

VMware vSphere Install, Configure, Manage v7

Quick Guide

Version 22.9

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VMware vSphere Install, Configure, Manage v7 | Quick Guide

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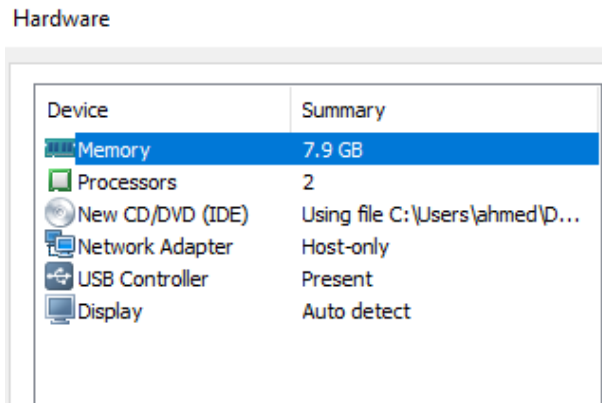
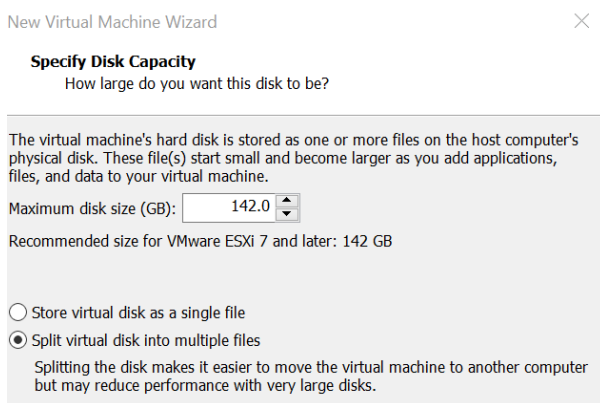
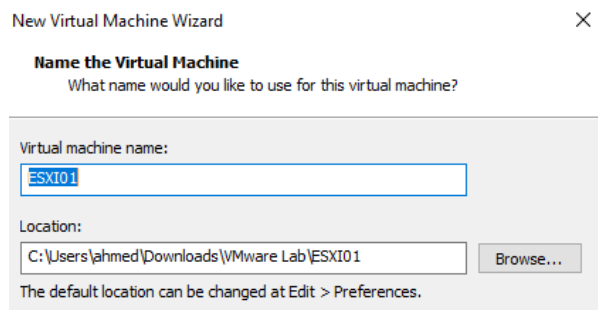
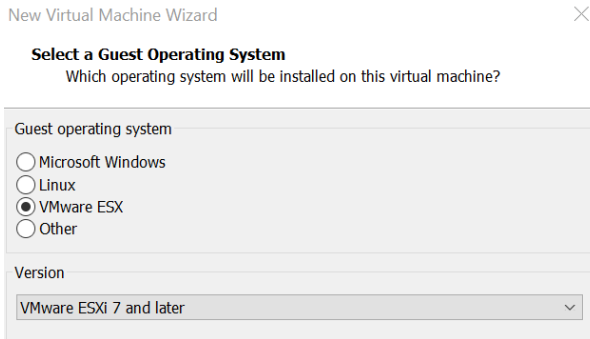
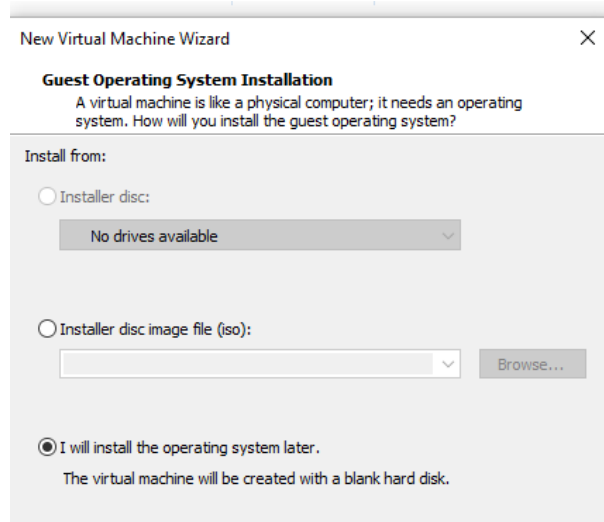
You can download latest vCenter trial version through

[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)



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```
VMware ESXi 7.0.2 (VMKernel Release Build 17867351)
VMware, Inc. VMware7,1
2 x Intel(R) Xeon(R) E-2276M CPU @ 2.80GHz
7.9 GiB Memory
```

```
Starting service vmtoolsd
```

```

Welcome to the VMware ESXi 7.0.2 Installation

VMware ESXi 7.0.2 installs on most systems but only
systems on VMware's Compatibility Guide are supported.

Consult the VMware Compatibility Guide at:
http://www.vmware.com/resources/compatibility

Select the operation to perform.

(Esc) Cancel      (Enter) Continue
```

F11 to accept the license

```

End User License Agreement (EULA)

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.

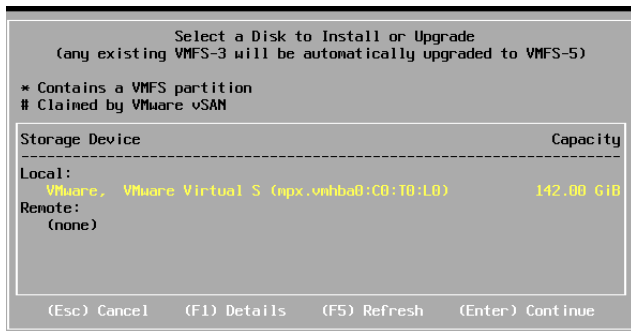
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Use the arrow keys to scroll the EULA text

(ESC) Do not Accept      (F11) Accept and Continue
```

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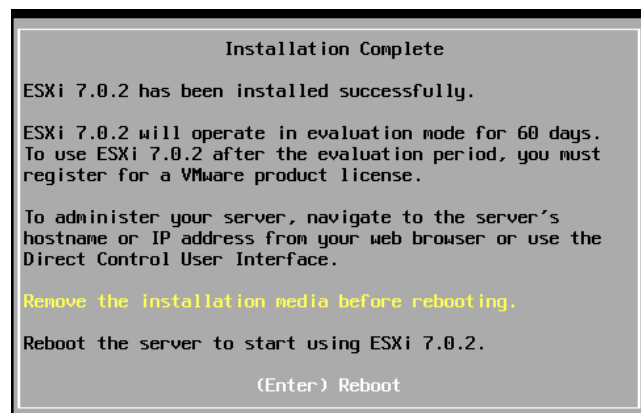
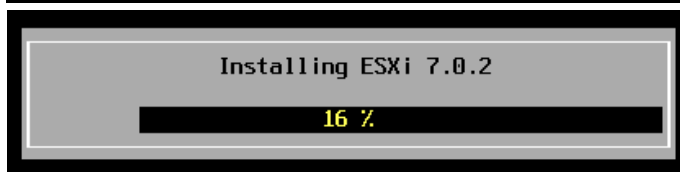
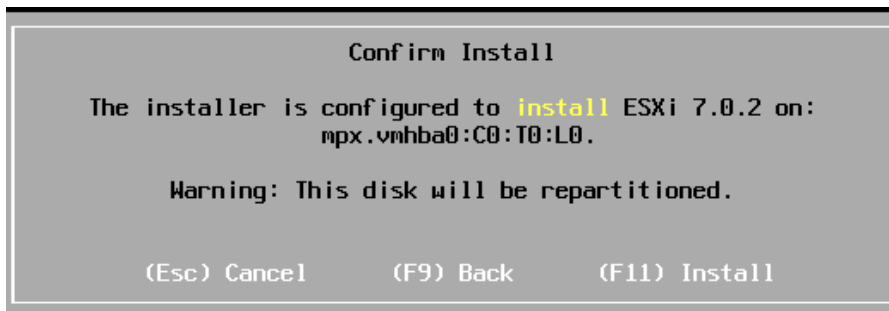
enter to add VMware file system (VMFS) to the HD



set password for **root** user

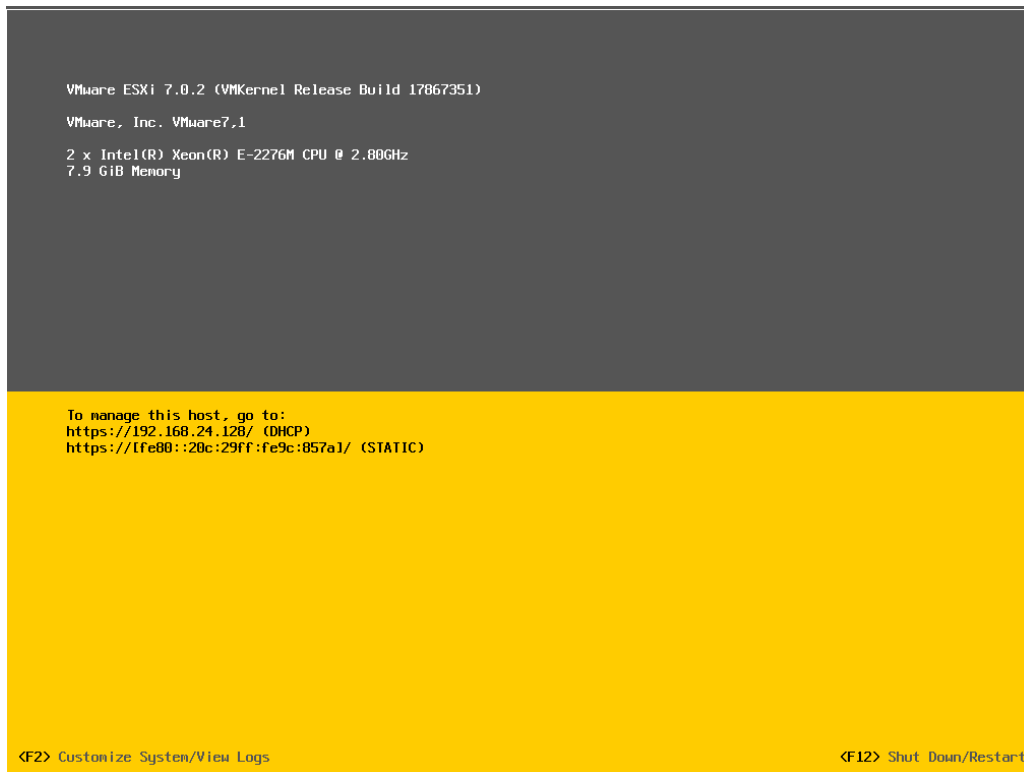


F11 to start ESXi installation



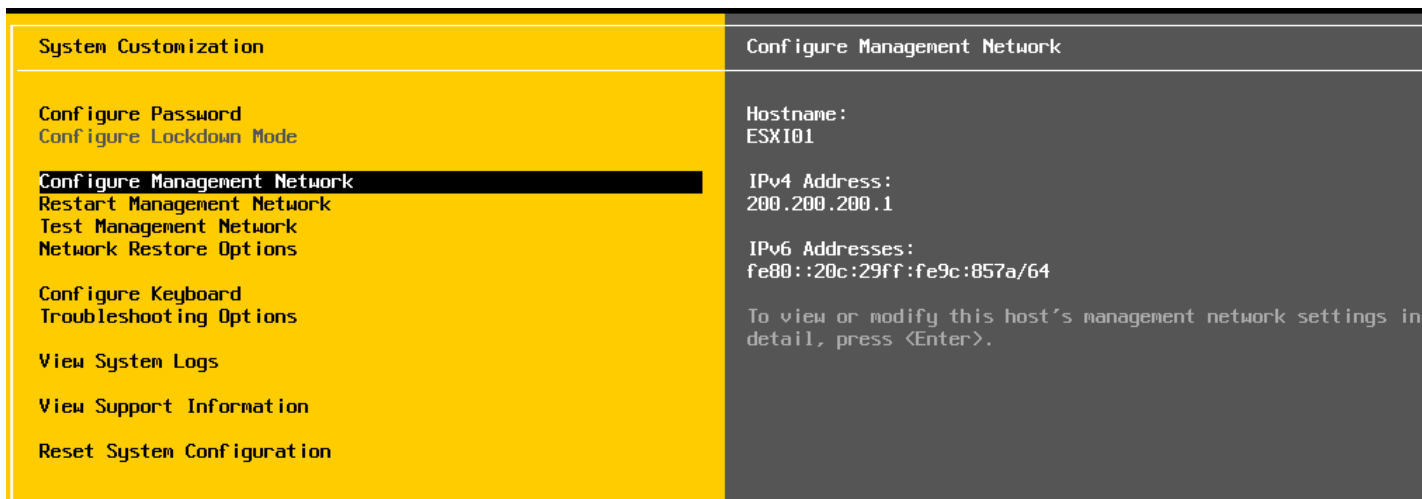
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F2 to login using root user.

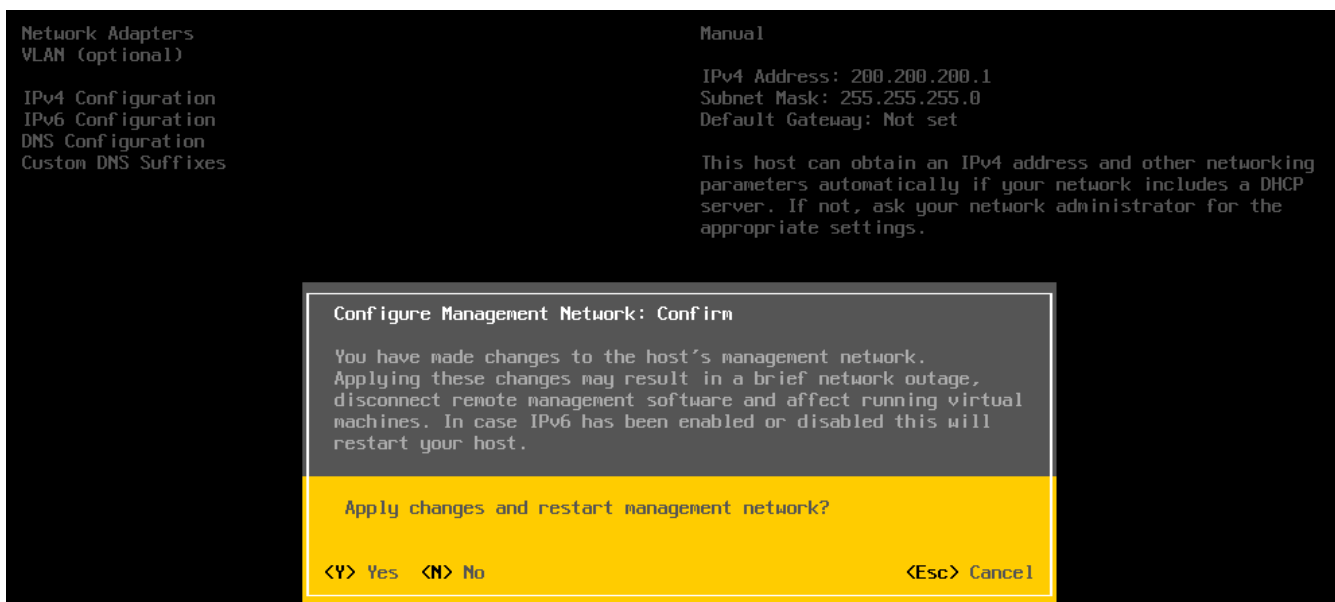
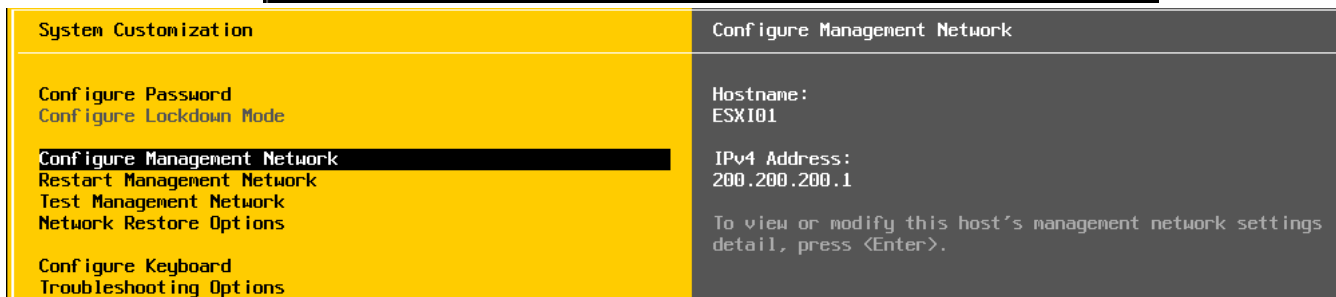
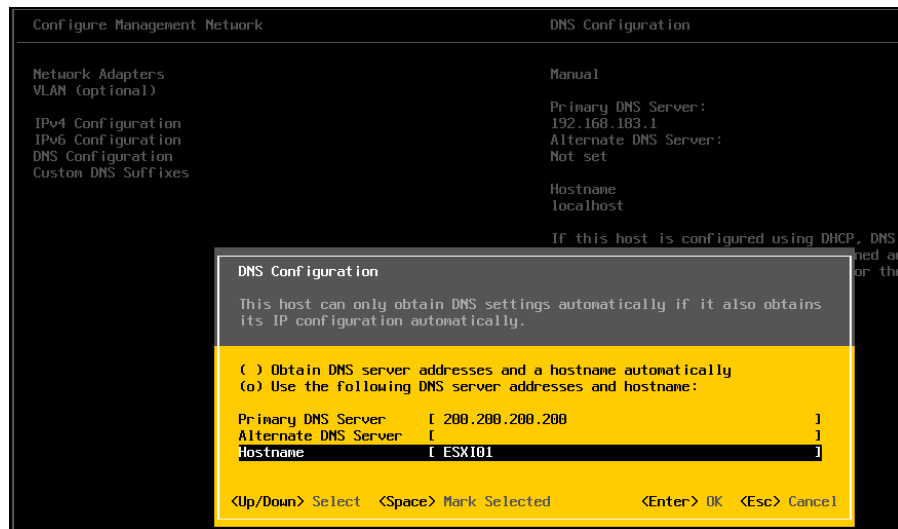


Configure hostname and network settings

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

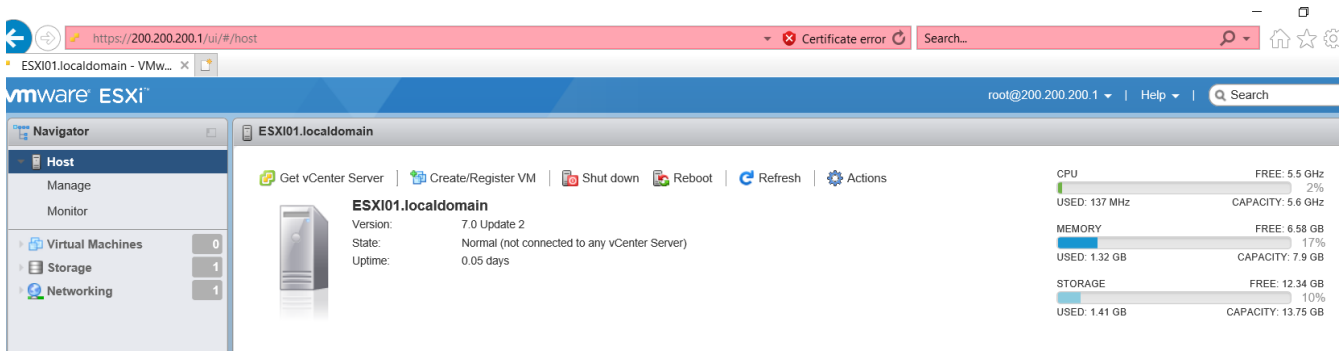


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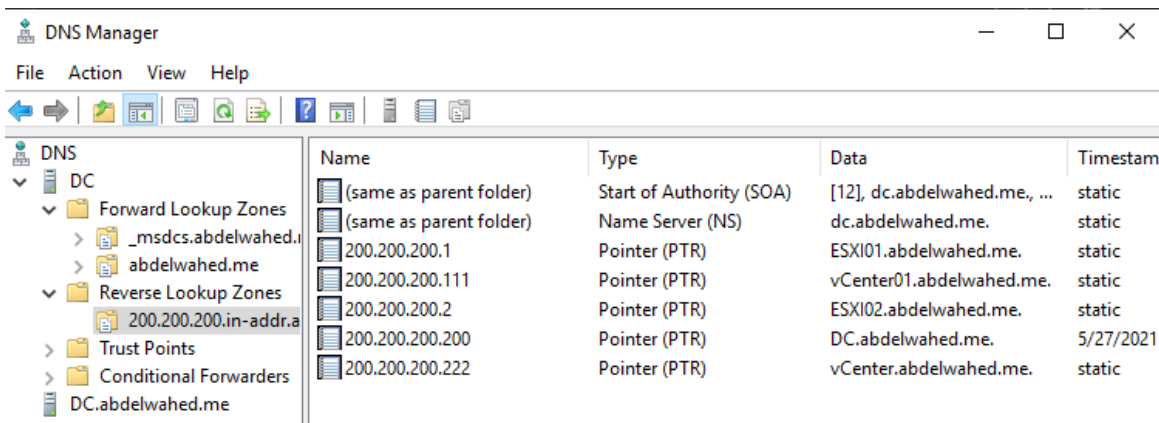
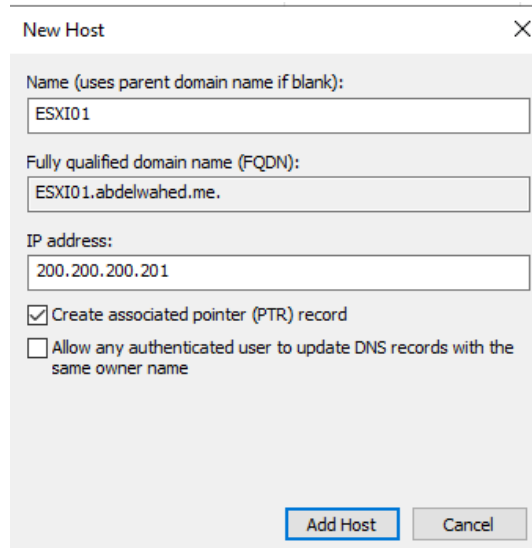
Now we can connect and manage both servers from browser



Now do the same steps for ESXi02

DNS Configuration for all ESXi hosts and vCenter Servers

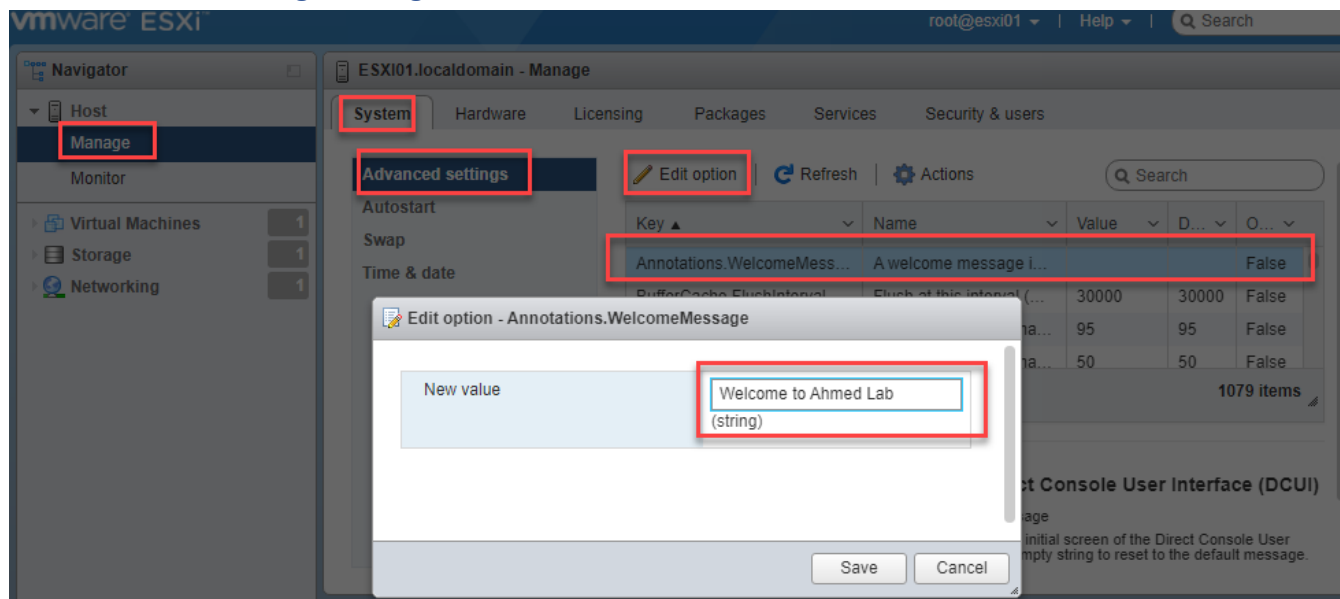
Through DNS add reverse lookup zone then add records for both ESXi servers and vcenter in both forward and reverse lookup zone



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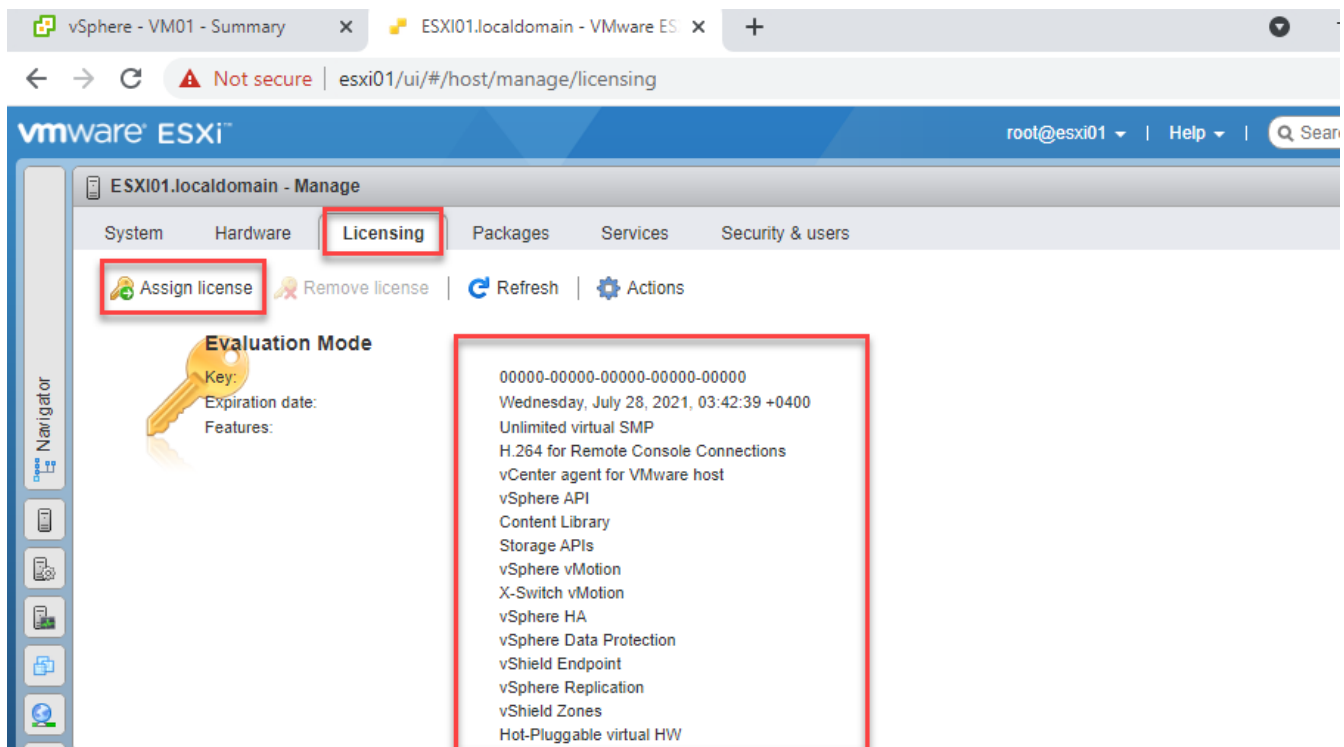
Configure ESXi host

Add welcome message during VM boot



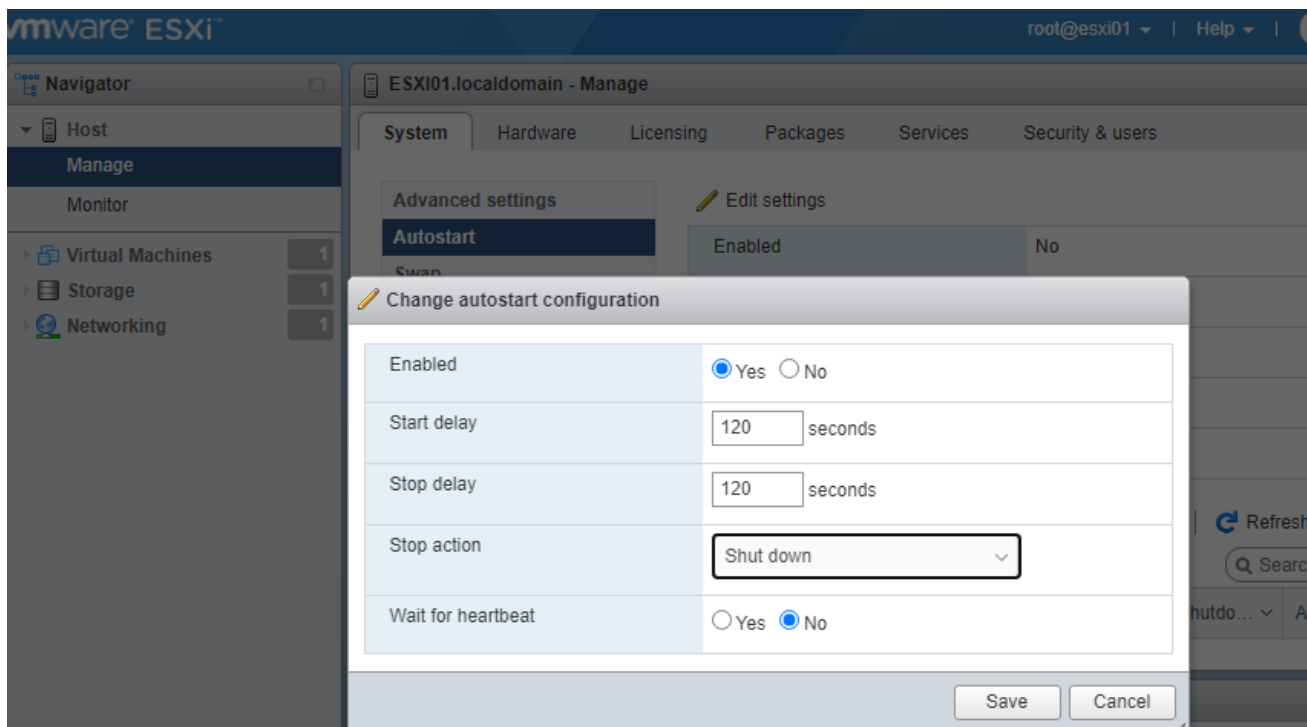
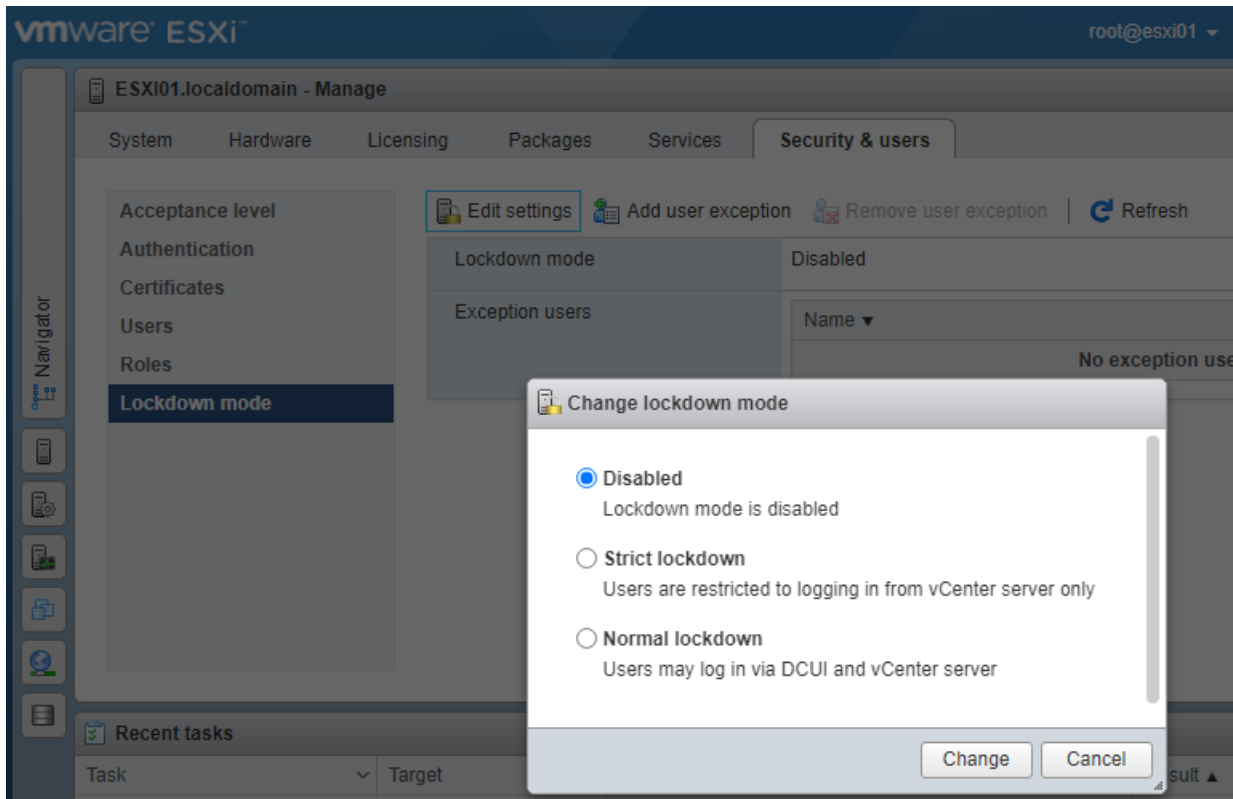
Assign ESXi license

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



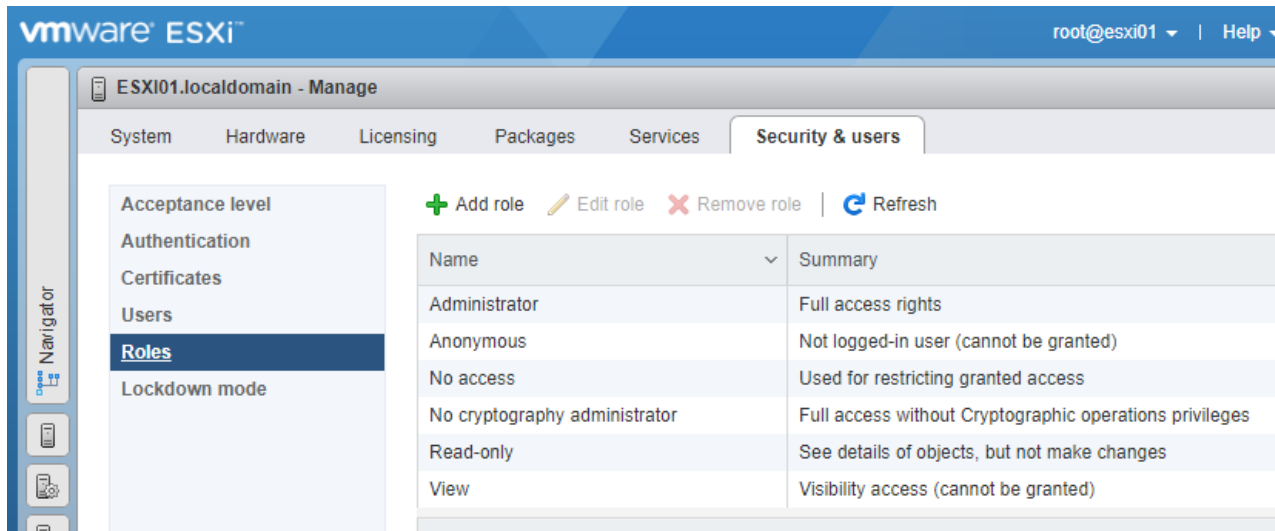
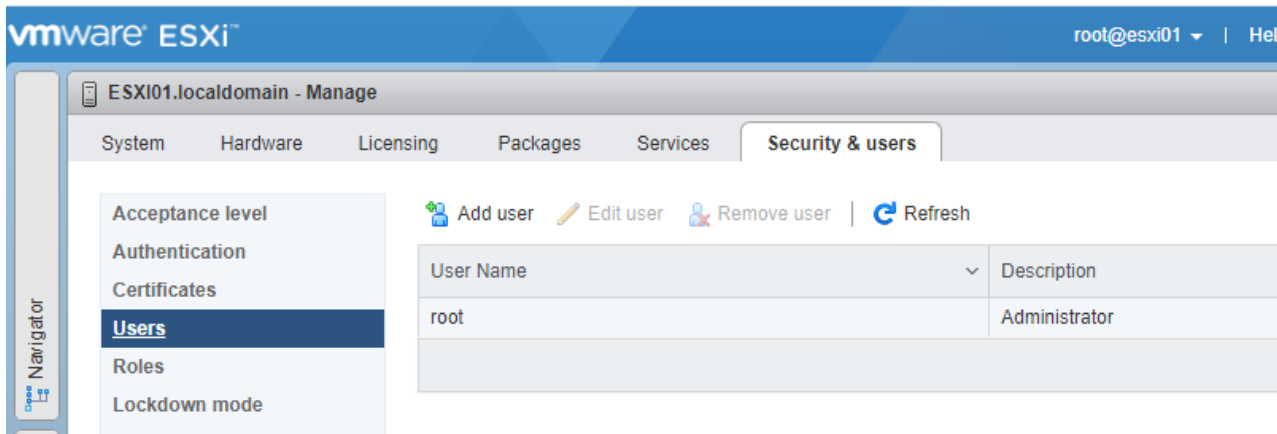
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Lockdown mode and autorestart option



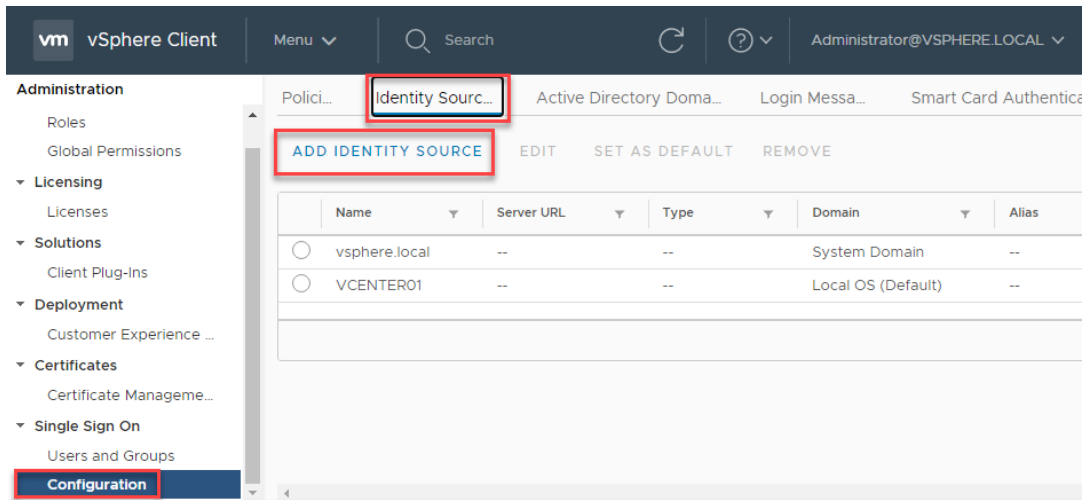
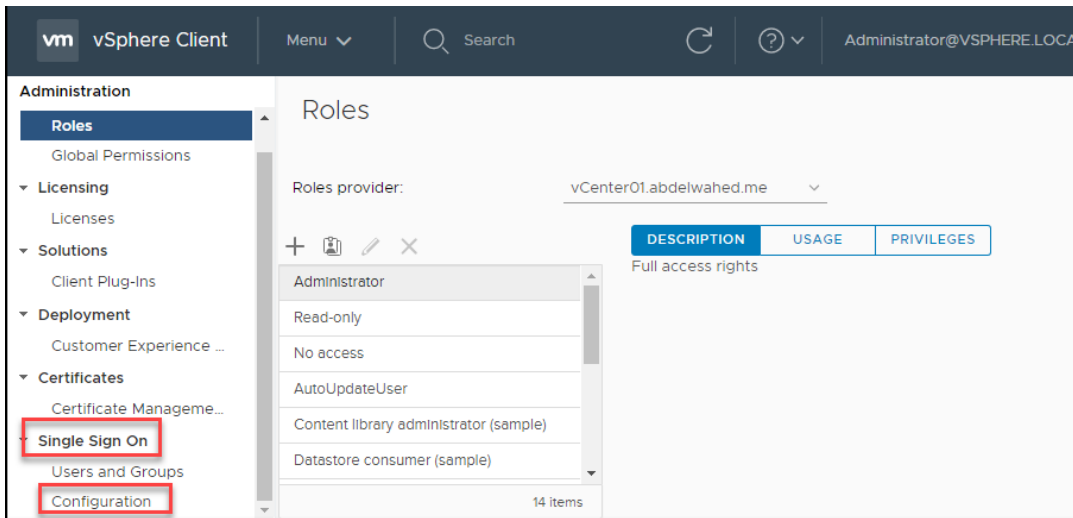
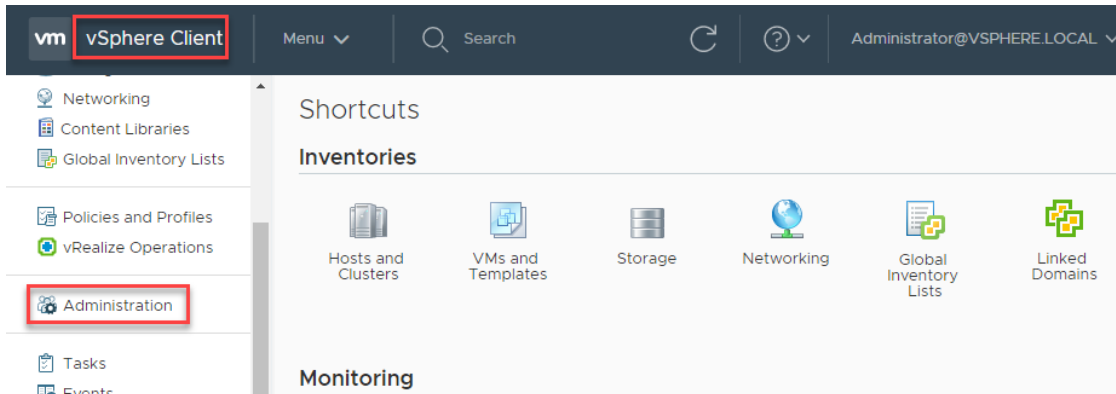
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Add more local users to ESXi host



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Integrate vSphere with Active Directory



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Add Identity Source

Identity Source Type: Active Directory (Windows Integrated Authentication)
Active Directory (Windows Integrated Authentication)
Active Directory over LDAP
Open LDAP
Use machine account
Use Service Principal Name (SPN)

Add Identity Source

Identity Source Type: Active Directory (Windows Integrated Authentication)
Domain name: abdelwahed.me
Use machine account
Use Service Principal Name (SPN)

Administration

- Roles
- Global Permissions
- ▼ **Licensing**
 - Licenses
- ▼ **Solutions**
 - Client Plug-Ins
- ▼ **Deployment**
 - Customer Experience ...
- ▼ **Certificates**
 - Certificate Manageme...

	Name	Server URL	Type	Domain	Alias
<input type="radio"/>	vsphere.local	--	--	System Domain	--
<input type="radio"/>	VCENTER01	--	--	Local OS (Default)	--
<input checked="" type="radio"/>	abdelwahed.me	--	Active Directory (Windows Integrated Authentication)	External Domain	--

login with domain users and permissions

User name:: it01@abdelwahed.me
Password:
 Use Windows session authentication

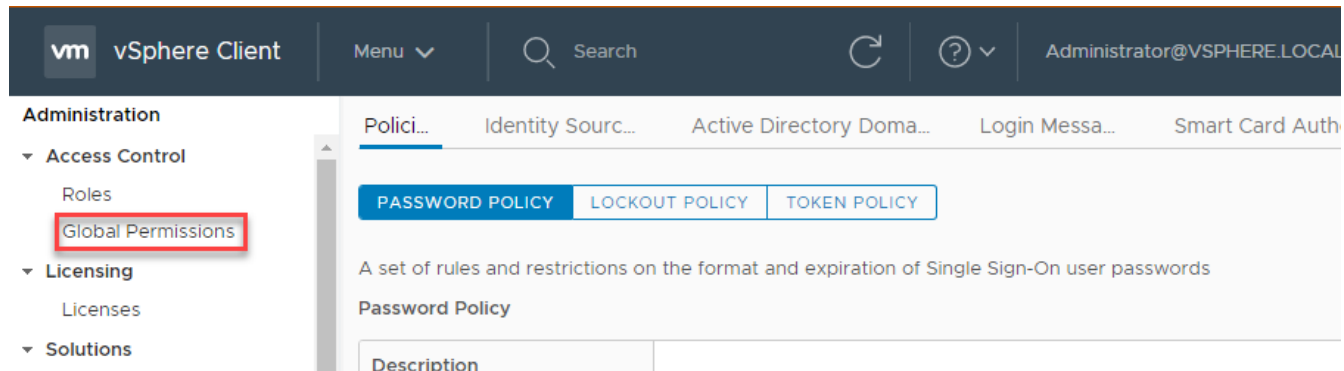
VMware vCenter Single Sign-On

now you can login, but you don't have permissions to access vCenter resources.

! Unable to login because you do not have permission on any vCenter Server systems connected to this client. [Back to login screen](#)

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



Add Permission | Global Permission Root

User:

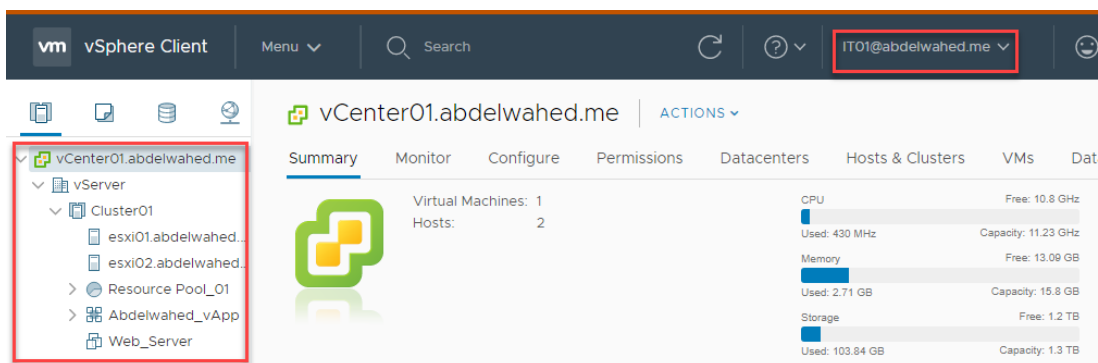
Q:

Role:

Propagate to children

User/Group	Role	Defined In
ABDELWAHED.ME\IT01	Administrator	Global Permission
VSPHERE.LOCAL\Administrator	Administrator	Global Permission
VSPHERE.LOCAL\Administrators	Administrator	Global Permission
VSPHERE.LOCAL\AutoUpdate	AutoUpdateUser	Global Permission
VSPHERE.LOCAL\vpzd-2baf9d20-bf6a-11eb-...	Administrator	Global Permission

Now you have full access as IT01



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Connect SSH to ESXi host

The screenshot shows the vSphere Client interface for host `esxi01.abdelwahed.me`. The **Configure** tab is active, and the **Services** section is expanded. The **SSH** service is highlighted, and the **Start** button is visible. Below this, the PuTTY Configuration dialog is shown, with the **SSH** connection type selected and the host name `200.200.200.1` and port `22` entered.

Name	Daemon	Startup Policy
Direct Console UI	Running	Start and stop with host
ESXi Shell	Stopped	Start and stop manually
SSH	Running	Start and stop manually
Load-Based Teaming Da...	Running	Start and stop with host

Basic options for your PuTTY session

Specify the destination you want to connect to

Host Name (or IP address): `200.200.200.1` Port: `22`

Connection type: SSH Serial Other: `Telnet`

```
200.200.200.1 - PuTTY
login as: root
Keyboard-interactive authentication prompts from server:
| Password:
End of keyboard-interactive prompts from server
The time and date of this login have been sent to the system logs.
WARNING:
  All commands run on the ESXi shell are logged and may be included in
  support bundles. Do not provide passwords directly on the command line.
  Most tools can prompt for secrets or accept them from standard input.
VMware offers supported, powerful system administration tools. Please
see www.vmware.com/go/sysadmintools for details.
The ESXi Shell can be disabled by an administrative user. See the
vSphere Security documentation for more information.
[root@ESXI01:~] hostname
ESXI01.localdomain
[root@ESXI01:~]
```

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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

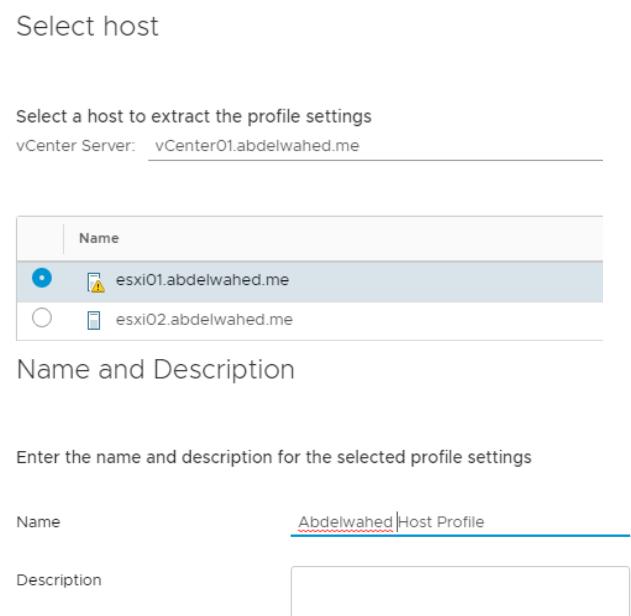
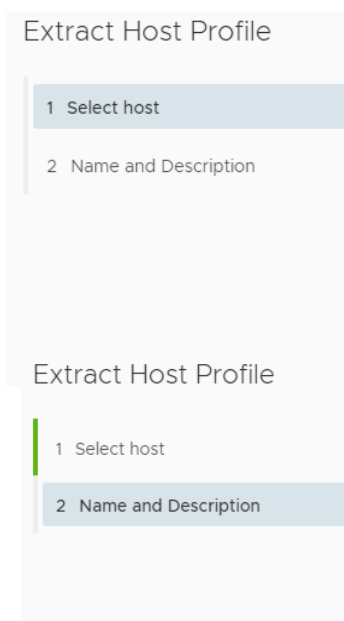
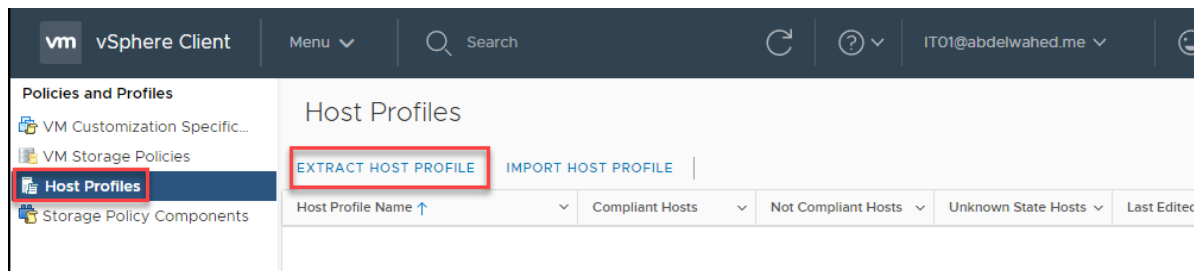
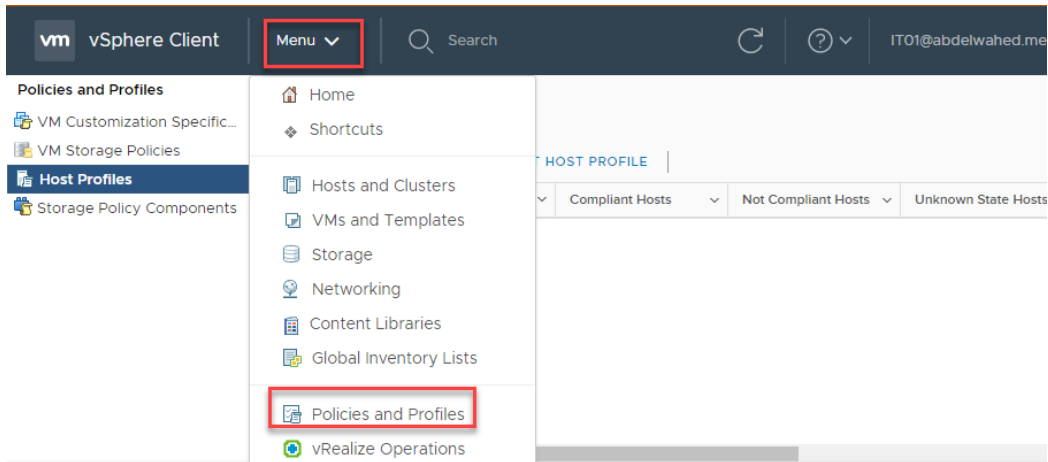
Available Namespaces:
  device                    Device manager commands
  esxcli                    Commands that operate on the esxcli system itself
                              allowing users to get additional information.
  fcoe                      VMware FCOE commands.
  graphics                  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
```

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Host Profile

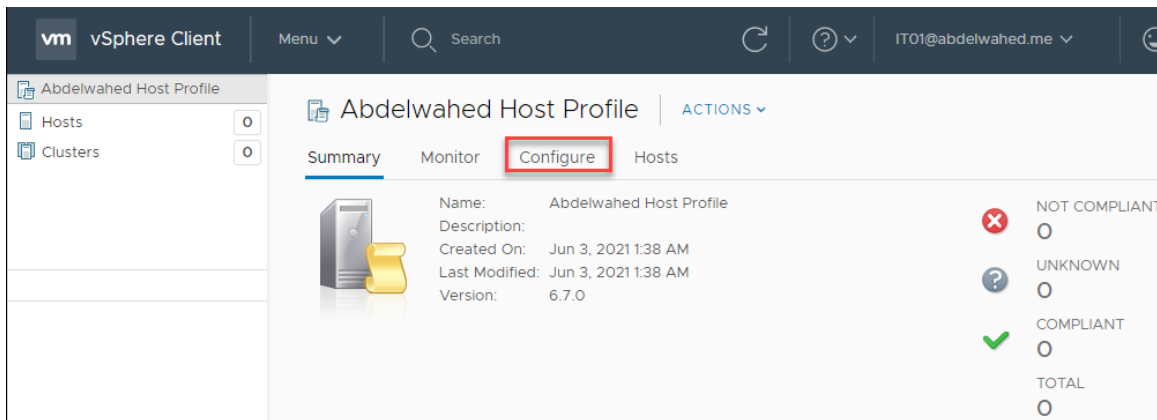
You can apply settings to all ESXi servers through host profile. For example, you want to configure ssh for all ESXi servers you can do this through host profile.

