBuild-Template**.



Set the following criteria:

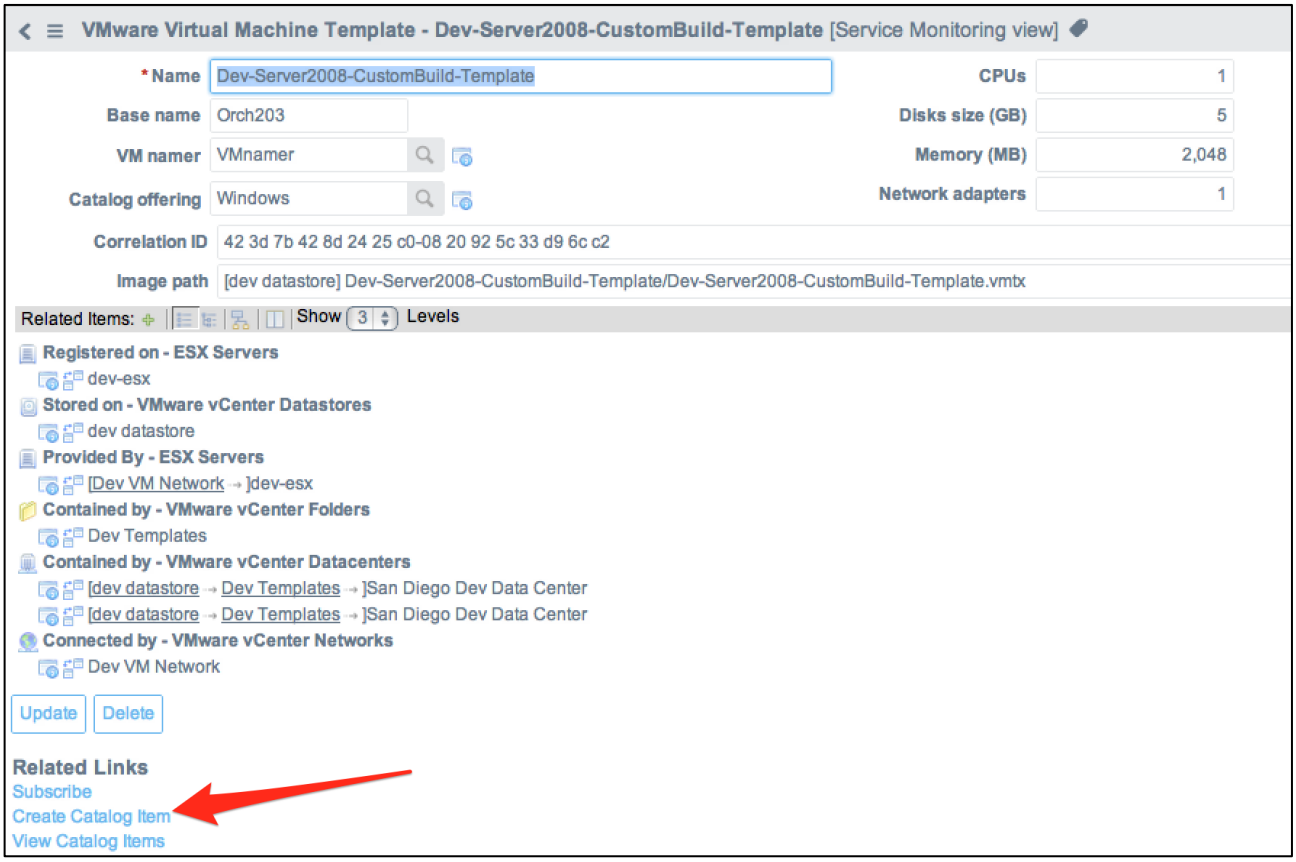
Base name: **Orch203**
Catalog Offering**: Windows**

NOTE: This is the prefix of the unique name that is generated by the VMnamer script. If the Base name is Orch203, then the resulting name of the first VM order will be Orch203-sa-1. [basename]-[user initials]-[unique ordered number]**.**

6. Right-click the form header and **Save.**

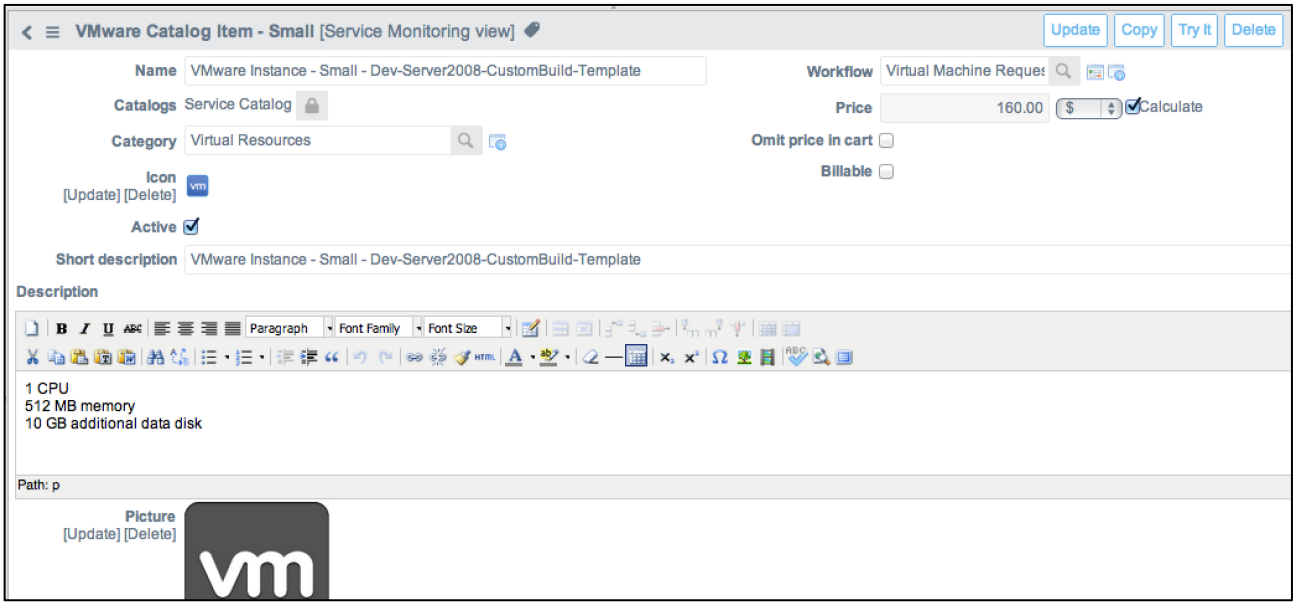
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7. Click the **Create Catalog Item** Related Link.



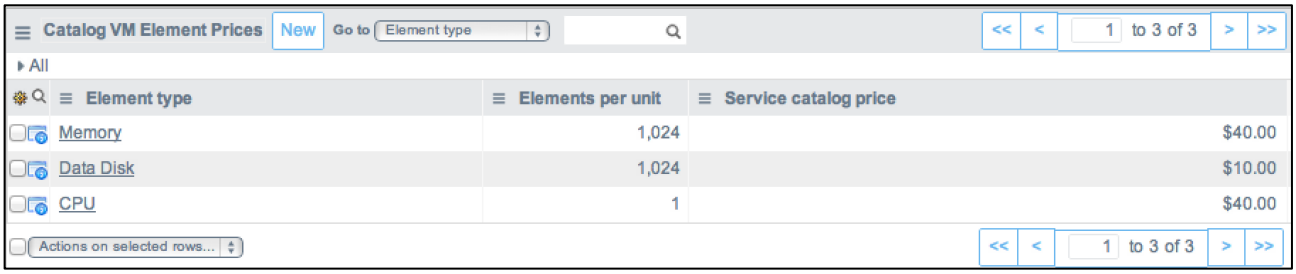
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Review the catalog item that was created.



Price is once again calculated based on criteria you setup in Cloud Provisioning. To review the pricing elements, navigate to **VMware > Prices**. Here you find the Catalog VM Element Prices. The $160 calculated price was determined based on multiplying the element price for cpu/memory/disk by how the VM is ordered, which in this case is with 1CPU/512MB Memory/10GB disk.

This allows you to easily update the prices for all VMware catalog offerings in one place. If your organization decides that CPU prices should increase for new VM orders, then you would simply modify the CPU element price, and it is reflected in all new orders.



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8. Scroll to the bottom of the catalog item to review the default settings:
    a. The **VM template** is automatically selected based on the one you chose.
    b. The default **VM size** is **Small**; you can easily define your own size criteria as well.
    c. **Skip approval** is default; keep this setting to streamline the ordering process.
    d. **Task automation** should be **Fully Automatic**. This eliminates any manual tasks that would normally be assigned to the VMware Operators group by using the pre-defined provisioning rules to direct the deployment of the VM. Alternatively, you can select Semi-Automatic to assign a task to review the selections made by the rules, or select Manual to have an operator direct it manually.



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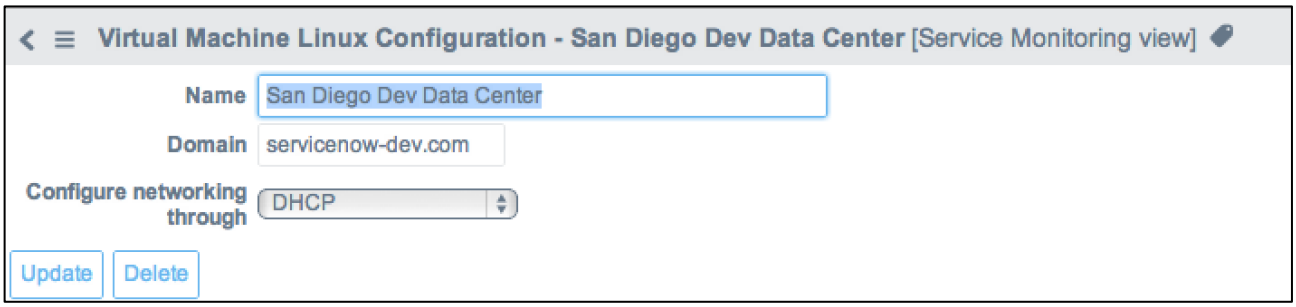
9. Set the following:

   Guest customization: **checked**
   Customization specification: **San Diego Dev Data Center**

   This option that allows you to pre-determine how the operating system of the VM is set up. You can use this to set criteria like registered user, product key, domain, etc.

10. Click **Update**.

Note: San Diego Dev Data Center options. These can be reviewed by navigating to VMware > Datacenters.

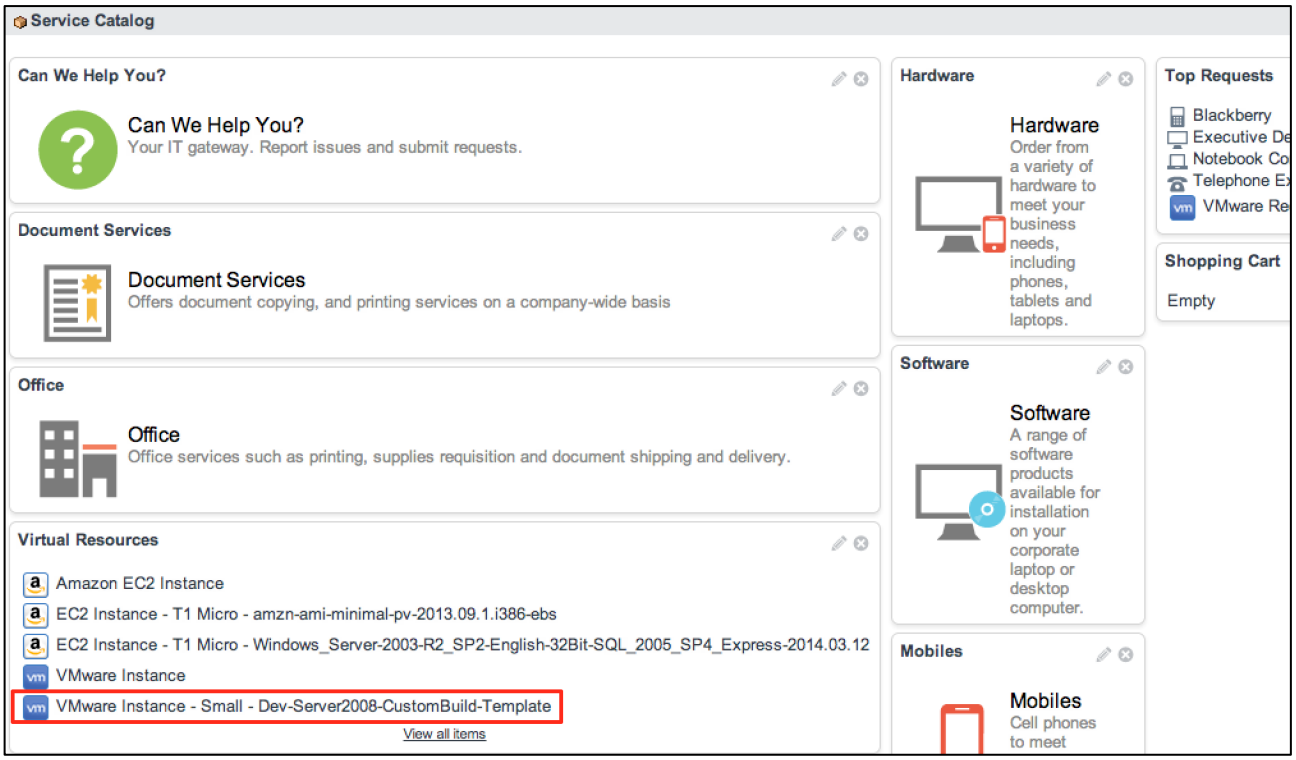


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Lab Success Verification

1. **Self-Service > Service Catalog**.

2. Verify that the new Service Catalog offering was created in Virtual Resources. By default the name is **VMware Instance - Small - Dev-Server2008-CustomBuild-Template**.



3. Report lab status using **Lab Management > Report Lab Progress.**

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Lab Goal

Use the Service Catalog, to order and deploy EC2 instances. For VMware you will review the ordering process.

