# Cloud Computing

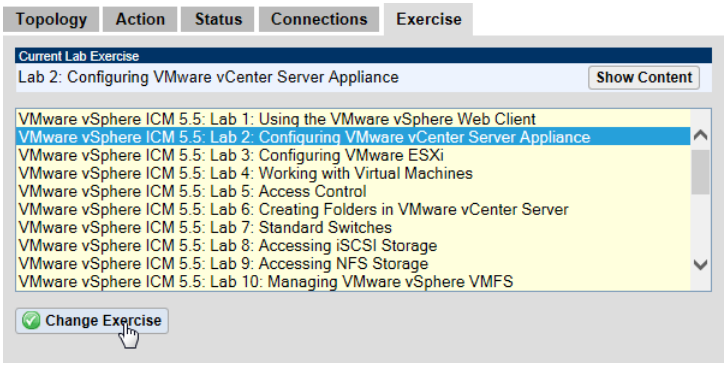
# Practical 10:
# Alarms and High Availability

## ***Aims and Objectives***

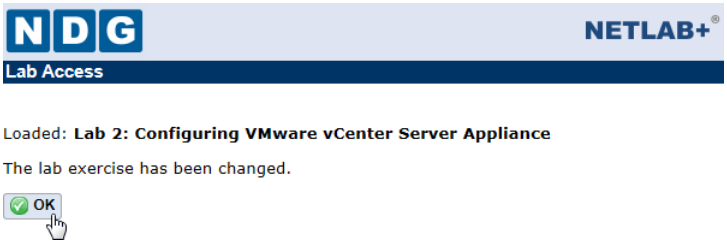
*In this week's practical we continue examining how to construct cloud infrastructure, working with the VMware virtualization systems and completing practical tasks aligned with the VMware vSphere Install, Configure, and Manage certification curriculum. This week we how to work with alarms, which provide an automated approach for dealing with events that occur to the infrastructure and the VMs running on that infrastructure. We then examine configuration of the High Availability functionality, which allows the virtual infrastructure to automatically reconfigure upon certain events, allowing a physical server to be shutdown and serviced/ replaced without interrupting the VMs operating on the system.*

## ***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 following lab tasks:

- Lab 19: Using Alarms
- Lab 20: Using vSphere High Availability

Following the instructions above, start by booking in a POD to complete Lab 19. The instructions for the lab tasks can be found by clicking on the **Show Lab Content** button as explained in Practical 2.

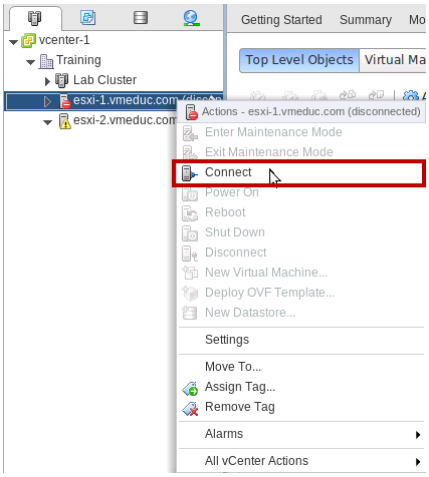
If you wish to complete multiple labs in one session, you can switch between labs using the steps shown above. Instructions for how to proceed with the next lab task can be found in the "problems" section below.

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

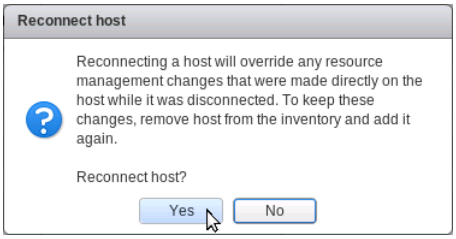
In the following pages, you will find instructions addressing possible problems you may encounter in completing each of the labs. Make sure you refer to these instructions as you complete the relevant lab tasks.

## 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:



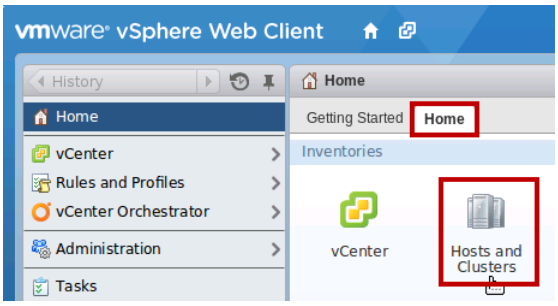

The system will then show a dialog, click **Yes** to confirm the (re-)connection:



**Possible Problems with Lab 19. Using Alarms**

*Part 1. Create a Virtual Machine Alarm that Monitors for a Condition*

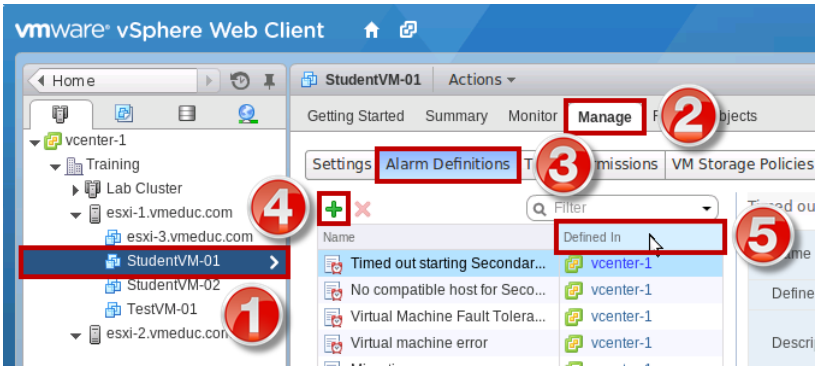
*5. Click the Hosts and Clusters under the Home tab in the main workspace area.*



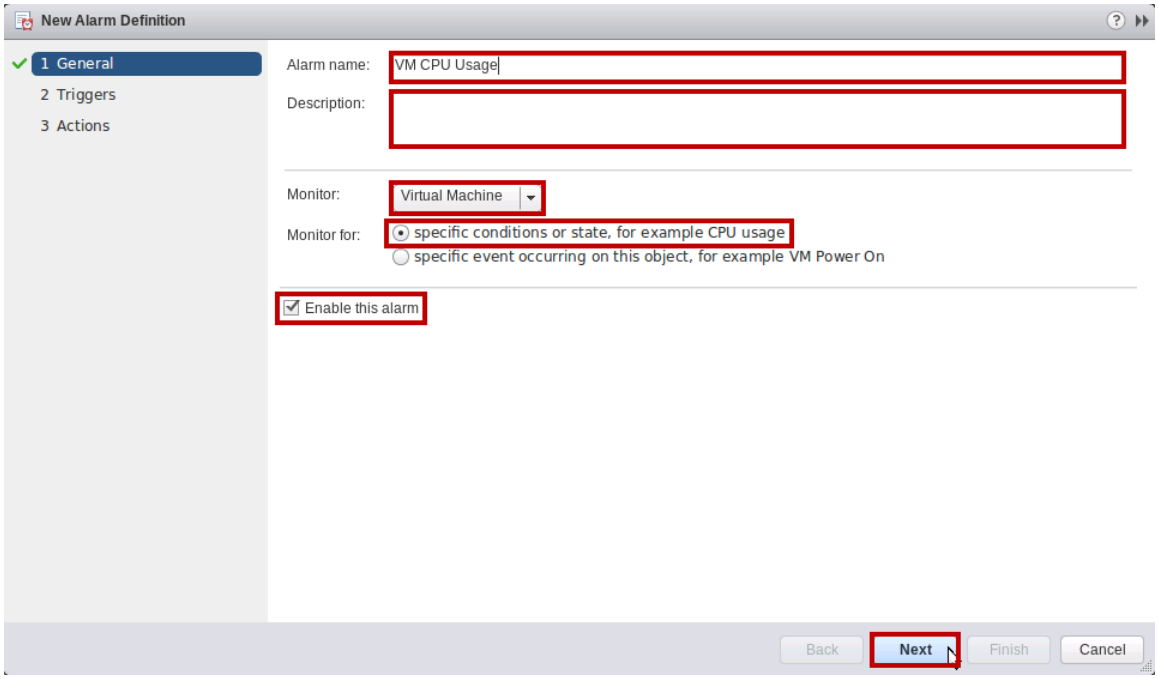

*6. Select the StudentVM-01 virtual machine in the inventory, click the Manage tab, and click on Alarm Definitions.*

