

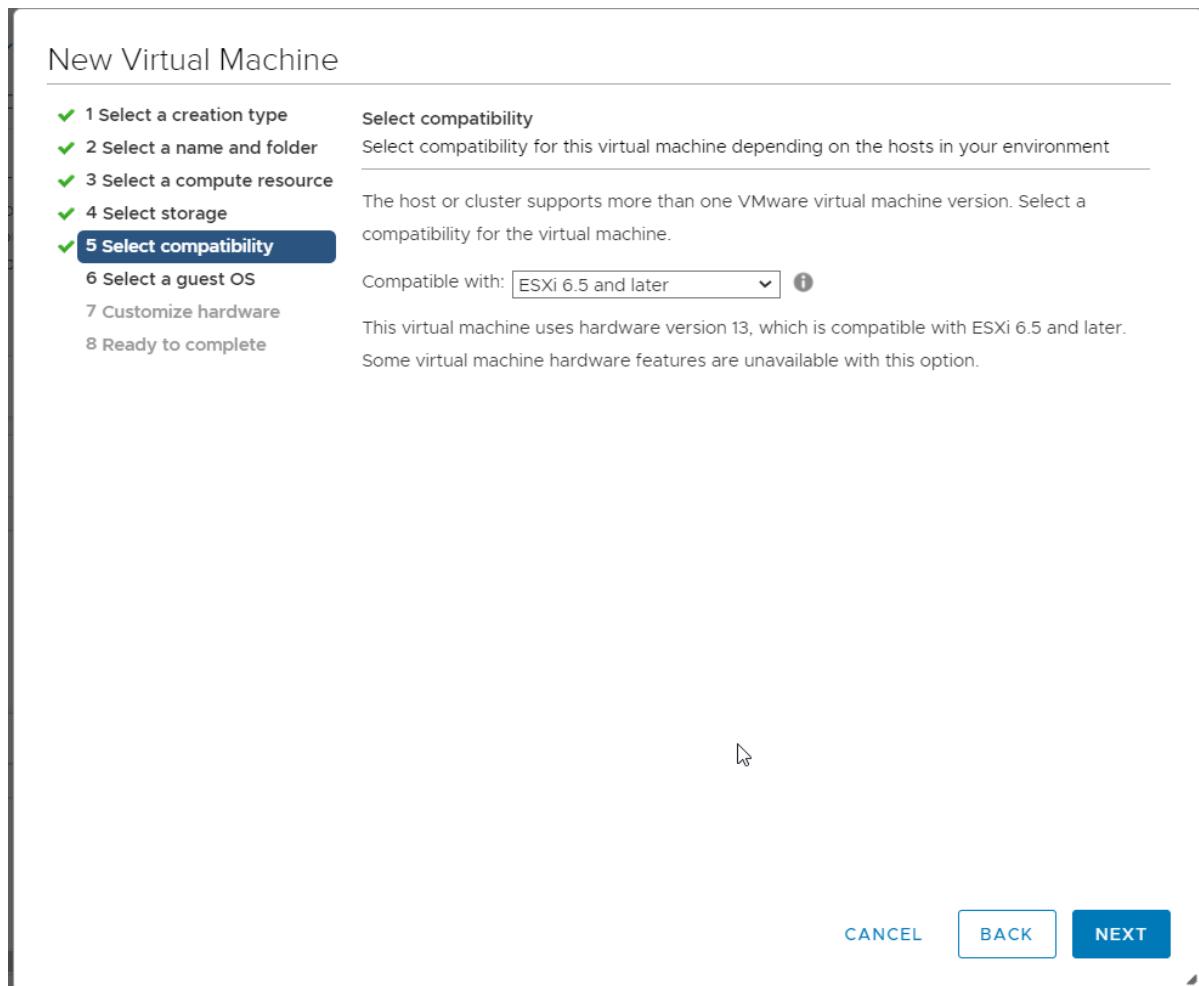
INDEX

| Sr No. | PRACTICAL | Date | Sign |
|--------|---|------|------|
| 1. | Configuring ESXi Hosts Install ESXi on a VM using your student desktop | | |
| 2. | Configuring ESXi Hosts Configure the Management Network Enable SSH | | |
| 3. | Deploying and Configuring a Virtual Machine a. Create a Virtual Machine b. Install a Guest Operating System and Disable Windows Updates c. Install VMware Tools/Install Files | | |
| 4. | Working with vCenter Server | | |
| 5. | Navigating the vSphere Clients | | |
| 6. | Creating Folders in vCenter Server Appliance | | |
| 7. | Using Standard Switches | | |
| 8. | Accessing iSCSI Storage | | |
| 9. | Managing VMFS Datastores | | |
| 10. | Accessing NFS Storage | | |

PRACTICAL 1

AIM: Install ESXi on a VM

First ESXi Host Installation



Select appropriate compatibility to install nested ESXi.

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:

Guest OS Version:

 This operating system is not supported, see description of "Unsupported" at: <http://kb.vmware.com/kb/2015161>



Compatibility: ESXi 6.5 and later (VM version 13)

[CANCEL](#)

[BACK](#)

[NEXT](#)

Selected appropriate guest operating system version.

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

Customize hardware
Configure the virtual machine hardware

Virtual Hardware VM Options

[ADD NEW DEVICE](#)

| | | |
|-------------------------|---|--|
| > CPU * | 6 | ▼ |
| > Memory * | 20 | GB ▼ |
| > New Hard disk * | 150 | GB ▼ |
| > New SCSI controller * | VMware Paravirtual | |
| > New Network * | NET701-SK-1_NET | ▼ <input checked="" type="checkbox"/> Connect... |
| > New Network * | NET701-SK-2_STC | ▼ <input checked="" type="checkbox"/> Connect... |
| > New CD/DVD Drive * | Datastore ISO File | ▼ <input checked="" type="checkbox"/> Connect... |
| > Video card * | Specify custom settings | ▼ |
| VMCI device | Device on the virtual machine PCI bus that provides support for the virtual machine | ▼ |

Compatibility: ESXi 6.5 and later (VM version 13)

[CANCEL](#)

[BACK](#)

[NEXT](#)

Added two network adaptors to access network & Storage over separate IP network also added more compute resources to install vCenter server on this ESXi host.

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

Customize hardware
Configure the virtual machine hardware

Virtual Hardware VM Options

[ADD NEW DEVICE](#)

| | | |
|-------------------------|---|-----------------------------|
| Limit | Unlimited | MHz |
| Shares | Normal | 6000 |
| CPUID Mask | Expose the NX/XD flag to guest | Advanced... |
| Hardware virtualization | <input checked="" type="checkbox"/> Expose hardware assisted virtualization to the guest OS | |
| Performance Counters | <input checked="" type="checkbox"/> Enable virtualized CPU performance counters | |
| Scheduling Affinity | | i |
| CPU/MMU Virtualization | Automatic | i |
| > <i>Memory</i> * | 20 | GB |

Compatibility: ESXi 6.5 and later (VM version 13)

[CANCEL](#)

[BACK](#)

[NEXT](#)

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

| | |
|-------------------------------|--------------------------------------|
| Provisioning type | Create a new virtual machine |
| Virtual machine name | ESXi-01 |
| Folder | NET701-SK |
| Resource pool | LAB |
| Datastore | NET701_SK_ds |
| Guest OS name | VMware ESXi 6.5 or later |
| Virtualization Based Security | Disabled |
| CPUs | 6 |
| Memory | 20 GB |
| NICs | 2 |
| NIC 1 network | NET701-SK-1_NET (dvSwitch01-VTE) |
| NIC 1 type | VMXNET 3 |
| NIC 2 network | NET701-SK-2_STORAGE (dvSwitch01-VTE) |
| NIC 2 type | VMXNET 3 |
| SCSI controller 1 | VMware Paravirtual |
| Create hard disk 1 | New virtual disk |
| Capacity | 150 GB |

CANCEL

BACK

FINISH

Enabling Hardware virtualization is must for nested hypervisor installation.

Final VM Hardware profile template for the vSphere ESXi installation.

VMware ESXi 6.5.0 (VMKernel Release Build 4564106)
VMware, Inc. VMware7.1
3 x Intel(R) Xeon(R) CPU E5-2609 v4 @ 1.70GHz
20 GiB Memory

user loaded successfully.

Installation is progressing.

VMware ESXi 6.5.0 Installer

End User License Agreement (EULA)

VMWARE END USER LICENSE AGREEMENT

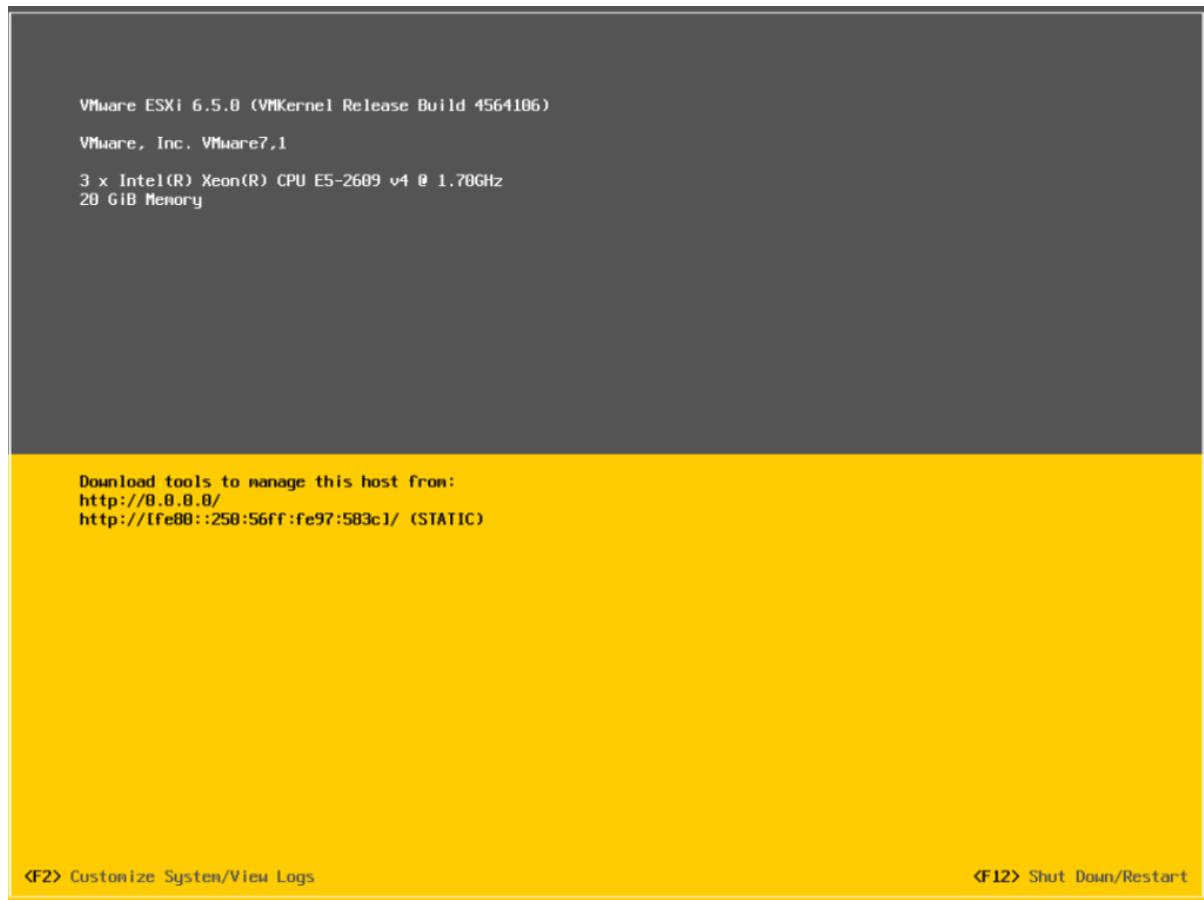
PLEASE NOTE THAT THE TERMS OF THIS END USER LICENSE AGREEMENT SHALL GOVERN YOUR USE OF THE SOFTWARE, REGARDLESS OF ANY TERMS THAT MAY APPEAR DURING THE INSTALLATION OF THE SOFTWARE.

IMPORTANT-READ CAREFULLY: BY DOWNLOADING, INSTALLING, OR USING THE SOFTWARE, YOU (THE INDIVIDUAL OR LEGAL ENTITY) AGREE TO BE BOUND BY THE TERMS OF THIS END USER LICENSE AGREEMENT ("EULA"). IF YOU DO NOT AGREE TO THE TERMS OF THIS EULA, YOU MUST NOT DOWNLOAD, INSTALL, OR USE THE SOFTWARE, AND YOU MUST DELETE OR RETURN THE UNUSED SOFTWARE TO THE VENDOR FROM WHICH YOU ACQUIRED IT WITHIN THIRTY (30) DAYS AND REQUEST A REFUND OF THE LICENSE FEE, IF ANY, THAT

Use the arrow keys to scroll the EULA text

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

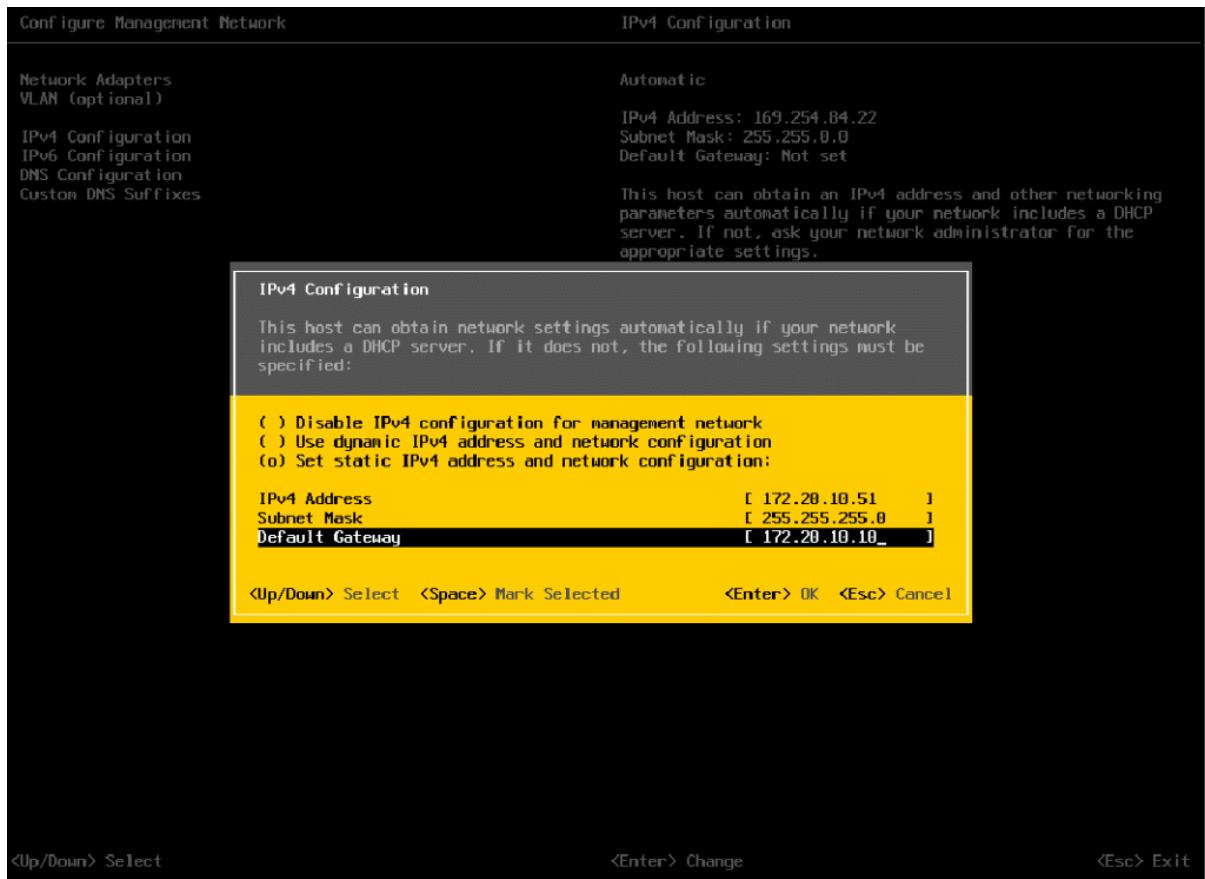
Installation is progressing.



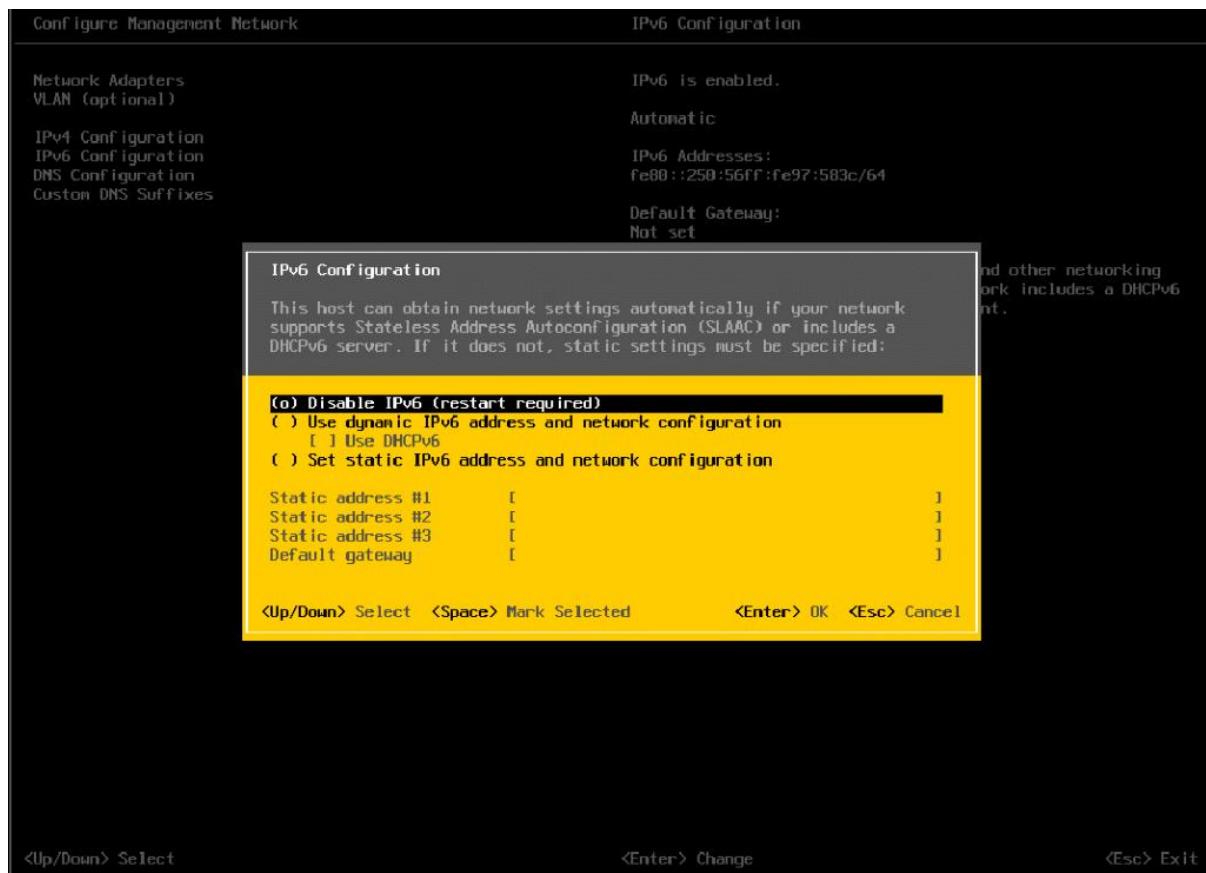
PRACTICAL 2

AIM:

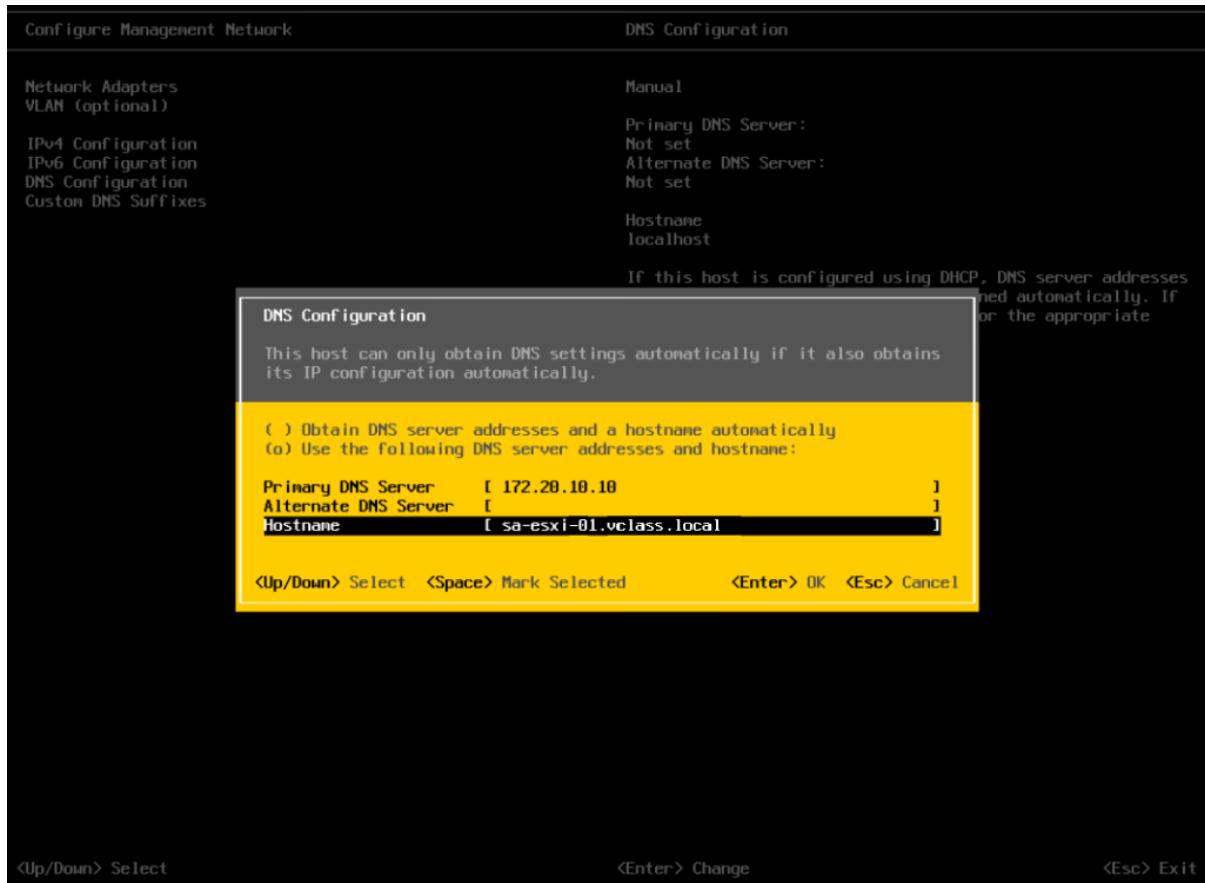
Configuring Management IP at the post installation of ESXi.