First you must take profile reference from one ESXi server

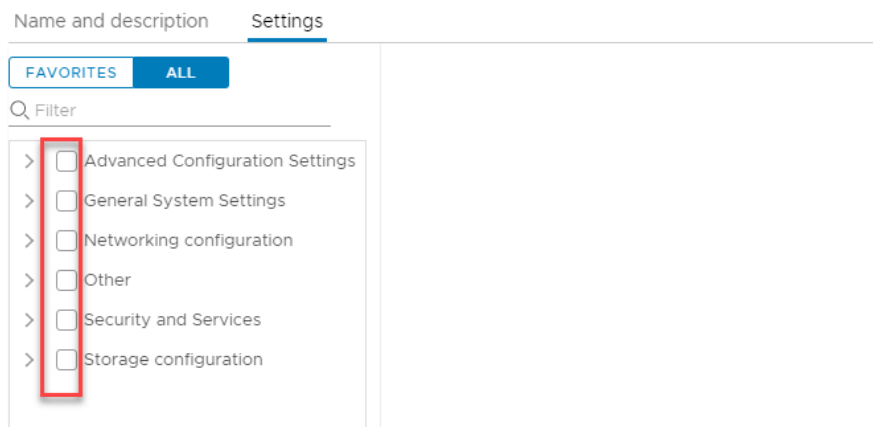
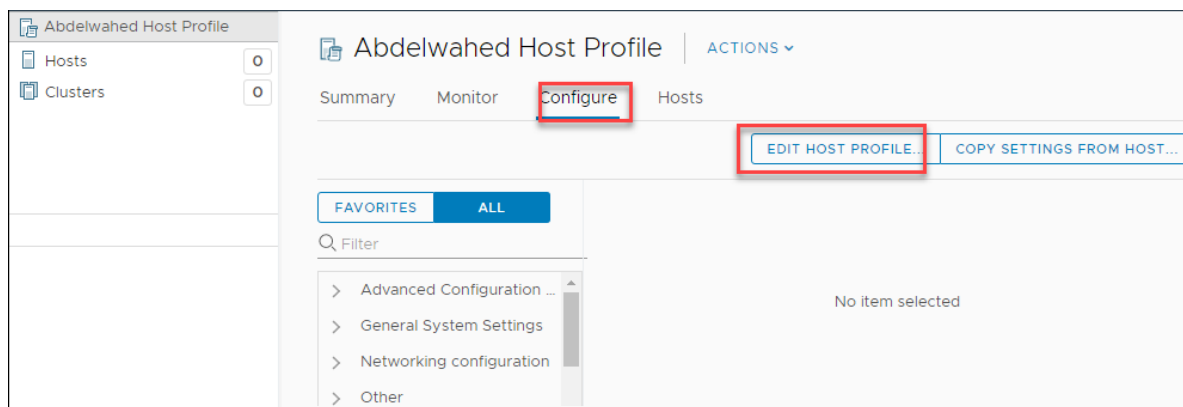


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Now you can access the host profile and edit it

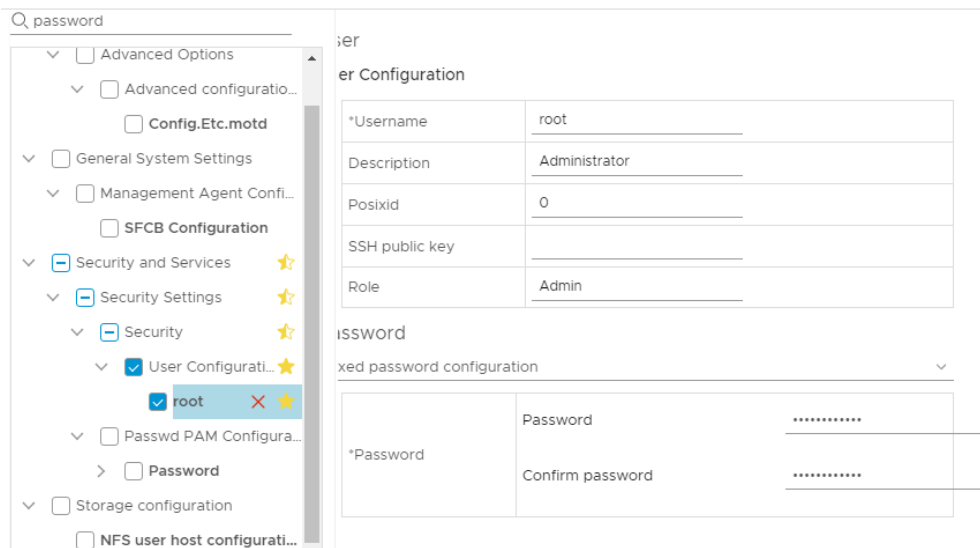


Now to configure this profile as a standard, uncheck all settings to avoid the conflict then add your customized settings.

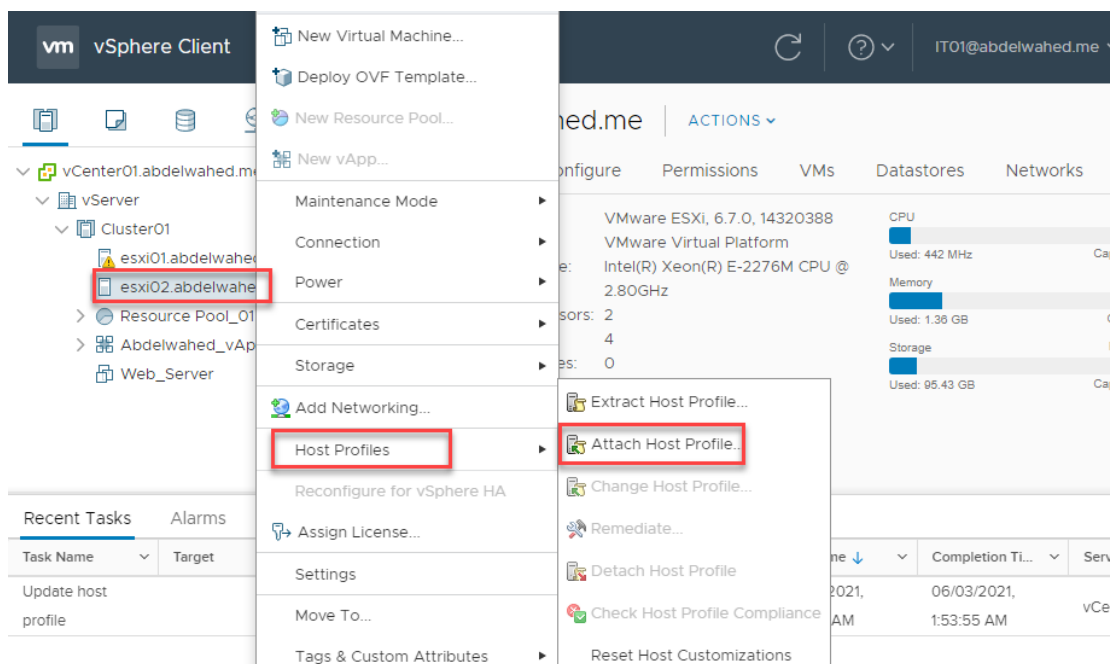
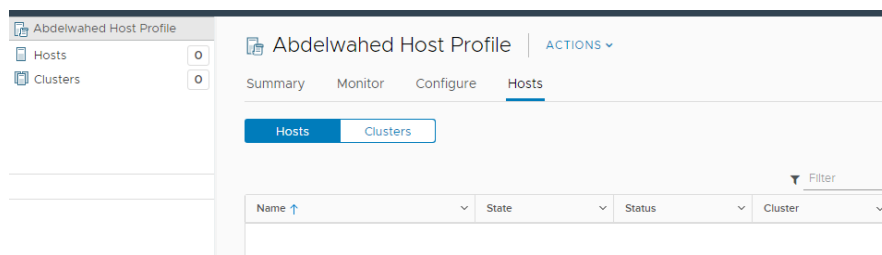


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In this example I will use host profile to configure ESXi server's password for root user.



Still no host attached to that profile

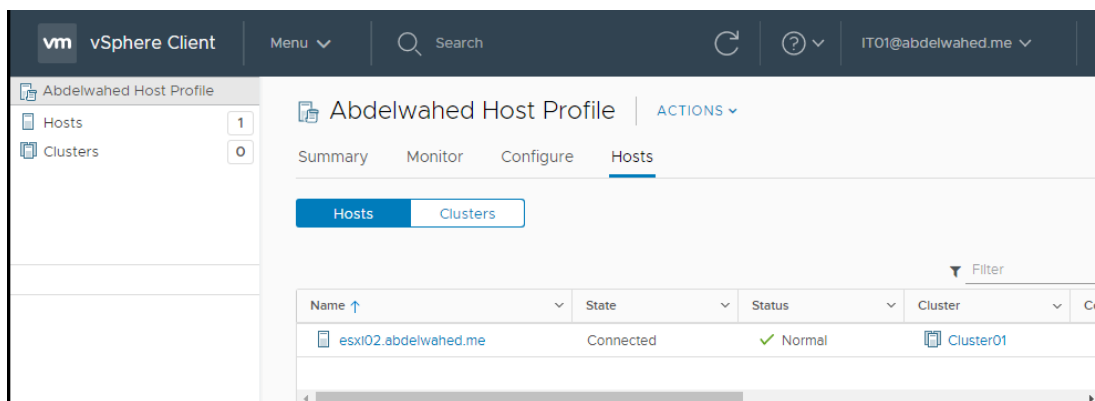
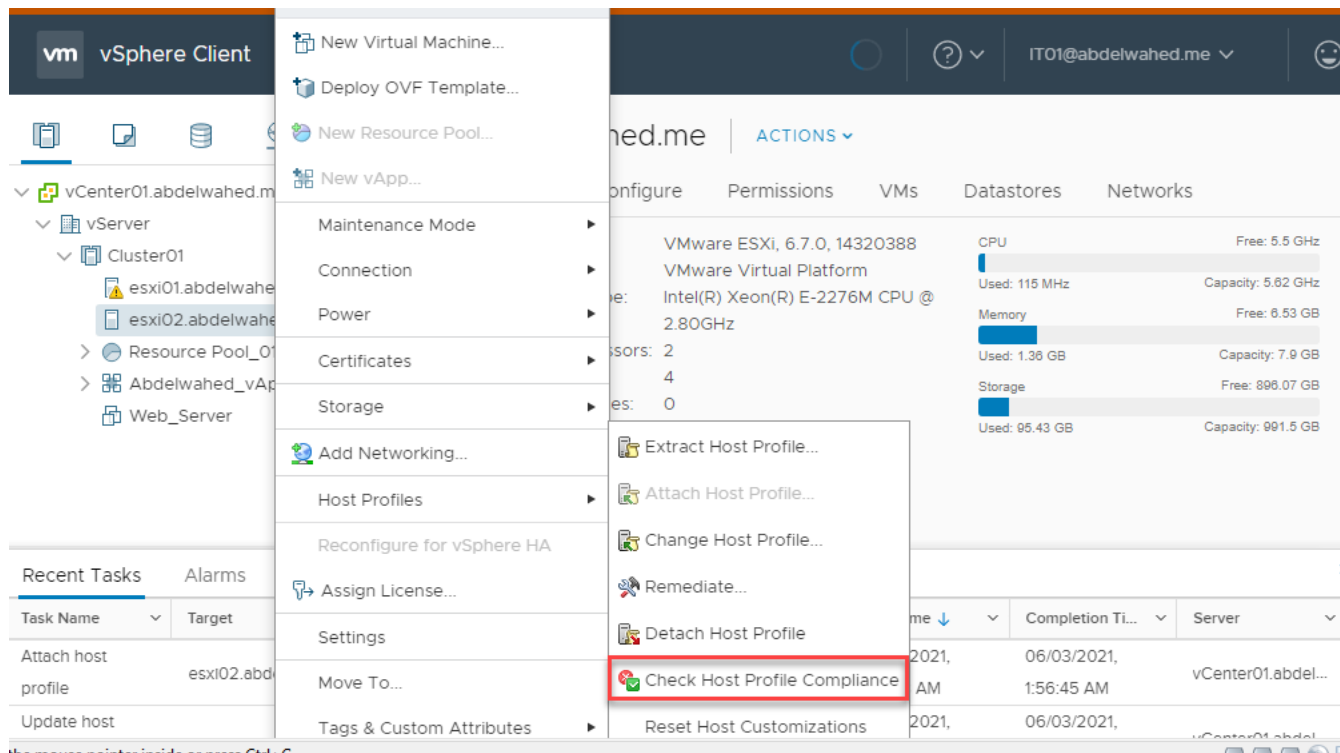


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esxi02.abdelwahed.me - Attach Host Profile

Profile	Description
Abdelwahed Host Profile	

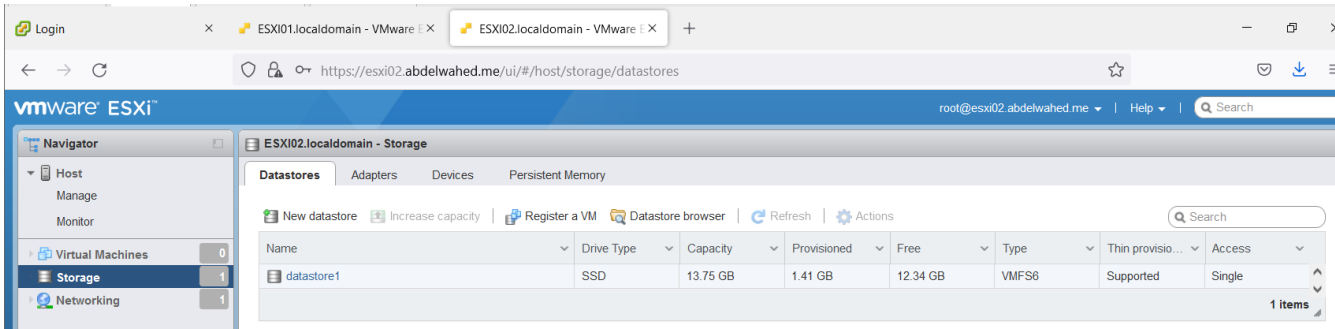
Now one host attached to that profile, you can also attach cluster



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Add and manage datastore

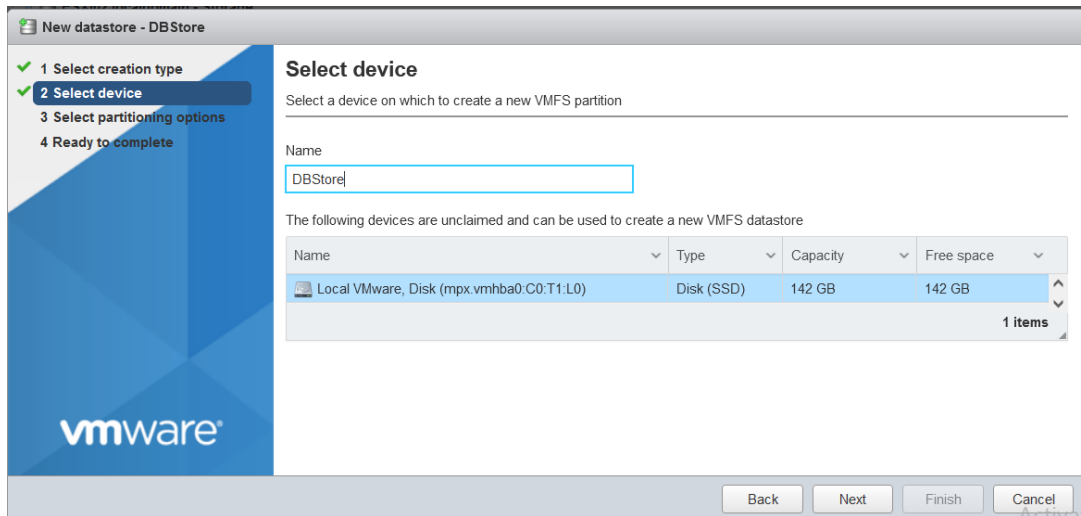
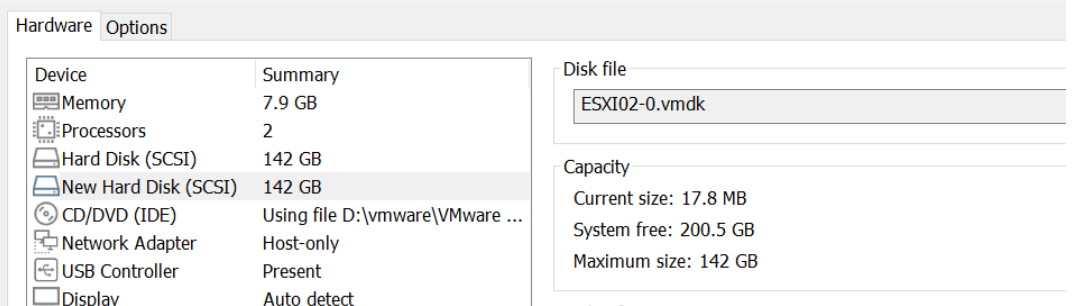
Both servers book around 8GB for OS and the rest of HD booked for datastore to save any kind of data including VMs data and OS ISO file



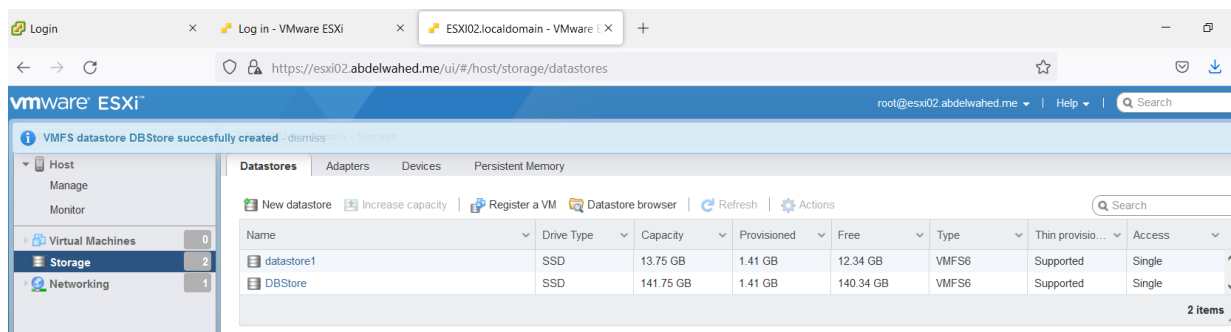
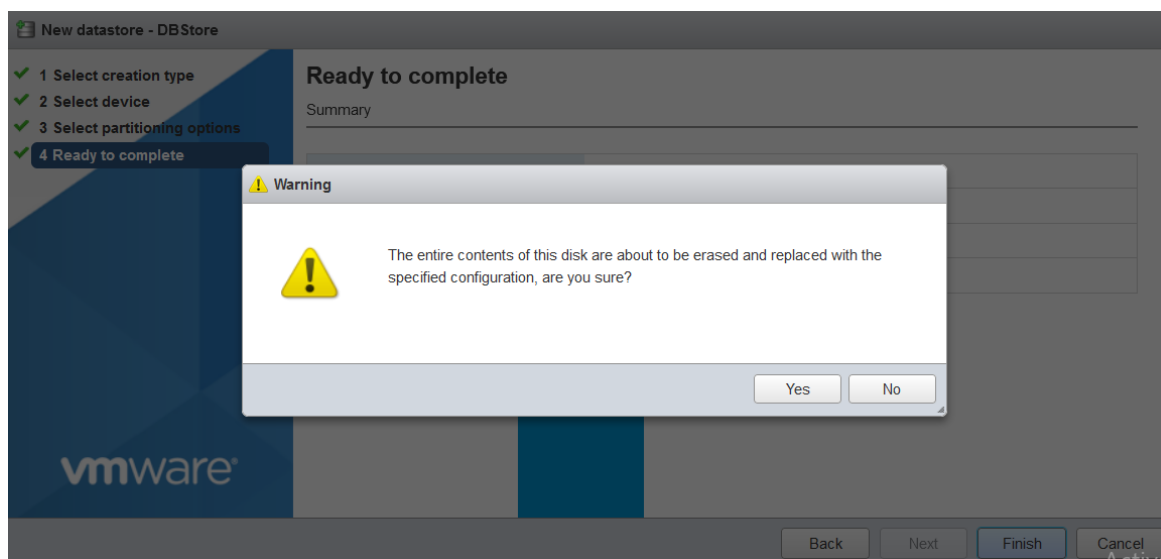
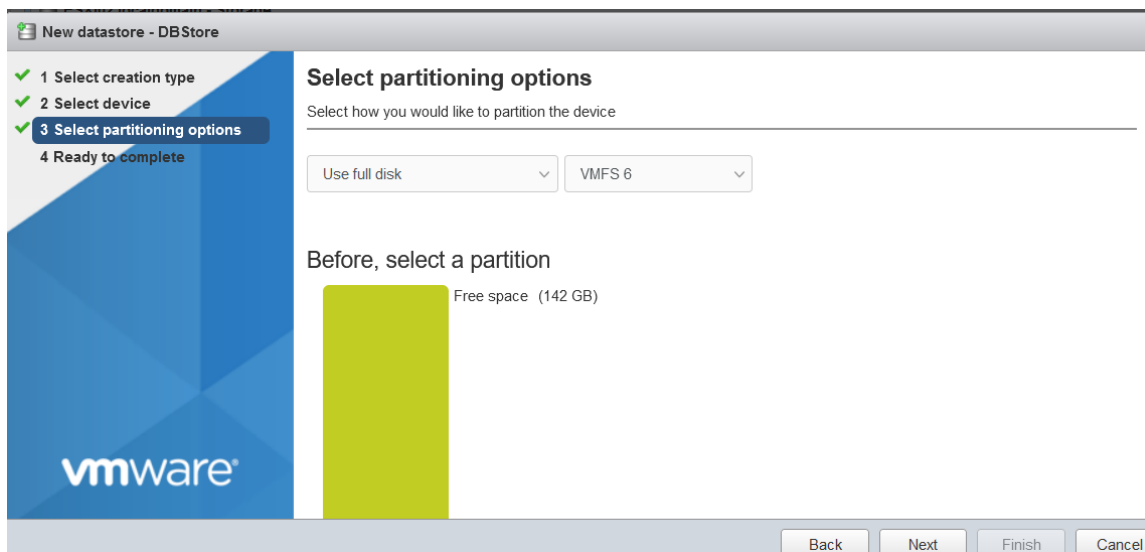
Create new local datastore (VMFS) using ESXi

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:

Virtual Machine Settings



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Extend exiting datastore

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

The screenshot shows the VMware ESXi interface for extending a datastore. The top part displays the 'Datastores' view for 'ESXi02.localdomain - Storage'. A table lists the datastores:

Name	Drive Type	Capacity	Provisioned	Free	Type	Thin provision...	Access
datastore1	SSD	13.75 GB	1.41 GB	12.34 GB	VMFS6	Supported	Single
DBStore			1.41 GB	140.34 GB	VMFS6	Supported	Single

A context menu is open over 'datastore1' with options: Rename, Increase capacity, Unmount, Delete, Browse, Refresh, Register a VM, and Permissions. Below the table is a storage usage bar: STORAGE (FREE: 12.34 GB, 10%, USED: 1.41 GB, CAPACITY: 13.75 GB).

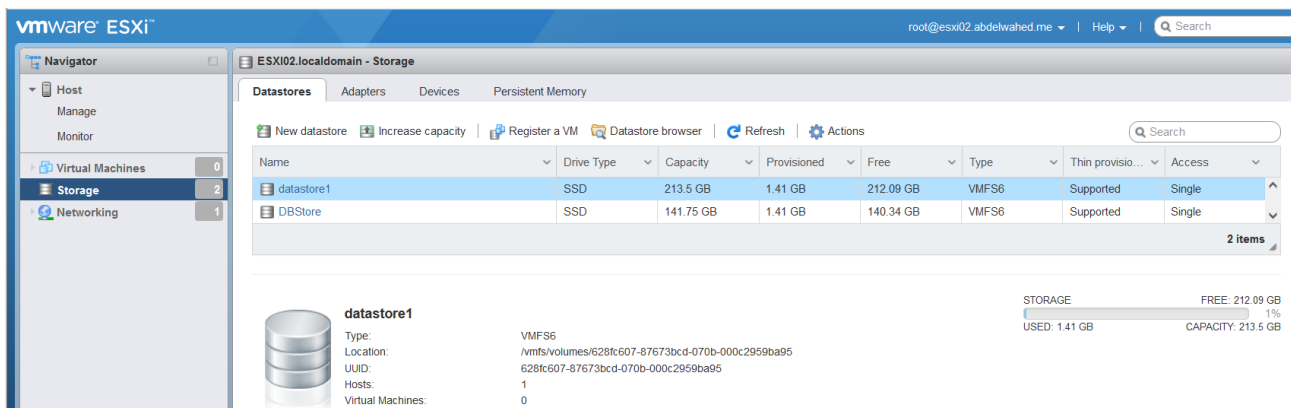
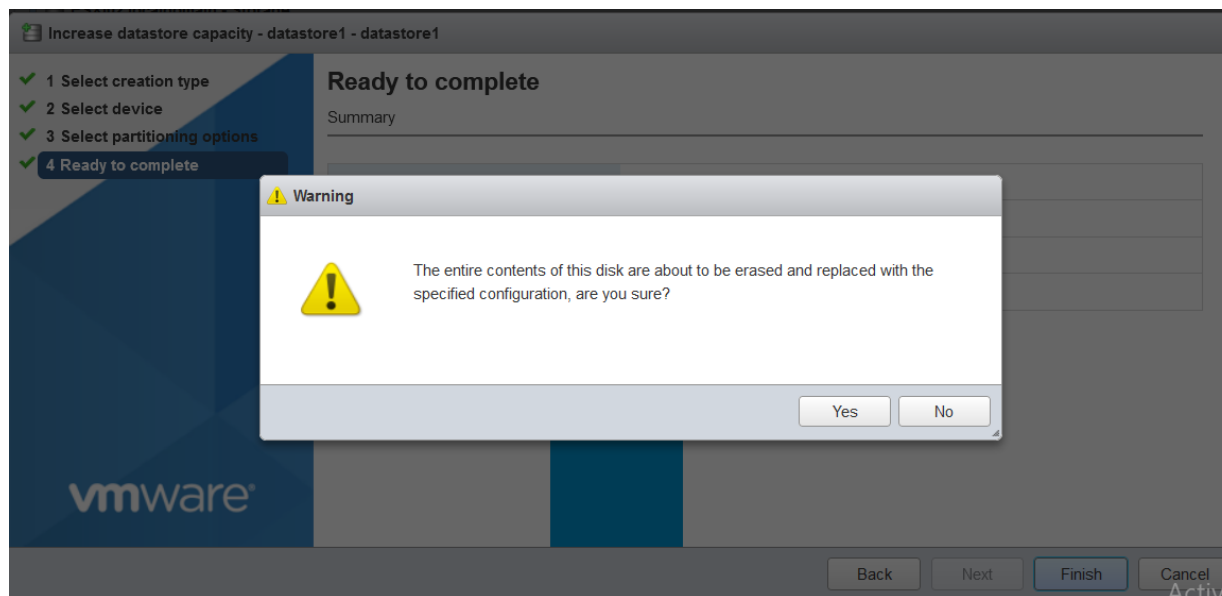
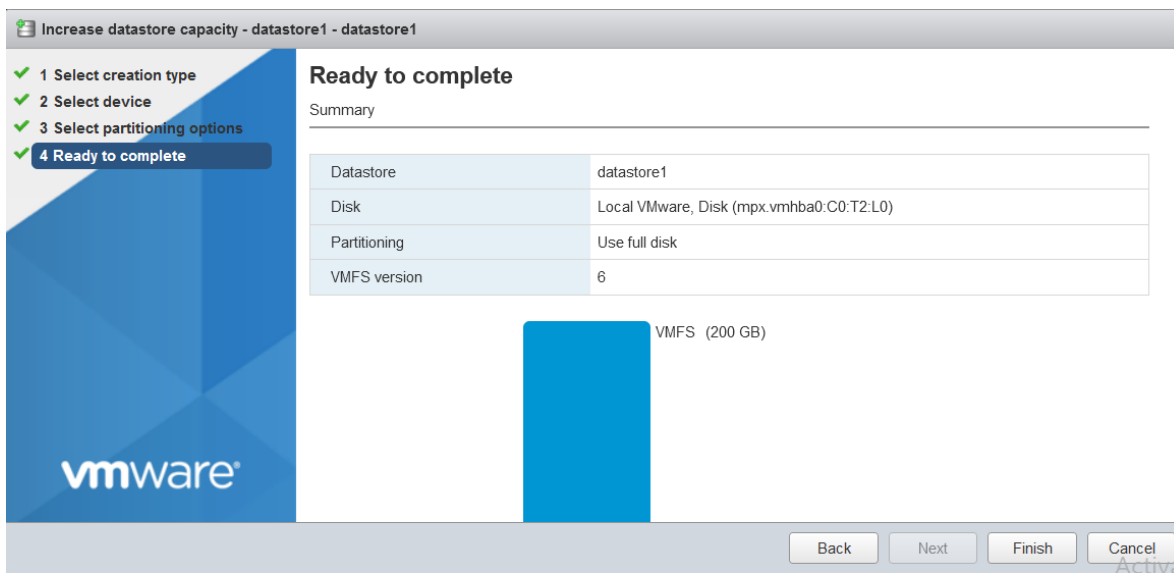
The first wizard screen is 'Increase datastore capacity - datastore1'. It shows a progress bar with 4 steps: 1 Select creation type (checked), 2 Select device (checked), 3 Select partitioning options, and 4 Ready to complete. The main content asks 'How would you like to create a datastore?' with two options: 'Add an extent to existing VMFS datastore' (selected) and 'Expand an existing VMFS datastore extent'.

The second wizard screen is 'Increase datastore capacity - datastore1 - datastore1'. It shows a progress bar with 4 steps: 1 Select creation type (checked), 2 Select device (checked), 3 Select partitioning options, and 4 Ready to complete. The main content asks 'Select a device on which to create a new VMFS partition'. It lists unclaimed devices:

Name	Type	Capacity	Free space
Local VMware, Disk (mpx.vmhba0:C0:T2:L0)	Disk (SSD)	200 GB	200 GB

The third wizard screen is 'Increase datastore capacity - datastore1 - datastore1'. It shows a progress bar with 4 steps: 1 Select creation type (checked), 2 Select device (checked), 3 Select partitioning options (checked), and 4 Ready to complete. The main content asks 'Select how you would like to partition the device'. It has two dropdowns: 'Use full disk' and 'VMFS 6'. Below, it says 'Before, select a partition' and shows a yellow box representing 'Free space (200 GB)'.

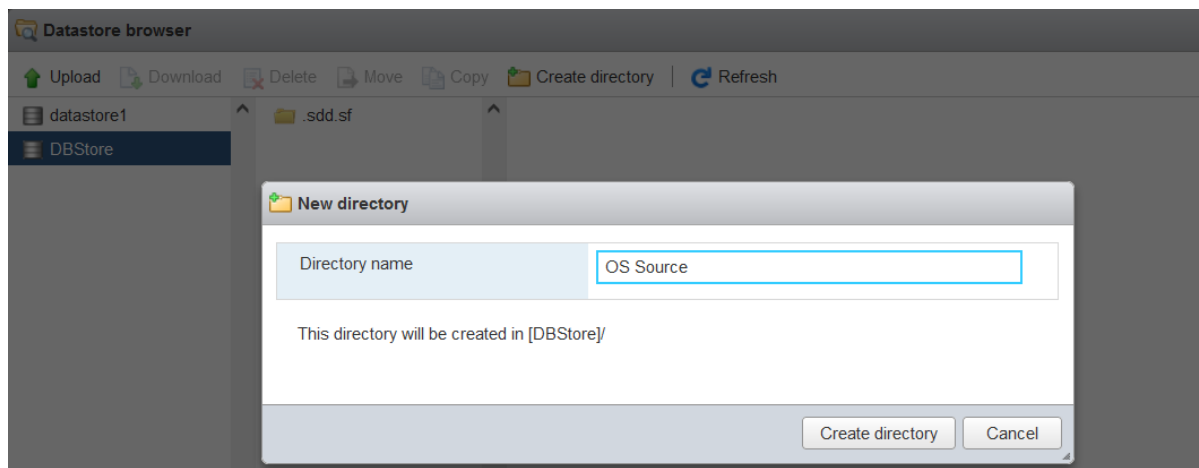
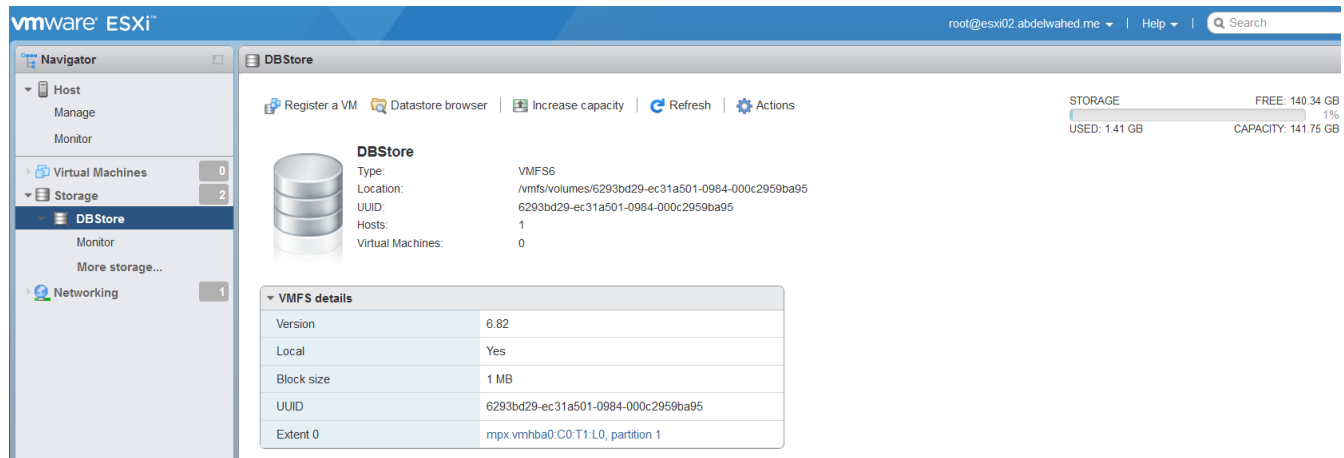
VMware vSphere Install, Configure, Manage v7 | Quick Guide



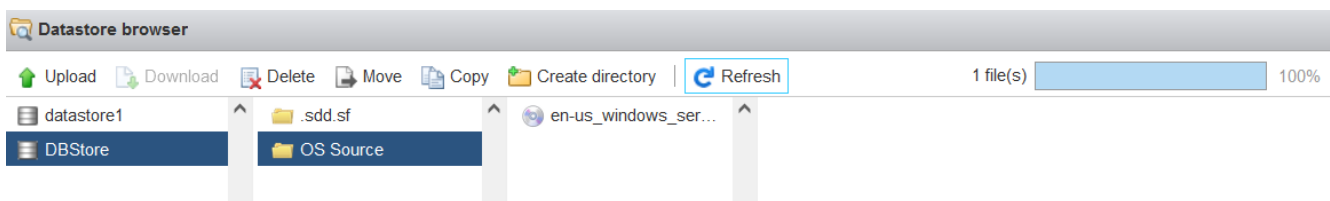
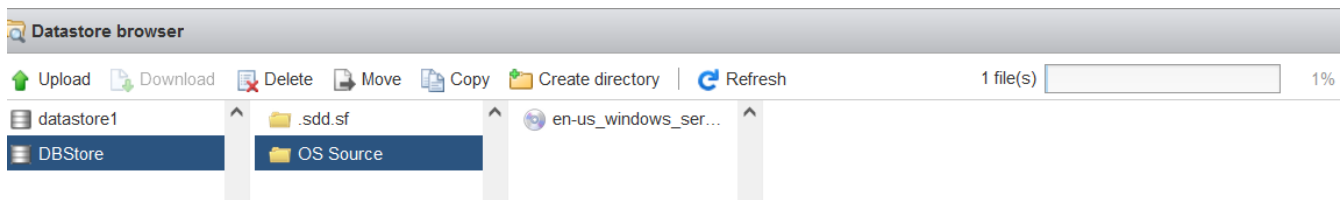
VMware vSphere Install, Configure, Manage v7 | Quick Guide

Add ISO file to datastore

First browse that store



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



VMware vSphere Install, Configure, Manage v7 | Quick Guide

Create and configure VM through ESXi02 host

VM Creation

New virtual machine - VM1-H2 (ESXi 7.0 U2 virtual machine)

- 1 Select creation type
- 2 Select a name and guest OS**
- 3 Select storage
- 4 Customize settings
- 5 Ready to complete

Select a name and guest OS

Specify a unique name and OS

Name: VM1-H2

Virtual machine names can contain up to 80 characters and they must be unique within each ESXi instance.

Identifying the guest operating system here allows the wizard to provide the appropriate defaults for the operating system installation.

Compatibility: ESXi 7.0 U2 virtual machine

Guest OS family: Windows

Guest OS version: Microsoft Windows Server 2022 (64-bit)

Enable Windows Virtualization Based Security

Virtualization Based Security
Makes Hardware virtualization, IOMMU, EFI, and Secure Boot available to the guest OS. You must also enable Virtualization Based Security within the guest OS of this virtual machine.
Go to Settings to activate Windows

Back Next

New virtual machine - VM1-H2 (ESXi 7.0 U2 virtual machine)

- 1 Select creation type
- 2 Select a name and guest OS
- 3 Select storage**
- 4 Customize settings
- 5 Ready to complete

Select storage

Select the storage type and datastore

Standard Persistent Memory

Select a datastore for the virtual machine's configuration files and all of its' virtual disks.