Lab 6
Ordering a Virtual Machine

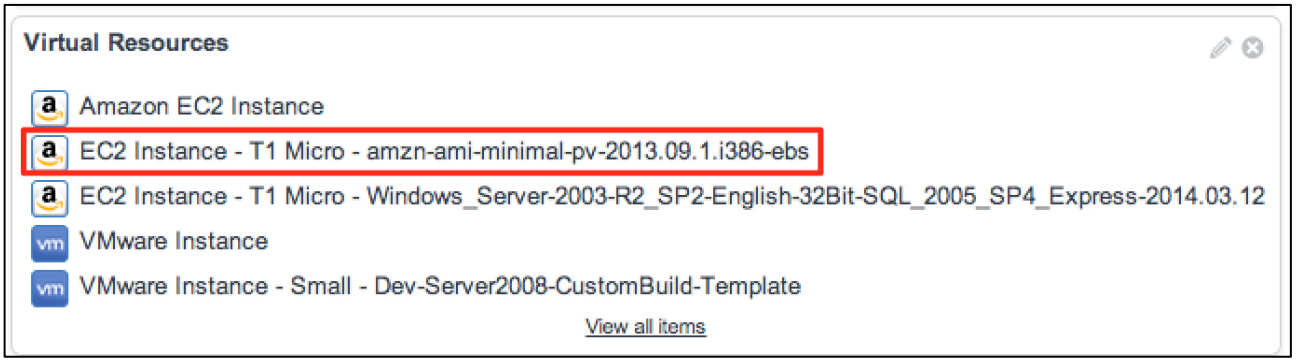
Ordering Virtual Resources from the Service Catalog

Now that offerings are available in the Service Catalog, you can order virtual machines. The lab environment allows you to fully deploy EC2 instances. For VMware you will review the ordering process.

1. **Impersonate <cloud user>**.

2. **Self-Service > Service Catalog**.

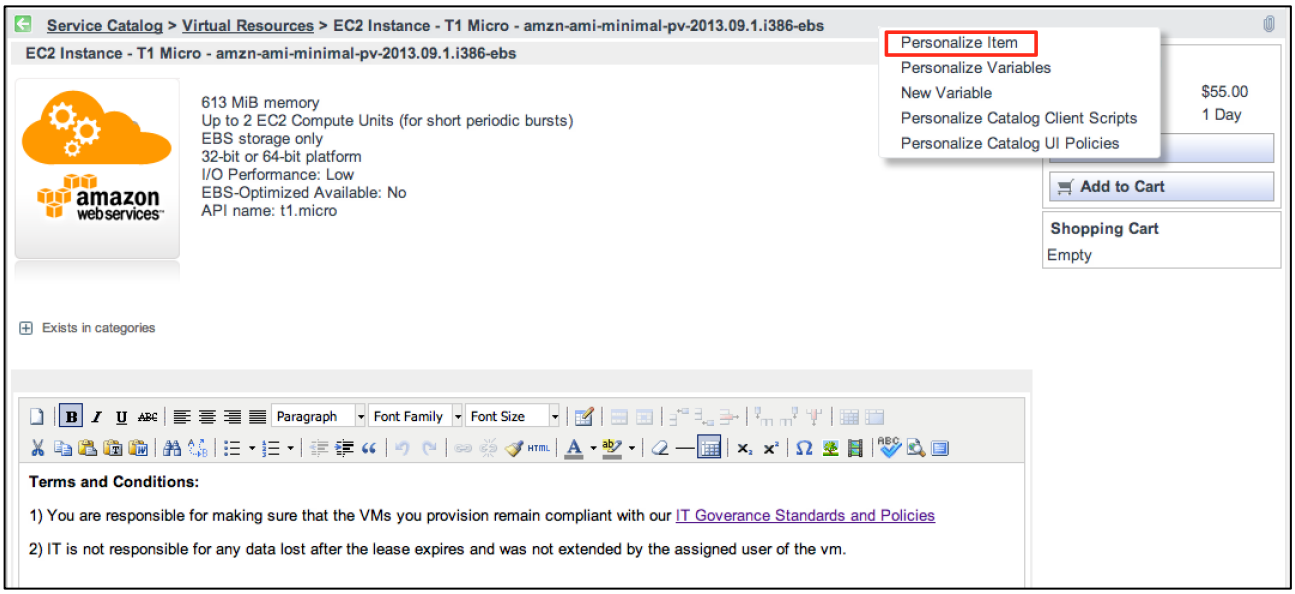
3. Click the EC2 offering **EC2 Instance - T1 Micro - amzn-ami-minimal-pv-2013.09.1.i386-ebs** created previously in the lab.



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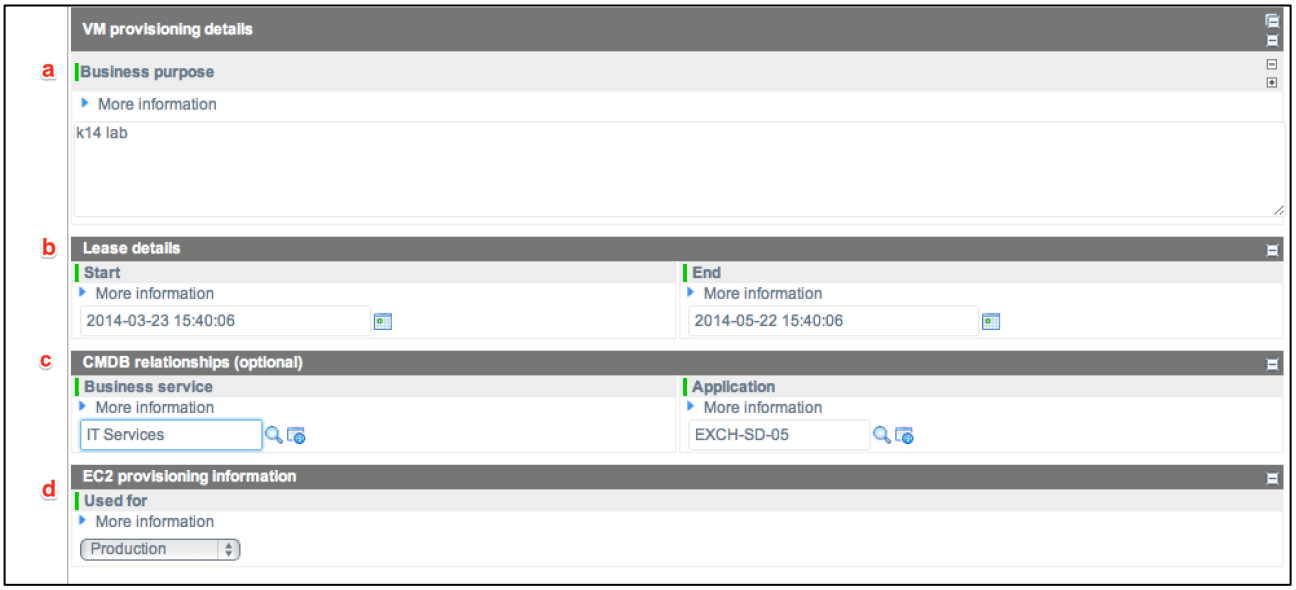
NOTE: The catalog item is completely configurable to catalog admins. You can personalize the item by right-clicking the item header and selecting **Personalize Item**. This gives you the flexibility to change the experience that end users have when ordering the VM by modifying images, descriptions, price, etc.

NOTE: The **Terms and Conditions** variable is directly editable to catalog admins. When a standard cloud user orders a VM, they are not able to modify the catalog item or the Terms and Conditions.



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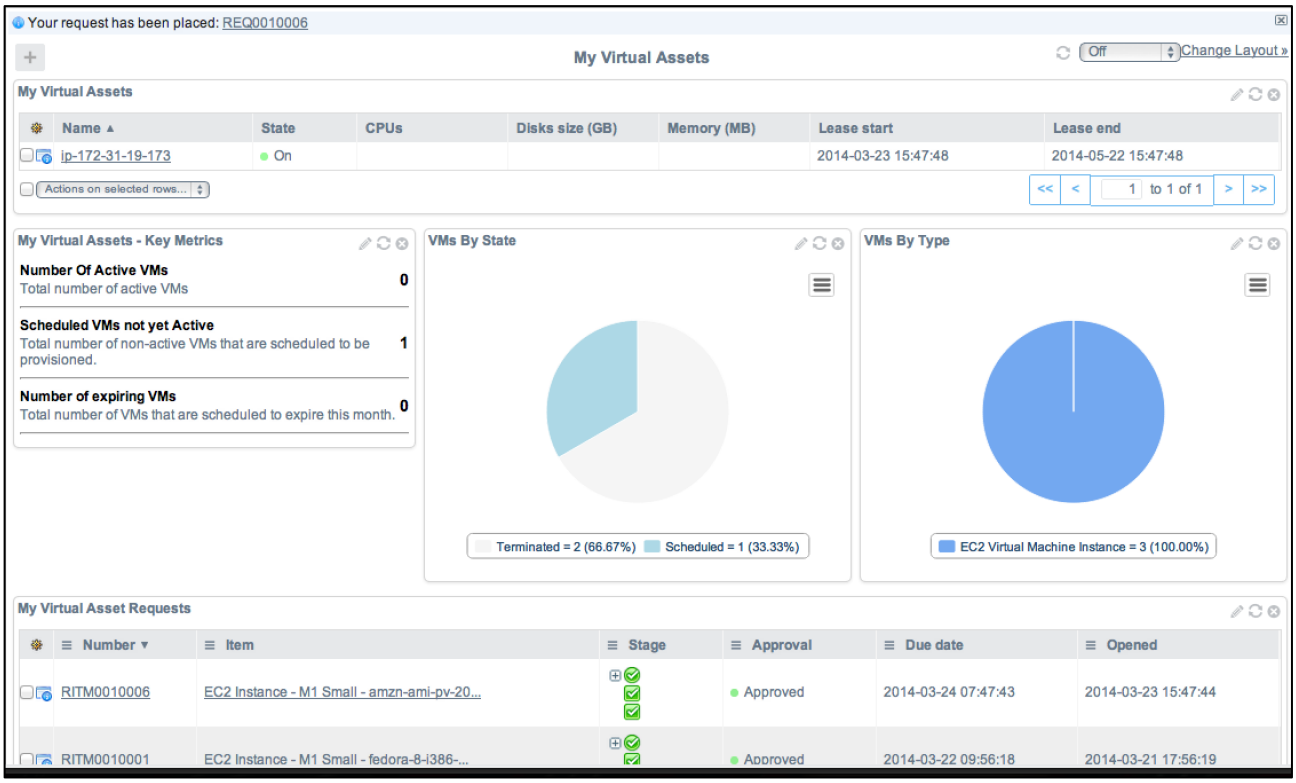
4. Scroll down to the bottom of the catalog item to review the provisioning details.
   a. Business purpose is a mandatory field by default. Set it to **K14 Lab**
   b. Set the lease Start to **5 min** from the current time. Lease details are set to ensure the VM starts provisioning at the lease start date. A schedule is created to retire the VM at the lease end date. Users can request for their lease to be extended. Default lease time frames are configurable in Properties within the Cloud Provisioning module.
   c. Set the Business Service to **IT Services** and Application to **EXCH-SD-05**. CMDB Relationships automatically relate the VM to a business services/application.
   d. Set the Used for drop down to **Production**. This populates the Used for field in the new VM CI that is created. It also drives the Change Condition to prompt a change control when the VM is modified.



5. Scroll up and click **Order Now** to submit your VM request.

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6. You should be redirected to the **My Virtual Assets** page. This page shows you all of the VM orders you have made and what state the order is in. If you set the VM to start after 5 min, you should see a VM in the blue "Scheduled" state. When the scheduler fires, the VM provisioning process begins.



The provisioning process should only take a few minutes, after that the state turns green to indicate that the VM is on.

7. **Self-Service > Service Catalog**.

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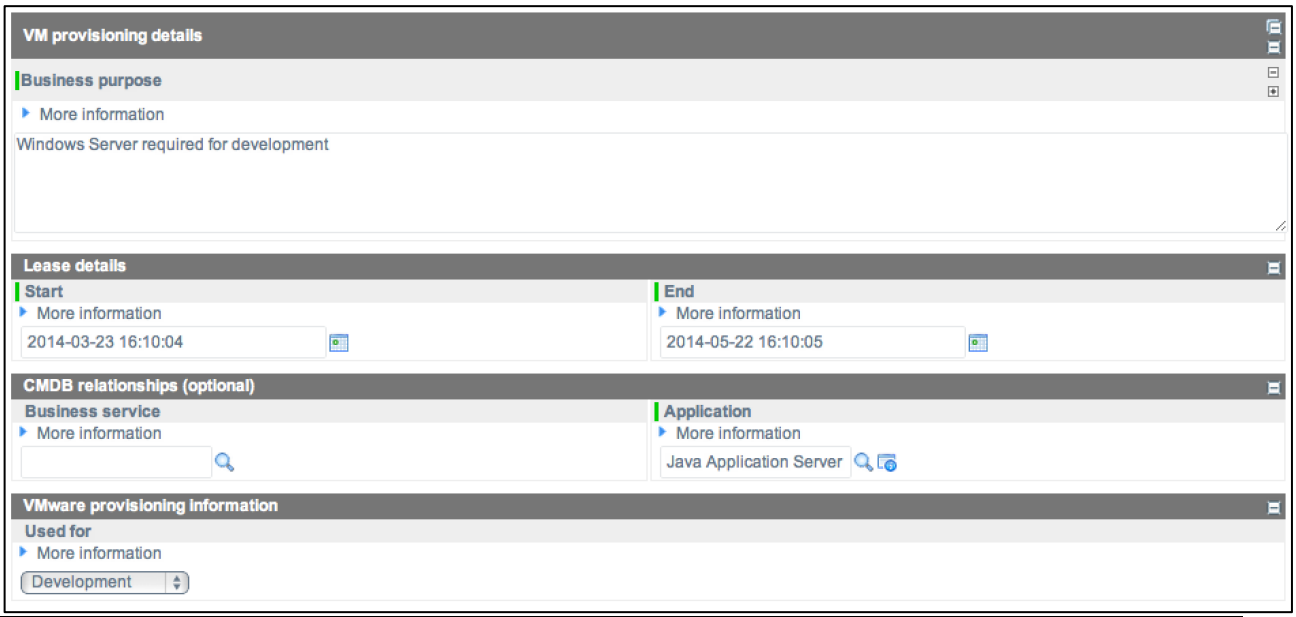
8. Click the **VMware Instance - Small - Dev-Server2008-CustomBuild-Template** offering.