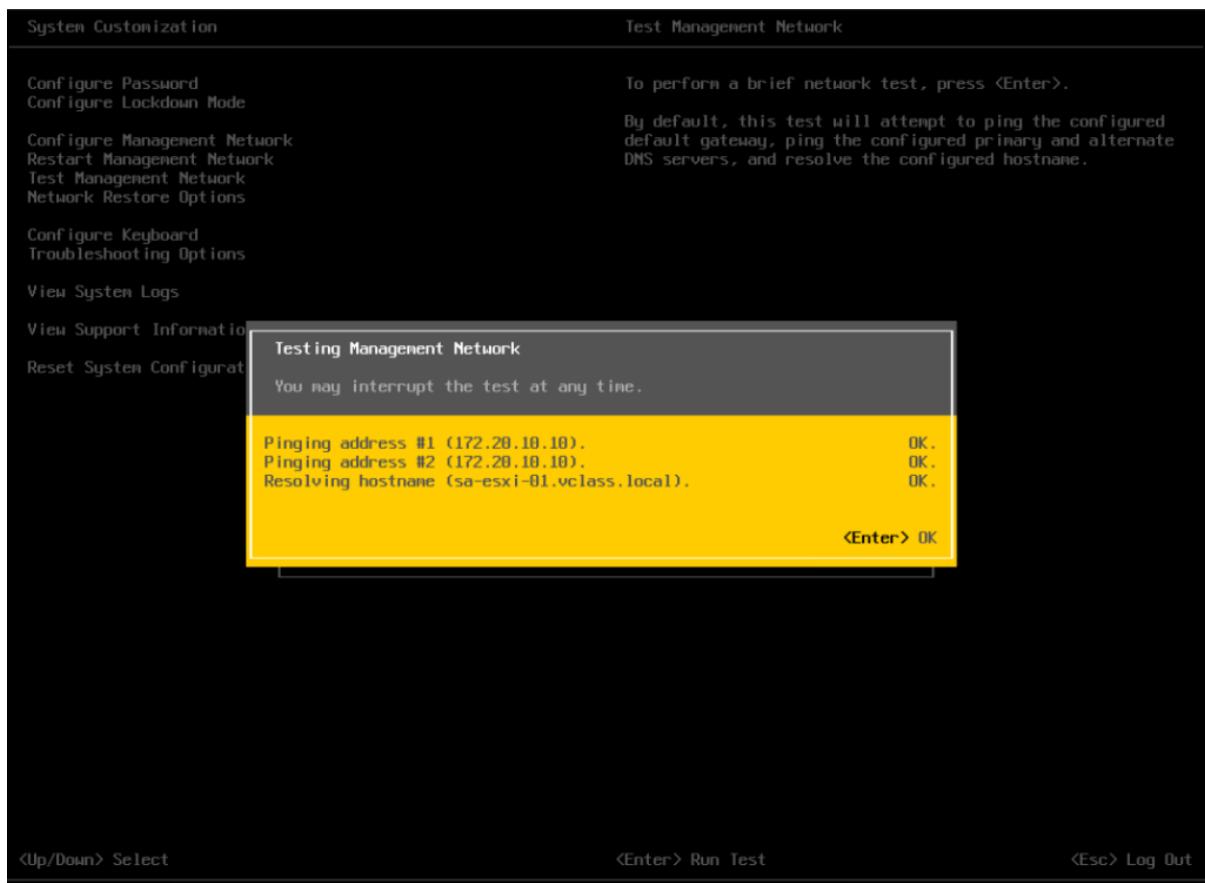
Configuring Management IP at the post installation of ESXi.



Disable IPv6 which is not required in this lab.



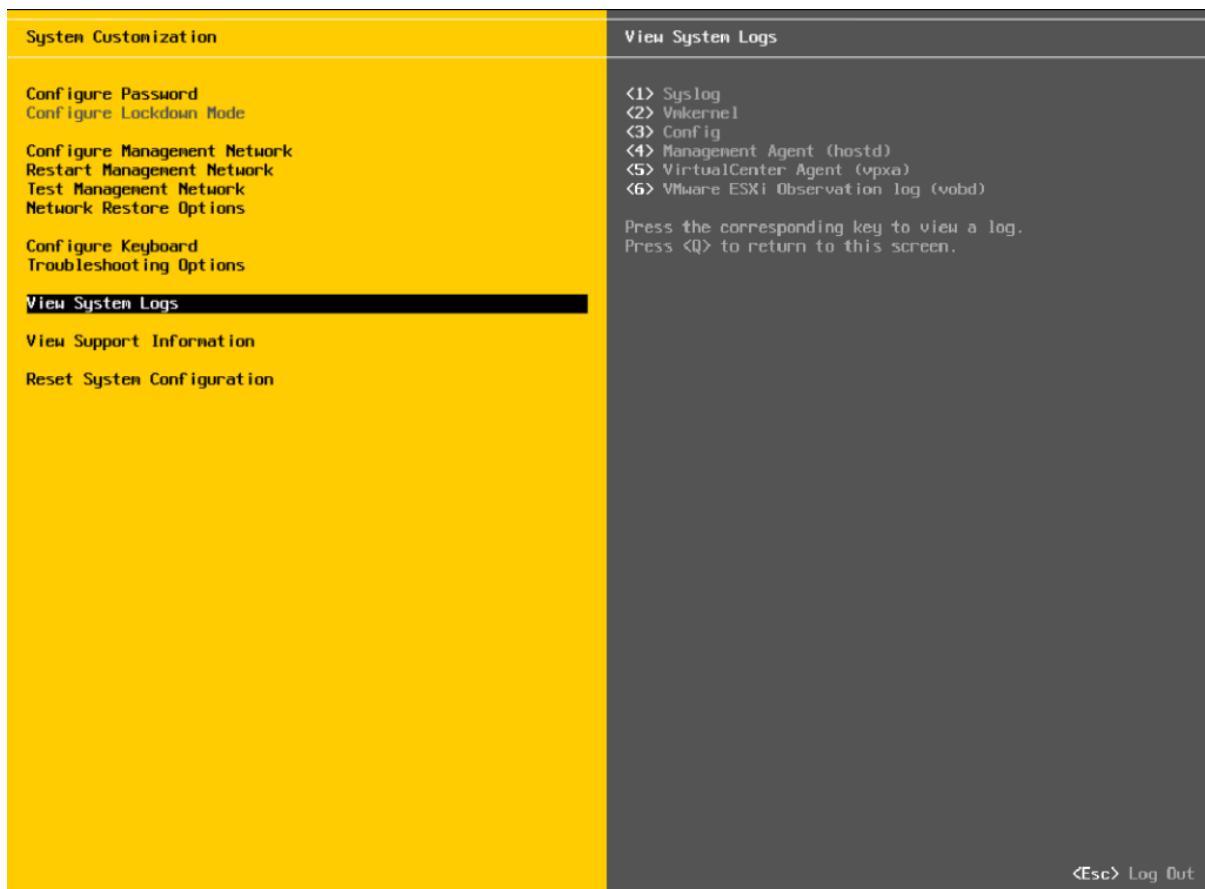
DNS configuration.



Testing management network by ping external host via management interface in ESXi. Successful ping would show the management interface is Up and running.

| Troubleshooting Mode Options | |
|------------------------------------|----------------|
| Disable ESXi Shell | |
| Enable SSH | |
| Modify ESXi Shell and SSH timeouts | |
| Modify DCUI idle timeout | |
| Restart Management Agents | |
| <Up/Down> Select | |
| | <Enter> Change |
| | <Esc> Exit |

Enabled SSH shell in ESXi server in order to perform further troubleshooting.



Viewing system logs.

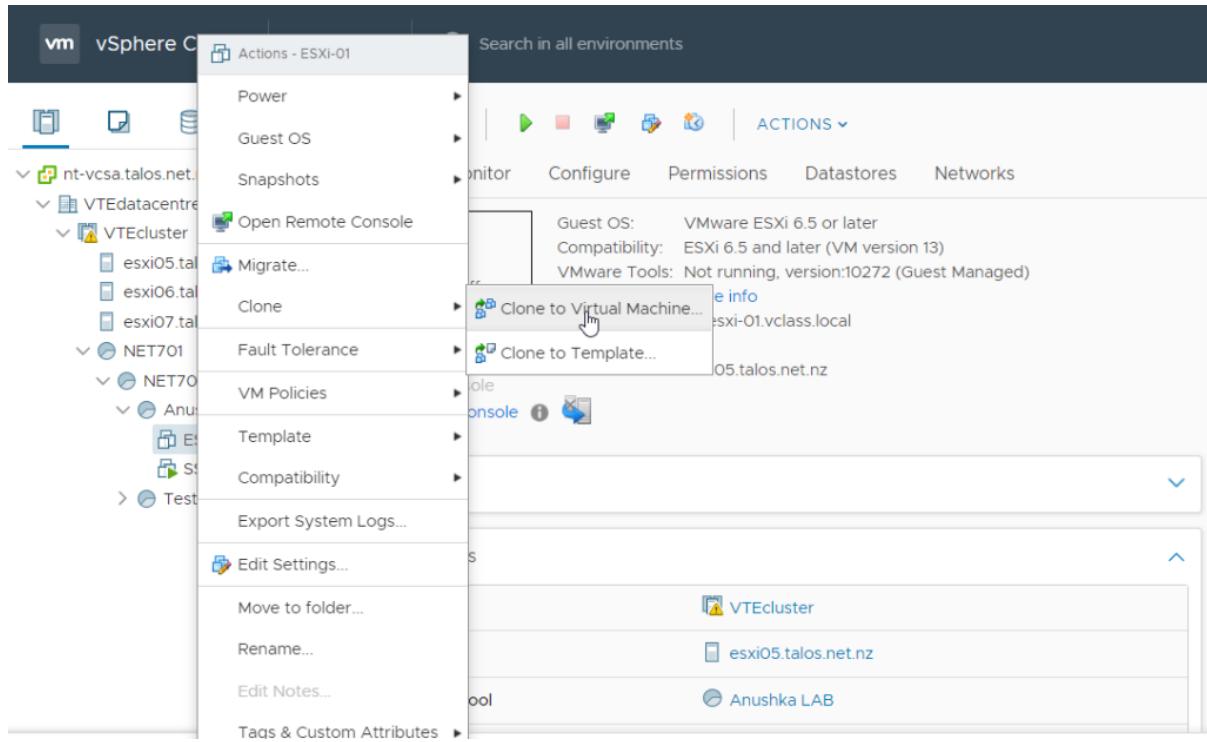
```

2020-09-17T10:12:15Z watchdog-vobd: [65849] Begin '/usr/lib/vmware/vob/bin/vobd', min-up time = 60, max-quick-failures = 5, max-total-failures = 1000000, bg_pid_file = '', reboot-flag = '0'
2020-09-17T10:12:15Z watchdog-vobd: Executing '/usr/lib/vmware/vob/bin/vobd'
2020-09-17T10:12:15Z jumpstart[65834]: Launching Executor
2020-09-17T10:12:15Z jumpstart[65834]: Setting up Executor - Reset Requested
2020-09-17T10:12:15Z jumpstart[65834]: executing start plugin: check-required-memory
2020-09-17T10:12:15Z jumpstart[65834]: executing start plugin: restore-configuration
2020-09-17T10:12:15Z jumpstart[65882]: restoring configuration
2020-09-17T10:12:15Z jumpstart[65882]: ConfigCheck: Running ipv6 option upgrade, redundantly
2020-09-17T10:12:15Z jumpstart[65882]: Util: tcpipv4 IPv6 enabled
2020-09-17T10:12:15Z jumpstart[65834]: executing start plugin: vmkeventd
2020-09-17T10:12:15Z jumpstart[65884]: Begin '/usr/lib/vmware/vmkeventd/bin/vmkeventd', min-up time = 10, max-quick-failures = 5, max-total-failures = 999999, bg_pid_file = '', reboot-flag = '0'
2020-09-17T10:12:15Z watchdog-vmkeventd: Executing '/usr/lib/vmware/vmkeventd/bin/vmkeventd'
2020-09-17T10:12:15Z jumpstart[65834]: executing start plugin: vmkcrypto
2020-09-17T10:12:15Z jumpstart[65862]: 65863:VVOLLIB : VoLLib_GetSoapContext:379: Using 30 secs for soap connect timeout.
2020-09-17T10:12:15Z jumpstart[65862]: 65863:VVOLLIB : VoLLib_GetSoapContext:380: Using 200 secs for soap receive timeout.
2020-09-17T10:12:15Z jumpstart[65862]: 65863:VVOLLIB : VoLLibTracingInit:89: Successfully initialized the VoLLib tracing module
2020-09-17T10:12:15Z jumpstart[65834]: executing start plugin: autodeploy-enabled
2020-09-17T10:12:15Z jumpstart[65834]: executing start plugin: vsan-base
2020-09-17T10:12:15Z jumpstart[65834]: executing start plugin: vsan-early
2020-09-17T10:12:15Z jumpstart[65834]: executing start plugin: advanced-user-configuration-options
2020-09-17T10:12:15Z jumpstart[65834]: executing start plugin: restore-advanced-configuration
2020-09-17T10:12:15Z jumpstart[65834]: executing start plugin: PSA-boot-config
2020-09-17T10:12:15Z jumpstart[65862]: DictionaryLoad: Cannot open file "/usr/lib/vmware/config": No such file or directory.
2020-09-17T10:12:15Z jumpstart[65862]: DictionaryLoad: Cannot open file "//vmware/config": No such file or directory.
2020-09-17T10:12:15Z jumpstart[65862]: DictionaryLoad: Cannot open file "//vmware/preferences": No such file or directory.
2020-09-17T10:12:15Z jumpstart[65862]: lib/ssl: OpenSSL using FIPS_drbg for RAND
2020-09-17T10:12:15Z jumpstart[65862]: lib/ssl: protocol list tls1.2
2020-09-17T10:12:15Z jumpstart[65862]: lib/ssl: protocol list tls1.2 (openssl flags 0x17000000)
2020-09-17T10:12:15Z jumpstart[65862]: lib/ssl: cipher list !aNULL:kECDH+AESGCM:ECDH+AESGCM:kECDH+AES:ECDH+AES:RSA+AES
2020-09-17T10:12:15Z jumpstart[65834]: executing start plugin: uprobe
2020-09-17T10:12:15Z jumpstart[65834]: executing start plugin: vmkapi-nvmt
2020-09-17T10:12:15Z jumpstart[65834]: executing start plugin: dma-engine
2020-09-17T10:12:15Z jumpstart[65834]: executing start plugin: procfs
2020-09-17T10:12:15Z jumpstart[65834]: executing start plugin: nvmt-vkapi-compatibility
2020-09-17T10:12:15Z jumpstart[65834]: executing start plugin: iom
2020-09-17T10:12:15Z jumpstart[65834]: executing start plugin: vkernel-vkapi-compatibility
2020-09-17T10:12:15Z jumpstart[65834]: executing start plugin: driver-status-check
2020-09-17T10:12:15Z jumpstart[65913]: driver_status_check: boot cmdline: /jumpstrt.gz vmbTrustedBoot=false tboot=0x101b000 installerDiskDumpSlotSize=2560 no-auto-partition bootUUID=7ce91a946ba33bc5f1f7924298bb7f5
2020-09-17T10:12:15Z jumpstart[65913]: driver_status_check: useropts:
2020-09-17T10:12:15Z jumpstart[65834]: executing start plugin: hardware-config
2020-09-17T10:12:15Z jumpstart[65914]: Failed to symlink /etc/vmware/pcl.ids: No such file or directory
2020-09-17T10:12:15Z jumpstart[65834]: executing start plugin: vmlinux
<Q> Quit </> RegEx Search <H> Help

```

Viewing syslog messages to find out any installation errors.

Second ESXi Host Installation.



Based on my research I am going to build a second ESXi server by Cloning first ESXi host. Which would save the installation timing.

ESXi-01 - Clone Existing Virtual Machine

1 Select a name and folder

2 Select a compute resource

3 Select storage

4 Select clone options

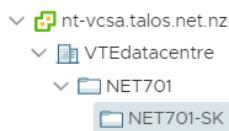
5 Ready to complete

Select a name and folder

Specify a unique name and target location

Virtual machine name:

Select a location for the virtual machine.



[CANCEL](#)

[BACK](#)

[NEXT](#)

Select New VM name.

ESXi-01 - Clone Existing Virtual Machine

✓ 1 Select a name and folder

2 Select a compute resource

3 Select storage

4 Select clone options

5 Ready to complete

Select a compute resource

Select the destination compute resource for this operation

The screenshot shows a tree view of compute resources under 'VTEdatacentre'. The 'VTEcluster' node has three children: 'esxi05.talos.net.nz', 'esxi06.talos.net.nz', and 'esxi07.talos.net.nz'. The 'NET701' node has two children: 'NET701-SK' and 'Test'. The 'NET701-SK' node contains an item named 'Anushka LAB', which is highlighted with a light blue background.

Compatibility

✓ Compatibility checks succeeded.

CANCEL

BACK

NEXT

Assign new compute resource.

ESXi-01 - Clone Existing Virtual Machine

- ✓ 1 Select a name and folder
- ✓ 2 Select a compute resource
- ✓ 3 Select storage

4 Select clone options

5 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



CANCEL

BACK

NEXT

It is important to not customize in order to minimize installation overhead.

ESXi-01 - Clone Existing Virtual Machine

- ✓ 1 Select a name and folder
- ✓ 2 Select a compute resource
- ✓ 3 Select storage
- ✓ 4 Select clone options

5 Ready to complete

Ready to complete
Click Finish to start creation.

| | |
|------------------------|-----------------------------------|
| Provisioning type | Clone an existing virtual machine |
| Source virtual machine | ESXi-01 |
| Virtual machine name | ESXi-02 |
| Folder | NET701-SK |
| Resource pool | Anushka LAB |
| Datastore | NET701_SK_ds |
| Disk storage | Thin Provision |

