



CONESTOGA

Connect Life and Learning

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Deliverable:	Assignment 4
Course Name:	NTWK8171-24F-Sec1-Virtualization and VMware Sphere

Date Assigned:	15/11/2024
Date Due:	05/12/2024
Rules:	<ul style="list-style-type: none">• Individual.• Cheating is not allowed.• Plagiarism counts as cheating!• That FAILURE to submit work in the course can result in a grade of 'F' or 'I' for failure to complete the course!

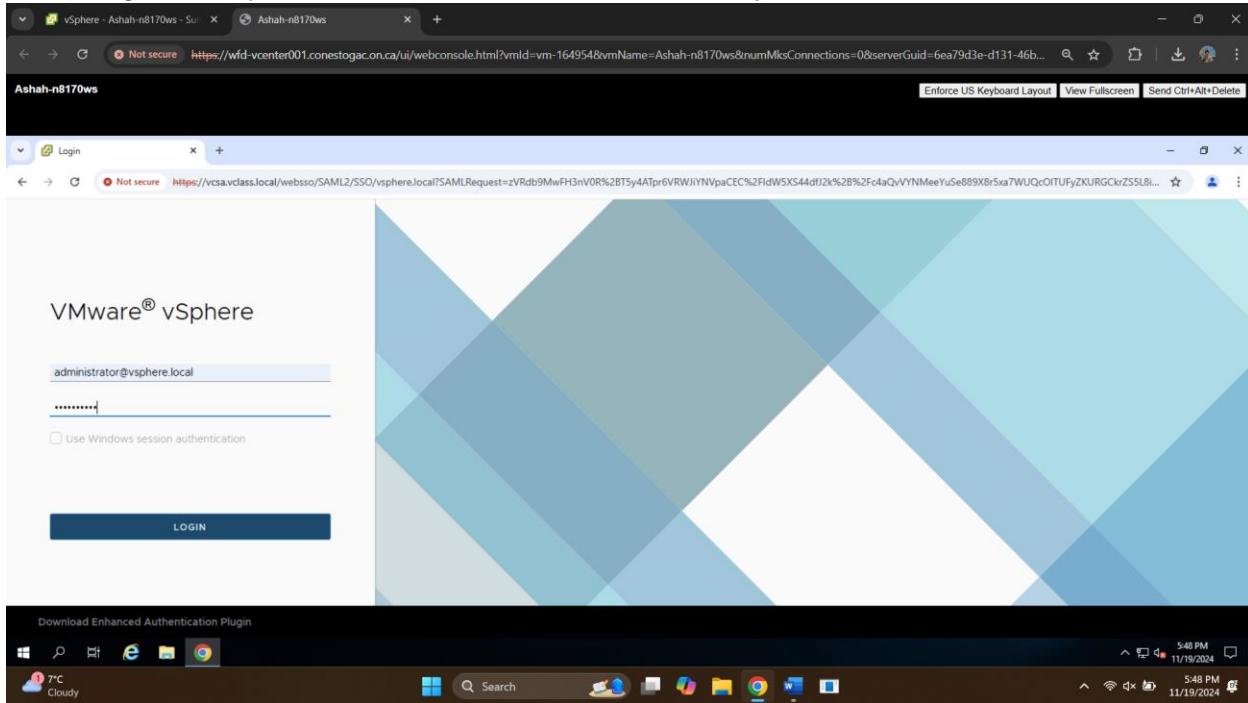
Table of Contents

LAB 12: Virtualization with VMware vSphere Lab 12: Resource Monitoring.....	3
Section 1: Creating an Alarm	3
Section 2: Running the Perl script to create CPU Contention.....	7
Section 3: Alarm Triggering and Performance Graphs	11
LAB 13: Virtualization with VMware vSphere Lab 13: vSphere DRS	15
Section 1: Creating the DRS Cluster	15
Section 2: Configuring and testing DRS.....	21
LAB 14: Virtualization with VMware vSphere Lab 14: vSphere HA and VM Fault Tolerance	29
Section 1: Testing HA Failover	29
Section 2: Fault Tolerance.....	33

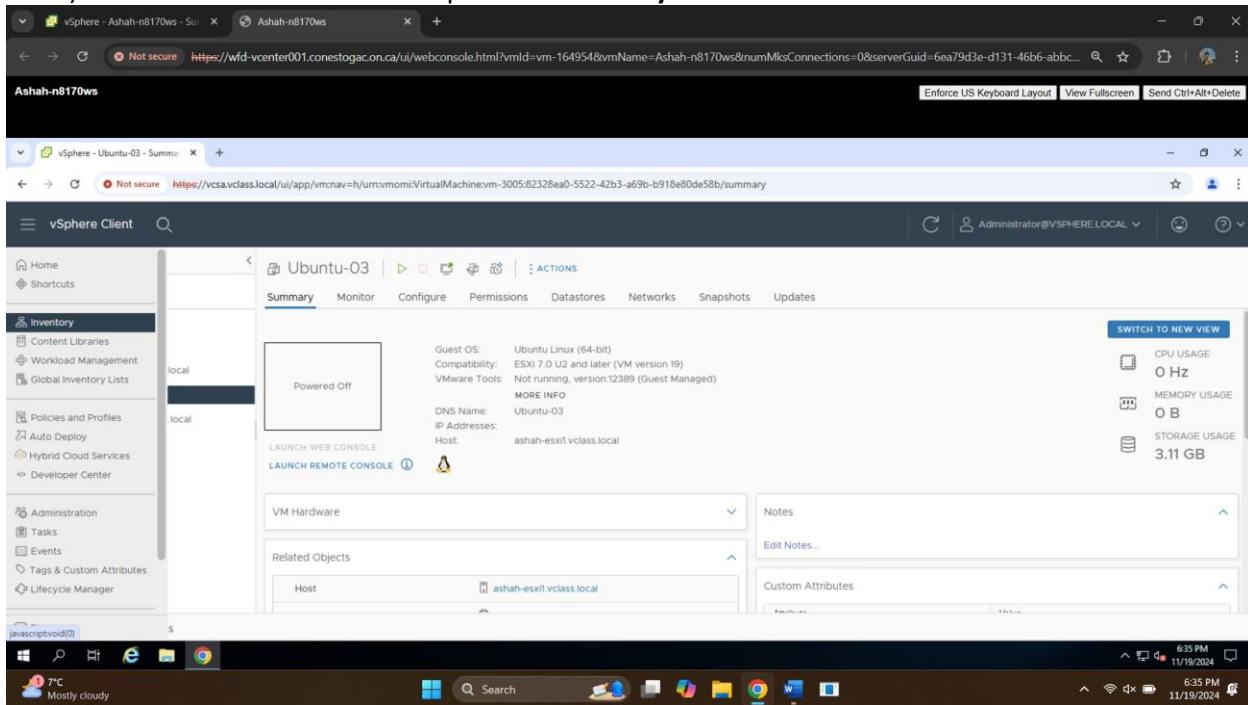
LAB 12: Virtualization with VMware vSphere Lab 12: Resource Monitoring

Section 1: Creating an Alarm

- 1) Sign into <https://vcsa.vclass.local> as `administrator@vsphere.local`.



- 2) Click the three lines in the top left → Inventory.



3) Make sure you are in hosts and clusters view (the three servers)

The screenshot shows the vSphere Client interface. The left sidebar lists datacenters: 'vcsa.vclass.local' (selected), 'NTWK8170-Ashan', and 'ashah-esxi1 vclass.local'. Under 'ashah-esxi1 vclass.local', there are two hosts: 'Ubuntu-03' and 'ashah-esxi2 vclass.local'. Under 'ashah-esxi2 vclass.local', there is another host 'Ubuntu-02'. The top navigation bar has tabs for 'Hosts & Clusters' (selected), 'VMs', 'Datastores', 'Networks', 'Linked vCenter Server Systems', and 'Extensions'. Below the tabs is a table showing host details:

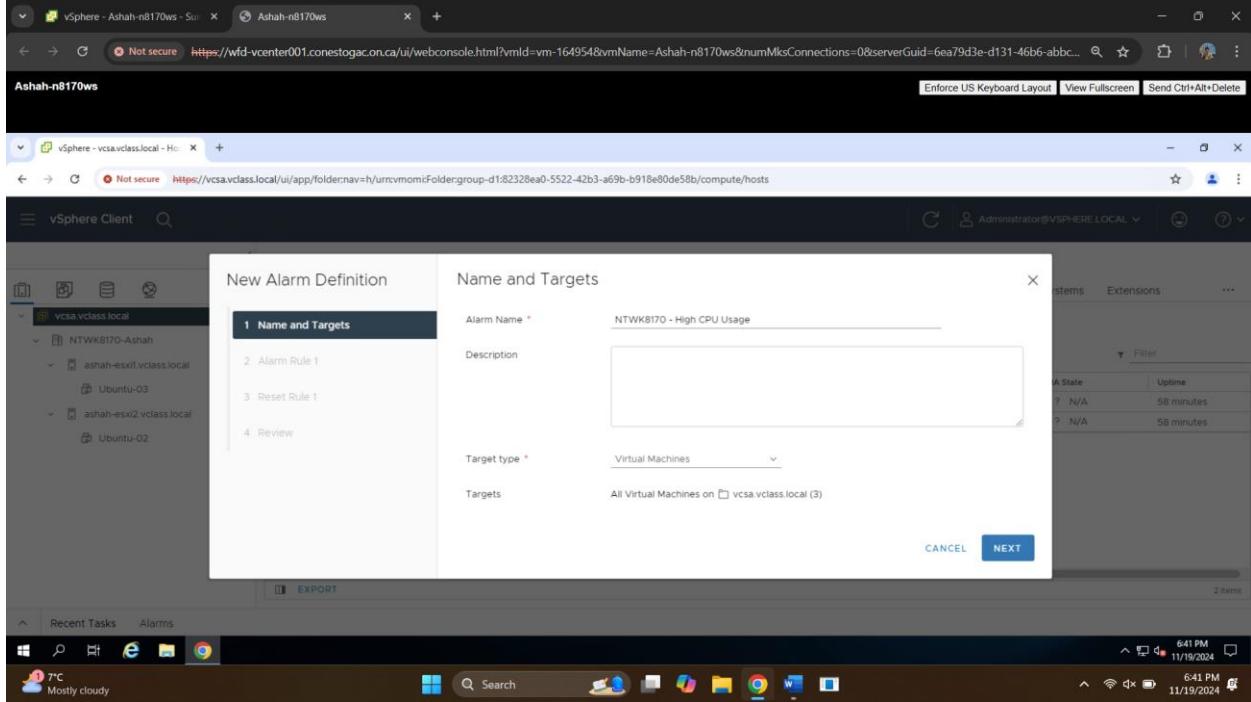
Name	State	Status	Cluster	Consumed CPU %	Consumed Memory %	HA State	Uptime
ashah-esxi1 vclass.local	Connected	Normal		0%	17%	? N/A	54 minutes
ashah-esxi2 vclass.local	Connected	Normal		0%	17%	? N/A	54 minutes

At the bottom of the interface, there is a toolbar with icons for Recent Tasks, Alarms, and other management functions.

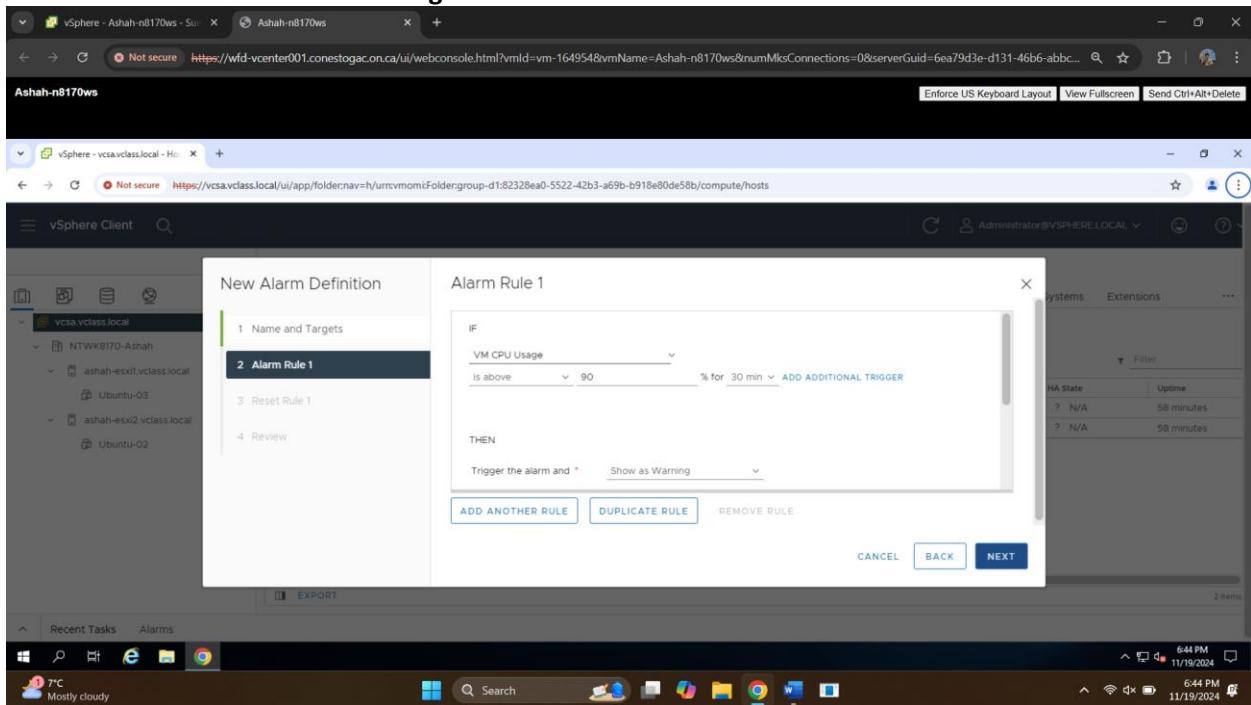
4) Click on **vcsa.vclass.local** → **Configure** → **Alarm Definitions**. Click Add.

The screenshot shows the vSphere Client interface with 'vcsa.vclass.local' selected in the left sidebar. A context menu is open over the 'Host Profiles' section, with the 'Alarms' option highlighted. A submenu for 'Alarms' is displayed, containing 'New Alarm Definition...', 'Enable Alarm Actions', and 'Disable Alarm Actions'. The top navigation bar has tabs for 'Hosts & Clusters' (selected), 'VMs', 'Datastores', 'Networks', 'Linked vCenter Server Systems', and 'Extensions'. Below the tabs is a table showing host details, identical to the one in the previous screenshot. At the bottom of the interface, there is a toolbar with icons for Recent Tasks, Alarms, and other management functions.

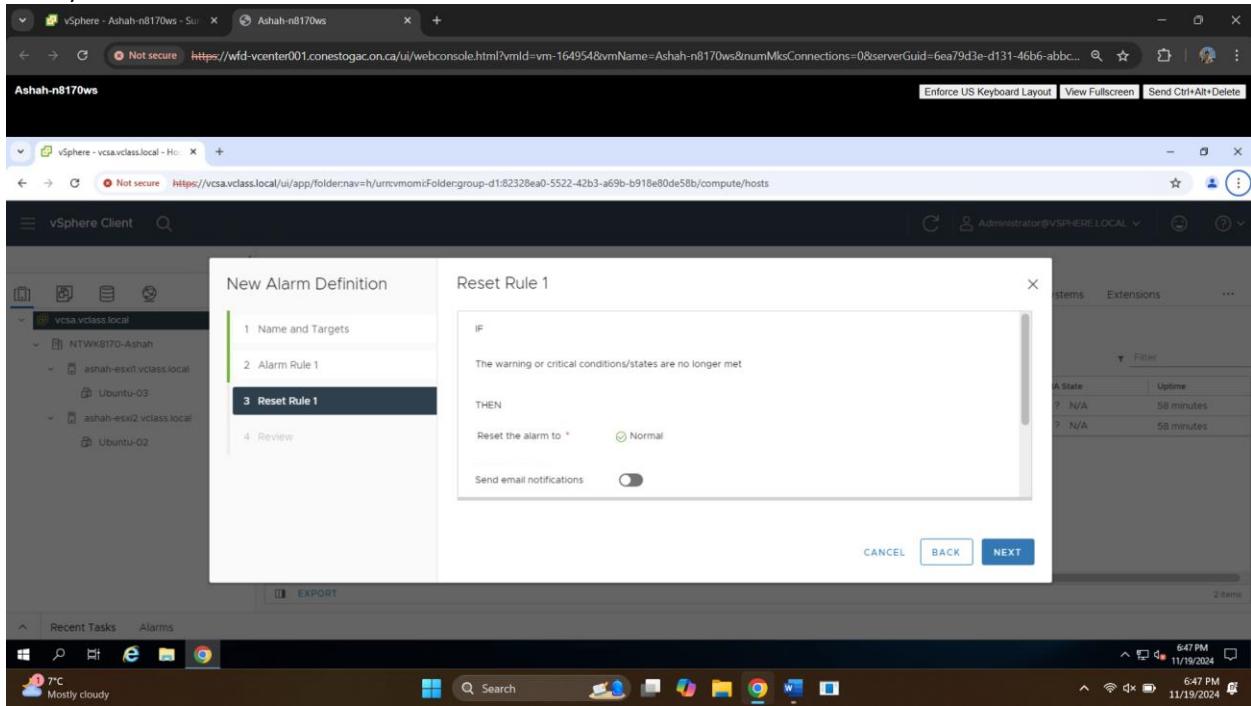
- 5) On Name and Targets for alarm name type in **NTWK8170 – High CPU Usage**, For Target Type select **Virtual Machines**, In Targets ensure All virtual machines on vcsa.vlcass.local is shown. Click Next.



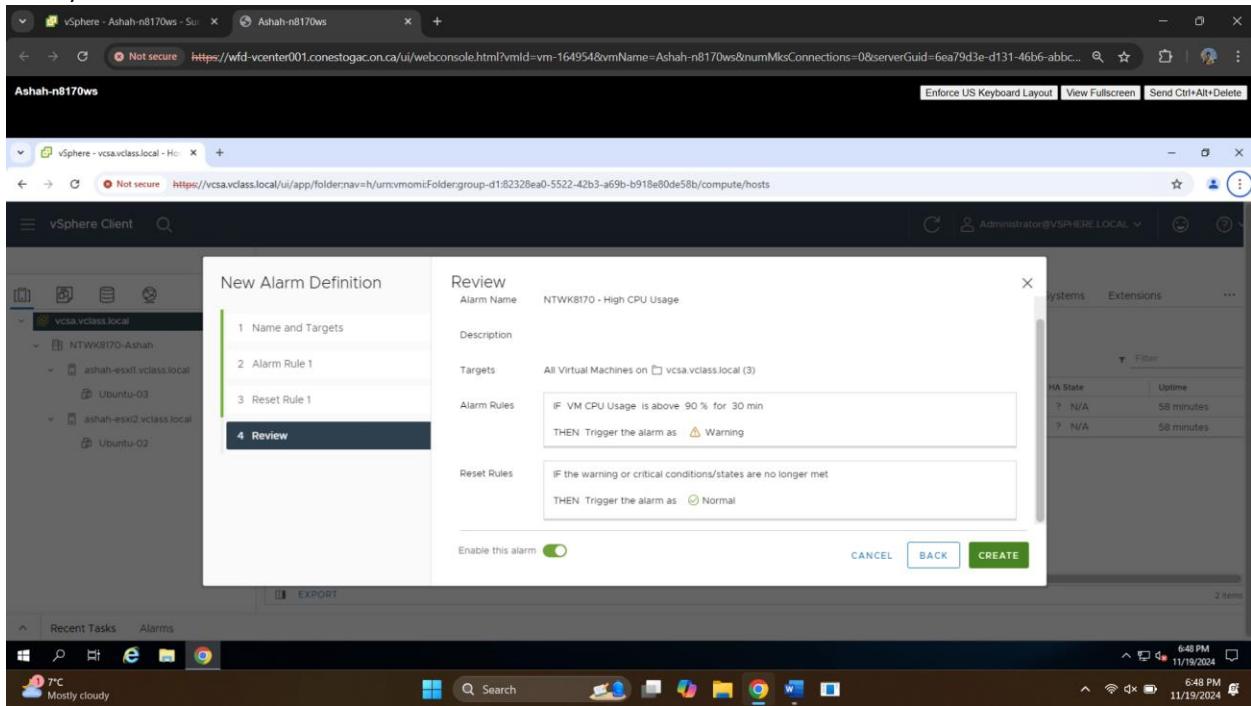
- 6) On Alarm Rule 1 in IF Select VM CPU usage is above 90% for 30 sec, For Then Trigger the alarm and Select Show as Warning. Click Next.



7) Leave Reset Rule 1 as Default. Click Next.



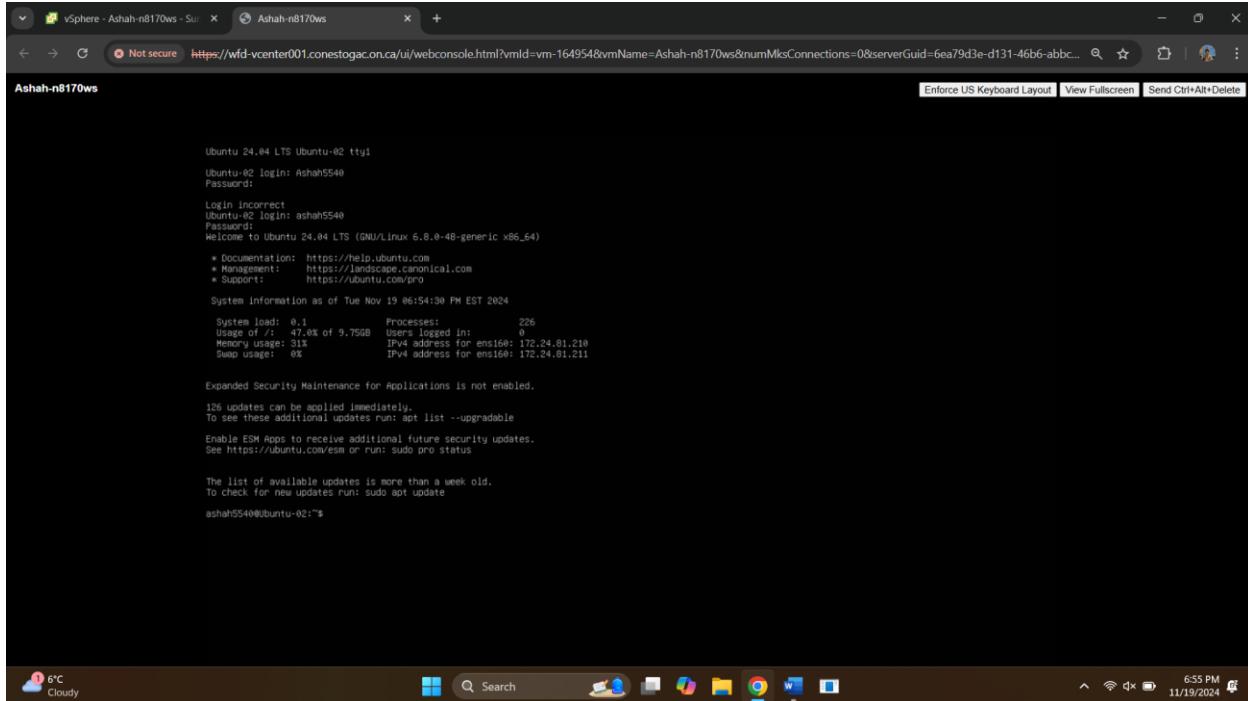
8) Ensure the Alarm is enabled. Click Create.