9. The VM order screen looks virtually identical to the EC2 ordering screen. This ensures that your users have a seamless ordering experience, regardless of the virtualization technology.

10. Complete the form as follows:

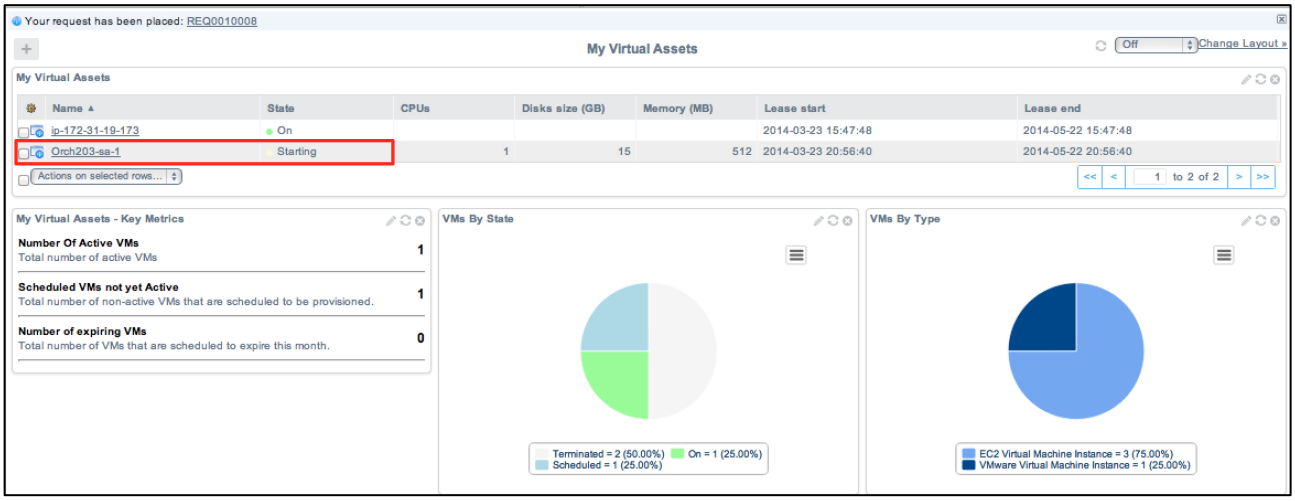
    Business purpose: **Windows Server required for development**
    Start/end lease times: leave defaults
    CMDB relationships > Application: **Java Application Server FLX**
    Used for: **Development** (this is required to invoke the Provisioning Rule you created earlier).



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11. Scroll up and click **Order Now.**

12. Once again you are brought back to the **My Virtual Assets** portal. From here you can refresh the My Virtual Assets gauge at the top right. You should notice that the new VM is stuck at the **Starting** yellow state. This is because the lab is not directly connected to a live vCenter environment.

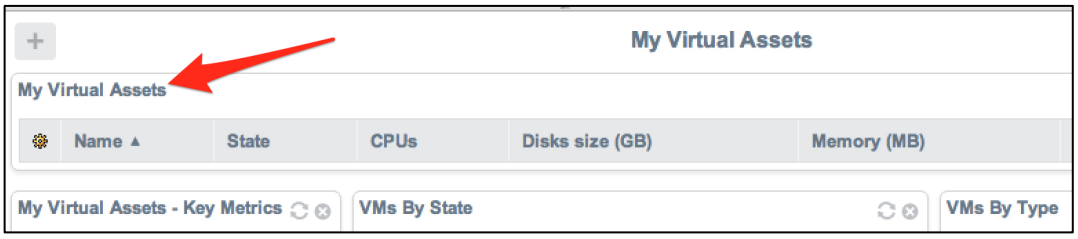


NOTE: Note the Request Number. It will be needed in the verification section.

13. **Impersonate <cloud admin>**.

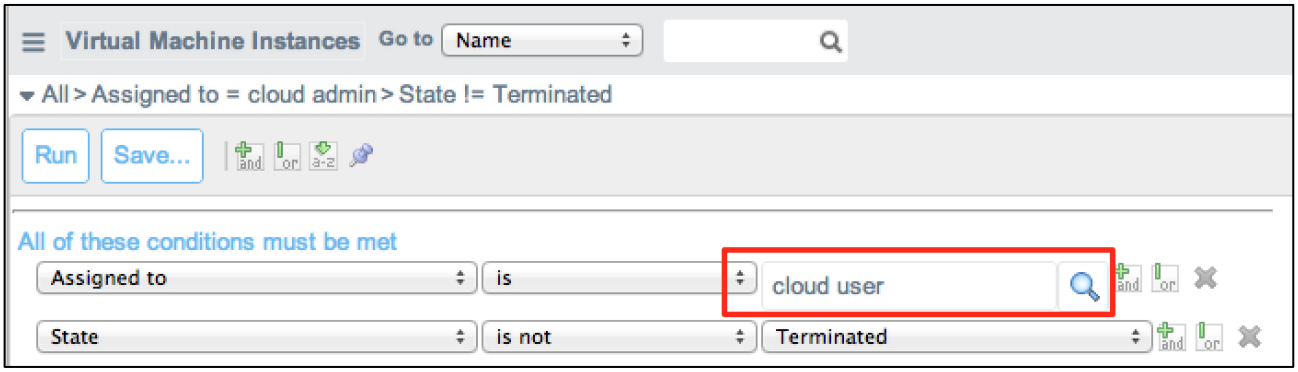
14. **Self-Service > My Virtual Assets.**

15. Click **My Virtual Assets** link.

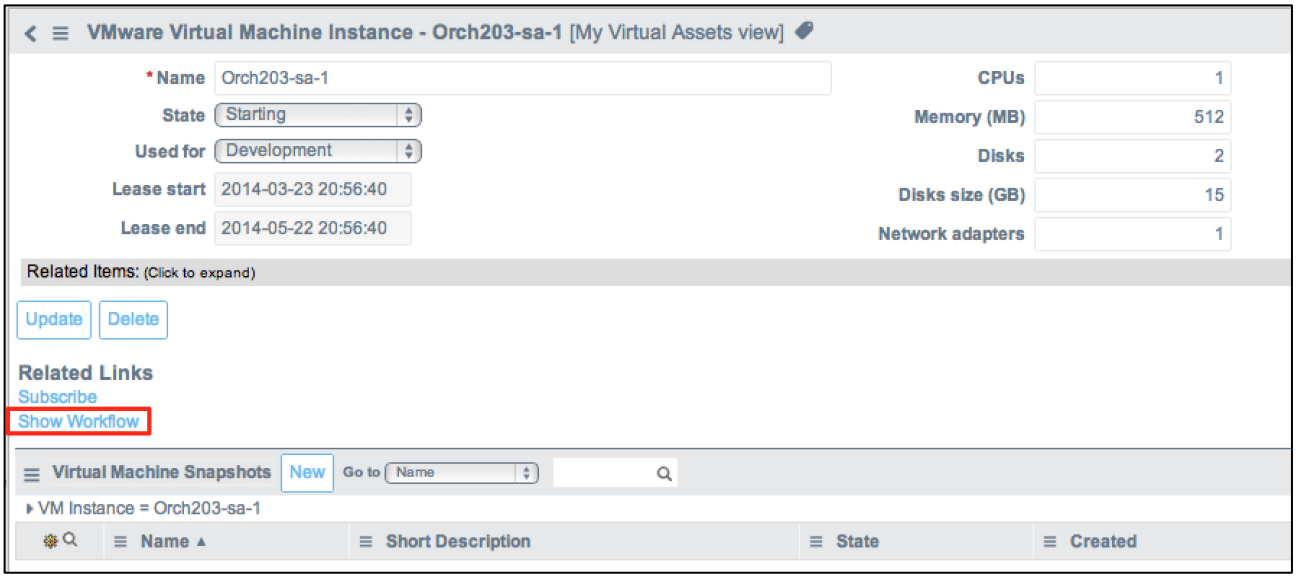


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16. Modify the filter to display where Assigned To is **cloud user.**

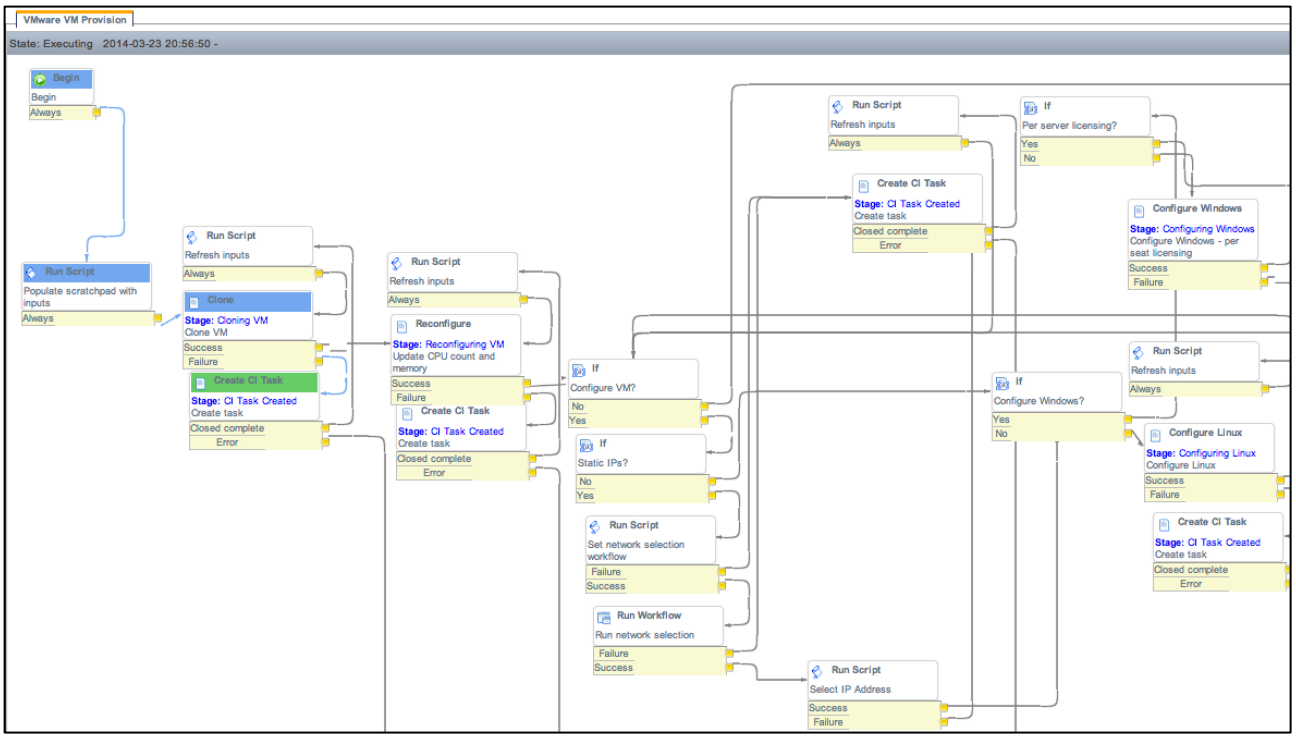


17. Click the **orch203-cu-1** VM and click the **Show Workflow** related link.



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This is the workflow that automatically provisions the VM. Here you can see where it stopped in the clone process. A task is automatically assigned to the VMware Operators group when something fails. If you hover over the failed activity, you see the error that the activity captured.



18. Close the **Workflow** window.

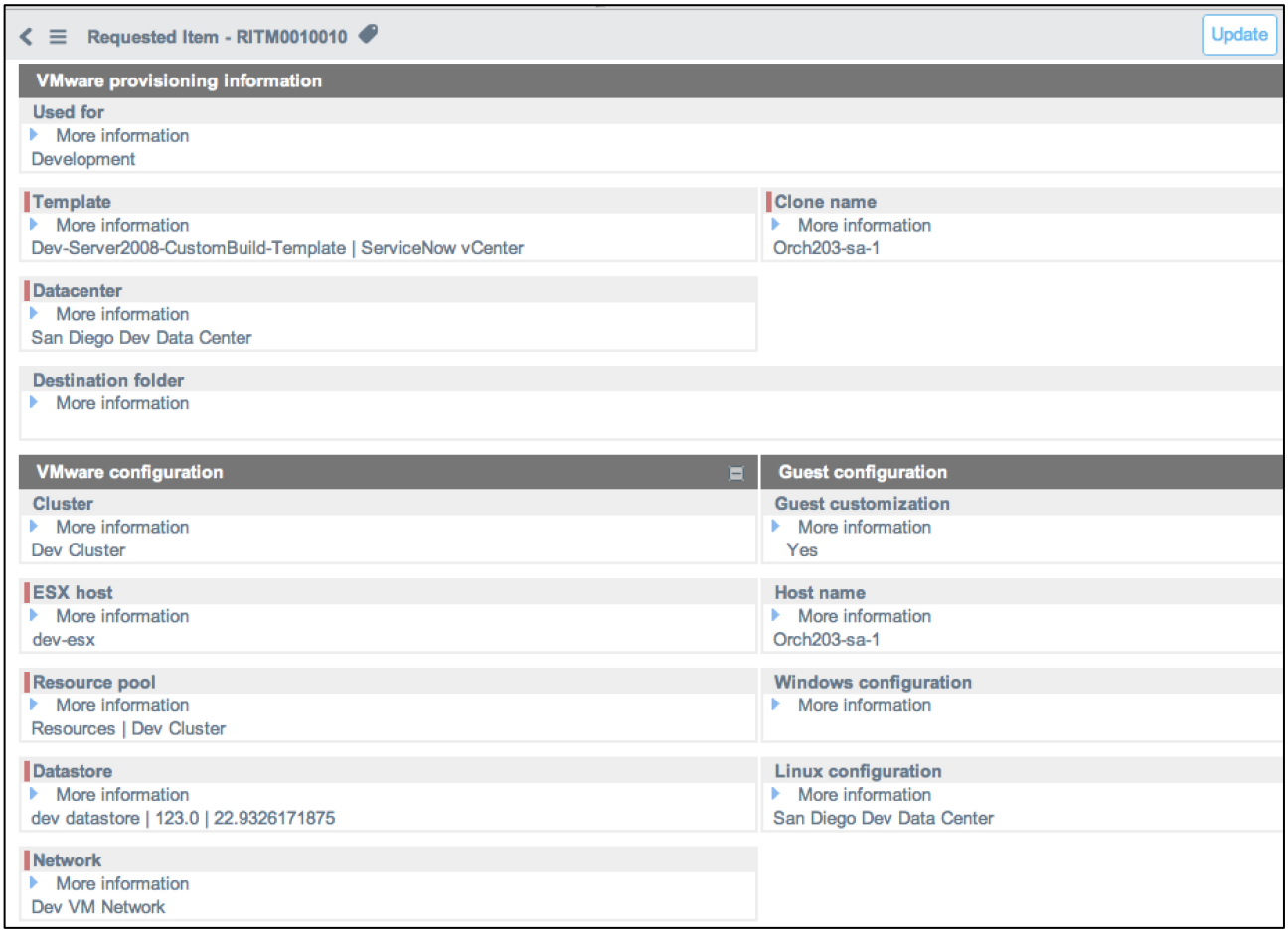
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Lab Success Verification

1. **Impersonate <cloud user>**.