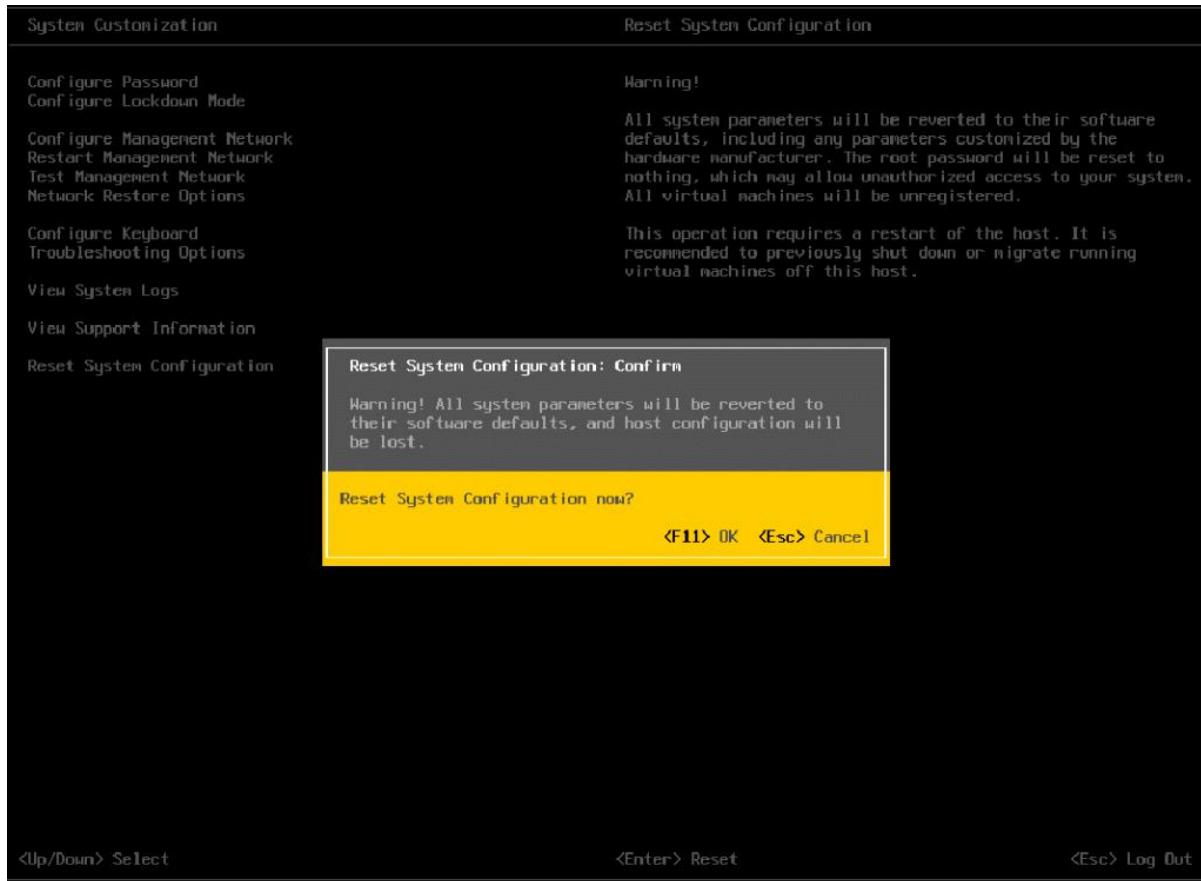


CANCEL

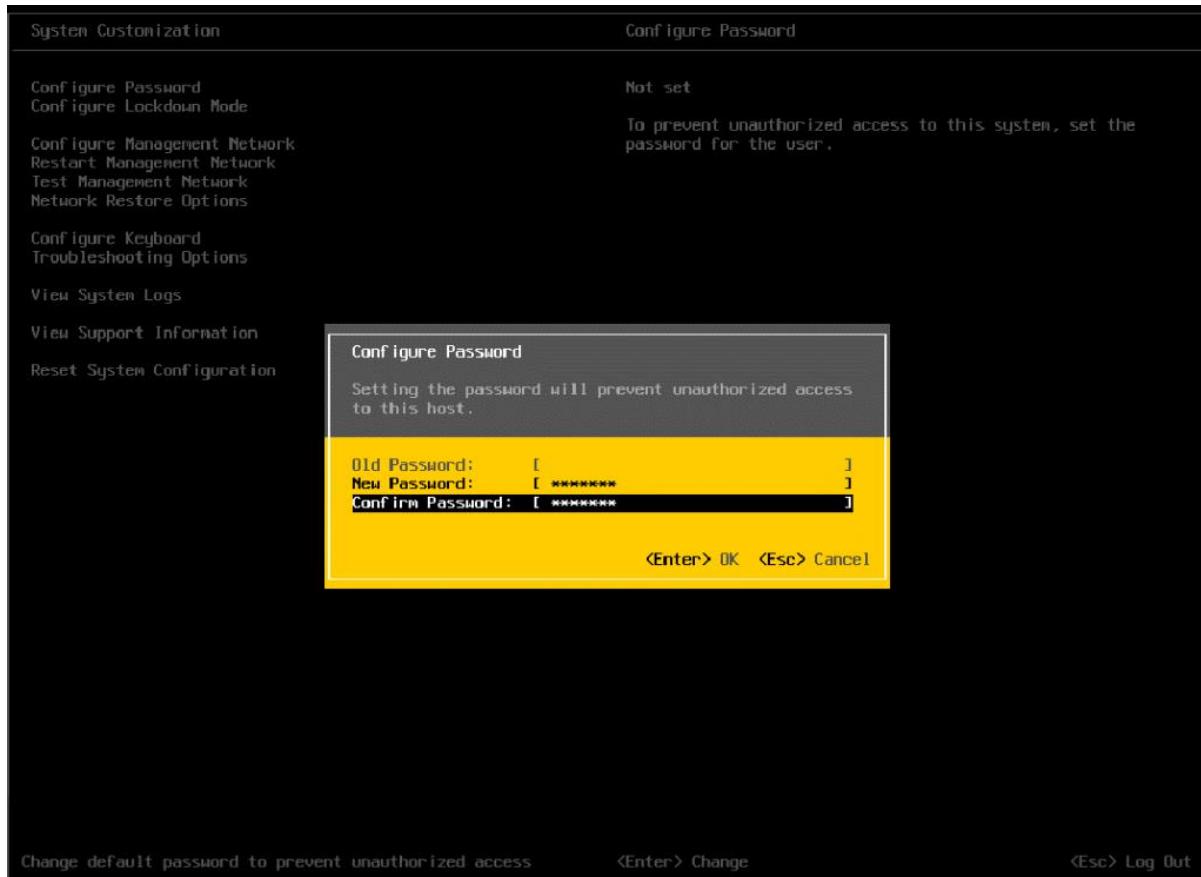
BACK

FINISH

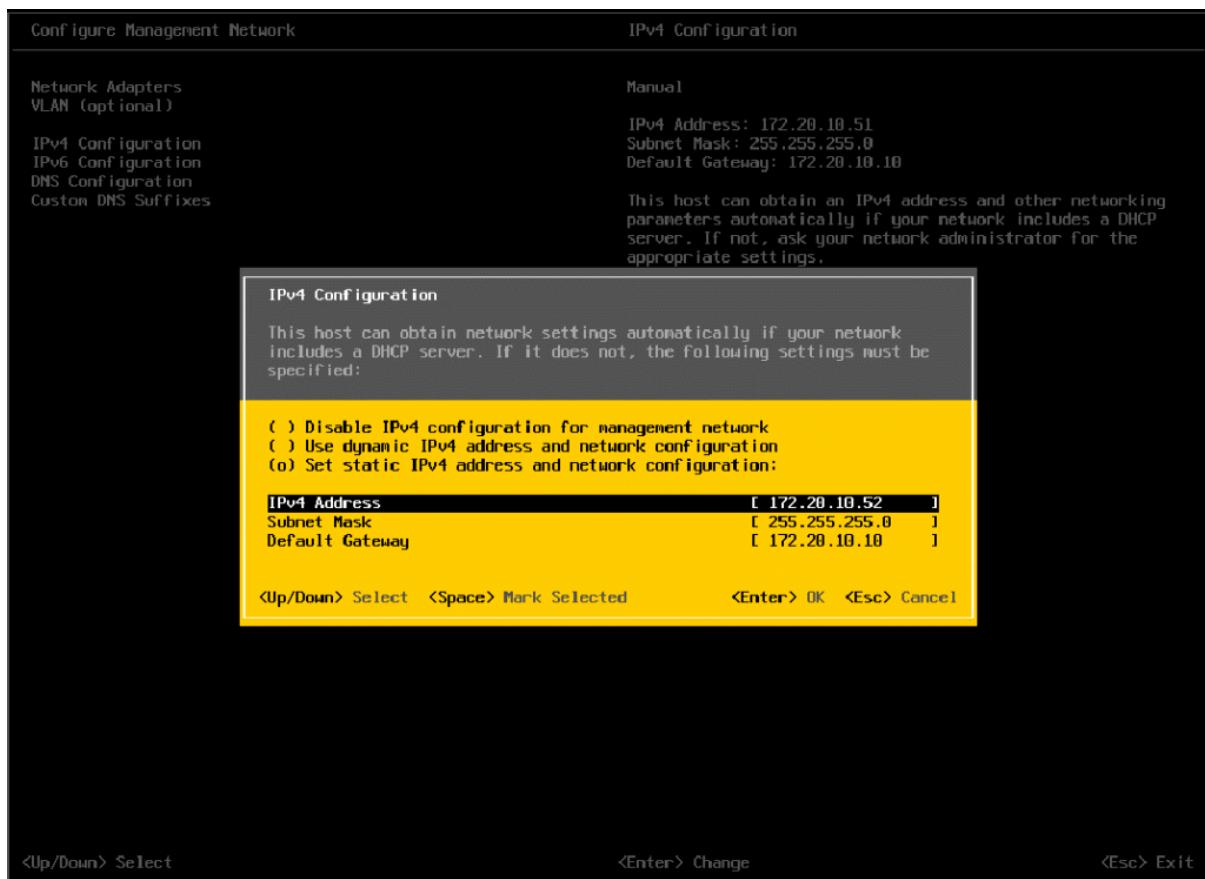
Final Cloning resource template.



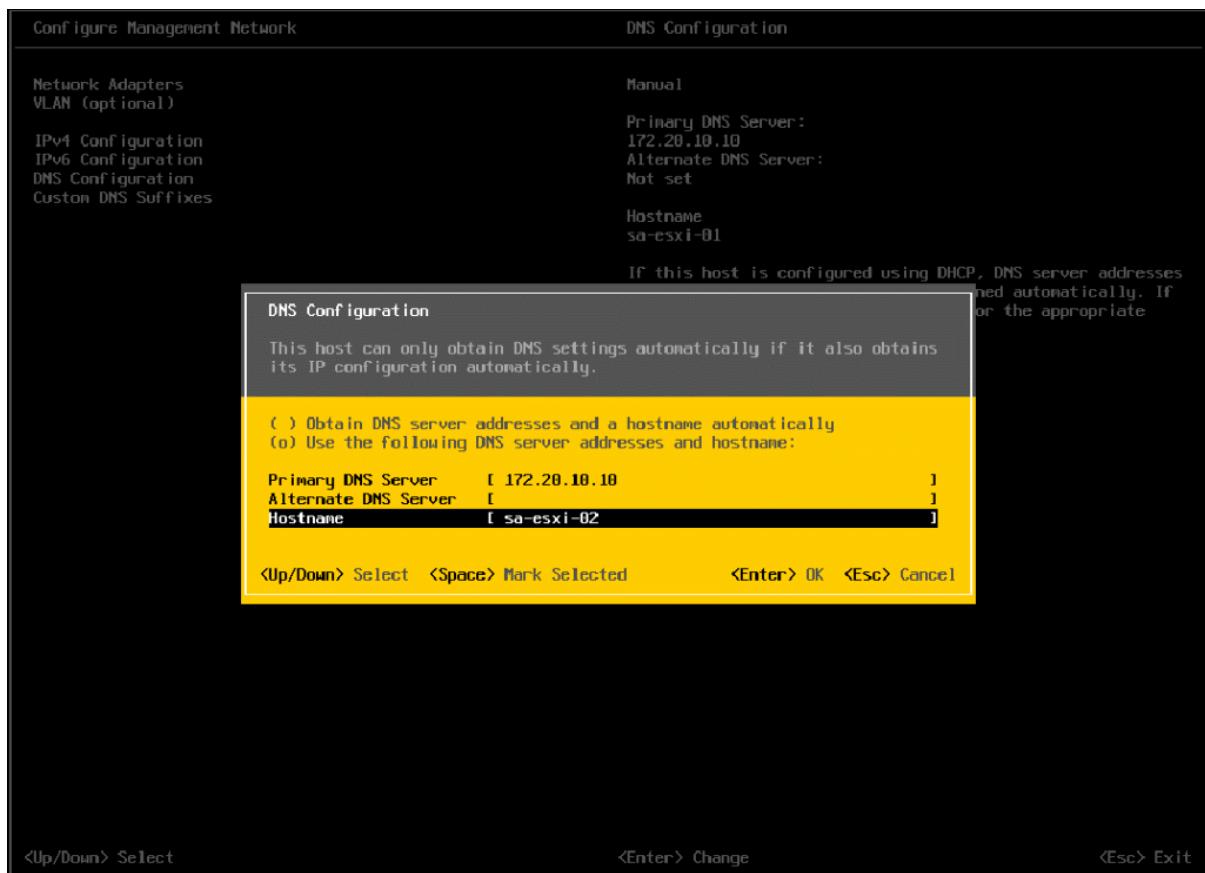
Need to rest existing configuration after Cloning is completed in order to avoid configuration duplication against first ESXi host, which could wipe out the management network and reboot.



Setting up password for secondary ESXi host.



Changing the management IP address of secondary ESXi host and VM is UP.



Changing the host name of secondary ESXi host.

VMware ESXi 6.5.0 (VMKernel Release Build 4564106)

VMware, Inc. VMware7.1

3 x Intel(R) Xeon(R) CPU E5-2689 v4 @ 1.70GHz
10 GiB Memory

Download tools to manage this host from:
<http://sa-esxi-02/>
[http://172.20.10.52/ \(STATIC\)](http://172.20.10.52/)

<F2> Customize System/View Logs

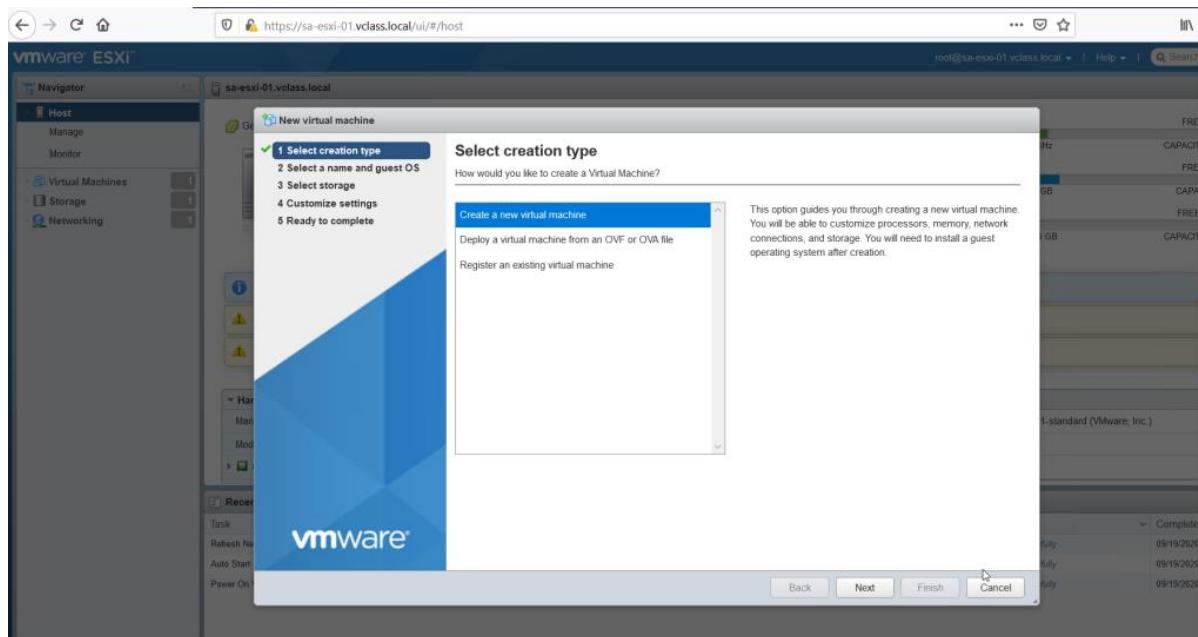
<F12> Shut Down/Restart

PRACTICAL 3

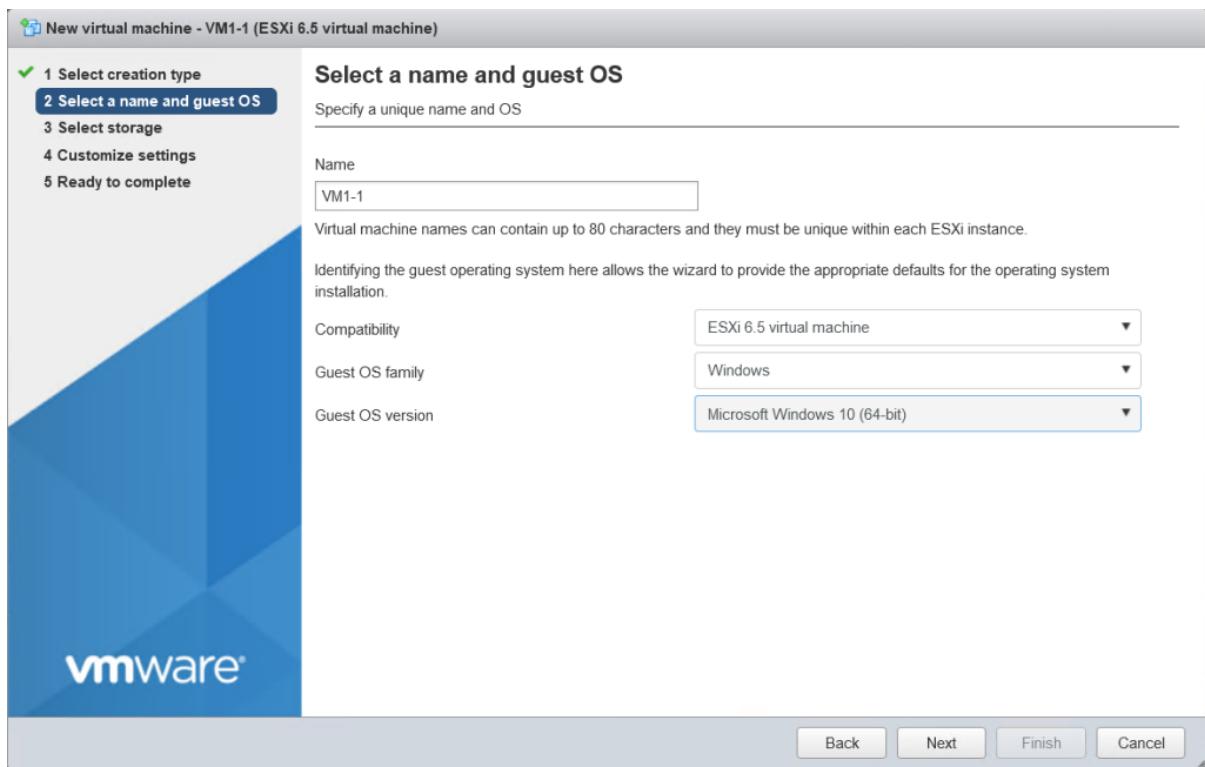
AIM: Deploying and Configuring a Virtual Machine.

Task 1: Create a Virtual Machine

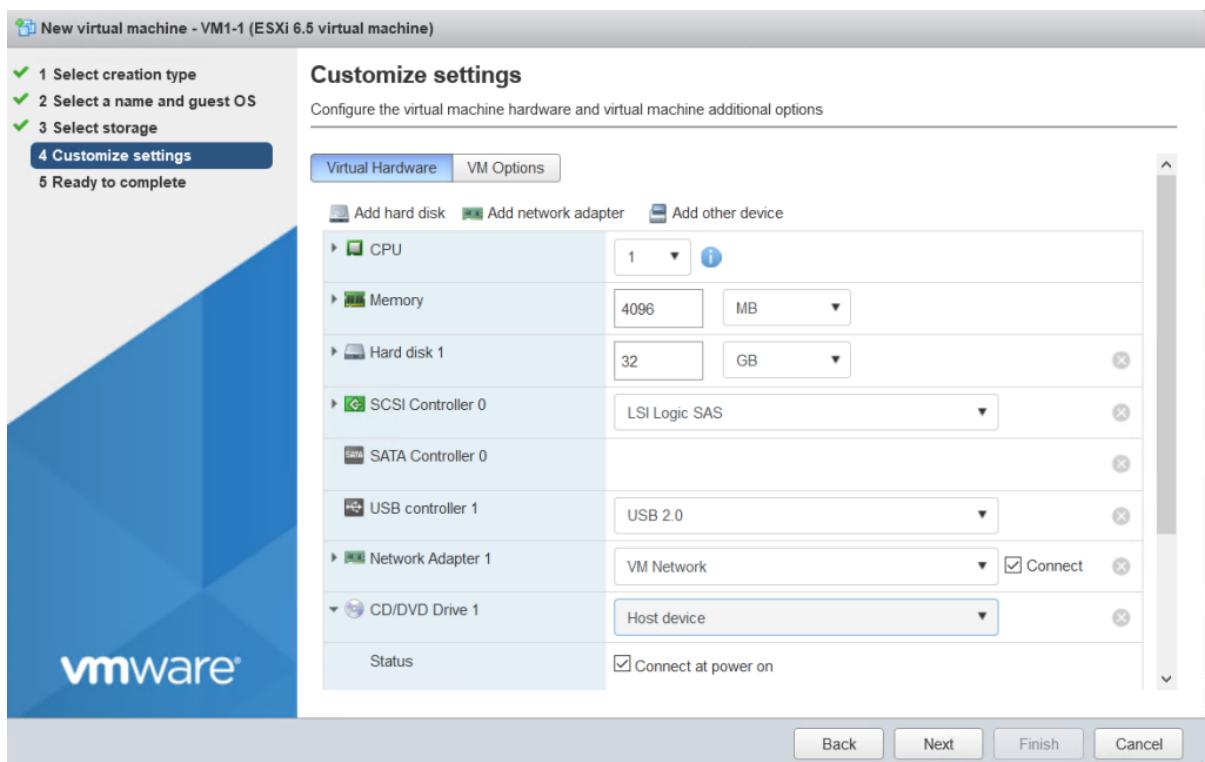
Create a virtual machine based on specific requirements, such as a particular operating system or hardware configuration.



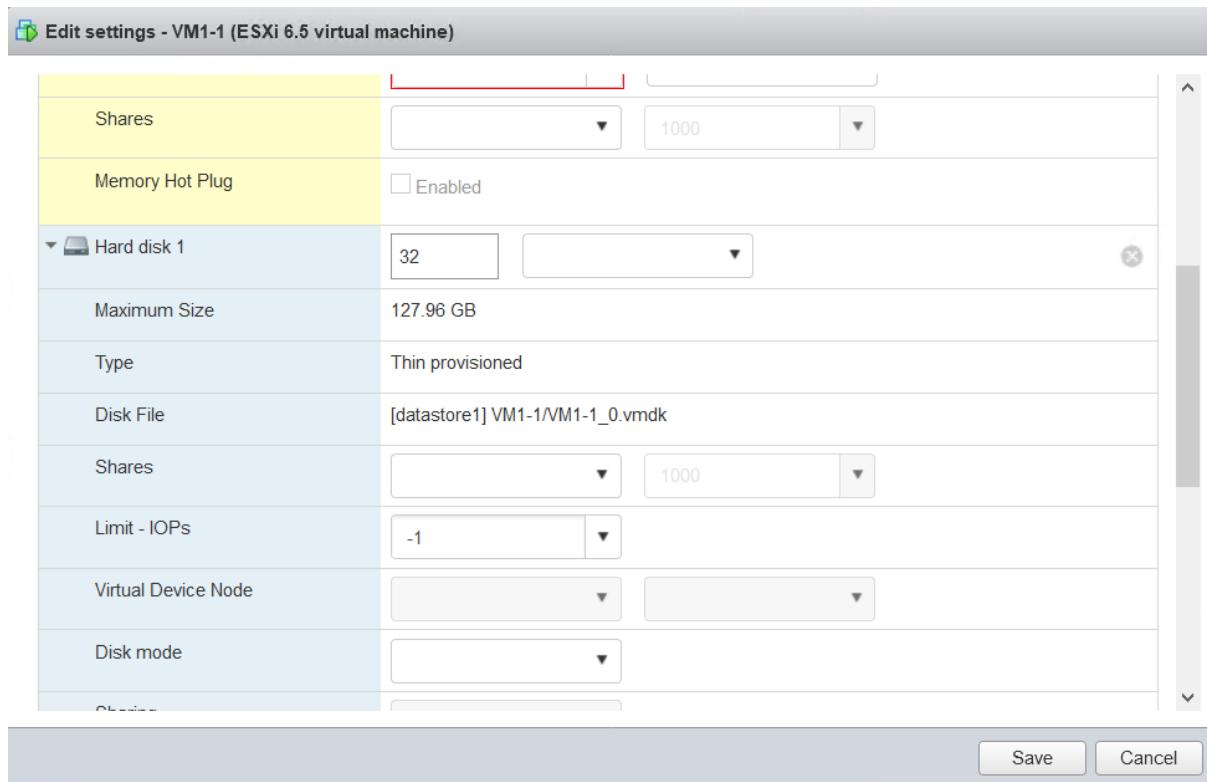
Creating guest VM



Choosing guest VM type



I have chosen a different compute resource for windows 10 however, the LAB guide shows compute requirement to install windows 7



Hardware Configuration pane, **Hard disk 1** information.