Name	Capacity	Free	Type	Thin pro...	Access
datastore1	213.5 GB	212.09 GB	VMFS6	Supported	Single
DBStore	141.75 GB	140.34 GB	VMFS6	Supported	Single

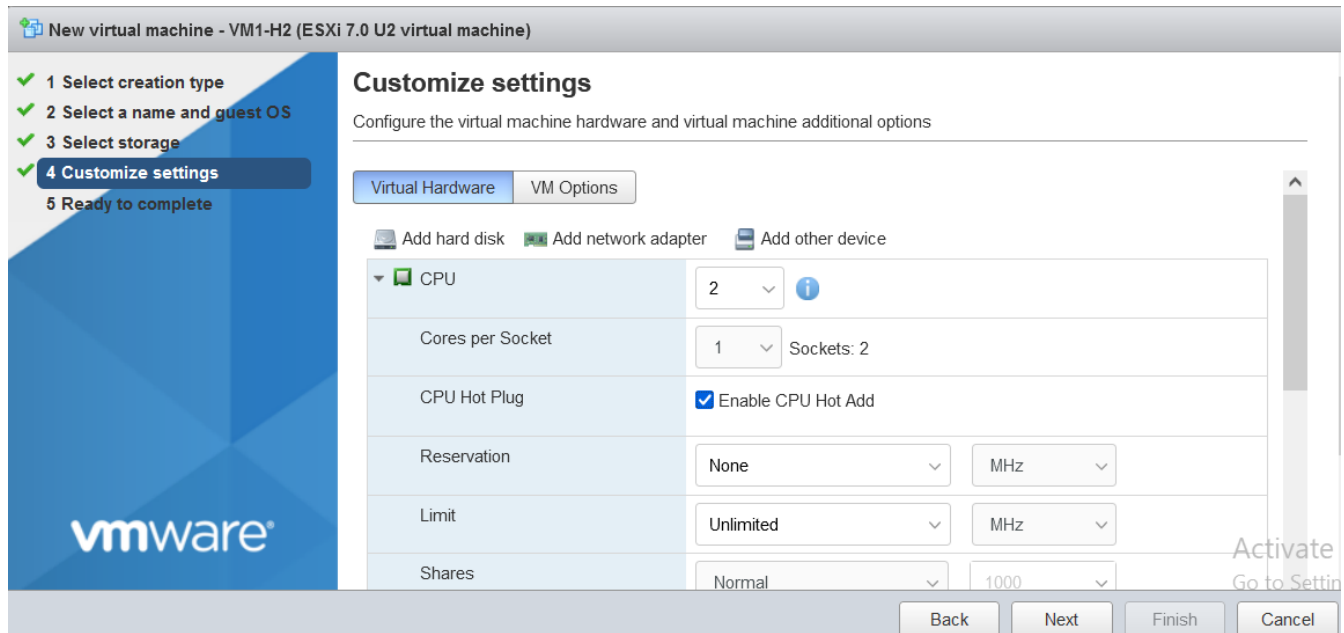
2 items

Activate Windows
Go to Settings to activate Windows

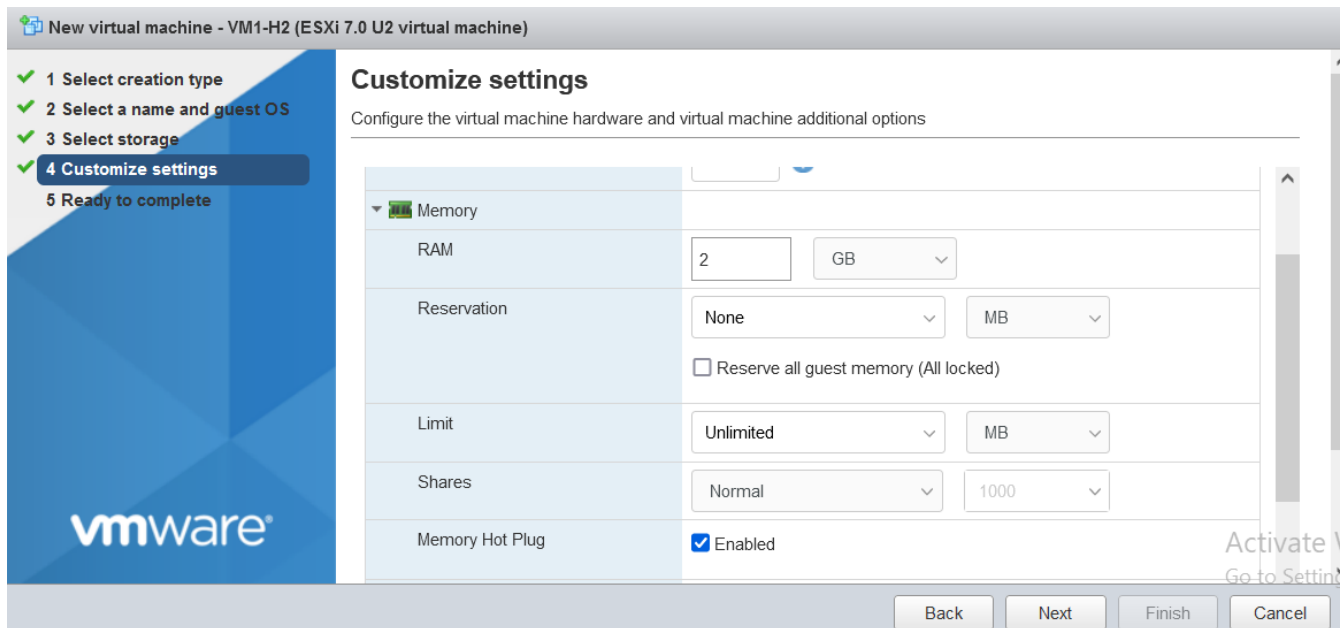
Back Next Finish Cancel

VMware vSphere Install, Configure, Manage v7 | Quick Guide

Select CPU Options

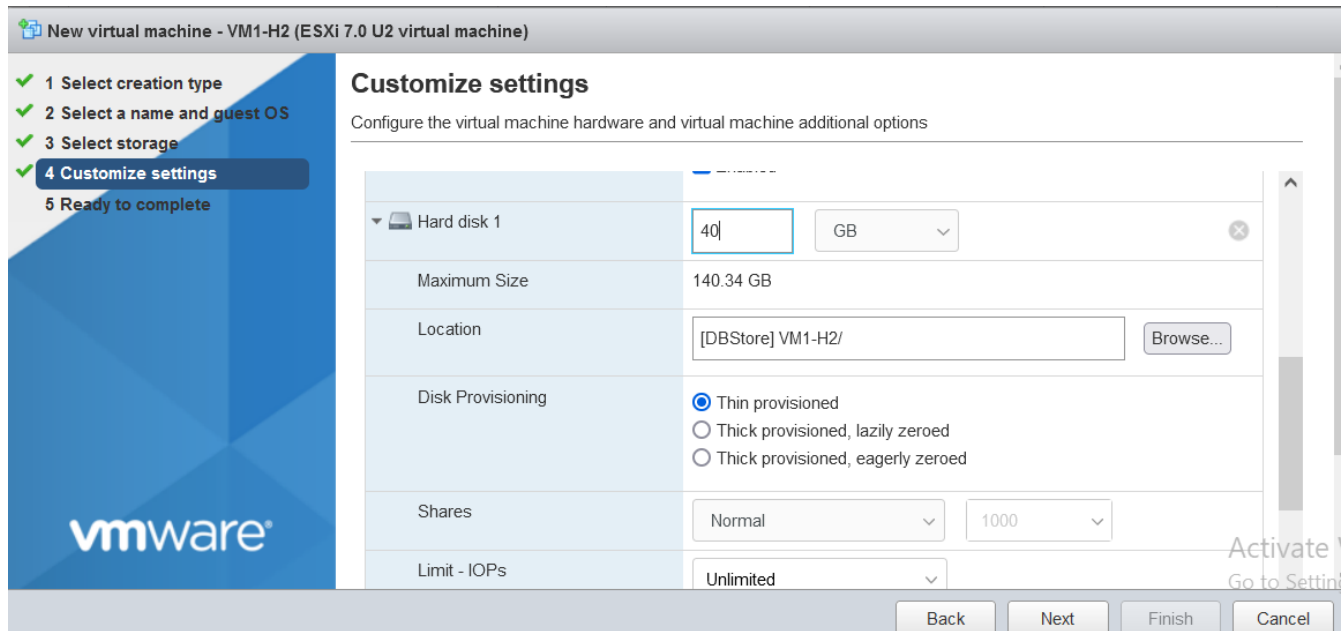


Select memory options

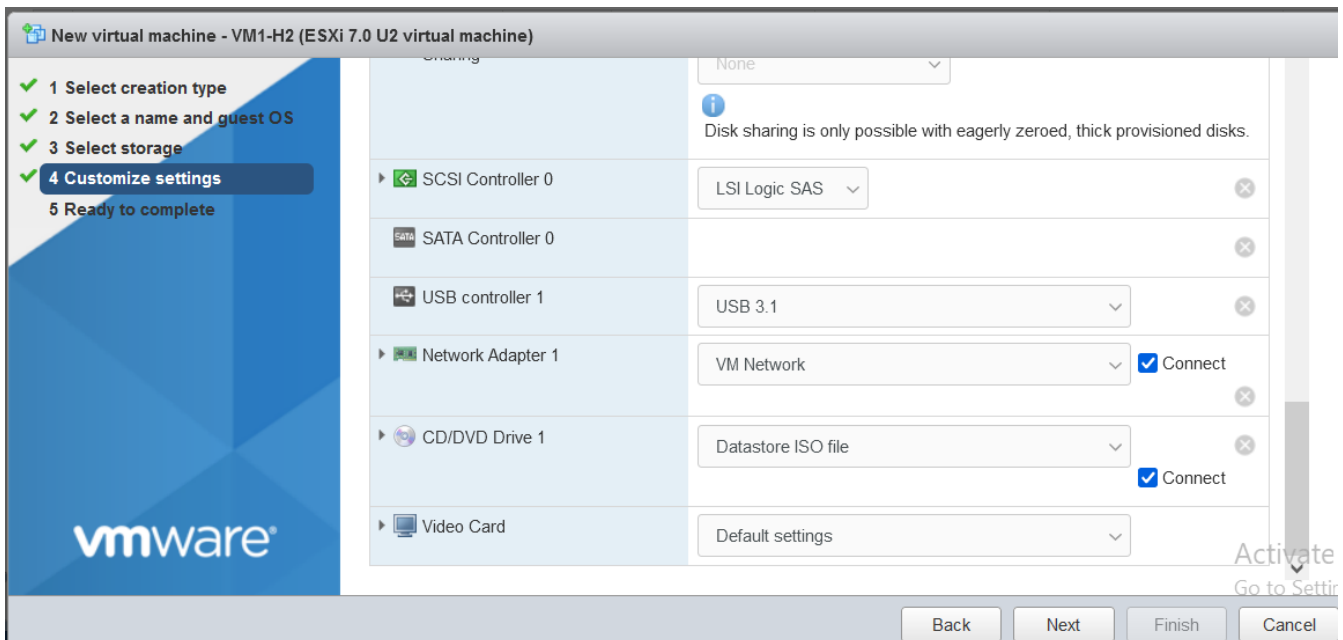


VMware vSphere Install, Configure, Manage v7 | Quick Guide

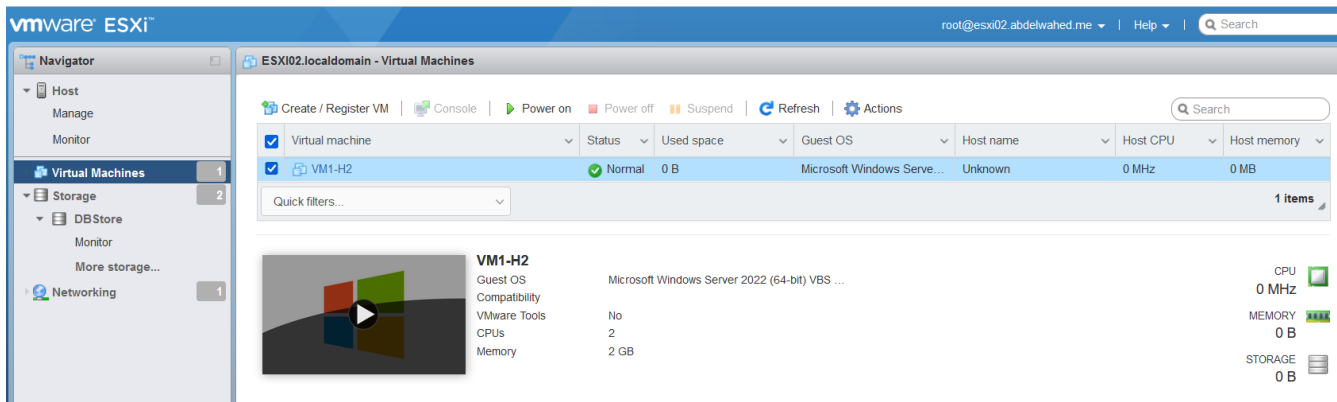
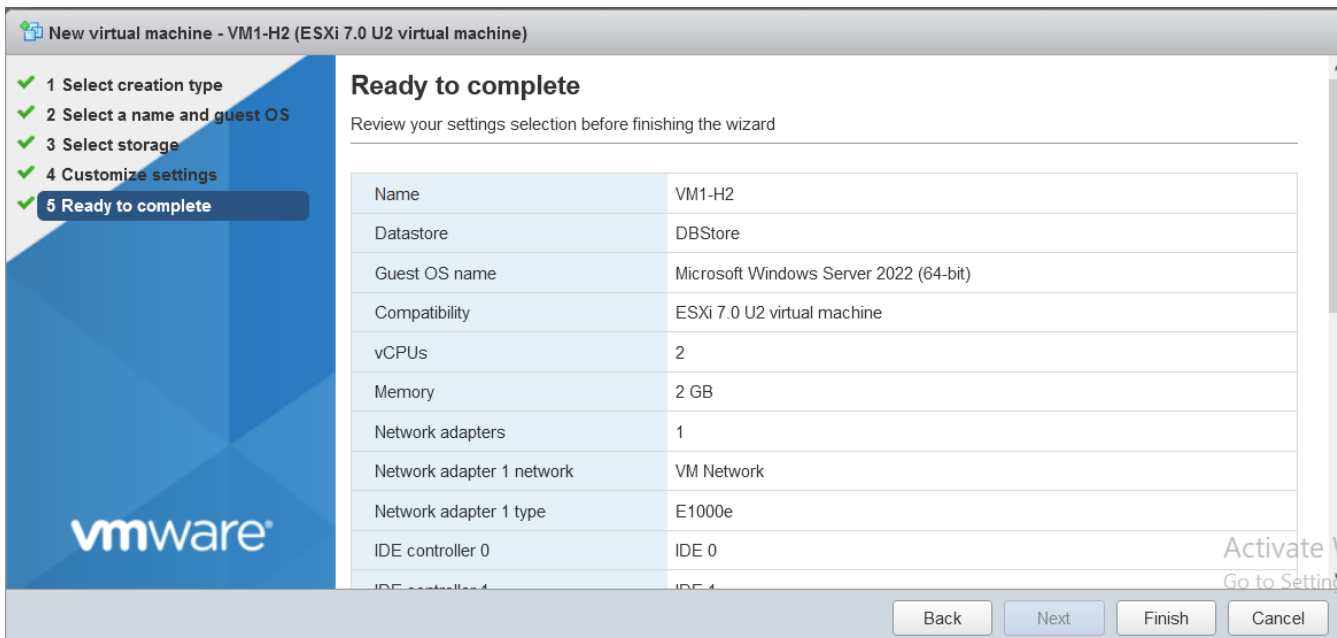
HD options



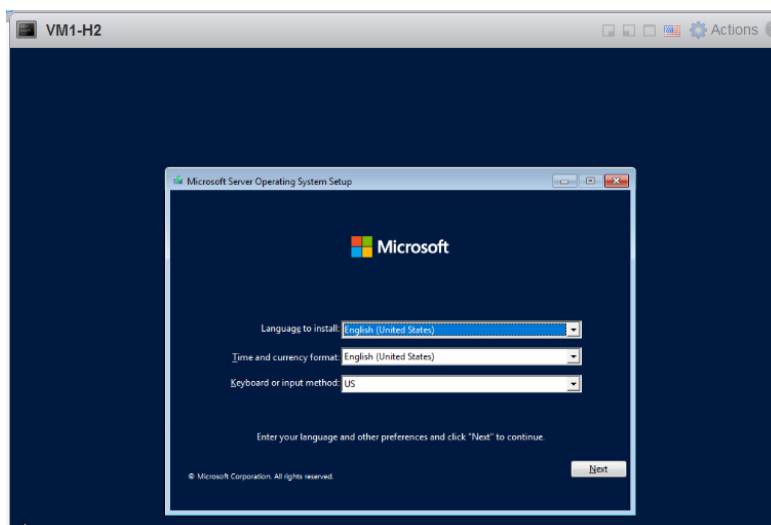
NIC and DVD options (select iso file from datastore)



VMware vSphere Install, Configure, Manage v7 | Quick Guide

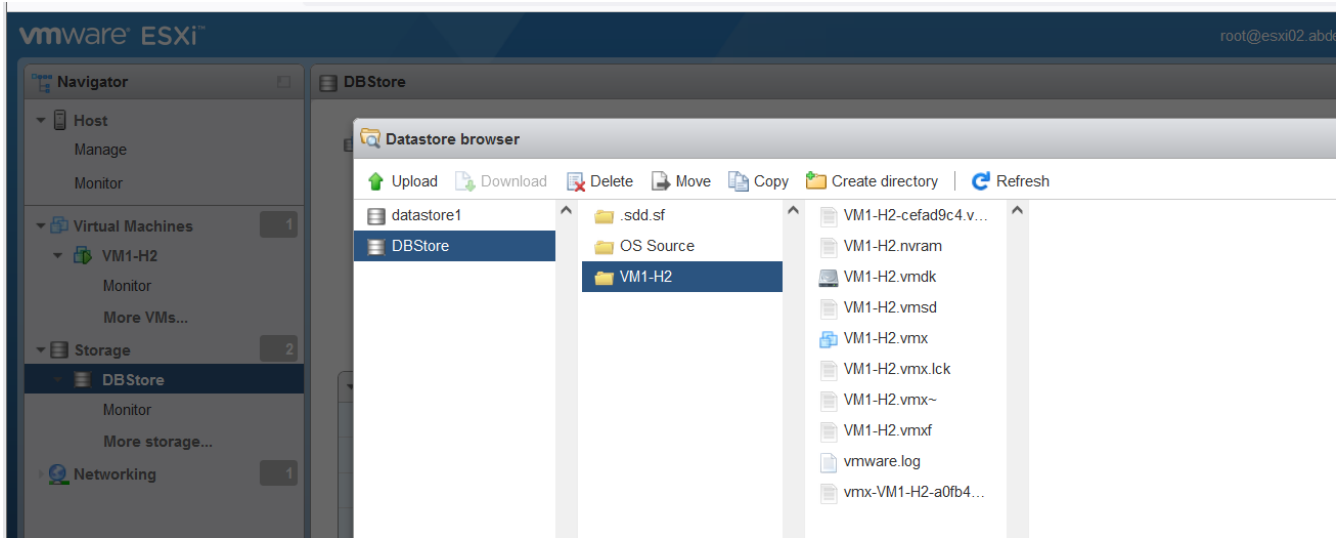


installation starts



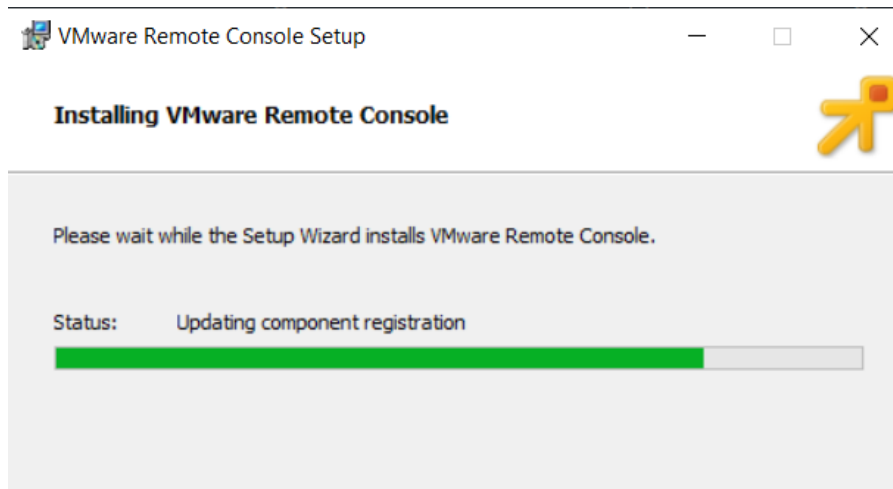
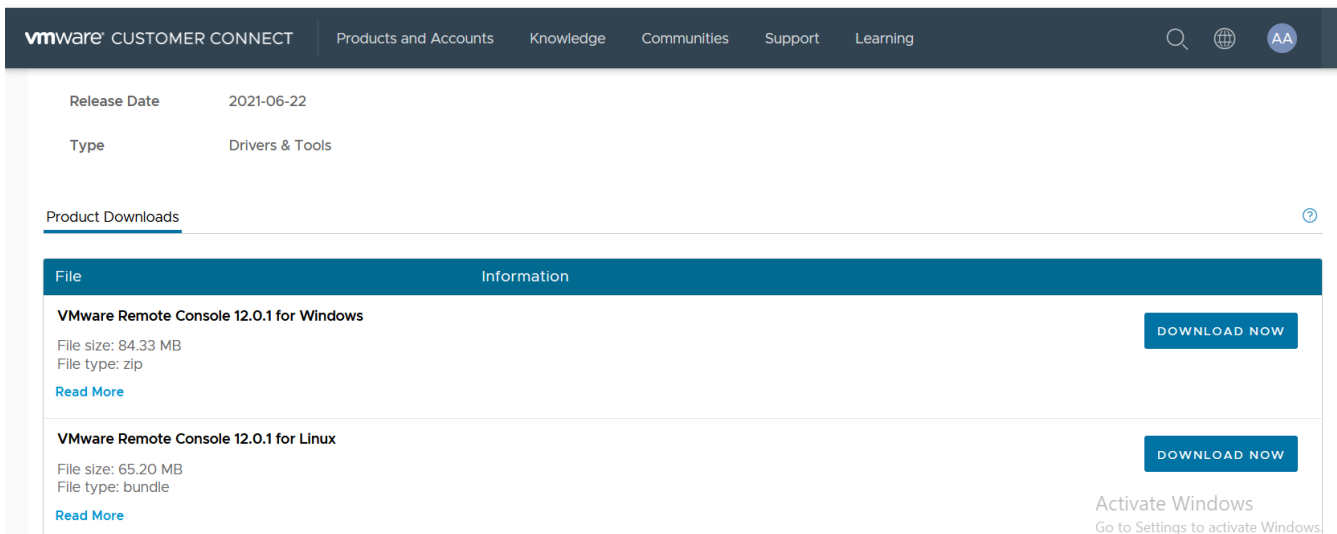
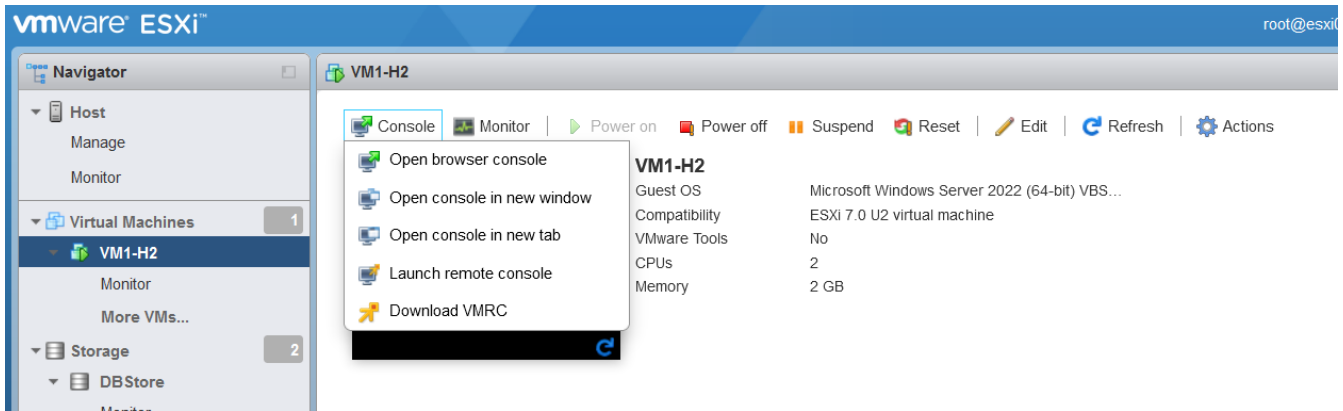
VMware vSphere Install, Configure, Manage v7 | Quick Guide

VM files saved inside selected datastore



VMware vSphere Install, Configure, Manage v7 | Quick Guide

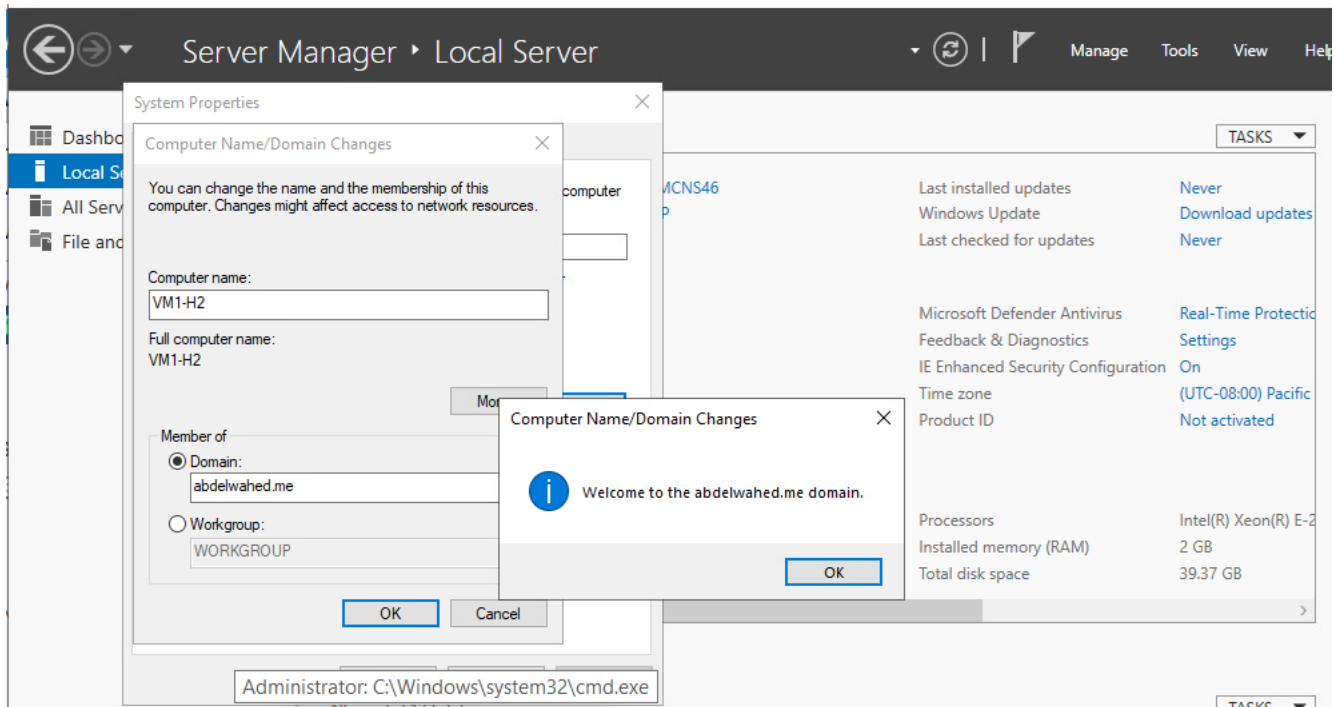
Download and install VMRC



VMware vSphere Install, Configure, Manage v7 | Quick Guide

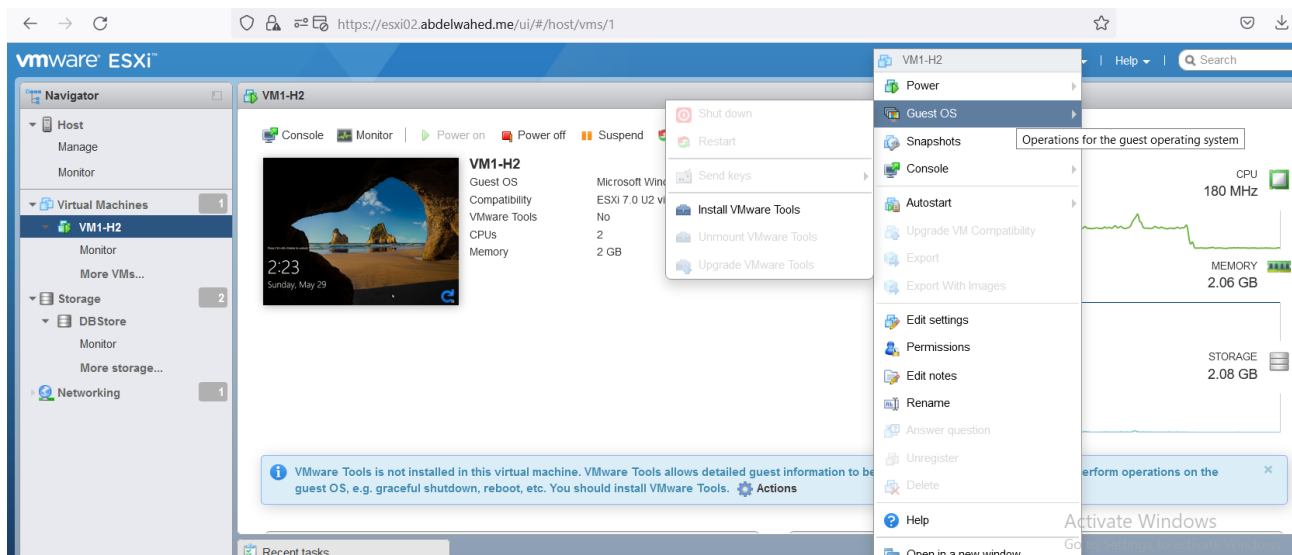


You can join that server to domain

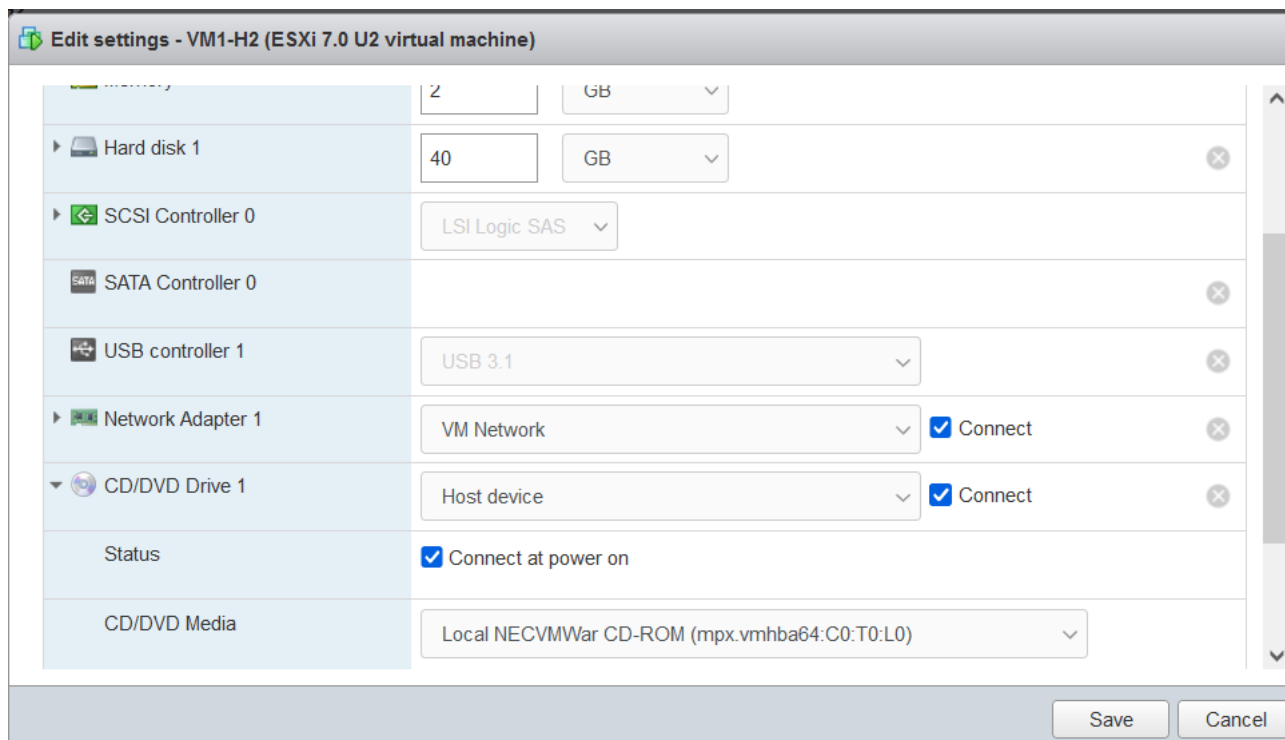


VMware vSphere Install, Configure, Manage v7 | Quick Guide

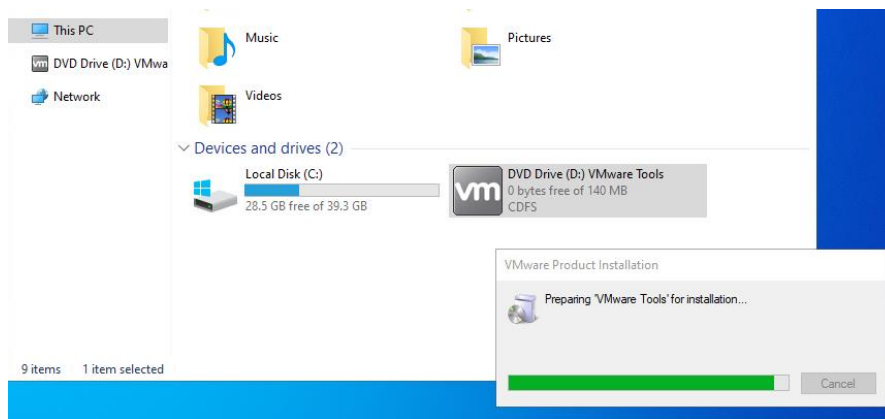
Install VM tools



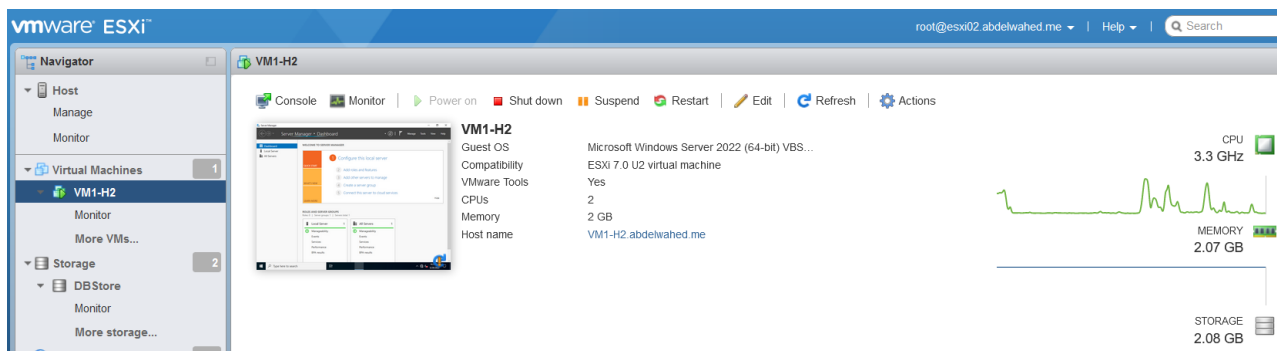
If VMtools not appears at this pc area. Edit the CD/DVD VM settings as shown below



VMware vSphere Install, Configure, Manage v7 | Quick Guide

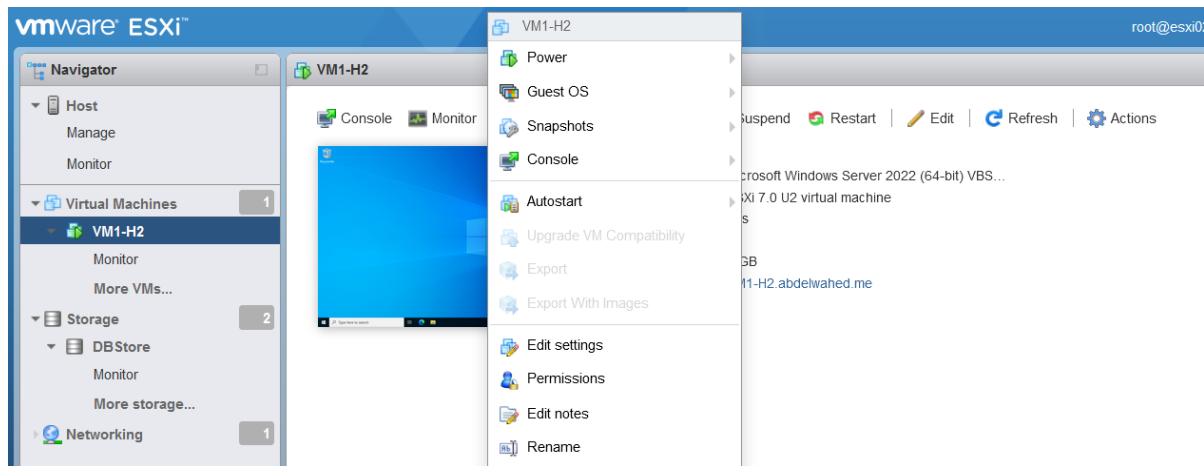


Now VMtools looks installed

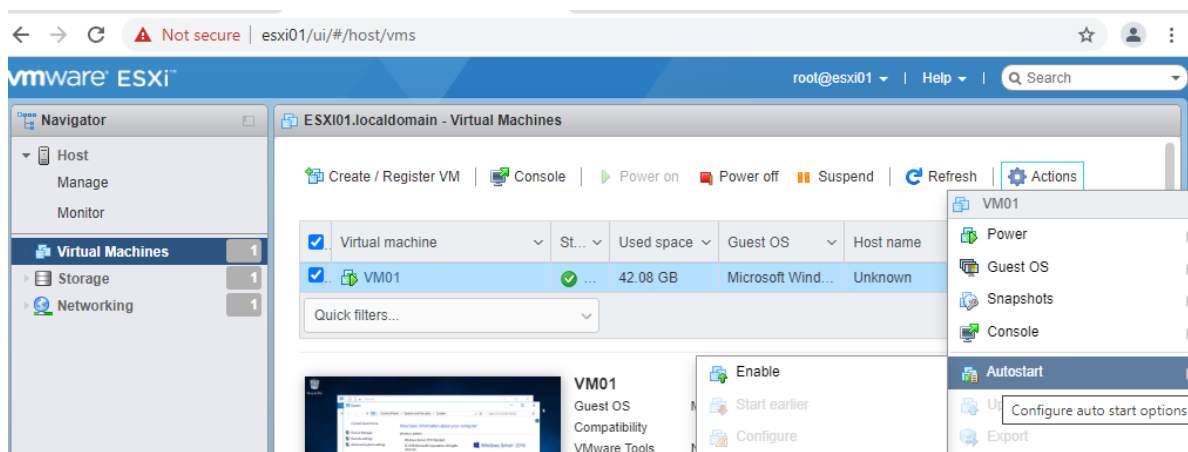


VMware vSphere Install, Configure, Manage v7 | Quick Guide

Edit VM settings



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



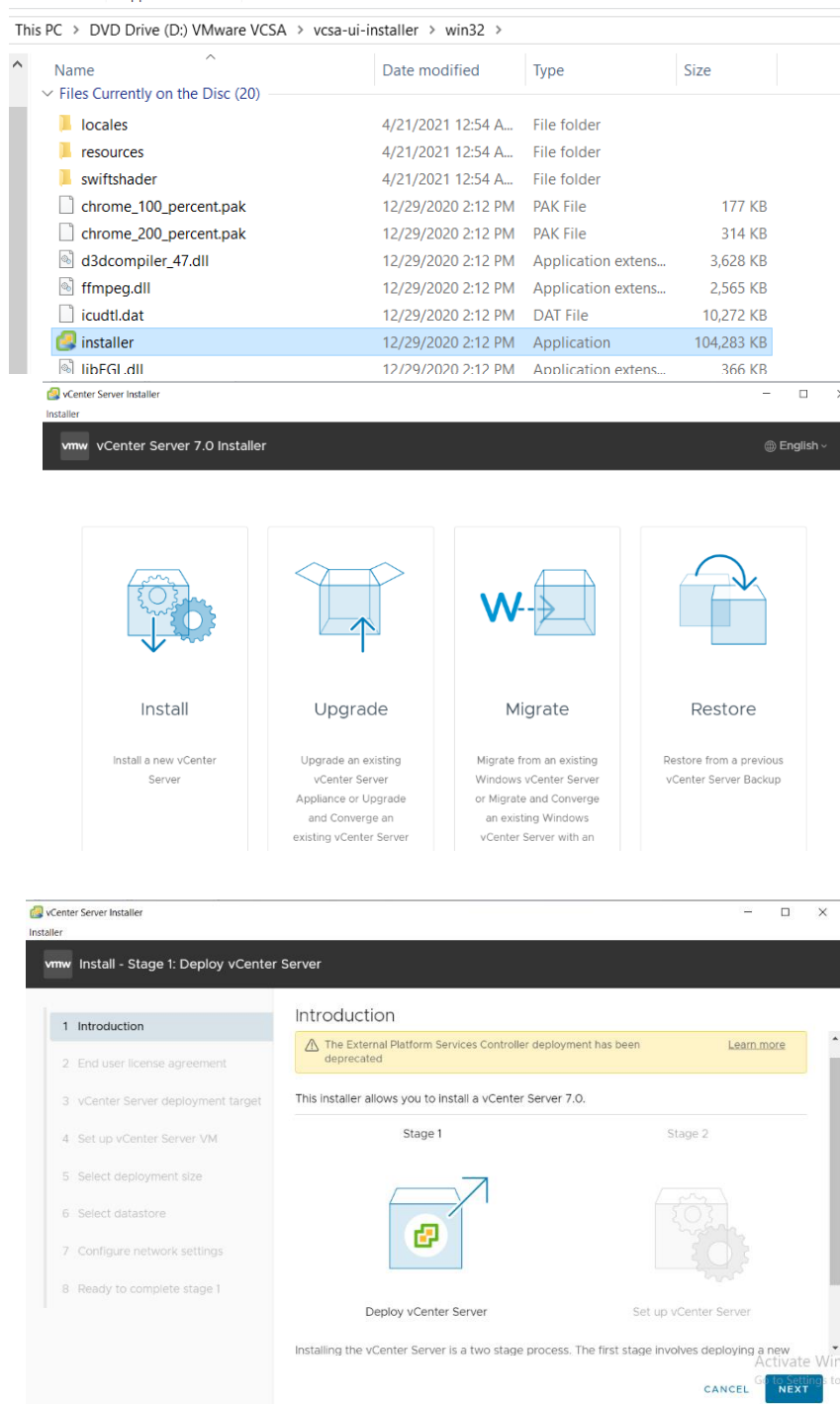
As shown up, managing VMs through ESXI only has limited options so we move on Vcenter to get more managing options like migrate and clone HA options.

VMware vSphere Install, Configure, Manage v7 | Quick Guide

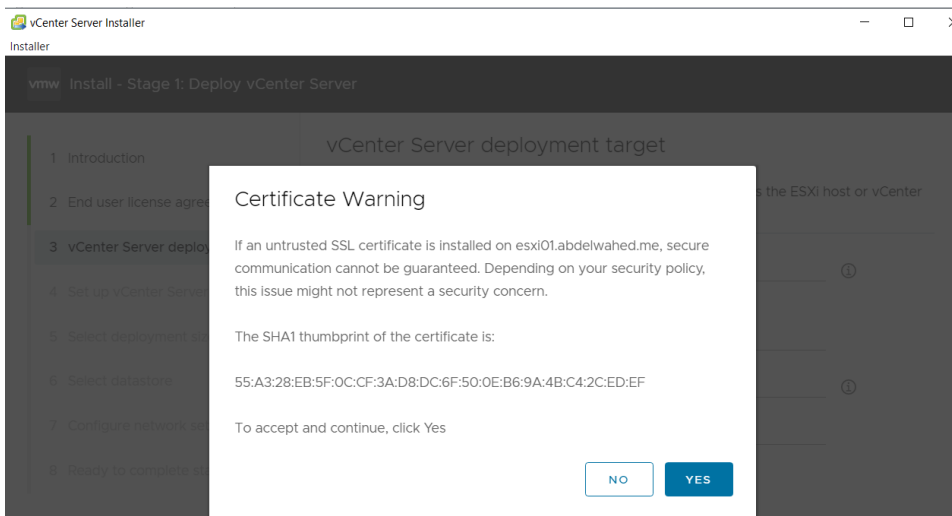
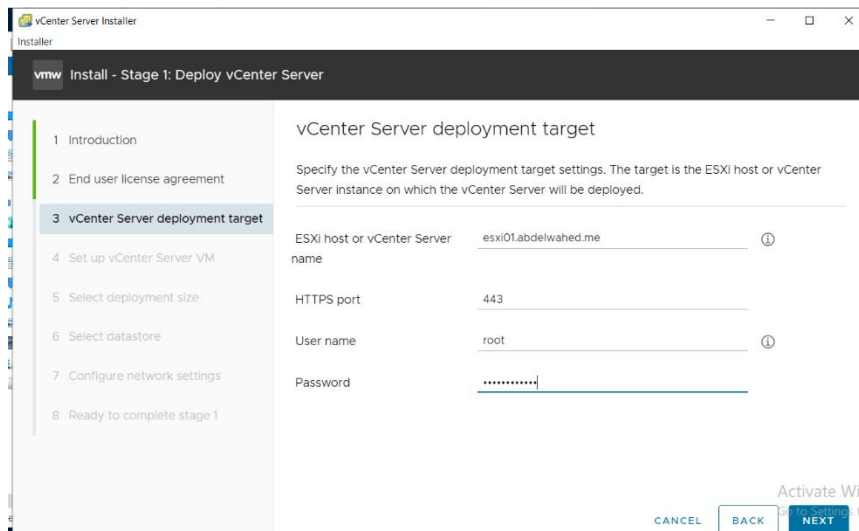
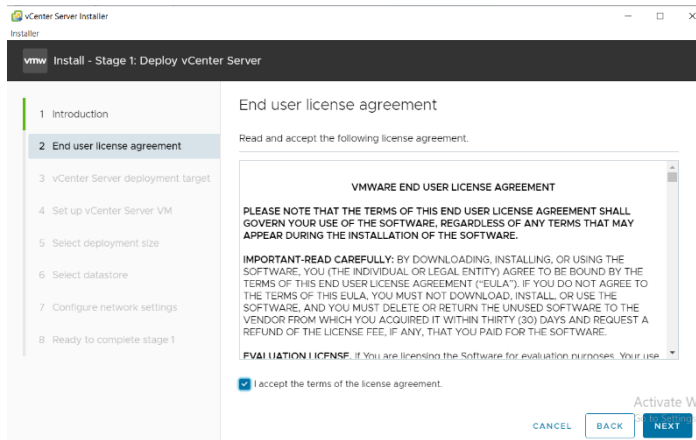
Deploy and configure vCenter

vCenter Deploy

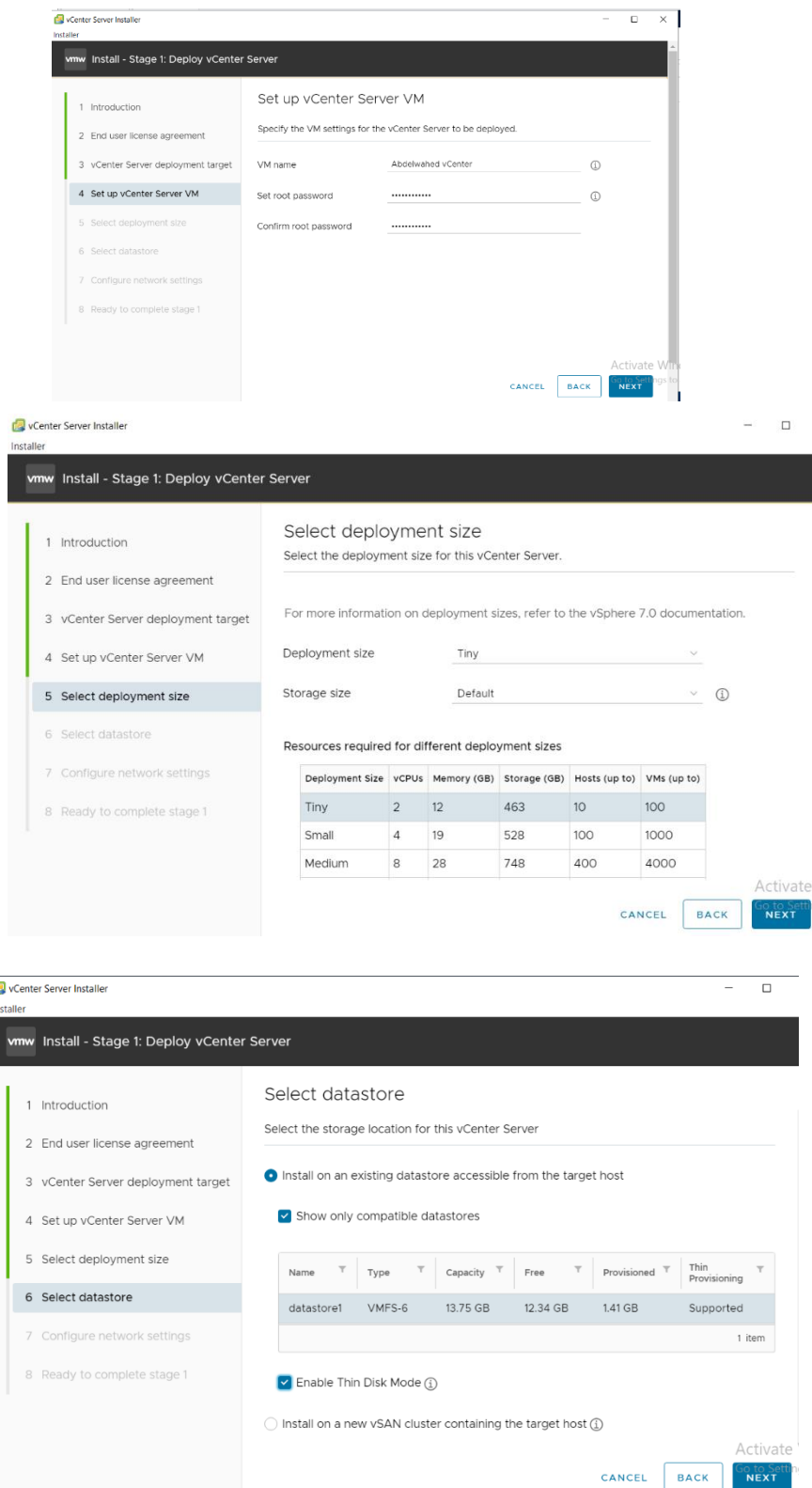
Insert VCA iso file in DC and run the installer



VMware vSphere Install, Configure, Manage v7 | Quick Guide



VMware vSphere Install, Configure, Manage v7 | Quick Guide



VMware vSphere Install, Configure, Manage v7 | Quick Guide

vCenter Server Installer
Installer

vmw 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	155.5 GB	154.09 GB	1.41 GB	Supported

1 item

Enable Thin Disk Mode ⓘ

Install on a new vSAN cluster containing the target host ⓘ

CANCEL BACK **Go to Setup** **Activate** **NEXT**

vCenter Server Installer
Installer

vmw 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

Configure network settings

Network	VM Network
IP version	IPv4
IP assignment	static
FQDN	Vcenter01.abdelwahed.me
IP address	200.200.200.222
Subnet mask or prefix length	255.255.255.0
Default gateway	200.200.200.100
DNS servers	200.200.200.200

Activate Windows
Go to Settings to activate Windows. CANCEL BACK **Activate** **NEXT**

vCenter Server Installer
Installer

vmw Install - Stage 1: Deploy vCenter Server

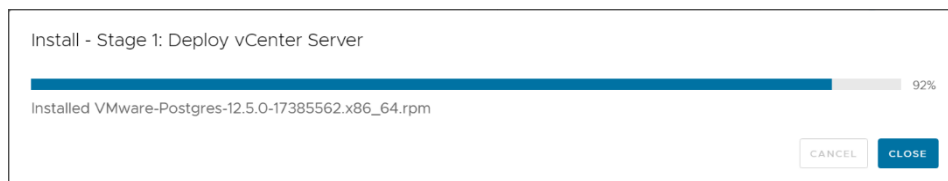
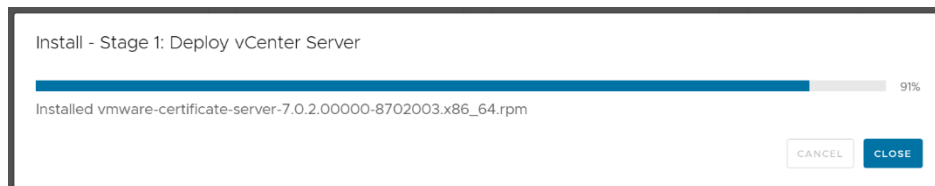
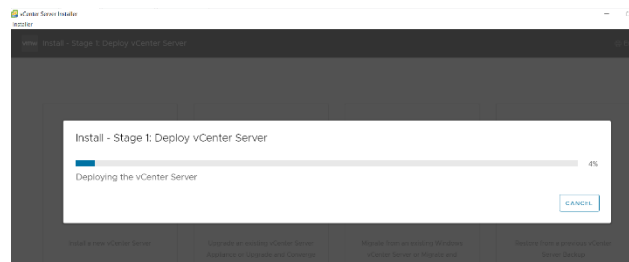
- 1 Introduction
- 2 End user license agreement
- 3 vCenter Server deployment target
- 4 Set up vCenter Server VM
- 5 Select deployment size
- 6 Select datastore
- 7 Configure network settings
- 8 Ready to complete stage 1**

Ready to complete stage 1

Storage size	Default
Datastore Details	
Datastore , Disk mode	datastore1 , thin
Network Details	
Network	VM Network
IP settings	IPv4 , static
IP address	200.200.200.222
Host name	Vcenter01.abdelwahed.me
Subnet mask or prefix length	255.255.255.0
Default gateway	200.200.200.100
DNS servers	200.200.200.200

Activate Windows
Go to Settings to activate Windows. CANCEL BACK **Activate** **FINISH**

VMware vSphere Install, Configure, Manage v7 | Quick Guide

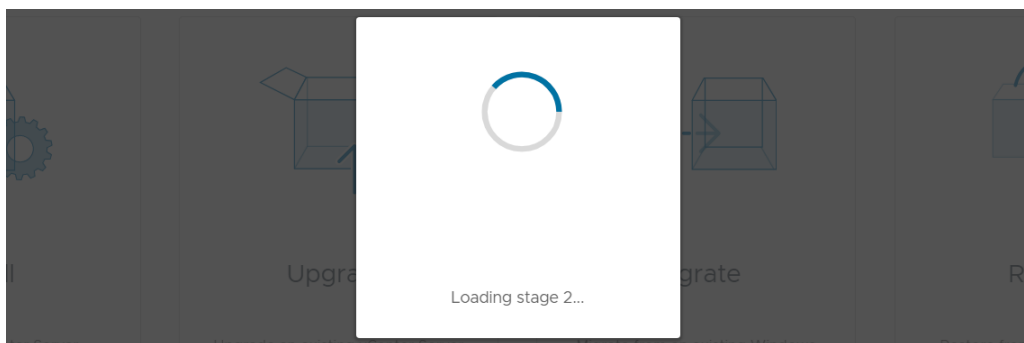


Install - Stage 1: Deploy vCenter Server

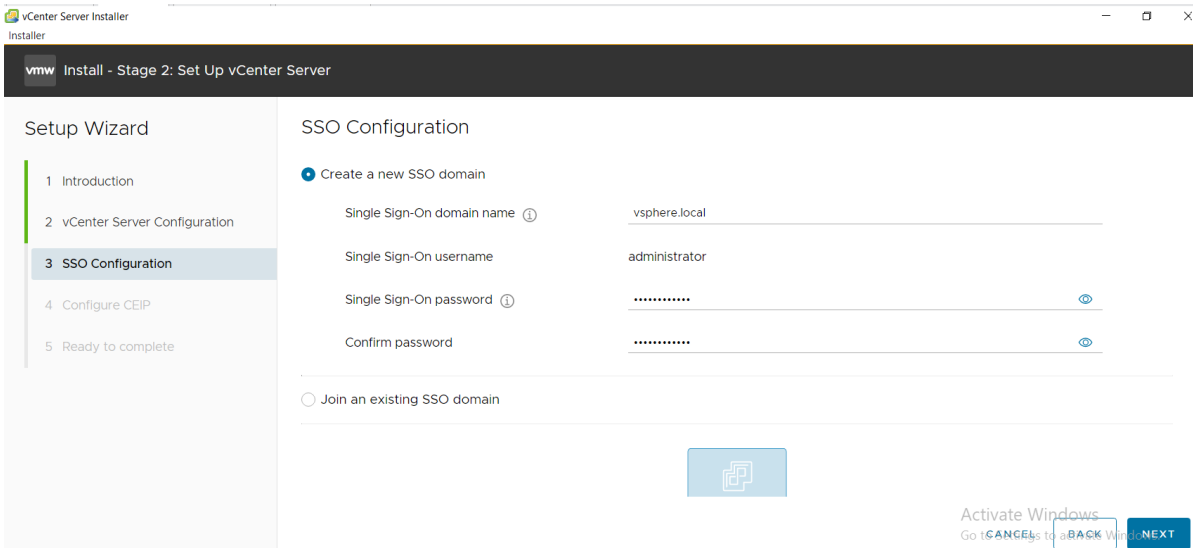
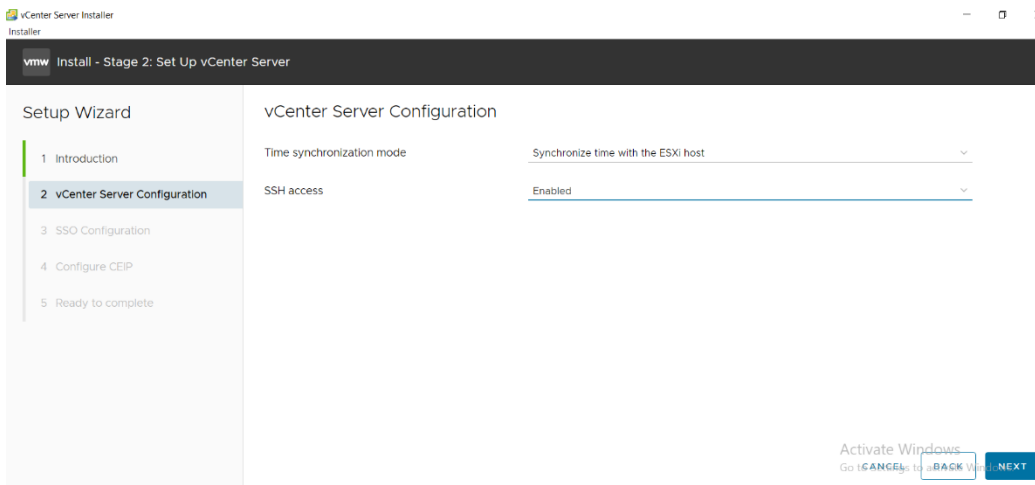
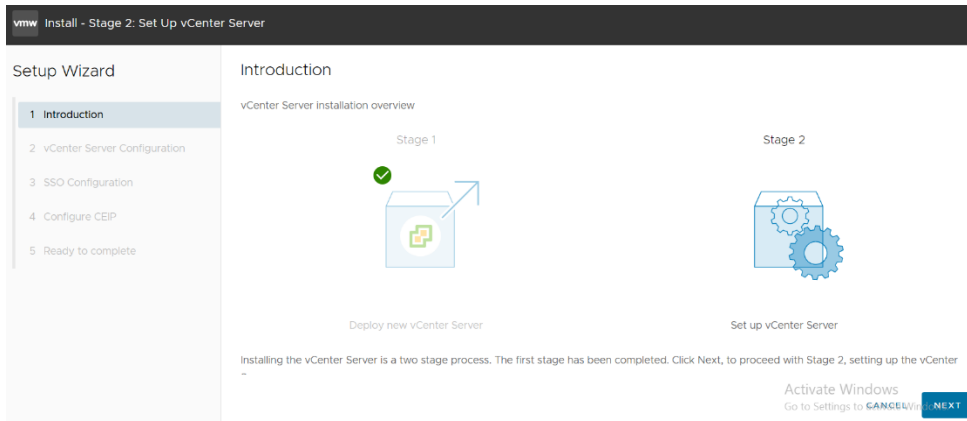
④ You have successfully deployed the vCenter Server.