Section 2: Running the Perl script to create CPU Contention

- 1) Open the console of both **Ubuntu-02** and **Ubuntu-03.**, Sign in as username **ashah5540**, password **Vclass123\$**.

Ubuntu-02



```
Ubuntu 24.04 LTS Ubuntu-02 ttys
Ubuntu-02 login: Ashah5540
Password:
Login incorrect
Ubuntu-02 login: ashah5540
Password:
Welcome to Ubuntu 24.04 LTS (GNU/Linux 6.8.0-48-generic x86_64)

 * Documentation: https://help.ubuntu.com
 * Management: https://landscape.canonical.com
 * Support: https://ubuntu.com/pro

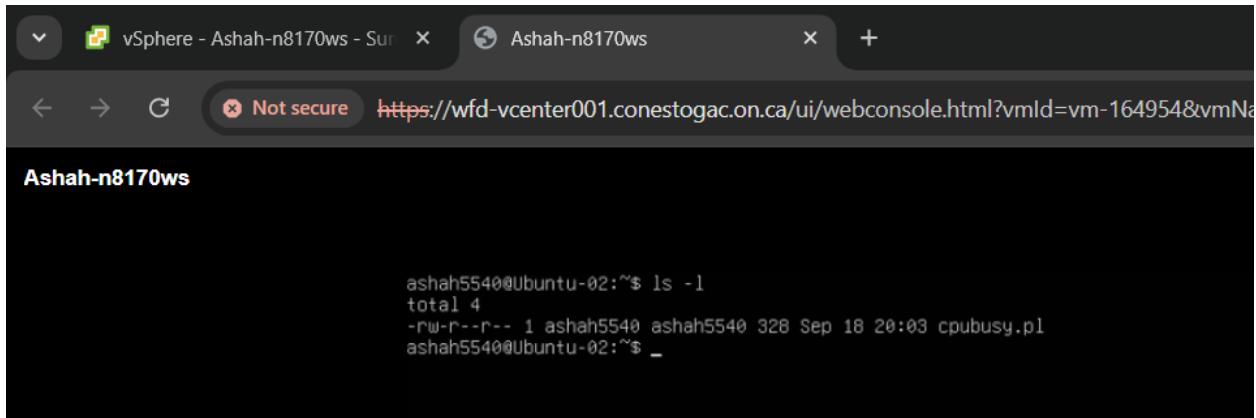
System Information as of Tue Nov 19 06:54:30 PM EST 2024
System load: 0.1 Processes: 236
Usage of /: 47.6% of 9.75GB Users logged in: 0
Memory usage: 31% IPv4 address for ens160: 172.24.81.210
Swap usage: 0% IPv4 address for ens160: 172.24.81.211

Expanded Security Maintenance for Applications is not enabled.
126 updates can be applied immediately.
To see these additional updates run: apt list --upgradable
Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update
ashah5540@ubuntu-02:~$
```

- 2) Run **ls -l** to view the directory contents. Check for **cpubusy.pl**. If it's not there you will need to copy it over using WinSCP.

Ubuntu-02



```
Ashah-n8170ws

ashah5540@Ubuntu-02:~$ ls -l
total 4
-rwxr--r-- 1 ashah5540 ashah5540 328 Sep 18 20:03 cpubusy.pl
ashah5540@Ubuntu-02:~$ _
```

- 3) Run the command **sudo chmod 755 cpubusy.pl** to make the script executable.

Ashah-n8170ws

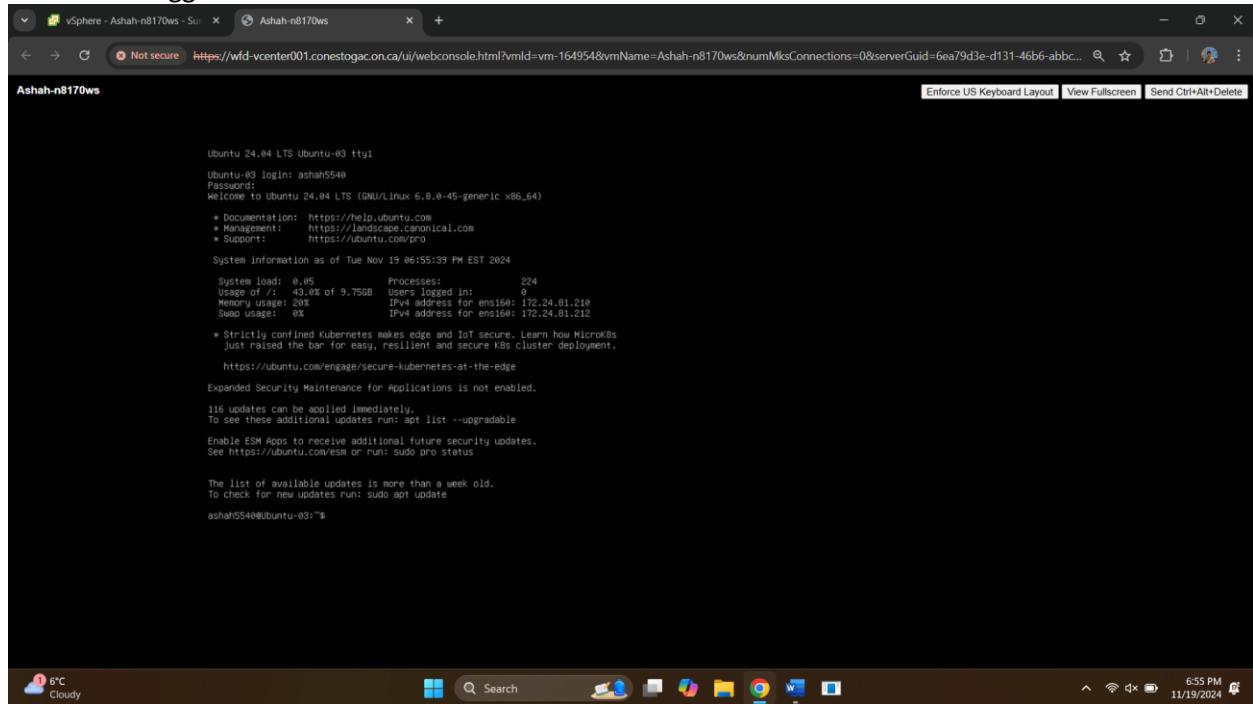
```
ashah5540@Ubuntu-02:~$ sudo chmod 755 cpubusy.pl  
[sudo] password for ashah5540:  
ashah5540@Ubuntu-02:~$
```

- 4) Run the command **perl cpubusy.pl**. (This will create CPU contention)

```
ashah5540@Ubuntu-02:~$ perl cpubusy.pl
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
I did three million sines in 0 seconds!
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
I did three million sines in 0 seconds!
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
I did three million sines in 0 seconds!
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
I did three million sines in 0 seconds!
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
I did three million sines in 0 seconds!
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
I did three million sines in 0 seconds!
```

5) Repeat steps 2-7 on Ubuntu-03.

Ubuntu-03 logged in with username: **ashah5540**



```
Ubuntu 24.04 LTS Ubuntu-03 ttym1
Ubuntu-03 login: ashah5540
Password:
Welcome to Ubuntu 24.04 LTS (GNU/Linux 6.0.0-45-generic x86_64)

 * Documentation: https://help.ubuntu.com
 * Management: https://landscape.canonical.com
 * Support: https://ubuntu.com/pro

System Information as of Tue Nov 19 06:55:39 PM EST 2024
System load: 0.95 Processes: 224
Usage of /: 43.0% of 9.75GB Users logged in: 0
Memory usage: 1.9GB available for eno167: 172.24.81.219
Swap usage: 0% IPv4 address for eno167: 172.24.81.212

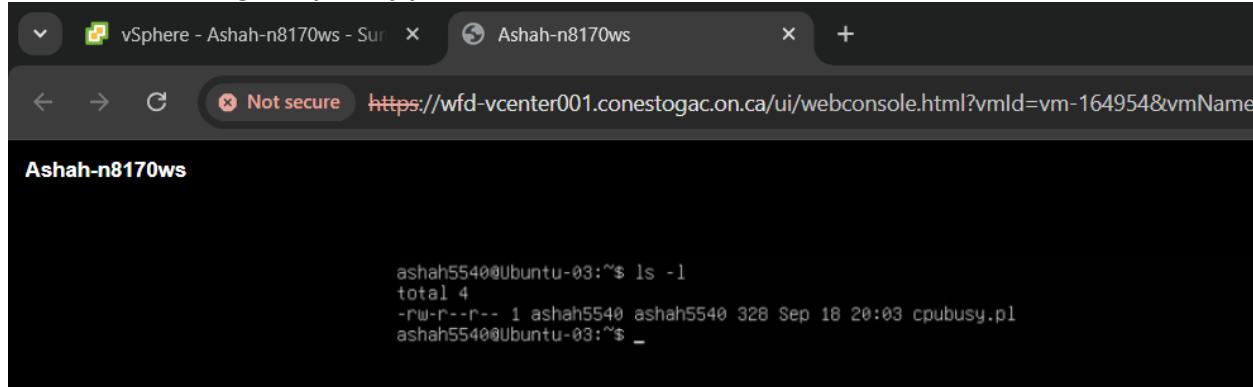
* Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s just raised the bar for easy, resilient and secure K8s cluster deployment.
https://ubuntu.com/engage/secure-kubernetes-at-the-edge

Expanded Security Maintenance for Applications is not enabled.
116 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo apt update

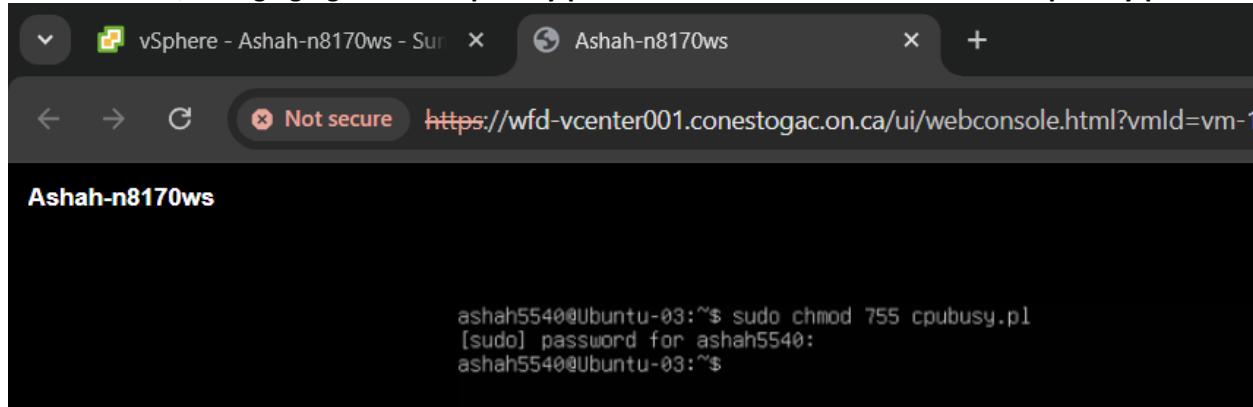
The list of available updates is more than a week old.
To check for new updates run: sudo apt update
ashah5540@ubuntu-03:~$
```

Ubuntu-03 checking file **cpubusy.pl** available with the command **ls -l**



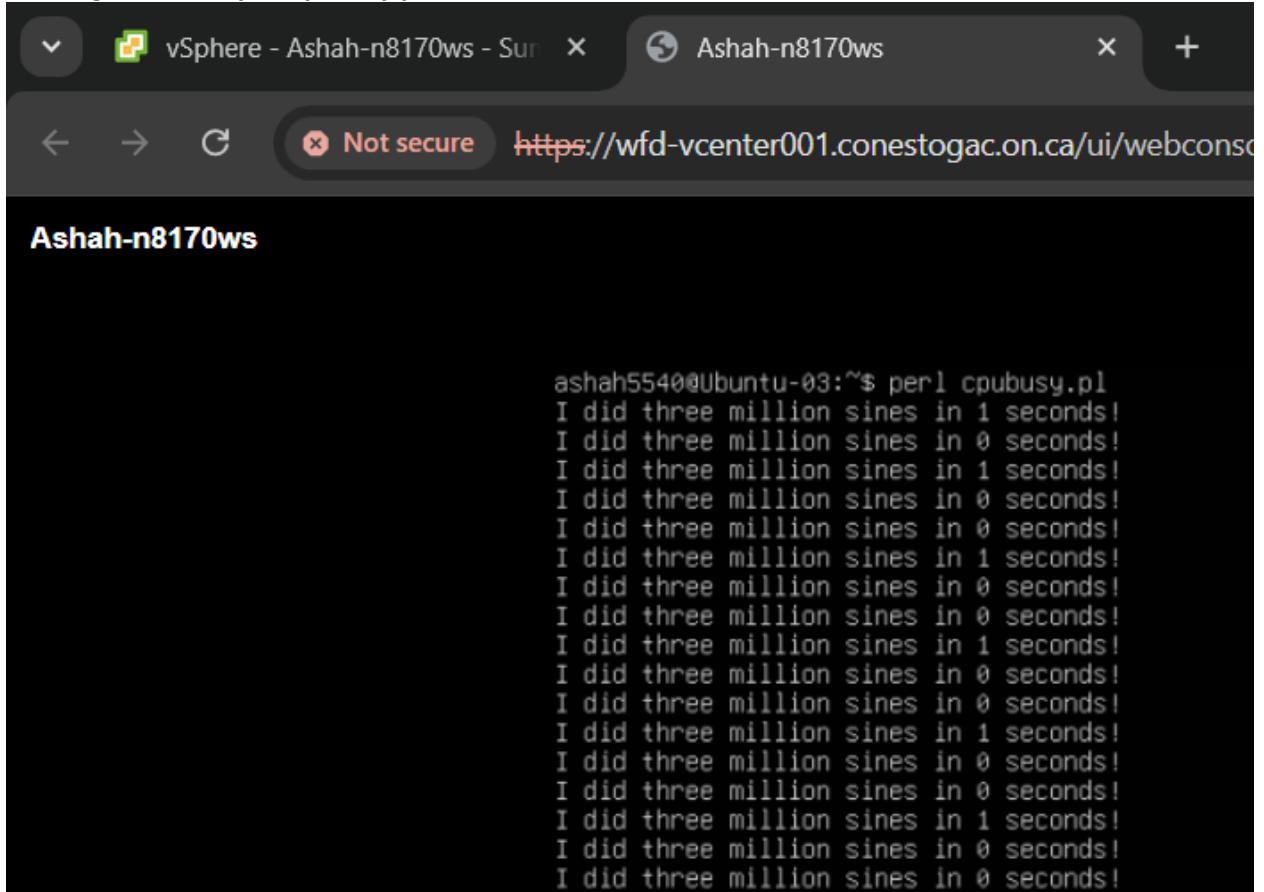
```
ashah5540@Ubuntu-03:~$ ls -l
total 4
-rwxr--r-- 1 ashah5540 ashah5540 328 Sep 18 20:03 cpubusy.pl
ashah5540@Ubuntu-03:~$
```

On Ubuntu-03, Changing rights of file **cpubusy.pl** with the command **sudo chmod 755 cpubusy.pl**



```
ashah5540@Ubuntu-03:~$ sudo chmod 755 cpubusy.pl
[sudo] password for ashah5540:
ashah5540@Ubuntu-03:~$
```

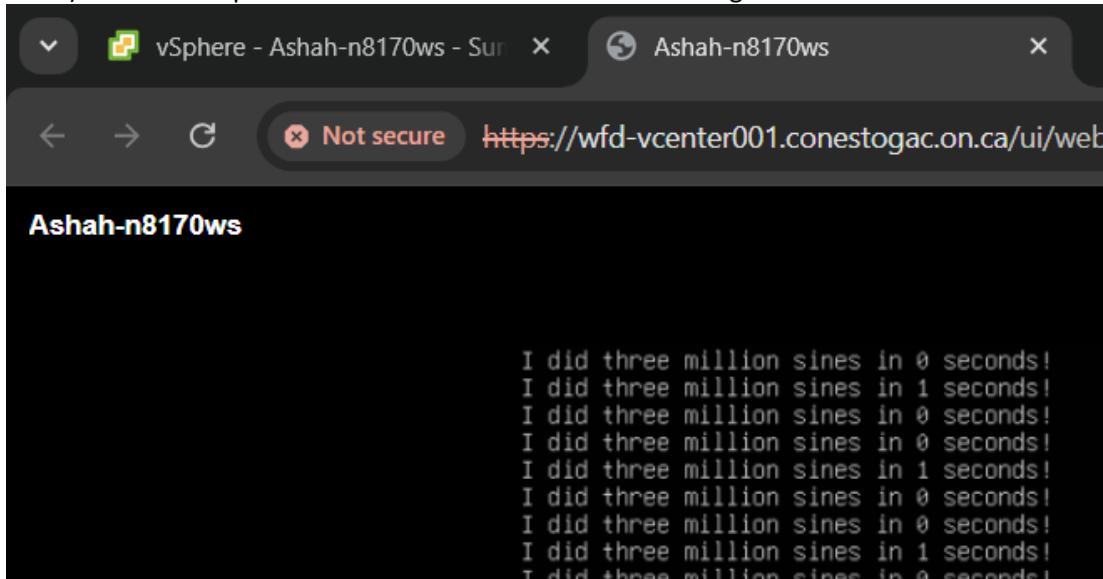
Running command perl cpubusy.pl on Ubuntu-03



A screenshot of a web browser window titled "Ashah-n8170ws". The address bar shows "Not secure https://wfd-vcenter001.conestogac.on.ca/ui/webcons". The main content area displays the output of the perl cpubusy.pl script, which consists of multiple lines of text: "ashah5540@Ubuntu-03:~\$ perl cpubusy.pl" followed by "I did three million sines in 1 seconds!" repeated approximately 20 times.

```
ashah5540@Ubuntu-03:~$ perl cpubusy.pl
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
I did three million sines in 0 seconds!
I did three million sines in 0 seconds!
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
I did three million sines in 0 seconds!
I did three million sines in 0 seconds!
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
I did three million sines in 0 seconds!
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
I did three million sines in 0 seconds!
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
```

- 6) Let the scripts run for about **2 minutes** before moving on to the next section.



A screenshot of a web browser window titled "Ashah-n8170ws". The address bar shows "Not secure https://wfd-vcenter001.conestogac.on.ca/ui/webcons". The main content area displays the output of the perl cpubusy.pl script, which consists of multiple lines of text: "I did three million sines in 0 seconds!" repeated approximately 20 times.

```
I did three million sines in 0 seconds!
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
I did three million sines in 0 seconds!
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
I did three million sines in 0 seconds!
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
```

Section 3: Alarm Triggering and Performance Graphs

- 1) In **Hosts and cluster's view** Select both **Ubuntu-02** and **Ubuntu-03**. You should notice that our alarm for **section 1** has been triggered on **both VMs**. The alarm was triggered because CPU use is above 90%.

The screenshot shows the vSphere Client interface. The left sidebar navigation pane includes 'vcsa.vclass.local' under 'Datacenters', 'Hosts & Clusters', 'VMs', 'Datastores', 'Networks', 'Linked vCenter Server Systems', and 'Extensions'. The main content area displays a table titled 'Triggered Alarms' with three entries:

Object	Type	Severity	Triggered Time
Ubuntu-02	Virtual Machine	Critical	1/19/2024, 7:15:41 PM
Ubuntu-03	Virtual Machine	Critical	1/19/2024, 7:15:30 PM
vCenter Server Health Alar...	Folder	Warning	1/19/2024, 5:52:34 P...

The status bar at the bottom indicates the date and time as 11/19/2024, 7:19 PM.

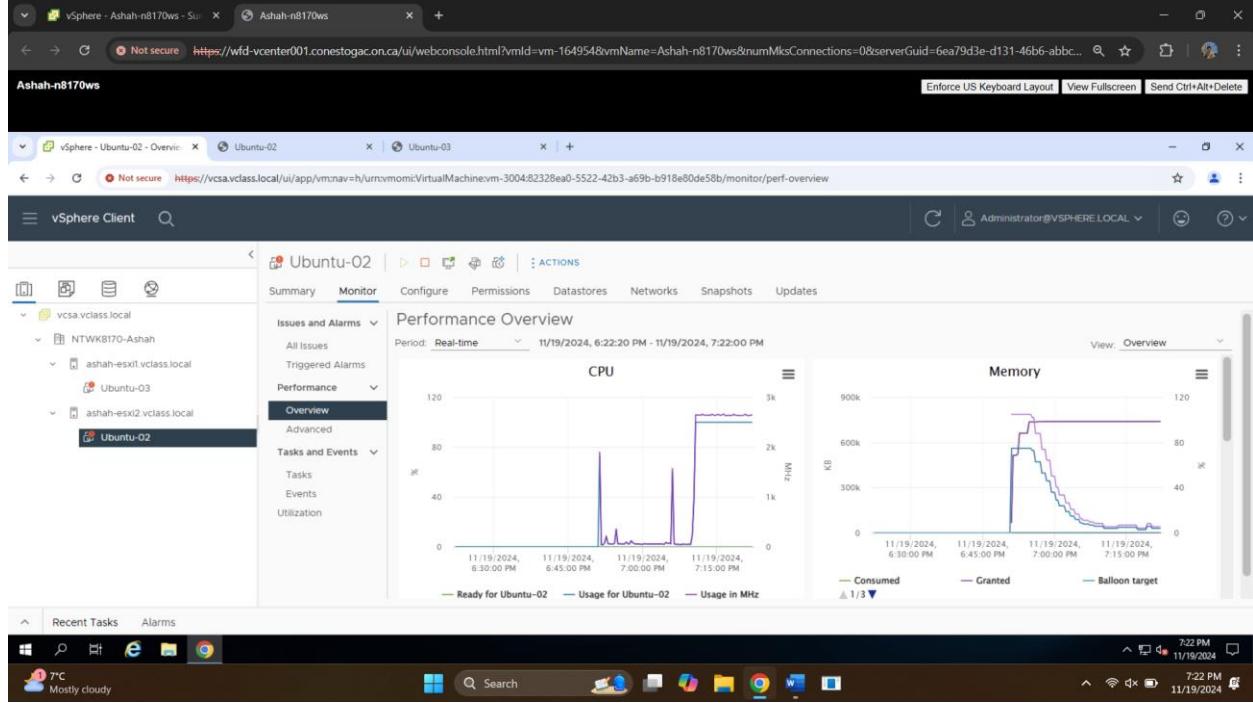
- 2) Acknowledge the alarms. Disable the alarm in **vcsa.vclass.local** → Configure → Alarm Definitions.