*7. In what object are the default alarms defined?*

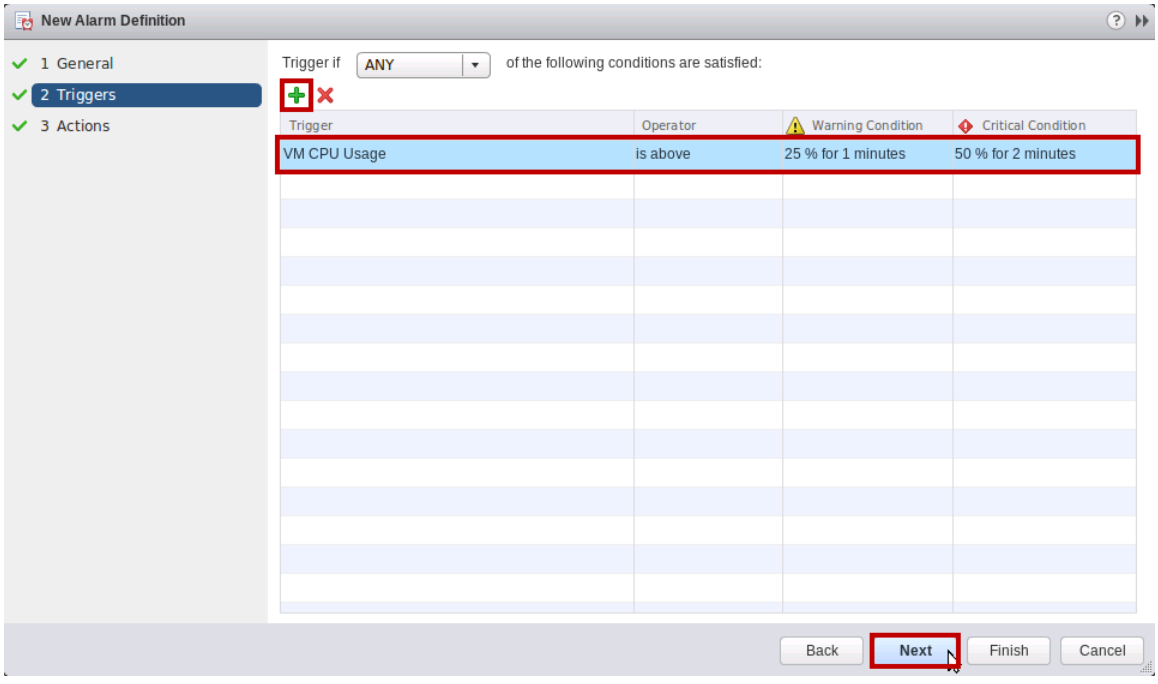
*8. Click the plus sign on the Alarm Definitions page to create a new Alarm. The New Alarm Definition dialog box appears.*



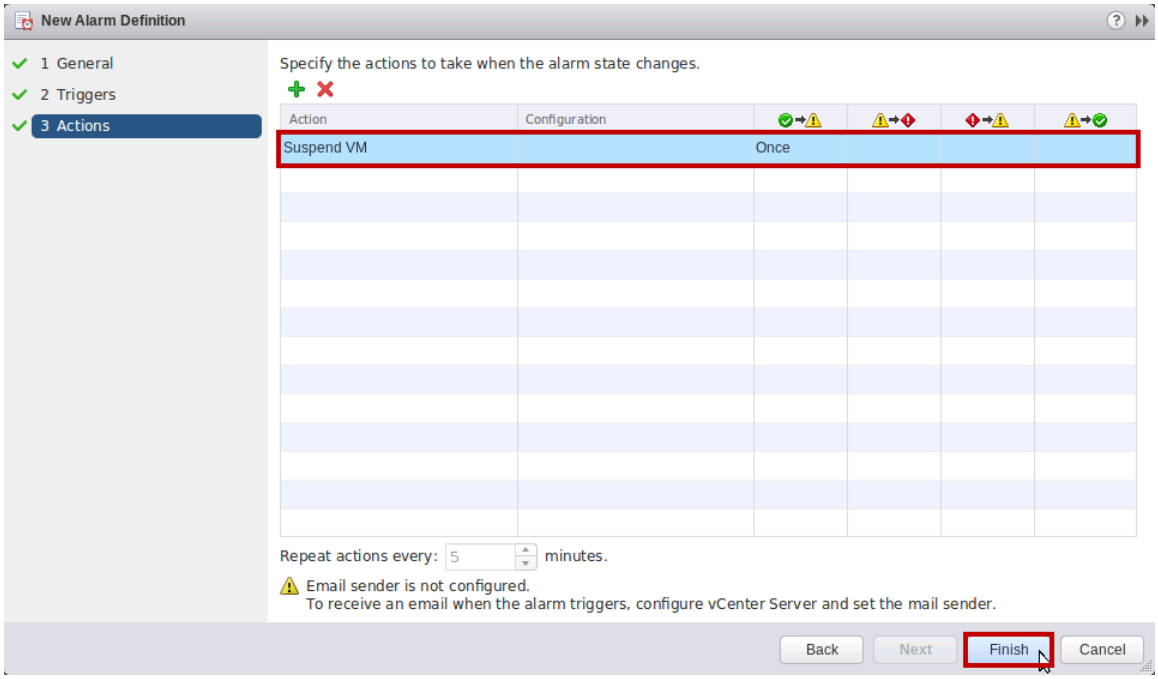
*9. On the General page, enter the following information:*




*Steps 10-15.*

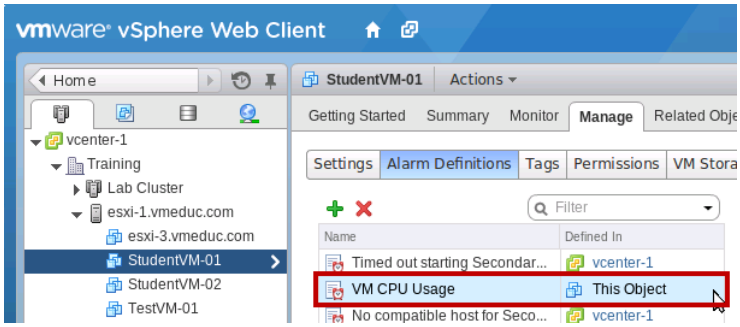


*Steps 16-18.*



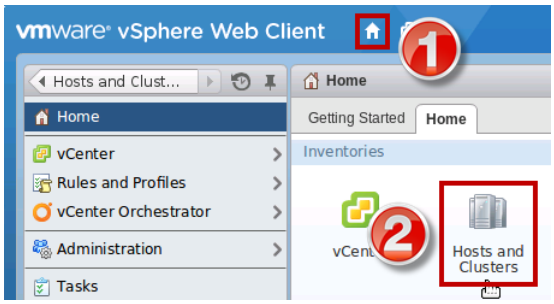

*19. Verify that your alarm appears in the list of alarms.*

*20. What object is your alarm defined in?*



*Part 2. Create a Virtual Machine Alarm that Monitors for an Event*

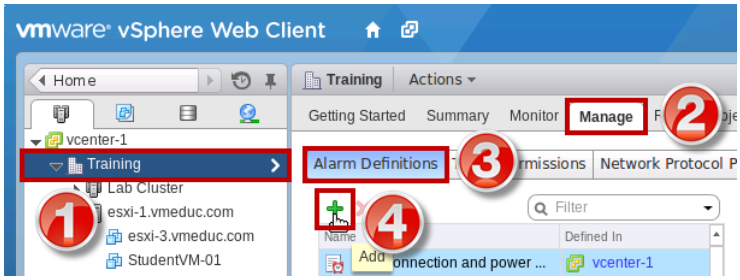
*1. Click on the Home icon in the title bar and click on Hosts and Clusters in the main workspace area.*