Task 2: Install a Guest Operating System and Disable Windows Updates

sa-esxi-01.vclass.local - Virtual Machines

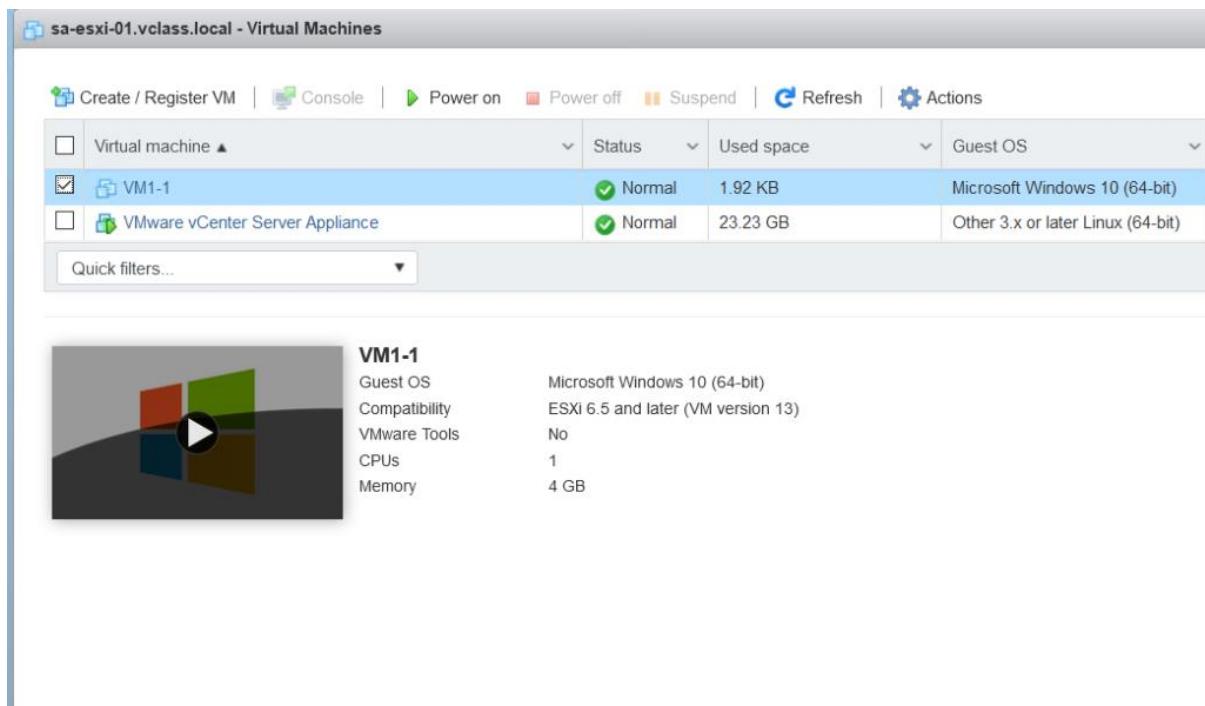
Create / Register VM | Console | Power on | Power off | Suspend | Refresh | Actions

| Virtual machine | Status | Used space | Guest OS |
|---------------------------------|--------|------------|-----------------------------------|
| VM1-1 | Normal | 1.92 KB | Microsoft Windows 10 (64-bit) |
| VMware vCenter Server Appliance | Normal | 23.23 GB | Other 3.x or later Linux (64-bit) |

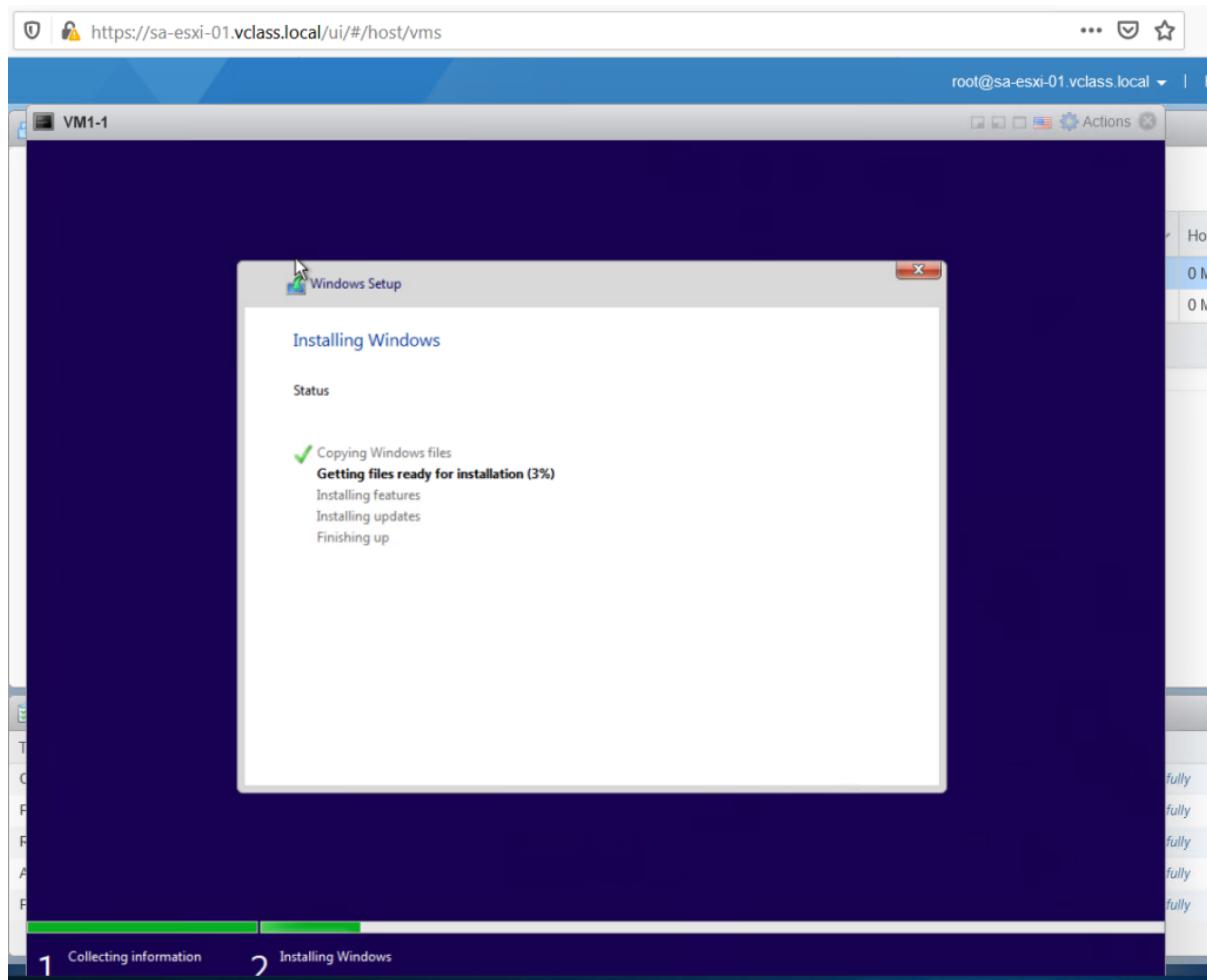
Quick filters...

VM1-1

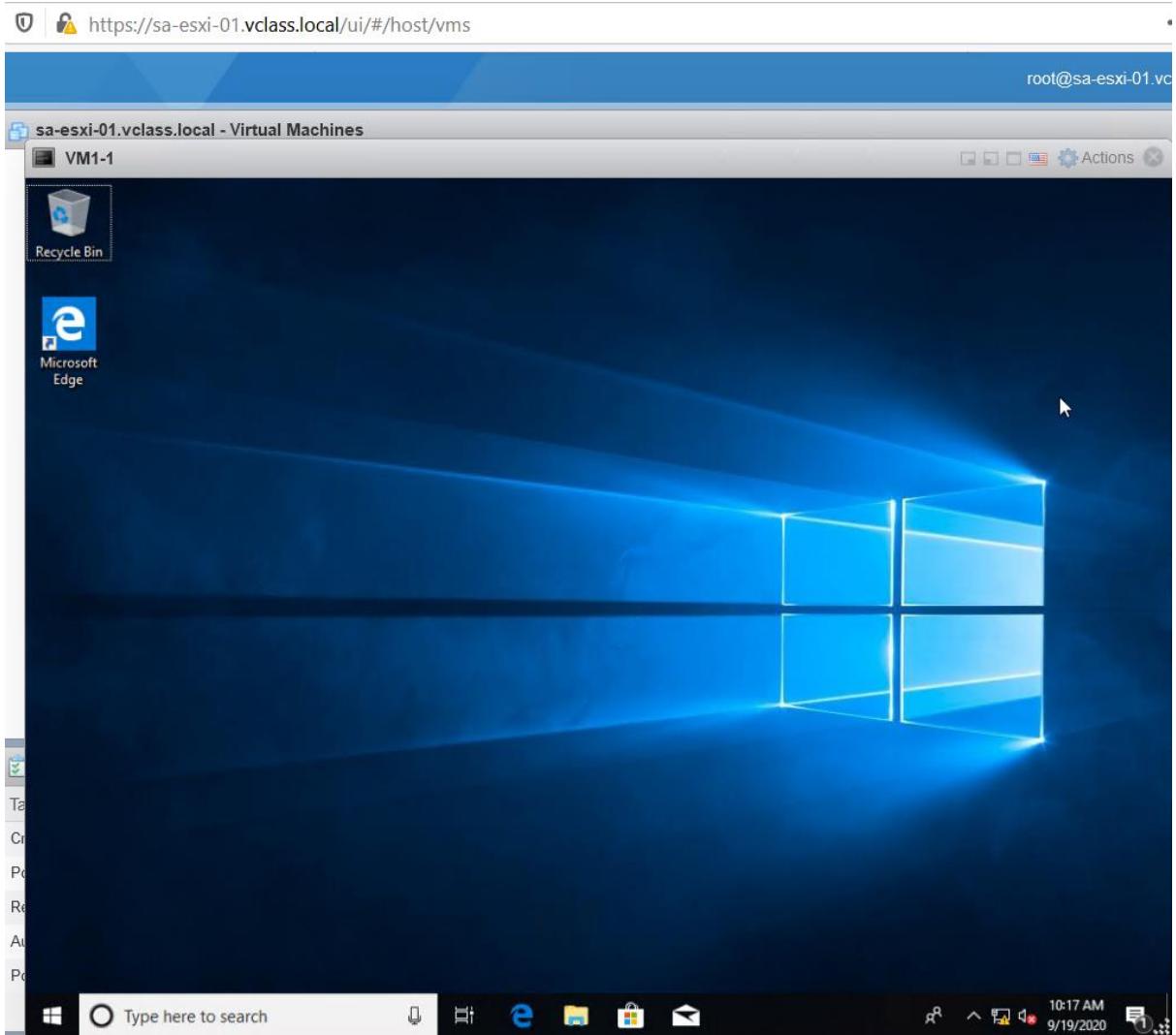
| | |
|---------------|------------------------------------|
| Guest OS | Microsoft Windows 10 (64-bit) |
| Compatibility | ESXi 6.5 and later (VM version 13) |
| VMware Tools | No |
| CPUs | 1 |
| Memory | 4 GB |



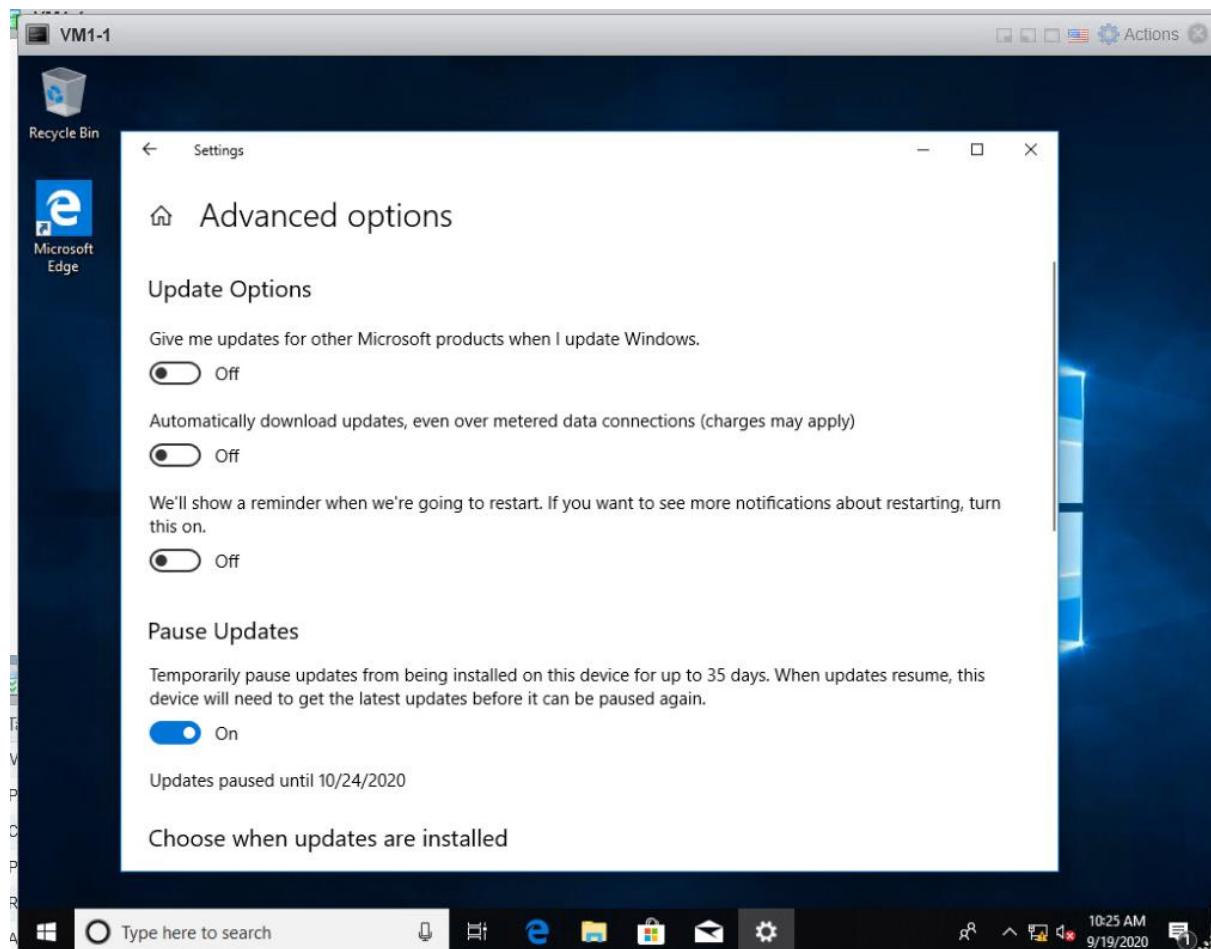
I am going to switch on the newly created guest VM1-1 on sa-esxi-01 host



Continuing Windows-10 installation

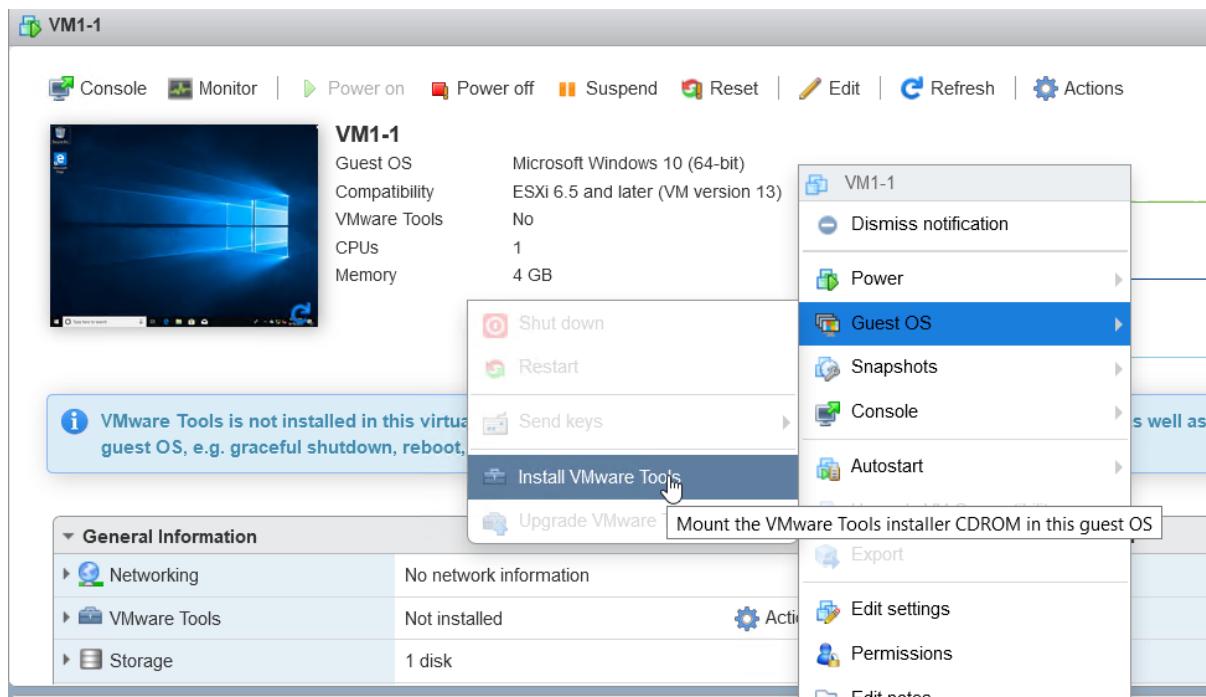


Guest VM1-1 installation has been completed

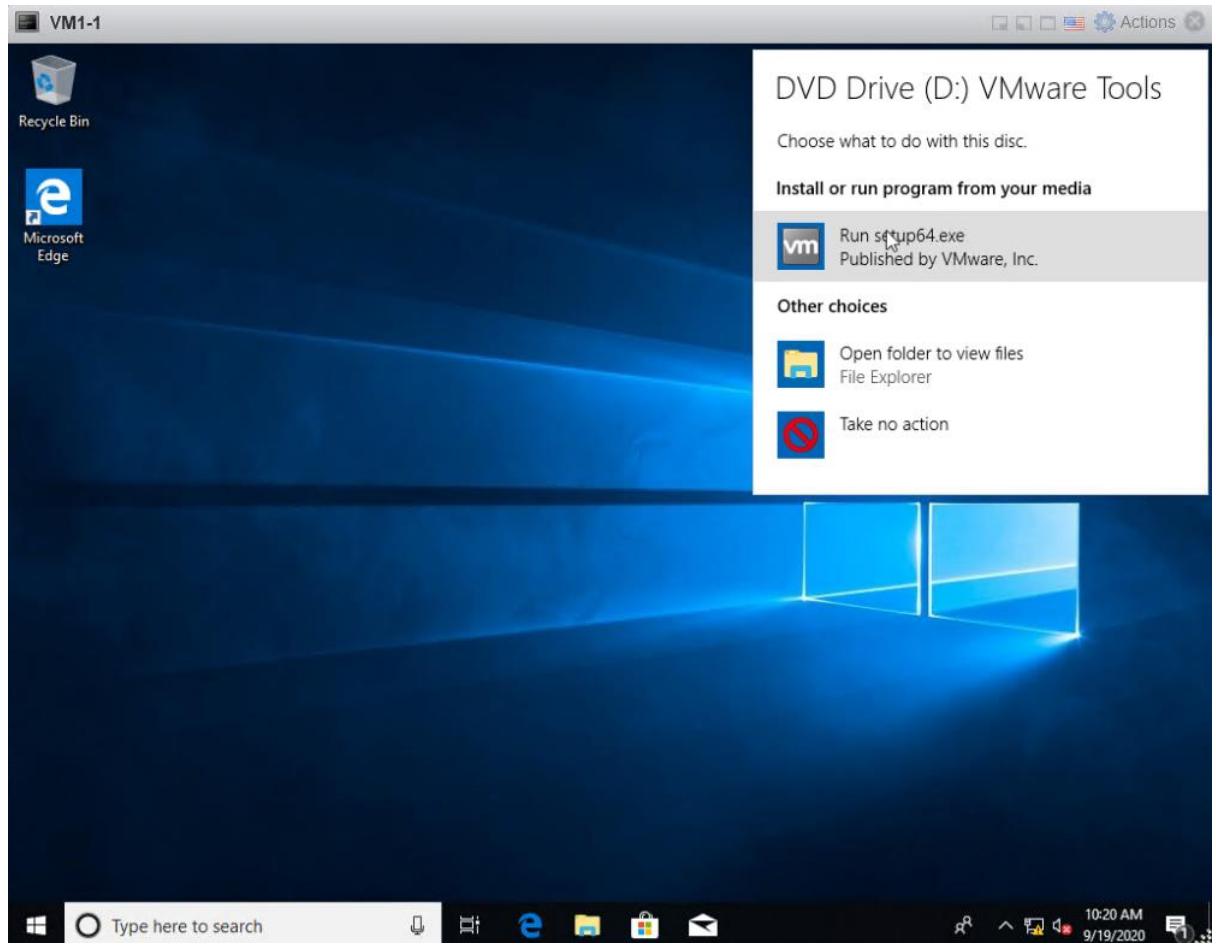


Disable windows10 update

Task 3: Install VMware Tools



Mount VMware tool on guest OS



Invoke VMware tools installation in VM1-1

Task 4: Install Files

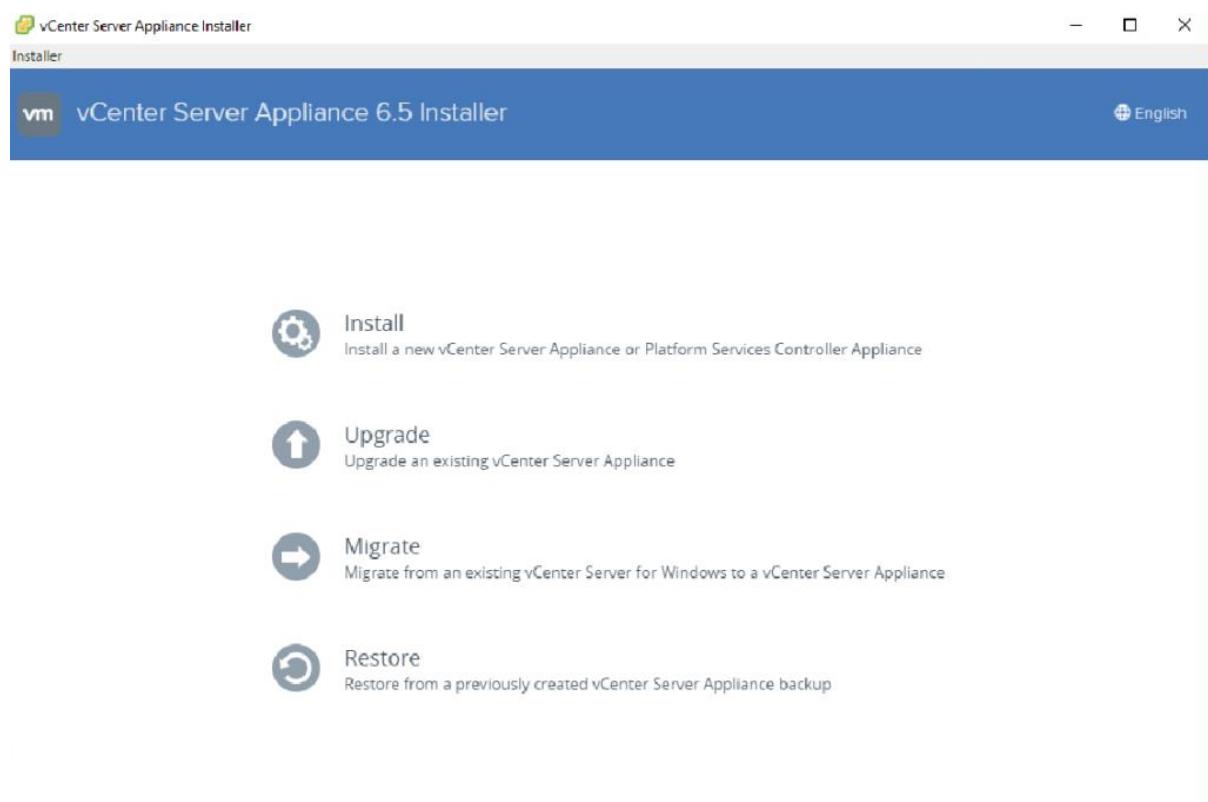
Mount and copied class files on VM1-1 desktop