The screenshot shows the vSphere Client interface with the 'Hosts & Clusters' tab selected. The left sidebar navigation pane includes 'vcsa.vclass.local' under 'Datacenters', 'Hosts & Clusters', 'VMs', 'Datastores', 'Networks', 'Linked vCenter Server Systems', and 'Extensions'. A context menu is open over the host list, with the 'Actions' option highlighted. The menu options include:

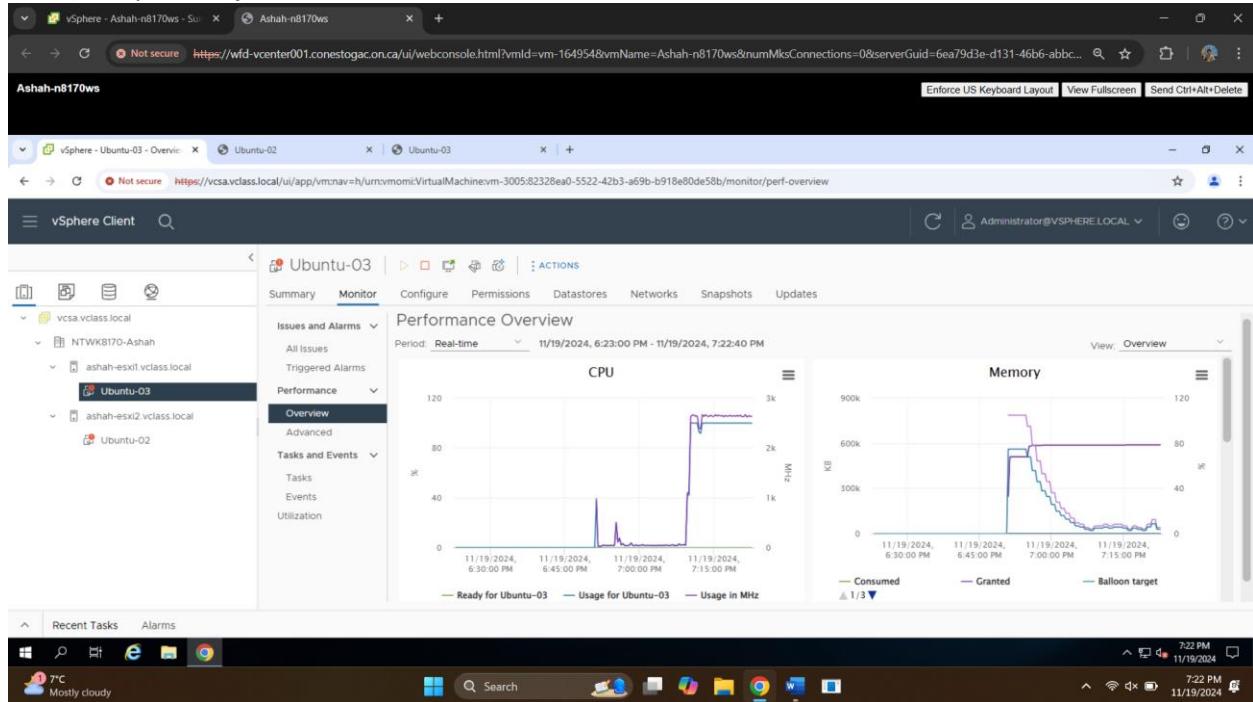
- New Datacenter...
- New Folder
- Export System Logs...
- Assign License...
- Tags & Custom Attributes
- Add Permission...
- Alarms

The status bar at the bottom indicates the date and time as 11/19/2024, 7:21 PM.

- 3) Click on **Ubuntu-02** → **Monitor** → **Performance** → **Overview**, You should notice in the CPU chart that the CPU usage is consistently higher than before we ran the script.

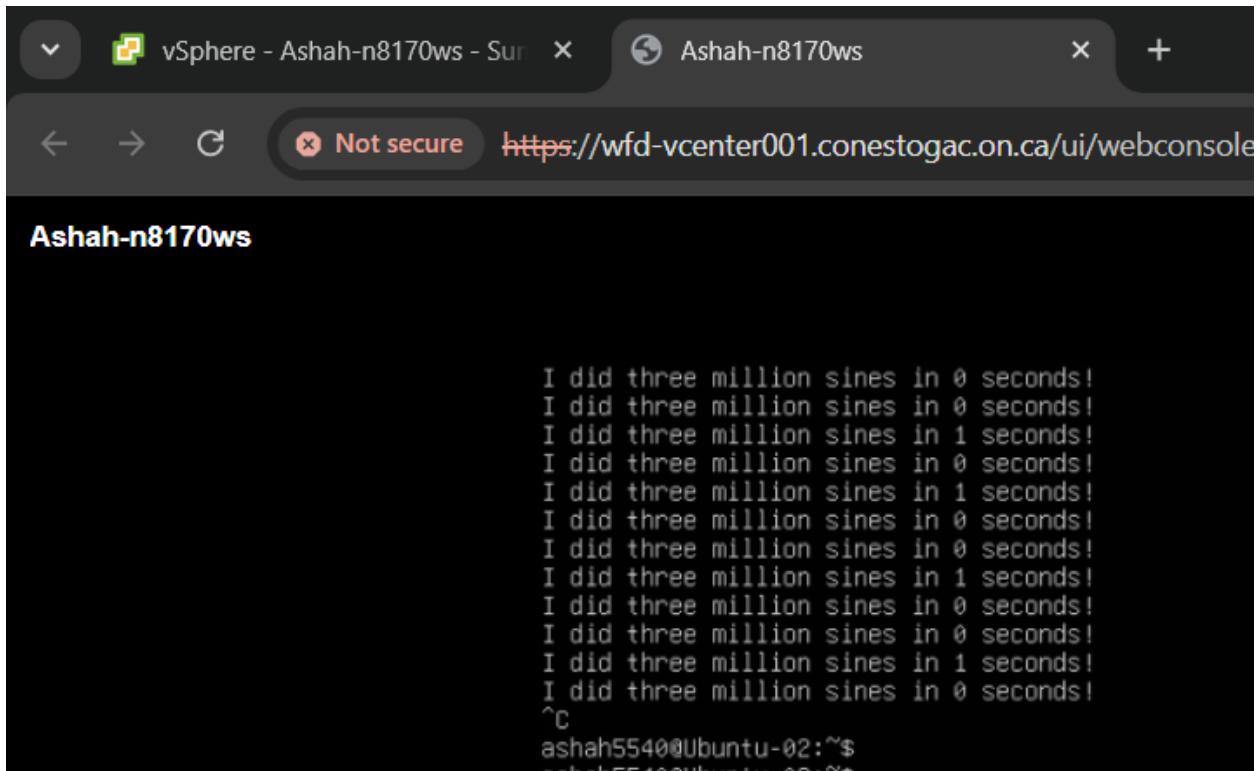


- 4) Repeat Steps 3-4 on Ubuntu-03.



5) Reopen the consoles for both **Ubuntu-02** and **Ubuntu-03** and use **CTRL-C** to stop the scripts.

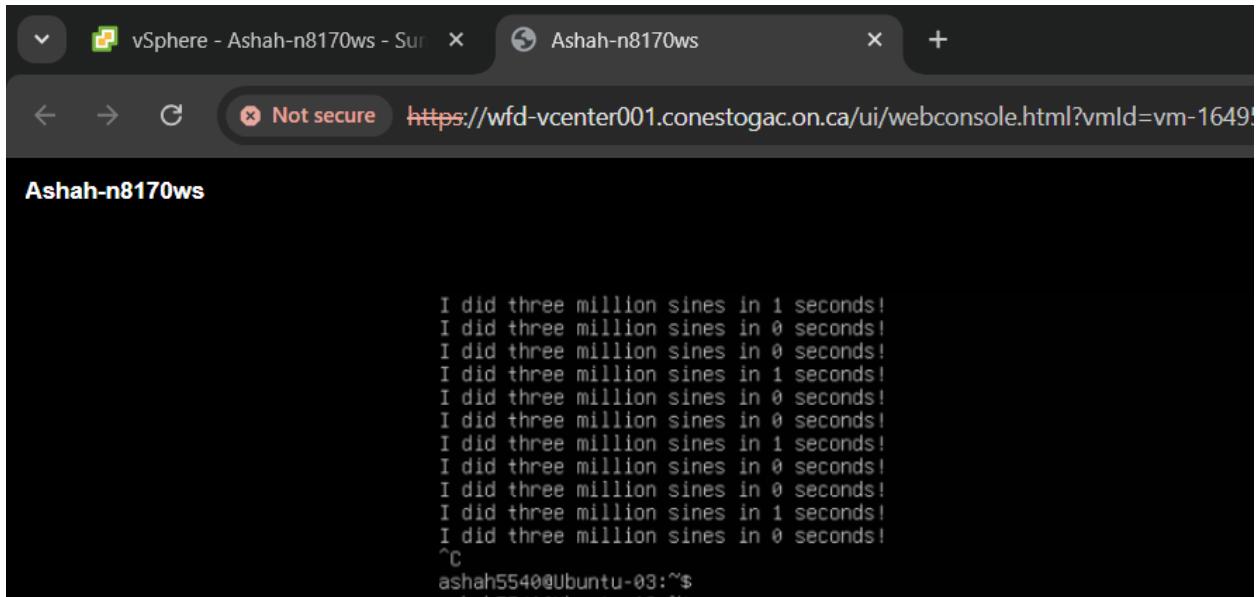
Ubuntu-02



A screenshot of a web browser window titled "vSphere - Ashah-n8170ws - Sun". The address bar shows "Not secure https://wfd-vcenter001.conestogac.on.ca/ui/webconsole". The main content area is titled "Ashah-n8170ws". It displays a continuous stream of text from a terminal session:

```
I did three million sines in 0 seconds!
I did three million sines in 0 seconds!
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
I did three million sines in 0 seconds!
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
I did three million sines in 0 seconds!
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
^C
ashah5540@Ubuntu-02:~$
```

Ubuntu-03



A screenshot of a web browser window titled "vSphere - Ashah-n8170ws - Sun". The address bar shows "Not secure https://wfd-vcenter001.conestogac.on.ca/ui/webconsole.html?vmId=vm-1649". The main content area is titled "Ashah-n8170ws". It displays a continuous stream of text from a terminal session:

```
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
I did three million sines in 0 seconds!
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
I did three million sines in 0 seconds!
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
I did three million sines in 0 seconds!
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
^C
ashah5540@Ubuntu-03:~$
```

6) Check the charts in around 1-2 minutes. You should see the charts start to show less CPU usage.

Ubuntu-02

vSphere - Ashah-n8170ws - Summary | Ashah-n8170ws | +

Not secure https://wfd-vcenter001.conestogac.on.ca/ui/webconsole.html?vmId=vm-164954&vmName=Ashah-n8170ws&numMksConnections=0&serverGuid=6ea79d3e-d131-46b6-abbc... Enforce US Keyboard Layout View Fullscreen Send Ctrl+Alt+Delete

Ashah-n8170ws

vSphere - Ubuntu-02 - Overview | Ubuntu-02 | Ubuntu-03 | +

Not secure https://vcsa.vclass.local/ui/app/vmnav=h/urn:vmonomi:VirtualMachine:vm-3004:82328ea0-5522-42b3-a69b-b918e80de58b/monitor/perf-overview

vSphere Client | Administrator@VSPHERE LOCAL | ?

Ubuntu-02 | Summary Monitor Configure Permissions Datastores Networks Snapshots Updates

Issues and Alarms | All Issues Triggered Alarms

Performance | Overview Advanced

Tasks and Events | Tasks Events Utilization

Performance Overview

Period: Real-time 11/19/2024, 6:30:20 PM - 11/19/2024, 7:30:00 PM

CPU

Memory

View: Overview

Recent Tasks Alarms

Windows Taskbar: 7:30 PM 11/19/2024

Ubuntu-03

vSphere - Ashah-n8170ws - Summary | Ashah-n8170ws | +

Not secure https://wfd-vcenter001.conestogac.on.ca/ui/webconsole.html?vmId=vm-164954&vmName=Ashah-n8170ws&numMksConnections=0&serverGuid=6ea79d3e-d131-46b6-abbc... Enforce US Keyboard Layout View Fullscreen Send Ctrl+Alt+Delete

Ashah-n8170ws

vSphere - Ubuntu-03 - Overview | Ubuntu-02 | Ubuntu-03 | +

Not secure https://vcsa.vclass.local/ui/app/vmnav=h/urn:vmonomi:VirtualMachine:vm-3005:82328ea0-5522-42b3-a69b-b918e80de58b/monitor/perf-overview

vSphere Client | Administrator@VSPHERE LOCAL | ?

Ubuntu-03 | Summary Monitor Configure Permissions Datastores Networks Snapshots Updates

Issues and Alarms | All Issues Triggered Alarms

Performance | Overview Advanced

Tasks and Events | Tasks Events Utilization

Performance Overview

Period: Real-time 11/19/2024, 6:31:20 PM - 11/19/2024, 7:31:00 PM

CPU

Memory

View: Overview

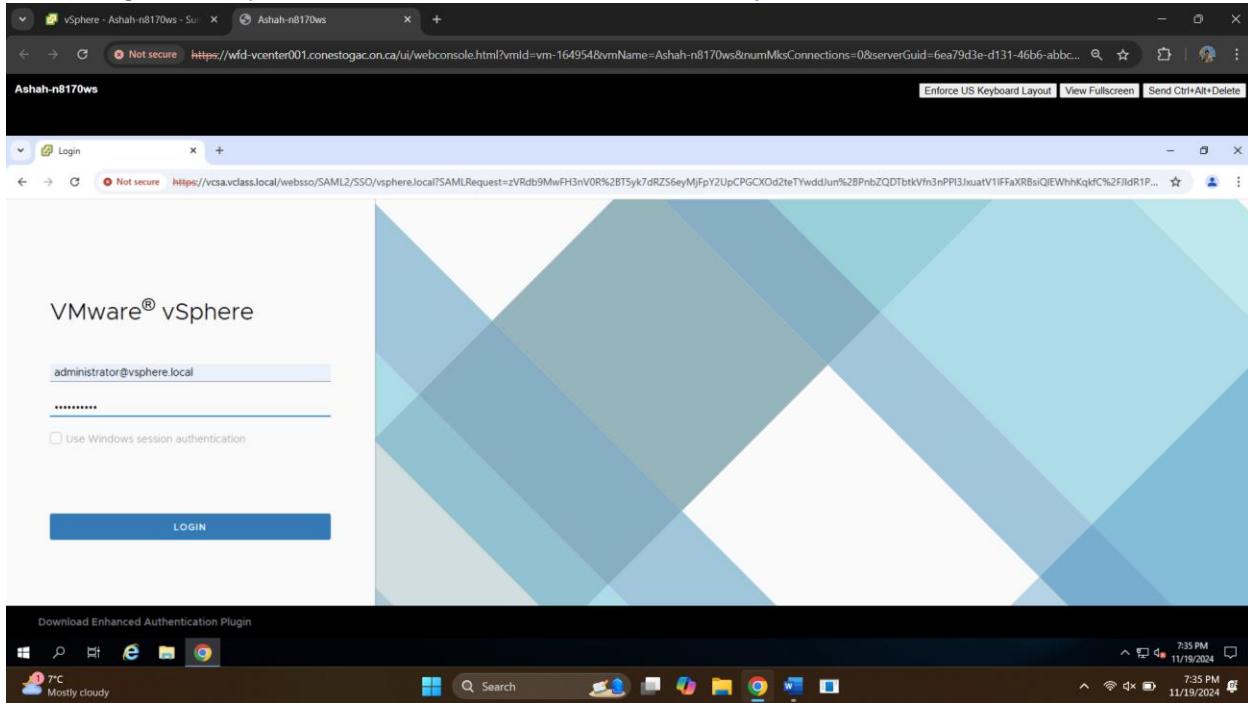
Recent Tasks Alarms

Windows Taskbar: 7:31 PM 11/19/2024

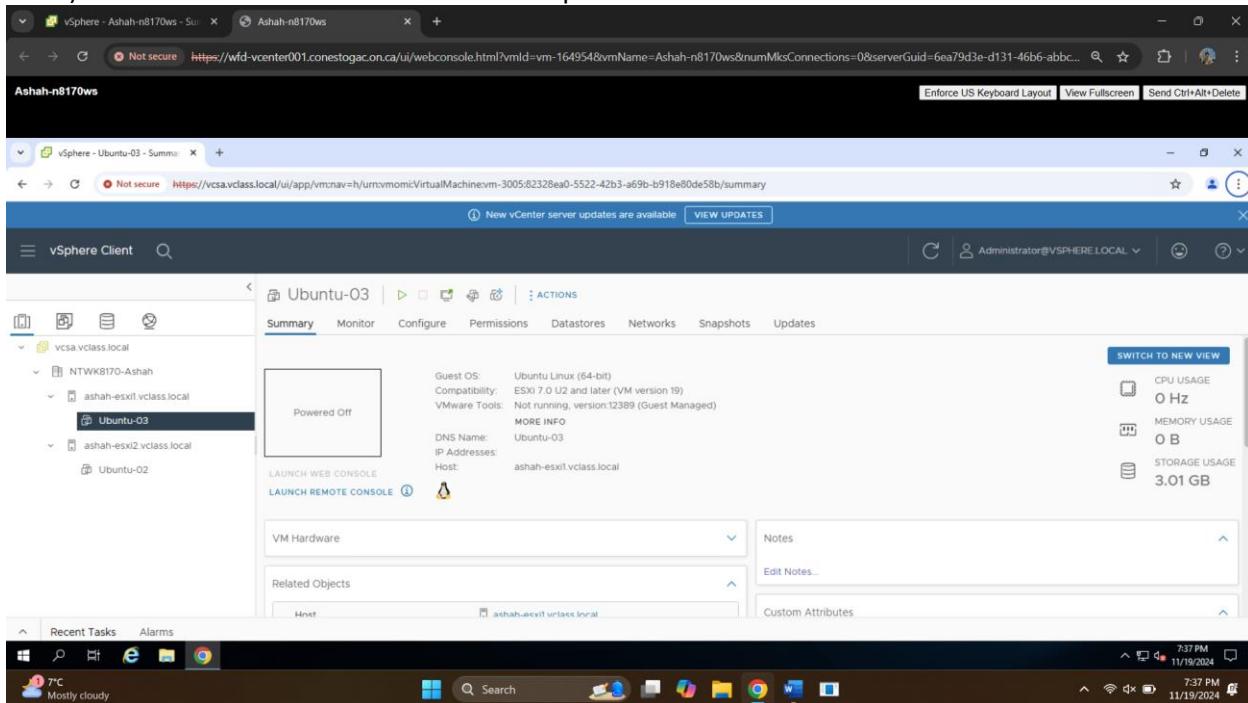
LAB 13: Virtualization with VMware vSphere Lab 13: vSphere DRS

Section 1: Creating the DRS Cluster

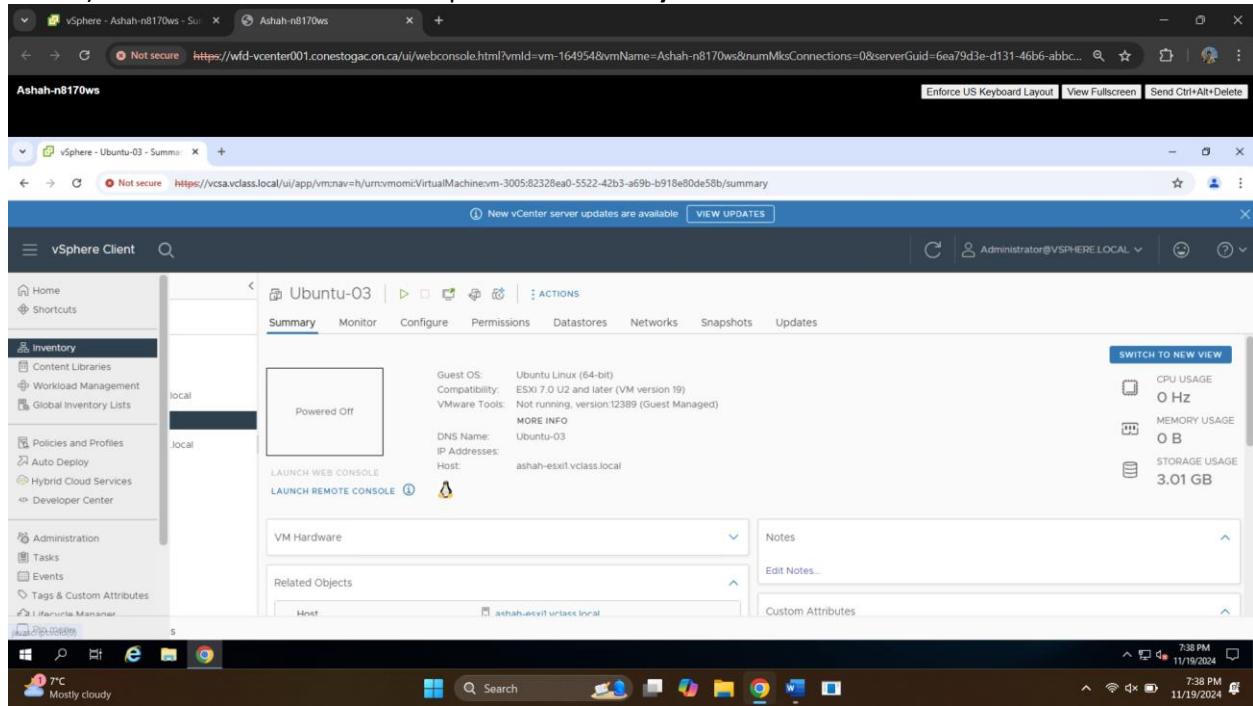
- 1) Sign into <https://vcsa.vclass.local> as `administrator@vsphere.local`.



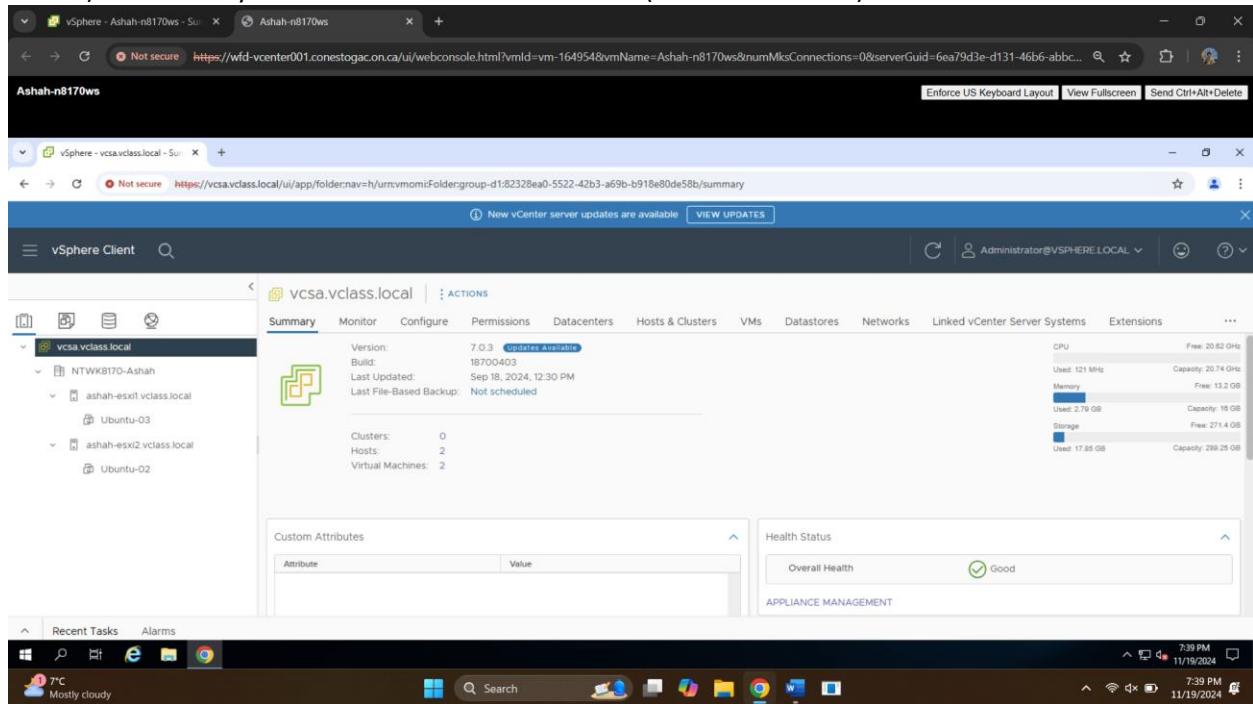
- 9) Ensure Ubuntu-02 and Ubuntu-03 are powered off.



