VMware vSphere Install, Configure, Manage v7

Quick Guide

Version 22.9

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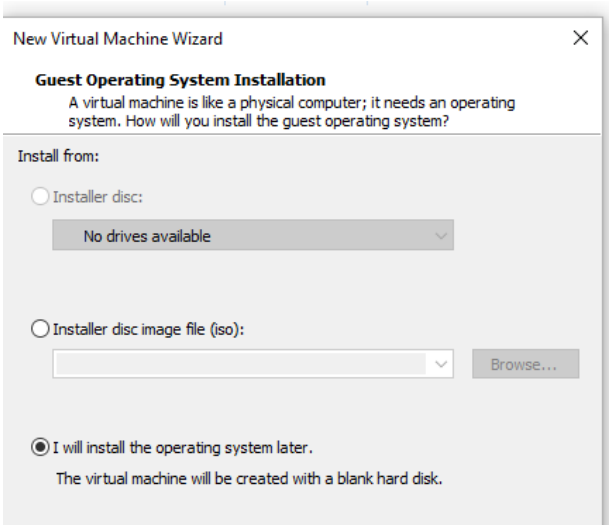
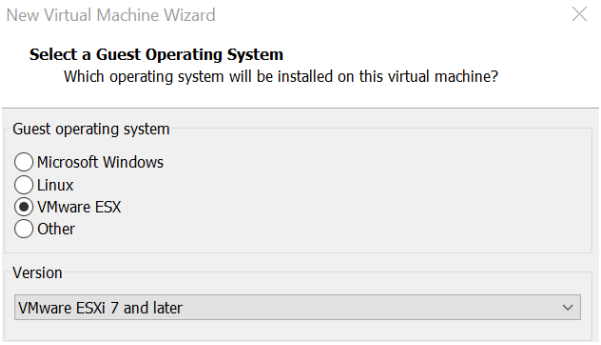
[Download VMware vSphere 7.0 Update 2a Evaluation - Free Managed Virtualization for 60 Days]

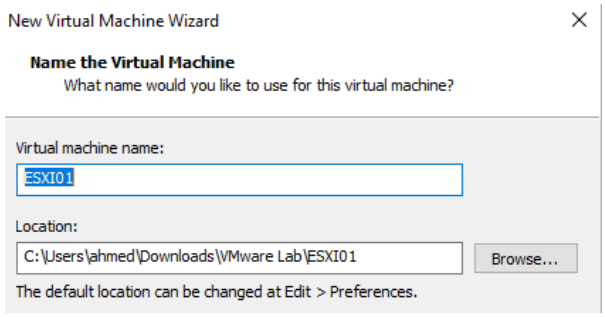
ESXi Installation and Basic Configurations

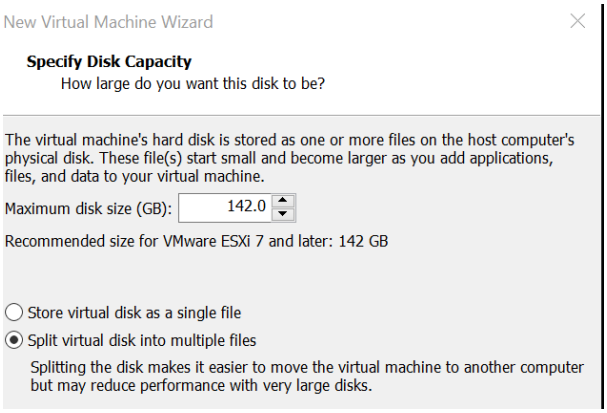
basic configuration includes:

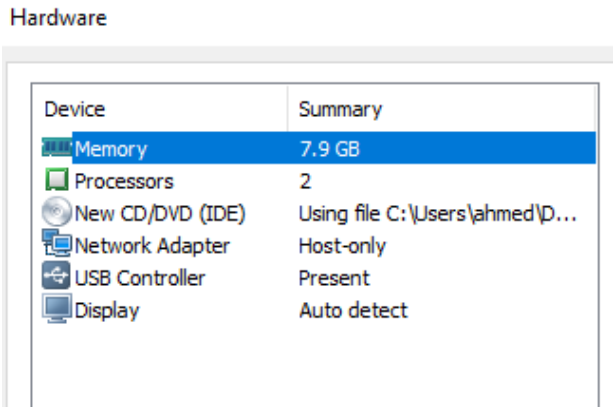
- Hostname
- Ip addressa (for management traffic)

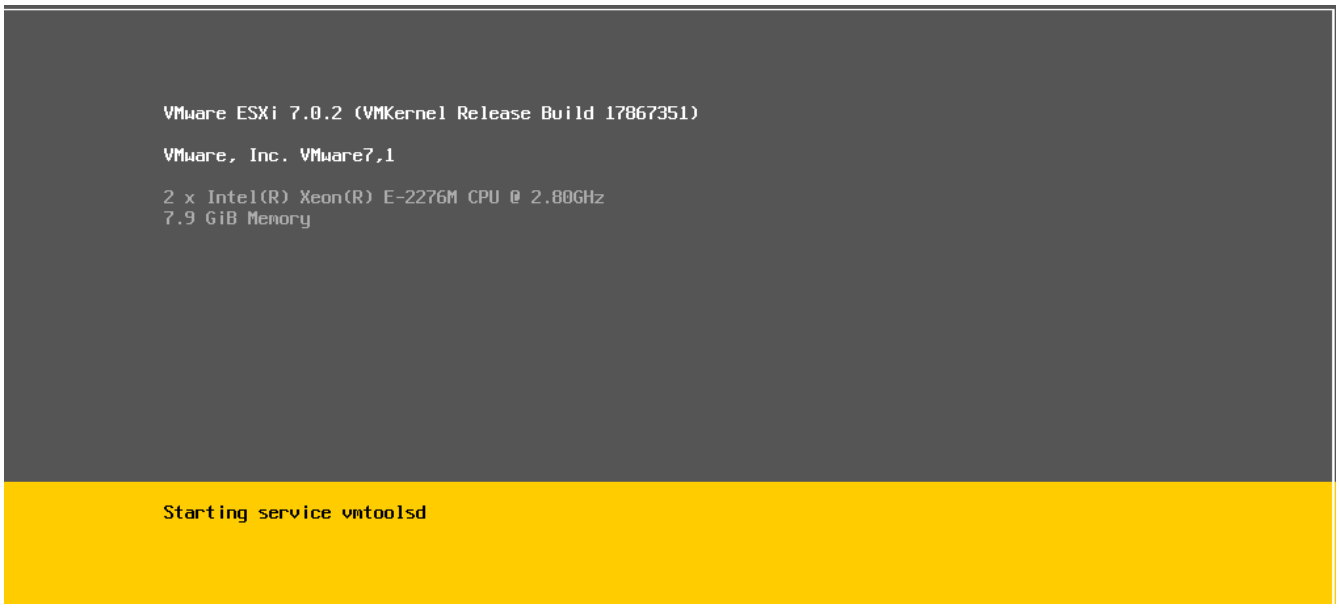


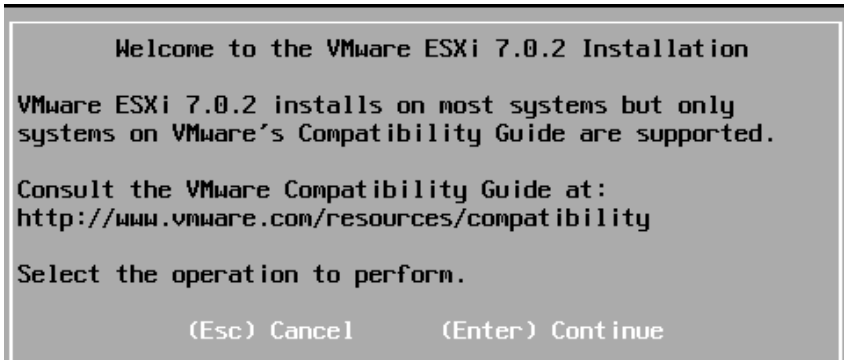




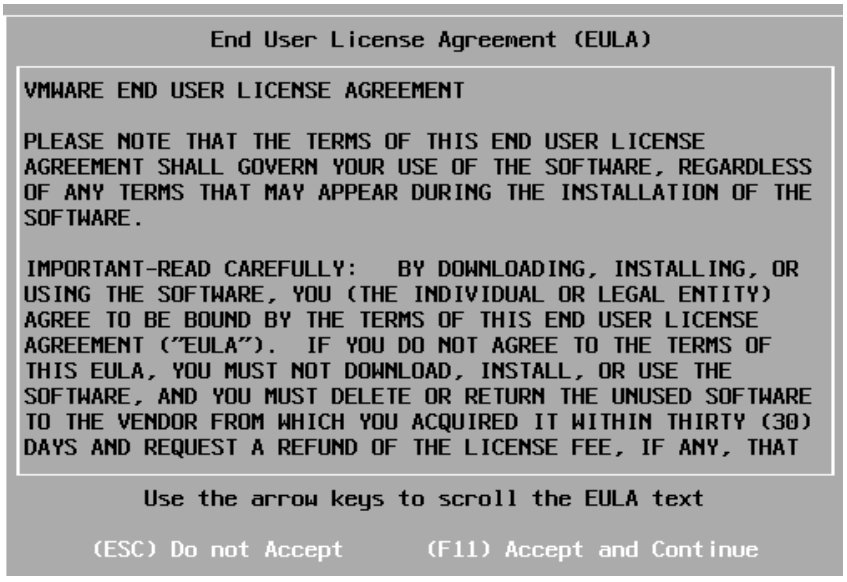




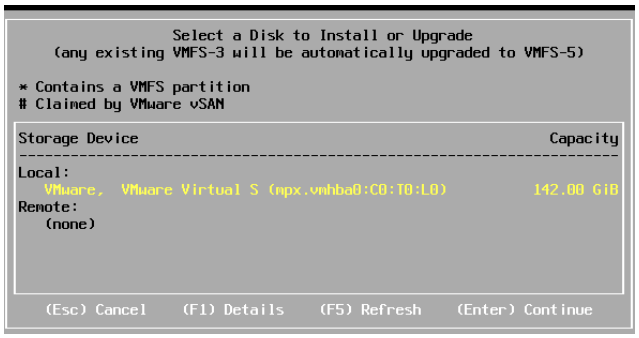


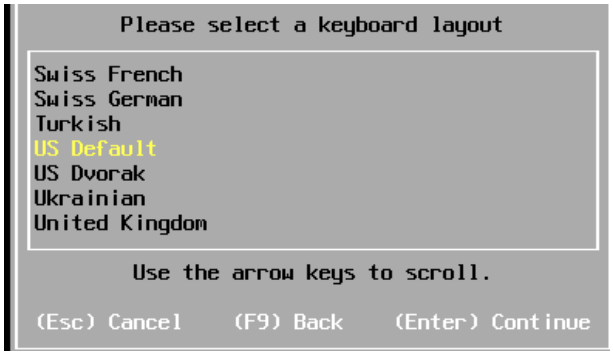


F11 to accept the license



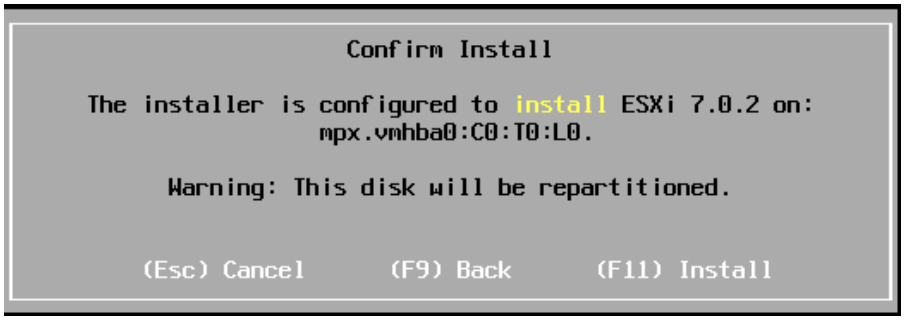
enter to add VMware file system (VMFS) to the HD



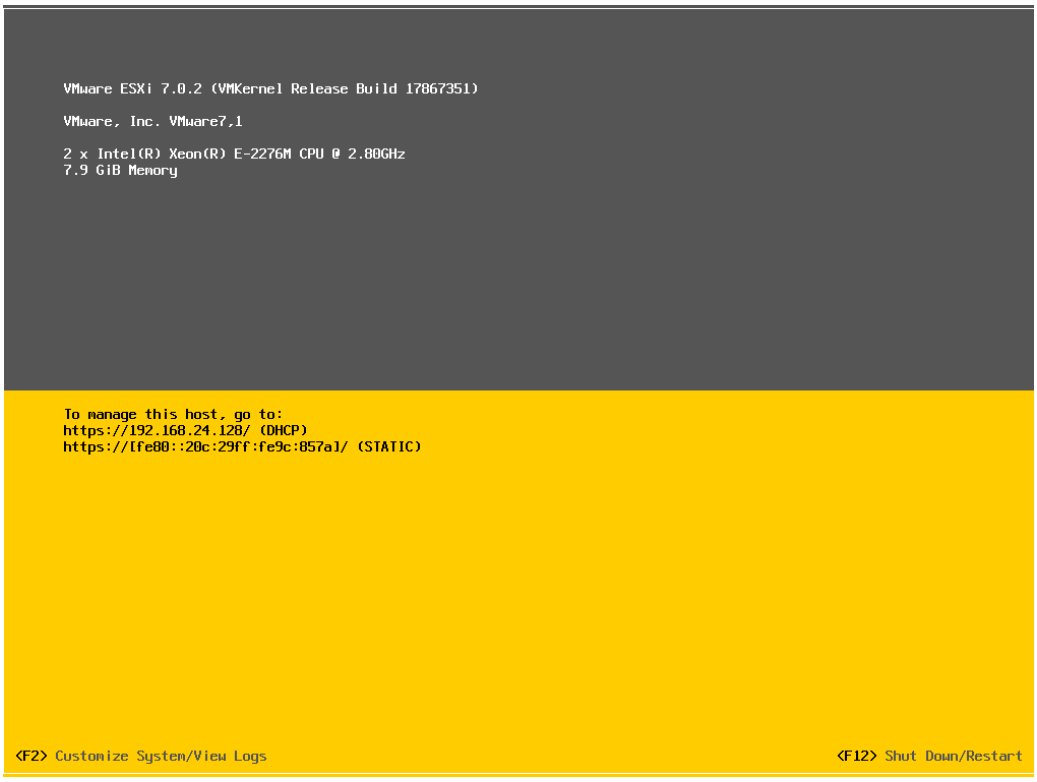


set password for **root** user

F11 to start ESXi installation

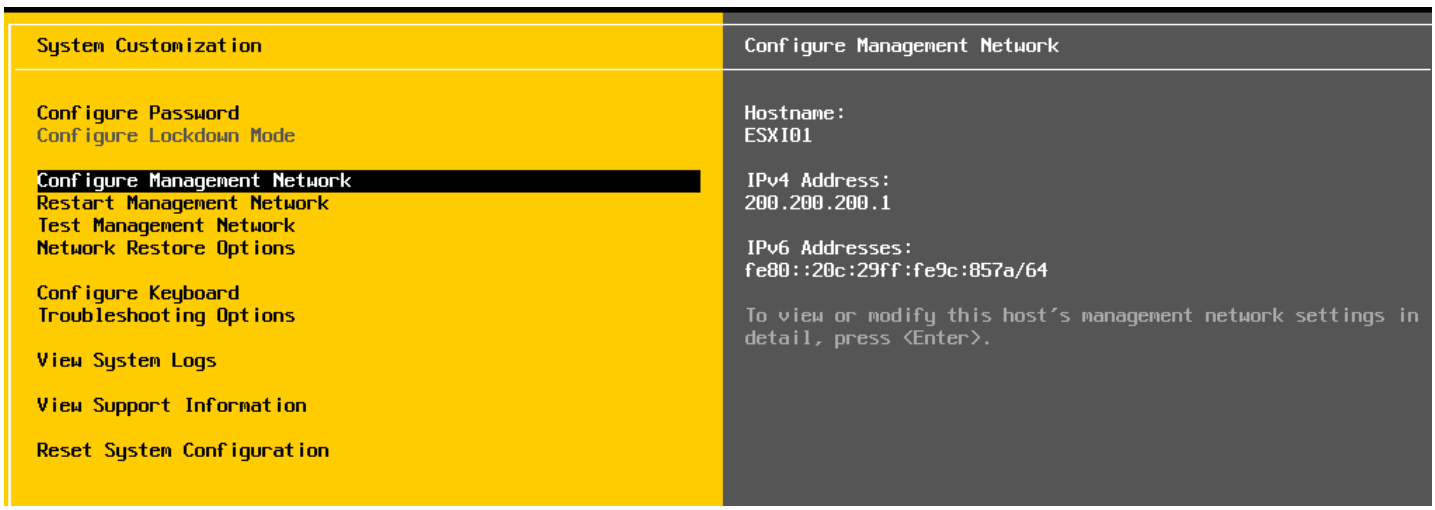


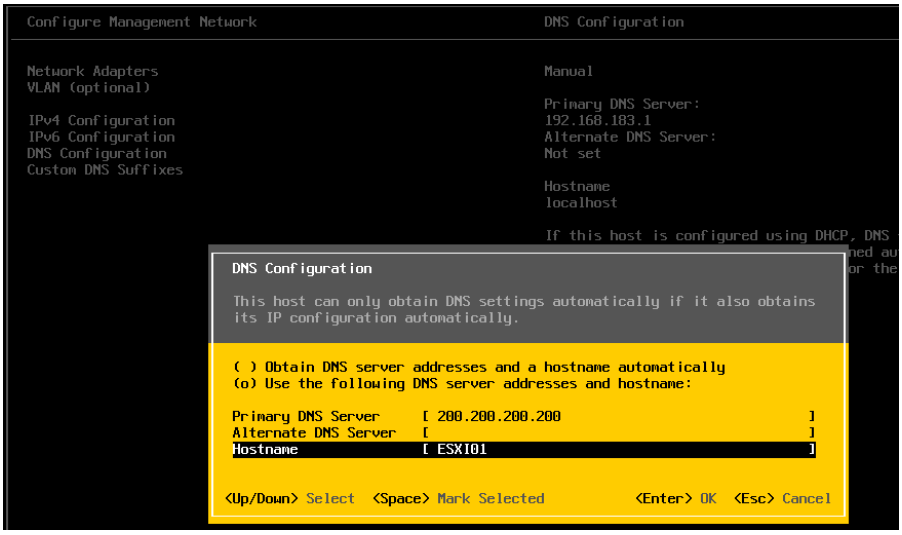
F2 to login using root user.

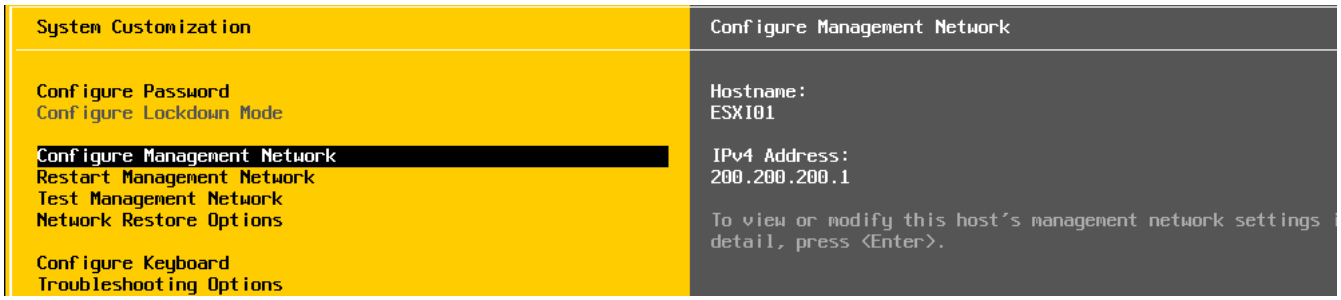


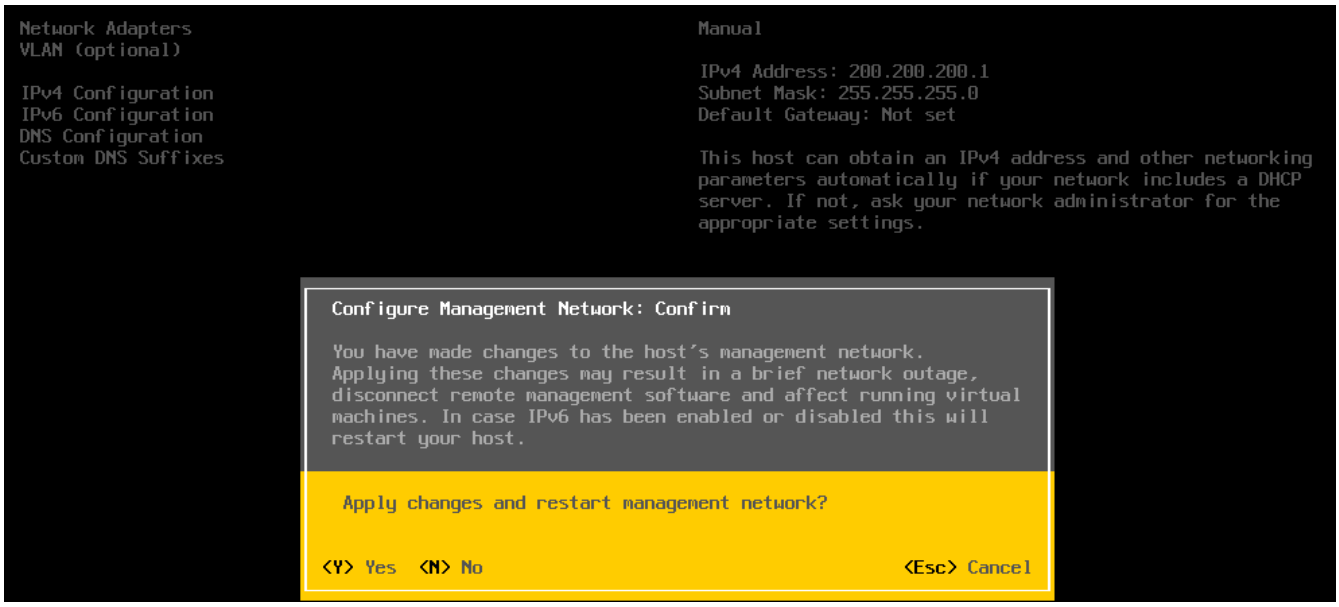
Configure hostname and network settings

Now you can configure the **hostname** and **network** so you can connect remotely using http to manage the server.

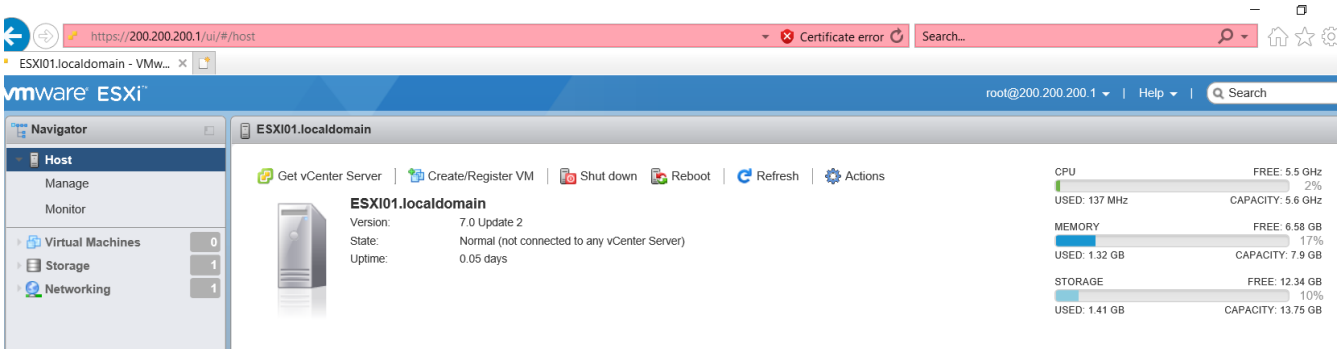



Configure Management Network
DNS Configuration
Network Adapters
VLAN (optional)
IPv4 Configuration
IPv6 Configuration
DNS Configuration
Custom DNS Suffixes
Manual
Primary DNS Server:
192.168.183.1
Alternate DNS Server:
Not set
Hostname
localhost
If this host is configured using DHCP, DNS
DNS Configuration
This host can only obtain DNS settings automatically if it also obtains its IP configuration automatically.
( ) Obtain DNS server addresses and a hostname automatically
(o) Use the following DNS server addresses and hostname:
Primary DNS Server [200.200.200.200]
Alternate DNS Server [ ]
Hostname [ESXI01]
<Up/Down> Select <Space> Mark Selected <Enter> OK <Esc> Cancel


System Customization
Configure Password
Configure Lockdown Mode
Configure Management Network
Restart Management Network
Test Management Network
Network Restore Options
Configure Keyboard
Troubleshooting Options
Configure Management Network
Hostname:
ESXI01
IPv4 Address:
200.200.200.1
To view or modify this host's management network settings
detail, press <Enter>.


Network Adapters
VLAN (optional)
IPv4 Configuration
IPv6 Configuration
DNS Configuration
Custom DNS Suffixes
Manual
IPv4 Address: 200.200.200.1
Subnet Mask: 255.255.255.0
Default Gateway: Not set
This host can obtain an IPv4 address and other networking parameters automatically if your network includes a DHCP server. If not, ask your network administrator for the appropriate settings.
Configure Management Network: Confirm
You have made changes to the host's management network. Applying these changes may result in a brief network outage, disconnect remote management software and affect running virtual machines. In case IPv6 has been enabled or disabled this will restart your host.
Apply changes and restart management network?
<Y> Yes <N> No <Esc> Cancel

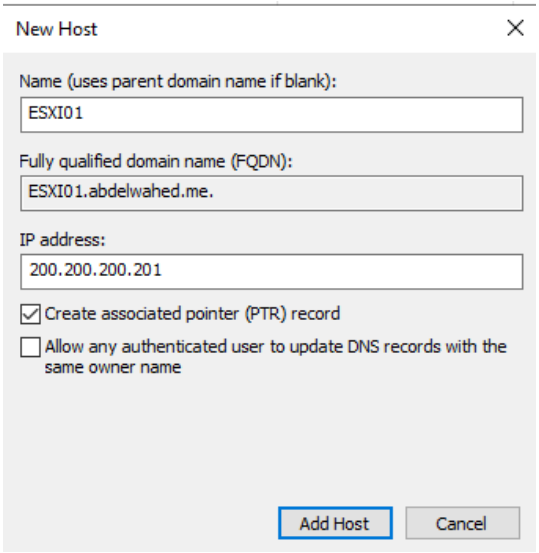
Now we can connect and manage both servers from browser

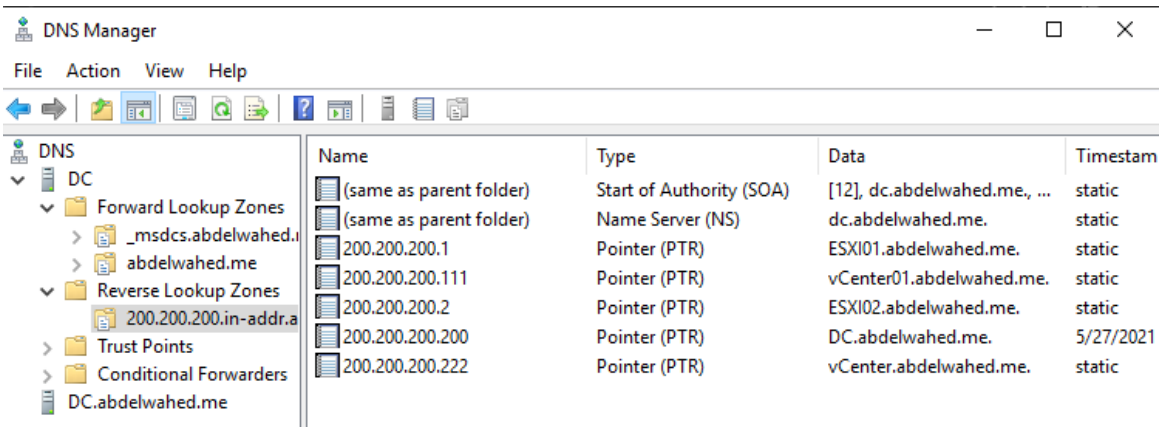


Now do the same steps for ESXi02

DNS Configuration for all ESXi hosts and vCenter Servers

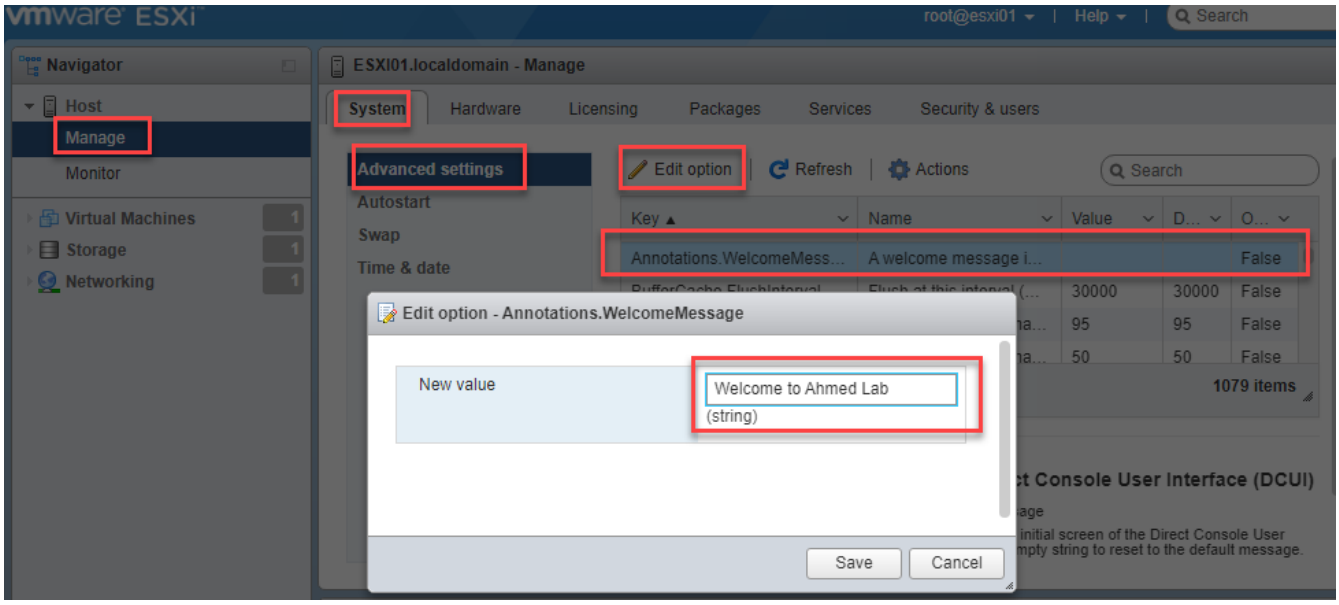
Through DNS add reverse lookup zone then add reocrds for both ESXI servers and vencter in both forward and reverse lookup zone





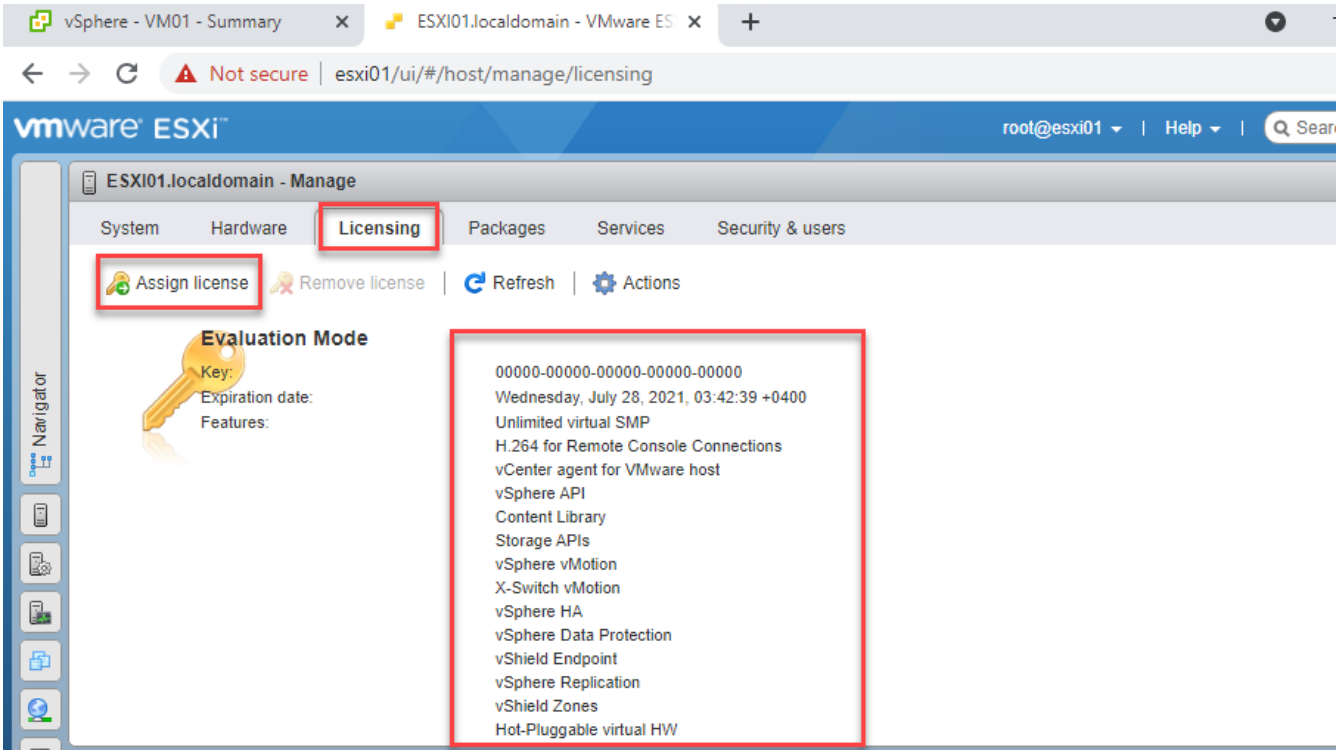
Configure ESXi host

Add welcome message during VM boot

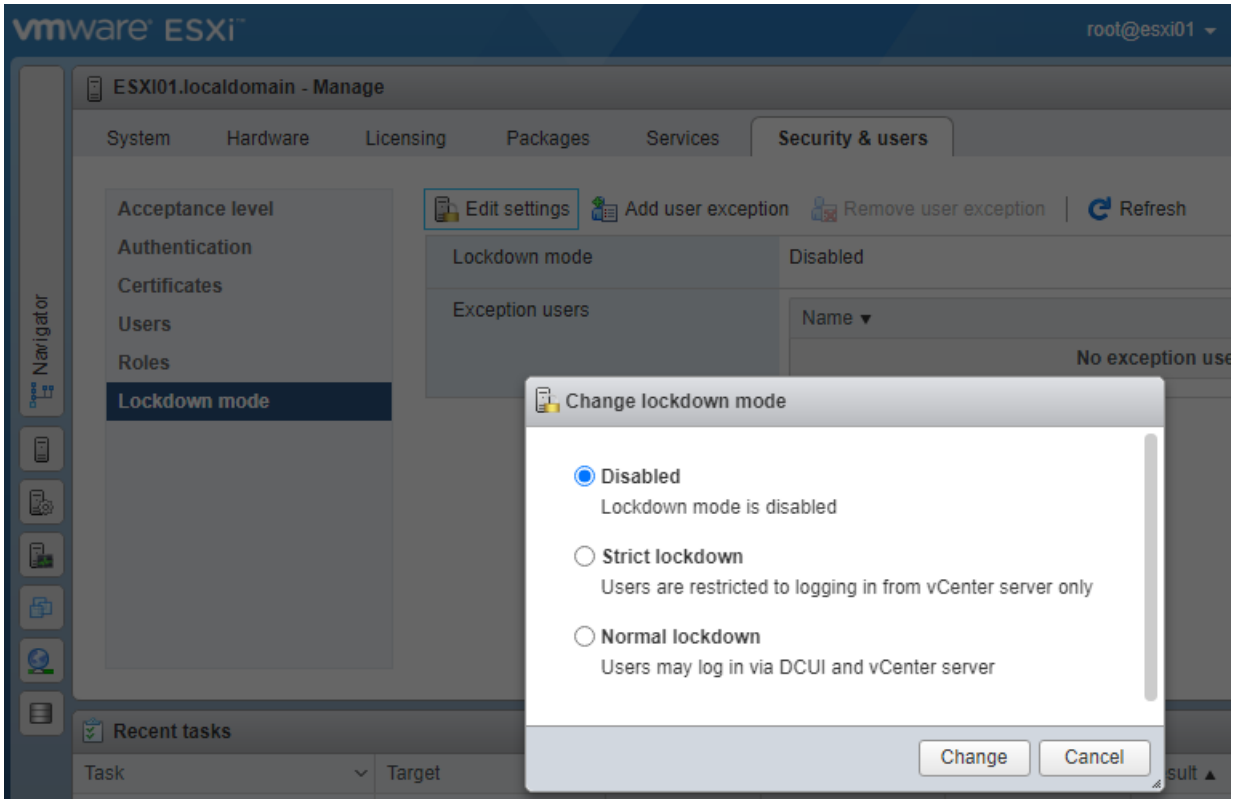


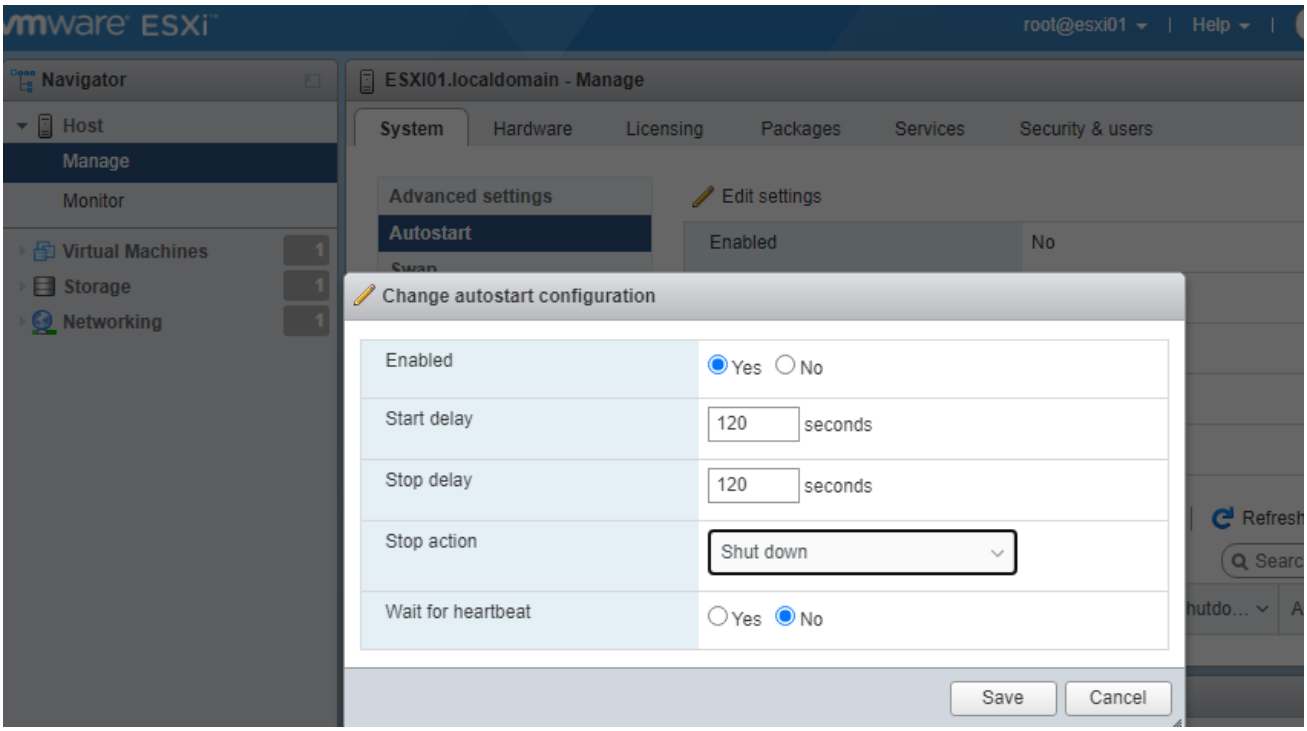
Assign ESXi license

Based on license you assign feature will added, trial license working for 60 days.

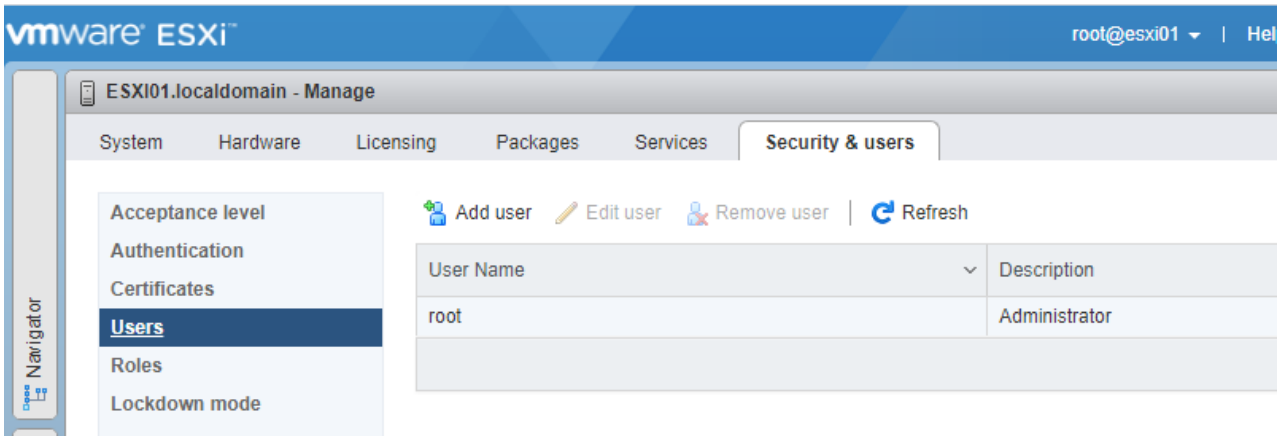


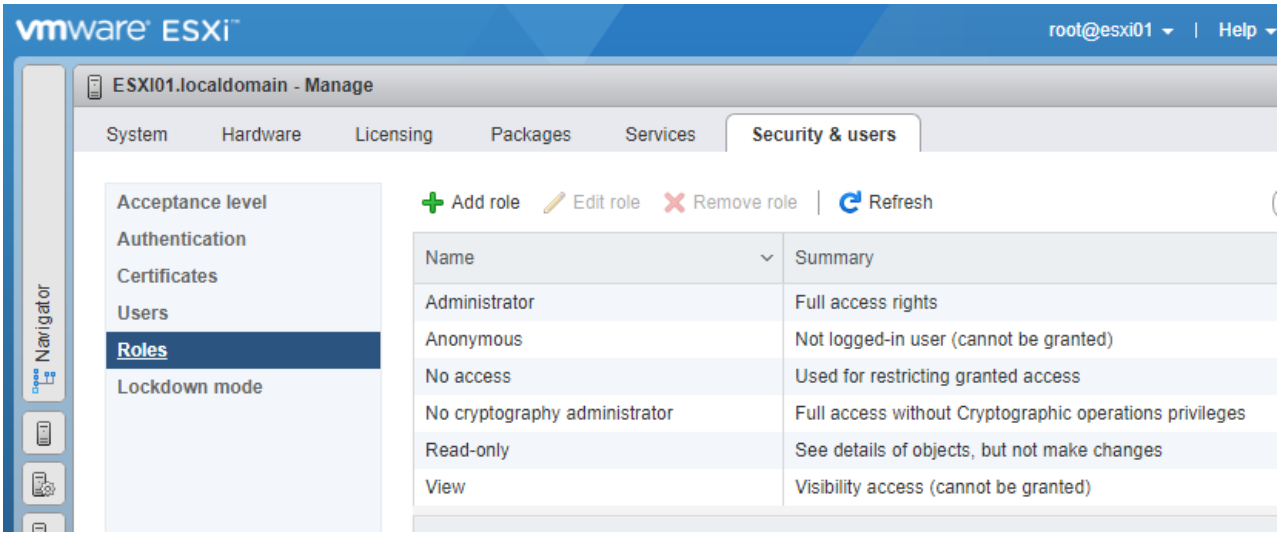
Lockdown mode and autorestart option



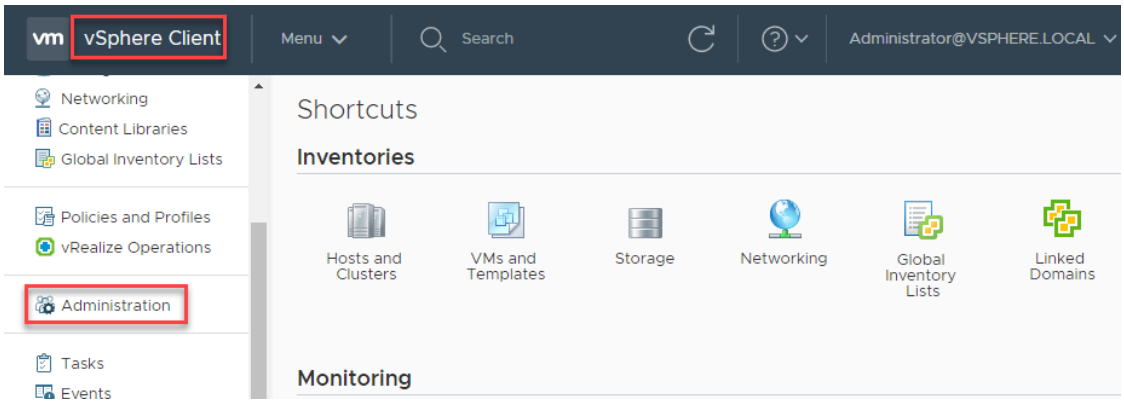


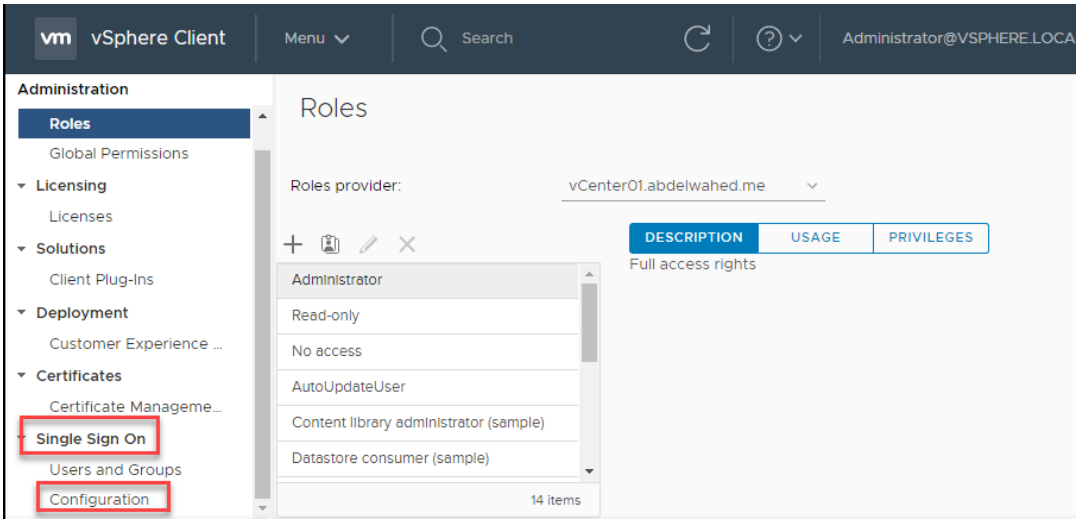
Add more local users to ESXi host

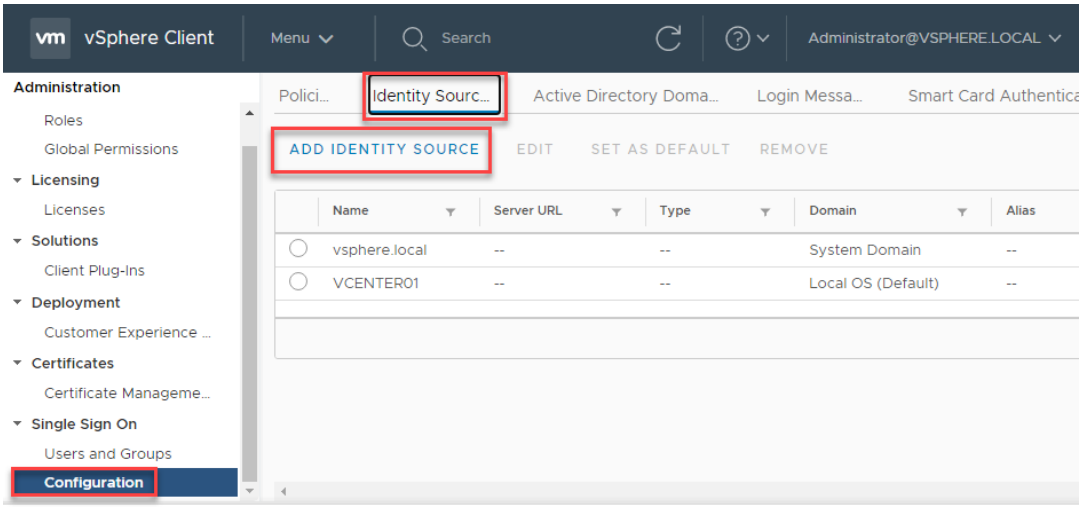


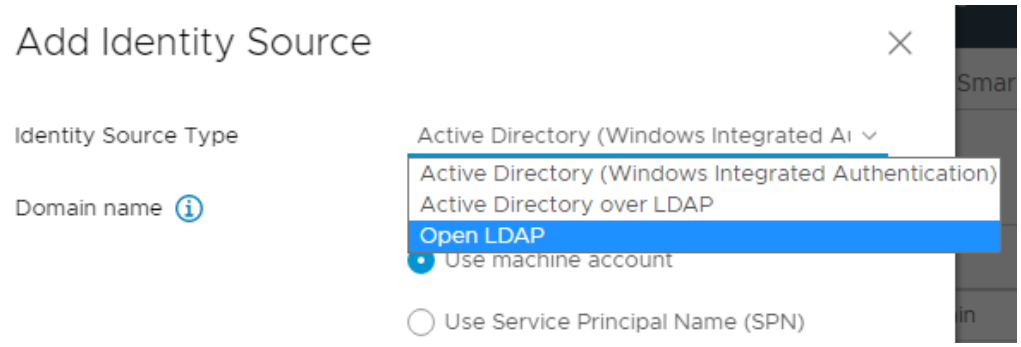


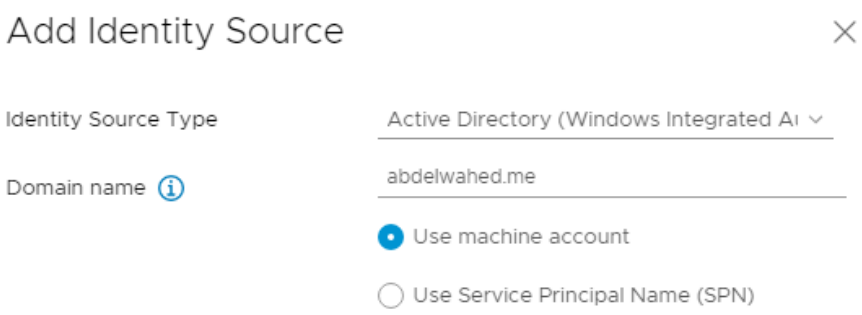
Integrate vSphere with Active Directory

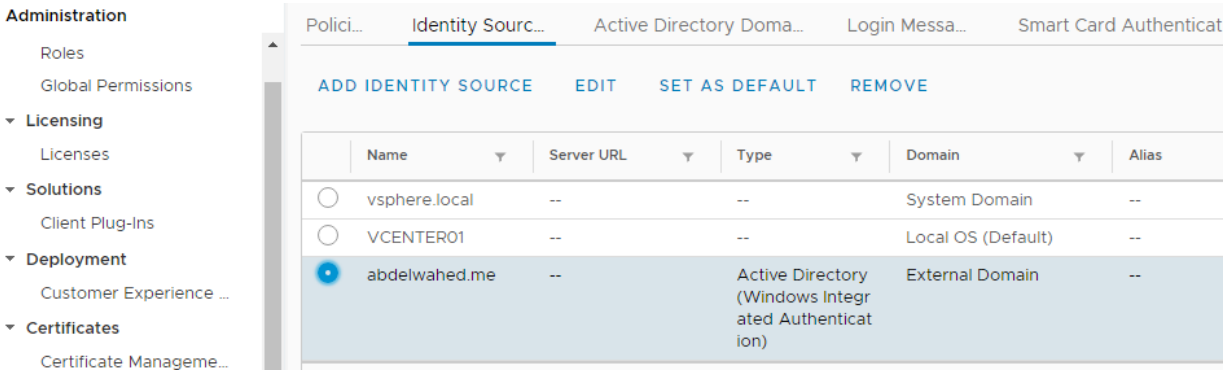






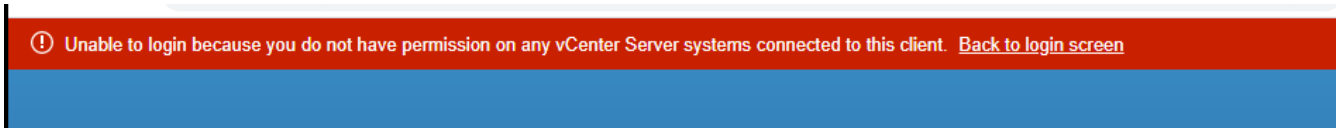




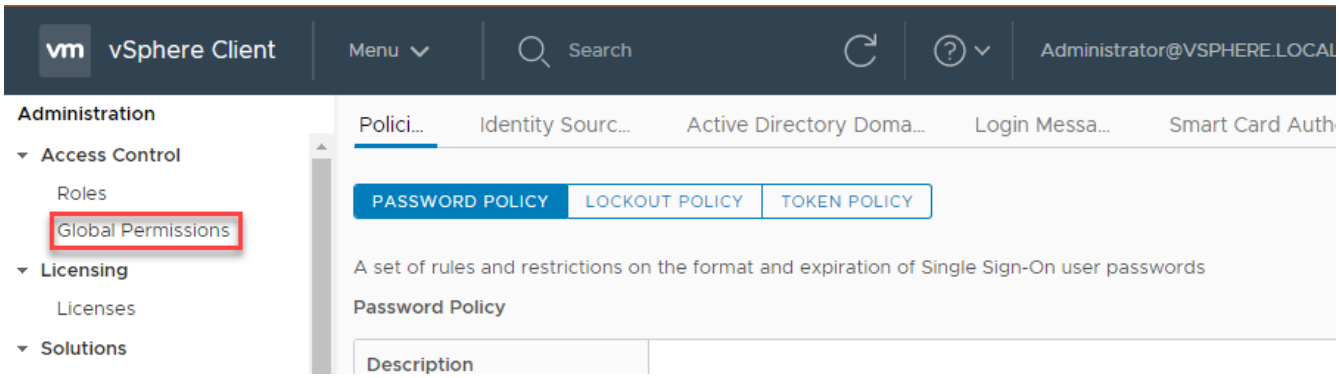


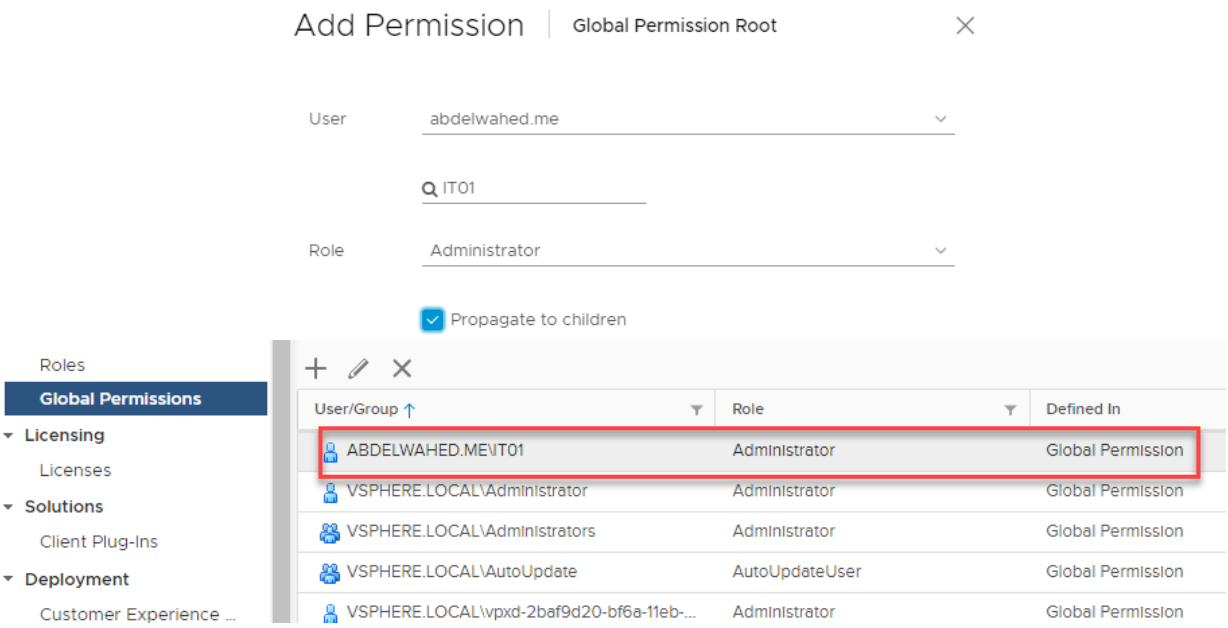
login with domain users and permissions

now you can login, but you don't have premissions to access vCenter resouces.

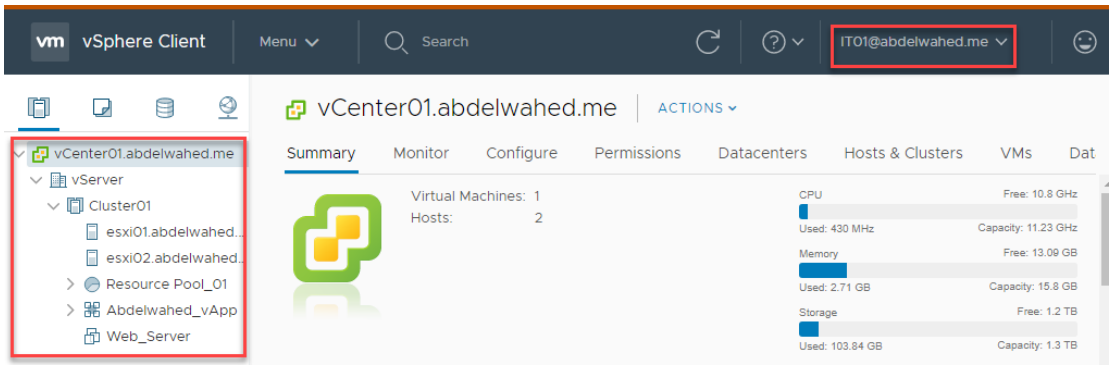


Now give it01@abdelwahed.me permission (RBAC) Role Based Access Control

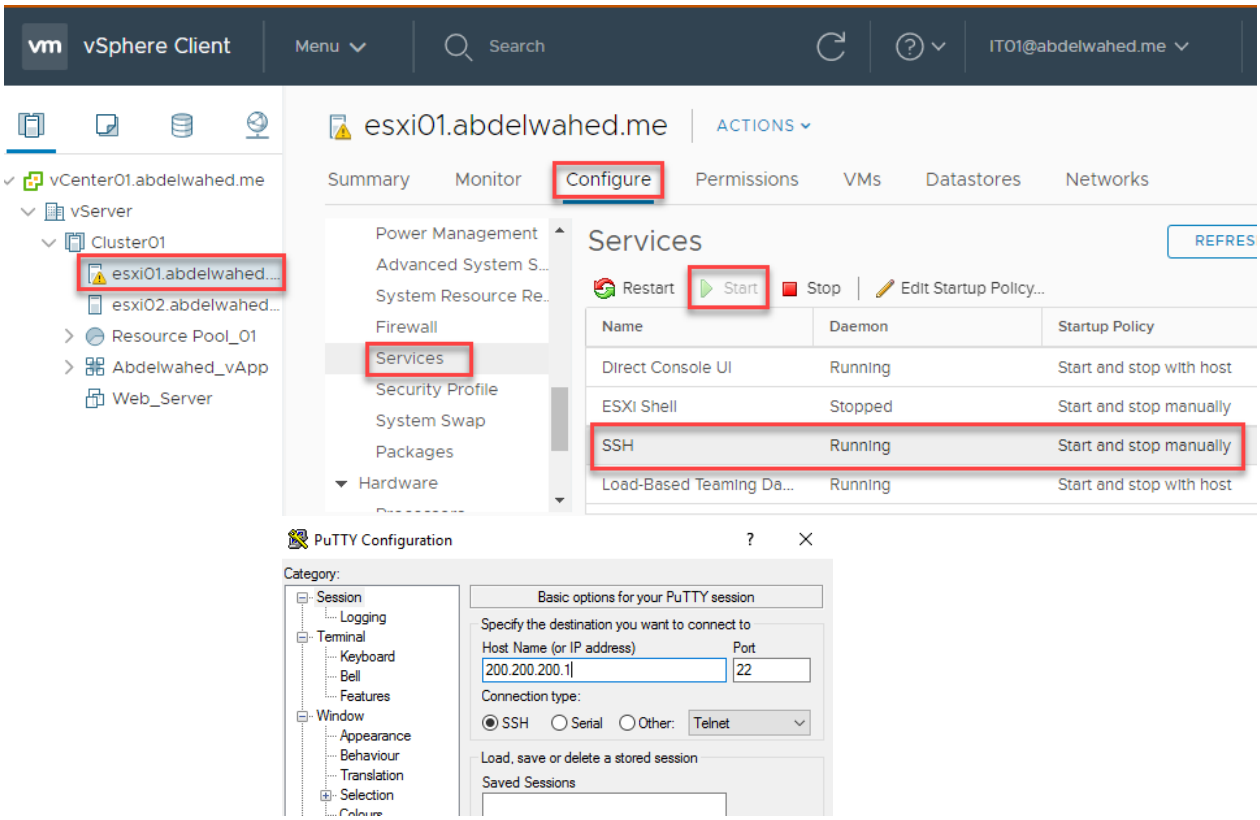


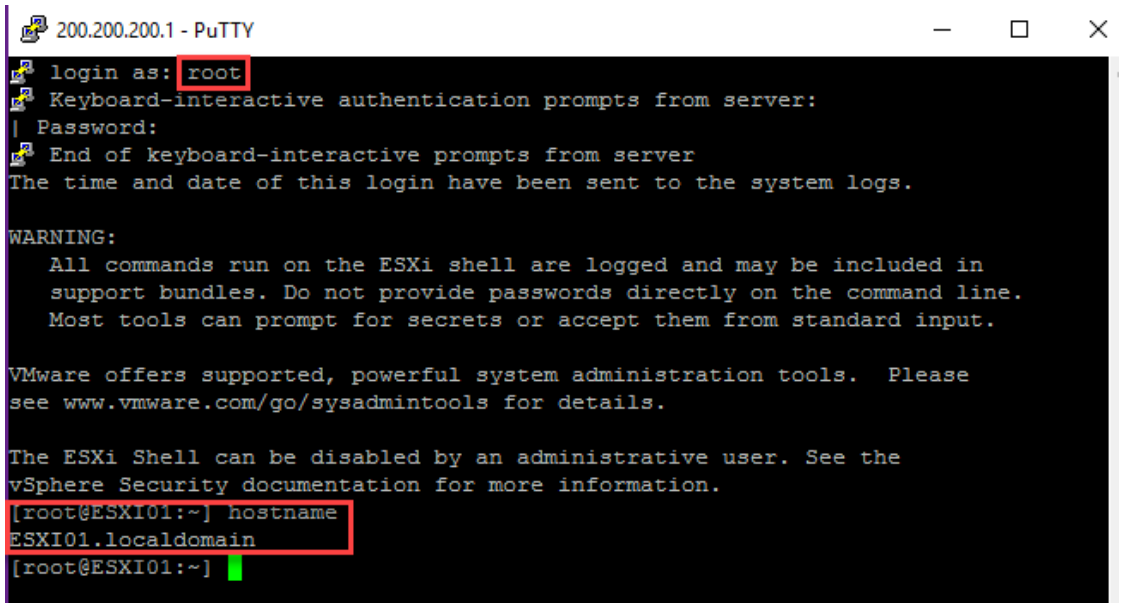


Now you have full access as IT01



Connect SSH to ESXi host





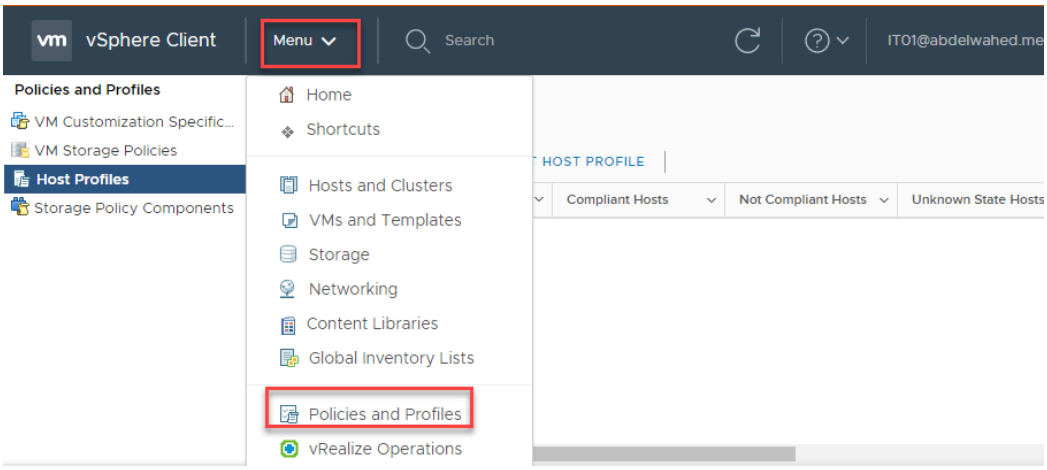
Default command is esxcli

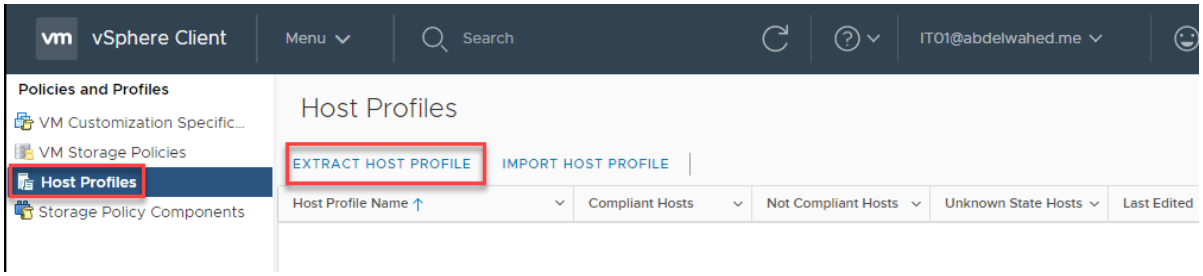
```
[root@ESXI01:~] esxcli
Usage: esxcli [options] {namespace}+ {cmd} [cmd options]

Options:
  --formatter=FORMATTER
                        Override the formatter to use for a given command.
                        Available formatter: xml, csv, keyvalue
  --debug               Enable debug or internal use options
  --version             Display version information for the script
  -?, --help            Display usage information for the script

Available Namespaces:
  device                Device manager commands
  esxcli                Commands that operate on the esxcli system itself
                        allowing users to get additional information.
  fcoe                  VMware FCOE commands.
  graphics              VMware graphics commands.
  hardware              VMKernel hardware properties and commands for
                        configuring hardware.
  iscsi                 VMware iSCSI commands.
  network               Operations that pertain to the maintenance of
                        networking on an ESX host. This includes a wide
                        variety of commands to manipulate virtual networking
                        components (vswitch, portgroup, etc) as well as local
                        host IP, DNS and general host networking settings.
  nvme                  VMware NVMe driver esxcli extensions
  rdma                  Operations that pertain to remote direct memory access
                        (RDMA) protocol stack on an ESX host.
  sched                 VMKernel system properties and commands for
                        configuring scheduling related functionality.
  software              Manage the ESXi software image and packages
  storage               VMware storage commands.
  system                VMKernel system properties and commands for
                        configuring properties of the kernel core system and
                        related system services.
  vm                    A small number of operations that allow a user to
                        Control Virtual Machine operations.
  vsan                  VMware vSAN commands
```

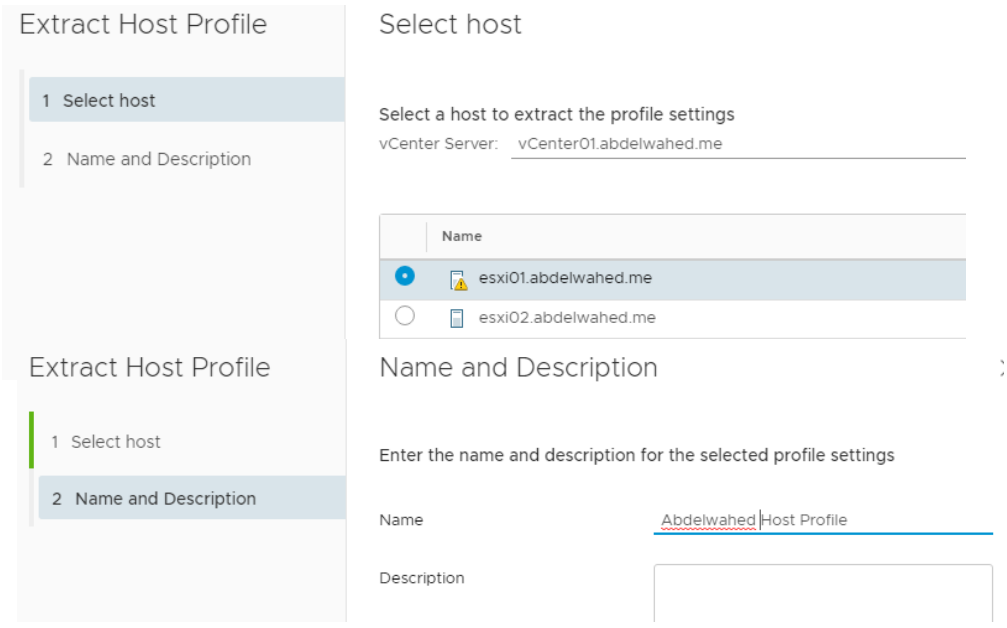
Host Profile

You can apply settings to all ESXi servers through host profile. For example, you want to configure ssh for all ESXi servers you can do this through host profile.

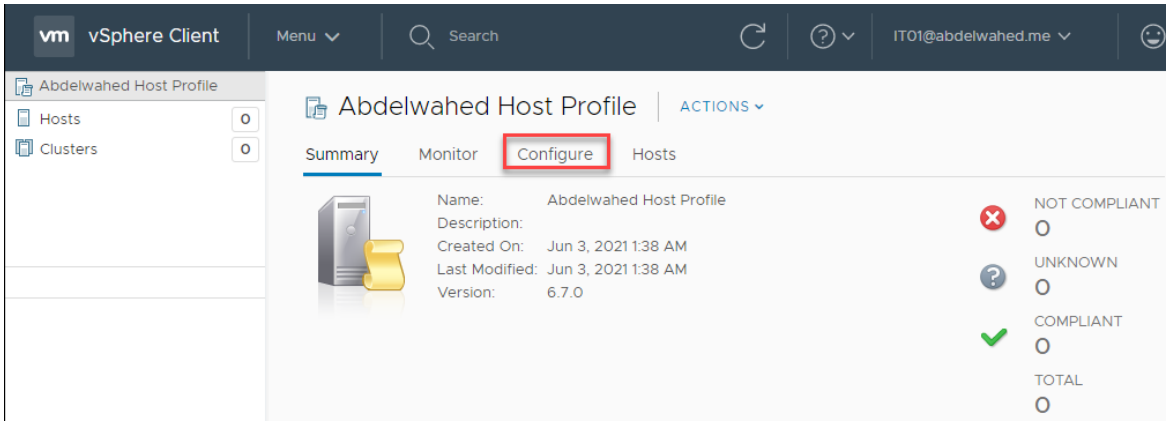
First you must take profile reference from one ESXi server



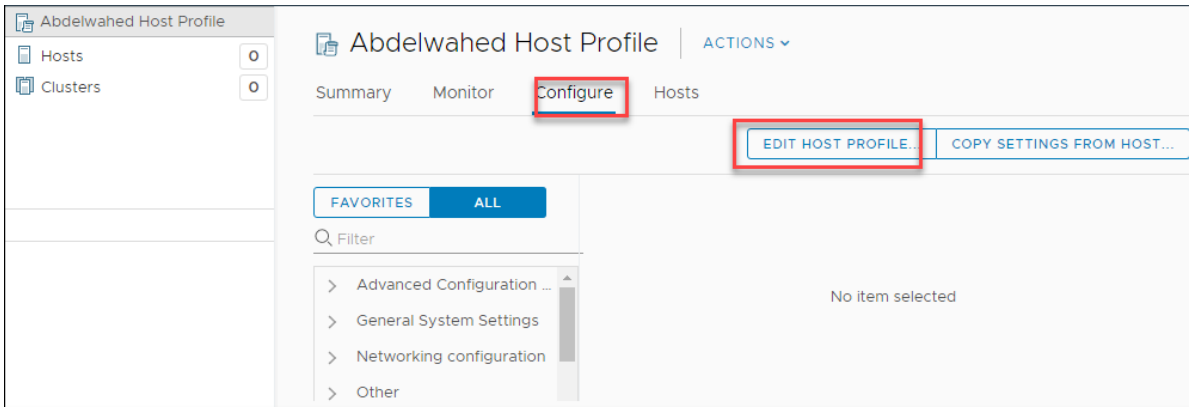


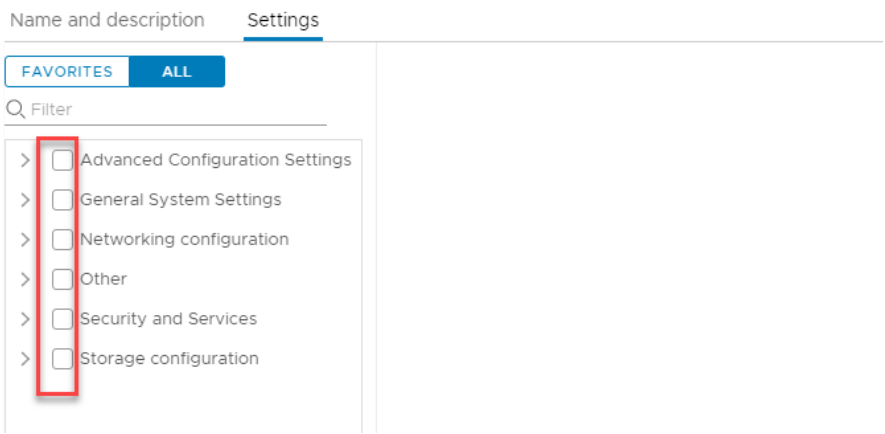


Now you can access the host profile and edit it

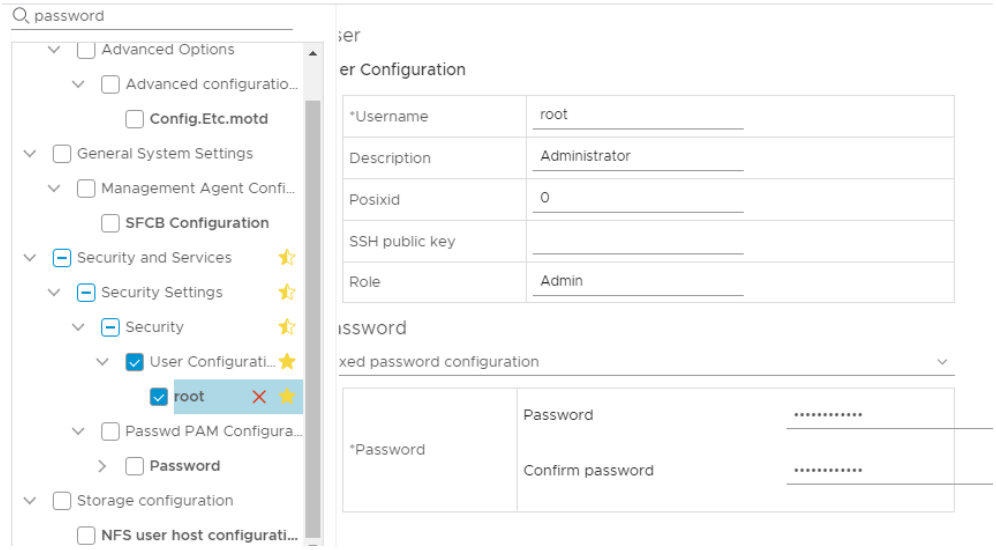


Now to configure this profile as a standard, uncheck all settings to avoid the conflict then add your customized settings.

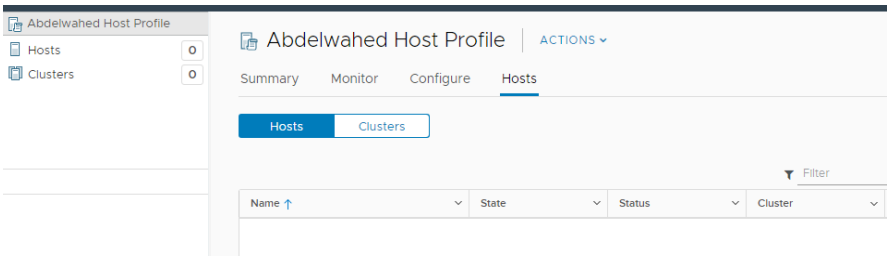


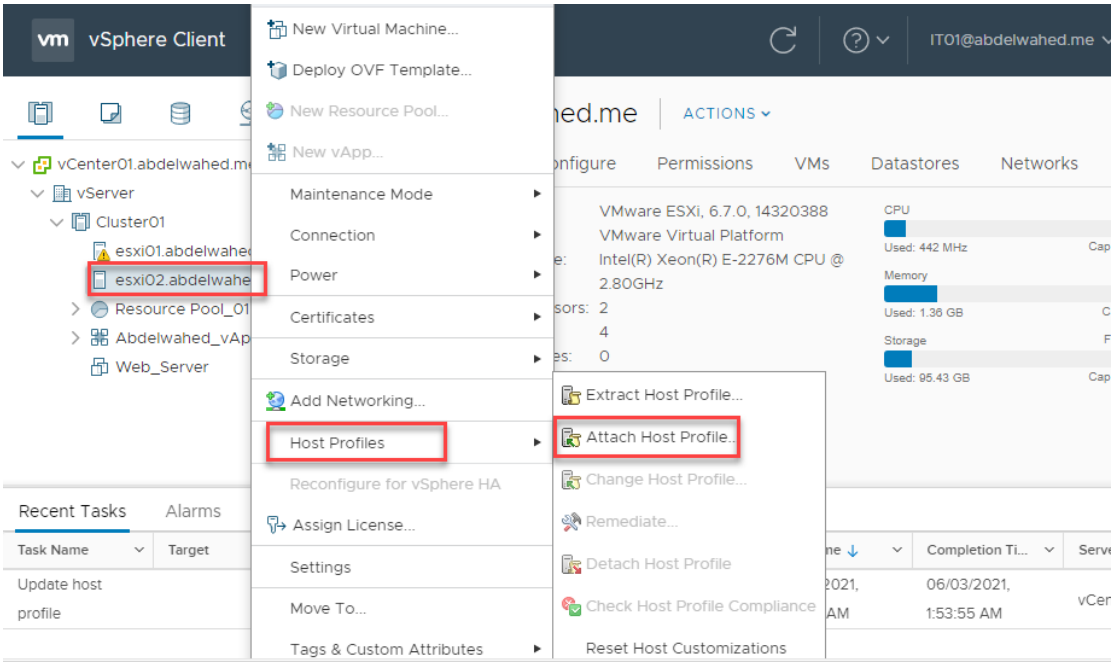


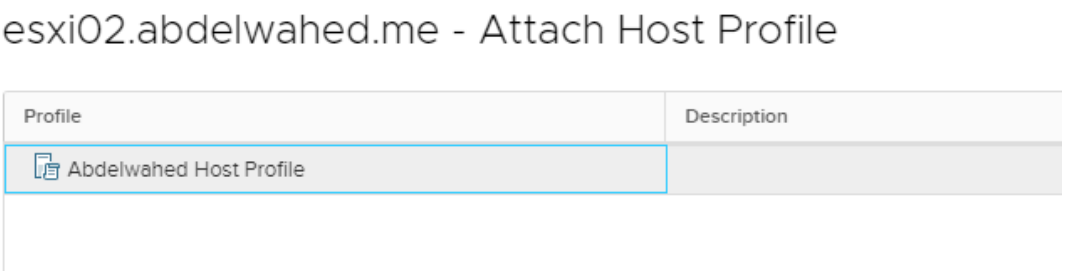
In this example I will use host profile to configure ESXi server's password for root user.



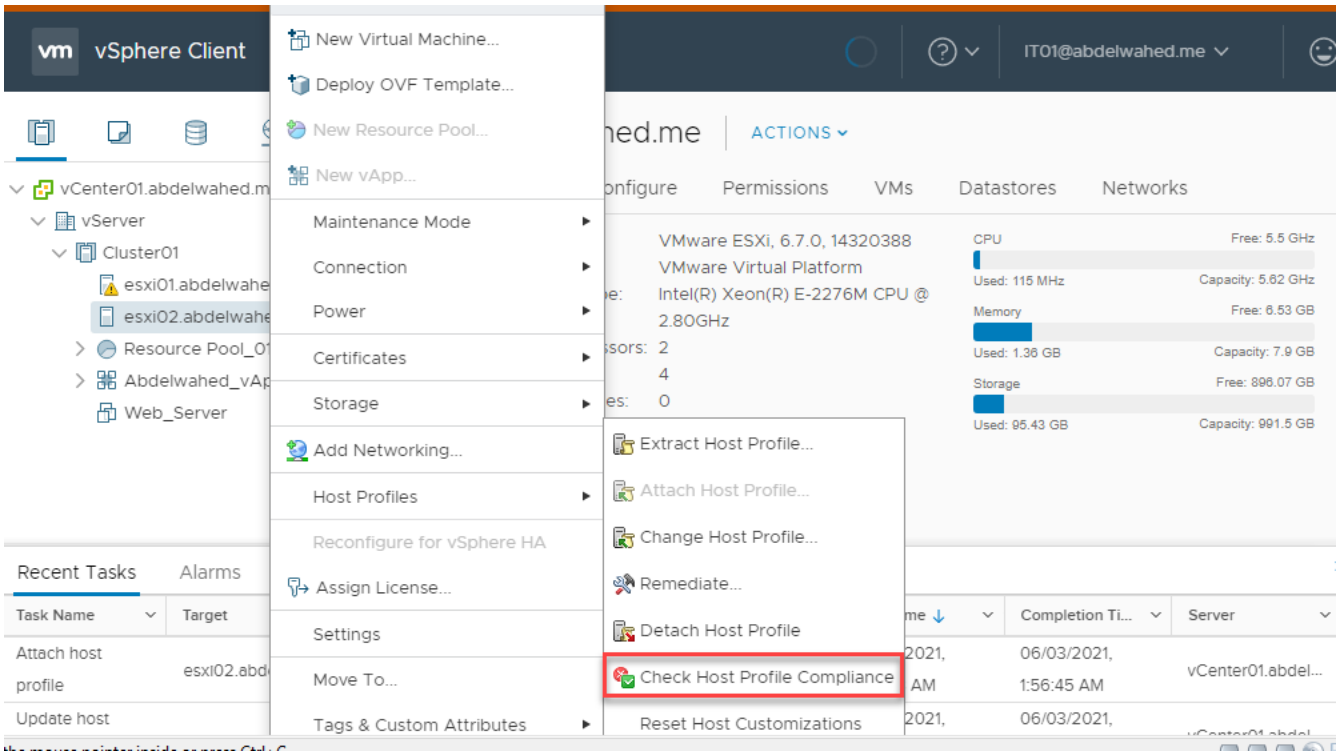
Still no host attached to that profile

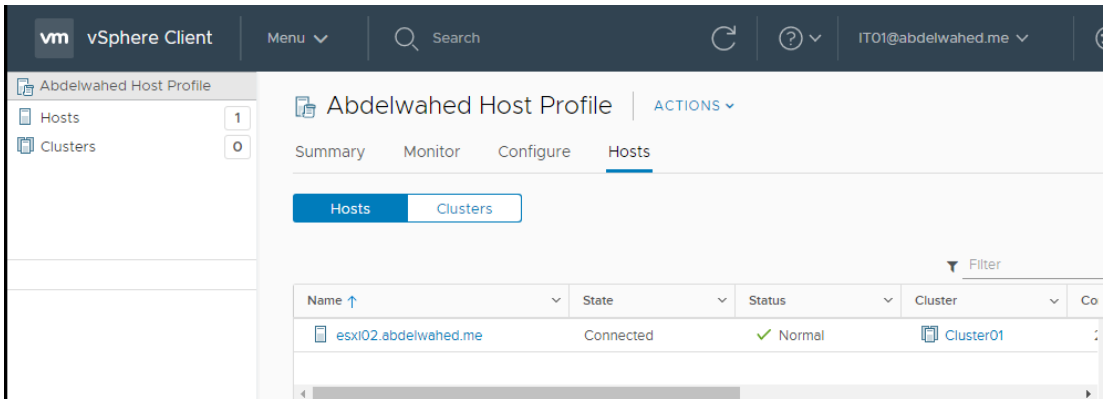






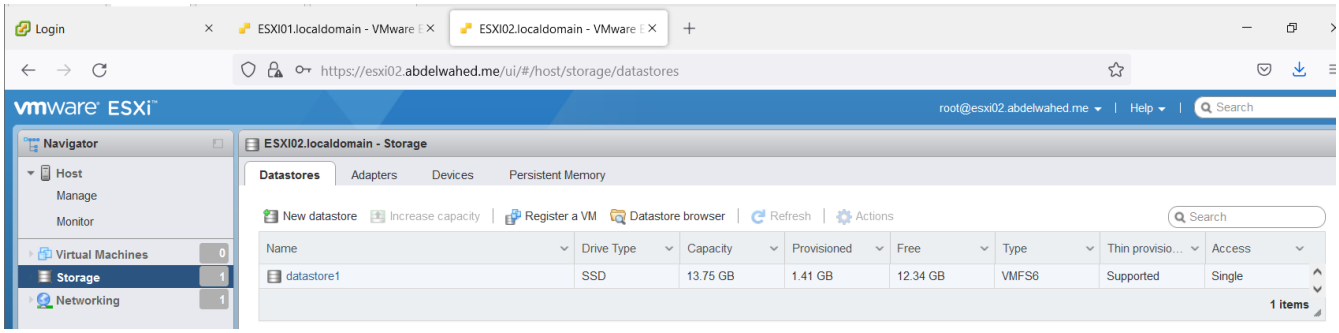
Now one host attached to that profile, you can also attach cluster





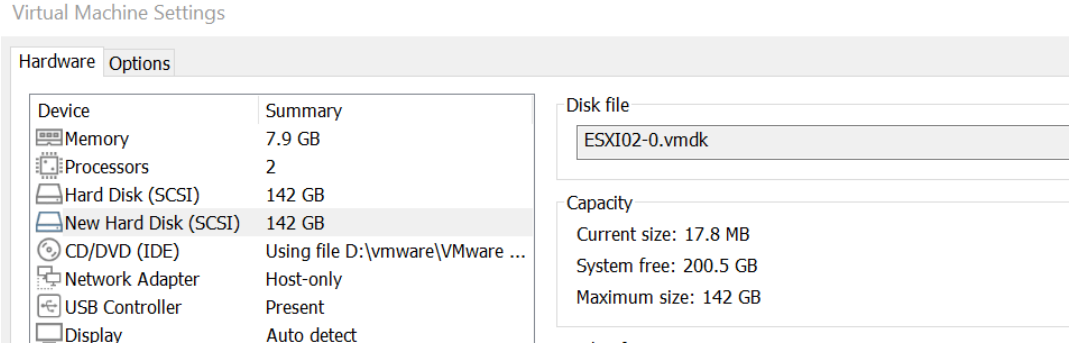
Add and manage datastore

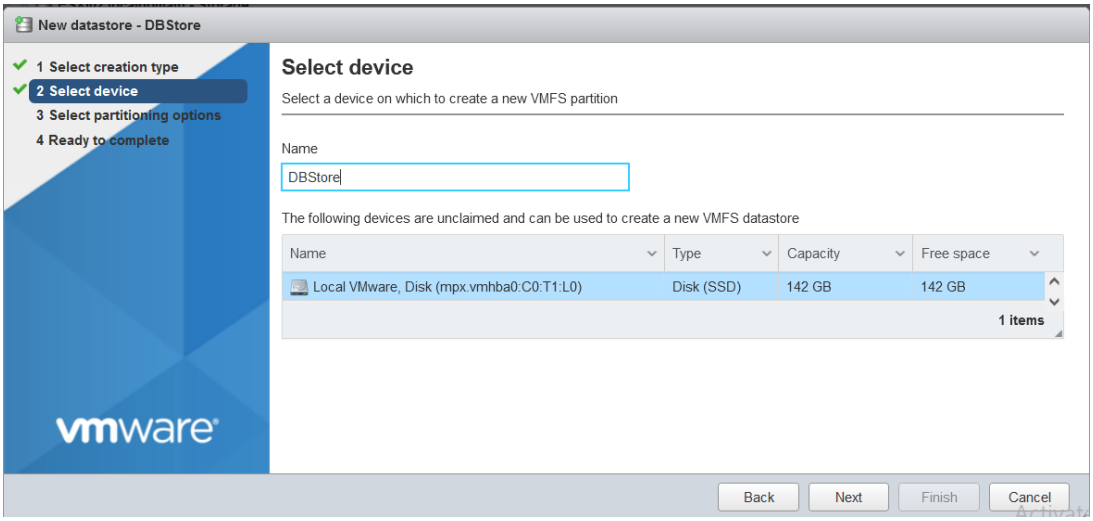
Both servers book around 8GB for OS and the rest of HD booked for datastore to save any kind of data including VMs data and OS ISO file .....