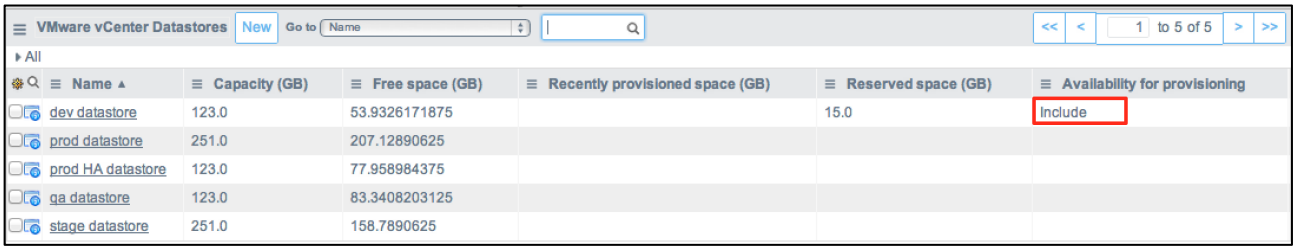
2. **Self-Service > My Virtual Assets.**

3. Click the requested VMware instance item at the bottom of the portal. Verify that the item's selections in the provisioning rule were automatically selected.



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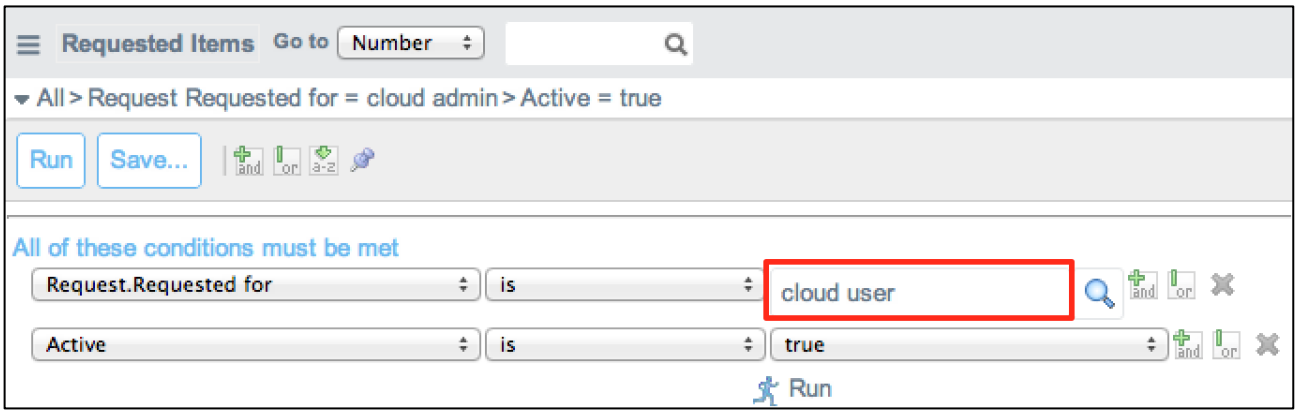
NOTE: Only those datastores associated with the selected ESX host that have Availability for Provisioning set to **Include** will appear in the choice list. Members of either Virtual Provisioning Administrators or VMware Operators groups can manage datastores.



4. **Impersonate <cloud admin>**.

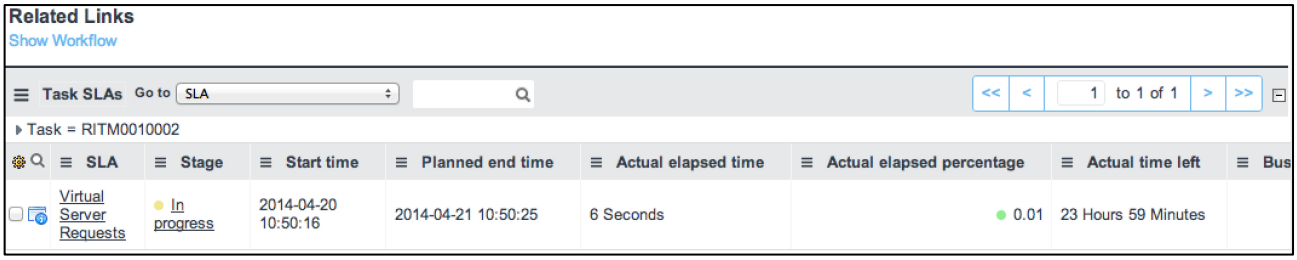
5. **Self-Service > Requested Items**.

6. Modify the filter to display where Assigned To is **cloud user.**



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7. At the bottom of the requested item, notice the task that was generated by the provisioning workflow and the Task SLA indicating the time left before breaching the **Virtual Machine Request** SLA.

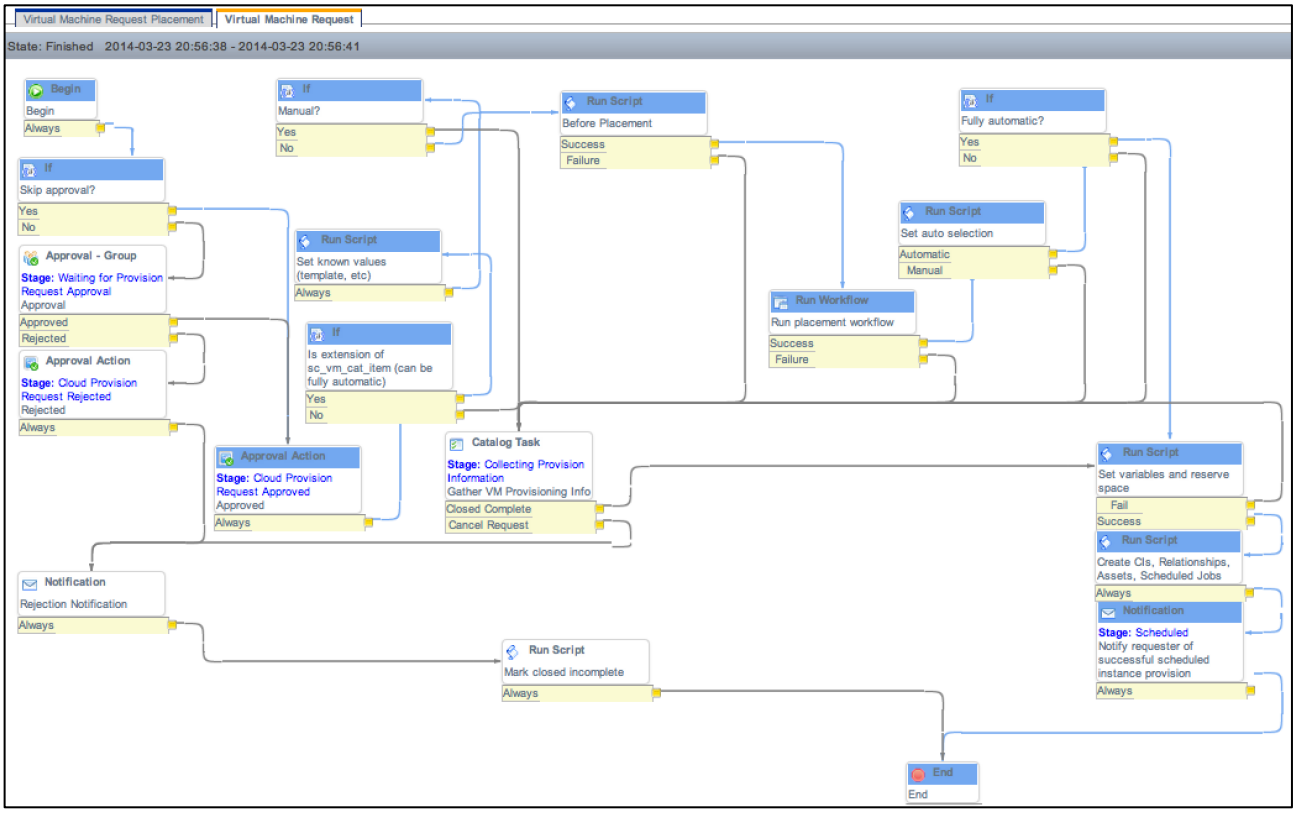


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8. Click the **Show Workflow** Related Link.

   Here you see two workflows that were executed.

   The **Virtual Machine Request** workflow handles the overall request and creation of the VM schedule based on the lease. It also handles the "Fully Automatic" task automation that was selected as part of the service catalog offering.



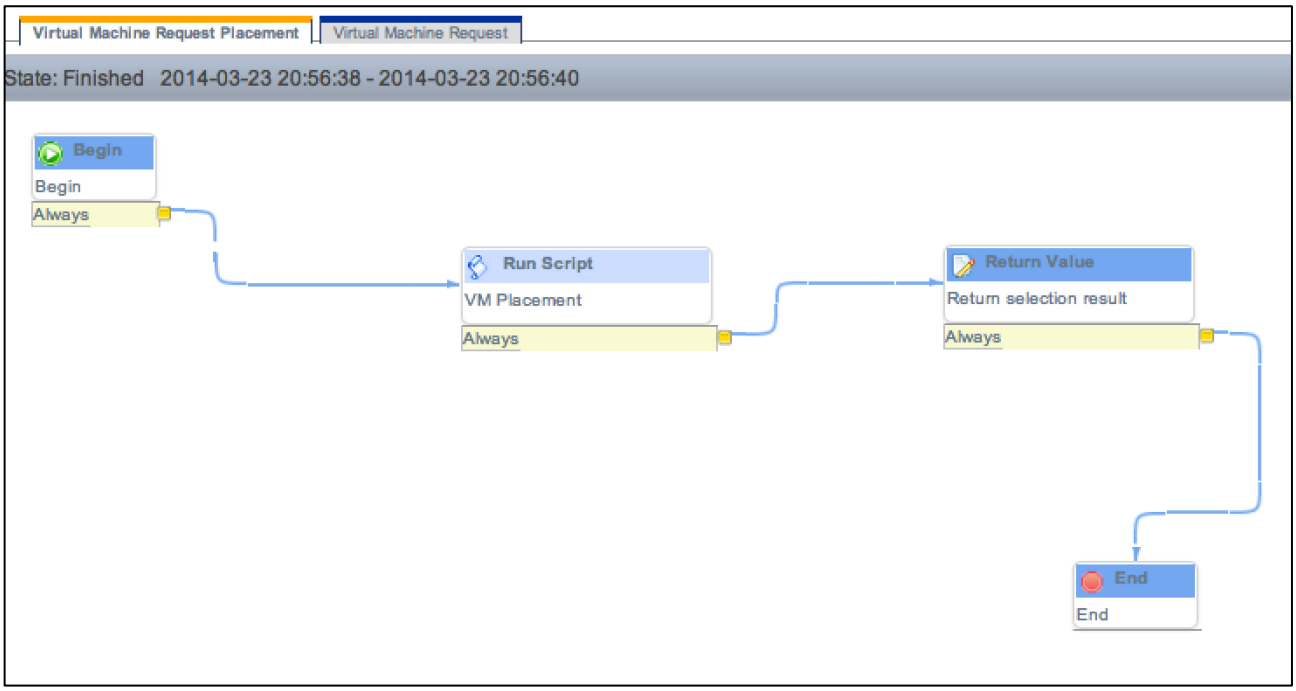
   The **Collect Provisioning Information** activity handles the selections made in the Provisioning Rule you created.

   The **Set variables and reserve space** activity performs basic capacity checks on datastores. Requests will be accepted as long as there is sufficient available space on the selected datastore. If space is available on the currently selected datastore the space is reserved for the request. Available space is updated once the VM is provisioned.

