Cloud Computing

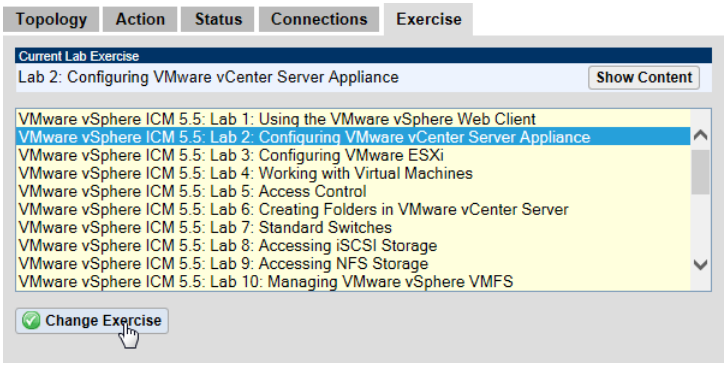
Practical 8:
Managing VMs and vApps

Aims and Objectives

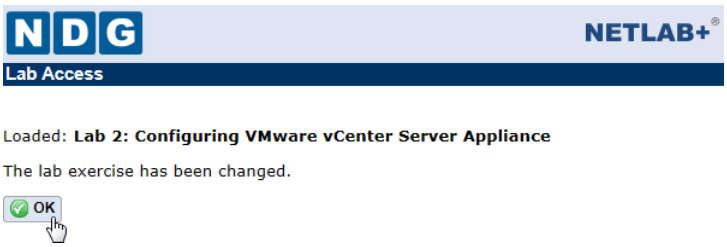
In this week's practical we continue examining how to construct cloud infrastructure, working with the VMware virtualization systems and completing practical tasks aligned with the VMware vSphere Install, Configure, and Manage certification curriculum. This week we examine the concept of virtual machine snapshots, which allows the contents of a virtual machine at a particular time to be captured. The state of the virtual machine can then be set to one of these snapshots at any time in the future, and the state of a virtual machine at a particular snapshot can also used for other operations, e.g., duplicated to another new virtual machine. We also examine the concept of a vApp, which is the combination of one or more VMs in a particular configuration, which can then be deployed as one logical appliance. For example, a vApp could be created to provide several load balanced web servers with an associated database server in one reusable appliance.

Changing Exercises in NetLab

If you complete the work for a lab task, you can change exercise using the Exercise tab indicated above. Changing on the Exercise tab will show you a list of available exercises for that particular POD:



Select the lab task that you wish to switch to, then click on the **Change Exercise** button. The system will then perform any necessary reconfiguration before displaying a confirmation message:



Clicking the **OK** button will return you to the topology to begin the new lab task.

Lab Tasks

In this week's practical, you are required to complete the first two lab tasks:

- Lab 14: Managing Virtual Machines
- Lab 15: Managing VMware vSphere vApps

Following the instructions above, start by booking in a POD to complete Lab 10. The instructions for the lab tasks can be found by clicking on the **Show Lab Content** button as explained in Practical 2.

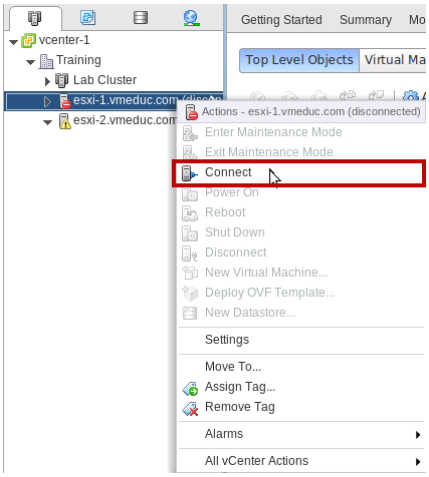
If you wish to complete multiple labs in one session, you can switch between labs using the steps shown above. Instructions for how to proceed with the next lab task can be found in the "problems" section below.

Make sure you follow the lab steps very carefully, otherwise you will encounter problems and be unable to complete the lab tasks.

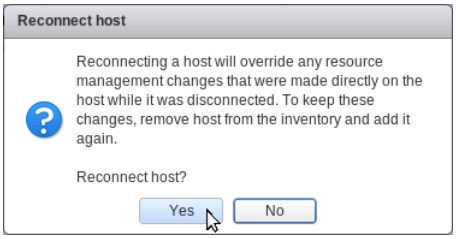
In the following pages, you will find instructions addressing possible problems you may encounter in completing each of the labs. Make sure you refer to these instructions as you complete the relevant lab tasks.

Possible Problems (General)

When the system first starts, it's possible that the infrastructure may not connect correctly. This can be identified by a red symbol appearing on the relevant infrastructure. If you encounter any problems, right click on the problem entry and click **Connect** on the pop-up menu:



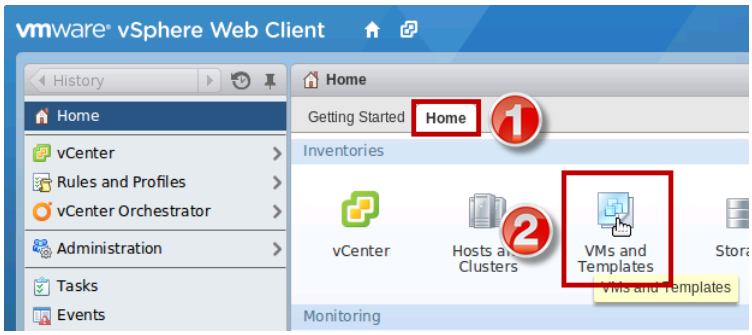
The system will then show a dialog, click **Yes** to confirm the (re-)connection:



Possible Problems with Lab 14. Managing Virtual Machines

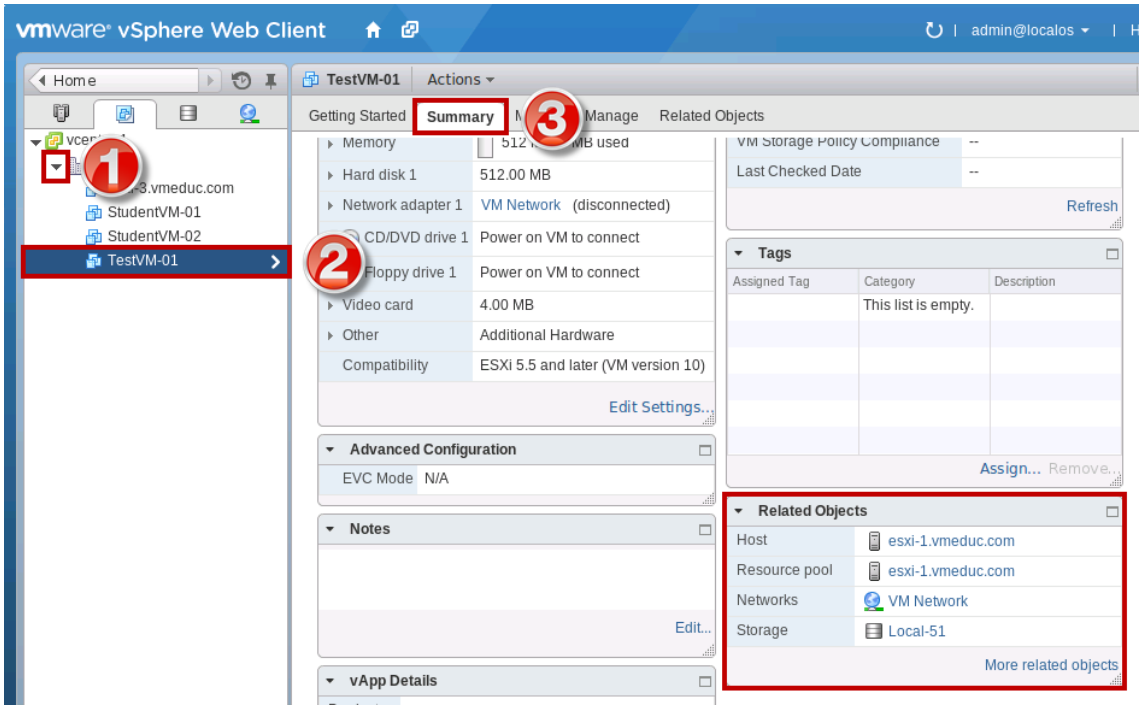
Part 1. Unregister a Virtual Machine in the vCenter Server Inventory