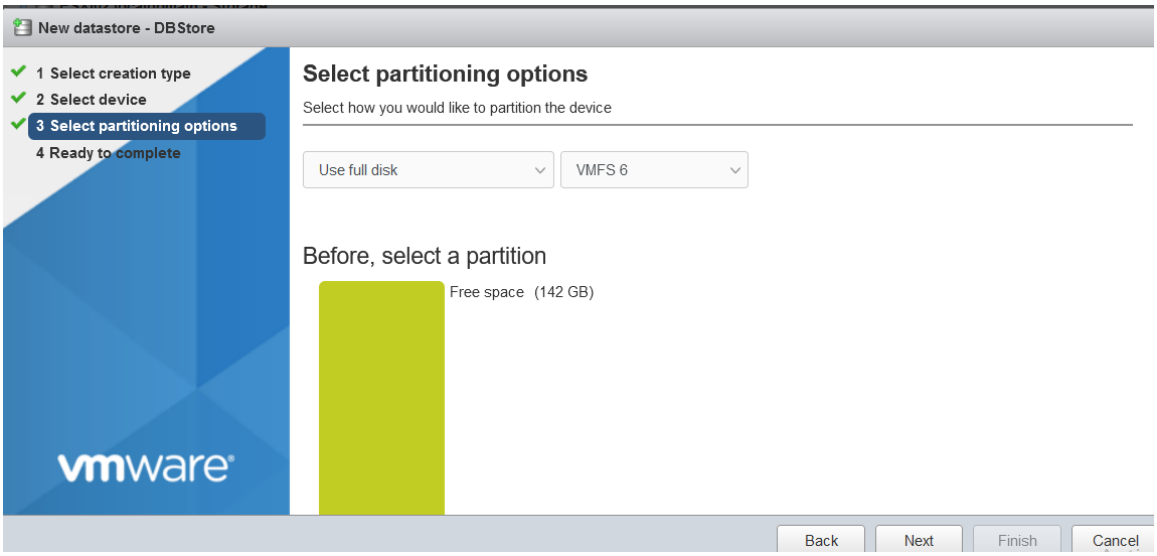


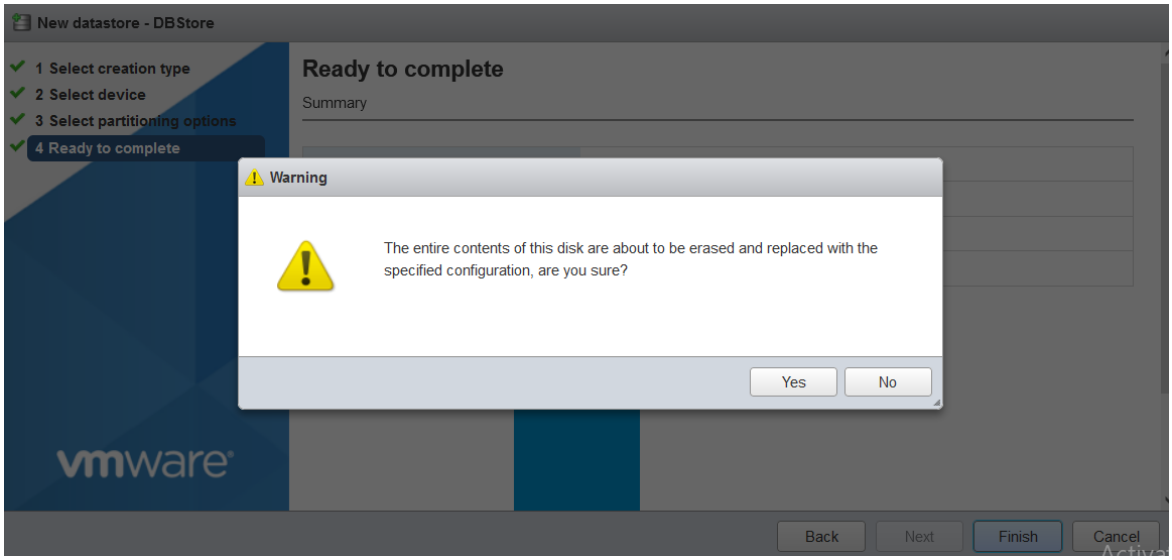
Create new local datastore (VMFS) using ESXi

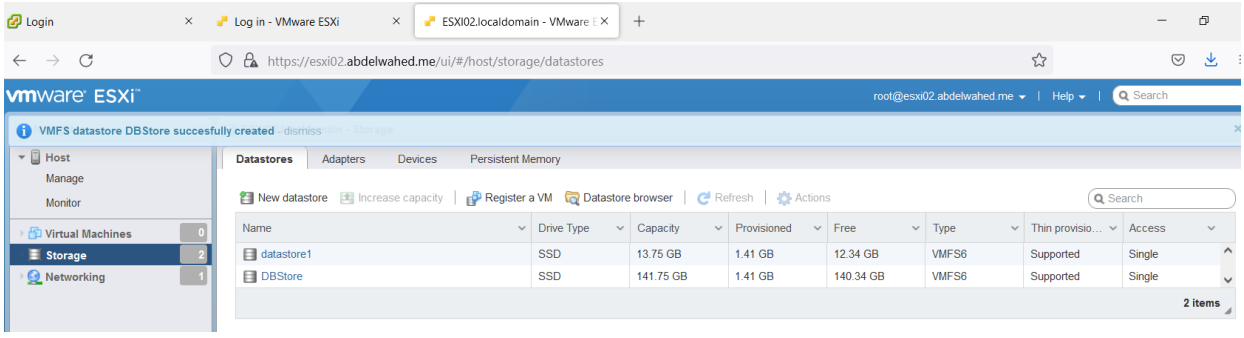
First you must add new hard disk to that server and restart the ESXi server or **rescan the storage without restart** using Vcenter by right click on ESXi server >> storage >> rescan then do the following:





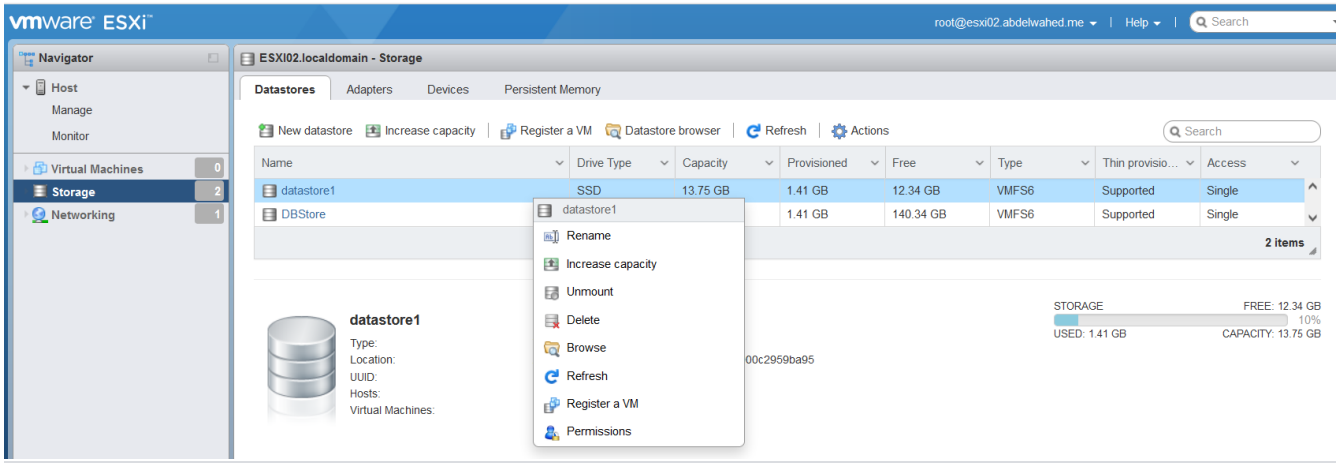

New datastore - DBStore
1 Select creation type
2 Select device
3 Select partitioning options
4 Ready to complete
Select partitioning options
Select how you would like to partition the device
Use full disk
VMFS 6
Before, select a partition
Free space (142 GB)
vmware
Back
Next
Finish
Cancel

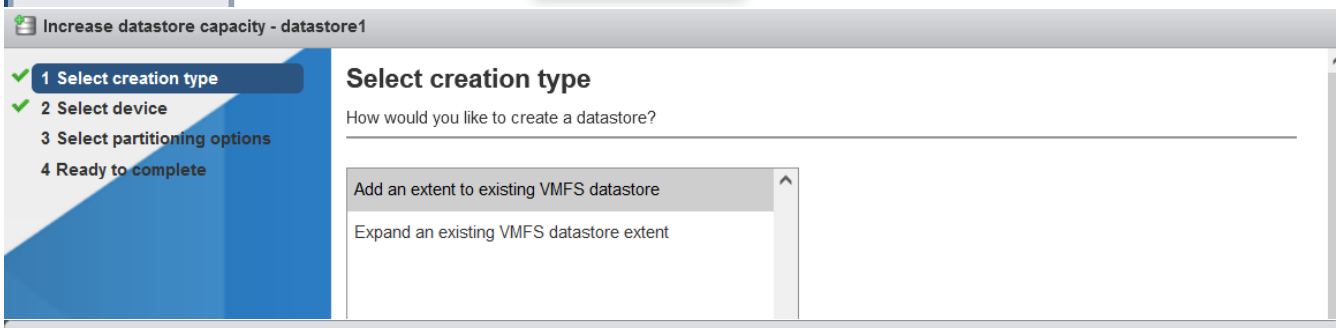

New datastore - DBStore
1 Select creation type
2 Select device
3 Select partitioning options
4 Ready to complete
Ready to complete
Summary
Warning
The entire contents of this disk are about to be erased and replaced with the specified configuration, are you sure?
Yes
No
vmware
Back
Next
Finish
Cancel

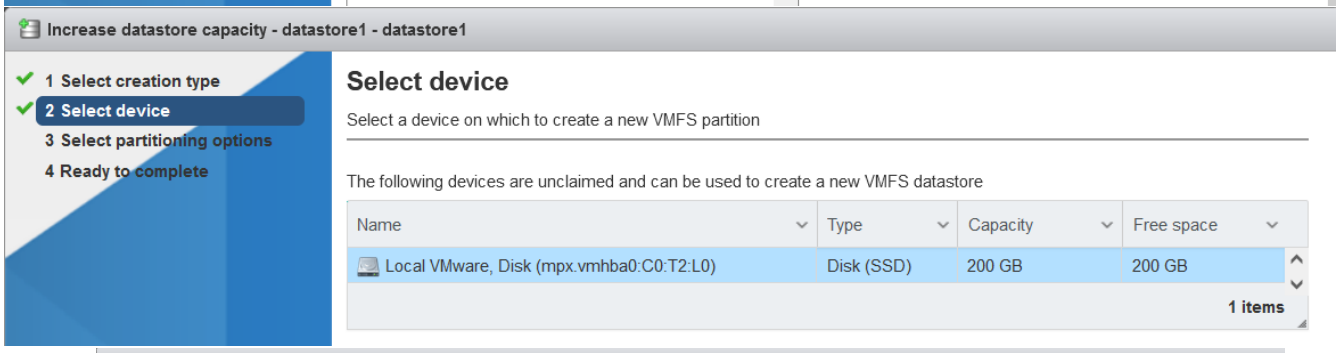

Login
Log in - VMware ESXi
ESXI02.localdomain - VMware
https://esxi02.abdelwahed.me/ui/#/host/storage/datastores
vmware ESXi
root@esxi02.abdelwahed.me
Help
Search
VMFS datastore DBStore succesfully created
Host
Manage
Monitor
Virtual Machines
Storage
Networking
Datastores
Adapters
Devices
Persistent Memory
New datastore
Increase capacity
Register a VM
Datastore browser
Refresh
Actions
Name
Drive Type
Capacity
Provisioned
Free
Type
Thin provisio...
Access
datastore1
SSD
13.75 GB
1.41 GB
12.34 GB
VMFS6
Supported
Single
DBStore
SSD
141.75 GB
1.41 GB
140.34 GB
VMFS6
Supported
Single
2 items

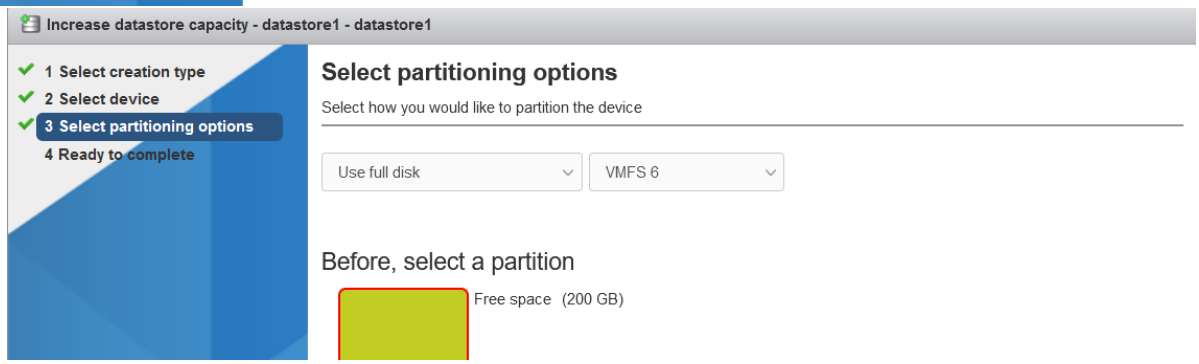
Extend exiting datastore

In this example we add 200GB HD to use it in this process, you have alsoto restart the server. We go to extend datastore1

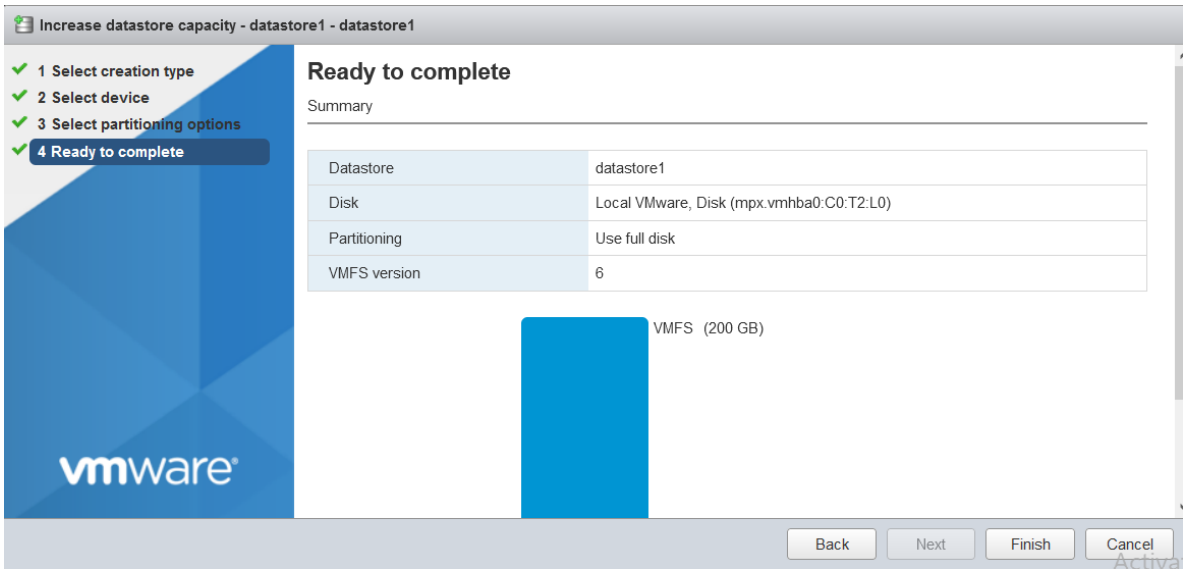


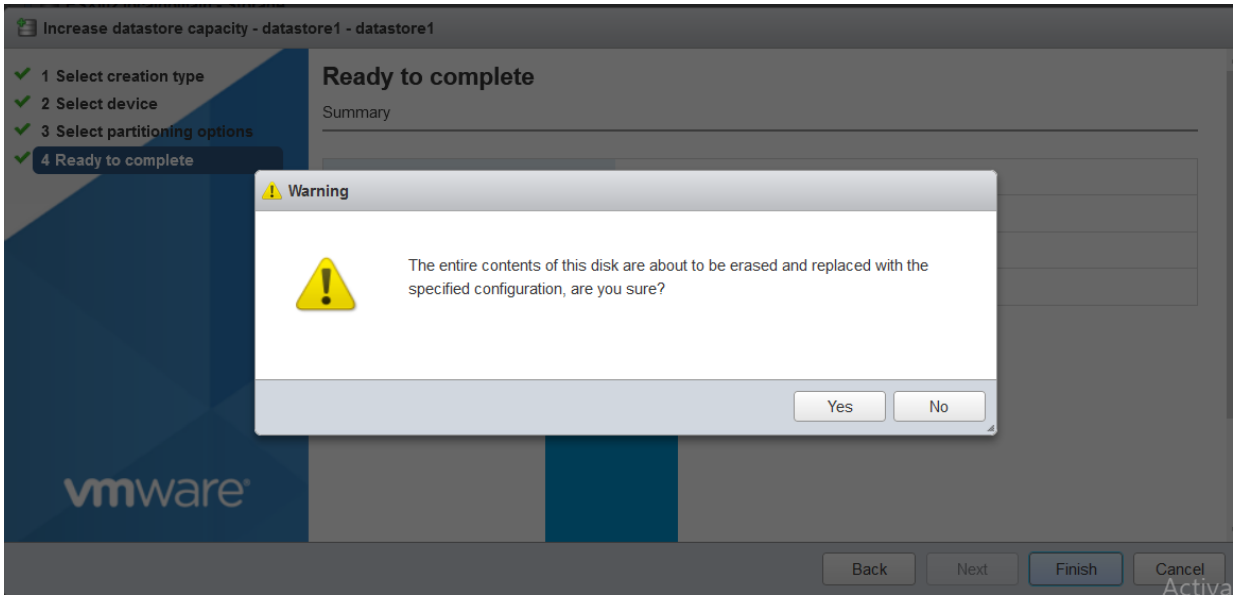


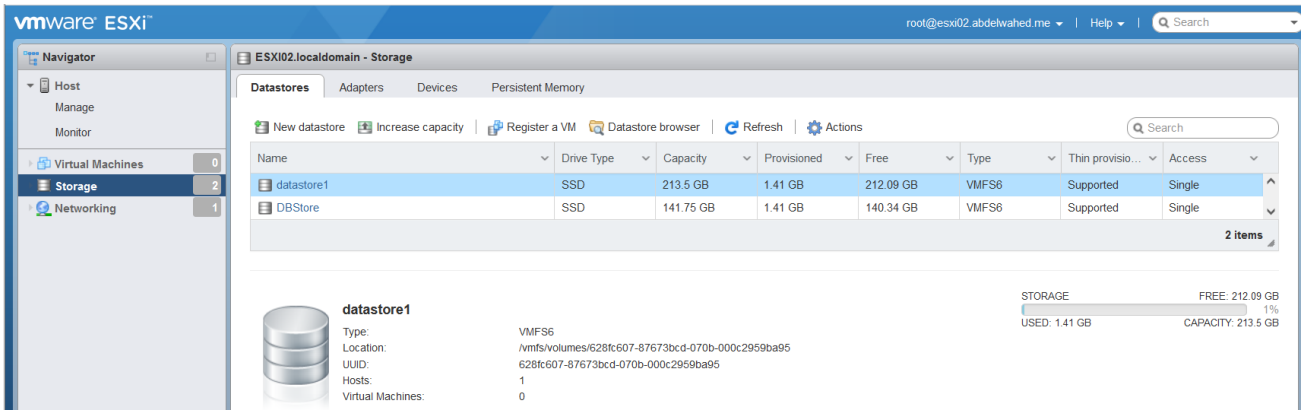




VMware vSphere Install, Configure, Manage v7 | Quick Guide

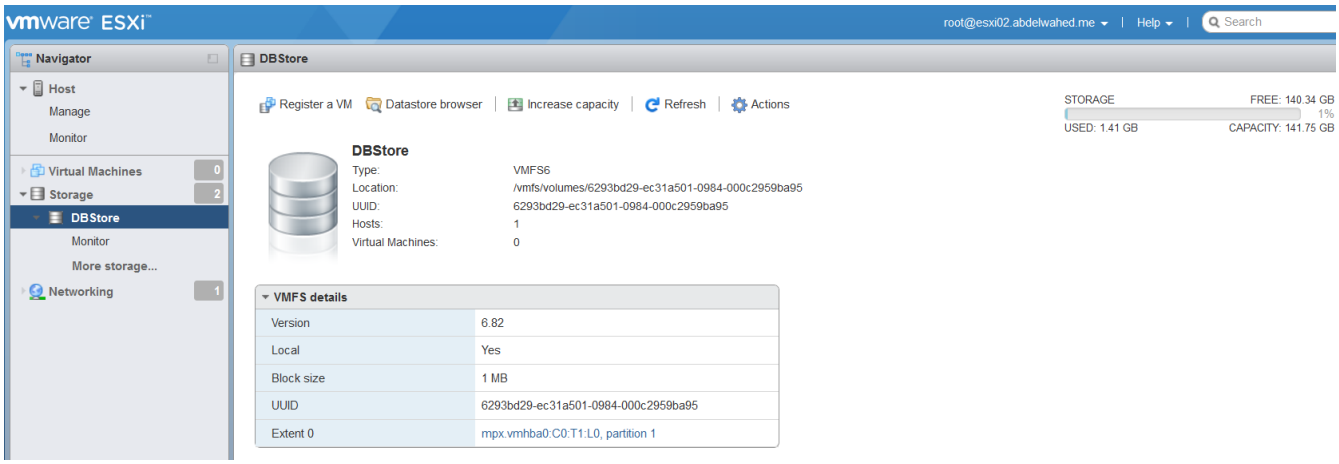


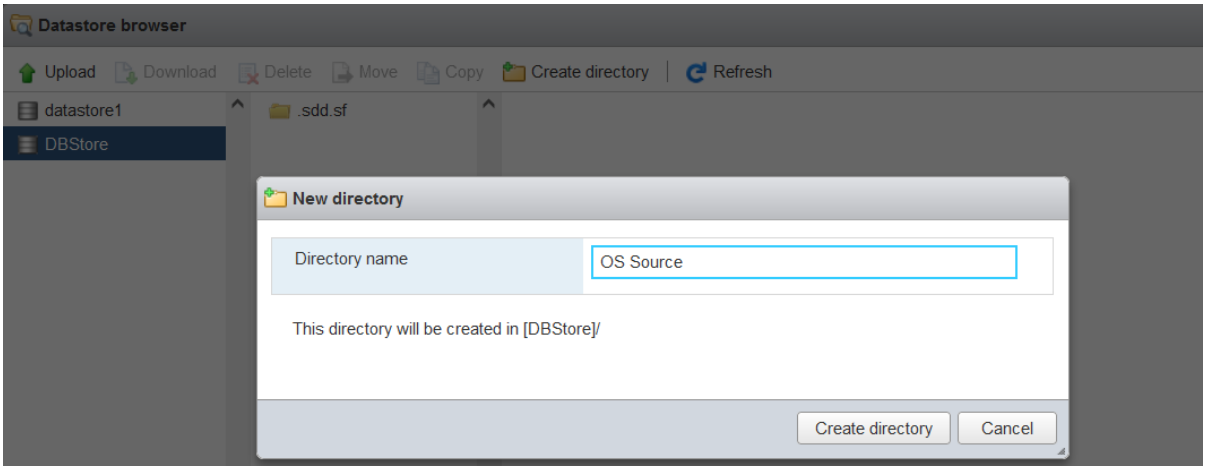




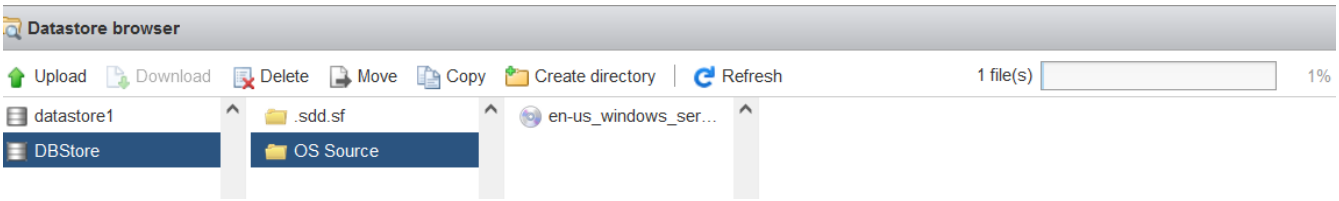
Add ISO file to datastore

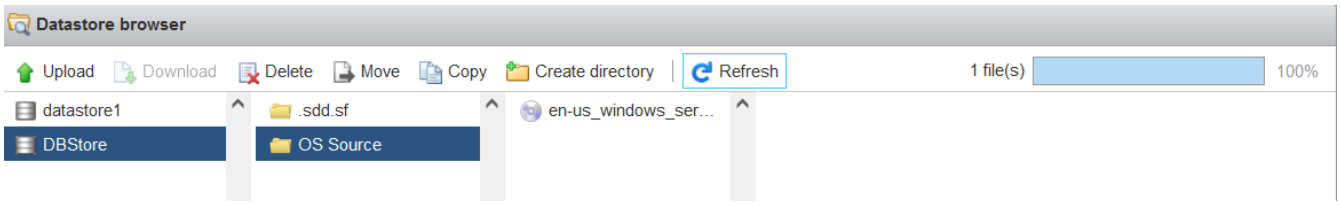
First browse that store





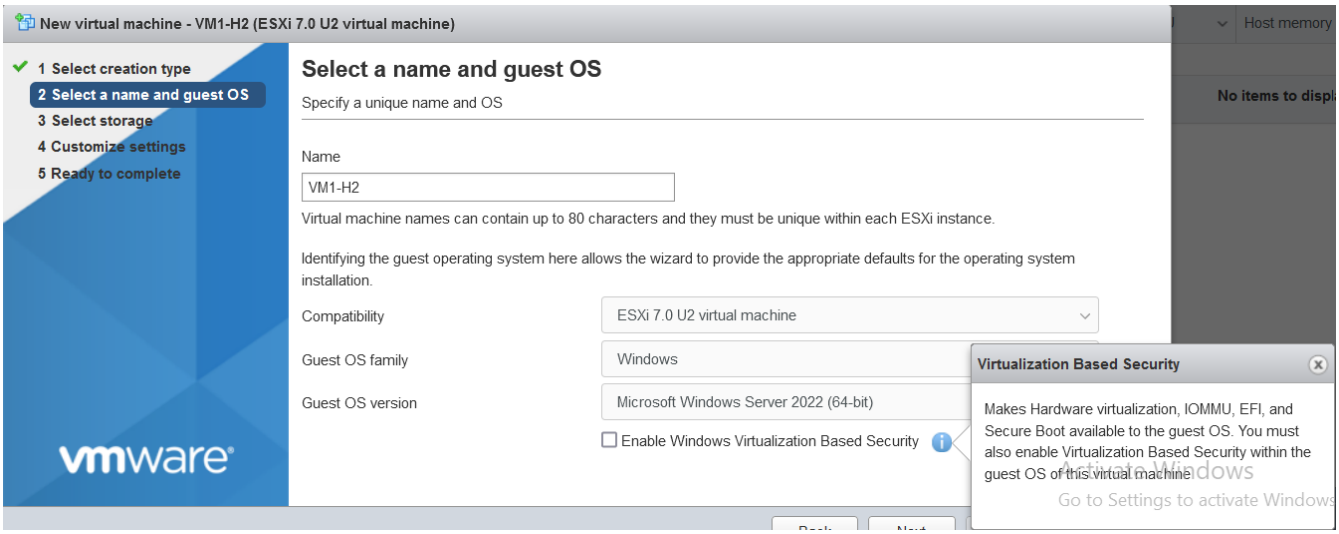
Then upload the iso file inside **OS Source** directory

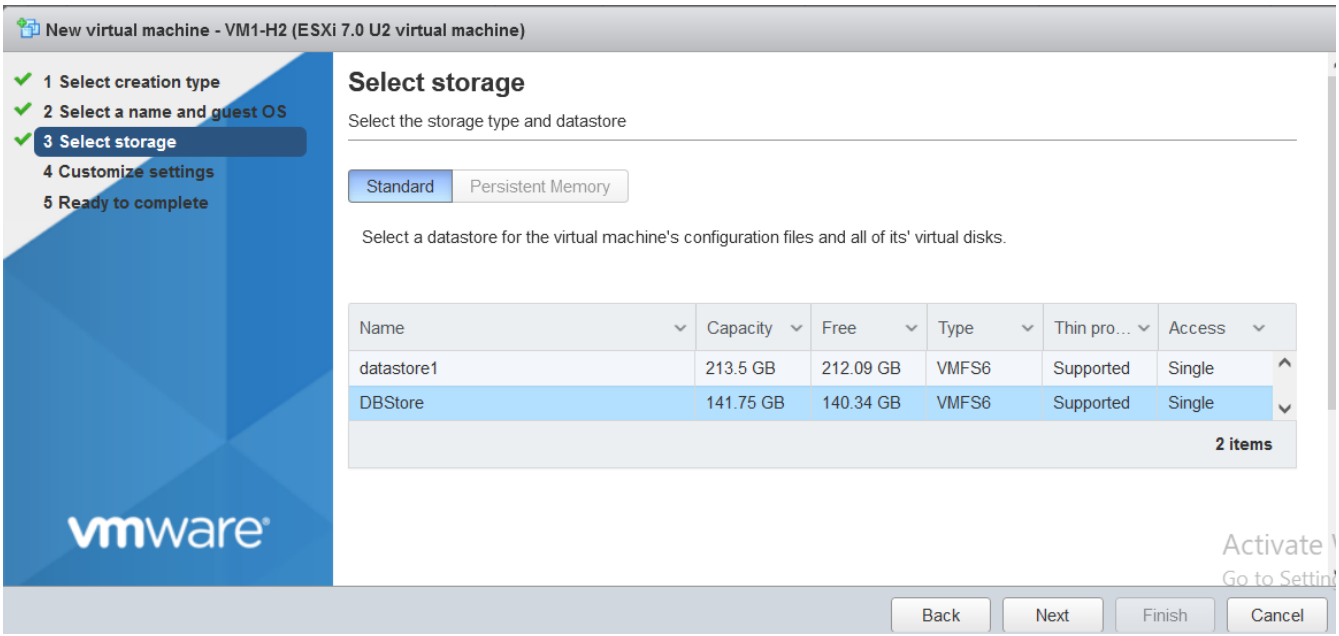




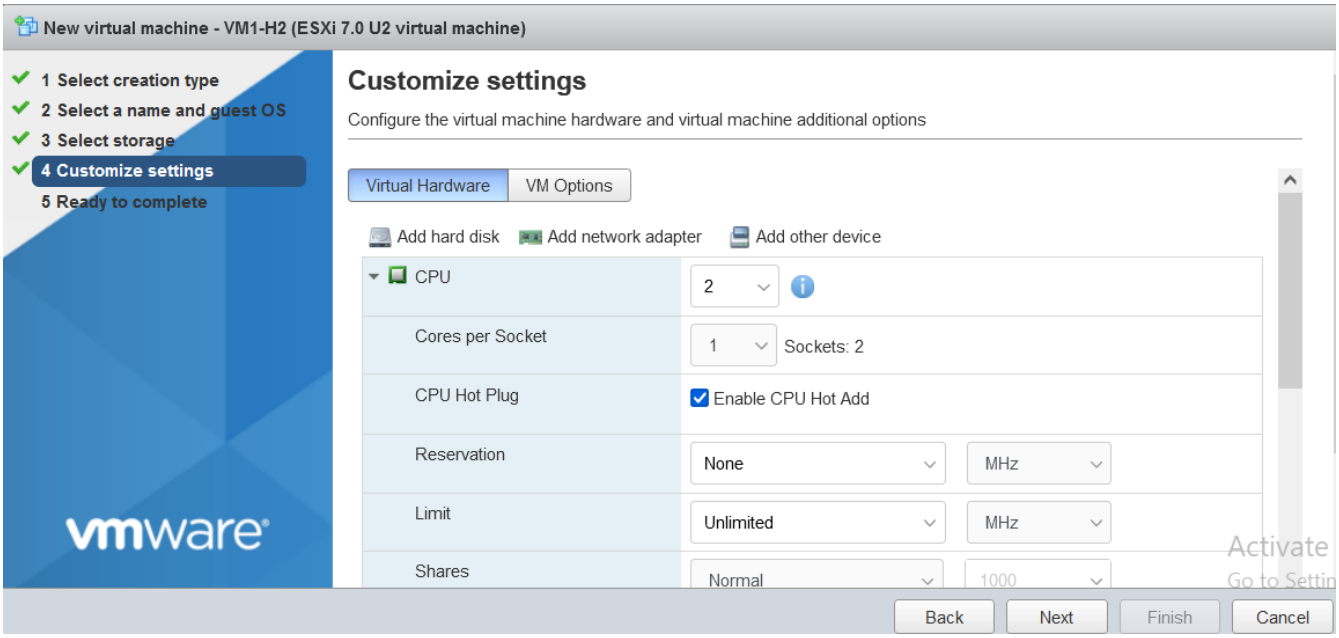
Create and configure VM through ESXi02 host

VM Creation

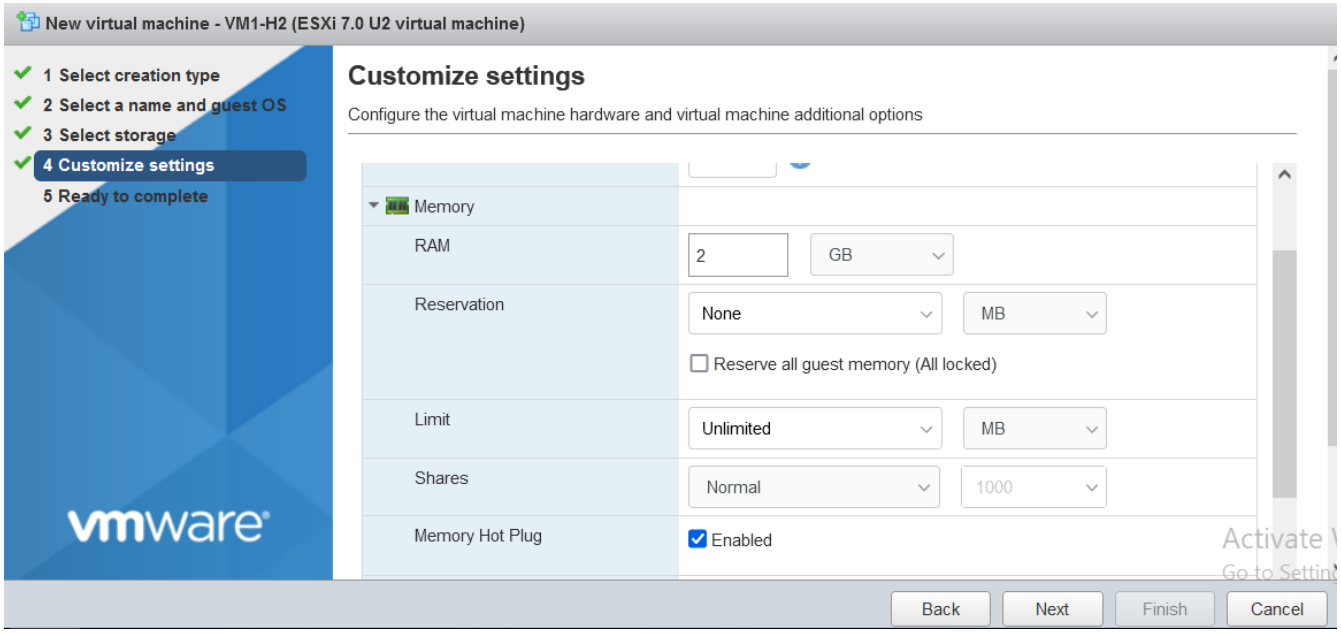




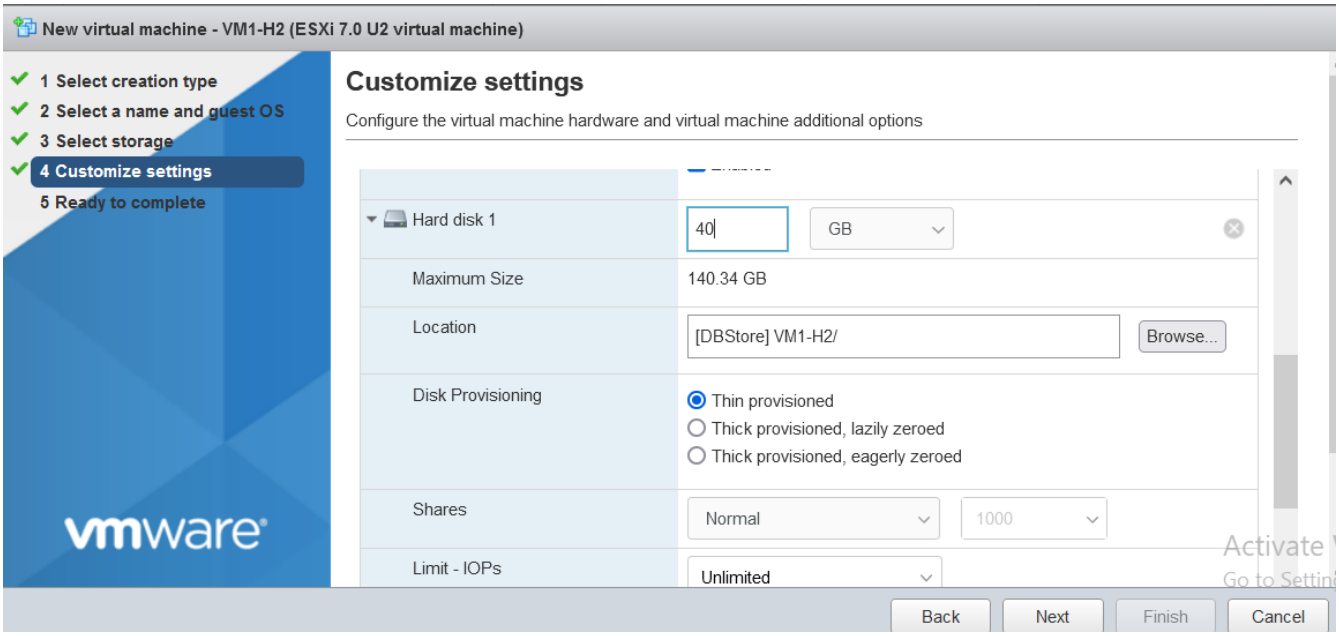
Select CPU Options



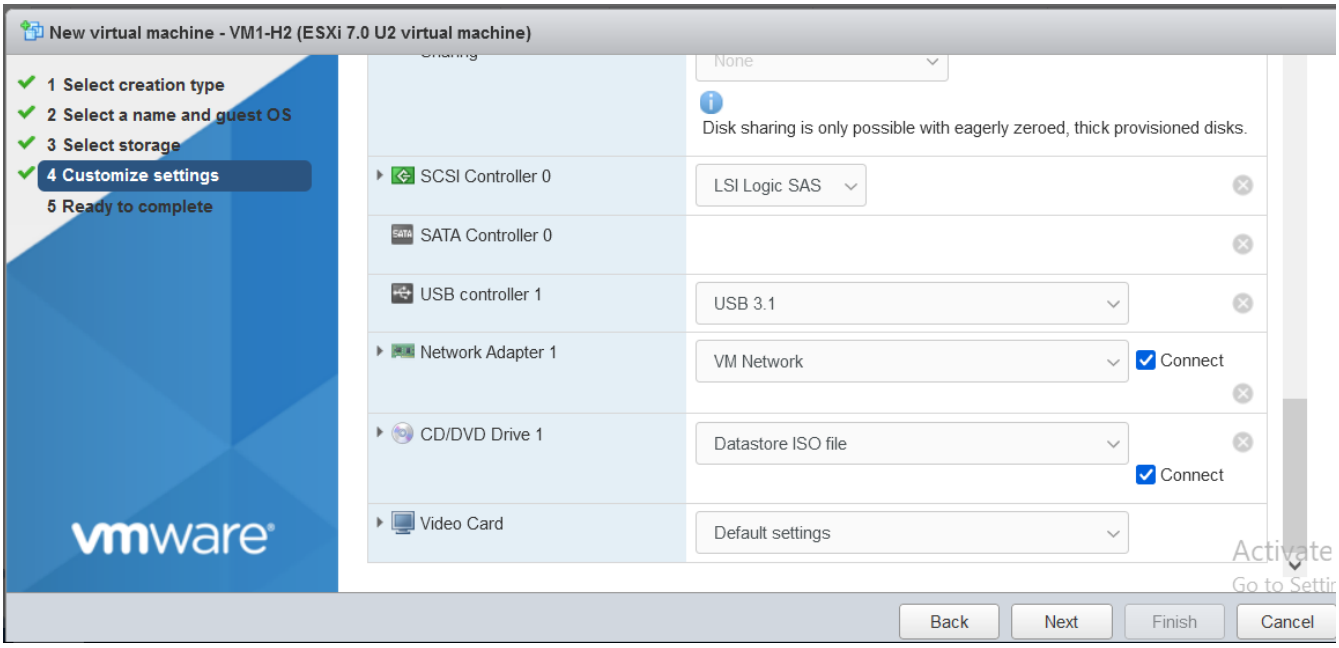
Select memoy options

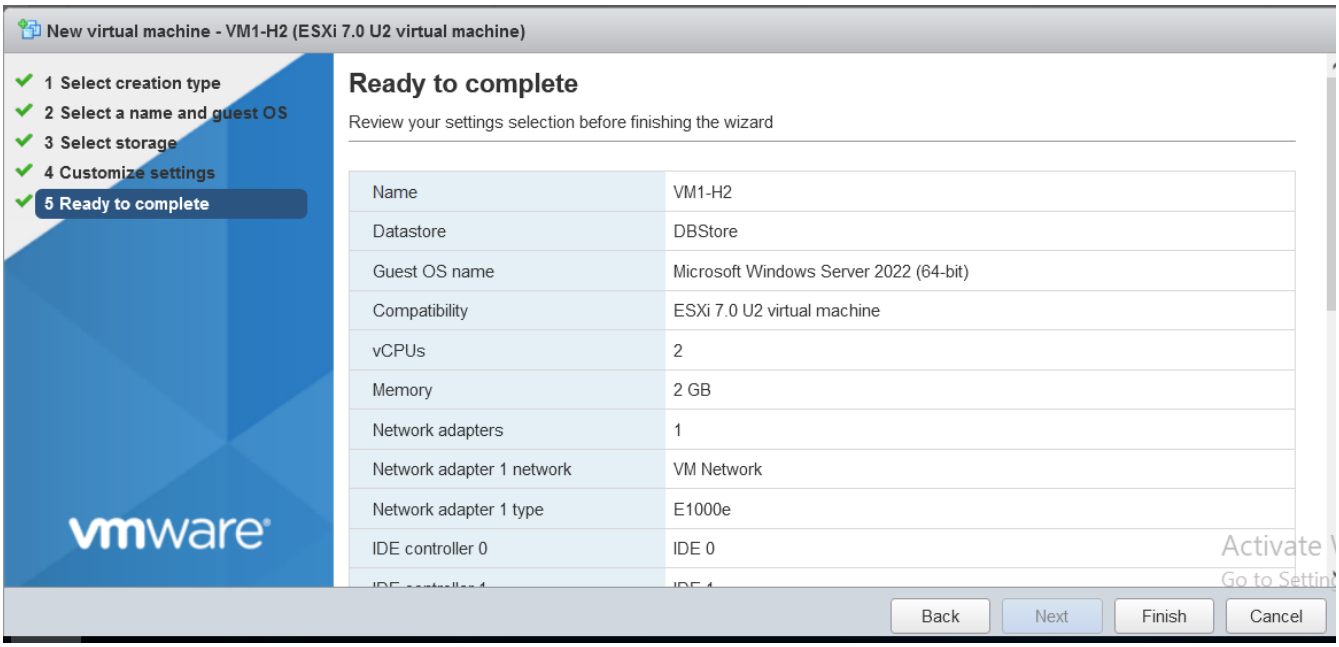


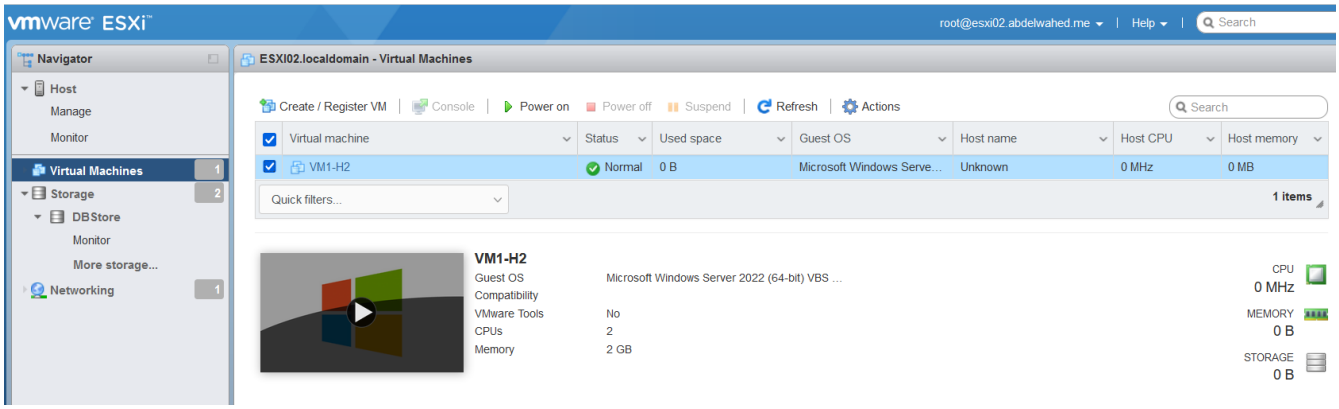
HD options



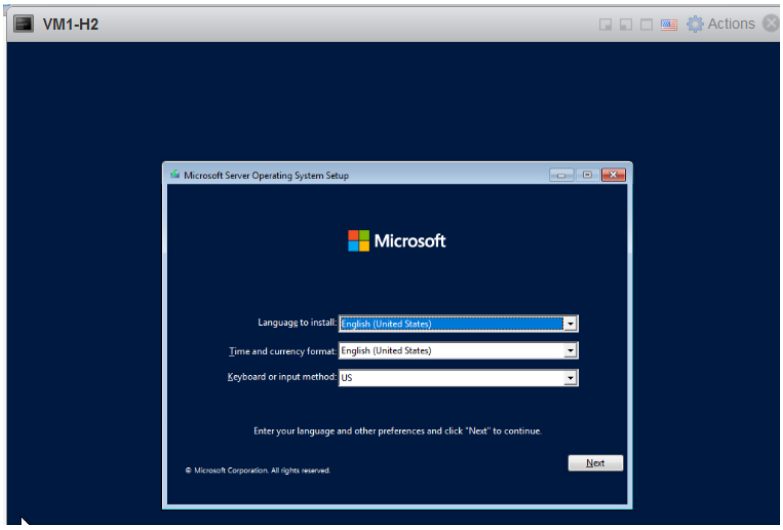
NIC and DVD options (select iso file from datastore)



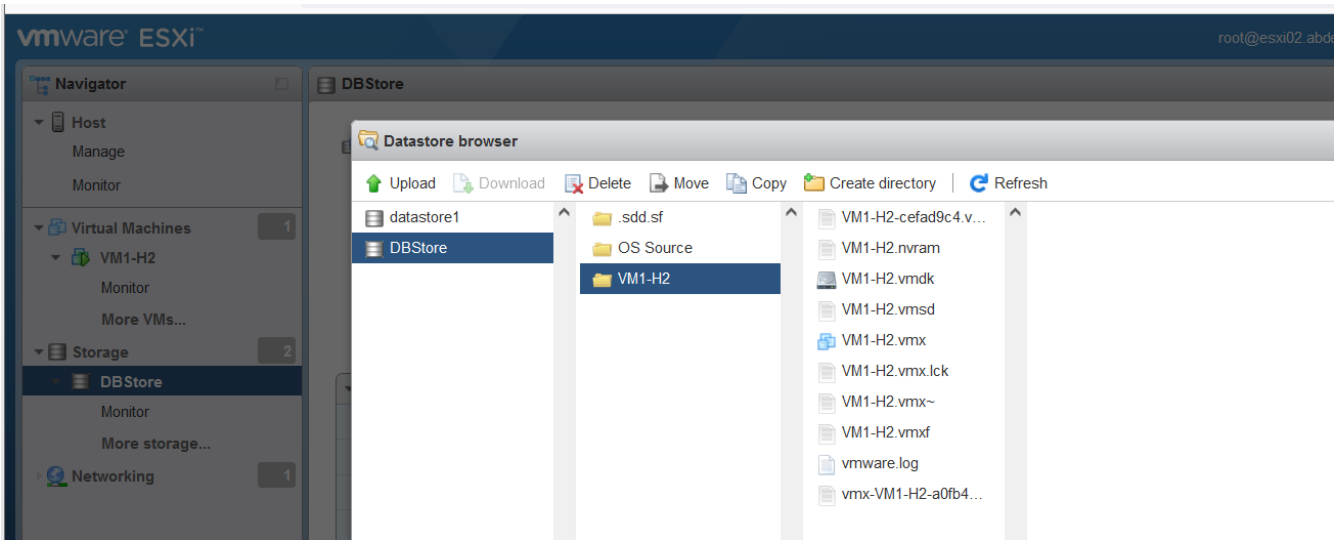




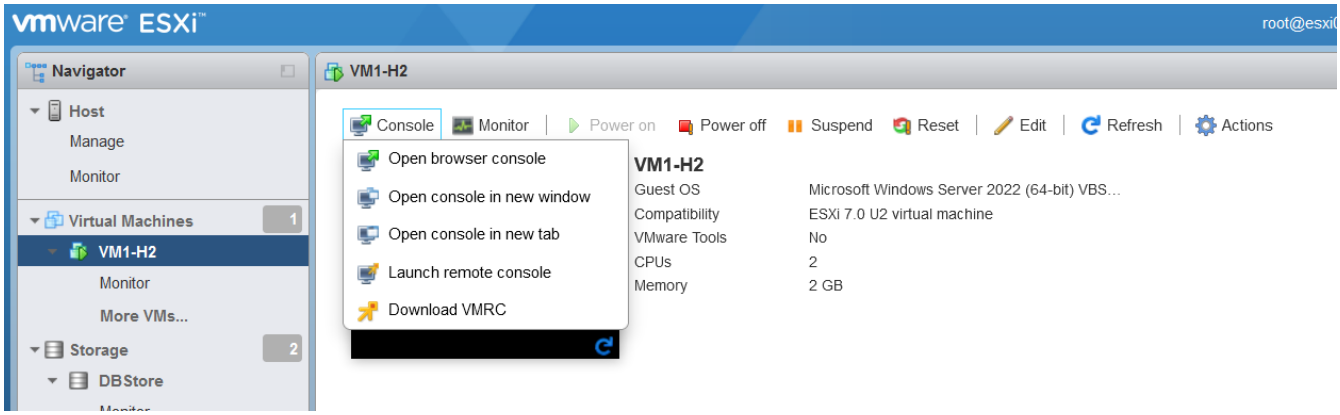
installation starts

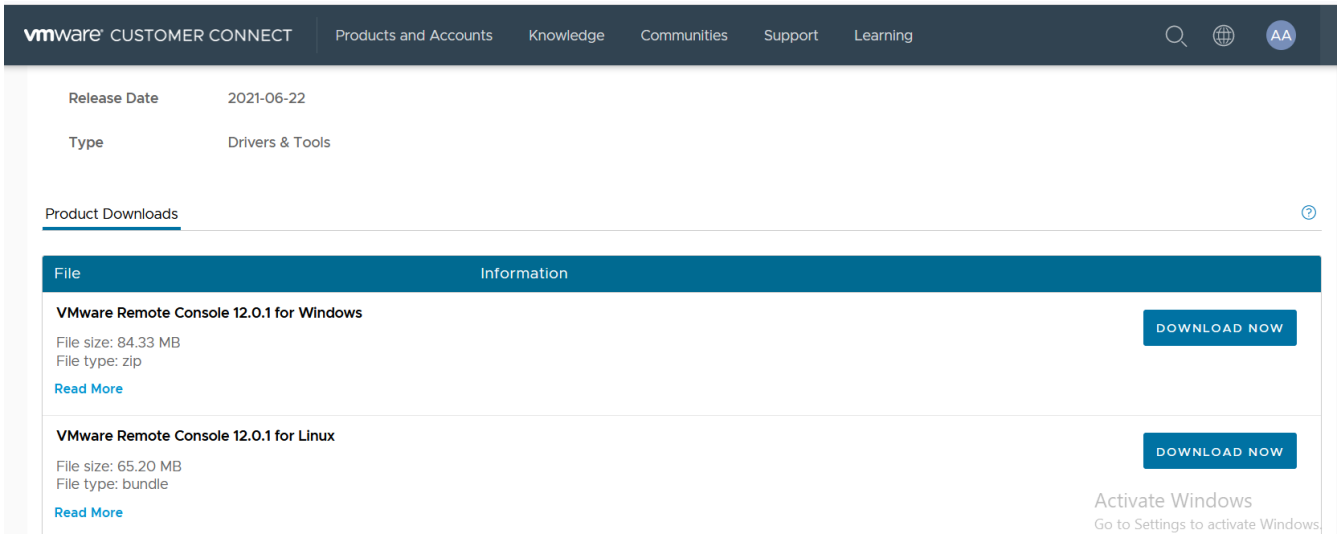


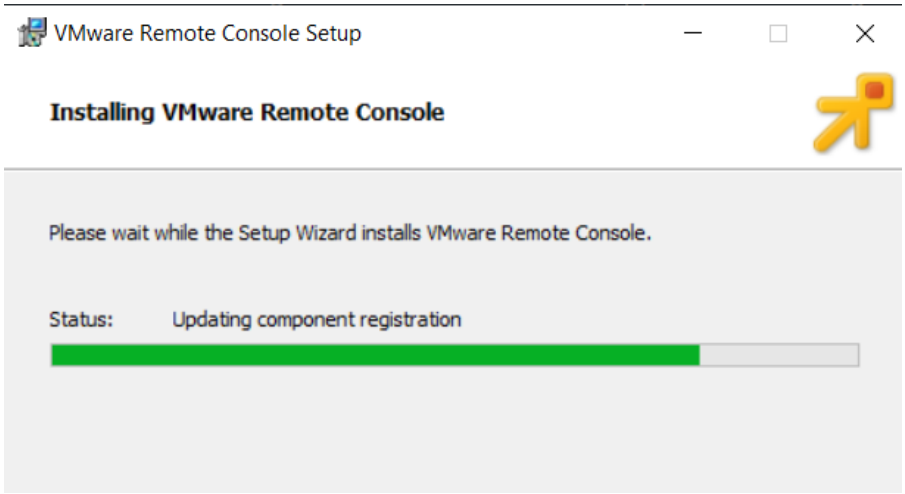
VM files saved inside selected datastore

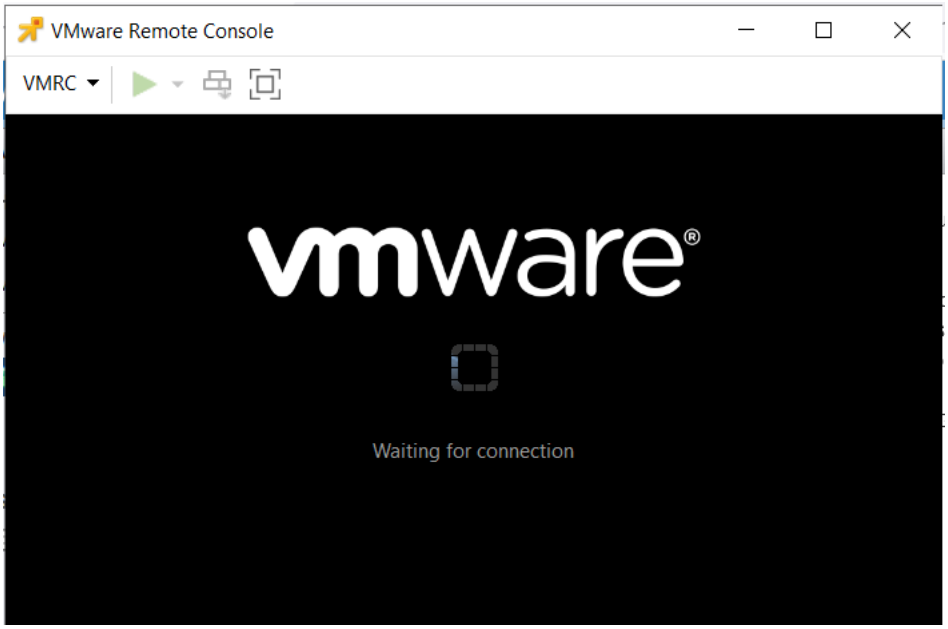


Download and install VMRC

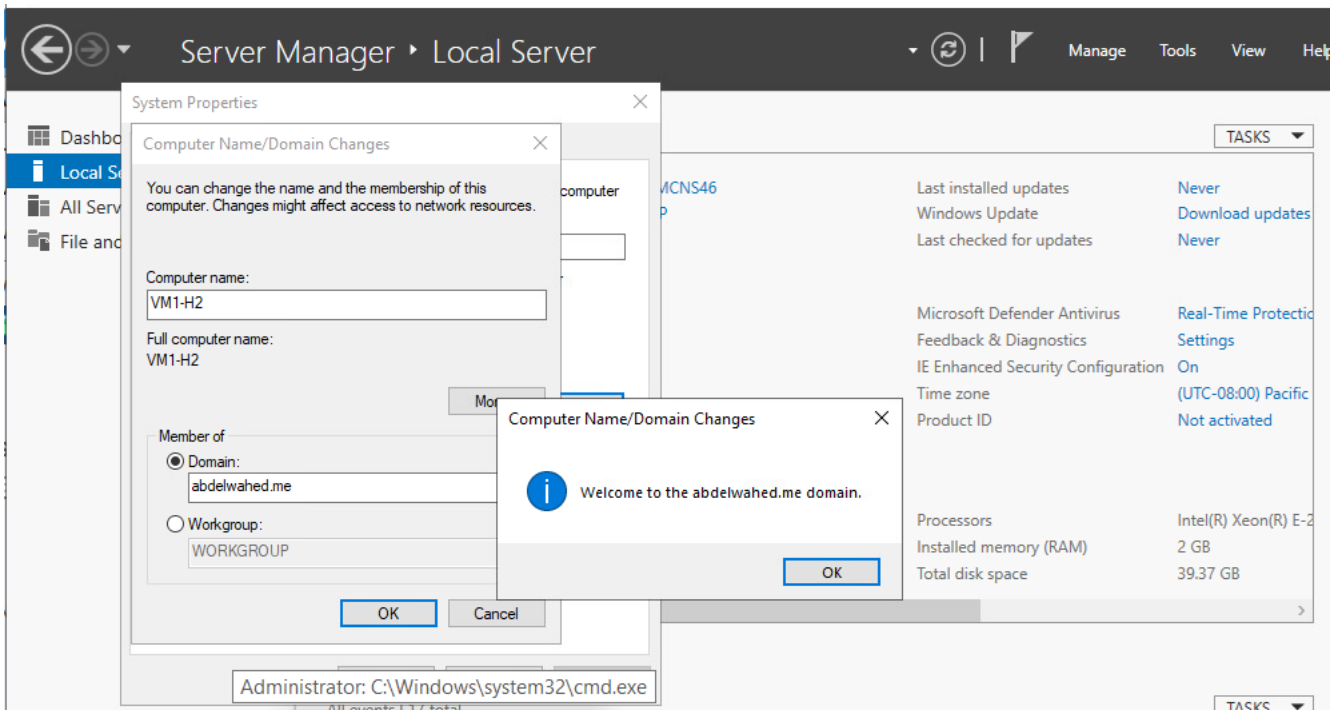




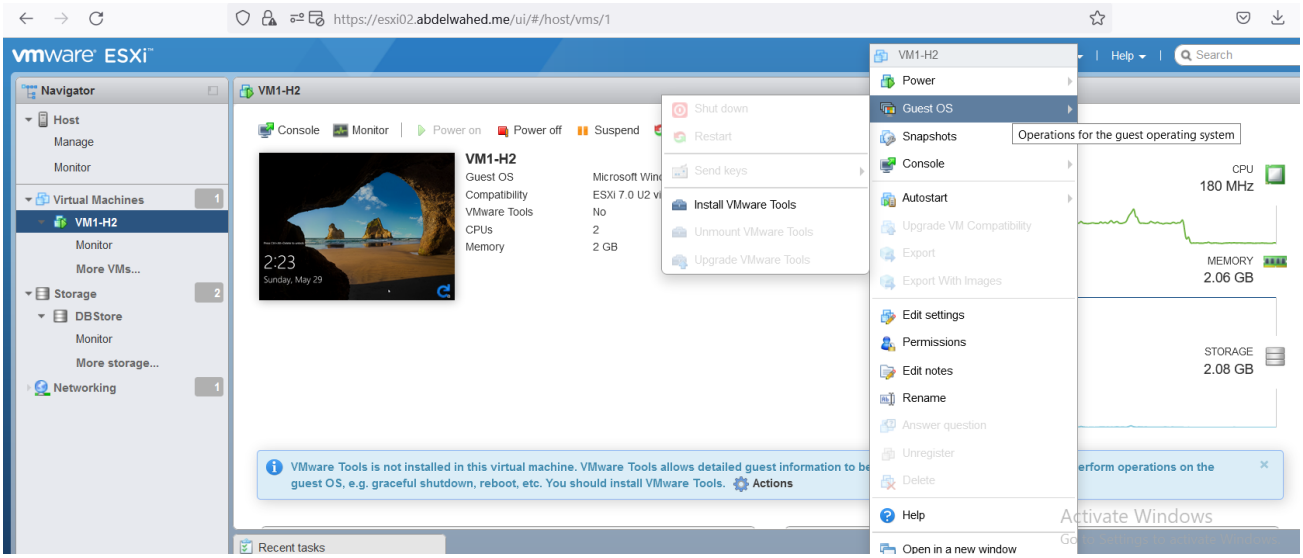




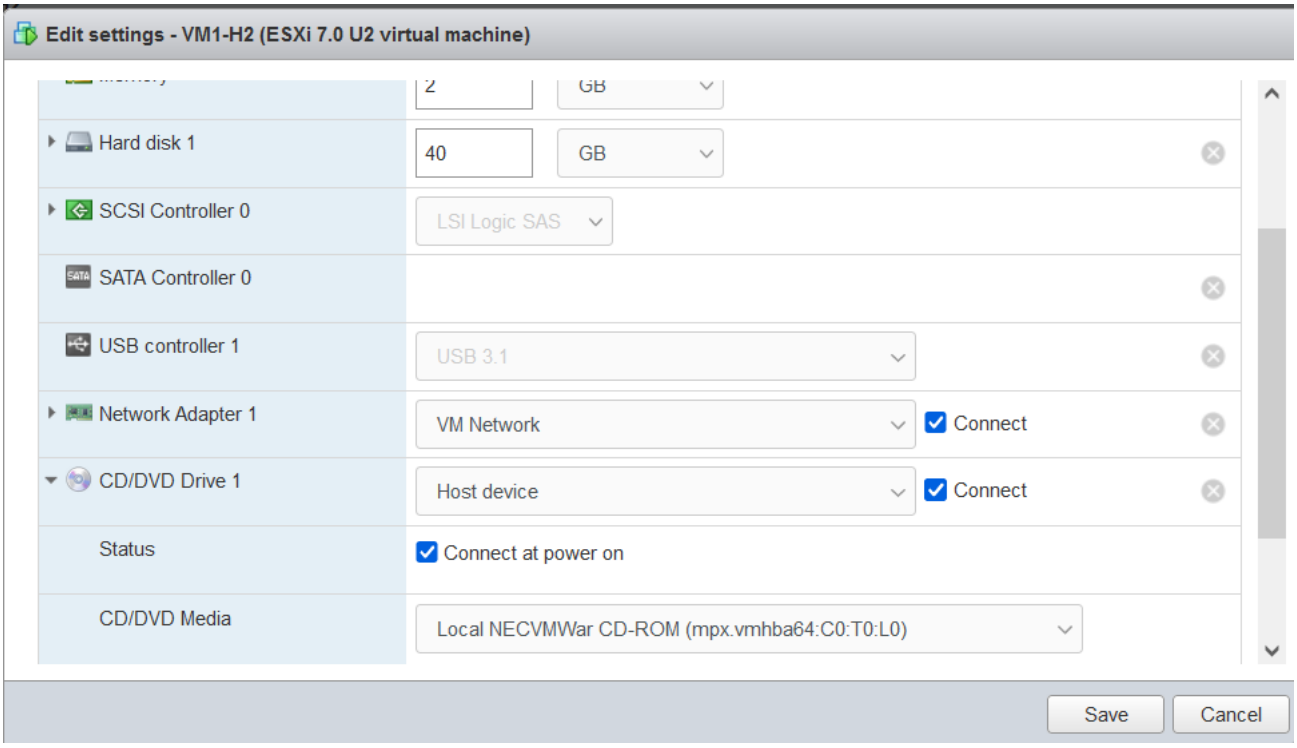
You can join that server to domain

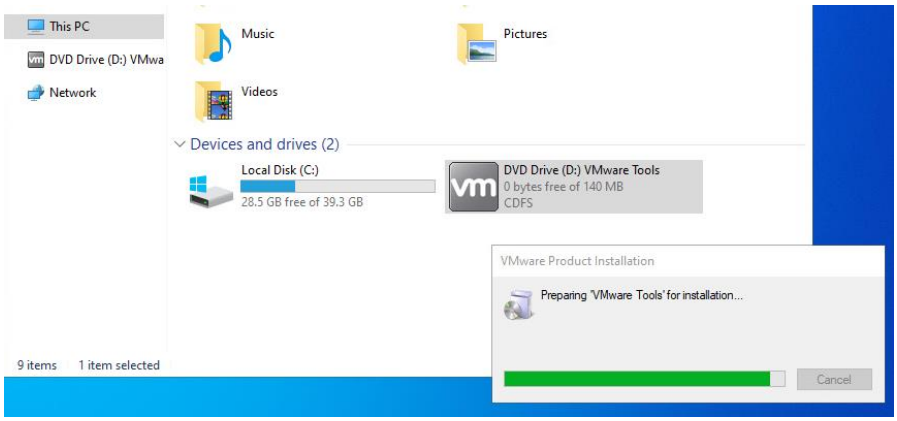


Install VM tools

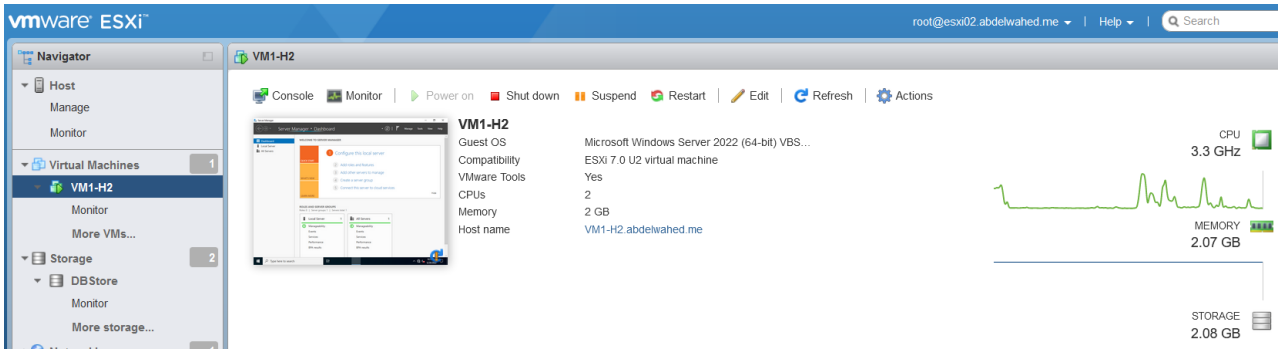


If VMtools not appears at this pc area. Edit the CD/DVD VM settings as shown below

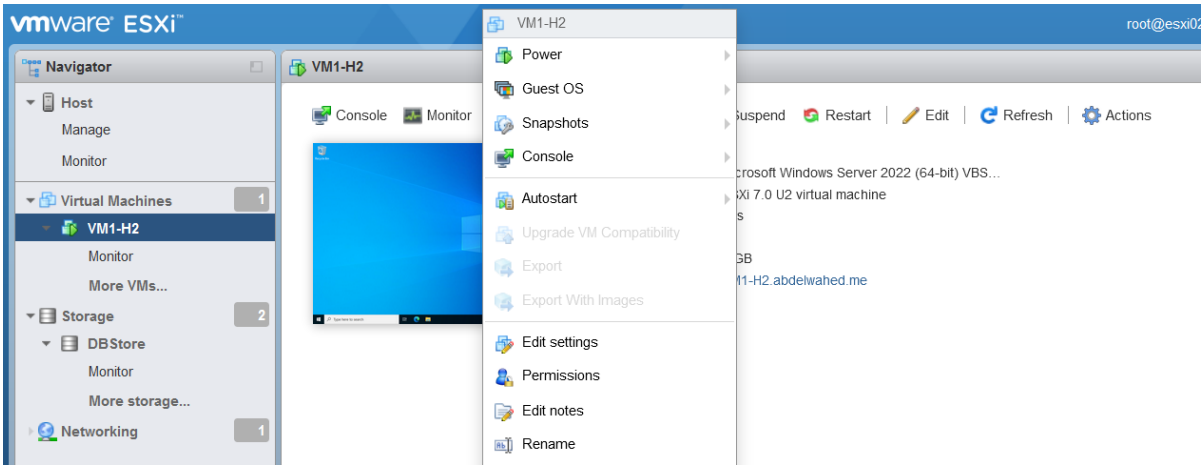




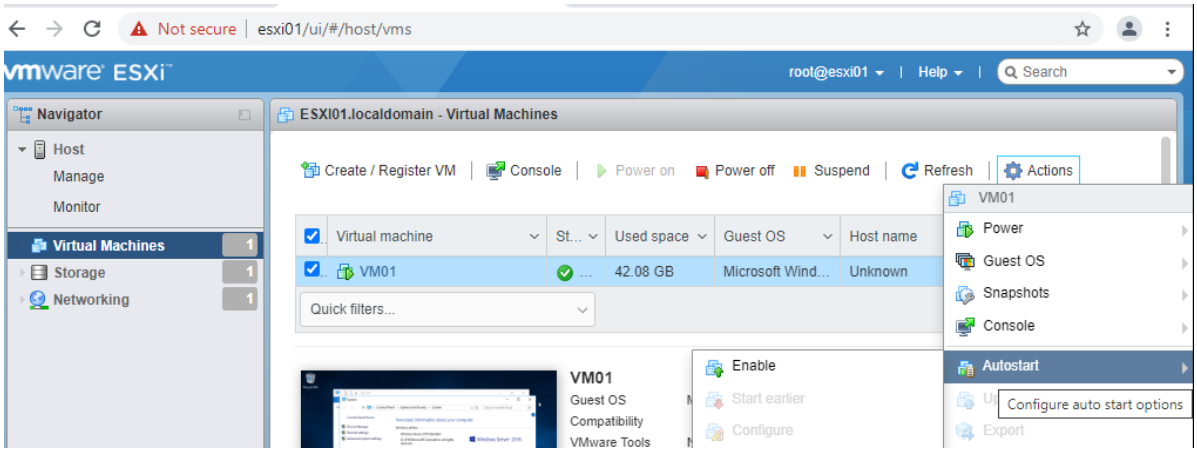
Now VMtools looks installed



Edit VM settings



From ESXI01 server you can configure some setting like autostart not from vCenter

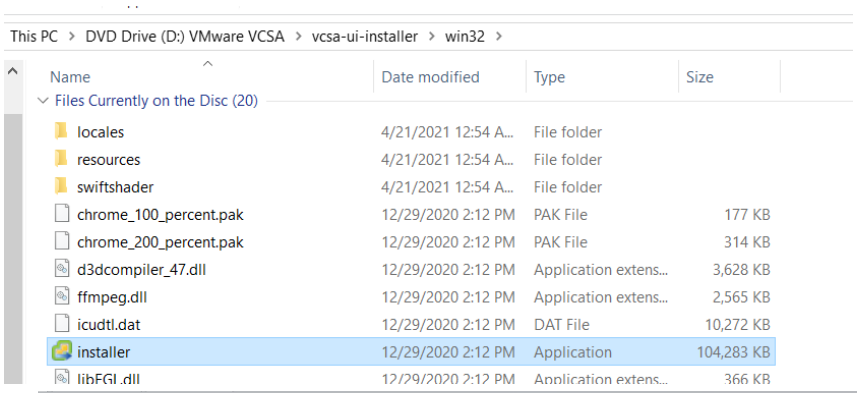


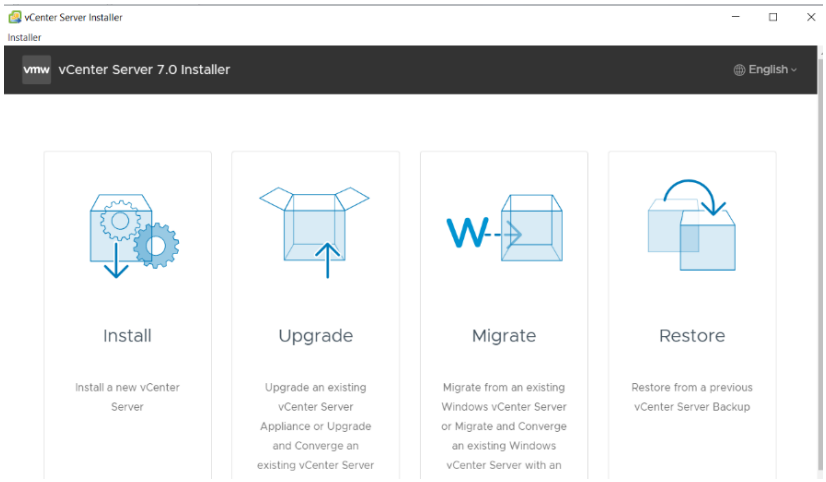
As shown up, managing VMs through ESXI only has limited options so we move on Vcenter to get more managing options like migrate and clone HA options.