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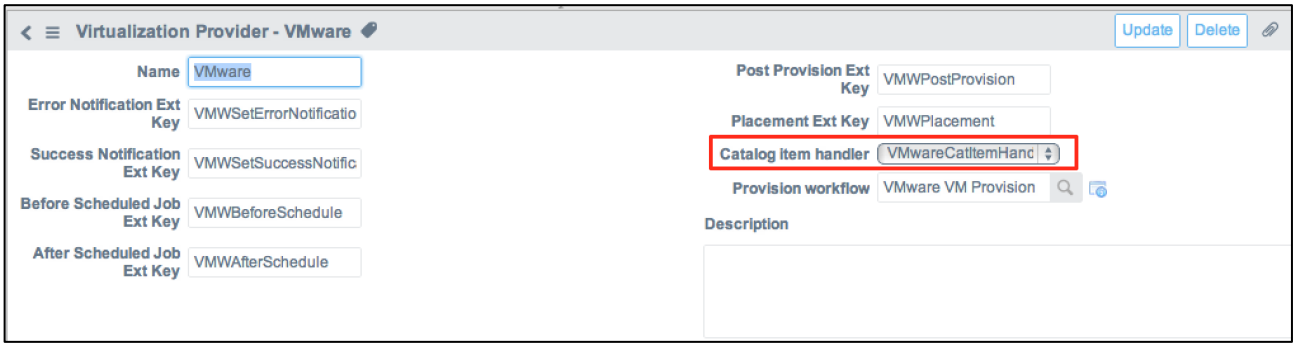
When there is insufficient space, a task will be generated and assigned to the VMware Operators group so that the provisioning request can be reassigned to a datastore will available space.

The **Virtual Machine Request Placement** workflow is the workflow that handles the "Fully Automatic" task automation that was selected as part of the service catalog offering.



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The **VM Placement** Run Script activity handles placement options for vCenter using the VM Extension Point associated with the virtualization provider's **Placement Extension Key**. The Placement Extension Key is obtained via the **VMCatItemHandler** Script Include. You may modify placement behavior by authoring an extension and associating the key with the VMware provider.



NOTE: Virtualization providers give the ability to add custom behavior by registering a variety of custom extensions that are invoked at specific points in the Cloud Provisioning process.

By default, the **VMWPlacement** extension (provided Out-of-Box with the **VMWare Support** plugin) selects host/datastore based on capacity. It also generates a unique name based on the **Base name** you set in the VMware template. (You set this to "Orch203" earlier in the lab, which resulted in the name of "Orch203-sa-1" for the CI name and VMware VM name).

9. Report lab status using **Lab Management > Report Lab Progress.**

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Lab Goal

Manage VM modifications and also ensures that proper change control is enforced to meet compliance standards as a Cloud admin.

Lab 7
Modifying a Virtual Machine

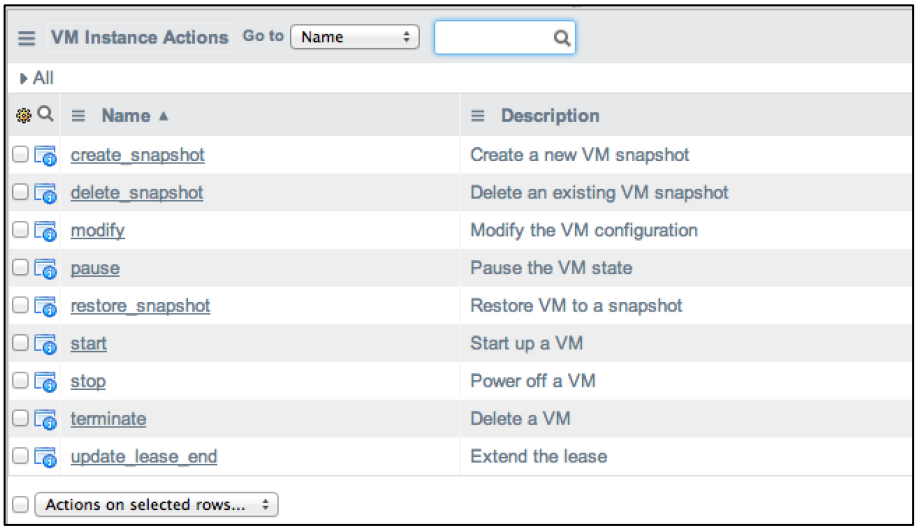
Modifying a VM under Change Control

Every time a user attempts to modify a VM, ServiceNow evaluates if the action requires a change control process. This ensures that critical VMs are not accidently turned off or modified and also ensures that proper change control is enforced to meet compliance standards.

1. **Impersonate <cloud admin>**.

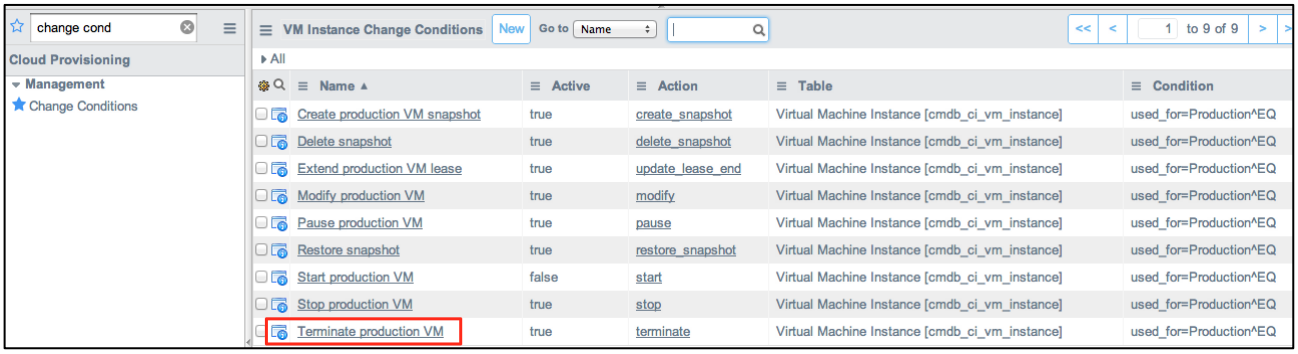
2. **Cloud Provisioning > Change Conditions**.

   Here is a list of actions that can have a change control process enforced.

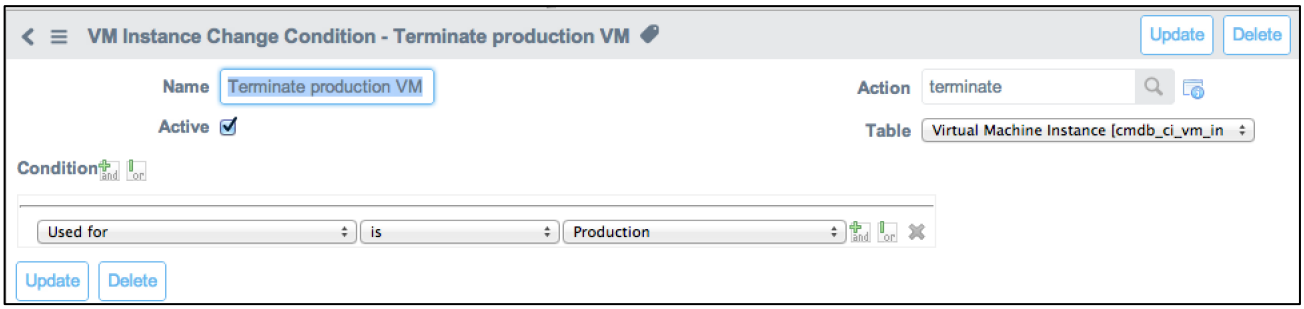


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3. Click the **Terminate production VM** change condition.



4. This condition enforces change control if the VM is marked as Used for **Production**. You can add any other criteria to this condition list to meet your change control requirements.

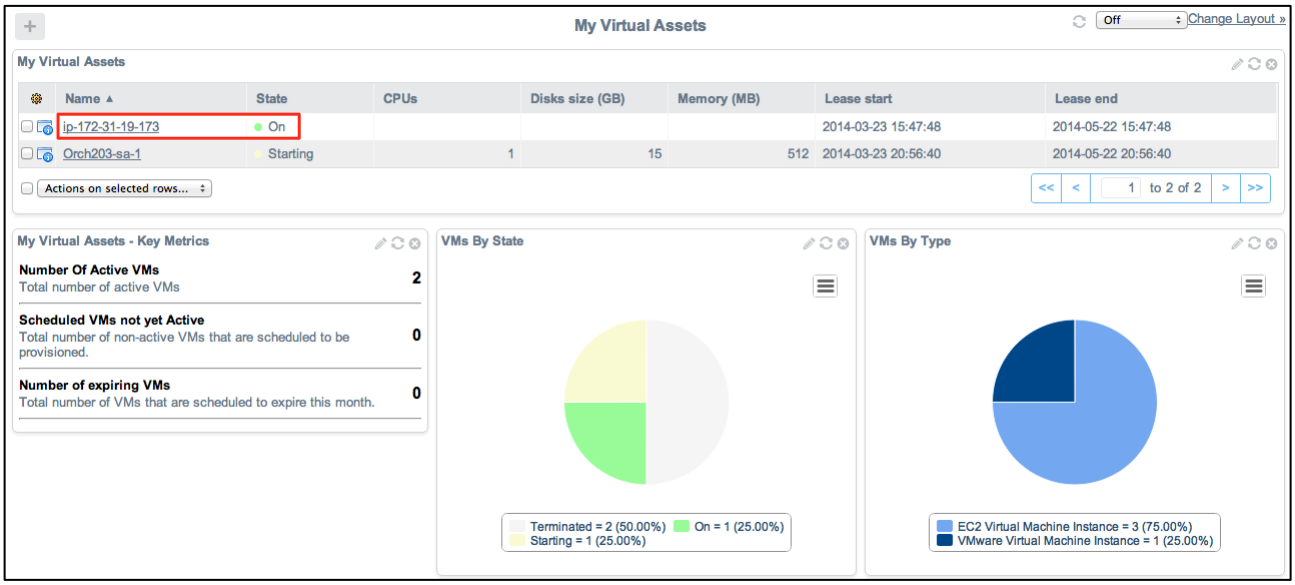


5. **Impersonate <cloud user>**.

6. **Self-Service > My Virtual Assets**.

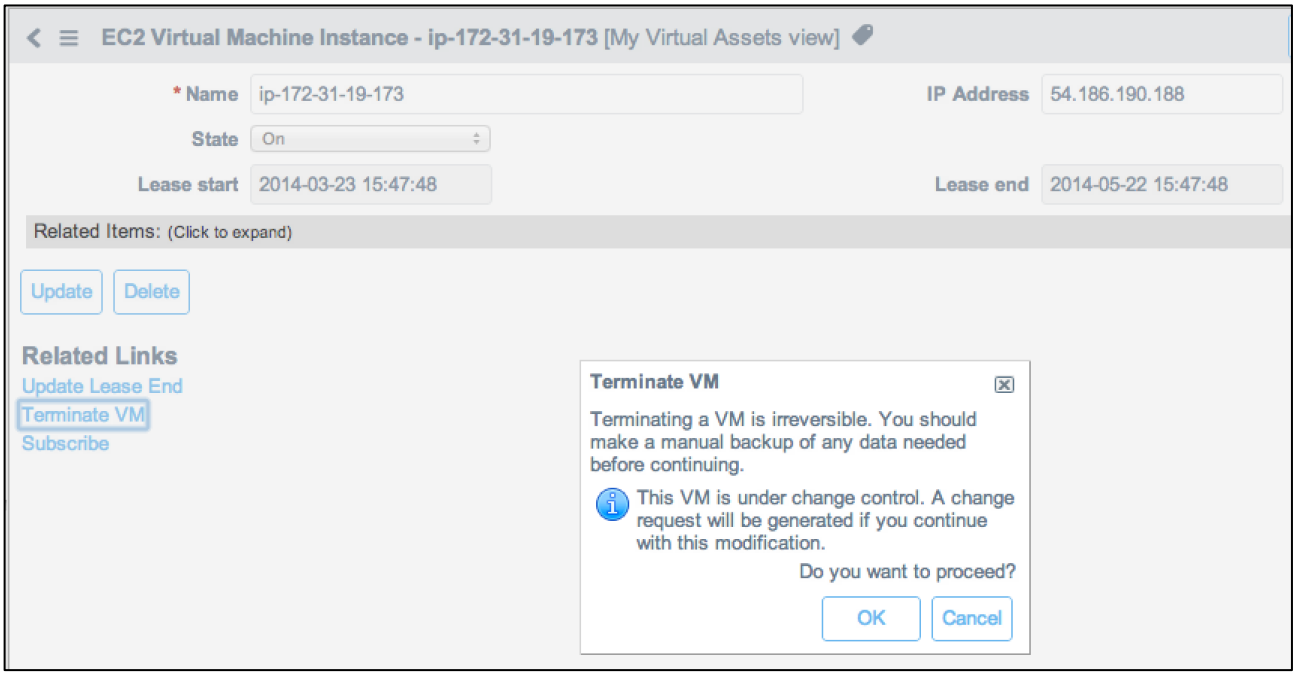
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7. Click the **Name** of the EC2 VM that is in the **On** state.



8. Under Related Links, click **Terminate VM.**

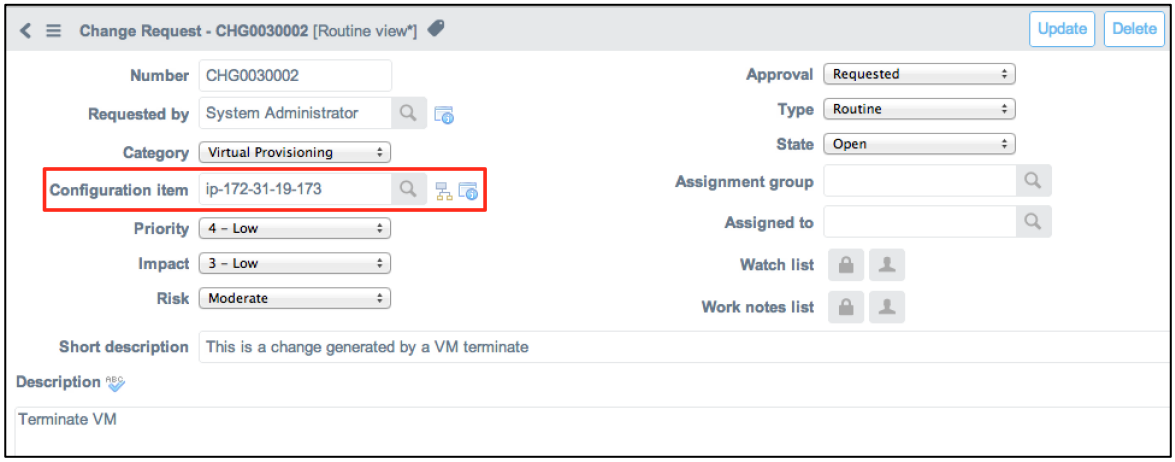
   When you ordered this VM, you indicated it would be “used for” Production. That matches the Change Condition for the Terminate action and enforces change control.