5. Click on the VMs and Templates icon in the Inventories section of the Home tab.

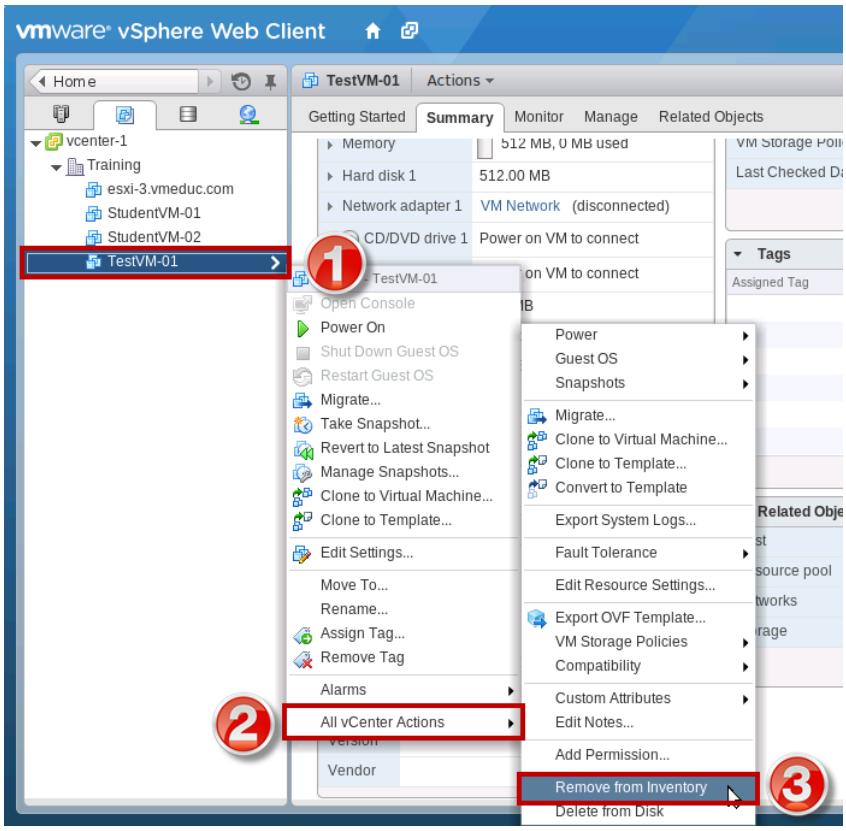


6. Click on TestVM-01 in the Object Navigator pane and then click on the Summary tab.

7. Scroll down to the Related Objects pane and record the following information about TestVM-01:



8. Right-click TestVM-01, select All vCenter Actions and then select Remove from Inventory.

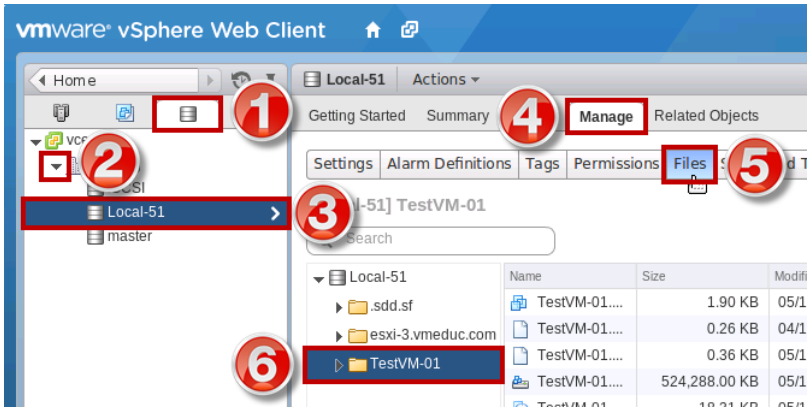


10. Click on the Storage tab in the Object Navigator pane.

11. Click on the datastore you recorded in Step 7 in the Related Objects pane.

12. Click on the Manage tab in the main workspace and then click on the Files button.

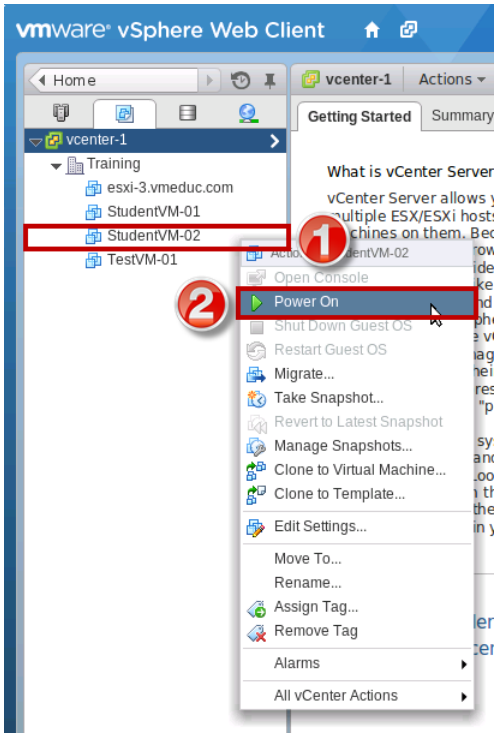
14. Click on the TestVM-01 folder to view the file's contents.



Part 2. Register a Virtual Machine in the vCenter Server Inventory

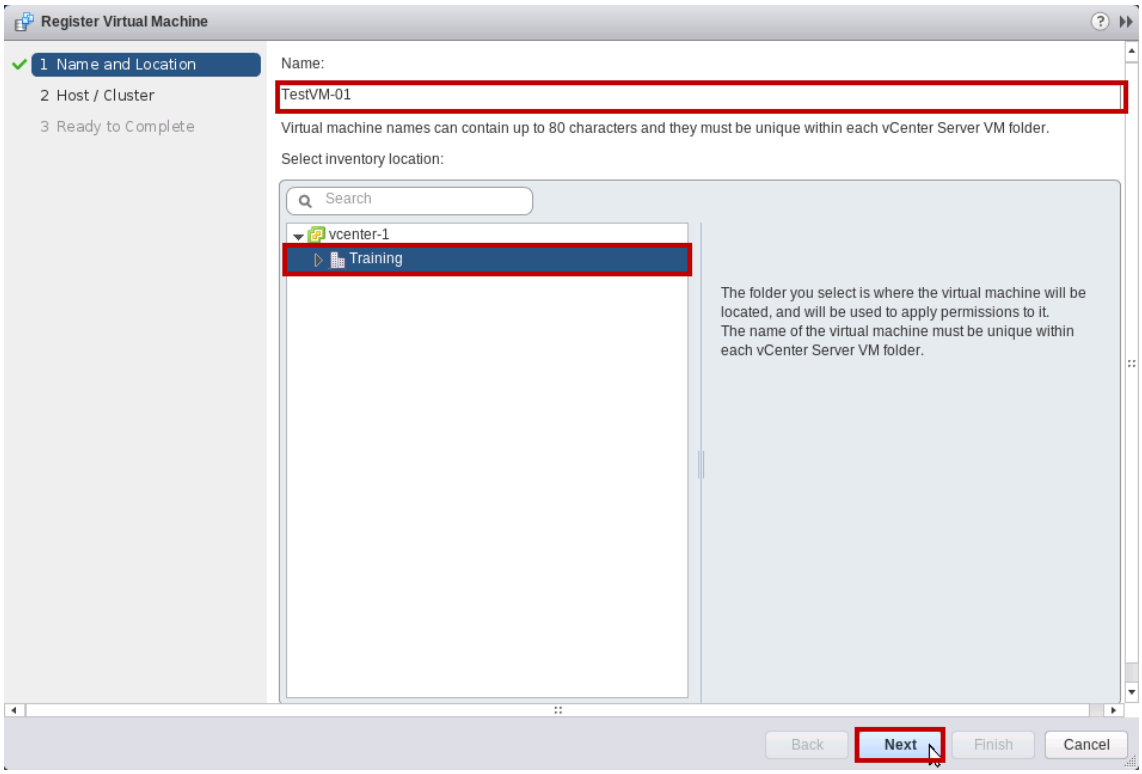
1. Expand the Name column so that the full names of files are visible.