To proceed with stage 2 of the deployment process, vCenter Server setup, click Continue.

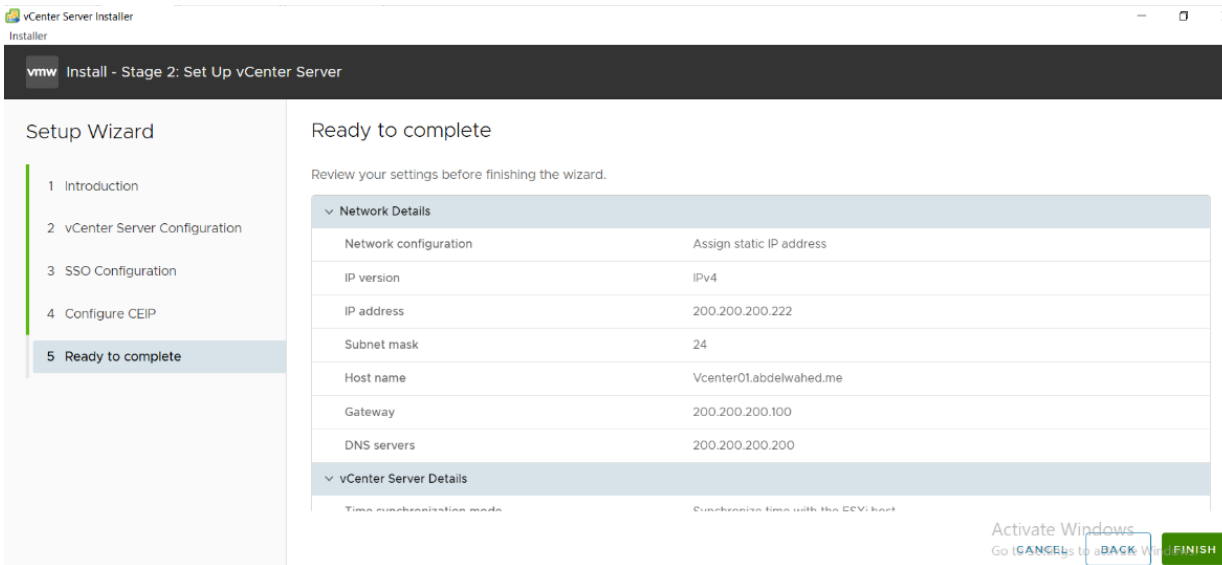
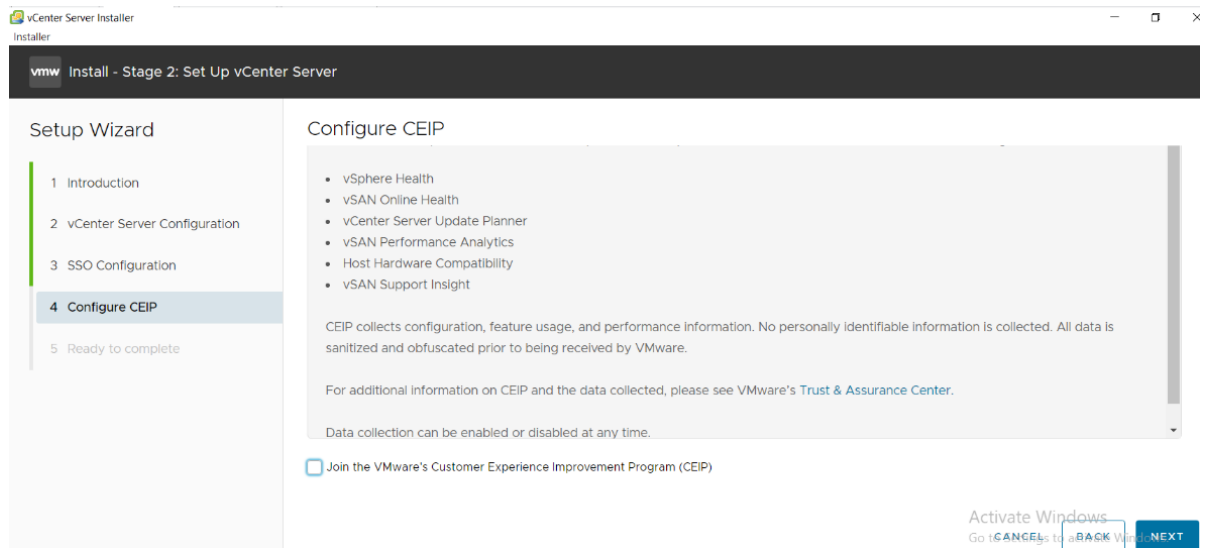
If you exit, you can continue with the vCenter Server setup at any time by logging in to the vCenter Server Management Interface <https://200.200.200.222:5480/>




VMware vSphere Install, Configure, Manage v7 | Quick Guide



VMware vSphere Install, Configure, Manage v7 | Quick Guide



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.

VMware vSphere Install, Configure, Manage v7 | Quick Guide

Install - Stage 2: vCenter Server setup is in progress



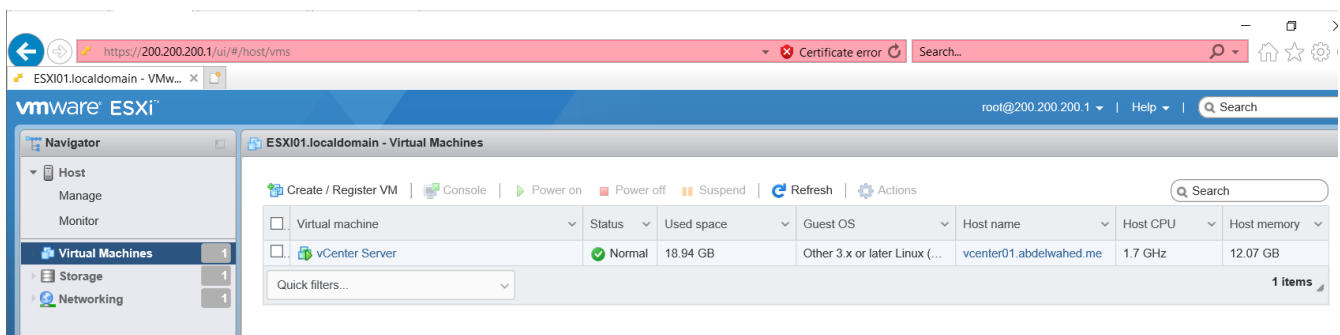
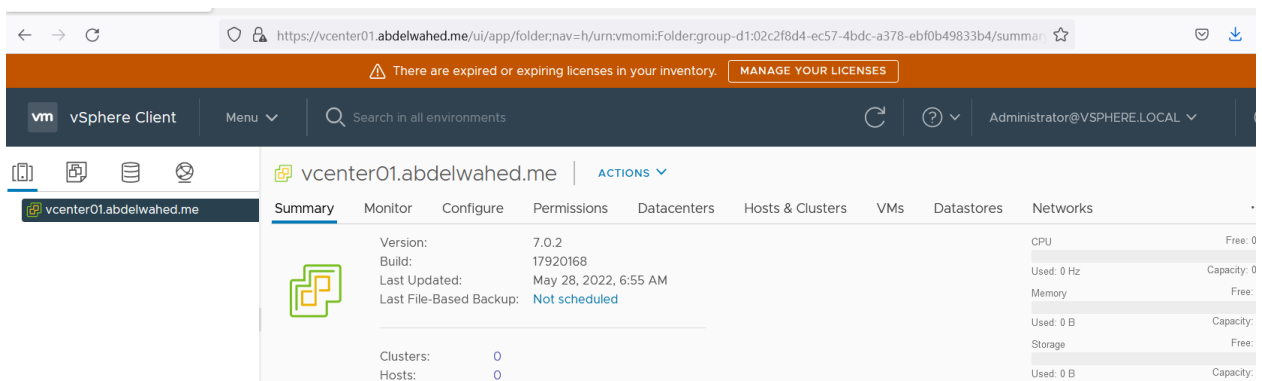
Install - Stage 2: Complete

✔ You have successfully setup this vCenter Server.

vCenter Server setup has been completed successfully. Click on the link below to get started. Press close to exit.

vCenter Server Getting Started Page : <https://vcenter01.abdelwahed.me:443>

CLOSE

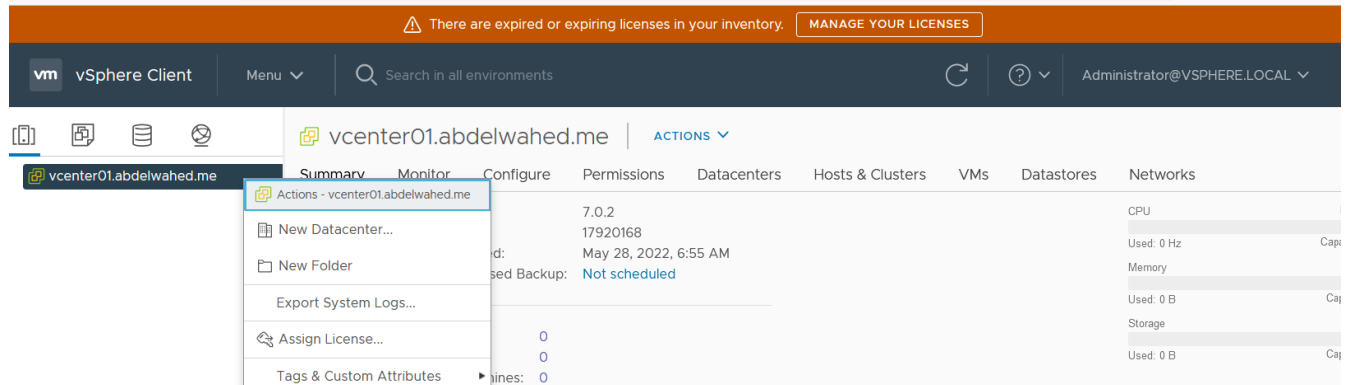


Troubleshooting tips: to start Vcenter installations, first you must add vCenter A and PTR record in DNS.

VMware vSphere Install, Configure, Manage v7 | Quick Guide

Add ESXi Servers to vCenter

I will add these servers in a datacenter, later inside 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.

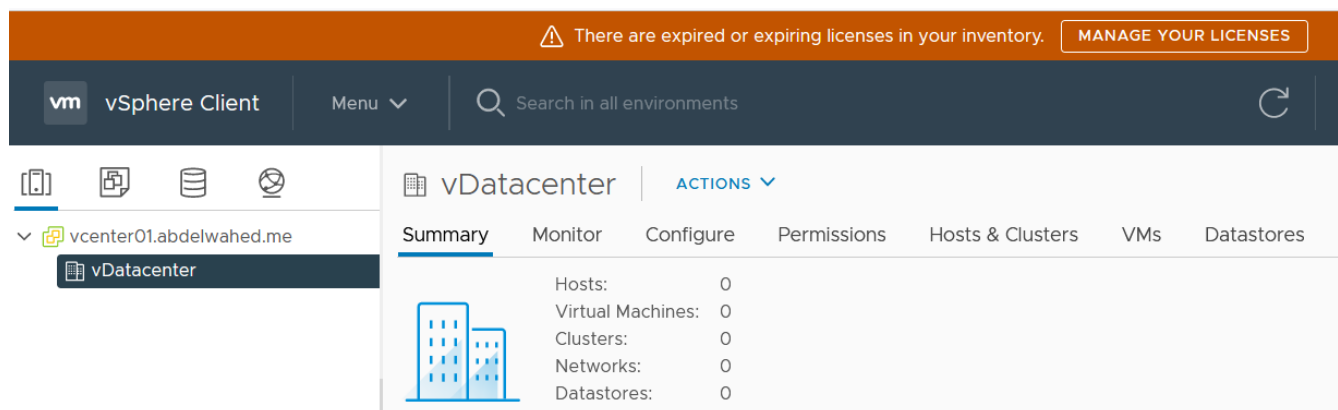


New Datacenter



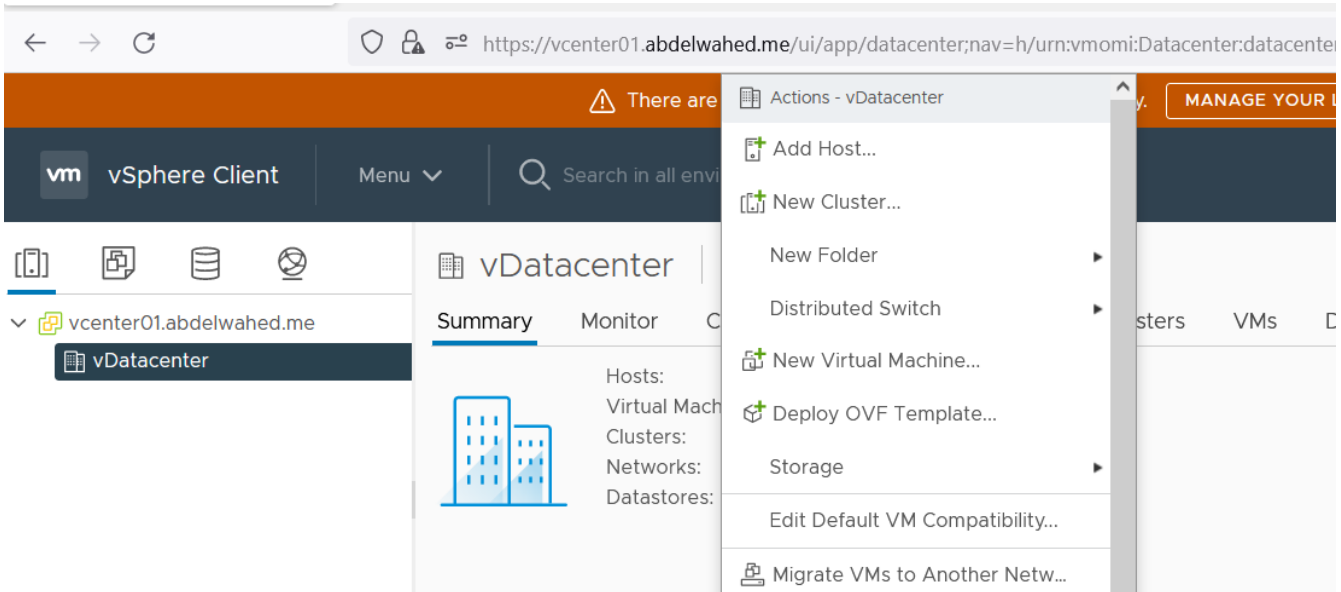
Name:

Location:



VMware vSphere Install, Configure, Manage v7 | Quick Guide

Now you can add ESXi hosts



Note, check new folder options

Add Host

1 Name and location	Name and location
2 Connection settings	Enter the name or IP address of the host to add to vCenter Server.
3 Host summary	
4 Assign license	
5 Lockdown mode	
6 VM location	
7 Ready to complete	

Host name or IP address:	esxi01
Location:	vDatacenter

1 Name and location	Connection settings
2 Connection settings	Enter the host connection details
3 Host summary	
4 Assign license	
5 Lockdown mode	
6 VM location	
7 Ready to complete	

User name:	root
Password:

VMware vSphere Install, Configure, Manage v7 | Quick Guide

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

VMware vSphere Install, Configure, Manage v7 | Quick Guide

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

Ready to complete

Click Finish to add the host

Name	esxi01.abdelwahed.me
Location	vDatacenter
Version	VMware ESXi 7.0.2 build-17867351
License	Evaluation License
Networks	VM Network
Datastores	datastore1
Lockdown mode	Disabled
VM location	vDatacenter

CANCEL

BACK

FINISH

The screenshot shows the vSphere Client interface. At the top, there is a warning banner: "There are expired or expiring licenses in your inventory. MANAGE YOUR LICENSES". Below the navigation bar, the left sidebar shows a tree view with "vcenter01.abdelwahed.me" expanded to "vDatacenter" and "esxi01.abdelwahed.me" selected. The main pane displays the "Summary" tab for the host. The host details are as follows:

Hypervisor:	VMware ESXi, 7.0.2, 17867351	CPU	Free: 5.62 GHz
Model:	VMware7,1	Used: 0 Hz	Capacity: 5.62 GHz
Processor Type:	Intel(R) Xeon(R) E-2276M CPU @ 2.80GHz	Memory	Free: 16 GB
Logical Processors:	2	Used: 0 B	Capacity: 16 GB
NICs:	1	Storage	Free: 118.23 GB
Virtual Machines:	1	Used: 37.27 GB	Capacity: 155.5 GB
State:	Connected		
Uptime:	0 second		

Do the same to ESXi02 to add it to our datacenter

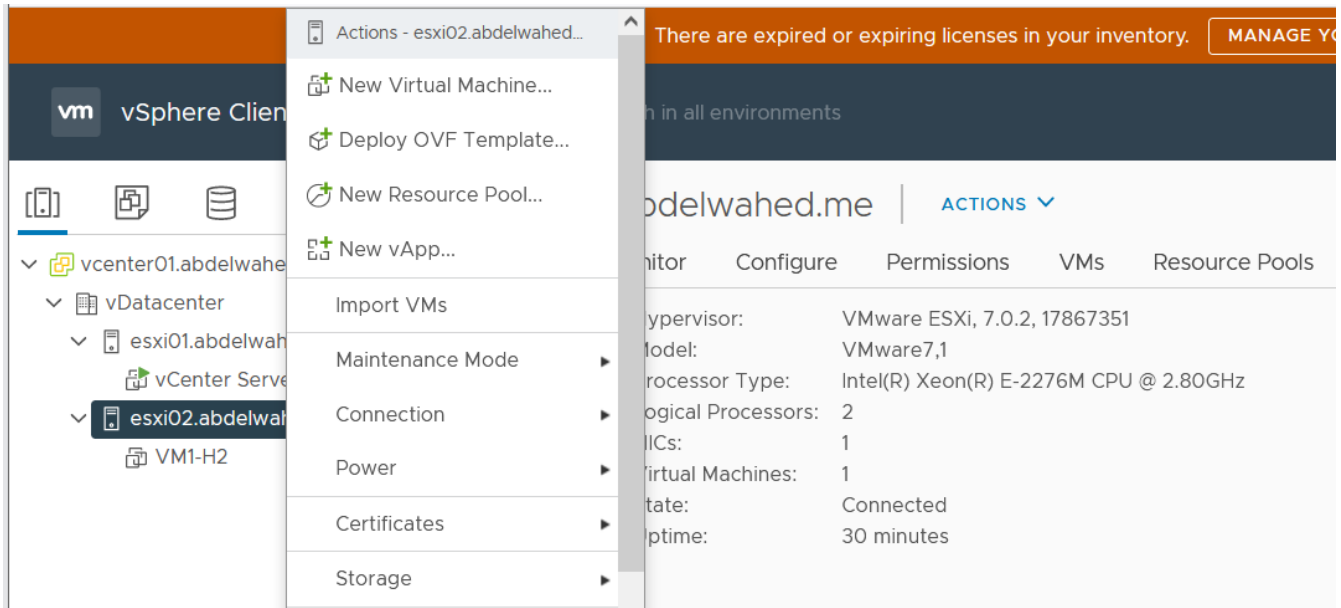
The screenshot shows the vSphere Client interface for host esxi02.abdelwahed.me. The left sidebar shows "esxi02.abdelwahed.me" selected under "vDatacenter". The main pane displays the "Summary" tab for the host. The host details are as follows:

Hypervisor:	VMware ESXi, 7.0.2, 17867351	CPU	Free: 1.79 GHz
Model:	VMware7,1	Used: 3.83 GHz	Capacity: 5.62 GHz
Processor Type:	Intel(R) Xeon(R) E-2276M CPU @ 2.80GHz	Memory	Free: 4.39 GB
Logical Processors:	2	Used: 3.5 GB	Capacity: 7.9 GB
NICs:	1	Storage	Free: 334.48 GB
Virtual Machines:	1	Used: 20.77 GB	Capacity: 355.25 GB
State:	Connected		
Uptime:	7 hours		

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 creation type

How would you like to create a virtual machine?

- Create a new virtual machine
- Deploy from template
- Clone an existing virtual machine
- Clone virtual machine to template
- Clone template to template
- Convert template to virtual machine

This option guides you through creating a new virtual machine. You will be able to customize processors, memory, network connections, and storage. You will need to install a guest operating system after creation.

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 name and folder

Specify a unique name and target location

Virtual machine name:

Select a location for the virtual machine.

- vcenter01.abdelwahed.me
 - vDatacenter

VMware vSphere Install, Configure, Manage v7 | Quick Guide

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.

VMware vSphere Install, Configure, Manage v7 | Quick Guide

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 ▾		<input checked="" type="checkbox"/> Connect...
> New CD/DVD Drive *	Client Device ▾		<input type="checkbox"/> Connect...
> New USB Controller	Client Device Host Device Datastore ISO File Content Library ISO File		
> Video card *	Not Configured		
> Security Devices			

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 ▾		<input checked="" type="checkbox"/> Connect...
> New CD/DVD Drive *	Datastore ISO File ▾		<input type="checkbox"/> Connect...
> New USB Controller	USB 3.1 ▾		
> Video card *	Specify custom settings ▾		
> Security Devices	Not Configured		

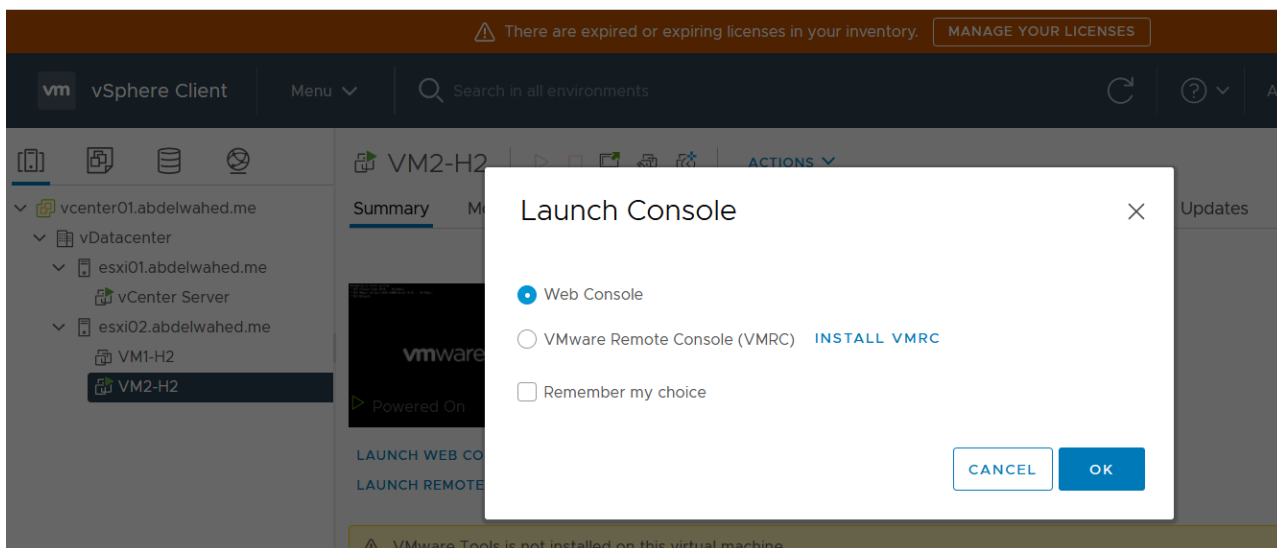
VMware vSphere Install, Configure, Manage v7 | Quick Guide

New Virtual Machine

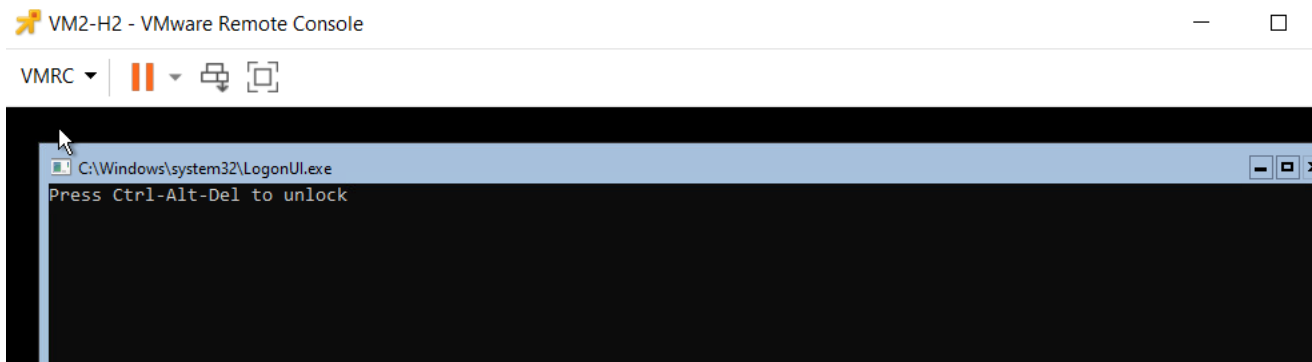
- ✓ 1 Select a creation type
- ✓ 2 Select a name and folder
- ✓ 3 Select a compute resource
- ✓ 4 Select storage
- ✓ 5 Select compatibility
- ✓ 6 Select a guest OS
- ✓ 7 Customize hardware
- 8 Ready to complete**

Ready to complete
Click Finish to start creation.

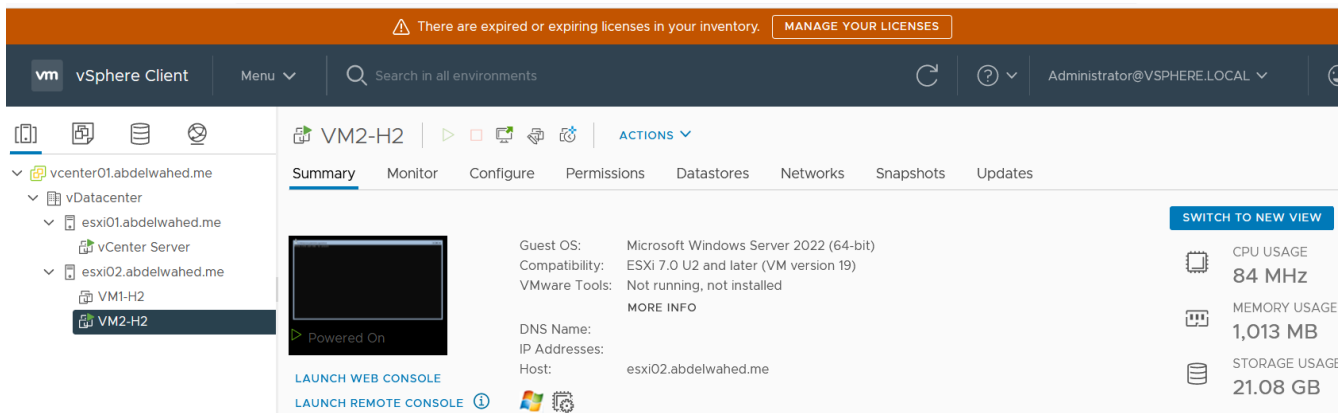
Virtual machine name	VM2-H2
Folder	vDatacenter
Host	esxi02.abdelwahed.me
Datastore	DBStore
Guest OS name	Microsoft Windows Server 2022 (64-bit)
Virtualization Based Security	Disabled



Server core 2022 now is installed.

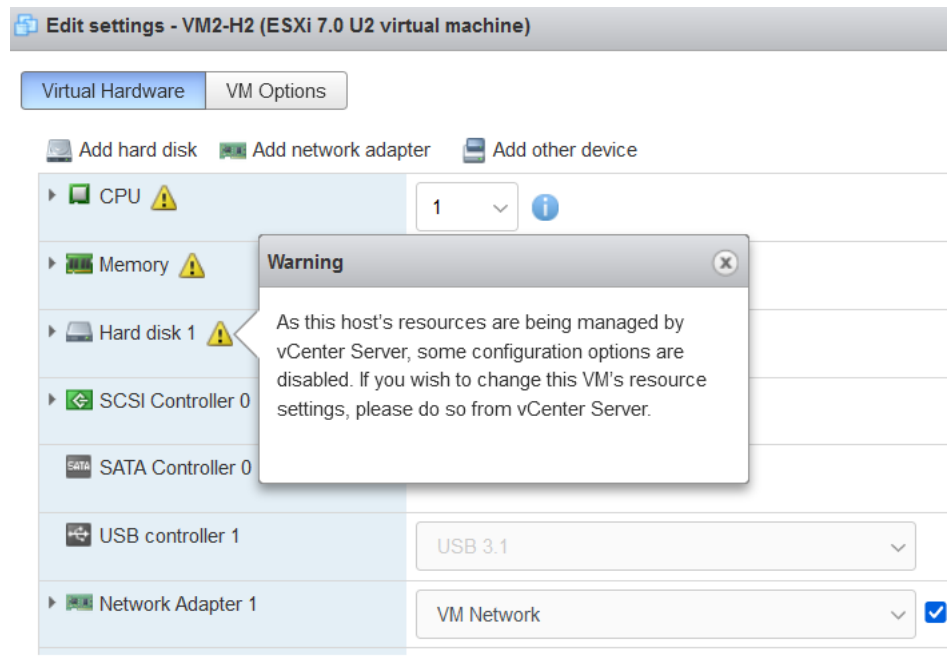
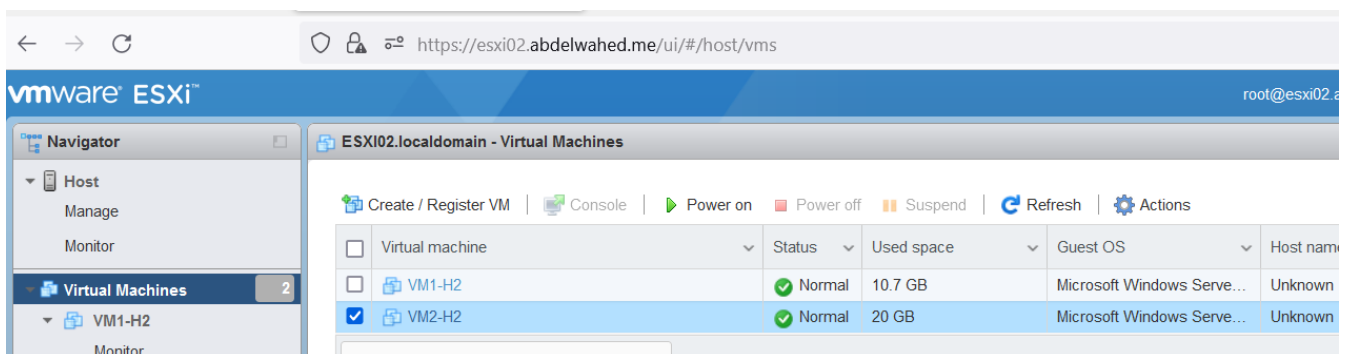


VMware vSphere Install, Configure, Manage v7 | Quick Guide



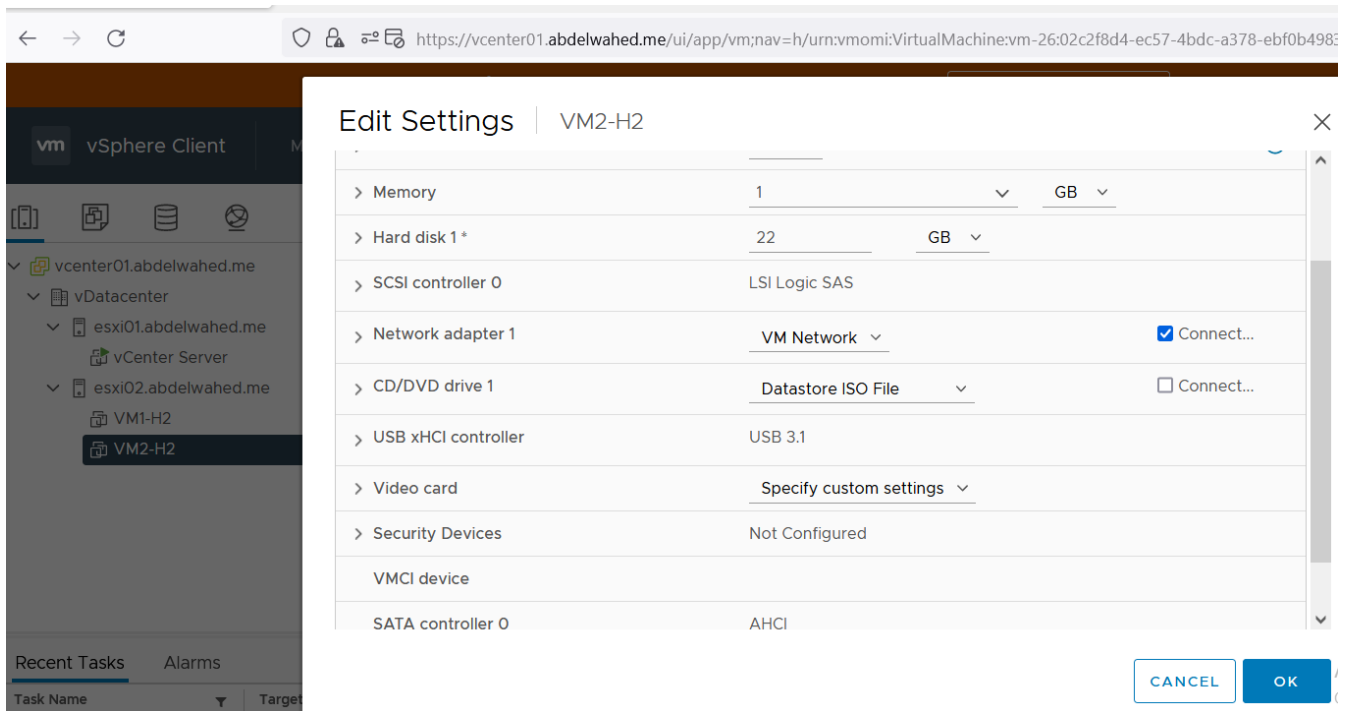
Edit VM Settings from vCenter

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

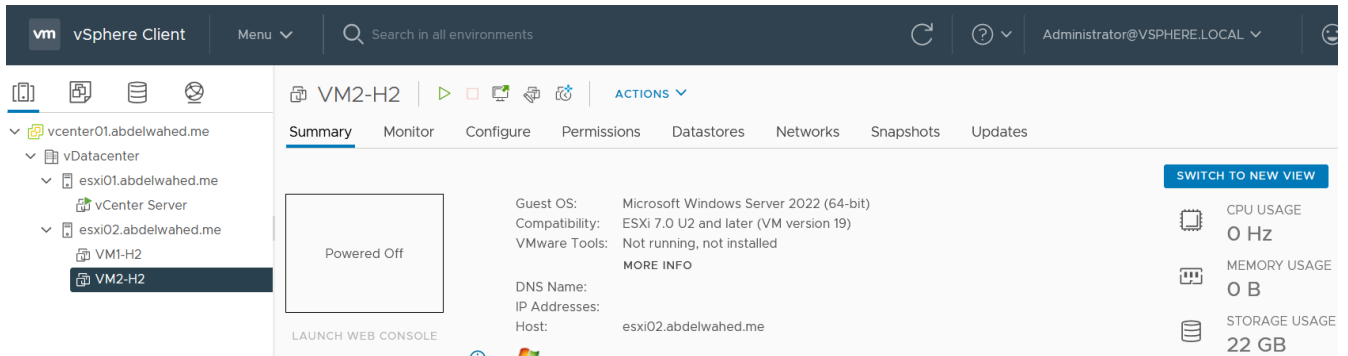


In this example, through vCenter we will extend VM HD from 20 to 22 GB

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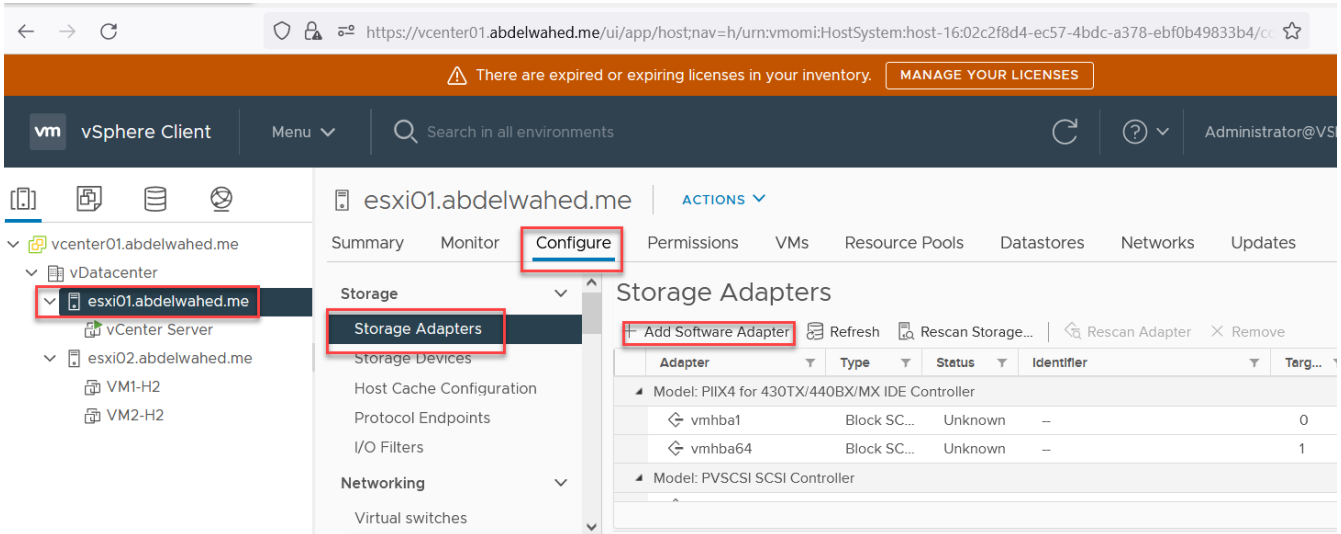
Now HD extended to 22GB



VMware vSphere Install, Configure, Manage v7 | Quick Guide

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 initiator)



Note: FCoE option for SAN storage

Add Software Adapter | esxi01.abdelwahed.me

Add software iSCSI adapter

A new software iSCSI adapter will be added to the list. After it has been added, select the adapter and use the Adapter Details section to complete the configuration.

Add software NVMe over RDMA adapter

Enable software NVMe adapter on the selected RDMA device.

Add Software FCoE Adapter

Discover software FCoE adapters associated with the following physical network adapter.

Physical Network Adapter: vmnic0

VLAN ID: 0 Range: 0 - 4094

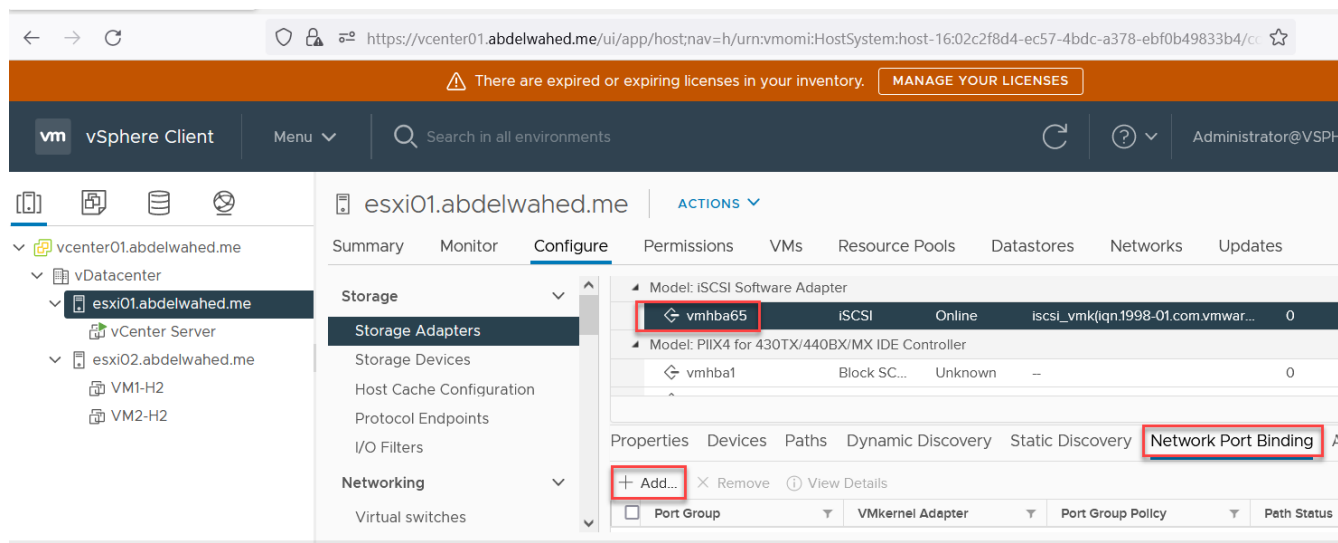
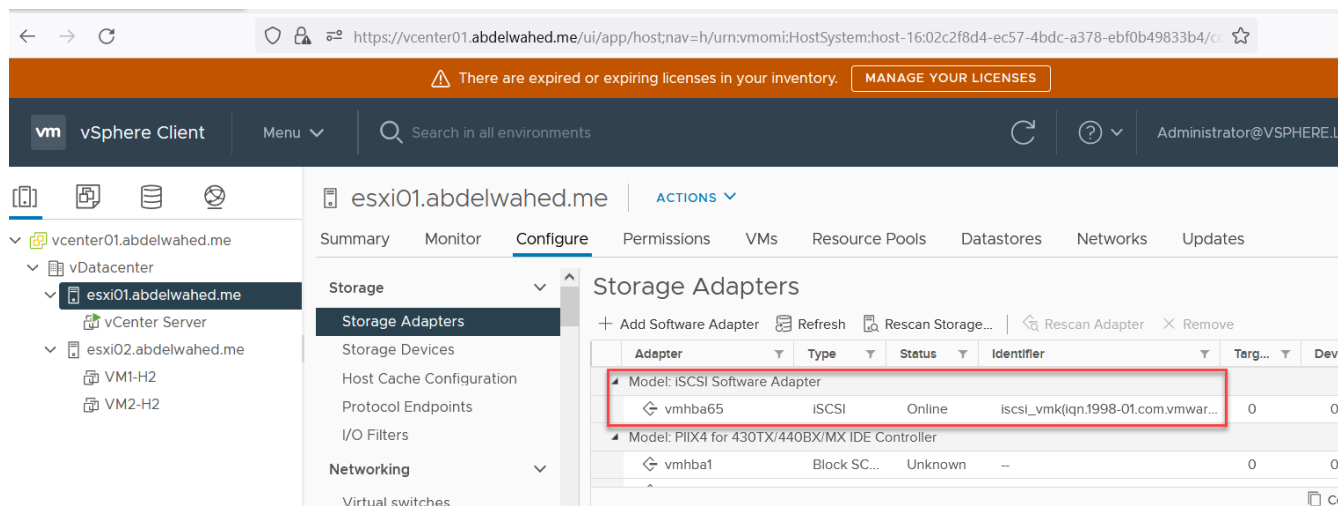
Priority Class: 3 Range: 0 - 7

Controller MAC Address: 00:0c:29:9c:85:7a

CANCEL

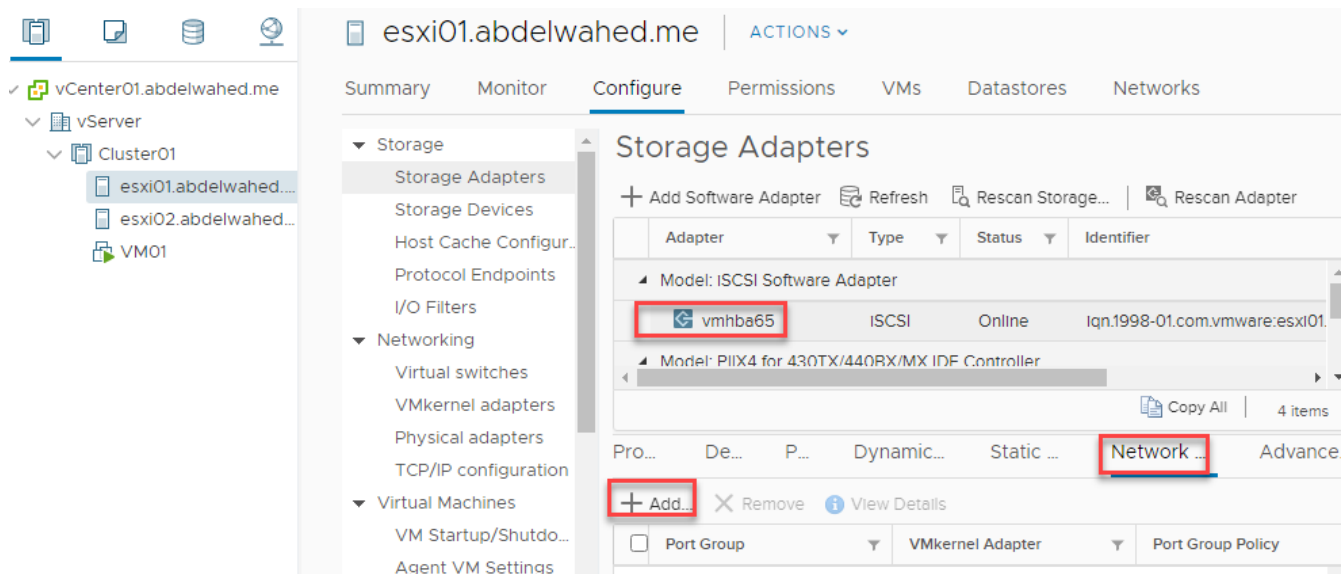
OK

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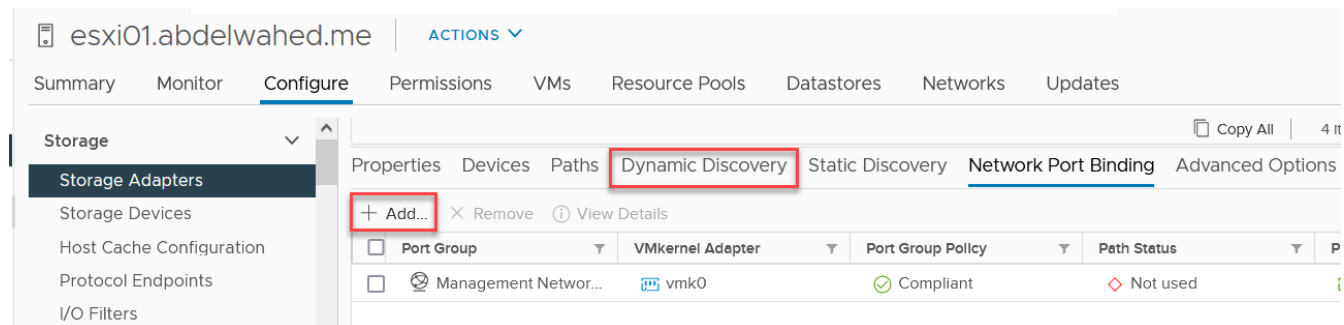
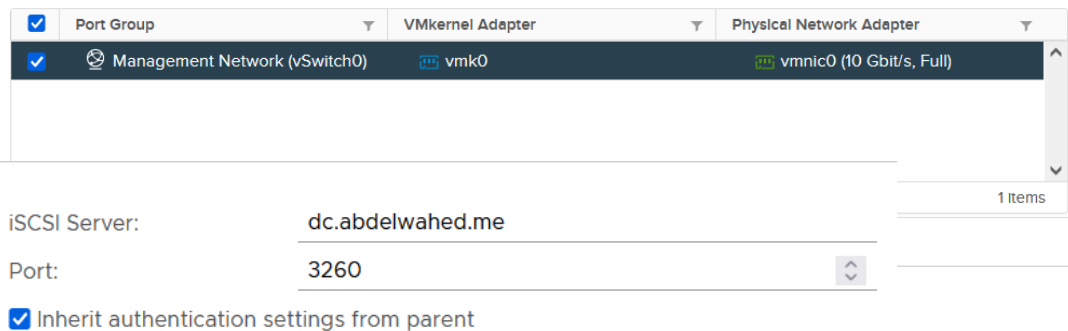
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Assign iSCSI software you added to network card

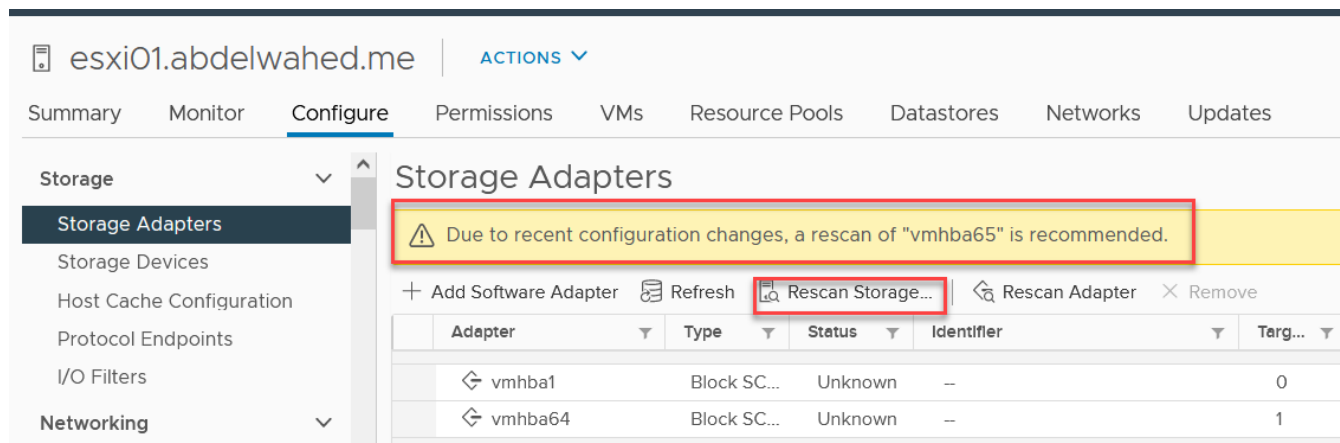
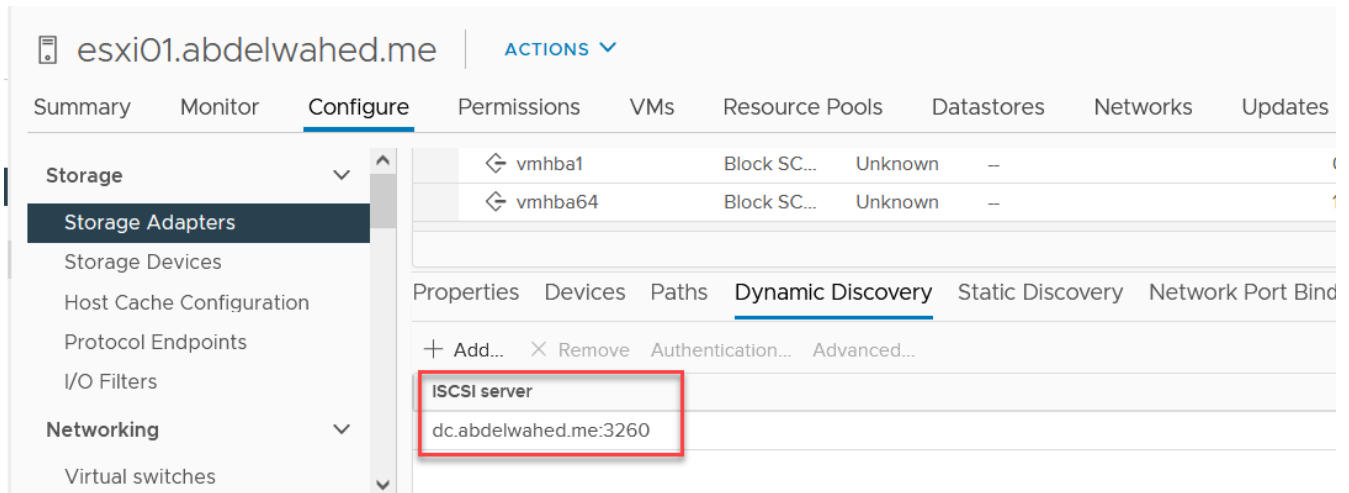


Bind vmhba65 with VMkernel Adapter | esxi01.abdelwahed.me

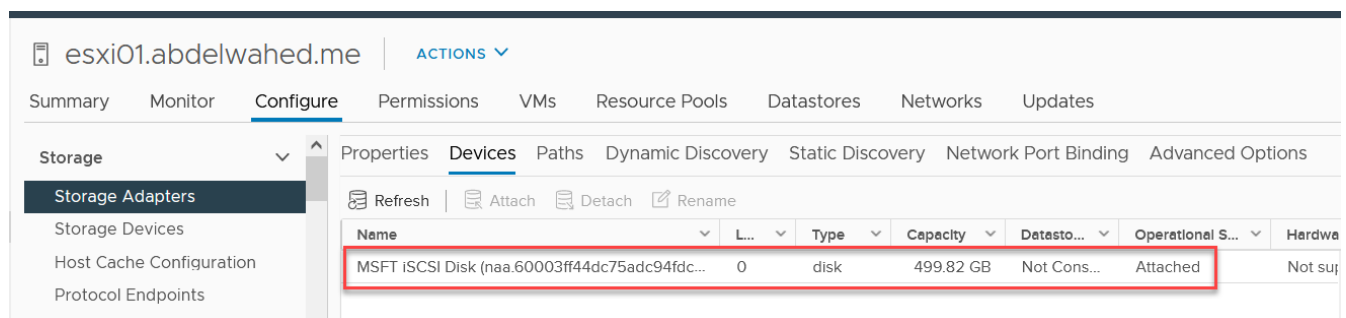
Only VMkernel adapters compatible with the iSCSI port binding requirements and available physical network adapters are listed.