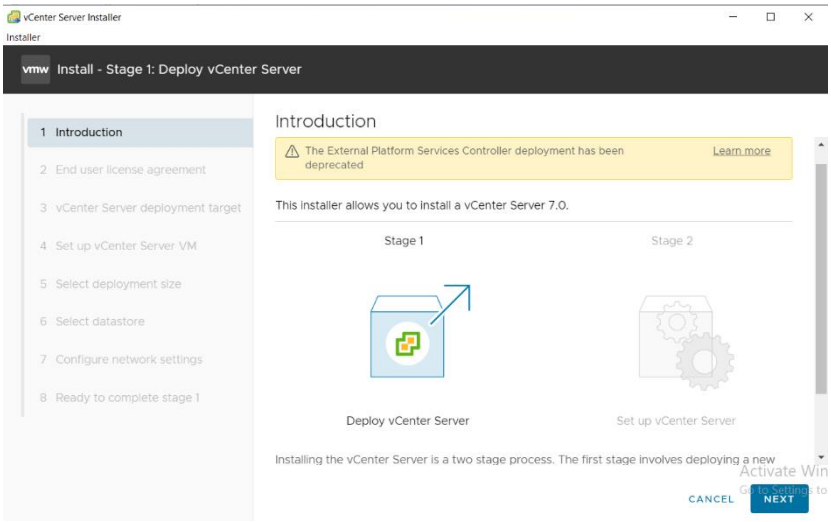
Deploy and configure vCenter

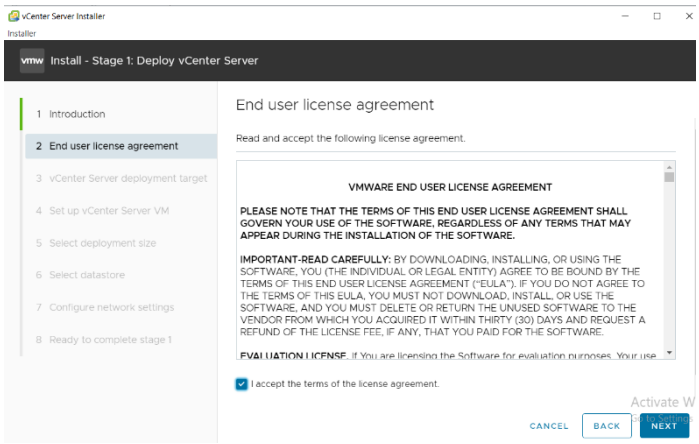
vCenter Deploy

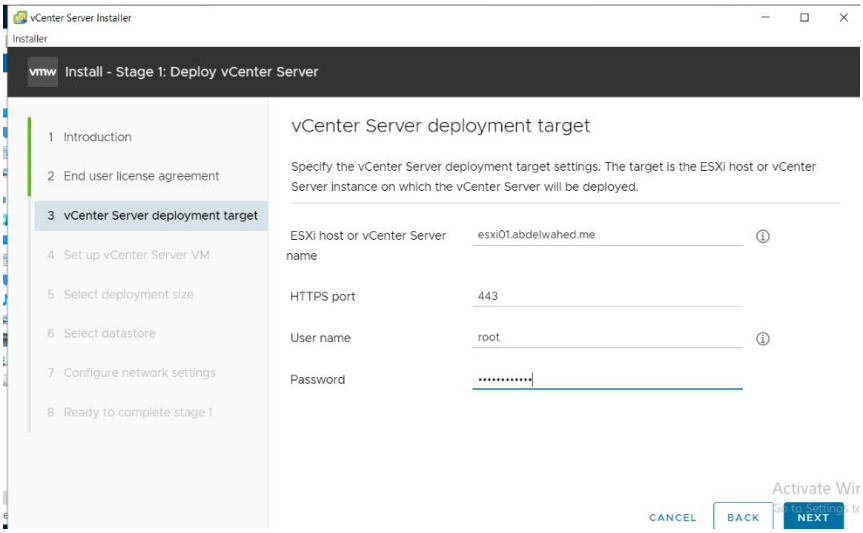
Insert VCA iso file in DC and run the installer

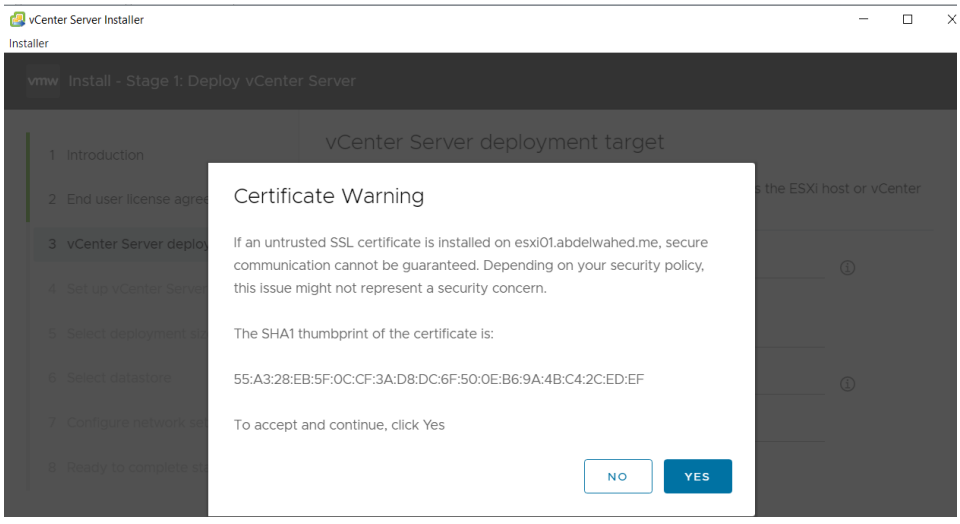


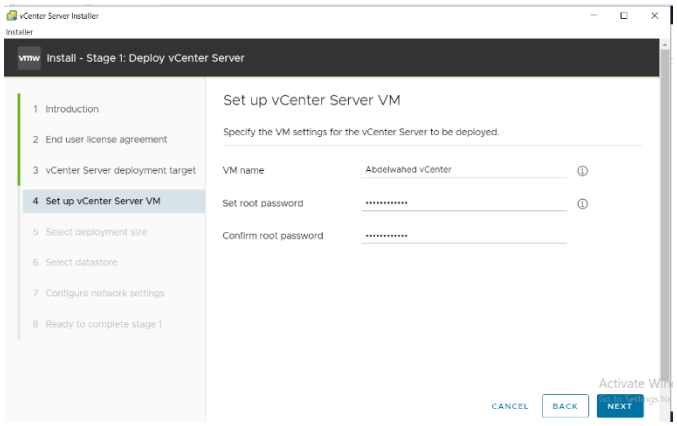


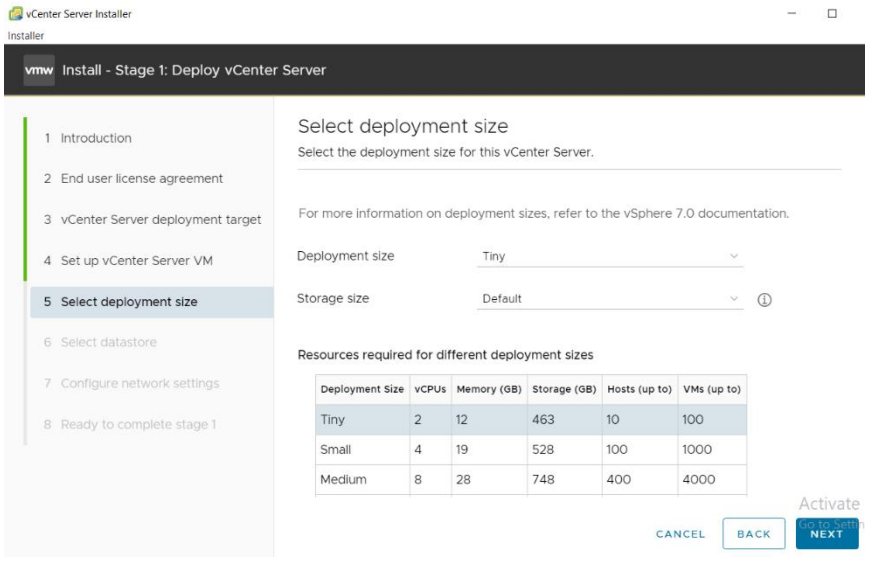


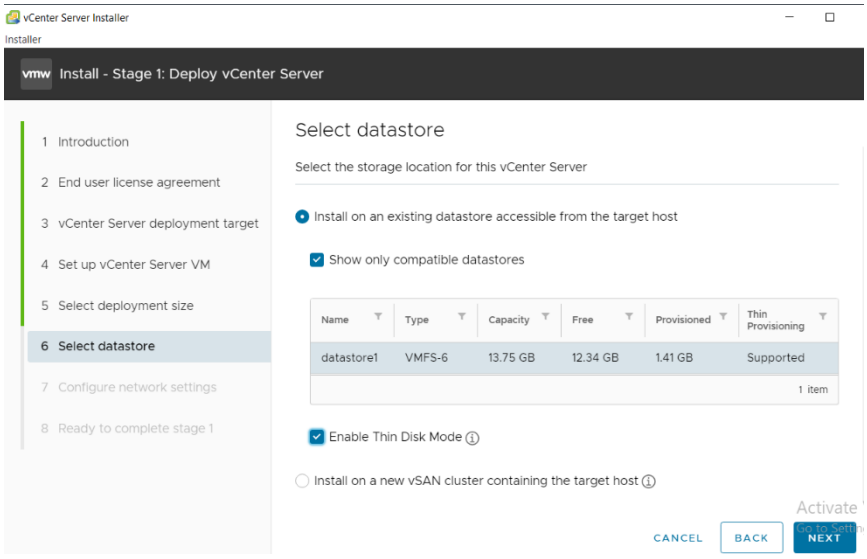

vCenter Server Installer
Installer
Install - Stage 1: Deploy vCenter Server
1 Introduction
2 End user license agreement
3 vCenter Server deployment target
4 Set up vCenter Server VM
5 Select deployment size
6 Select datastore
7 Configure network settings
8 Ready to complete stage 1
End user license agreement
Read and accept the following license agreement.
VMWARE END USER LICENSE AGREEMENT
PLEASE NOTE THAT THE TERMS OF THIS END USER LICENSE AGREEMENT SHALL GOVERN YOUR USE OF THE SOFTWARE, REGARDLESS OF ANY TERMS THAT MAY APPEAR DURING THE INSTALLATION OF THE SOFTWARE.
IMPORTANT-READ CAREFULLY: BY DOWNLOADING, INSTALLING, OR USING THE SOFTWARE, YOU (THE INDIVIDUAL OR LEGAL ENTITY) AGREE TO BE BOUND BY THE TERMS OF THIS END USER LICENSE AGREEMENT ("EULA"). IF YOU DO NOT AGREE TO THE TERMS OF THIS EULA, YOU MUST NOT DOWNLOAD, INSTALL, OR USE THE SOFTWARE, AND YOU MUST DELETE OR RETURN THE UNUSED SOFTWARE TO THE VENDOR FROM WHICH YOU ACQUIRED IT WITHIN THIRTY (30) DAYS AND REQUEST A REFUND OF THE LICENSE FEE, IF ANY, THAT YOU PAID FOR THE SOFTWARE.
I accept the terms of the license agreement.
CANCEL
BACK
NEXT


vCenter Server Installer
Installer
Install - Stage 1: Deploy vCenter Server
1 Introduction
2 End user license agreement
3 vCenter Server deployment target
4 Set up vCenter Server VM
5 Select deployment size
6 Select datastore
7 Configure network settings
8 Ready to complete stage 1
vCenter Server deployment target
Specify the vCenter Server deployment target settings. The target is the ESXi host or vCenter Server instance on which the vCenter Server will be deployed.
ESXi host or vCenter Server name
esxi01.abdelwahed.me
HTTPS port
443
User name
root
Password
CANCEL
BACK
NEXT

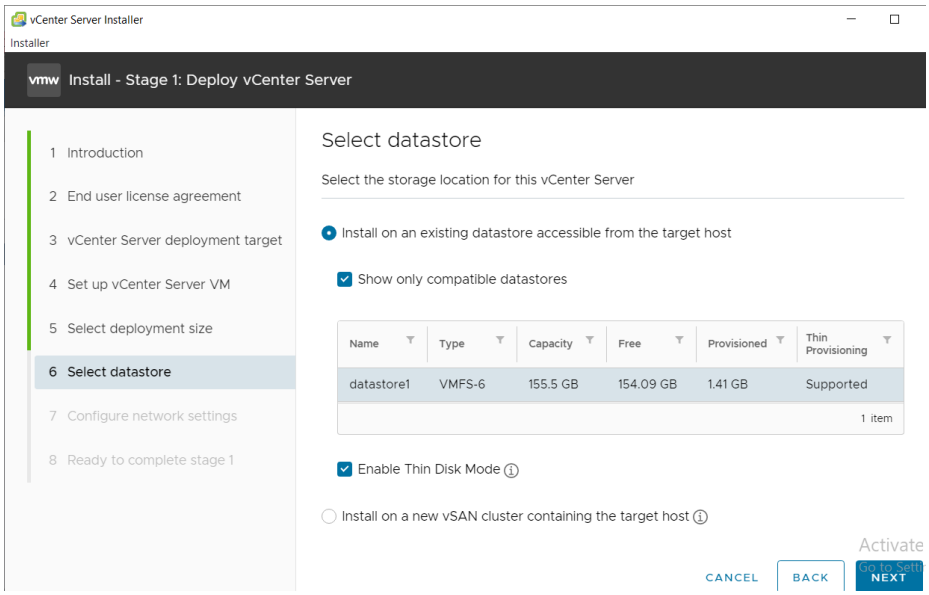

vCenter Server Installer
Installer
Install - Stage 1: Deploy vCenter Server
vCenter Server deployment target
Certificate Warning
If an untrusted SSL certificate is installed on esxi01.abdelwahed.me, secure communication cannot be guaranteed. Depending on your security policy, this issue might not represent a security concern.
The SHA1 thumbprint of the certificate is:
55:A3:28:EB:5F:0C:CF:3A:D8:DC:6F:50:0E:B6:9A:4B:C4:2C:ED:EF
To accept and continue, click Yes
NO
YES

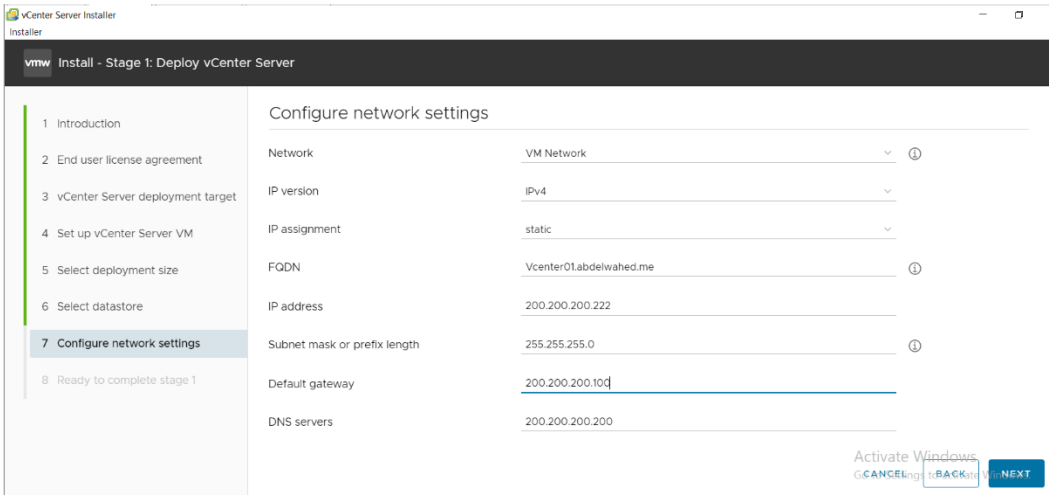

vCenter Server Installer
Installer
Install - Stage 1: Deploy vCenter Server
1 Introduction
2 End user license agreement
3 vCenter Server deployment target
4 Set up vCenter Server VM
5 Select deployment size
6 Select datastore
7 Configure network settings
8 Ready to complete stage 1
Set up vCenter Server VM
Specify the VM settings for the vCenter Server to be deployed.
VM name
Abdelwahed vCenter
Set root password
Confirm root password
CANCEL
BACK
NEXT

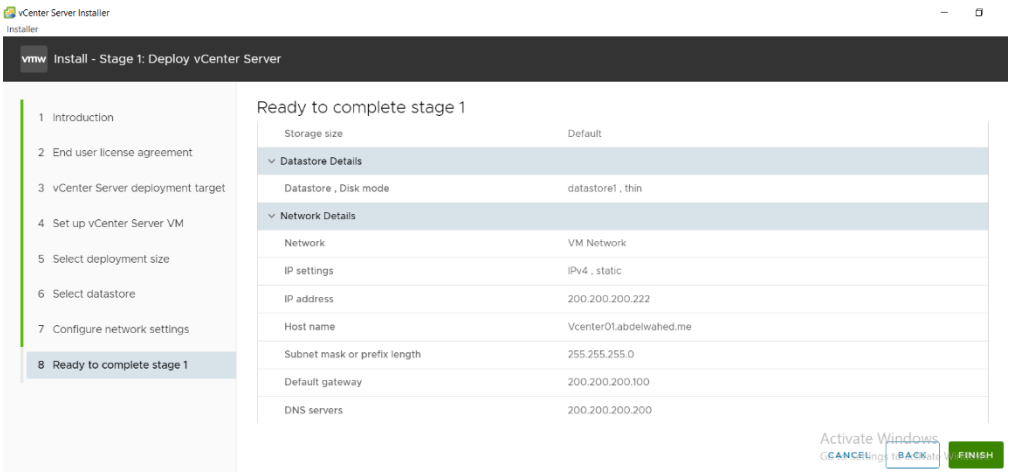

vCenter Server Installer
Installer
Install - Stage 1: Deploy vCenter Server
1 Introduction
2 End user license agreement
3 vCenter Server deployment target
4 Set up vCenter Server VM
5 Select deployment size
6 Select datastore
7 Configure network settings
8 Ready to complete stage 1
Select deployment size
Select the deployment size for this vCenter Server.
For more information on deployment sizes, refer to the vSphere 7.0 documentation.
Deployment size
Tiny
Storage size
Default
Resources required for different deployment sizes
Deployment Size | vCPUs | Memory (GB) | Storage (GB) | Hosts (up to) | VMs (up to)
Tiny | 2 | 12 | 463 | 10 | 100
Small | 4 | 19 | 528 | 100 | 1000
Medium | 8 | 28 | 748 | 400 | 4000
CANCEL
BACK
NEXT

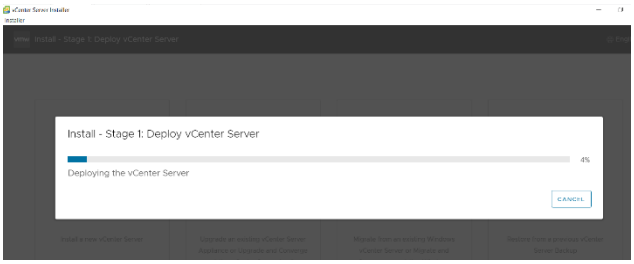

vCenter Server Installer
Installer
Install - Stage 1: Deploy vCenter Server
1 Introduction
2 End user license agreement
3 vCenter Server deployment target
4 Set up vCenter Server VM
5 Select deployment size
6 Select datastore
7 Configure network settings
8 Ready to complete stage 1
Select datastore
Select the storage location for this vCenter Server
Install on an existing datastore accessible from the target host
Show only compatible datastores
Name | Type | Capacity | Free | Provisioned | Thin Provisioning
datastore1 | VMFS-6 | 13.75 GB | 12.34 GB | 1.41 GB | Supported
1 item
Enable Thin Disk Mode
Install on a new vSAN cluster containing the target host
CANCEL
BACK
NEXT

VMware vSphere Install, Configure, Manage v7 | Quick Guide

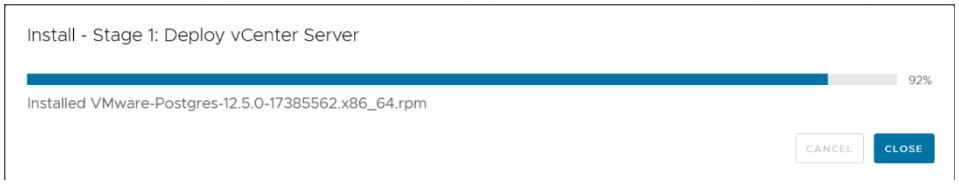


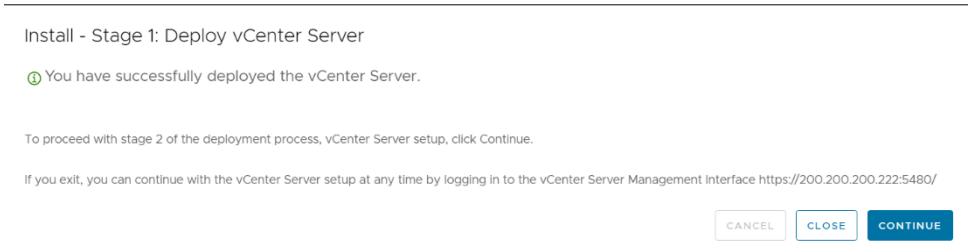


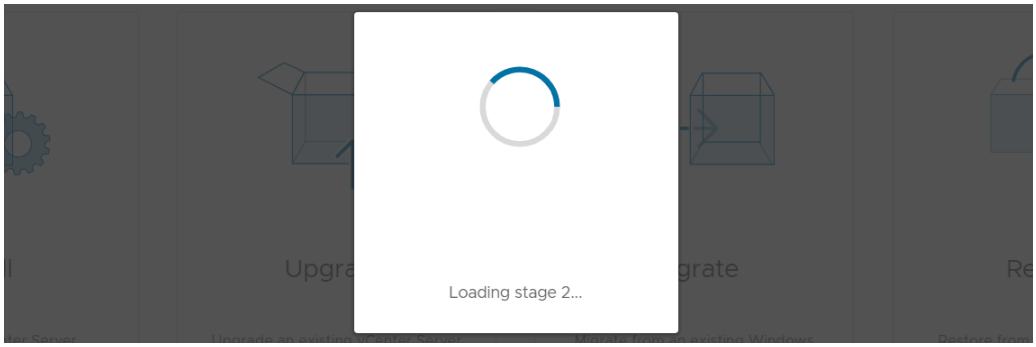


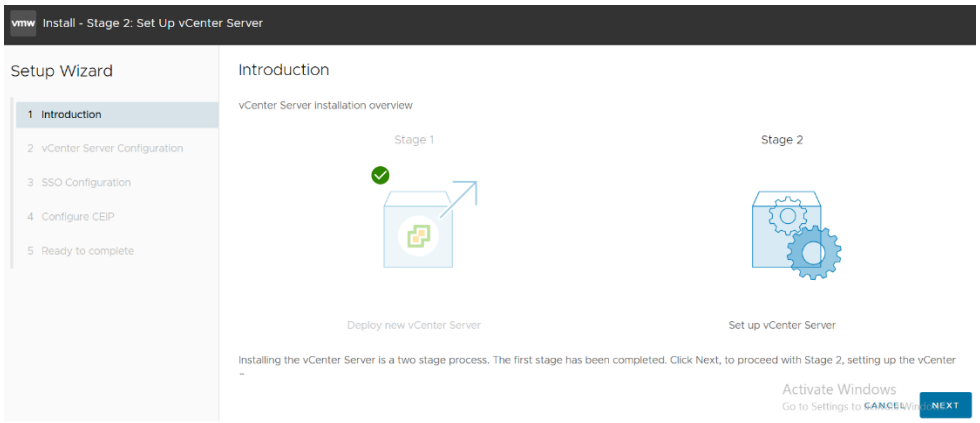

Install - Stage 1: Deploy vCenter Server
4%
Deploying the vCenter Server
CANCEL

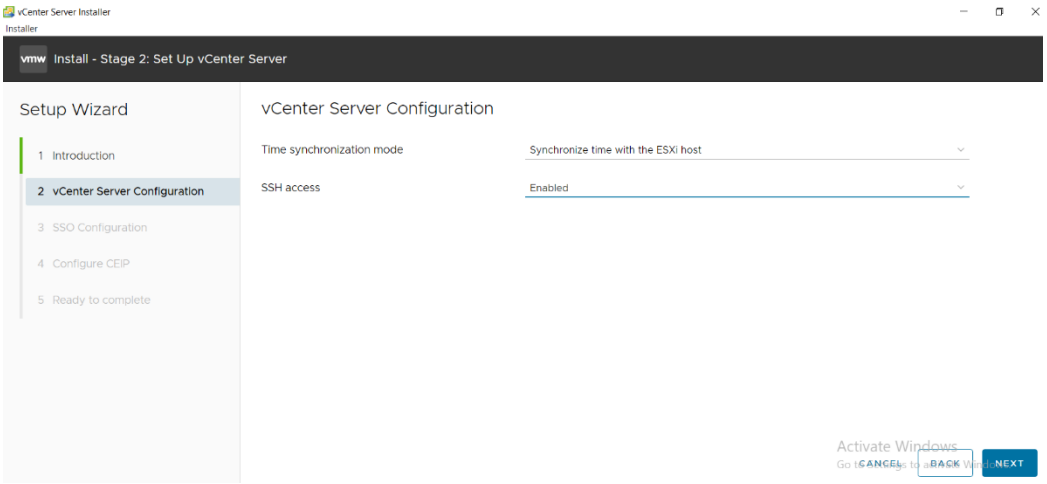
Install - Stage 1: Deploy vCenter Server
91%
Installed vmware-certificate-server-7.0.2.00000-8702003.x86_64.rpm
CANCEL
CLOSE

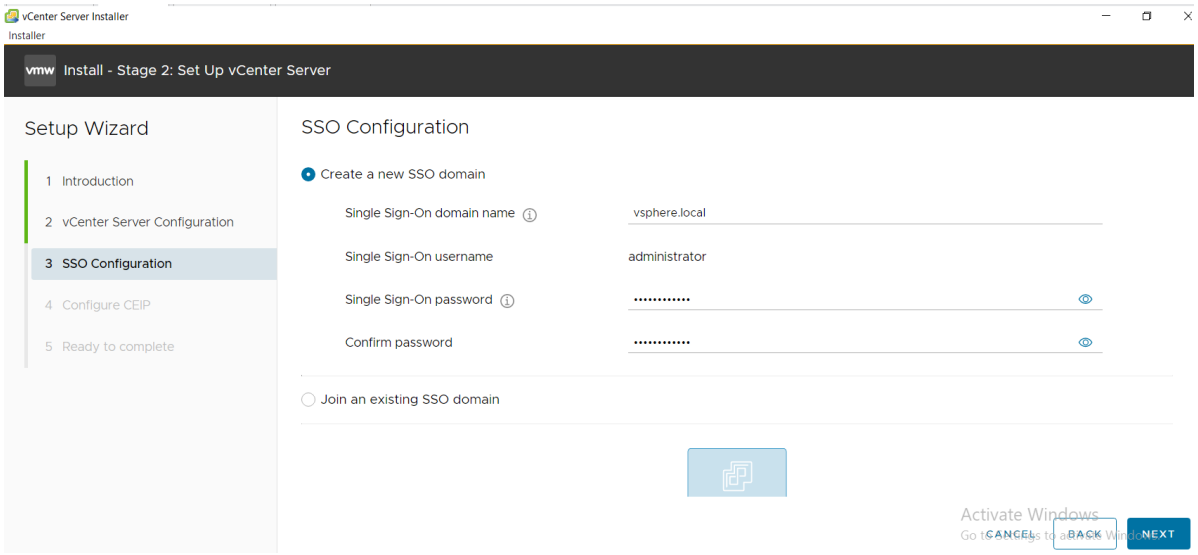

Install - Stage 1: Deploy vCenter Server
92%
Installed VMware-Postgres-12.5.0-17385562.x86_64.rpm
CANCEL
CLOSE

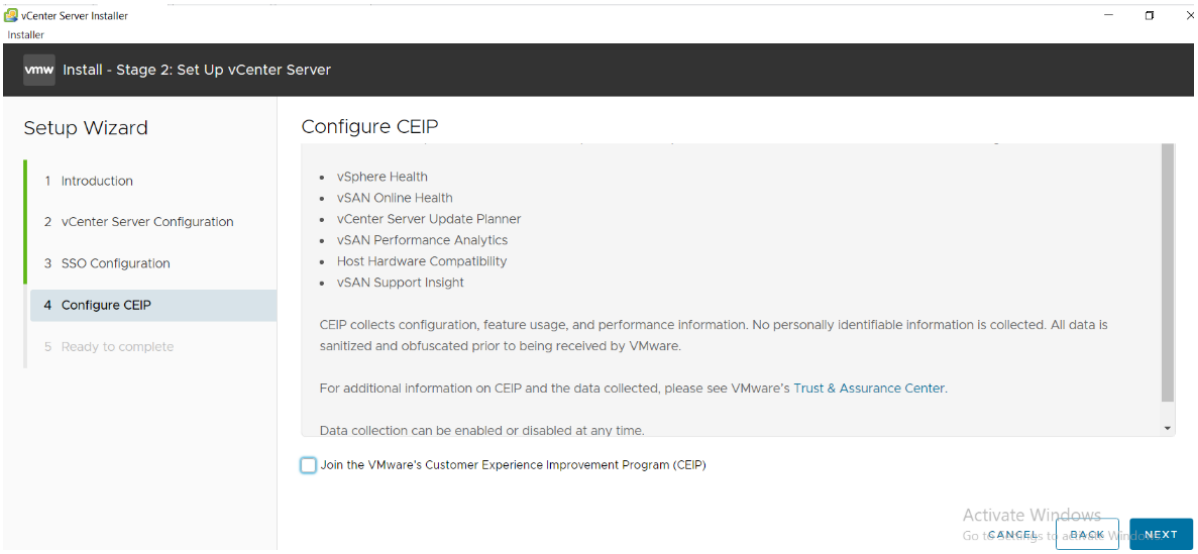

Install - Stage 1: Deploy vCenter Server
You have successfully deployed the vCenter Server.
To proceed with stage 2 of the deployment process, vCenter Server setup, click Continue.
If you exit, you can continue with the vCenter Server setup at any time by logging in to the vCenter Server Management Interface https://200.200.200.222:5480/
CANCEL
CLOSE
CONTINUE

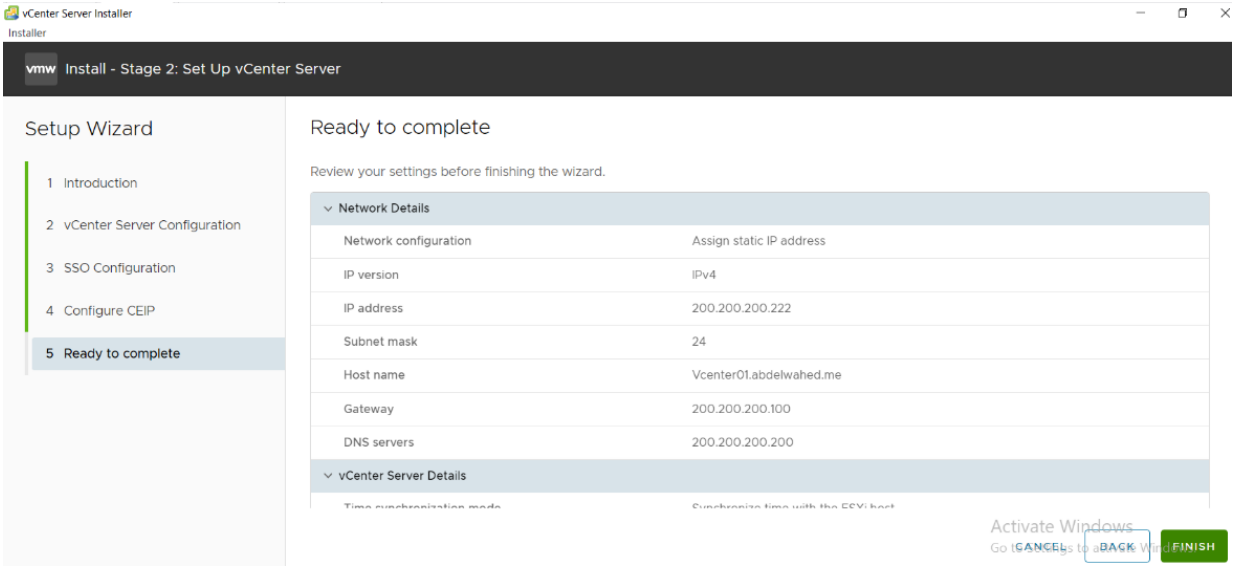

Loading stage 2...

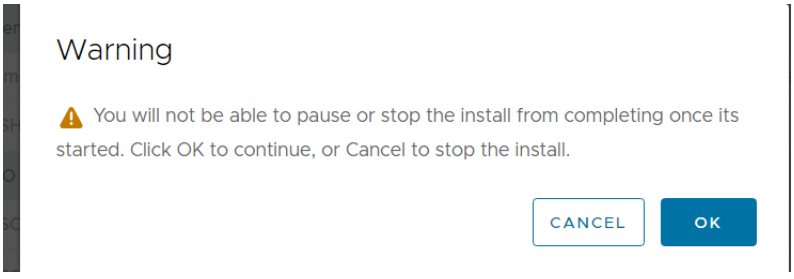

Install - Stage 2: Set Up vCenter Server
Setup Wizard
1 Introduction
2 vCenter Server Configuration
3 SSO Configuration
4 Configure CEIP
5 Ready to complete
Introduction
vCenter Server installation overview
Stage 1
Stage 2
Deploy new vCenter Server
Set up vCenter Server
Installing the vCenter Server is a two stage process. The first stage has been completed. Click Next, to proceed with Stage 2, setting up the vCenter
Activate Windows
CANCEL
NEXT

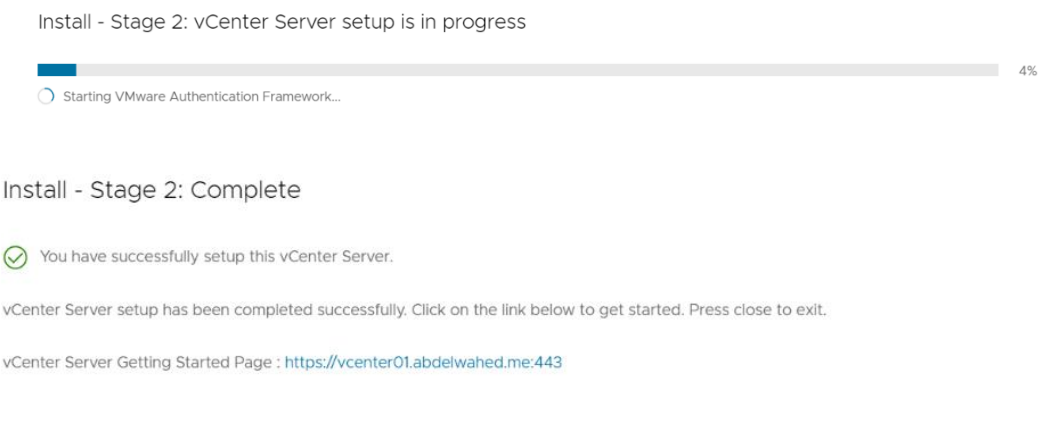

vCenter Server Installer
Installer
Install - Stage 2: Set Up vCenter Server
Setup Wizard
1 Introduction
2 vCenter Server Configuration
3 SSO Configuration
4 Configure CEIP
5 Ready to complete
vCenter Server Configuration
Time synchronization mode
Synchronize time with the ESXi host
SSH access
Enabled
Activate Windows
CANCEL
BACK
NEXT

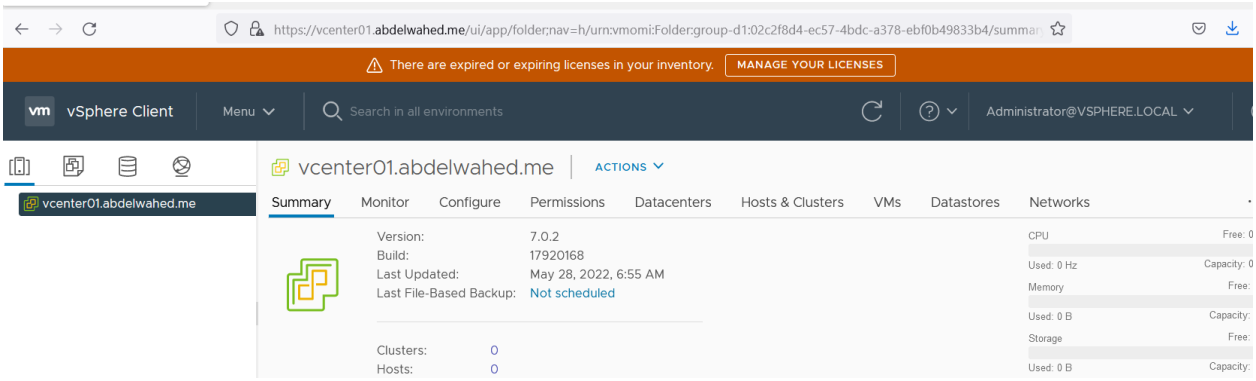

vCenter Server Installer
Installer
Install - Stage 2: Set Up vCenter Server
Setup Wizard
1 Introduction
2 vCenter Server Configuration
3 SSO Configuration
4 Configure CEIP
5 Ready to complete
SSO Configuration
Create a new SSO domain
Single Sign-On domain name
vsphere.local
Single Sign-On username
administrator
Single Sign-On password
Confirm password
Join an existing SSO domain
Activate Windows
CANCEL
BACK
NEXT

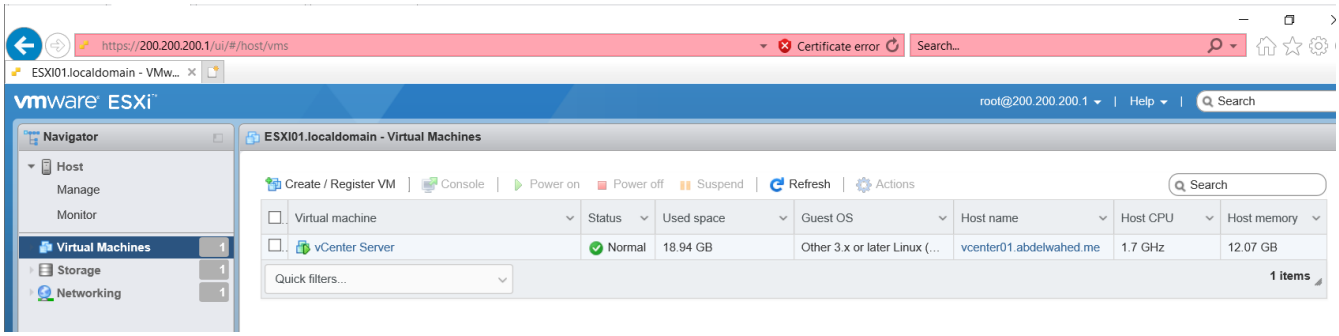

vCenter Server Installer
Installer
Install - Stage 2: Set Up vCenter Server
Setup Wizard
1 Introduction
2 vCenter Server Configuration
3 SSO Configuration
4 Configure CEIP
5 Ready to complete
Configure CEIP
vSphere Health
vSAN Online Health
vCenter Server Update Planner
vSAN Performance Analytics
Host Hardware Compatibility
vSAN Support Insight
CEIP collects configuration, feature usage, and performance information. No personally identifiable information is collected. All data is sanitized and obfuscated prior to being received by VMware.
For additional information on CEIP and the data collected, please see VMware's Trust & Assurance Center.
Data collection can be enabled or disabled at any time.
Join the VMware's Customer Experience Improvement Program (CEIP)
Activate Windows
CANCEL
BACK
NEXT


vCenter Server Installer
Installer
Install - Stage 2: Set Up vCenter Server
Setup Wizard
1 Introduction
2 vCenter Server Configuration
3 SSO Configuration
4 Configure CEIP
5 Ready to complete
Ready to complete
Review your settings before finishing the wizard.
Network Details
Network configuration Assign static IP address
IP version IPv4
IP address 200.200.200.222
Subnet mask 24
Host name Vcenter01.abdelwahed.me
Gateway 200.200.200.100
DNS servers 200.200.200.200
vCenter Server Details
Activate Windows
CANCEL
BACK
FINISH


Warning
You will not be able to pause or stop the install from completing once its started. Click OK to continue, or Cancel to stop the install.
CANCEL
OK



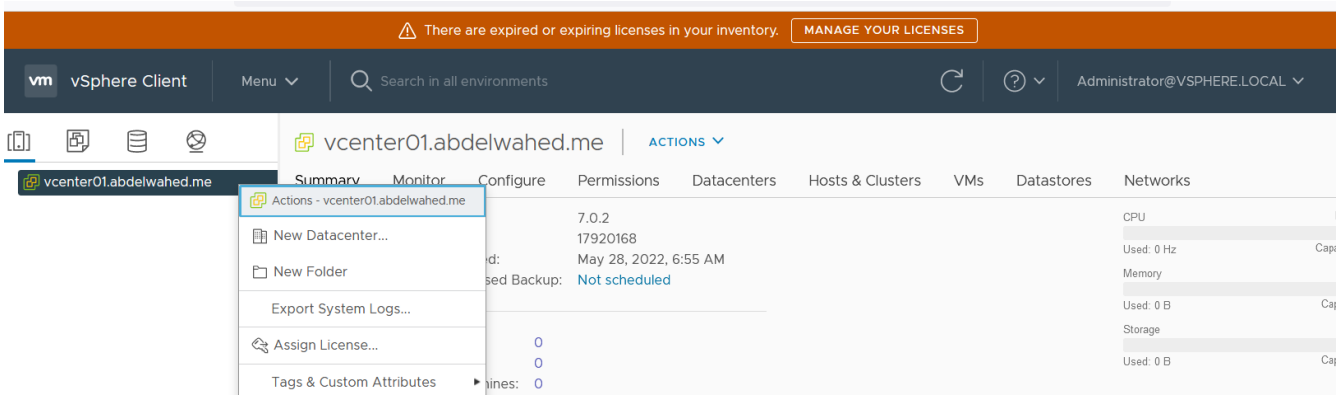


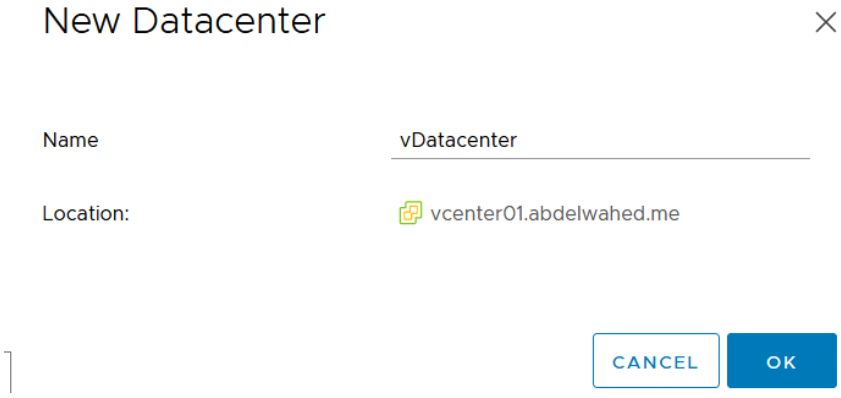


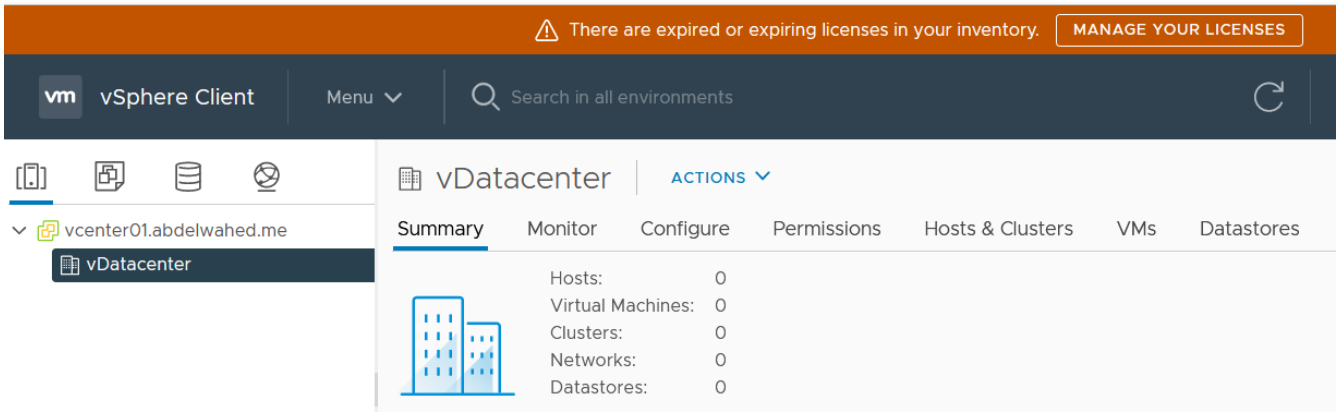
Troubleshooting tips: to start Vcenter installations, first you must add vCenter A and PTR record in DNS.

Add ESXi Servers to vCenter

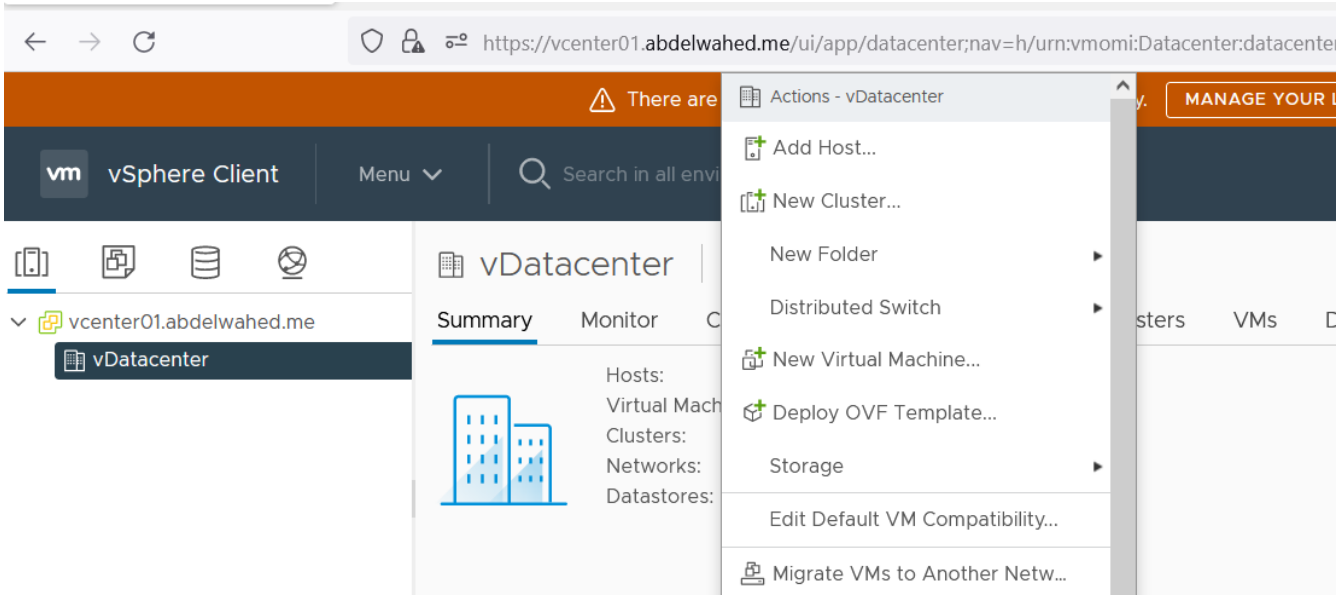
I will add these servers in a datacenter, laterinside datacenter we will add cluster also to give more options and I can apply bulk of features (like HA) on vSphere servers included in cluster. Add datacenter first.



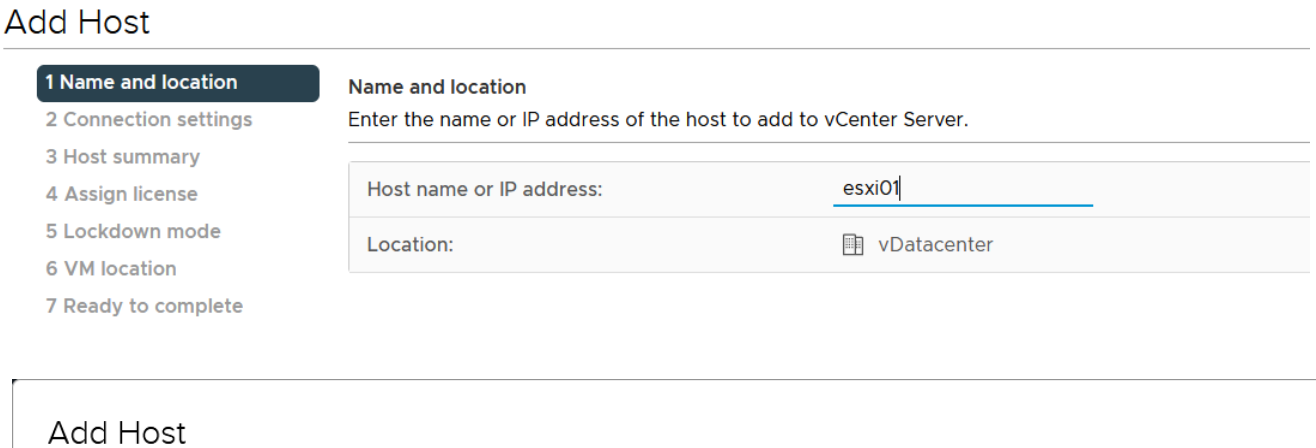


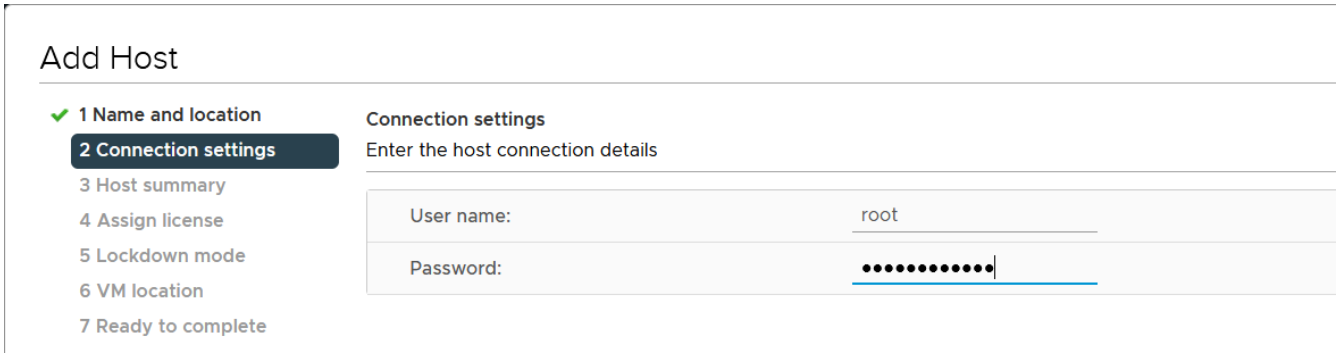


Now you can add ESXi hosts



Note, check new folder options





Add Host

- ✔ 1 Name and location
- ✔ 2 Connection settings
- 3 Host summary
- 4 Assign license
- 5 Lockdown mode
- 6 VM location
- 7 Ready to complete

Host summary

Review the summary for the host

Name	esxi01.abdelwahed.me
Vendor	VMware, Inc.
Model	VMware7,1
Version	VMware ESXi 7.0.2 build-17867351
Virtual Machines	vCenter Server

Add Host

- ✔ 1 Name and location
- ✔ 2 Connection settings
- ✔ 3 Host summary
- 4 Assign license
- 5 Lockdown mode
- 6 VM location
- 7 Ready to complete

Assign license

Assign an existing or a new license to this host

License	License Key	Product	Usage	Ca
Evaluation License	--	--	--	--

Add Host

- ✔ 1 Name and location
- ✔ 2 Connection settings
- ✔ 3 Host summary
- ✔ 4 Assign license
- ✔ 5 Lockdown mode
- 6 VM location
- 7 Ready to complete

Specify whether to enable lockdown mode on the host

When enabled, lockdown mode prevents remote users from logging directly into this host. The host will only be accessible through local console or an authorized centralized management application.

If you are unsure what to do, leave lockdown mode disabled. You can configure lockdown mode later by editing Security Profile in host settings.

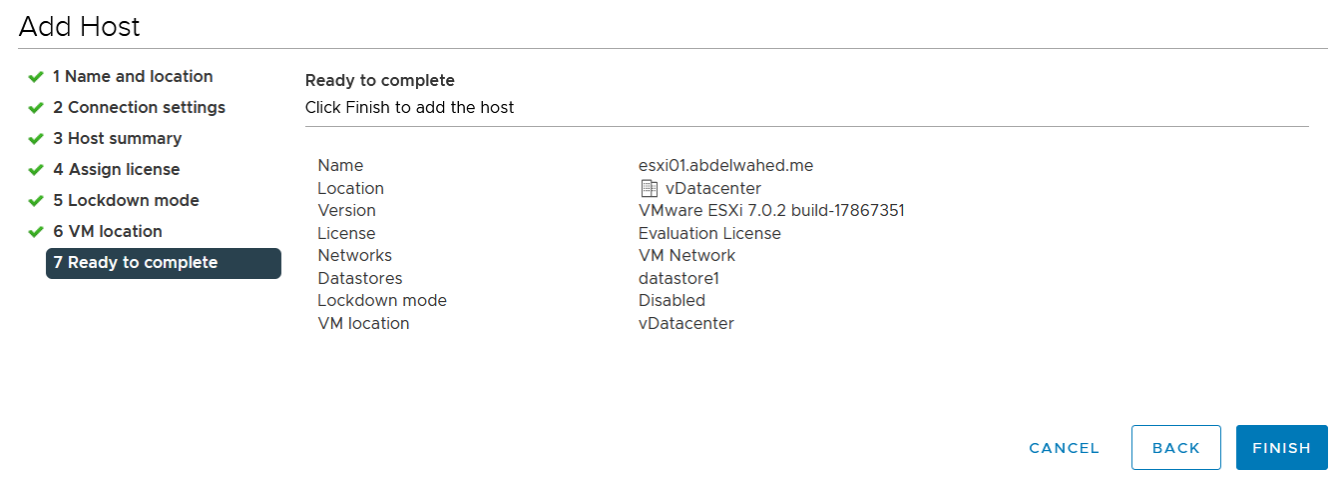
- (•) Disabled
- ( ) **Normal**
  The host is accessible only through the local console or vCenter Server.
- ( ) **Strict**
  The host is accessible only through vCenter Server. The Direct Console UI service is stopped.

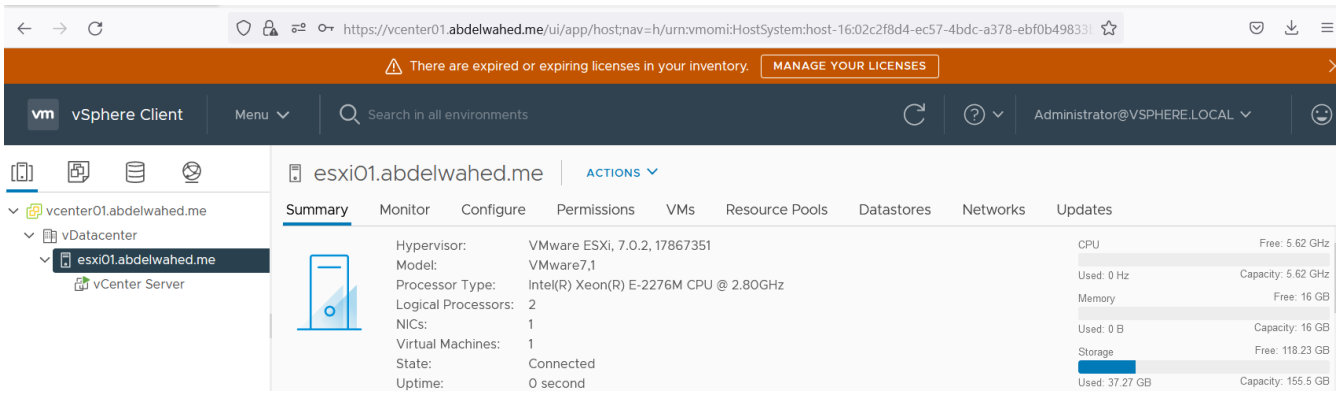
Add Host

- ✔ 1 Name and location
- ✔ 2 Connection settings
- ✔ 3 Host summary
- ✔ 4 Assign license
- ✔ 5 Lockdown mode
- 6 VM location
- 7 Ready to complete

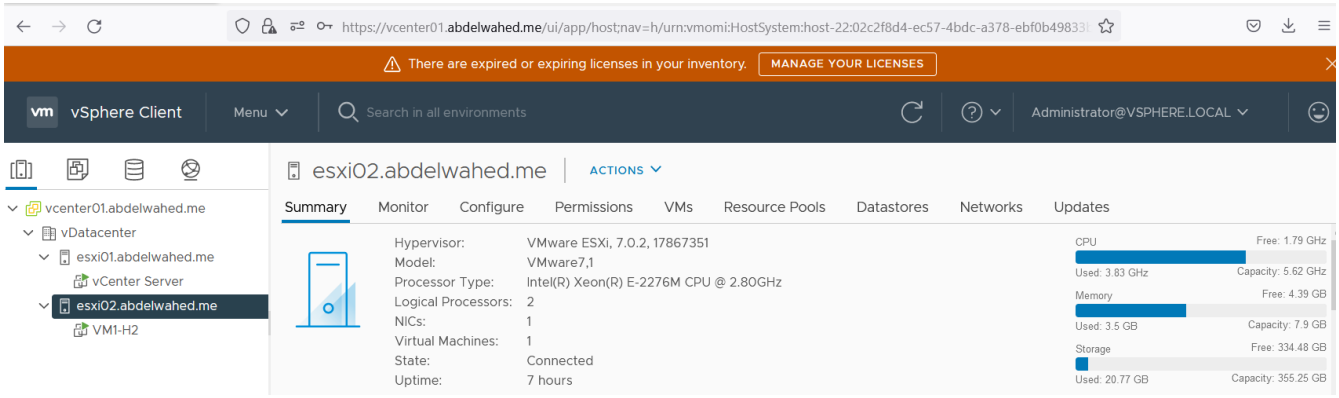
VM location

vDatacenter





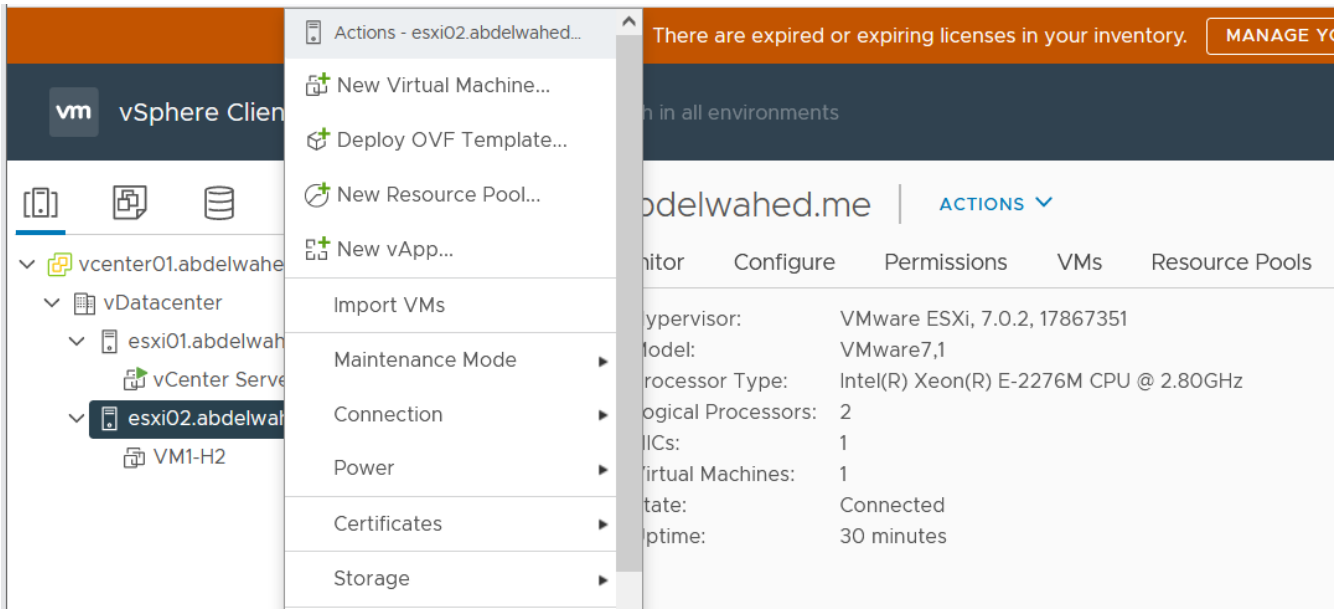
Do the same to ESXi02 to add it to our datacenter

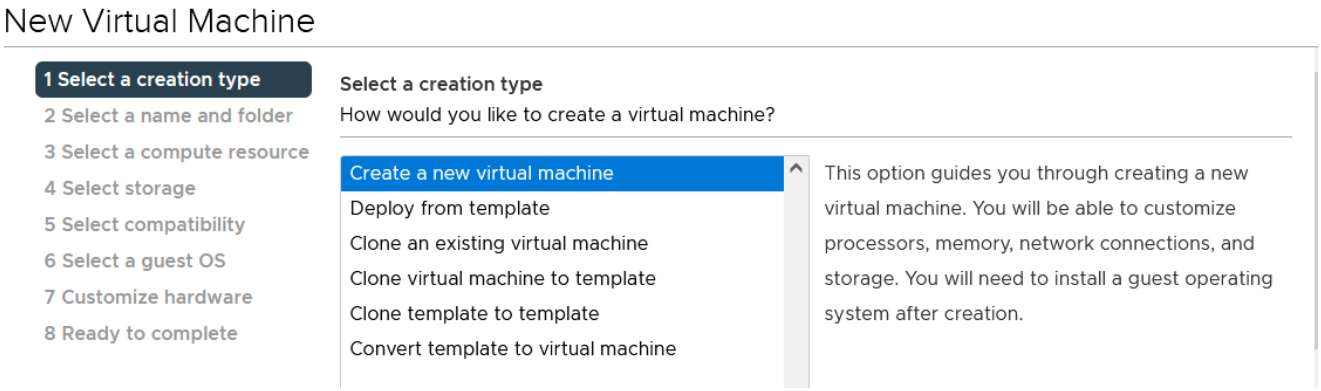


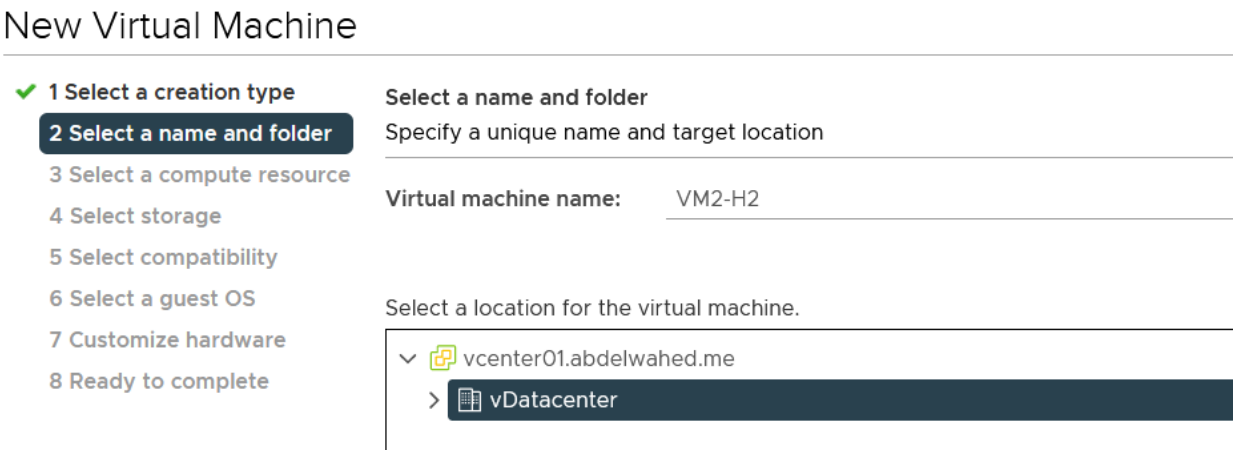
Now both hosts are added

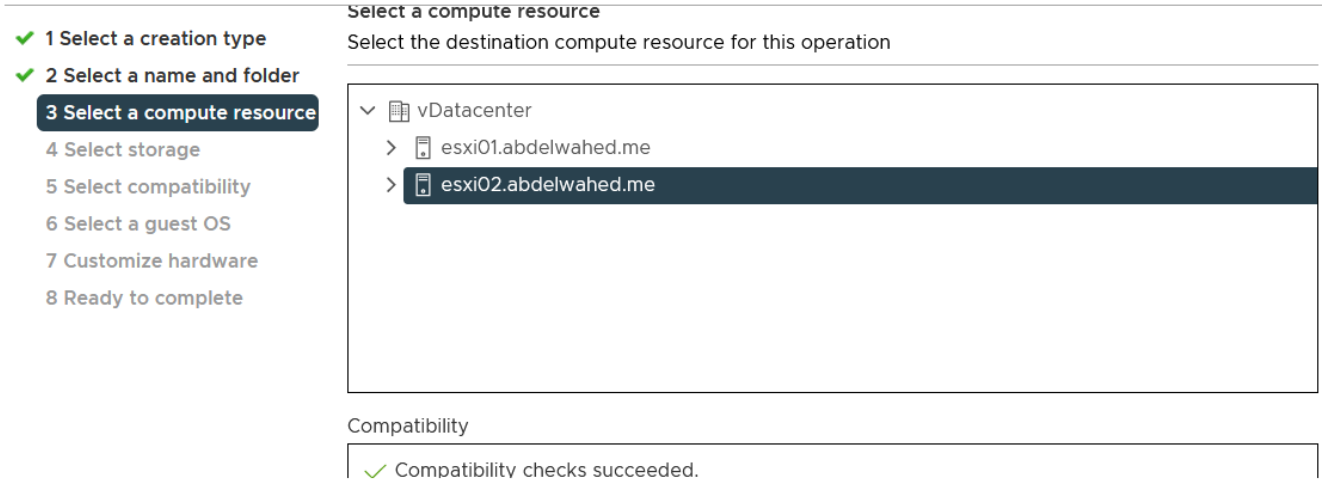
VMware vSphere Install, Configure, Manage v7 | Quick Guide

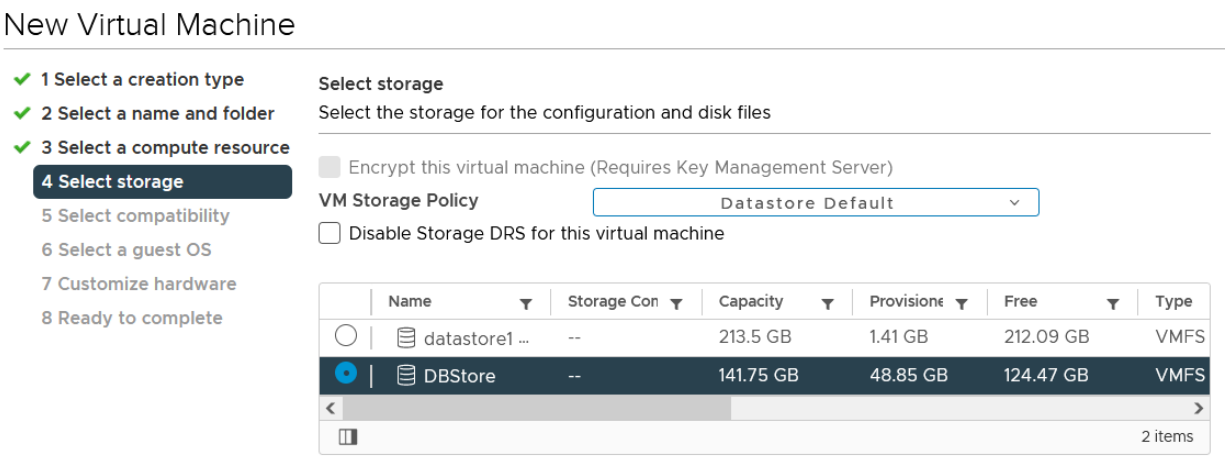
Create VM through vCenter

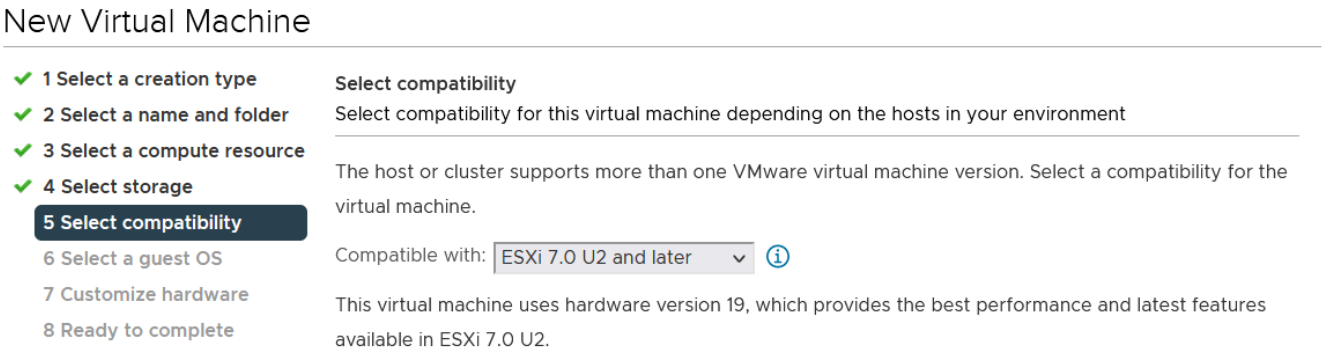


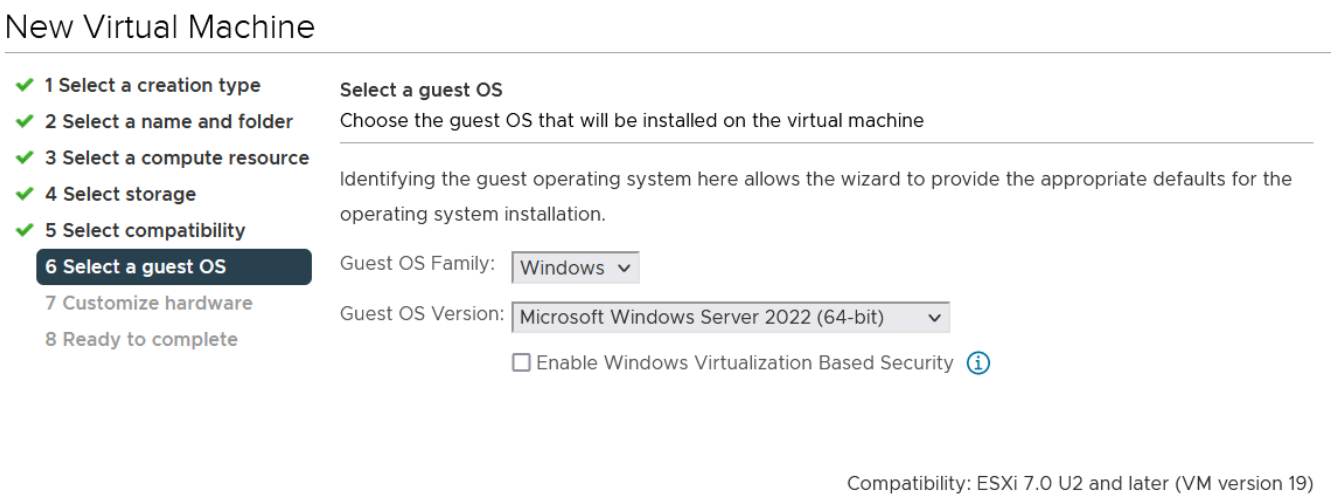


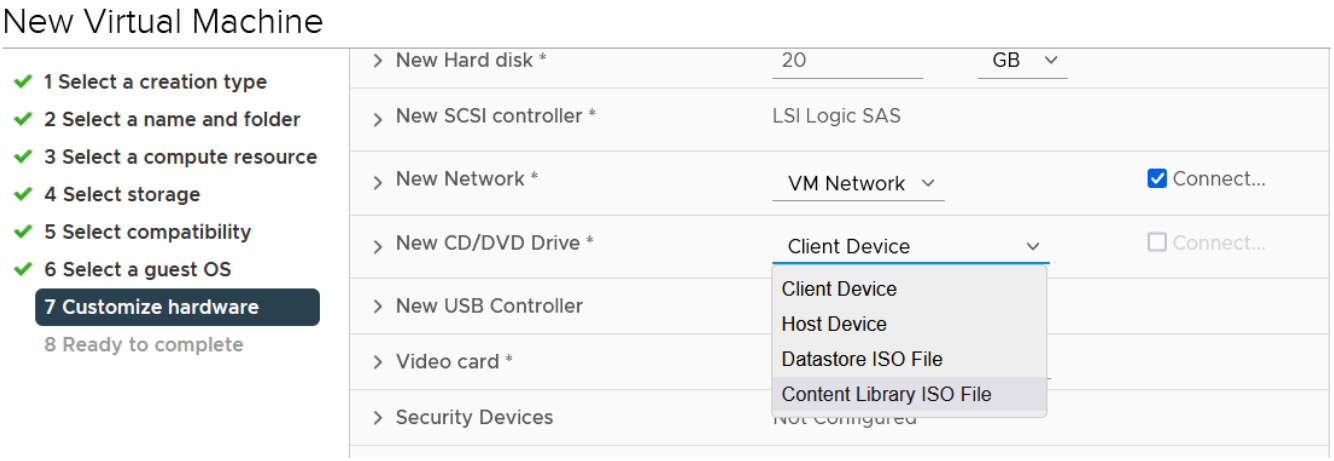


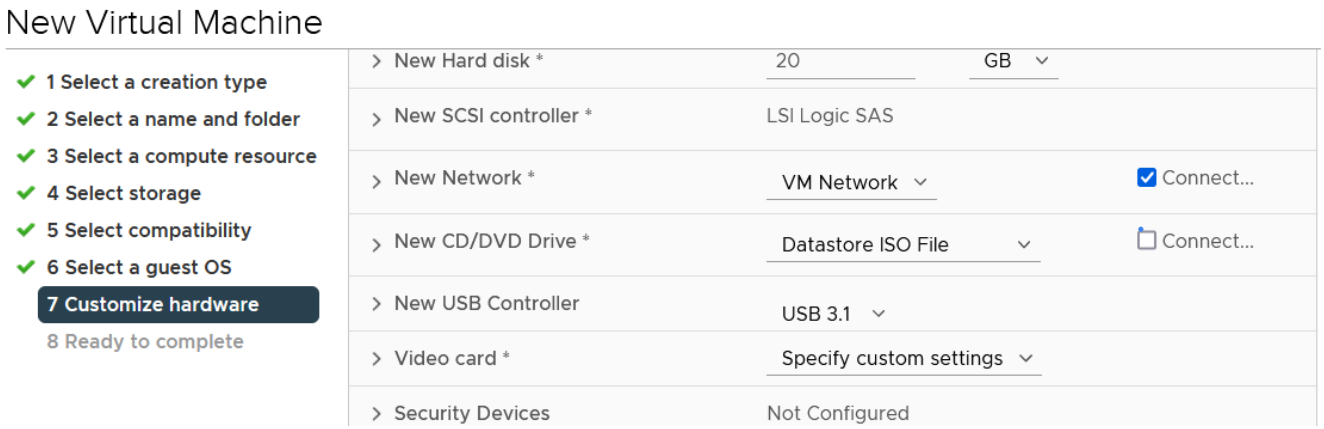

New Virtual Machine
1 Select a creation type
2 Select a name and folder
3 Select a compute resource
4 Select storage
5 Select compatibility
6 Select a guest OS
7 Customize hardware
8 Ready to complete
Select a compute resource
Select the destination compute resource for this operation
vDatacenter
esxi01.abdelwahed.me
esxi02.abdelwahed.me
Compatibility
Compatibility checks succeeded.

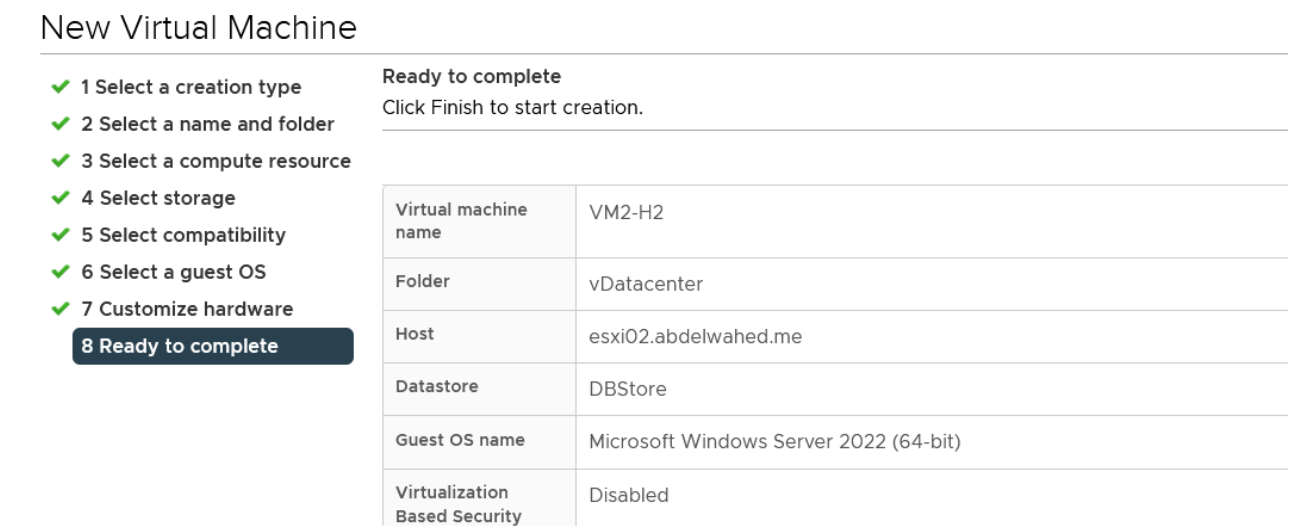

New Virtual Machine
1 Select a creation type
2 Select a name and folder
3 Select a compute resource
4 Select storage
5 Select compatibility
6 Select a guest OS
7 Customize hardware
8 Ready to complete
Select storage
Select the storage for the configuration and disk files
Encrypt this virtual machine (Requires Key Management Server)
VM Storage Policy
Datastore Default
Disable Storage DRS for this virtual machine
Name
Storage Con
Capacity
Provisione
Free
Type
datastore1 ...
--
213.5 GB
1.41 GB
212.09 GB
VMFS
DBStore
--
141.75 GB
48.85 GB
124.47 GB
VMFS
2 items

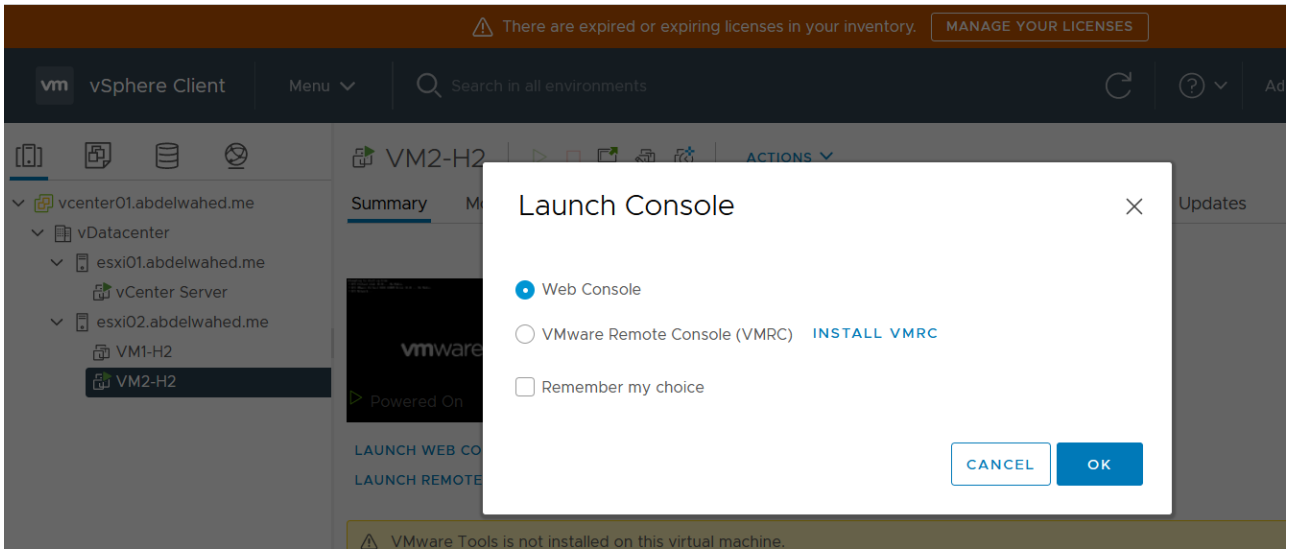

New Virtual Machine
1 Select a creation type
2 Select a name and folder
3 Select a compute resource
4 Select storage
5 Select compatibility
6 Select a guest OS
7 Customize hardware
8 Ready to complete
Select compatibility
Select compatibility for this virtual machine depending on the hosts in your environment
The host or cluster supports more than one VMware virtual machine version. Select a compatibility for the virtual machine.
Compatible with:
ESXi 7.0 U2 and later
This virtual machine uses hardware version 19, which provides the best performance and latest features available in ESXi 7.0 U2.


New Virtual Machine
1 Select a creation type
2 Select a name and folder
3 Select a compute resource
4 Select storage
5 Select compatibility
6 Select a guest OS
7 Customize hardware
8 Ready to complete
Select a guest OS
Choose the guest OS that will be installed on the virtual machine
Identifying the guest operating system here allows the wizard to provide the appropriate defaults for the operating system installation.
Guest OS Family: Windows
Guest OS Version: Microsoft Windows Server 2022 (64-bit)
Enable Windows Virtualization Based Security
Compatibility: ESXi 7.0 U2 and later (VM version 19)


New Virtual Machine
1 Select a creation type
2 Select a name and folder
3 Select a compute resource
4 Select storage
5 Select compatibility
6 Select a guest OS
7 Customize hardware
8 Ready to complete
New Hard disk * 20 GB
New SCSI controller * LSI Logic SAS
New Network * VM Network Connect...
New CD/DVD Drive * Client Device Connect...
New USB Controller
Video card *
Security Devices
Client Device
Host Device
Datastore ISO File
Content Library ISO File

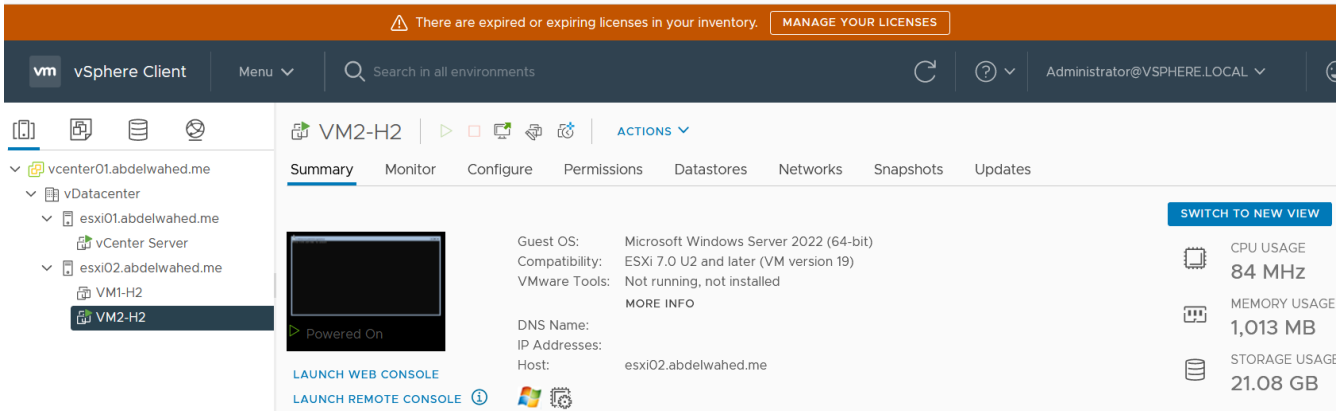

New Virtual Machine
1 Select a creation type
2 Select a name and folder
3 Select a compute resource
4 Select storage
5 Select compatibility
6 Select a guest OS
7 Customize hardware
8 Ready to complete
New Hard disk * 20 GB
New SCSI controller * LSI Logic SAS
New Network * VM Network Connect...
New CD/DVD Drive * Datastore ISO File Connect...
New USB Controller USB 3.1
Video card * Specify custom settings
Security Devices Not Configured





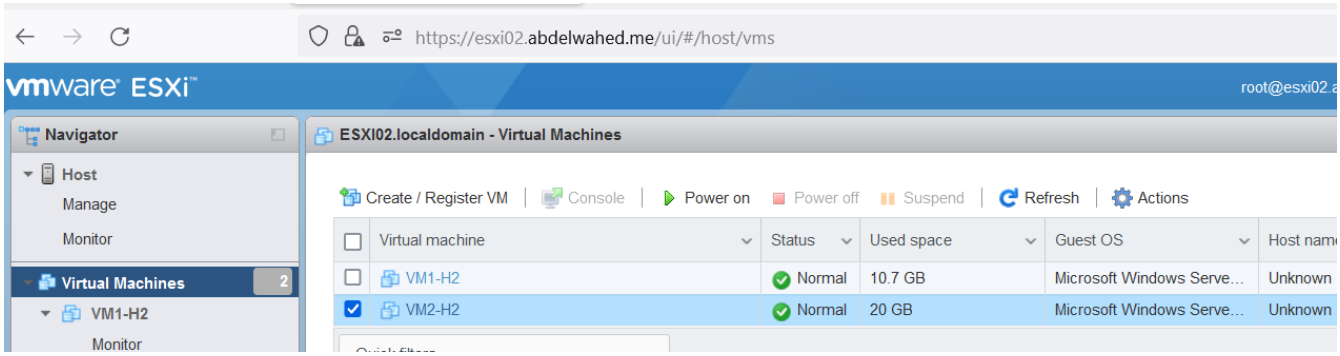
Server core 2022 now is installed.