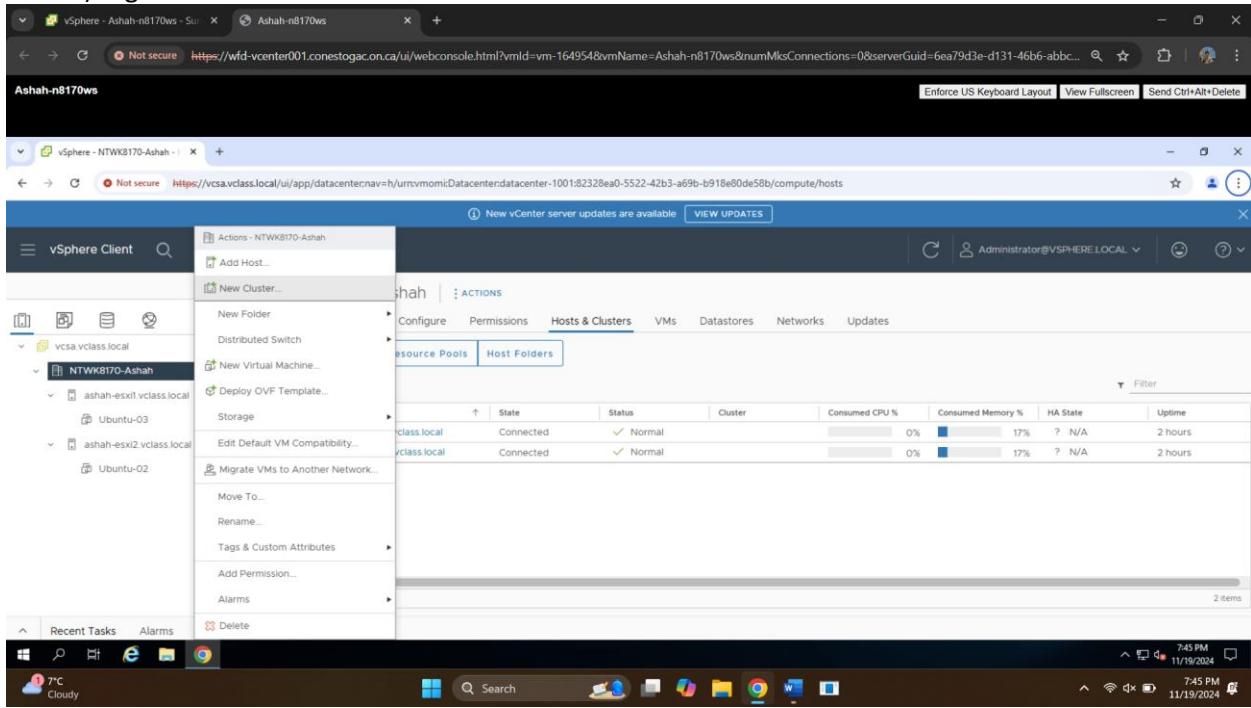
10) Click the three lines in the top left → Inventory.



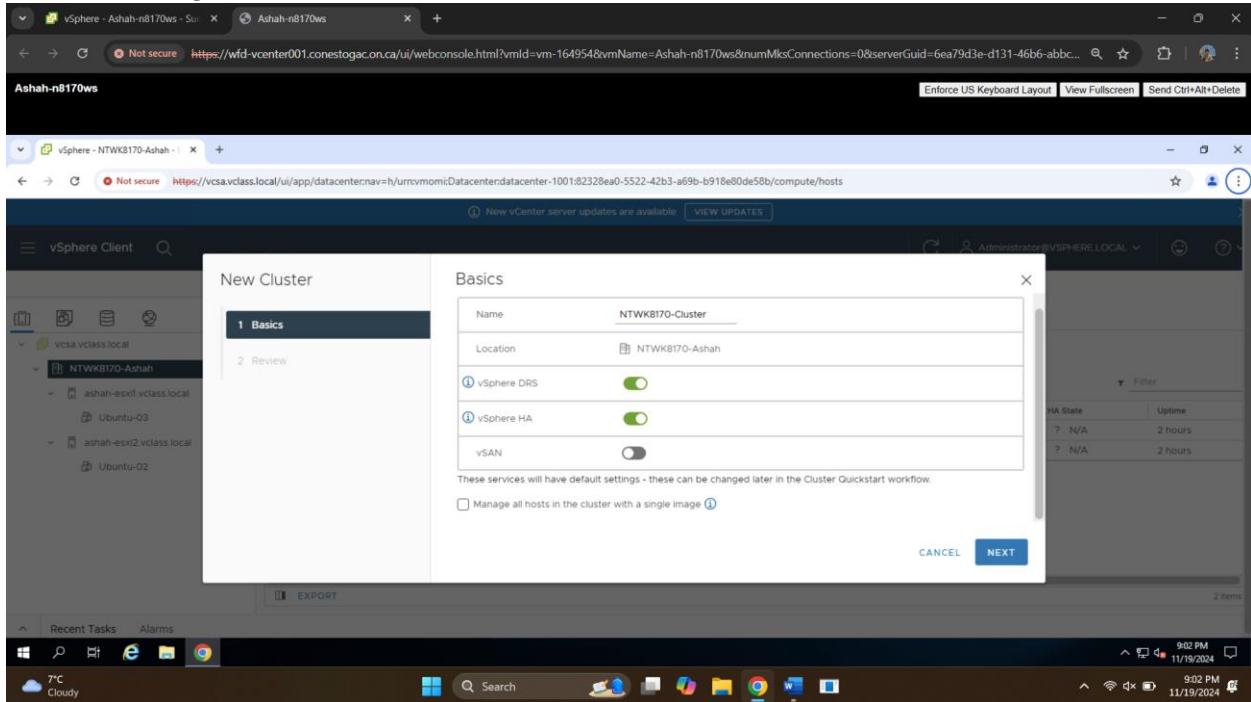
11) Make sure you are in hosts and clusters view (the three servers)



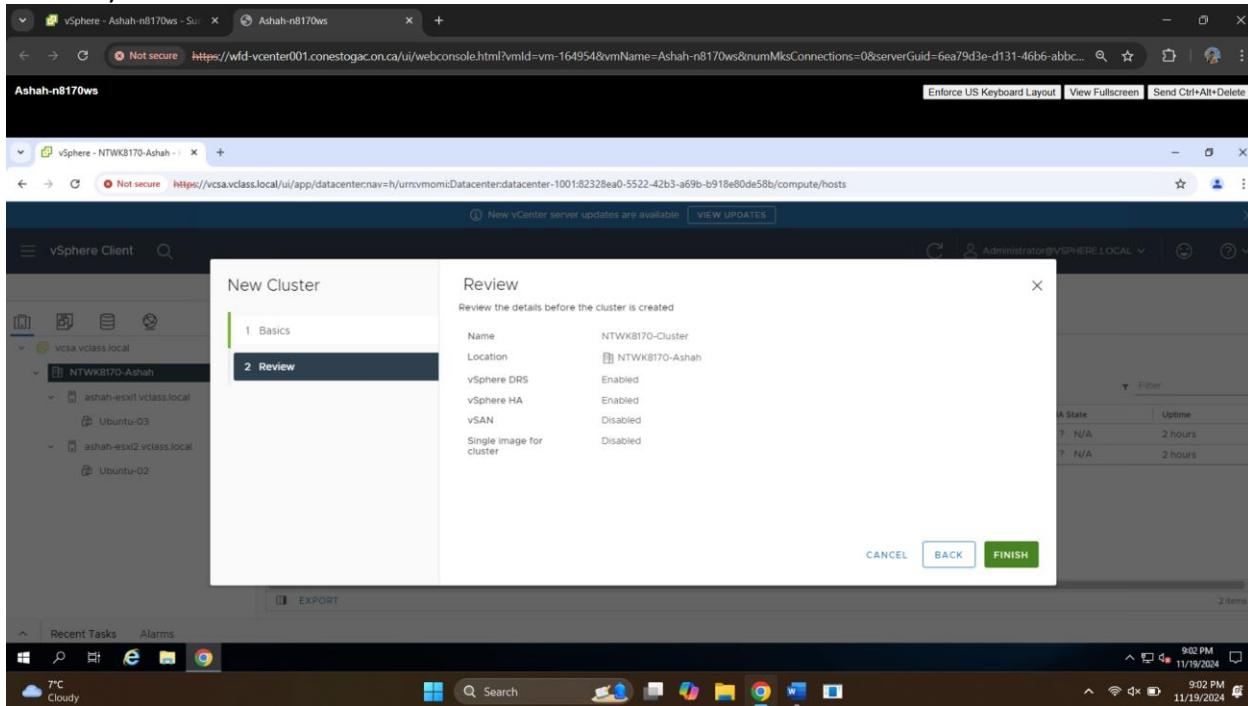
12) Right-Click the NTWK8170 datacenter → New Cluster...



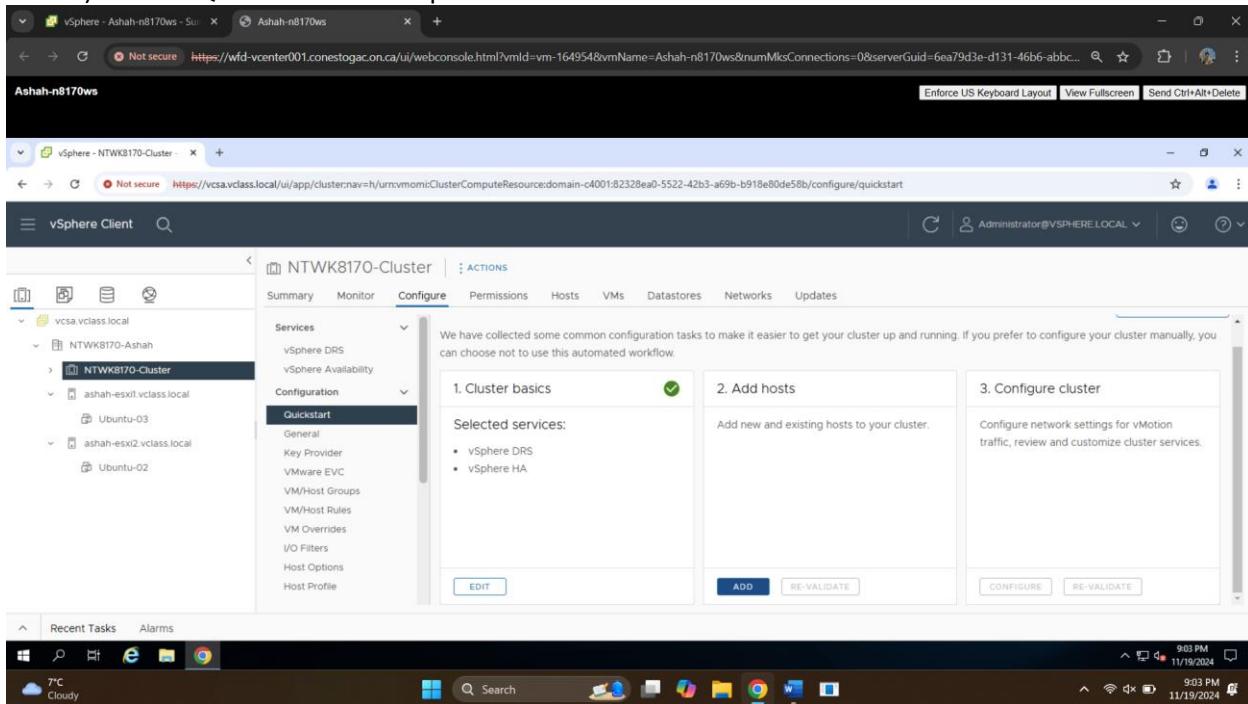
13) In Basics for name type in NTWK8170-Cluster check vSphere DRS and vSphere HA. We will be covering HA next week. Click Next. Then Finish.



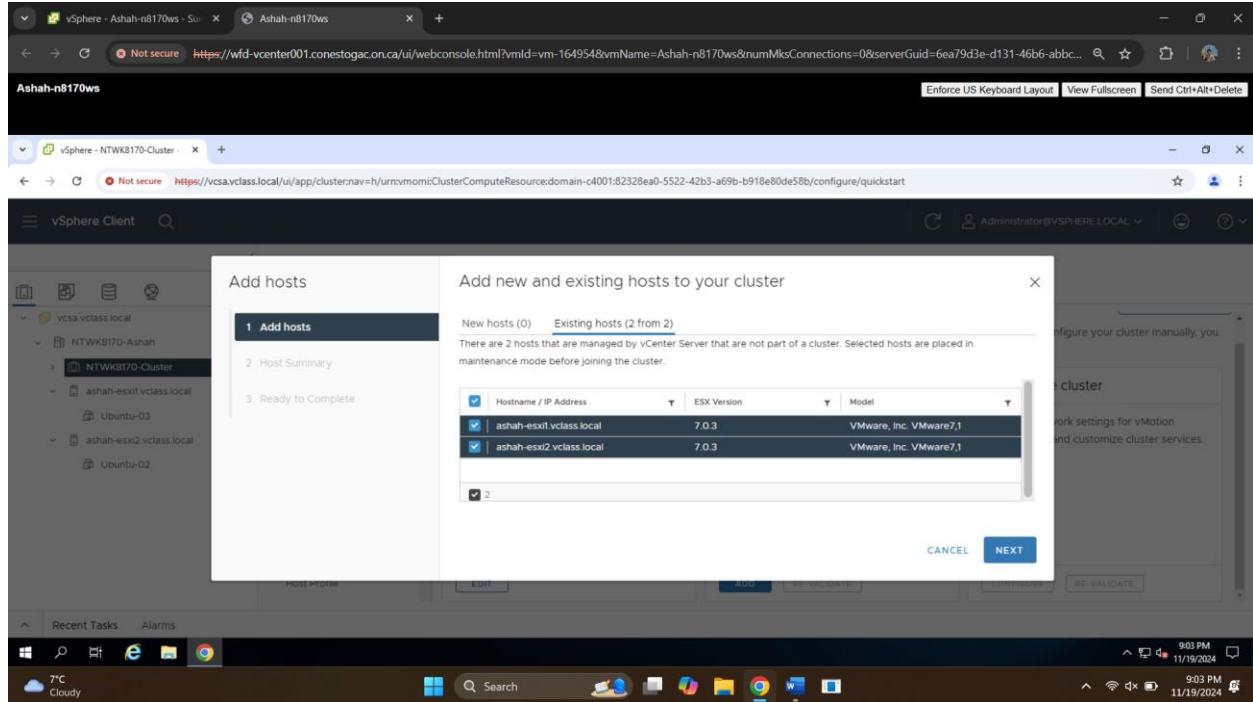
Summary of new cluster creation



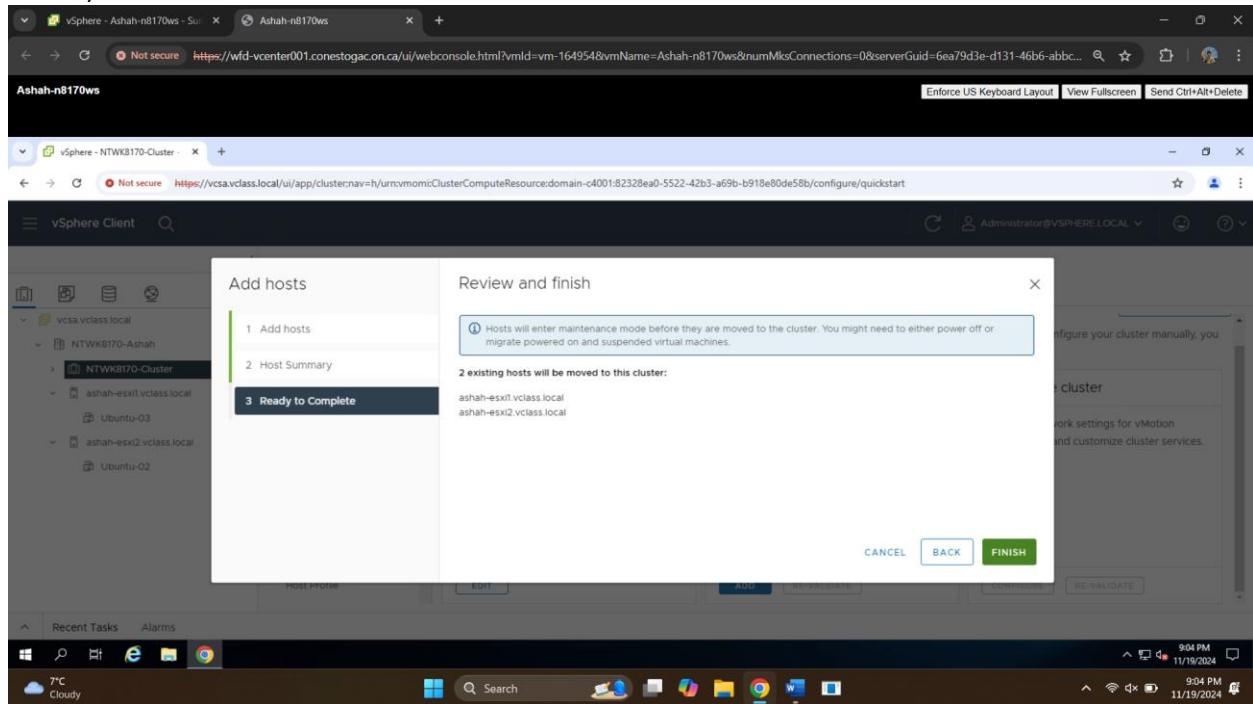
14) Cluster Quickstart should open now. Click Add under Add Hosts.



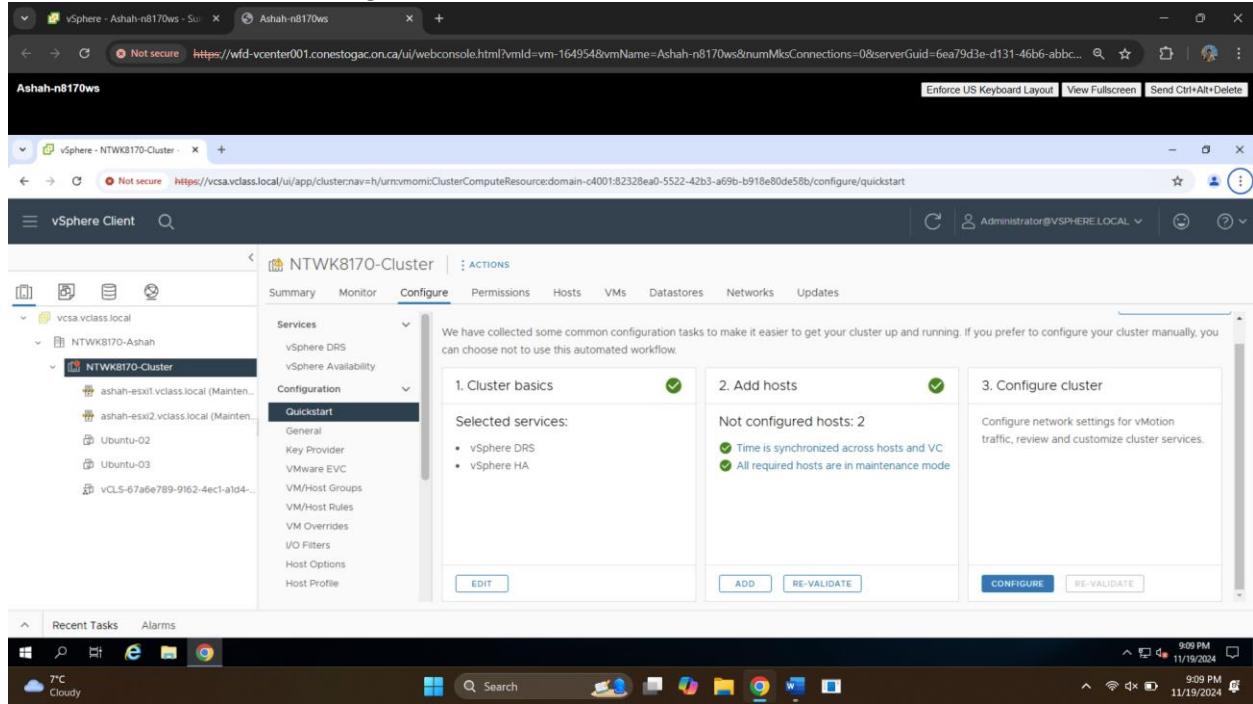
15) On Add hosts Select Existing Hosts. Click the Top check box to select **ESXi1 and **ESXi2**. Click Next.**



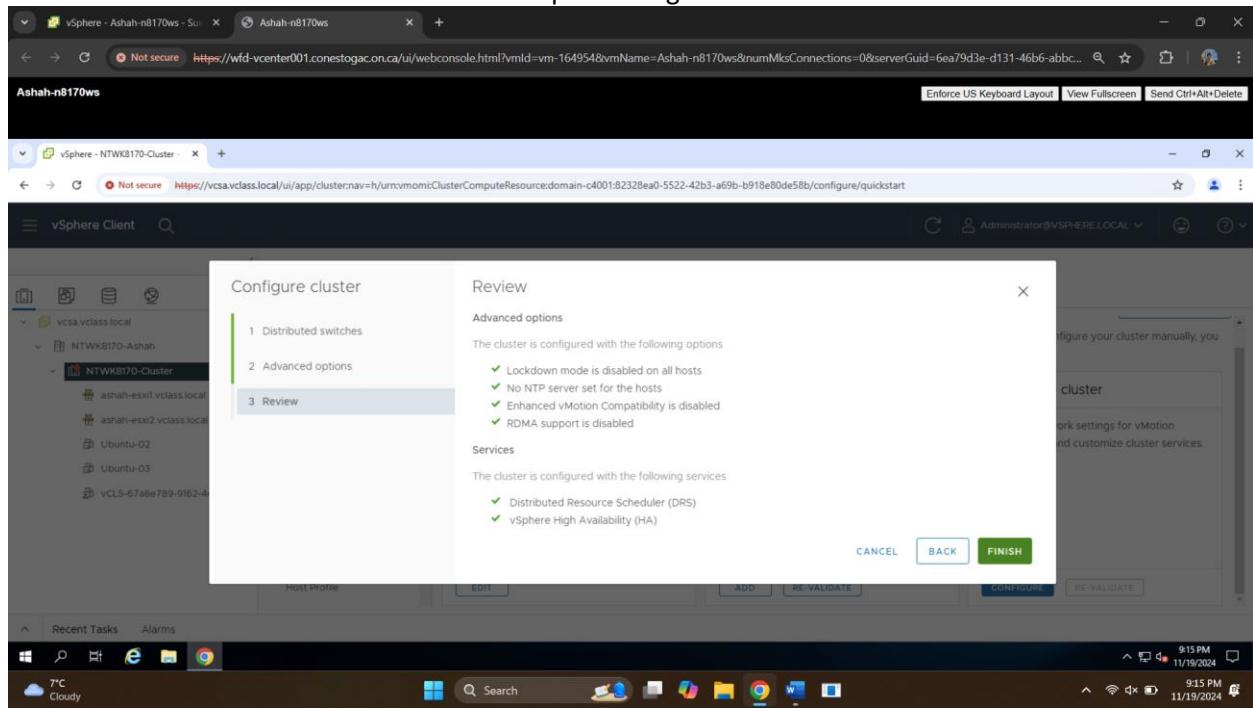
16) Click Next. Then Finish.