VMware vSphere Install, Configure, Manage v7 | Quick Guide

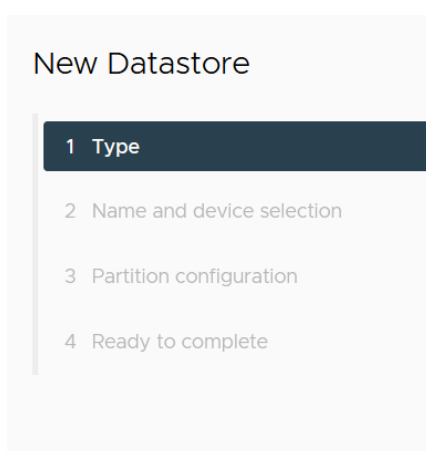
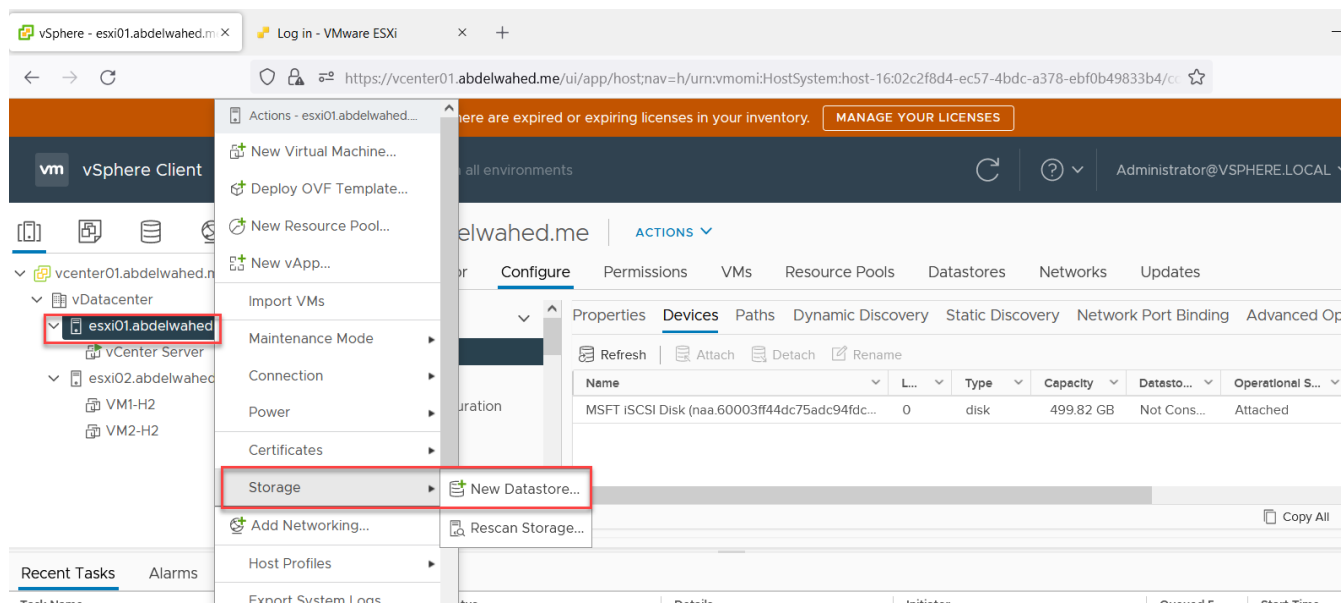


Now ISCSI Disk appears



Now you can add this disk as datastore

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Type

Specify datastore type.

VMFS

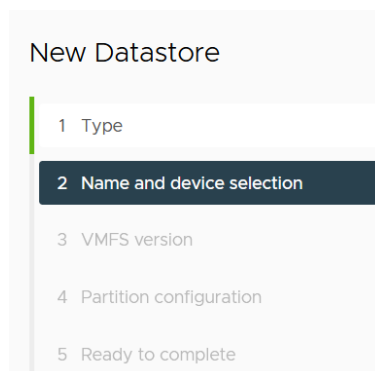
Create a VMFS datastore on a disk/LUN.

NFS

Create an NFS datastore on an NFS share over the network.

vVol

Create a Virtual Volumes datastore on a storage container connected to a storage provider.



Name and device selection

Specify datastore name and a disk/LUN for provisioning the datastore.

Name:

Name	LUN	Capacity	Hardware	Drive Typ	Sector Fo	Clust
<input checked="" type="radio"/> MSFT iSCSI Disk (naa.600...	0	499.82 GB	Not suppo...	HDD	512e	No

VMware vSphere Install, Configure, Manage v7 | Quick Guide

New Datastore

- 1 Type
- 2 Name and device selection
- 3 VMFS version**

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.

New Datastore

- 1 Type
- 2 Name and device selection
- 3 VMFS version
- 4 Partition configuration**
- 5 Ready to complete

Partition configuration

Review the disk layout and specify partition configuration details.

Partition Configuration	Use all available partitions	▼
Datastore Size	<input type="range"/>	499.1 GB
Block size	1 MB	▼
Space Reclamation Granularity	1 MB	▼
Space Reclamation Priority	Low	▼

New Datastore

- 1 Type
- 2 Name and device selection
- 3 VMFS version
- 4 Partition configuration
- 5 Ready to complete**

Ready to complete

Review your settings selections before finishing the wizard.

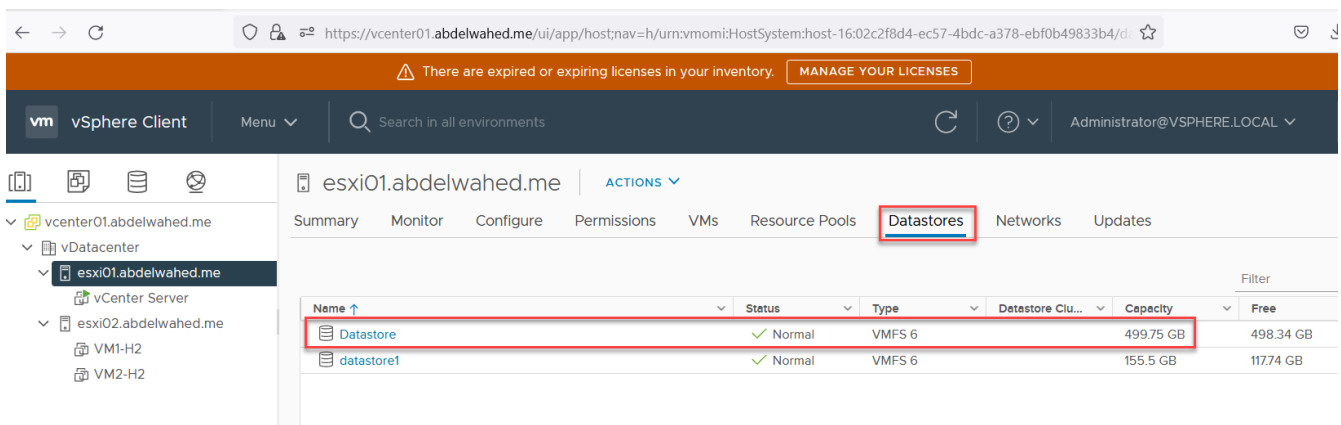
- ▼ General
 - Name: Datastore
 - Type: VMFS
 - Datastore size: 499.82 GB
- ▼ Device and Formatting
 - Disk/LUN: MSFT iSCSI Disk (naa.60003ff44dc75adc94fdc2b8b8c3c3e6)
 - Partition Format: GPT
 - VMFS Version: VMFS 6

CANCEL

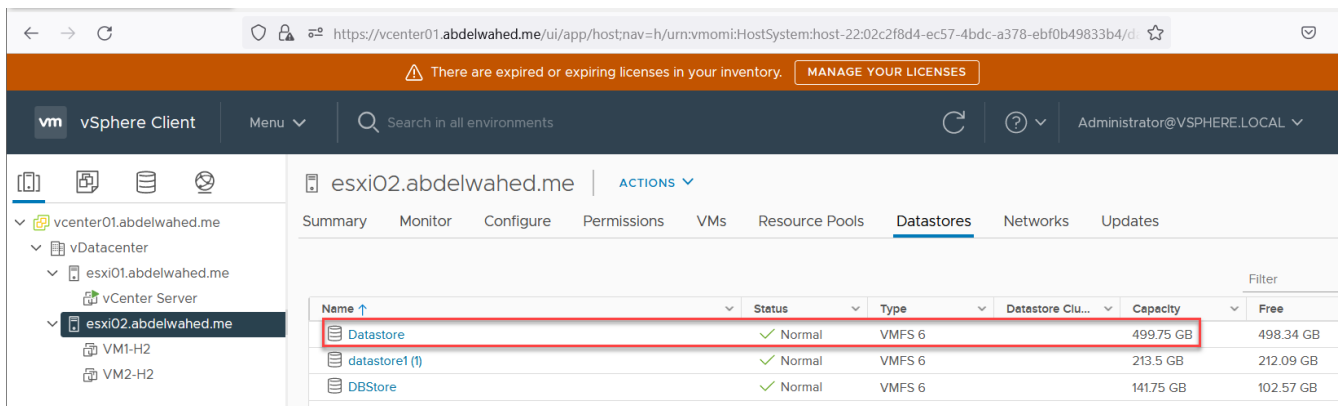
BACK

FINISH

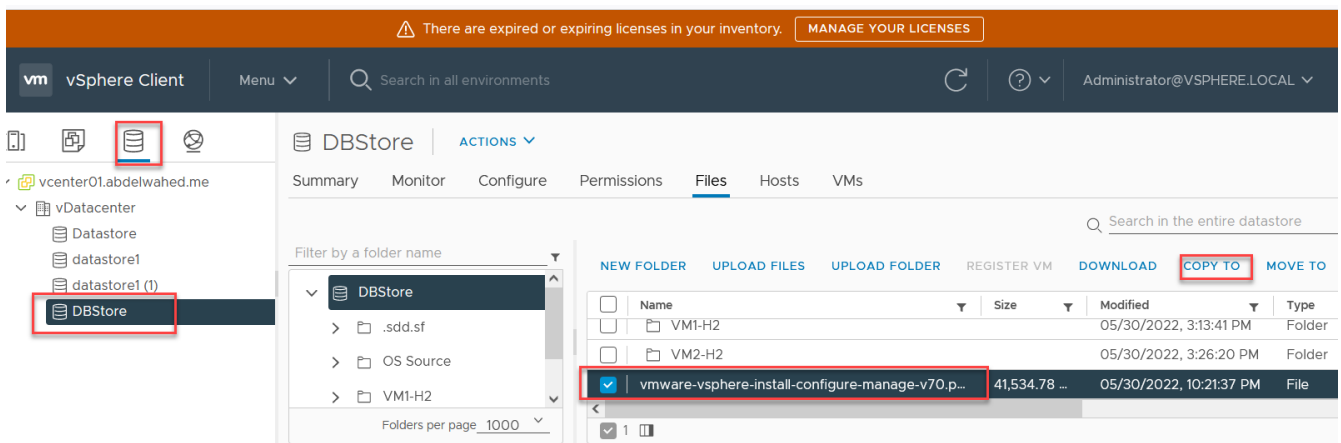
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now do the same for ESXi02 without adding new datastore we will connect it we just want to connect it



now add some files to the iscsi storage



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Select Destination

Name	Free Space
<input checked="" type="radio"/> Datastore	498.34 GB
<input type="radio"/> datastore1	117.74 GB
<input type="radio"/> datastore1 (1)	212.09 GB
<input type="radio"/> DBStore	102.57 GB

Filter by a folder name

- [-] Datastore
 - [>] .sdd.sf
 - [>] Test ISCSI

There are expired or expiring licenses in your inventory. [MANAGE YOUR LICENSES](#)

vm vSphere Client | Menu | Search in all environments | Administrator@VSPHERE.LOCAL

Datastore | ACTIONS

Summary | Monitor | Configure | Permissions | **Files** | Hosts | VMs

Filter by a folder name

- [-] Datastore
 - [>] .sdd.sf
 - [>] Test ISCSI

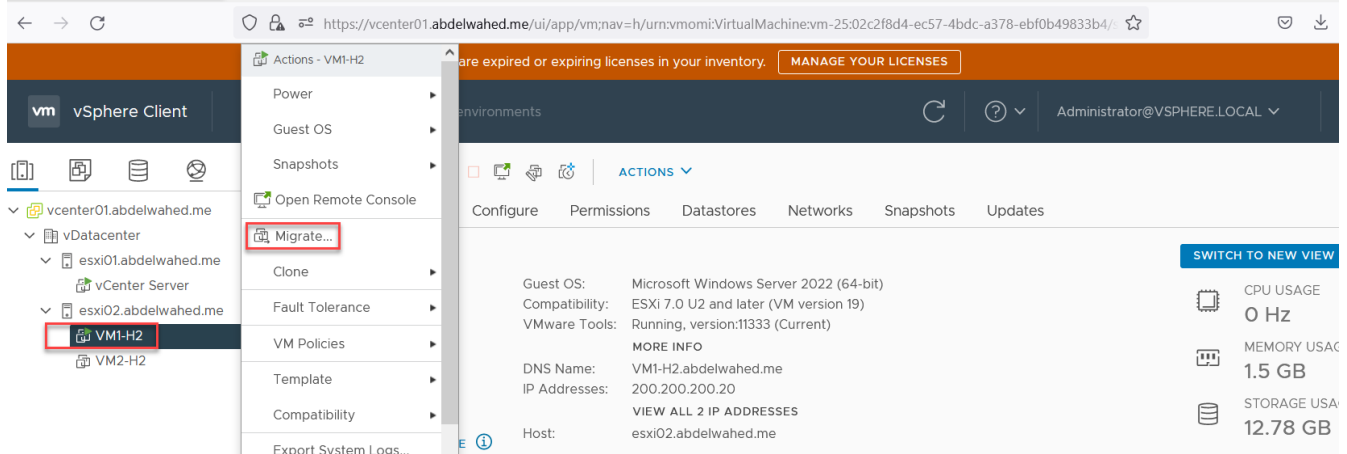
NEW FOLDER | UPLOAD FILES | UPLOAD FOLDER | REGISTER VM | DOWNLOAD | COPY TO | MOVE TO

Name	Size	Modified	Type
<input type="checkbox"/> .sdd.sf		05/30/2022, 10:00:43 P...	Folder
<input type="checkbox"/> Test ISCSI		05/30/2022, 10:13:08 PM	Folder
<input checked="" type="checkbox"/> vmware-vsphere-install-configure-manage-v70.p...	41,534.78 ...	05/30/2022, 10:24:58 PM	File

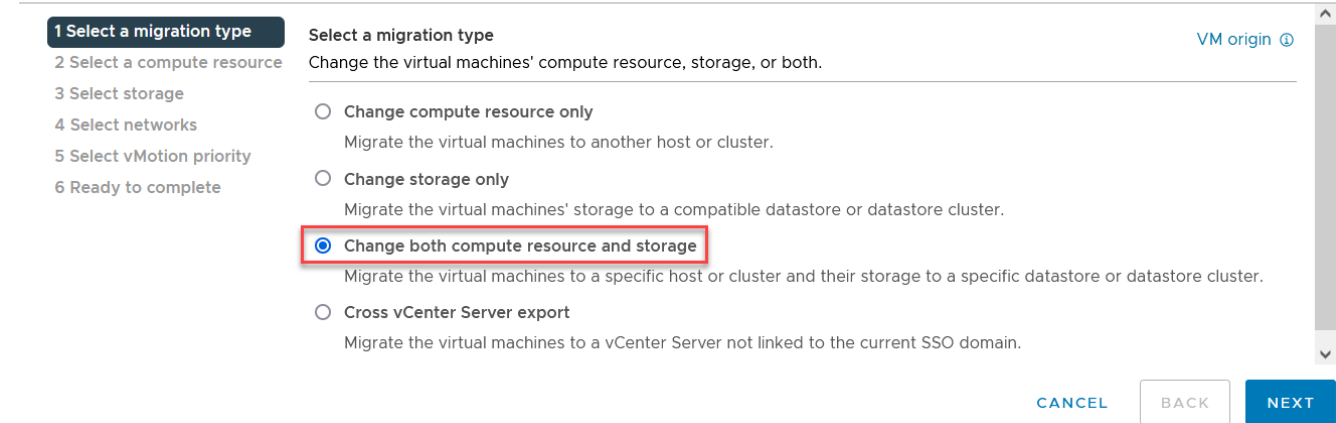
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Migrate VM to another the iscsi datastore

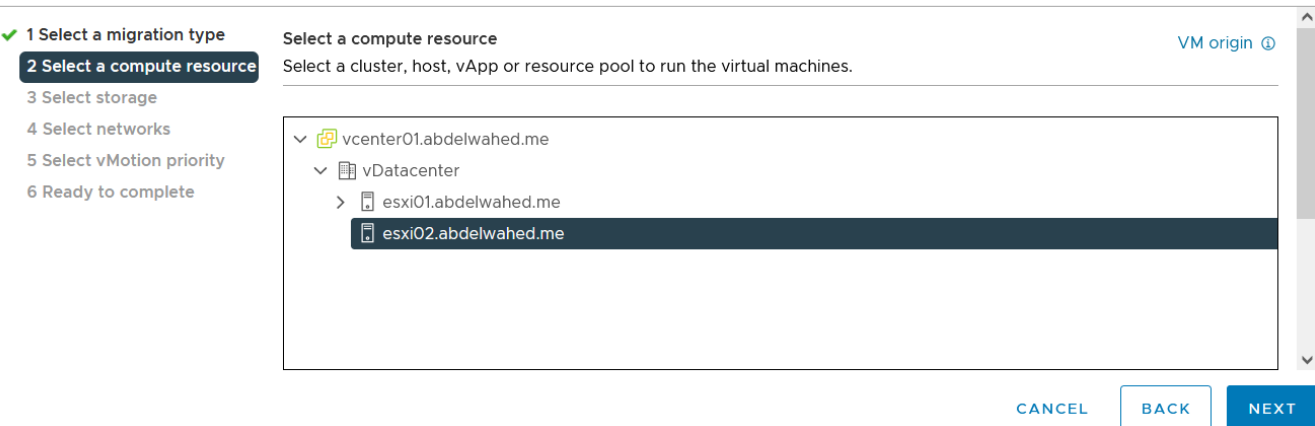
without enabled vMotion we can't move VMs during power on state only you can move while VM is turned off. Which is named **Cold Migration** while **Hot Migration** running with vSphere vMotion.



Migrate | VM1-H2



Migrate | VM1-H2



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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 VM origin ⓘ

Select the destination storage for the virtual machine migration.

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	Provision	Free	Type	Cluster
<input checked="" type="radio"/>	Datastore	--	499.75 GB	1.45 GB	498.3 GB	VMFS 6	
<input type="radio"/>	datastore1 ...	--	213.5 GB	1.41 GB	212.09 GB	VMFS 6	
<input type="radio"/>	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 VM origin ⓘ

Select destination networks for the virtual machine migration.

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 VM origin ⓘ

Protect the performance of your running virtual machines by prioritizing the allocation of CPU resources.

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**

VMware vSphere Install, Configure, Manage v7 | Quick Guide

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](#)

vm vSphere Client | Administrator@VSPHERE.LOCAL

VM1-H2 | Summary | Monitor | Configure | Permissions | Datastores | Networks | Snapshots | Updates

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

Task Name	Target	Status	Details	Initiator	Queued F	Start Time
Relocate virtual machine	VM1-H2	35%	Migrating Virtual Machine active s	VSPHERE.LOCAL\Administrator	28 ms	05/31/2022, 8:11:30 AM

There are expired or expiring licenses in your inventory. [MANAGE YOUR LICENSES](#)

vm vSphere Client | Administrator@VSPHERE.LOCAL

VM1-H2 | Summary | Monitor | Configure | Permissions | Datastores | Networks | Snapshots | Updates

Guest OS: Microsoft Windows Server 2022 (64-bit)
Compatibility: ESXi 7.0 U2 and later (VM version 19)
VMware Tools: Running, version:11333 (Current)

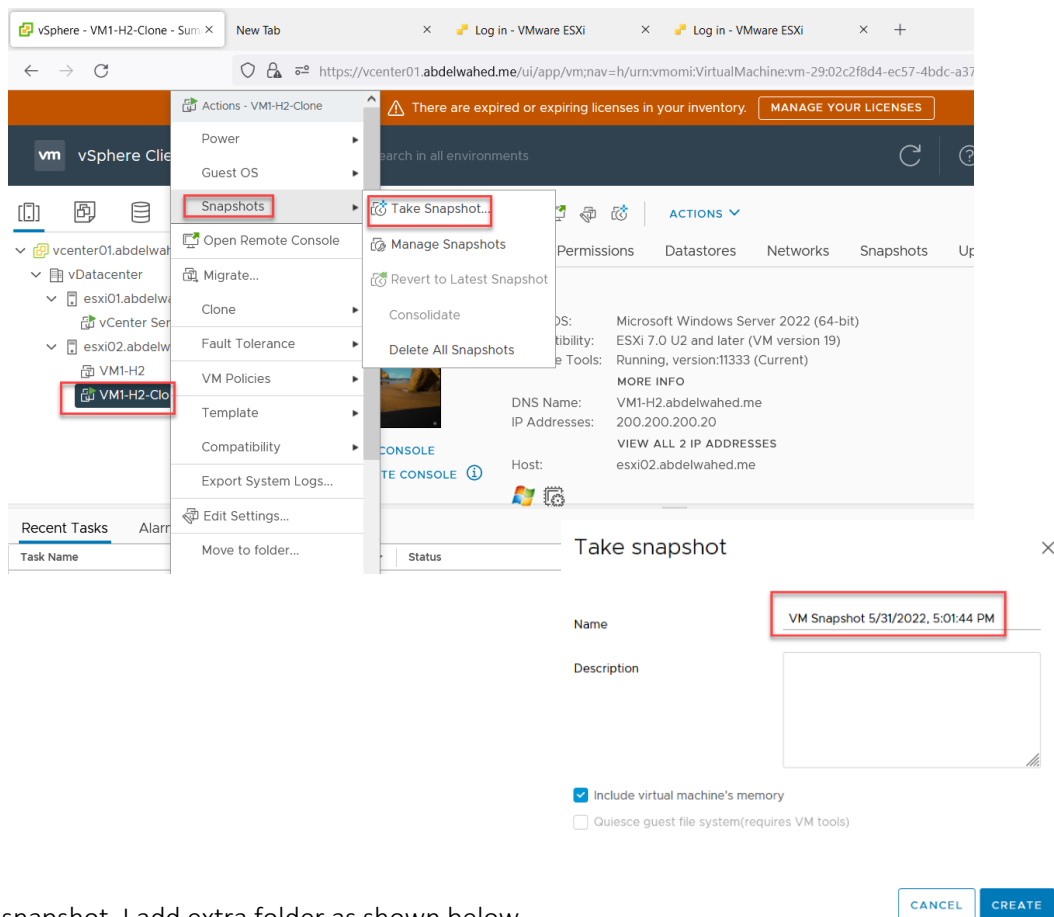
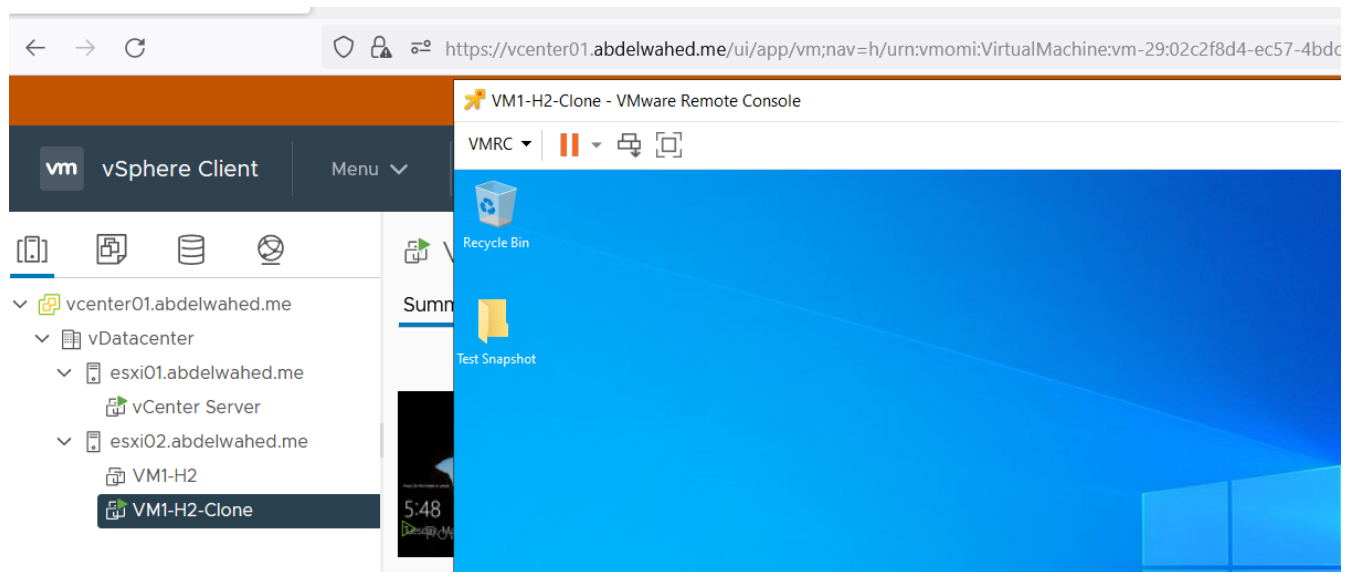
CPU USAGE: 168 MHz

Task Name	Target	Status	Details	Initiator	Queued F	Start Time
Relocate virtual machine	VM1-H2	Completed	Migrating Virtual Machine active s	VSPHERE.LOCAL\Administrator	28 ms	05/31/2022, 8:11:30 AM

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Working with Snapshot

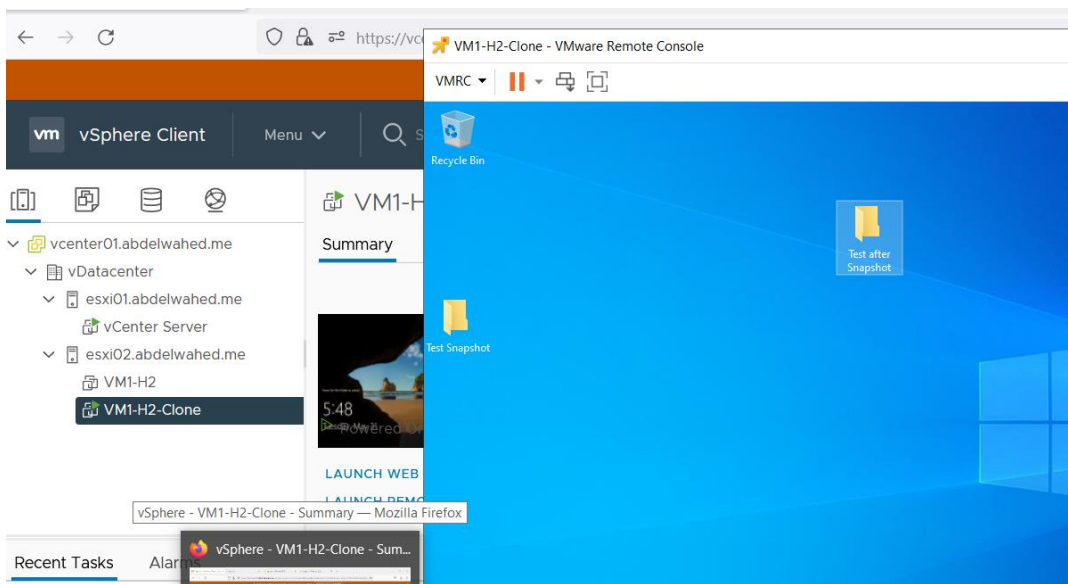
i have one VM include test snapshot folder saved on desktop



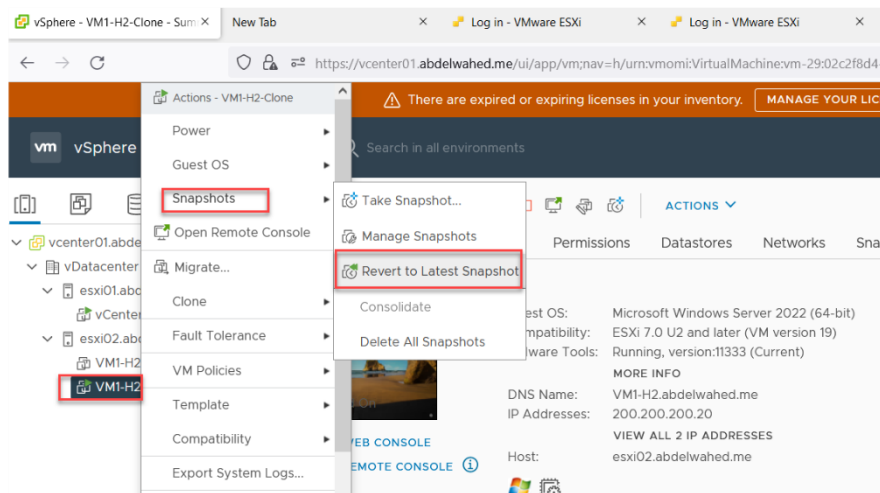
After I take snapshot, I add extra folder as shown below

www.abdelwahed.me

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Now I will revert that VM and see the changes



Revert to latest snapshot ×

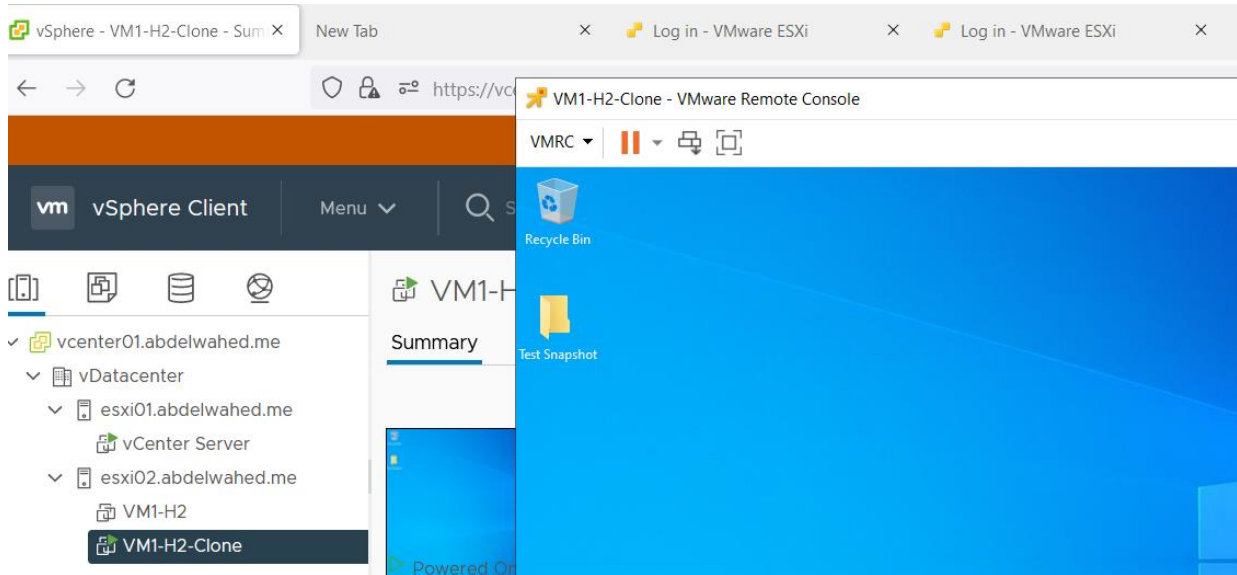
The current state of this virtual machine will be lost unless it is saved in a snapshot. Are you sure you want to revert the current state of the virtual machine to snapshot 'VM Snapshot 5%2f31%2f2022, 5:01:44 PM'?

Suspend this virtual machine when reverting to selected snapshot

CANCEL REVERT

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the new added folder is deleted

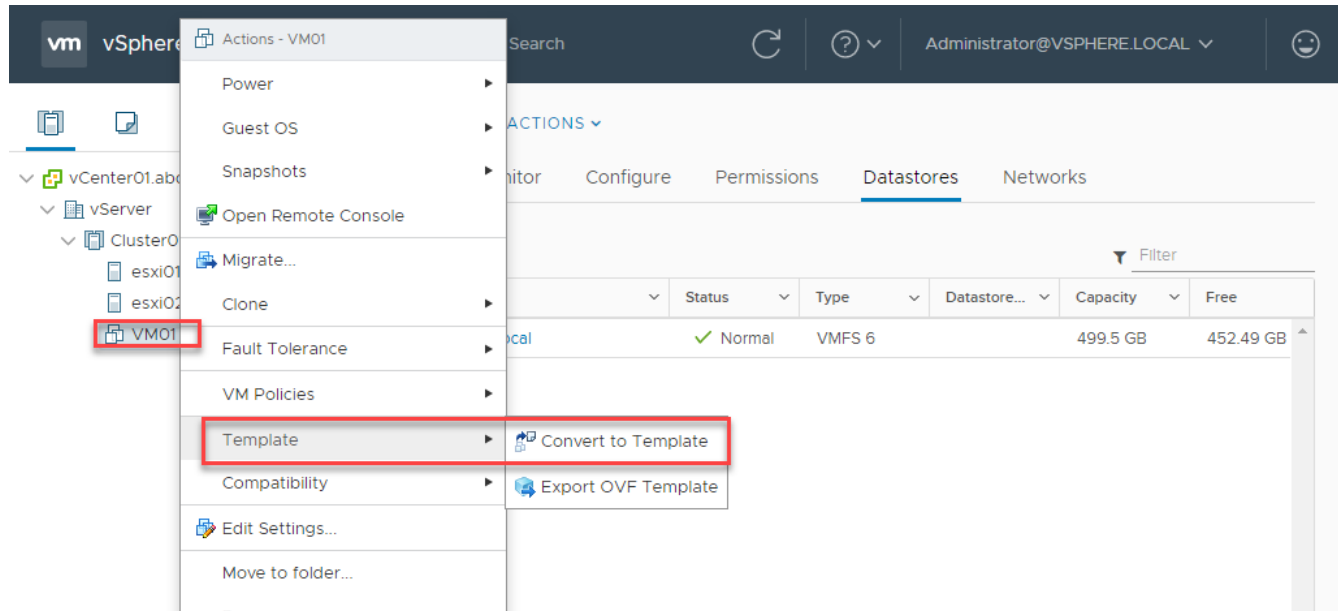


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VM clone and template

Create VM Template

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



Confirm Convert | VM01



Convert the virtual machine "VM01" to a template?

NO

YES

Task Name	Target	Status	Initiator	Queued For	Start Time	Completion Ti...	Server
Mark virtual machine as template	VM01	✓ Completed	VSPHERE.LOCA...	undefined	05/29/2021, 9:47:47 PM	05/29/2021, 9:47:48 PM	vCenter01.abdel...

Activate Windows

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Deploy VM from template

Deploy From Template

1 Select a creation type

- 2 Select a template
- 3 Select a name and folder
- 4 Select a compute resource
- 5 Review details
- 6 Select storage
- 7 Ready to complete

Select a creation type

How would you like to create a virtual machine?

- Create a new virtual machine
- Deploy from template**
- Clone an existing virtual machine
- Clone virtual machine to template
- Clone template to template
- Convert template to virtual machine

This option guides you through the process of creating a virtual machine from a template. A template is a golden image of a virtual machine that lets you easily create ready-for-use virtual machines. You must have a template to proceed with this option.

Deploy From Template

✓ 1 Select a creation type

2 Select a template

- 3 Select a name and folder
- 4 Select a compute resource
- 5 Select storage
- 6 Select clone options
- 7 Ready to complete

Select a template

Content Library **Data Center**

- ✓ vCenter01.abdelwahed.me
 - ✓ vServer
 - > Discovered virtual machine
 - VM01**

VM01 - Deploy From Template

✓ 1 Select a creation type

✓ 2 Select a template

3 Select a name and folder

- 4 Select a compute resource
- 5 Select storage
- 6 Select clone options
- 7 Ready to complete

Select a name and folder

Specify a unique name and target location

Virtual machine name: Server01

Select a location for the virtual machine.

- ✓ vCenter01.abdelwahed.me
 - ✓ vServer
 - Discovered virtual machine

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VM01 - Deploy From Template

- ✓ 1 Select a creation type
- ✓ 2 Select a template
- ✓ 3 Select a name and folder
- ✓ 4 Select a compute resource
- 5 Select storage**
- 6 Select clone options
- 7 Ready to complete

Select storage

Select the datastore in which to store the configuration and disk files

Select virtual disk format: Same format as source Configure per disk

VM Storage Policy: Keep existing VM storage policies

Name	Capacity	Provisioned	Free
Storage Compatibility: Compatible			
DataStore03_local	149.5 GB	7 GB	142.5 GB
Datastore04_local	499.5 GB	49.22 GB	452.49 GB
datastore1_local	192.5 GB	1.41 GB	191.09 GB

VM01 - Deploy From Template

- ✓ 1 Select a creation type
- ✓ 2 Select a template
- ✓ 3 Select a name and folder
- ✓ 4 Select a compute resource
- ✓ 5 Select storage
- 6 Select clone options**
- 7 Ready to complete

Select clone options

Select further clone options

- Customize the operating system
- Customize this virtual machine's hardware (Experimental)
- Power on virtual machine after creation

I create 4 server 2 vms in each host

Task Name	Target	Status	Initiator	Queued For	Start Time	Completion Ti...	Server
Clone virtual machine	VM01	41% <input checked="" type="checkbox"/>	VSPHERE.LOCA...	undefined	05/29/2021, 9:56:08 PM		vCenter01.abdel...
Clone virtual machine	VM01	44% <input checked="" type="checkbox"/>	VSPHERE.LOCA...	undefined	05/29/2021, 9:55:35 PM		vCenter01.abdel...
Clone virtual machine	VM01	52% <input checked="" type="checkbox"/>	VSPHERE.LOCA...	undefined	05/29/2021, 9:54:33 PM		vCenter01.abdel...

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Clone Existing 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**

Clone Existing Virtual Machine

1 Select a creation type

- 2 Select a virtual machine
- 3 Select a name and folder
- 4 Select a compute resource
- 5 Select storage
- 6 Select clone options
- 7 Ready to complete

Select a creation type
How would you like to create a virtual machine?

- Create a new virtual machine
- Deploy from template
- Clone an existing virtual machine**
- Clone virtual machine to template
- Clone template to template
- Convert template to virtual machine

This option guides you through creating a copy of an existing virtual machine.

CANCEL BACK NEXT

Clone Existing Virtual Machine

1 Select a creation type

- 2 Select a virtual machine**
- 3 Select a name and folder
- 4 Select a compute resource
- 5 Select storage
- 6 Select clone options
- 7 Ready to complete

Select a virtual machine
Select a virtual machine to clone

- vcenter01.abdelwahed.me
 - vDatacenter
 - vCenter Server
 - VM1-H2**

CANCEL BACK NEXT

VMware vSphere Install, Configure, Manage v7 | Quick Guide

VM1-H2 - Clone Existing Virtual Machine

1 Select a creation type
2 Select a virtual machine
3 Select a name and folder
4 Select a compute resource
5 Select storage
6 Select clone options
7 Ready to complete

Select a name and folder
Specify a unique name and target location

Virtual machine name: VM1-H2-Clone

Select a location for the virtual machine.

- vcenter01.abdelwahed.me
 - vDatacenter**

CANCEL BACK NEXT

i will move to another ESXI host

VM1-H2 - Clone Existing Virtual Machine

1 Select a creation type
2 Select a virtual machine
3 Select a name and folder
4 Select a compute resource
5 Select storage
6 Select clone options
7 Ready to complete

Select a compute resource
Select the destination compute resource for this operation

- vDatacenter
 - esxi01.abdelwahed.me**
 - esxi02.abdelwahed.me

VM1-H2 - Clone Existing Virtual Machine

1 Select a creation type
2 Select a virtual machine
3 Select a name and folder
4 Select a compute resource
5 Select storage
6 Select clone options
7 Ready to complete

Select storage
Select the storage for the configuration and disk files

BATCH CONFIGURE CONFIGURE PER DISK

Select virtual disk format: Same format as source

VM Storage Policy: Keep existing VM storage policies

Disable Storage DRS for this virtual machine

Name	Storage Con	Capacity	Provisione	Free	Type
Datastore	--	499.75 GB	43.57 GB	485.45 GB	VMFS 6
datastor...	--	155.5 GB	448.03 GB	117.64 GB	VMFS 6

CANCEL BACK NEXT

VMware vSphere Install, Configure, Manage v7 | Quick Guide

if you want to customize VM hardware select second option

VM1-H2 - Clone Existing Virtual Machine

- ✓ 1 Select a creation type
 - ✓ 2 Select a virtual machine
 - ✓ 3 Select a name and folder
 - ✓ 4 Select a compute resource
 - ✓ 5 Select storage
 - ✓ 6 Select clone options
 - 7 Ready to complete
- Select clone options**
Select further clone options
- Customize the operating system
 - Customize this virtual machine's hardware
 - Power on virtual machine after creation

VM1-H2 - Clone Existing Virtual Machine

- ✓ 1 Select a creation type
- ✓ 2 Select a virtual machine
- ✓ 3 Select a name and folder
- ✓ 4 Select a compute resource
- ✓ 5 Select storage
- ✓ 6 Select clone options
- 7 Ready to complete

Ready to complete
Click Finish to start creation.