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9. Click **OK** to be redirected to the **Change Request**.

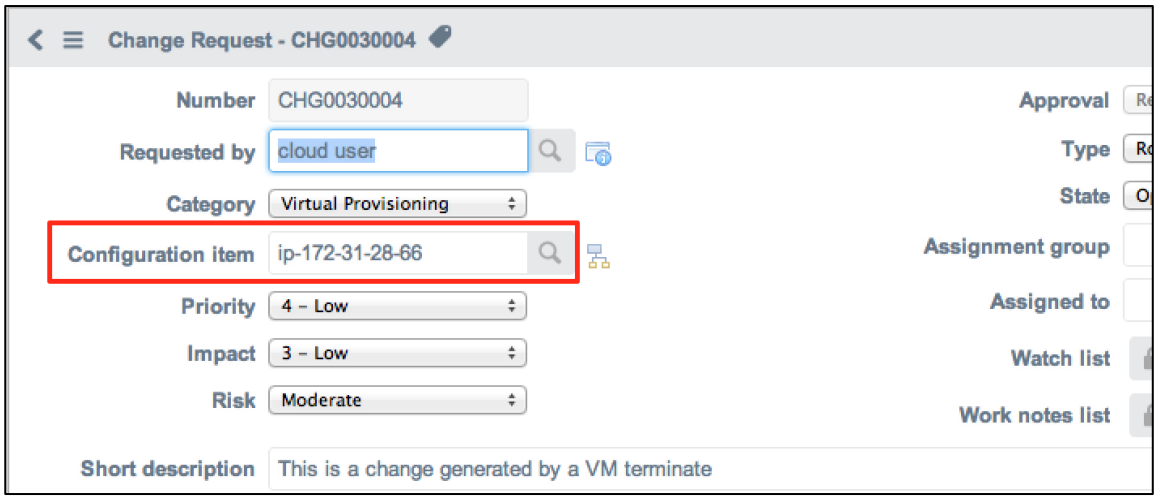
   You are now in a Routine Change Request that was automatically generated to handle the VM Termination.



10. **Impersonate <cloud approver>**.

11. **Service Desk > My Approvals**.

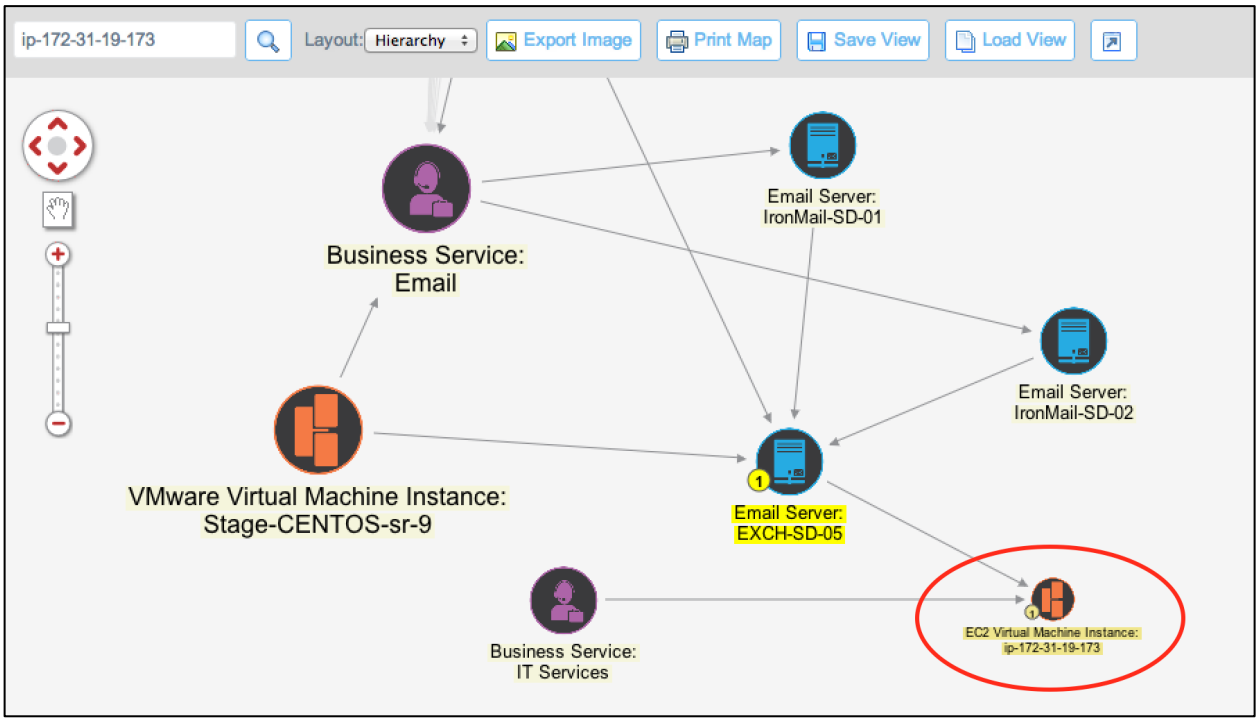
12. Click the **Approval for** field (this is the change to terminate the VM).



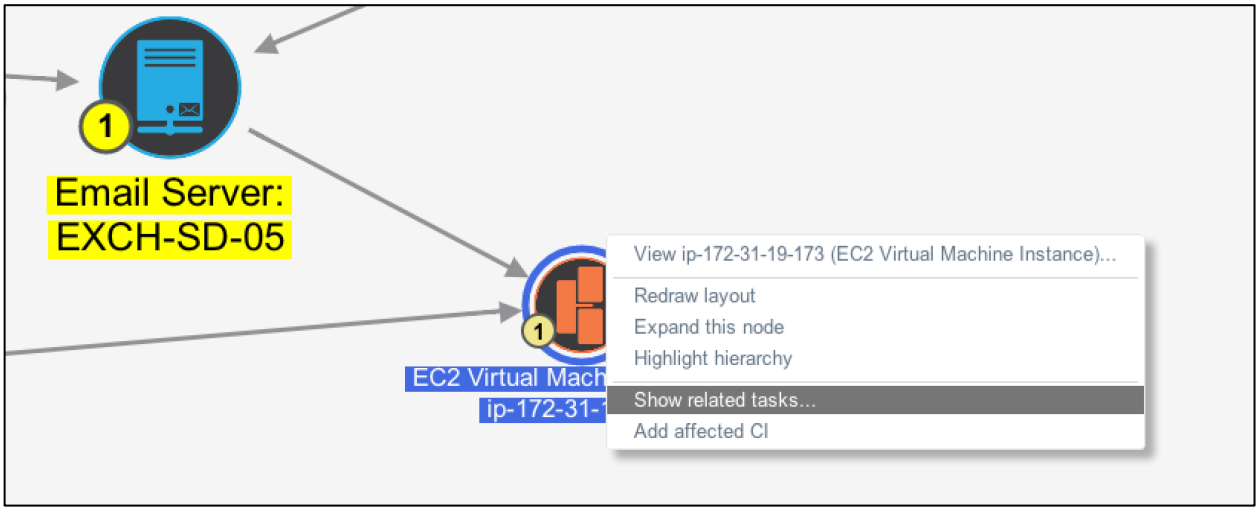
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13. Click the **Show CI Map** button to the right of the Configuration item highlighted above.

    This relationship map is critical for anyone handling Change Requests, Incidents, Problems, or anything in ServiceNow related to the VM. The relationships between the VM and the business service were automatically created upon ordering the VM.

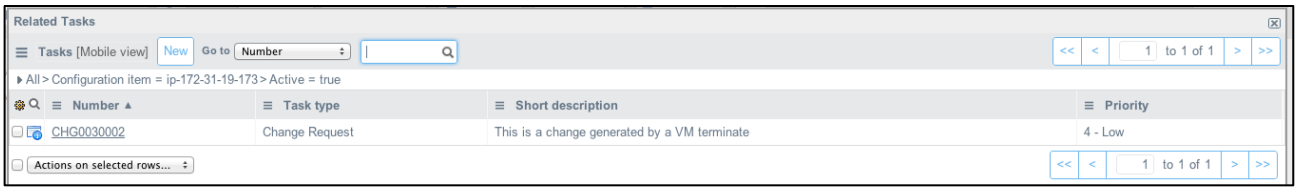


14. Right-click the VM. Click the **Show Related Tasks** context menu item.



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15. The Related Tasks list dialogue indicates any active Incidents, Changes, Problems, or Tasks against the CI. This is why the VM is highlighted in Yellow on the BSM map.



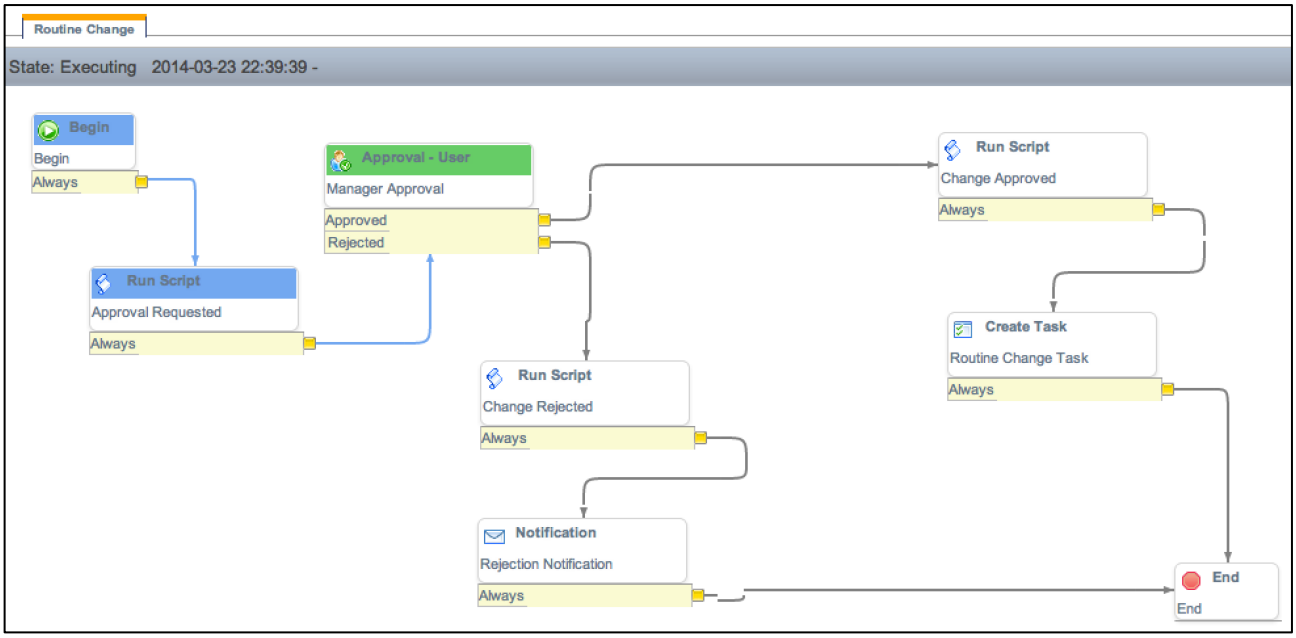
16. Navigate back to the **Change Request** on the main ServiceNow page.

17. Scroll down to the bottom and click on the **Show Workflow** Related Link.

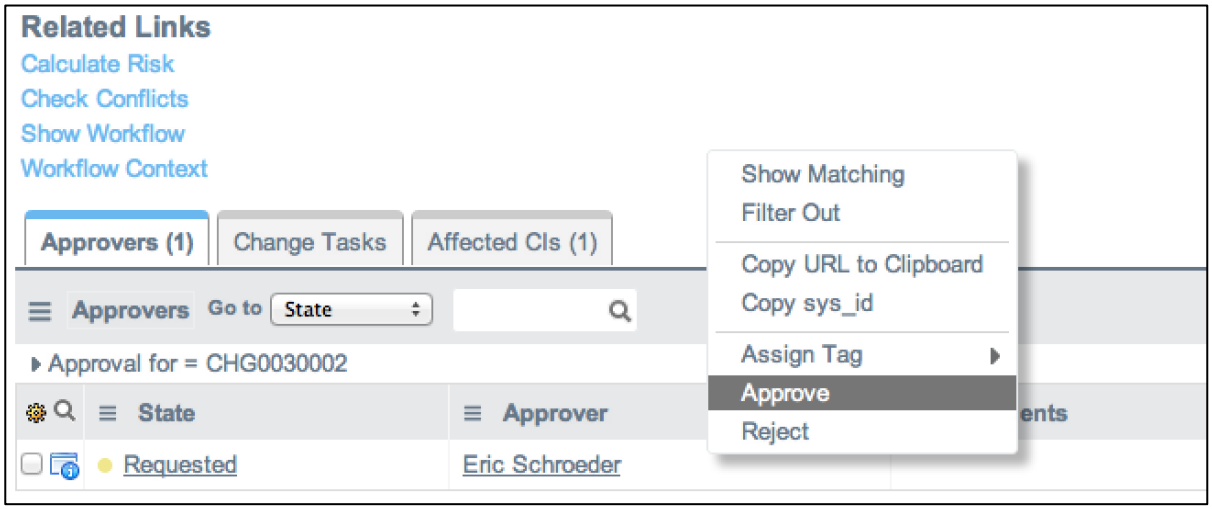


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18. This is the default **Routine Change** workflow. You can modify the workflow to meet any change control standards you require. In this case, a manager approval is required before proceeding. This creates an approval for **cloud approver** since he is cloud user's Manager.