VMware vSphere Install, Configure, Manage v7 | Quick Guide

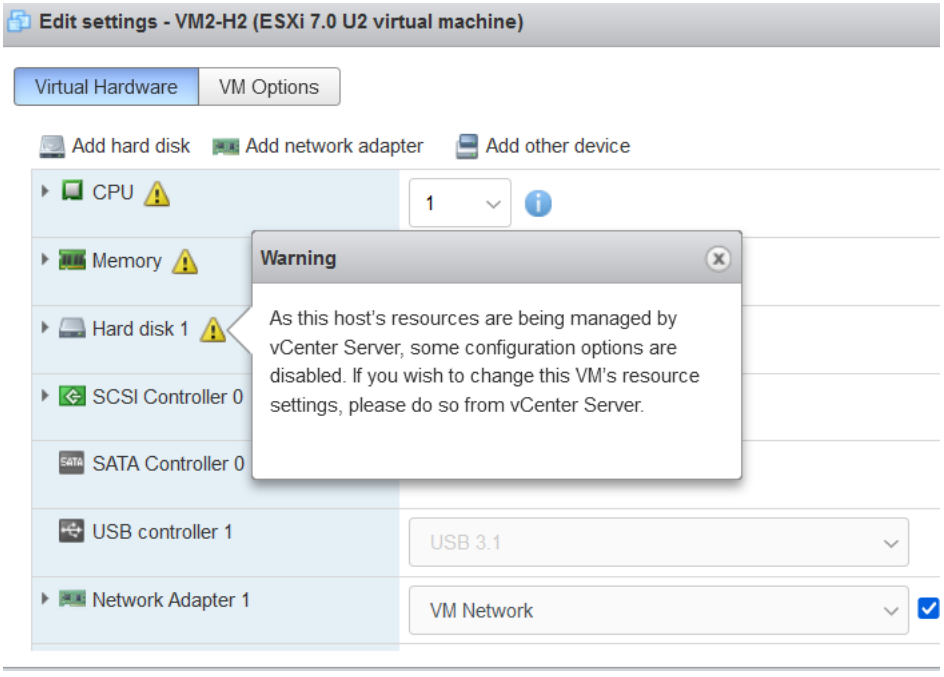


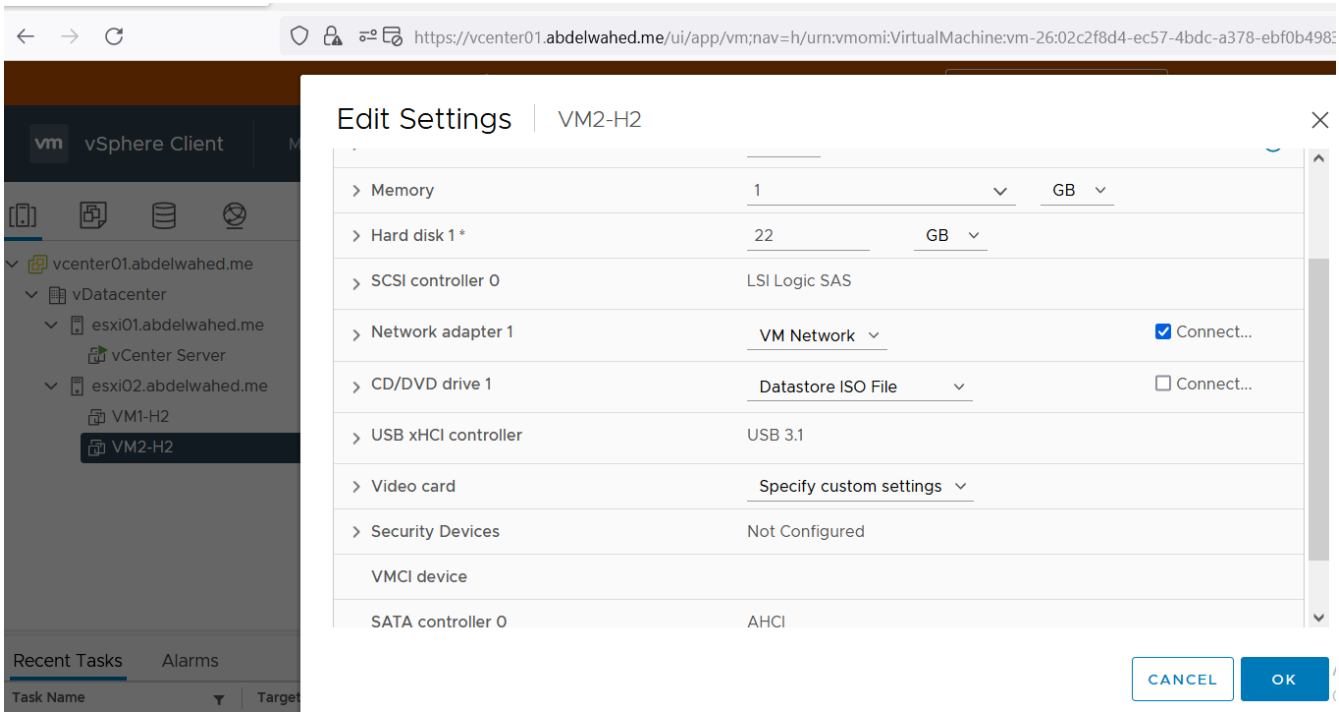
Edit VM Settings from vCenter

Through VM setting you can change some vm settings, in this example we going to extend HD size (some setting require power off)

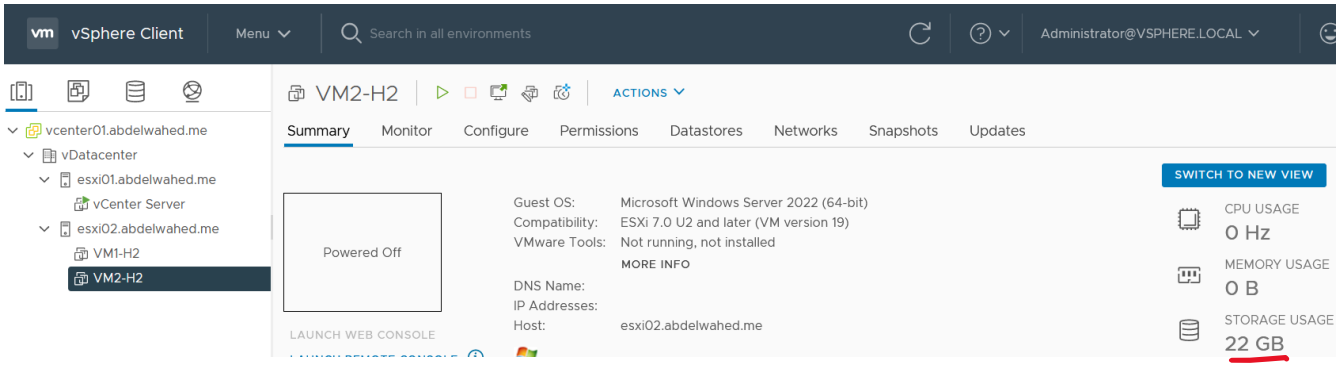


In this example, through vCenter we will extend VM HD from 20 to 22 GB



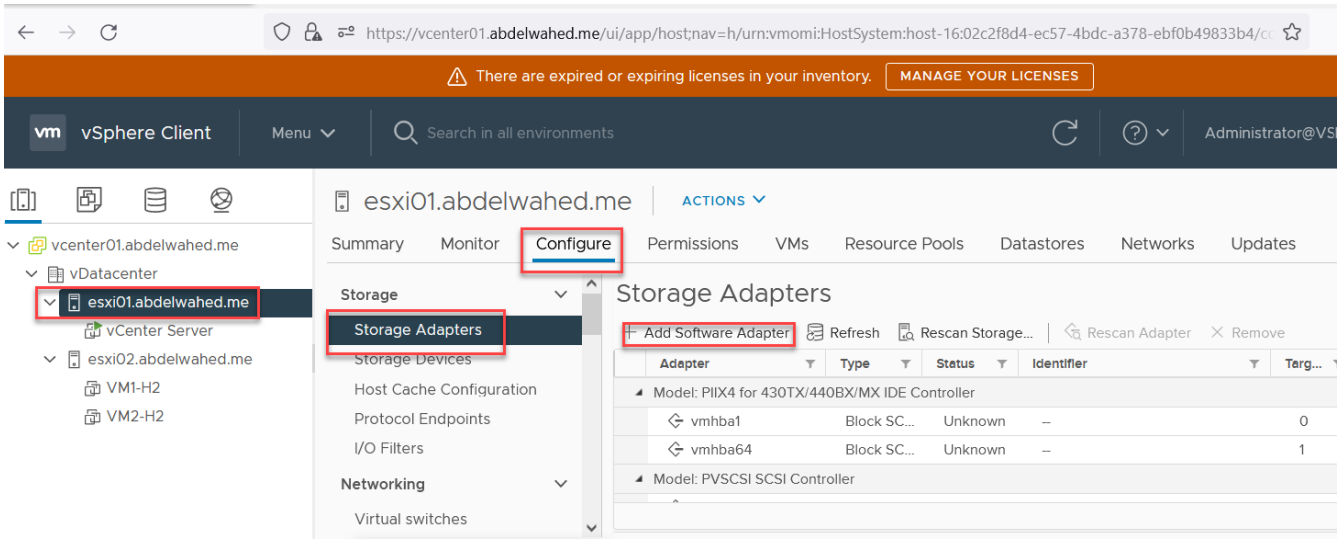


Now HD extended to 22GB

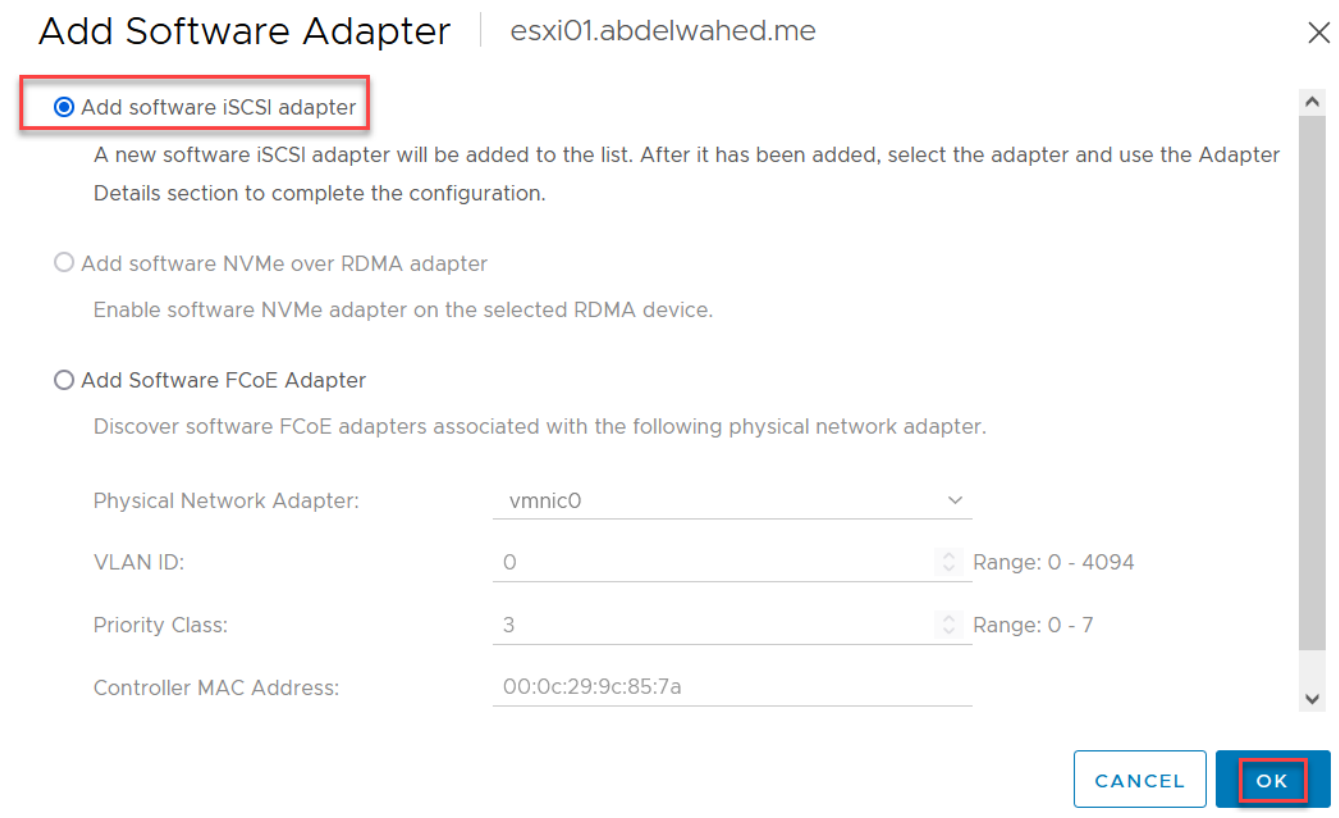


Add ISCSI disk to both ESXi servers using vCenter

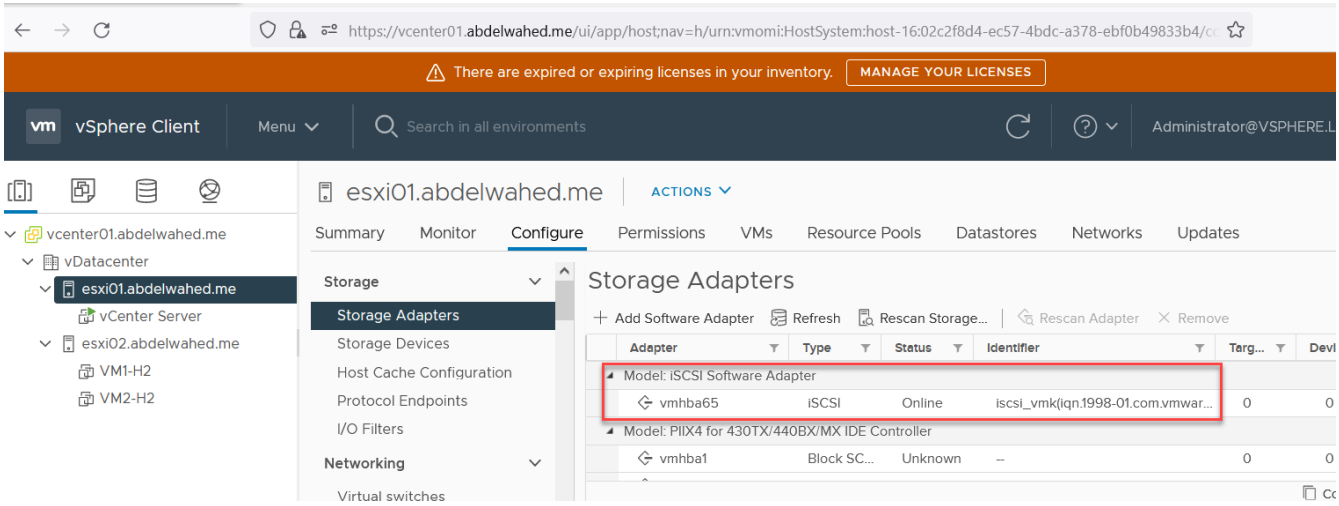
First, I configure **dc.abdelwahed.me** as ISCSI storage and allow both ESXI servers to connect this storage through network. In this scenario I use **500GB** SCSI disk. Now ISCSI software (ISCSI intiator)

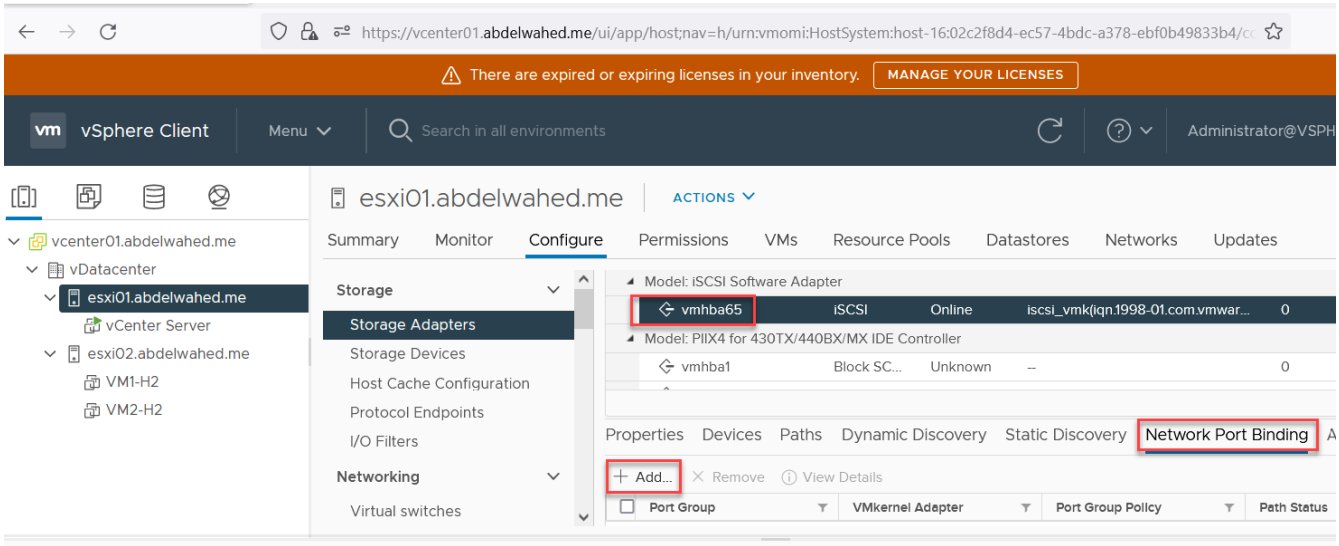


Note: FCoE option for SAN storage

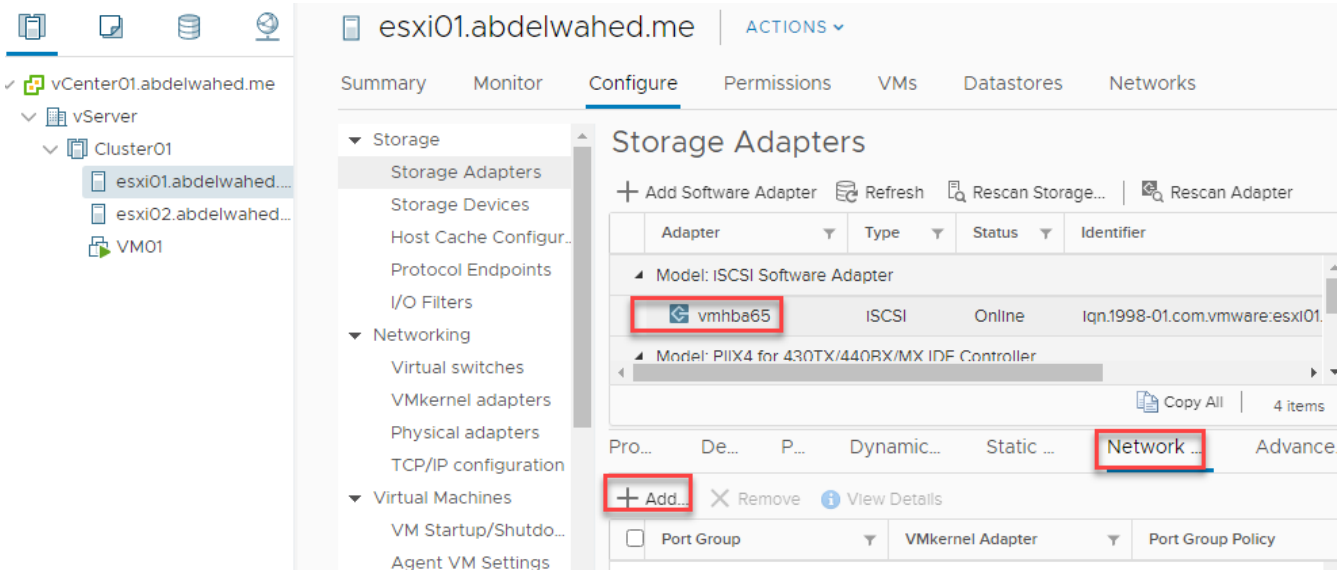


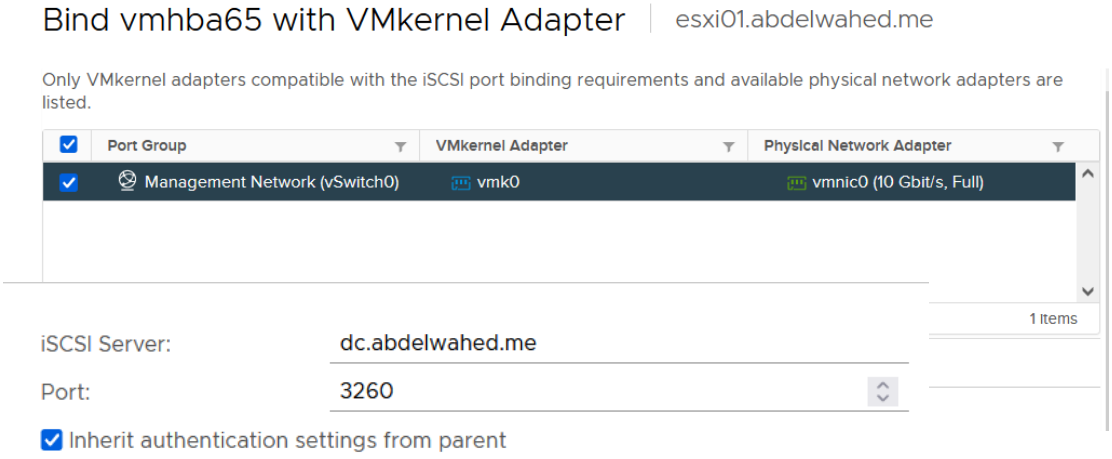
VMware vSphere Install, Configure, Manage v7 | Quick Guide

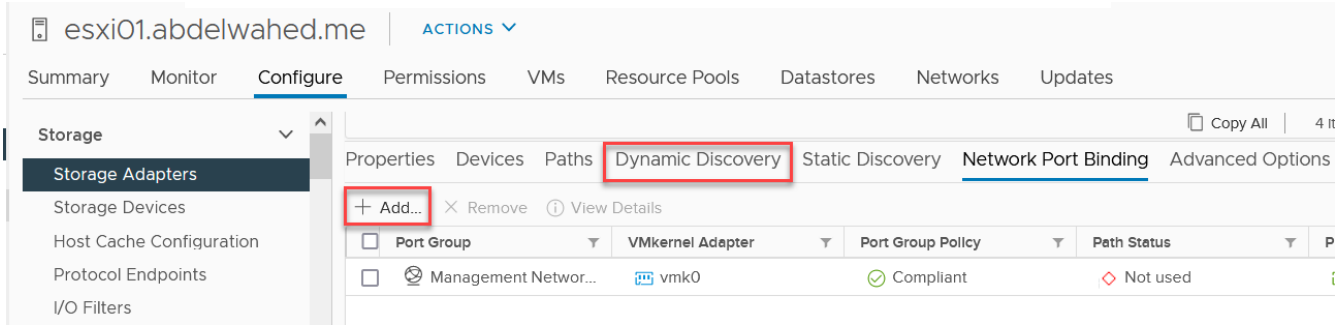


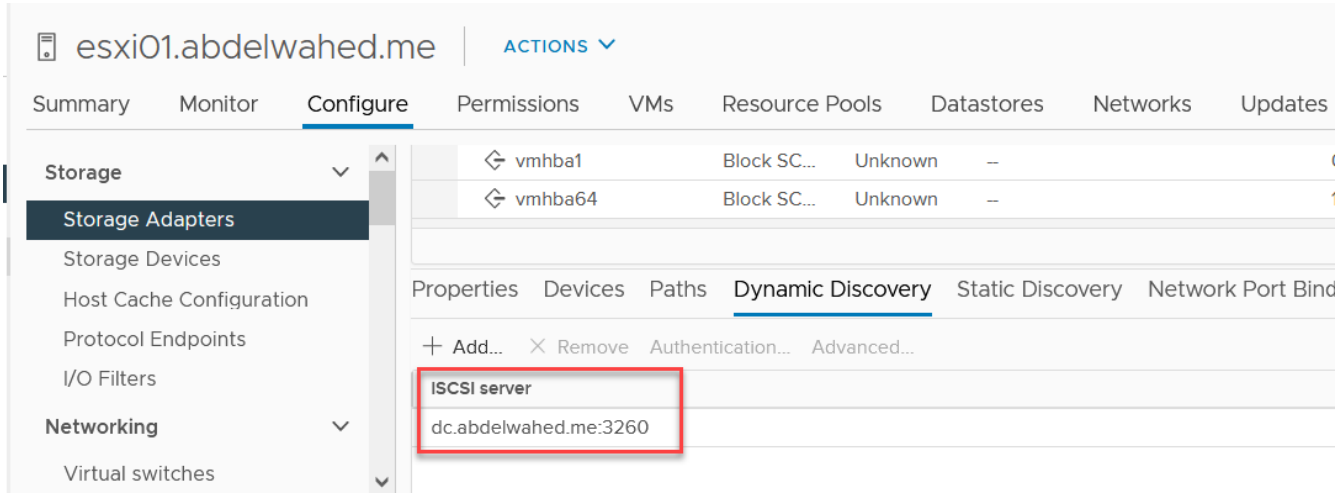


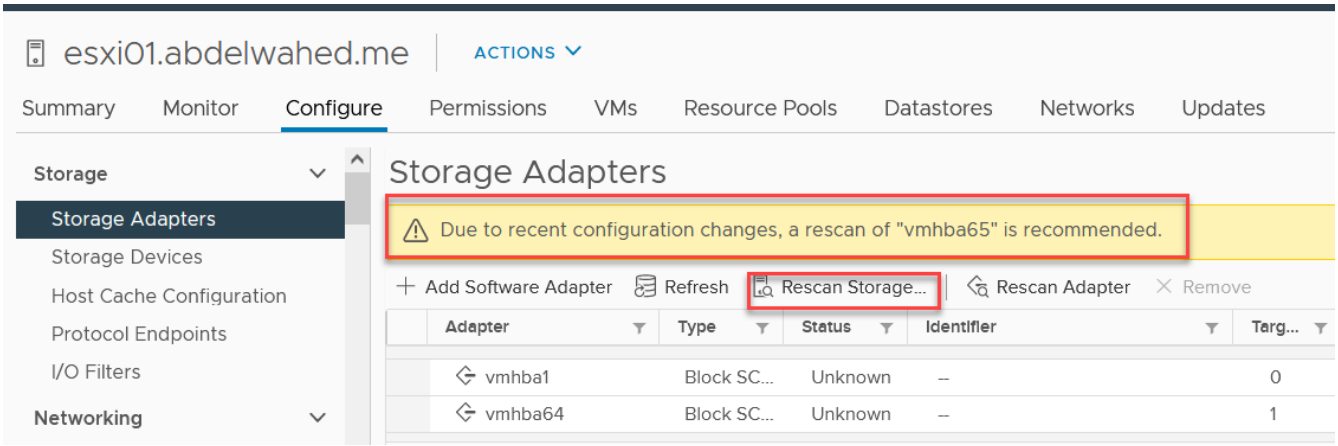
Assign ISCSI software you added to network card



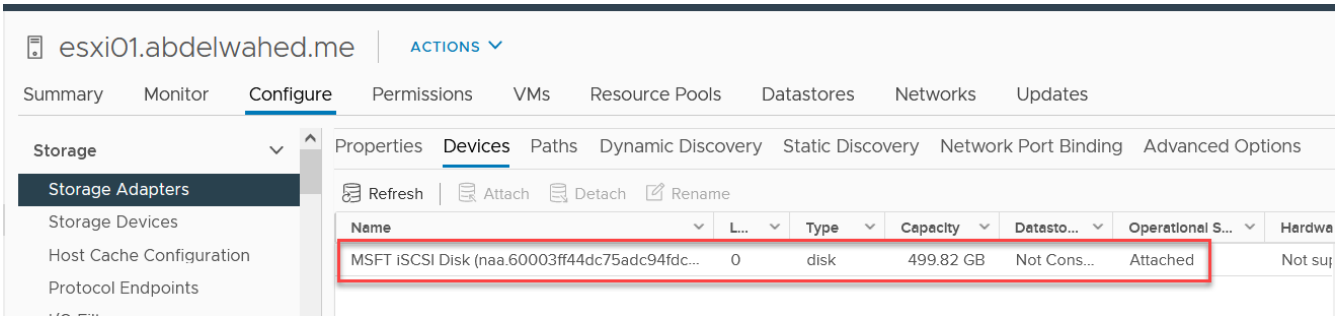






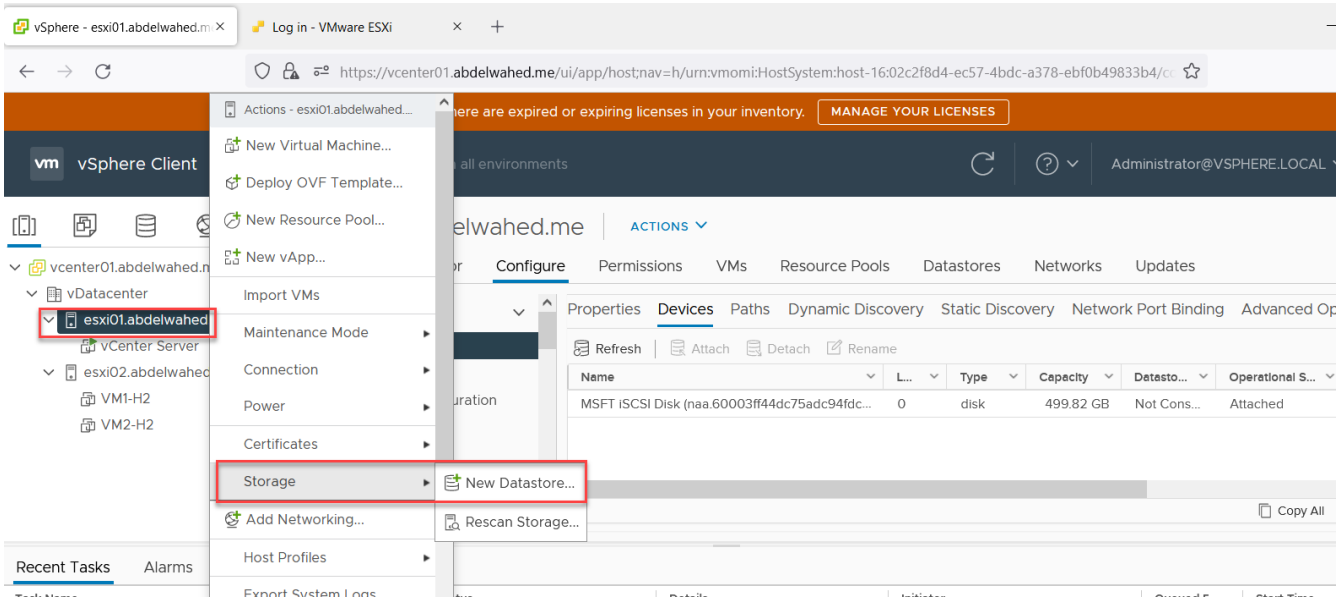


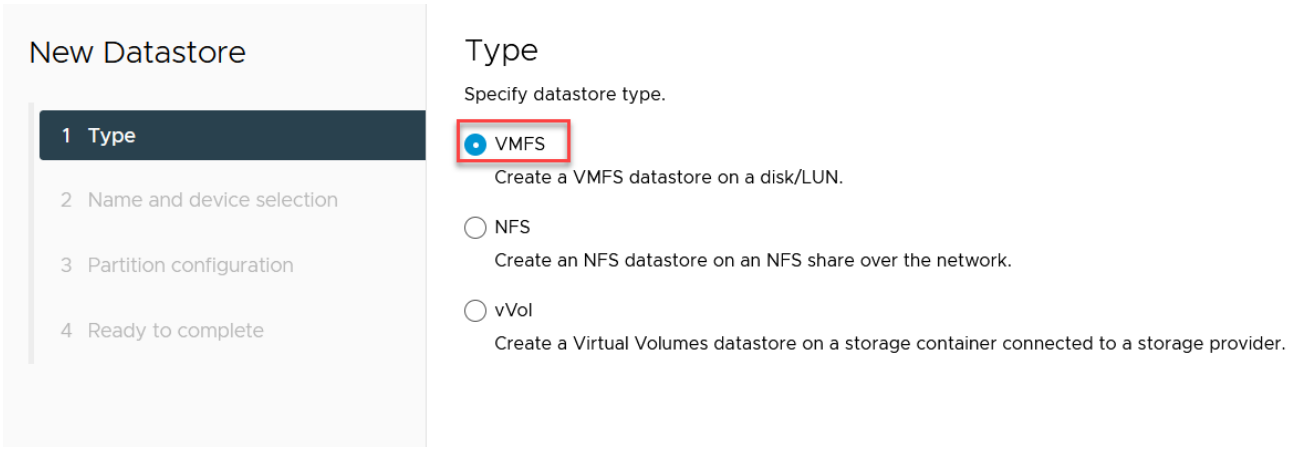
Now ISCSI Disk appears

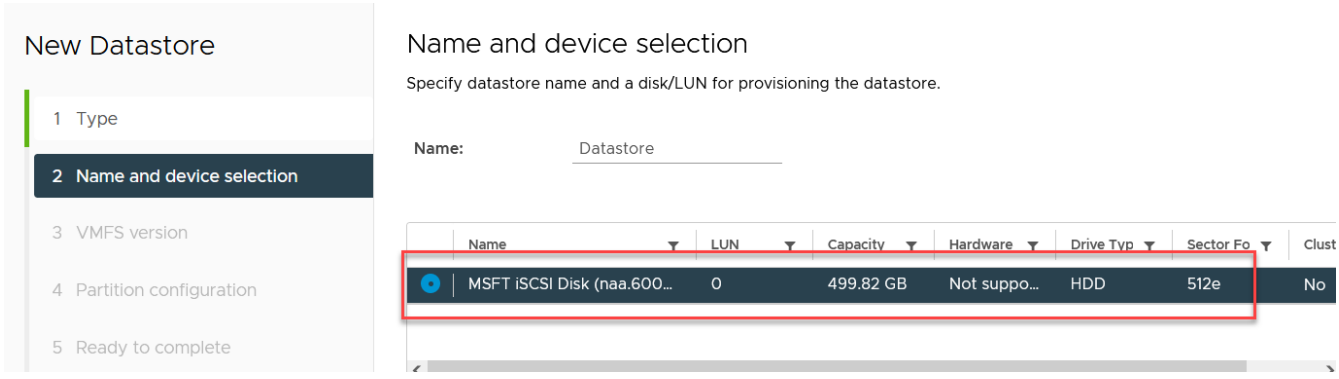


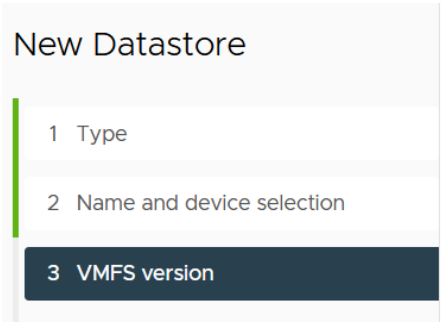
Now you can add this disk as datastore

VMware vSphere Install, Configure, Manage v7 | Quick Guide





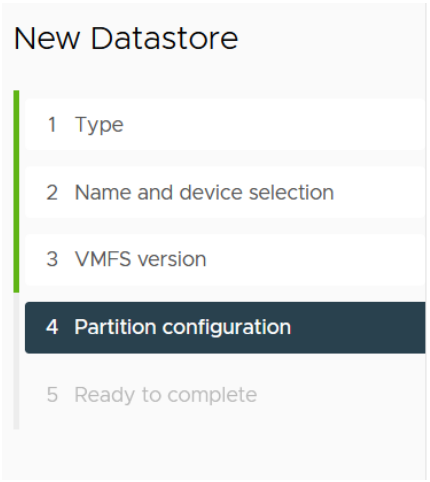




VMFS version

Specify the VMFS version for the datastore.

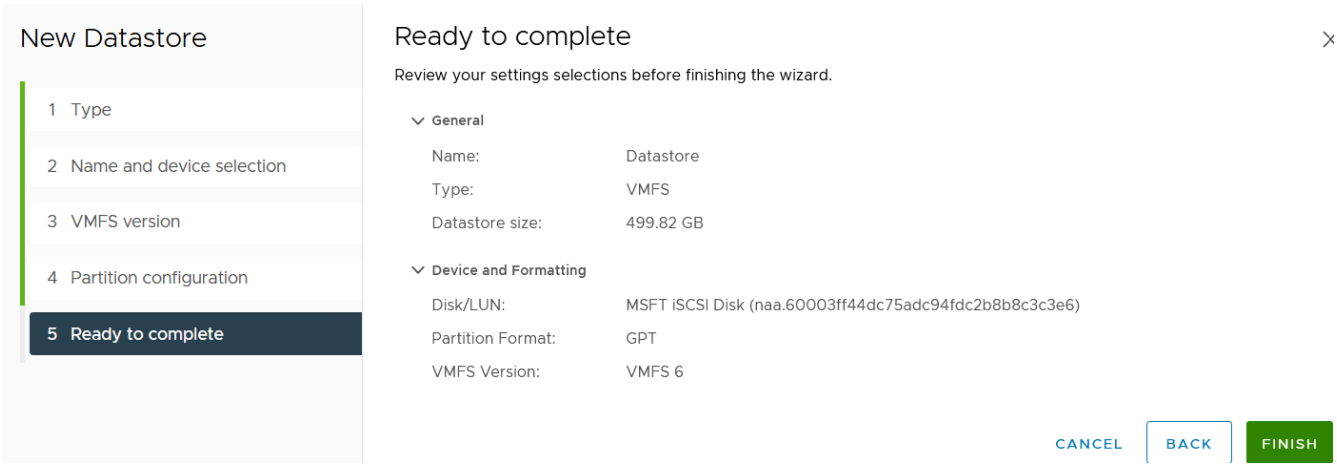
- (•) VMFS 6
  VMFS 6 enables advanced format (512e) and automatic space reclamation support.
- ( ) VMFS 5
  VMFS 5 enables 2+TB LUN support.

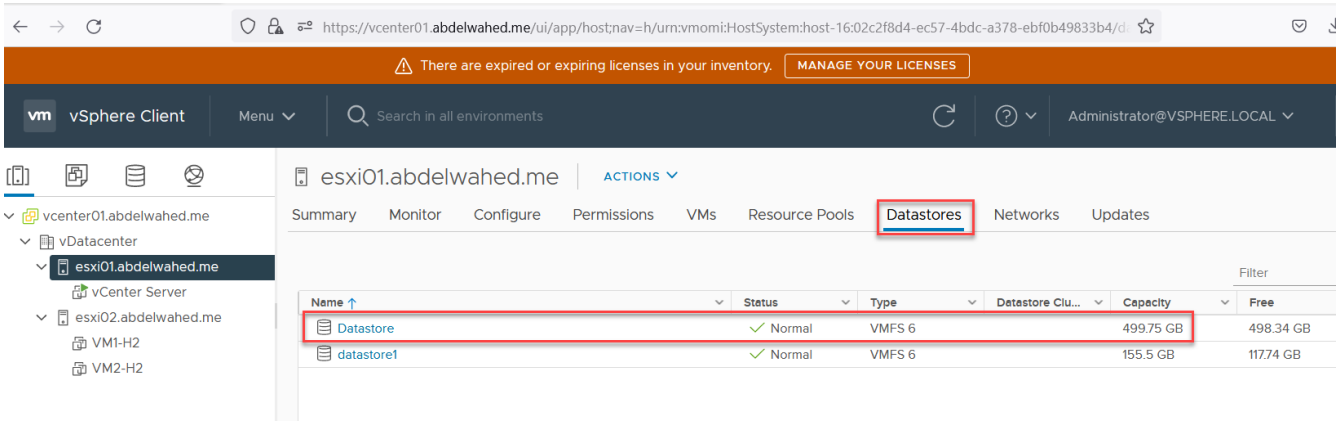


Partition configuration

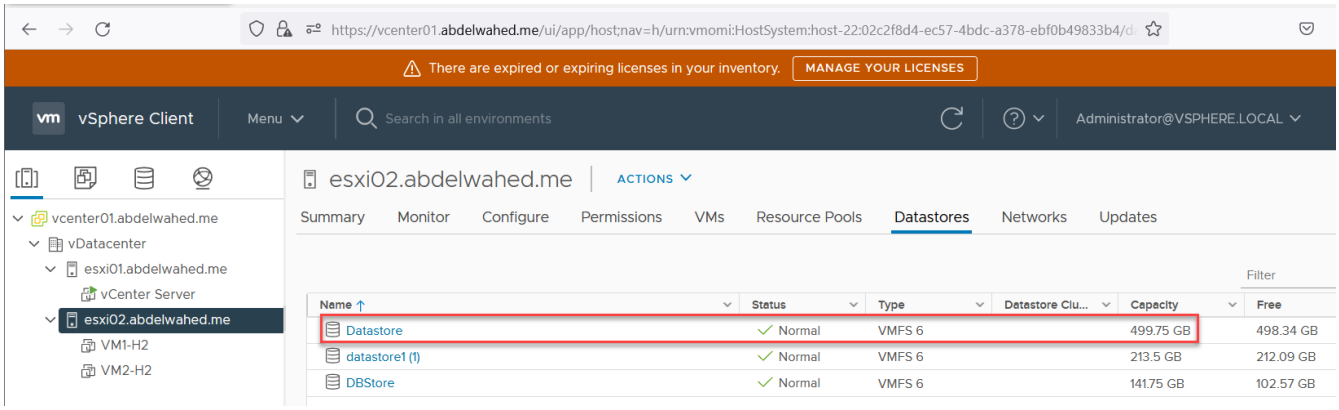
Review the disk layout and specify partition configuration details.

Partition Configuration	Use all available partitions
Datastore Size	499.8 GB
Block size	1 MB
Space Reclamation Granularity	1 MB
Space Reclamation Priority	Low

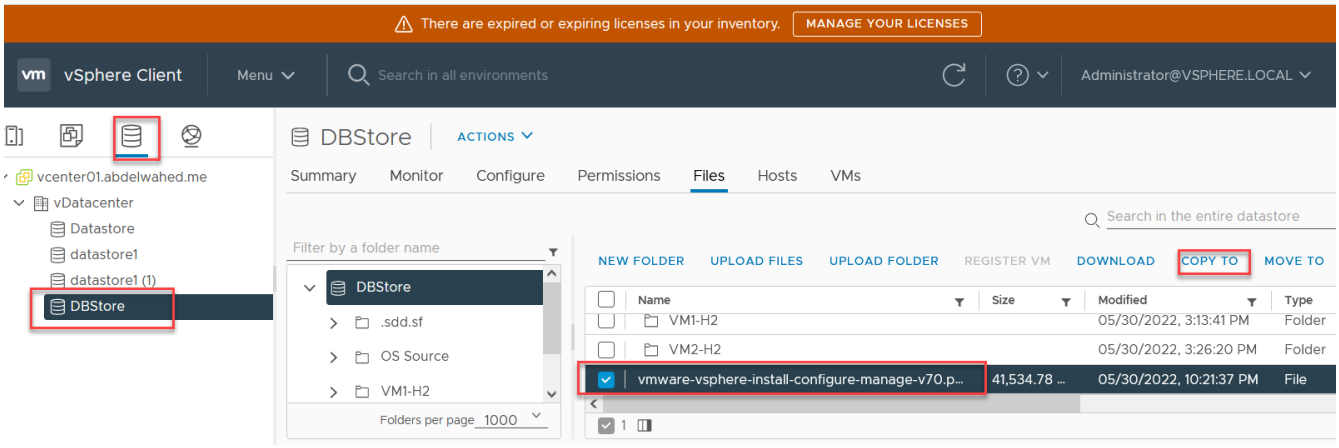


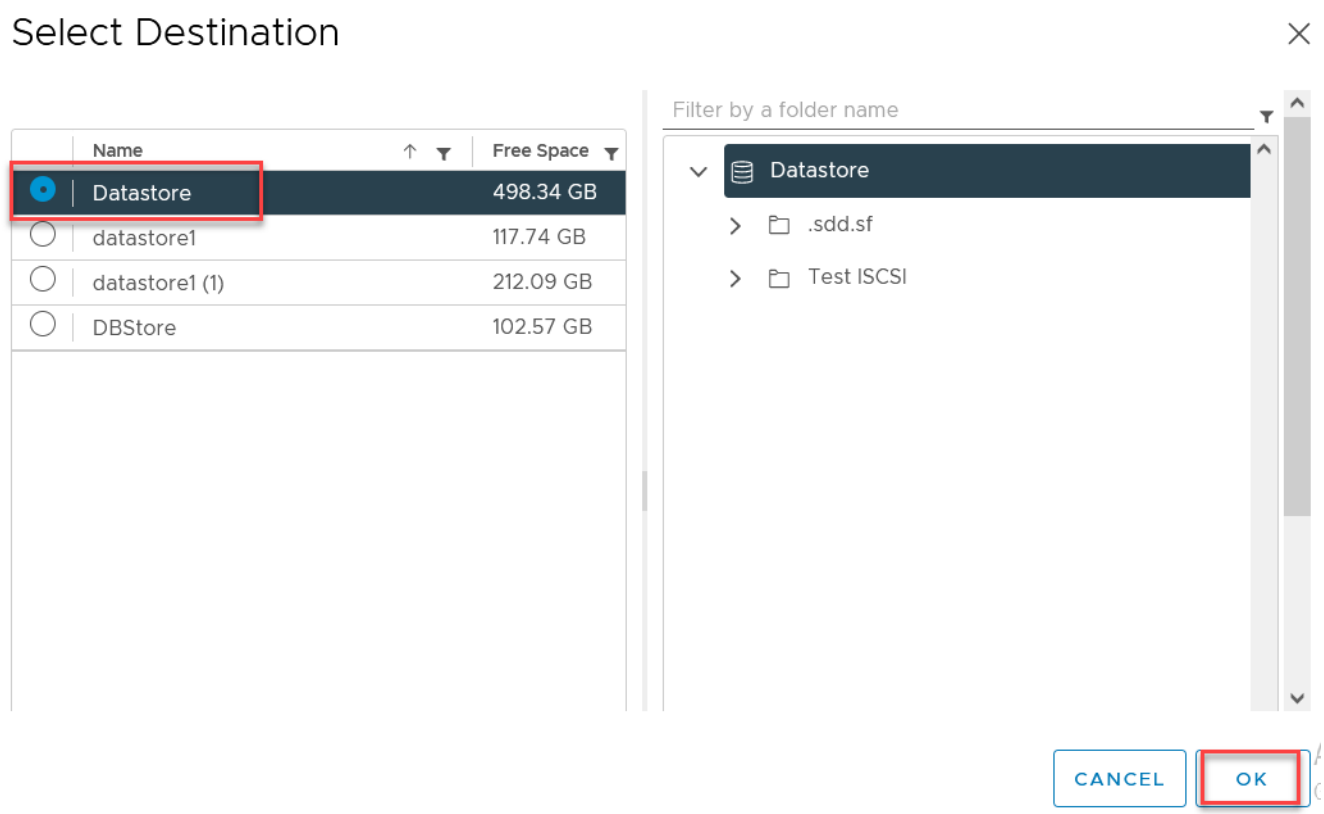


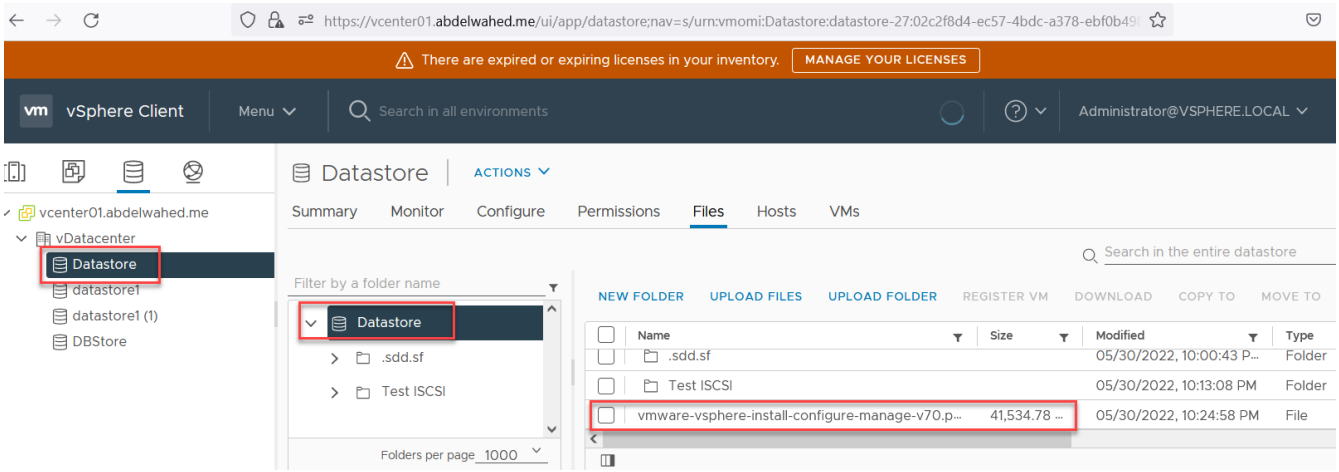
now do the same for ESXi02 without adding new datastore we will connect it we just want to connect it



now add some files to the iscsi storage

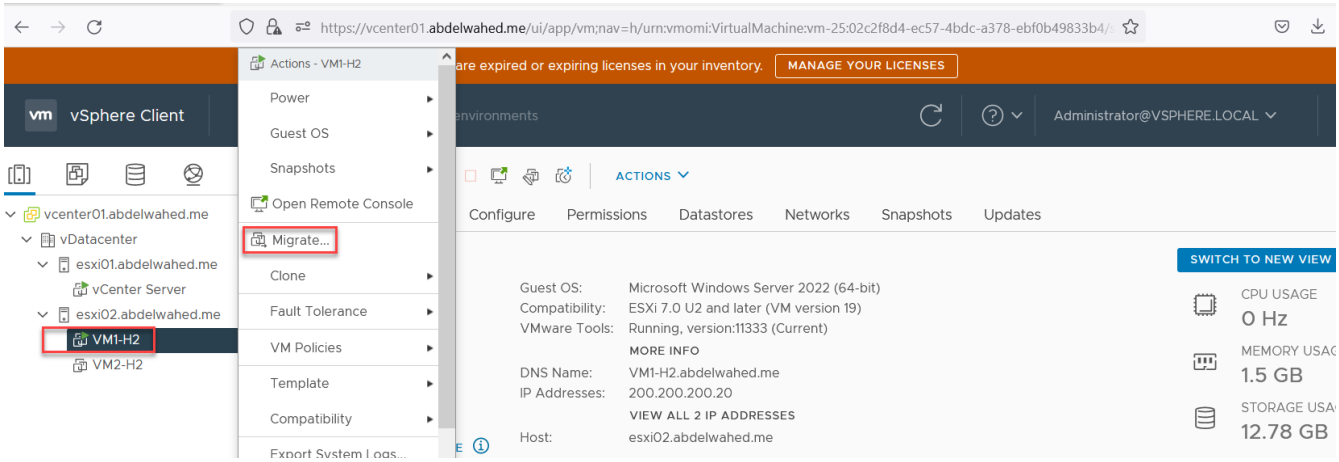


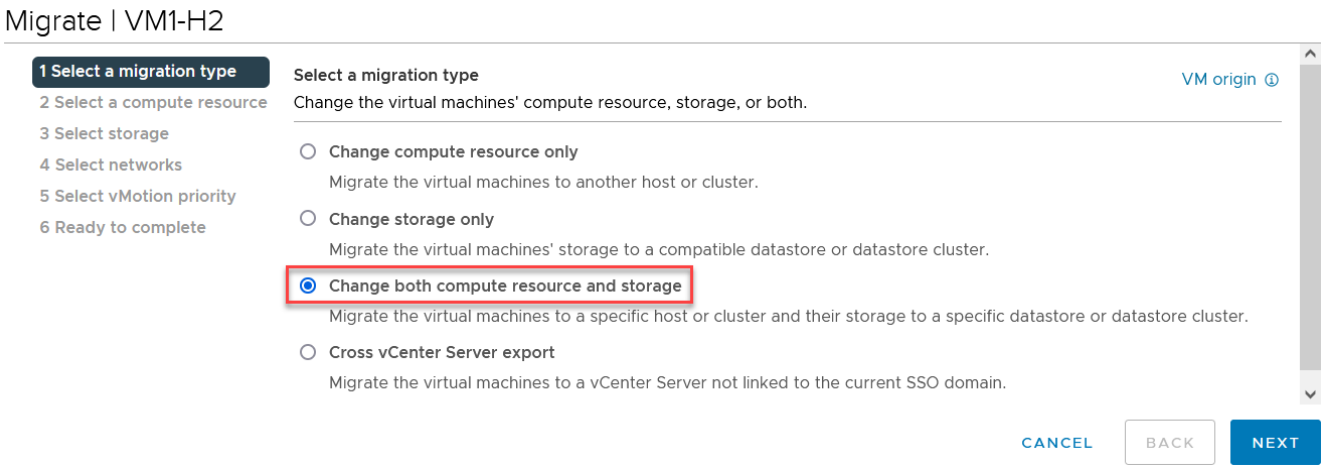

Select Destination
Name
Free Space
Datastore
498.34 GB
datastore1
117.74 GB
datastore1 (1)
212.09 GB
DBStore
102.57 GB
Filter by a folder name
Datastore
.sdd.sf
Test ISCSI
CANCEL
OK

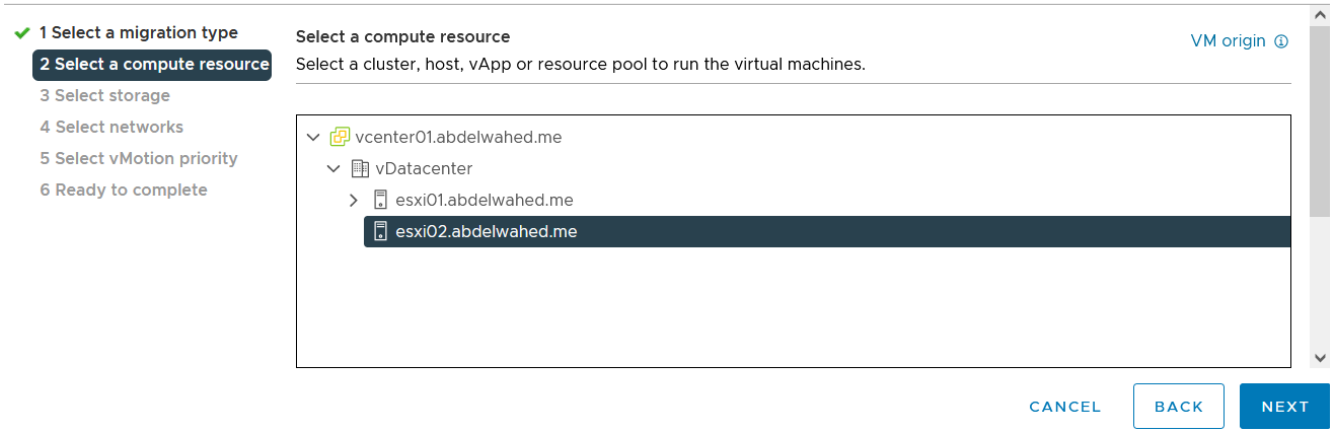

https://vcenter01.abdelwahed.me/ui/app/datastore;nav=s/urn:vmomi:Datastore:datastore-27:02c2f8d4-ec57-4bdc-a378-ebf0b49
There are expired or expiring licenses in your inventory.
MANAGE YOUR LICENSES
vSphere Client
Menu
Search in all environments
Administrator@VSPHERE.LOCAL
vcenter01.abdelwahed.me
vDatacenter
Datastore
datastore1
datastore1 (1)
DBStore
Datastore
ACTIONS
Summary
Monitor
Configure
Permissions
Files
Hosts
VMs
Search in the entire datastore
Filter by a folder name
NEW FOLDER
UPLOAD FILES
UPLOAD FOLDER
REGISTER VM
DOWNLOAD
COPY TO
MOVE TO
Name
Size
Modified
Type
.sdd.sf
05/30/2022, 10:00:43 P...
Folder
Test ISCSI
05/30/2022, 10:13:08 PM
Folder
vmware-vsphere-install-configure-manage-v70.p...
41,534.78 ...
05/30/2022, 10:24:58 PM
File
Folders per page
1000

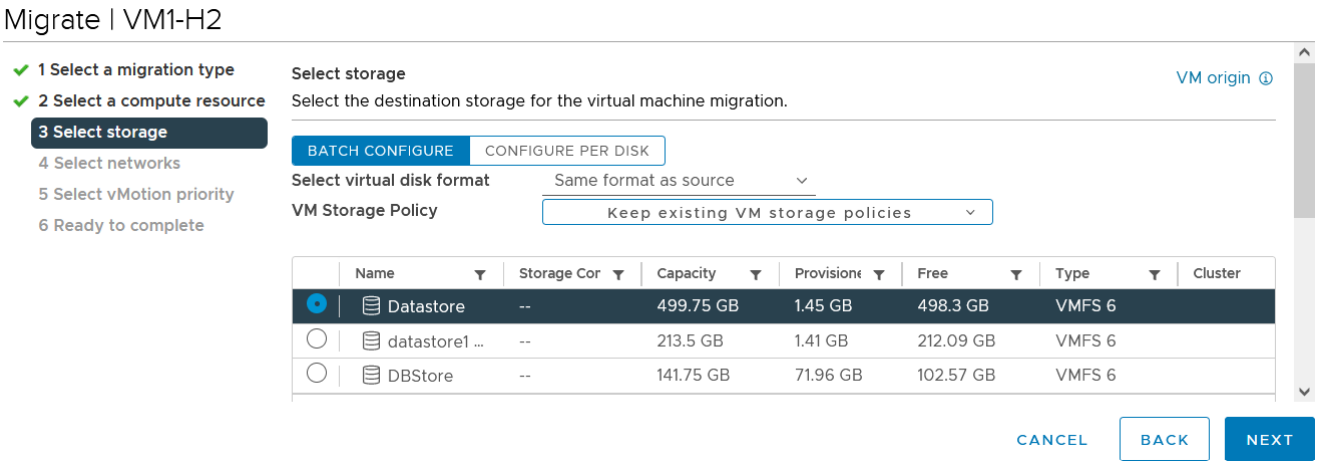
Migrate VM to another the iscsi datastore

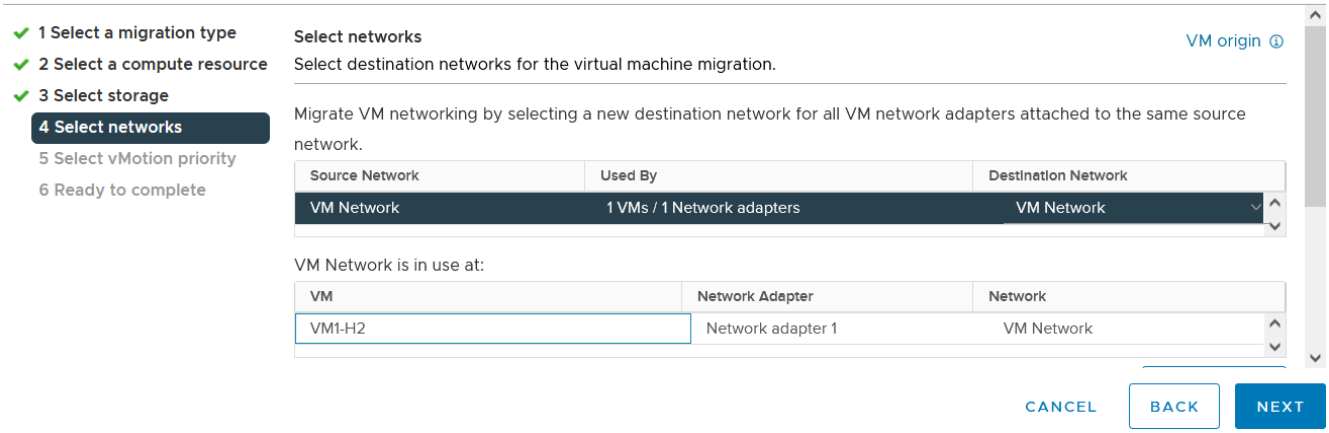
without enabled vMotion we can't move VMs during power on state only you can move while VM is turned off. Which is named **Cold Migration** while **Hot Migration** running with vSphere vMotion.

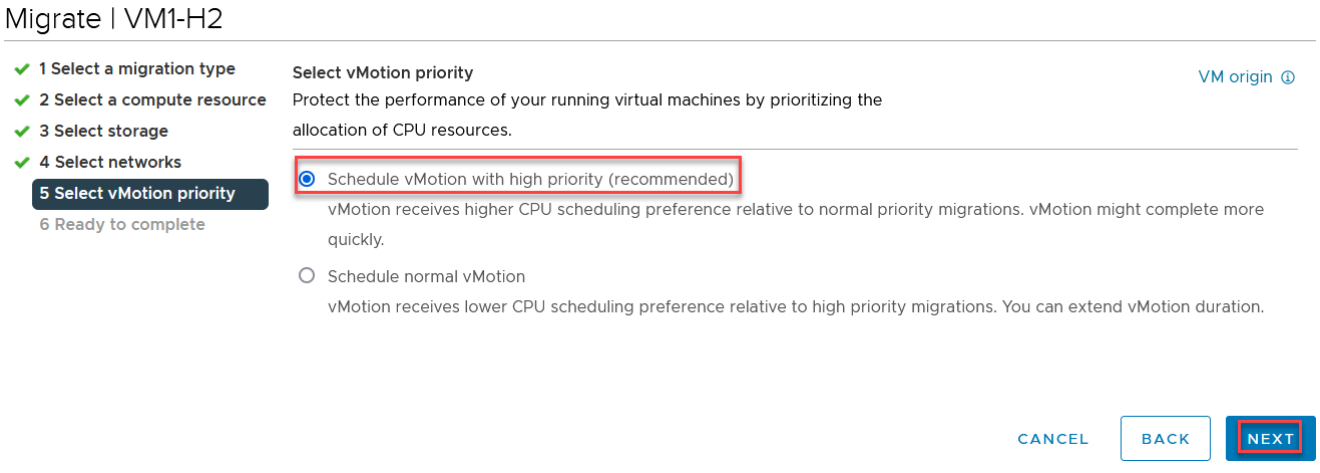


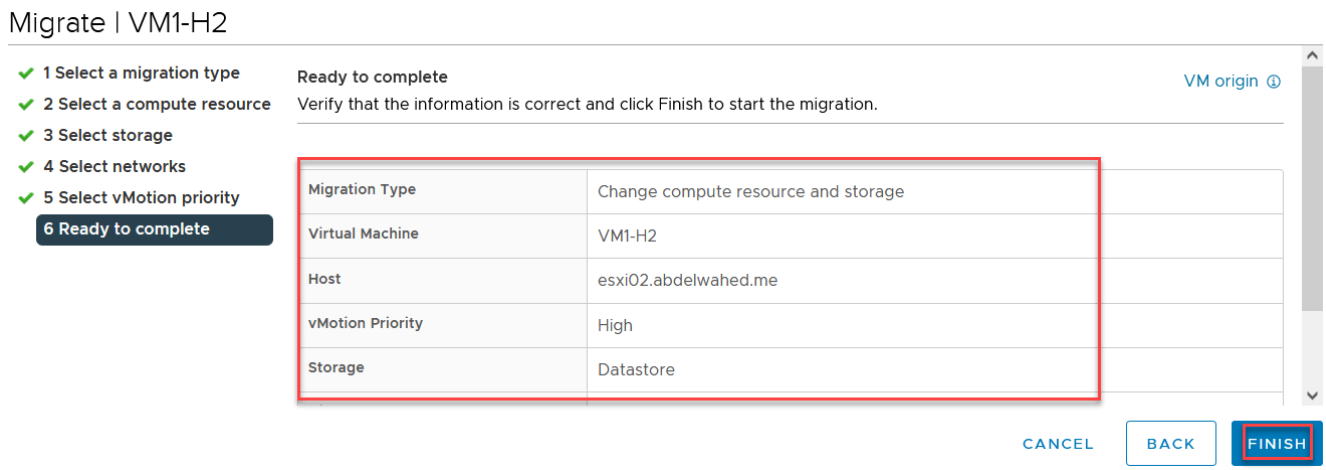


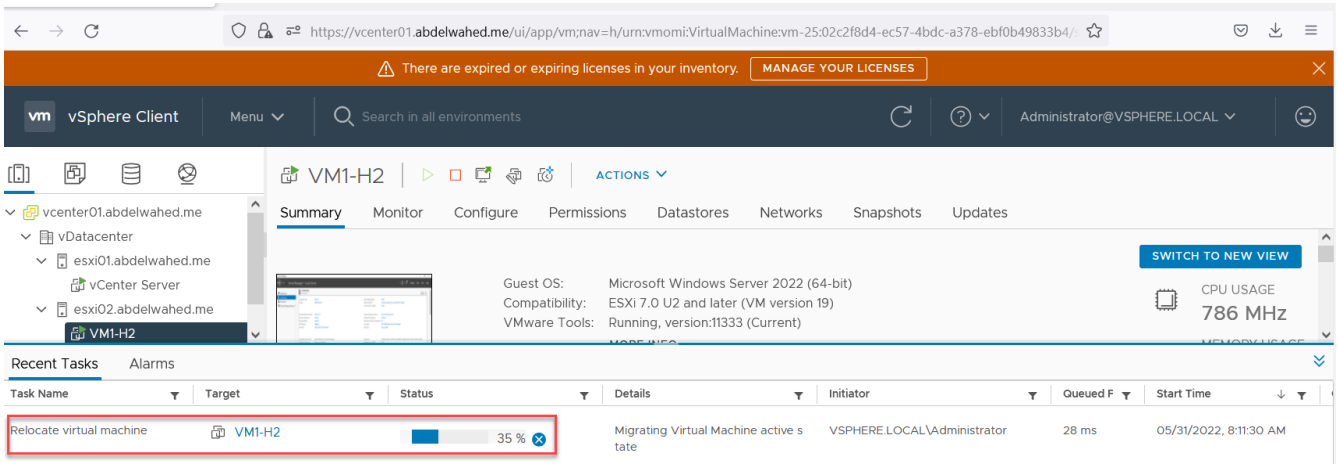


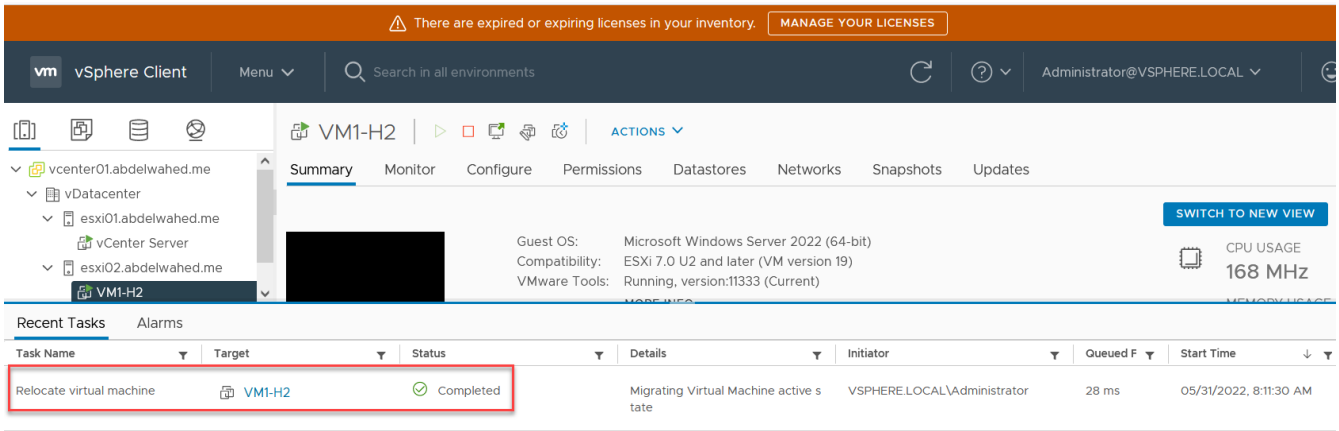

Migrate | VM1-H2
1 Select a migration type
2 Select a compute resource
3 Select storage
4 Select networks
5 Select vMotion priority
6 Ready to complete
Select storage
Select the destination storage for the virtual machine migration.
VM origin
BATCH CONFIGURE
CONFIGURE PER DISK
Select virtual disk format
Same format as source
VM Storage Policy
Keep existing VM storage policies
Name
Storage Cor
Capacity
Provisione
Free
Type
Cluster
Datastore -- 499.75 GB 1.45 GB 498.3 GB VMFS 6
datastore1 ... -- 213.5 GB 1.41 GB 212.09 GB VMFS 6
DBStore -- 141.75 GB 71.96 GB 102.57 GB VMFS 6
CANCEL
BACK
NEXT


Migrate | VM1-H2
1 Select a migration type
2 Select a compute resource
3 Select storage
4 Select networks
5 Select vMotion priority
6 Ready to complete
Select networks
Select destination networks for the virtual machine migration.
VM origin
Migrate VM networking by selecting a new destination network for all VM network adapters attached to the same source network.
Source Network
Used By
Destination Network
VM Network
1 VMs / 1 Network adapters
VM Network
VM Network is in use at:
VM
Network Adapter
Network
VM1-H2
Network adapter 1
VM Network
CANCEL
BACK
NEXT


Migrate | VM1-H2
1 Select a migration type
2 Select a compute resource
3 Select storage
4 Select networks
5 Select vMotion priority
6 Ready to complete
Select vMotion priority
Protect the performance of your running virtual machines by prioritizing the allocation of CPU resources.
VM origin
Schedule vMotion with high priority (recommended)
vMotion receives higher CPU scheduling preference relative to normal priority migrations. vMotion might complete more quickly.
Schedule normal vMotion
vMotion receives lower CPU scheduling preference relative to high priority migrations. You can extend vMotion duration.
CANCEL
BACK
NEXT

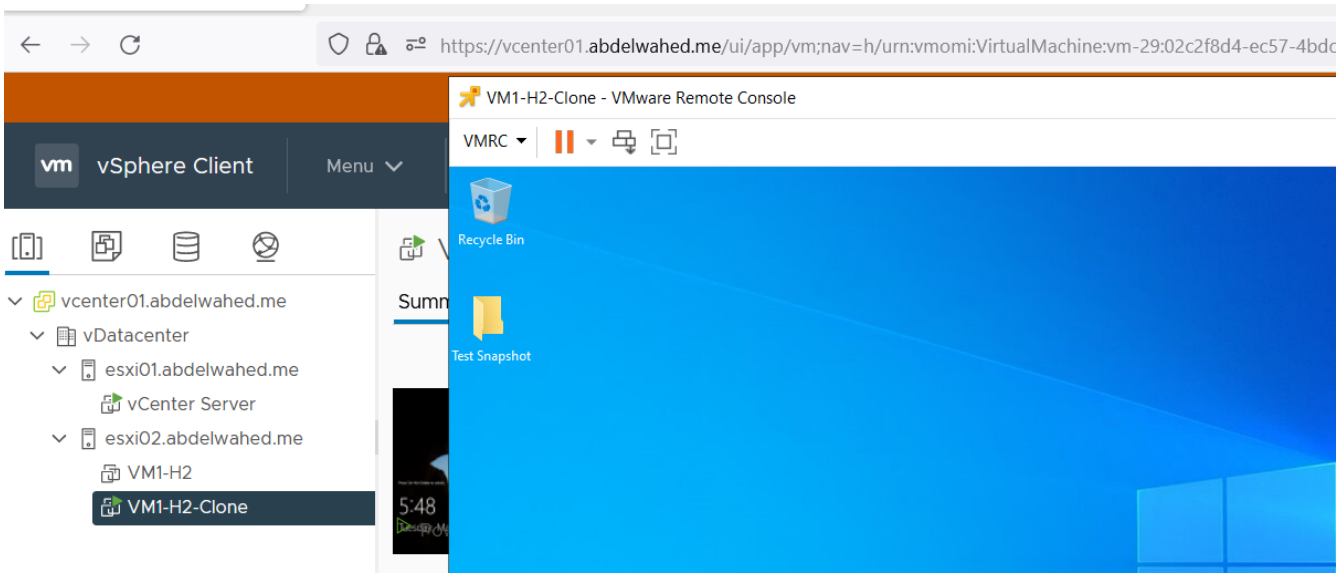

Migrate | VM1-H2
1 Select a migration type
2 Select a compute resource
3 Select storage
4 Select networks
5 Select vMotion priority
6 Ready to complete
Ready to complete
Verify that the information is correct and click Finish to start the migration.
VM origin
Migration Type
Change compute resource and storage
Virtual Machine
VM1-H2
Host
esxi02.abdelwahed.me
vMotion Priority
High
Storage
Datastore
CANCEL
BACK
FINISH

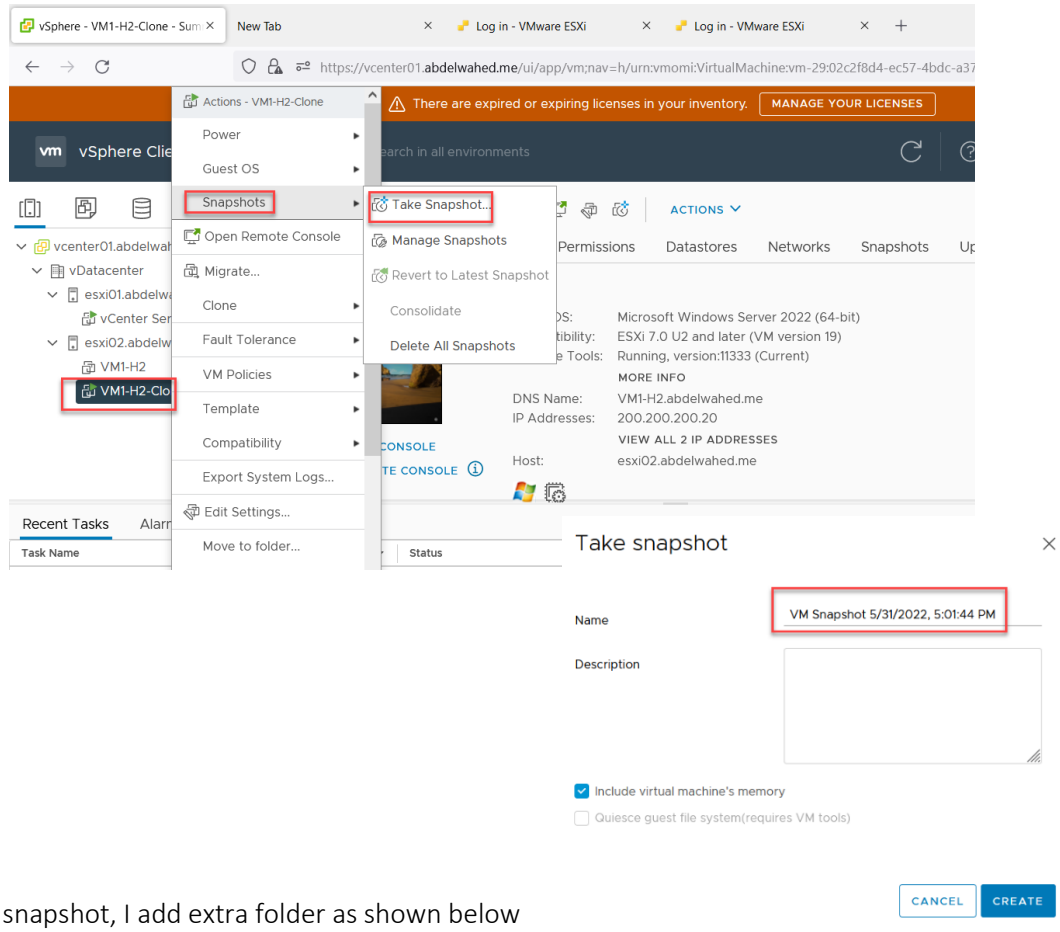

There are expired or expiring licenses in your inventory.
MANAGE YOUR LICENSES
vSphere Client
Menu
Search in all environments
Administrator@VSPHERE.LOCAL
VM1-H2
ACTIONS
Summary
Monitor
Configure
Permissions
Datastores
Networks
Snapshots
Updates
SWITCH TO NEW VIEW
Guest OS: Microsoft Windows Server 2022 (64-bit)
Compatibility: ESXi 7.0 U2 and later (VM version 19)
VMware Tools: Running, version:11333 (Current)
CPU USAGE
786 MHz
Recent Tasks
Alarms
Task Name
Target
Status
Details
Initiator
Queued F
Start Time
Relocate virtual machine
VM1-H2
35 %
Migrating Virtual Machine active s tate
VSPHERE.LOCAL\Administrator
28 ms
05/31/2022, 8:11:30 AM


There are expired or expiring licenses in your inventory.
MANAGE YOUR LICENSES
vSphere Client
Menu
Search in all environments
Administrator@VSPHERE.LOCAL
VM1-H2
ACTIONS
Summary
Monitor
Configure
Permissions
Datastores
Networks
Snapshots
Updates
SWITCH TO NEW VIEW
Guest OS: Microsoft Windows Server 2022 (64-bit)
Compatibility: ESXi 7.0 U2 and later (VM version 19)
VMware Tools: Running, version:11333 (Current)
CPU USAGE
168 MHz
Recent Tasks
Alarms
Task Name
Target
Status
Details
Initiator
Queued F
Start Time
Relocate virtual machine
VM1-H2
Completed
Migrating Virtual Machine active s tate
VSPHERE.LOCAL\Administrator
28 ms
05/31/2022, 8:11:30 AM

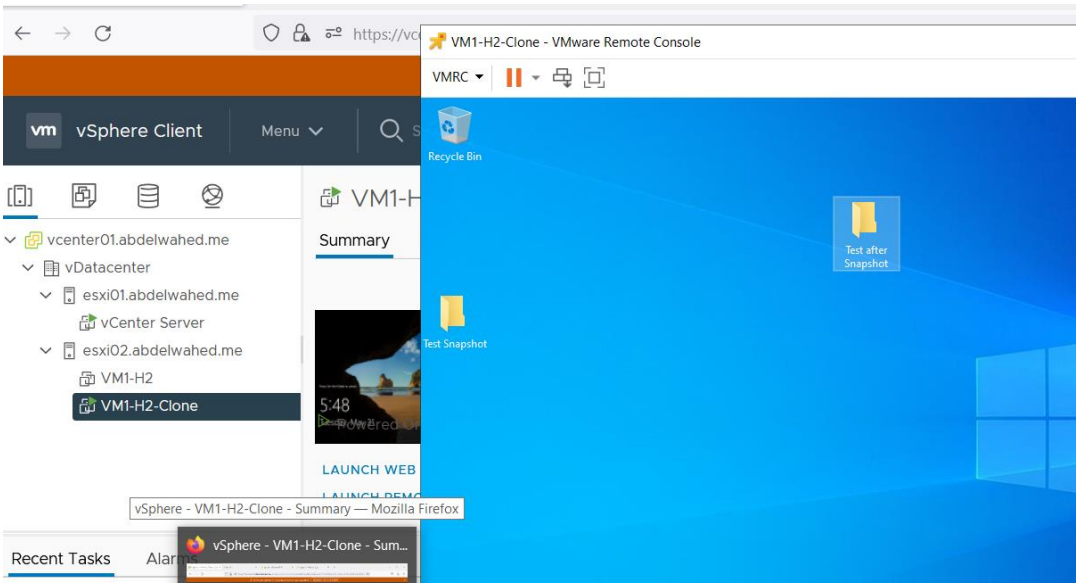
Working with Snapshot

i have one VM include test snapshot folder saved on desktop

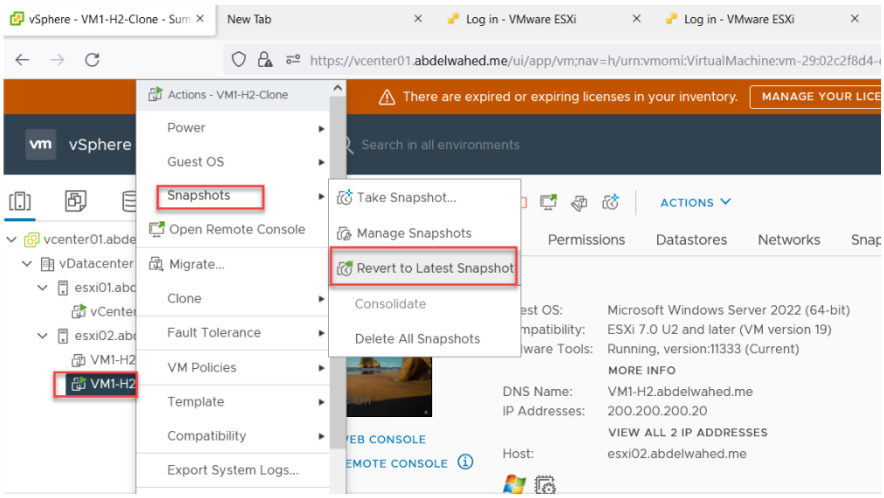


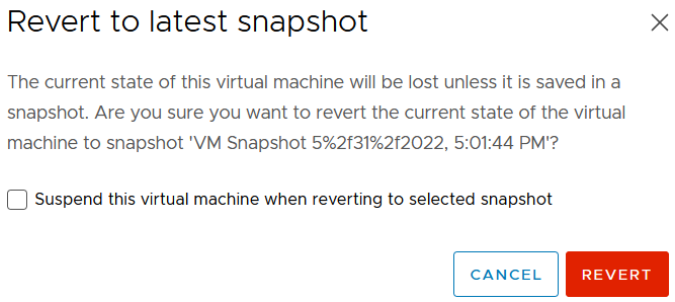


After I take snapshot, I add extra folder as shown below

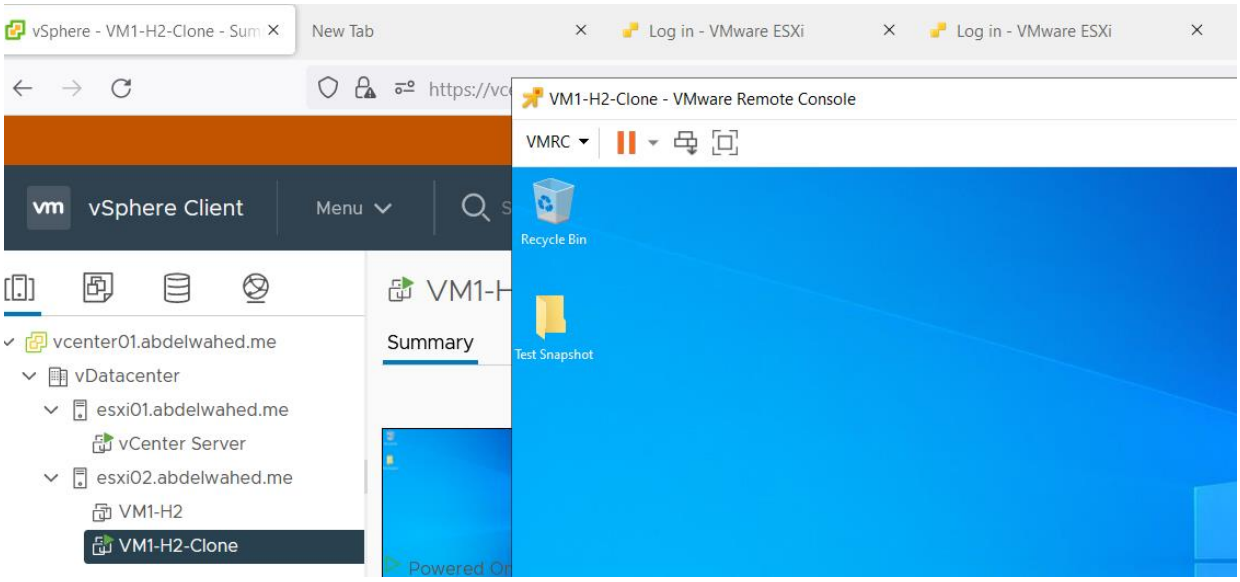


Now I will revert that VM and see the changes





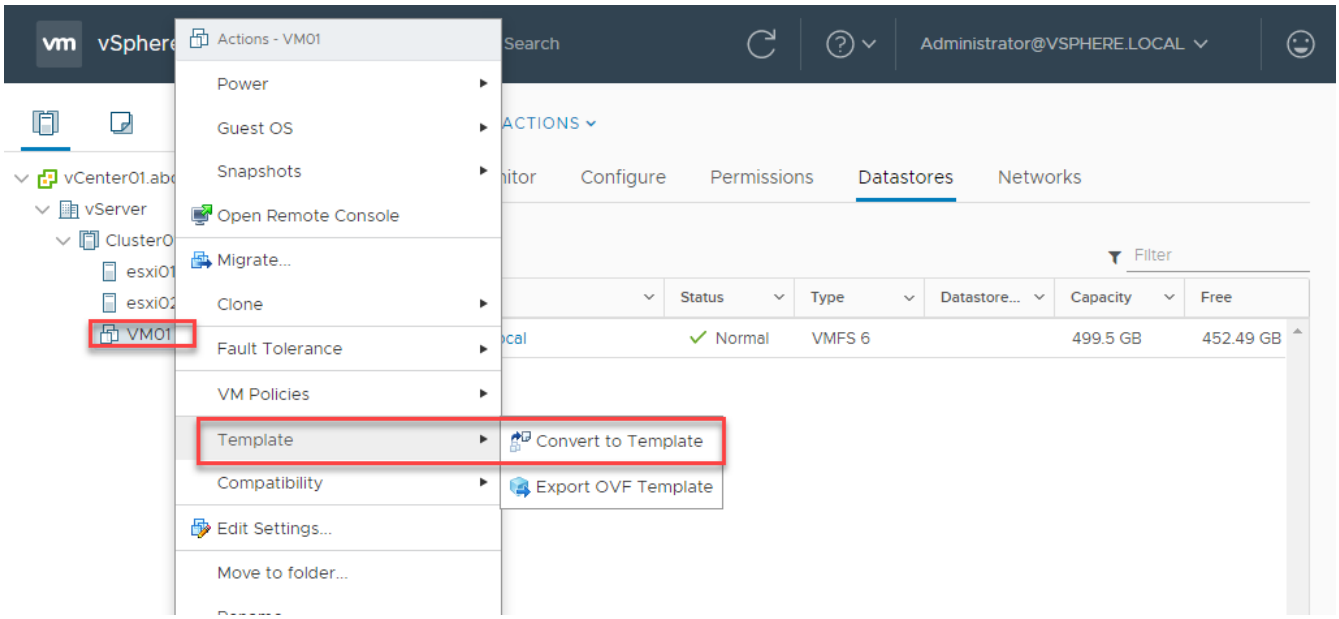
the new added folder is deleted

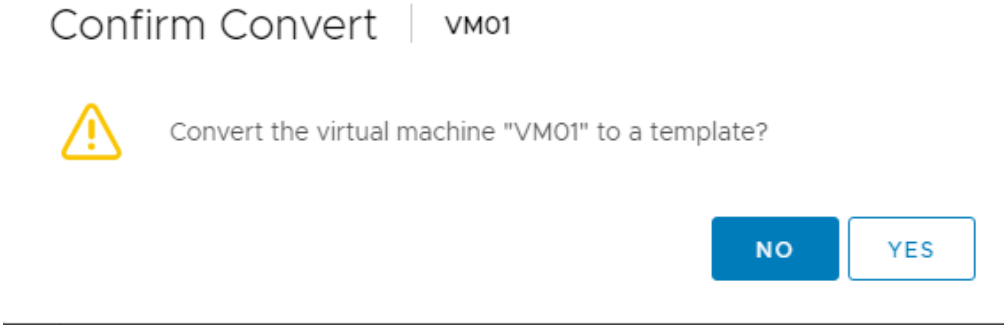


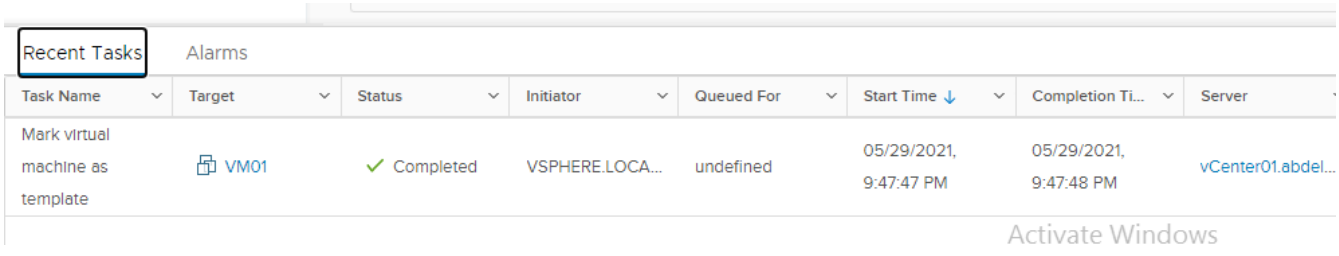
VM clone and template

Create VM Template

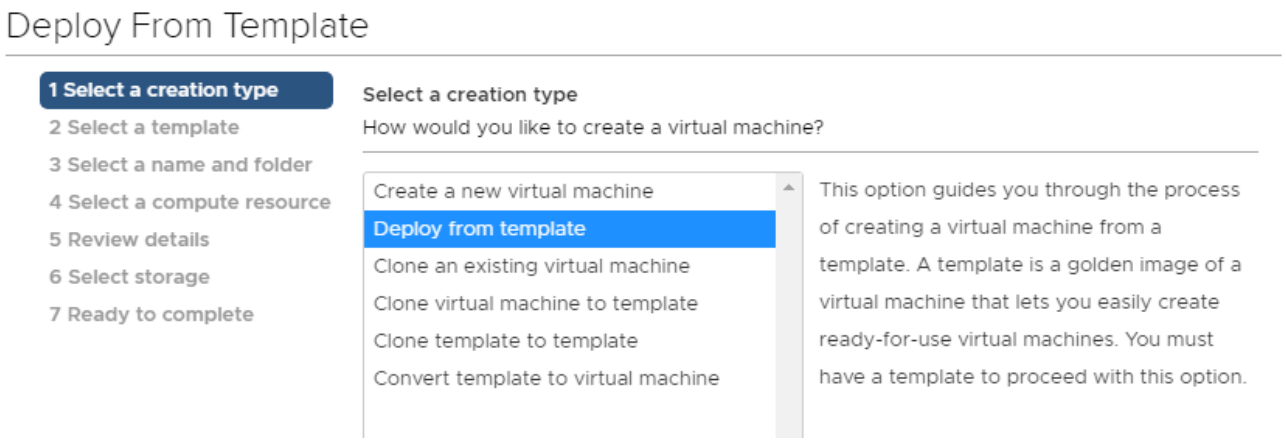
First you must power off vm, so you can convert to template

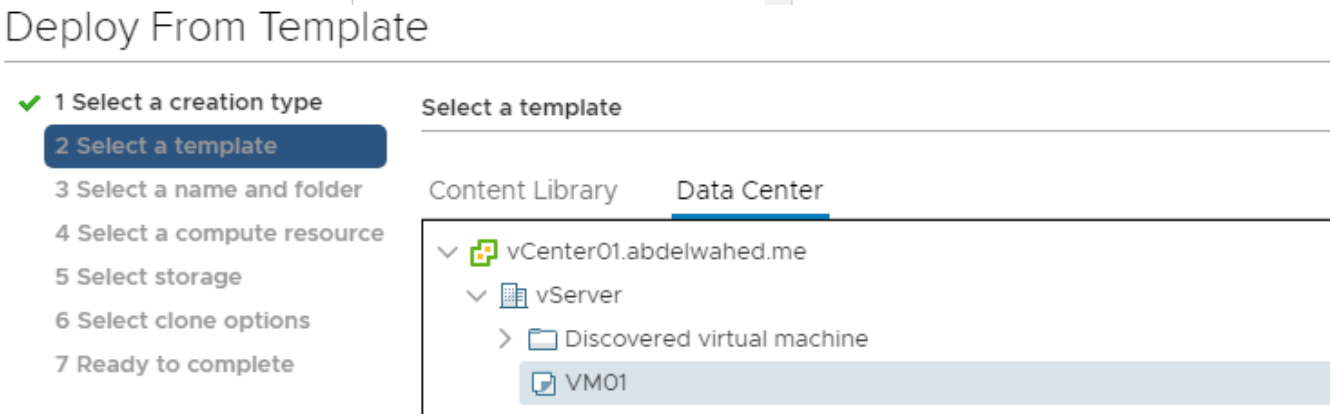


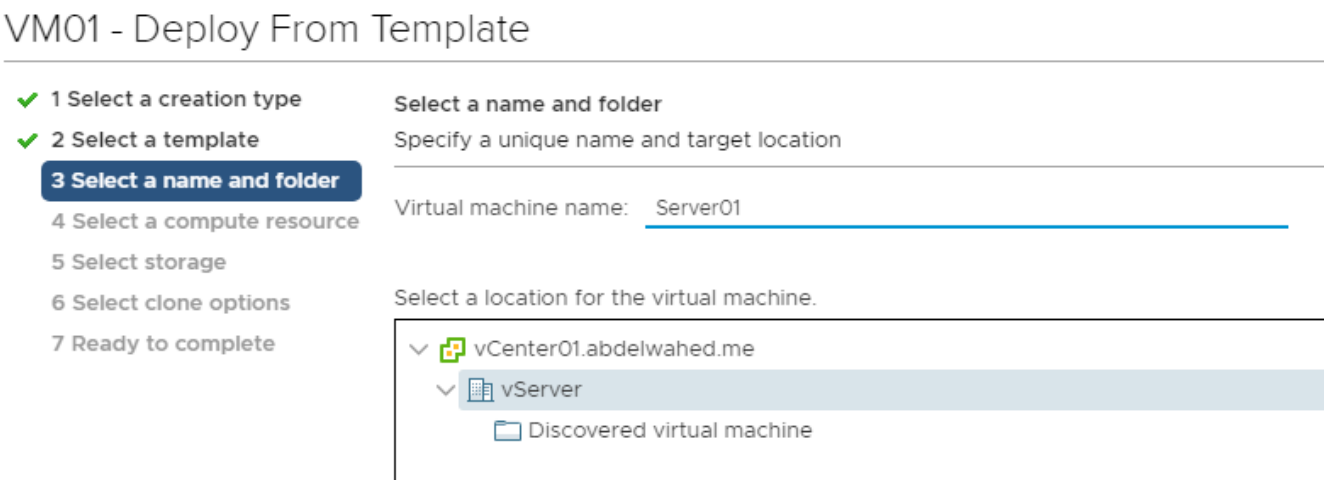


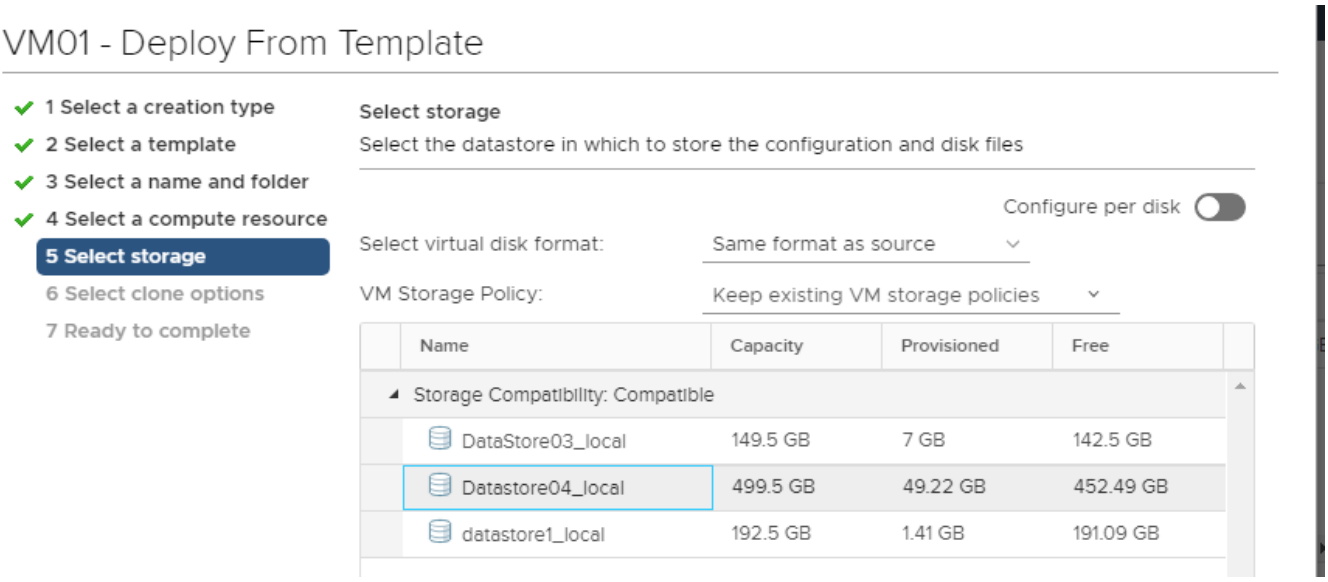


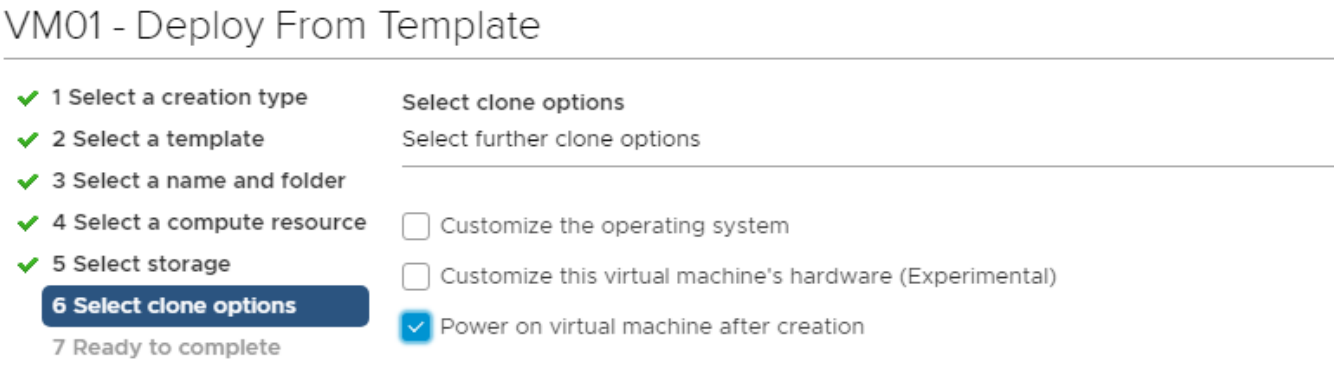
Deploy VM from template



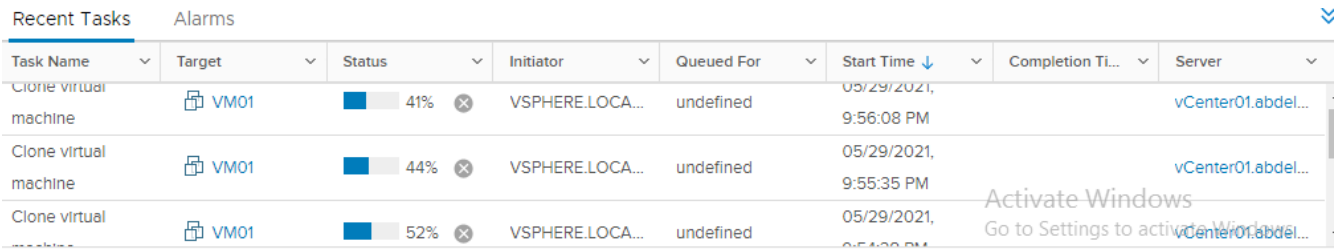






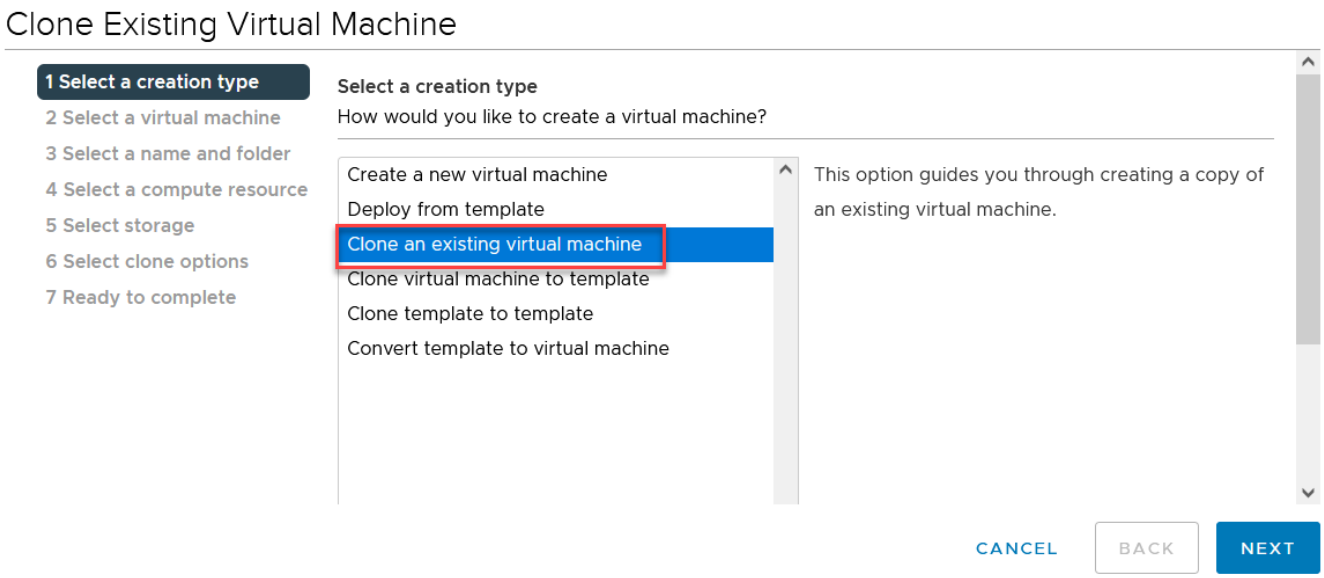


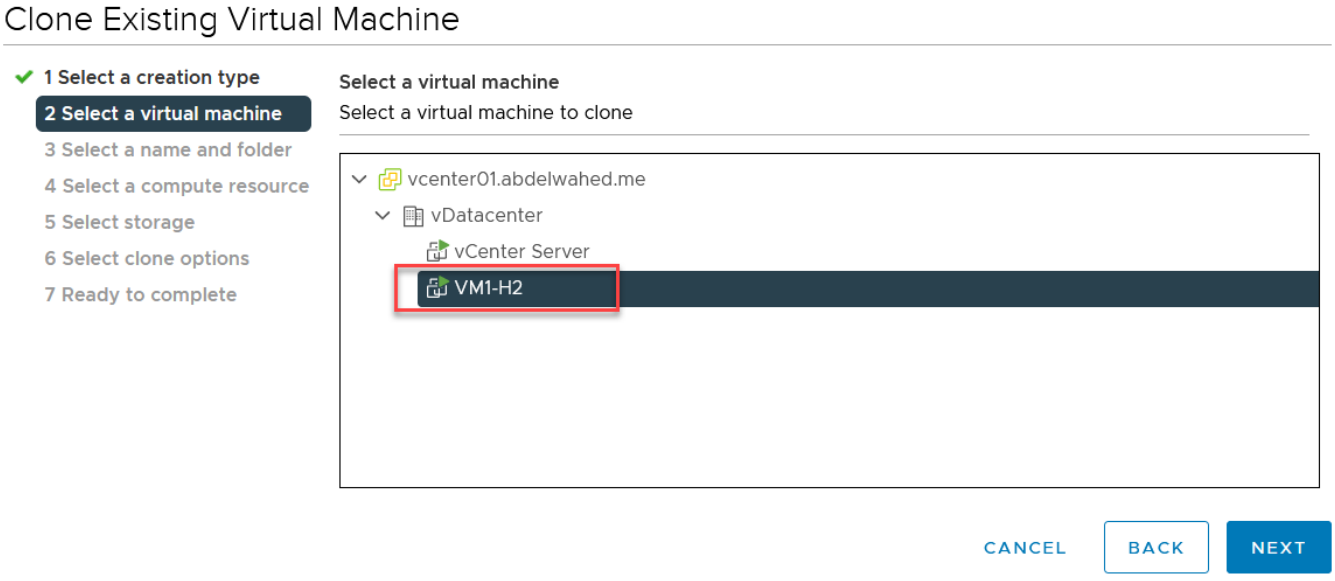
I create 4 server 2 vms in each host

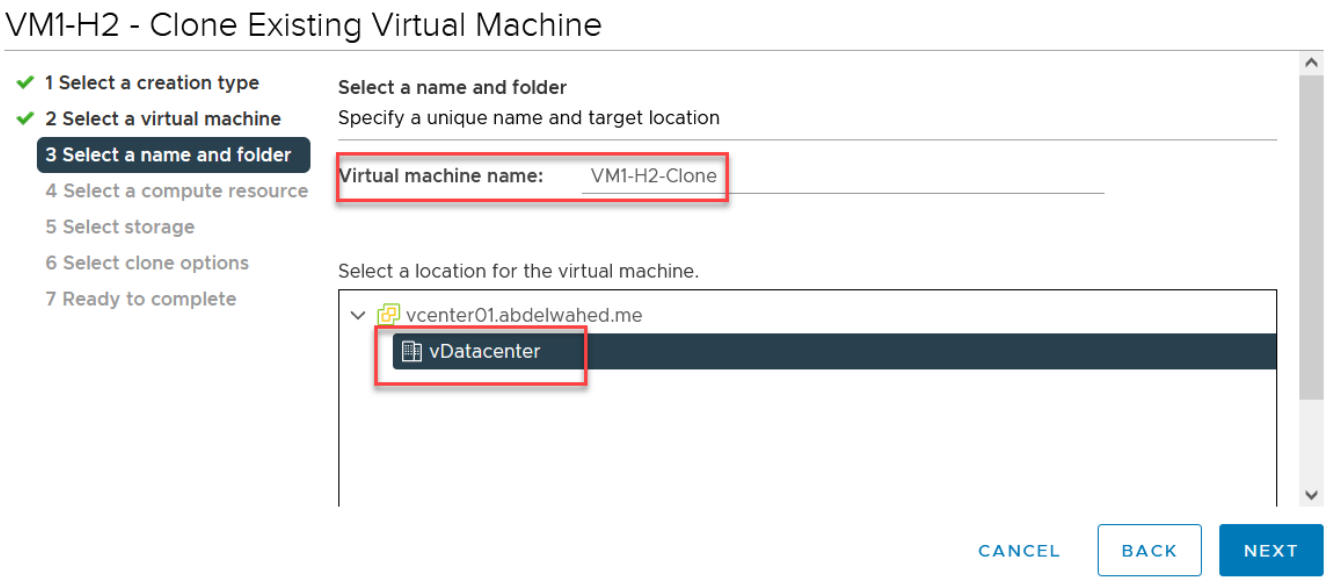


Clone Exiting VM

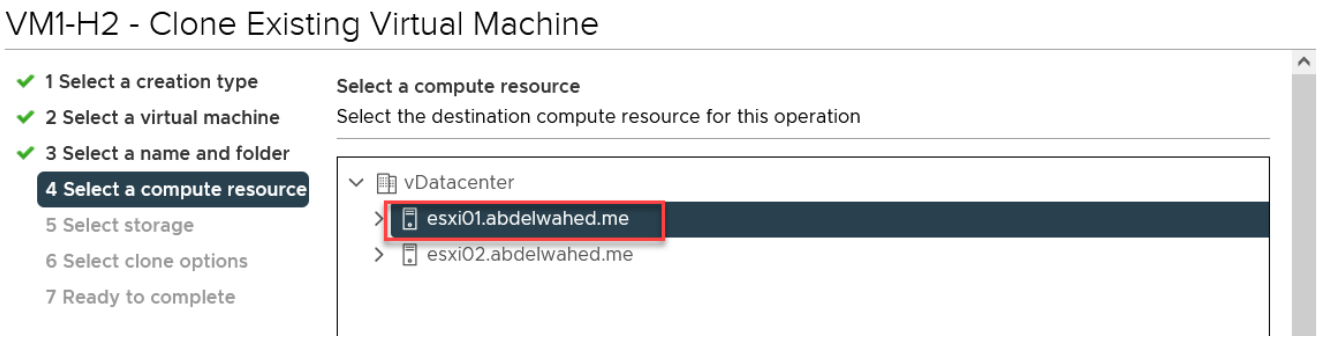
clone running VM will save the VM source, while convert VM to template will remove the VM source. And give new UUID, you can check VM UUID by running **wmic path win32_computersystemproduct get uuid**