Source virtual machine	VM1-H2
Virtual machine name	VM1-H2-Clone
Folder	vDatacenter
Host	esxi01.abdelwahed.me
Datastore	Datastore

CANCEL BACK FINISH

There are expired or expiring licenses in your inventory. [MANAGE YOUR LICENSES](#)

vm vSphere Client Menu Search in all environments Administrator@VSPHERE.LOCAL

esxi01.abdelwahed.me ACTIONS

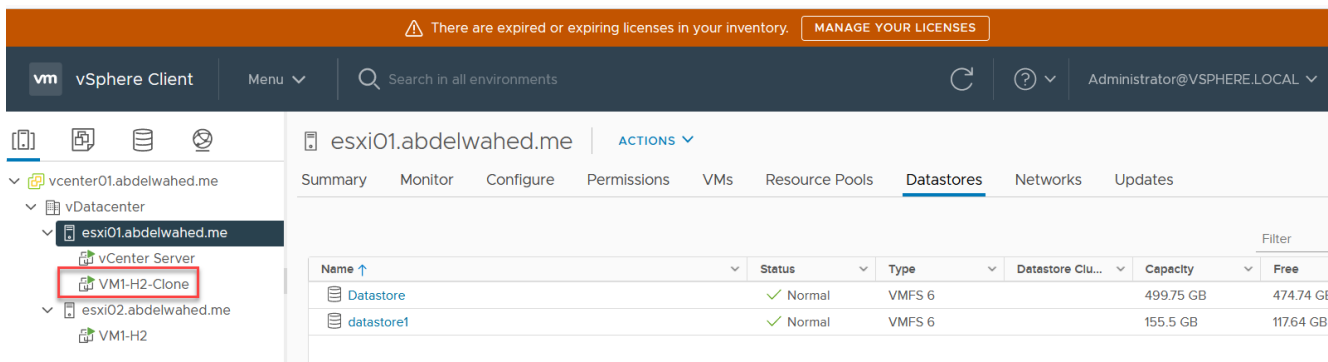
Summary Monitor Configure Permissions VMs Resource Pools **Datastores** Networks Updates

Name	Status	Type	Datastore Clu...	Capacity	Free
Datastore	✓ Normal	VMFS 6		499.75 GB	485.45 GB

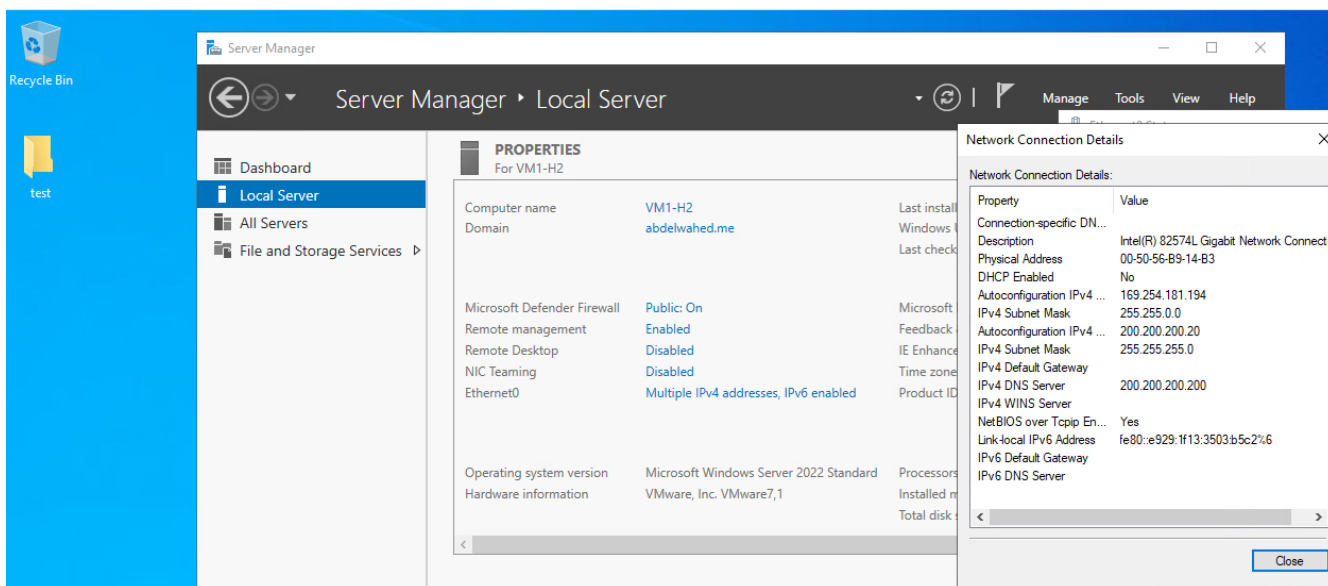
Recent Tasks Alarms

Task Name	Target	Status	Details	Initiator	Queued F	Start Time
Clone virtual machine	VM1-H2	9 %	Creating snapshot of Virtual Machine	VSPHERE.LOCAL\Administrator	11 ms	05/31/2022, 8:37:42 AM

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

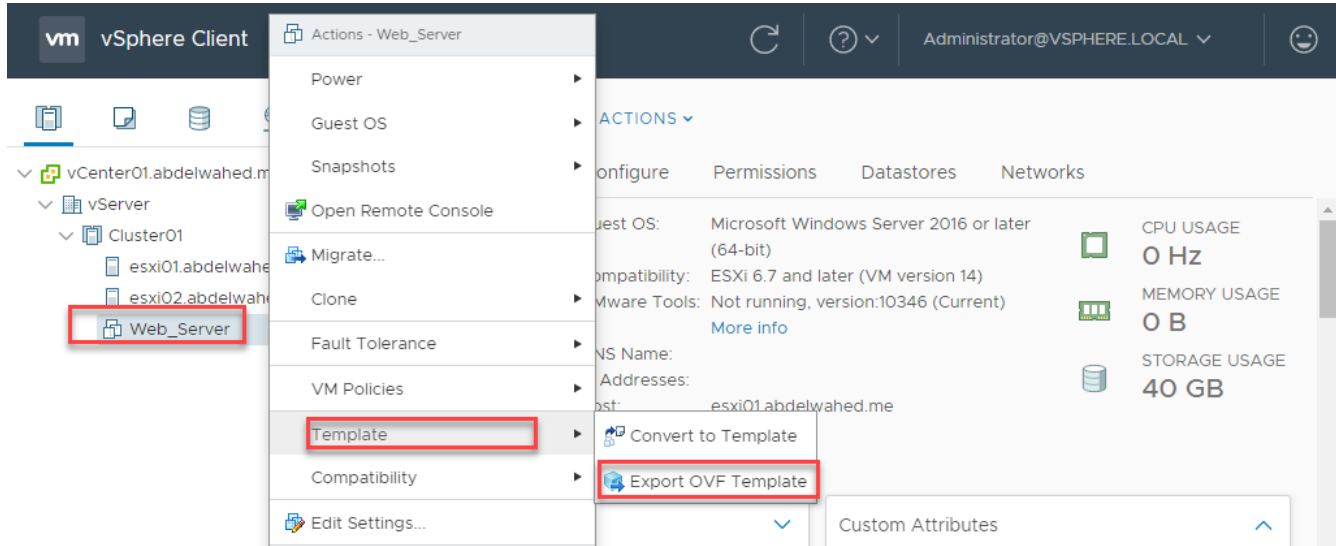


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OVF and OVA Template (Open Virtualization Format and Appliance)

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

Export OVF Template

Name:

Format:

Annotation:

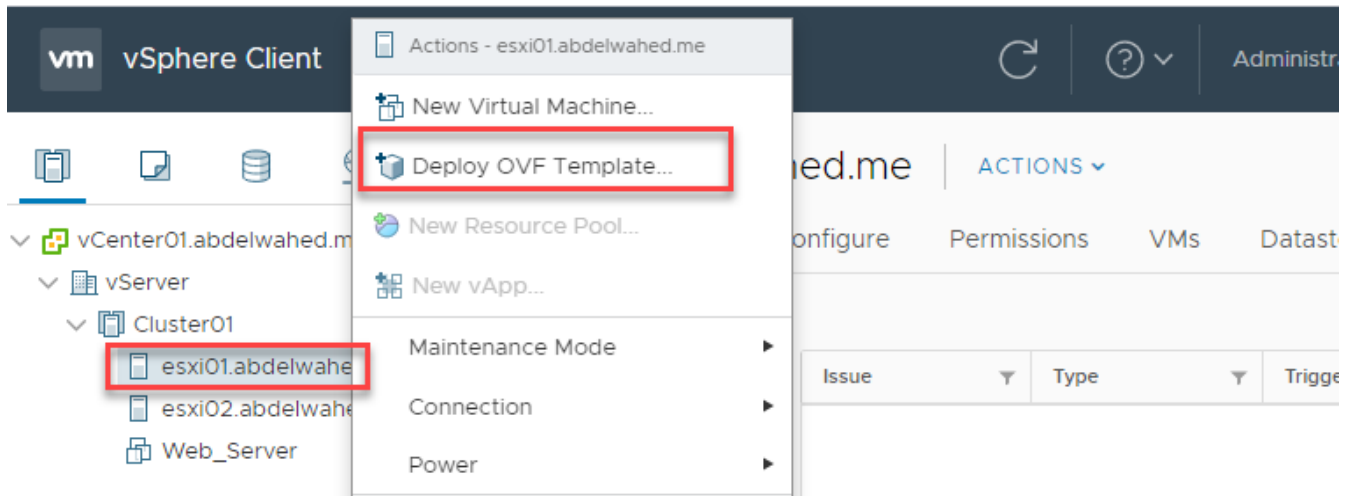
Advanced

- Enable advanced options
- Include BIOS UUID
- Include MAC addresses
- Include extra configuration

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Task Name	Target	Status	Initiator	Queued For	Start Time	Completion Ti...	Server
Export OVF template	Web_Server	0%	VSPHERE.LOCA...	8 ms	06/02/2021, 4:48:43 AM		vCenter01.abdel...
Export OVF package	Web_Server	0%	vsphere.local\A...	176 ms	06/02/2021, 4:48:43 AM	Activate Windows	vCenter01.abdel...

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



Deploy OVF Template

1 Select an OVF template

- 2 Select a name and folder
- 3 Select a compute resource
- 4 Review details
- 5 Select storage
- 6 Ready to complete

Select an OVF template

Select an OVF template from remote URL or local file system

Enter a URL to download and install the OVF package from the Internet, or browse to a location accessible from your computer, such as a local hard drive, a network share, or a CD/DVD drive.

URL

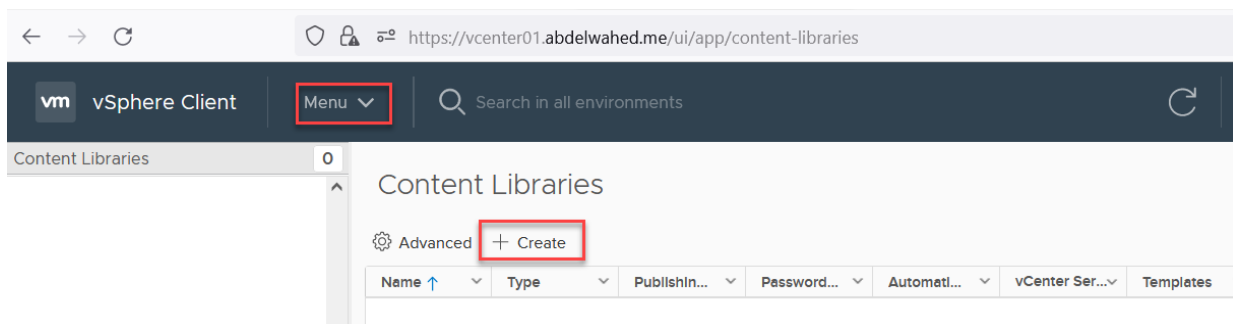
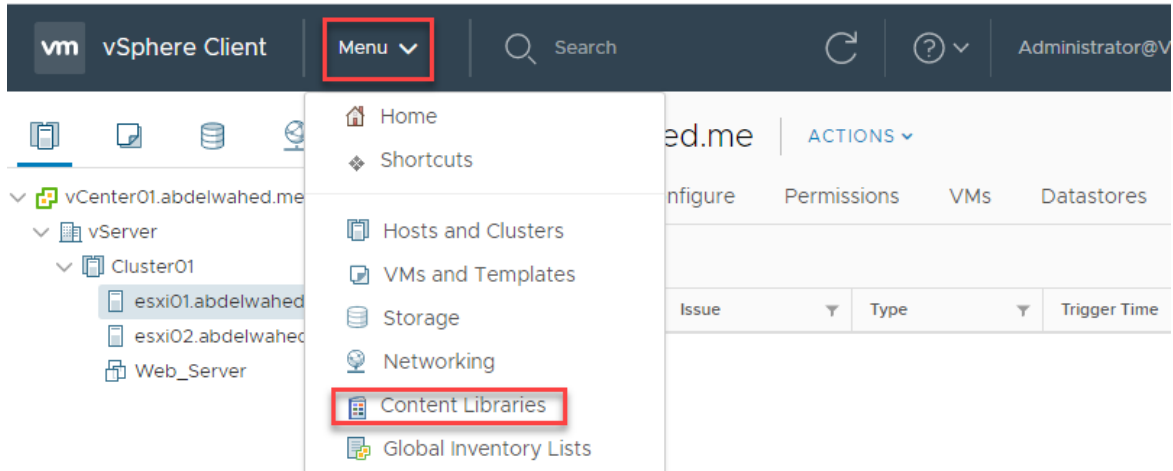
Local file

No file chosen

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Content Library

Centralized store for template, ISO, files and folders and more so you can use later many times without duplication. This library is stored on the datastore.



New Content Library

1 Name and location

- 2 Configure content library
- 3 Add storage
- 4 Ready to complete

Name and location

Specify content library name and location.

Name:

Notes:

vCenter Server:

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

New Content Library

✓ 1 Name and location

2 Configure content library

3 Add storage

4 Ready to complete

Configure content library

Local libraries can be published externally and optimized for syncing over HTTP.

Subscribed libraries originate from other published libraries.

Local content library

Publish externally

Optimize for syncing over HTTP

Once published, it cannot be reverted back to a local library and cannot be used to deploy virtual machines.

Enable authentication

Subscribed content library

Subscription URL: Example: `https://server/path/lib.ison`

New Content Library

✓ 1 Name and location

✓ **2 Configure content library**

3 Add storage

4 Ready to complete

Add storage

Select a storage location for the library contents. Use a file system backing for published content libraries to store the uploaded OVF packages. Use a datastore backing for local and subscribed content libraries to store content optimized for cloning.

Filter

Name ↑	Status	Type	Datastore...
DataStore03_local	✓ Normal	VMFS 6	
Datastore04_ISCSI	✓ Normal	VMFS 6	
datastore1_local	✓ Normal	VMFS 6	
datastore2_local	✓ Normal	VMFS 6	
Datastore5-ISCSI	✓ Normal	VMFS 6	

vm vSphere Client | Menu | Search | Administrator@VSPHERE.LOCAL

Content Libraries | 1 | Abdelwahed_local_Lib

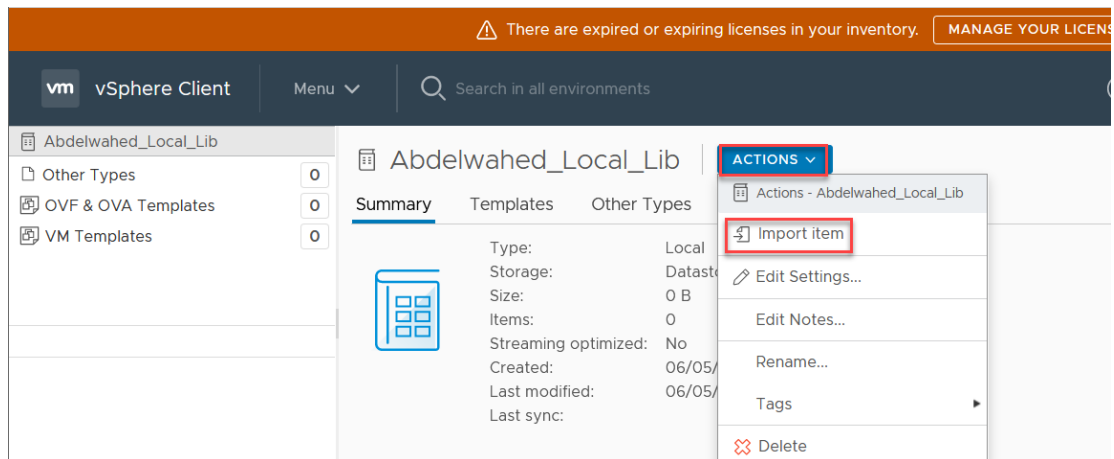
Content Libraries

+ Filter

Na...	Type	Pu...	Pas...	Aut...	Te...	Oth...	Sto...	Cre...	Las...	Las...
A..	Local	No	--	No	0	0	0 B	Jun 2...	Jun 2...	

VMware vSphere Install, Configure, Manage v7 | Quick Guide

Now you can upload different type of data to it



Abdelwahed_local_Lib | Import Library Item

Source

Source file

URL

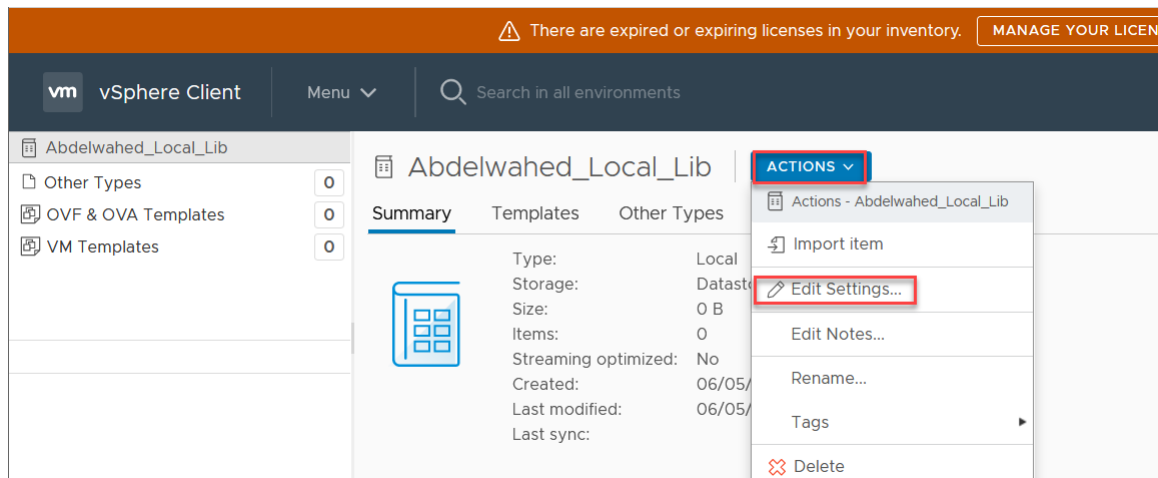
Enter URL

Local file

UPLOAD FILE

Task Name	Target	Status	Initiator	Queued For	Start Time	Completion Time	Server
Upload Files to a Library Item	en_windows_s...	20%	VSPHERE.LOCA...	undefined	06/02/2021, 5:28:56 AM		vCenter01.abdel...
Create Library Item	Abdelwahed_lo...	Completed	vsphere.localA...	undefined	06/02/2021, 5:28:56 AM	06/02/2021, 5:29:56 AM	vCenter01.abdel...

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



VMware vSphere Install, Configure, Manage v7 | Quick Guide

Edit Settings | Abdelwahed_local_Lib >

Publishing option Publish this content library externally

Subscription URL <https://vCenter01.abdelwahed.me:443/cis/vcsp/lib/a241bb75-bb88-4cd1-83c7-8c0677259803/lib.json>
[COPY LINK](#)

Authentication Enable user authentication for access to this content library

Password

Confirm Password

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.

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

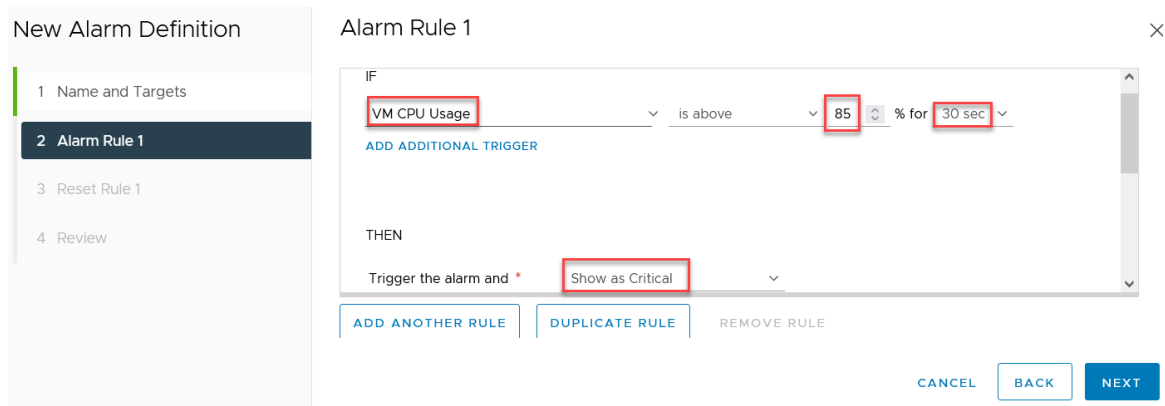
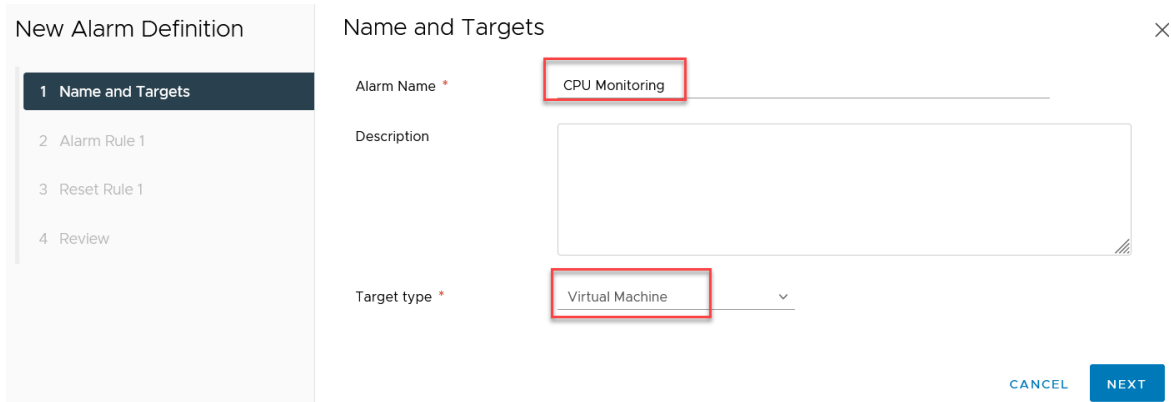
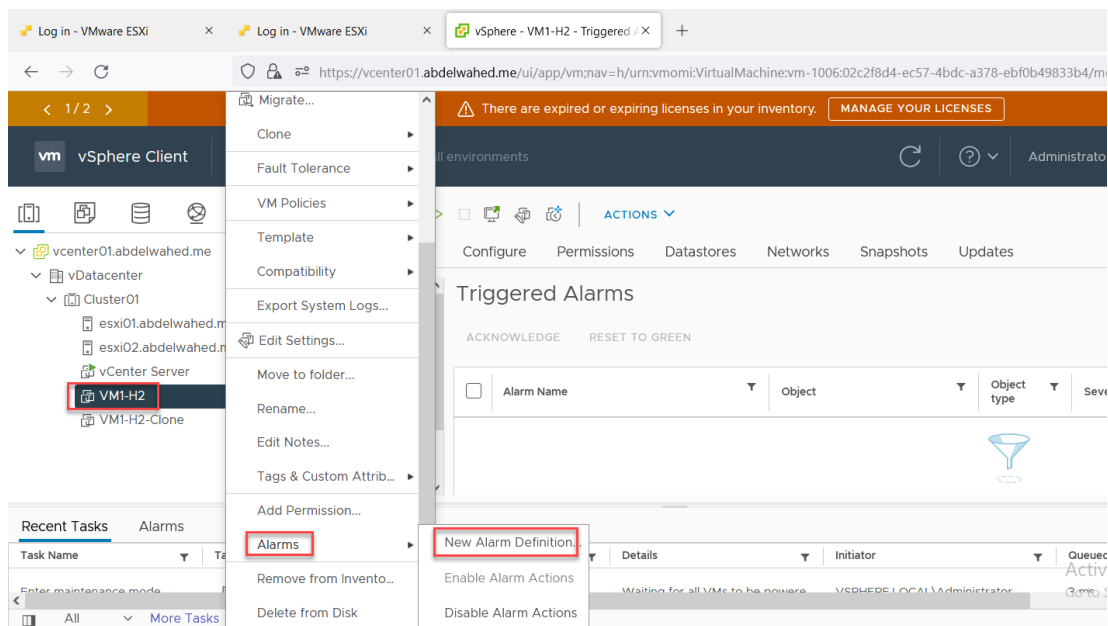
> New Hard disk *	16 GB
> New SCSI controller *	VMware Paravirtual
> New Network *	VM Network <input checked="" type="checkbox"/> Connect...
▼ New CD/DVD Drive *	Content Library ISO File ✓
Status	<input checked="" type="checkbox"/> Connect At Power On
CD/DVD Media	[contentLib]/Abdelwahec BROWSE...
Device Mode	Passthrough CD-ROM
Virtual Device Node	New SATA Controller SATA(0:0) New CD/DVD Drive

[CANCEL](#) [BACK](#) [NEXT](#)

Using Alarms

Create alarms to monitor VMs events and conditions

VMware vSphere Install, Configure, Manage v7 | Quick Guide



VMware vSphere Install, Configure, Manage v7 | Quick Guide

You can set actions once your conditions met

New Alarm Definition

- 1 Name and Targets
- 2 Alarm Rule 1**
- 3 Reset Rule 1
- 4 Review

Alarm Rule 1

Send email notifications

Send SNMP traps

Run script

Select an advanced action REMOVE

ADD ANOTHER RULE DUPLICATE RULE REMOVE RULE

CANCEL BACK NEXT

New Alarm Definition

- 1 Name and Targets
- 2 Alarm Rule 1**
- 3 Reset Rule 1
- 4 Review

Alarm Rule 1

Send email notifications

Send SNMP traps

Run script

Power off VM REMOVE

ADD ANOTHER RULE DUPLICATE RULE REMOVE RULE

CANCEL BACK NEXT

New Alarm Definition

- 1 Name and Targets
- 2 Alarm Rule 1
- 3 Reset Rule 1
- 4 Review**

Review

Alarm Name CPU Monitoring

Description

Targets VM1-H2

Alarm Rules IF VM CPU Usage is above 85 % for 30 sec
THEN Trigger the alarm as Critical
Power off VM

Enable this alarm

CANCEL BACK CREATE

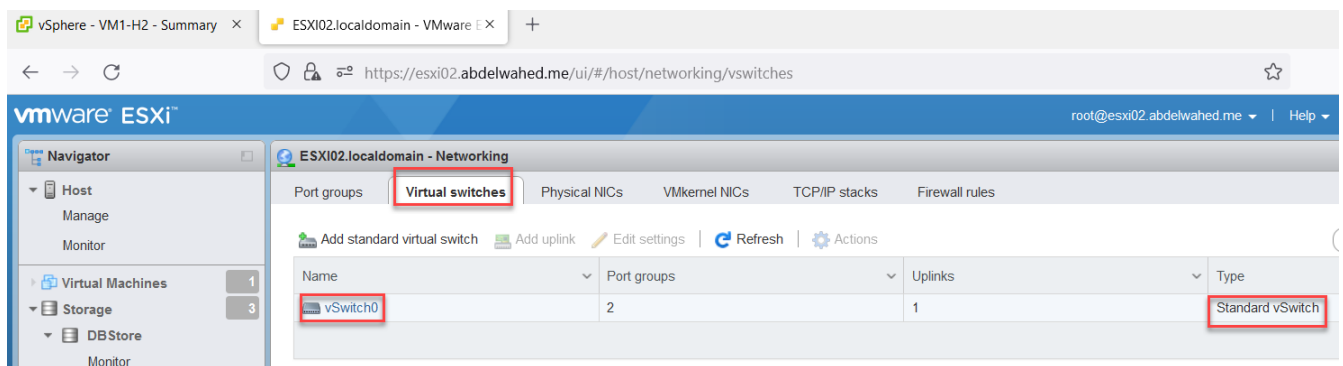
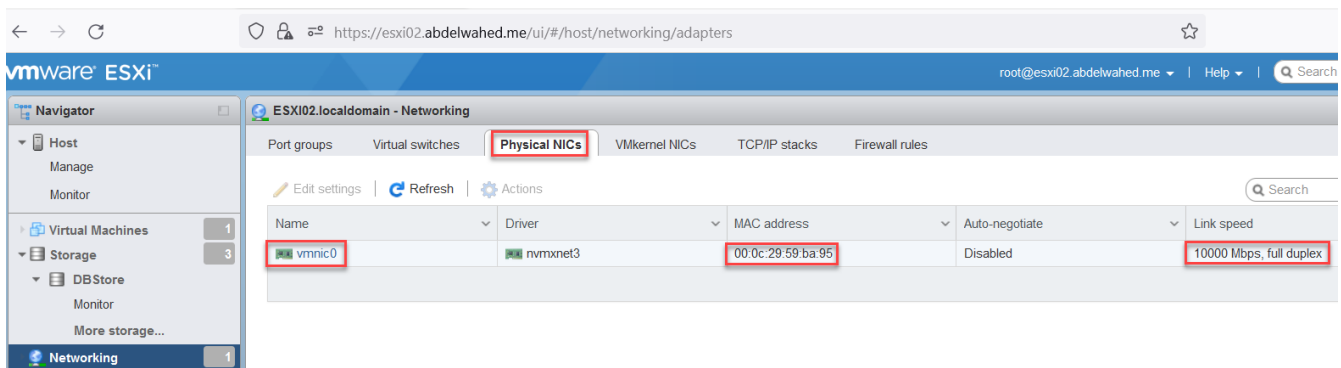
VMware vSphere Install, Configure, Manage v7 | Quick Guide

Networking

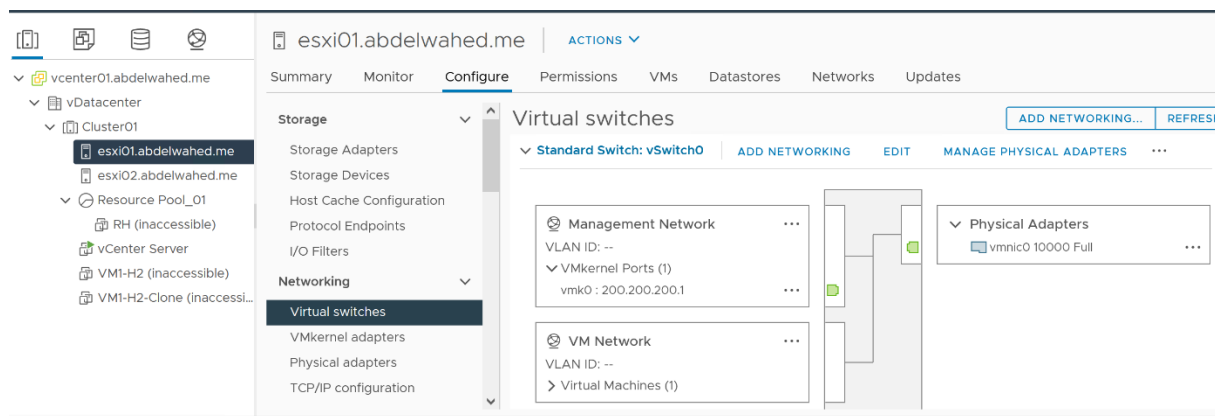
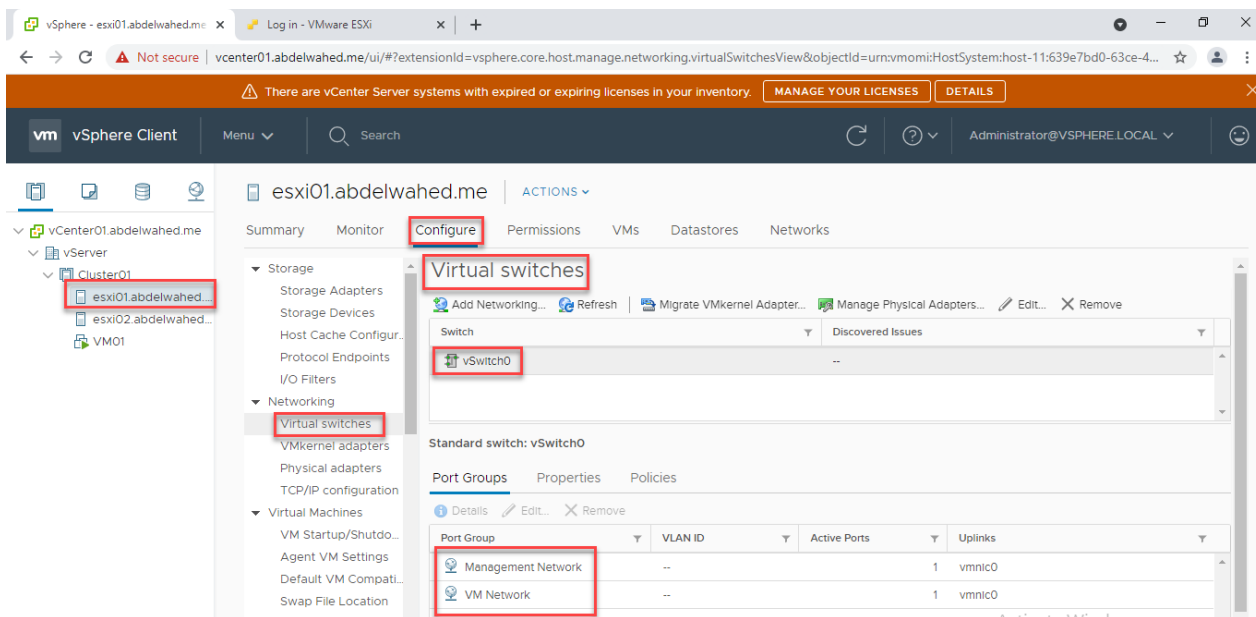
It's recommended to use two types of networks, one for ESXi management and another for VM. To do that you have to add 2 standard virtual switch (connected to two uplink which is NIC connected to two physical switch) and at first switch add one port group for VM connection and for another switch add VM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

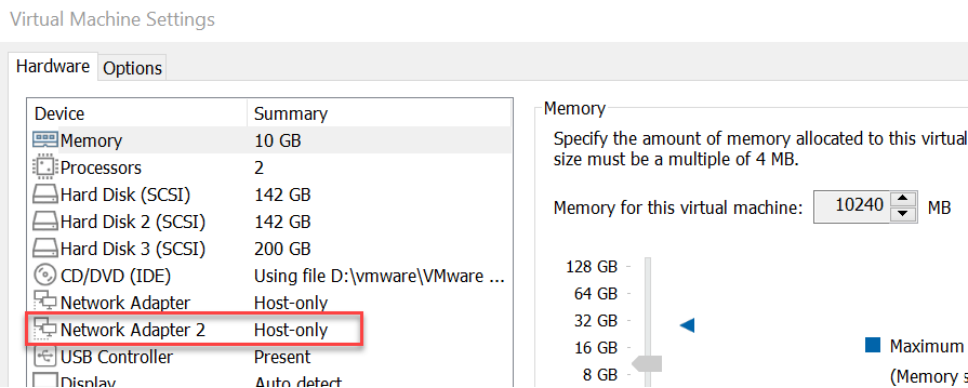


VMware vSphere Install, Configure, Manage v7 | Quick Guide



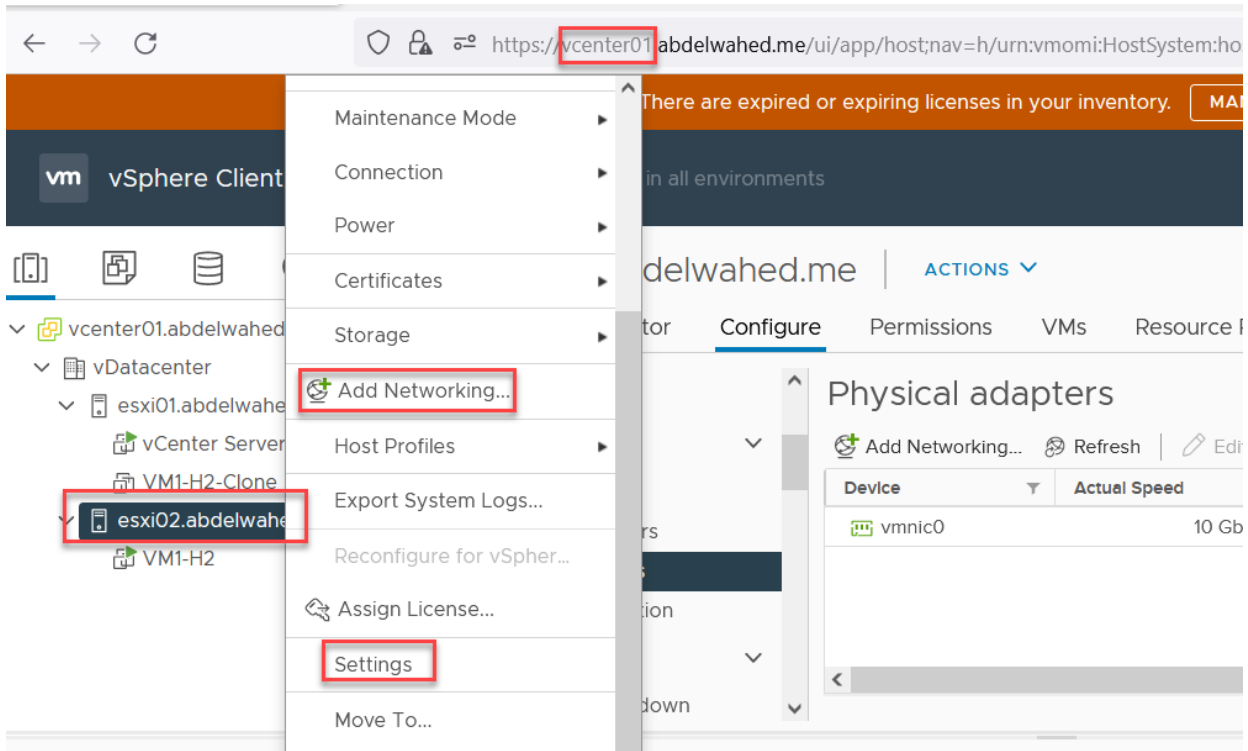
Add new NIC to ESXi02 using vCenter

Add second NIC through ESXi VM setting and restart the server



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As shown below, you have two options 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 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.

Virtual Machine Port Group for a Standard Switch

A port group handles the virtual machine traffic on standard switch.

Physical Network Adapter

A physical network adapter handles the network traffic to other hosts on the network.

VMware vSphere Install, Configure, Manage v7 | Quick Guide

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. vmxnet3 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	

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](#)

vm vSphere Client Menu Search in all environments Administrator@VSPHERE.LOCAL

esxi02.abdelwahed.me ACTIONS

Summary Monitor **Configure** Permissions VMs Resource Pools Datastores Networks Updates

Physical adapters

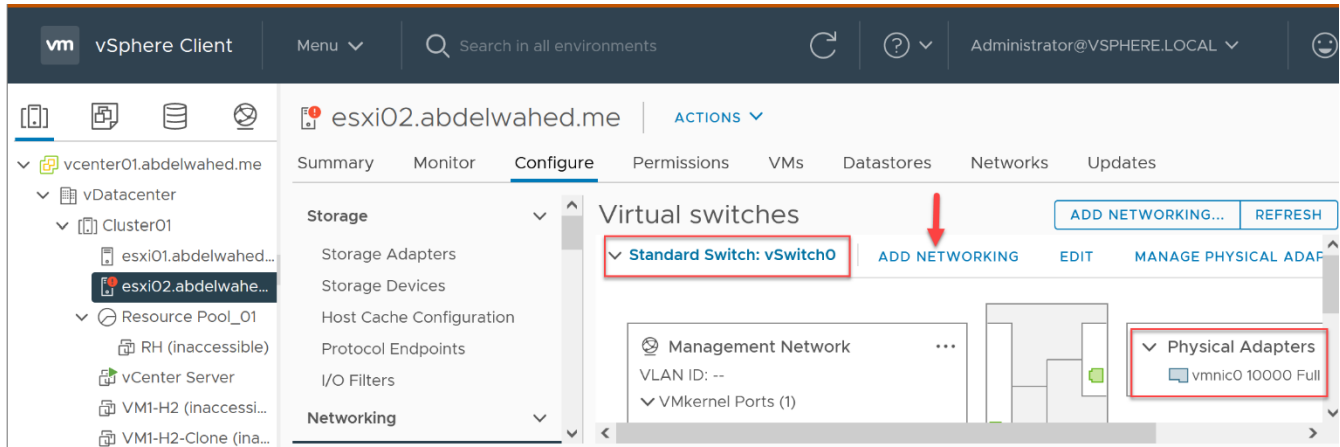
Add Networking... Refresh Edit...

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

VMware vSphere Install, Configure, Manage v7 | Quick Guide

Add standby physical adapter for vSwitch0 (standard switch)

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



1 Select connection type

2 Select target device

3 Add physical network ad...

4 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.

Virtual Machine Port Group for a Standard Switch

A port group handles the virtual machine traffic on standard switch.

Physical Network Adapter

A physical network adapter handles the network traffic to other hosts on the network.

VMware vSphere Install, Configure, Manage v7 | Quick Guide

✓ 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 Name VMware Inc. vmxnet3 Virtual Ethernet Controller
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

Acti

VMware vSphere Install, Configure, Manage v7 | Quick Guide

- ✓ 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

All Properties CDP LLDP

if you set both NIC under active the Loadbalancing will applied

- ✓ 1 Select connection type
- ✓ 2 Select target device
- ✓ 3 Add physical network ad...
- 4 Ready to complete**

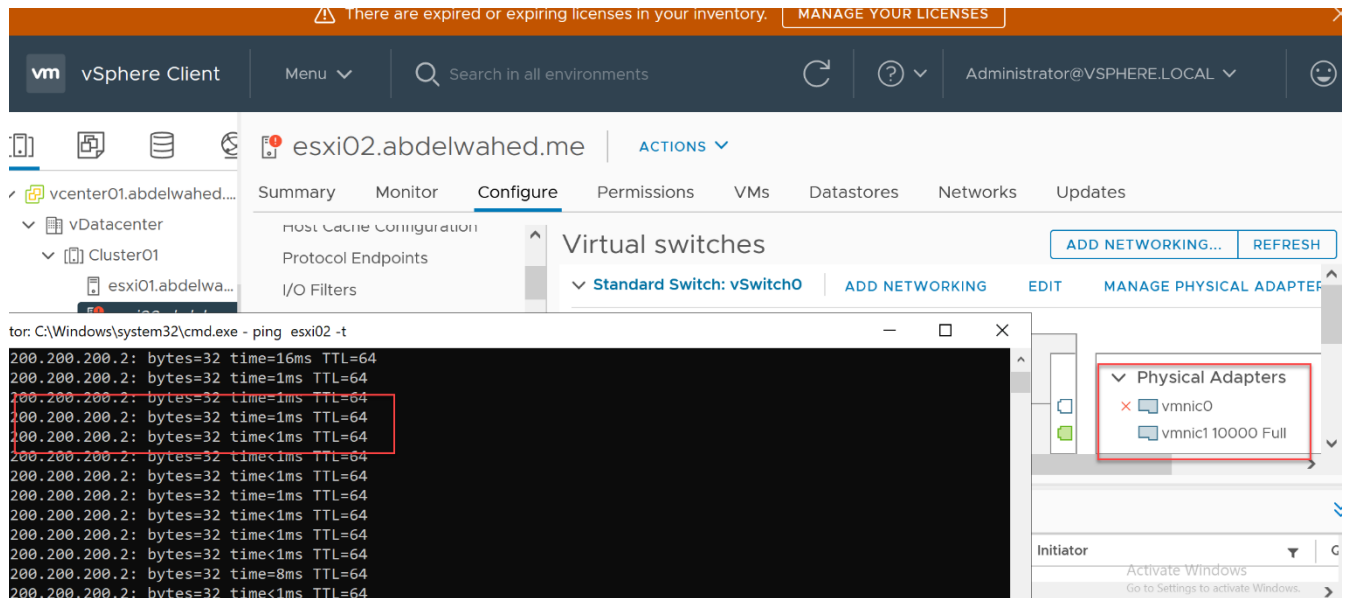
Ready to complete

Review your settings selections before finishing the wizard.

Standard switch	vSwitch0
Assigned adapters	vmnic1

VMware vSphere Install, Configure, Manage v7 | Quick Guide

Now disconnect fist NIC



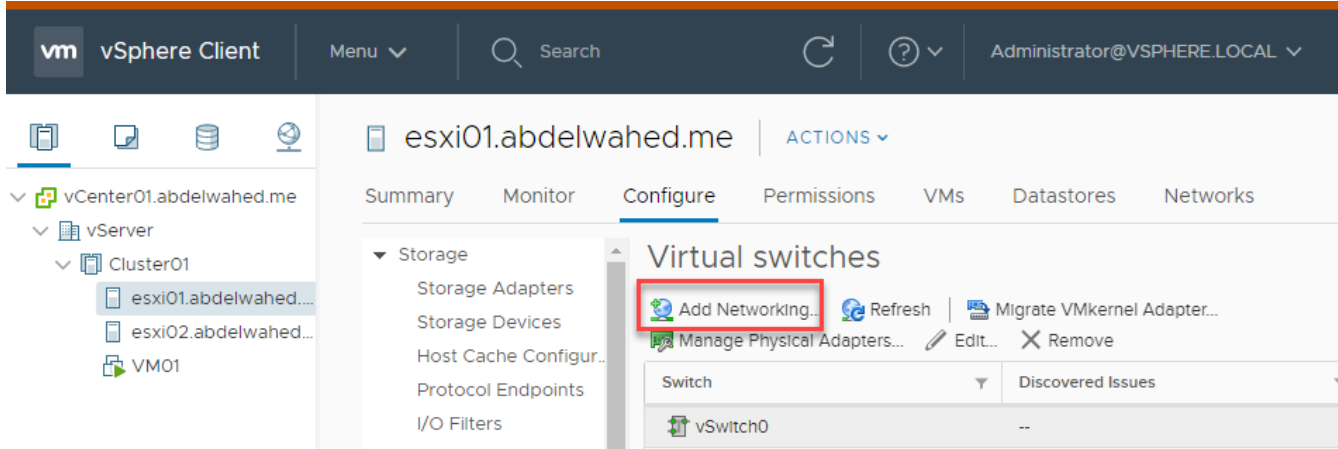
ESXI02 still working

VMware vSphere Install, Configure, Manage v7 | Quick Guide

Add VMkernel port for management

- 1- Add new NIC for both ESXi servers with 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 تؤدي وظيفة واحدة ويكون ليها IP لحاله وتكون في VLane مختلفة



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

vSwitch0

BROWSE ...

New standard switch

MTU (Bytes)

1500

VMware vSphere Install, Configure, Manage v7 | Quick Guide

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

Port properties
Specify VMkernel port settings.

VMkernel port settings

Network label: VMkernel

VLAN ID:

MTU: Get MTU from switch

TCP/IP stack:

Available services

Enabled services

- vMotion
- Provisioning
- Fault Tolerance logging
- Management
- vSphere Replication
- vSphere Replication NFC
- vSAN

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

IPv4 settings
Specify VMkernel IPv4 settings.