2. Right-click on TestVM-01.vmx and select Register VM. The Register Virtual Machine wizard will appear.

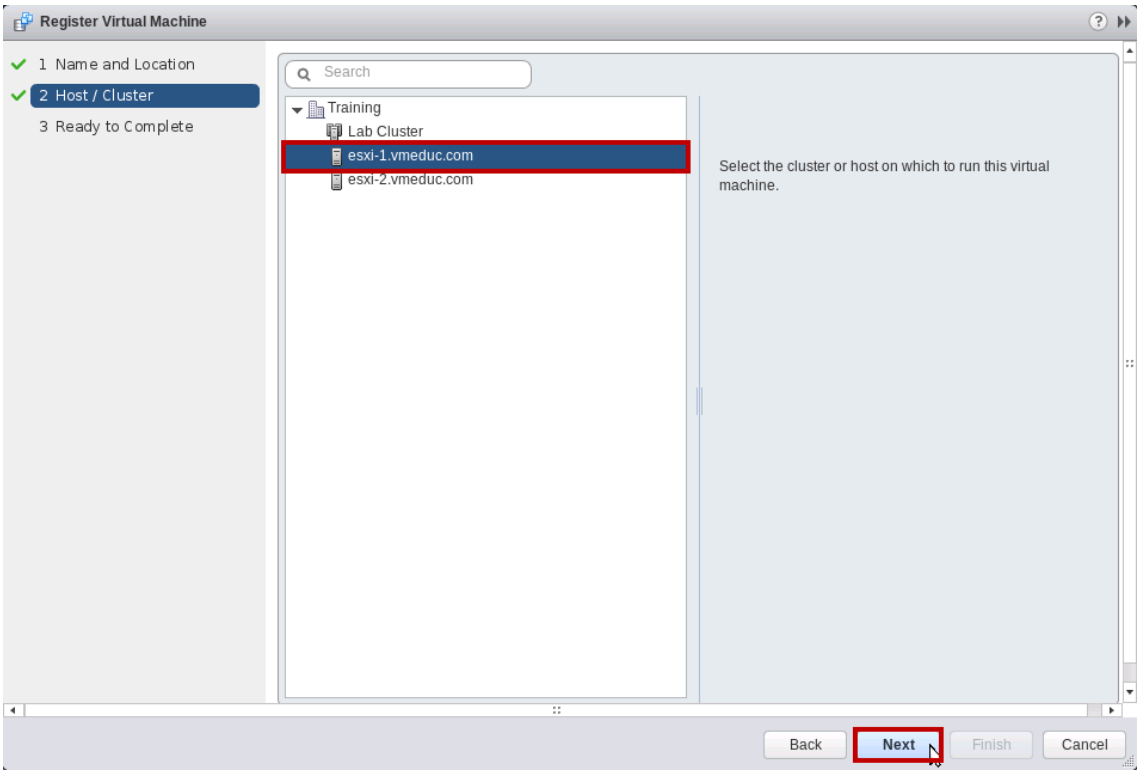


3. On the Name and Location page, leave the name set to TestVM-01.

4. Click on the Training datacentre and click Next.

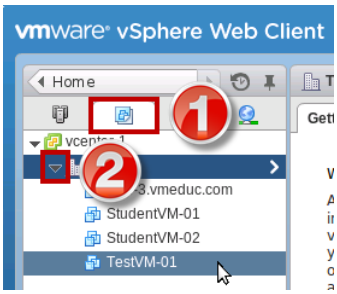


5. On the Host/Cluster page, expand the Training datacentre, select the esxi-1.vmeduc.com host and click Next.



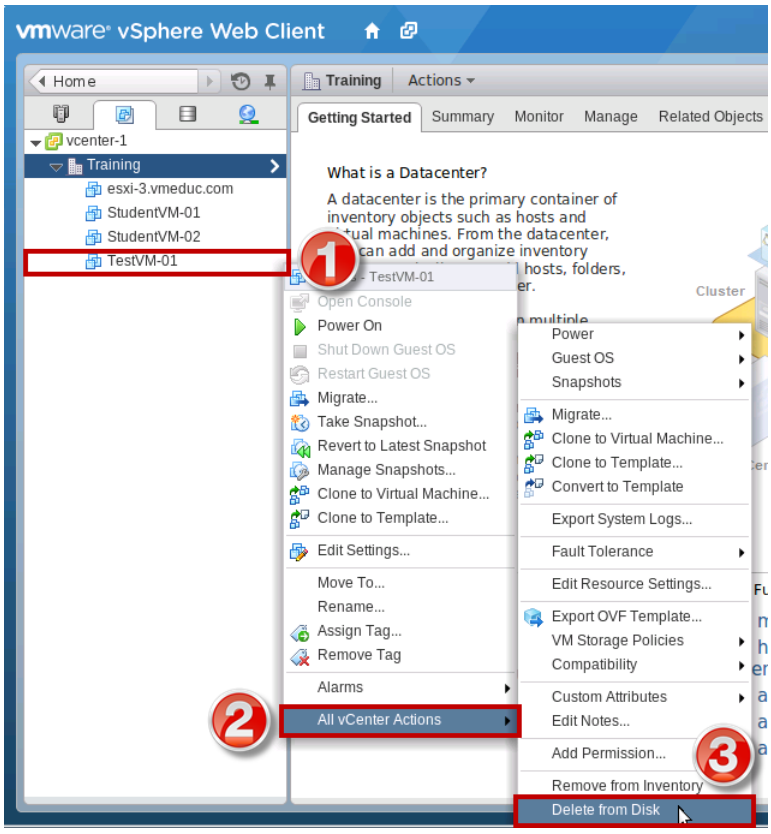
7. Click on the VMs and Templates tab in the Object Navigator pane.

8. What VMs are listed in the inventory pane?



Part 3. Unregister and Delete Virtual Machines from a Disk

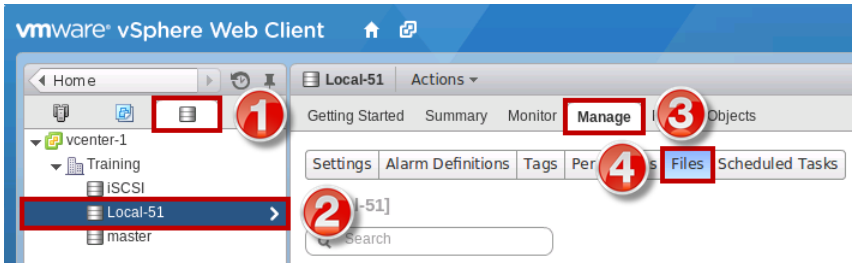
1. Right-click TestVM-01, select All vCenter Actions, and select Delete from Disk.



3. Click on the Storage tab in the Object Navigator pane.

4. Click on the datastore you recorded in step 7 in the inventory pane.

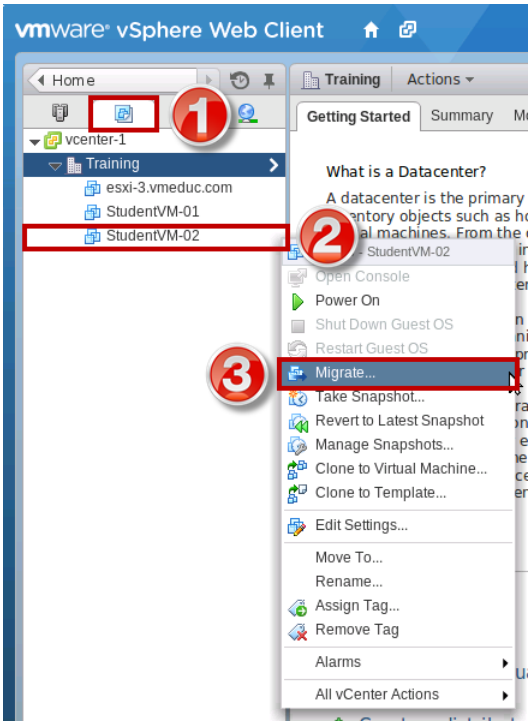
5. Click on the Manage tab in the content pane and then click on the Files button.



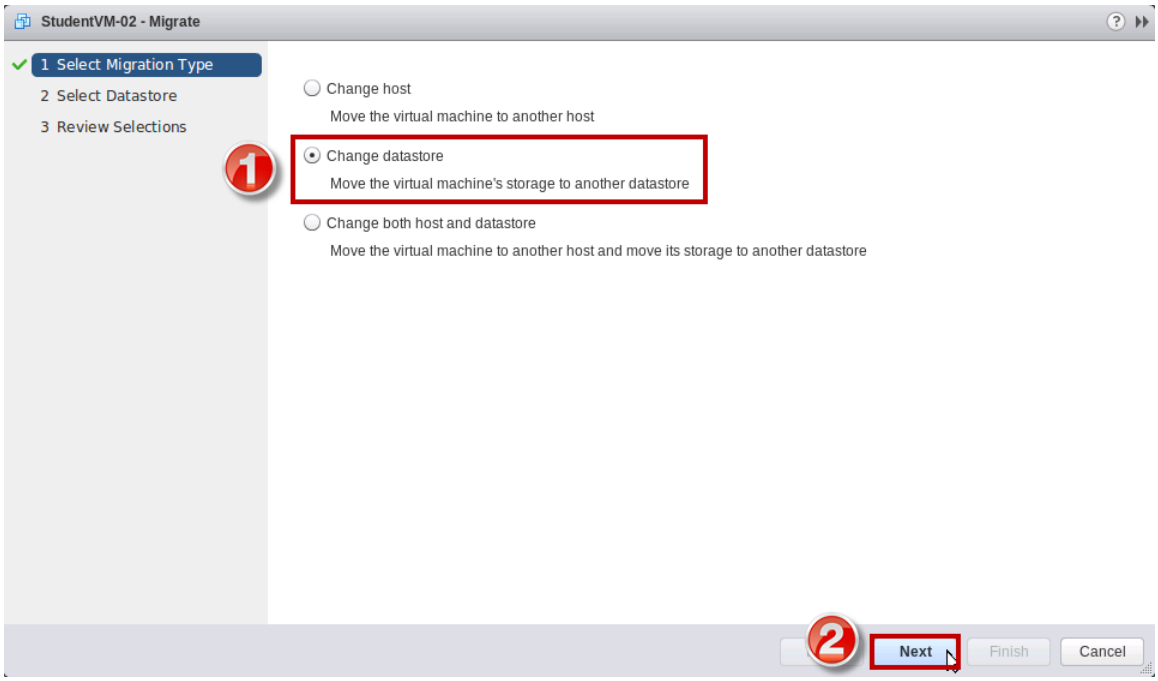
7. When TestVM-01 has been successfully removed, migrate StudentVM-02 onto the master datastore, select Thin Provision for the virtual disk format.

This is a very complicated instruction which is shown with step-by-step instructions, as follows.