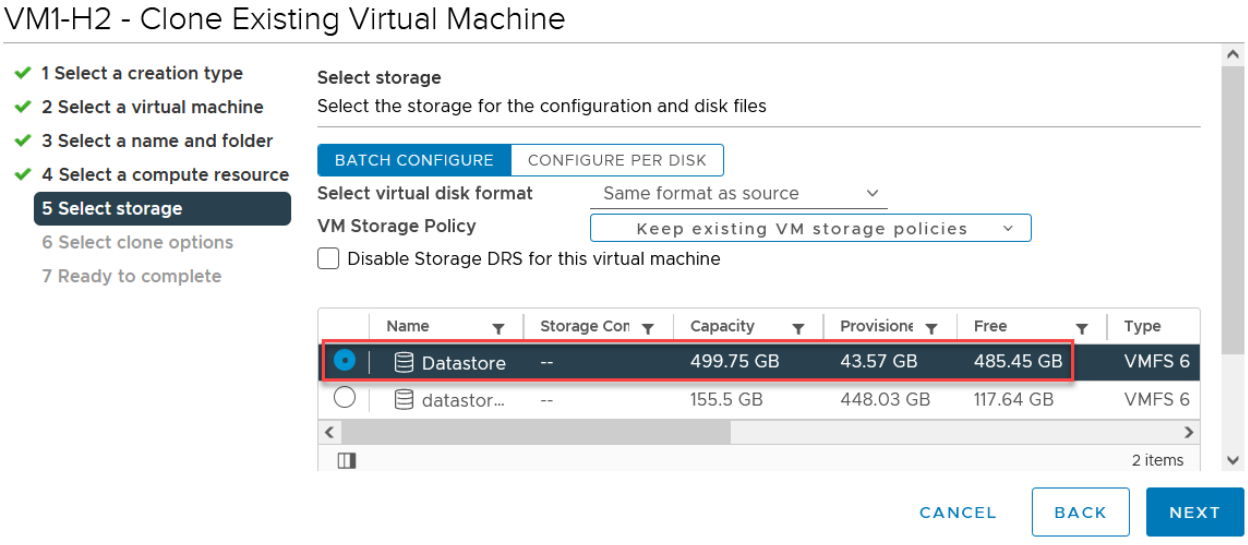




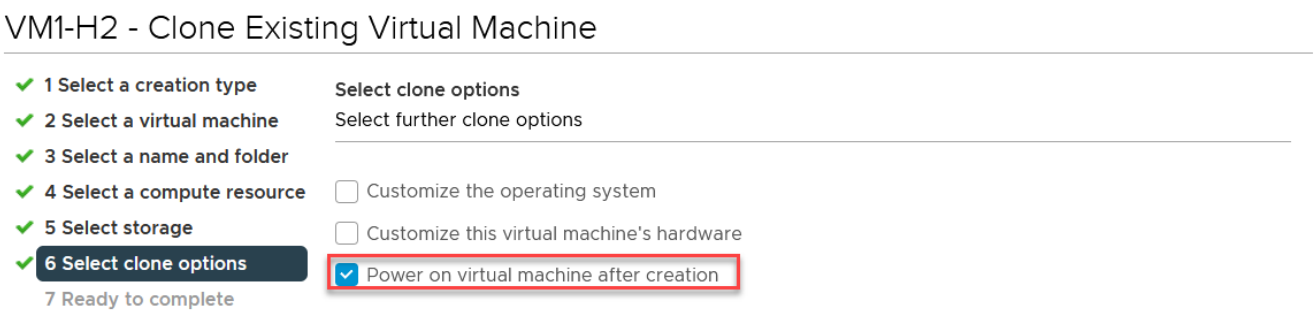


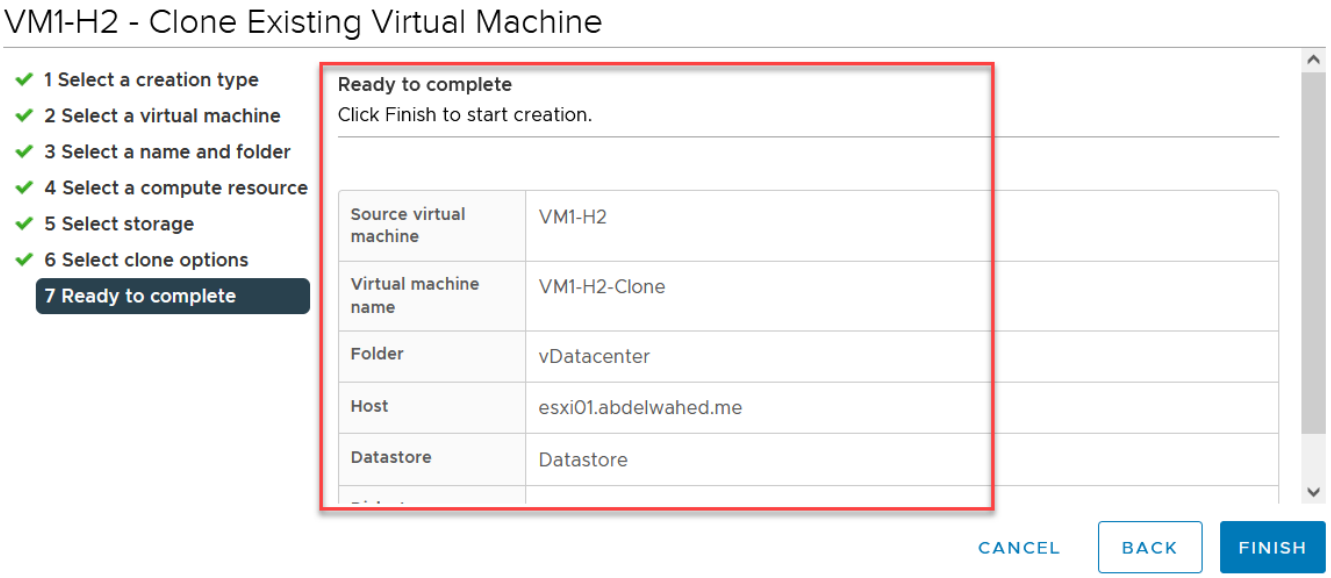
i will move to another ESXI host

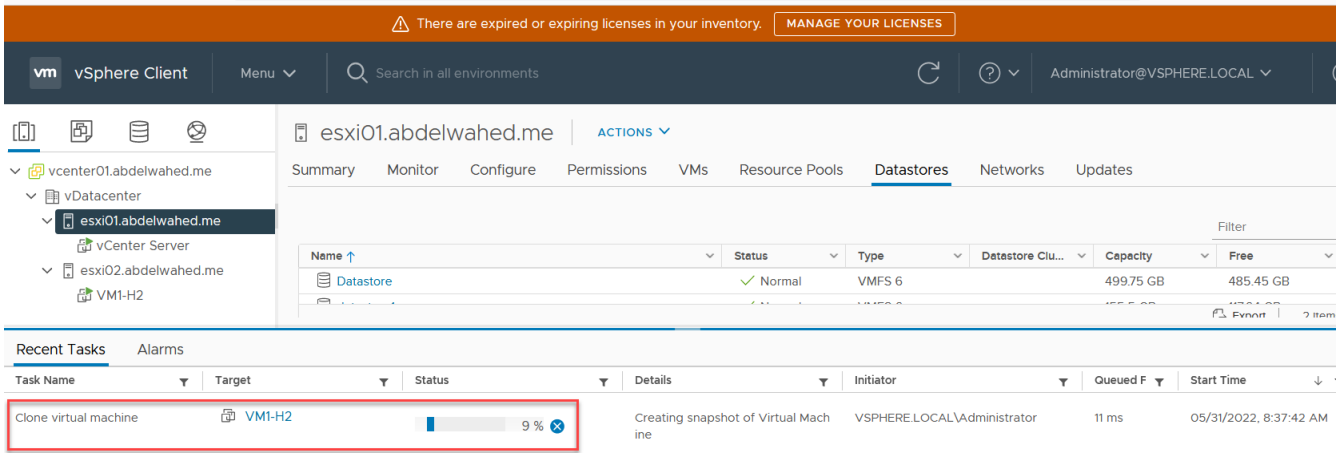


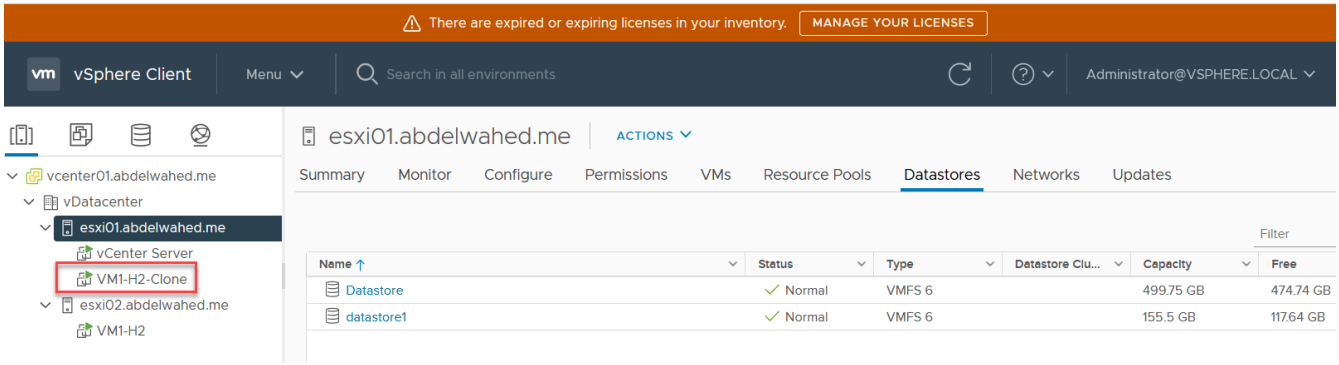


if you want to customize VM hardware select second option

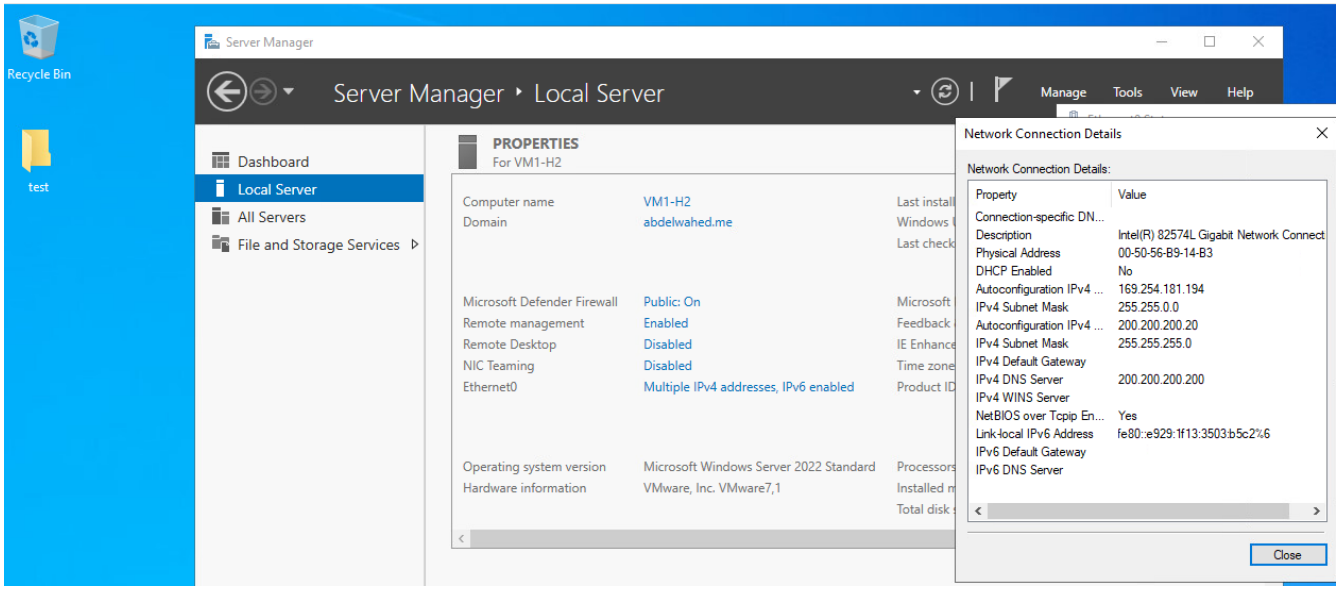








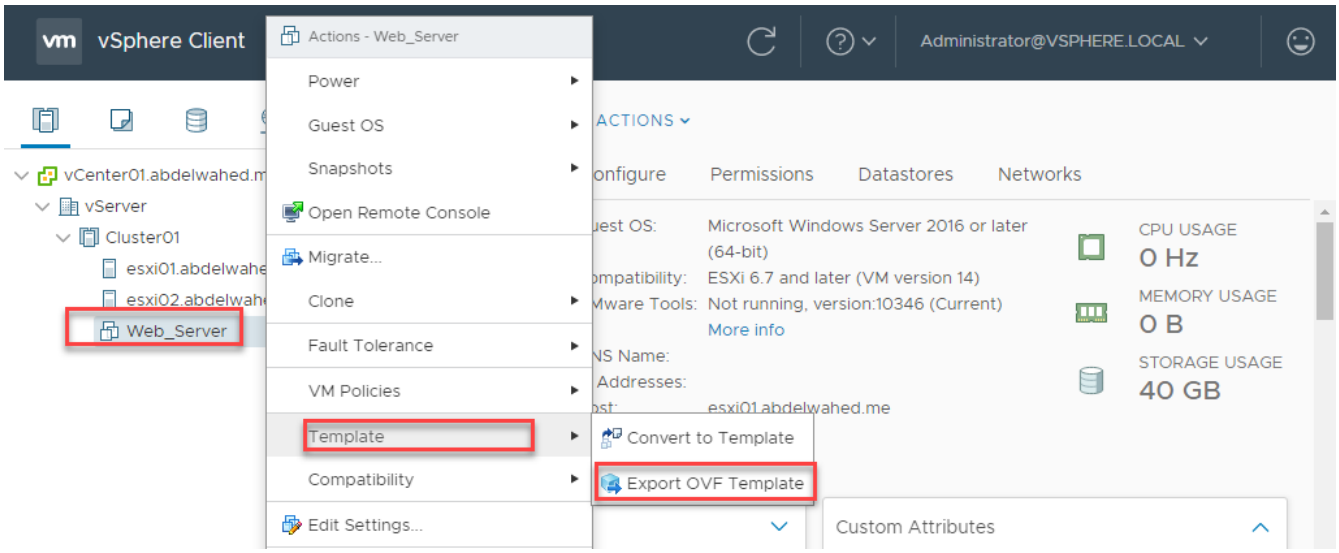
after clone, everything kept as it, only IP and UUID changed



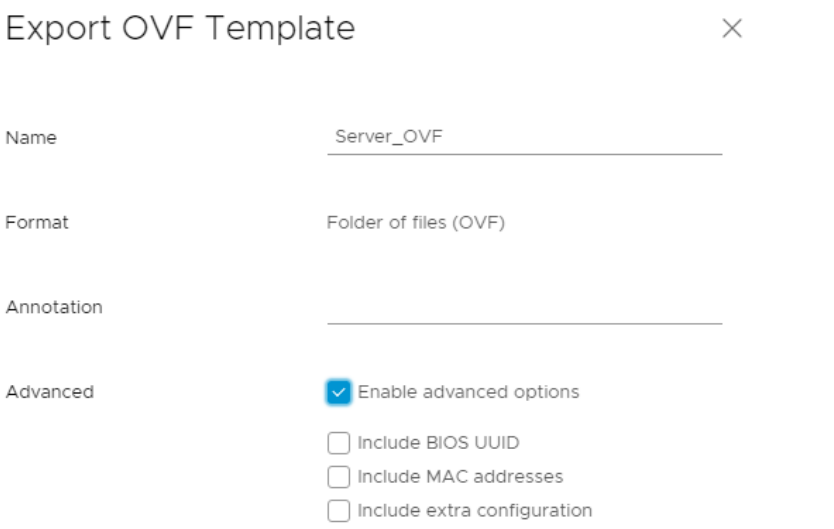
OVF and OVA Template (Open Virualization Format and Appliance)

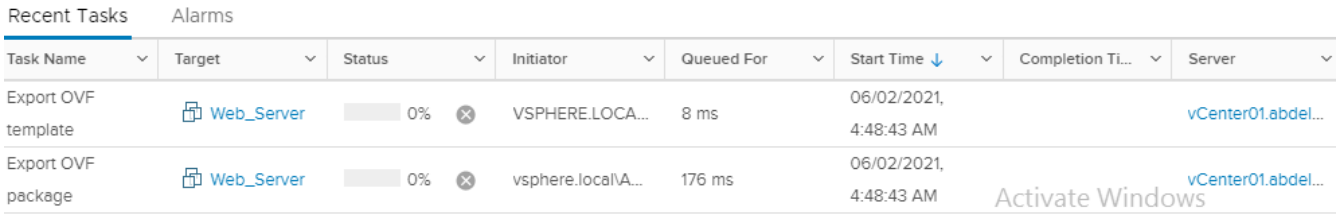
Preconfigured VM, no need to ask about RAM, CPU or HD. By default, you can't import VM from another vCenter or another ESXi server, to do that you have to export VM as a OVF template so you can use it in different environment like vCenter or ESXi server or VMware workstation

First power the VM off

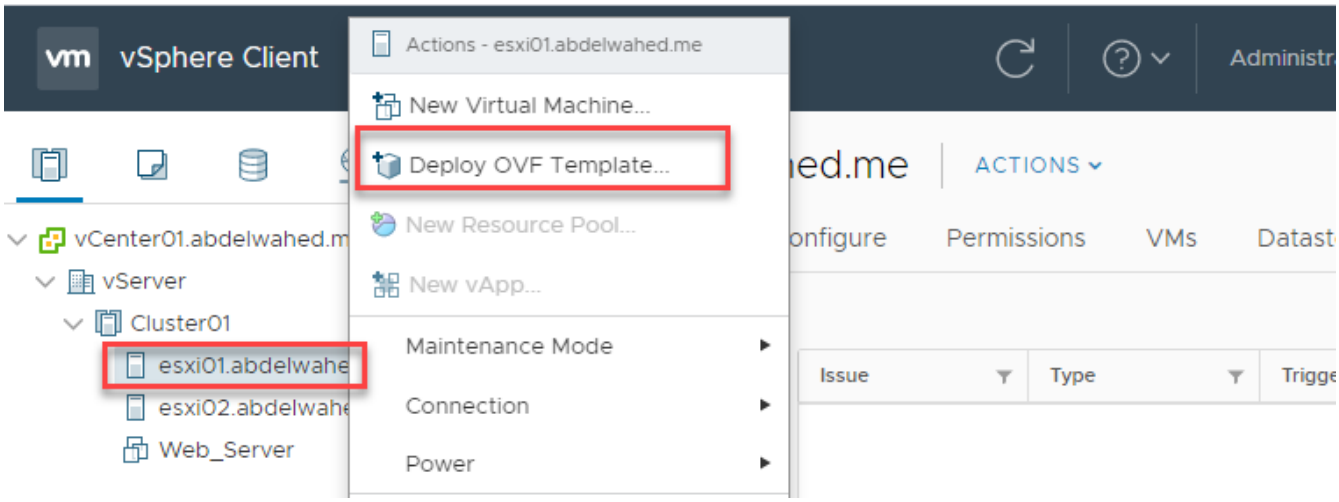


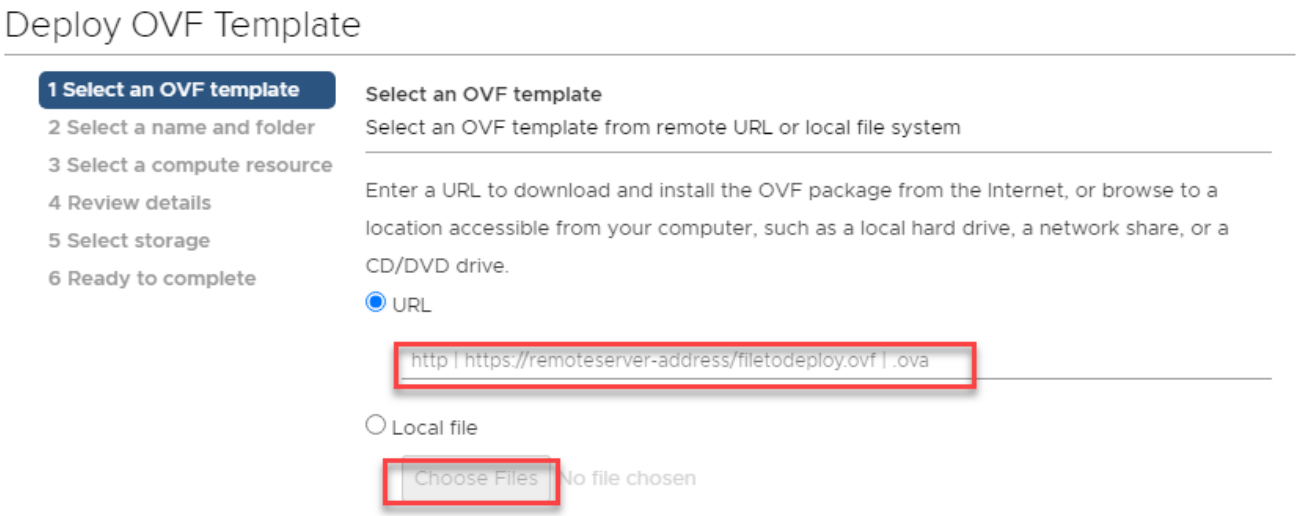
VM will DOWNLOADED then you can use it for another environment





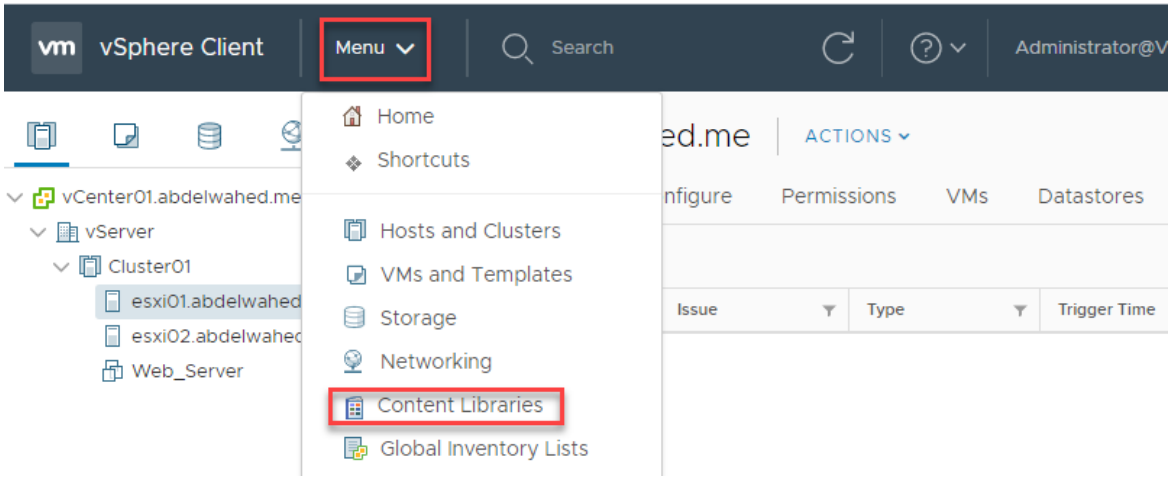
Now you import to the same environment or different one through the following steps

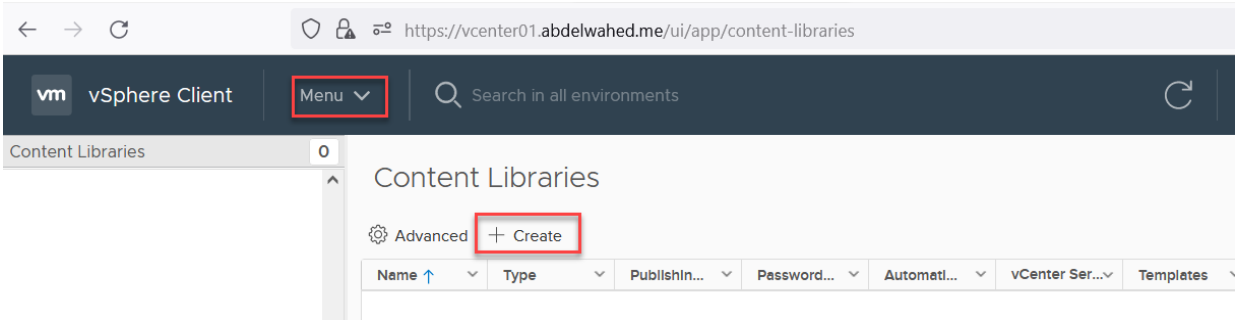


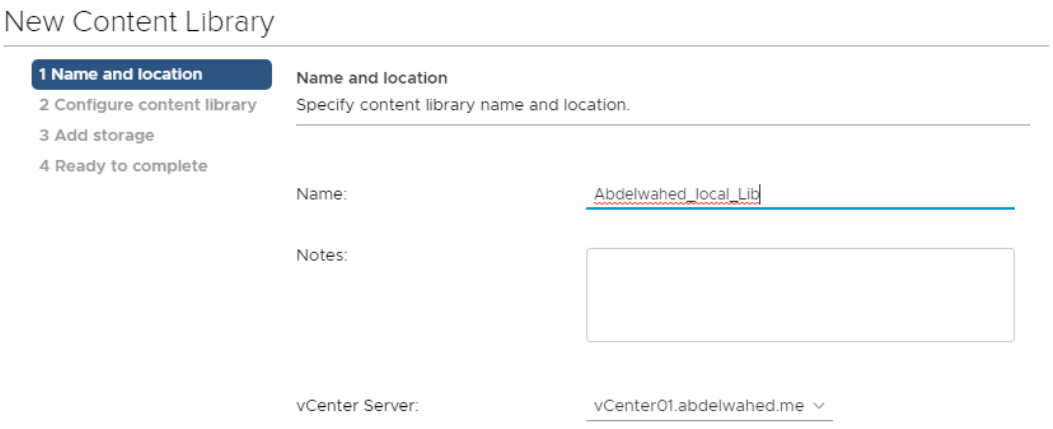


Content Library

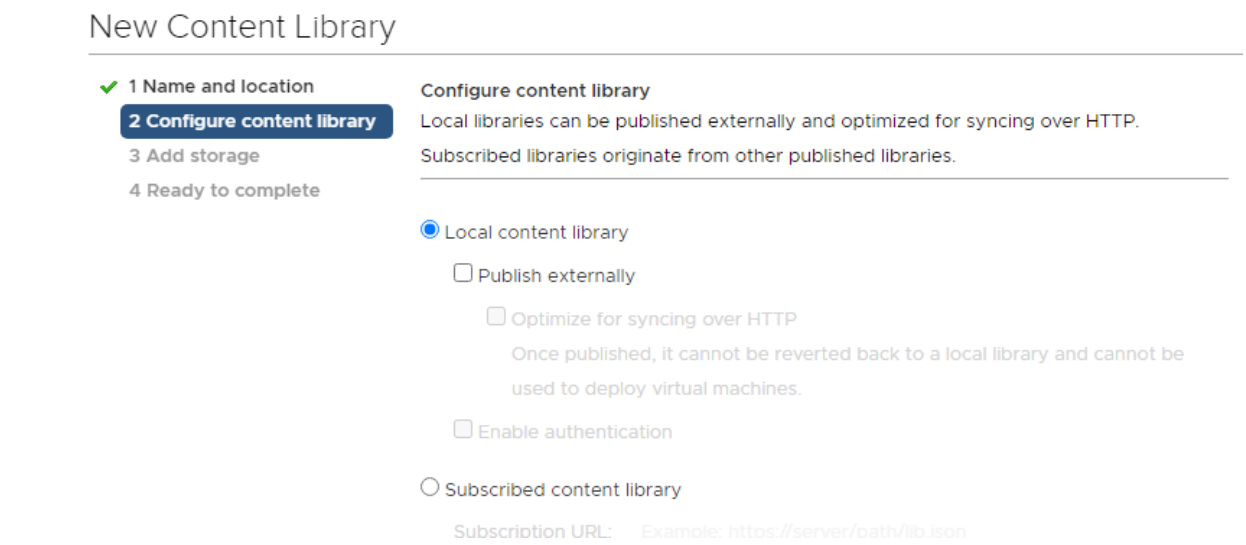
Centeralized store for template, ISO, files and folders and more so you can used later many times without duplication. This library stored on datastore.

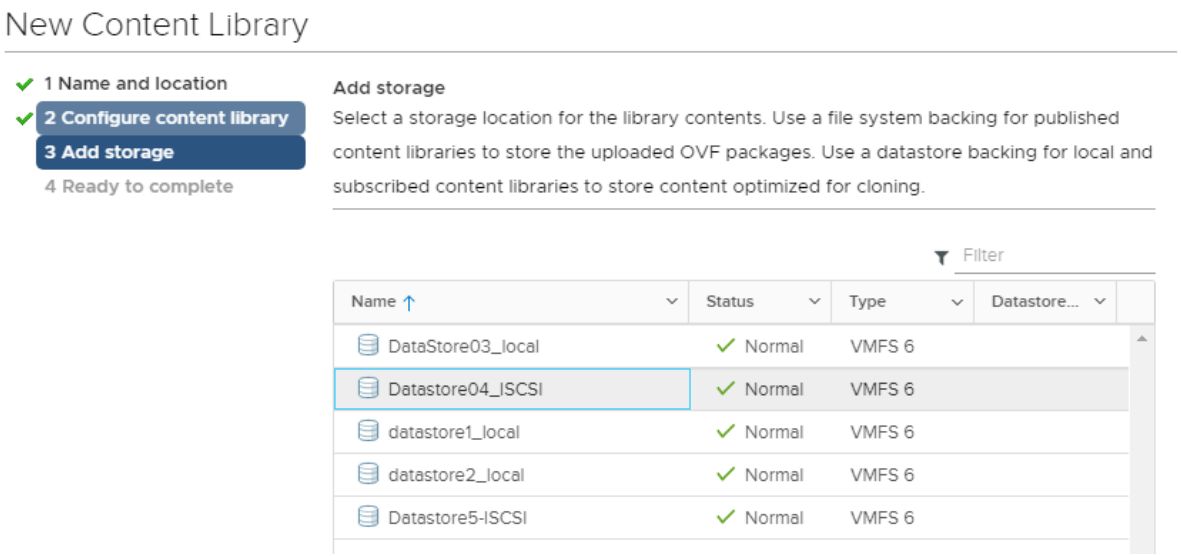


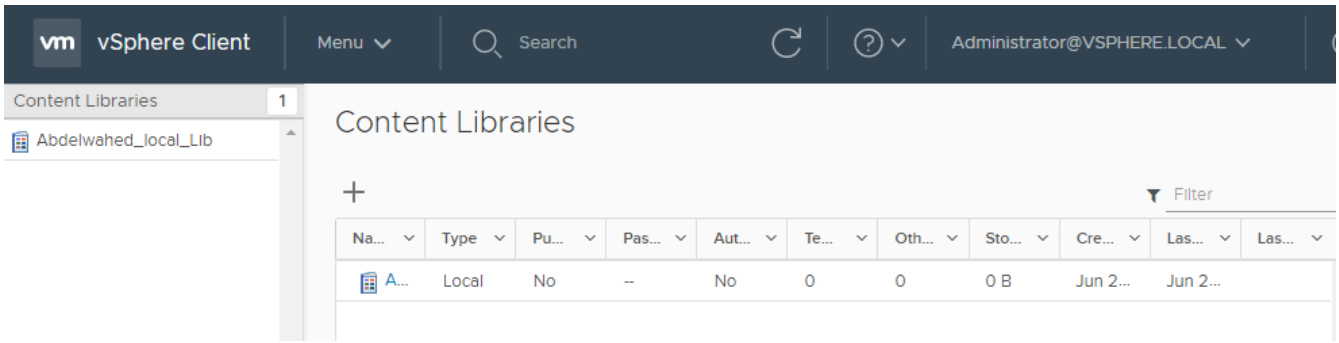




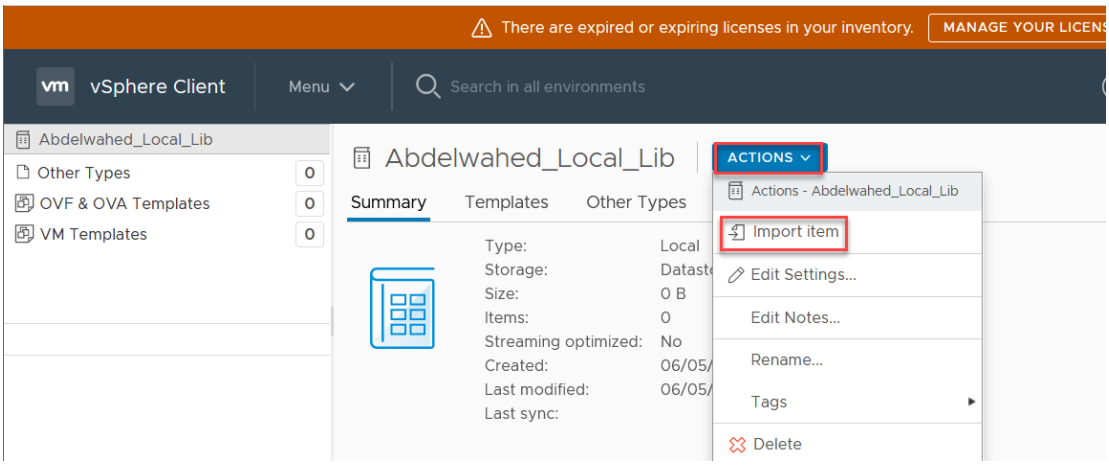
You can publish this library and another vCenter can connect it to use these reources.

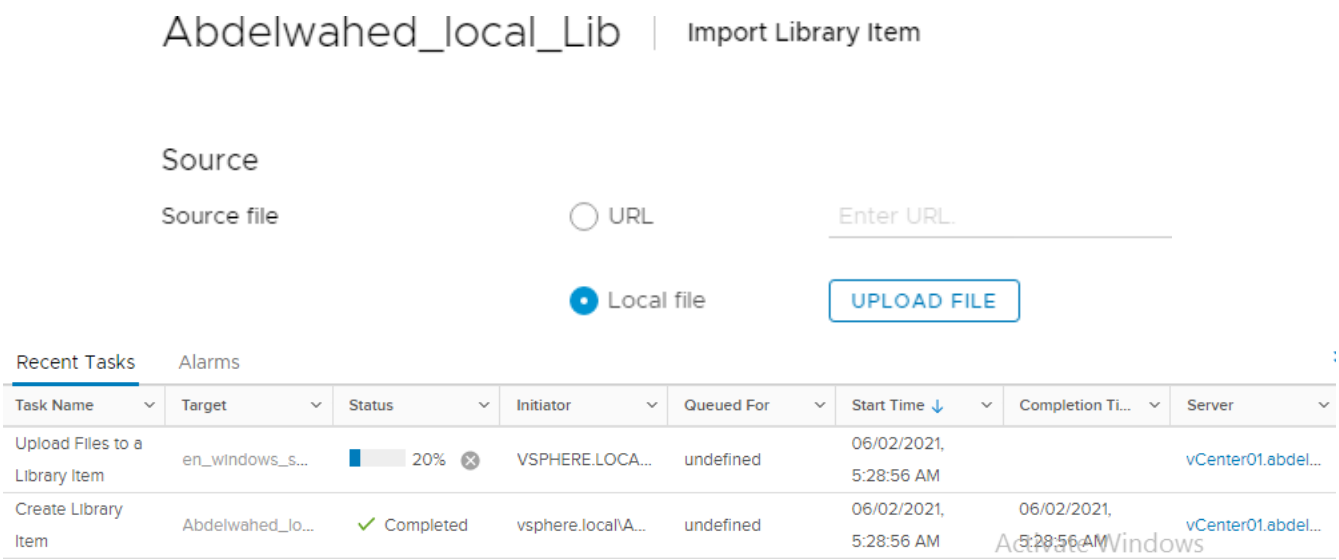




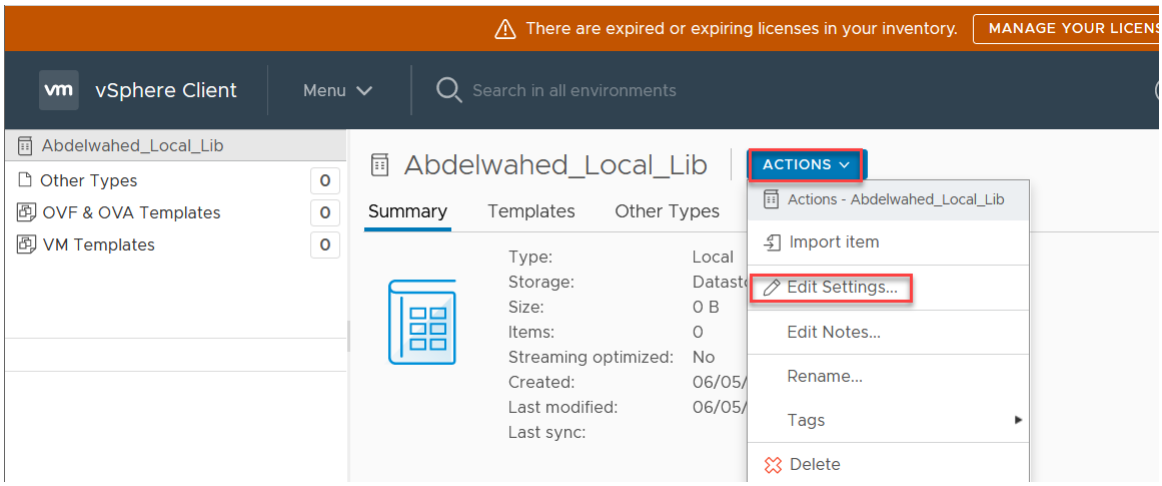


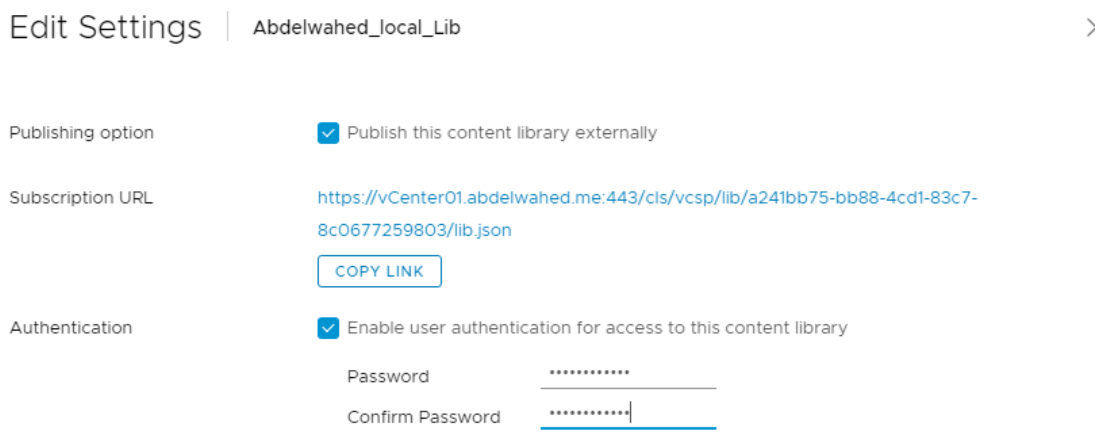
Now you can upload different type of data to it





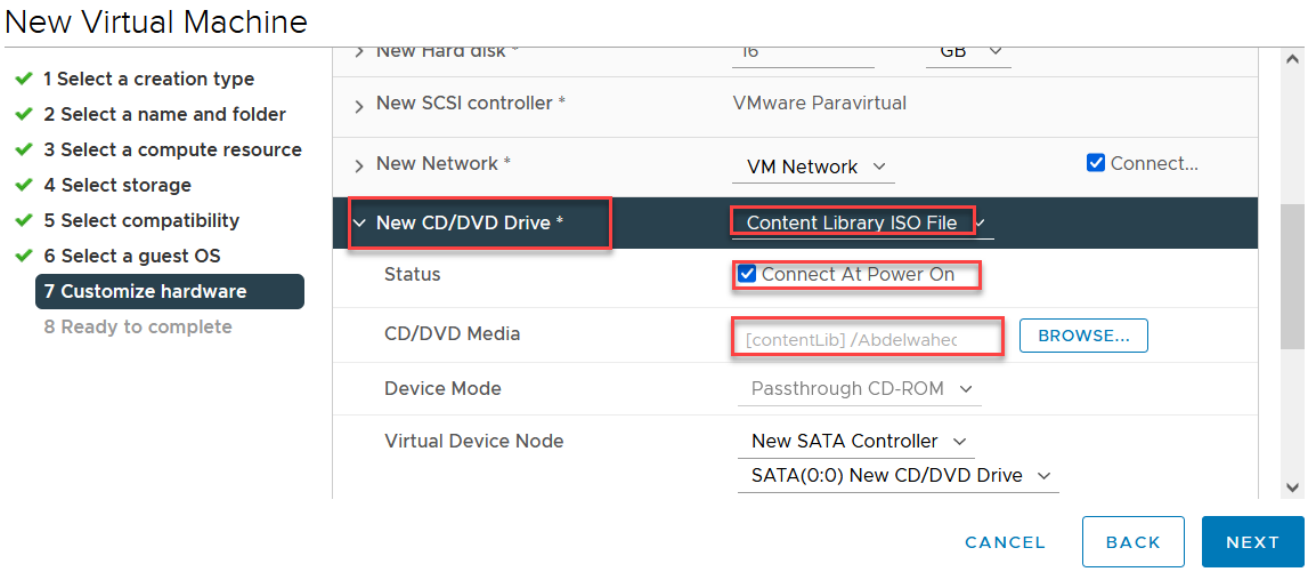
You can convert this local library to subscriped library (web)





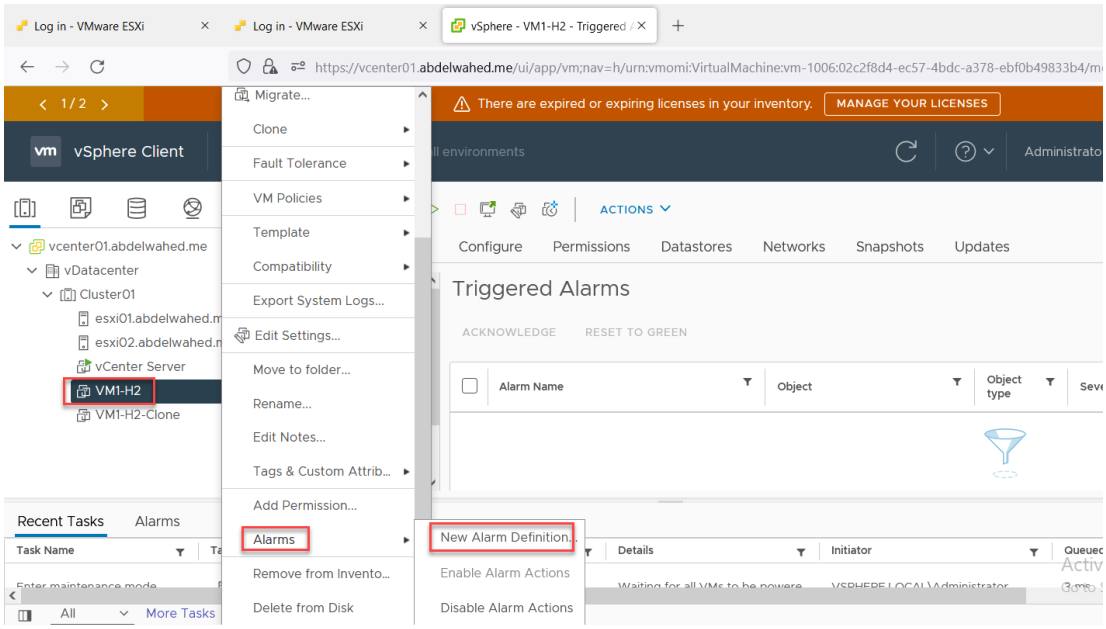
This link you can use for another vCenter as a local library.

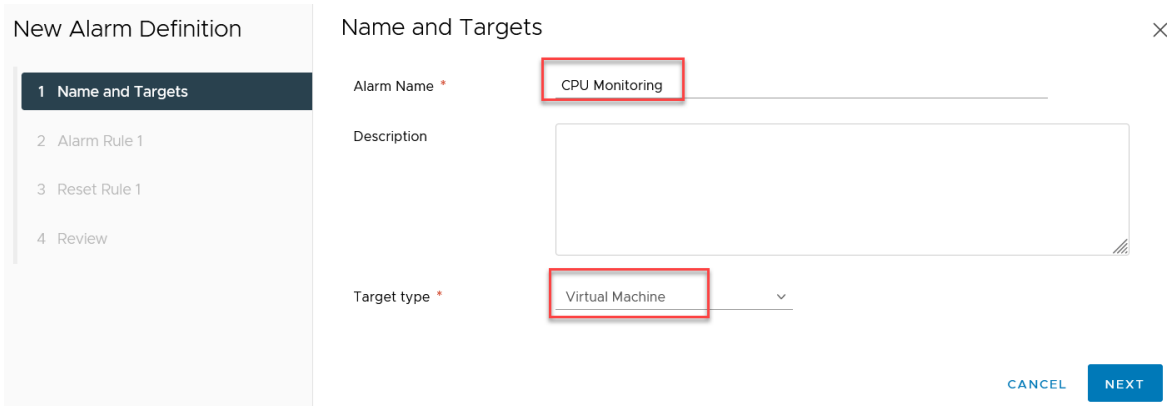
Now you can use the uploaded ISO in the library to install new VM.

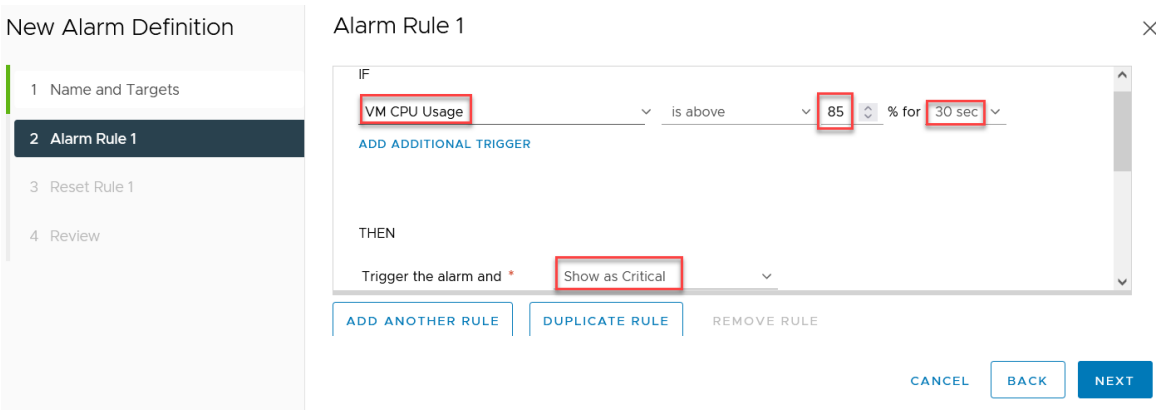


Using Alarms

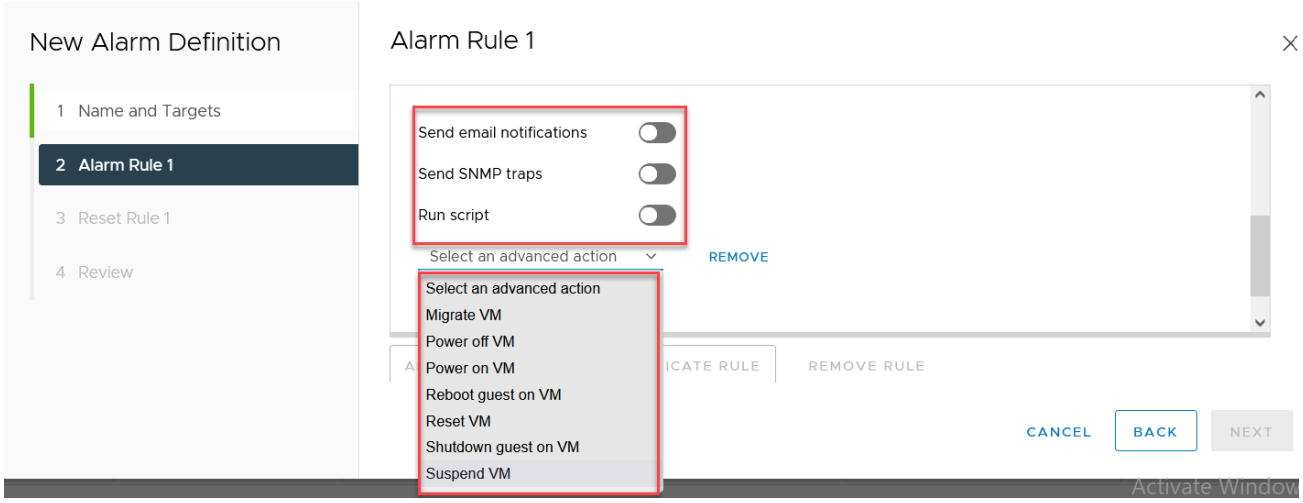
Create alarms to monitor VMs events and conditions

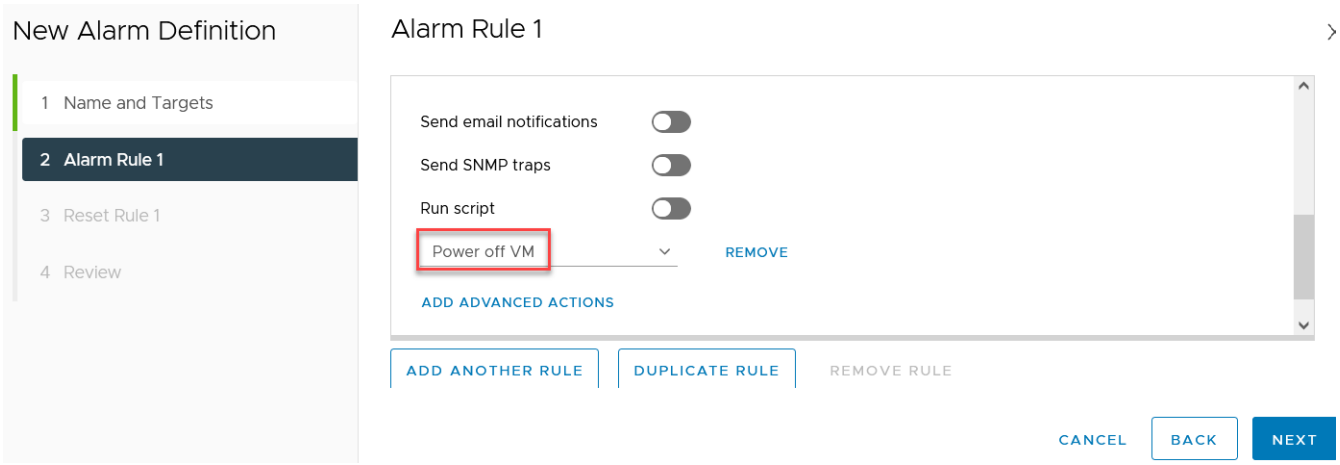

Log in - VMware ESXi
Log in - VMware ESXi
vSphere - VM1-H2 - Triggered
https://vcenter01.abdelwahed.me/ui/app/vm;nav=h/urn:vmomi:VirtualMachine:vm-1006:02c2f8d4-ec57-4bdc-a378-ebf0b49833b4/
vSphere Client
There are expired or expiring licenses in your inventory.
MANAGE YOUR LICENSES
vcenter01.abdelwahed.me
vDatacenter
Cluster01
esxi01.abdelwahed.m
esxi02.abdelwahed.n
vCenter Server
VM1-H2
VM1-H2-Clone
Migrate...
Clone
Fault Tolerance
VM Policies
Template
Compatibility
Export System Logs...
Edit Settings...
Move to folder...
Rename...
Edit Notes...
Tags & Custom Attrib...
Add Permission...
Alarms
Remove from Invento...
Delete from Disk
New Alarm Definition...
Enable Alarm Actions
Disable Alarm Actions
ACTIONS
Configure
Permissions
Datastores
Networks
Snapshots
Updates
Triggered Alarms
ACKNOWLEDGE
RESET TO GREEN
Alarm Name
Object
Object type
Recent Tasks
Alarms
Task Name
Details
Initiator
All
More Tasks

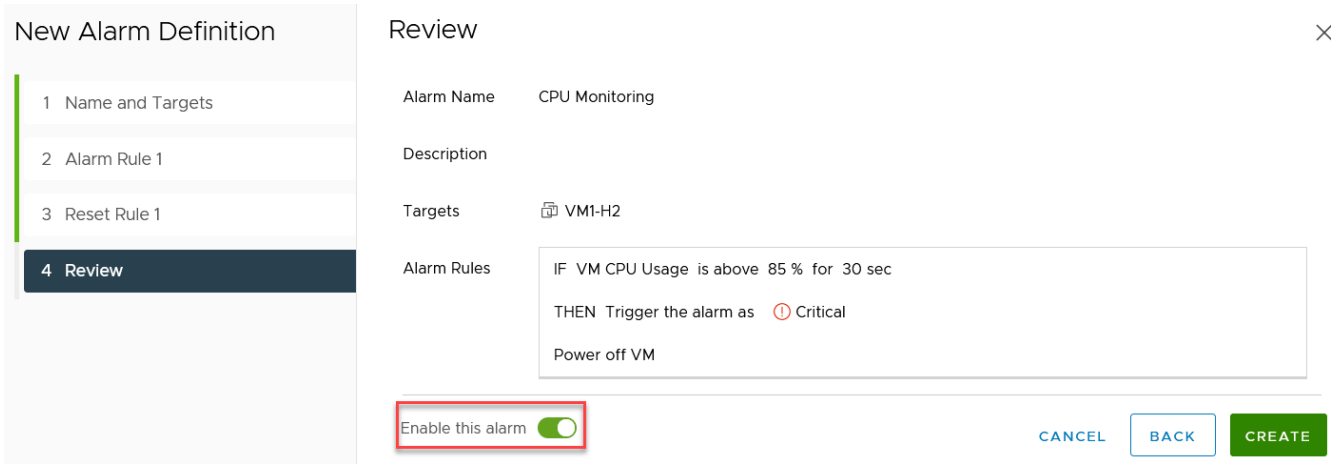

New Alarm Definition
1 Name and Targets
2 Alarm Rule 1
3 Reset Rule 1
4 Review
Name and Targets
Alarm Name *
CPU Monitoring
Description
Target type *
Virtual Machine
CANCEL
NEXT


New Alarm Definition
1 Name and Targets
2 Alarm Rule 1
3 Reset Rule 1
4 Review
Alarm Rule 1
IF
VM CPU Usage
is above
85
% for
30 sec
ADD ADDITIONAL TRIGGER
THEN
Trigger the alarm and *
Show as Critical
ADD ANOTHER RULE
DUPLICATE RULE
REMOVE RULE
CANCEL
BACK
NEXT

You can set actions once your conditions met





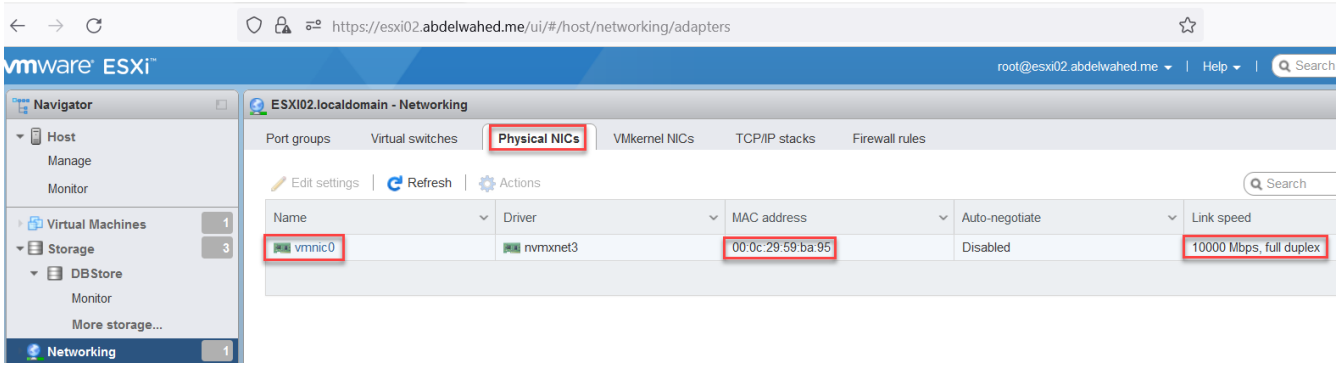


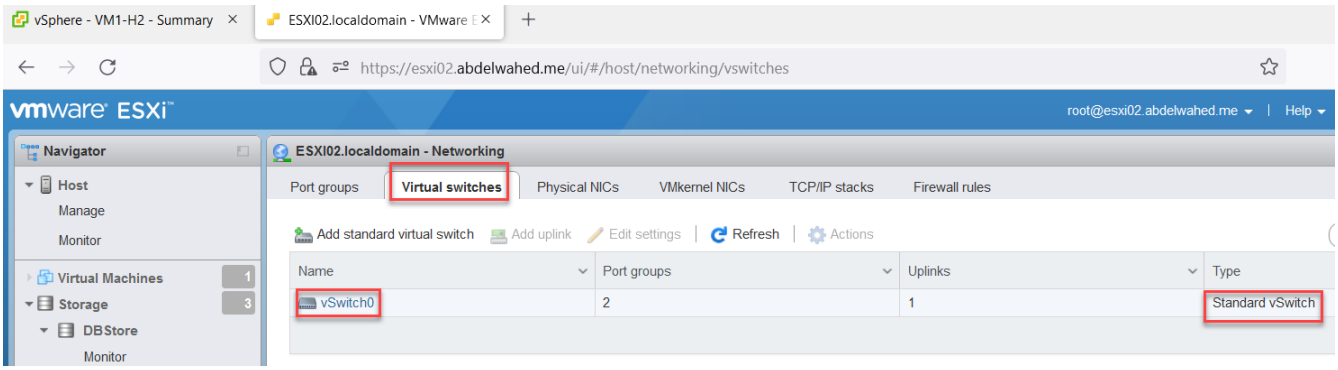
Networking

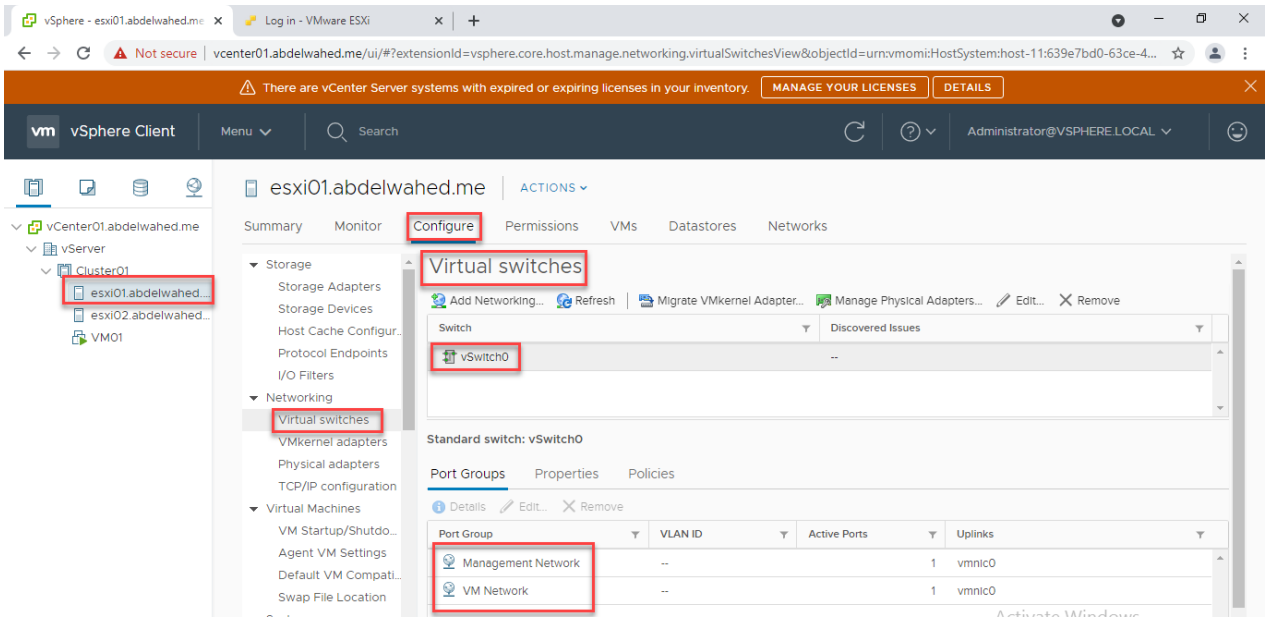
It's recommended to use two types of networks, one for ESXI management and another for VM. To do that you have to add 2 standard virtual switch (connected to two uplink which is NIC connected to two physical switch) and at first switch add one port group for VM connection and for another switch add VM kernel port for ESXI management connection.

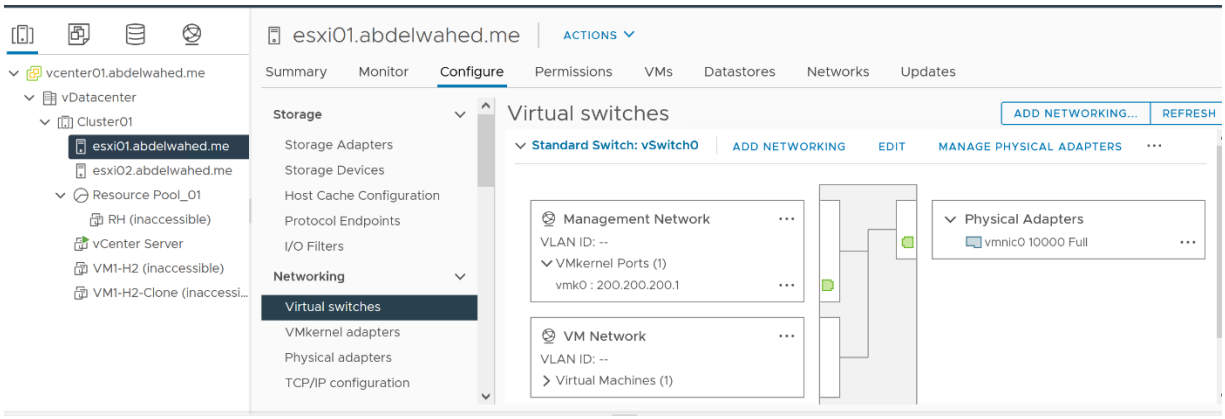
Note: IP for VMkernel port added to the uplink (NIC). While port group ip assigned to the VM.

Default settings is you have one standard virtual switch (comes once you finish ESXi installation) named VSwitch0 with one port group named VM Network and one VMKernel port named management Network.



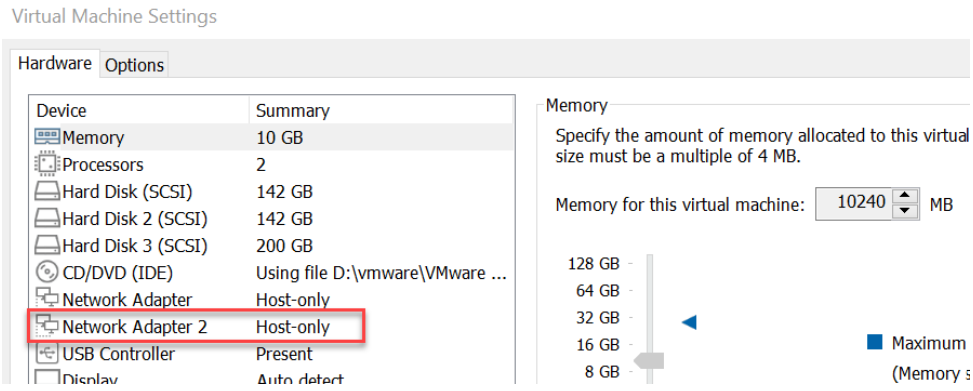




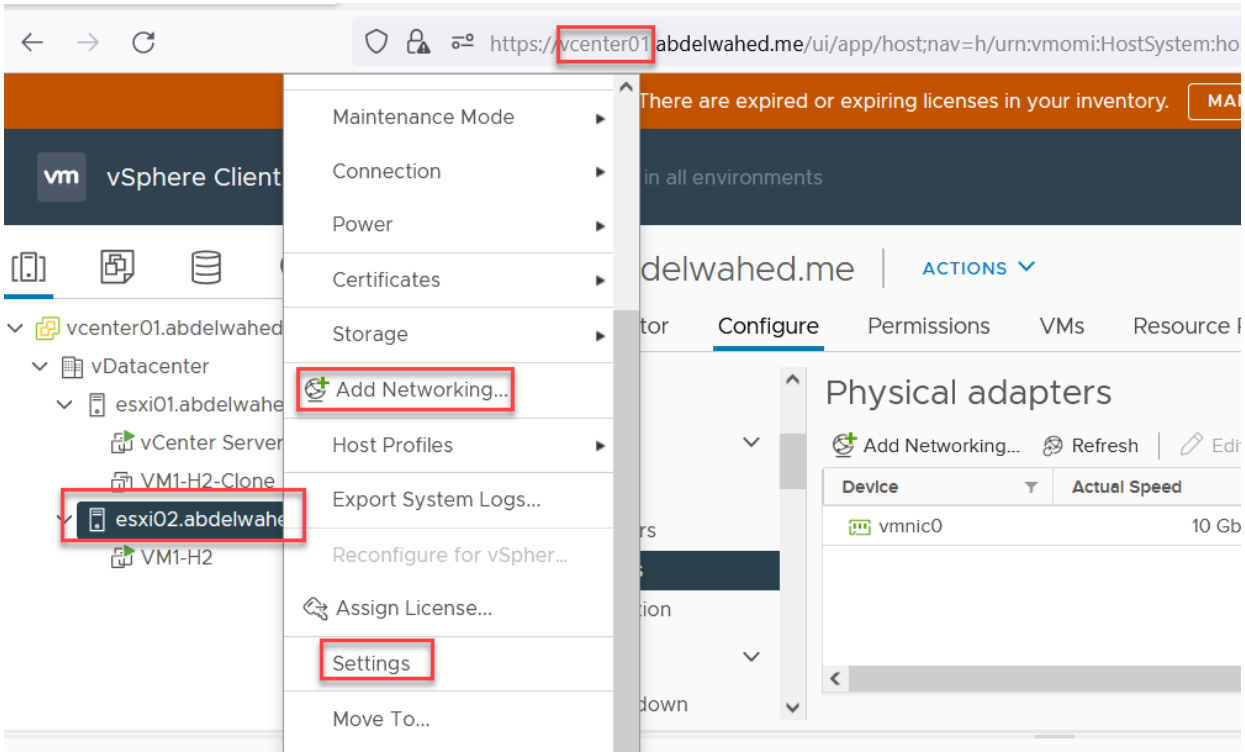


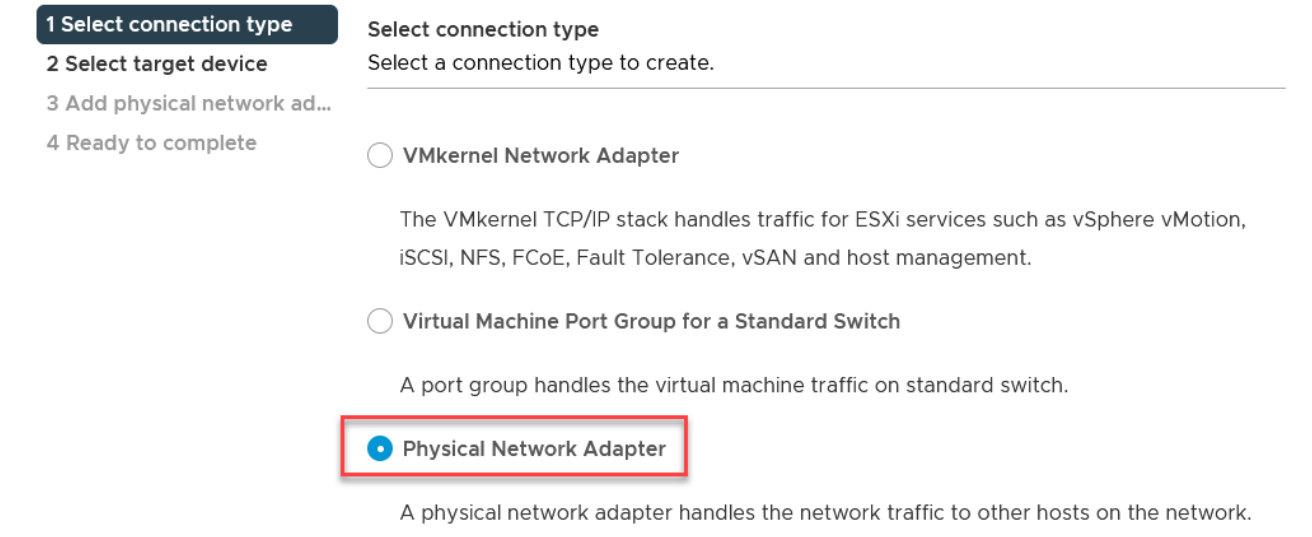
Add new NIC to ESXi02 using vCenter

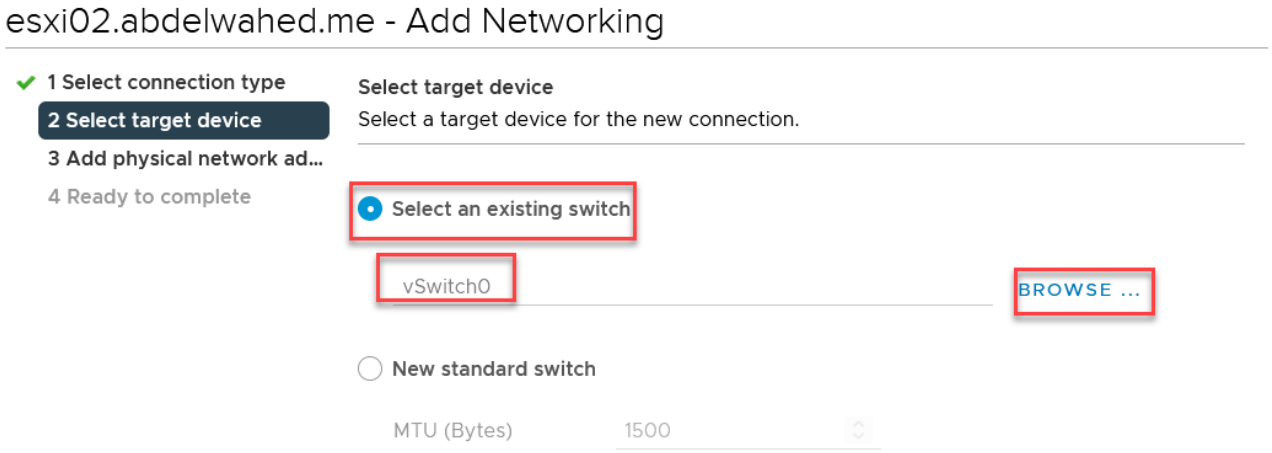
Add second NIC through ESXi VM setting and restart the server

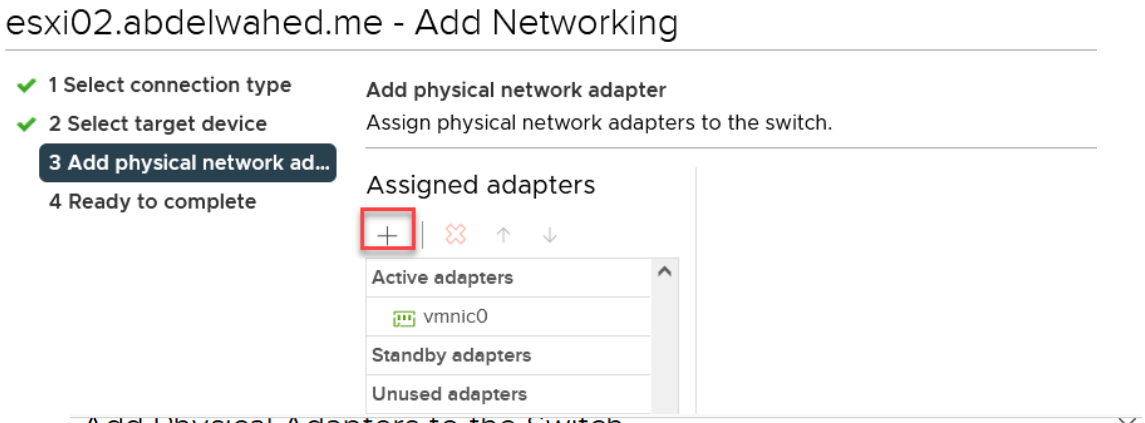


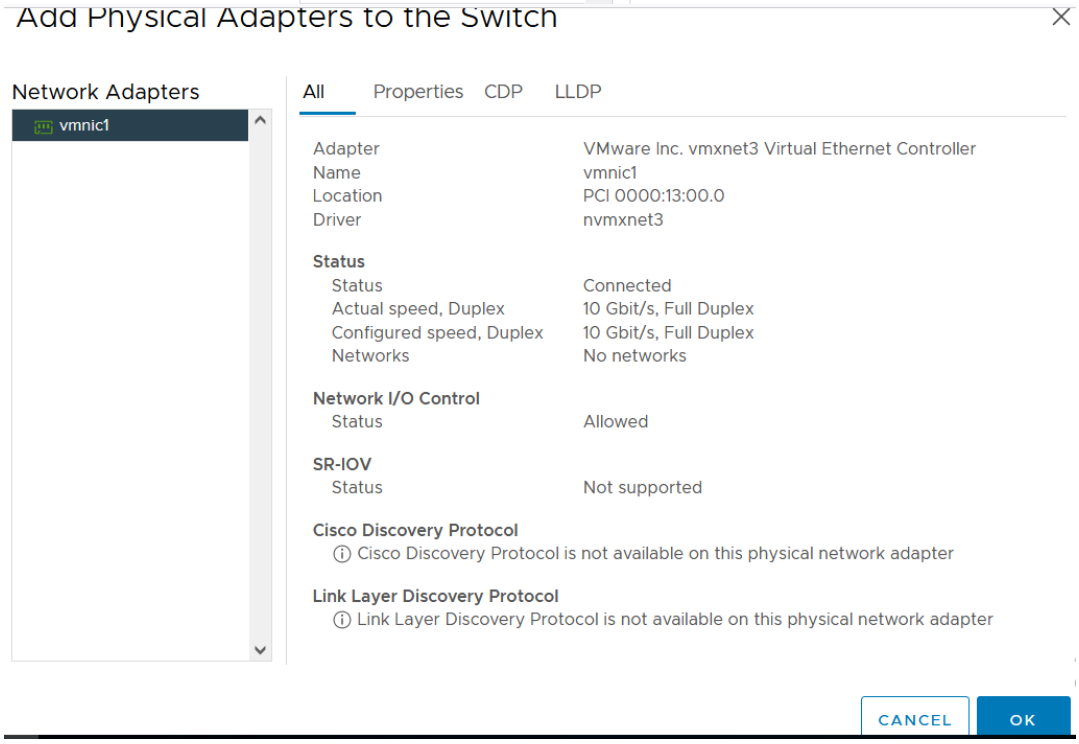
As shown below, you have two option to add network adapter through add Networking direct or through settings.