17) The process will take a few minutes, If the hosts are still in maintenance mode, you may need to take them out of it. Right-Click the host → Maintenance mode → Exit Maintenance Mode.

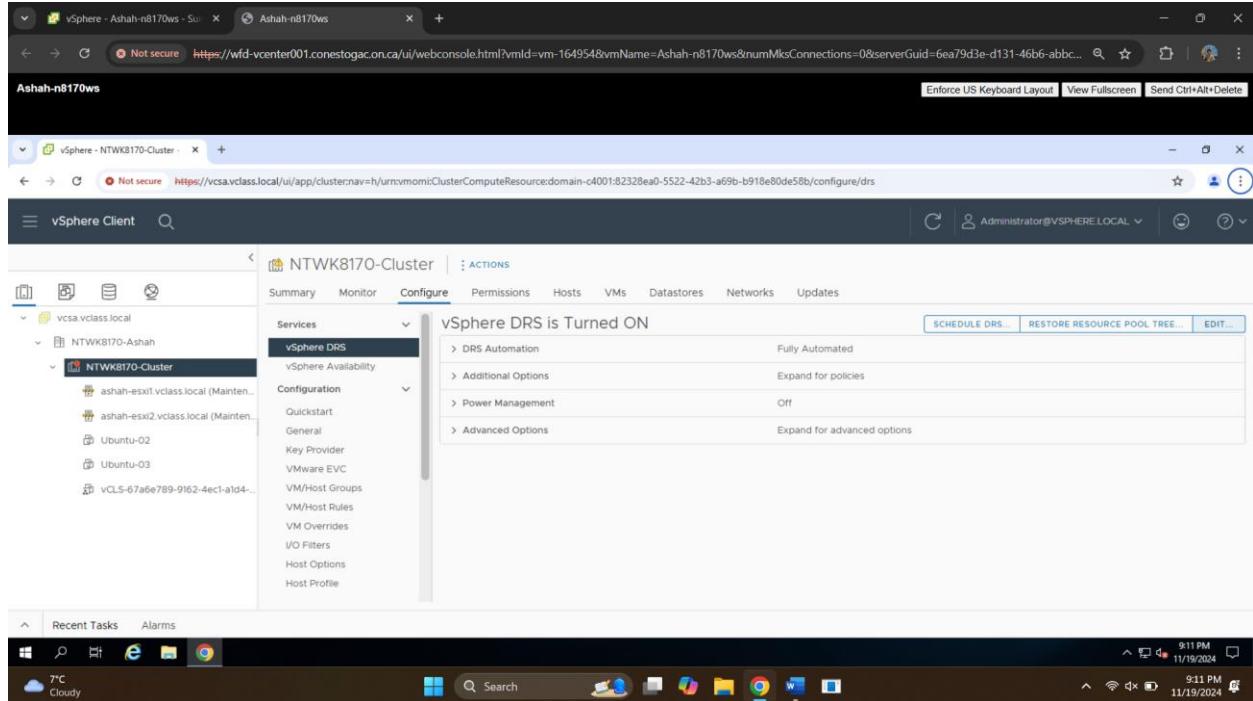


18) View the details of the cluster by clicking on it and then going to Summary, You'll notice that the resources of both ESXi hosts are now pooled together.

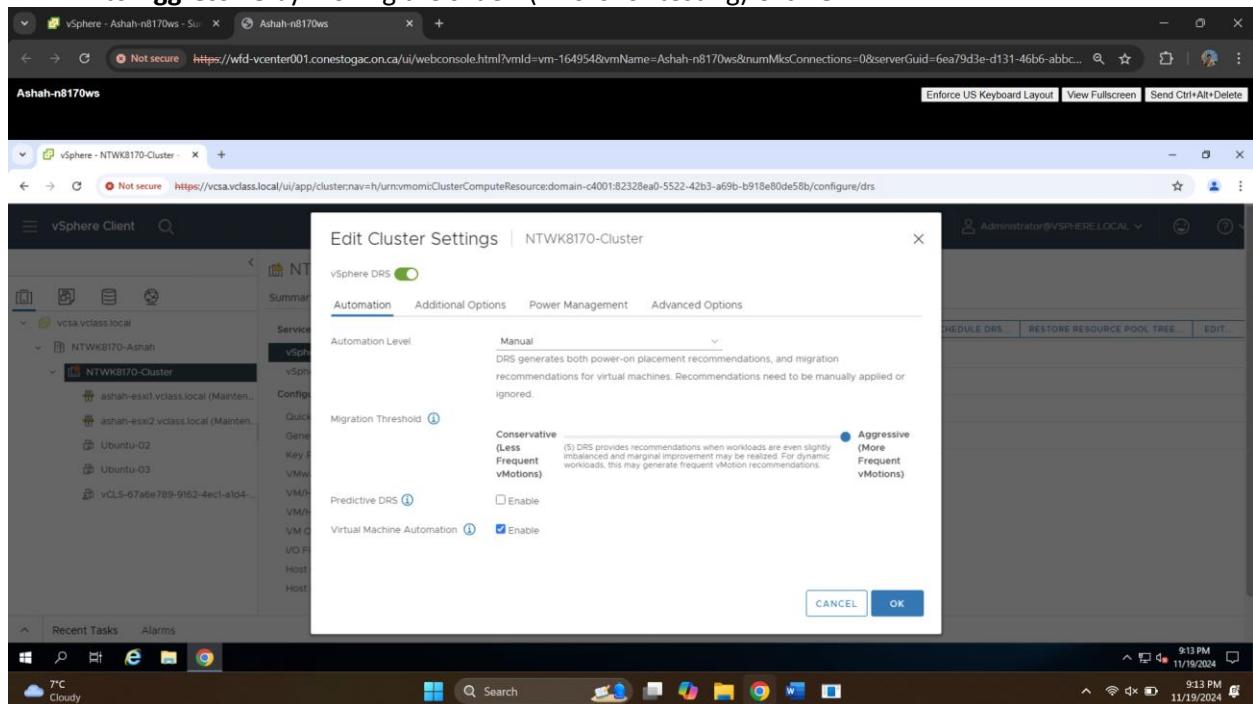


Section 2: Configuring and testing DRS

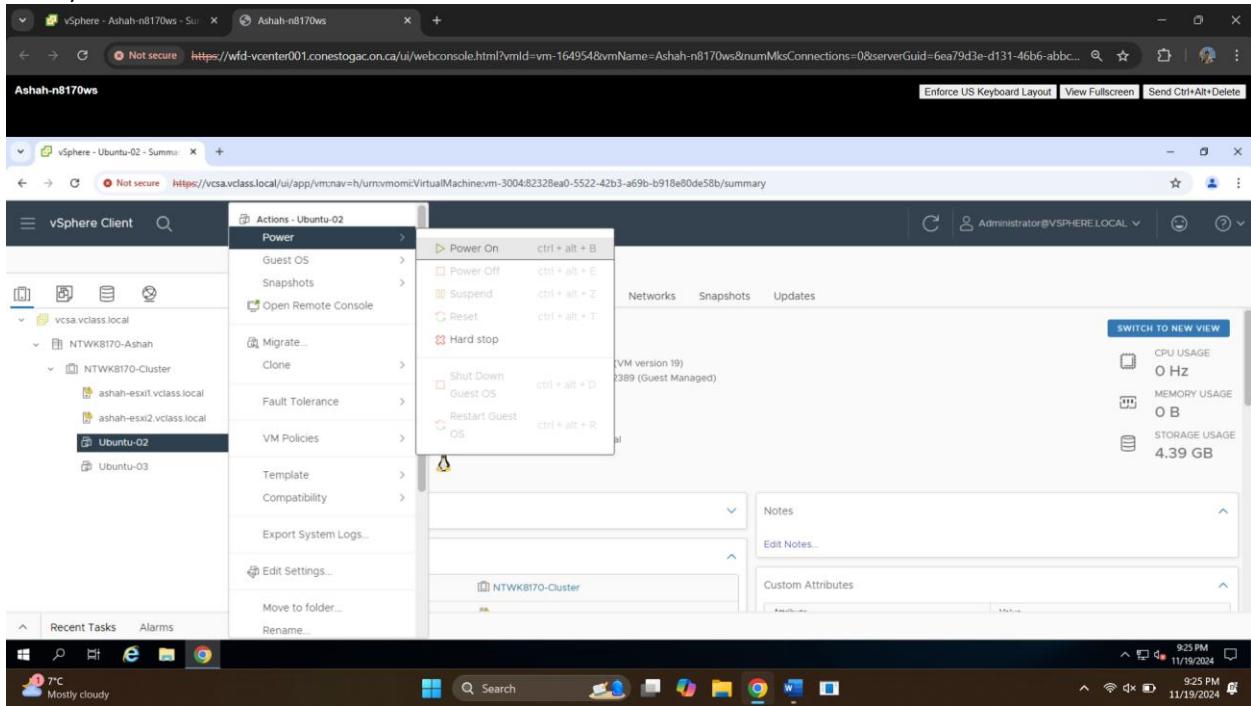
- 1) Click on the **Cluster → Configure → Services → vSphere DRS**, By default, the DRS mode is **Fully automated**. We're going to change this to manual to confirm what DRS is doing when the VMs are powered on or there is resource contention, Click **Edit...** in the top right.



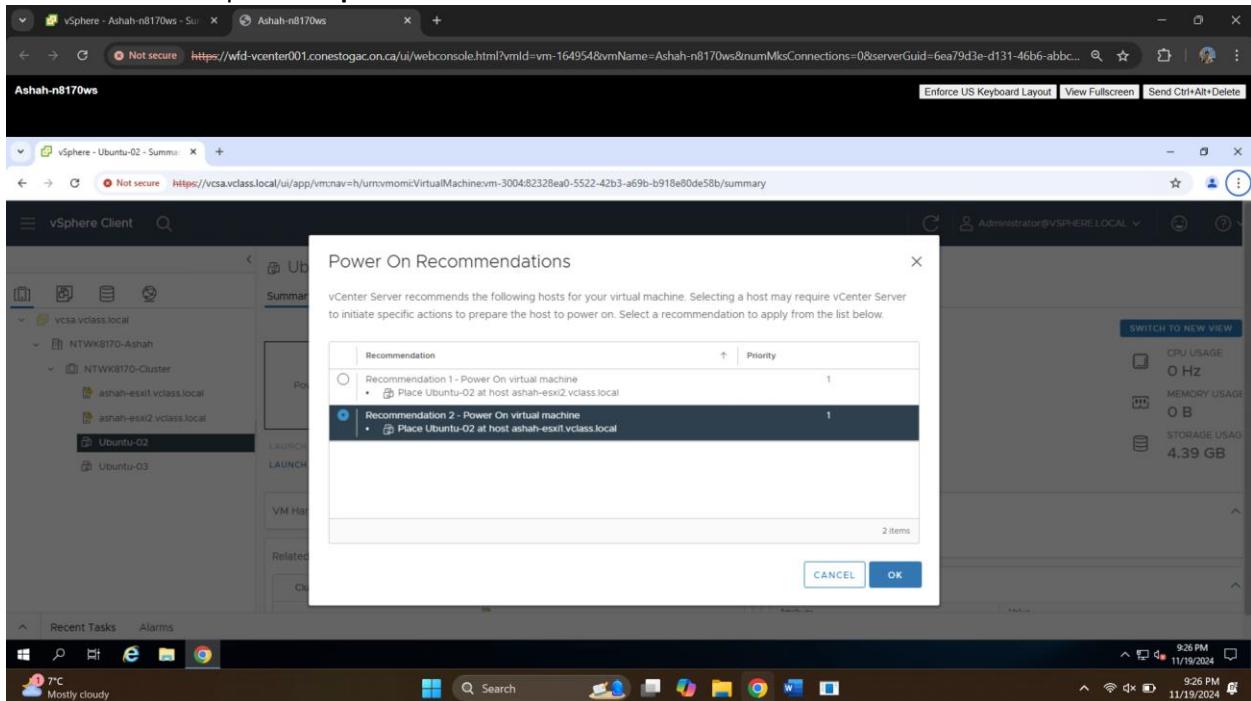
- 2) Under **Automation** change the Automation mode to **Manual**, Change the **Migration Threshold** to **Aggressive** by moving the slider. (This is for testing) Click **Ok**.



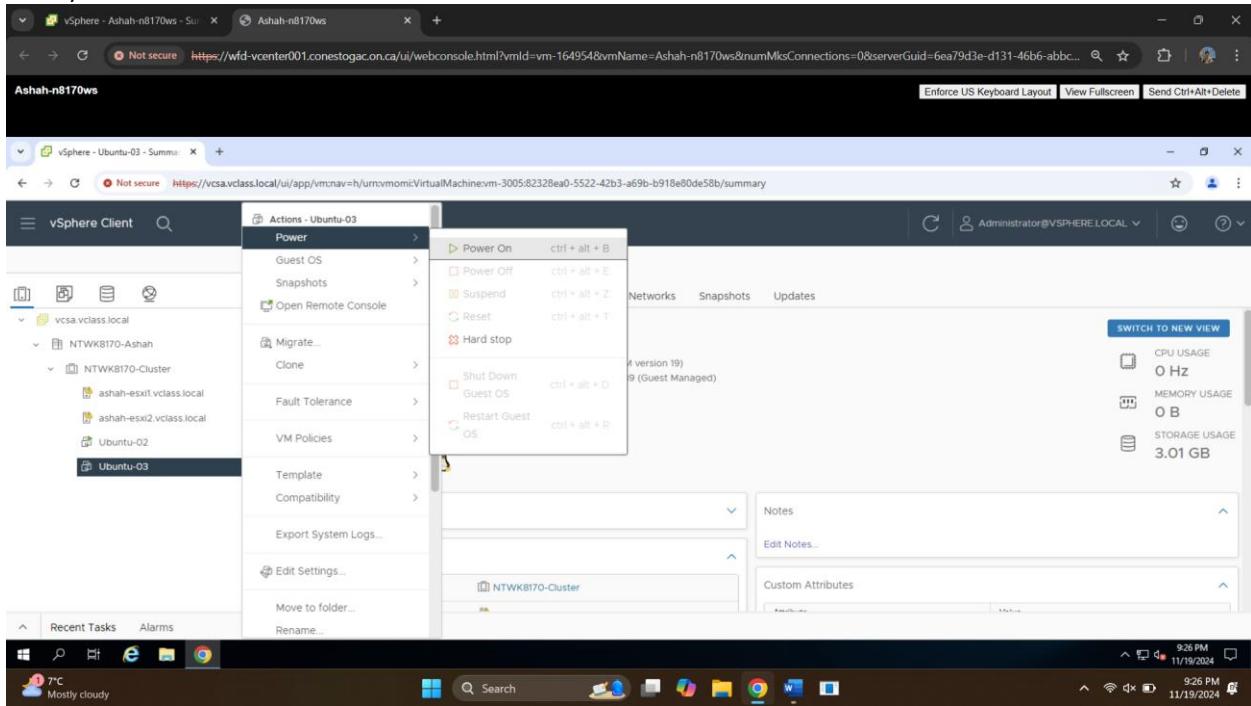
3) Power On Ubuntu-02.



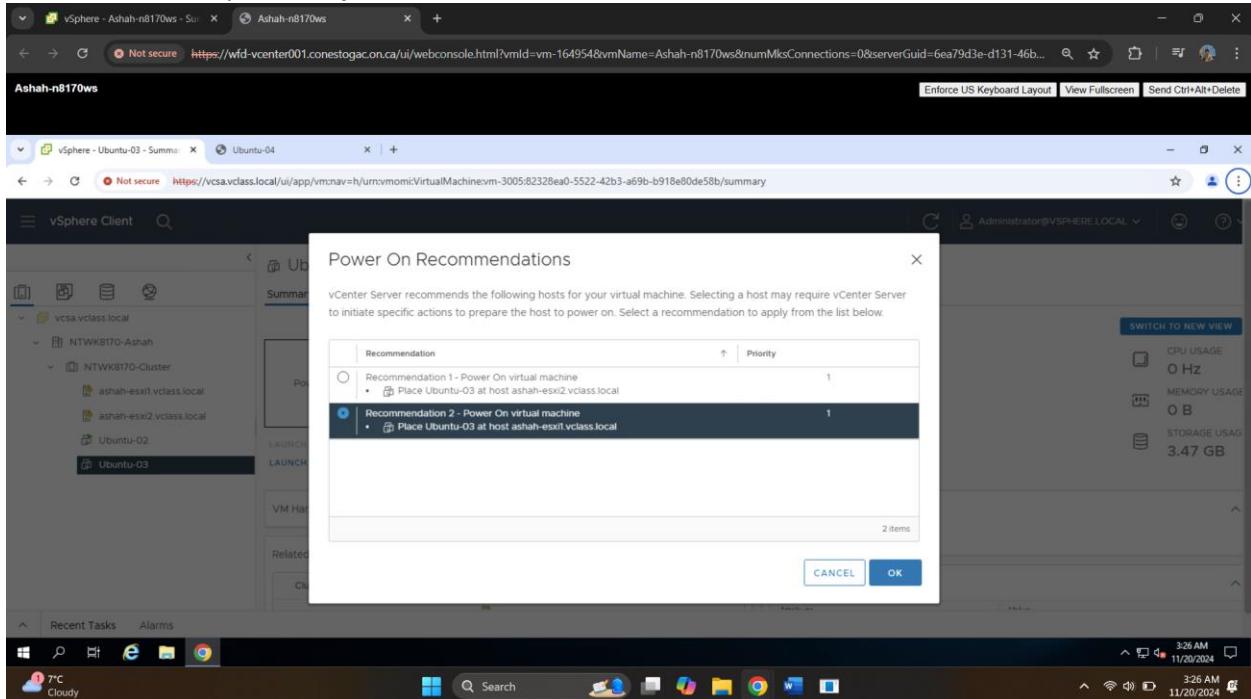
- 4) A message will pop up with **DRS recommendations**. Select **Place Ubuntu-02 at host ESXi1**. Click **Ok** to complete the power on.



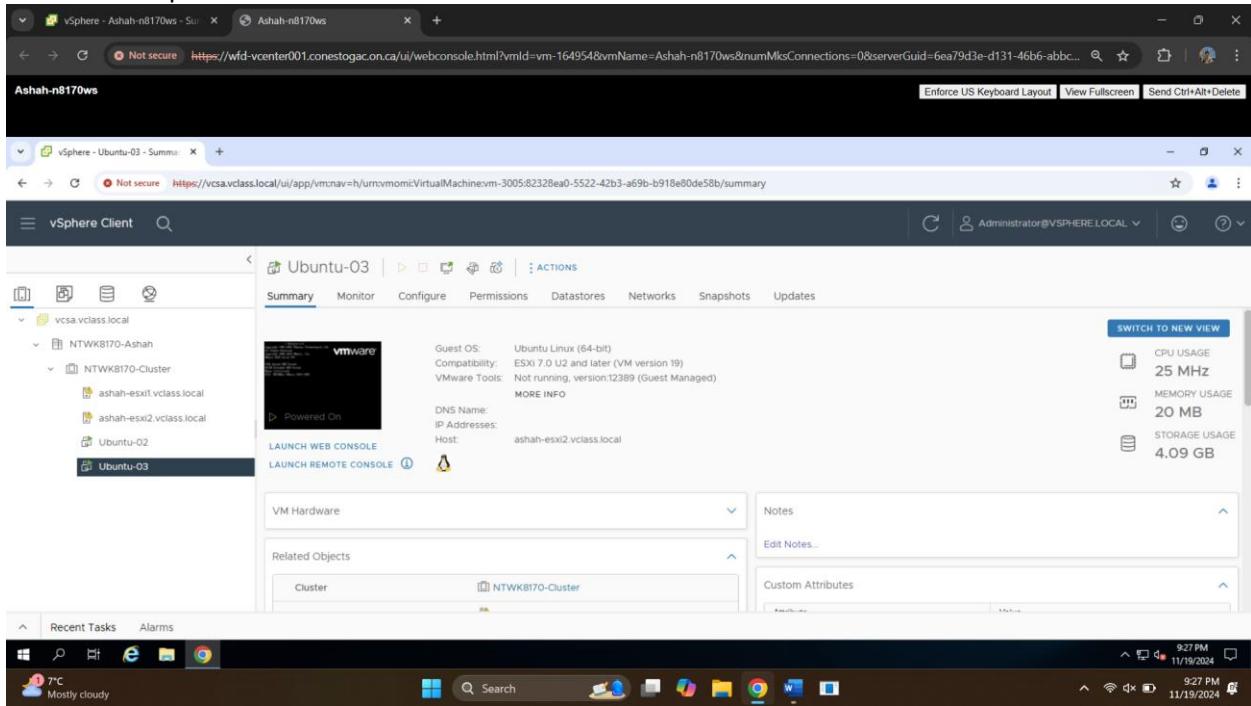
5) Power On Ubuntu-03.



- 6) A message will pop up with **DRS recommendations**. Select **Place Ubuntu-03 at host ESXi1**. Click **Ok** to complete the power on.