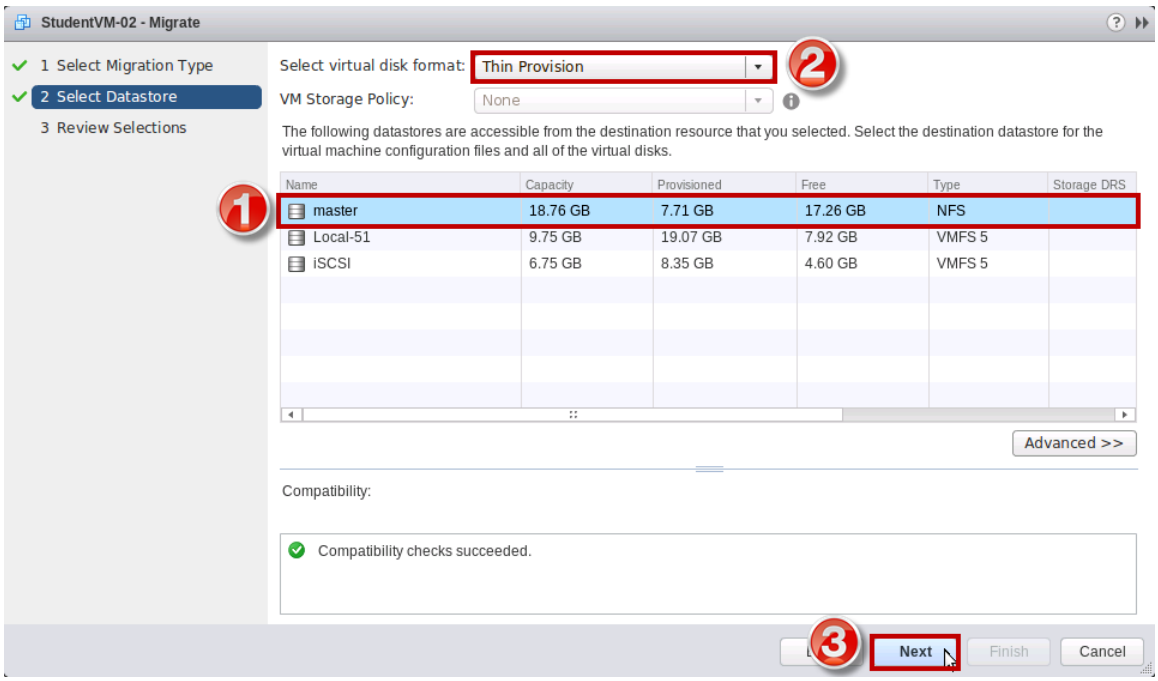
Start by clicking on the **VMs and Templates** button in the Object Navigator pane. Right-click on the **StudentVM-02** entry in the inventory pane and select **Migrate…**



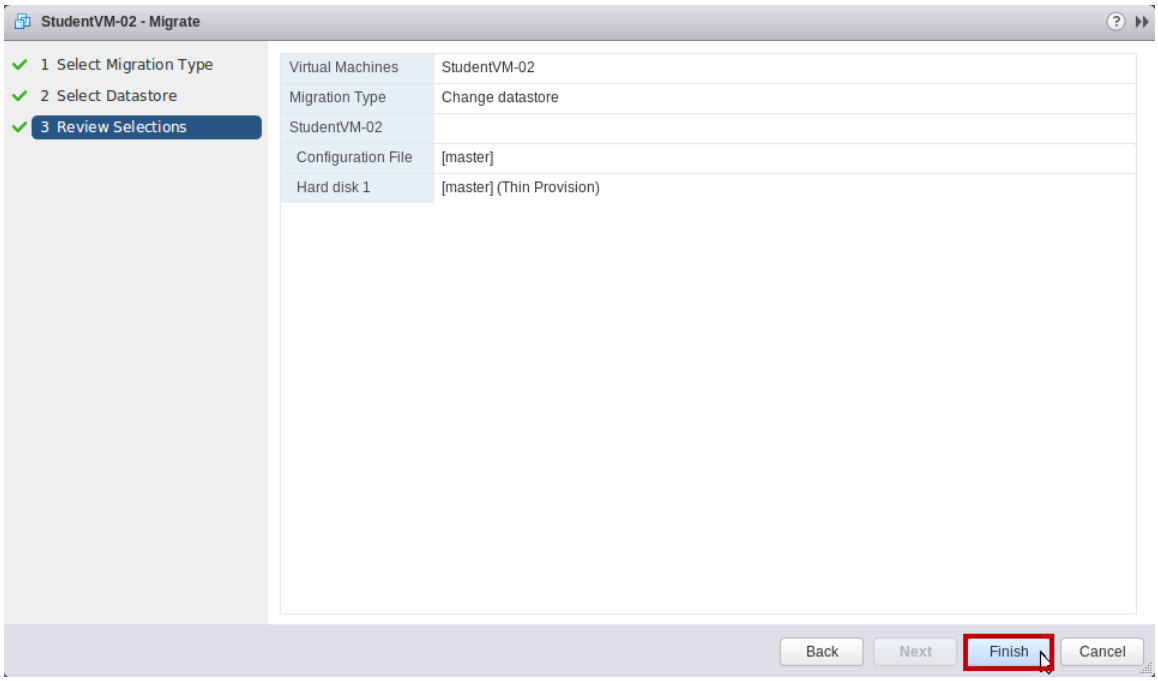
On the Select Migration Type page of the migration wizard, select **Change datastore** then click **Next.**



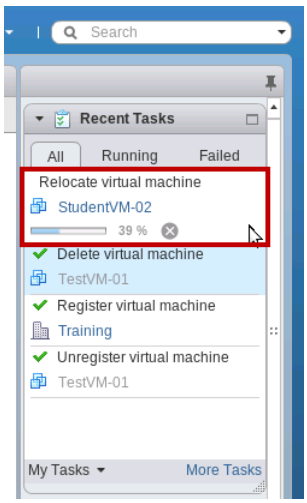
On the Select Datastore page of the migration wizard, select the **master** datastore, confirm that the Select virtual disk format field shows **Thin Provision** then click **Next**.



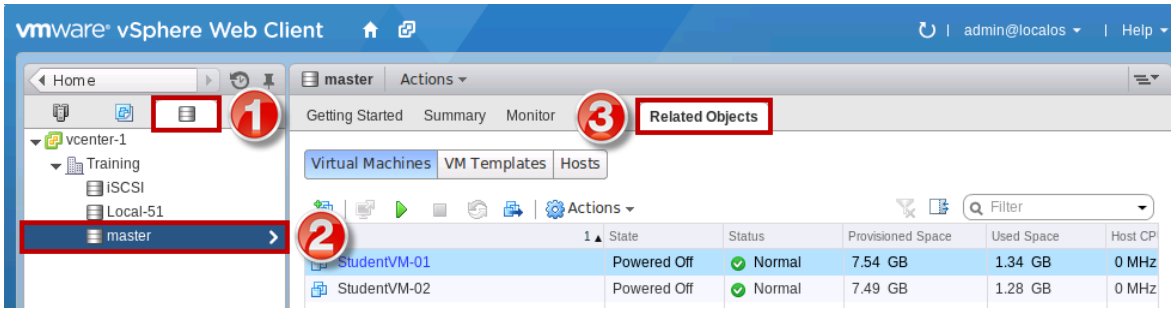
On the Review Selections page of the migration wizard, confirm the settings then click **Finish**.



Finally, wait for the task to complete, which you can monitor in the Recent Tasks panel at the top right of the browser window.



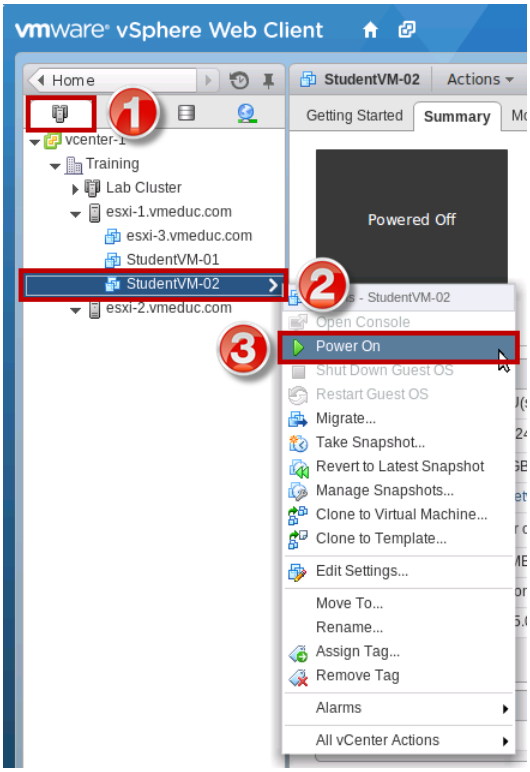
8. The Related Object tab for the master datastore should resemble the following when viewing Virtual Machines.