Obtain IPv4 settings automatically

Use static IPv4 settings

IPv4 address:

Subnet mask:

Default gateway: Override default gateway for this adapter

DNS server addresses:

VMware vSphere Install, Configure, Manage v7 | Quick Guide

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

The screenshot shows the VMware vSphere Client interface. The top navigation bar includes the VMware logo, 'vSphere Client', a menu, a search bar, and the user 'Administrator@VSPHERE.LOCAL'. The left sidebar shows a tree view with 'vCenter01.abdelwahed.me' expanded to 'vServer' > 'Cluster01', where 'esxi01.abdelwahed.me' is selected. The main content area is titled 'esxi01.abdelwahed.me' and has tabs for 'Summary', 'Monitor', 'Configure', 'Permissions', 'VMs', 'Datastores', and 'Networks'. The 'Configure' tab is active, showing 'Virtual switches'. A table lists the virtual switches:

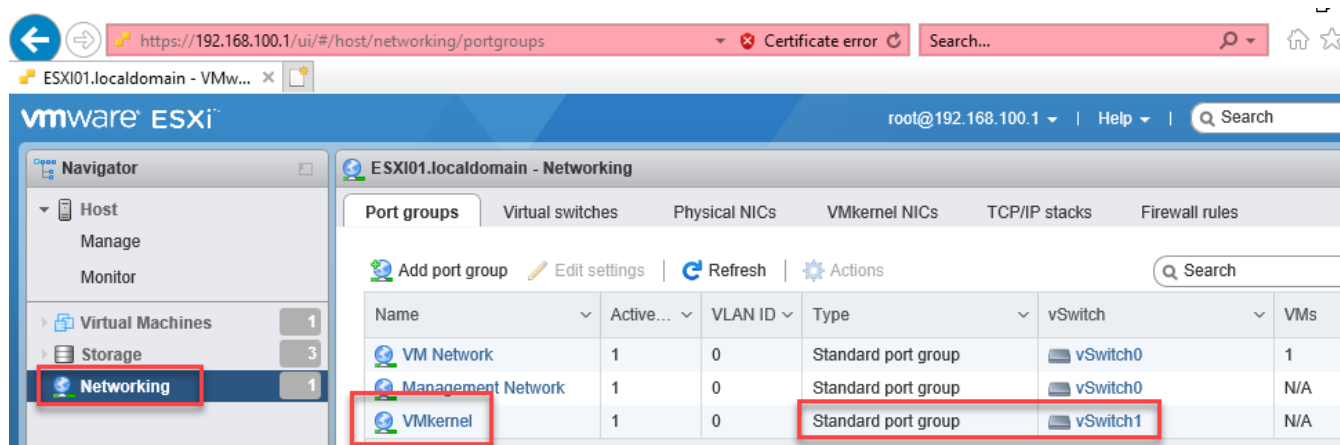
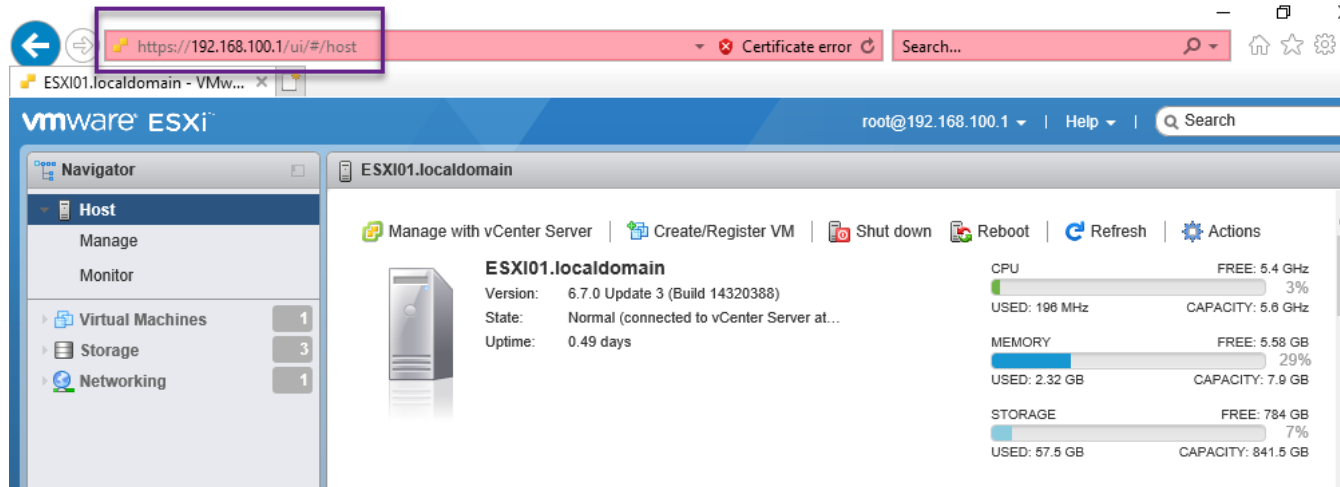
Switch	Discovered Issues
vSwitch0	--
vSwitch1	--

Below the table, the configuration for 'Standard switch: vSwitch1' is shown. It has tabs for 'Port Groups', 'Properties', and 'Policies'. The 'Port Groups' tab is active, showing a table of port groups:

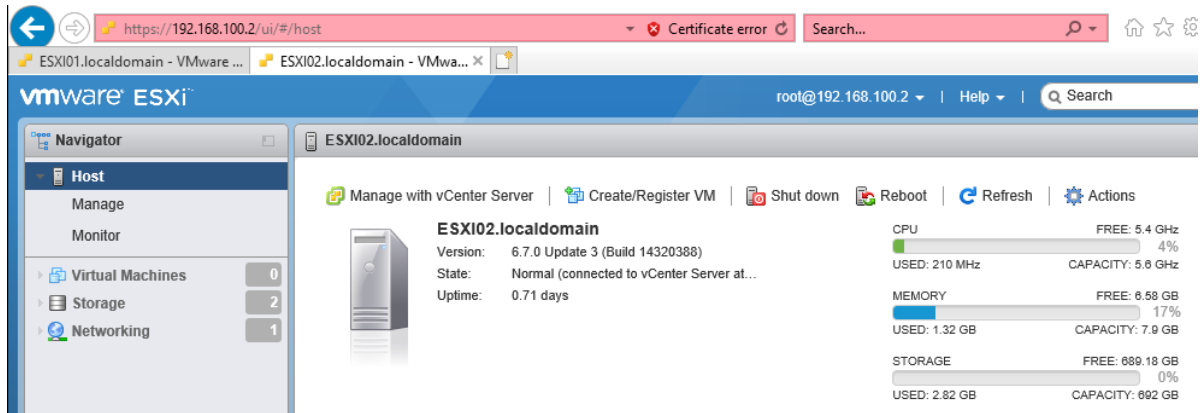
Port Group	VLAN ID	Active Po...	Uplinks
VMkernel	--	1	vmnic1

VMware vSphere Install, Configure, Manage v7 | Quick Guide

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

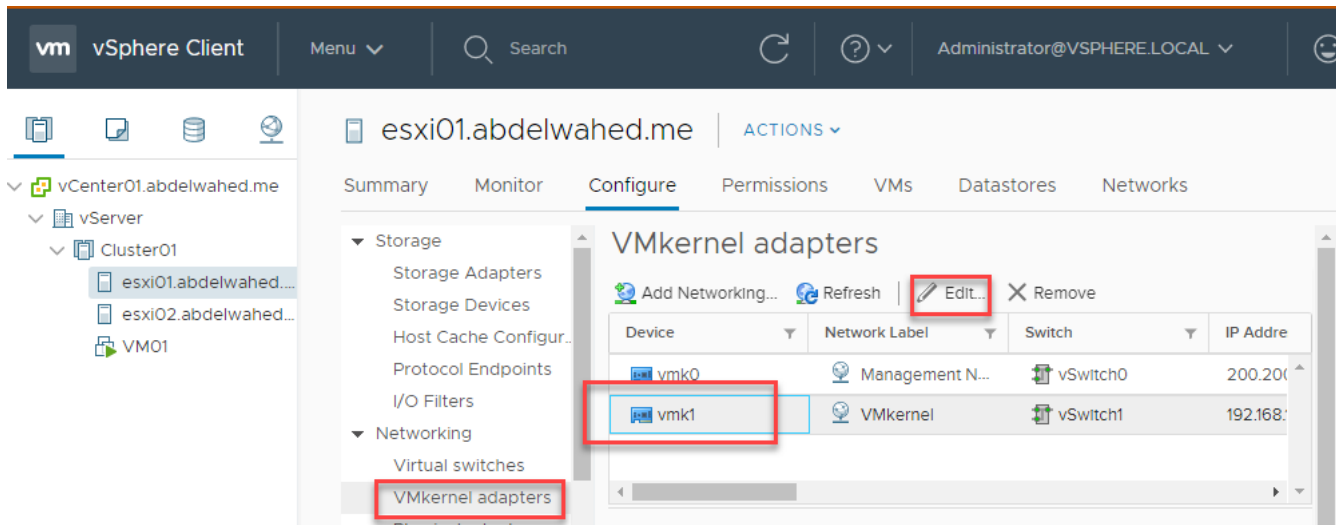


configures the same for ESXI02



VMware vSphere Install, Configure, Manage v7 | Quick Guide

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



vmk1 - Edit Settings

Port properties

IPv4 settings

VMkernel port settings

TCP/IP stack Default
MTU 1500

Available services

Enabled services

- vMotion
- Provisioning
- Fault Tolerance logging
- Management
- vSphere Replication
- vSphere Replication NFC
- vSAN

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 existing VMkernel for both ESXi01 and ESXi02.

VMware vSphere Install, Configure, Manage v7 | Quick Guide

VMware Cluster

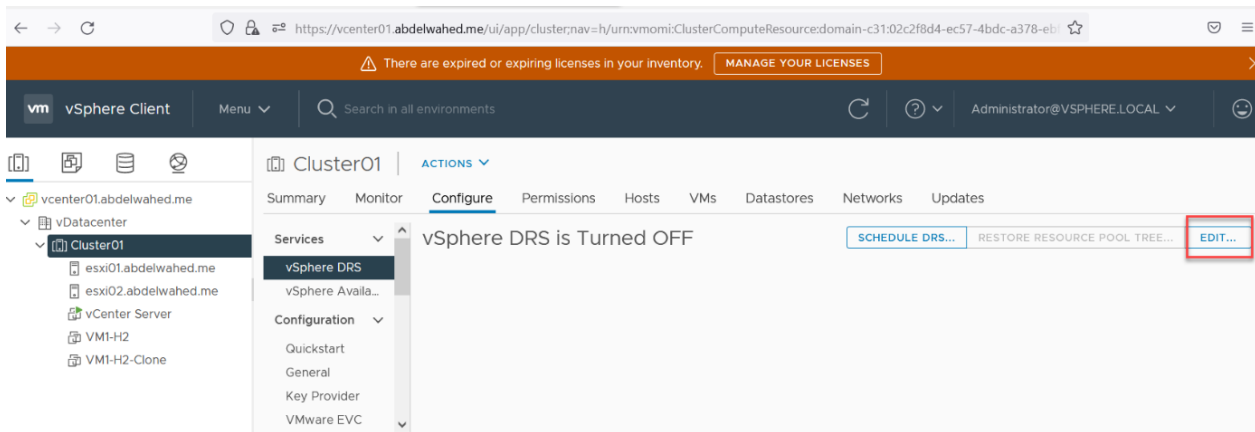
For the following labs you must add VMware cluster inside vCenter and move the ESXi servers to it

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 ask about the automation level



Edit Cluster Settings | Cluster01

vSphere DRS

Automation Additional Options Power Management Advanced Options

Automation Level Fully Automated
DRS automatically places virtual machines onto hosts at VM power-on, and virtual machines are automatically migrated from one host to another to optimize resource utilization.

Migration Threshold *i* Conservative Aggressive
DRS provides recommendations when workloads are moderately imbalanced. This threshold is suggested for environments with stable workloads. (Default)

Predictive DRS *i* Enable

Virtual Machine Automation *i* Enable

VMware vSphere Install, Configure, Manage v7 | Quick Guide

Edit Cluster Settings | Cluster01

vSphere DRS

Automation | Additional Options | Power Management | Advanced Options

Automation Level: Fully Automated (dropdown menu open, Manual selected)

Migration Threshold *i*: Conservative (slider) Aggressive
DRS provides recommendations when workloads are moderately imbalanced.
This threshold is suggested for environments with stable workloads. (Default)

Predictive DRS *i*: Enable

Virtual Machine Automation *i*: Enable

if you set to **manual DRS** will suggest you to migrate and you have to accept or no. while **partially automated** will migrate the VMs and inform you that the vms moved to different 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 together 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 behaviour runs on the server so if the same behaviour repeated will start direct the migration. (Predictive DRS)

VMware vSphere Install, Configure, Manage v7 | Quick Guide

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 *i* Enable
Over-commitment ratio: 0 _____ :1 (vCPU:pCPU)

Edit Cluster Settings | Cluster01

vSphere DRS

Automation Additional Options **Power Management** Advanced Options

- DPM *i* Enable
- Automation Level
- 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

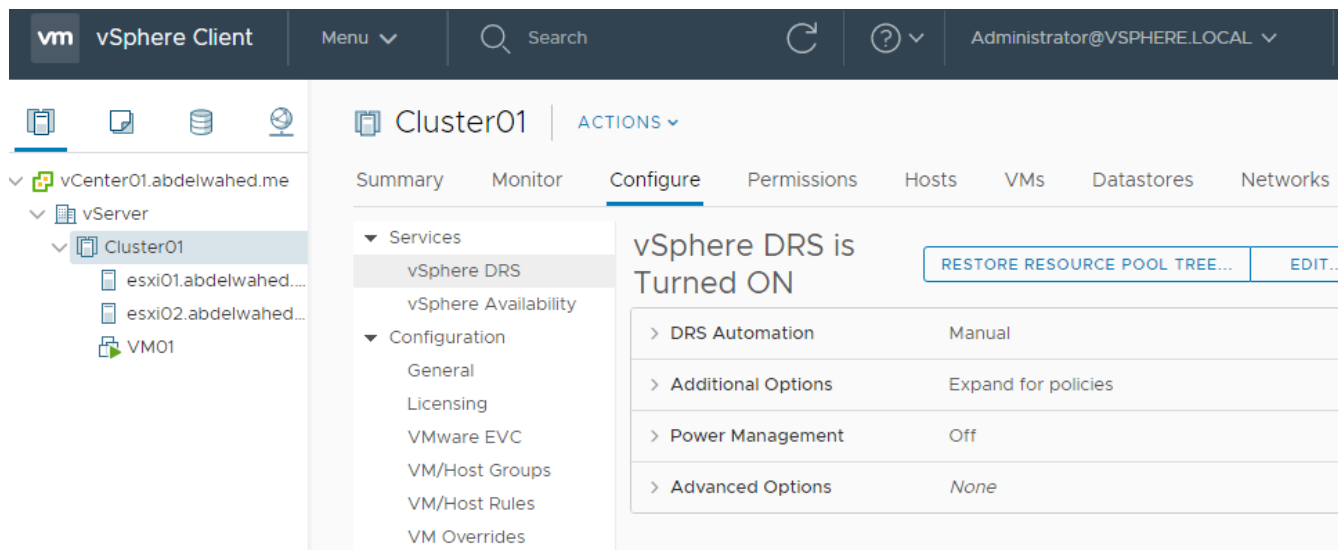
Automation Additional Options Power Management **Advanced Options**

Configuration Parameters

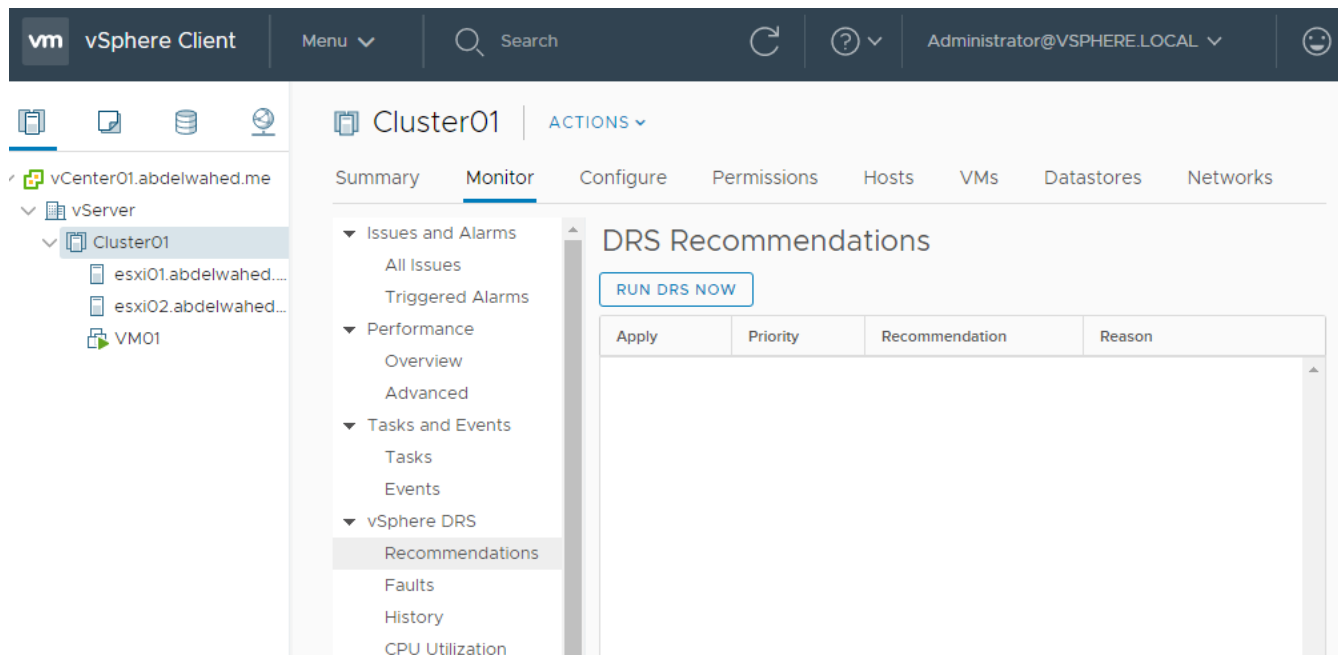
+ Add ✕ Delete

Option	Value
<input type="text"/>	

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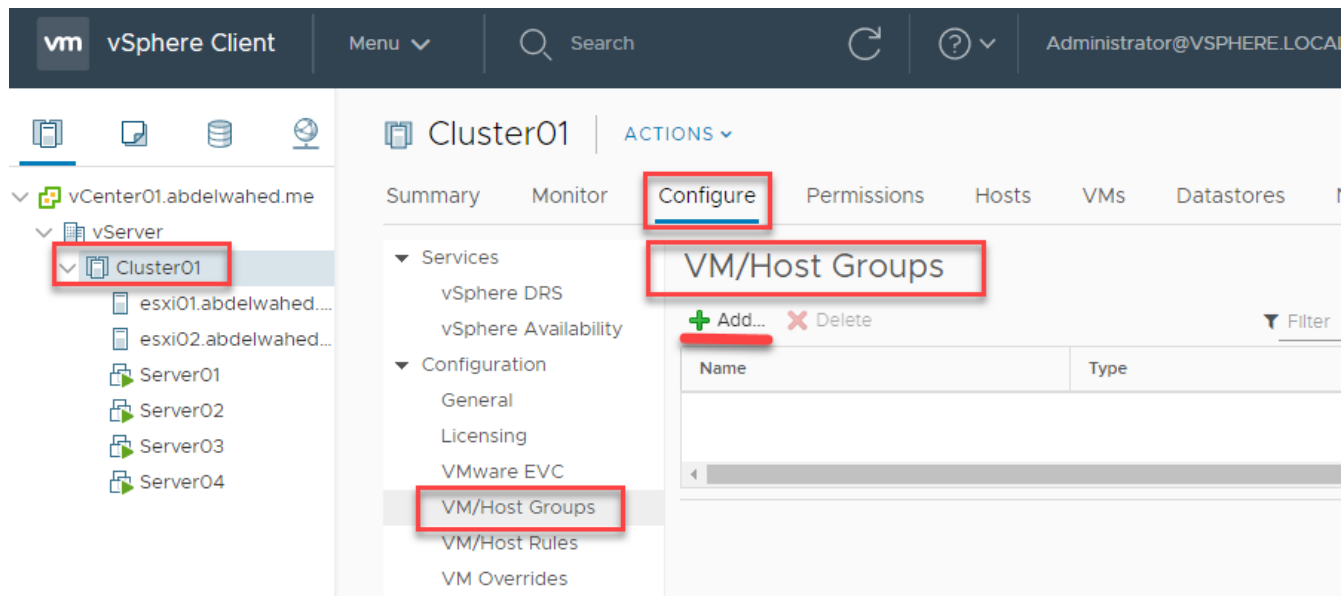
any recommendation comes here, and you can apply it.



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Crear 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 Group | Cluster01

Name: R1

Type: VM Group

+ Add... - Remove

Members

- Server01
- Server02

Create VM/Host Group | Cluster01

Name: R2

Type: VM Group

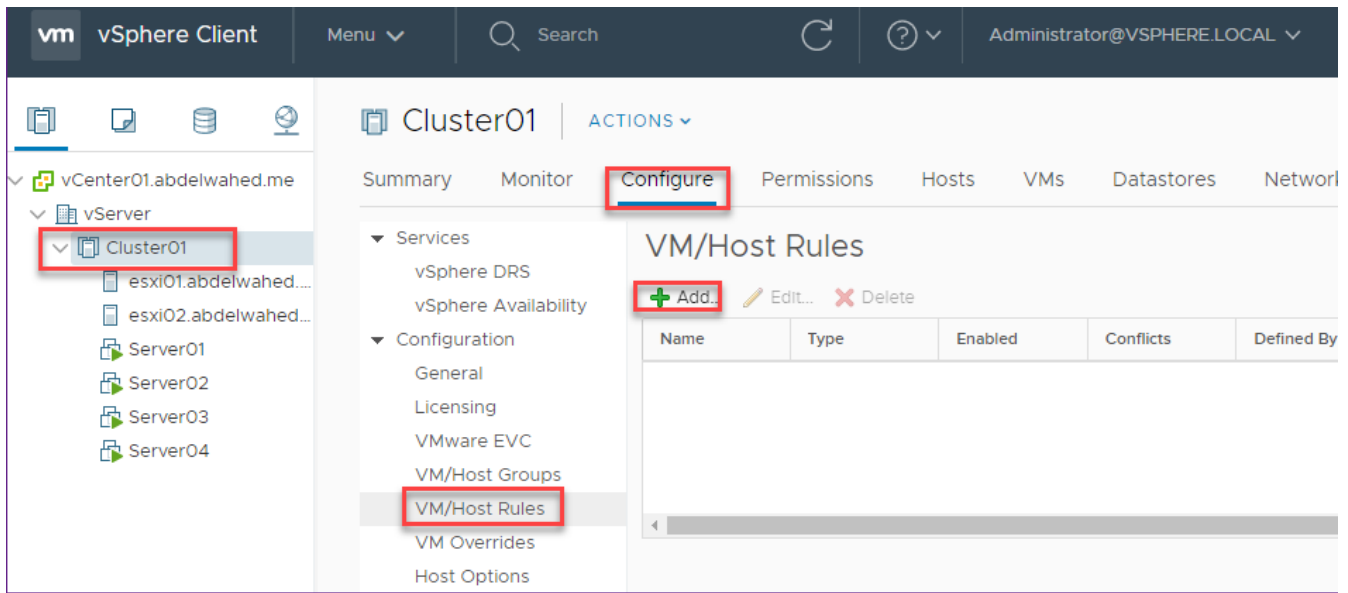
+ Add... - Remove

Members

- Server03
- Server04

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Create VM/Host Rules
To control DRS behavior.



Create VM/Host Rule | Cluster01

Name	DC-ADC Rule	<input checked="" type="checkbox"/> Enable rule.
Type	Separate Virtual Machines	

Description:
The listed Virtual Machines must be run on separate hosts.

+ Add... - Remove

Members
ADC
DC



Create VM/Host Rule | cluster01 ✕

Name	App-AppDB Rule	<input checked="" type="checkbox"/> 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	<input checked="" type="checkbox"/> 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

Create VM/Host Rule | Cluster01

Name	R1-R2 Rule	<input checked="" type="checkbox"/> Enable rule.
Type	Virtual Machines to Virtual Machines	

Description:

Virtual machines in the Cluster VM Group R1 must have the dependency restart condition met before vSphere HA proceeds with restarting the VMs in group R2.

The VM dependency restart condition must be met before continuing to:

R1

On restart for VM group:

R2

VM Overrides

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

Edit Cluster Settings | Cluster01

vSphere DRS

Automation | Additional Options | Power Management | Advanced Options

Automation Level: Manual

Migration Threshold: Conservative

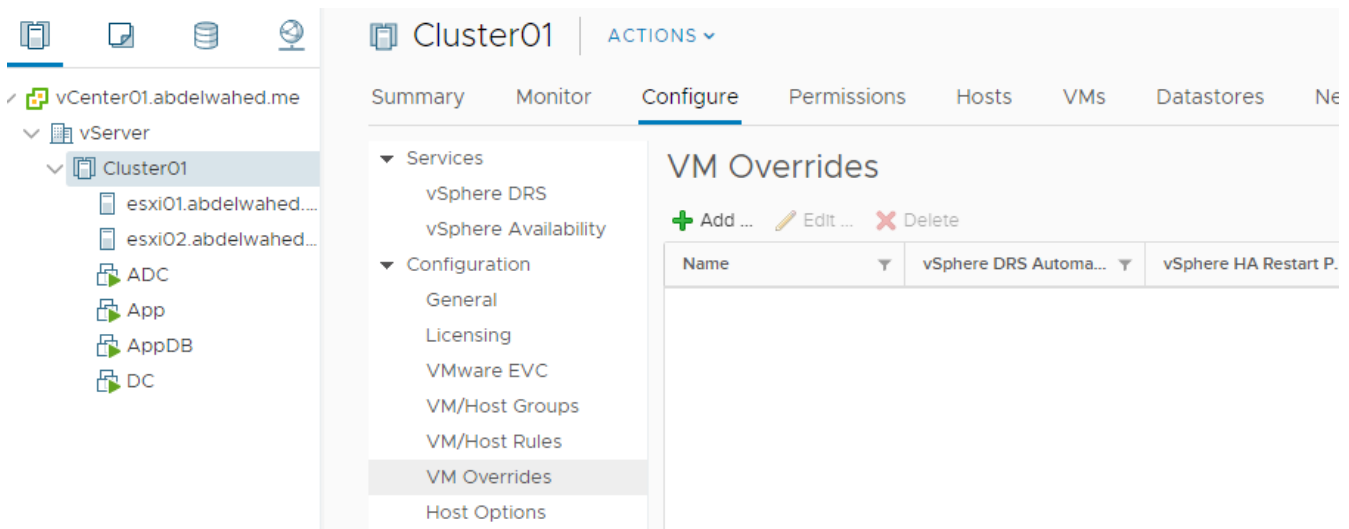
Predictive DRS

Virtual Machine Automation *i*

Help
Override for individual virtual machines can be set from the VM Overrides page.

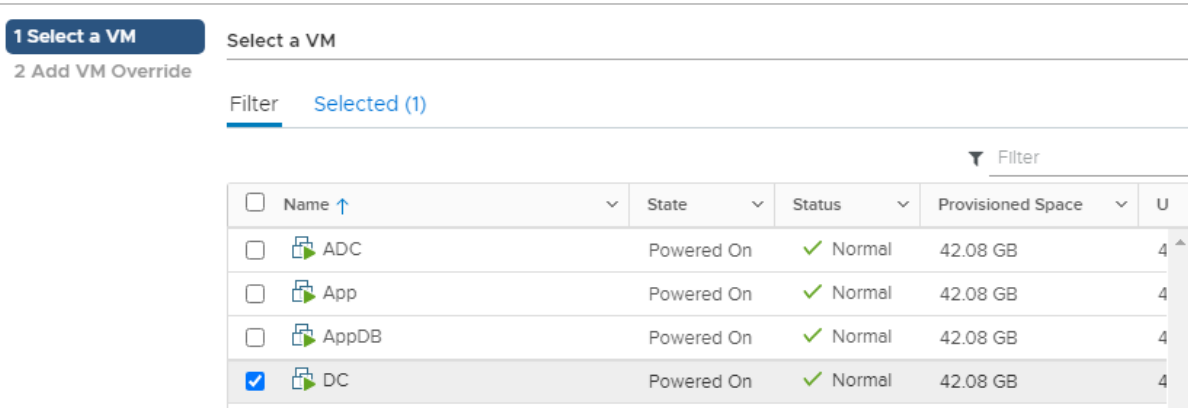
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Once you enable it you can configure from

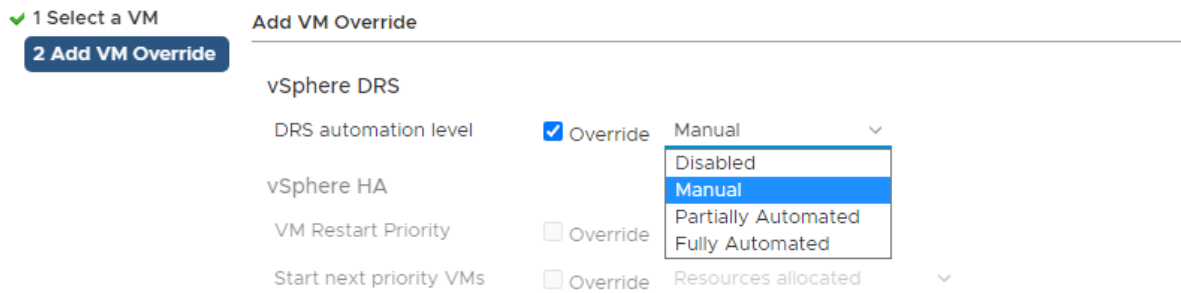


First you must select the VM you want to run different DRS options

Add VM Override Cluster01



Add VM Override Cluster01



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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 tolerance (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 cluster 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. In case this master server is down ESXi server will vote to select another master which is the highest resource server, if all same resources will vote based on build number.
- In case you have two ESXi servers if one host is down all VMs will move to another host, but what if another host doesn't have enough resources?

To solve this case, during design there is admission control which will reserve resources from beginning 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 have enough resource which is named (VM degregation) and you have to accept this rule or no if you accept VMs resources will decrease if no the server will go down in case host is down.

HA requirements:

- 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 failure in network or at host.

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Configure HA

Add two ISCSI disk to both servers then add datastore

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...

Swap File Location

System

Storage Adapters

+ Add Software Adapter Refresh Rescan Storage... Rescan Adapter

Adapter	Type	Status	Identifier
Model: ISCSI Software Adapter			
vmhba65	ISCSI	Online	Iqn.1998-01.com.vmware:esx
Model: PIIX4 for 430TX/440RX/MX IDE Controller			

Pro... D... P... Dynam... Static ... Network ... Advanc...

Refresh Attach Detach Rename...

Name	L...	Type	Capacity
MSFT ISCSI Disk (naa.60003ff44dc75adca3d1...	0	disk	499.68 GE
MSFT ISCSI Disk (naa.60003ff44dc75adc89d0...	1	disk	299.71 GE

Activate Windows

esxi02.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...

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Storage Adapters

+ Add Software Adapter Refresh Rescan Storage... Rescan Adapter

Adapter	Type	Status	Identifier
Model: ISCSI Software Adapter			
vmhba65	ISCSI	Online	Iqn.1998-01.com.vmware:esx
Model: PIIX4 for 430TX/440RX/MX IDE Controller			

Pro... D... P... Dynam... Static ... Network ... Advanc...

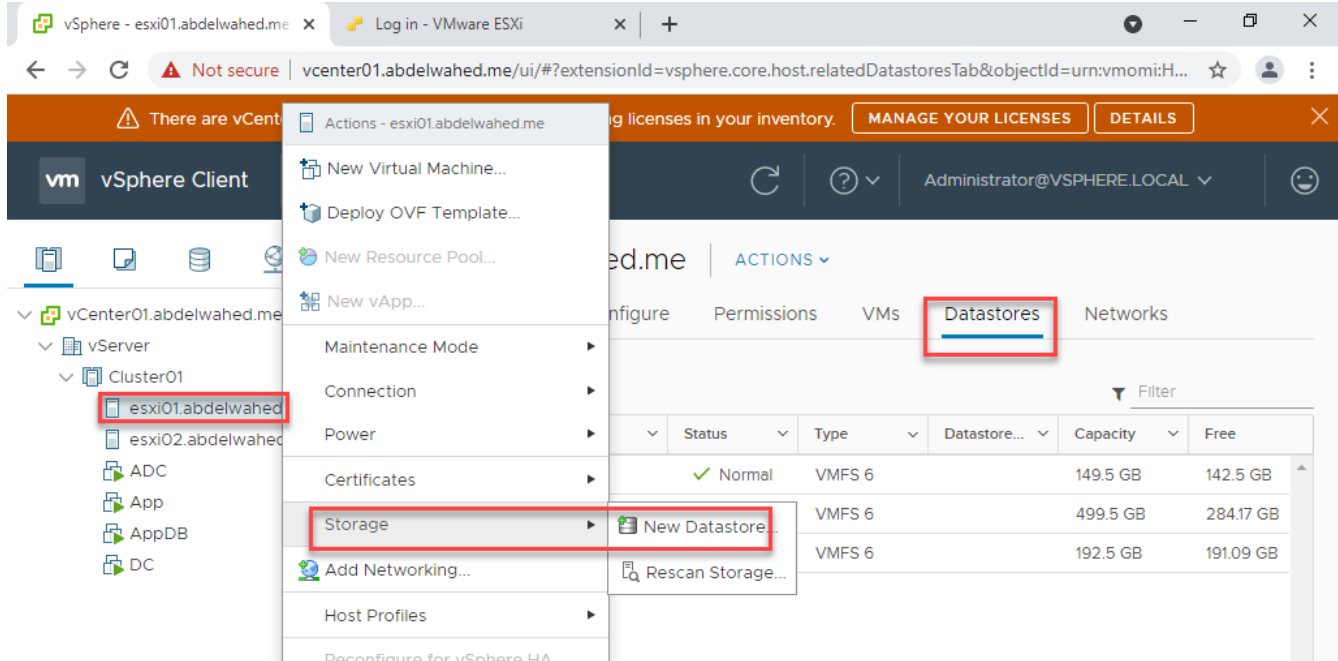
Refresh Attach Detach Rename...

Name	L...	Type	Capacity
MSFT ISCSI Disk (naa.60003ff44dc75adca3d1...	0	disk	499.68 GE
MSFT ISCSI Disk (naa.60003ff44dc75adc89d0...	1	disk	299.71 GE

Activate Windows

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



1 Type

- 2 Name and device selection
- 3 VMFS version
- 4 Partition configuration
- 5 Ready to complete

Type

Specify datastore type.

VMFS

Create a VMFS datastore on a disk/LUN.

NFS

Create an NFS datastore on an NFS share over the network.

VVol

Create a Virtual Volumes datastore on a storage container connected to a storage provider.

✓ 1 Type

2 Name and device selection

- 3 VMFS version
- 4 Partition configuration
- 5 Ready to complete

Name and device selection

Select a name and a disk/LUN for provisioning the datastore.

Datastore name:

Name	LUN	Capacity	Hardware...	Drive T...	S
MSFT iSCSI Disk (naa.60...	1	299.71 GB	Not suppor...	HDD	5

VMware vSphere Install, Configure, Manage v7 | Quick Guide

✓ 1 Type
✓ 2 Name and device selection
3 VMFS version
4 Partition configuration
5 Ready to complete

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.

New Datastore

✓ 1 Type
✓ 2 Name and device selection
✓ 3 VMFS version
4 Partition configuration
5 Ready to complete

Partition configuration
Review the disk layout and specify partition configuration details.

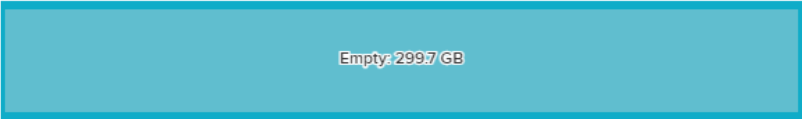
Partition Configuration Use all available partitions

Datastore Size GB

Block size 1 MB

Space Reclamation Granularity 1 MB

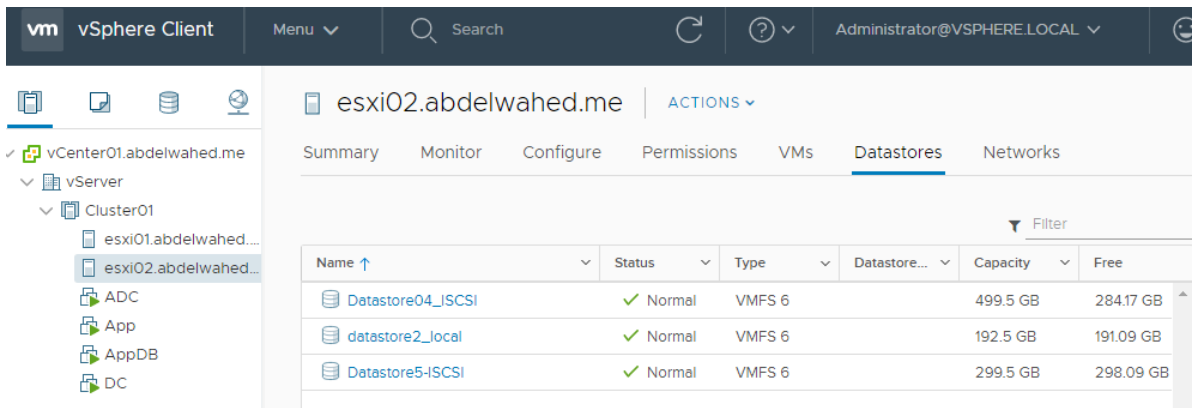
Space Reclamation Priority



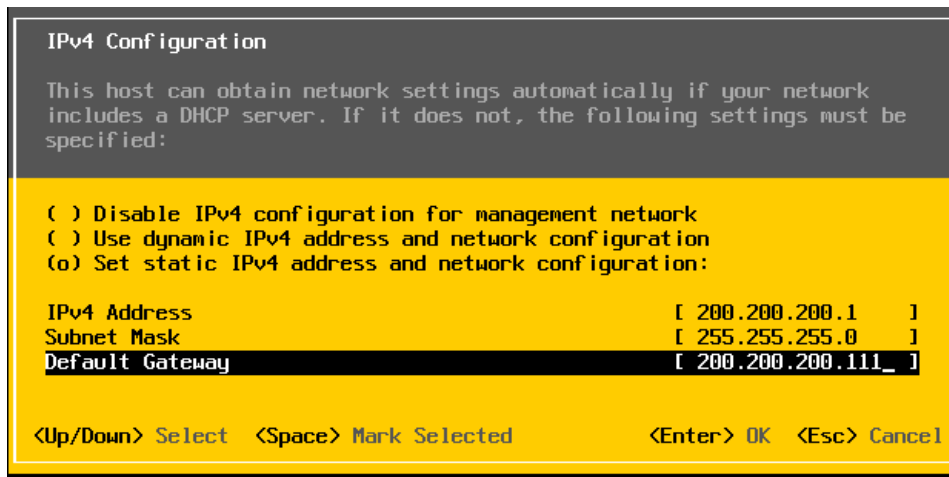
Now I have two iSCSI datastore connected to both hosts

Name ↑	Status	Type	Datastore...	Capacity	Free
DataStore03_local	✓ Normal	VMFS 6		149.5 GB	142.5 GB
Datastore04_iSCSI	✓ Normal	VMFS 6		499.5 GB	284.17 GB
datastore1_local	✓ Normal	VMFS 6		192.5 GB	191.09 GB
Datastore5-iSCSI	✓ Normal	VMFS 6		299.5 GB	298.09 GB

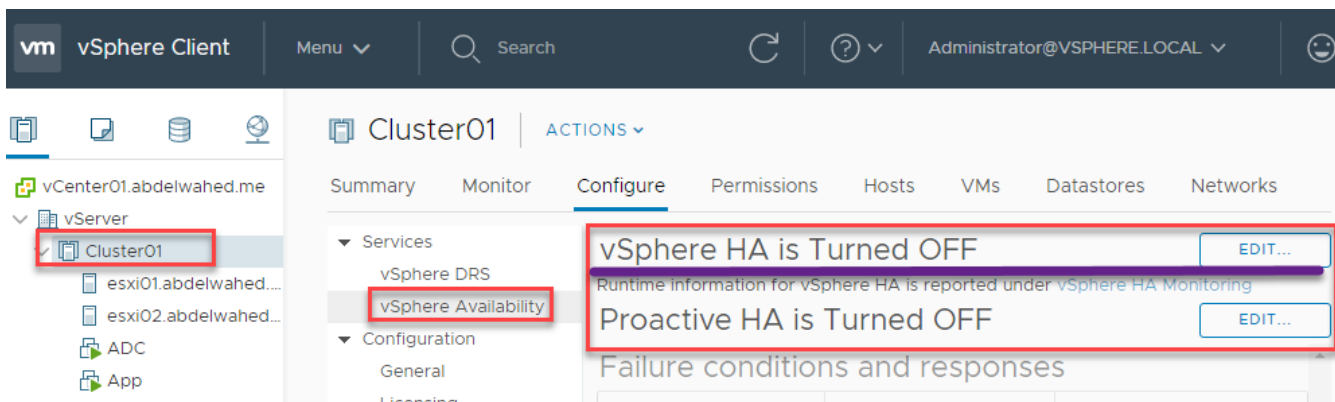
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Add pingable DF for both hosts (in this case I will use IP for vCenter)



Now you can enable HA



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vSphere HA

Failures and responses

Admission Control

Heartbeat Datastores

Advanced Options

You can configure how vSphere HA responds to the failure conditions on this cluster. The following failure conditions are supported: host, host isolation, VM component protection (datastore with PDL and APD), VM and application.

Enable Host Monitoring *i*

> Host Failure Response	Restart VMs ▼
> Response for Host Isolation	Disabled ▼
> Datastore with PDL	Disabled ▼
> Datastore with APD	Disabled ▼
> VM Monitoring	Disabled ▼

- 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

> Response for Host Isolation	Disabled ▼
> Datastore with PDL	Disabled
> Datastore with APD	Disabled

PDL, datastore that store the VM is down

▼ Datastore with PDL

Datastore with PDL Failure Response

Allows you to configure the cluster to respond to PDL Datastore failures.

Disabled

No action will be taken to the affected VMs.

Issue events

No action will be taken to the affected VMs; events will be generated.

Power off and restart VMs

All affected VMs will be terminated and vSphere HA will attempt to restart the VMs on hosts that still have connectivity to the datastore.

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

All Paths Down (APD) Failure Response

Allows you to configure the cluster to respond to APD Datastore failures

- Disabled
No action will be taken on the affected VMs.
- Issue events
No action will be taken on the affected VMs. Events will be generated.
- Power off and restart VMs - Conservative restart policy
A VM will be powered off, if HA determines the VM can be restarted on a different host.
- Power off and restart VMs - Aggressive restart policy
A VM will be powered off, if HA determines the VM can be restarted on a different host, or if HA cannot detect the resources on other hosts because of network connectivity loss (network partition).

VM Monitoring

Enable heartbeat monitoring

VM monitoring resets individual VMs if their VMware tools heartbeats are not received within a set time. Application monitoring resets individual VMs if their in-guest heartbeats are not received within a set time.

- Disabled
- VM Monitoring Only
Turns on VMware tools heartbeats. When heartbeats are not received within a set time, the VM is reset.
- VM and Application Monitoring
Turns on application heartbeats. When heartbeats are not received within a set time, the VM is reset.

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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
Maximum is one less than number of hosts in cluster.

Define host failover capacity by

Override calculated failover capacity.

Reserved failover CPU capacity: % CPU

Reserved failover Memory capacity: % Memory

Performance degradation VMs tolerate %
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

Define host failover capacity by
Maximum is one less than number of hosts in cluster.

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: MHz

Memory slot size: MB

VMs requiring multiple slots:

Performance degradation VMs tolerate %
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.

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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 ↓
<input type="checkbox"/>	 Datastore5-ISCSI	N/A	2
<input type="checkbox"/>	 Datastore04_ISCSI	N/A	2

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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 i

VM dependency restart condition timeout: 600 seconds i

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

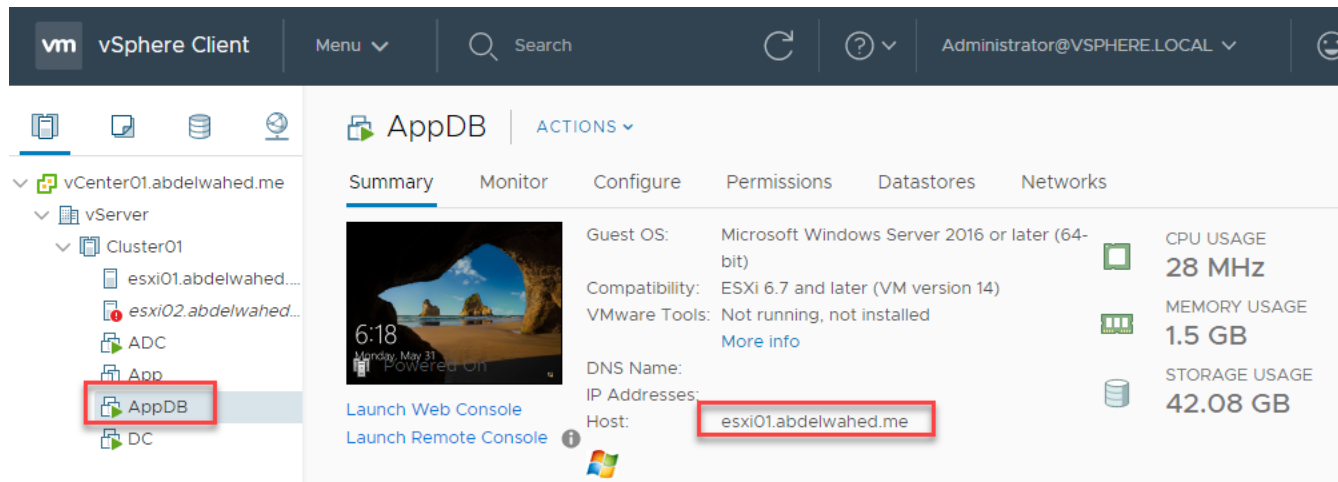
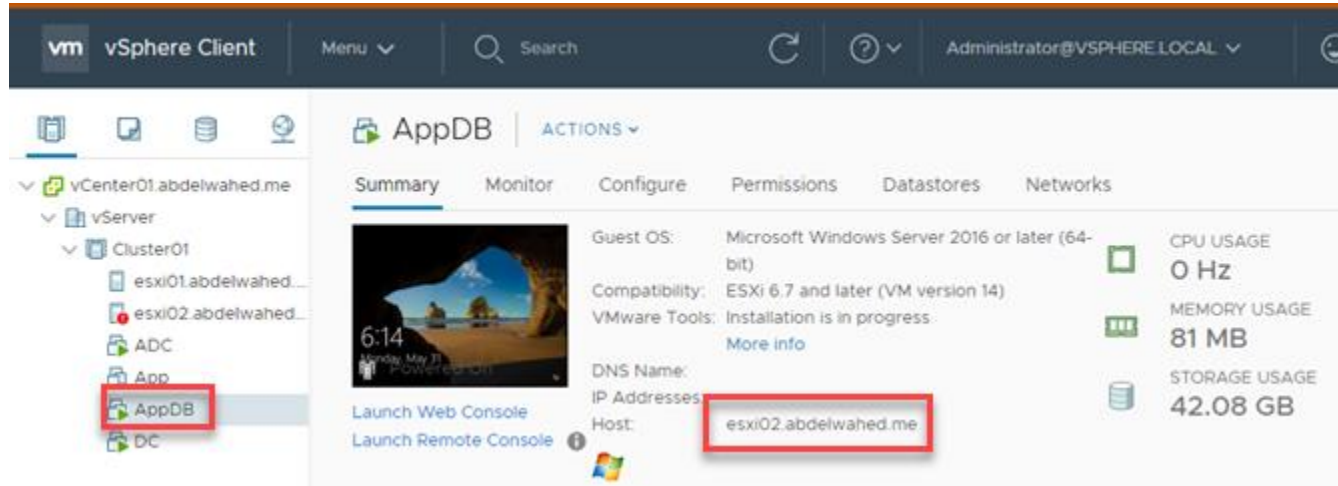
Proactive HA is Turned OFF EDIT...

Failure conditions and responses

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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.

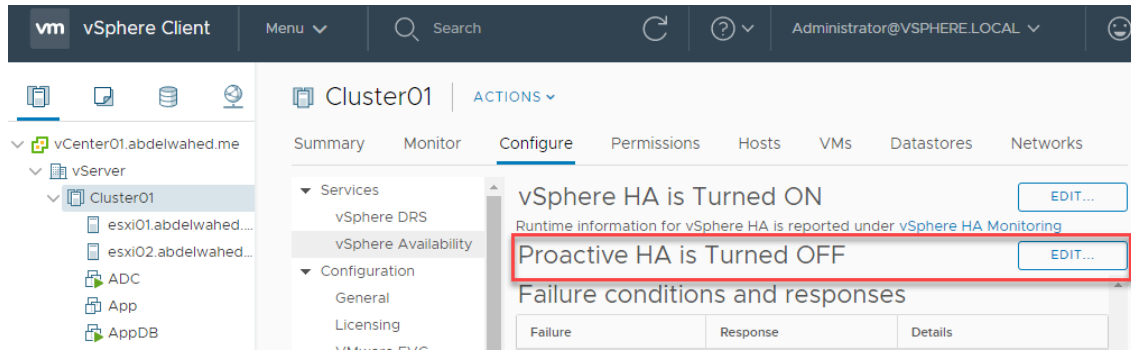


vCenter Proactive HA (need plugins)

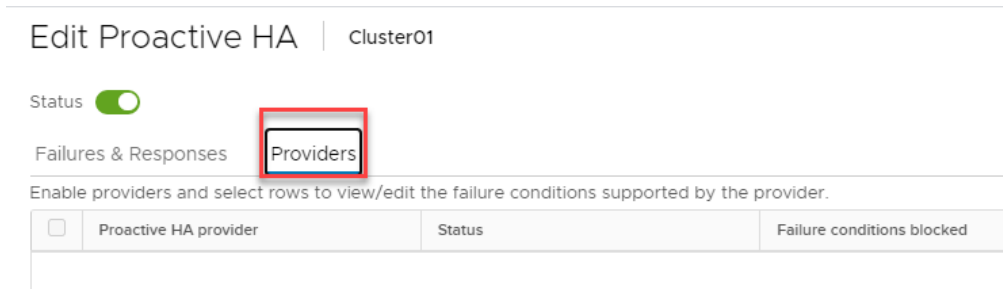
vCenter can monitor hardware through vmware tool plugins,

www.abdelwahed.me

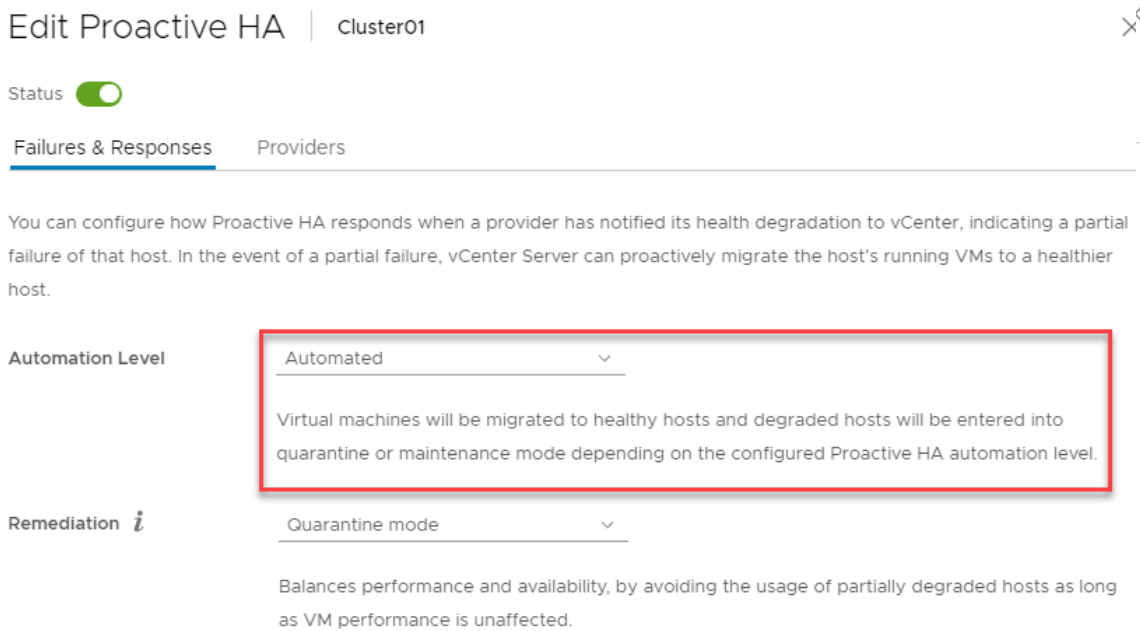
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this plugin provided by vendor, we install it at vCenter and will appear at provider area so we can monitor health degradation not hardware failuar.



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 degradation:

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- 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.

Edit Proactive HA | Cluster01 ×

Status

Failures & Responses Providers

You can configure how Proactive HA responds when a provider has notified its health degradation to vCenter, indicating a partial failure of that host. In the event of a partial failure, vCenter Server can proactively migrate the host's running VMs to a healthier host.

Automation Level Automated

Virtual machines will be migrated to healthy hosts and degraded hosts will be entered into quarantine or maintenance mode depending on the configured Proactive HA automation level.

Remediation *i* Quarantine mode

Balances performance and availability, by avoiding the usage of partially degraded hosts as long as VM performance is unaffected.

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

Remediation *i* Maintenance mode

Ensures VMs do not run on partially failed hosts.