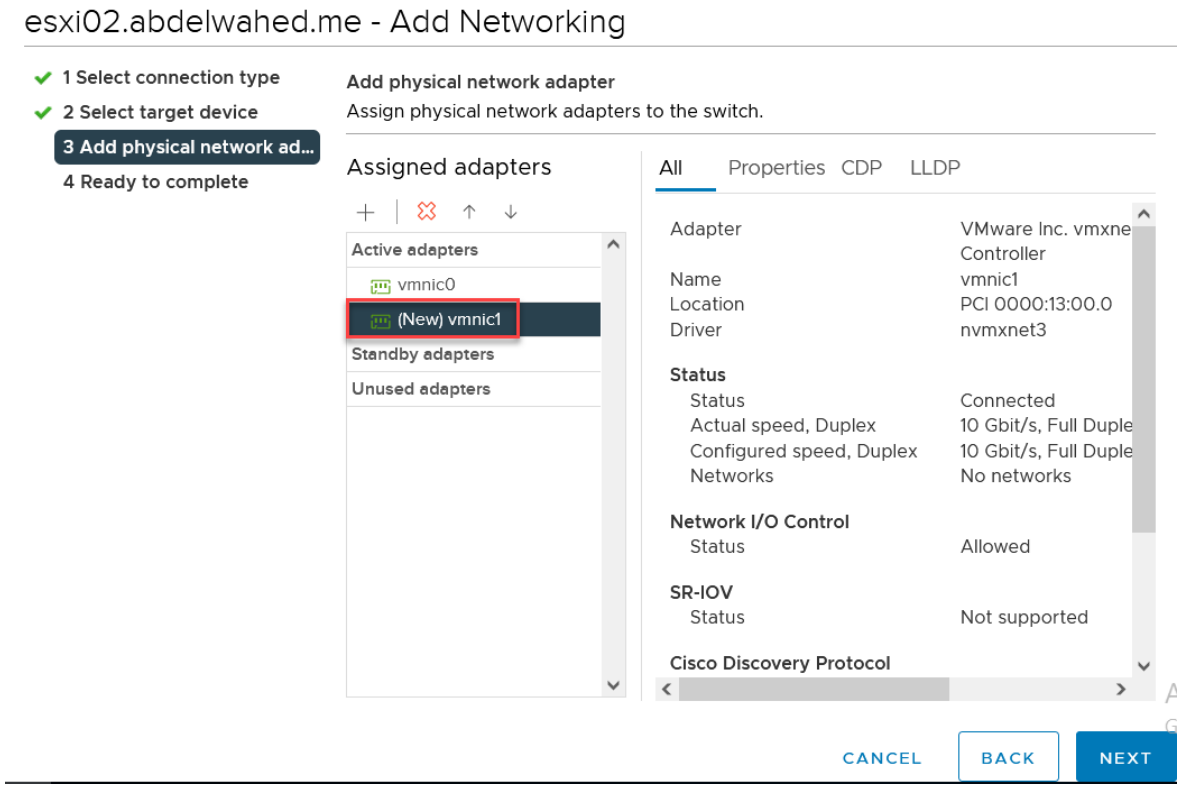


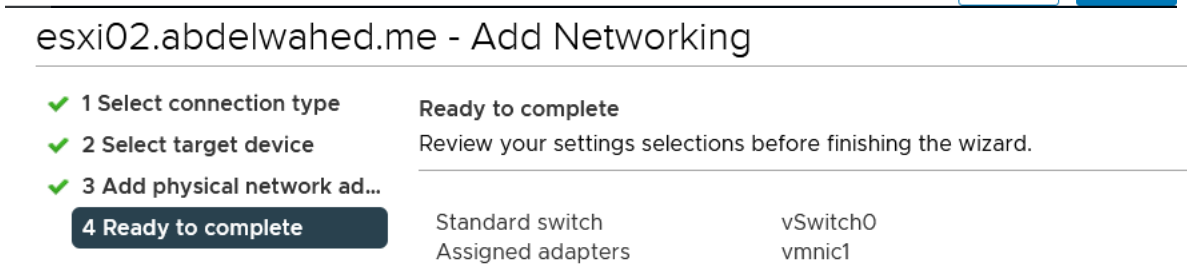


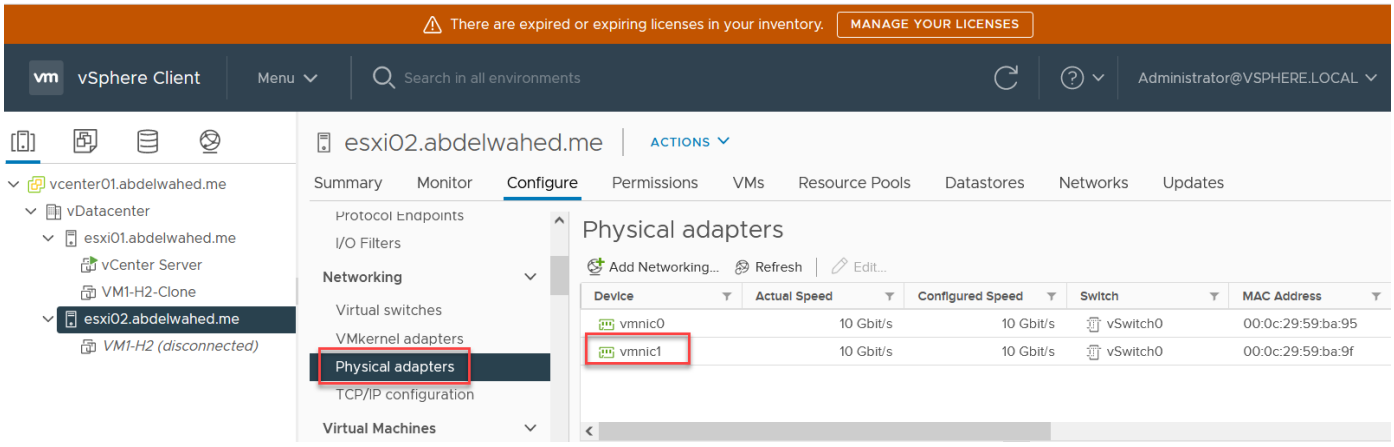

esxi02.abdelwahed.me - Add Networking
1 Select connection type
2 Select target device
3 Add physical network ad...
4 Ready to complete
Select target device
Select a target device for the new connection.
Select an existing switch
vSwitch0
BROWSE ...
New standard switch
MTU (Bytes)
1500


esxi02.abdelwahed.me - Add Networking
1 Select connection type
2 Select target device
3 Add physical network ad...
4 Ready to complete
Add physical network adapter
Assign physical network adapters to the switch.
Assigned adapters
Active adapters
vmnic0
Standby adapters
Unused adapters


Add Physical Adapters to the Switch
Network Adapters
vmnic1
All
Properties
CDP
LLDP
Adapter
VMware Inc. vmxnet3 Virtual Ethernet Controller
Name
vmnic1
Location
PCI 0000:13:00.0
Driver
nvmxnet3
Status
Status
Connected
Actual speed, Duplex
10 Gbit/s, Full Duplex
Configured speed, Duplex
10 Gbit/s, Full Duplex
Networks
No networks
Network I/O Control
Status
Allowed
SR-IOV
Status
Not supported
Cisco Discovery Protocol
Cisco Discovery Protocol is not available on this physical network adapter
Link Layer Discovery Protocol
Link Layer Discovery Protocol is not available on this physical network adapter
CANCEL
OK

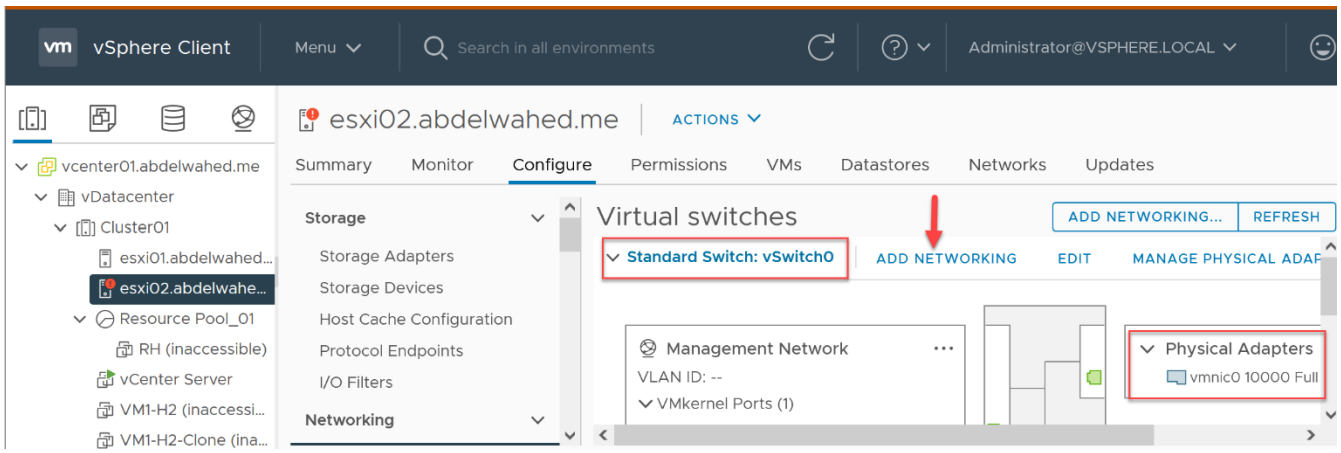

esxi02.abdelwahed.me - Add Networking
1 Select connection type
2 Select target device
3 Add physical network ad...
4 Ready to complete
Add physical network adapter
Assign physical network adapters to the switch.
Assigned adapters
Active adapters
vmnic0
(New) vmnic1
Standby adapters
Unused adapters
All
Properties
CDP
LLDP
Adapter
VMware Inc. vmxne
Controller
Name
vmnic1
Location
PCI 0000:13:00.0
Driver
nvmxnet3
Status
Status
Connected
Actual speed, Duplex
10 Gbit/s, Full Duple
Configured speed, Duplex
10 Gbit/s, Full Duple
Networks
No networks
Network I/O Control
Status
Allowed
SR-IOV
Status
Not supported
Cisco Discovery Protocol
CANCEL
BACK
NEXT

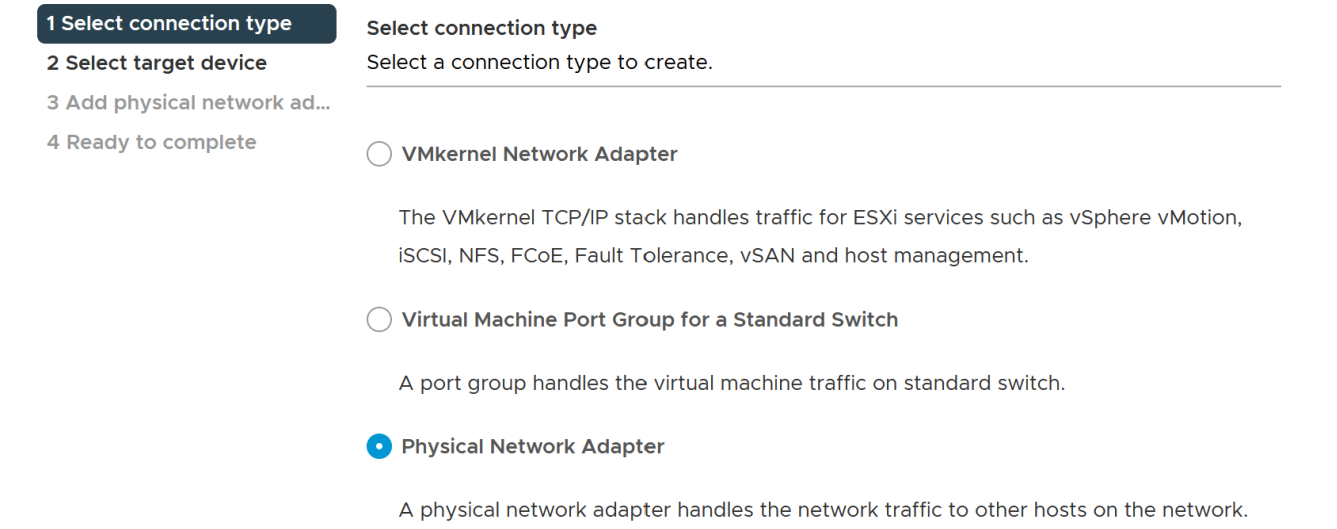

esxi02.abdelwahed.me - Add Networking
1 Select connection type
2 Select target device
3 Add physical network ad...
4 Ready to complete
Ready to complete
Review your settings selections before finishing the wizard.
Standard switch
vSwitch0
Assigned adapters
vmnic1


There are expired or expiring licenses in your inventory.
MANAGE YOUR LICENSES
vSphere Client
Menu
Search in all environments
Administrator@VSPHERE.LOCAL
vcenter01.abdelwahed.me
vDatacenter
esxi01.abdelwahed.me
vCenter Server
VM1-H2-Clone
esxi02.abdelwahed.me
VM1-H2 (disconnected)
esxi02.abdelwahed.me
ACTIONS
Summary
Monitor
Configure
Permissions
VMs
Resource Pools
Datastores
Networks
Updates
Protocol Endpoints
I/O Filters
Networking
Virtual switches
VMkernel adapters
Physical adapters
TCP/IP configuration
Virtual Machines
Physical adapters
Add Networking...
Refresh
Edit...
Device
Actual Speed
Configured Speed
Switch
MAC Address
vmnic0
10 Gbit/s
10 Gbit/s
vSwitch0
00:0c:29:59:ba:95
vmnic1
10 Gbit/s
10 Gbit/s
vSwitch0
00:0c:29:59:ba:9f

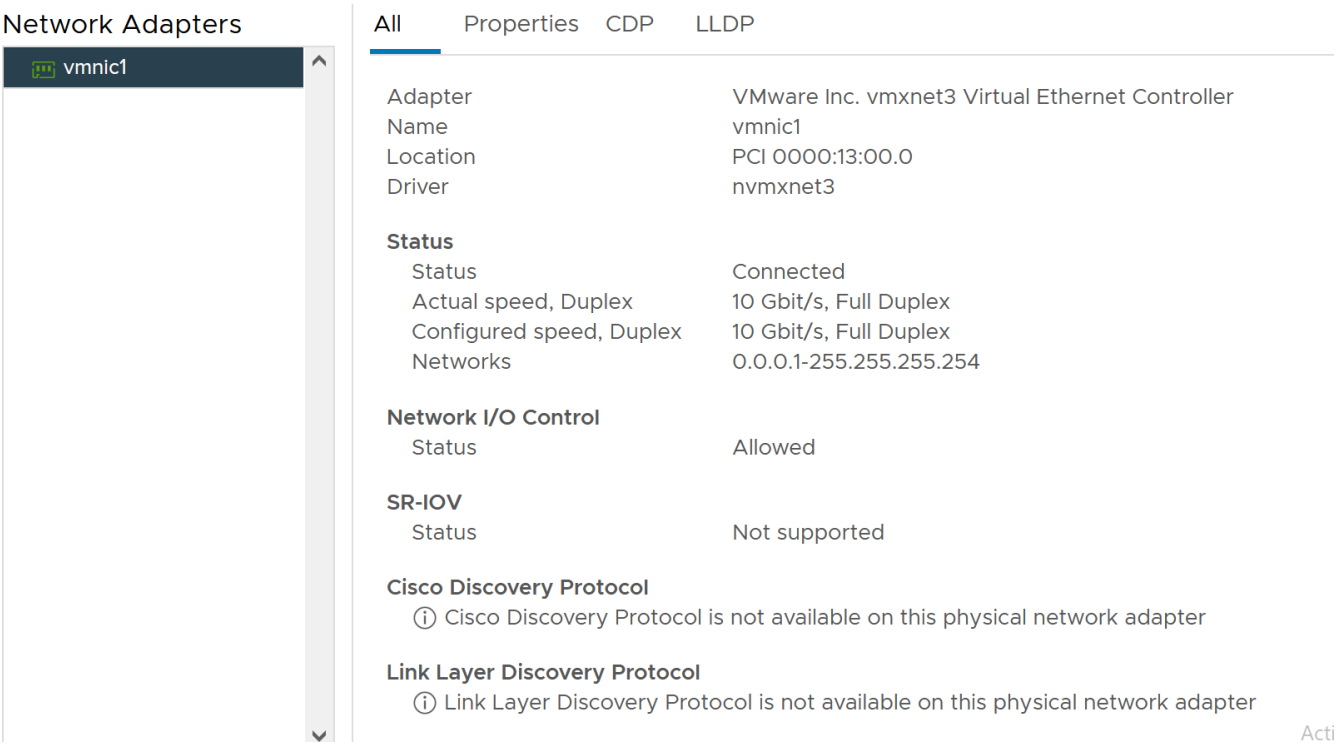
Add standby physical adapter for vSwitch0 (standard switch)

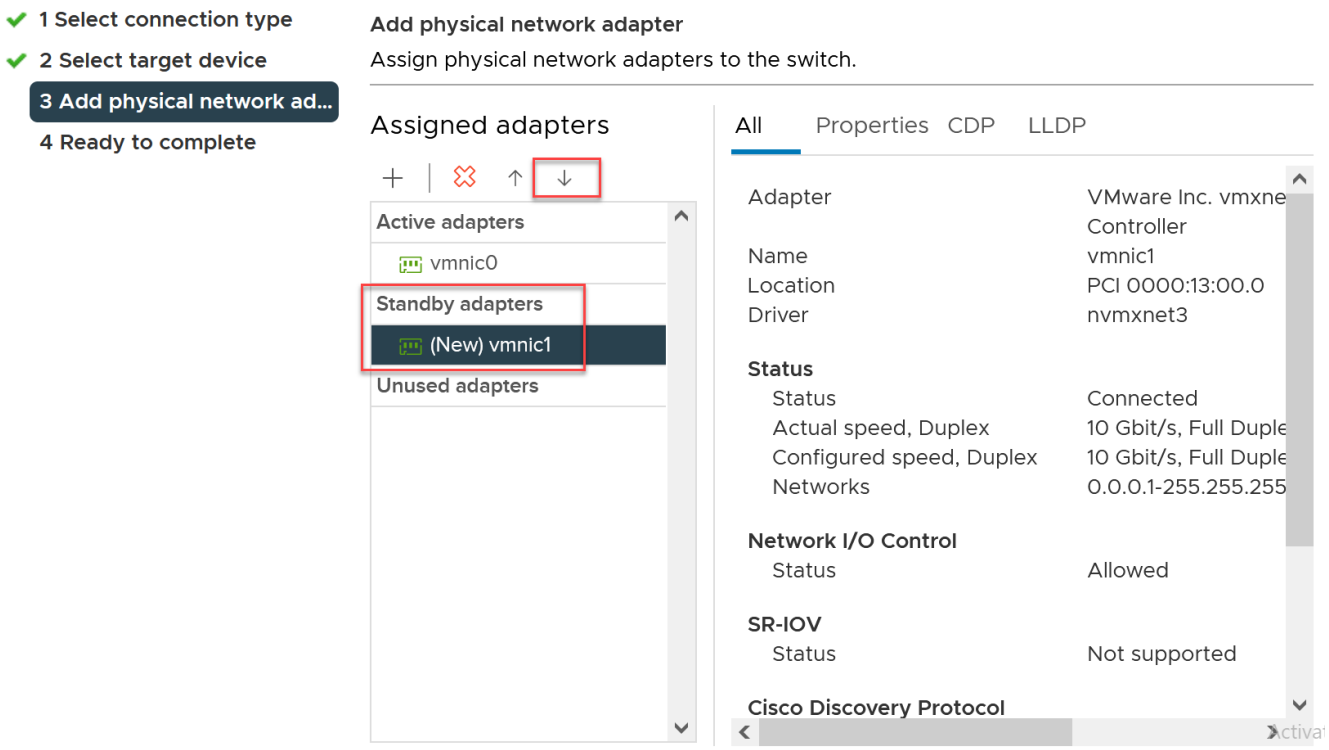
First you have to add new NIC adatpter to tha VM then follow the following steps



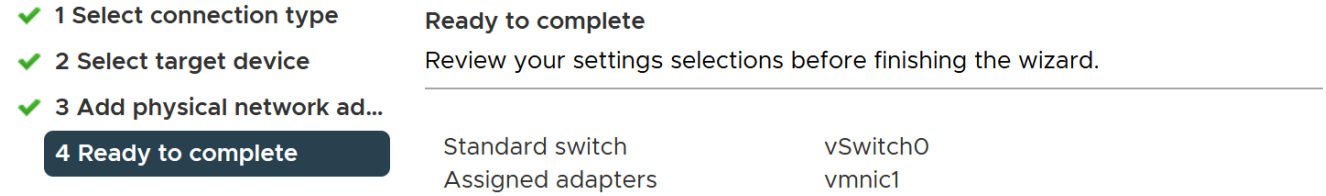


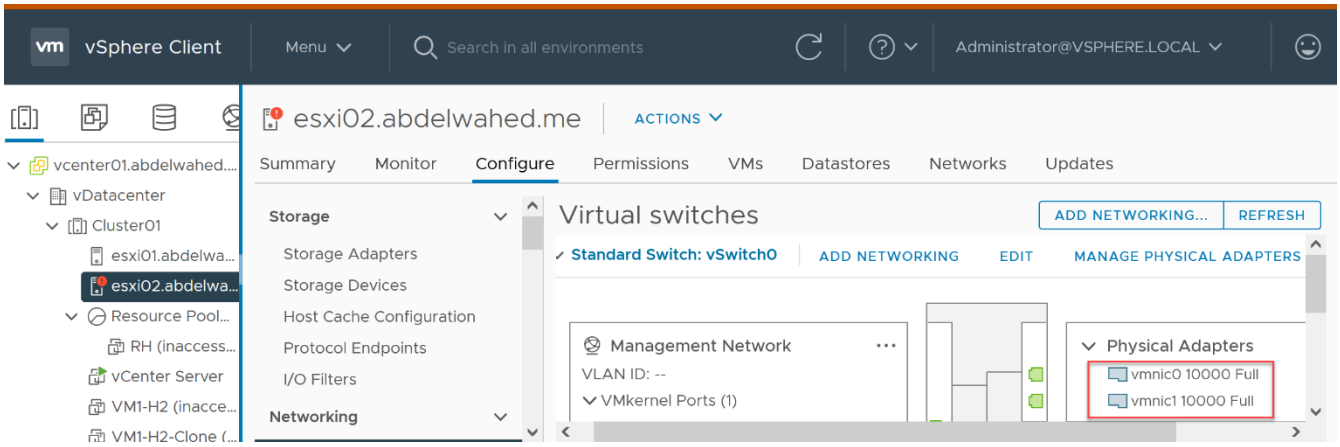
1 Select connection type
2 Select target device
3 Add physical network ad...
4 Ready to complete
Select target device
Select a target device for the new connection.
Select an existing switch
vSwitch0
BROWSE ...
New standard switch
MTU (Bytes)
1500


Network Adapters
vmnic1
All
Properties
CDP
LLDP
Adapter
VMware Inc. vmxnet3 Virtual Ethernet Controller
Name
vmnic1
Location
PCI 0000:13:00.0
Driver
nvmxnet3
Status
Status
Connected
Actual speed, Duplex
10 Gbit/s, Full Duplex
Configured speed, Duplex
10 Gbit/s, Full Duplex
Networks
0.0.0.1-255.255.255.254
Network I/O Control
Status
Allowed
SR-IOV
Status
Not supported
Cisco Discovery Protocol
Cisco Discovery Protocol is not available on this physical network adapter
Link Layer Discovery Protocol
Link Layer Discovery Protocol is not available on this physical network adapter

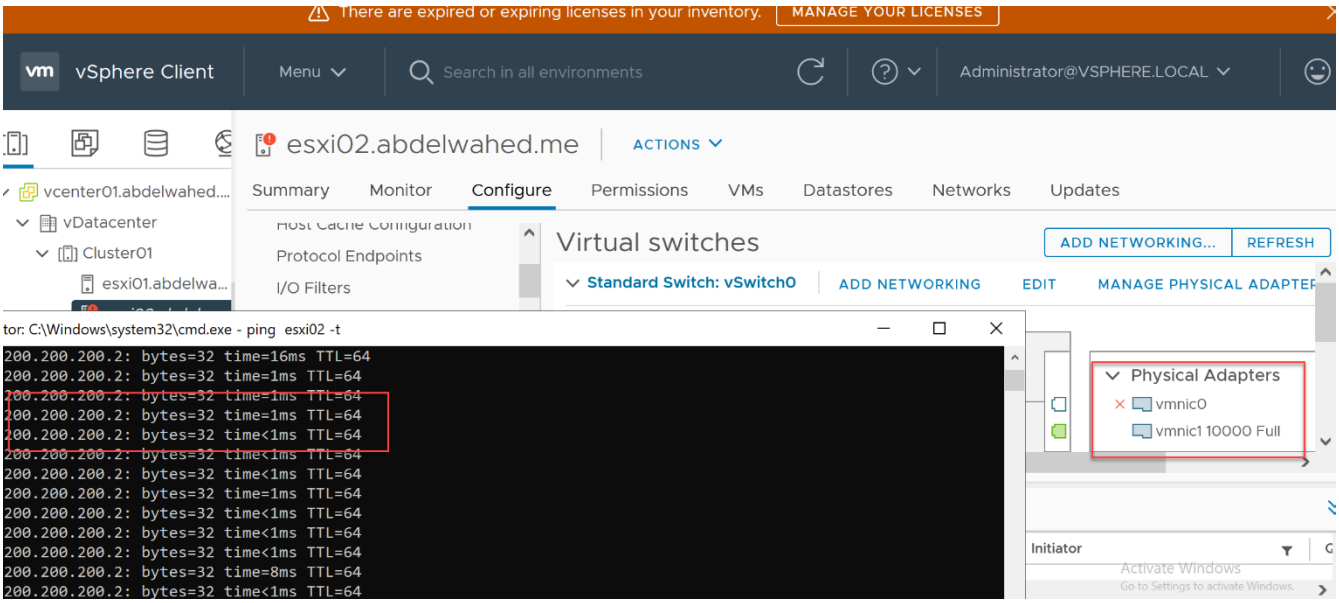


if you set both NIC under active the Loadbalancing will applied





Now disconnect fist NIC

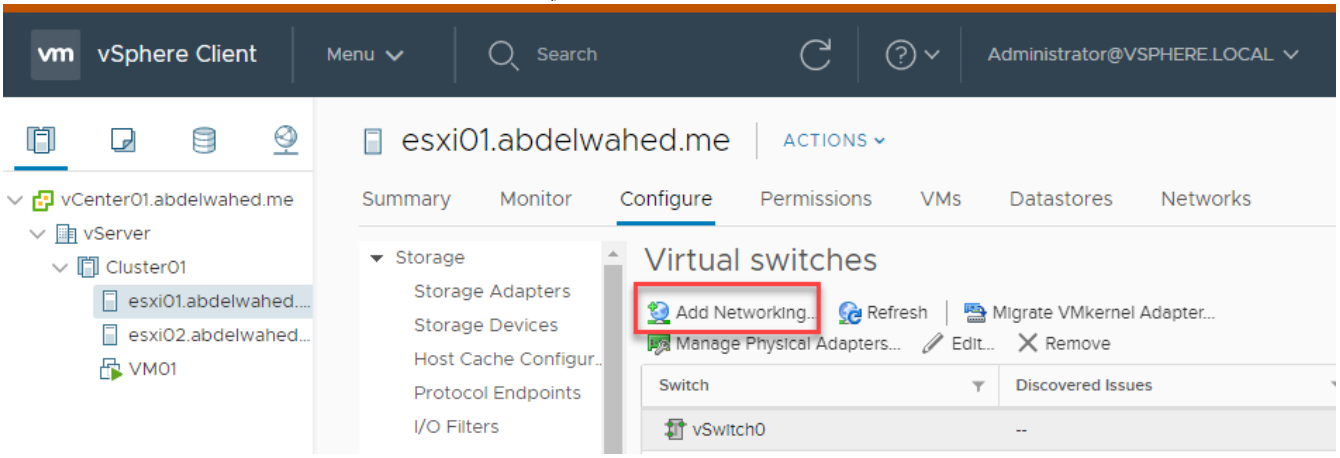


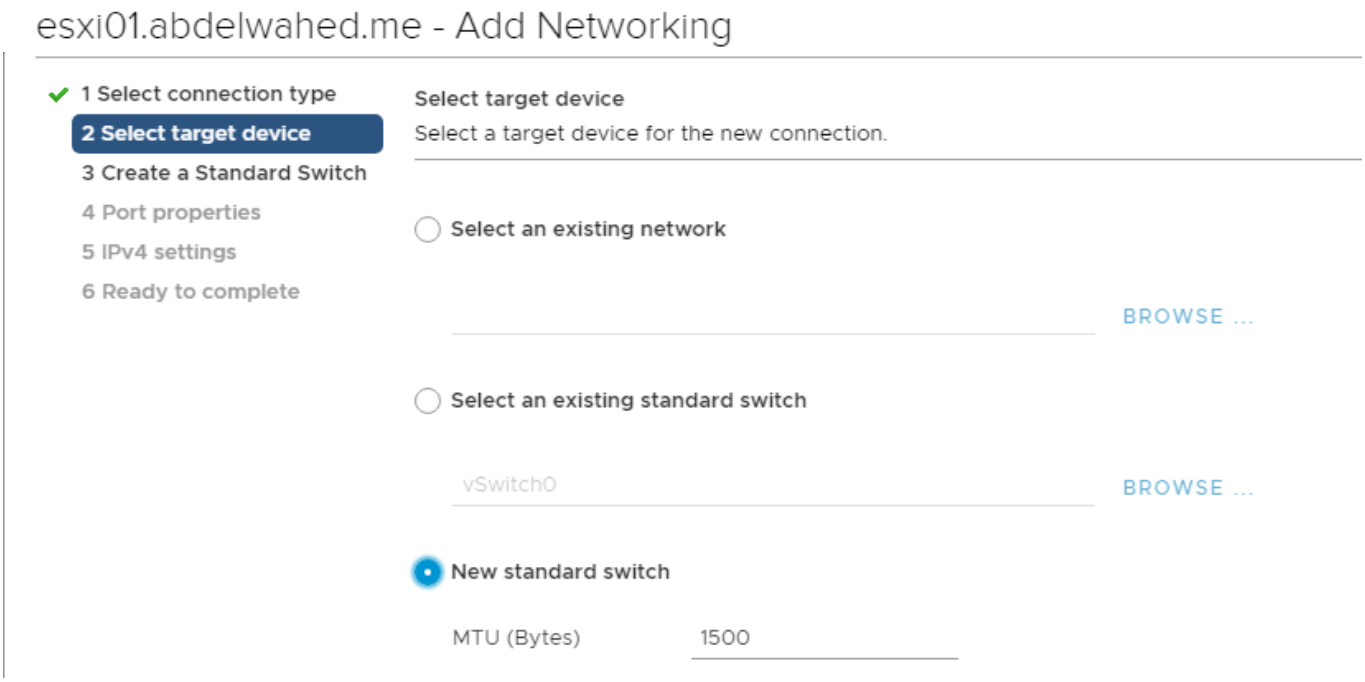
ESXI02 still working

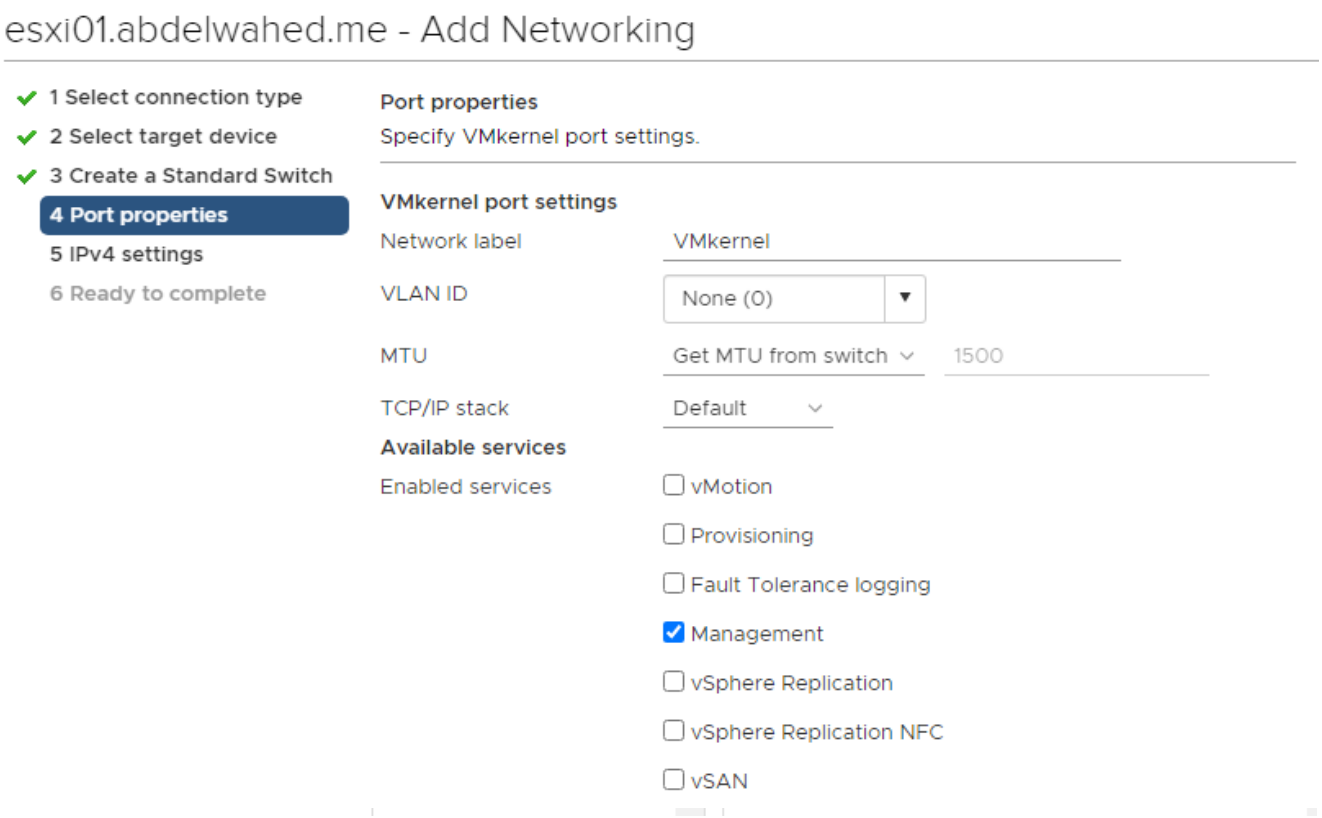
Add VMkernel port for management

1- Add new NIC for both ESXi servers eith Host-only profile. (Restart network management so the new NIC appears) without adding ip address.
2- For both ESXi servers add new switch to assign VMKernel port

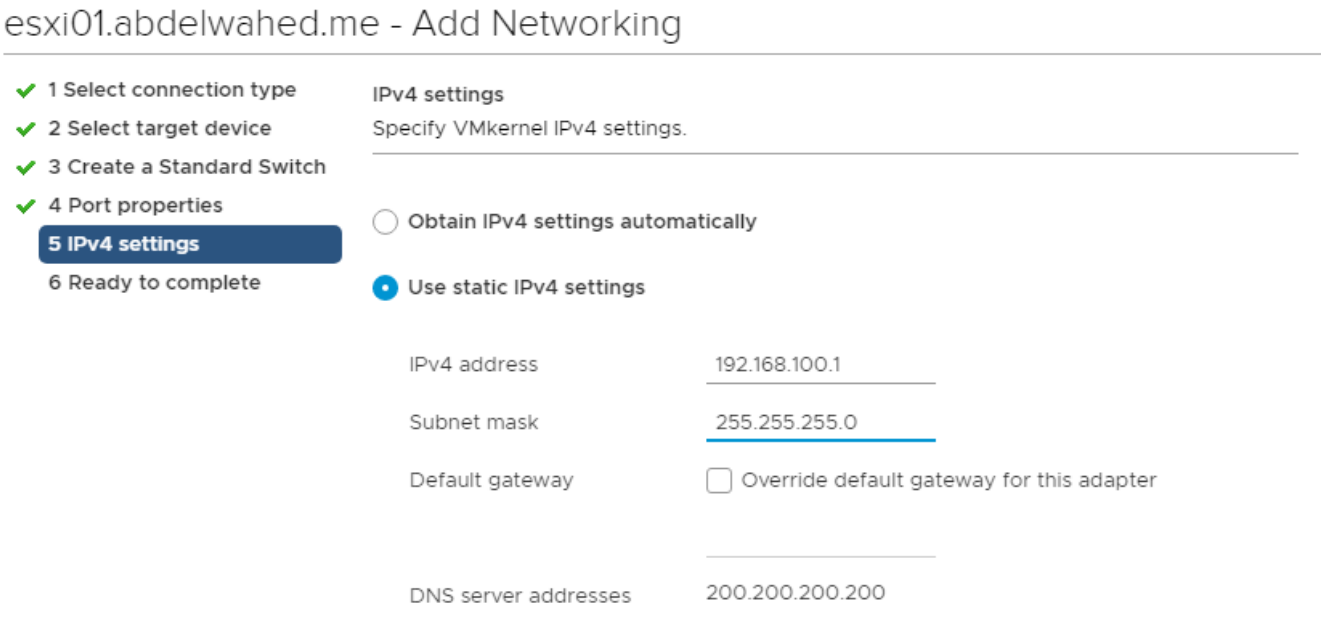
ملحوظة كل VMKernel يفضل ان تؤدى وظيفة واحدة ويكون ليها IP لحاله وتكون في VLane مختلفة

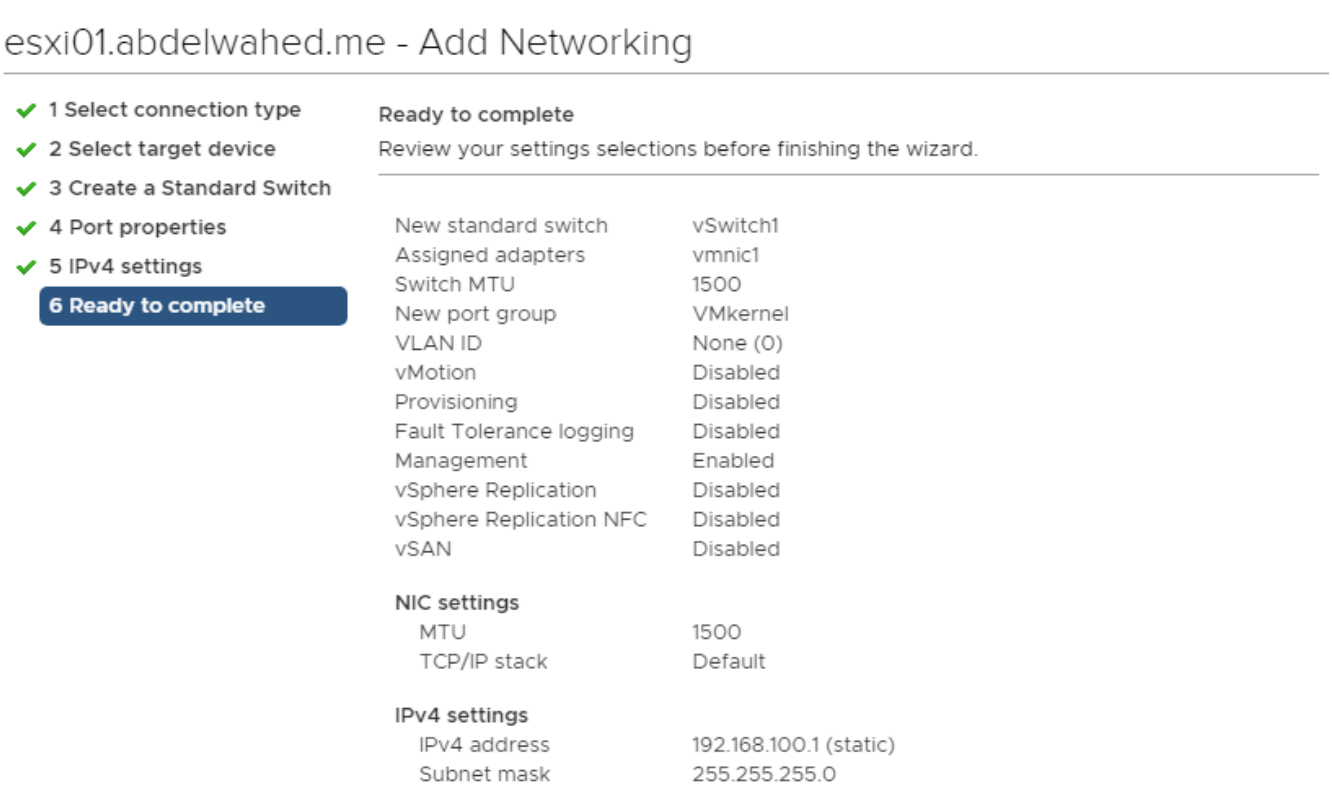


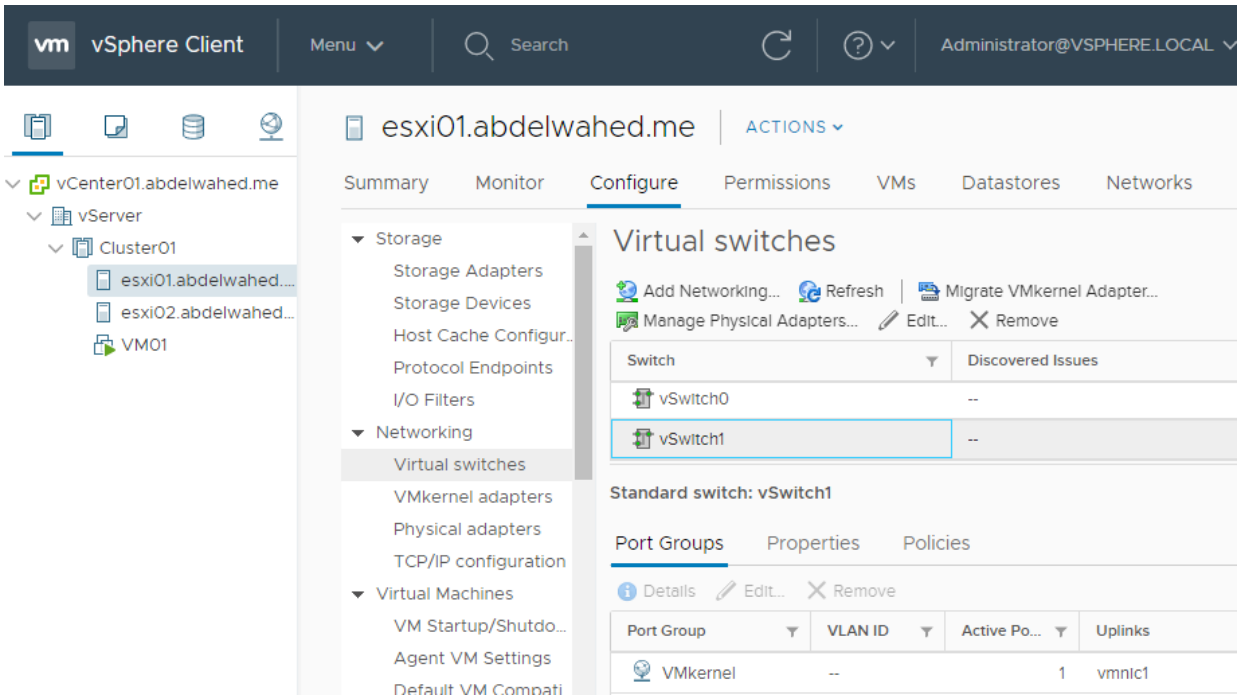




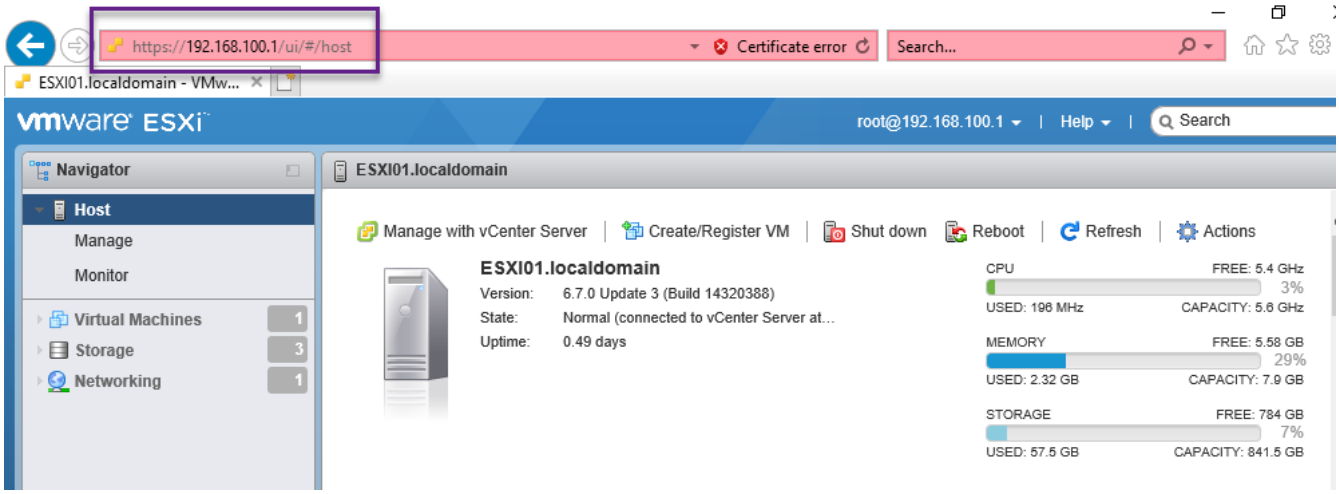
because we add kernel port so ask for IP. If we add port group not ask for IP because IP you add direct to the VM.

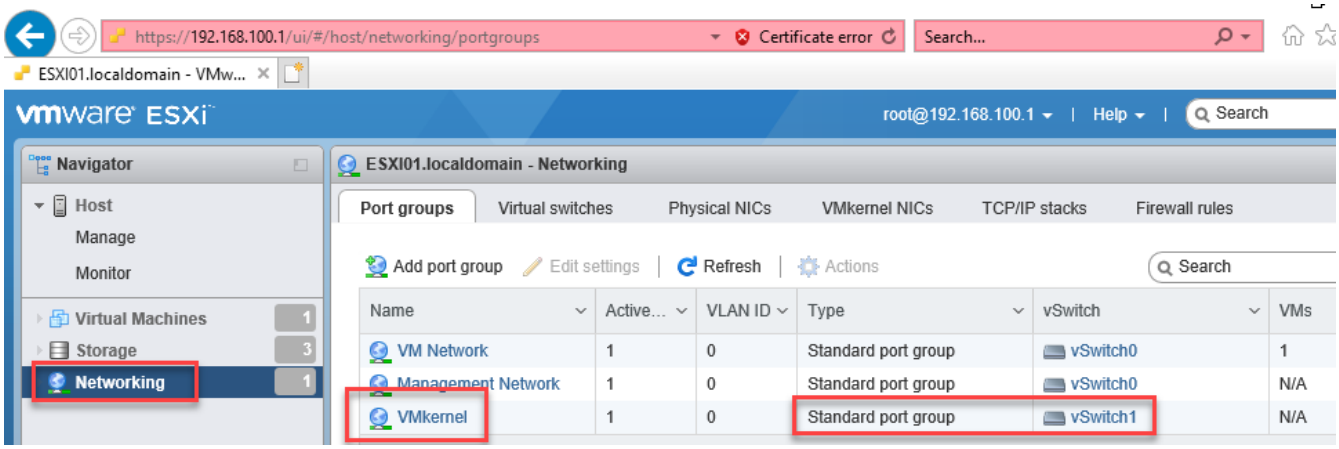



esxi01.abdelwahed.me - Add Networking
1 Select connection type
2 Select target device
3 Create a Standard Switch
4 Port properties
5 IPv4 settings
6 Ready to complete
Ready to complete
Review your settings selections before finishing the wizard.
New standard switch vSwitch1
Assigned adapters vmnic1
Switch MTU 1500
New port group VMkernel
VLAN ID None (0)
vMotion Disabled
Provisioning Disabled
Fault Tolerance logging Disabled
Management Enabled
vSphere Replication Disabled
vSphere Replication NFC Disabled
vSAN Disabled
NIC settings
MTU 1500
TCP/IP stack Default
IPv4 settings
IPv4 address 192.168.100.1 (static)
Subnet mask 255.255.255.0

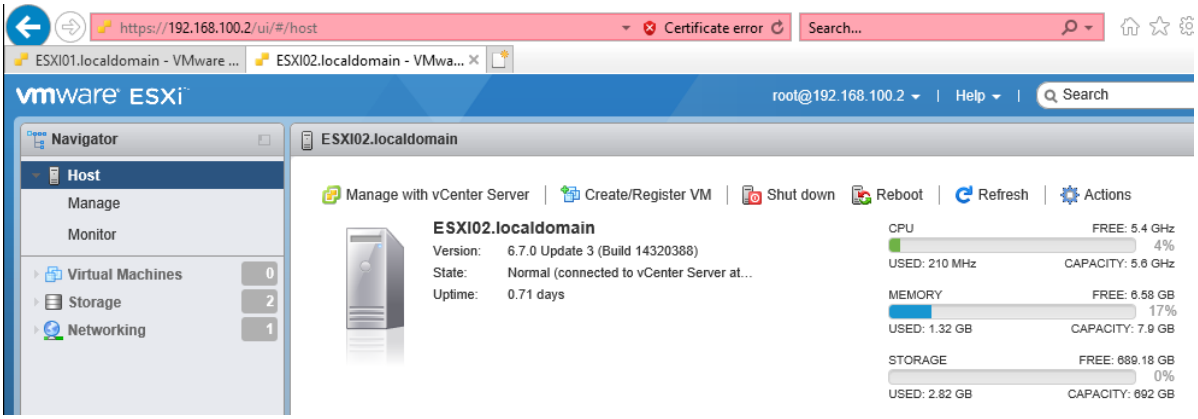

vSphere Client
Menu
Search
Administrator@VSPHERE.LOCAL
vCenter01.abdelwahed.me
vServer
Cluster01
esxi01.abdelwahed....
esxi02.abdelwahed...
VM01
esxi01.abdelwahed.me
ACTIONS
Summary
Monitor
Configure
Permissions
VMs
Datastores
Networks
Storage
Storage Adapters
Storage Devices
Host Cache Configur...
Protocol Endpoints
I/O Filters
Networking
Virtual switches
VMkernel adapters
Physical adapters
TCP/IP configuration
Virtual Machines
VM Startup/Shutdo...
Agent VM Settings
Default VM Compati...
Virtual switches
Add Networking...
Refresh
Migrate VMkernel Adapter...
Manage Physical Adapters...
Edit...
Remove
Switch
Discovered Issues
vSwitch0
vSwitch1
Standard switch: vSwitch1
Port Groups
Properties
Policies
Details
Edit...
Remove
Port Group
VLAN ID
Active Po...
Uplinks
VMkernel
1
vmnic1

From another PC add second IP to the NIC and try to access the VMKernel port for ESXi01

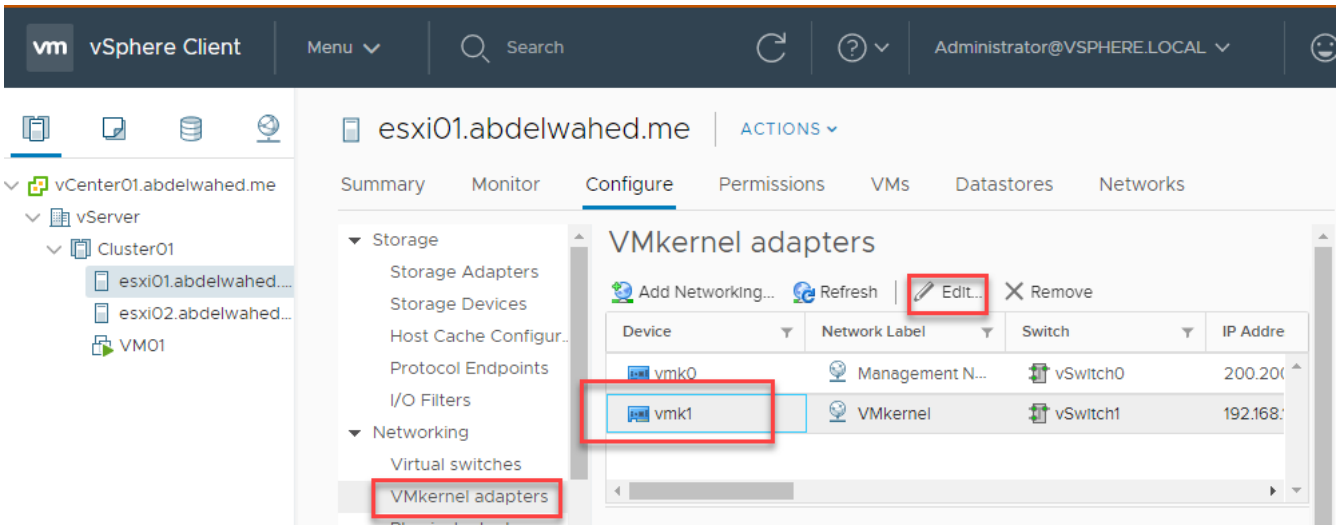


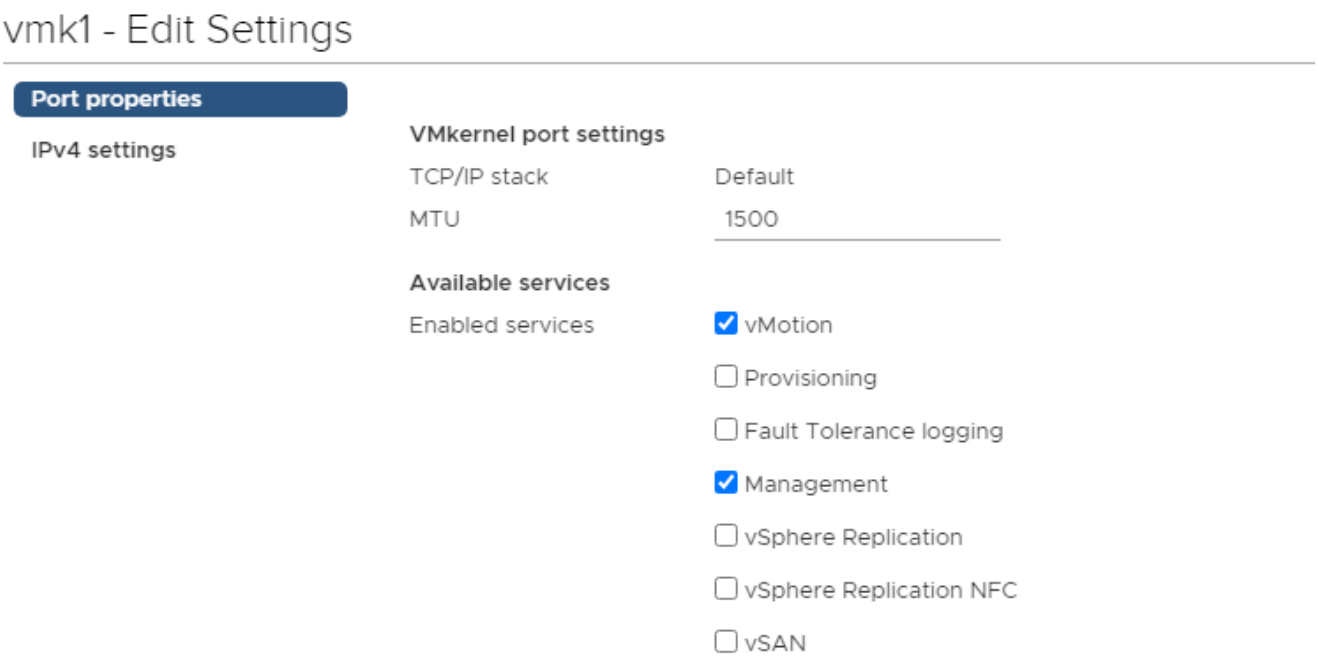


configures the same for ESXi02



Edit VMkernel port to support vMotion (vMotion for migrating storage and VMs)





Note, to complete storage or VM migration (hot migration) between different ESXi hosts. You must either add VMKernel for vMotion traffic or add vMotion option to exiting VMKernel for both ESXi01 and ESXi02.

VMware Cluster

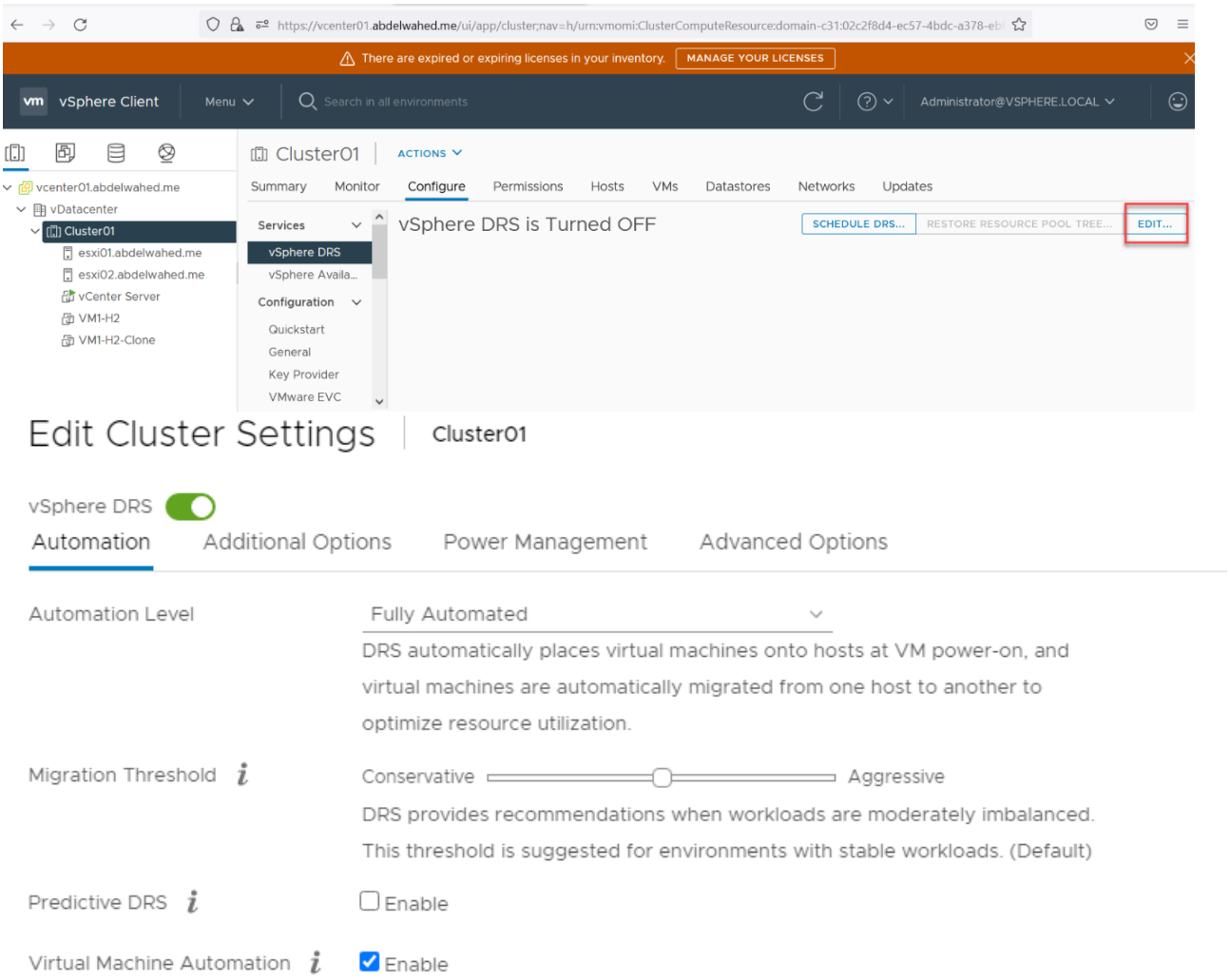
For the following labs you must add VMware cluster inside vCenter and move the ESXi servers to it

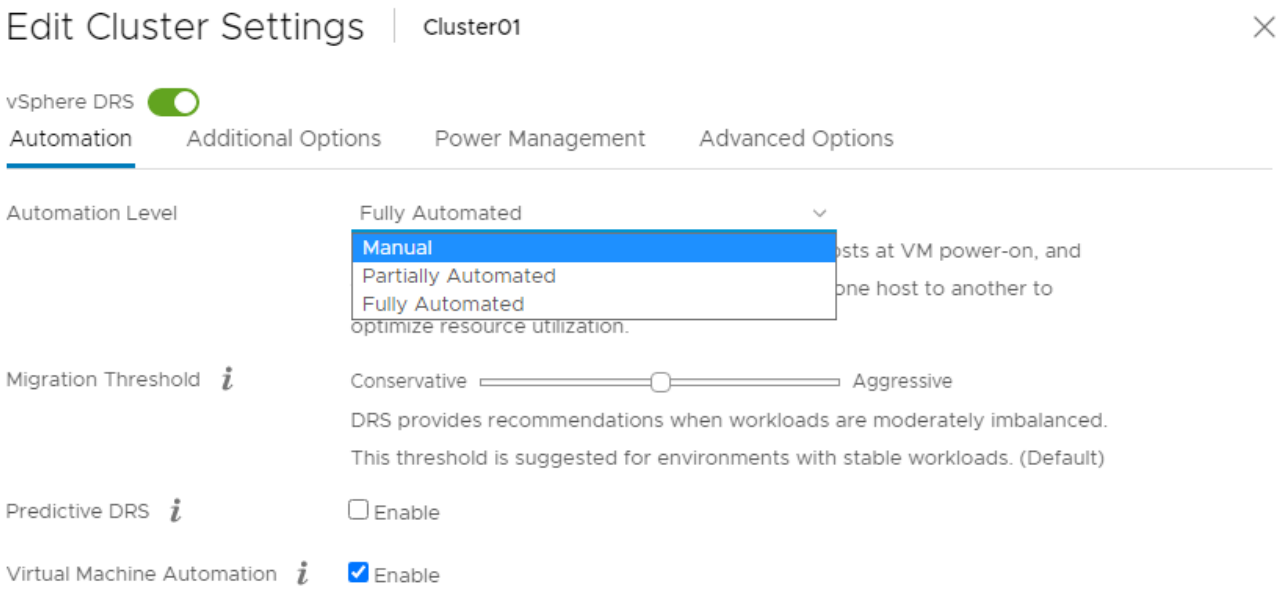
VMware vSphere® Distributed Resource Scheduler™ (DRS) – Power of Cluster

DRS only available with vCenter cluster, once you enable this service the monitor CPU and memory utilization will start monitored on each ESXi host and if utilization increase at one node will migrate included vms to another ESXi host.

VMware DRS is a feature used for balancing resources of virtual machines across ESXi hosts in a cluster. The purpose of DRS is to balance CPU and memory across clusters. It can be set to automatically move VMs based off of its algorithms, or be set to manual and give recommendations for manually moving VMs.

Try to enable it, you will aske about the automation level

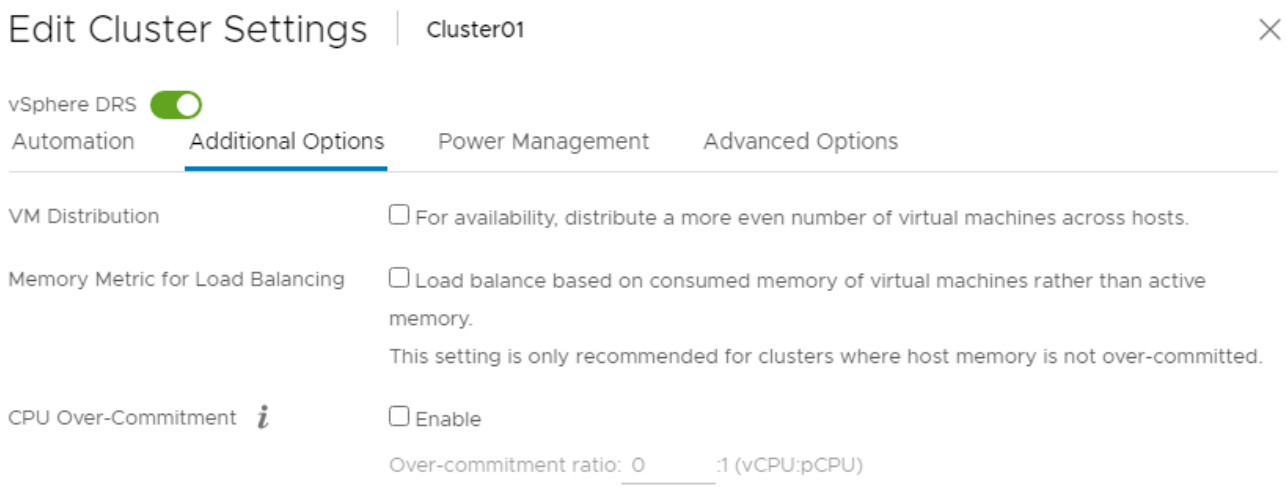


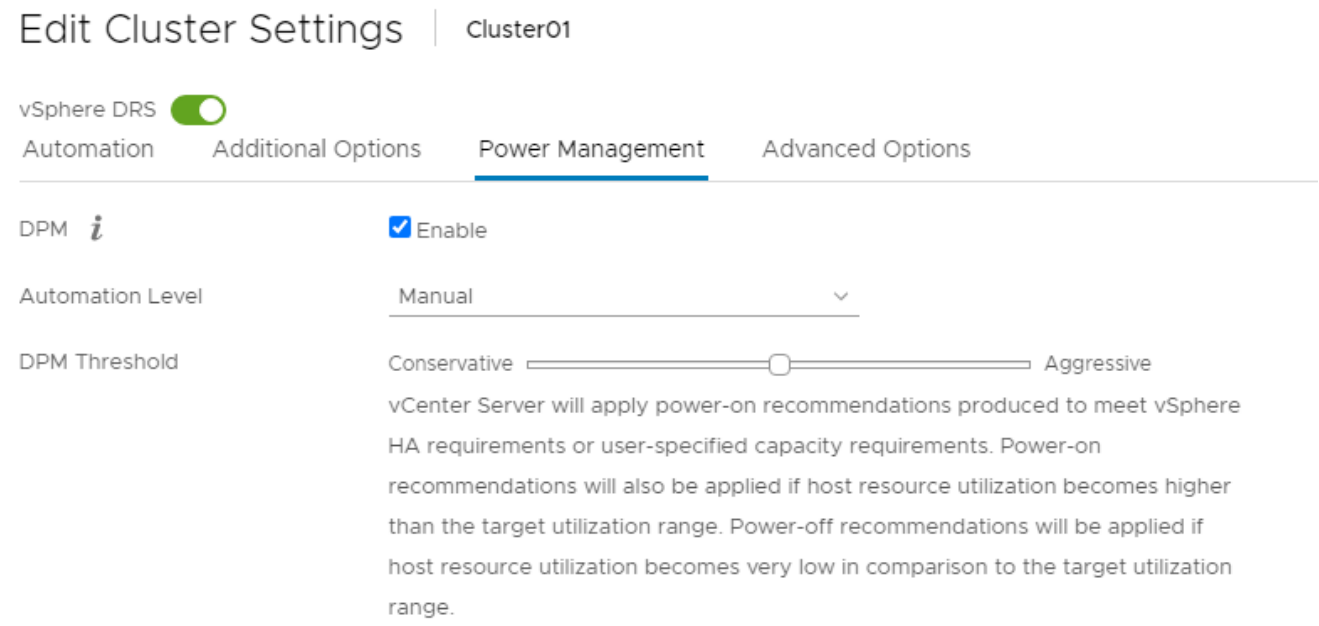


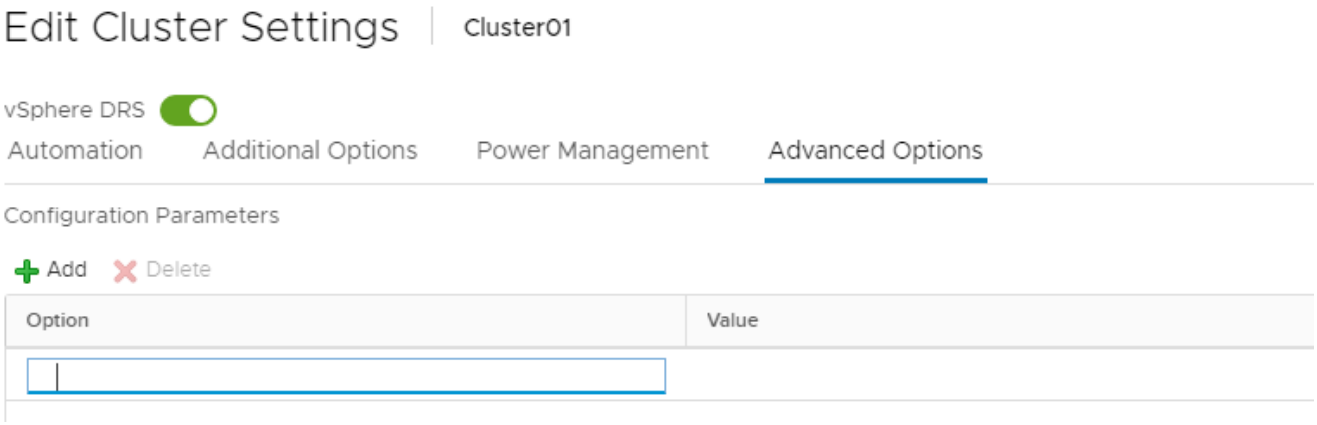
if you set to **manual DRS** will suggest you to migrate and you have to accept or no. while **partialy automated** will migrate the VMs and inform you that the vms moved to diffrent host based on these criteria. **Fully automated** migrate without notification because as administrator I only care that VMs up and running on any host.

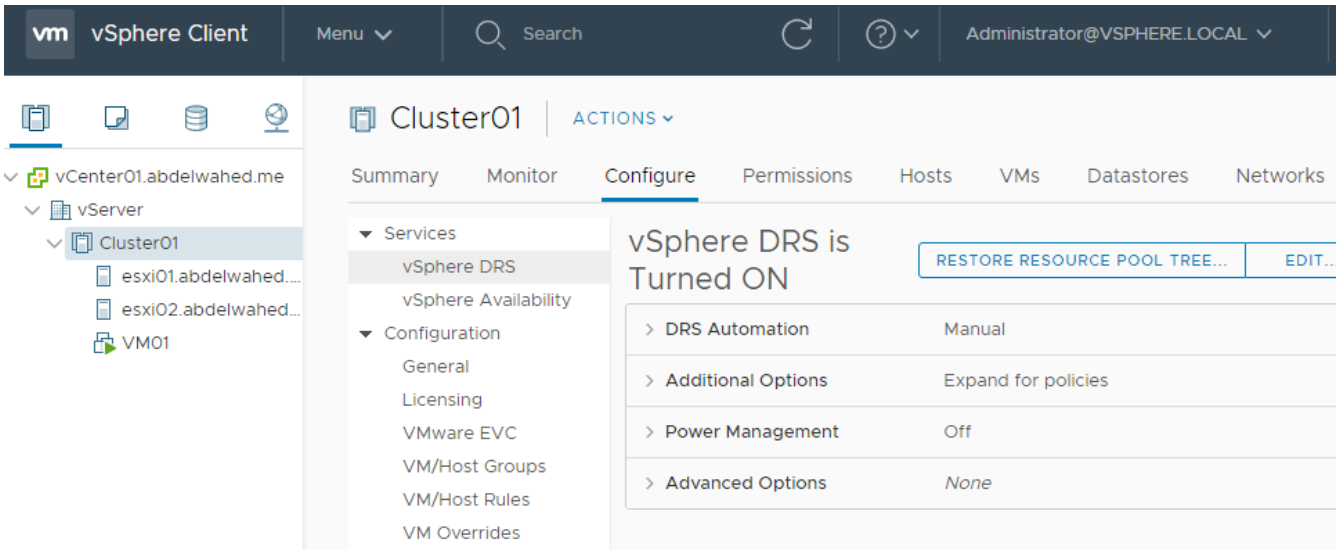
Even if it migrated automated, we can add some roles (DRS Rules) for its action. For example:

1- If there is two servers one DC and another ADC I can set rules that these vms must be always separated.
2- If there is two servers one App and another App DB I can set rule to force DRS to keep these servers always at the same server so if one server move will move the other also.
3- In some cases you can set collection of ESXi servers togother in one compute rack and add them to one group then I can force DRS to prevent moving some servers to another ESXi at another rack in case of power disconnect.
4- We can set rule also for migrate to start migration before CPU and memory utilization going high based on historical information like last time the CPU utilization going high If there is two servers one there was specific behaviuor runs on the server so if the same behaviour repeated will start direct the migration. (Predictive DRS)

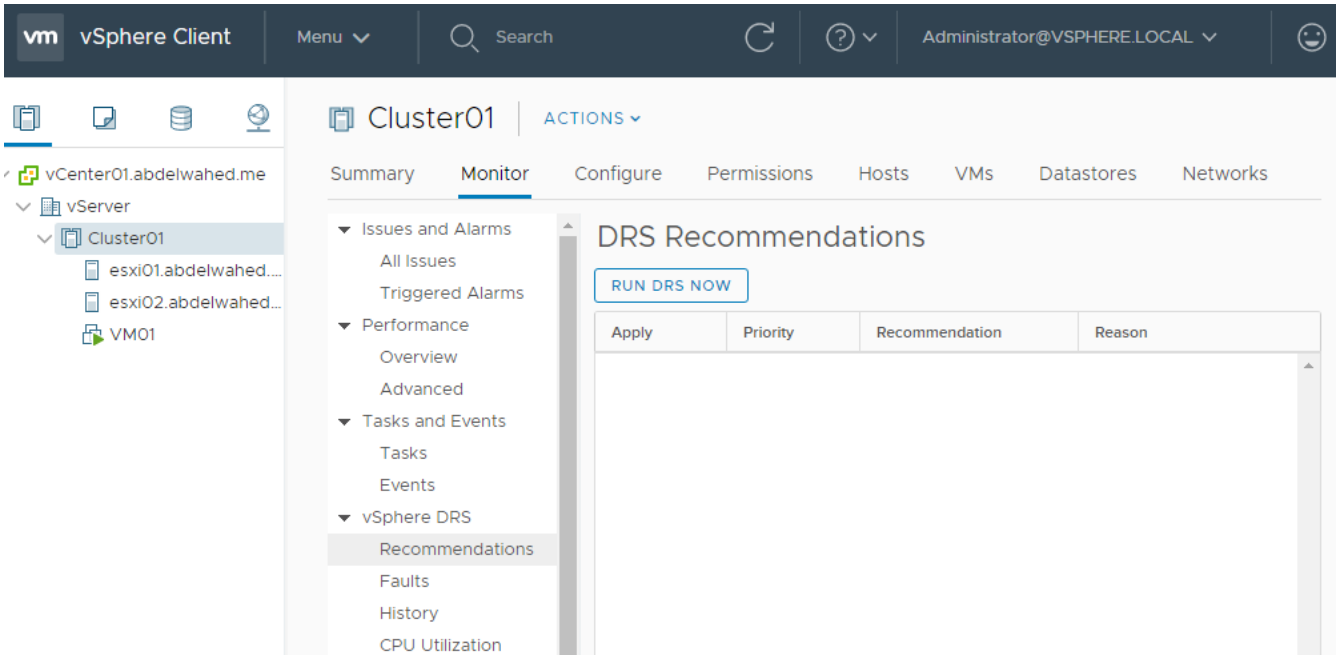

Edit Cluster Settings
Cluster01
vSphere DRS
Automation
Additional Options
Power Management
Advanced Options
VM Distribution
For availability, distribute a more even number of virtual machines across hosts.
Memory Metric for Load Balancing
Load balance based on consumed memory of virtual machines rather than active memory.
This setting is only recommended for clusters where host memory is not over-committed.
CPU Over-Commitment
Enable
Over-commitment ratio: 0 :1 (vCPU:pCPU)


Edit Cluster Settings
Cluster01
vSphere DRS
Automation
Additional Options
Power Management
Advanced Options
DPM
Enable
Automation Level
Manual
DPM Threshold
Conservative
Aggressive
vCenter Server will apply power-on recommendations produced to meet vSphere HA requirements or user-specified capacity requirements. Power-on recommendations will also be applied if host resource utilization becomes higher than the target utilization range. Power-off recommendations will be applied if host resource utilization becomes very low in comparison to the target utilization range.


Edit Cluster Settings
Cluster01
vSphere DRS
Automation
Additional Options
Power Management
Advanced Options
Configuration Parameters
Add
Delete
Option
Value

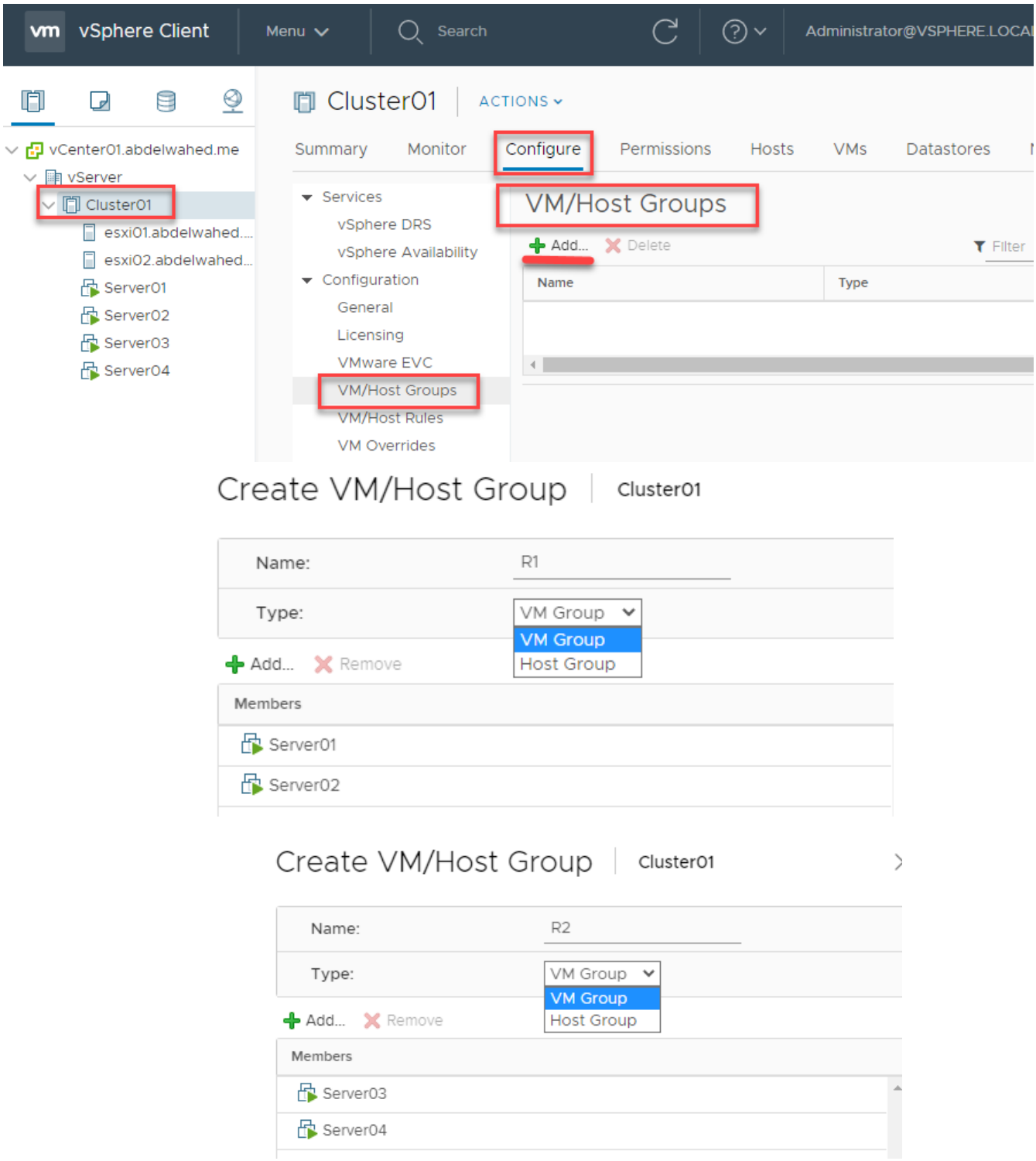


any recommendation comes here, and you can apply it.



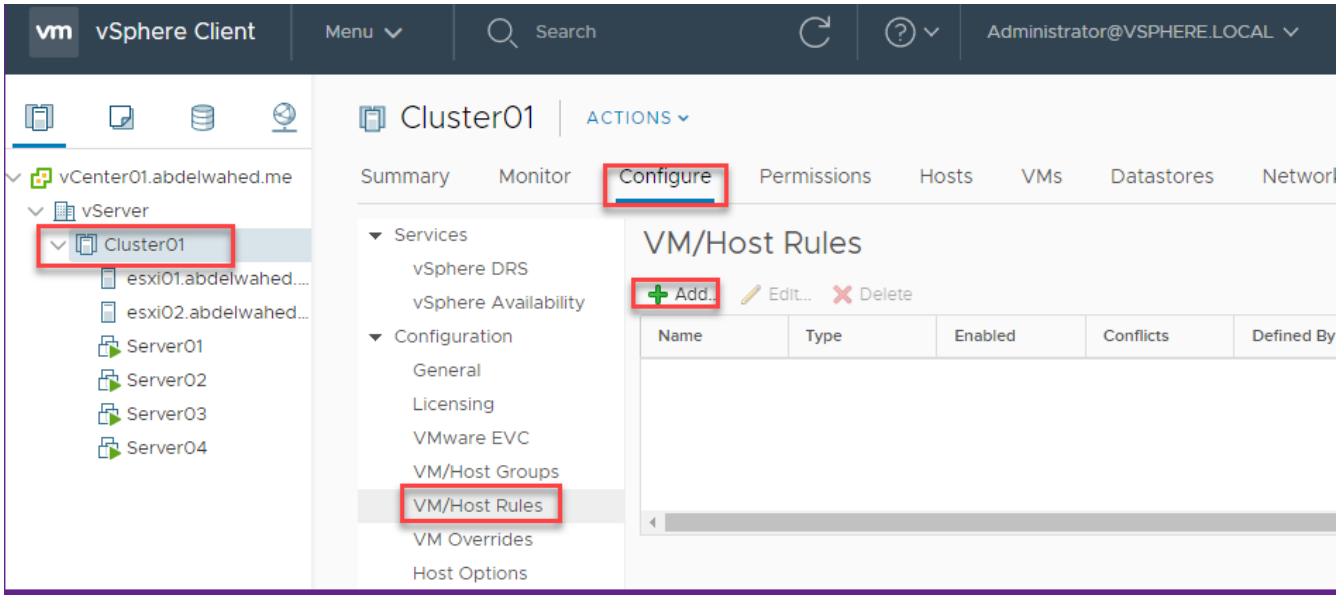
Creat VM/Host Groups

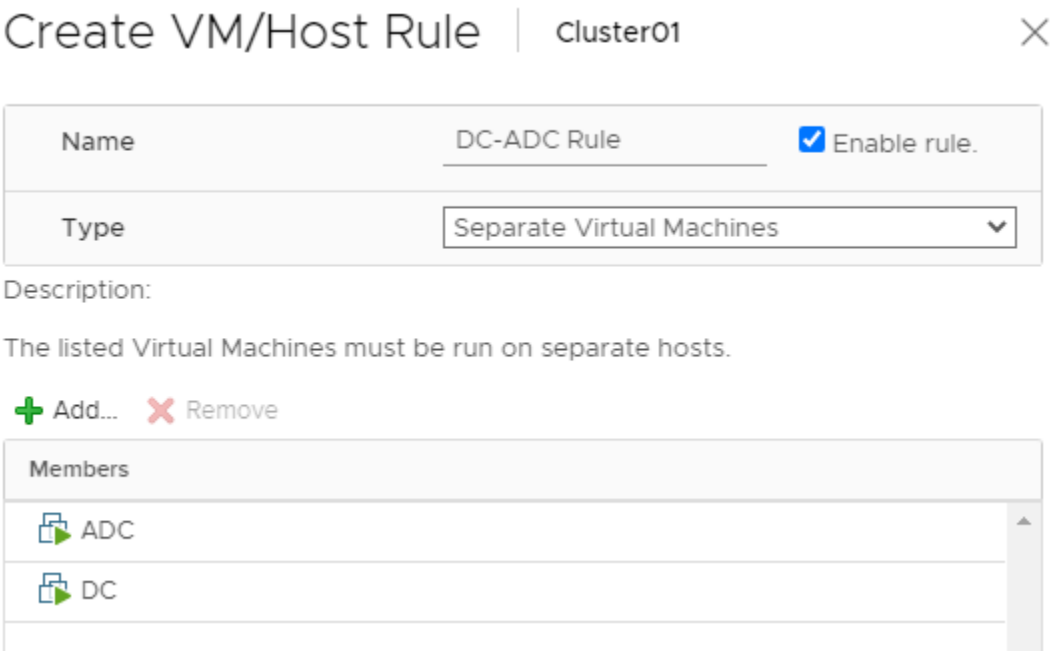
Like each group of VMs inside one compute rack add them to one group or based any other criteria.

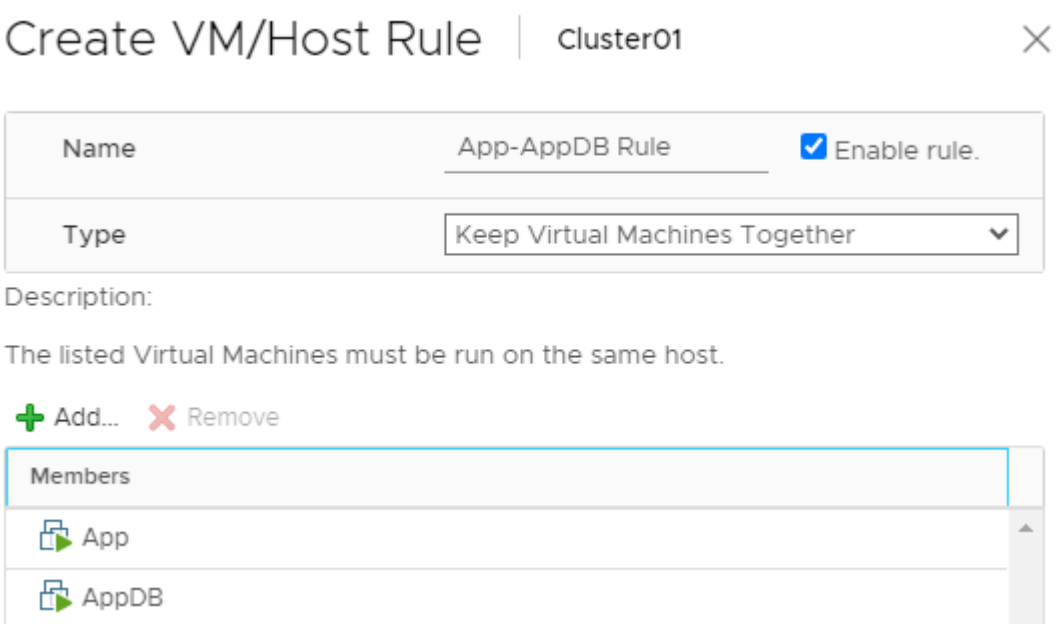


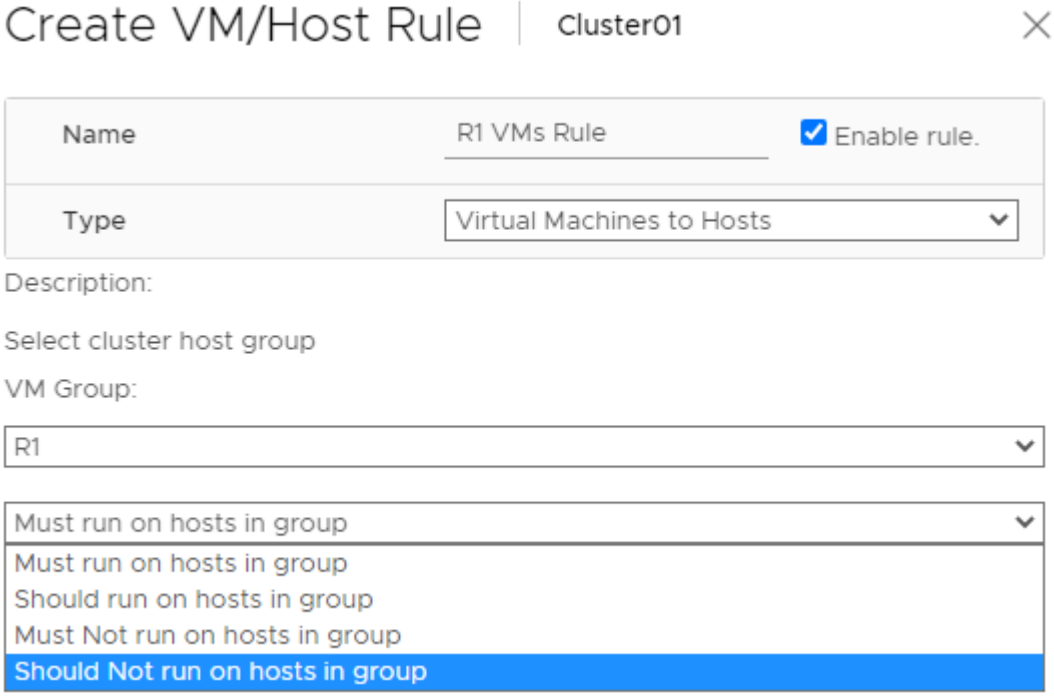
Create VM/Host Rules

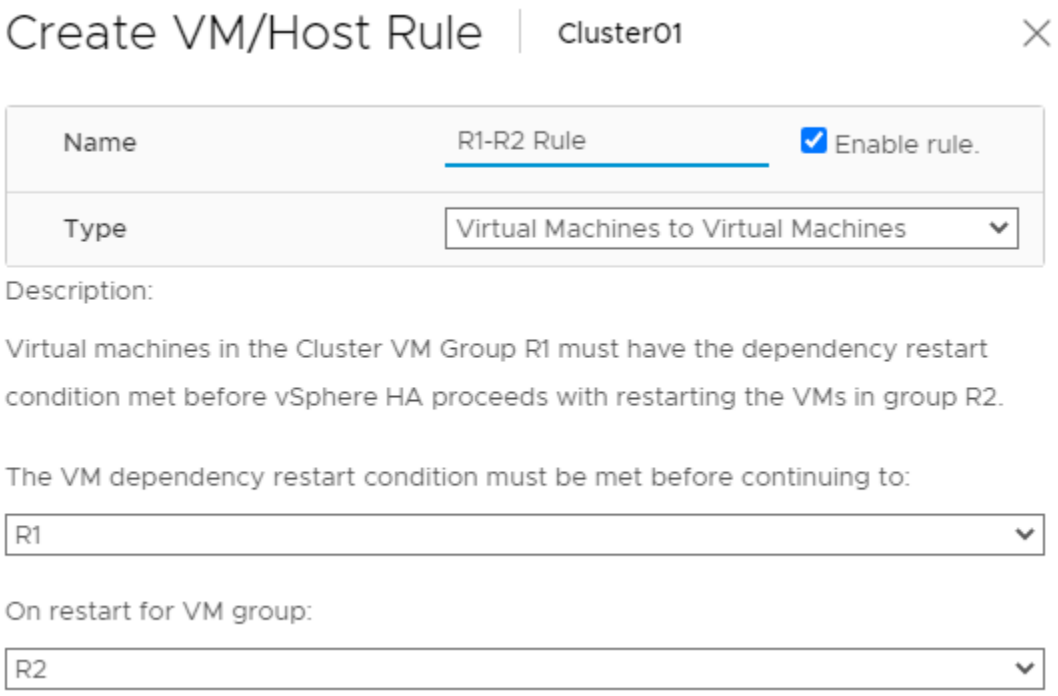
To control DRS behavior.