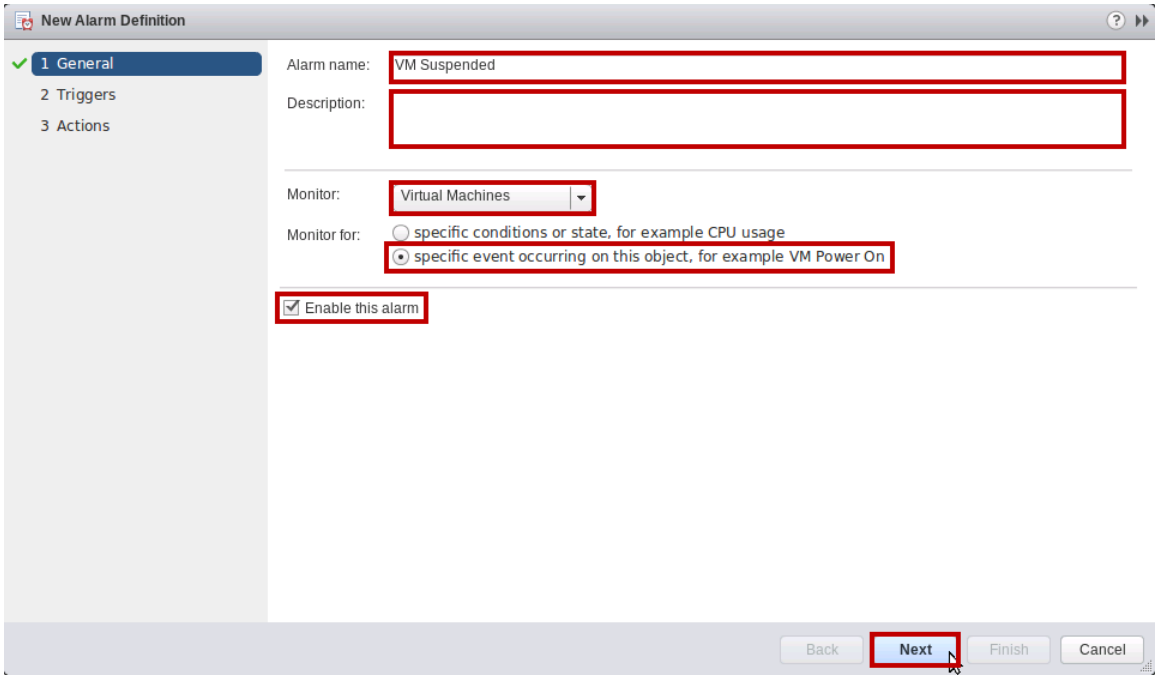

*2. Select the Training datacentre in the inventory, click the Manage tab and click on Alarm Definitions.*

*3. In what object are the default alarms defined?*

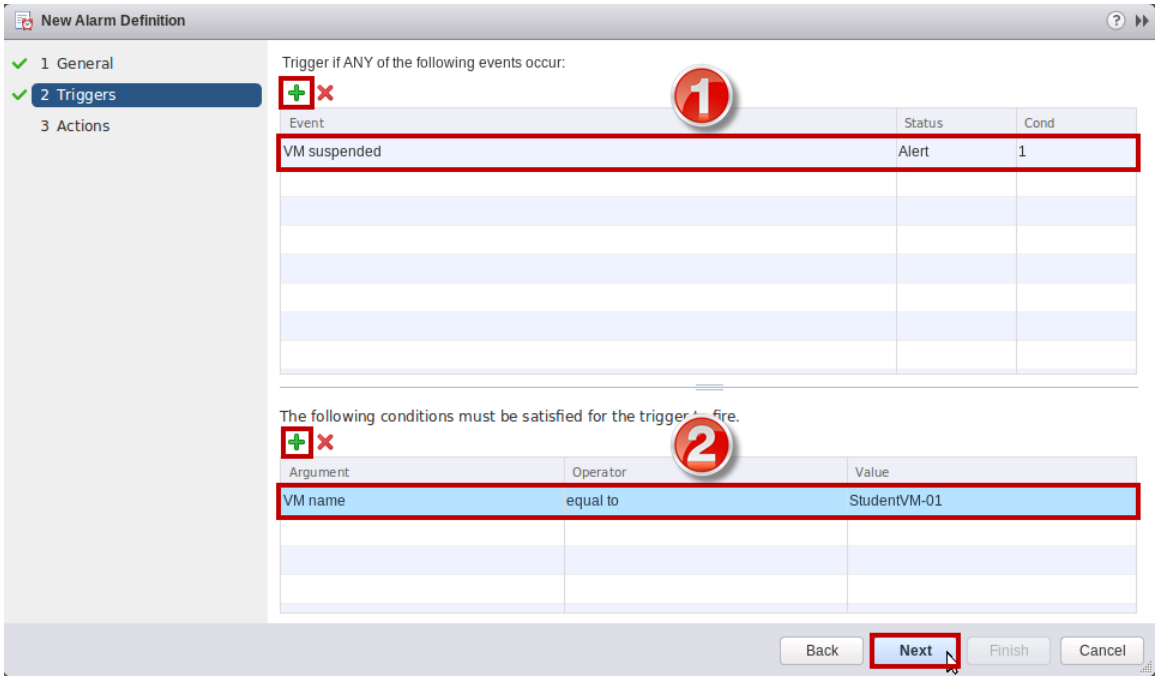
*4. Click on the plus sign on the Alarm Definitions page to create a new Alarm. The New Alarm Definition dialog box appears.*



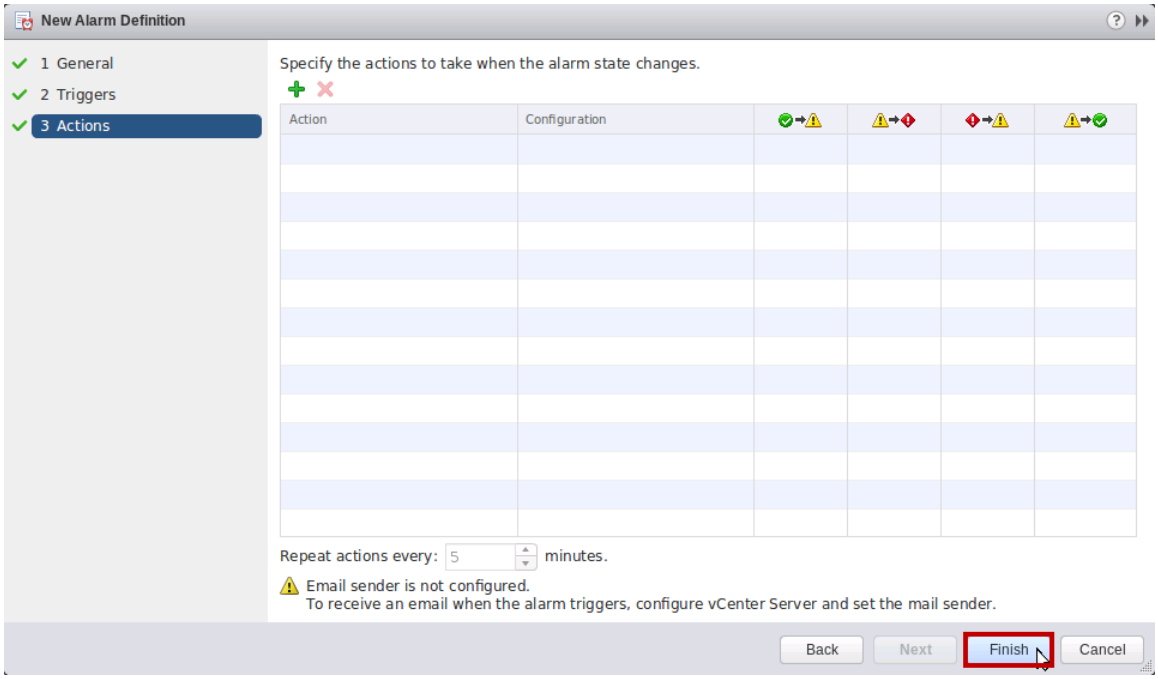
*5. On the General page, enter the following information:*