Repeated above task on sa-ESXi-02 host to create guest VM2-1

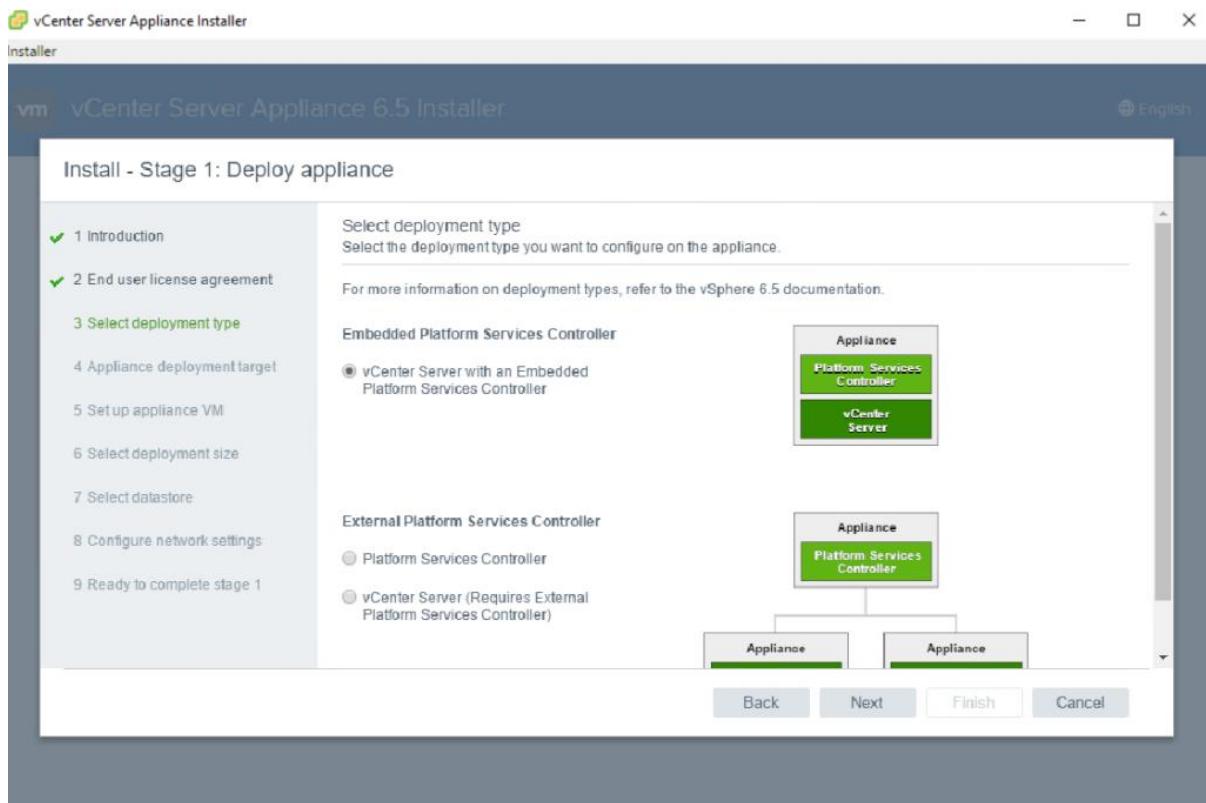
PRACTICAL 4

AIM: Working with vCenter Server

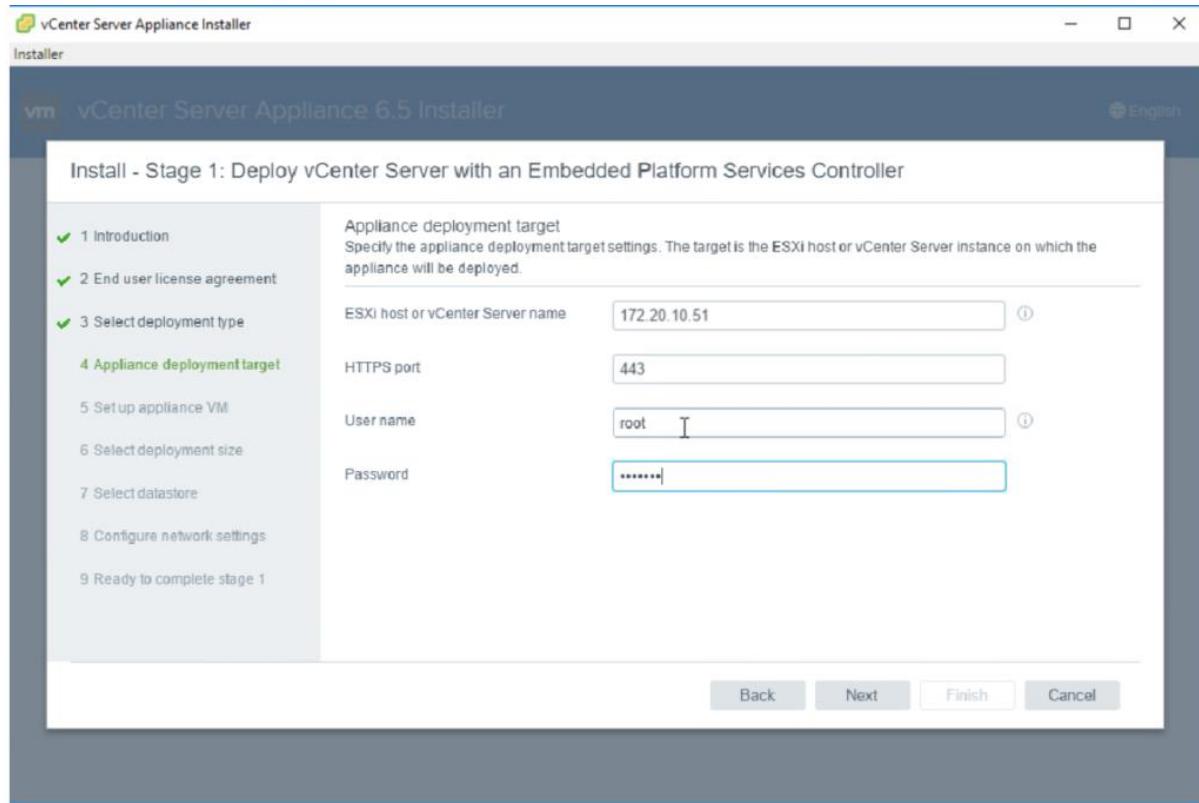
Task 1: Deploy vCenter Server Appliance



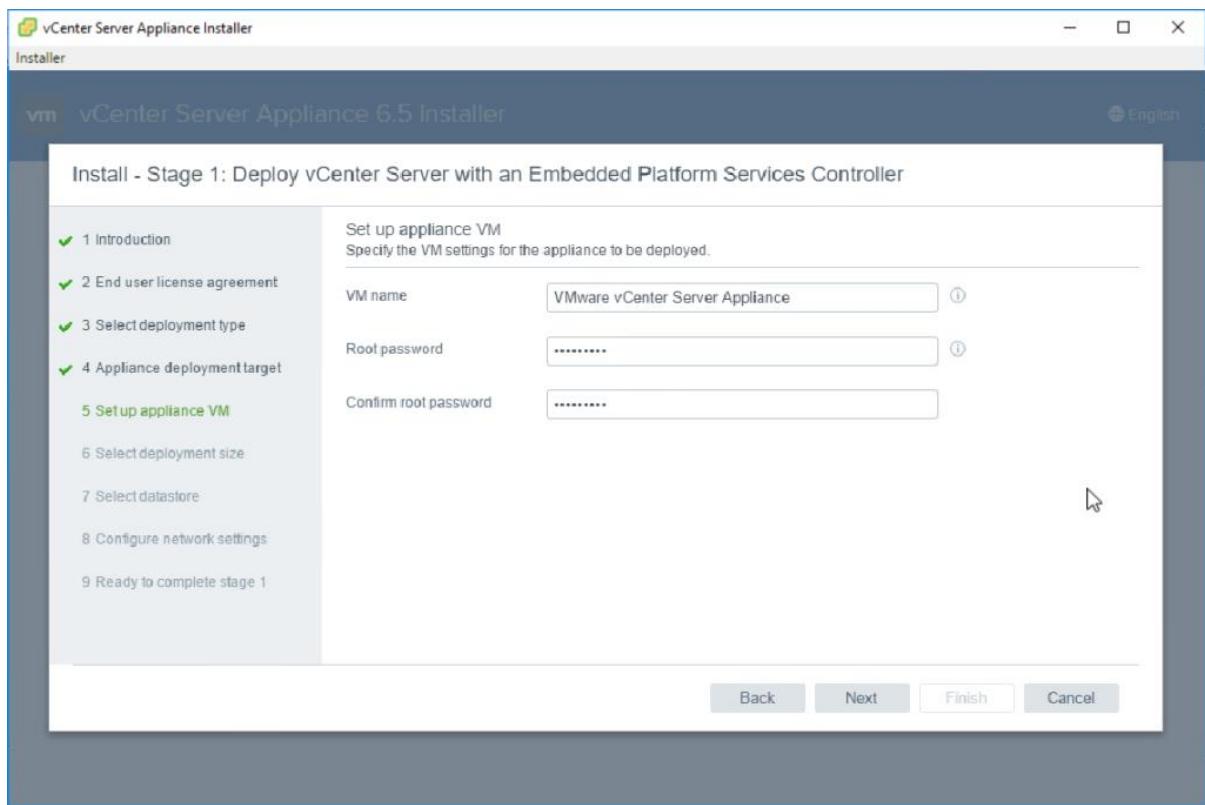
Invoking vCenter Installation



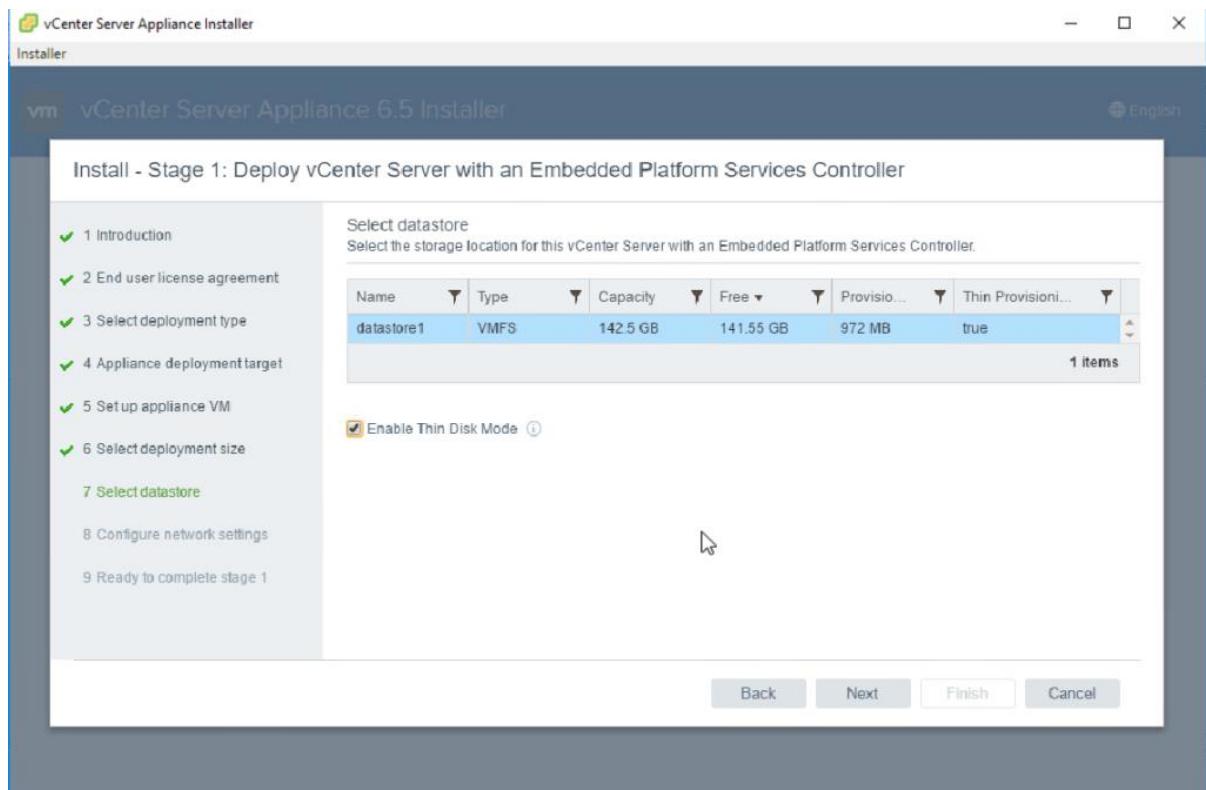
Selecting embedded vCenter installation mode



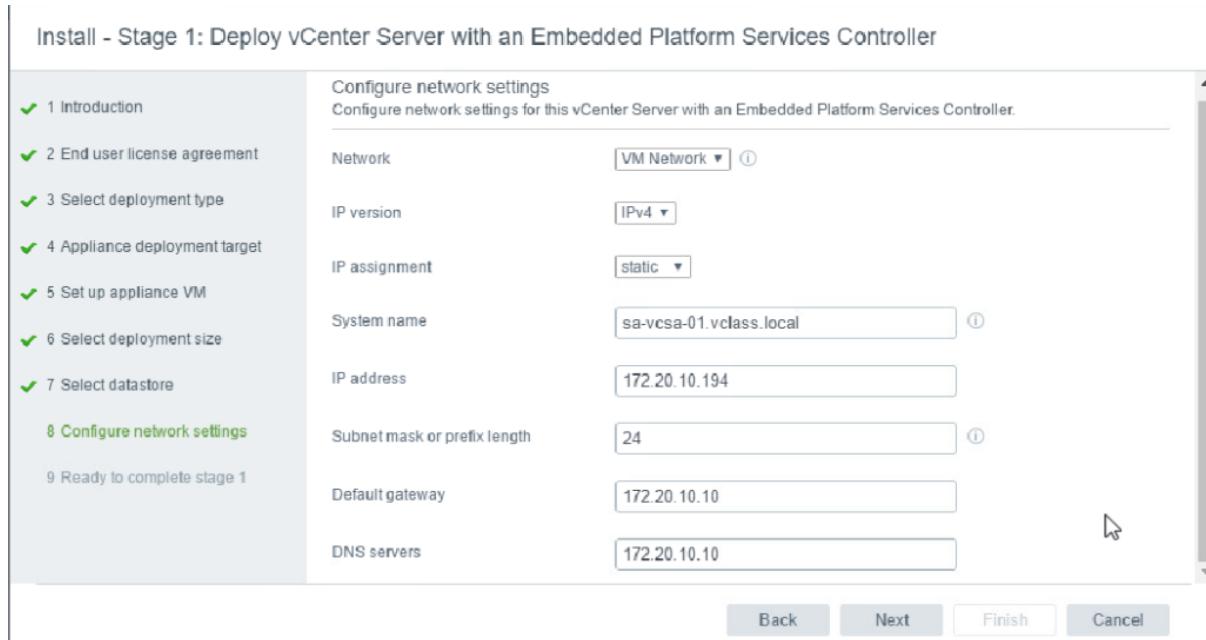
vCenter soft appliance to be embedded on ESXi-01 host



Configure vCenter appliance credentials



Make sure to select thin disk mode in order to auto seizure the disk space



Invoking vCenter naming and IP information

Install - Stage 1: Deploy vCenter Server with an Embedded Platform Services Controller

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

| Deployment Details | |
|------------------------------|--|
| Target ESXi host | 172.20.10.52 |
| VM name | VMware vCenter Server Appliance |
| Deployment type | vCenter Server with an Embedded Platform Services Controller |
| Deployment size | Tiny |
| Datastore Details | |
| Datastore, Disk mode | datastore1, thin |
| Network Details | |
| Network | VM Network |
| IP settings | IPv4 , static |
| IP address | 172.20.10.194 |
| System name | sa-vcsa-01.vclass.local |
| Subnet mask or prefix length | 24 |
| Default gateway | 172.20.10.10 |
| DNS servers | 172.20.10.10 |

Back

Next

Finish

Cancel

Invoking vCenter naming and IP information

Install - Stage 1: Deploy vCenter Server with an Embedded Platform Services Controller



You have successfully deployed the vCenter Server with an Embedded Platform Services Controller.

100%

Deployment complete

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

If you exit, you can continue with the appliance setup at any time by logging in to the vCenter Server Appliance Management Interface <https://sa-vcsa-01.vclass.local:5480/>

Continue

Close

Completed vCenter Stage-01 installation

Install - Stage 2: Set Up vCenter Server Appliance with an Embedded PSC

- 1 Introduction
- 2 Appliance configuration
- 3 SSO configuration
- 4 Configure CEIP
- 5 Ready to complete

Introduction
vCenter Server Appliance installation overview



Deploy new vCenter Server Appliance



Set up vCenter Server Appliance

Installing the vCenter Server Appliance is a two stage process. The first stage has been completed. Click Next, to proceed with Stage 2, setting up the vCenter Server Appliance.

Back

Next

Finish

Cancel

Starting vCenter Stage-02 installation

Install - Stage 2: Set Up vCenter Server Appliance with an Embedded PSC

- ✓ 1 Introduction
- 2 Appliance configuration
- 3 SSO configuration
- 4 Configure CEIP
- 5 Ready to complete

Appliance configuration

Time synchronization mode

Synchronize time with NTP servers ▾

NTP servers (comma-separated list)

, 172.20.10.10

SSH access

Enabled ▾

Back

Next

Finish

Cancel

Provide NTP server IP address to sync appliance clock with correct time

Install - Stage 2: Set Up vCenter Server Appliance with an Embedded PSC

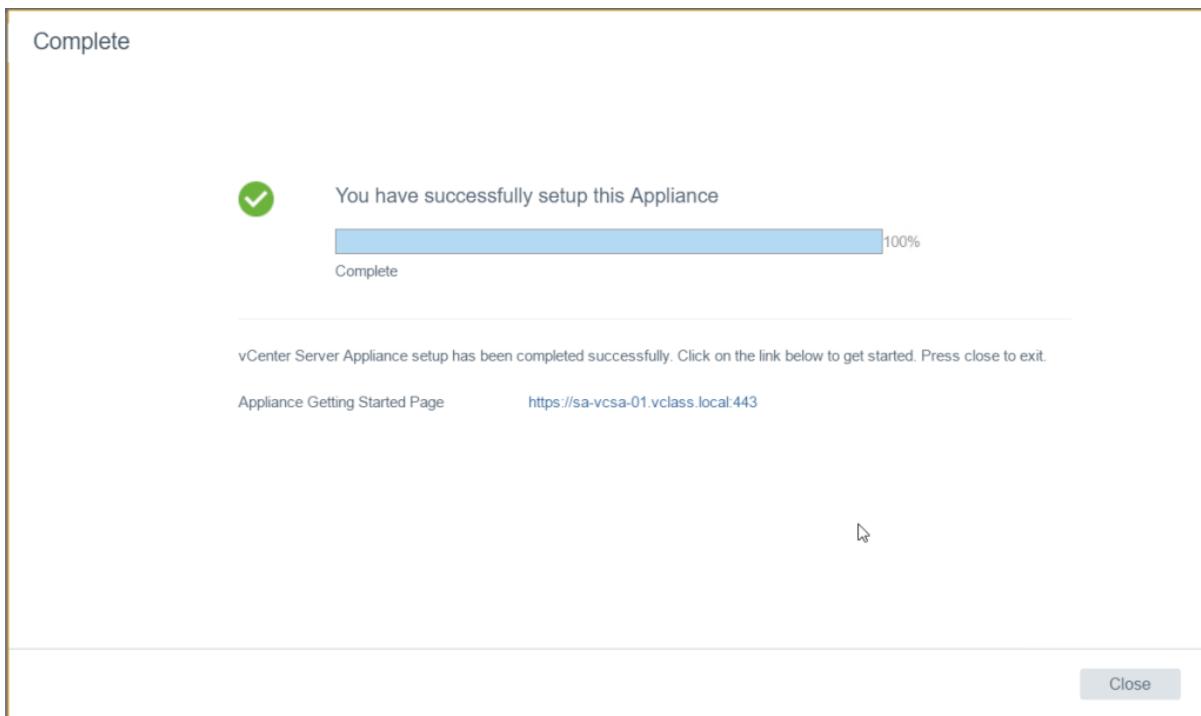
| | |
|--|---|
| <ul style="list-style-type: none">✓ 1 Introduction✓ 2 Appliance configuration3 SSO configuration4 Configure CEIP5 Ready to complete | <p>SSO configuration</p> <p>Single Sign-On domain name <input type="text" value="vclass.local"/> ⓘ</p> <p>Single Sign-On user name <input type="text" value="administrator"/></p> <p>Single Sign-On password <input type="password" value="*****"/> ⓘ</p> <p>Confirm password <input type="password" value="*****"/></p> <p>Site name <input type="text" value="default-site"/> ⓘ</p> <p>Info In vCenter 6.5, joining a vCenter with embedded PSC to an external PSC is not supported. For more information on recommended vCenter and PSC topologies, refer to the vCenter Server documentation.</p> <p style="text-align: right;">Back Next Finish Cancel</p> |
|--|---|