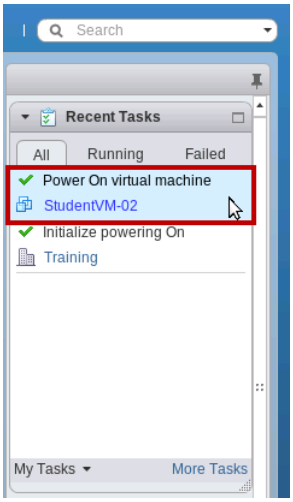


Part 4. Take Snapshots of a Virtual Machine

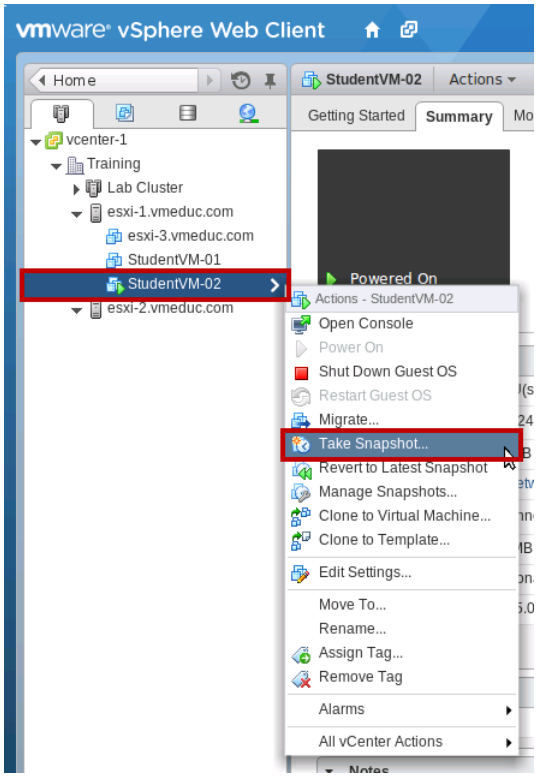
1. Right-click StudentVM-02 in the Object Navigator pane and select Power > Power On. Wait for the machine to power up.

After powering up the VM, monitor the progress of the operation in the Recent Tasks panel at the top-right of the window (shown as completed).





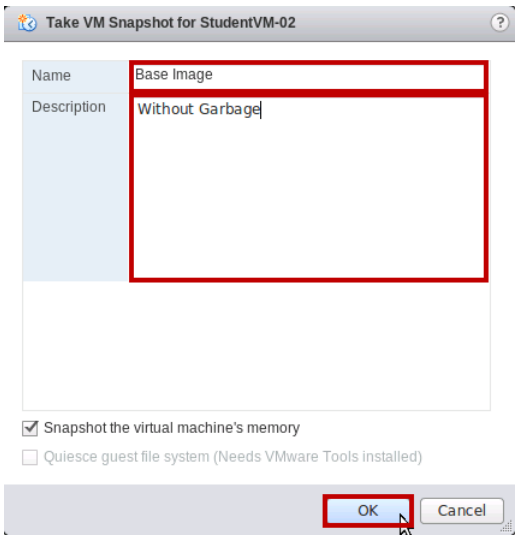
2. Right-click the virtual machine and select Take Snapshot.



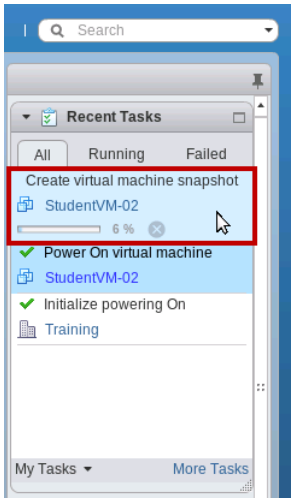
3. In the Name field, enter Base Image.

4. In the Description field, enter Without Garbage.

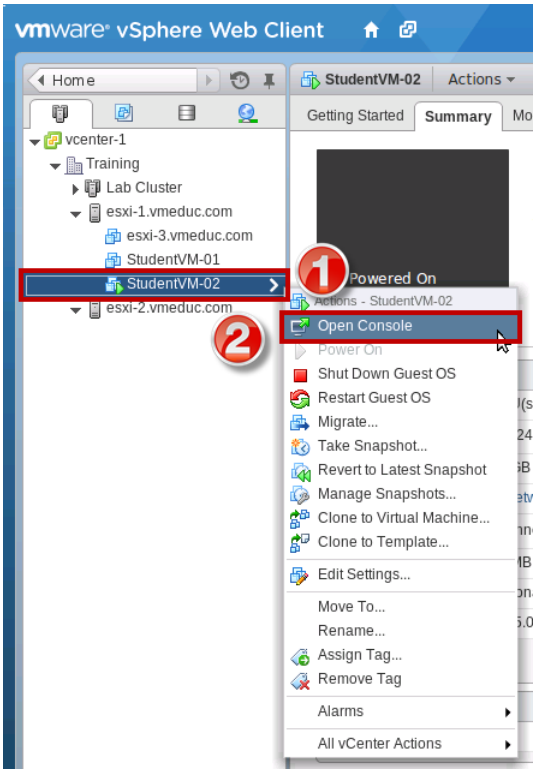
5. Leave the rest of the settings at their defaults and click OK.



6. Monitor the Recent Tasks pane and wait for the task to complete. The process will take a few moments.



7. Right-click StudentVM-02 and select Open Console.

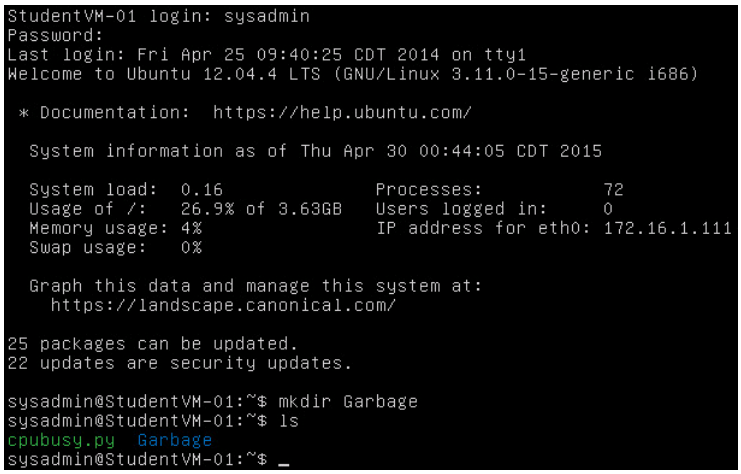


9. Log in as user sysadmin with vmware123 as the password.

10. Type mkdir Garbage and press Enter.

11. Type ls and press Enter.

Note: If the console window appears to be blank, press any key on the keyboard to wake it up again (you may need to click in the black area first).



15. Return to the vSphere Web Client, right-click StudentVM-02 and select Take Snapshot.

16. In the Name field, enter Test Image.

17. In the Description field, enter With Garbage.

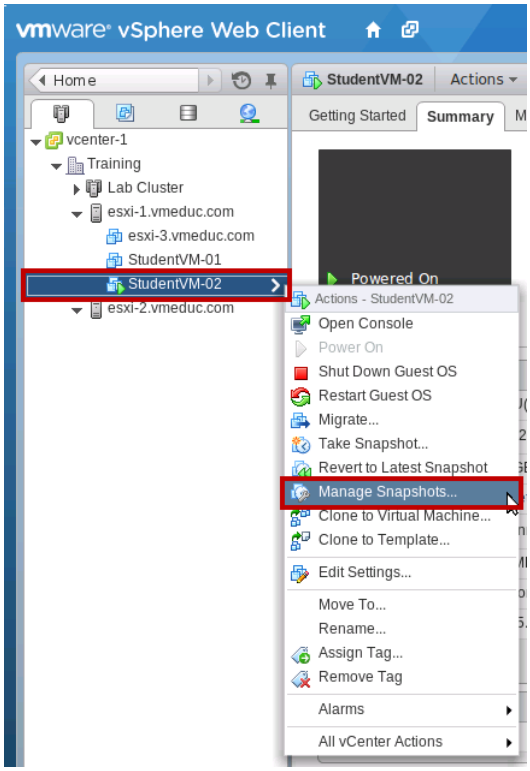
18. Leave the rest of the settings at their defaults and click OK.

19. Monitor the Recent Tasks pane and wait for the task to complete. The process will take a few moments.

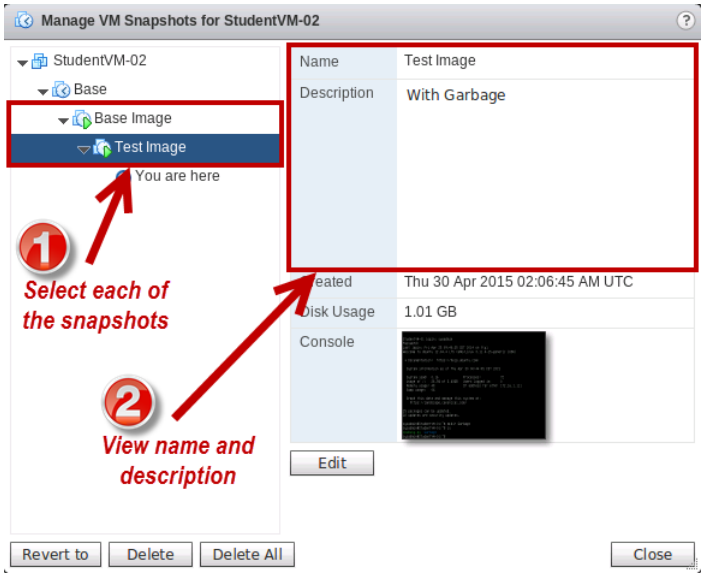
For help completing these steps, review Steps 2-6 above (it is the same task, just with different name and description values).

If the system is not responding to your clicks, the most likely cause is that you haven't completed Step 14 properly. Move your mouse into the StudentVM-02 window, then hold down the **CTRL** and **ALT** keys. Move the mouse outside of the StudentVM-02 window, while keeping it inside the vClient window. If you are still having difficulties, while holding CTRL and ALT, try clicking on the title bar for the StudentVM-02 window.