*Steps 6-12.*

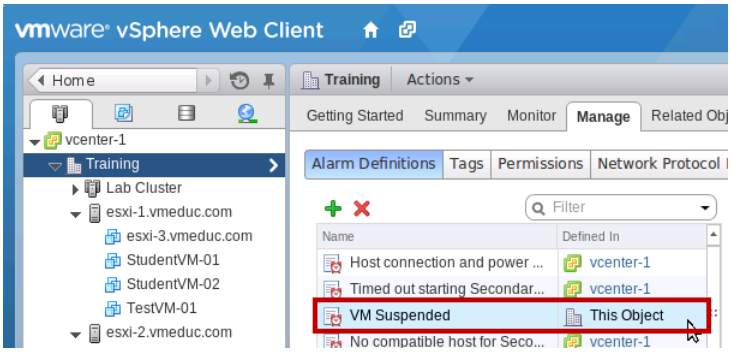


*13. Without making changes on the Actions page, click Finish.*



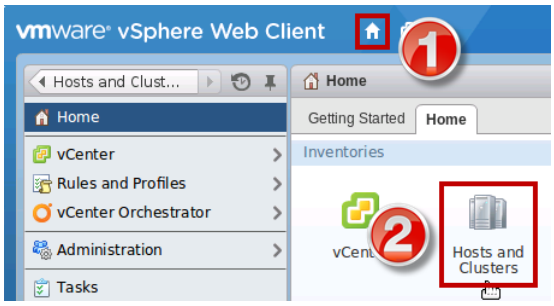

*14. Verify that your alarm appears in the list of alarms.*

*15. What object is your alarm defined in?*

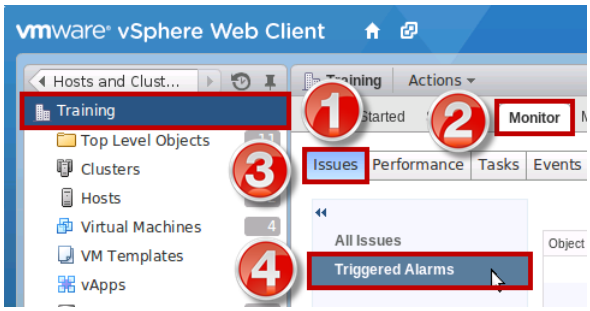


*Part 3. Trigger Virtual Machine Alarms and Acknowledge the Alarms*

*1. Click on the Home icon in the title bar and click on Hosts and Clusters in the main workspace area.*



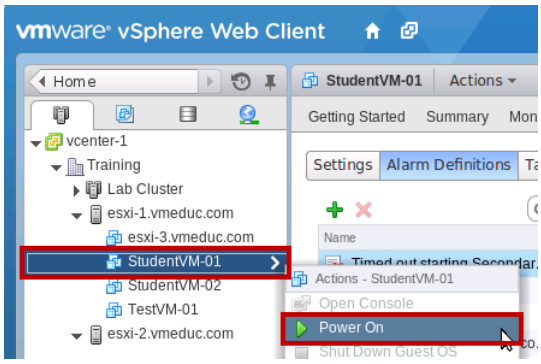

*2. Select the Training datacentre in the Object Navigator and click the Monitor tab.*



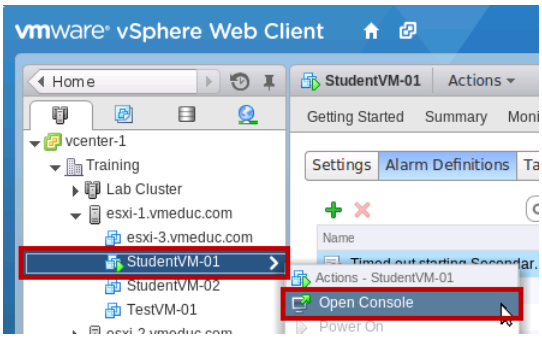

*4. Click on the Home icon in the title bar and click on Hosts and Clusters in the main workspace area.*

See Step 1, above.

*5. In the Object Navigator, right-click the StudentVM-01 virtual machine and then select Power On.*



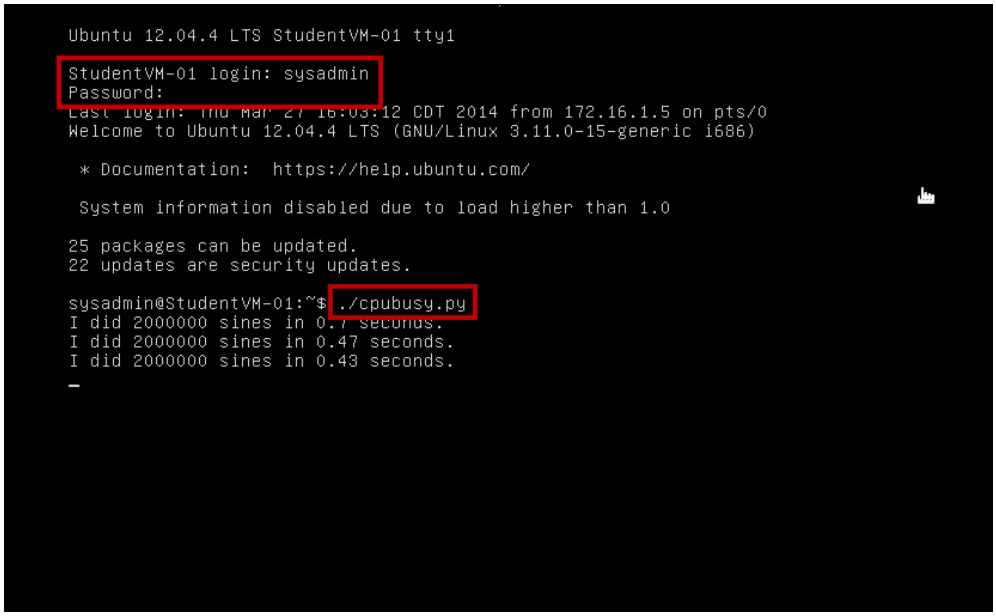

*6. Open a console to the VM and switch to it by clicking on the Chrome icon at the side of the screen.*



*7. Login as sysadmin with vmware123 as the password.*

*8. Type the following command and press Enter.*

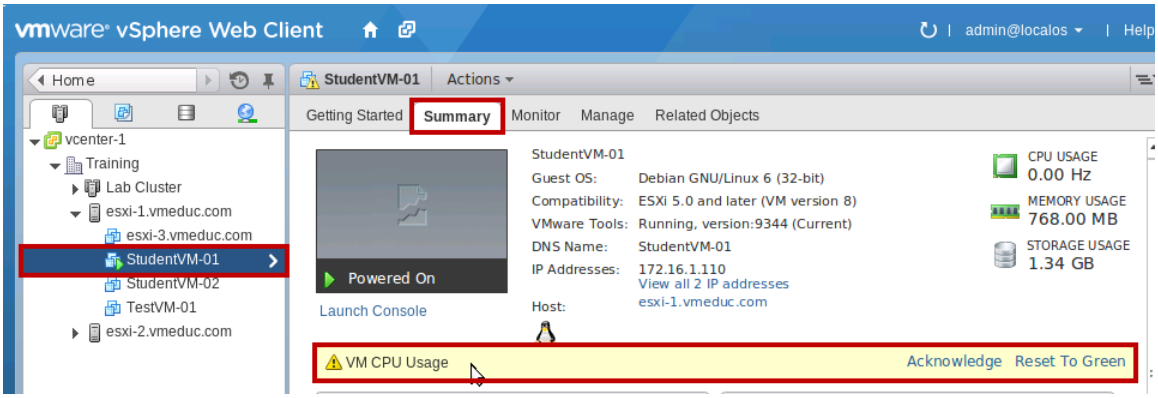
Note that if the console screen shows a message along the lines of waiting for a connection, it is because the alarm has already triggered and you can skip to Step 9.




*10. Click on the Summary tab.*

*11. Wait about a minute and a warning should appear for VM CPU Usage.*

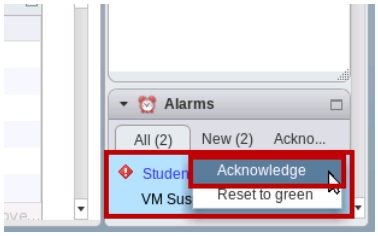
If the system is not responding to your clicking of the **X** button, the most likely cause is that you haven't completed Step 9 properly. Make sure that your window to the vClient is currently selected (in case you clicked outside of the window). Move your mouse into the StudentVM-02 window, then hold 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.