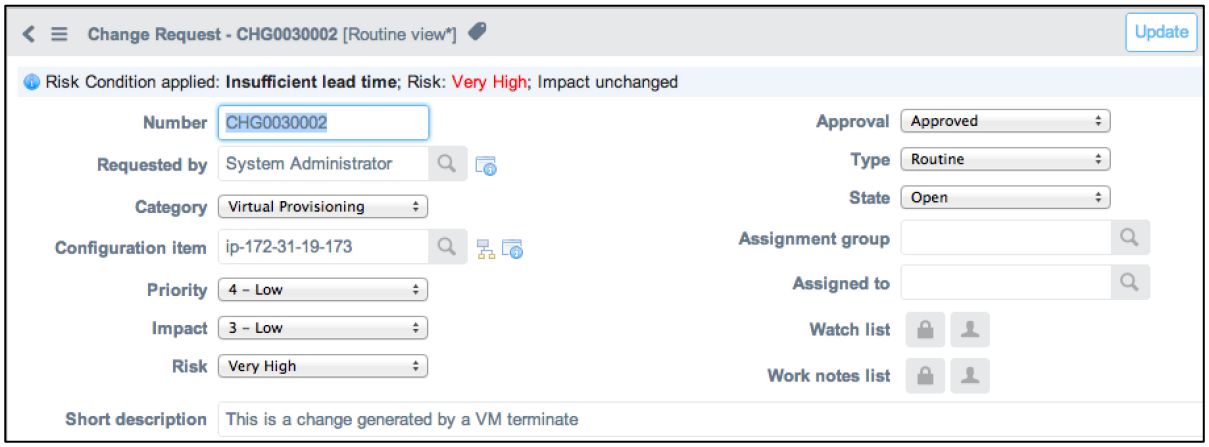


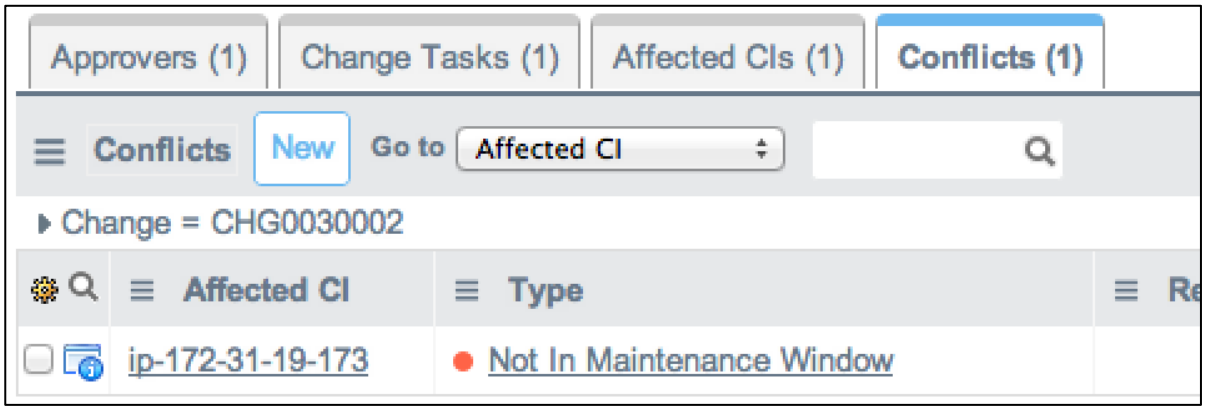
19. Navigate back to the **Change Request**. Right-click the requested approval and select **Approve**.



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NOTE: You can also select Calculate Risk and Check Conflicts, which are default features within the Change Request. These provide the Change team with more information regarding the Change Request and enforce change standards.





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Lab Success Verification

1. Impersonate **<cloud user>**.

2. **Self-Service > My Virtual Assets**.

3. Click the Name of the VM you were changing.

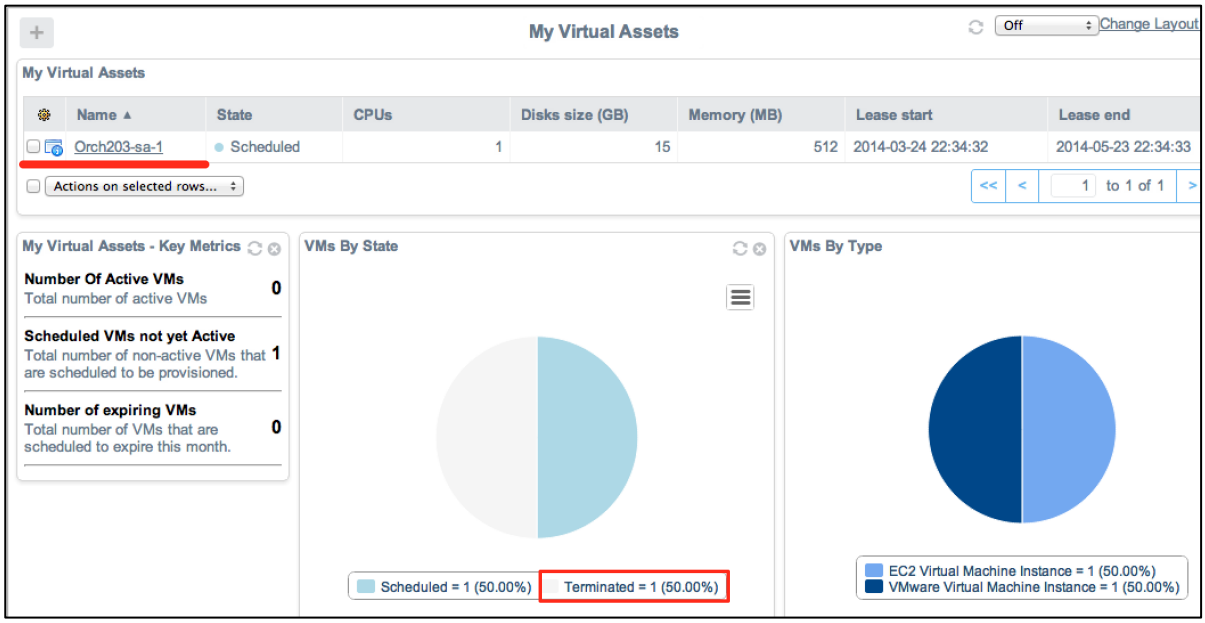
   The Related Links reflect the current state of the VM. **Cancel Change** cancels the change request in the event that the end user no longer wants to terminate the VM.



4. Click **Proceed with Change** to terminate the VM. This launches an Orchestration workflow to terminate the VM in EC2.

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5. Verify that the EC2 VM has been removed from the **My Virtual Assets** list and the number of **Terminated VMs** has increased by 1.



6. Report lab status using **Lab Management > Report Lab Progress.**

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Lab Goal

Use the Service Monitoring Portal to determine the health of the Cloud Provisioning application by understanding and responding to critical events.

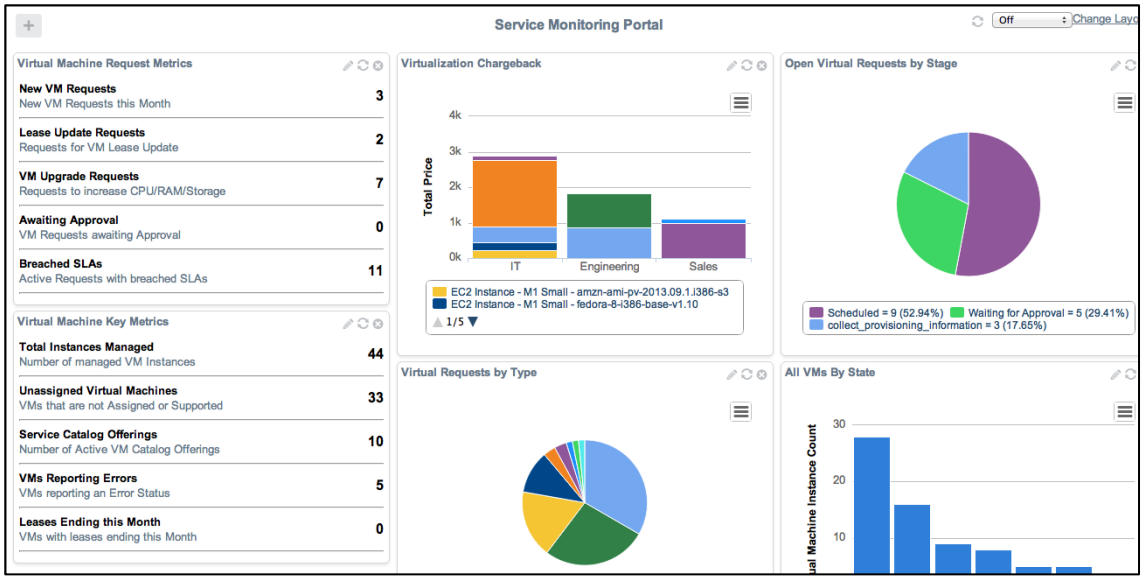
Lab 8
Monitoring service health

The Service Monitoring Portal

1. **Impersonate <cloud admin>.**

2. **Cloud Provisioning** > **Service Monitoring Portal**.

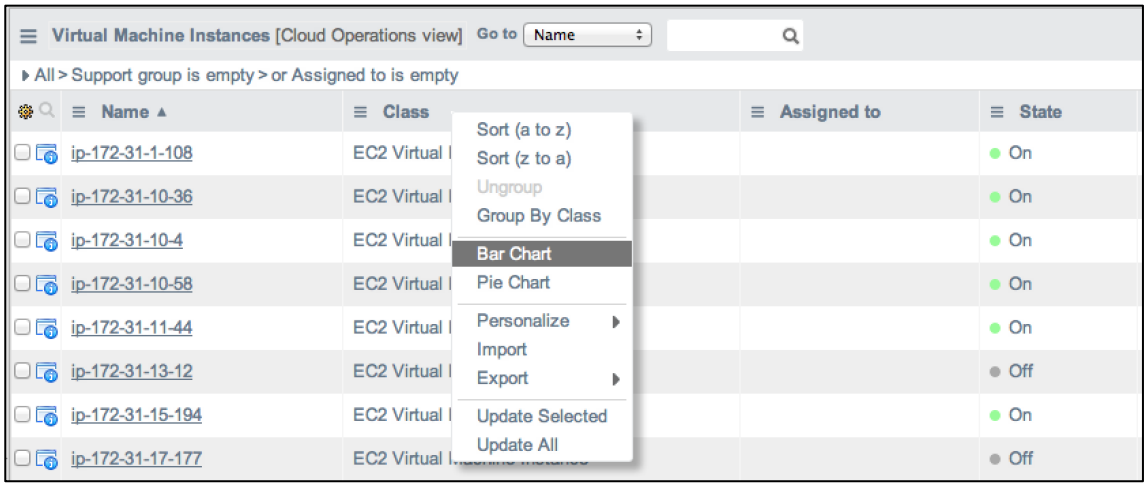
   The Service Monitoring Portal is available to members of the Virtual Provisioning Cloud Administrators group. It displays critical data that helps determine the health of the Cloud Provisioning application. When request SLAs breach, VM related costs spike, or there are unassigned VMs; this portal is the place to go to take action on those.



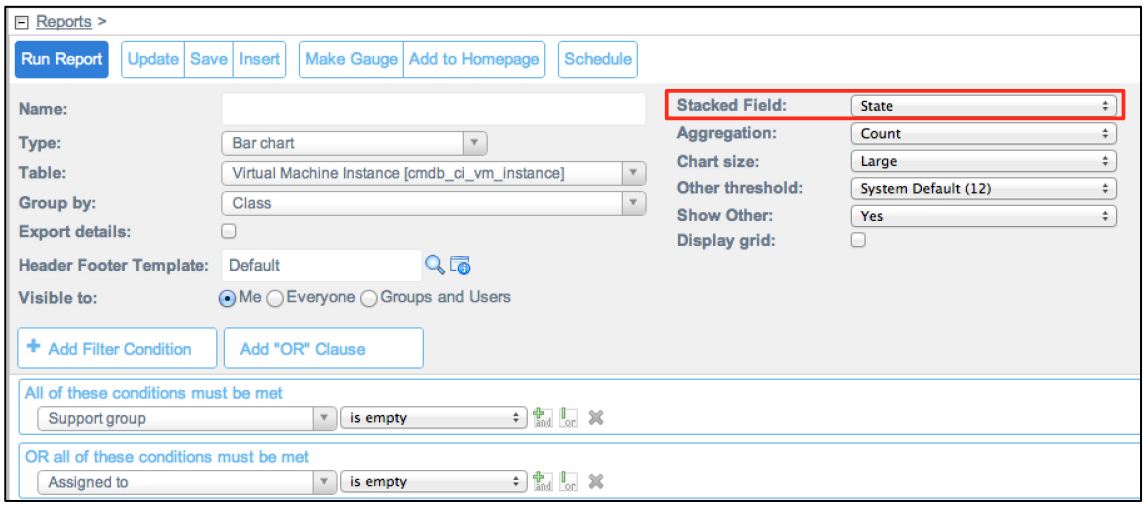
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3. Under Virtual Machine Key Metrics, click **Unassigned Virtual Machines.**