Ubuntu-03 is powered ON

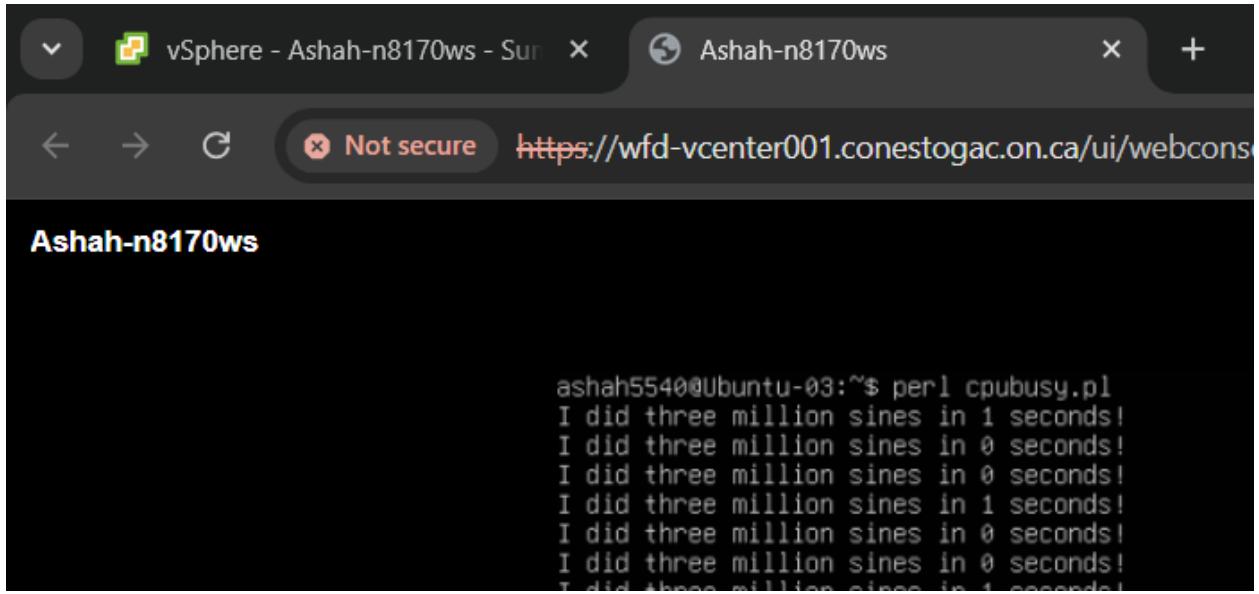


- 7) On both **Ubuntu-02** and **Ubuntu-03** run the **cpubusy.pl** Perl script from last week's lab.

Ubuntu-02

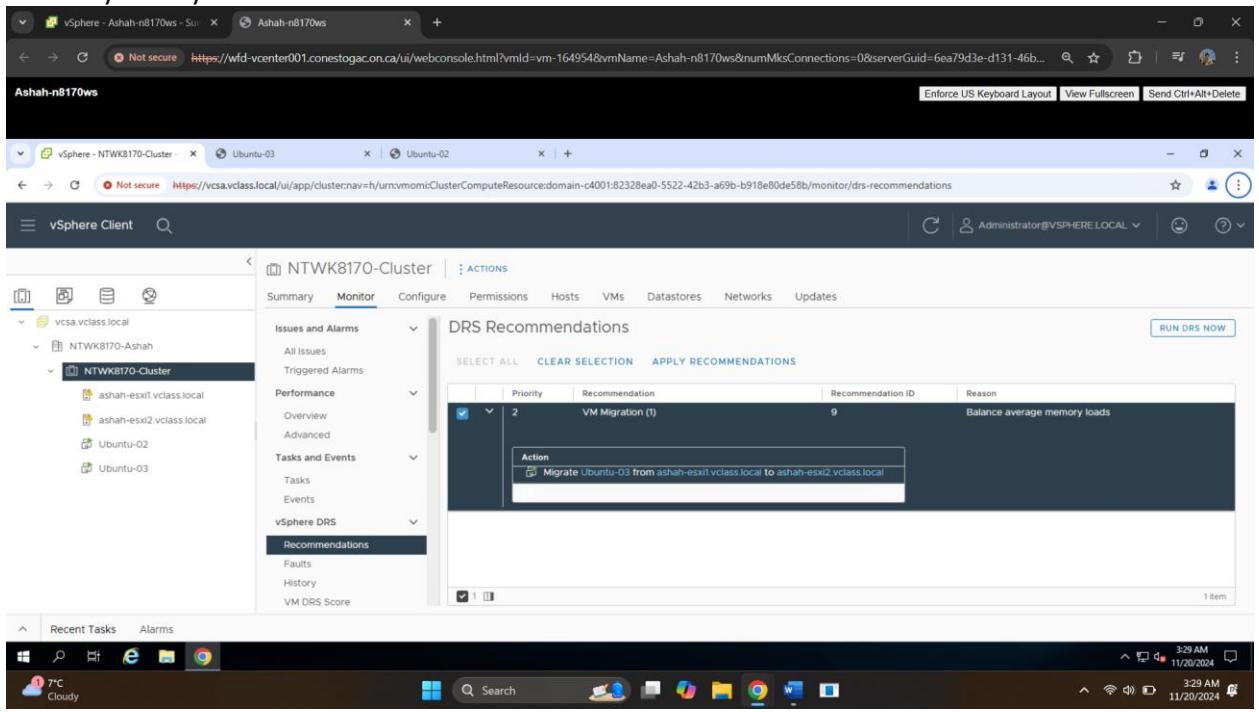
```
ashah5540@Ubuntu-02:~$ perl cpibusy.pl
I did three million sines in 0 seconds!
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
I did three million sines in 0 seconds!
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
I did three million sines in 1 seconds!
```

Ubuntu-03



```
ashah5540@Ubuntu-03:~$ perl cpubusy.pl
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
I did three million sines in 0 seconds!
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
I did three million sines in 0 seconds!
I did three million sines in 1 seconds!
```

- 8) Click on the Cluster → Monitor → vSphere DRS → Recommendations, After waiting a recommendation should come up suggesting to move one of the VMs to ESXi2. If it's not there you may need to Click Run DRS now.



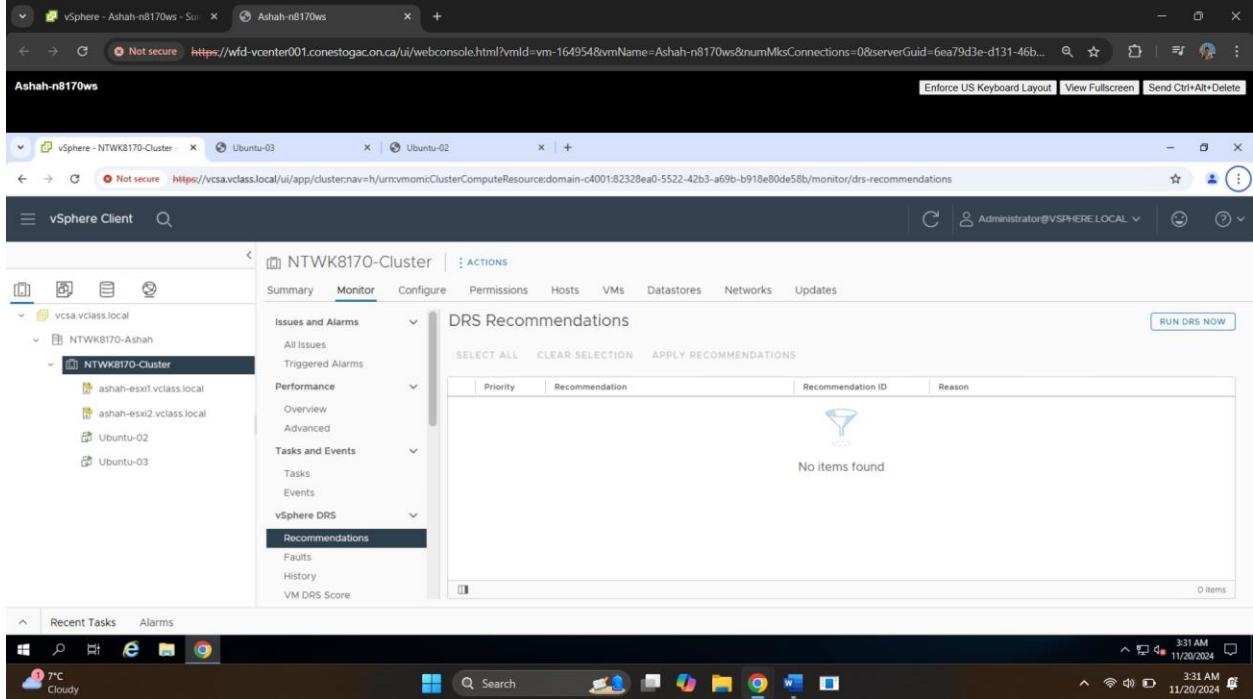
The screenshot shows the vSphere Client interface with the following details:

- Top Bar:** Shows two browser tabs: "vSphere - Ashah-n8170ws - Sur" and "Ashah-n8170ws". The address bar indicates the URL is <https://wfd-vcenter001.conestogac.on.ca/ui/webconsole.html>.
- Header:** Displays the title "Ashah-n8170ws" and user information "Administrator@VSPHERE.LOCAL".
- Left Sidebar:** Lists clusters: "vcsa vclass local", "NTWK8170-Ashan", and "NTWK8170-Cluster". Under "NTWK8170-Cluster", it lists VMs: "ashah-esxi1 vclass.local", "ashah-esxi2 vclass.local", "Ubuntu-02", and "Ubuntu-03".
- Central Panel:** Titled "NTWK8170-Cluster | ACTIONS". It has tabs for "Summary", "Monitor" (which is selected), "Configure", "Permissions", "Hosts", "VMs", "Datastores", "Networks", and "Updates".
 - Issues and Alarms:** Shows "All Issues" and "Triggered Alarms".
 - Performance:** Shows "Overview" and "Advanced".
 - Tasks and Events:** Shows "Tasks" and "Events".
 - vSphere DRS:** Shows "Recommendations".
- Right Panel:** Titled "DRS Recommendations". It displays a table with one item:

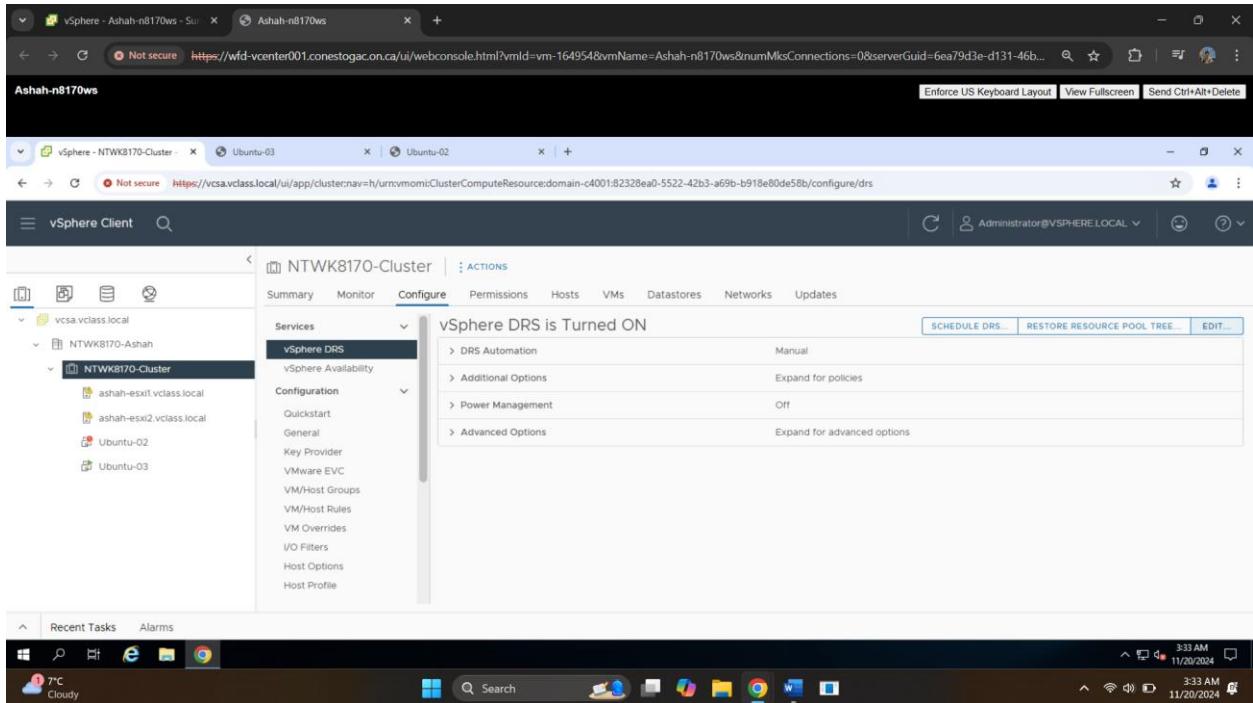
Priority	Recommendation	Recommendation ID	Reason
2	VM Migration (1)	9	Balance average memory loads

An action button "Migrate Ubuntu-03 from ashah-esxi1 vclass local to ashah-esxi2 vclass local" is shown below the table.
- Bottom:** Shows the Windows taskbar with icons for File Explorer, Google Chrome, and others. The system tray shows the date and time as "3:29 AM 11/20/2024".

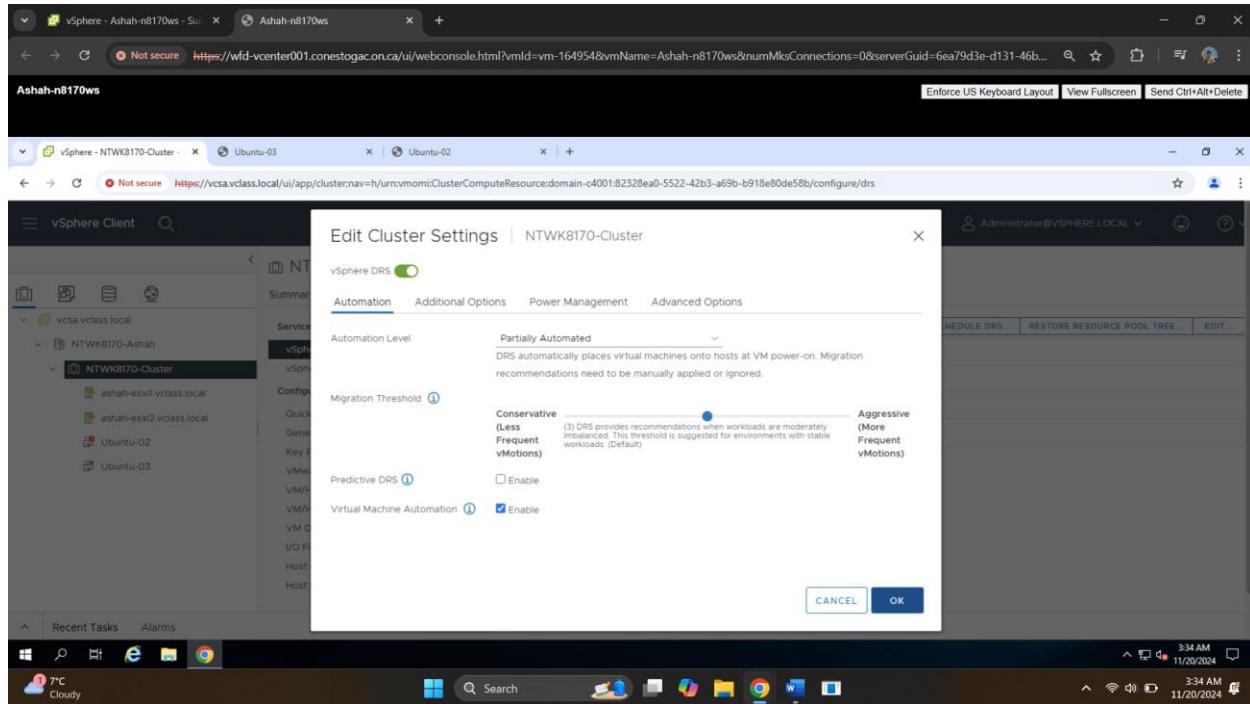
- 9) Select the **Recommendation** that appears → **Apply Recommendations**, vMotion will then be used to move the VM to ESXi2, **Please Note: If you are having trouble getting recommendations to appear try deploying another Ubuntu-VM from the template into ESXi1 called Ubuntu-04 and run the perl script.**



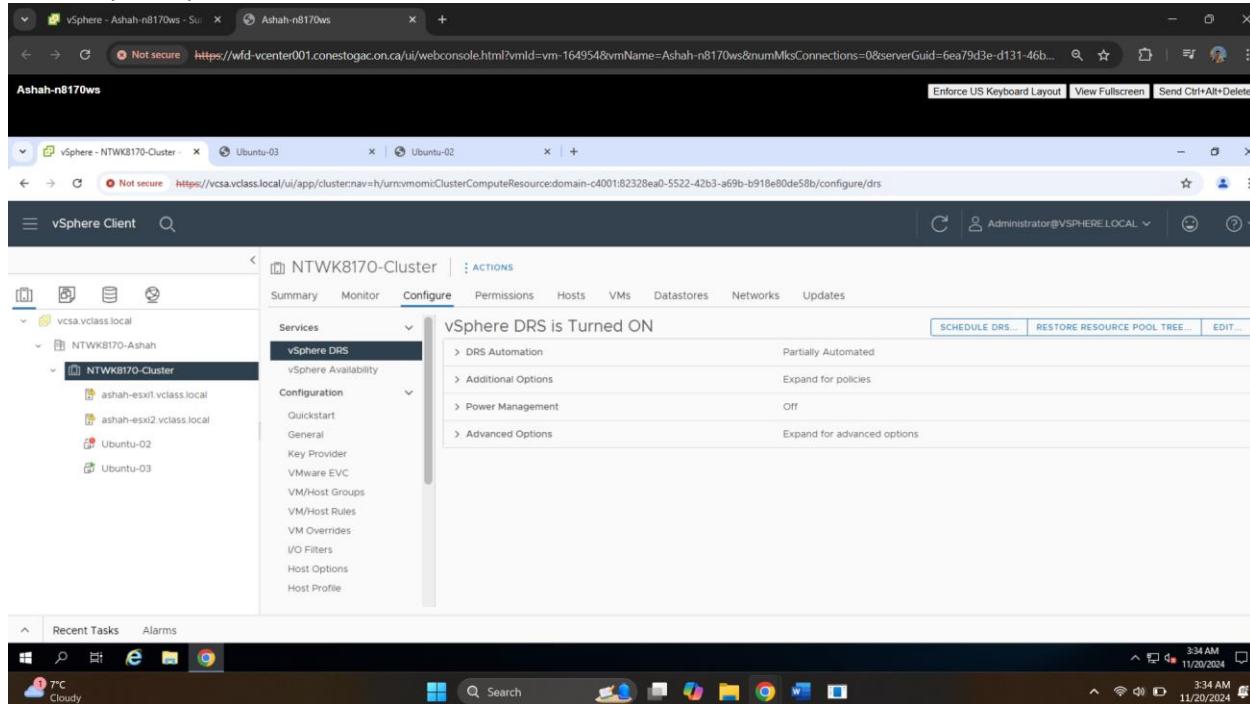
- 10) After performing the recommendation go back to Cluster → Configure → Services → vSphere DRS. Click **Edit**.



11) Change the **automation level** to **Partially Automated**, Move the slider for **Migration Threshold** back to the **middle**. Click **Ok**.

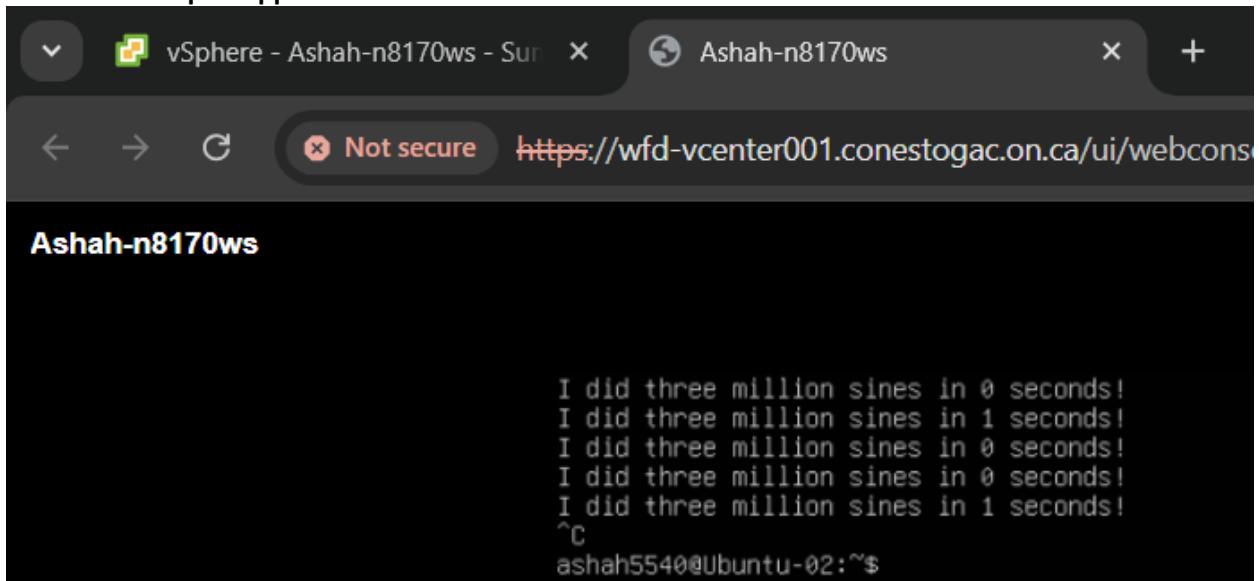


Summary of vSphere DRS



12) Stop the scripts running on your VMs with **CTRL-C**.

Ubuntu-02 Script stopped

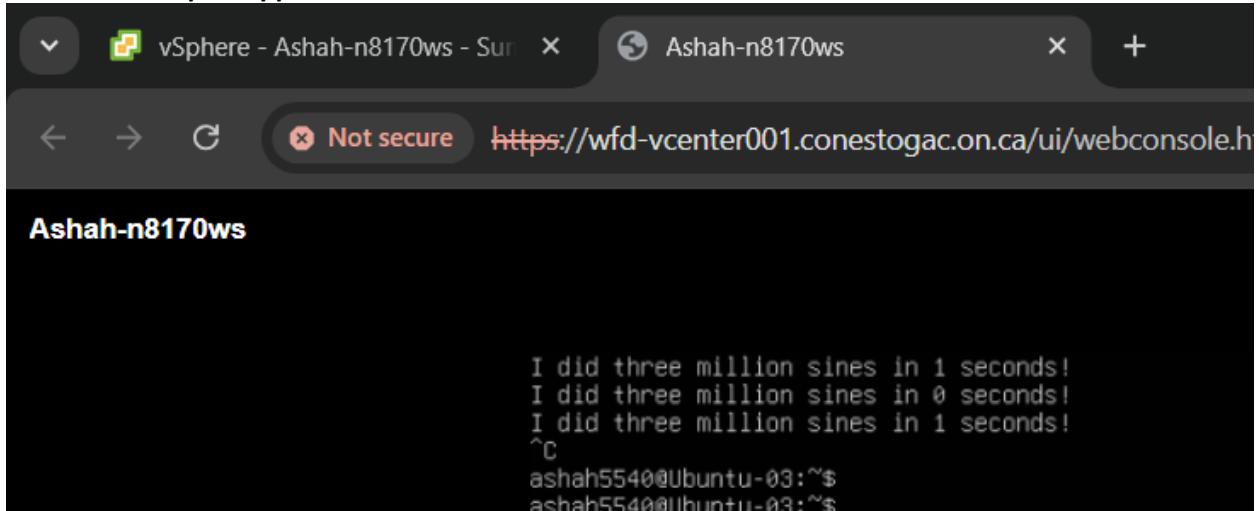


vSphere - Ashah-n8170ws - Sur Ashah-n8170ws
Not secure https://wfd-vcenter001.conestogac.on.ca/ui/webconsole.h

Ashah-n8170ws

```
I did three million sines in 0 seconds!
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
I did three million sines in 0 seconds!
I did three million sines in 1 seconds!
^C
ashah5540@Ubuntu-02:~$
```

Ubuntu-03 Script Stopped



vSphere - Ashah-n8170ws - Sur Ashah-n8170ws
Not secure https://wfd-vcenter001.conestogac.on.ca/ui/webconsole.h

Ashah-n8170ws

```
I did three million sines in 1 seconds!
I did three million sines in 0 seconds!
I did three million sines in 1 seconds!
^C
ashah5540@Ubuntu-03:~$
ashah5540@Ubuntu-03:~$
```

LAB 14: Virtualization with VMware vSphere Lab 14: vSphere HA and VM Fault Tolerance

Section 1: Testing HA Failover

- 19) We already turned-on HA last week during the DRS Lab. We will be testing it this week, Ensure your VMs are all located on ESXi1. You can migrate them with vMotion if needed, Click on the **NTWK8170-Cluster → Configure → Services → vSphere Availability**, Confirm HA is turned on.

vSphere - Ashah-n8170ws - Summary | Ashah-n8170ws | +

Not secure https://wfd-vcenter001.conestogac.on.ca/ui/webconsole.html?vmId=vm-1649548&vmName=Ashah-n8170ws&numMksConnections=0&serverGuid=6ea79d3e-d131-46b...