*12. Wait another minute for the VM Suspended alarm to show in the Alarms pane.*

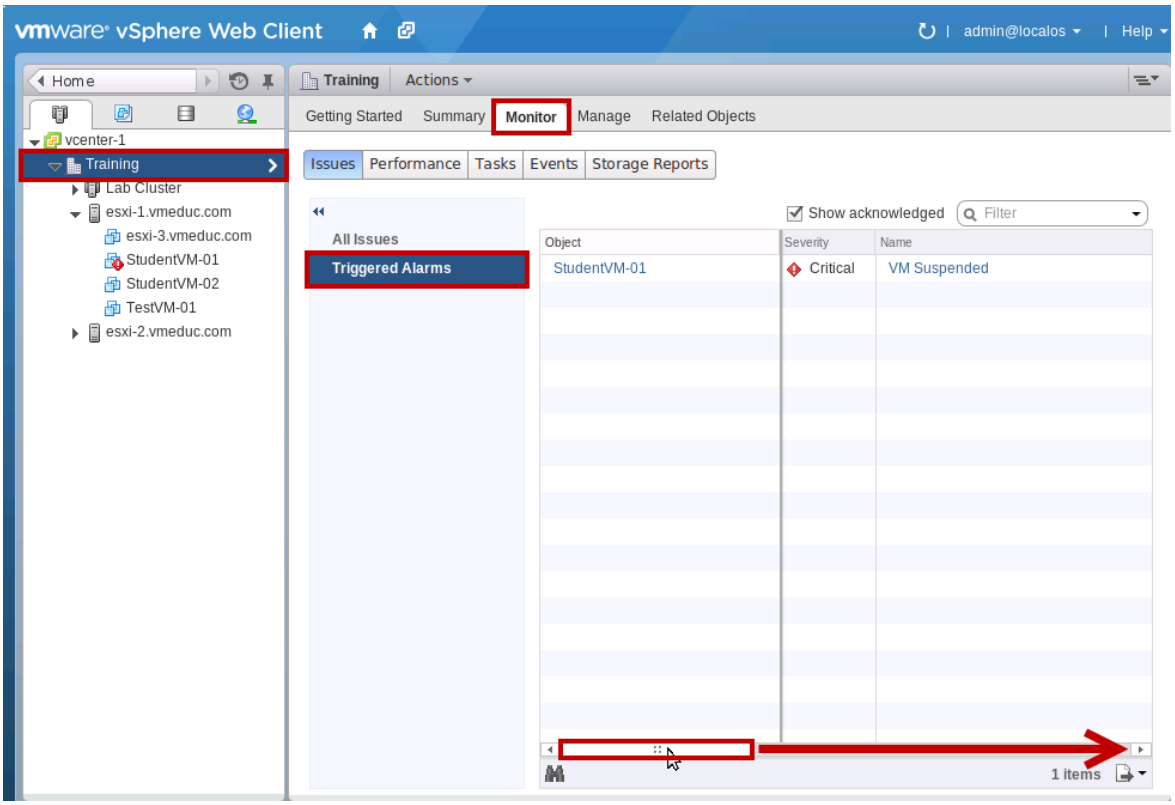
Note that the alarm appears in a different location to the alarm in Step 11 (bottom right of the browser window).

*13. Right-click the VM Suspended alarm and select Acknowledge.*




*14. Click on the Training datacentre, the Monitor tab, and the Triggered Alarms button.*

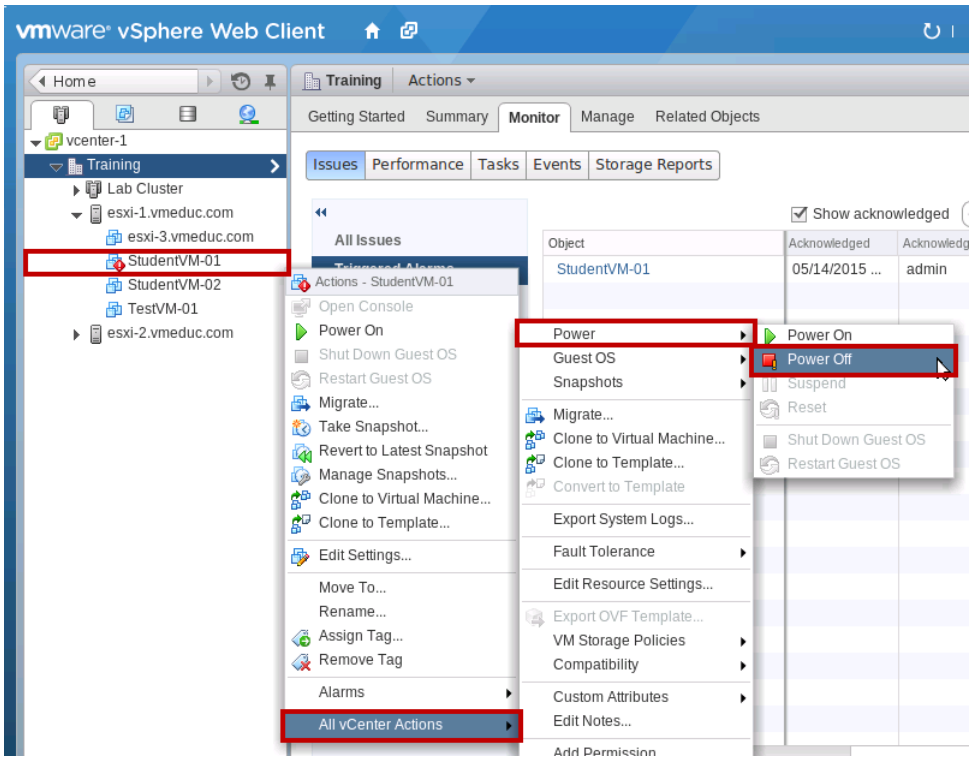
*15. Scroll the window to the right. The Acknowledged and Acknowledged By fields are now populated.*



*16. Return to the virtual machine console and press CTRL+C to stop the cpubusy.py script.*

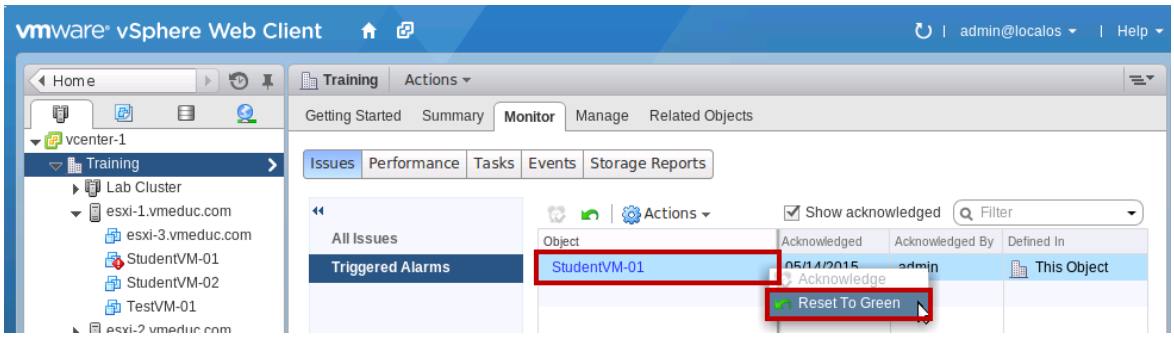
Note that this is not possible, as the second alarm (from Step 12) appears after the VM has been suspended. You need to follow the instructions in the red box instead:

*If you cannot shutdown the cpubusy.py script before the alarm triggers, right-click StudentVM-01 in the inventory, select All vCenter Actions, and then Power Off.*



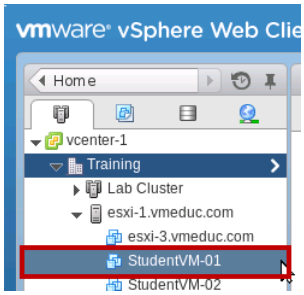

*18. In the Triggered Alarms pane for the Training datacentre, right-click StudentVM-01 in the Object column and select Reset to Green.*

If your browser no longer shows the information in this picture, follow away from this screen, follow Steps 1-3 to return to the correct screen.



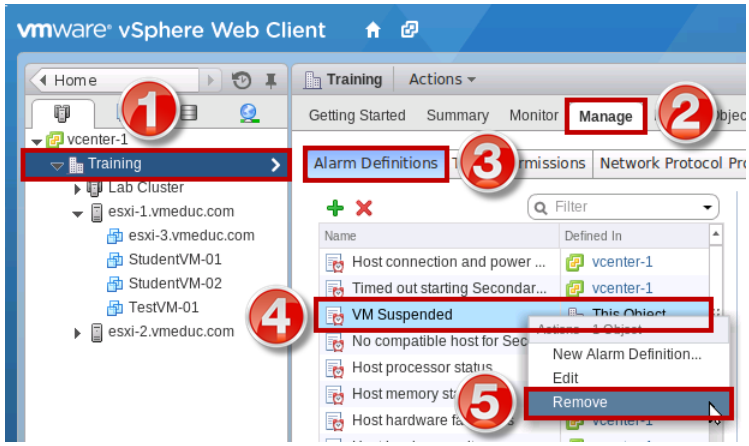
*19. In the Object Navigator, verify that the red alert icon is removed from the virtual machine.*

Note that it can take some time for the red alert icon to disappear. Your screen should match the picture below once the red alert icon has vanished.