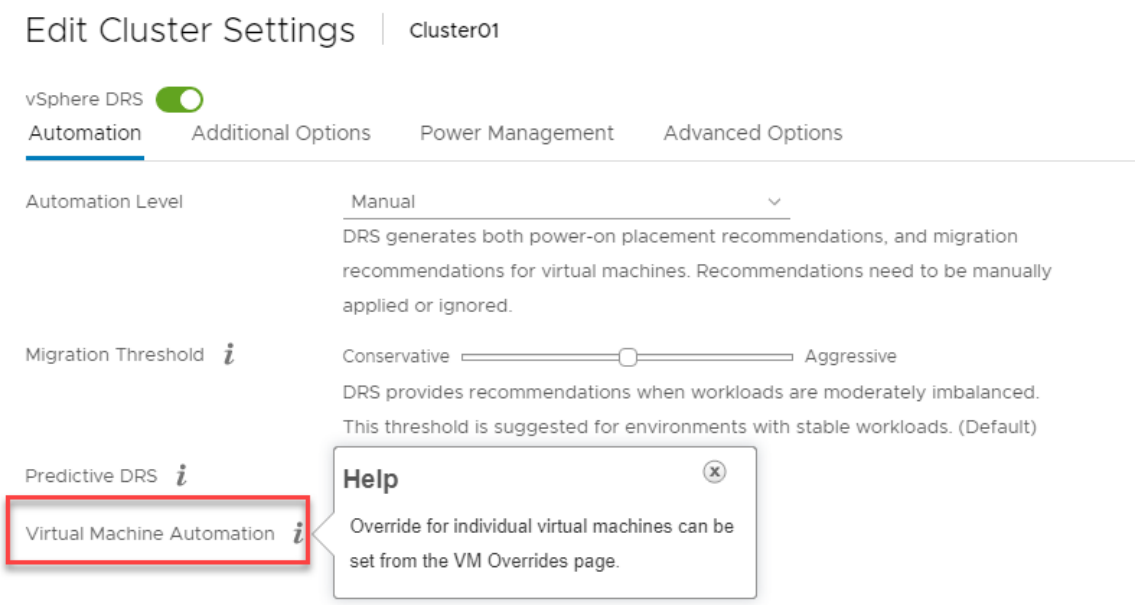

Create VM/Host Rule
Cluster01
Name
App-AppDB Rule
Enable rule.
Type
Keep Virtual Machines Together
Description:
The listed Virtual Machines must be run on the same host.
Add...
Remove
Members
App
AppDB


Create VM/Host Rule
Cluster01
Name
R1 VMs Rule
Enable rule.
Type
Virtual Machines to Hosts
Description:
Select cluster host group
VM Group:
R1
Must run on hosts in group
Must run on hosts in group
Should run on hosts in group
Must Not run on hosts in group
Should Not run on hosts in group

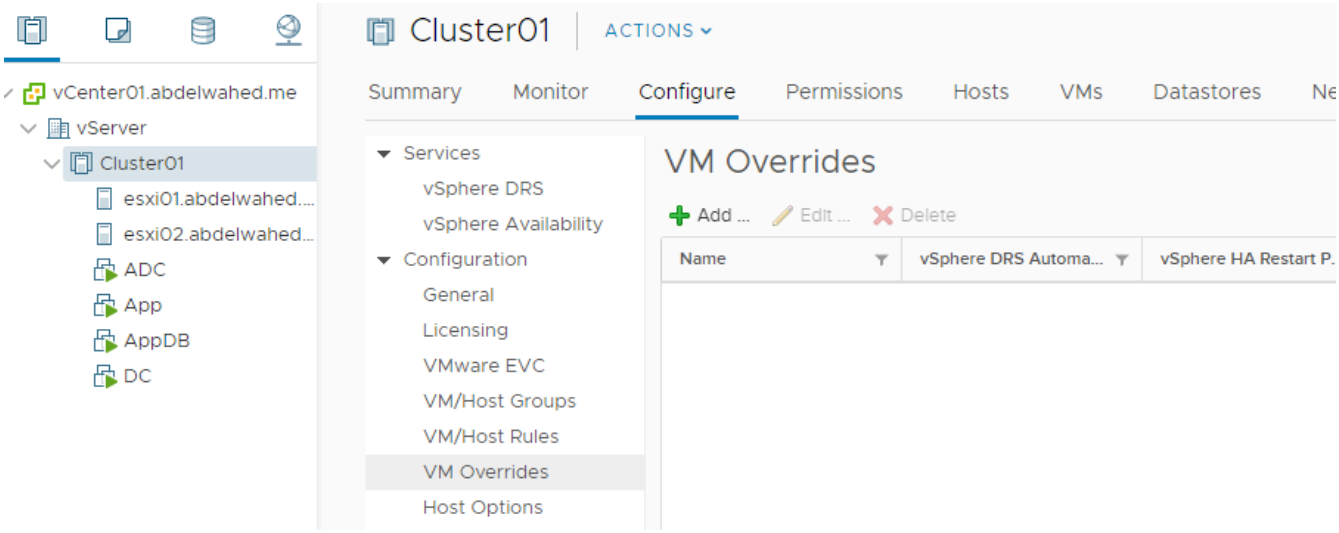


VM Overrides

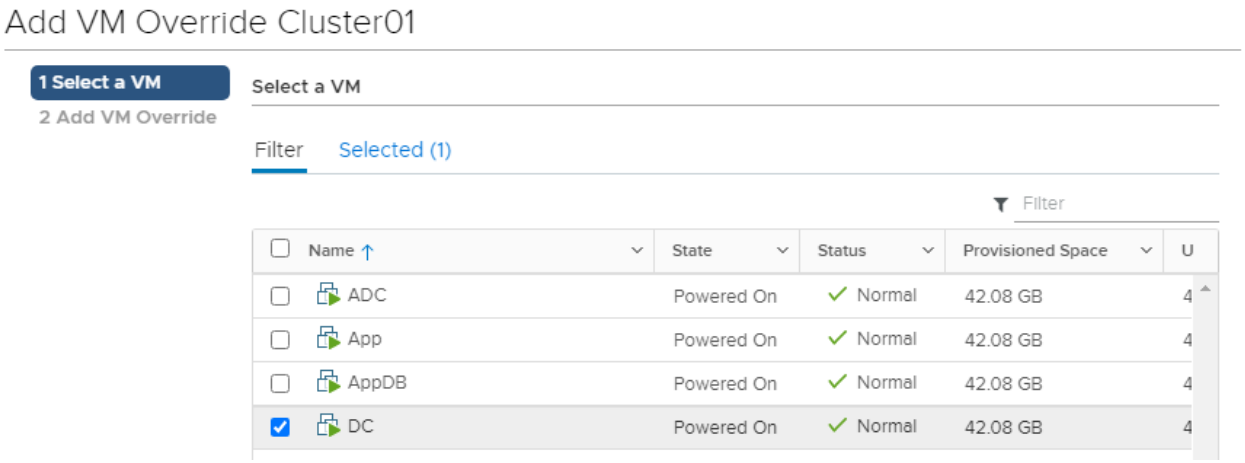
To override DRS configuration and more for specific VM, enable the following option during DRS configuration.

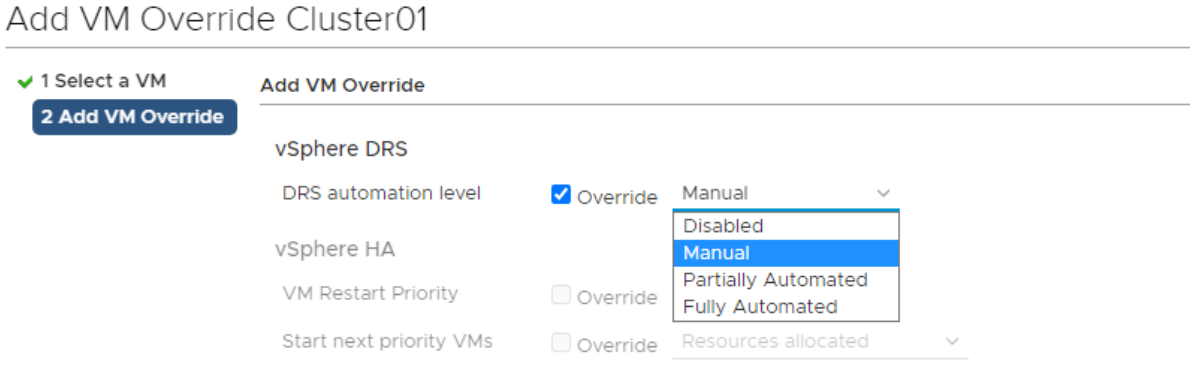


Once you enable it you can configure from



First you must select the VM you want to run different DRS options





VMware HA

- you have to use network storage to save VM data
- HA not zero down time, HA reduce the down time because the machine will restart (reboot) from another server.
- To keep machine running without down time you have to use fault torrelance (FA)
- Heartbeat between servers smarter because working in different levels, like storage, Application, network
- If vCenter is going down HA will continue work
- In case vCenter down HA will continue work because vCenter just build the HA and select one ESXI server as a master node this master node will manage the HA because it has a connection to HA configuration file at a network storage, this configuration file included all information about HA clutser like how many hosts we have and how many numbers of VMs inside each host, if any node is down this master will move all vms included to another ESXi hosts. Incase this master server is down ESXi server will vote to select another master whis is the highest resource server, if all same resources will vote based on build number.
- In case you have two ESxXi srevers if one host is down all VMs will move to another host, but what if another host doen't has enough resources?

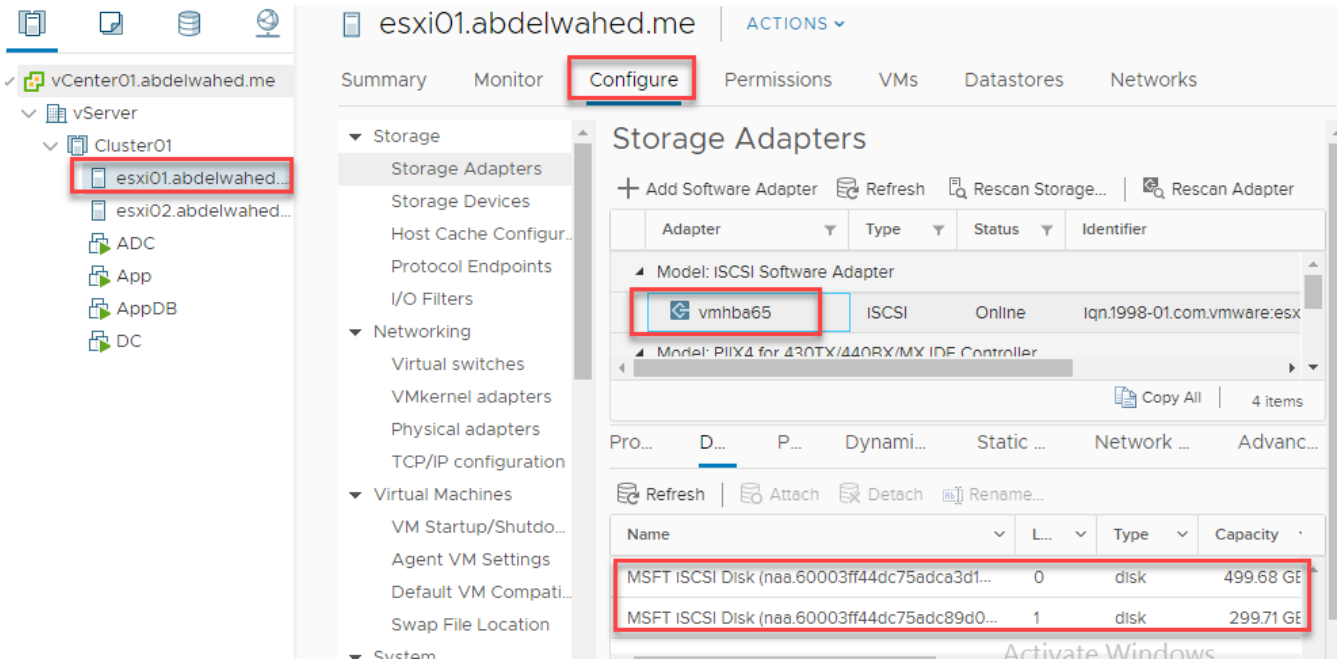
To solve this case, during design there is admission control which will reserve resources from beginning the for HA. This control will apply rule to the HA for example preserve 50% of each host resource to use it in this case or the rule is to preserve one empty host as a standby server for this case. Also admission can ask for decrease VMs resources to move it to another host in case another host doesn't has enough resource which is named (VM degregation) and you have to accept this rule or no if you accept VMs resouces will decreased if no the server will go down in case host is down.

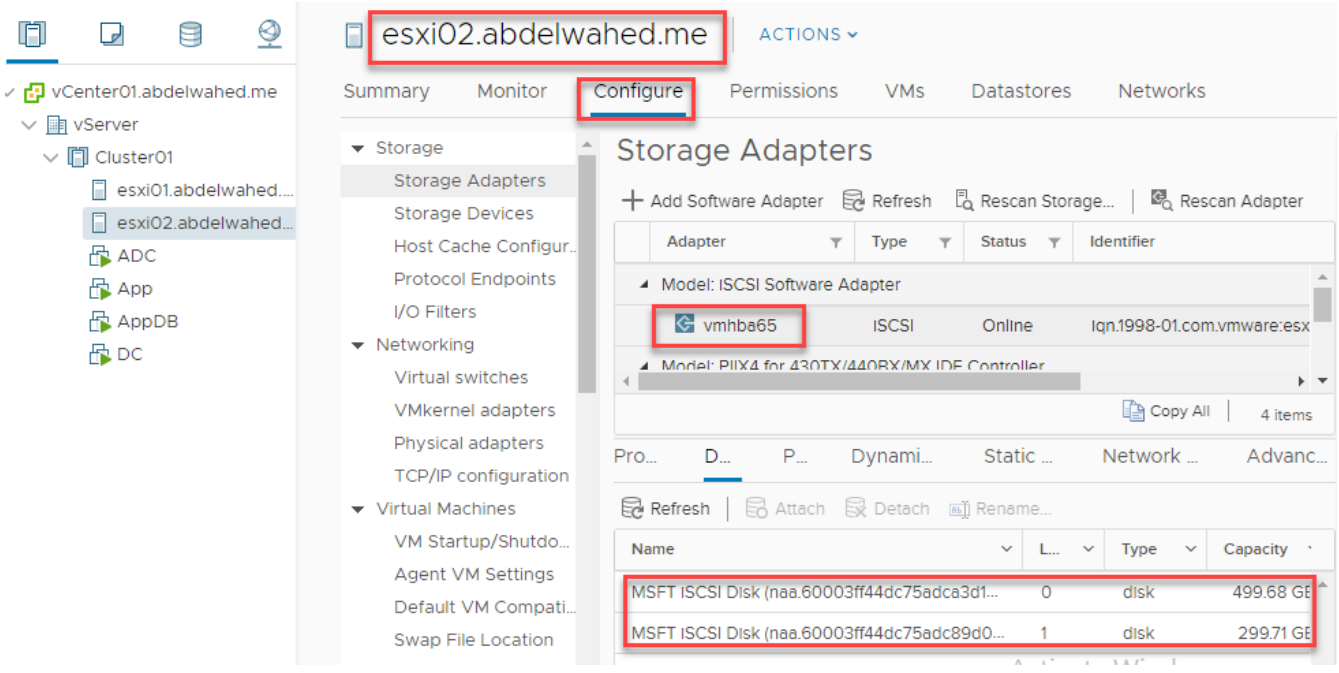
HA requirments:

1- At least 2 shared datastore (ISCSI) to detect the actual problem in datastore or on SAN storage.
2- Default gateway configured on network cards to detect the failuar in network or at host.

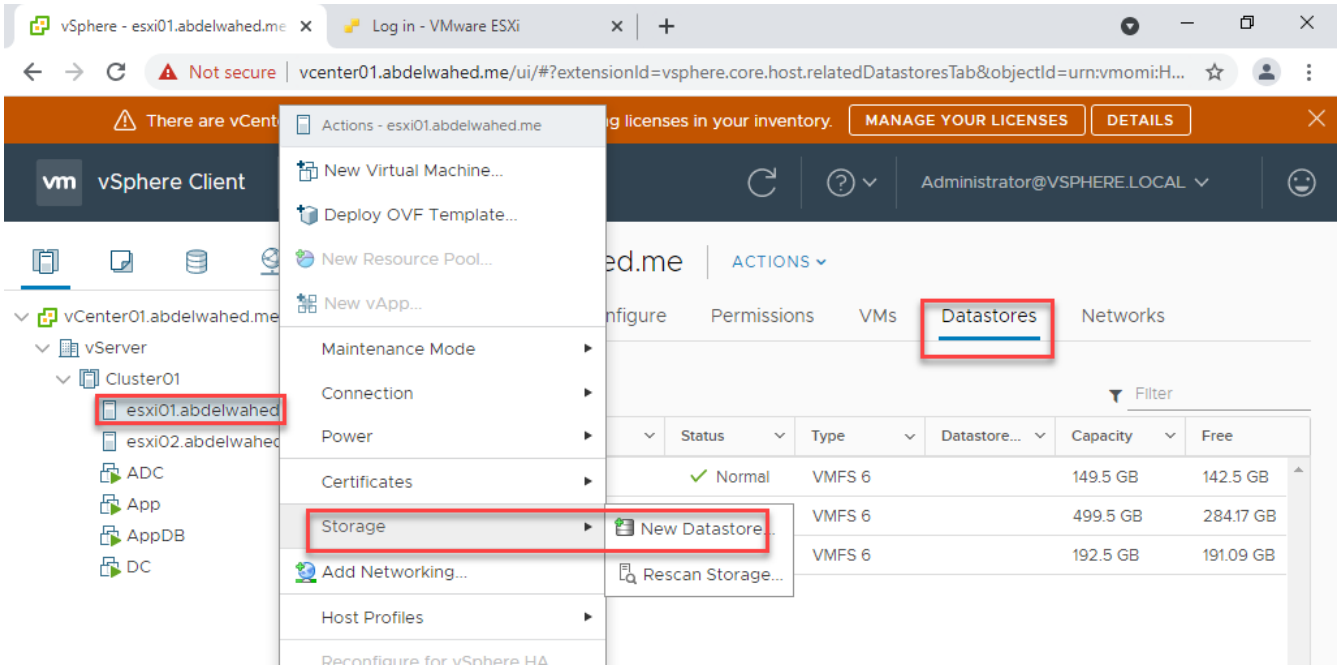
Configure HA

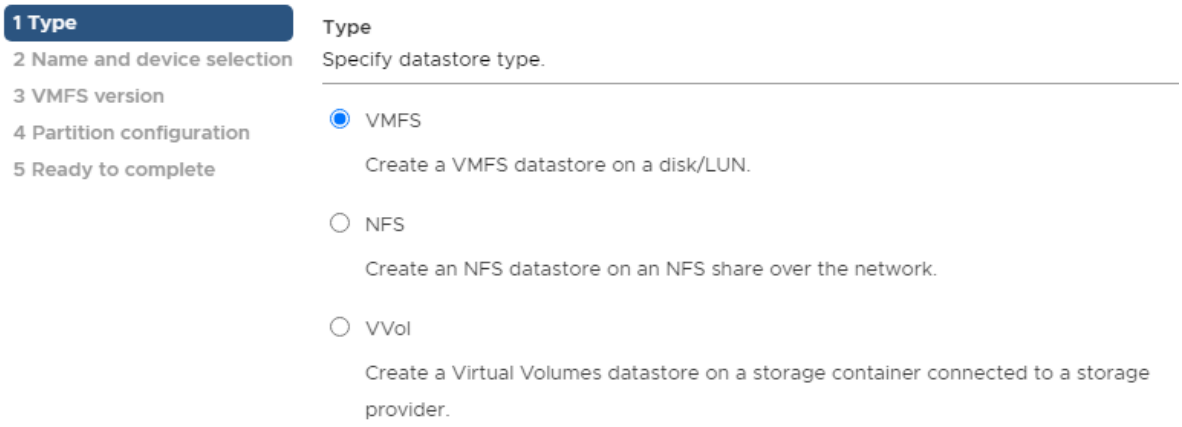
Add two ISCSI disk to both servers then add datastore

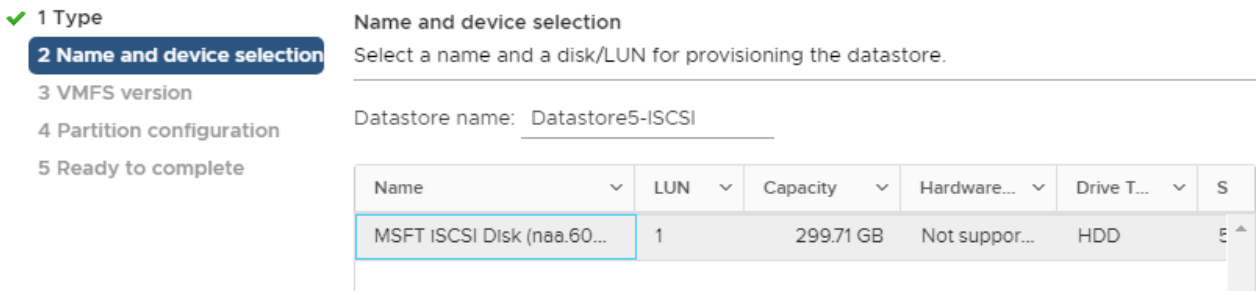


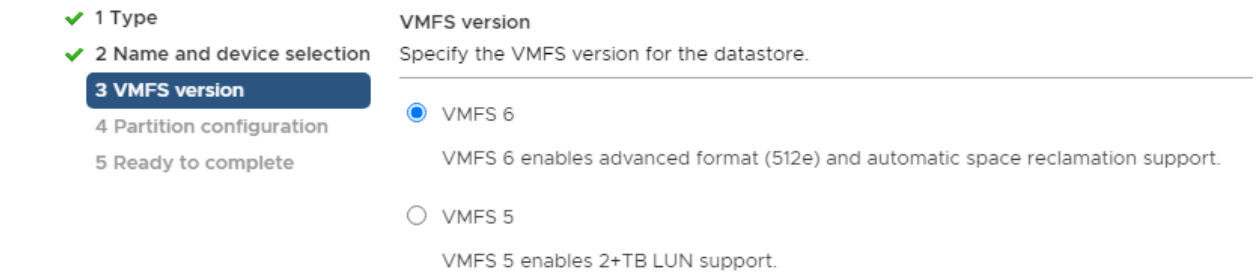


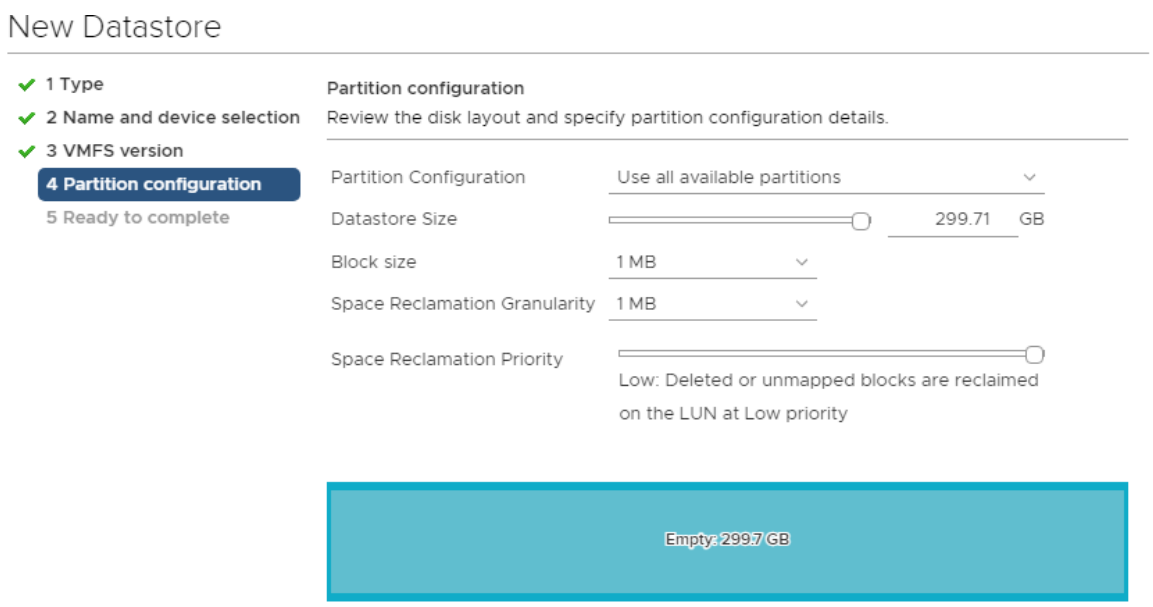
For datastore we already configure one ISCSI datastore with 500GB size now we will add another 300GB iSCSI datastore



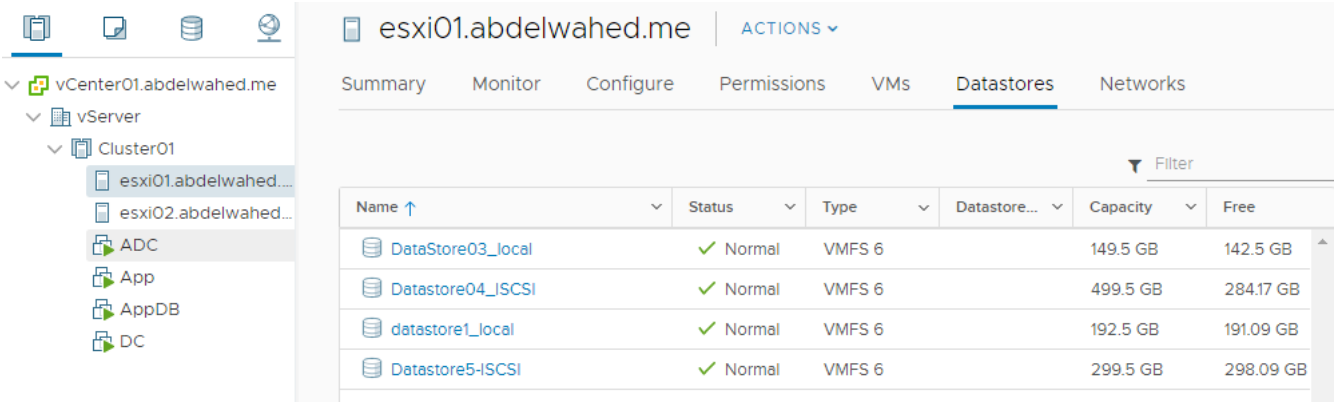


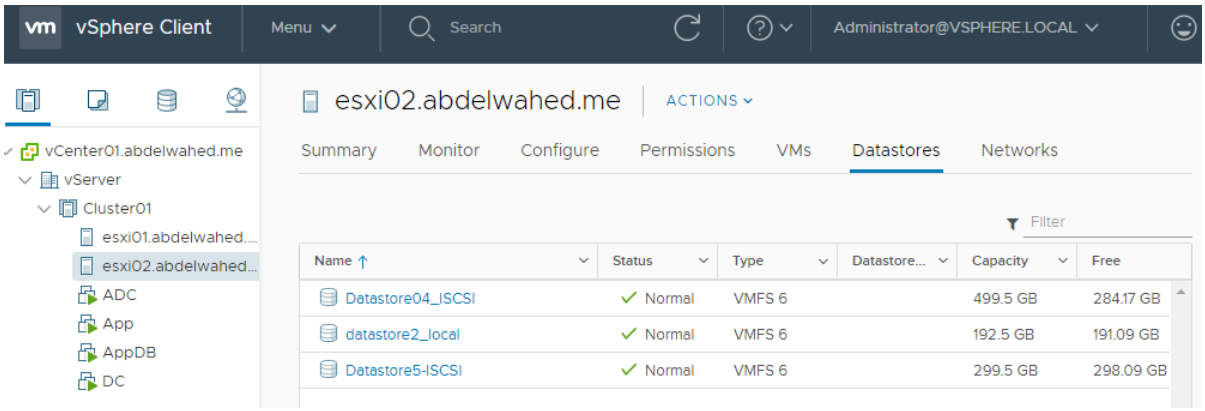




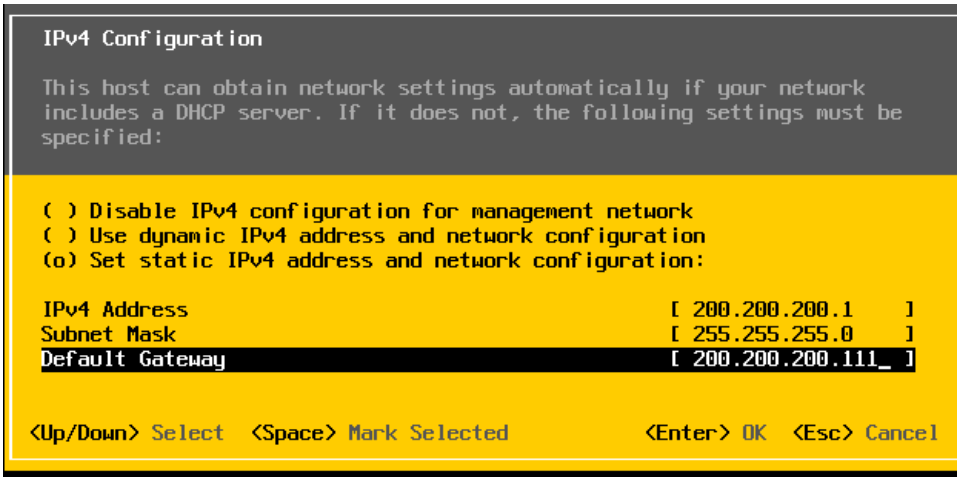


Now I have two iSCSI datastore connected to both hosts

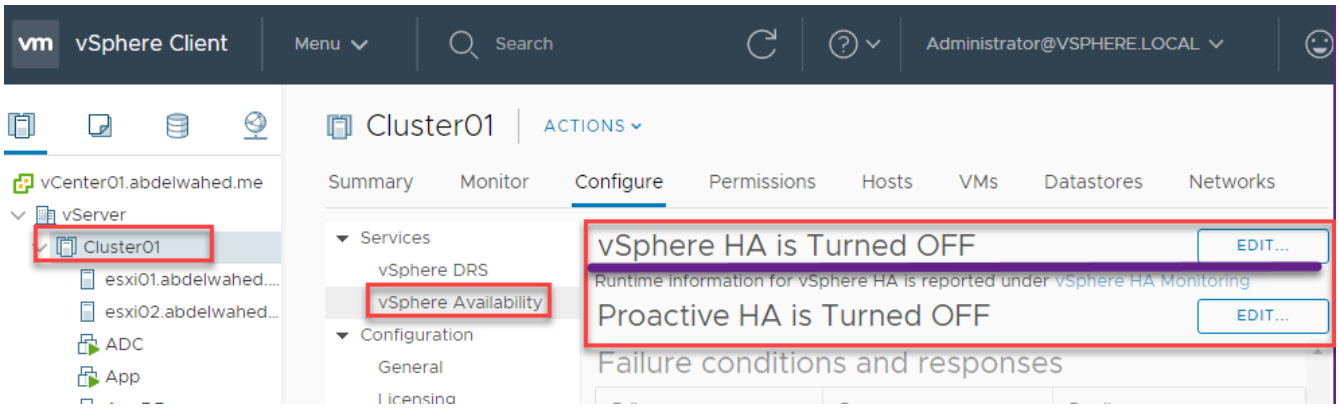


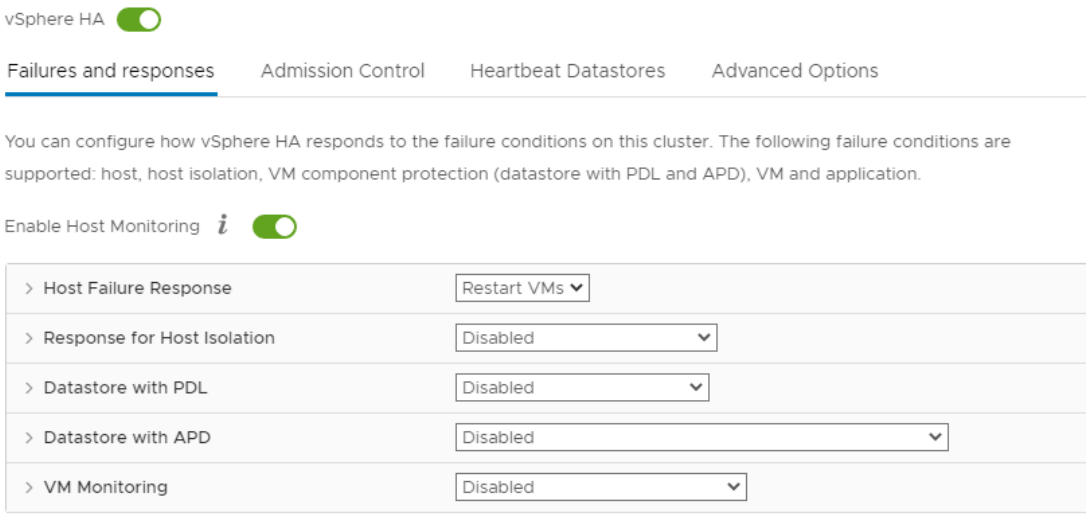


Add pingable DF for both hosts (in this case I will use IP for vCenter)

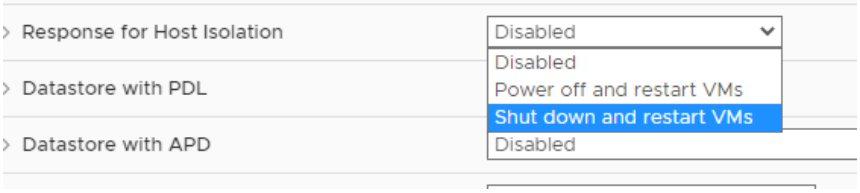


Now you can enable HA

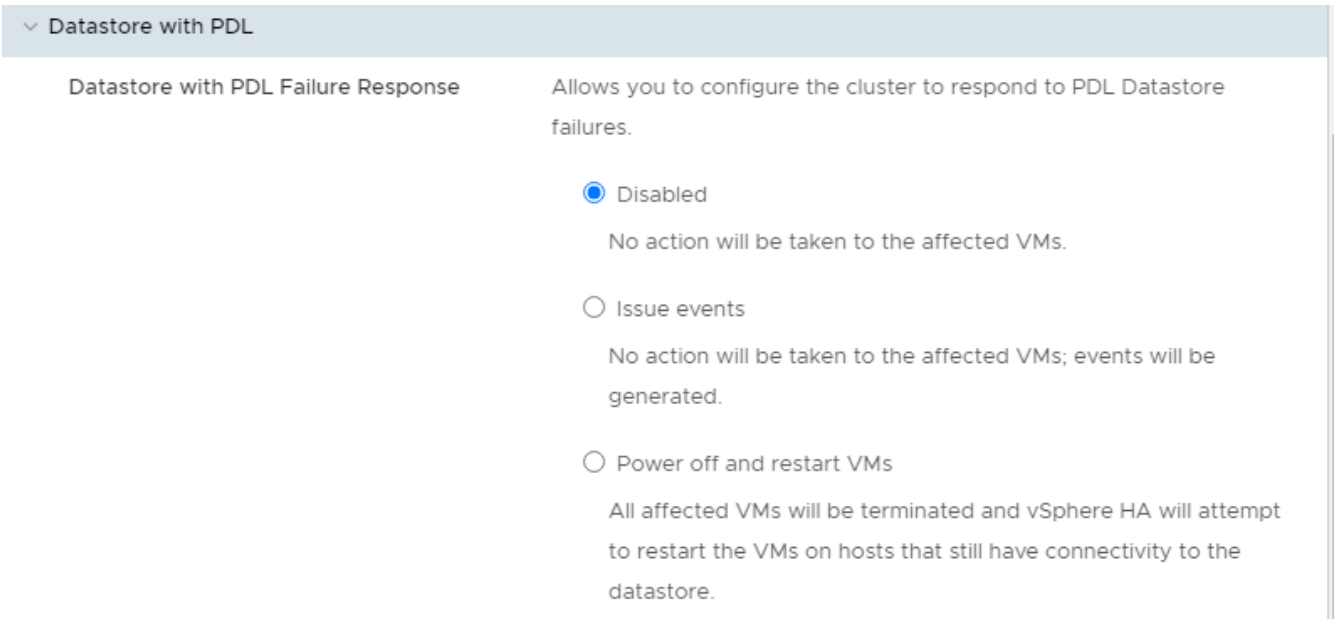




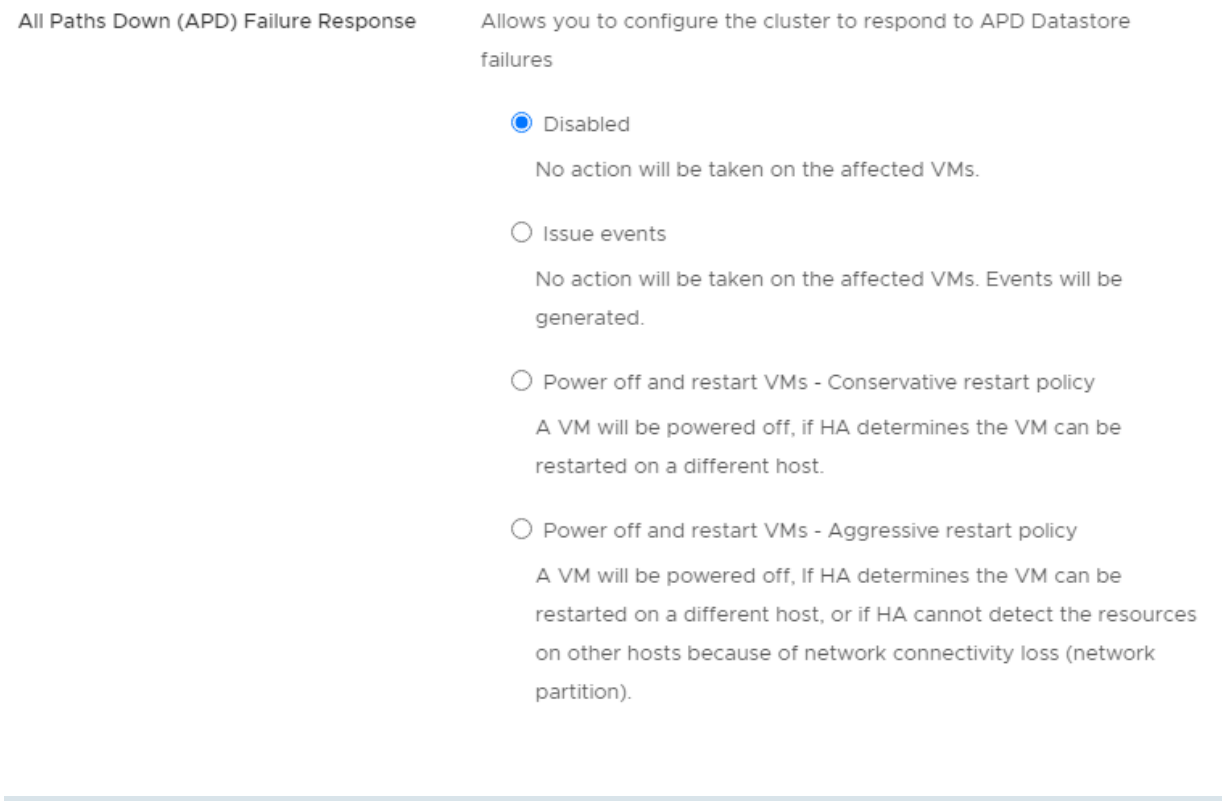
- Response for host isolation, means VM not pingable there is network problem. You have to take care about this option because sometimes VM temporary unaviable due to backup process or any heavy traffic running now on VM

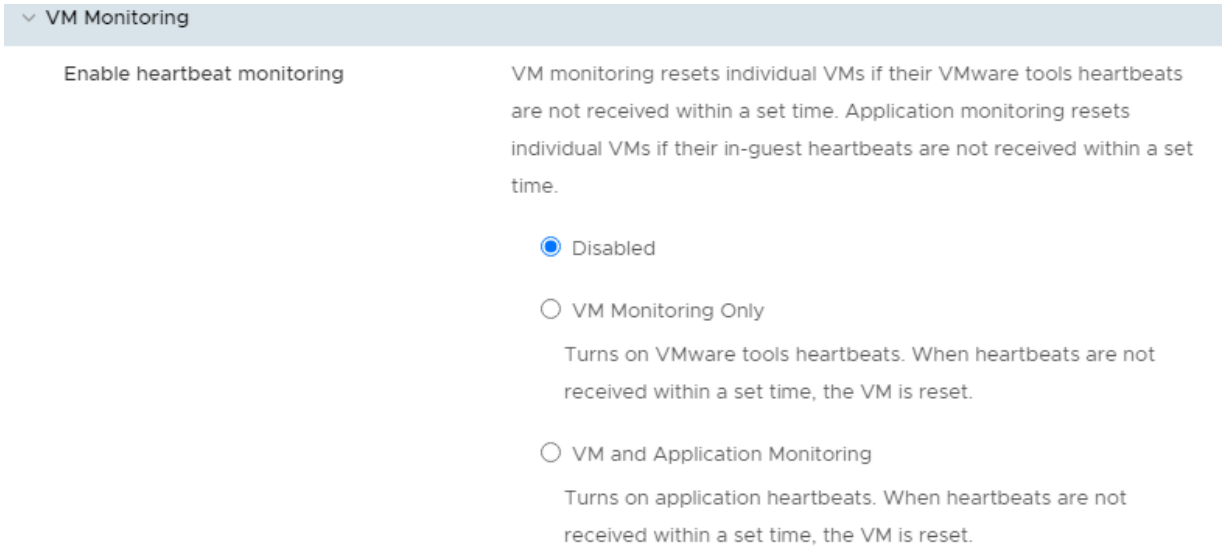


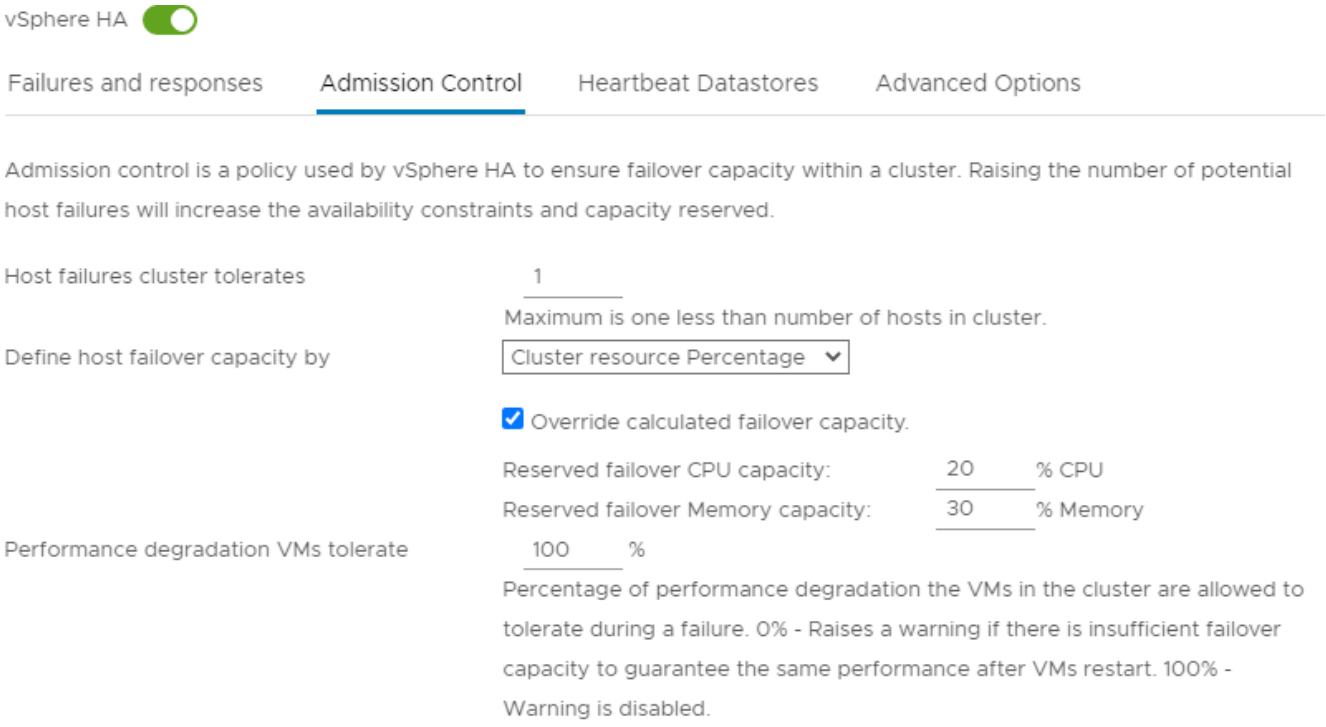
PDL, datastore that store the VM is down

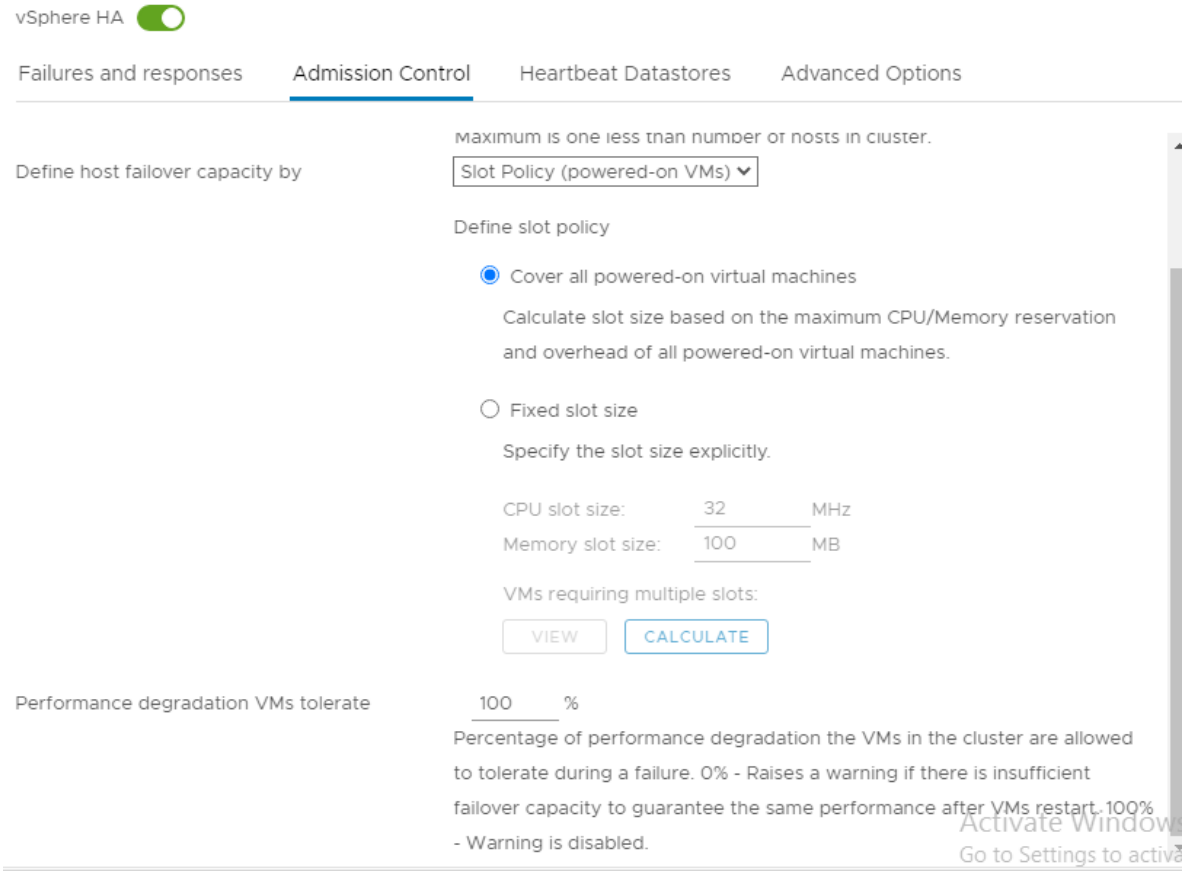


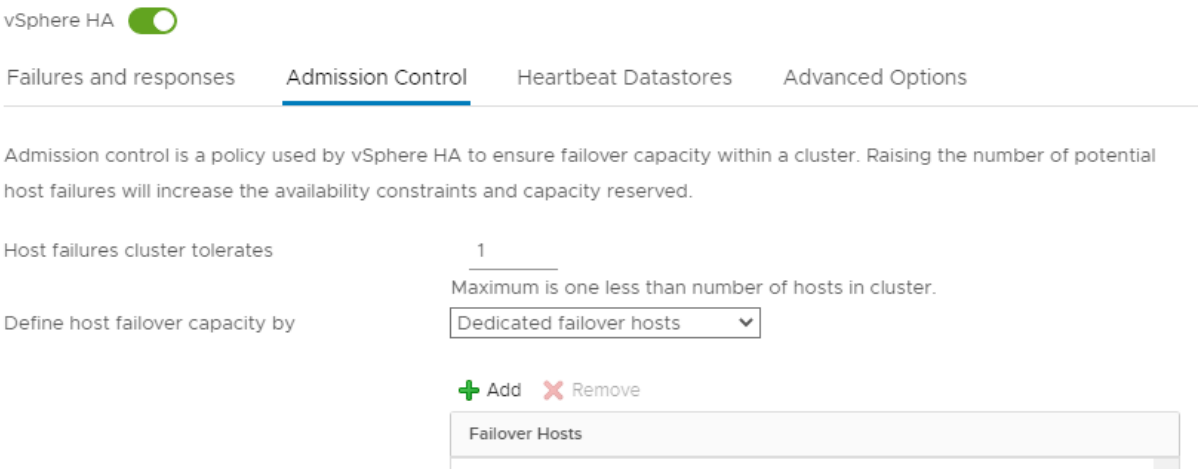
APD, all path is down that all datastore is down mean SAN problem

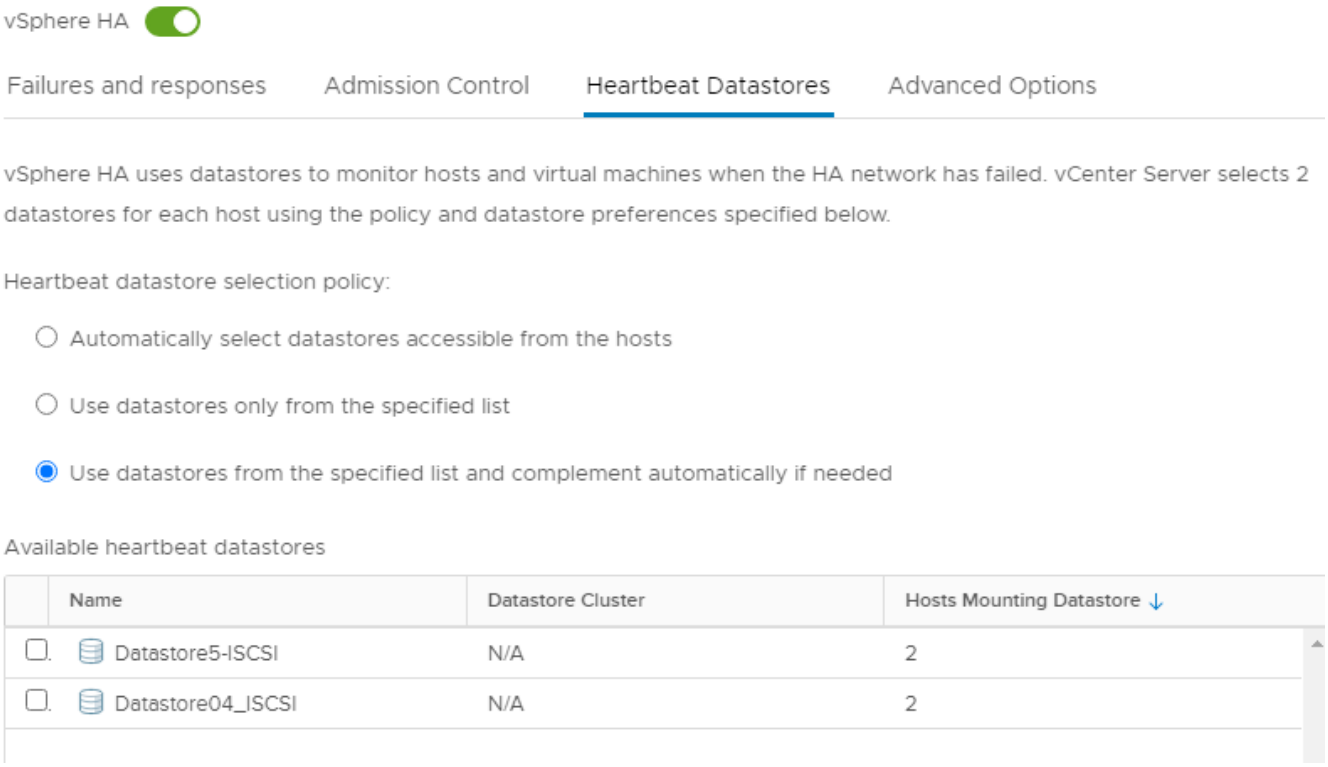


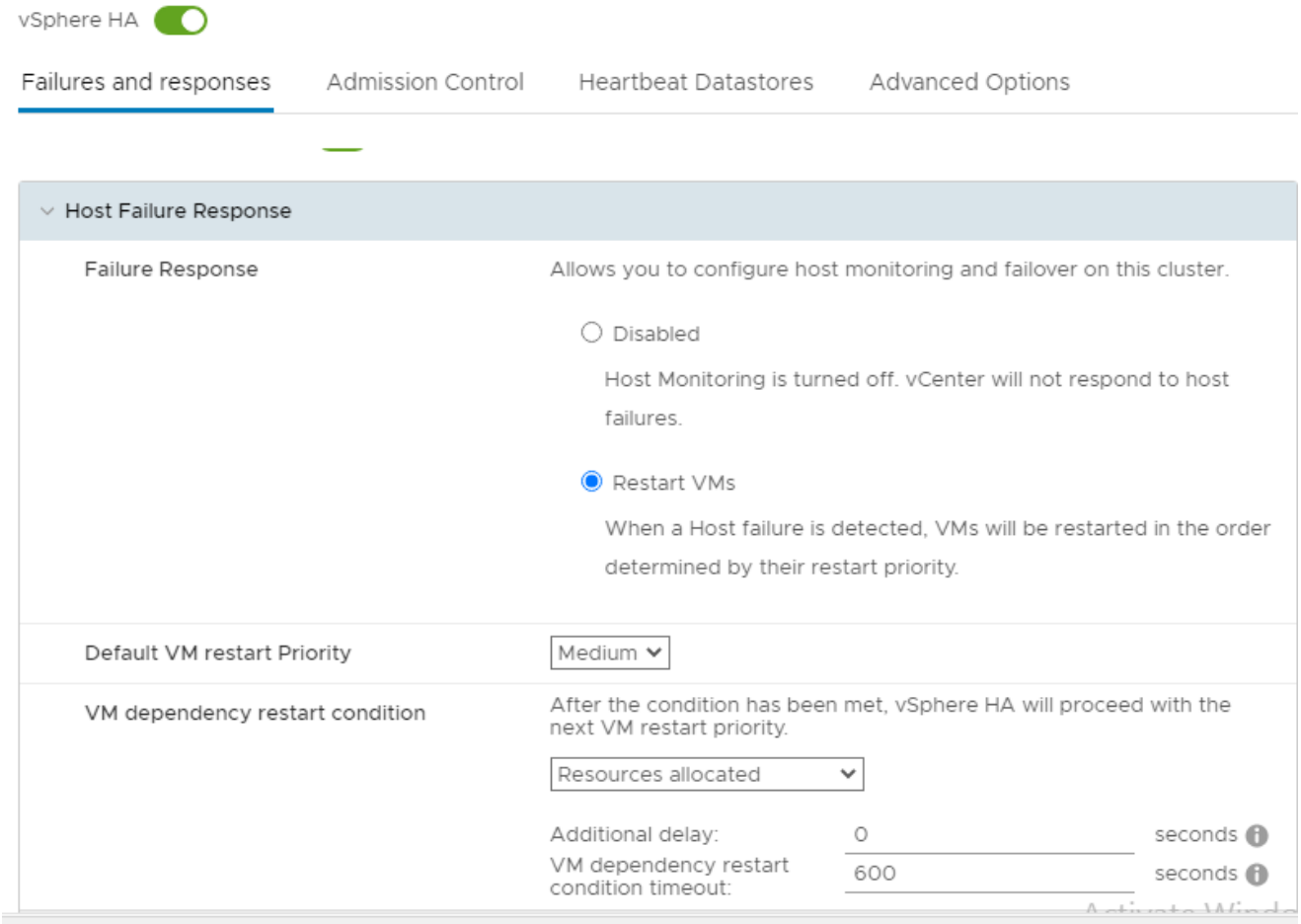


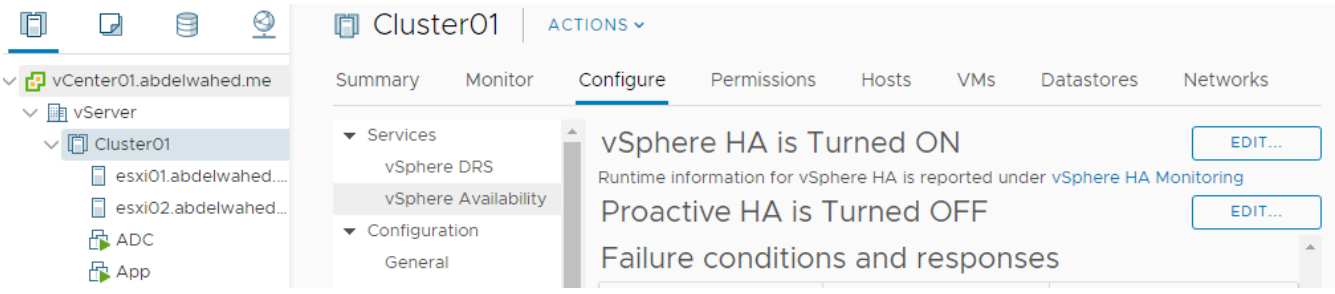

vSphere HA
Failures and responses
Admission Control
Heartbeat Datastores
Advanced Options
Admission control is a policy used by vSphere HA to ensure failover capacity within a cluster. Raising the number of potential host failures will increase the availability constraints and capacity reserved.
Host failures cluster tolerates
1
Maximum is one less than number of hosts in cluster.
Define host failover capacity by
Cluster resource Percentage
Override calculated failover capacity.
Reserved failover CPU capacity:
20
% CPU
Reserved failover Memory capacity:
30
% Memory
Performance degradation VMs tolerate
100
%
Percentage of performance degradation the VMs in the cluster are allowed to tolerate during a failure. 0% - Raises a warning if there is insufficient failover capacity to guarantee the same performance after VMs restart. 100% - Warning is disabled.


vSphere HA
Failures and responses
Admission Control
Heartbeat Datastores
Advanced Options
Maximum is one less than number of hosts in cluster.
Define host failover capacity by
Slot Policy (powered-on VMs)
Define slot policy
Cover all powered-on virtual machines
Calculate slot size based on the maximum CPU/Memory reservation and overhead of all powered-on virtual machines.
Fixed slot size
Specify the slot size explicitly.
CPU slot size:
32
MHz
Memory slot size:
100
MB
VMs requiring multiple slots:
VIEW
CALCULATE
Performance degradation VMs tolerate
100
%
Percentage of performance degradation the VMs in the cluster are allowed to tolerate during a failure. 0% - Raises a warning if there is insufficient failover capacity to guarantee the same performance after VMs restart. 100% - Warning is disabled.
Activate Windows
Go to Settings to activa


vSphere HA
Failures and responses
Admission Control
Heartbeat Datastores
Advanced Options
Admission control is a policy used by vSphere HA to ensure failover capacity within a cluster. Raising the number of potential host failures will increase the availability constraints and capacity reserved.
Host failures cluster tolerates
1
Maximum is one less than number of hosts in cluster.
Define host failover capacity by
Dedicated failover hosts
Add
Remove
Failover Hosts

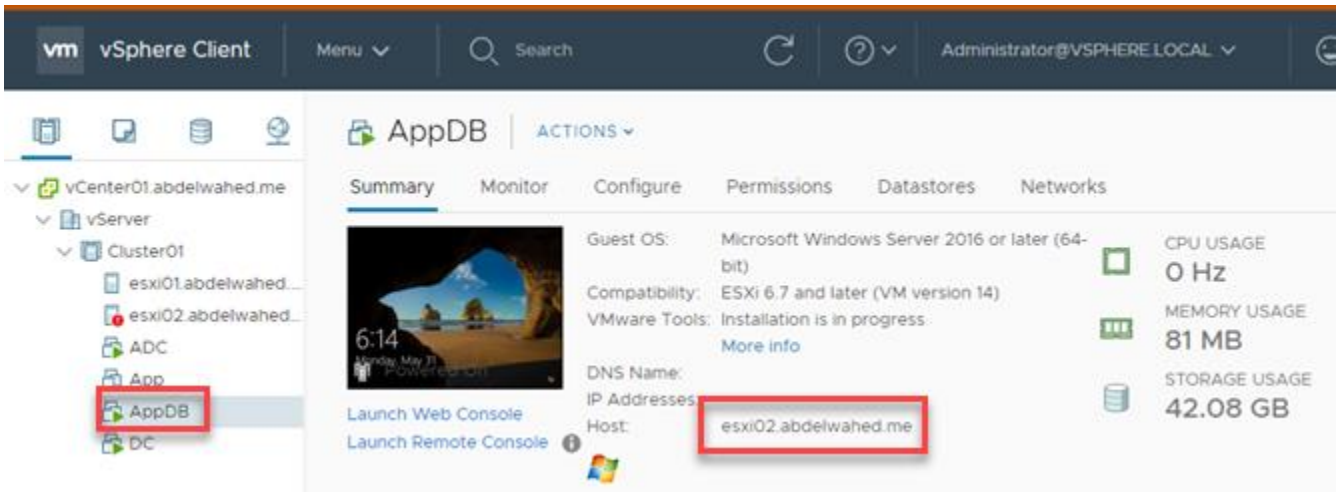

vSphere HA
Failures and responses
Admission Control
Heartbeat Datastores
Advanced Options
vSphere HA uses datastores to monitor hosts and virtual machines when the HA network has failed. vCenter Server selects 2 datastores for each host using the policy and datastore preferences specified below.
Heartbeat datastore selection policy:
Automatically select datastores accessible from the hosts
Use datastores only from the specified list
Use datastores from the specified list and complement automatically if needed
Available heartbeat datastores
Name
Datastore Cluster
Hosts Mounting Datastore
Datastore5-ISCSI
N/A
2
Datastore04_ISCSI
N/A
2

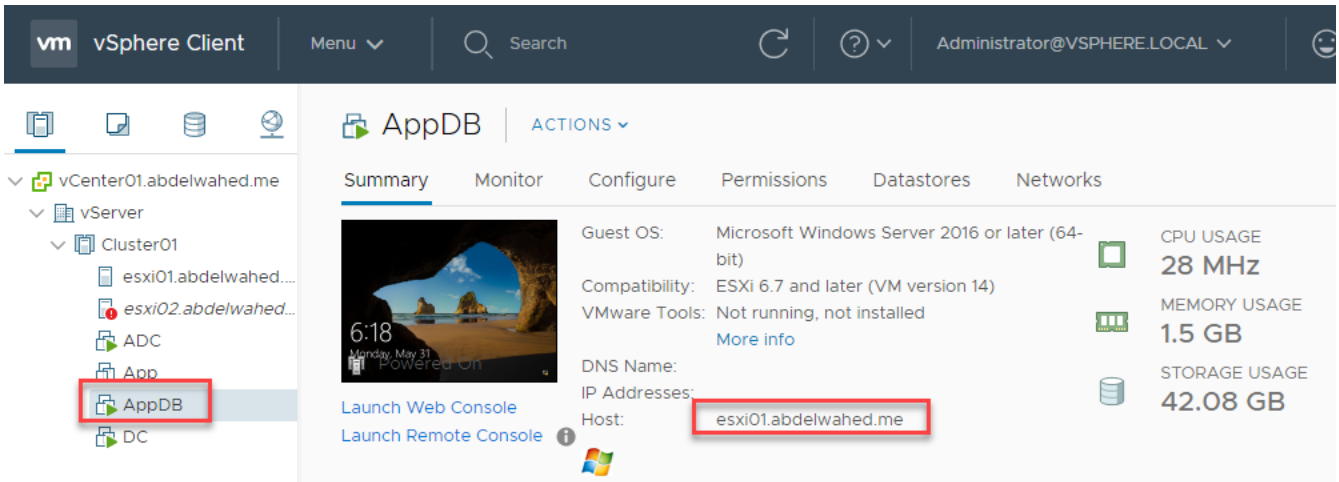

vSphere HA
Failures and responses
Admission Control
Heartbeat Datastores
Advanced Options
Host Failure Response
Failure Response
Allows you to configure host monitoring and failover on this cluster.
Disabled
Host Monitoring is turned off. vCenter will not respond to host failures.
Restart VMs
When a Host failure is detected, VMs will be restarted in the order determined by their restart priority.
Default VM restart Priority
Medium
VM dependency restart condition
After the condition has been met, vSphere HA will proceed with the next VM restart priority.
Resources allocated
Additional delay:
0
seconds
VM dependency restart condition timeout:
600
seconds


vCenter01.abdelwahed.me
vServer
Cluster01
esxi01.abdelwahed....
esxi02.abdelwahed...
ADC
App
Cluster01
ACTIONS
Summary
Monitor
Configure
Permissions
Hosts
VMs
Datastores
Networks
Services
vSphere DRS
vSphere Availability
Configuration
General
vSphere HA is Turned ON
EDIT...
Runtime information for vSphere HA is reported under vSphere HA Monitoring
Proactive HA is Turned OFF
EDIT...
Failure conditions and responses

Testing

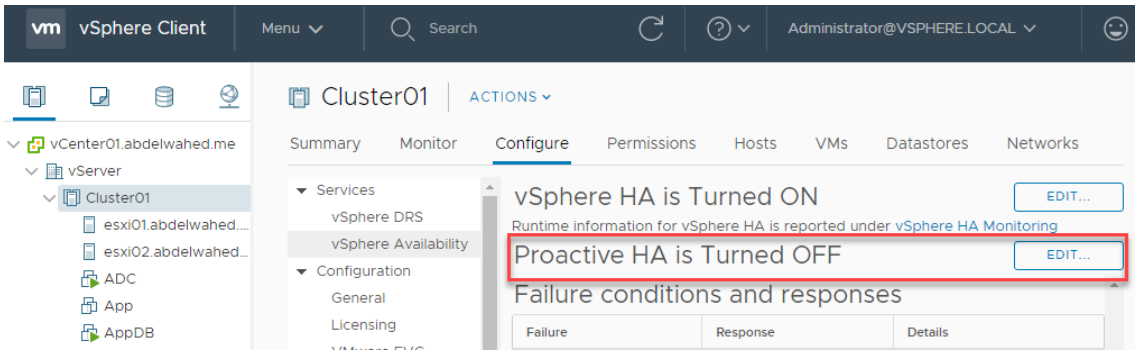
I have one VM named AppDB hosted on ESXi02, I will be disconnected ESXi02 from network and AppDB will move to ESXi01, because I set HA for network if down will restart VM on another host.



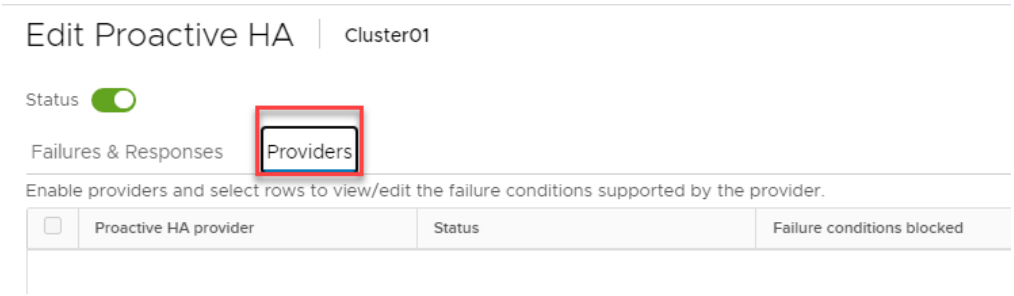


vCenter Proactive HA (need plugins)

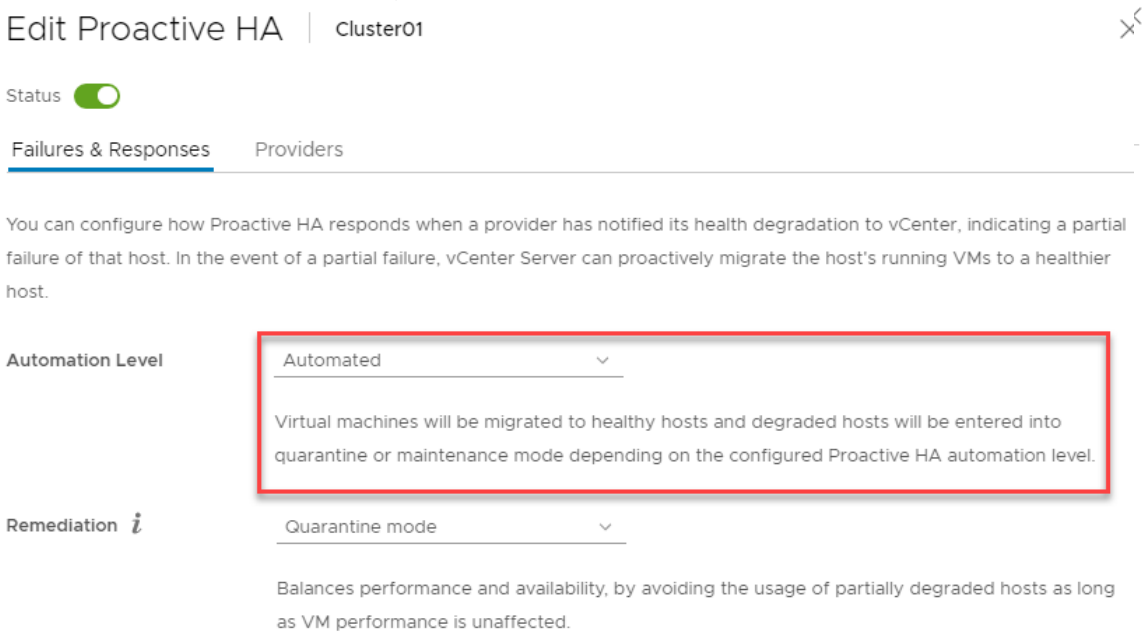
vCenter can monitor hardware through vmware tool plugins,



this plugin provided by vendor, we install it at vCenter and will appear at provider area so we can monitor health degregation not hardware failuar.

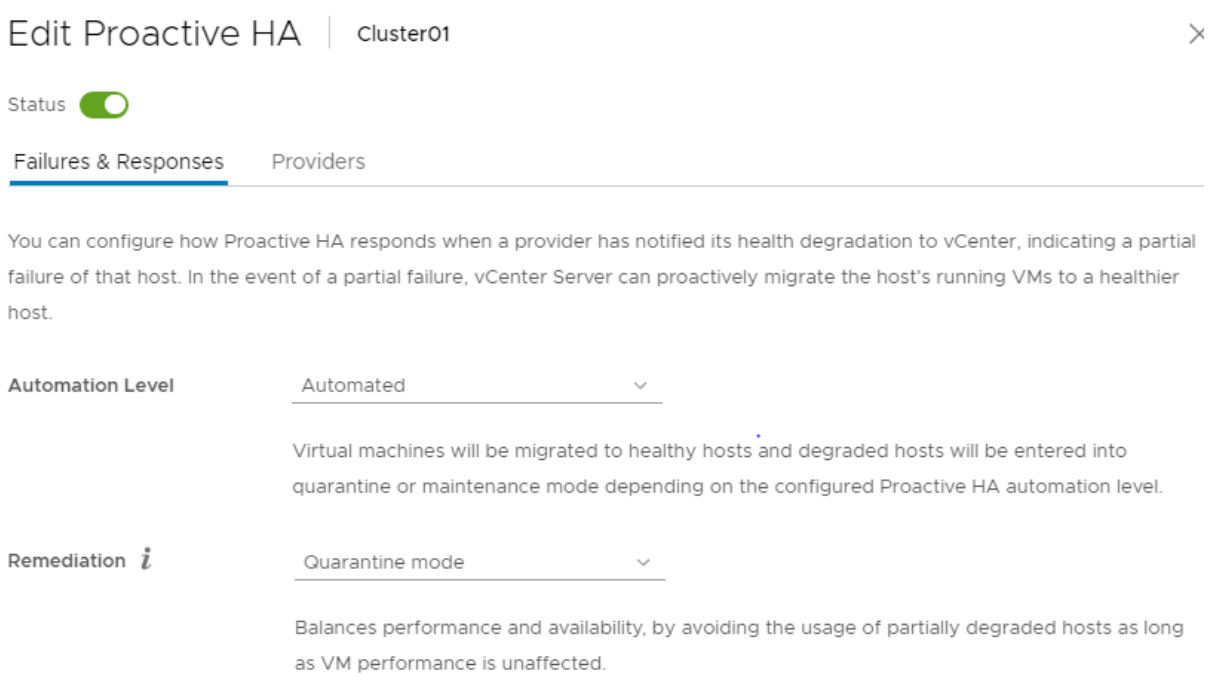


If you set it manual will notify you at DRS with recommendations, but if you set it to automatic will take actions automatic.

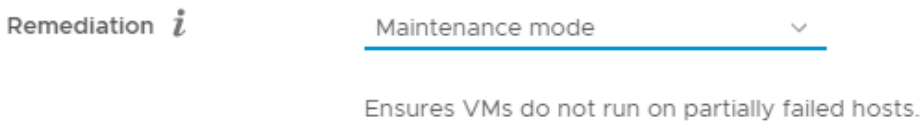


Remedation determine the action (for HA) in case server marked as hardware degregation:

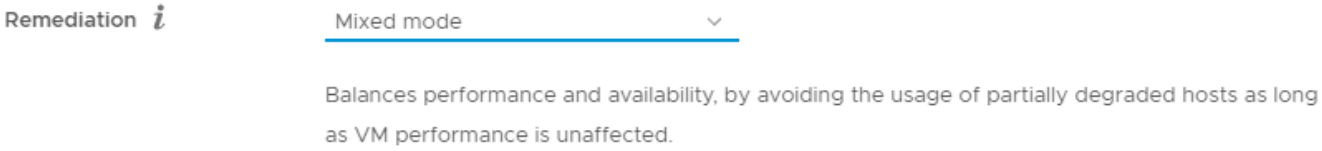
- Quarantine mode, if the server marked as the server in quarantine so not selected for any HA role. Like moving servers to it or voted as master.



- Maintanance mode, will move all included VMs to another host

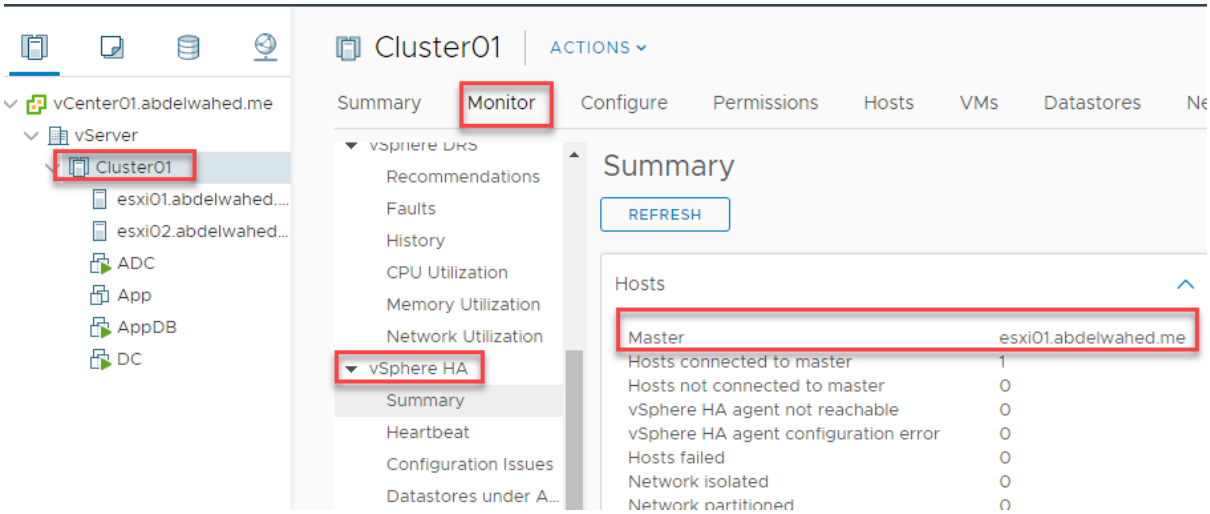


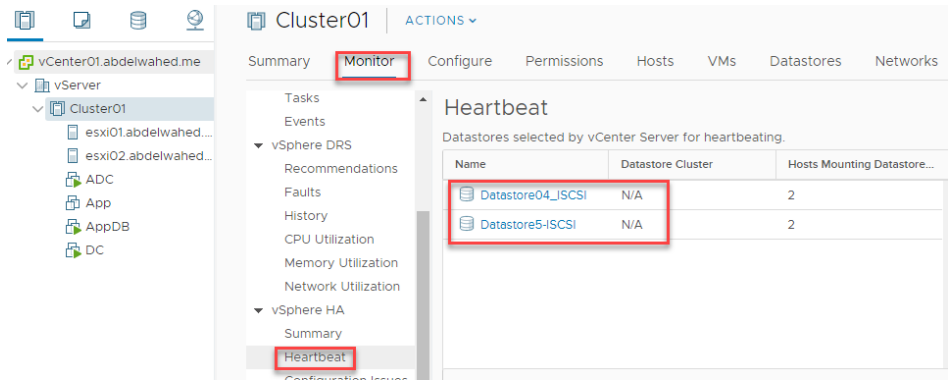
- Mixed mode, move VMs to another host and mark as quarantine



HA Summary and Heartbeat

voted master serve





Fault Tolerance (0 down time)

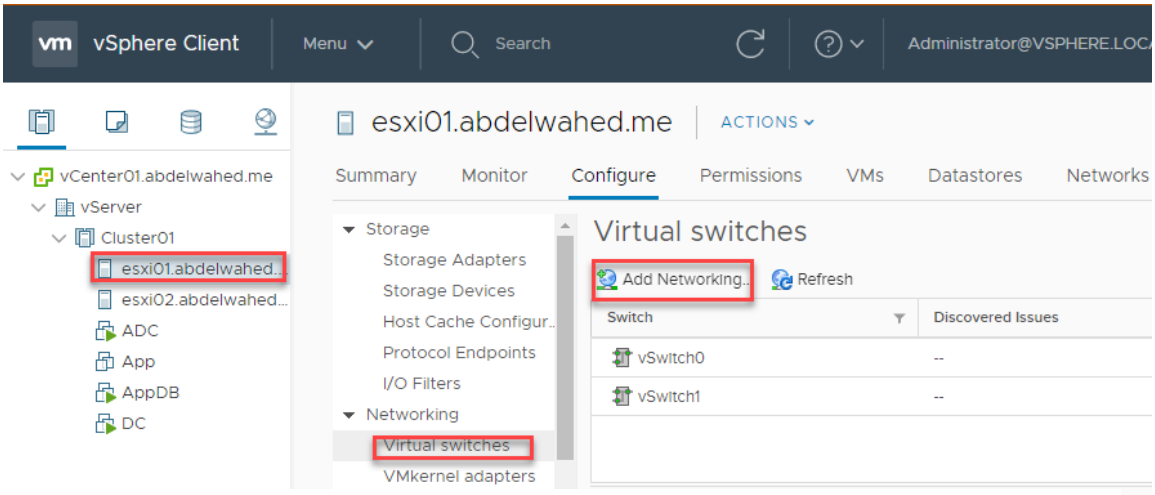
To maintain 0 down time, the VM will duplicated at datastore one run as primary and another run as secondary, and everything (including storage and any data in memory) in primary VM will updated to secondary one at the same time. And there is heartbeat between the servers if primary one doen the secondary server will act as primary.

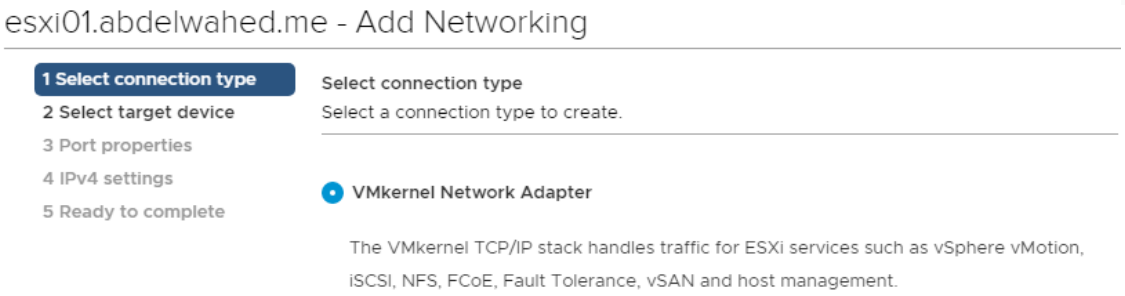
Requirments

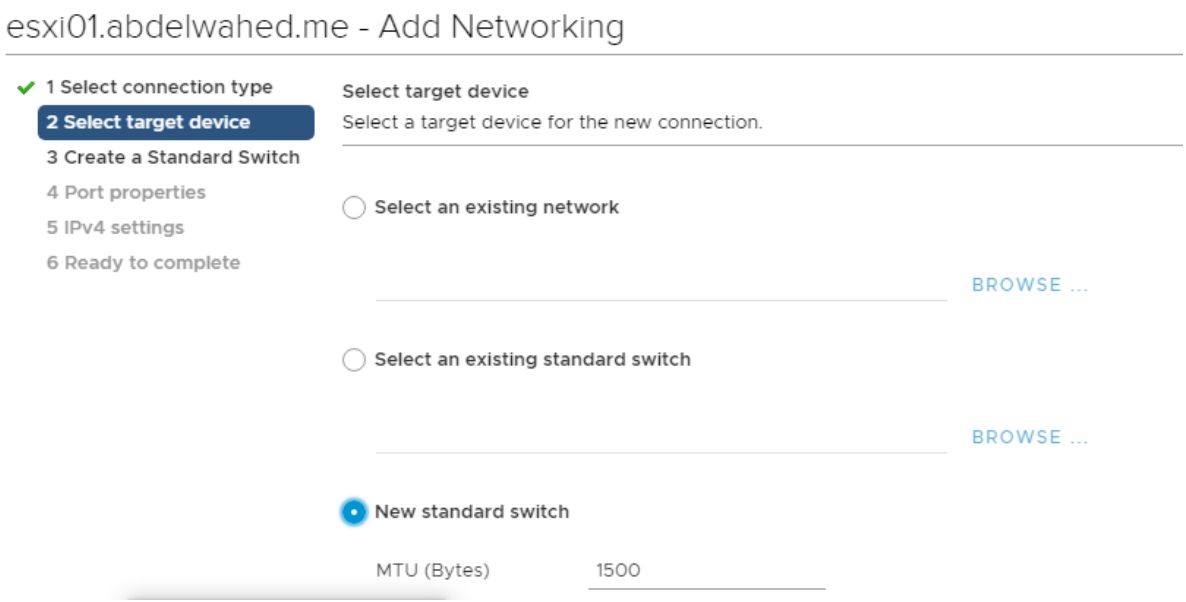
- 2 dedicated NIC with 1GB/sec speed for each server.
- Datastore run on SSD disk.
- FT lecence.
- HA Enabled

Configuration

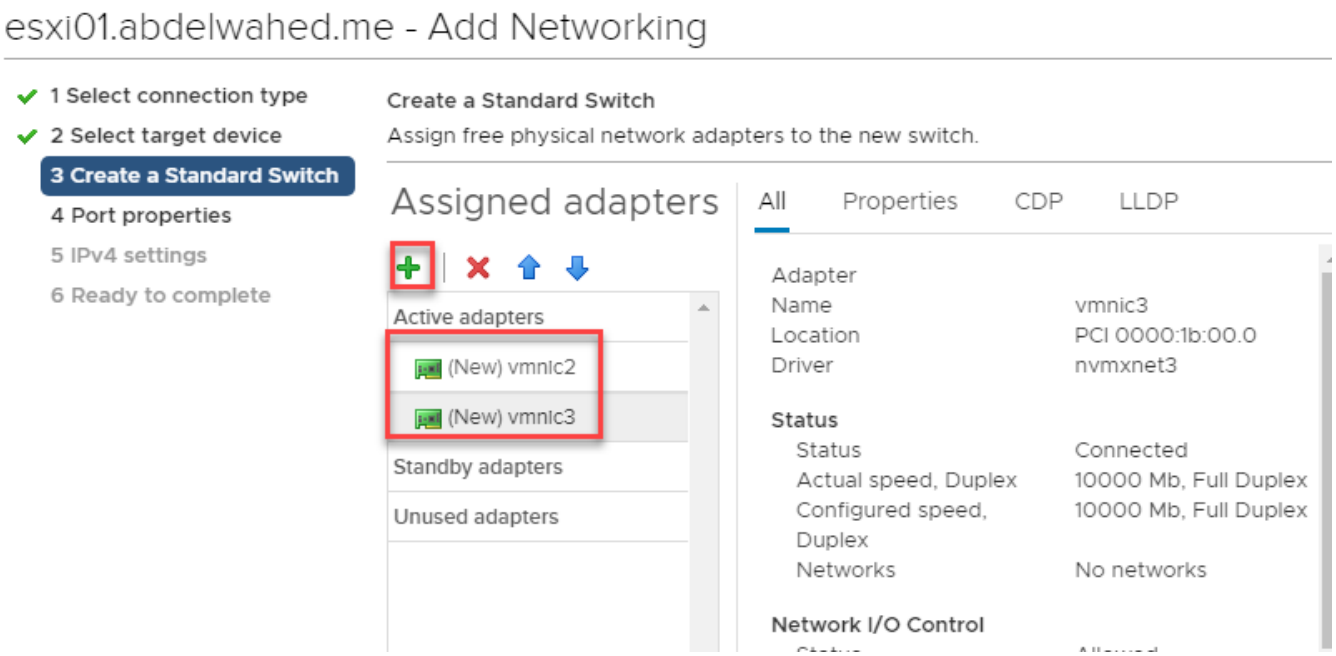
First add 2 NIC on each ESXi servers and restart the management network for both servers to detect the new cards. Then go to vCenter to start FT configuration.

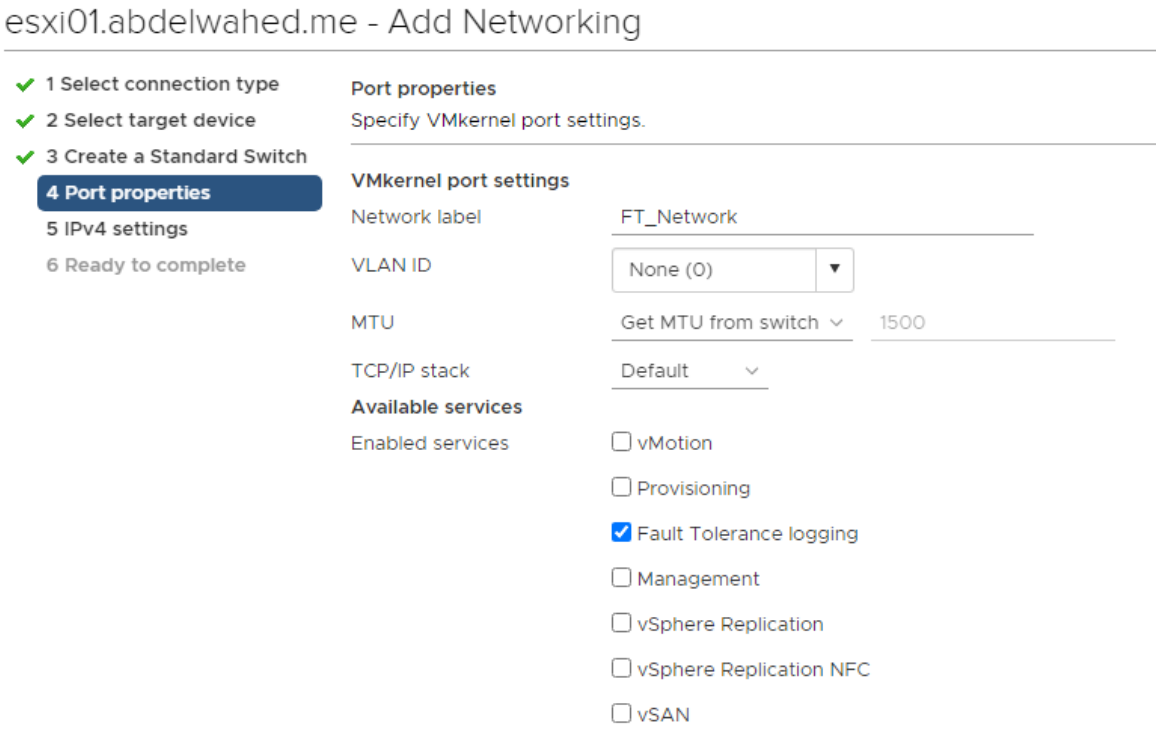

vSphere Client
Menu
Search
Administrator@VSPHERE.LOC
esxi01.abdelwahed.me
ACTIONS
vCenter01.abdelwahed.me
vServer
Cluster01
esxi01.abdelwahed...
esxi02.abdelwahed...
ADC
App
AppDB
DC
Summary
Monitor
Configure
Permissions
VMs
Datastores
Networks
Storage
Storage Adapters
Storage Devices
Host Cache Configur...
Protocol Endpoints
I/O Filters
Networking
Virtual switches
VMkernel adapters
Virtual switches
Add Networking...
Refresh
Switch
Discovered Issues
vSwitch0
--
vSwitch1
--


esxi01.abdelwahed.me - Add Networking
1 Select connection type
2 Select target device
3 Port properties
4 IPv4 settings
5 Ready to complete
Select connection type
Select a connection type to create.
VMkernel Network Adapter
The VMkernel TCP/IP stack handles traffic for ESXi services such as vSphere vMotion, iSCSI, NFS, FCoE, Fault Tolerance, vSAN and host management.