Ashah-n8170ws Enforce US Keyboard Layout View Fullscreen Send Ctrl+Alt+Delete

vSphere - NTKW8170-Cluster - Summary | Ashah-n8170ws | +

Not secure https://vcsa.vclass.local/ui/app/cluster:nav=h/urvcvmonicClusterComputeResource:domain-c4001:82328ea0-5522-42b3-a69b-b918e80de58b/configure/ha

vSphere Client Administrator@VSPHERE.LOCAL

NTWK8170-Cluster | ACTIONS

Summary Monitor Configure Permissions Hosts VMs Datastores Networks Updates

Services vSphere DRS vSphere Availability

Configuration Quickstart General Key Provider VMware EVC VM/Host Groups VM/Host Rules VM Overrides I/O Filters Host Options Host Profile

vSphere HA Is Turned On Runtime information for vSphere HA is reported under vSphere HA Monitoring

Proactive HA Is Turned OFF

Failure conditions and responses

Failure	Response	Details
Host failure	✓ Restart VMs	Restart VMs using VM restart priority ordering.
Proactive HA	ⓘ Disabled	Proactive HA is not enabled.
Host Isolation	ⓘ Disabled	VMs on isolated hosts will remain powered on.
Datastore with Permanent Device Loss	✓ Power off and restart VMs	Datastore protection enabled. Always attempt to restart VMs.
Datastore with All Paths Down	✓ Power off and restart VMs	Datastore protection enabled. Ensure resources are available before restarting VMs.
Guest not heartbeating	ⓘ Disabled	VM and application monitoring disabled.

Admission Control Expand for details

Recent Tasks Alarms

3:45 AM 11/20/2024

USD/EUR +0.29% 3:45 AM 11/20/2024

- 20) Force Power off ESXi1 in the Conestoga vCenter Environment.

vSphere - Ashah-n8170ESXi1 - Summary | Ashah-n8170ws | +

Not secure https://wfd-vcenter001.conestogac.on.ca/ui/app/vm:nav=h/urvcvmonicVirtualMachine:vm-165097:6ea79d3e-d131-46b6-abbc-b8e3379f5344/summary

vSphere Client Ashah5540@conestogac.on.ca

Actions - Ashah-n8170ESXi1

Power

- Guest OS
- Snapshots
- Open Remote Console
- Migrate...
- Clone
- Fault Tolerance
- VM Policies
- Template
- Compatibility
- Export System Logs...
- Edit Settings...
- Move to folder...
- Rename...
- Edit Notes...
- Tags & Custom Attributes
- Add Permission...
- Alarms
- Remove from Inventory
- Delete from Fldr...

Power On ctrl + alt + B

Power Off ctrl + alt + E

Suspend ctrl + alt + Z

Reset ctrl + alt + T

Hard stop

Shut Down ctrl + alt + D

Restart Guest OS ctrl + alt + R

Usage 3:45 AM

4 CPUs allocated

Memory 0 MB used

Storage 7.73 GB used 124.37 GB allocated

VIEW STATS

Tags

Recent Tasks Alarms

Finance headline US Crude Oil Inv... 3:52 AM 11/20/2024

21) The VMs should power up onto ESXi2. You will also see various error messages.

Ashah-n8170ws

vSphere - ashah-esxi1.vclass.local

Not secure https://vcsa.vclass.local/ui/app/hostnav/h/urcmomiHostSystem:host-1008:82328ea0-5522-42b3-a69b-b918e80de58b/summary

vSphere Client

Administrator@VSPHERE LOCAL

ashah-esxi1.vclass.local | ACTIONS

Summary Monitor Configure Permissions VMs Datastores Networks Updates

Host connection and power state

vSphere HA host status

This host currently has no management network redundancy

Cannot synchronize host ashah-esxi1.vclass.local

View all issues (6)

Recent Tasks Alarms

Upcoming Earnings

3:54 AM 11/20/2024

3:54 AM 11/20/2024

Ubuntu-02 started hosting on ESXi2

Ashah-n8170ws

vSphere - Ubuntu-02 - Summary

Not secure https://vcsa.vclass.local/ui/app/vm:nav=h/urcmomiVirtualMachinevm-3004:82328ea0-5522-42b3-a69b-b918e80de58b/summary

vSphere Client

Administrator@VSPHERE LOCAL

Ubuntu-02 | ACTIONS

Summary Monitor Configure Permissions Datastores Networks Snapshots Updates

Powered On

Guest OS: Ubuntu Linux (64-bit)
Compatibility: ESXi 7.0 U2 and later (VM version 19)
VMware Tools: Running, version 12389 (Guest Managed)

MORE INFO

DNS Name: Ubuntu-02
IP Addresses: 172.24.81.20

VIEW ALL 3 IP ADDRESSES

Host: ashah-esxi2.vclass.local

LAUNCH WEB CONSOLE LAUNCH REMOTE CONSOLE

VM Hardware

Related Objects Cluster NTWK8170-Cluster

Notes

Edit Notes...

Custom Attributes

SWITCH TO NEW VIEW

CPU USAGE 0 Hz

MEMORY USAGE 532 MB

STORAGE USAGE 4.73 GB

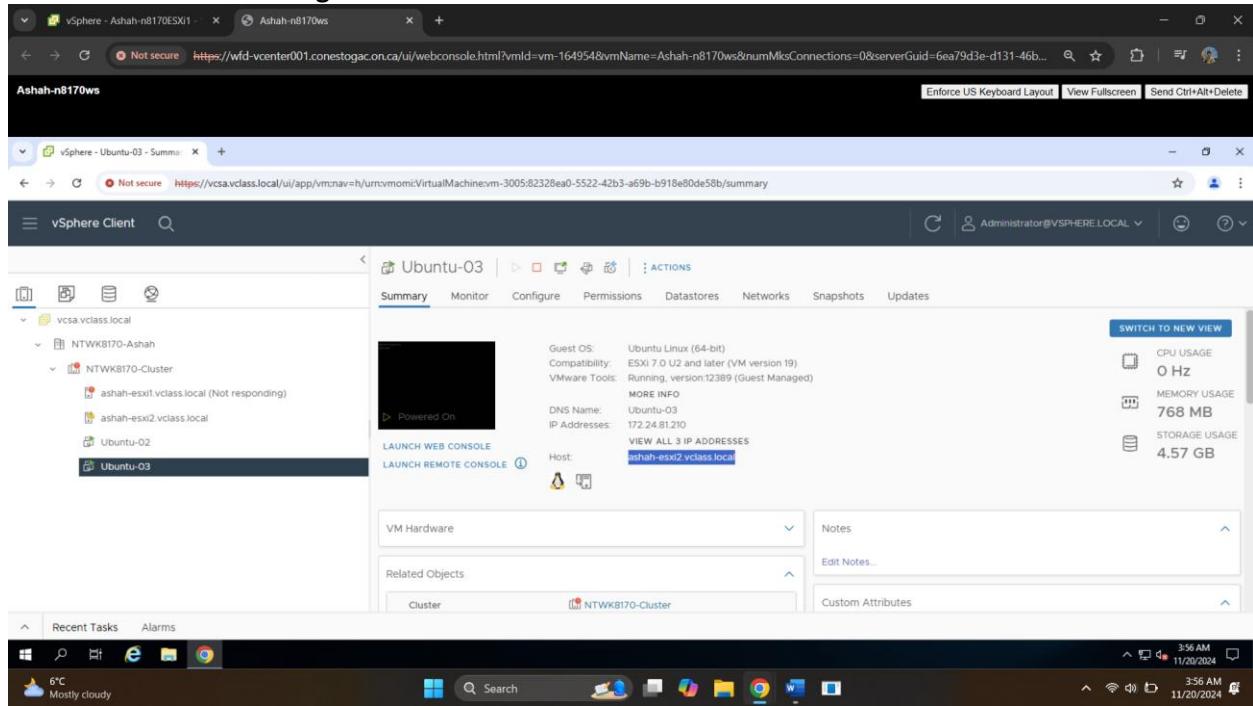
Recent Tasks Alarms

6°C Mostly cloudy

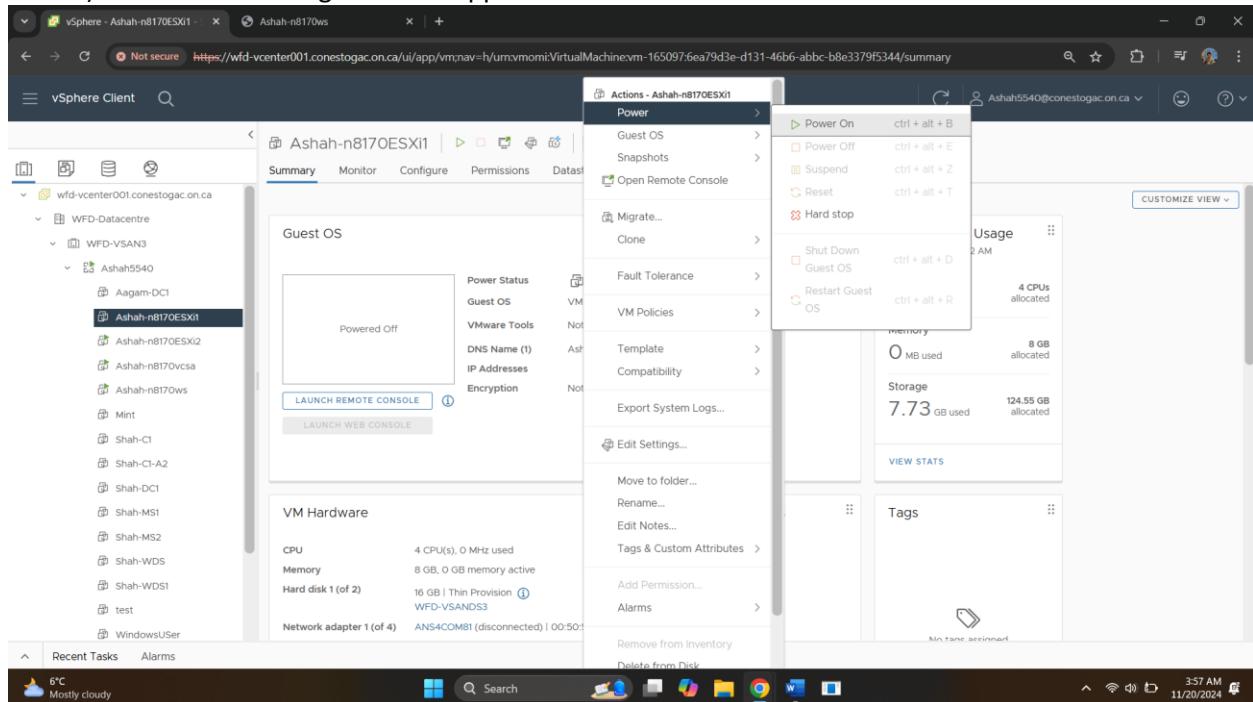
3:54 AM 11/20/2024

3:54 AM 11/20/2024

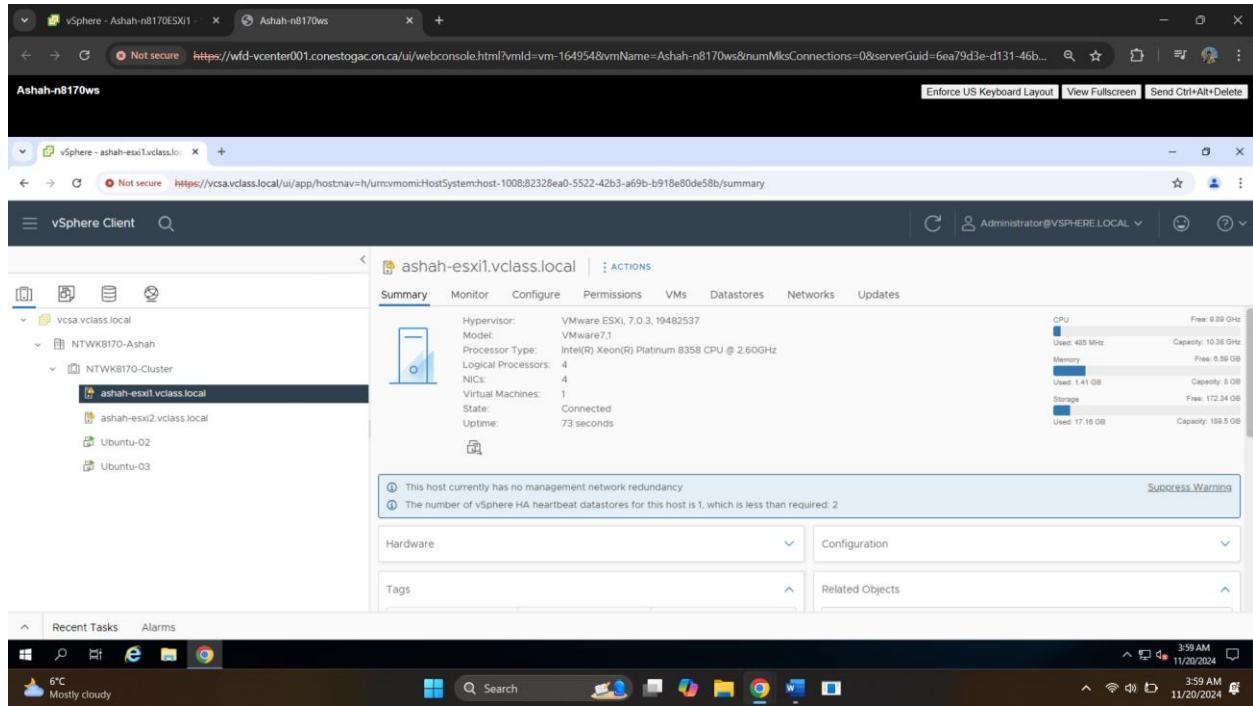
Ubuntu-03 started hosting on ESXi2



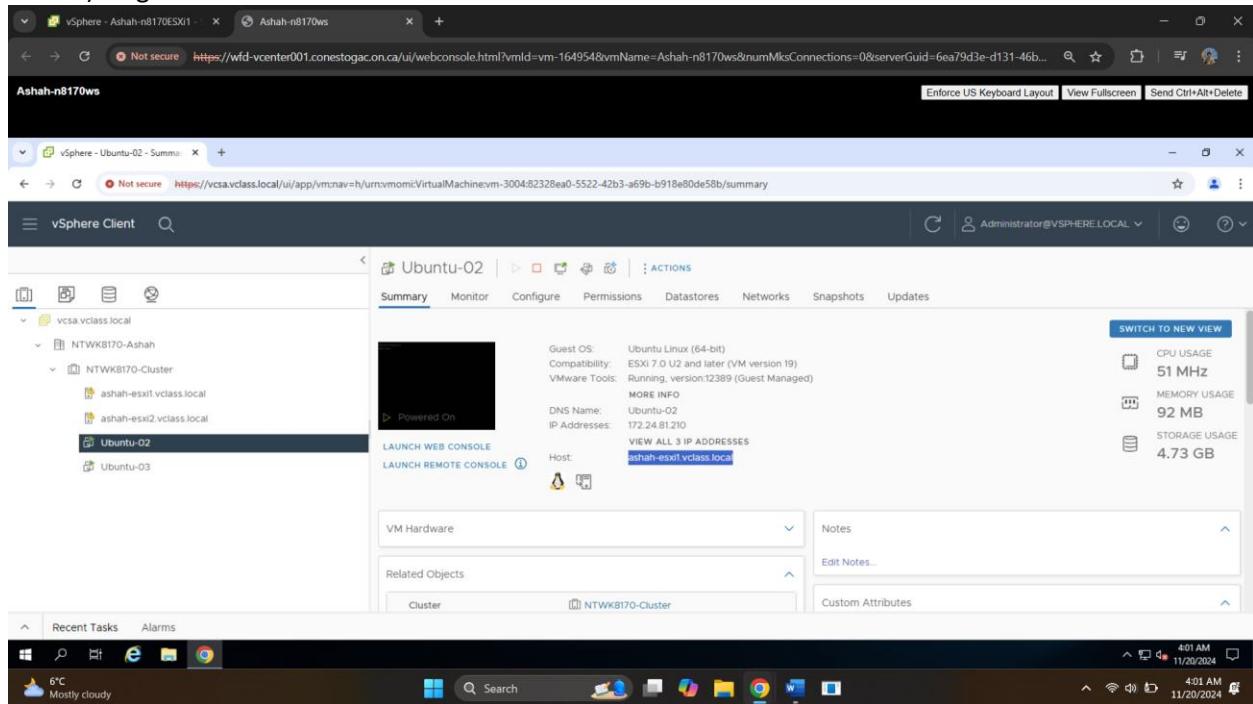
22) Power-On ESXi1 again. It will appear back in the cluster as connected.



ESXi1 Connected



23) Migrate Ubuntu-02 to ESXi1.



Section 2: Fault Tolerance

- 1) Migrate **Ubuntu-02** over to **ESXi1**, Click on **ESXi1** → **Configure** → **Networking** → **VMkernel Adapters**.

The screenshot shows the vSphere Client interface for the host 'ashah-esxi1.vclass.local'. The left sidebar navigation pane is visible, showing the tree structure of the host's resources. The main content area is titled 'ashah-esxi1.vclass.local' and 'VMkernel adapters'. A table lists three VMkernel adapters: vmk0 (Management Network), vmk1 (Storage), and vmk2 (vMotion). The table includes columns for Device, Network Label, Switch, IP Address, TCP/IP Stack, and Enabled Services. The 'Enabled Services' column for vmk0 shows 'Management' selected. The bottom of the screen shows the Windows taskbar with the date and time as 11/20/2024 at 4:03 AM.

- 2) Click the 3 dots next to vmk0 → **Edit...**, Check **Fault Tolerance Logging** leave Management Selected. Click **Ok**.

The screenshot shows the 'vmk0 - Edit Settings' dialog box. The 'Port properties' tab is selected. Under 'VMkernel port settings', the 'TCP/IP stack' is set to 'Default' and 'MTU' is set to '1500'. In the 'Available services' section, the 'Enabled services' dropdown shows 'Management' selected. Underneath, several other services are listed with checkboxes: 'vMotion', 'Provisioning', 'Fault Tolerance logging' (which is checked), 'Management' (which is also checked), 'vSphere Replication', 'vSphere Replication NFC', 'vSAN', 'vSphere Backup NFC', 'NVMe over TCP', and 'NVMe over RDMA'. At the bottom right of the dialog are 'CANCEL' and 'OK' buttons. The background shows the same vSphere Client interface as the previous screenshot, with the same host selected and the same table of VMkernel adapters.

3) Repeat Steps 1-3 on ESXi2.

The screenshot shows the vSphere Client interface for the host **ashah-esxi2.vclass.local**. The left sidebar lists storage, networking, and VMkernel adapters. The **VMkernel adapters** section is selected, displaying three entries:

Device	Network Label	Switch	IP Address	TCP/IP Stack	Enabled Services
vmk0	Management Network	vSwitch0	172.24.81.203	Default	Management
vmk1	Storage	vSwitch2	192.168.1.4	Default	--
vmk2	vMotion	vSwitch3	192.168.2.3	Default	vMotion

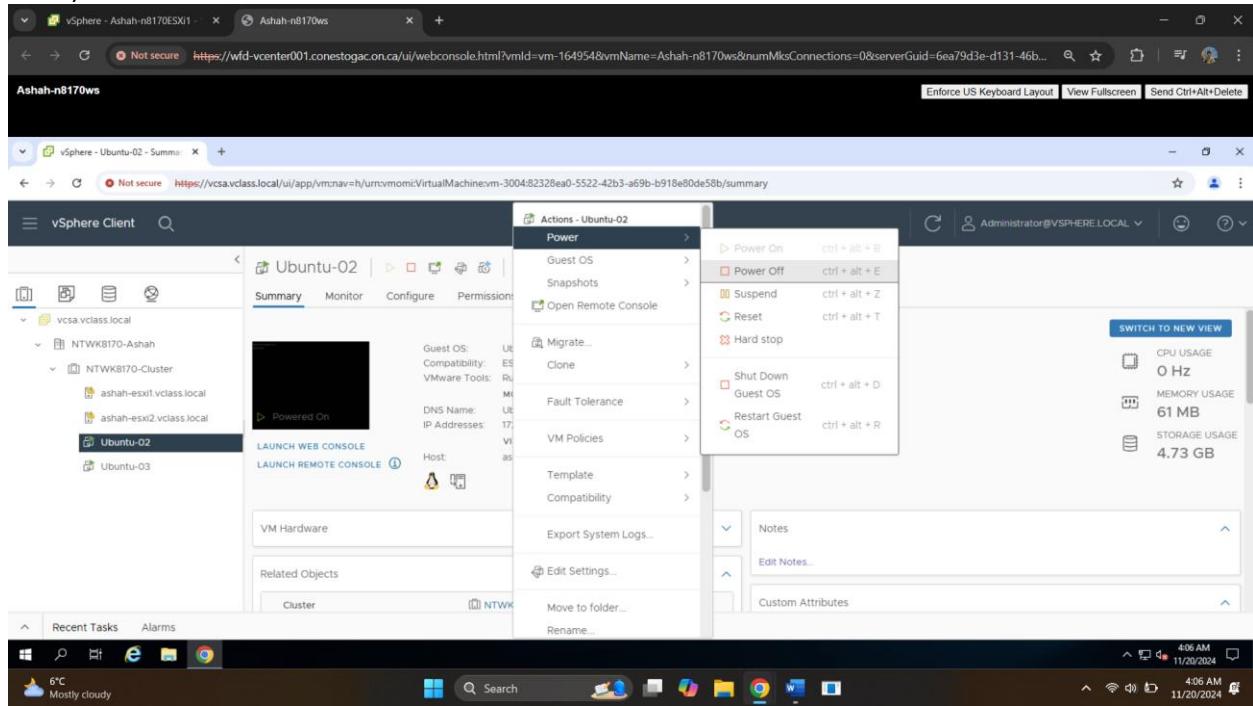
Selecting Fault Tolerance logging on ESXi2

The screenshot shows the **vmk0 - Edit Settings** dialog box in the vSphere Client. The **Port properties** tab is active, showing the following configuration:

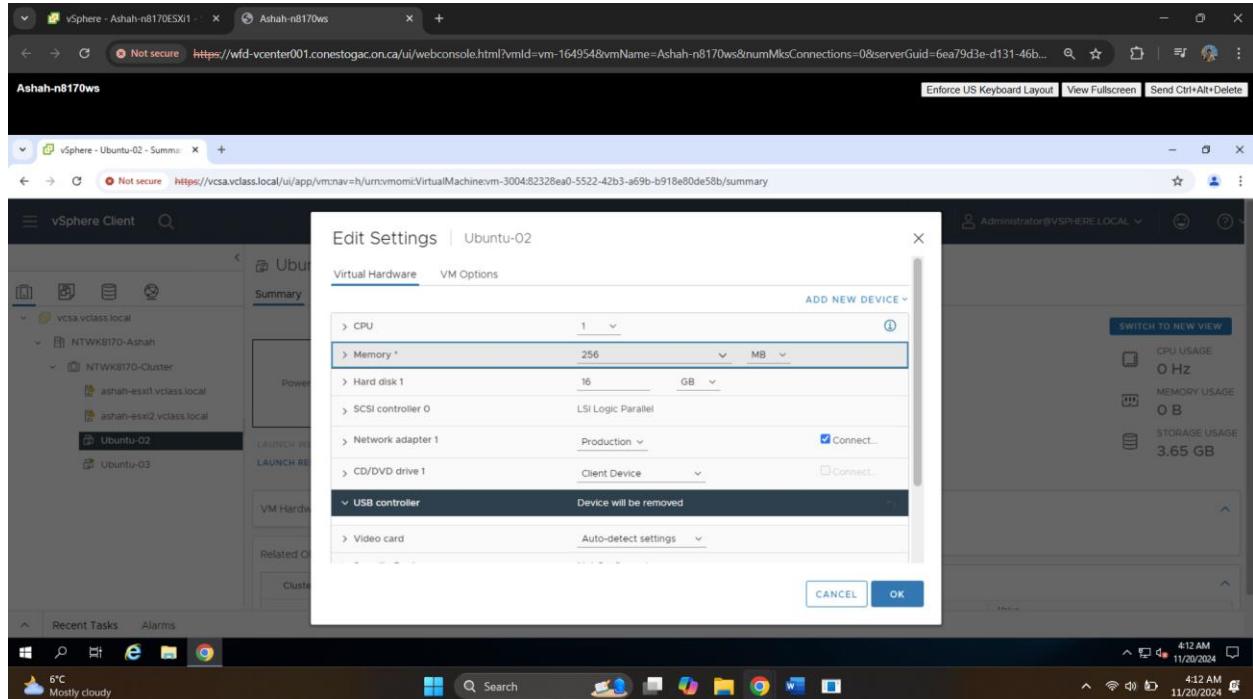
- VMkernel port settings**
 - IPV4 settings: TCP/IP stack (Default), MTU (1500)
 - IPV6 settings: MTU (1500)
 - Available services: Enabled services (checkboxes for vMotion, Provisioning, Fault Tolerance logging, Management, vSphere Replication, vSAN, vSphere Replication NFC, vSAN, vSphere Backup NFC, NVMe over TCP, NVMe over RDMA)

The **Fault Tolerance logging** checkbox is checked. The dialog has **CANCEL** and **OK** buttons at the bottom right.