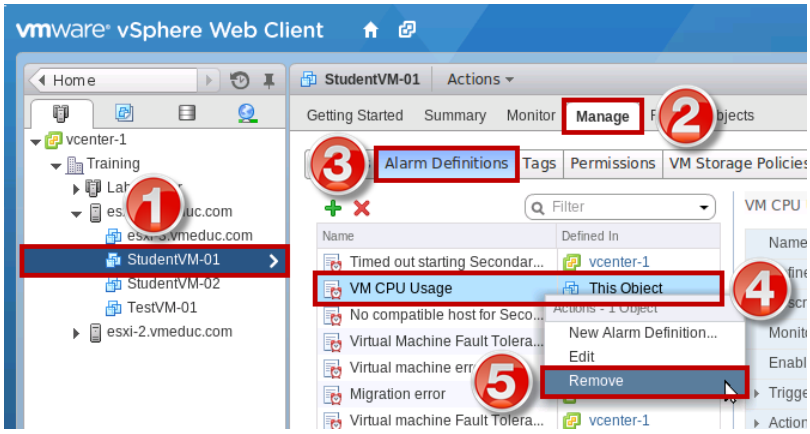


*Part 4. Disable Virtual Machine Alarms*

*1. Disable your VM suspended alarm:*




*2. Disable your VM CPU Usage alarm:*




*3. Exit the vSphere Client.*

*4. Close the vClient window.*

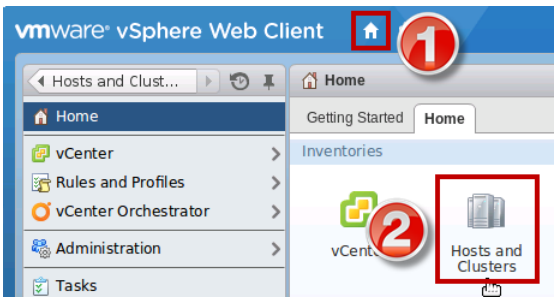
Ignore these steps if you are progressing onto the next lab task.

**Possible Problems with Lab 20. Using vSphere High Availability**

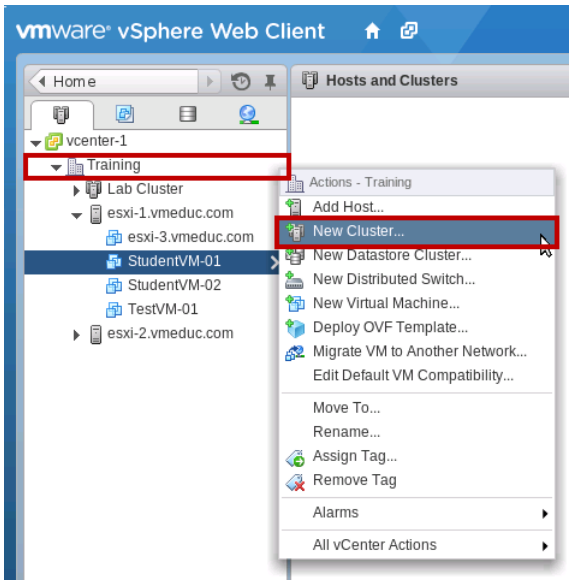
*The start of this lab task assumes that you have just started an equipment POD. In this case, we already have a running POD, so begin the new lab by clicking on the Home button, then continuing the instructions from Step 5.*


*Part 1. Create a cluster enabled for vSphere HA*

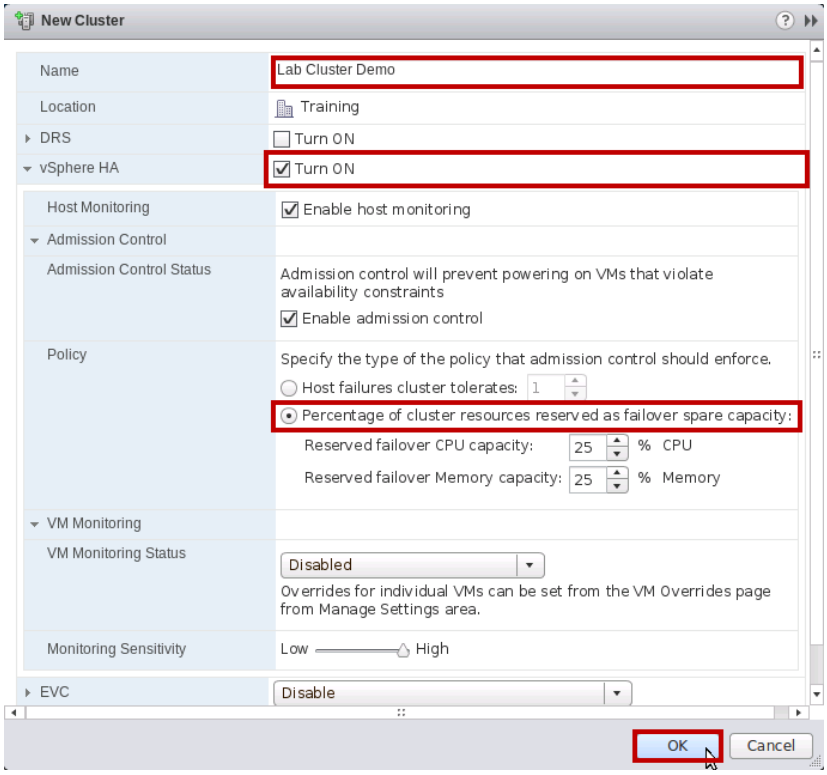
*5. Under the Inventories pane in the main workspace area, click the Hosts and Clusters icon.*



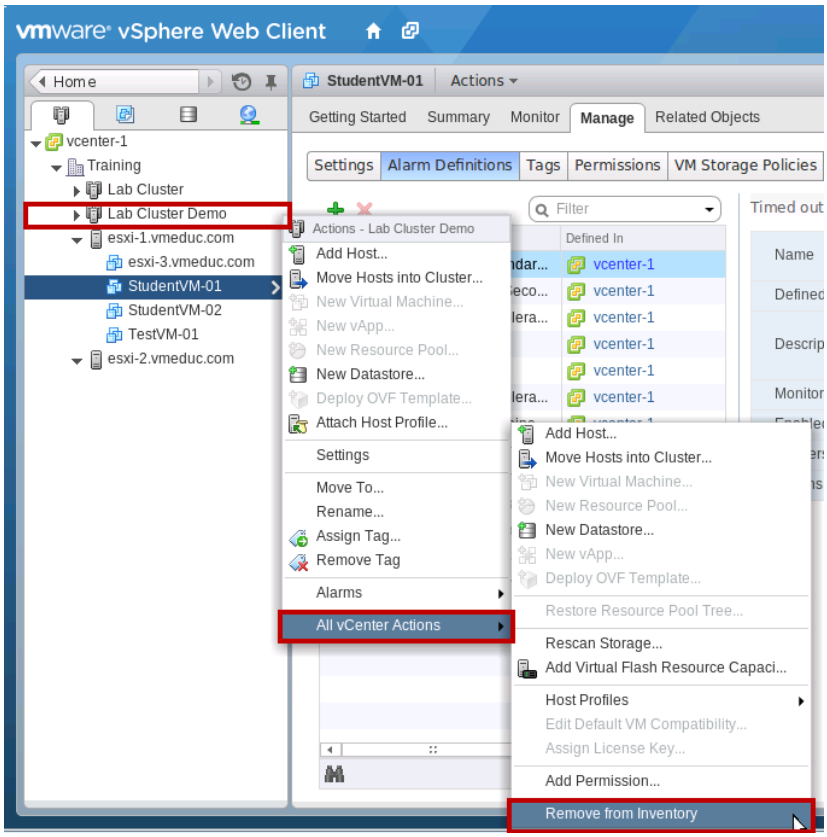
*6. In the Object Navigator pane, right-click the Training datacentre and click New Cluster.*




*Steps 7-9.*

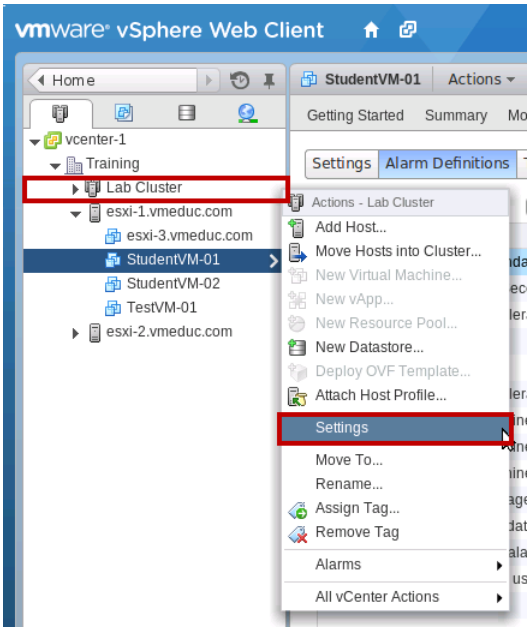


*10. When the task completes, right-click the Lab Cluster Demo, select all vCenter Actions, and click Remove from Inventory.*