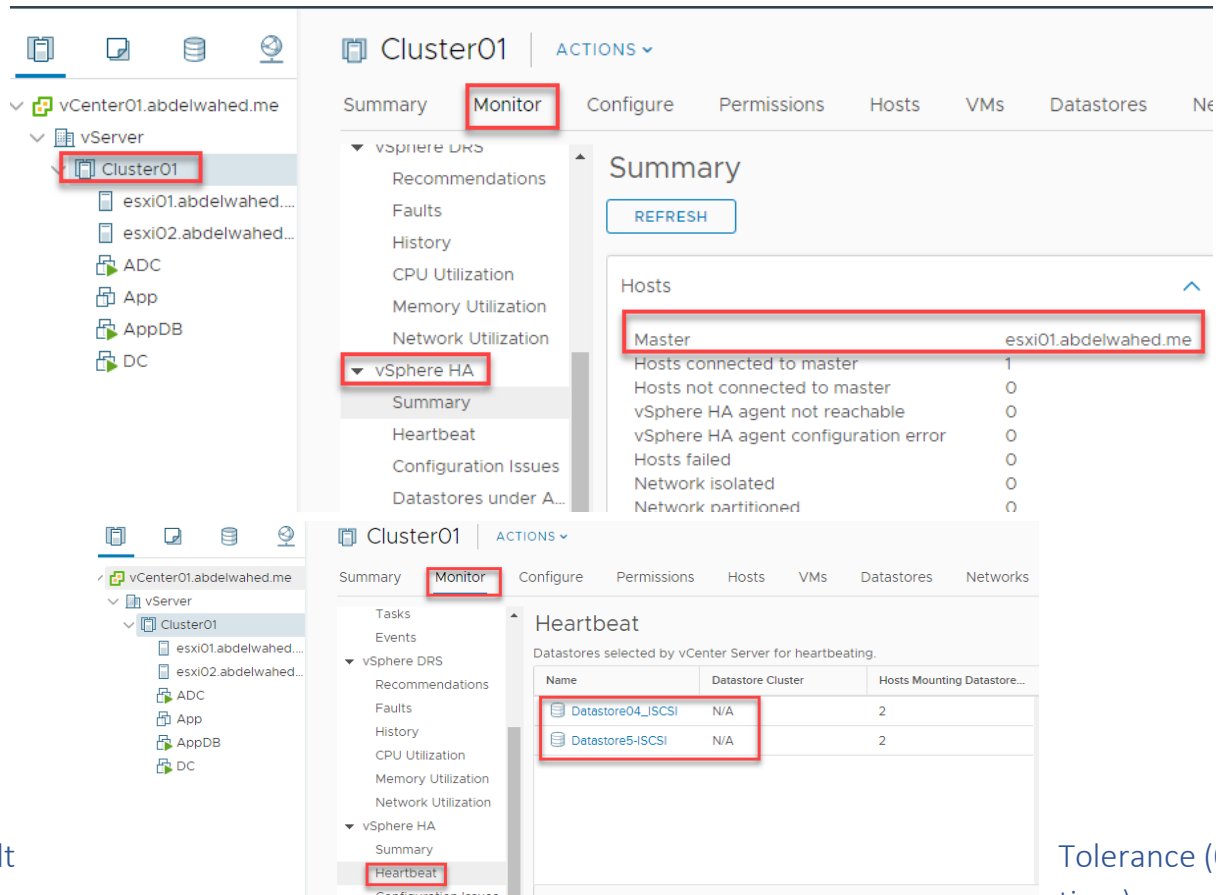
- Mixed mode, move VMs to another host and mark as quarantine

Remediation *i* Mixed mode

Balances performance and availability, by avoiding the usage of partially degraded hosts as long as VM performance is unaffected.

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HA Summary and Heartbeat voted master serve



Fault
down

Tolerance (0
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.

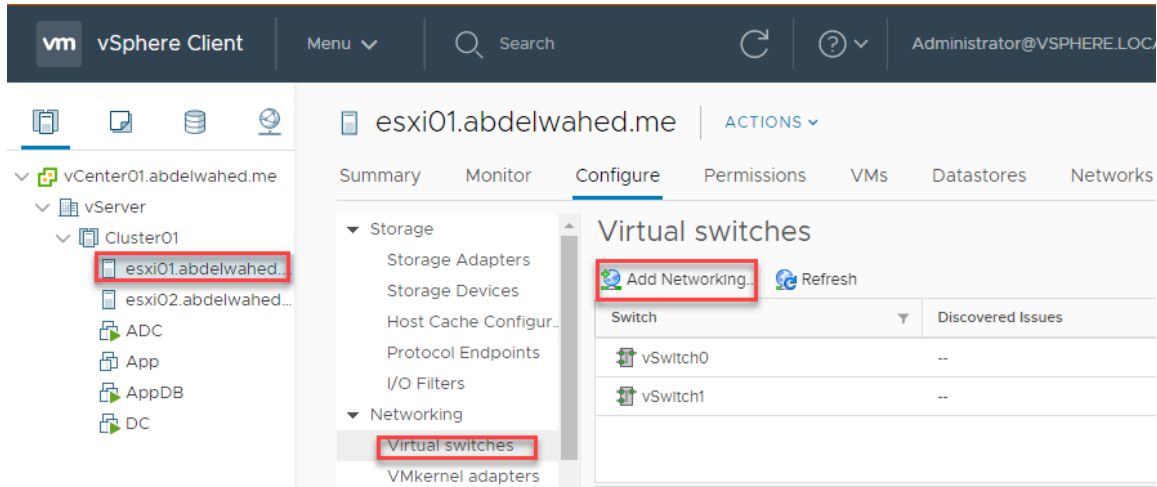
Requirments

- 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.

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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

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Add both adapters we added to ESXi in the virtual switch

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

Create a Standard Switch

Assign free physical network adapters to the new switch.

Assigned adapters

Active adapters

- (New) vmnic2
- (New) vmnic3

Standby adapters

Unused adapters

All	Properties	CDP	LLDP
Adapter			
Name	vmnic3		
Location	PCI 0000:1b:00.0		
Driver	nvmxnet3		
Status			
Status	Connected		
Actual speed, Duplex	10000 Mb, Full Duplex		
Configured speed, Duplex	10000 Mb, Full Duplex		
Networks	No networks		
Network I/O Control			
Status	Allowed		

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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

Port properties

Specify VMkernel port settings.

VMkernel port settings

Network label	FT_Network
VLAN ID	None (0) ▼
MTU	Get MTU from switch ▼ 1500
TCP/IP stack	Default ▼

Available services

- Enabled services
- vMotion
 - Provisioning
 - Fault Tolerance logging
 - Management
 - vSphere Replication
 - vSphere Replication NFC
 - vSAN

configure any different IP rang

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

IPv4 settings

Specify VMkernel IPv4 settings.

- Obtain IPv4 settings automatically
- Use static IPv4 settings

IPv4 address	172.16.0.100
Subnet mask	255.255.255.0
Default gateway	<input type="checkbox"/> Override default gateway for this adapter 200.200.200.111
DNS server addresses	200.200.200.200

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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	vSwitch2
Assigned adapters	vmnic2, vmnic3
Switch MTU	1500
New port group	FT_Network
VLAN ID	None (0)
vMotion	Disabled
Provisioning	Disabled
Fault Tolerance logging Management	Enabled
vSphere Replication	Disabled
vSphere Replication NFC	Disabled
vSAN	Disabled

NIC settings	
MTU	1500
TCP/IP stack	Default

IPv4 settings	
IPv4 address	172.16.0.100 (static)
Subnet mask	255.255.255.0

Activate Windows
Go to Settings to activate Windows.
CANCEL BACK FINISH

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

Web_Server | ACTIONS

Summary Monitor Configure Permissions Datastores Networks

Guest OS: Microsoft Windows Server 2016 or later (64-bit)
Compatibility: ESXi 6.7 and later (VM version 14)
VMware Tools: Running, version:10346 (Current)
DNS Name: VM01.abdelwahed.me
IP Addresses: 200.200.200.20
Host: esxi02.abdelwahed.me

CPU USAGE: 28 MHz
MEMORY USAGE: 225 MB
STORAGE USAGE: 42.08 GB

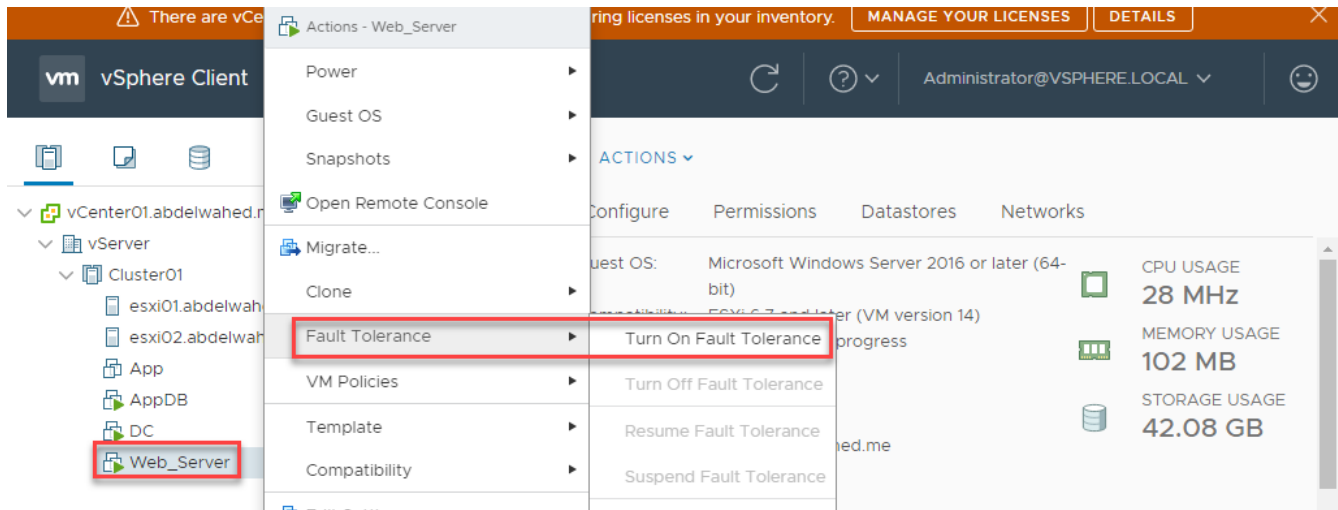
Web_Server | ACTIONS

Summary Monitor Configure Permissions Datastores Networks

Name	Status	Type	Datastore...	Capacity	Free
Datastore04_iSCSI	✓ Normal	VMFS 6		499.5 GB	286.23 GB

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Now enable FT for that server in different iSCSI datastore



Web_Server - Turn On Fault Tolerance

1 Select datastores

2 Select host

3 Ready to complete

Select datastores

Select datastores to place the secondary VM disks and configuration files.

Configure per disk

Name	Capacity	Provisioned	Free
Datastore5-ISCSI	299.5 GB	1.41 GB	298.09 GB
Datastore04_ISCSI	499.5 GB	217.68 GB	286.23 GB

Web_Server - Turn On Fault Tolerance

✓ 1 Select datastores

2 Select host

3 Ready to complete

Select host

Select host for the secondary VM.

Show all hosts

Filter

Name	State	Status
esxi01.abdelwahed.me	Connected	✓ Normal

Web_Server - Turn On Fault Tolerance

✓ 1 Select datastores

✓ 2 Select host

3 Ready to complete

Ready to complete

Review your selections and click Finish to turn on fault tolerance on this virtual machine.

Placement details for the Secondary VM

Host:	esxi01.abdelwahed.me
Configuration File Location:	Datastore5-ISCSI
Tie Breaker File Location:	Datastore5-ISCSI
Hard disk 1 Location:	Datastore5-ISCSI

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Web_Server | ACTIONS

Summary | Monitor | Configure | Permissions | Datastores | Networks

Guest OS: Microsoft Windows Server 2016 or later (64-bit)
Compatibility: ESXi 6.7 and later (VM version 14)
VMware Tools: Running, version:10346 (Current)
DNS Name: VM01.abdelwahed.me
IP Addresses: 200.200.200.20
Host: esxi02.abdelwahed.me

CPU USAGE: 28 MHz
MEMORY USAGE: 122 MB
STORAGE USAGE: 42.08 GB

Virtual machine Fault Tolerance state changed | Acknowledge | Reset To Green

Task Name	Target	Status	Initiator	Queued For	Start Time	Completion Time	Server
Start Fault Tolerance	Web_Server	24%	System	10 ms	06/01/2021, 6:56:00 AM		vCenter01.abdelwahed.me
Turn On Fault Tolerance	Web_Server	Completed	VSPHERE.LOCAL...	undefined	06/01/2021, 6:55:55 AM	06/01/2021, 6:56:00 AM	vCenter01.abdelwahed.me

esxi01.abdelwahed.me | ACTIONS

Summary | Monitor | Configure | Permissions | **VMs** | Datastores | Networks

Virtual Machines | VM Templates

Name	State	Status	Provisioned Space	Used Space
Web_Server (secondary)	Powered On	Normal	40.24 GB	40 GB

Testing, Disconnect ESXI02 which is the primary server

if vCenter down FT will continue work because it's based-on HA

vm vSphere Client | Menu | Search | Administrator@VSPHERE.LOCAL

esxi01.abdelwahed.me | ACTIONS

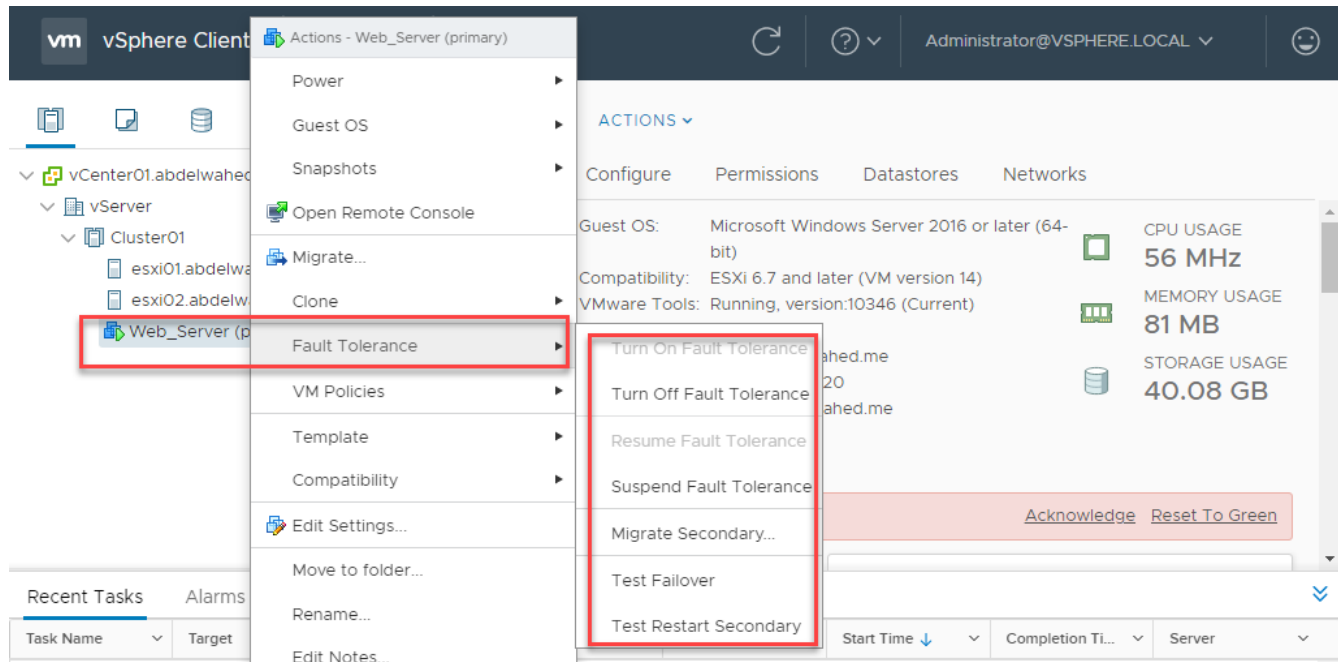
Summary | Monitor | Configure | Permissions | **VMs** | Datastores | Networks

Virtual Machines | VM Templates

Name	State	Status	Provisioned Space	Used Space
Web_Server (primary)	Powered On	Alert	40.08 GB	40.08 GB

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Migrate the VM without failuar



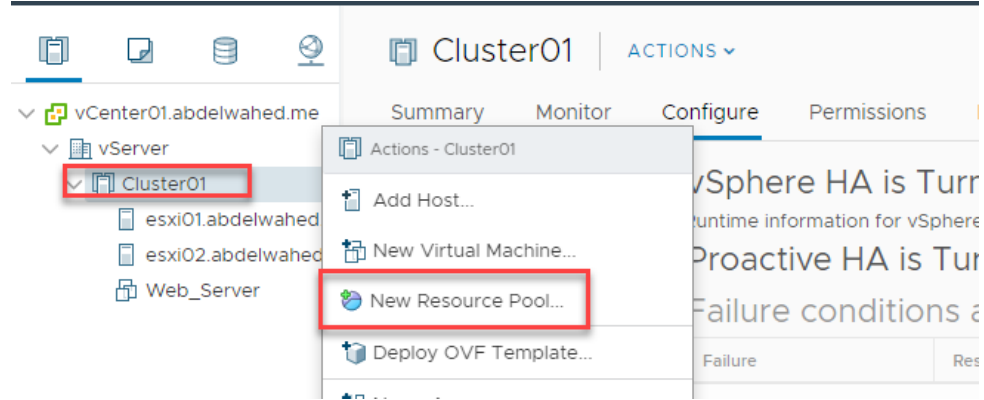
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Resource Pool

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 priority 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



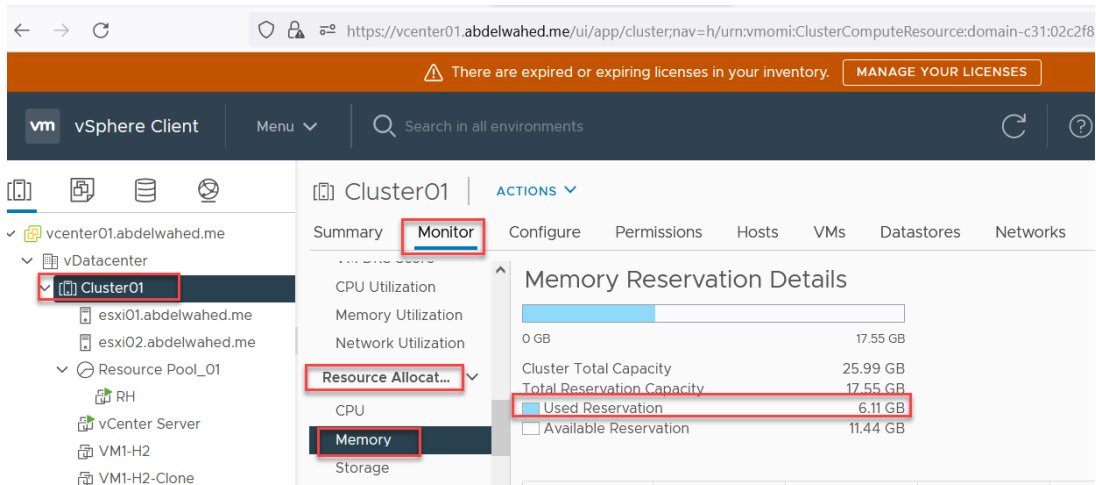
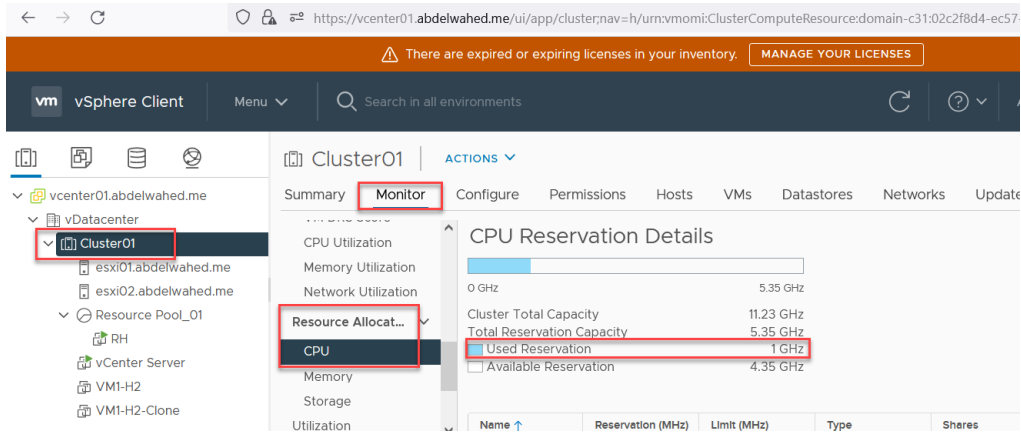
Name	Resource Pool_01	
Scale Descendant's Shares	<input checked="" type="checkbox"/> Yes, make them scalable	
▼ CPU		
Shares	Normal	4000
Reservation	1000	MHz
Max reservation: 5,348 MHz		
Reservation Type	<input checked="" type="checkbox"/> Expandable	
Limit	Unlimited	MHz
Max limit: 5,348 MHz		
▼ Memory		
Shares	Normal	163840
Reservation	6	GB
Max reservation: 17.39 GB		
Reservation Type	<input checked="" type="checkbox"/> Expandable	

Name	Resource Pool_01
Scale Descendant's Shares	<input checked="" type="checkbox"/> Yes, make them scalable
▼ CPU	
Shares	Normal
Reservation	1000

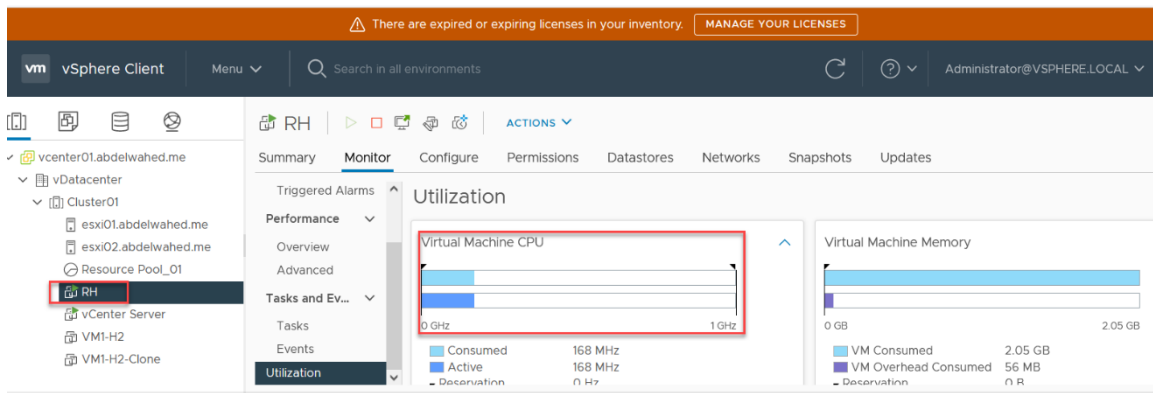
WHY IS THIS:

If this option is selected, the shares allocated to each descendant resource pool shall be adjusted to ensure that the relative shares allocated to the VMs are maintained

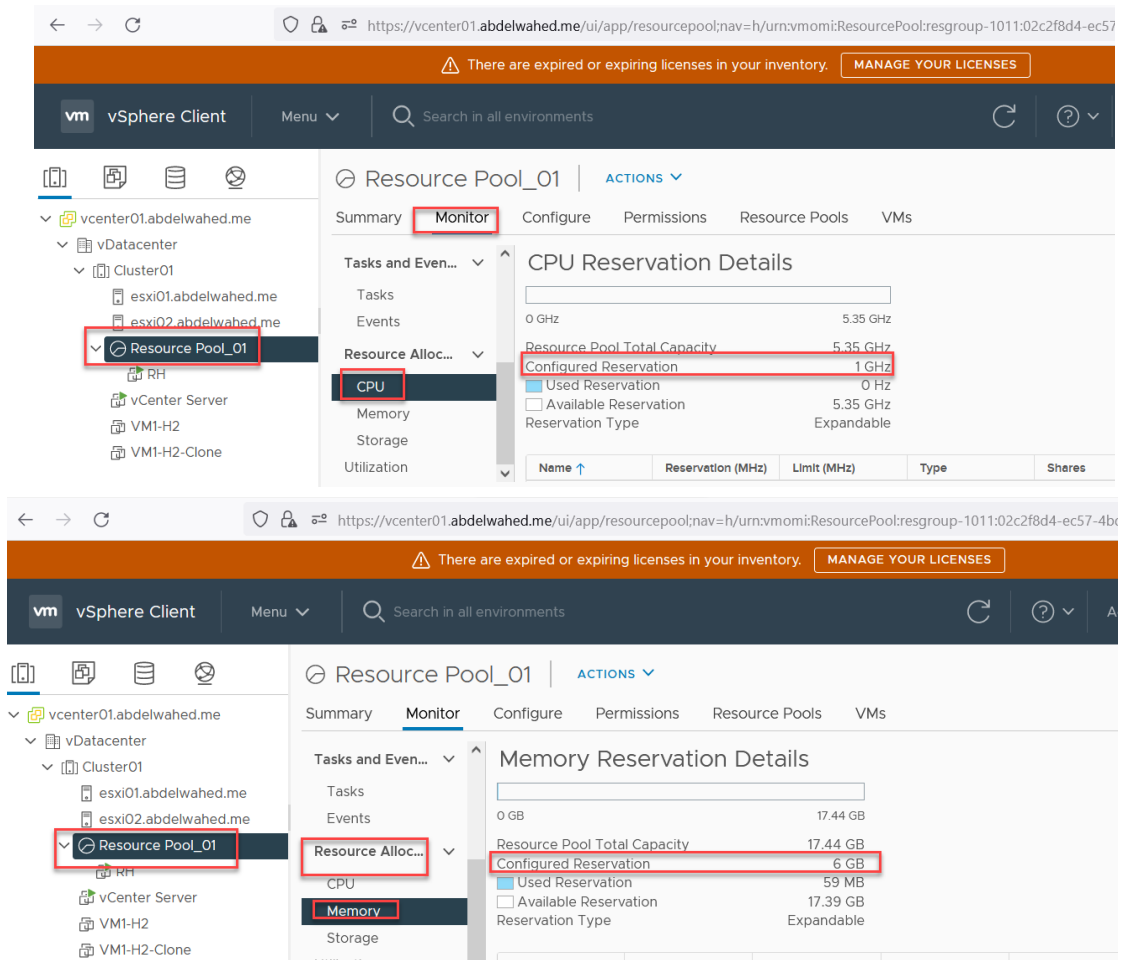
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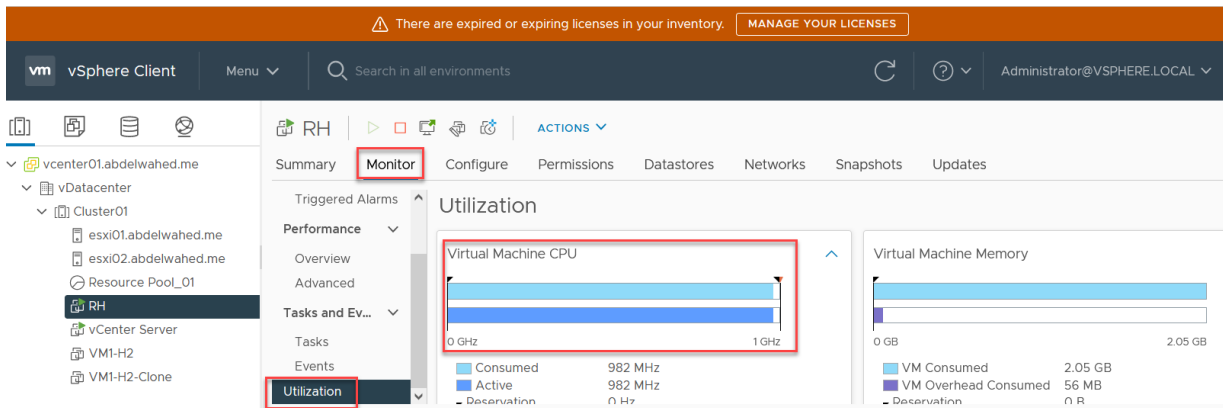
Testing, I have one RedHat VM with 1GHZ CPU speed



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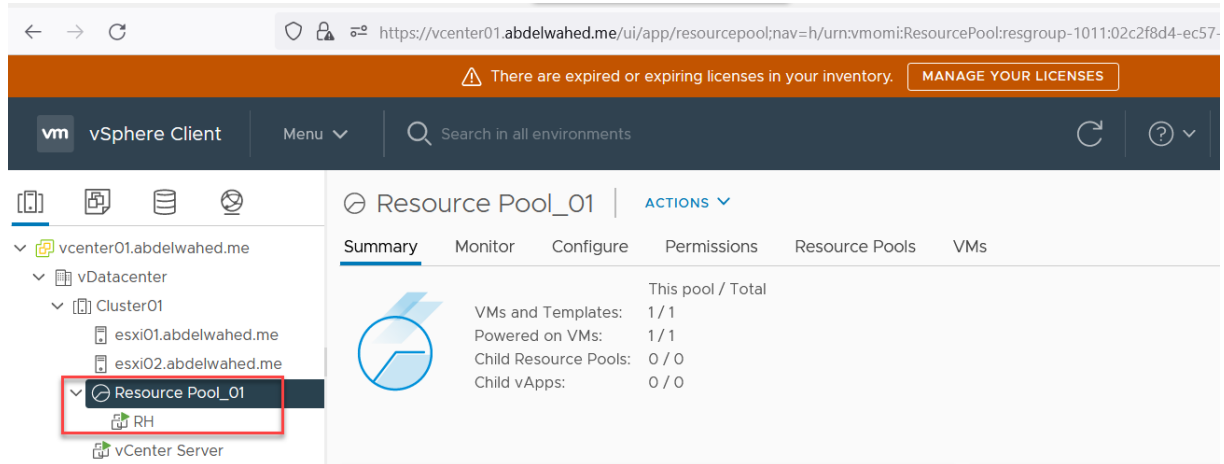


I will increase the CPU usage using `dd if=/dev/zero of=/dev/null` and monitor CPU change



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



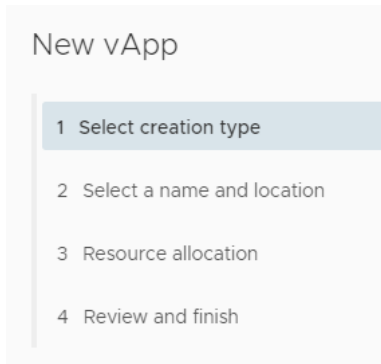
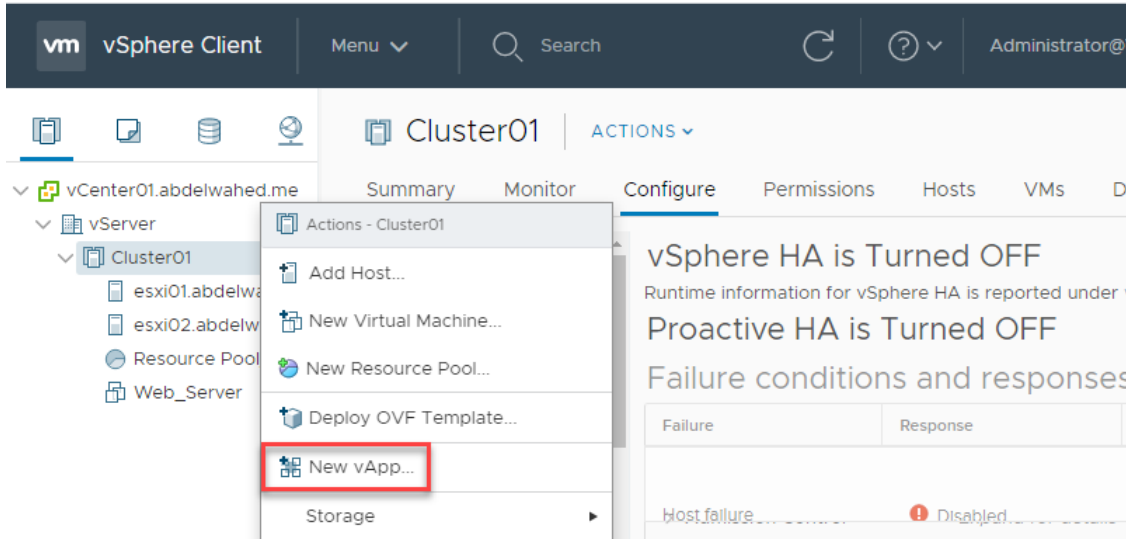
We can also create sub pool,

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

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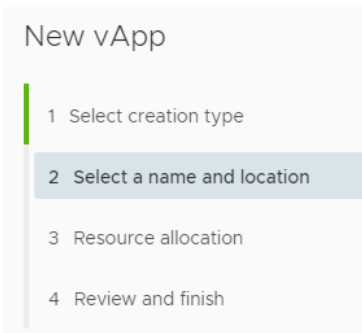
vApp

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.



Select creation type

- Create a new vApp
This option guides you through creating a new vApp. You will be able to customize CPU and memory resources.
- Clone an existing vApp



Select a name and location

vApp name:

Select a folder or datacenter

- ▼ vServer
 - > Discovered virtual machine

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The screenshot shows the 'New vApp' wizard in VMware vSphere. The 'Resource allocation' step is active, showing the following settings:

- CPU**
 - Shares: High (8000)
 - Reservation: 300 MHz (Max reservation: 4,728 MHz)
 - Reservation Type: Expandable
 - Limit: Unlimited MHz (Max limit: 5,728 MHz)

The 'Review and finish' step shows the following summary:

Property	Value
Name	Abdelwahed_vApp
Location	vServer
Resource	Cluster01
CPU allocation	300 - Unlimited MHz
Memory allocation	2048 - Unlimited MB

The screenshot shows the VMware vSphere interface with the 'Abdelwahed_vApp' object selected in the inventory. The 'Power' menu is open, and the 'Power On' option is selected. The interface also shows the 'CPU USAGE' and 'MEMORY USAGE' metrics for the selected vApp.


Inventory:

- vCenter01.abdelwahed.me
 - vServer
 - Cluster01
 - esxi01.abdelwahed...
 - esxi02.abdelwahed...
 - Resource Pool_01
 - Abdelwahed_vApp**
 - Web_Server

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Edit vApp | Abdelwahed_vApp

Resources **Start Order** IP Allocation Details

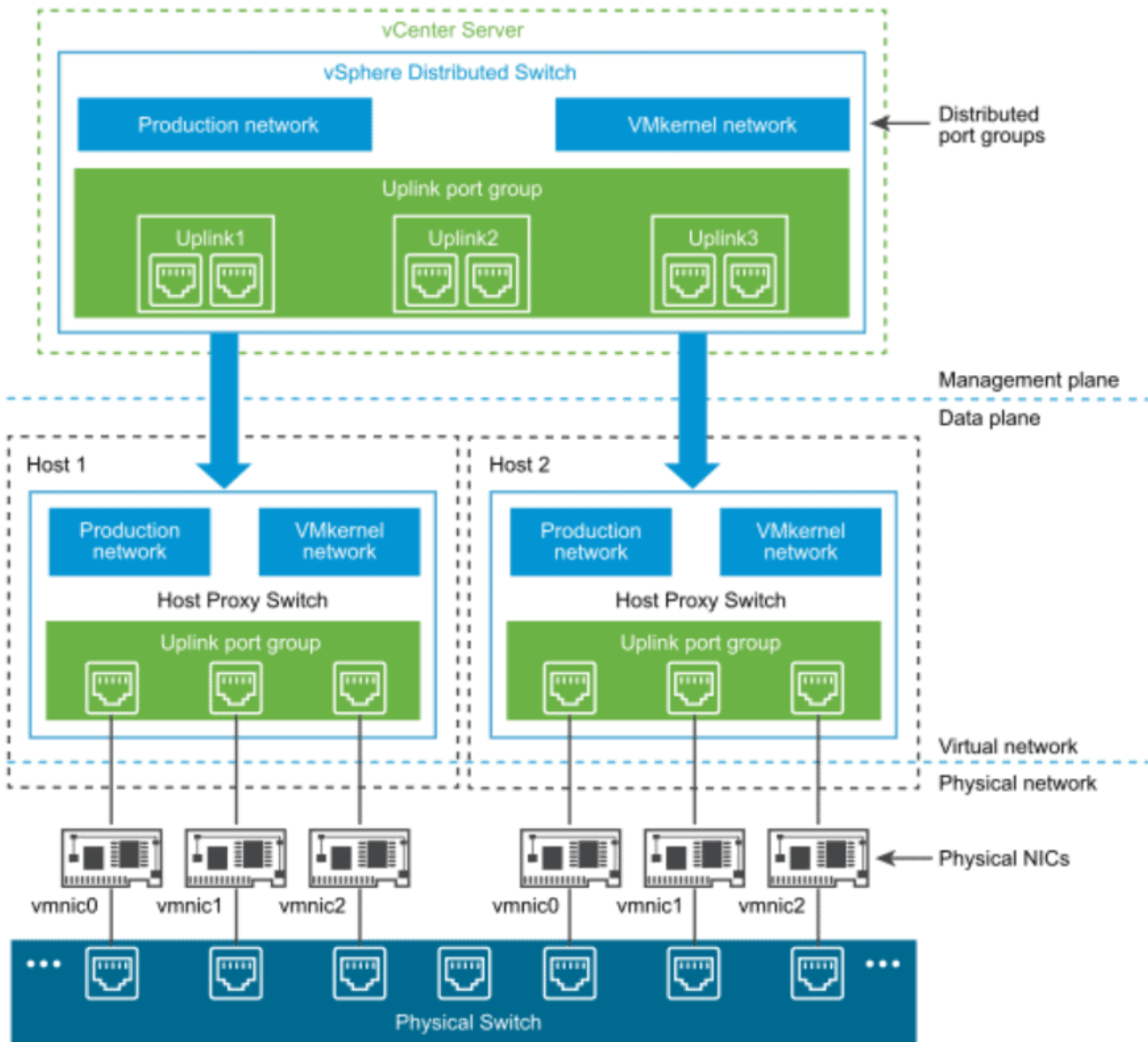
Name ▾	Order ▾	Startup action	Startup delay (s)	VM tools	Shutdown action	Shutdown delay (s)
						
0 VMs						

Order		Startup		Shutdown	
Group	▾	Action	▾	Action	▾
		Delay (s)		Delay (s)	

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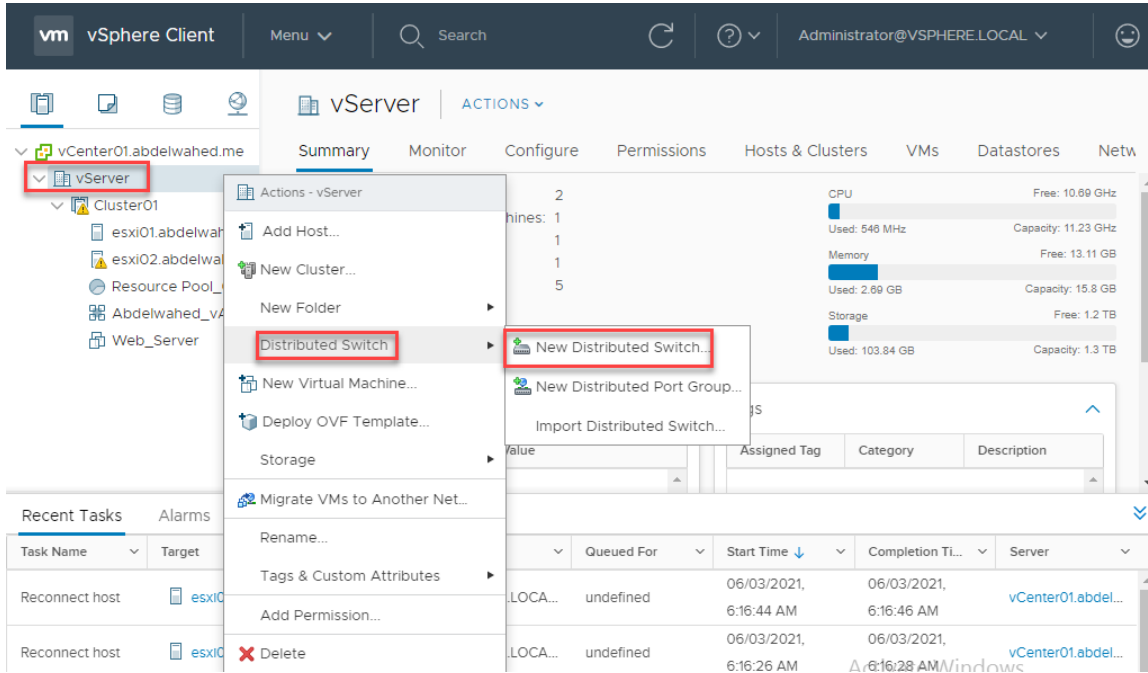
Virtual Distributed switch (datacenter level)

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.



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First, add NIC for both ESXi servers



New Distributed Switch

1 Name and location

2 Select version

3 Configure settings

4 Ready to complete

Name and location

Specify distributed switch name and location.

Name

DSwitch

Location

vServer

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

New Distributed Switch

1 Name and location

2 Select version

3 Configure settings

4 Ready to complete

Select version

Specify a distributed switch version.

6.6.0 - ESXi 6.6 and later

6.5.0 - ESXi 6.5 and later

6.0.0 - ESXi 6.0 and later

Features per version ⓘ

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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

New Distributed Switch

✓ 1 Name and location
✓ 2 Select version
3 Configure settings
4 Ready to complete

Configure settings
Specify number of uplink ports, resource allocation and default port group.

Number of uplinks	1
Network I/O Control	Enabled
Default port group	<input checked="" type="checkbox"/> Create a default port group
Port group name	DProduction

New Distributed Switch

✓ 1 Name and location
✓ 2 Select version
✓ 3 Configure settings
4 Ready to complete

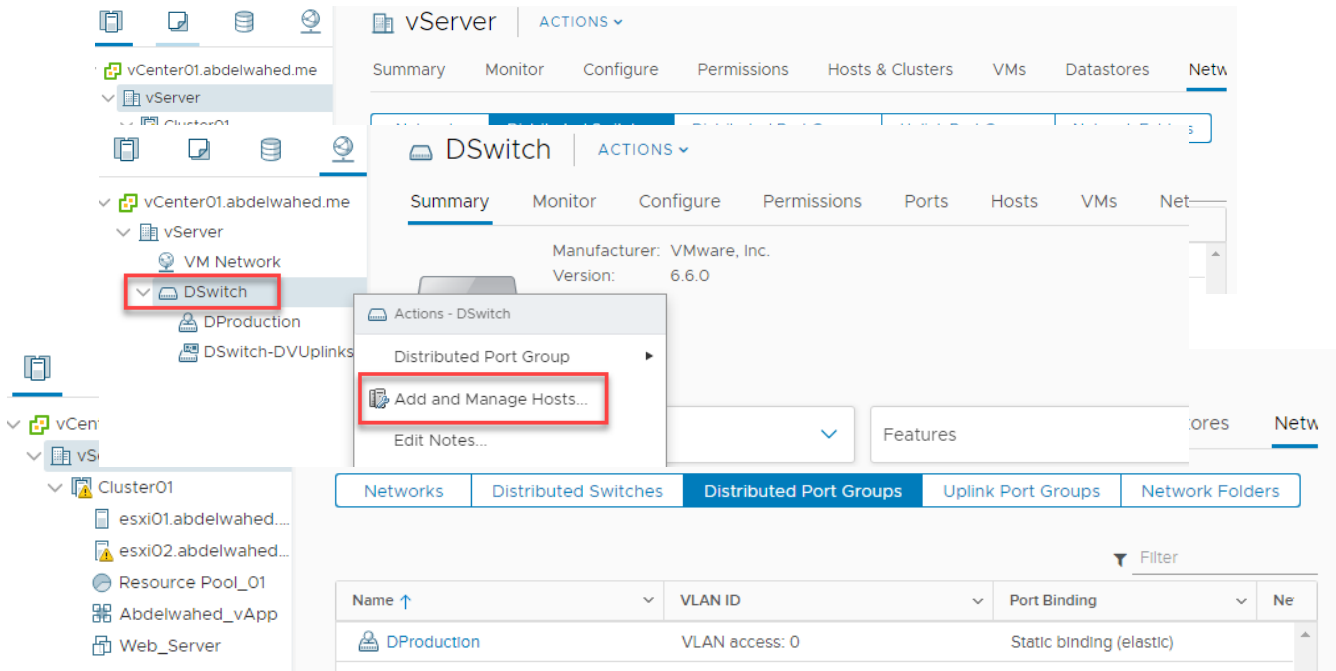
Ready to complete
Review your settings selections before finishing the wizard.

Name	DSwitch
Version	6.6.0
Number of uplinks	1
Network I/O Control	Enabled
Default port group	DProduction

Suggested next actions

- New Distributed Port Group
- Add and Manage Hosts

These actions will be available in the Actions menu of the new distributed switch.



DSwitch - Add and Manage Hosts

1 Select task | **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** | **Select hosts**
Select hosts to add to this distributed switch.

2 Select hosts | **3 Manage physical adapters**

4 Manage VMkernel adapt... | 5 Migrate VM networking | 6 Ready to complete

➕ New hosts | ➖ Remove

DSwitch - Add and Manage Hosts

✓ **1 Select task** | **Manage physical adapters**
Add or remove physical network adapters to this distributed switch.

✓ **2 Select hosts** | **3 Manage physical adapters**

4 Manage VMkernel adapt... | 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	--	--	--

Select an Uplink | vmnic4

Uplink	Assigned Adapter
Uplink 1	--
(Auto-assign)	

Now NIC assigned to DSwitch

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

Manage physical adapters

Add or remove physical network adapters to this distributed switch.

Assign uplink | Reset changes | View settings

Host/Physical Network Adapters	In Use by Switch	Uplink	Uplink Port Group
esxi01.abdelwahed.me			
On this switch			
vmnic4 (Assigned)	--	Uplink 1	DSwitch-DVUplin...
On other switches/unclaimed			
vmnic0	vSwitch0	--	--
vmnic1	vSwitch1	--	--
vmnic2	vSwitch2	--	--
vmnic3	vSwitch2	--	--
esxi02.abdelwahed.me			
On this switch			
vmnic4 (Assigned)	--	Uplink 1	DSwitch-DVUplin...
On other switches/unclaimed			

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

Manage VMkernel adapters

Manage and assign VMkernel network adapters to the distributed switch.

Assign port group | Reset changes | View settings

Host/VMkernel Network Adapters	In Use by Switch	Source Port Group	Destination Port Gr...
esxi01.abdelwahed.me			
On this switch			
On other switches/unclaimed			
vmk0	vSwitch0	Management Net...	Do not migrate
vmk1	vSwitch1	VMkernel	Do not migrate
vmk2	vSwitch2	FT_Network	Do not migrate
esxi02.abdelwahed.me			
On this switch			
On other switches/unclaimed			
vmk0	vSwitch0	Management Net...	Do not migrate
vmk1	vSwitch1	VMkernel	Do not migrate
vmk2	vSwitch2	FT_Network	Do not migrate

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

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

Migrate VM networking
Select virtual machines or network adapters to migrate to the distributed switch.

Assign port group Reset changes View settings

Host/Virtual Machine/Network Adapter	NIC Count	Source Port Group	Destination Port Group
esxi01.abdelwahed.me			
Web_Server	1		
Network adapter 1		VM Network	Do not migrate

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 Network

Filter

Name	Distributed Switch
DProduction	DSwitch

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

Migrate VM networking
Select virtual machines or network adapters to migrate to the distributed switch.

Assign port group Reset changes View settings

Host/Virtual Machine/Network Adapter	NIC Count	Source Port Group	Destination Port Group
esxi01.abdelwahed.me			
Web_Server	1		Reassigned
Network adapter 1		VM Network	DProduction

DSwitch - Add and Manage Hosts

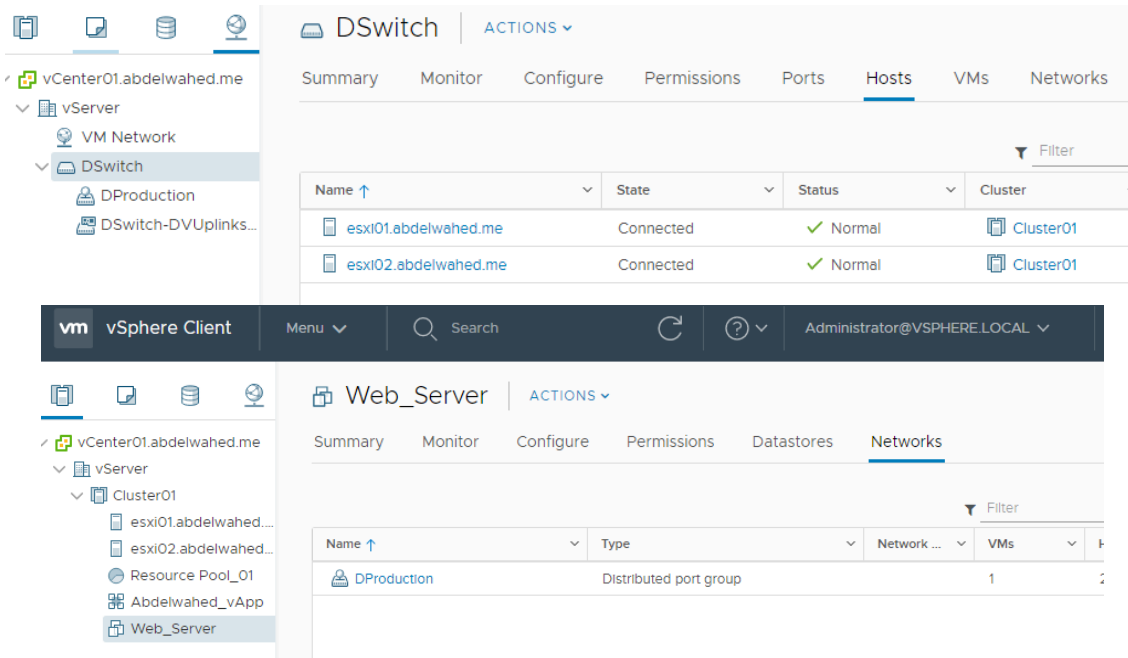
- ✓ 1 Select task
- ✓ 2 Select hosts
- ✓ 3 Manage physical adapters
- ✓ 4 Manage VMkernel adapt...
- ✓ 5 Migrate VM networking
- 6 Ready to complete**

Ready to complete
Review your settings selections before finishing the wizard.

Number of managed hosts
Hosts to add 2

Number of network adapters for update
Physical adapters 2
Virtual machine adapters 1

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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.