20. After the task has completed, right-click StudentVM-02 and select Manage Snapshots.



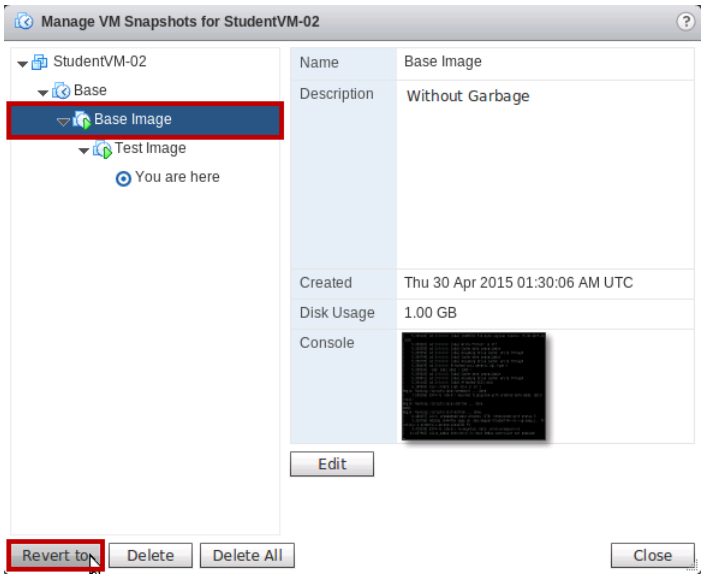
21. Select each snapshot in the snapshot hierarchy and view its name and description.



Part 5. Revert to a Snapshot

1. In the Manage Snapshots window, select the snapshot name Base Image and select Revert to.

After completing this step, the window will remain open. In the background, you will see the Recent Tasks panel in the top right of the window. Monitor the progress of this task. Once the task completes, the window will update and the 'You are here' line will move.



Steps 5-14.

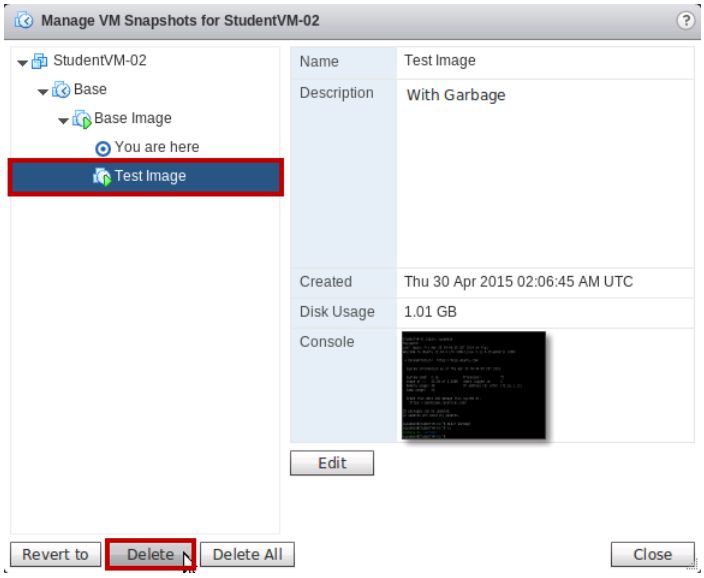
These steps are only repeating tasks that have already been examined. Use the information above if you run into trouble.

Part 6. Delete and Individual Snapshot

Steps 1-7.

These steps are only repeating tasks that have already been examined. Use the information above if you run into trouble.

8. Highlight Test Image and select Delete.



10. You may now verify that the Garbage directory is no longer present on the StudentVM-02 virtual machine.

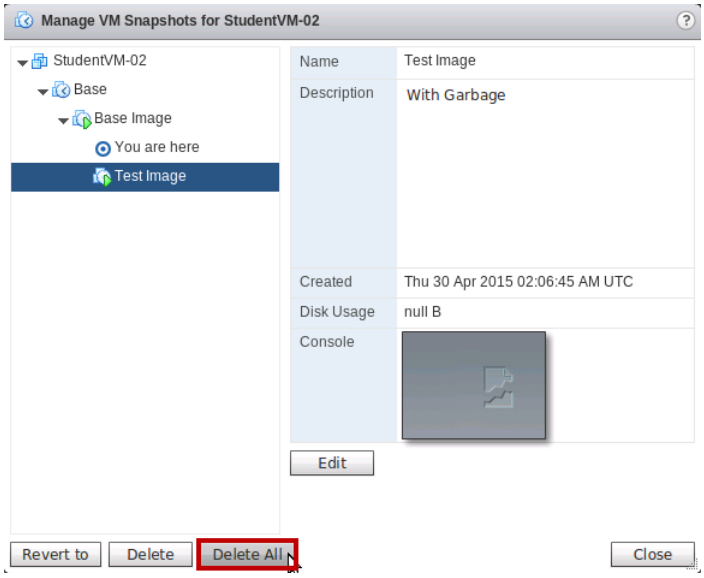
You can skip this task if you wish as it is identical to Steps 5-7 in Part 5 Revert to a Snapshot.

Part 7. Use the Delete All Function in Snapshot Manager

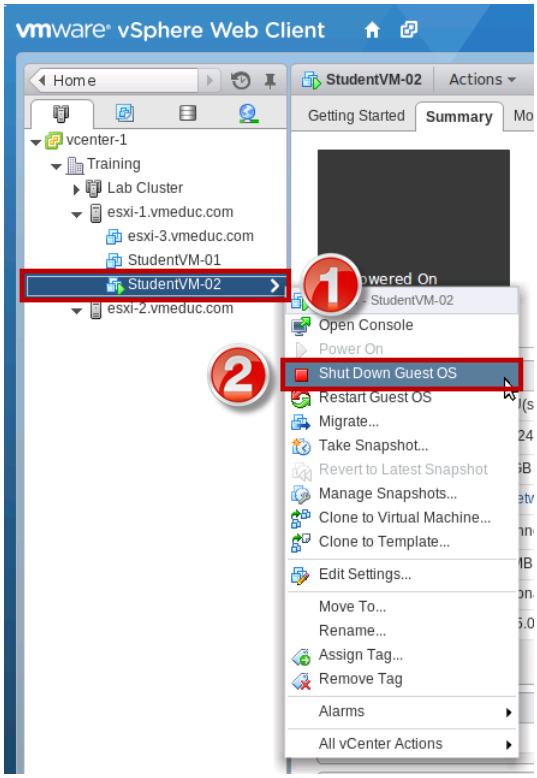
1. *Right-click the StudentVM-02 and select Manage Snapshots.*

This step is only repeating tasks that have already been examined. Use the information above if you run into trouble.

3. Click on Delete All.



10. Right-click the StudentVM-02 and select Shut Down Guest Os and click Yes on the confirmation screen.

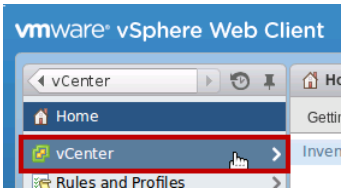


Possible Problems with Lab 17. Managing VMware vSphere vApps

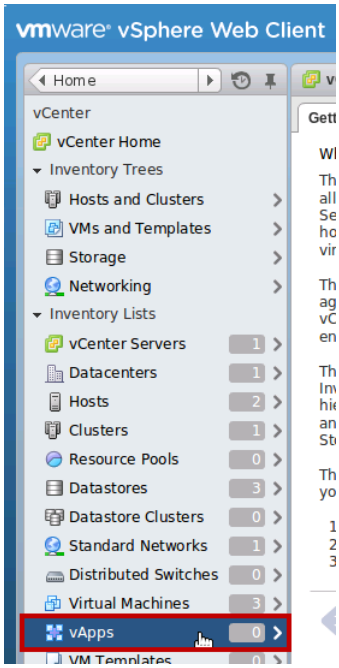
The start of this lab task assumes that you have just started an equipment POD. In this case, we already have a running POD, so begin the new lab by clicking on the Home button, then continuing the instructions from Step 5.