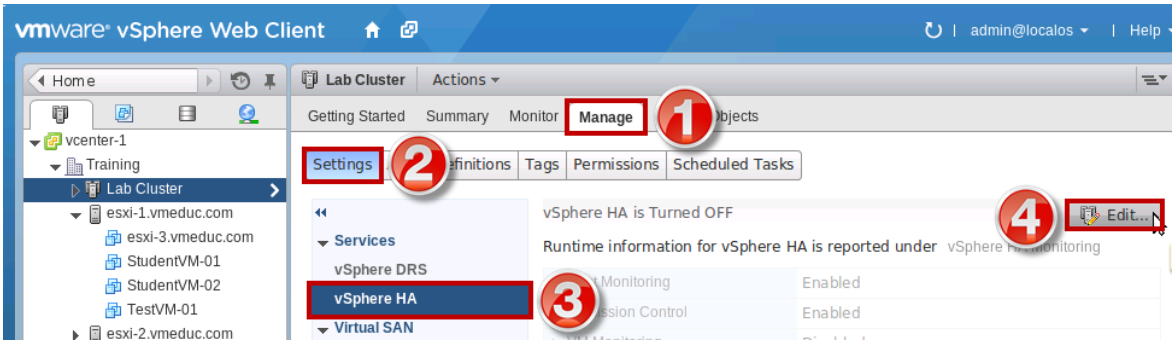


*Part 2. Add the Hosts to the Lab Cluster*

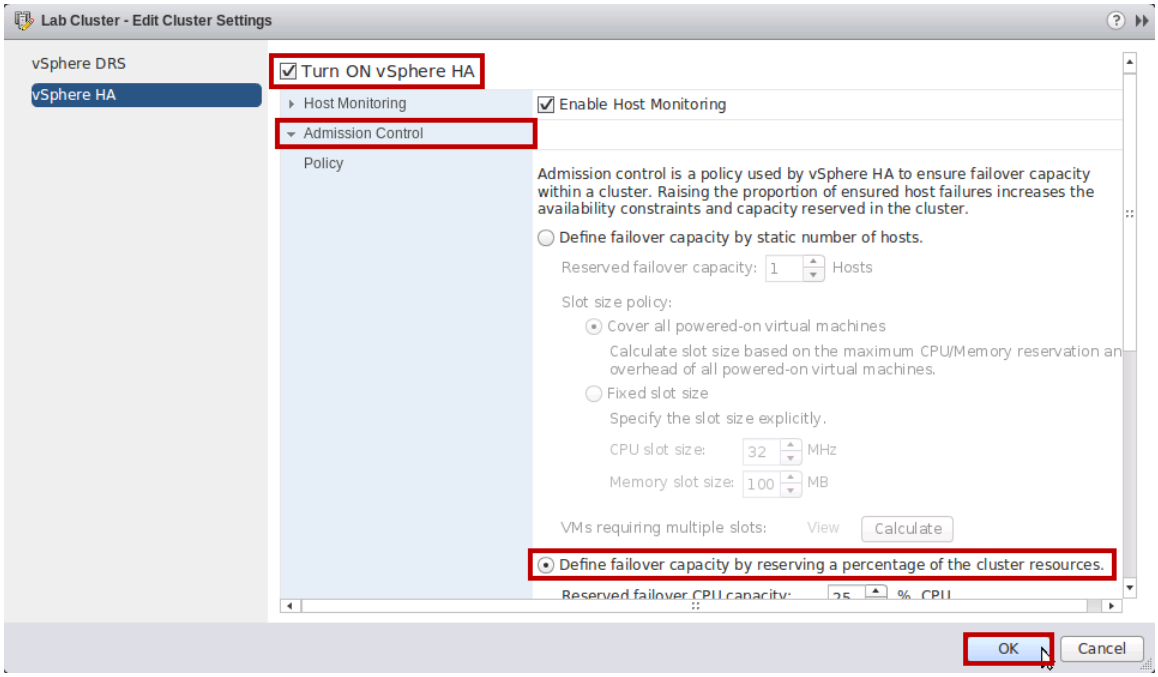
*1. Right-click Lab Cluster and select Settings.*



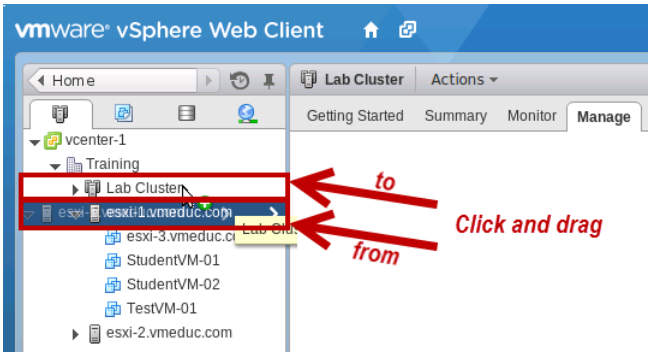

*2. Under the Manage tab and Settings button, click vSphere HA and click the Edit… button.*



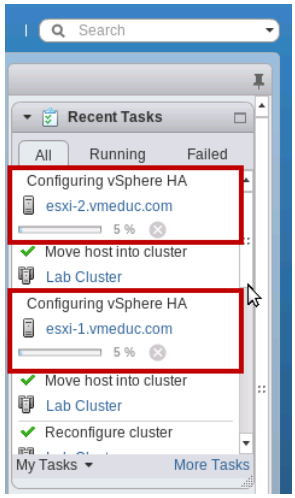
*Steps 3-5.*



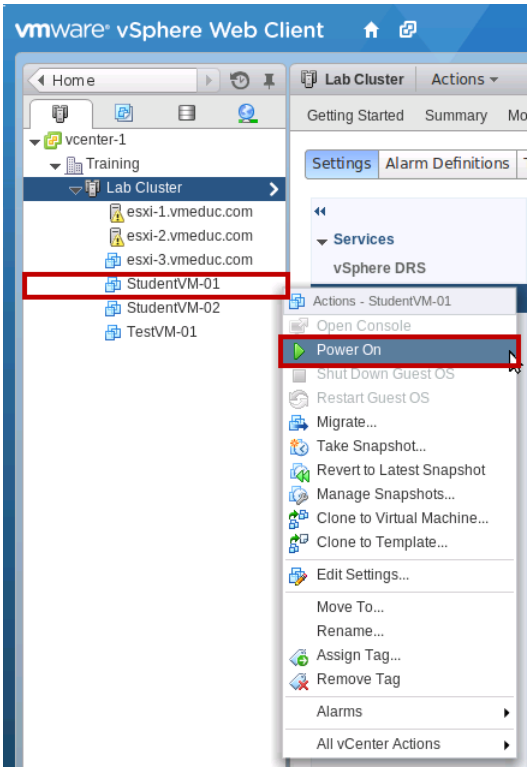

*Steps 6-7.*



*8. In the Recent Tasks pane, wait for the operation to complete. (It may take a minute or two.)*

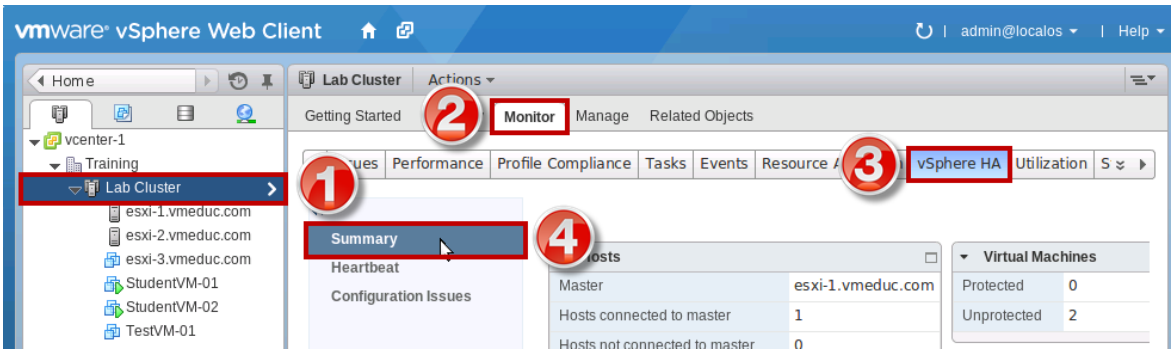



*Steps 9-10.*



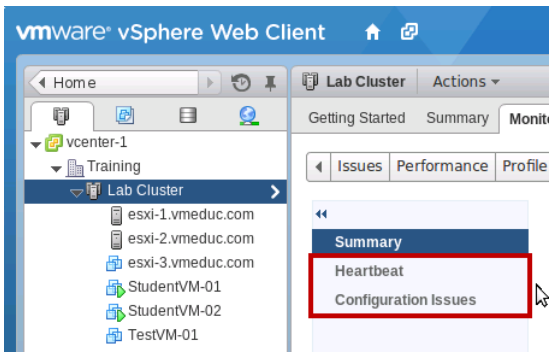
*11. Click on the Lab Cluster in the inventory.*