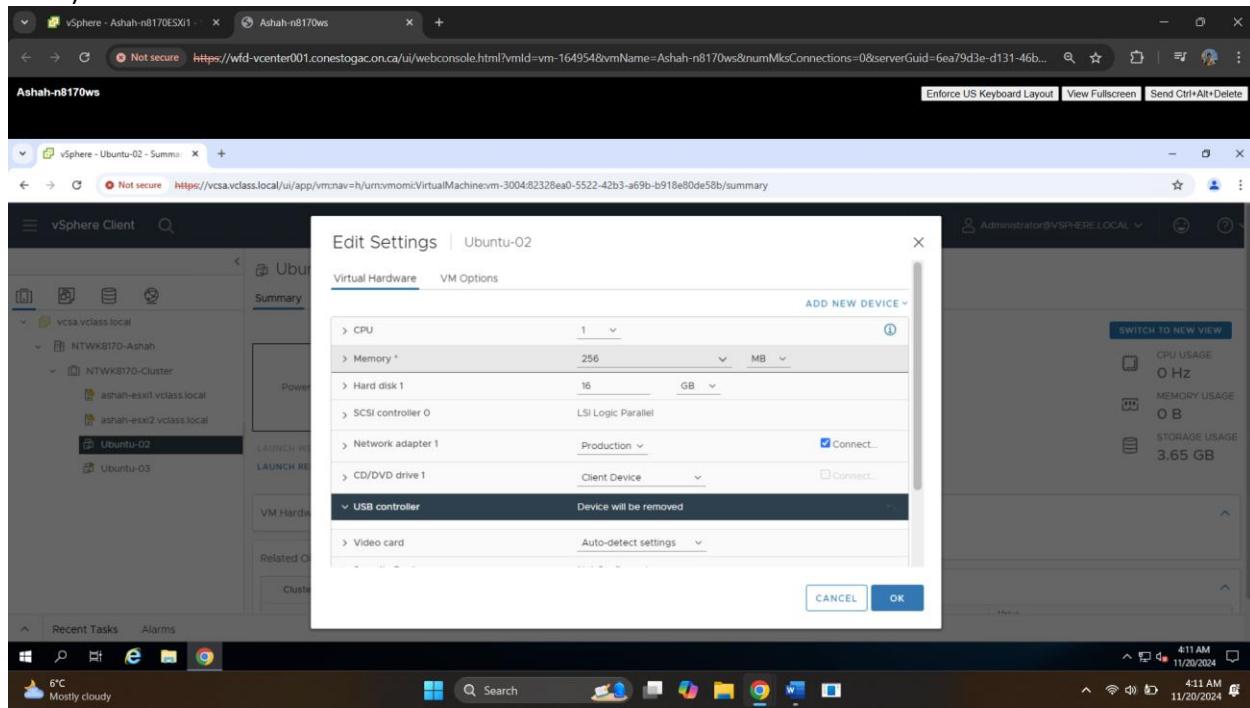
4) Power-off Ubuntu-02.



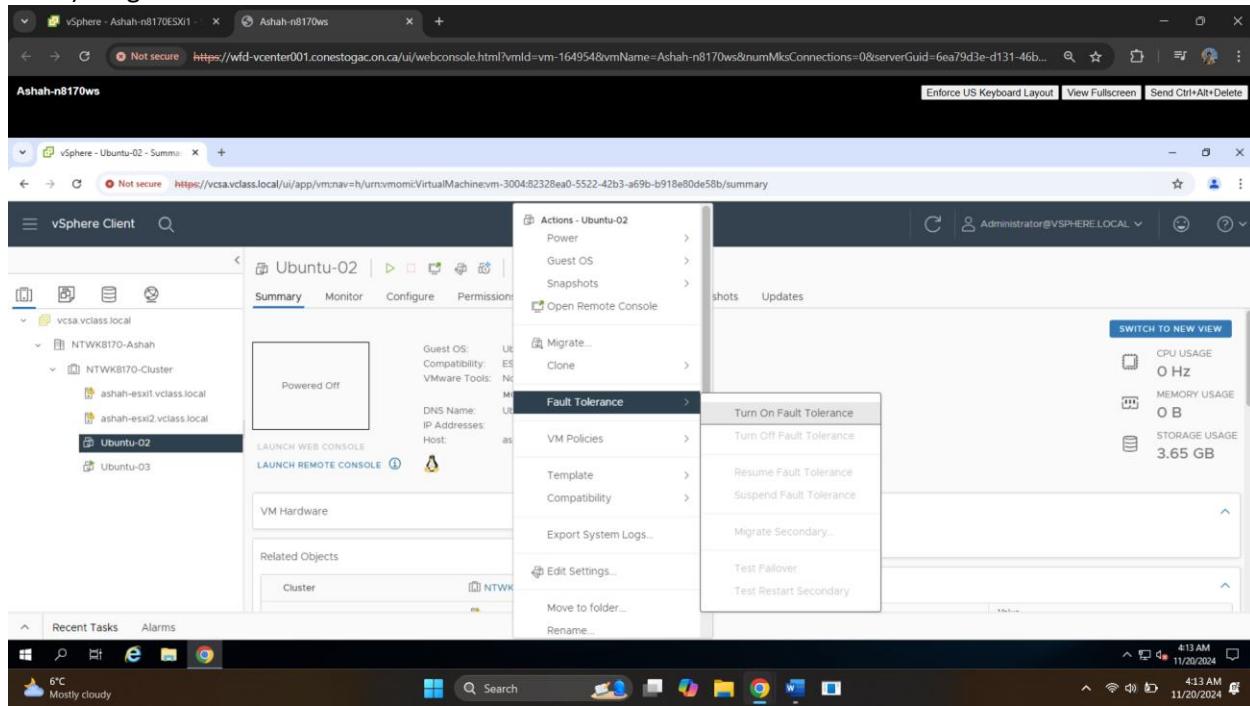
5) Right-Click Ubuntu-02 → Edit Settings..., Set the Memory to 256MB (Fault Tolerance Sets reservations)



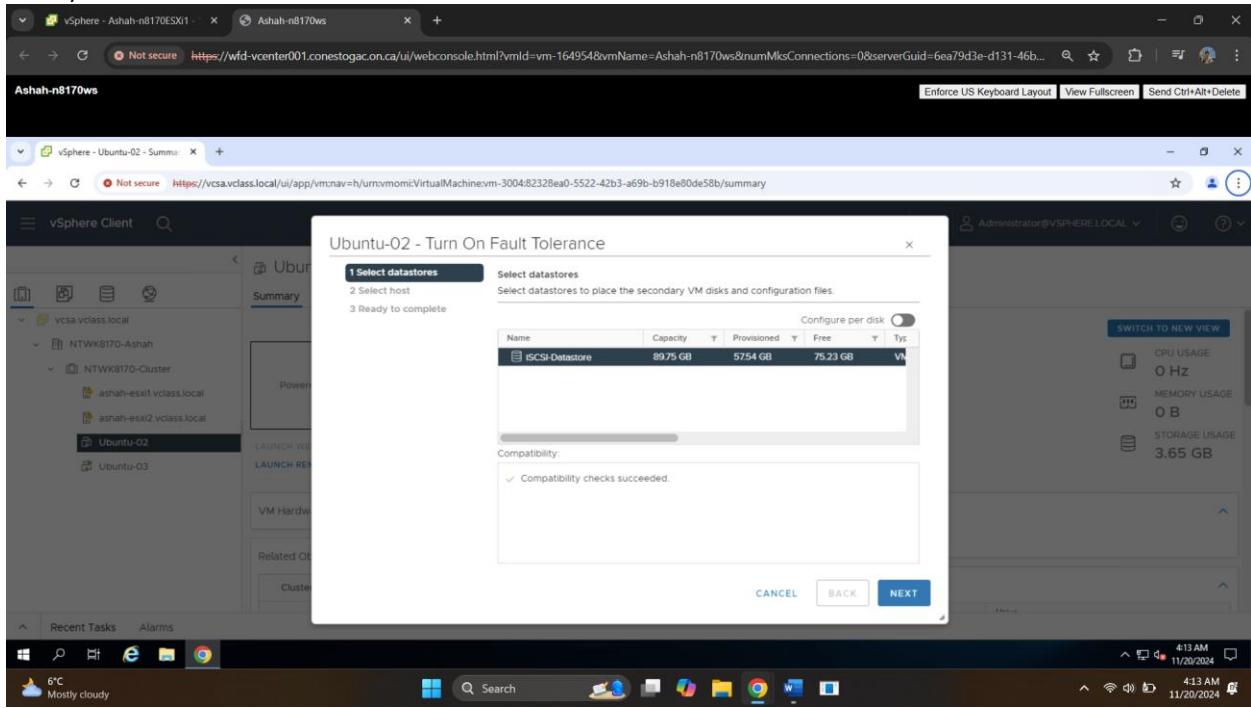
6) Remove the USB Controller. Click Ok.



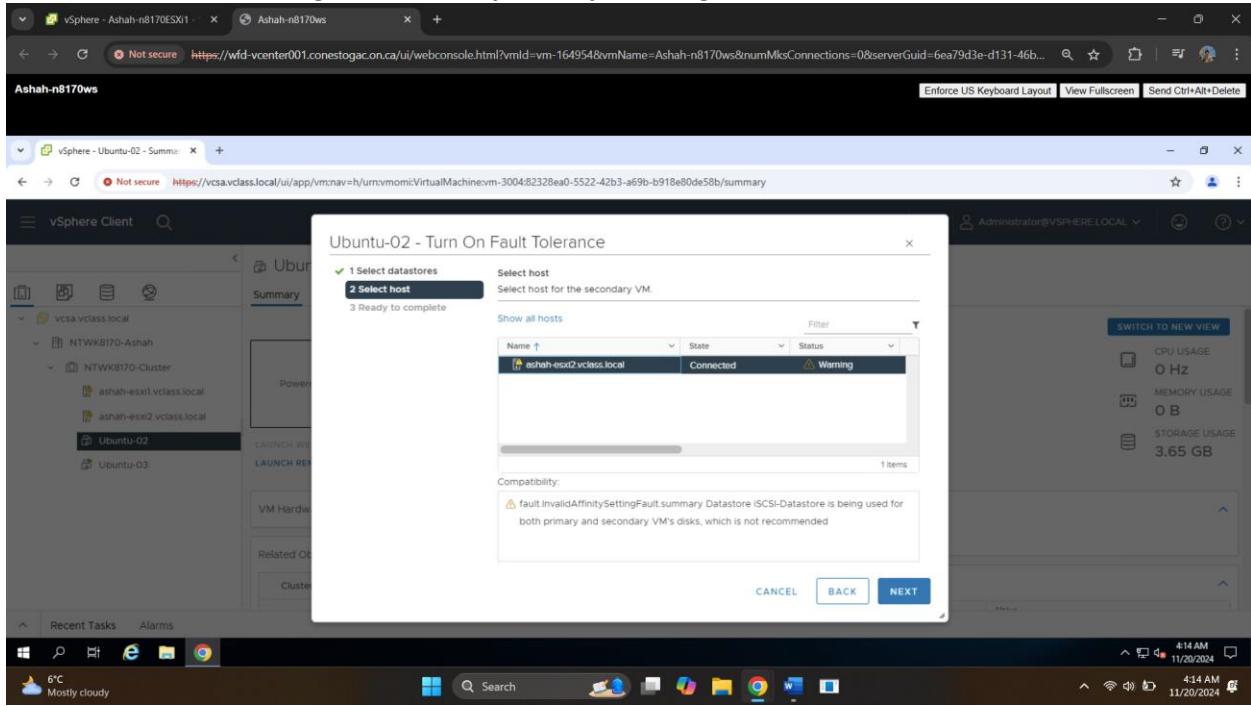
7) Right-Click Ubuntu-02 → Fault Tolerance → Turn on Fault Tolerance.



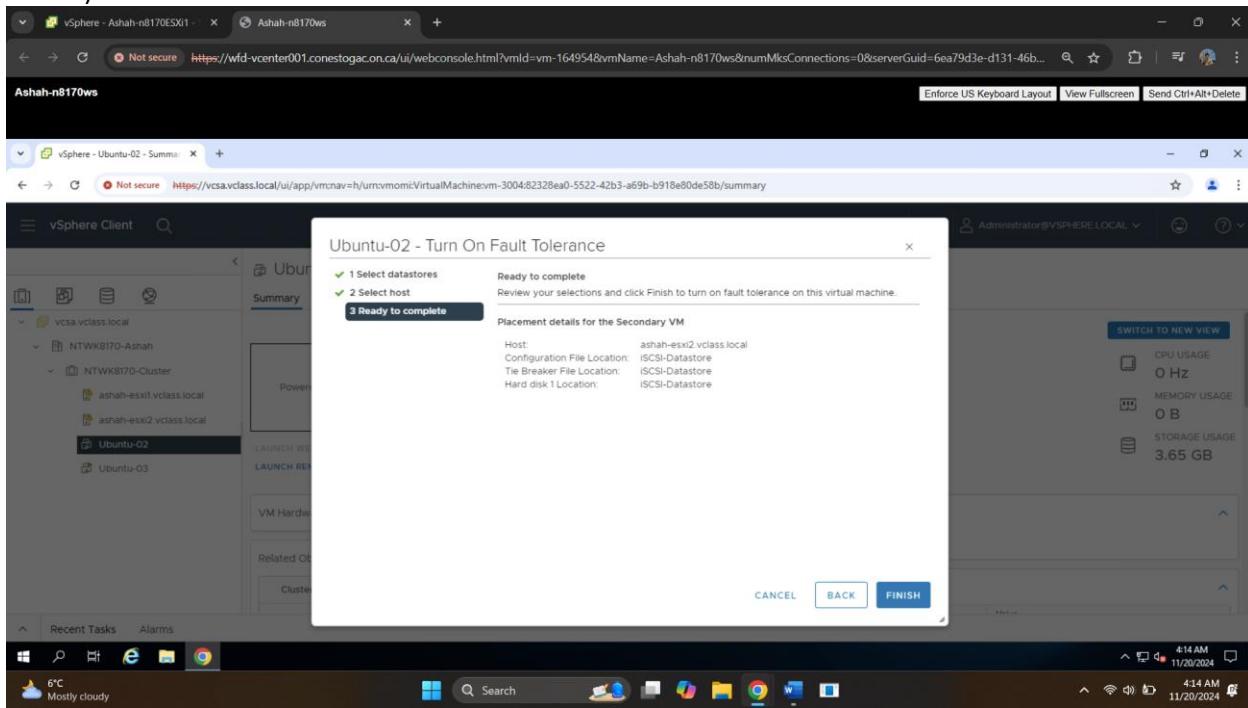
8) On Select Datastores Select iSCSI Datastore. Click Next.



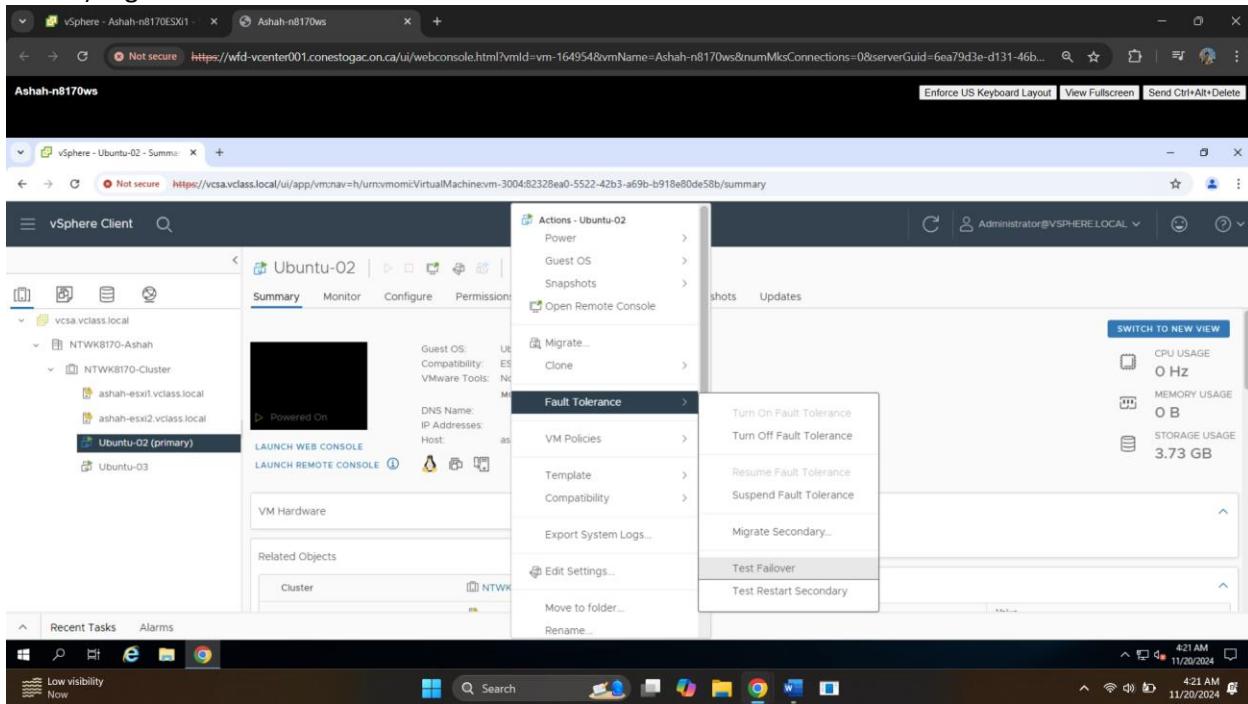
9) Select ESXi2 and ignore the Compatibility Warning. Click Next. Click Finish.



10) Fault Tolerance will now be turned on.



11) Right-Click Ubuntu-02 → Fault Tolerance → Test Failover.



12) This will test failover to ensure that it is working.

The screenshot shows the vSphere Client interface. The left sidebar lists vCenter servers (vcsa.vclass.local), hosts (NTWK8170-Ashan, NTWK8170-Cluster), and VMs (Ubuntu-02 (primary), Ubuntu-03). The main pane displays the summary for VM Ubuntu-02, which is powered on. Key details include:

- Guest OS: Ubuntu Linux (64-bit)
- Compatibility: ESXi 7.0 U2 and later (VM version 19)
- VMware Tools: Running, version 2147483647 (Guest Managed)
- DNS Name: Ubuntu-02
- IP Addresses: 172.24.81.210
- Host: ashan-esxi2.vclass.local

On the right, resource usage is shown:

- CPU USAGE: 0 Hz
- MEMORY USAGE: 192 MB
- STORAGE USAGE: 3.74 GB

A message at the bottom indicates: "Virtual machine Fault Tolerance state changed".

Triggered log in Issues section.

The screenshot shows the vSphere Client interface with the "Issues" section selected for VM Ubuntu-02. The left sidebar shows the same navigation structure as the previous screenshot. The main pane displays the "All Issues" table:

Issue	Type	Trigger Time	Status
Virtual machine Fault Tolerance state changed	Triggered Alarm	11/20/2024, 04:21 AM	Alert

At the bottom of the table, there is a note: "1 item".

We can check the event section to confirm the fault tolerance action.

The screenshot shows the vSphere Client interface with the following details:

- Title Bar:** vSphere - Ashah-n8170ESX1 - Ashah-n8170ws
- Address Bar:** Not secure https://wfd-vcenter001.conestogac.on.ca/ui/webconsole.html?vmId=vm-164954&vmName=Ashah-n8170ws&numMksConnections=0&serverGuid=6ea79d3e-d131-46b...
- User:** Administrator@VSPHERE.LOCAL
- VM Selection:** Ubuntu-02 (primary)
- Event Details:**
 - Description: Fault Tolerance state ...
 - Date Time: 11/20/2024, 4:23:37 AM
 - Type: Information
 - User: System
 - Target: Ubuntu-02 (secondary)
 - Description: Fault Tolerance state of Ubuntu-02 (secondary) on host ashah-esxi2.vclass.local in cluster NTWK8170-Cluster in NTWK8170-Ashah changed from Enabled to Running
 - Event Type Description: The Fault Tolerance state of the virtual machine has been updated.
- Bottom Taskbar:** Shows recent tasks, alarms, and system status (4:24 AM, 11/20/2024).