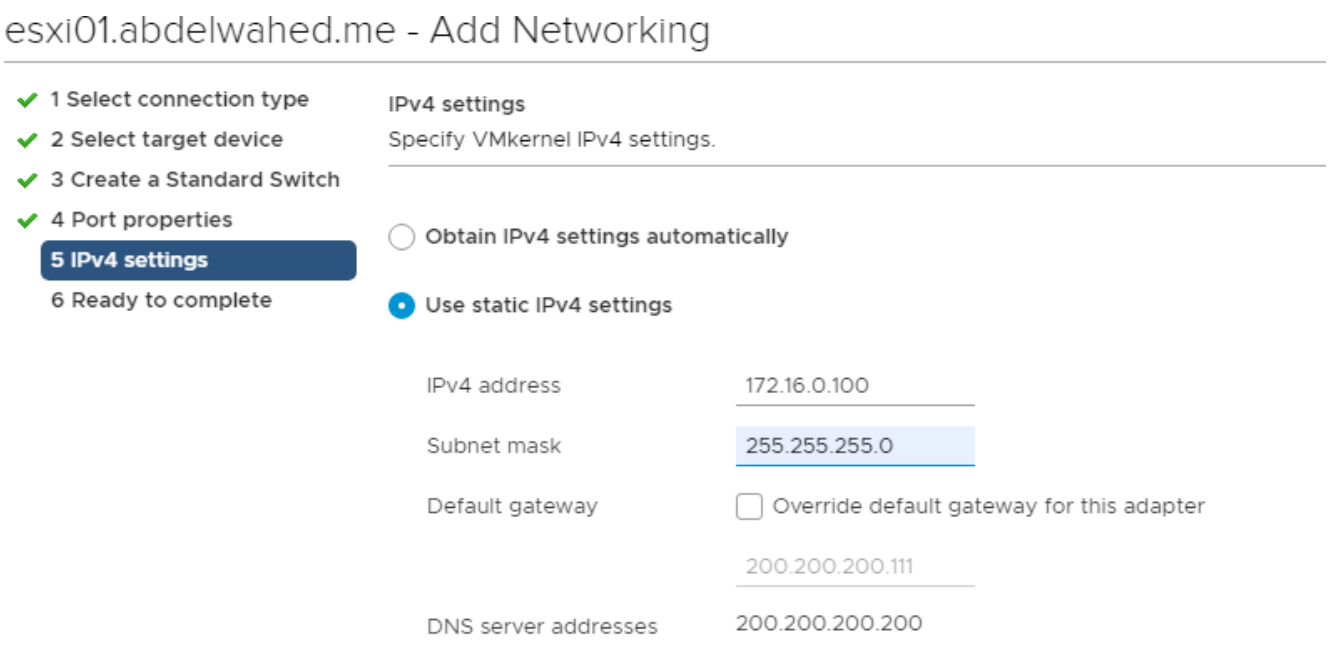

esxi01.abdelwahed.me - Add Networking
1 Select connection type
2 Select target device
3 Create a Standard Switch
4 Port properties
5 IPv4 settings
6 Ready to complete
Select target device
Select a target device for the new connection.
Select an existing network
BROWSE ...
Select an existing standard switch
BROWSE ...
New standard switch
MTU (Bytes)
1500

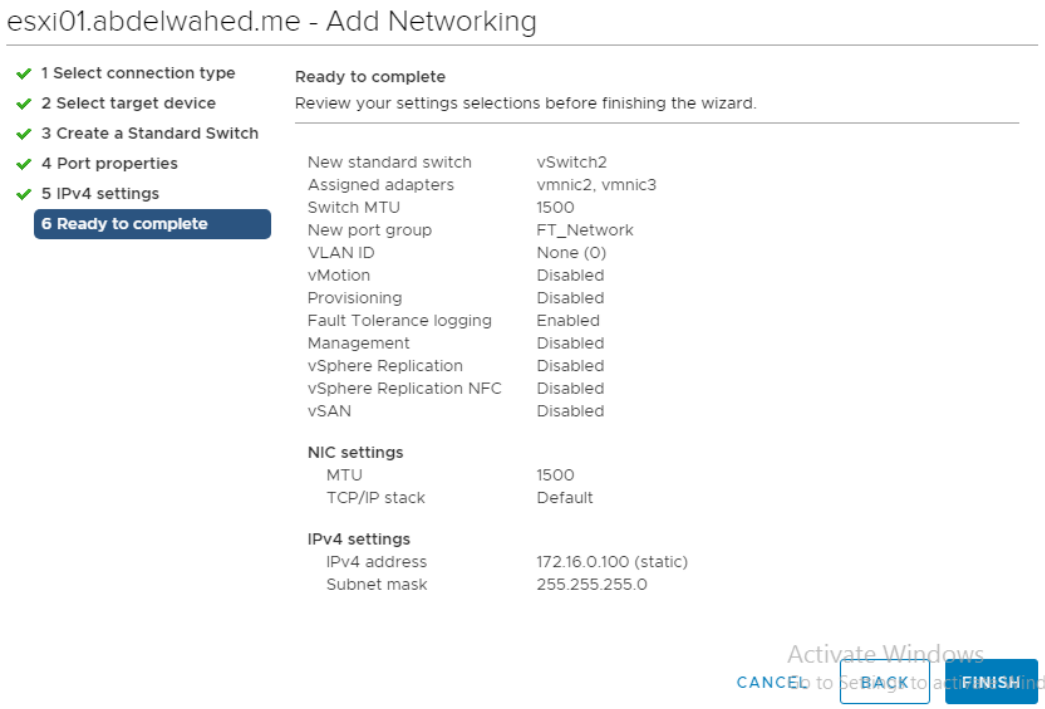
Add both adapters we added to ESXi in the virtual switch





configure any different IP rang

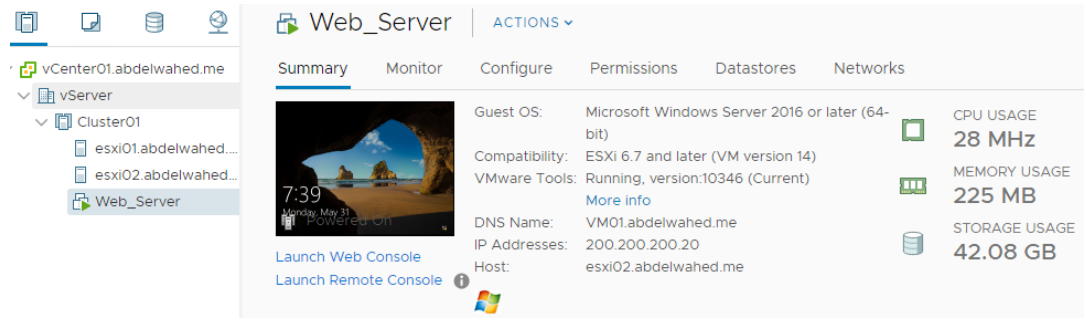


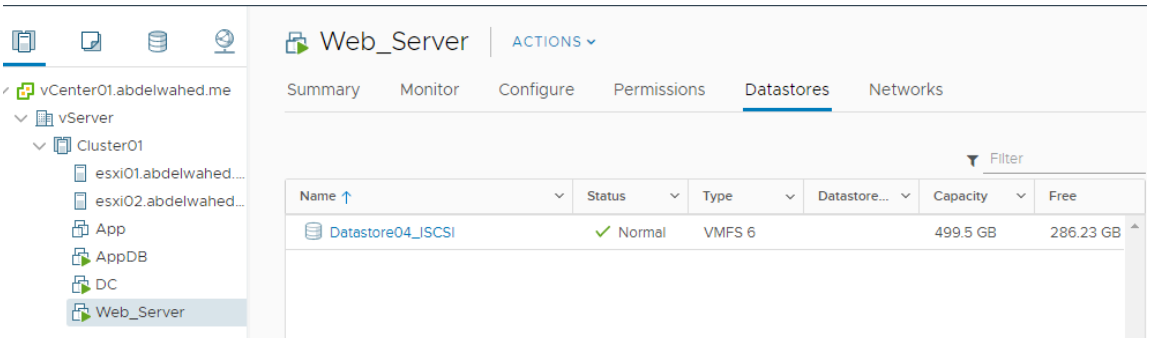


Repeat the same for EXSi02 with ip 172.16.0.101

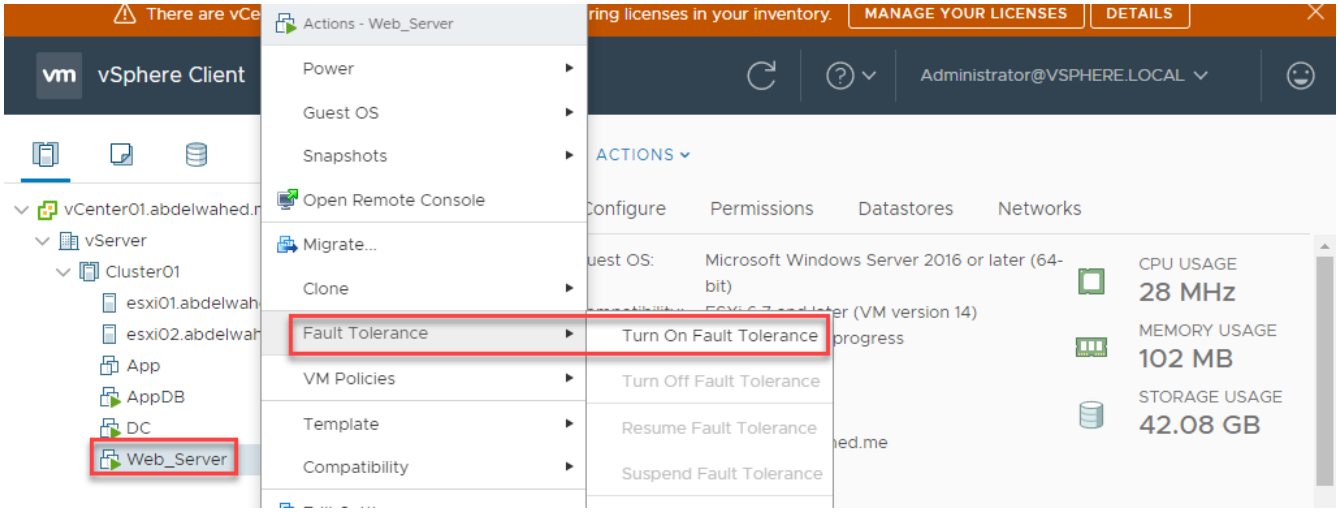
Now enable FT for App server

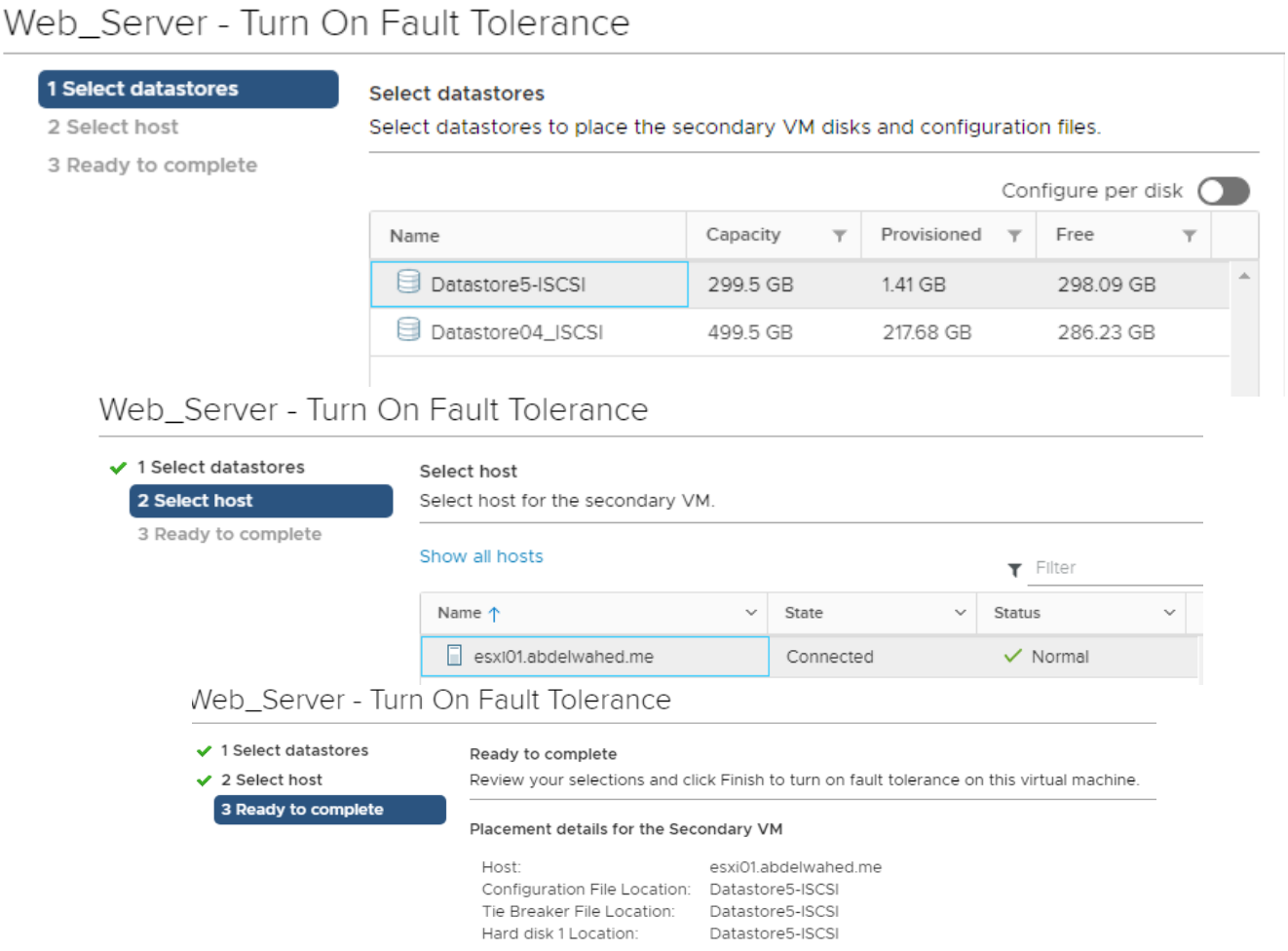
Web_Server hosted in ESXi01 and atored in iSCSI4 dtarstore



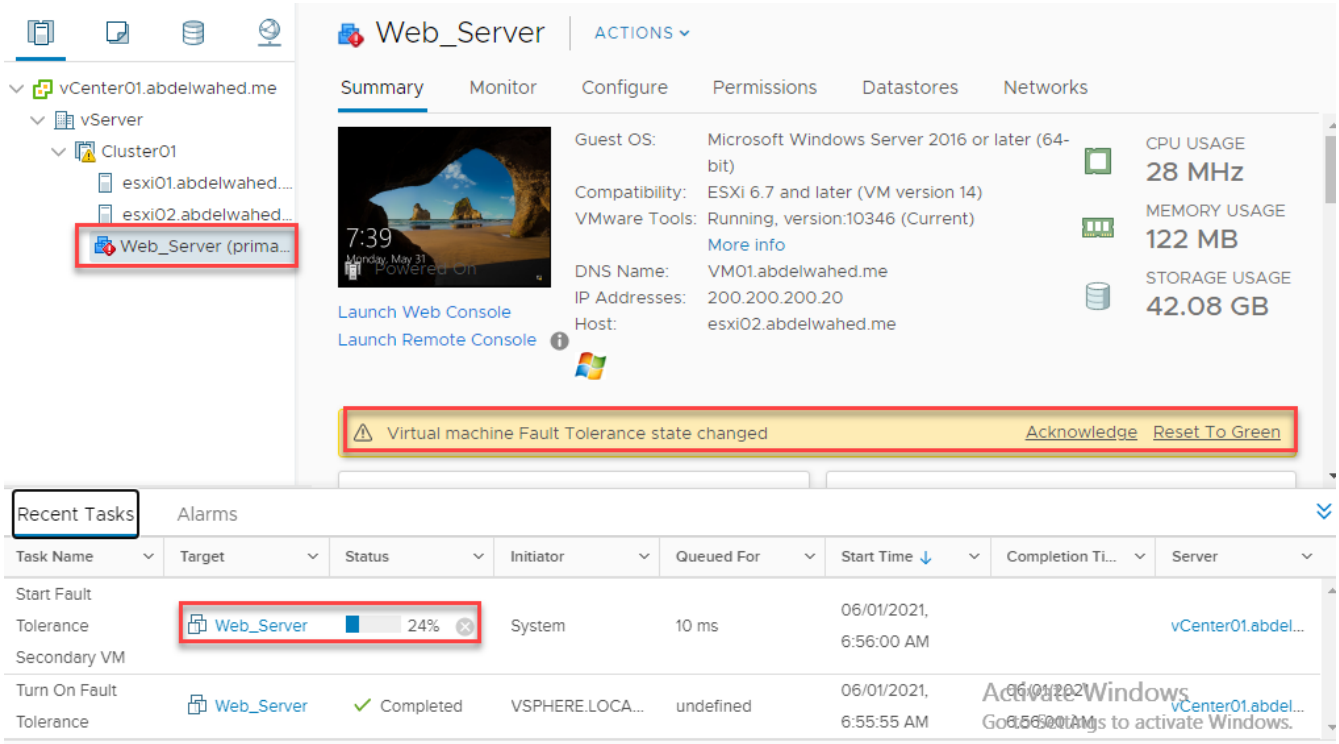


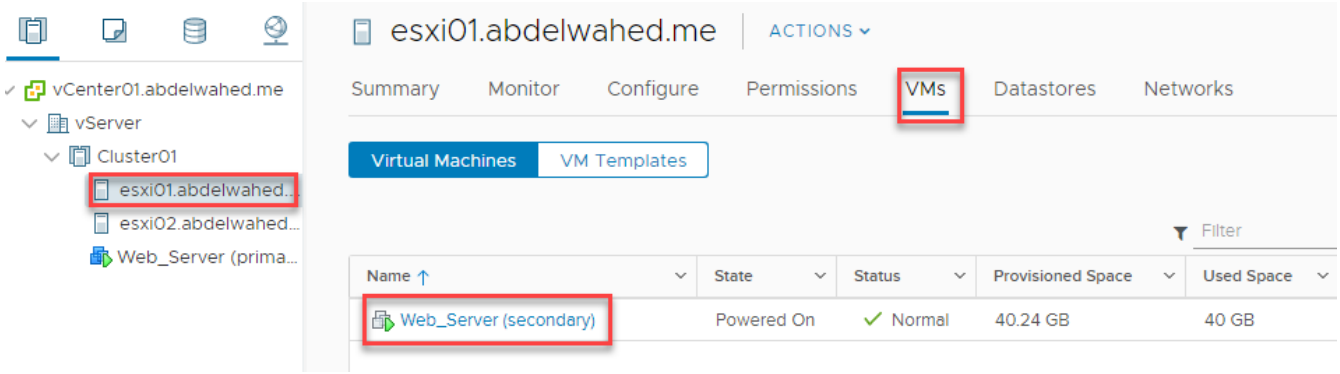
Now enable FT for that server in different iSCSI datastore





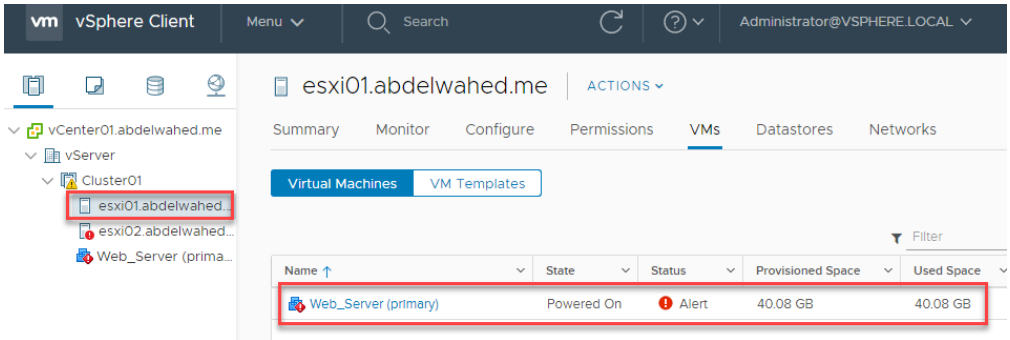
VMware vSphere Install, Configure, Manage v7 | Quick Guide



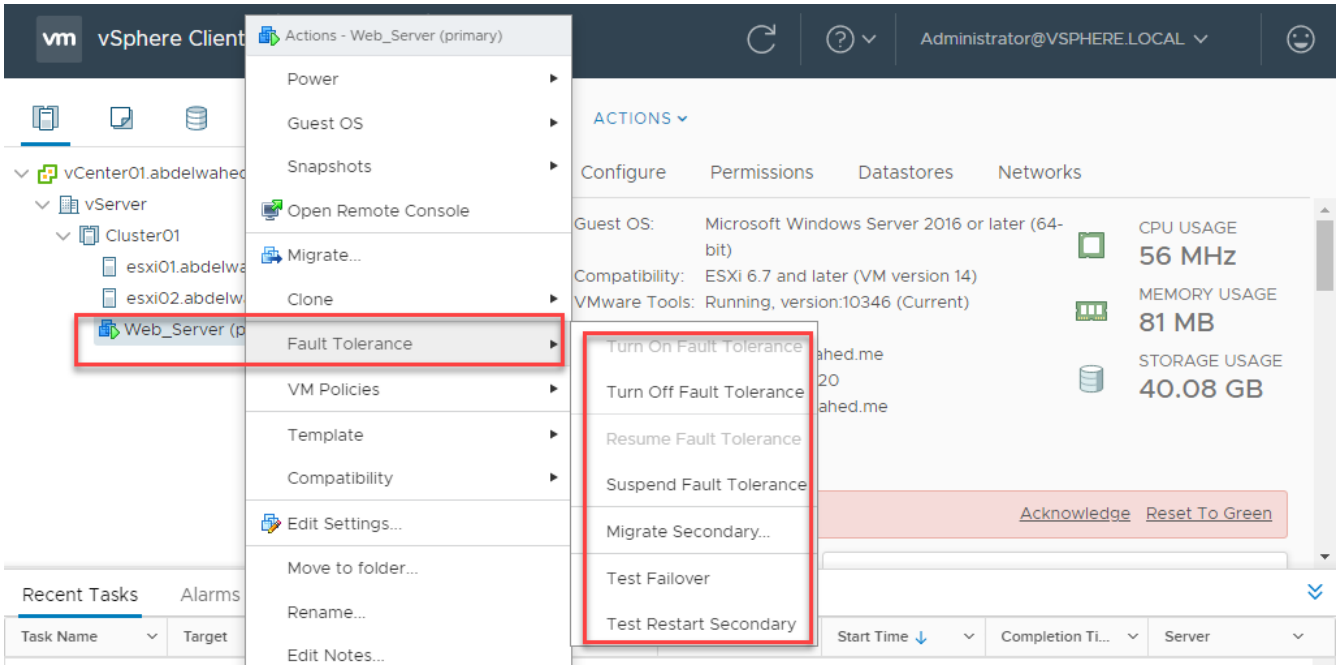


Tesing, Disconnect ESXI02 which is the primary server

if vCenter down FT will continu work because its based-on HA



Migrate the VM without failuar

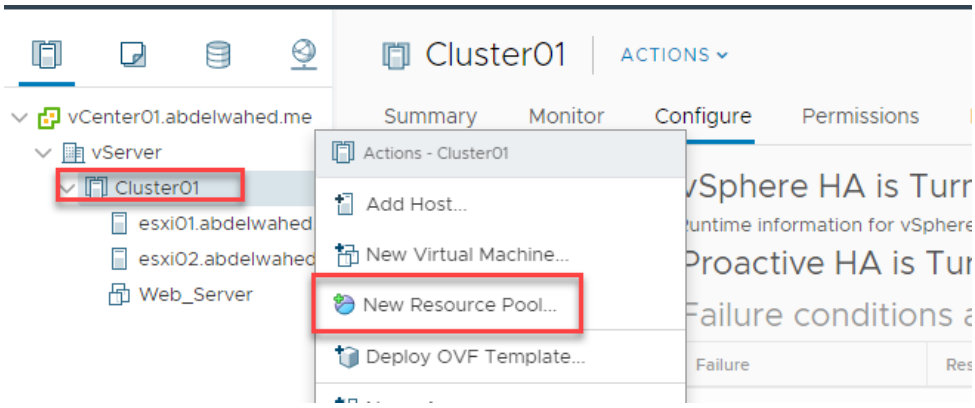


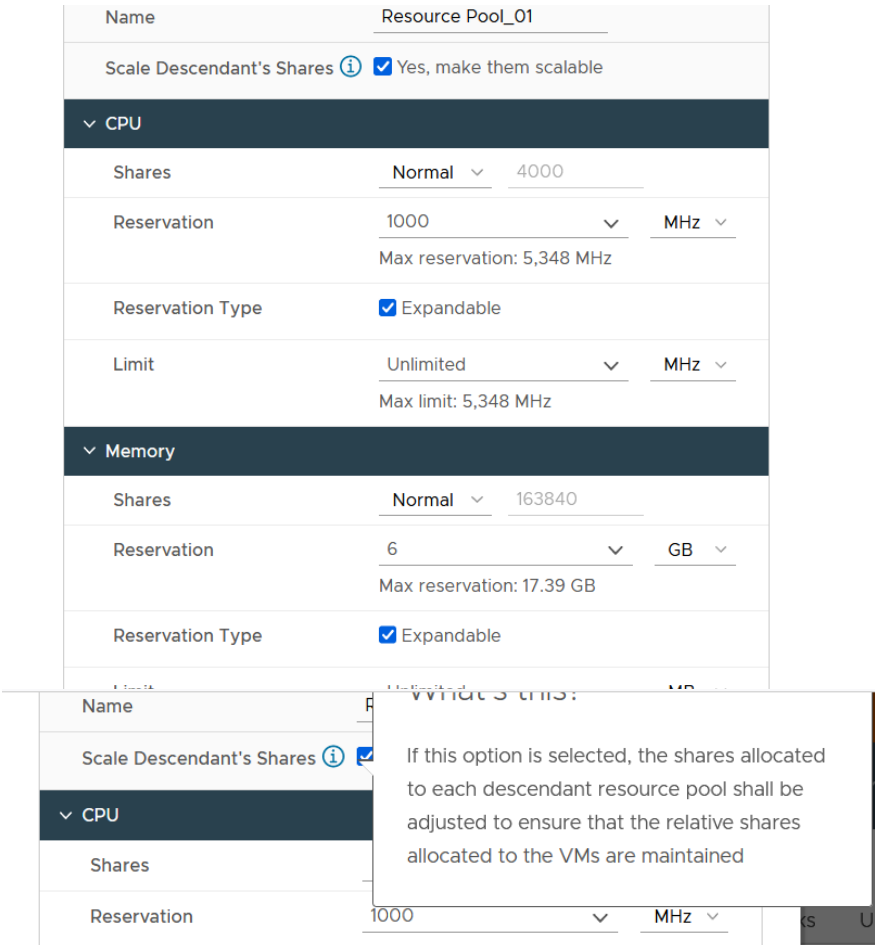
Resource Pool

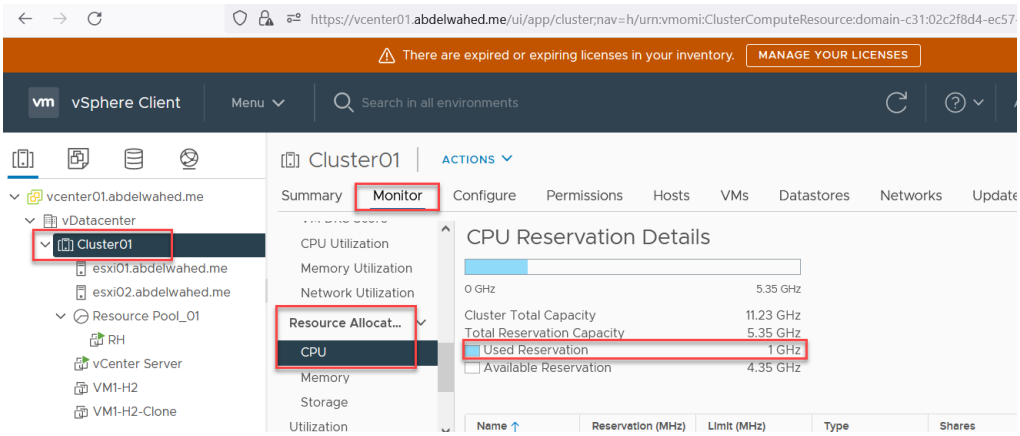
For cluster, I can add some of VMs inside one resource pool then I can reserve specific resources for this pool like 20GB RAM and give high perioty for this pool. Change normal to high in below screenshot.

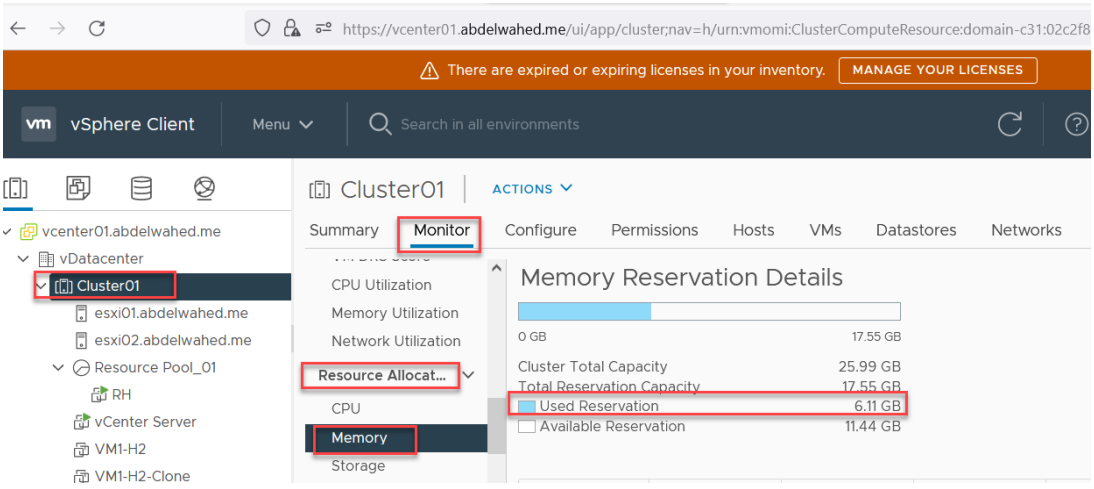
you must enable **DRS** first, otherwise you can't create resource pool.

احجز لعدد من الأجهزة في نفس الكلاستر مجموعة من ال resources

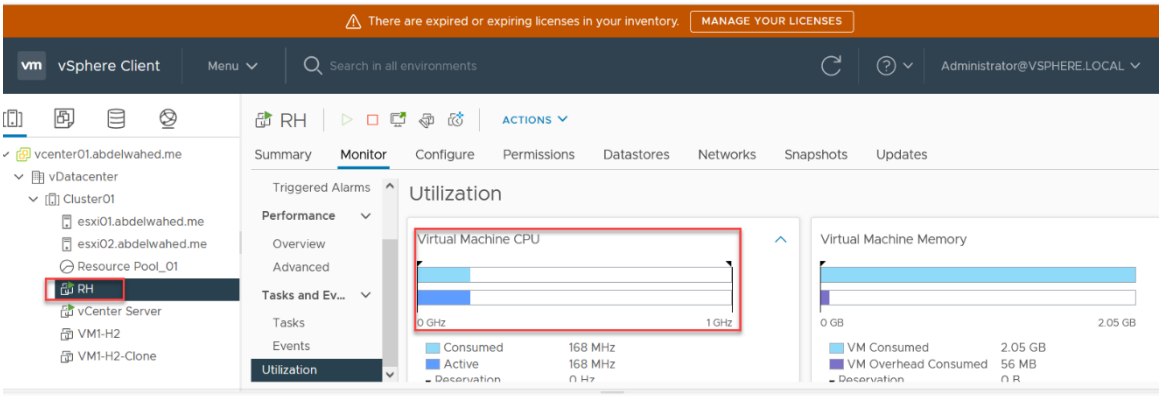


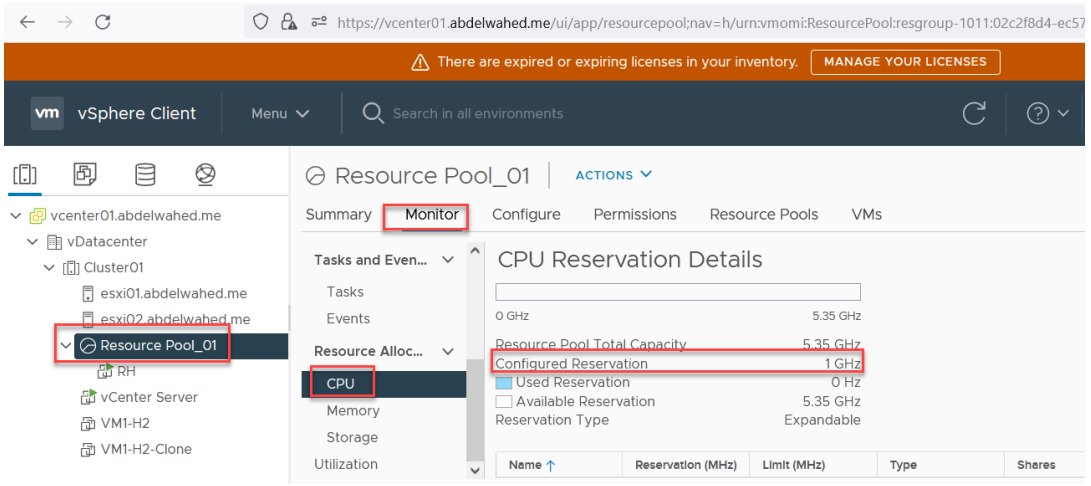


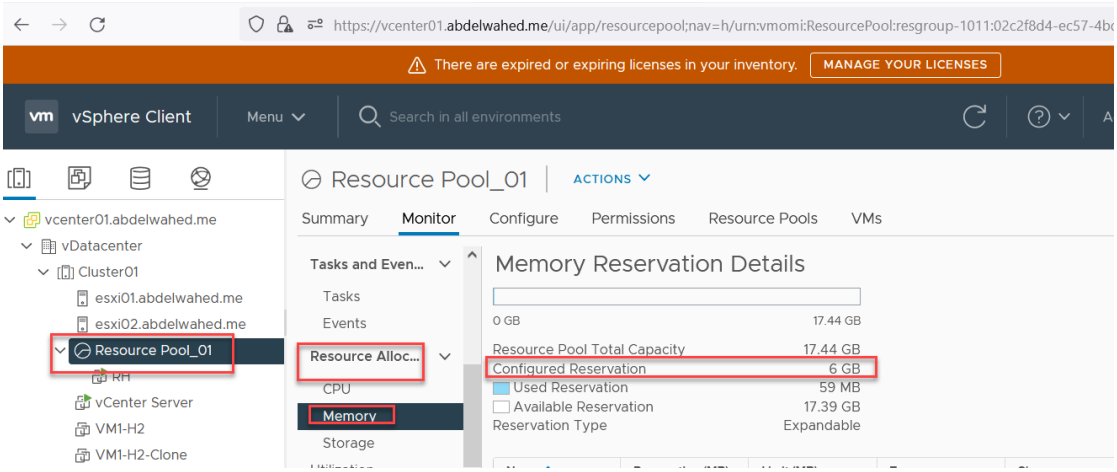




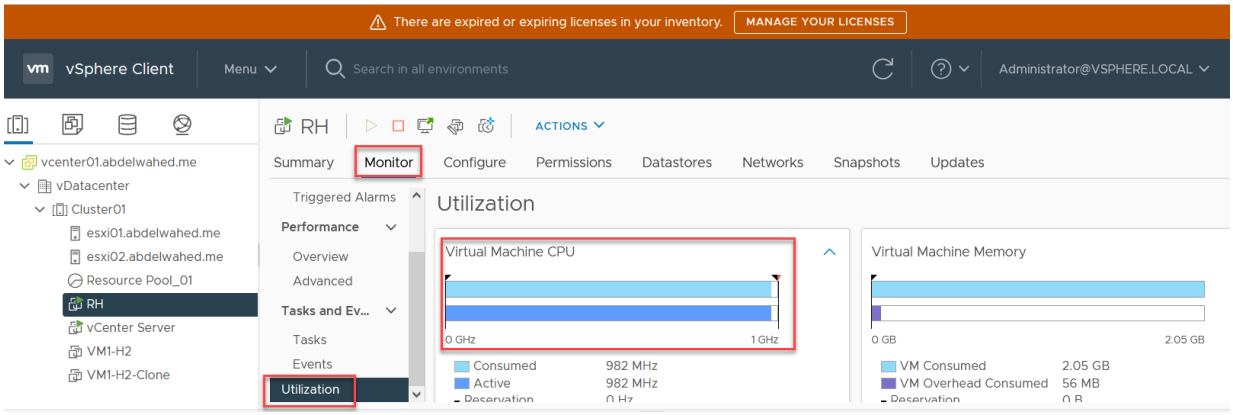
Tesing, I have one RedHat VM with 1GHZ CPU speed



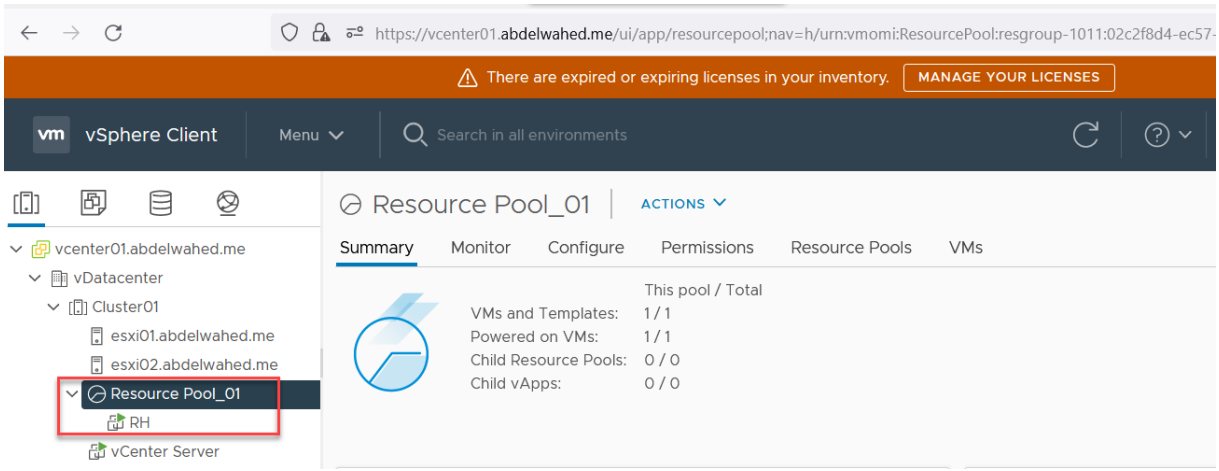




I will increase the CPU usage using dd if=/dev/zero of=/dev/null and monitor CPU change



Now drag and drop RH VM inside the newly created resource pool

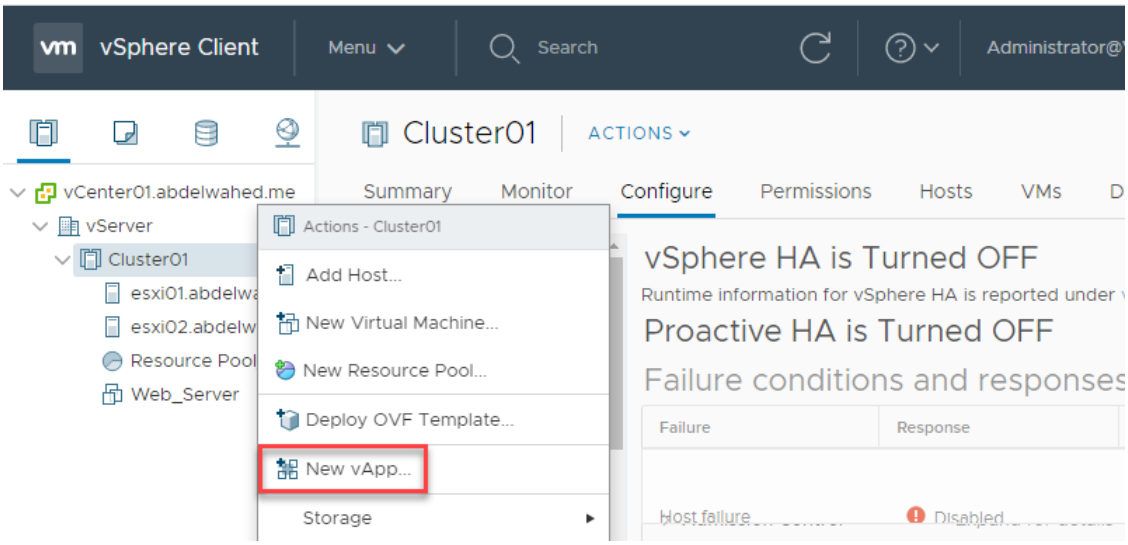


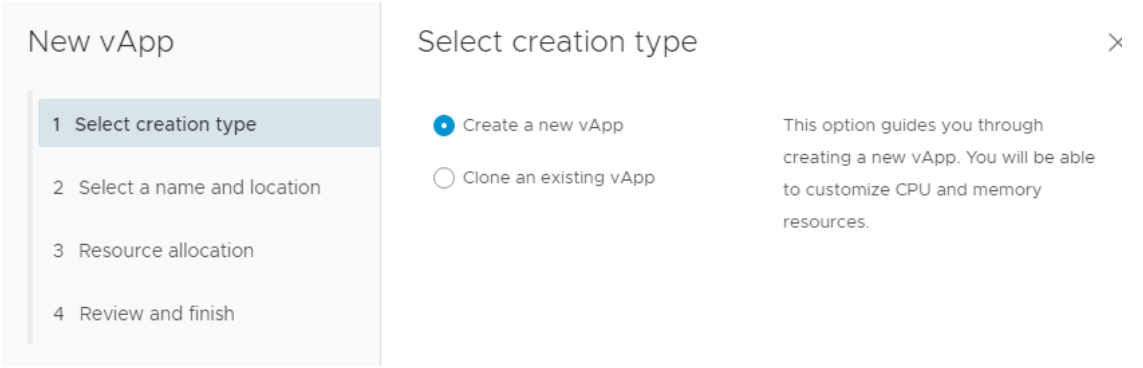
We can also create sub pool,

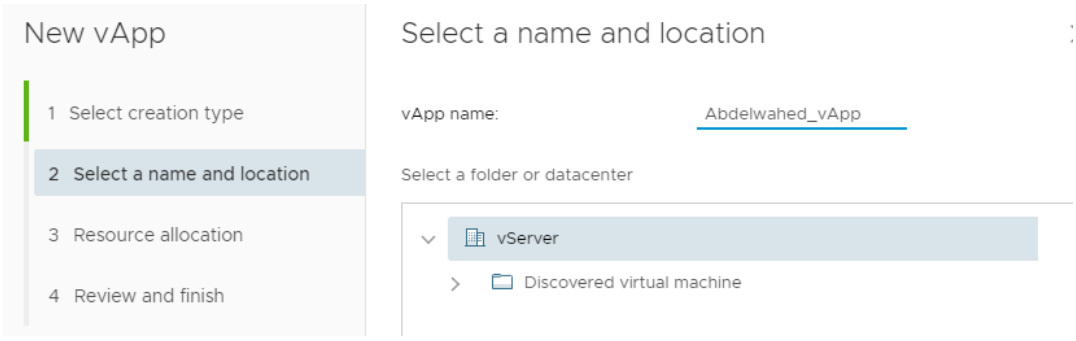
If I delete resource pool does not affect VMs included only will disconnect these VMs from that pool.

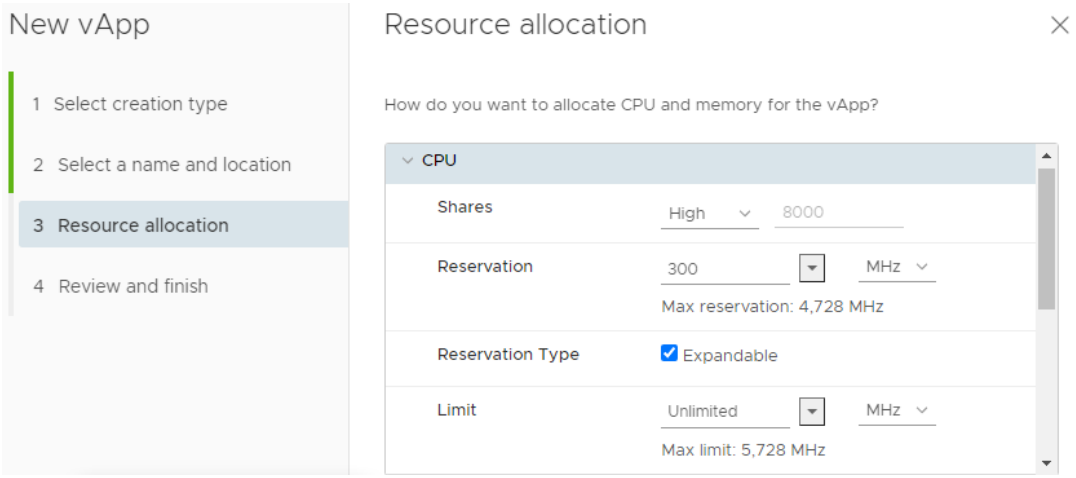
vApp

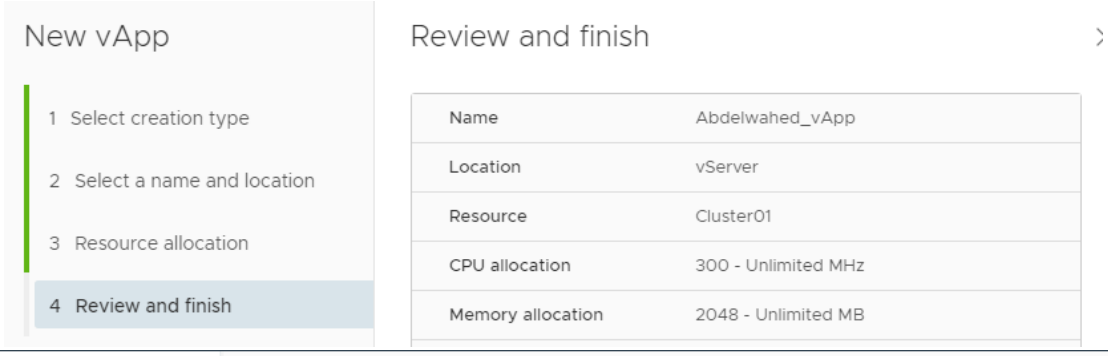
same concept as resource pool with one more option which is you can give one VM more priority than another. Like one VM start early and another will delay (start order). Another more option, you can power off or power on all VMs in the vApp.

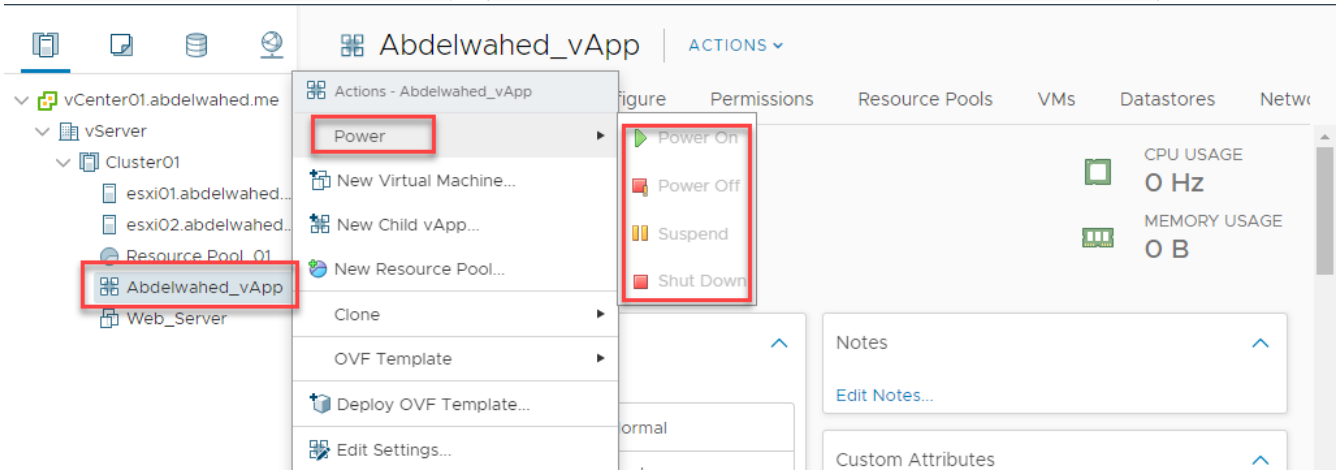


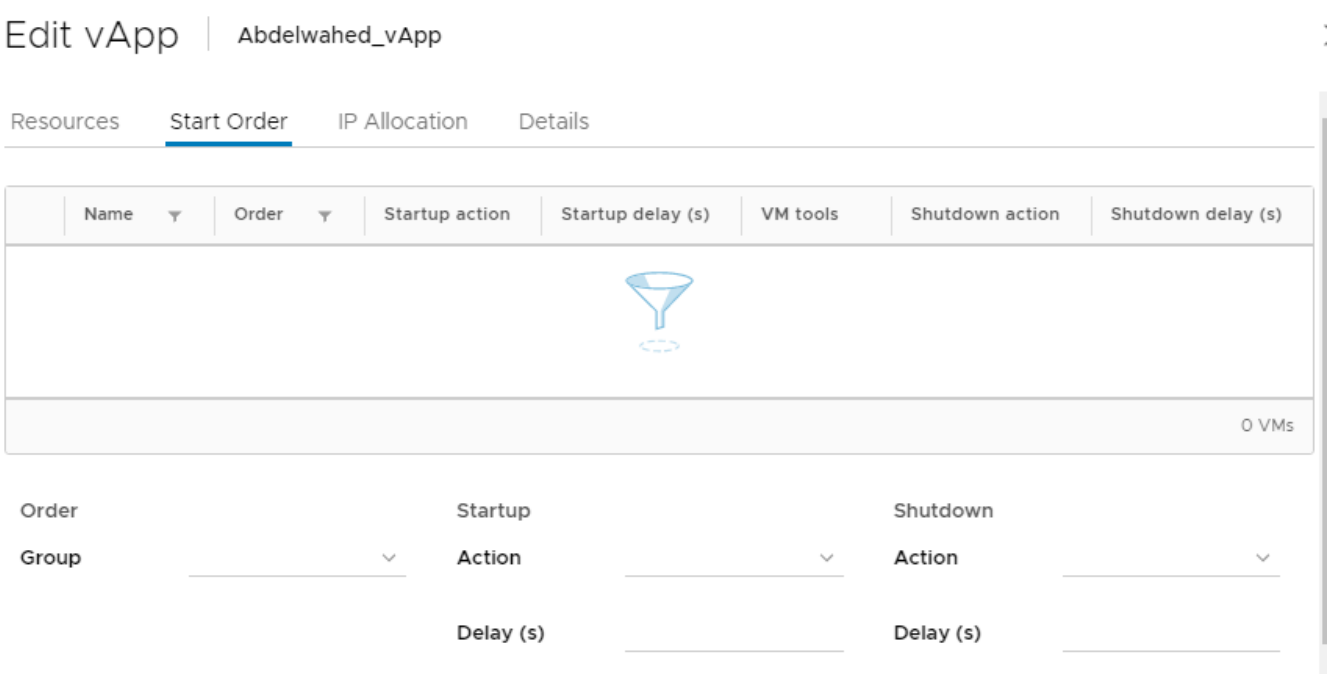





New vApp
1 Select creation type
2 Select a name and location
3 Resource allocation
4 Review and finish
Resource allocation
How do you want to allocate CPU and memory for the vApp?
CPU
Shares
High
8000
Reservation
300
MHz
Max reservation: 4,728 MHz
Reservation Type
Expandable
Limit
Unlimited
MHz
Max limit: 5,728 MHz

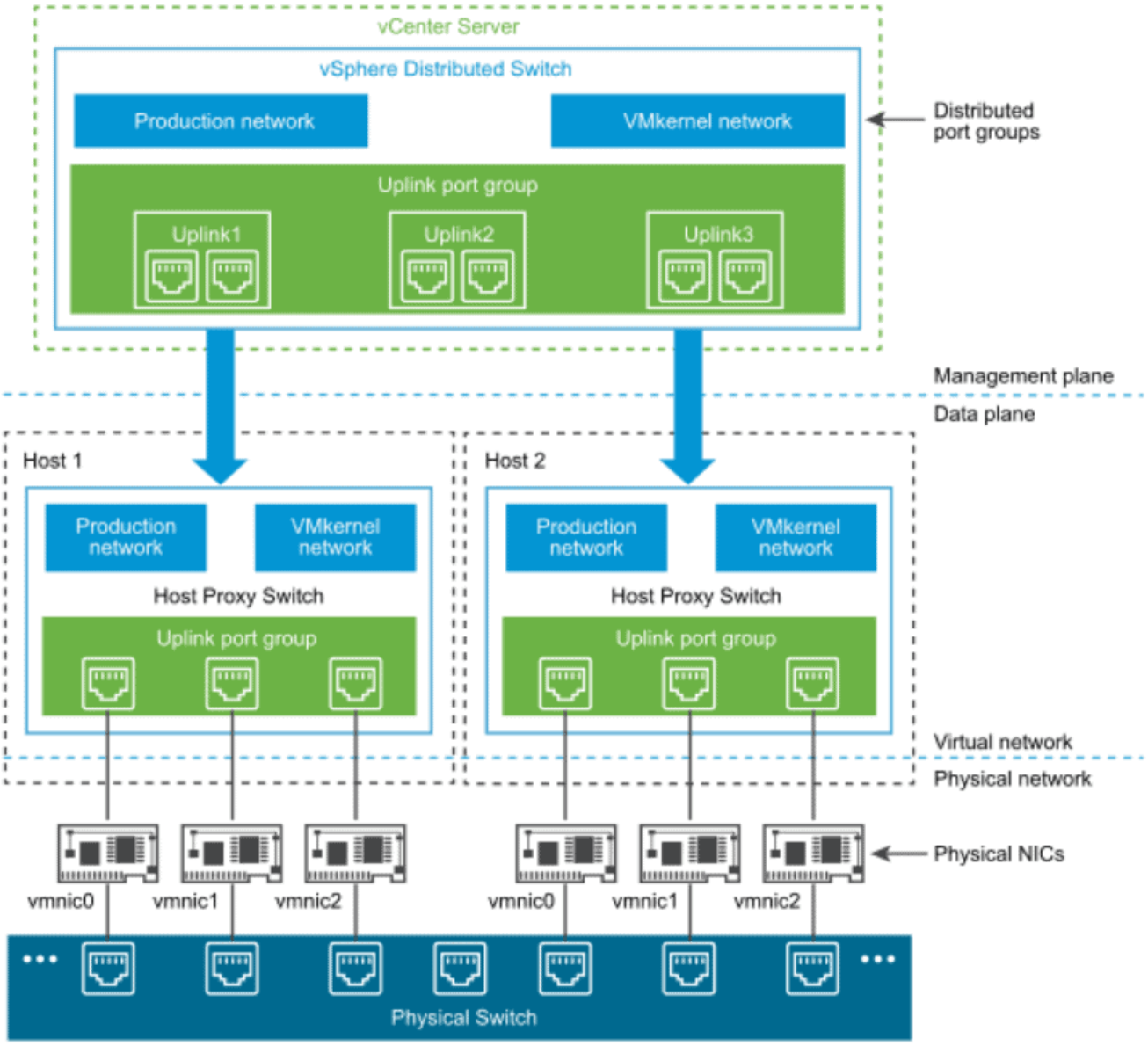

New vApp
1 Select creation type
2 Select a name and location
3 Resource allocation
4 Review and finish
Review and finish
Name
Abdelwahed_vApp
Location
vServer
Resource
Cluster01
CPU allocation
300 - Unlimited MHz
Memory allocation
2048 - Unlimited MB


Abdelwahed_vApp
ACTIONS
vCenter01.abdelwahed.me
vServer
Cluster01
esxi01.abdelwahed...
esxi02.abdelwahed...
Resource Pool_01
Abdelwahed_vApp
Web_Server
Actions - Abdelwahed_vApp
Power
New Virtual Machine...
New Child vApp...
New Resource Pool...
Clone
OVF Template
Deploy OVF Template...
Edit Settings...
Power On
Power Off
Suspend
Shut Down
Permissions
Resource Pools
VMs
Datastores
CPU USAGE
0 Hz
MEMORY USAGE
0 B
Notes
Edit Notes...
Custom Attributes

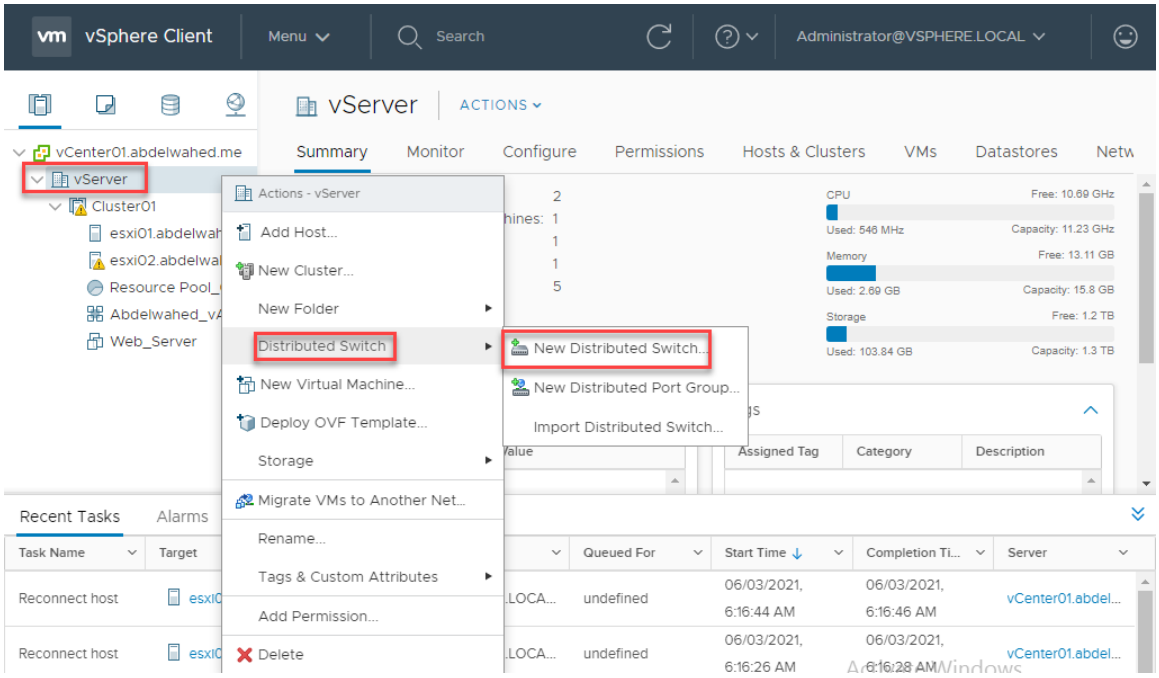

Edit vApp
Abdelwahed_vApp
Resources
Start Order
IP Allocation
Details
Name
Order
Startup action
Startup delay (s)
VM tools
Shutdown action
Shutdown delay (s)
0 VMs
Order
Group
Startup
Action
Delay (s)
Shutdown
Action
Delay (s)

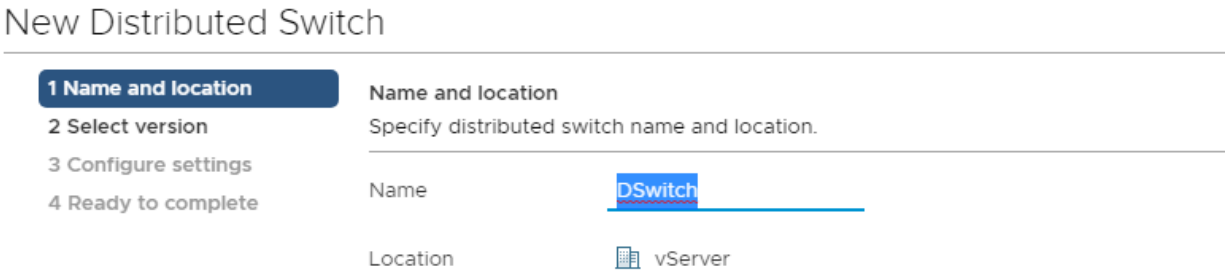
Virtual Distributed switch (datacenter level)

Manage switches centrally. Better than we create separate switch for each ESXi server. From here we carete it one time for all servers inside Datacenter.

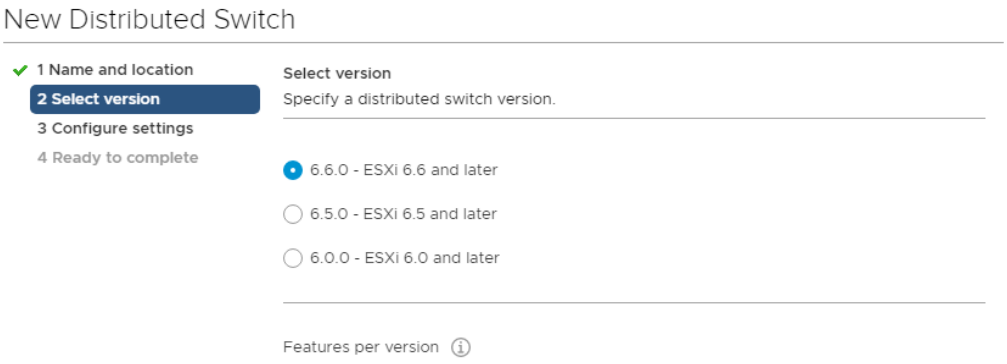


First, add NIC for both ESXi servers

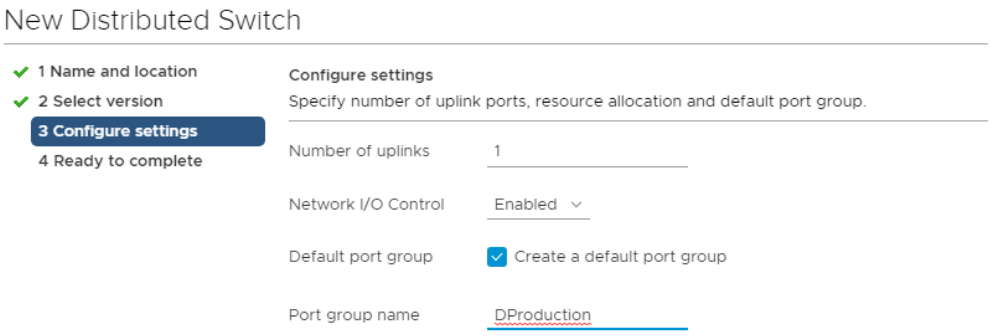


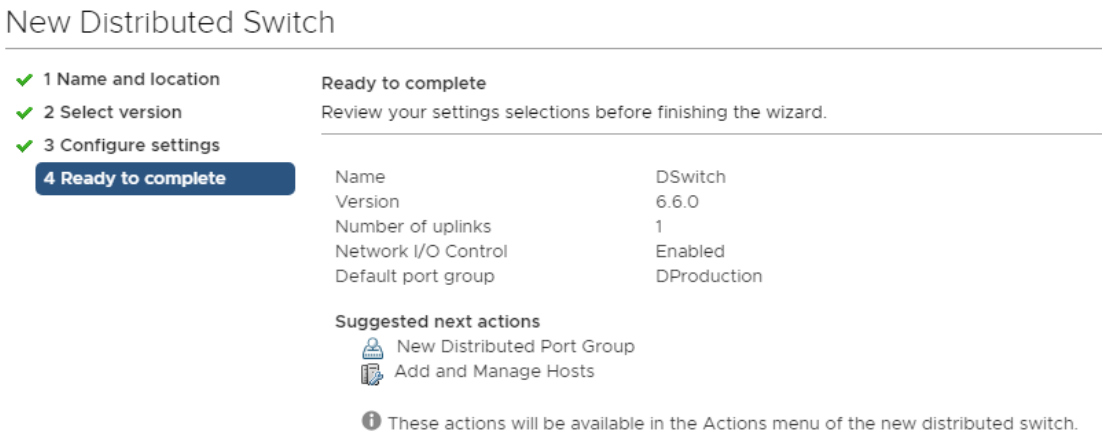


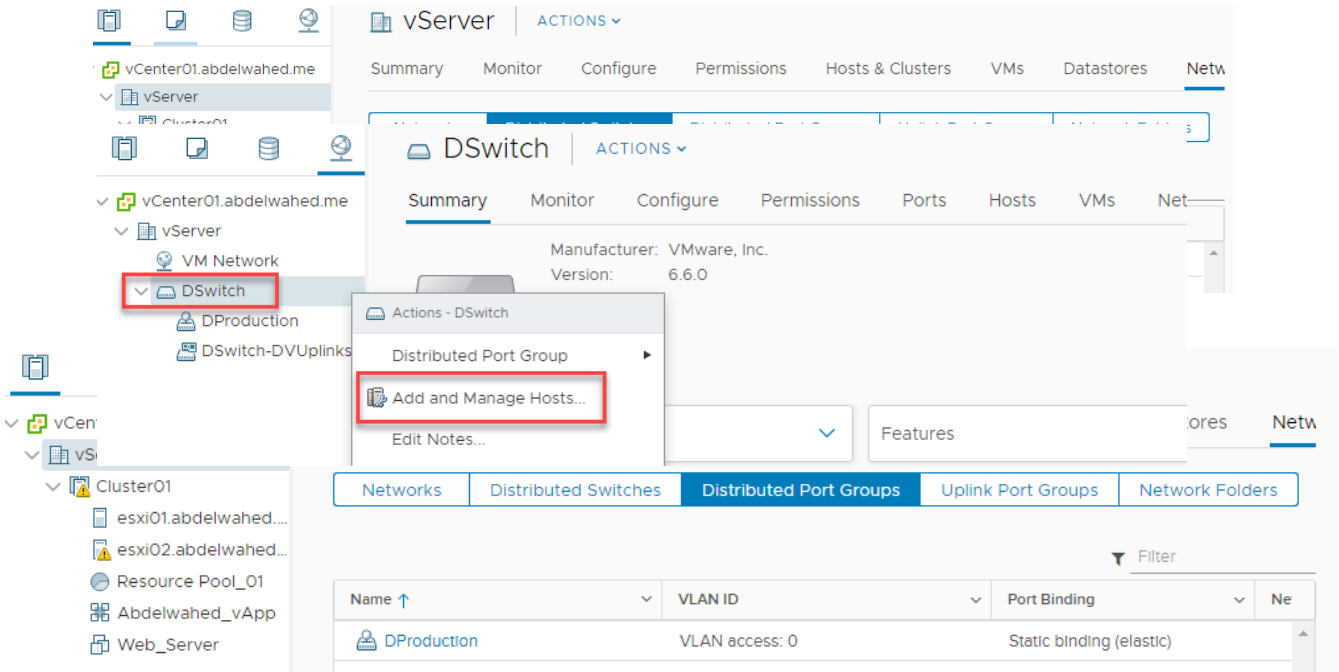
Select the lowest ESXi server version, in case you have different ESXi versions. Also, you can't downgrade this selection.

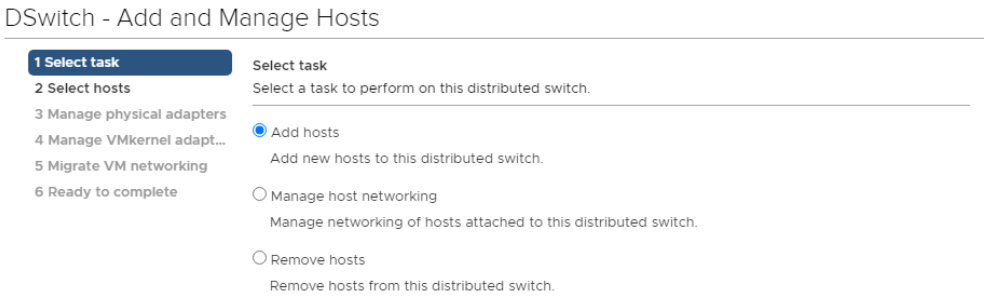


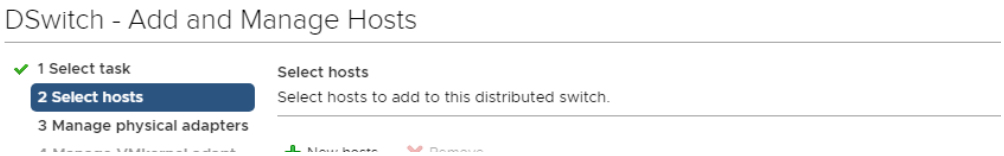
uplinks refer to number of NIC, later you can increase or decrease number of uplinks. You can increase number of links for example you have only 2 uplinks in each server you can add here 4

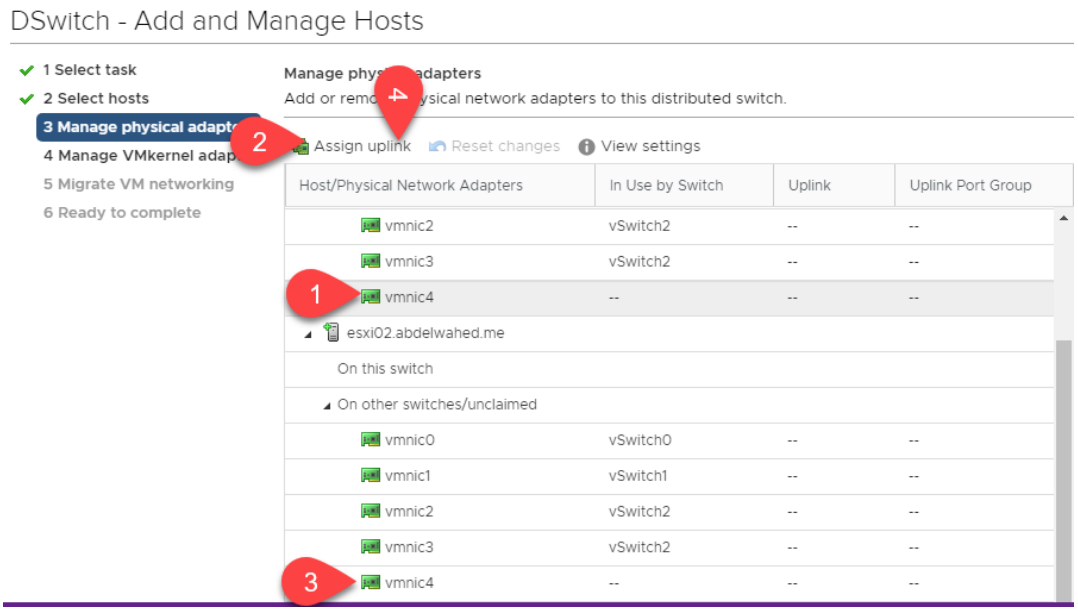


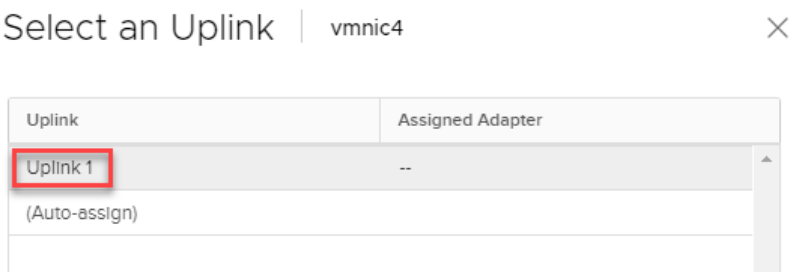




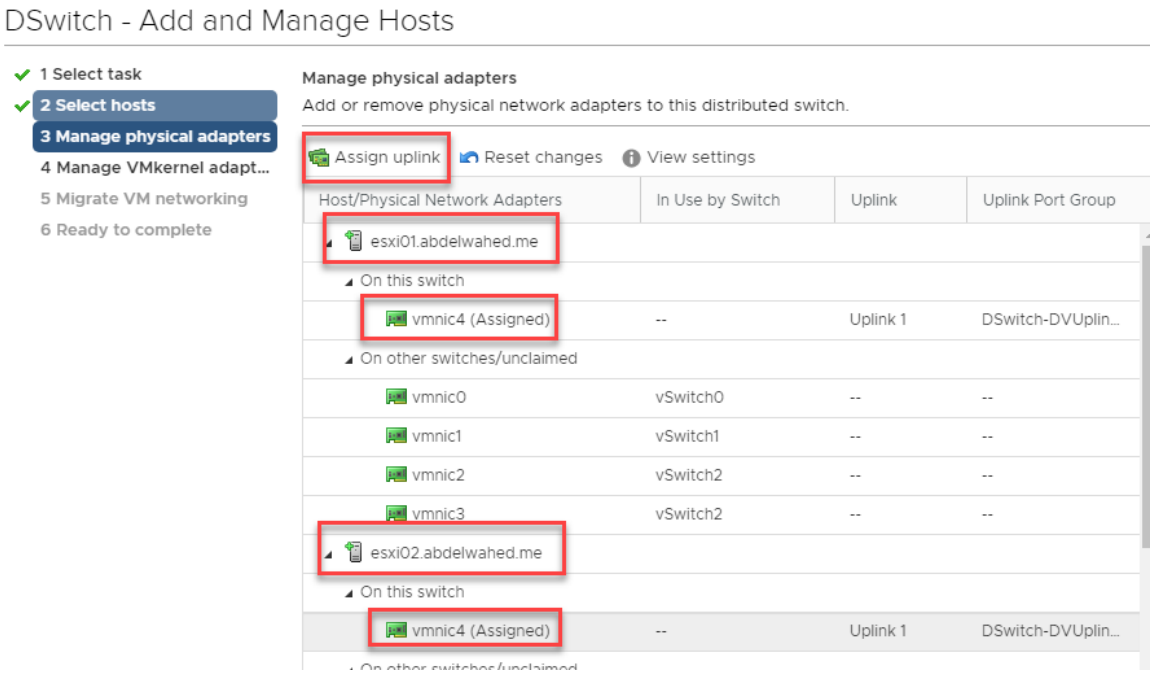

DSwitch - Add and Manage Hosts
1 Select task
2 Select hosts
3 Manage physical adapters
4 Manage VMkernel adapt...
5 Migrate VM networking
6 Ready to complete
Select task
Select a task to perform on this distributed switch.
Add hosts
Add new hosts to this distributed switch.
Manage host networking
Manage networking of hosts attached to this distributed switch.
Remove hosts
Remove hosts from this distributed switch.

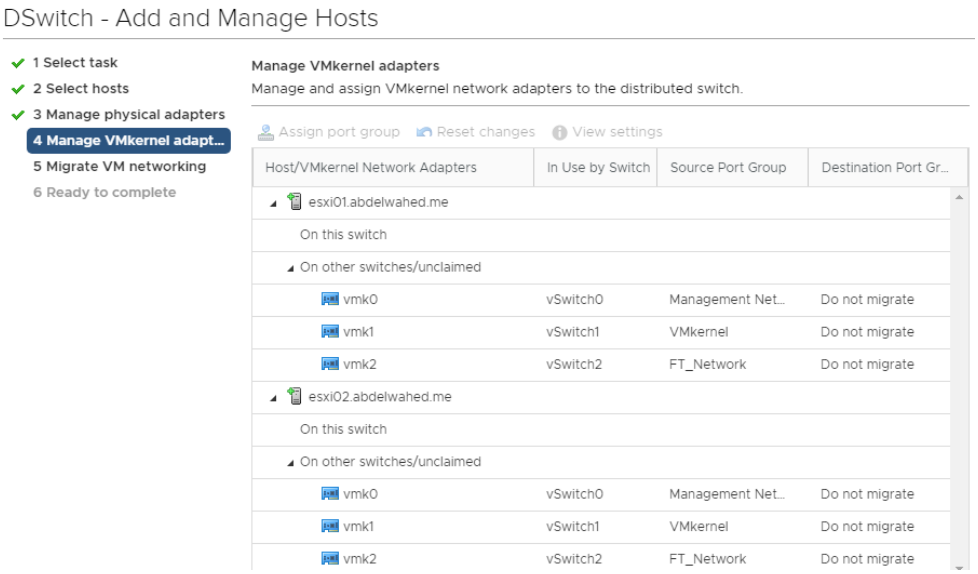

DSwitch - Add and Manage Hosts
1 Select task
2 Select hosts
3 Manage physical adapters
Select hosts
Select hosts to add to this distributed switch.


DSwitch - Add and Manage Hosts
1 Select task
2 Select hosts
3 Manage physical adapt
4 Manage VMkernel adap
5 Migrate VM networking
6 Ready to complete
Assign uplink
Reset changes
View settings
Host/Physical Network Adapters
In Use by Switch
Uplink
Uplink Port Group
vmnic2 vSwitch2 -- --
vmnic3 vSwitch2 -- --
vmnic4 -- -- --
esxi02.abdelwahed.me
On this switch
On other switches/unclaimed
vmnic0 vSwitch0 -- --
vmnic1 vSwitch1 -- --
vmnic2 vSwitch2 -- --
vmnic3 vSwitch2 -- --
vmnic4 -- -- --
1
2
3
4

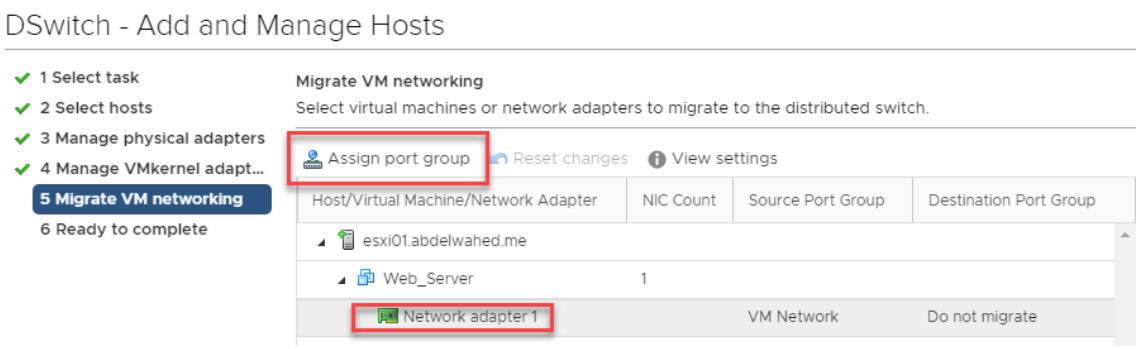


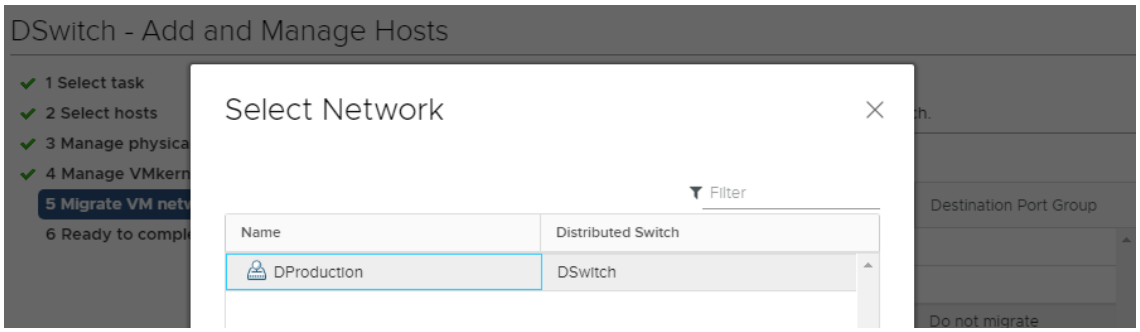
Now NIC assigned to DSwitch

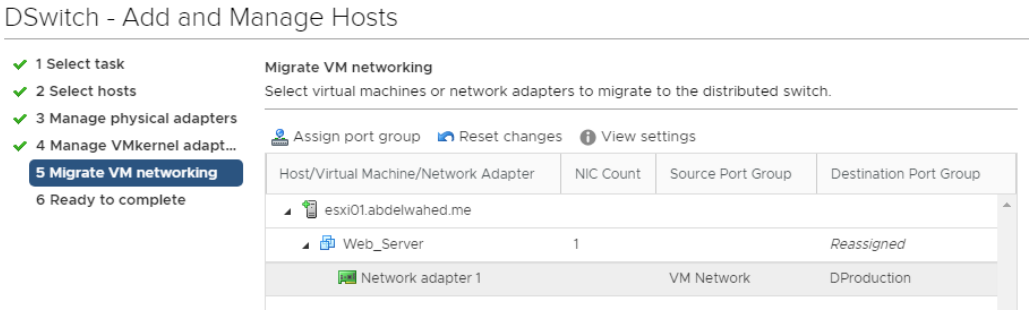


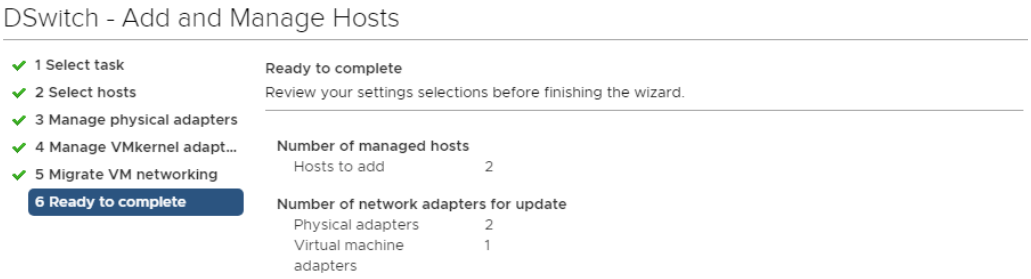


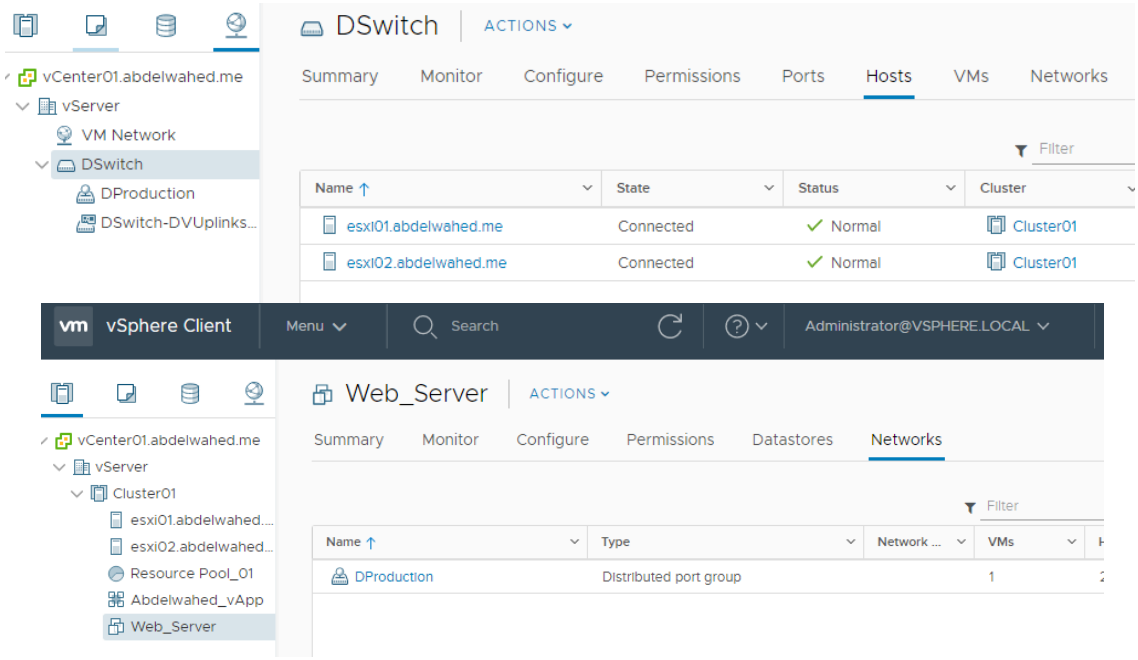
Now move VM network to new production DSwitch (in our case we only have Web-Server on ESXi01)

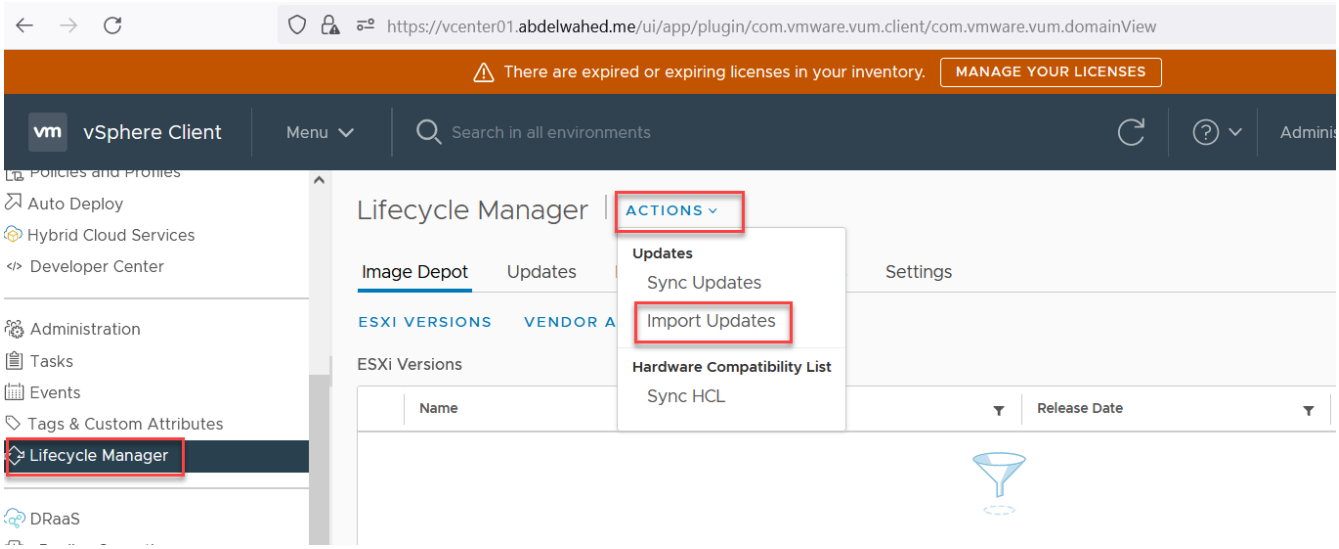










Lifecycle Manager

vSphere Lifecycle Manager is a service that runs in vCenter Server and uses the embedded vCenter Server PostgreSQL database. No additional installation is required to start using that feature. Upon deploying the vCenter Server appliance, the vSphere Lifecycle Manager user interface becomes automatically enabled in the HTML5-based vSphere Client.