vCenter single sign on details

Install - Stage 2: Set Up vCenter Server Appliance with an Embedded PSC

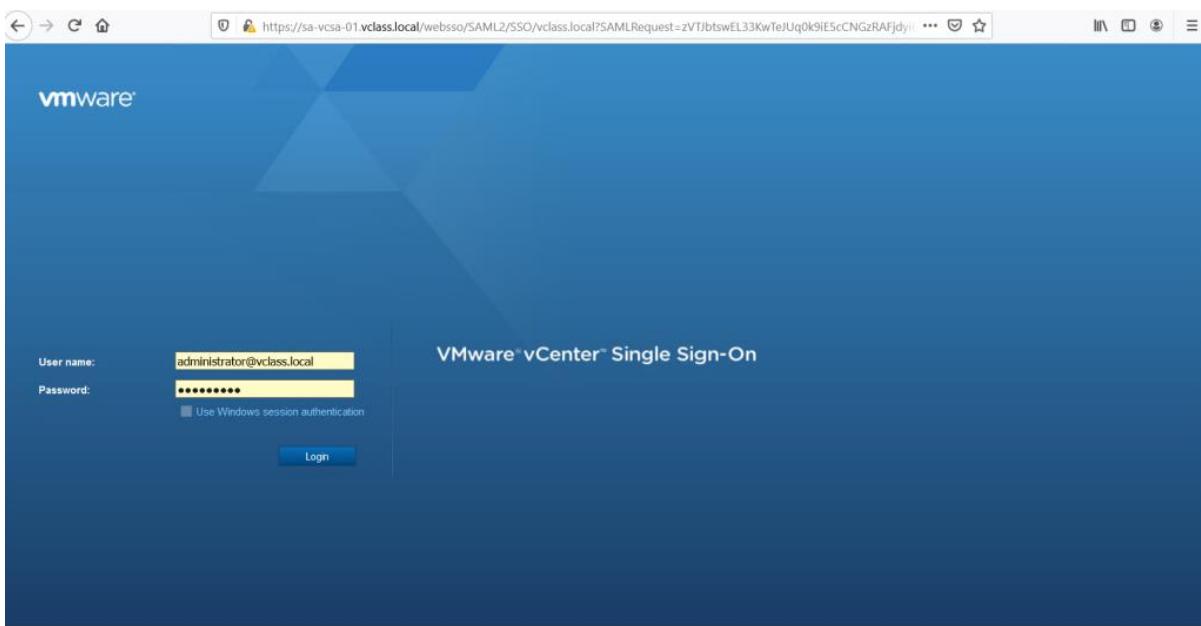
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|------------|------|-----------|-------------------------|------------|---------------|-------------|---------------|---------|--------------|-------------|--------------|---------------------------|-----------------------------------|-------------|----------------|------------|---------|-------------|--------------|-----------|--------------|-----------|---------------|--------------|----------|
| <ul style="list-style-type: none">✓ 1 Introduction✓ 2 Appliance configuration3 SSO configuration4 Configure CEIP✓ 5 Ready to complete | <p>Ready to complete Review your settings before finishing the wizard.</p> <table border="1"><tr><td>IP version</td><td>IPv4</td></tr><tr><td>Host name</td><td>sa-vcsa-01.vclass.local</td></tr><tr><td>IP Address</td><td>172.20.10.194</td></tr><tr><td>Subnet mask</td><td>255.255.255.0</td></tr><tr><td>Gateway</td><td>172.20.10.10</td></tr><tr><td>DNS servers</td><td>172.20.10.10</td></tr></table> <p>Appliance Details</p> <table border="1"><tr><td>Time synchronization mode</td><td>Synchronize time with NTP servers</td></tr><tr><td>NTP Servers</td><td>, 172.20.10.10</td></tr><tr><td>SSH access</td><td>Enabled</td></tr></table> <p>SSO Details</p> <table border="1"><tr><td>Domain name</td><td>vclass.local</td></tr><tr><td>Site name</td><td>default-site</td></tr><tr><td>User name</td><td>administrator</td></tr></table> <p>Customer Experience Improvement Program</p> <table border="1"><tr><td>CEIP setting</td><td>Opted in</td></tr></table> <p style="text-align: right;">Back Next Finish Cancel</p> | IP version | IPv4 | Host name | sa-vcsa-01.vclass.local | IP Address | 172.20.10.194 | Subnet mask | 255.255.255.0 | Gateway | 172.20.10.10 | DNS servers | 172.20.10.10 | Time synchronization mode | Synchronize time with NTP servers | NTP Servers | , 172.20.10.10 | SSH access | Enabled | Domain name | vclass.local | Site name | default-site | User name | administrator | CEIP setting | Opted in |
| IP version | IPv4 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Host name | sa-vcsa-01.vclass.local | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IP Address | 172.20.10.194 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Subnet mask | 255.255.255.0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Gateway | 172.20.10.10 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DNS servers | 172.20.10.10 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Time synchronization mode | Synchronize time with NTP servers | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NTP Servers | , 172.20.10.10 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SSH access | Enabled | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Domain name | vclass.local | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Site name | default-site | | | | | | | | | | | | | | | | | | | | | | | | | | |
| User name | administrator | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CEIP setting | Opted in | | | | | | | | | | | | | | | | | | | | | | | | | | |

Final configuration template of vCenter stage-02 installation

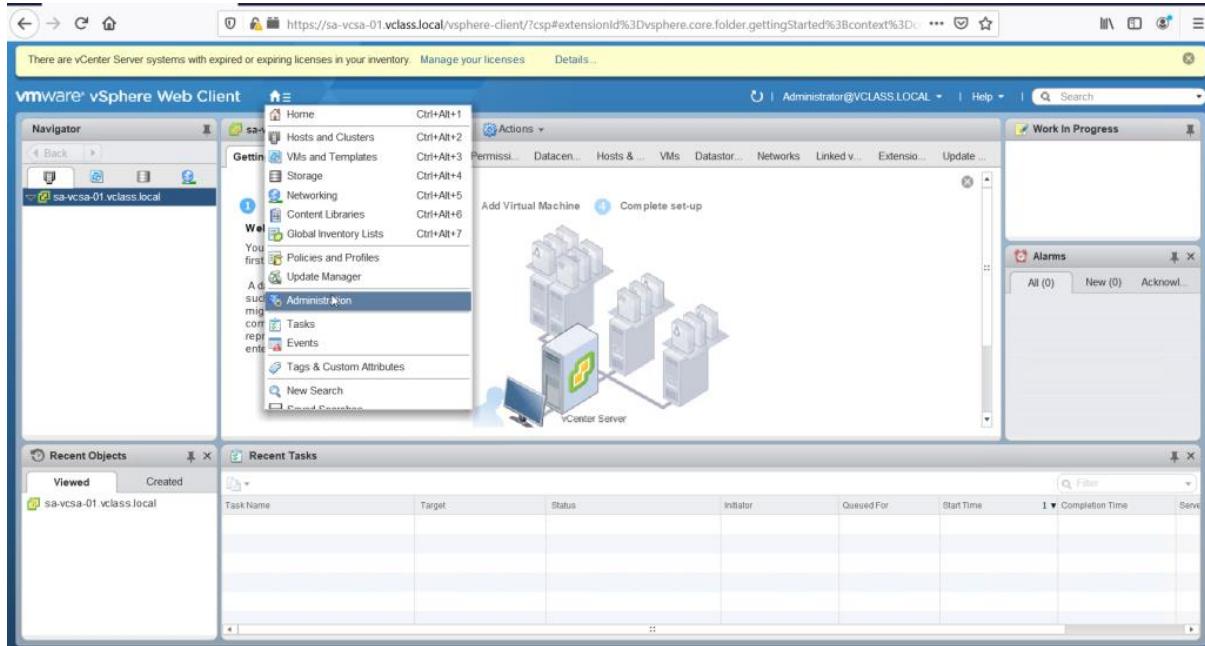


vCenter stage-02 has been completed

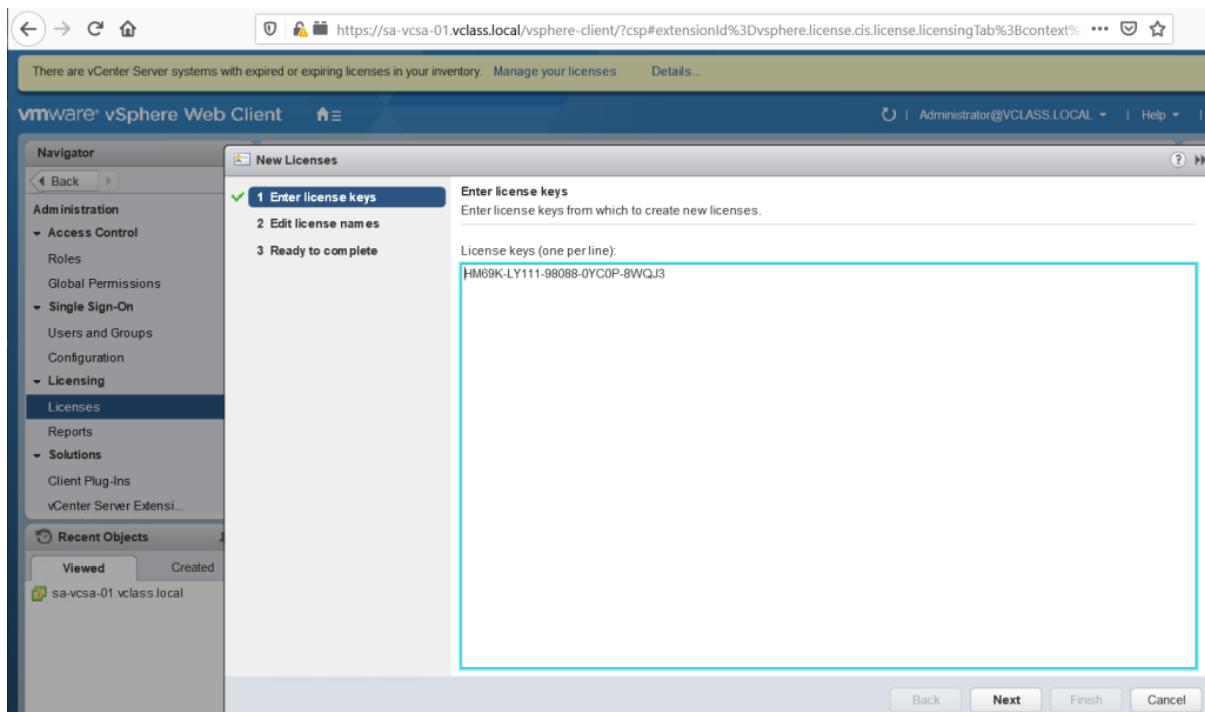
Task 2: Access and Configure vCenter Server Appliance



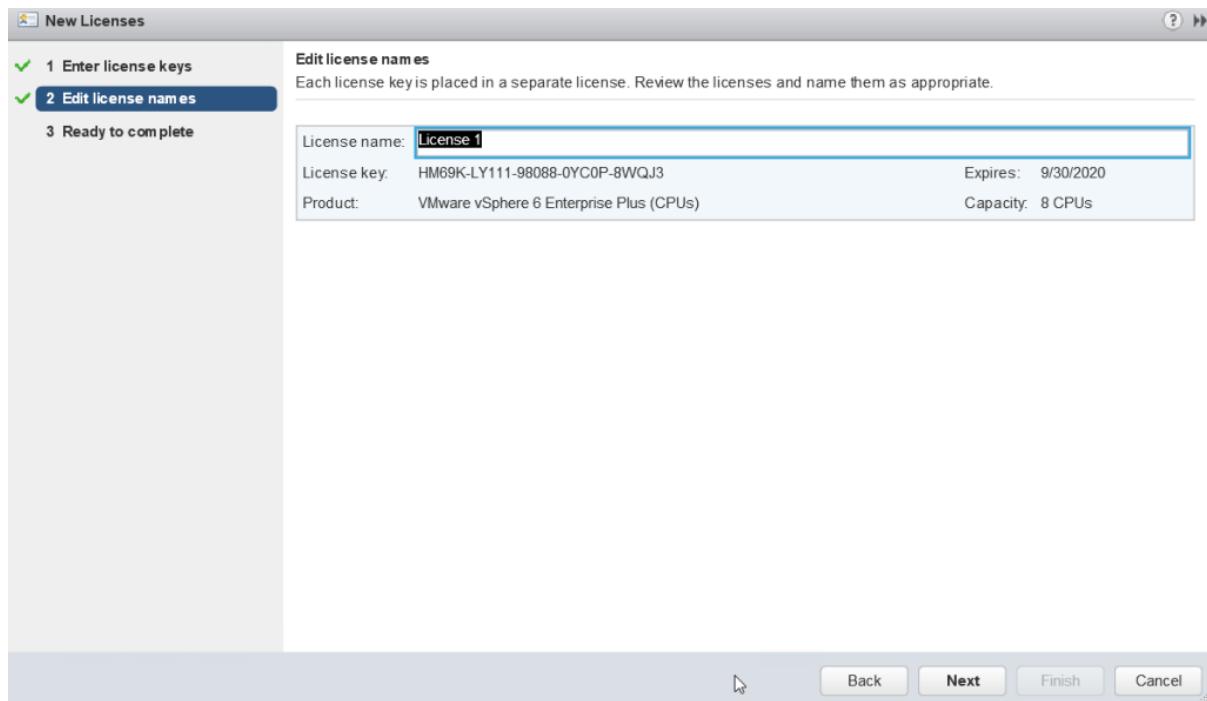
Access vCenter administration page for the first time



Go to the administration panel



Insert Licence key



Entering and assigning vCenter enterprise licence key provided for the LAB

The screenshot shows the VMware vSphere Web Client interface. In the top navigation bar, there are icons for back, forward, and home, followed by the URL <https://sa-vcsa-01.vclass.local/vsphere-client/?csp#extensionId%3Dss0.password.policies.view.extension>. Below the URL, a message says "There are vCenter Server systems with expired or expiring licenses in your inventory. Manage your licenses" with a "Details..." link.

The main title is "vmware vSphere Web Client" with a "Administrator" status indicator. On the left, the Navigator pane shows a tree structure under "Administration" with "Access Control", "Single Sign-On", "Users and Groups", "Configuration", "Licensing", and "Solutions". Under "Recent Objects", "sa-vcsa-01.vclass.local" is listed under "Viewed".

In the center, the "SSO Configuration for sa-vcsa-01.vclass.local" section has tabs for "Policies", "Identity Sources", and "Certificates". The "Policies" tab is selected, showing "Password Policy" and "Lockout Policy". A sub-section titled "A set of rules and restrictions on the format and expiration of vCenter Single Sign-On user passwords" is displayed. The "Password Policy" tab is selected here, showing configuration details:

| Description | Value |
|------------------------|--|
| Maximum lifetime | Password must be changed every 0 days |
| Restrict reuse | Users cannot reuse any previous 5 passwords |
| Character requirements | At least 1 special character, At least 2 alphabetic characters, At least 1 uppercase character, At least 1 lowercase character, At least 1 numeric character, At least 3 identical adjacent characters |

An "Edit Password Policies" dialog box is open over the main interface, allowing modification of these settings. The "Description" field is empty. The "Maximum lifetime" field is set to "0". The "Restrict reuse" field is set to "5". The "Character requirements" section includes fields for special, alphabetic, uppercase, lowercase, numeric, and adjacent characters.

Change maximum lifetime for the administration password

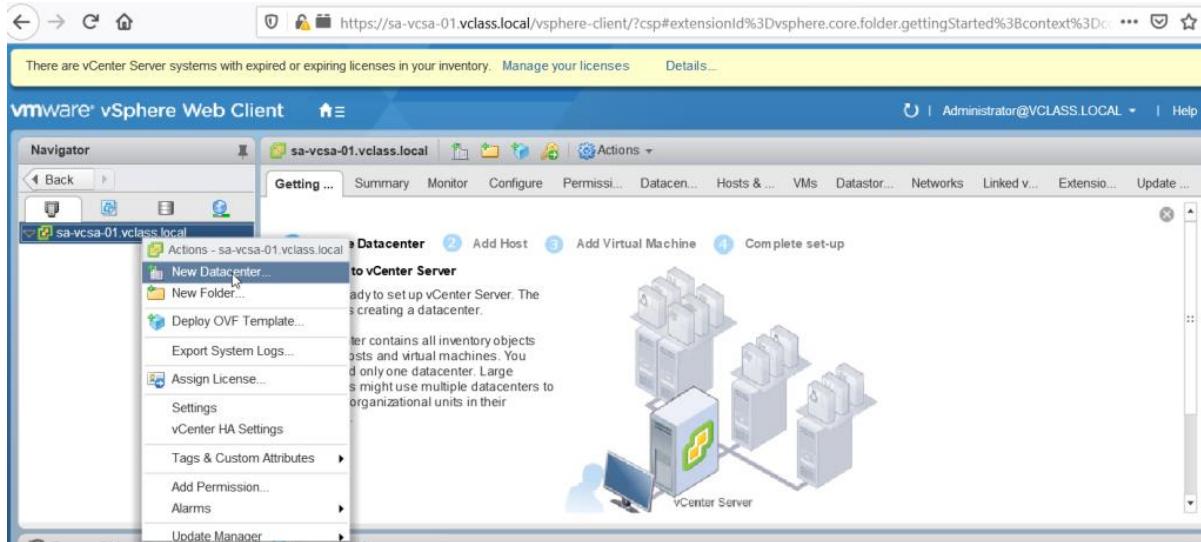
The screenshot shows the "SSO Configuration for sa-vcsa-01.vclass.local" interface. The "Policies" tab is selected, showing "Password Policy", "Lockout Policy", and "Token Policy".

The "Password Policy" section contains the following information:

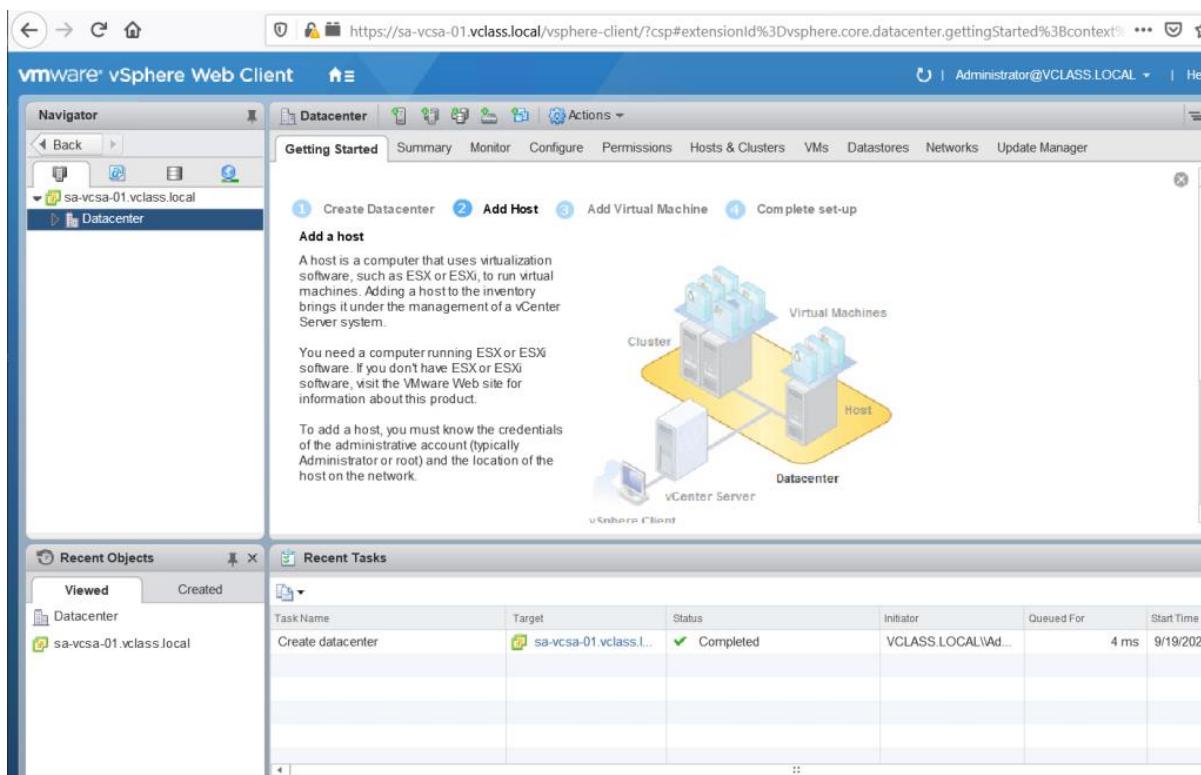
| Description | Value |
|------------------------|--|
| Maximum lifetime | Password never expires |
| Restrict reuse | Users cannot reuse any previous 5 passwords |
| Maximum length | 20 characters |
| Minimum length | 8 characters |
| Character requirements | At least 2 alphabetic characters At least 1 special characters At least 1 uppercase characters |

A "Edit..." button is located at the top right of the "Password Policy" section.