4. Right-click the **Class** column and select **Bar Chart.**

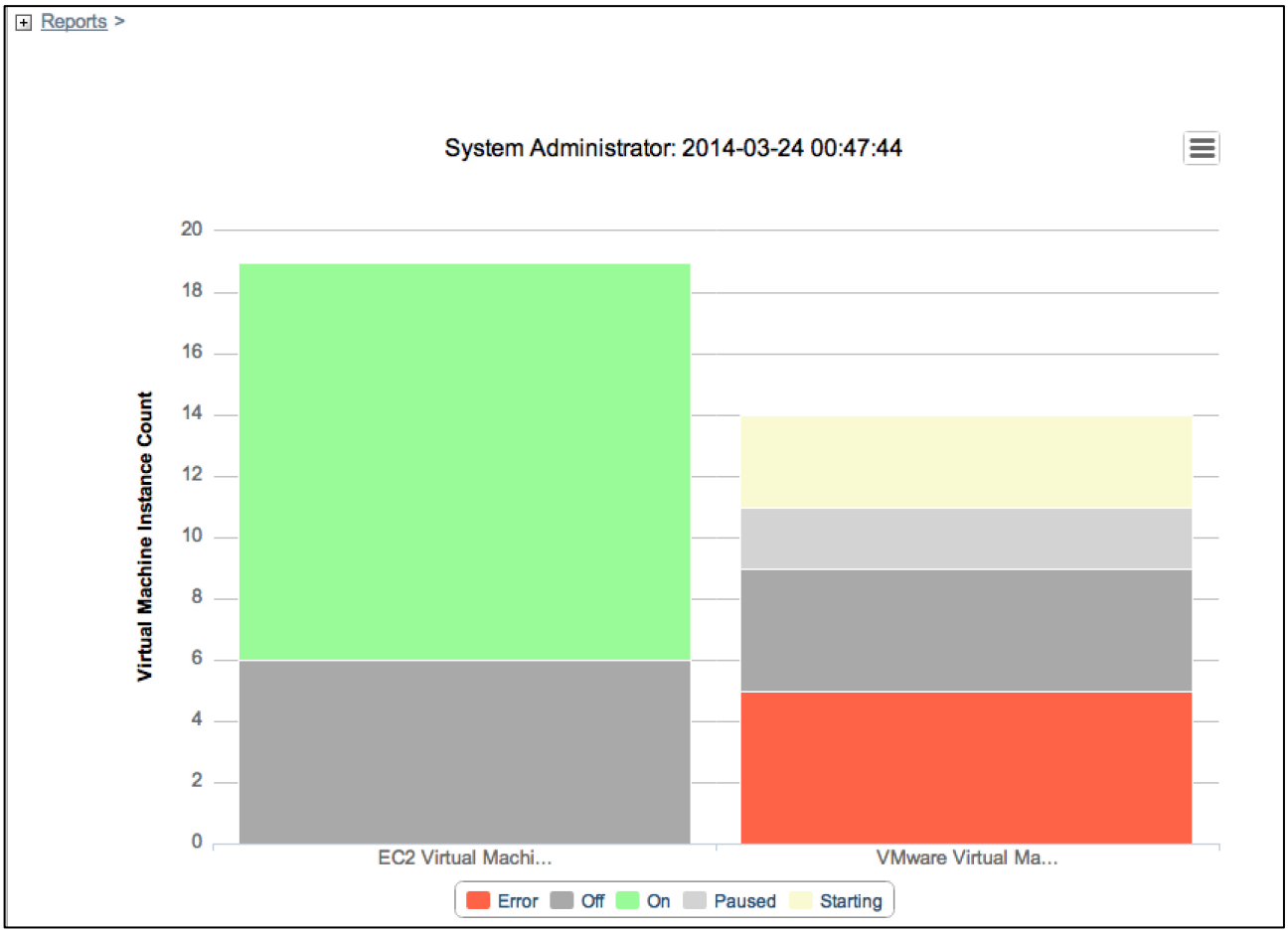


5. Stack the report by **State** and rerun the report.



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6. In a few clicks, you have identified VMs by type that are not assigned to a support group or to a person. This occurs when VMs are created outside of the ServiceNow process. The best approach to remedy this would be to create a Data Certification schedule to ensure that someone certifies all unassigned VMs.



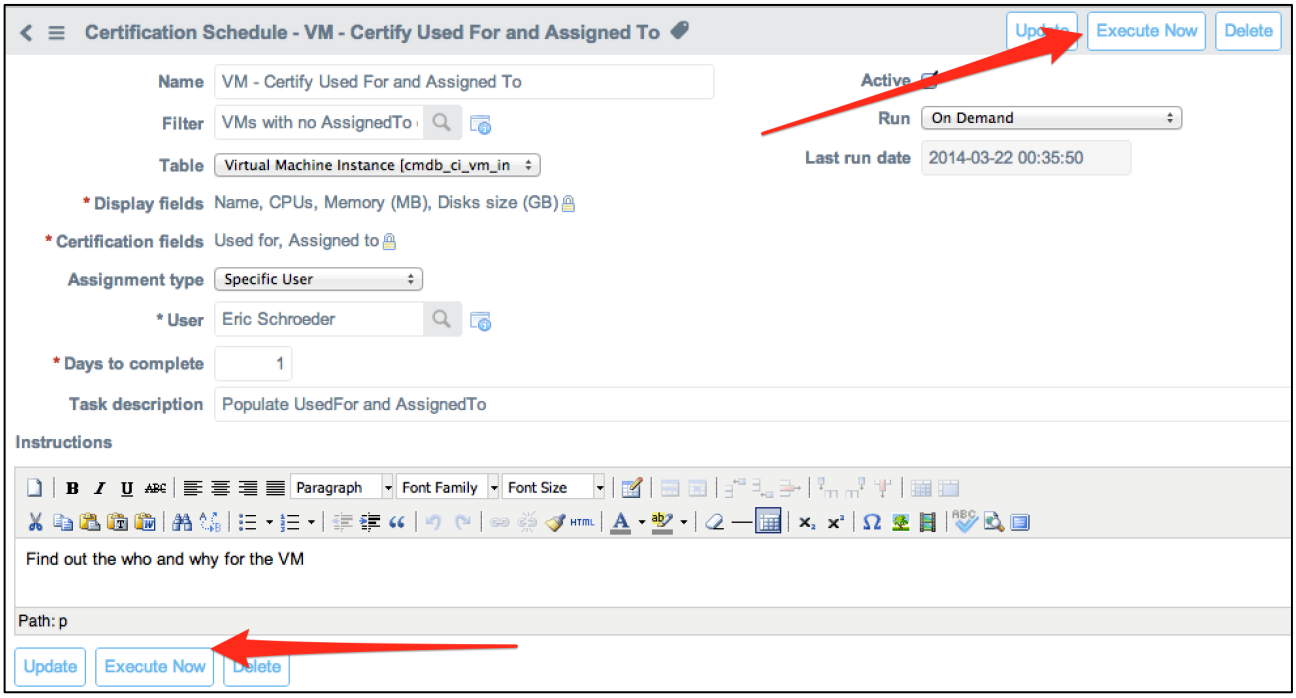
7. **Impersonate <System Administrator>**.

8. **Data Certification** > **Schedule Definitions**. Click the **VM - Certify Used For and Assigned To** schedule.

   This certification schedule can be set to periodically scan the CMDB for VMs with empty Assigned to or Used for fields.

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9. Click **Execute Now** to run the schedule.

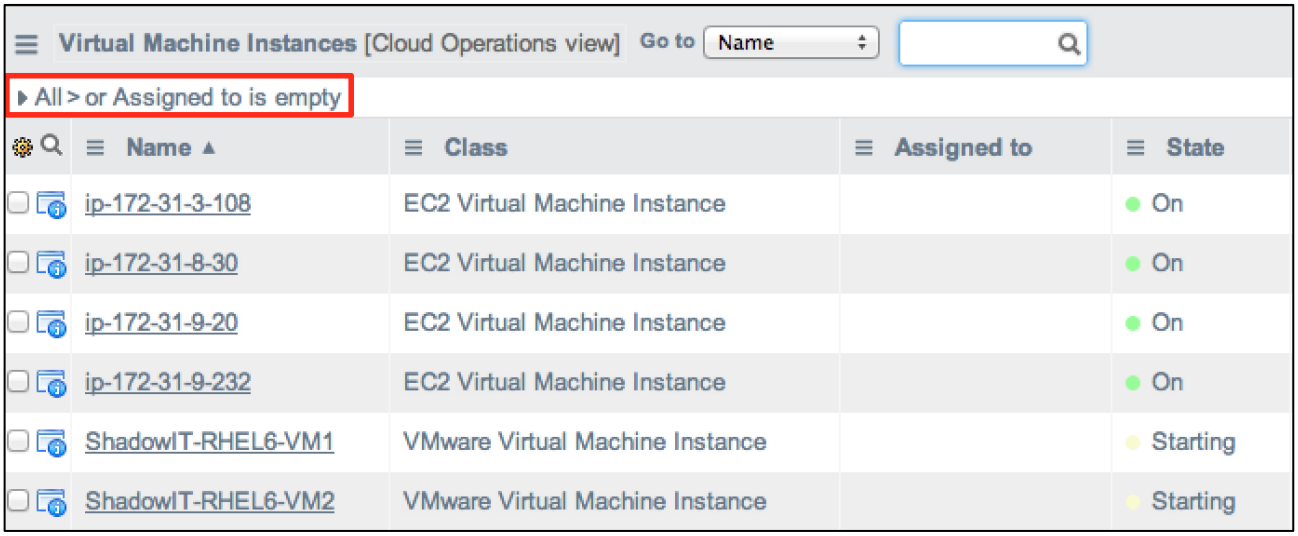


NOTE: Assignment type controls how certification tasks are assigned. Tasks can be assigned to specific groups or users; or from user or group fields on the table being certified. In this case, all tasks will be assigned to **Eric Schroeder** (a user with the certification role)

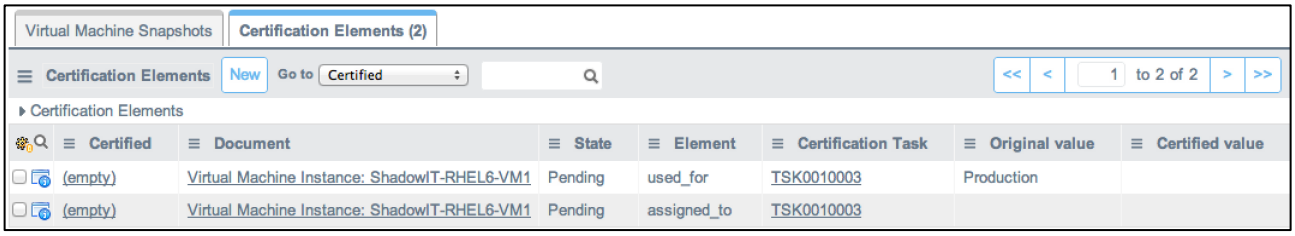
10. **Cloud Provisioning** > **Service Monitoring**. Select the **Unassigned Virtual Machine** metric again.

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11. Modify the filter to only display where **Assigned To is empty**.



12. Click **ShadowIT-RHEL6-VM1** and scroll to the bottom to view the Certification Elements.

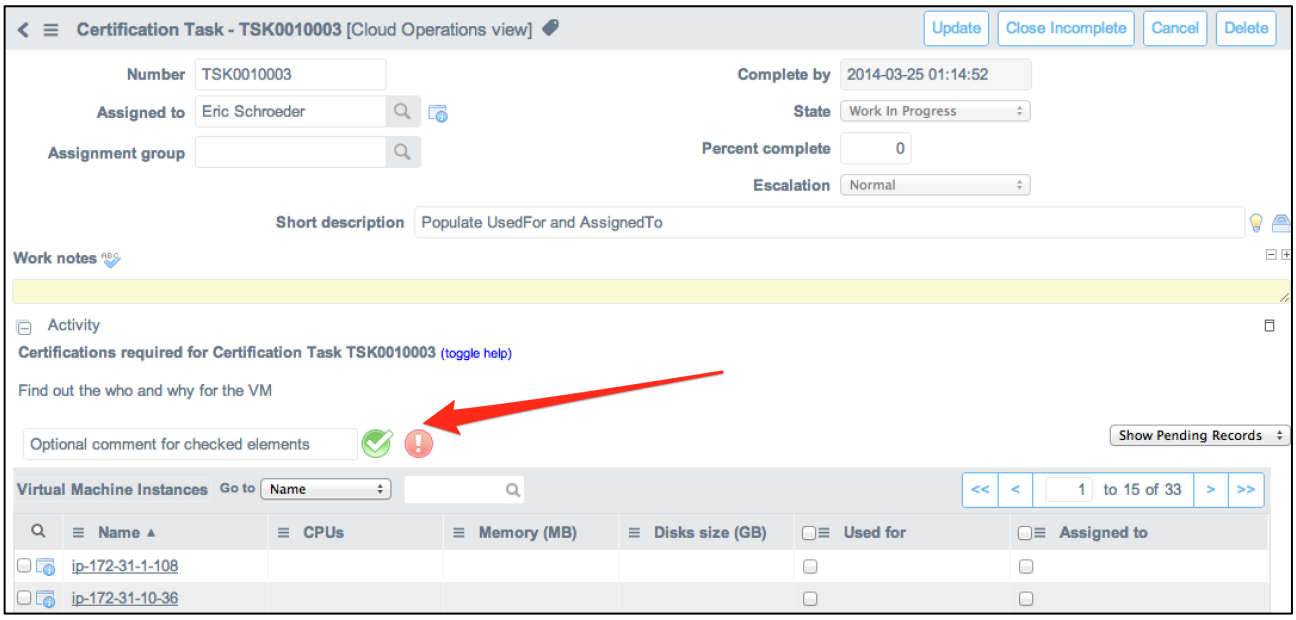


The certification schedule automatically assigned tasks to Eric Schroeder to populate the Assigned to and Used for fields in the ShadowIT VM.

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13. Click one of the **Certification Tasks**.

    Here you can work on the task on behalf of Eric. You can set the Used for and Assigned to fields and add a comment to the task by clicking the green check mark below. This populates those fields in the CI. It is important to mark all VMs so that they are assigned to the right stakeholders and are included in change control.



14. Report lab status using **Lab Management > Report Lab Progress**.

Additional Resources

- http://wiki.servicenow.com/index.php?title=Cloud_Provisioning
- http://wiki.servicenow.com/index.php?title=Amazon_EC2_for_Cloud_Provisioning
- http://wiki.servicenow.com/index.php?title=VMware_for_Cloud_Provisioning
- http://wiki.servicenow.com/index.php?title=Orchestration
- http://wiki.servicenow.com/index.php?title=Workflow_Overview
- http://wiki.servicenow.com/index.php?title=Data_Certification

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