*12. Under the Monitor tab, click on the vSphere HA button on the right side, and click on Summary.*



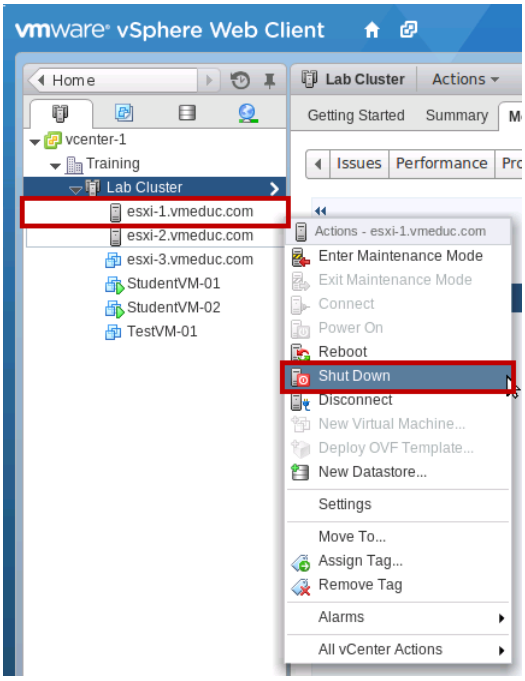

*14. Click on Heartbeat.*

*15. Click on Configuration Issues.*



*Part 3. Test VMware HA Functionality*

*1. Right-click the esxi-1.vmeduc.com host in the inventory pane and select Shutdown.*

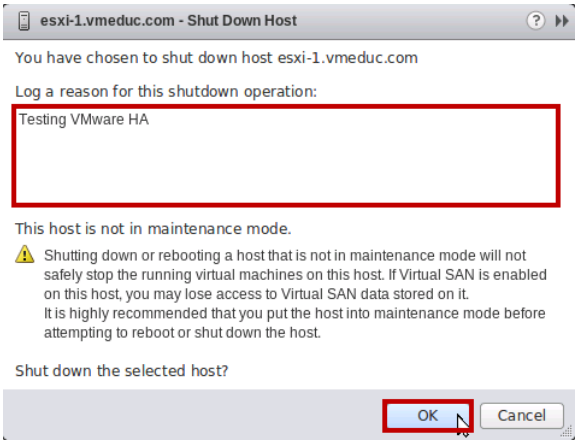



*2. Click Yes to shutdown when the warning message appears that your host is not in maintenance mode.*

Proceed to Step 3 if this message does not appear.

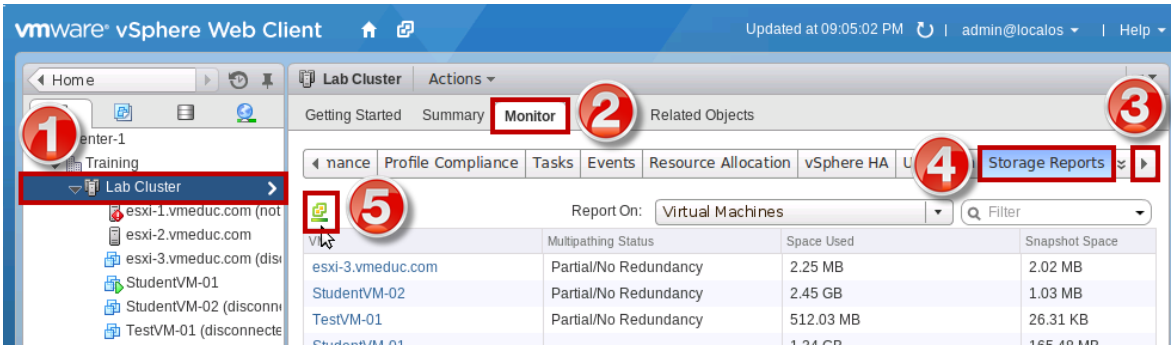
*3. Type Testing VMware HA as the reason for rebooting and click OK.*

Note that this step should read 'the reason for shutting down', not rebooting.

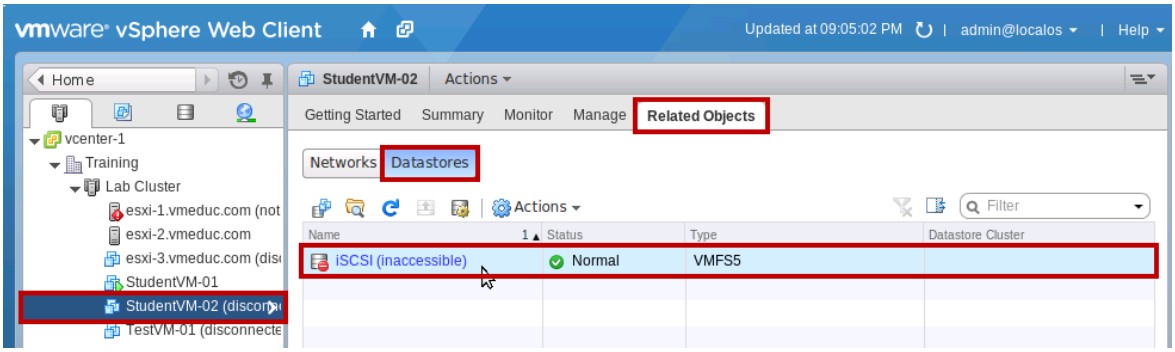


*7. In the Object Navigator pane, select Lab Cluster then click the Monitor tab followed by the Storage Reports button. Observe the Multipathing Status for all listed virtual machines. Note: You may need to click the Rescan button in order to see any entries.*

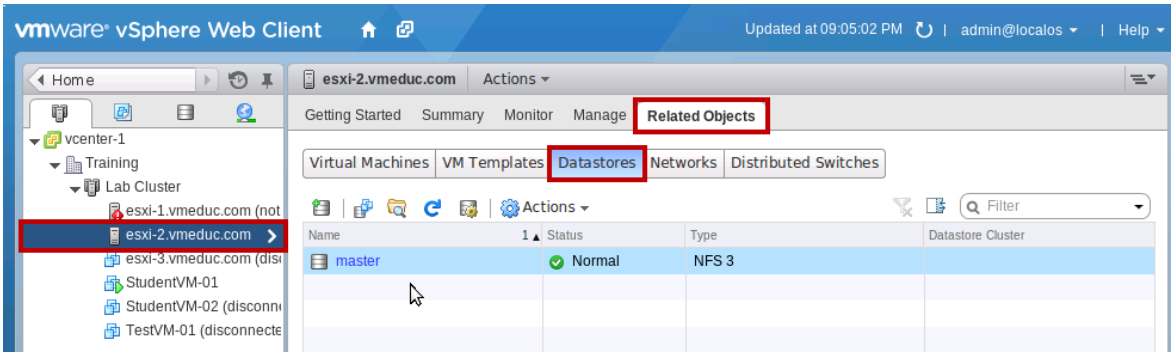
The Rescan button is the button indicated by number (5) in the picture below.




*8. In the Object Navigator pane, select StudentVM-02 then click the Related Objects tab then the Datastores button. Notice that the iSCSI datastore that StudentVM-02 resides upon is inaccessible.*




*9. In the Object Navigator pane, select esxi-2.vmeduc.com, then click on the Related Objects tab and then the Datastores button. Notice that the iSCSI datastore is not listed. Without this datastore available on this host the virtual machine could not be accessed and powered up via VMware vSphere HA.*



*10. Power off the StudentVM-01 virtual machine.*