Administration password lifetime is set to 0 , mean no expiration

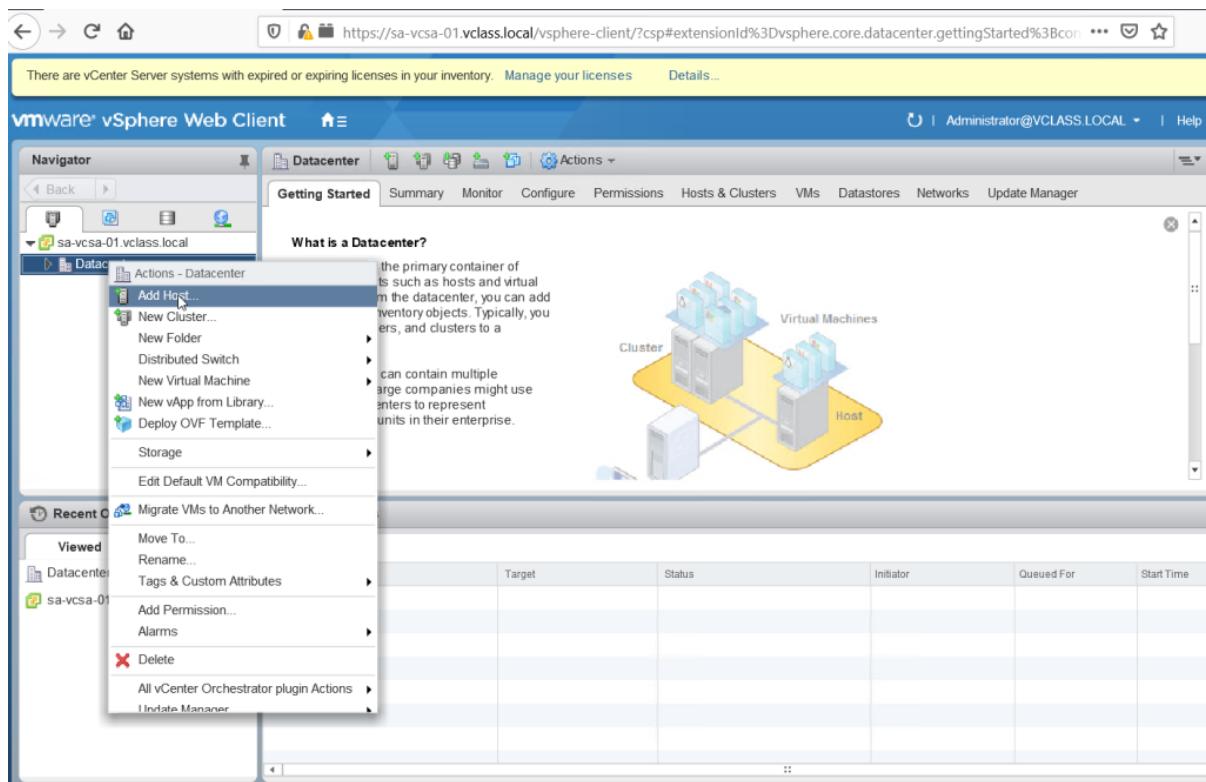


Creating datacenter object

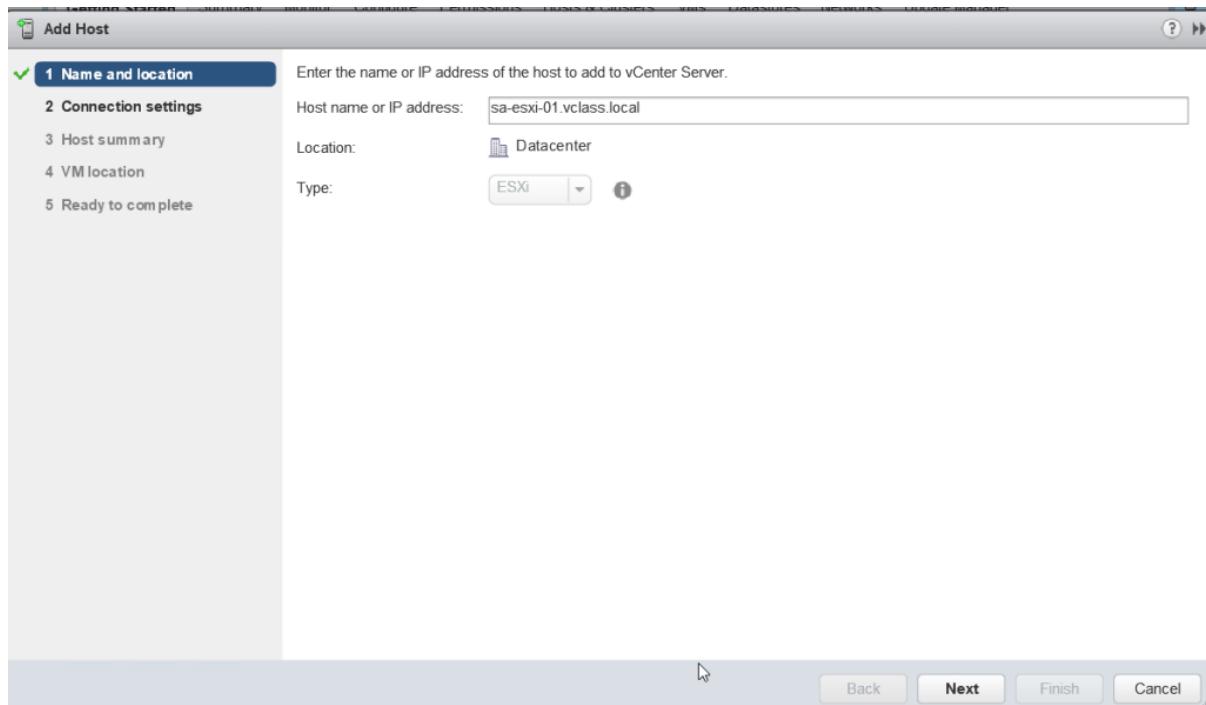


Successfully created datacentre object named “Datacenter”

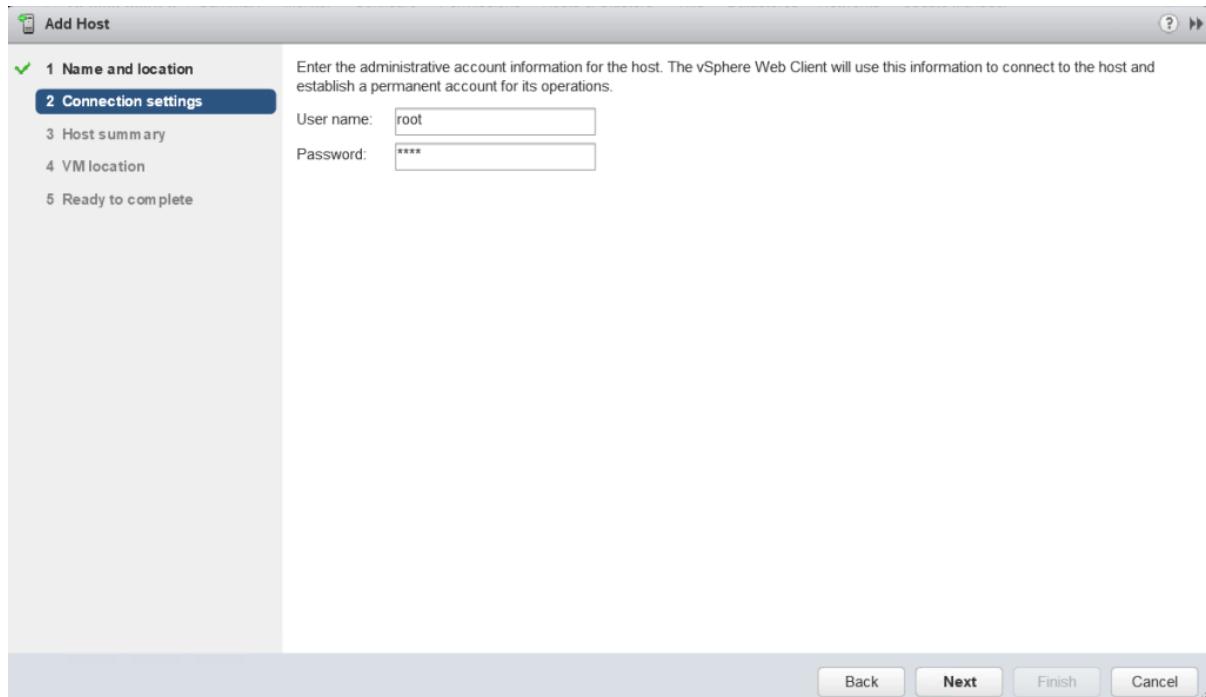
Task 3: Add Your ESXi Hosts to the vCenter Server Inventory



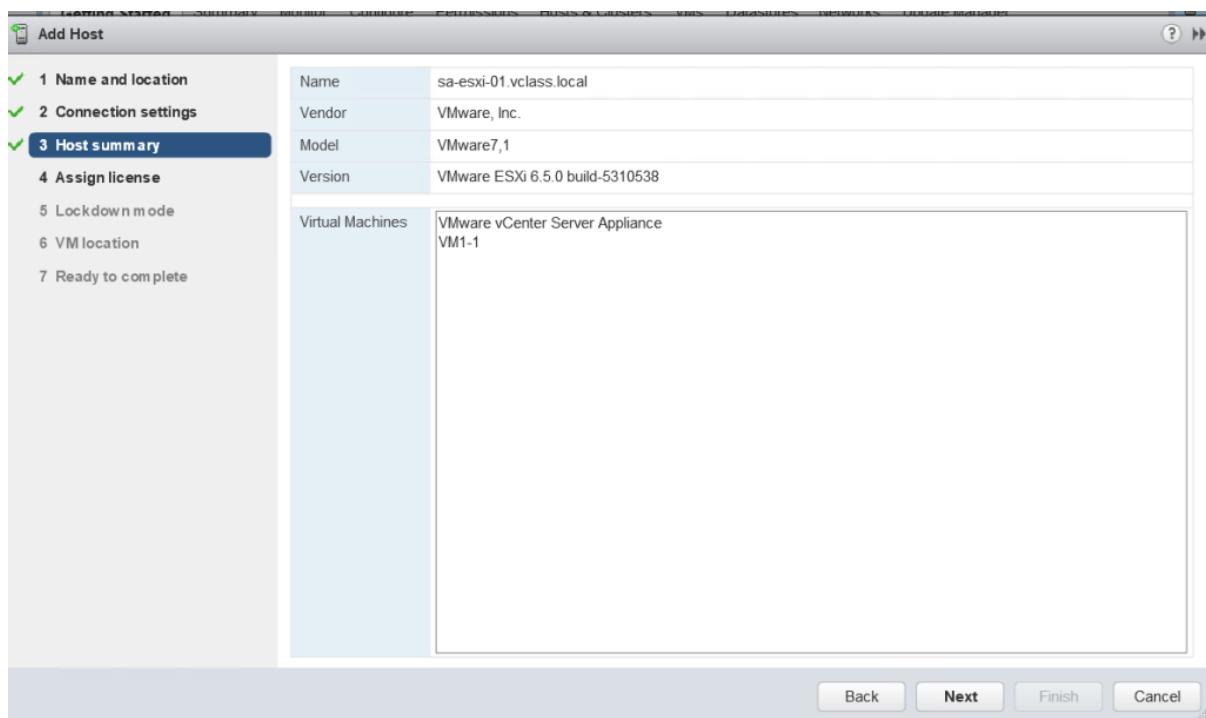
Access datacenter object in Navigate panel



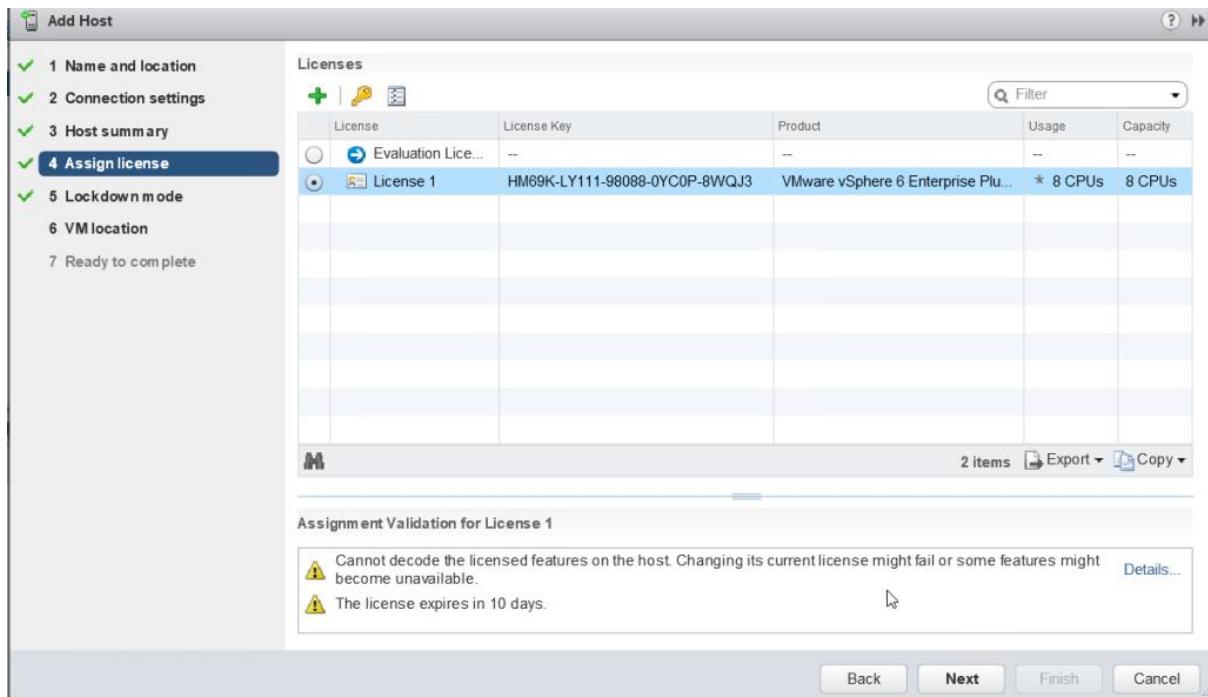
Insert Vmware host name which is sa-esxi-01.vclass.local



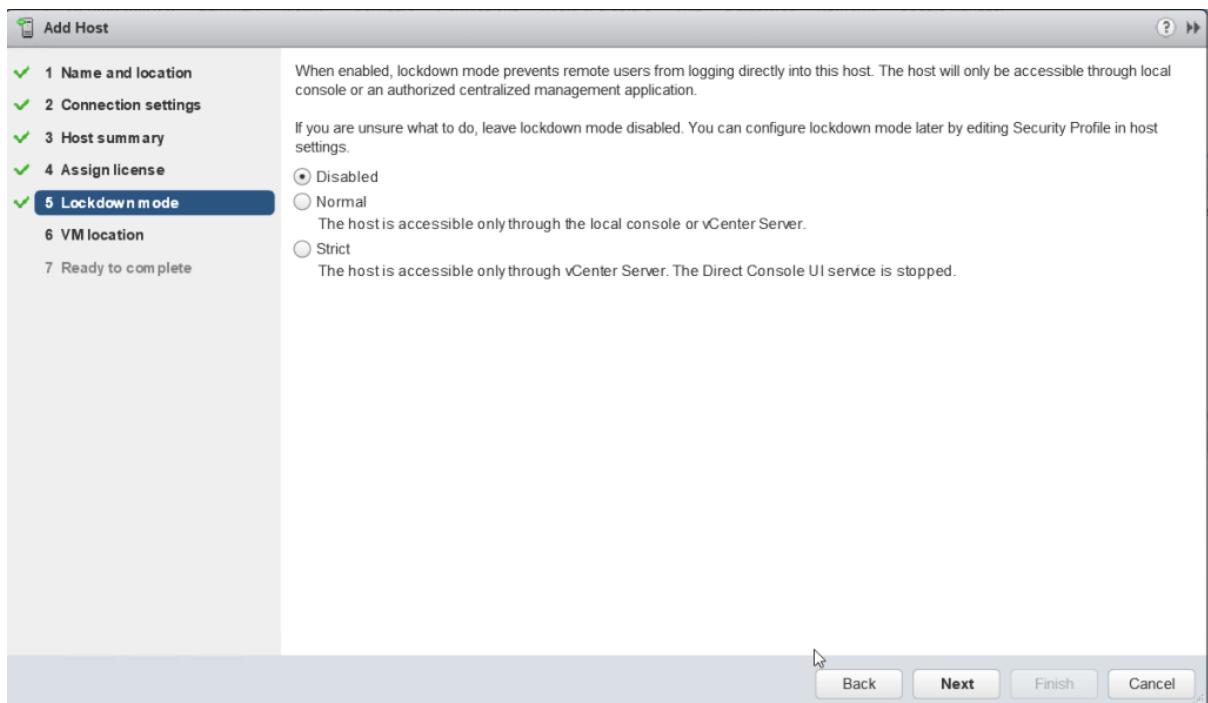
Supply Vmware Host credentials



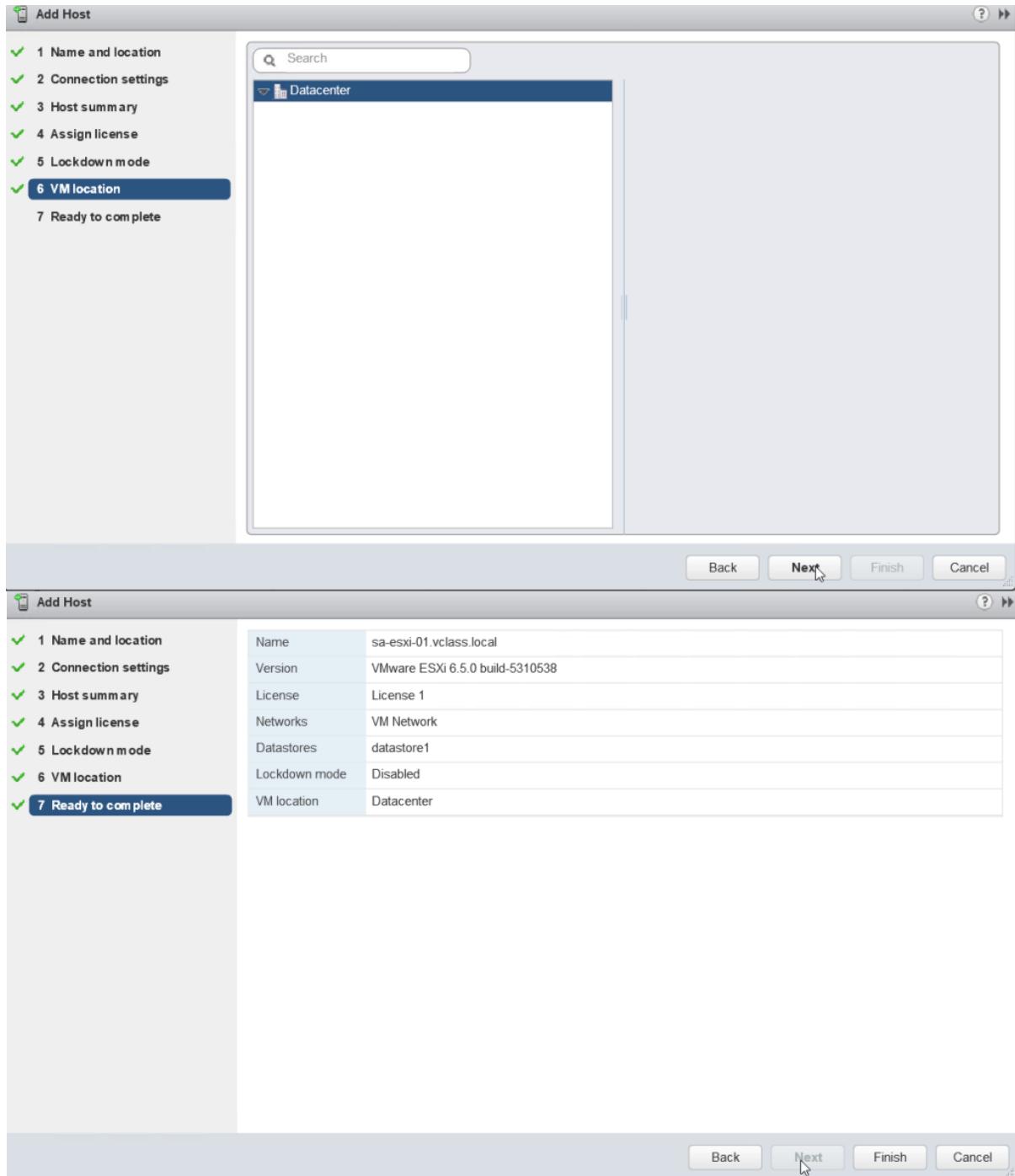
vCenter retrieved guest VM names inside host