Part 1. Create a vApp

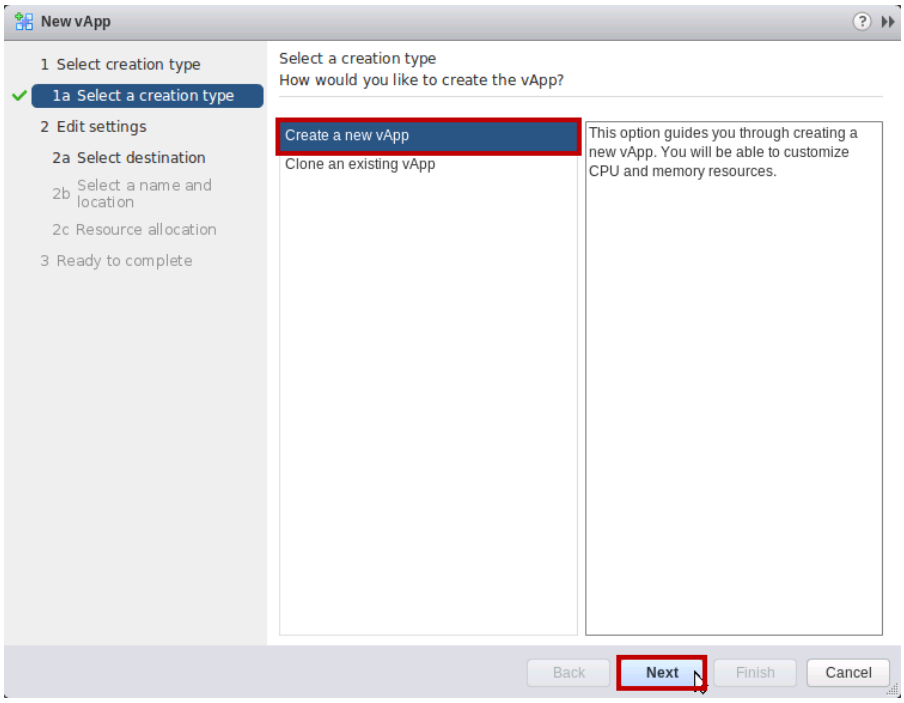
5. Click on the vCenter icon in the Object Navigator pane.



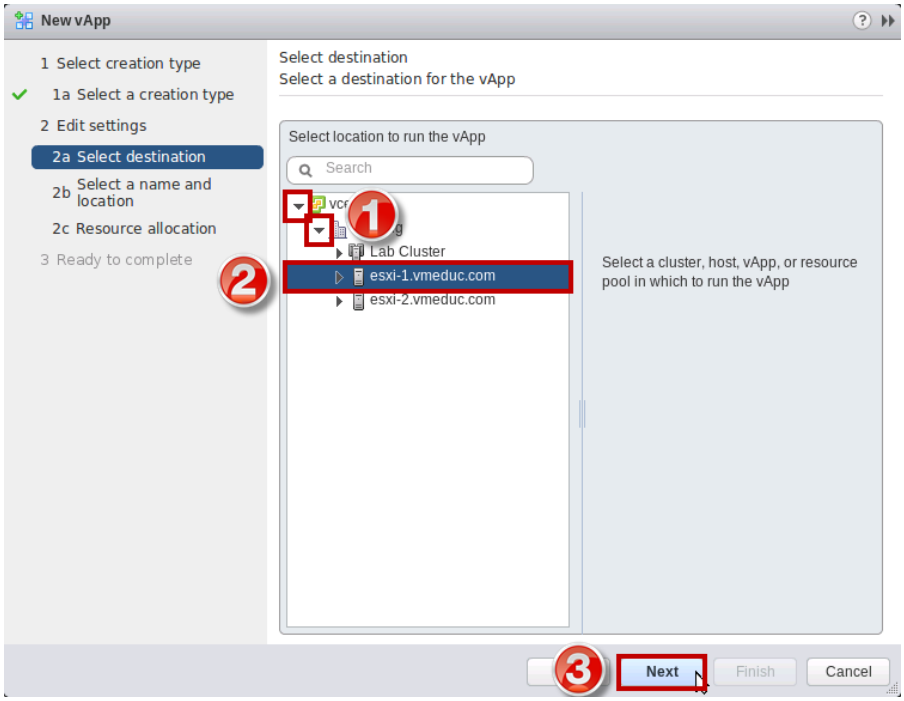
6. Click on the vApps entry under the Inventory Lists and then click on the Create a New vApp icon.



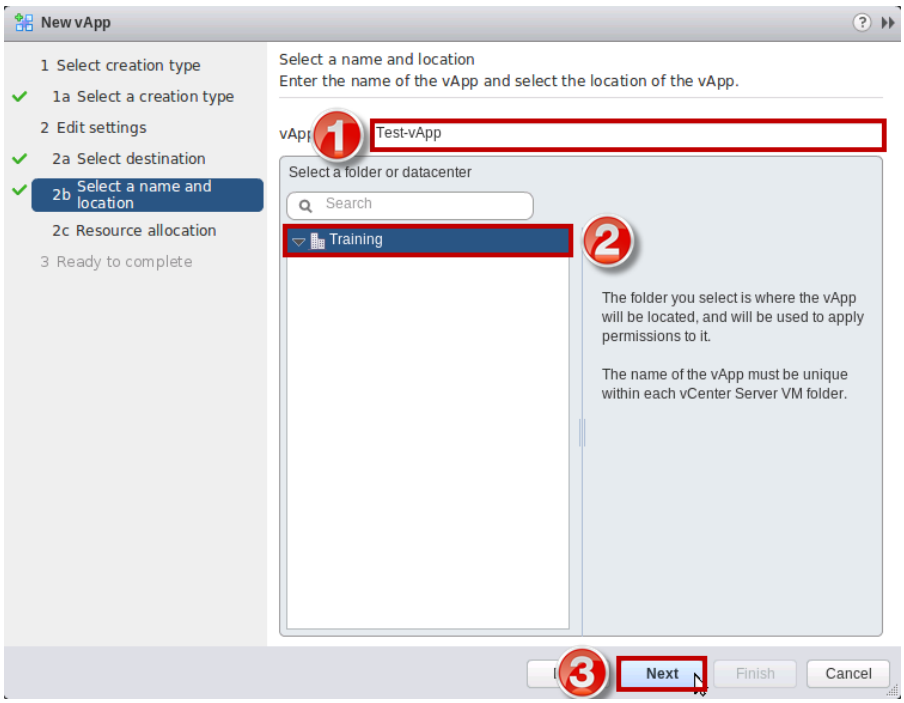
7. On the Select a creation type page, click on the Create a new vApp and then click Next.



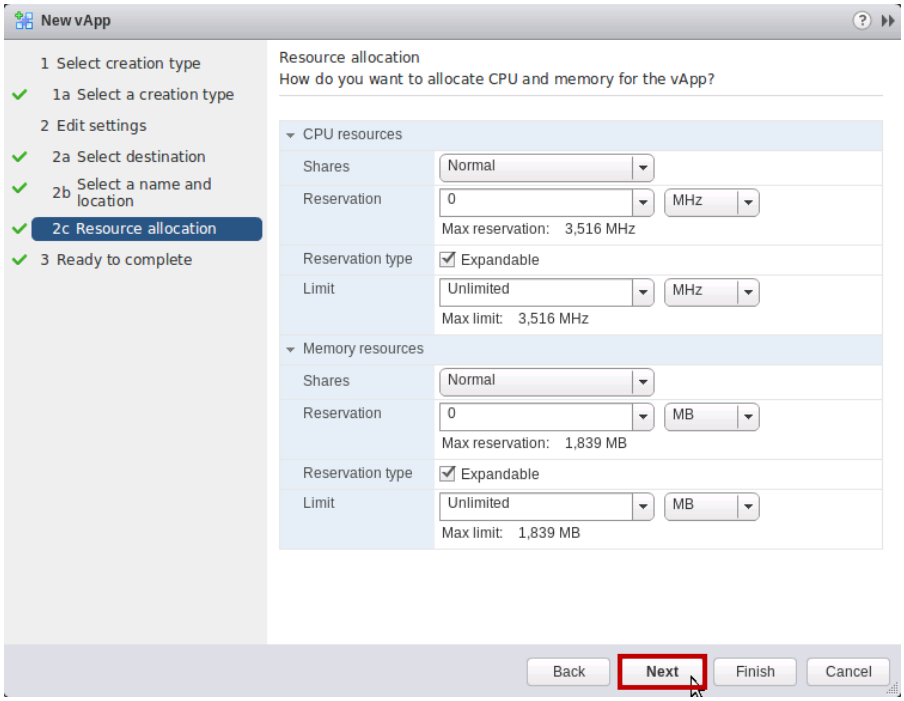
8. On the Select destination page, click on Create a new vApp and then click Next.



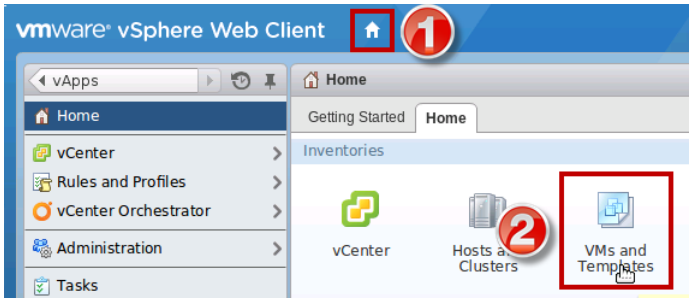
9. On the Select a name and location page, add the name as Test-vApp and select the Training datacenter. Click Next.



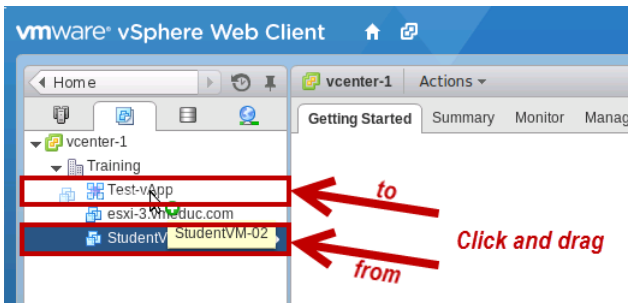
10. On the Resource Allocation page, leave the defaults and click Next.



12. Click on the Home icon in the title bar and then click on the VMs and Templates icon in the main workspace area.



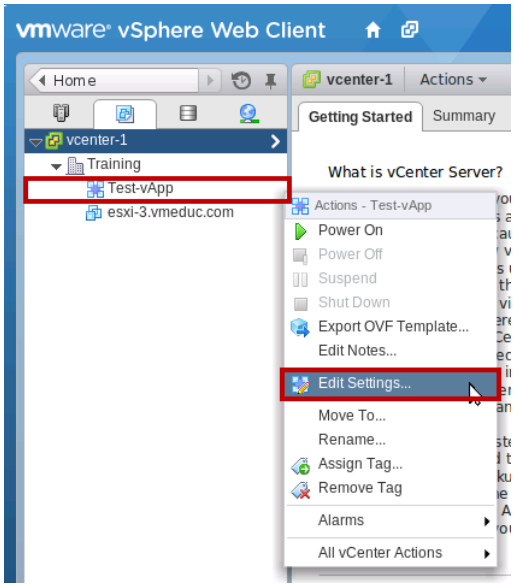
15. Drag StudentVM-01 and StudentVM-02 virtual machine in the inventory list to the vApp.



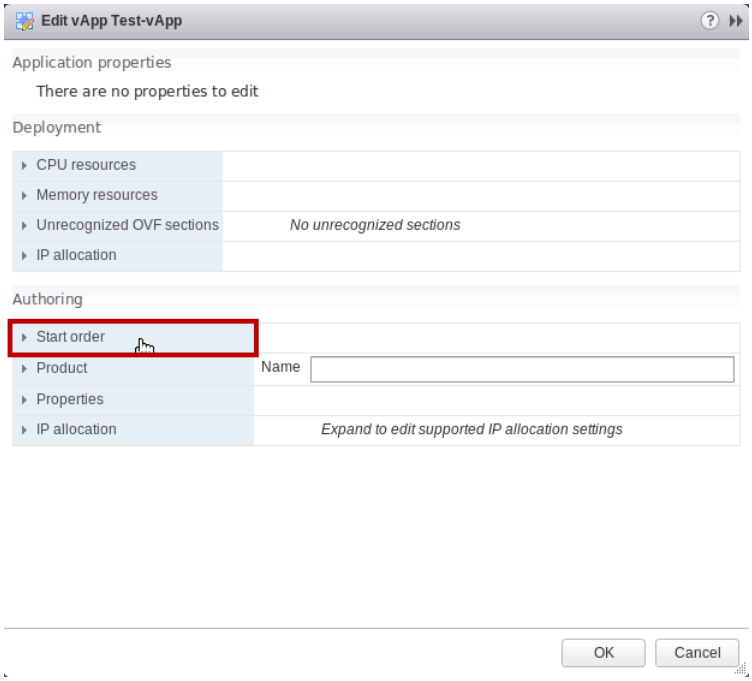
16. Your inventory should now look like the image below.

Note that the TestVM-01 virtual machine will not appear in this list – we deleted it in the first lab in this practical!

17. Right-click Test-vApp in the Object Navigator pane and select Edit Settings.



18. Click on Start Order under the Authoring group.

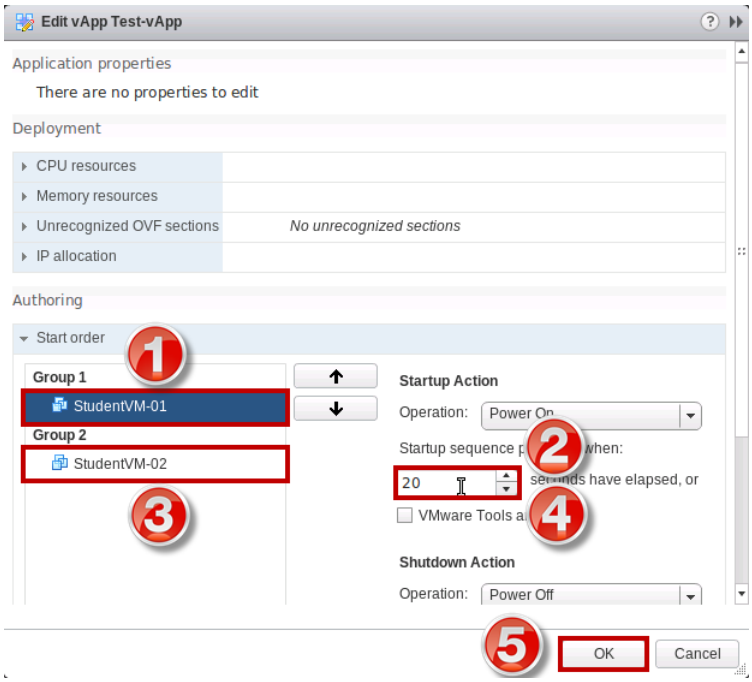


20. Select StudentVM-01 and change the value in the Startup sequence proceeds when field from 120 to 20.

21. Select StudentVM-02 and change the value in the Startup sequence proceeds when field from 120 to 20.

22. Click OK.

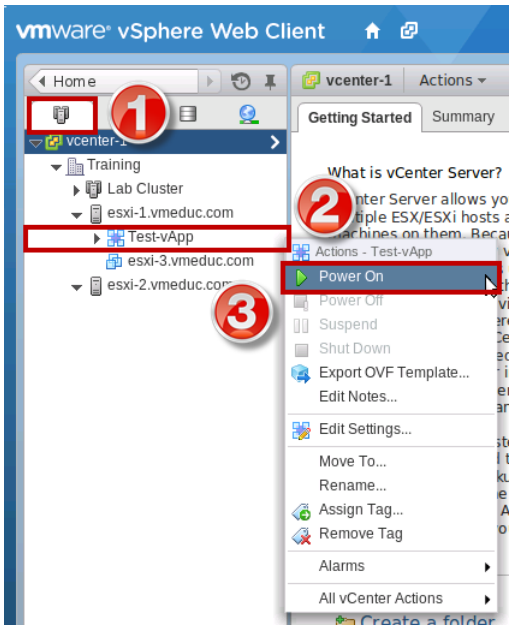
Note that if you use only the keyboard to change the value of 120 to 20, switching to the other VM may reset the first entry you changed. To get the value to stick, use the up and down buttons to change the number (to do so quickly, use the keyboard to change 120 to 20, then click up and down once each).



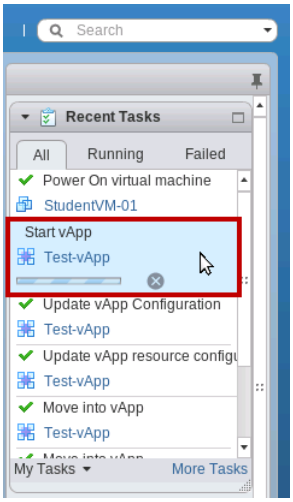
Part 2. Power On a vApp

1. Click on the Hosts and Clusters tab in the Object Navigator pane.

2. Right-click Test-vApp in the inventory pane and select Power On.

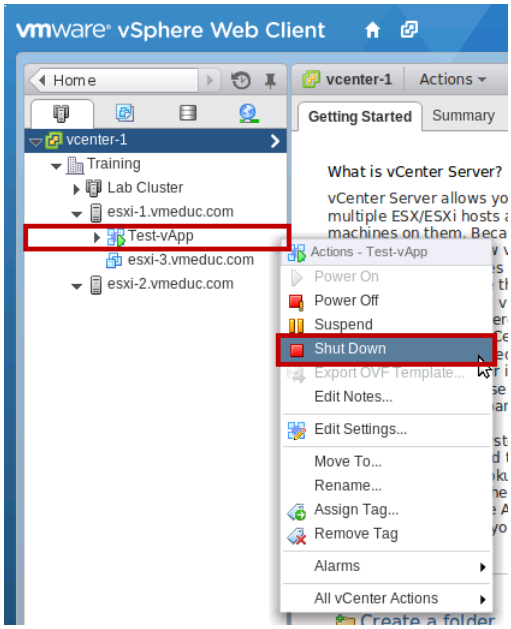


3. Monitor the task in the Recent Tasks pane and the virtual machine icons in the inventory list.



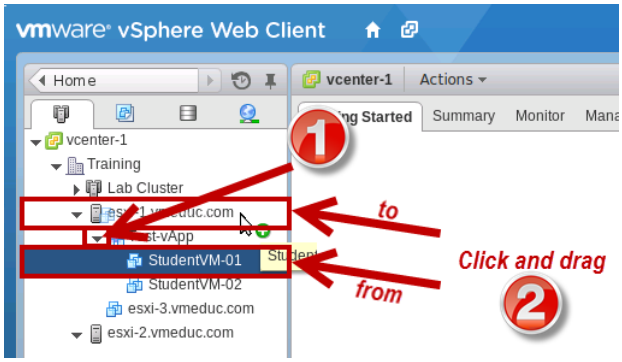
Part 3. Remove a vApp

1. Right-click Test-vApp in the inventory pane and select Shut Down.



3. Expand the Test-vApp in the Object Navigator pane.

4. Drag your StudentVM-01 virtual machine back to the esxi-1.vmeduc.com host.
Leave the StudentVM-02 virtual machine in the vApp.



5. Right-click your Test-vApp, select All vCenter Actions, and select Delete from Disk.