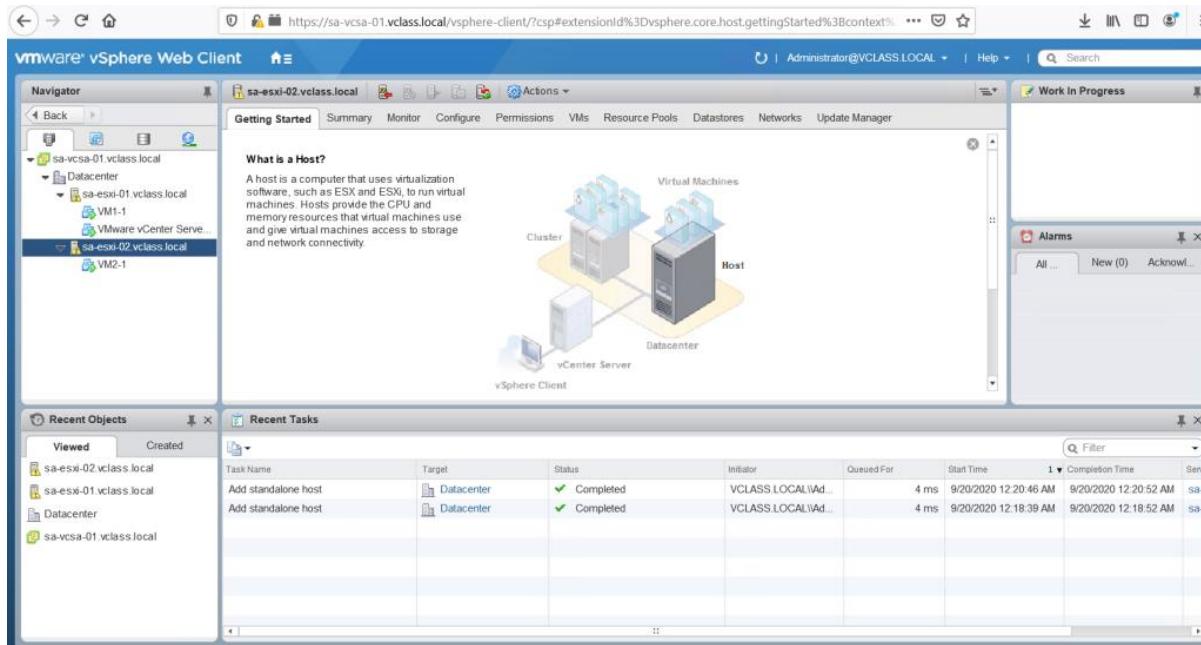
Assigning Host licence



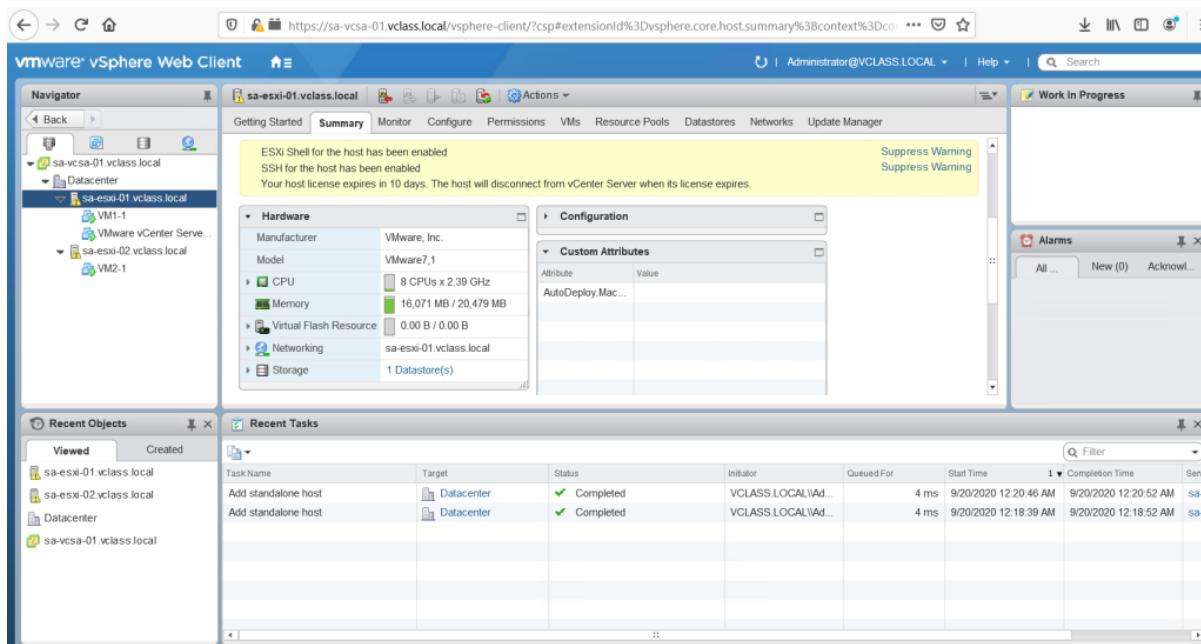
Disabling portlock



Adding host has been successfully completed

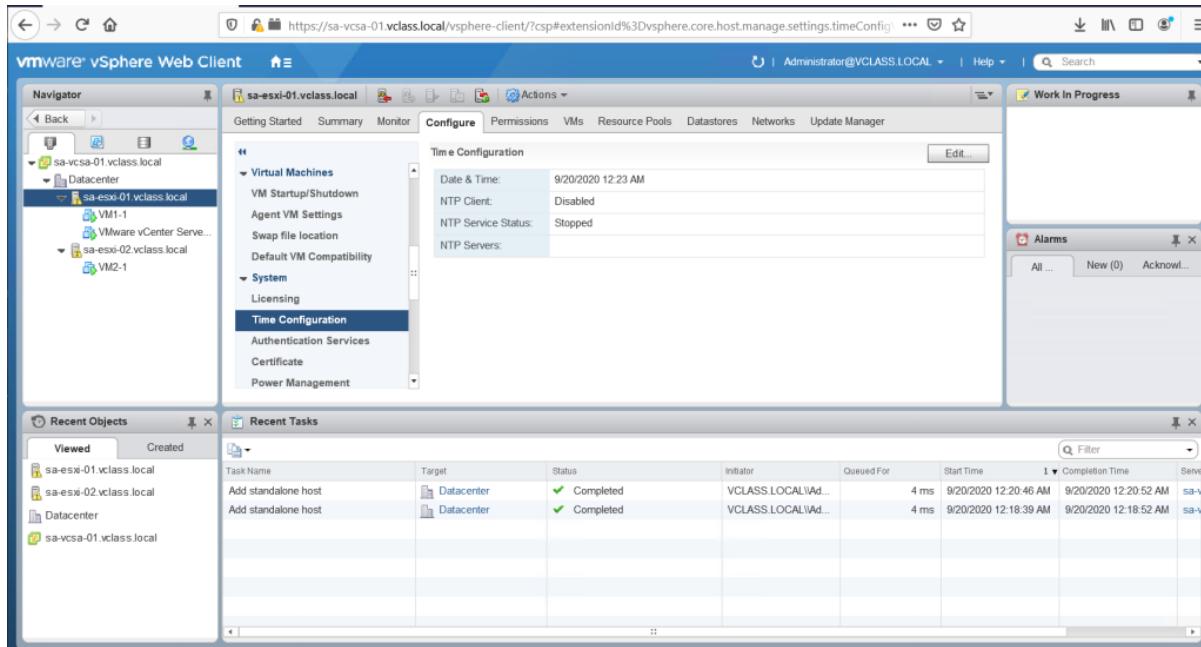


Repeat the task for sa-esxi-02.vclass.local as well. Final output of after adding both the hosts

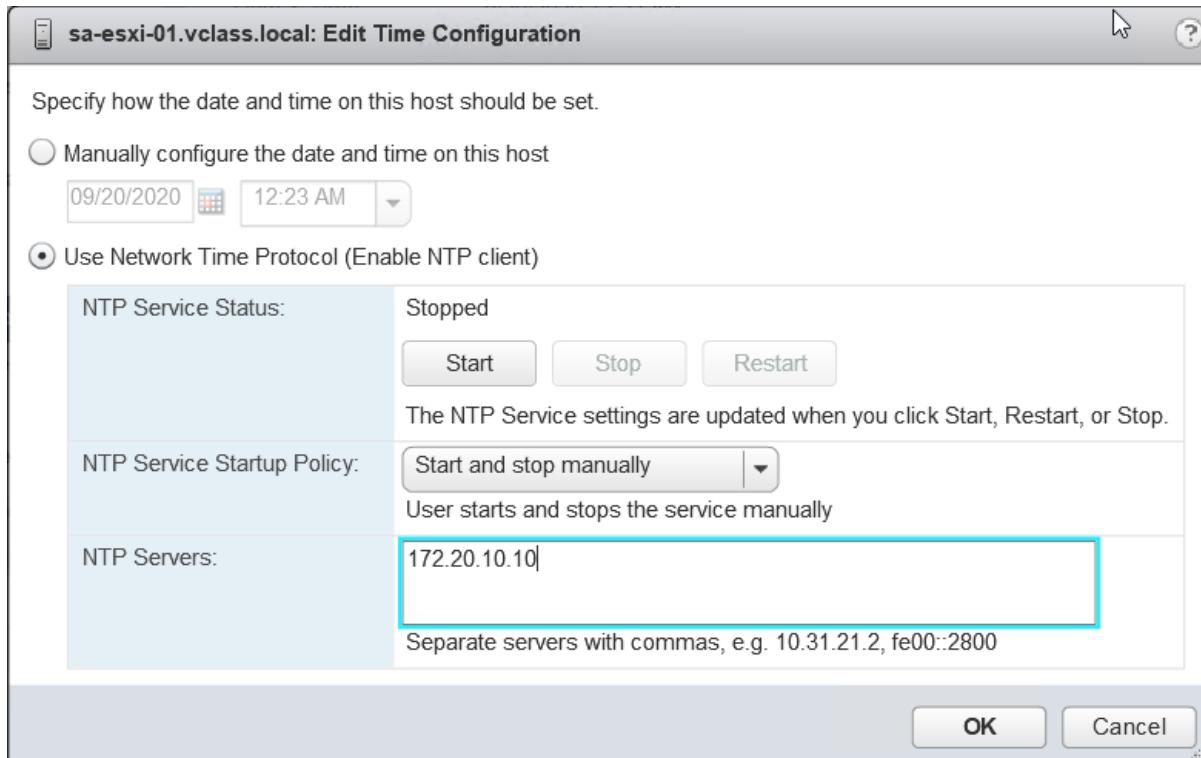


Retrieving hardware information of the added hosts

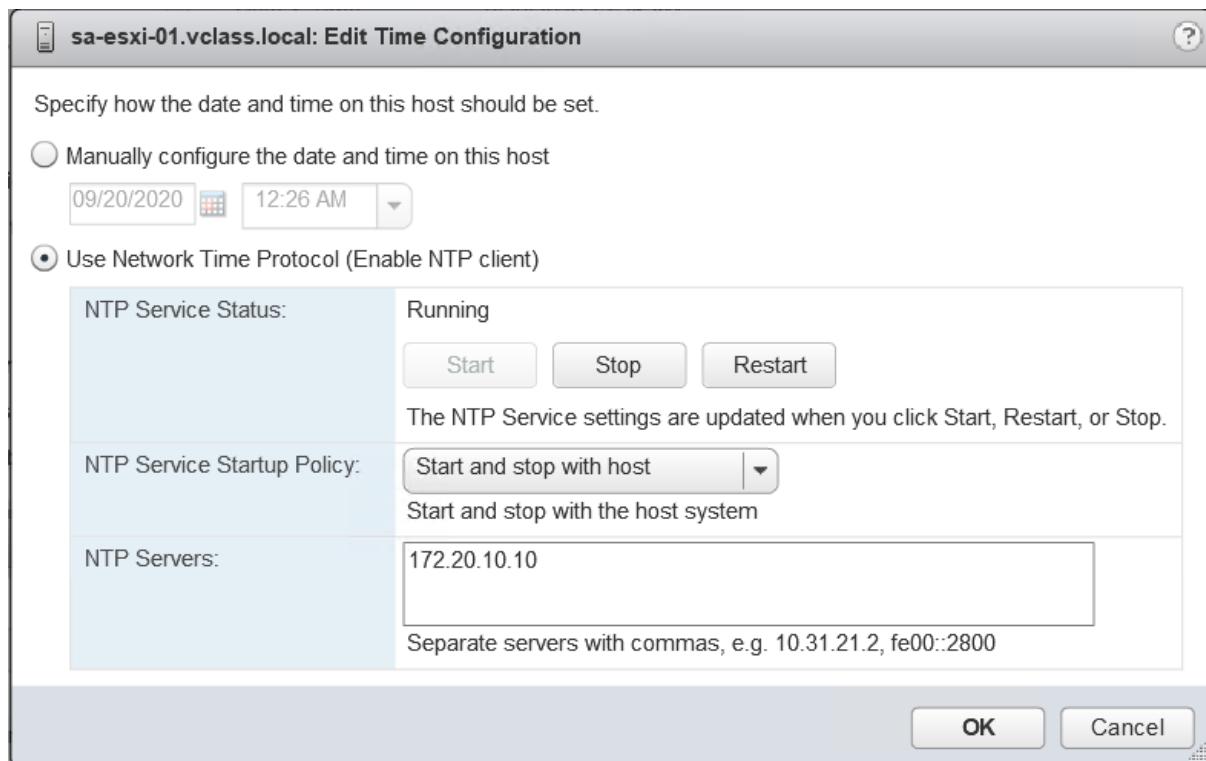
Task 4: Configure the ESXi Hosts as NTP Clients



Go to time configuration of vmware host

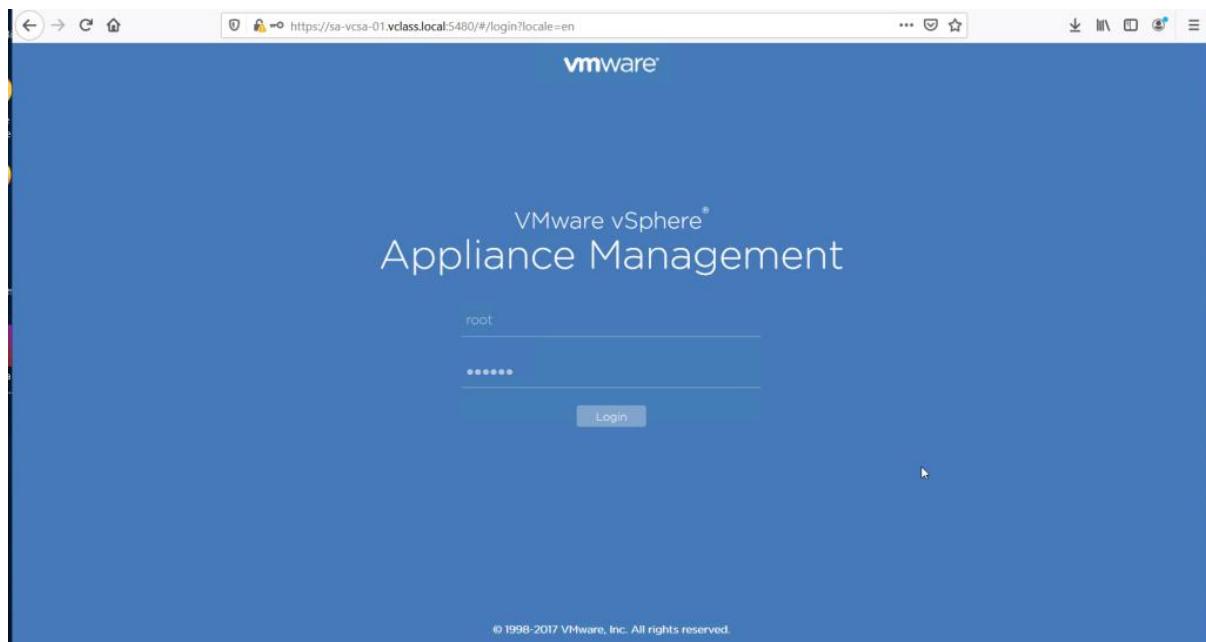


Insert NTP server ip address 172.20.10.10



Set NTP start-up policy and start NTP service, same steps were repeated for the secondary host

Task 5: Back Up vCenter Server Appliance



Accessing vCenter appliance management page

The screenshot shows the vCenter Server Appliance management interface. The URL in the browser is <https://sa-vcsa-01.vclass.local:5480/#/appliance/summary?locale=en>. The page title is "vCenter Server Appliance". The left sidebar (Navigator) includes links for Summary, Access, Networking, Time, Update, Administration, Syslog Configuration, CPU and Memory, and Database. The main content area is titled "Summary". It displays the following information:

| Hostname: | sa-vcsa-01.vclass.local |
|-----------------------|--|
| Type: | vCenter Server with an embedded Platform Services Controller |
| Product: | VMware vCenter Server Appliance |
| Version: | 6.5.0.14000 |
| Health Status | |
| Overall Health | Good |
| Last Health Check | 9/20/2020, 12:30:26 AM |
| CPU | Good |
| Memory | Good |
| Database | Good |
| Single Sign-On | |
| Single Sign-On Domain | vclass.local |
| Status | Running |

Below the health status, there is a section for "Health Messages" which states "No Messages Available."

Dashboard of vCenter appliance page

Backup Appliance

The screenshot shows the "Enter backup details" step of the "Backup Appliance" wizard. The left sidebar lists steps: 1 Enter backup details (highlighted in green), 2 Select parts to backup, and 3 Ready to complete.

Enter backup details
Specify the location details and credentials to establish connection with the server. Optionally, encrypt your backup.

Protocol:

Location: ⓘ

Port:

User name:

Password:

Encrypt Backup Data

Warning: The HTTP and FTP protocols are not secure. Do not use them to connect outside of your LAN

Back Next Finish Cancel

Entering backup details

Backup Appliance

✓ 1 Enter backup details
2 Select parts to backup
3 Ready to complete

Select parts to backup
Select files you want to backup and optionally provide a description for your backup.

A minimum set of data needed to restore the appliance will be backed up by default. This includes data such as OS, VC services and Inventory. In addition to this, you can also choose to backup additional parts below.

Parts

| | | |
|---|--|--------|
| <input checked="" type="checkbox"/> common | Inventory and configuration. | 557 MB |
| <input checked="" type="checkbox"/> Stats, Events, Alarms, and Tasks | Historical data (Statistics, Events and Tasks) in vCenter Server database. | 23 MB |

Description:

Back Next Finish Cancel

Select all parts to be backed up

Backup Appliance

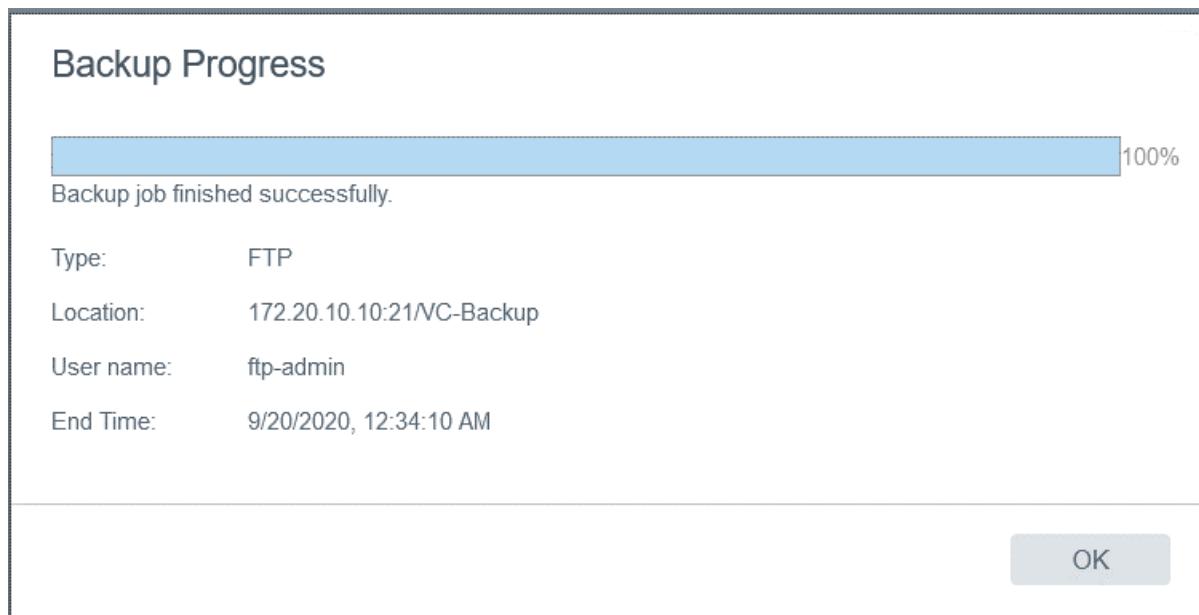
✓ 1 Enter backup details
✓ 2 Select parts to backup
3 Ready to complete

Ready to complete
Review your selections before finishing the wizard.

| | |
|---------------------|---------------------------|
| Protocol: | FTP |
| Location: | 172.20.10.10:21/VC-Backup |
| User name: | ftp-admin |
| Encryption enabled: | No |
| Backup parts: | common,seat |

Back Next Finish Cancel

Backup template



Backup task has been successfully completed.

Task 6: Complete the vCenter Server Appliance Deployment

This task has already been completed along with Task 1 which is vCenter deployment

PRACTICAL 5

AIM: Navigating the vSphere Clients.

In Talos , The security policy of a virtual switch includes MAC address changes is set to Reject. This option affects traffic that a virtual machine receives. When the Mac address changes , an option is set to Accept, ESXi accepts requests to change the effective MAC address to a different address than the initial MAC address. When the Mac address changes an option is set to Reject, ESXi does not honor requests to change the effective MAC address to a different address than the initial MAC address. Therefore rest of the LABs will be completed in a simulated environment in my own VMware LAB.

For more information:

rkempf. (n.d.). MAC Address Changes. Retrieved September 24, 2020, from <https://docs-prod.vmware.com/en/VMware-vSphere/6.0/com.vmware.vsphere.security.doc/GUID-942BD3AA-731B-4A05-8196-66F2B4BF1ACB.html>

Task 1: Navigate vSphere Client

The screenshot shows the vSphere Client interface for the host sa-vcsa-01.vclass.local. The left sidebar shows the Datacenter. The main pane is titled 'sa-vcsa-01.vclass.local' and is under the 'Configure' tab, specifically the 'Storage Providers' section. It lists three storage providers: IOFILTER Provider sa-esxi-02, IOFILTER Provider sa-esxi-01, and IOFILTER Provider sa-esxi-00. Below this, the 'Recent Tasks' section shows four completed tasks: 'Scan entity' (target sa-esxi-01.vclass.local), 'Power On virtual machine' (target VM2-1), 'Initialize powering On' (target Datacenter), and 'Power On virtual machine' (target VM1-1). The tasks are listed by start time, with the most recent at the top.

| Task Name | Target | Status | Initiator | Queued For | Start Time | Completion Time | Server |
|--------------------------|-------------------------|-----------|---------------------------|------------|------------------------|------------------------|-------------------------|
| Scan entity | sa-esxi-01.vclass.local | Completed | VCLASS-LOCAL\Administr... | 13 ms | 09/20/2020, 6:38:16 AM | 09/20/2020, 6:38:16 AM | sa-vcsa-01.vclass.local |
| Power On virtual machine | VM2-1 | Completed | VCLASS-LOCAL\Administr... | 4 ms | 09/20/2020, 6:34:08 AM | 09/20/2020, 6:34:09 AM | sa-vcsa-01.vclass.local |
| Initialize powering On | Datacenter | Completed | VCLASS-LOCAL\Administr... | 8 ms | 09/20/2020, 6:34:08 AM | 09/20/2020, 6:34:08 AM | sa-vcsa-01.vclass.local |
| Power On virtual machine | VM1-1 | Completed | VCLASS-LOCAL\Administr... | 2 ms | 09/20/2020, 6:34:04 AM | 09/20/2020, 6:34:05 AM | sa-vcsa-01.vclass.local |

Dashboard after login vCenter using UI client

The screenshot shows the vSphere Client interface with the URL <https://sa-vcsa-01.vclass.local/ui/#?extensionId=vsphere.core.inventory.serverObjectViewsExtension&objectId=urn:vmomi:...>. The title bar says "vSphere Client". The top navigation bar includes "Menu", "Search", "Actions", "Administrator@VCLASS.LOCAL", and a help icon. The left sidebar shows a tree view with "sa-vcsa-01.vclass.local" expanded, showing "Datacenter" and two hosts: "sa-esxi-01.vclass.local" (selected) and "sa-esxi-02.vclass.local". The main content area is titled "sa-esxi-01.vclass.local" and has tabs for "Summary", "Monitor", "Configure", "Permissions", "VMs", "Resource Pools", "Datastores", and "Networks". The "Summary" tab displays hardware information: Hypervisor: VMware ESXi, 6.5.0, 5310538; Model: VMware7.1; Processor Type: Intel(R) Xeon(R) CPU E5-2620 v3 @ 2.40GHz; Logical Processors: 8; NICs: 2; Virtual Machines: 2; State: Connected; Uptime: 23 minutes. It also shows resource usage: CPU (Free: 15.81 GHz, Used: 3.34 GHz), Memory (Free: 6 GB, Used: 14 GB), and Storage (Free: 118.66 GB, Used: 33.84 GB). A message at the bottom says "Your host license expires in 10 days. The host will disconnect from vCenter Server when its license expires." Below the summary are sections for "Hardware" and "Configuration". At the bottom, there are tabs for "Recent Tasks" and "Alarms", and a table showing a single task: "Scan entity" completed by "VCLASS.LOCAL/Admin..." at 09/20/2020, 6:38:16 AM.

Above is the **Summary** tab of **sa-esxi-01.vclass.local** and recorded the information given below

- Hypervisor : VMware ESXi, 6.5.0, 5310538
- Logical Processors : 8
- NICs : 2

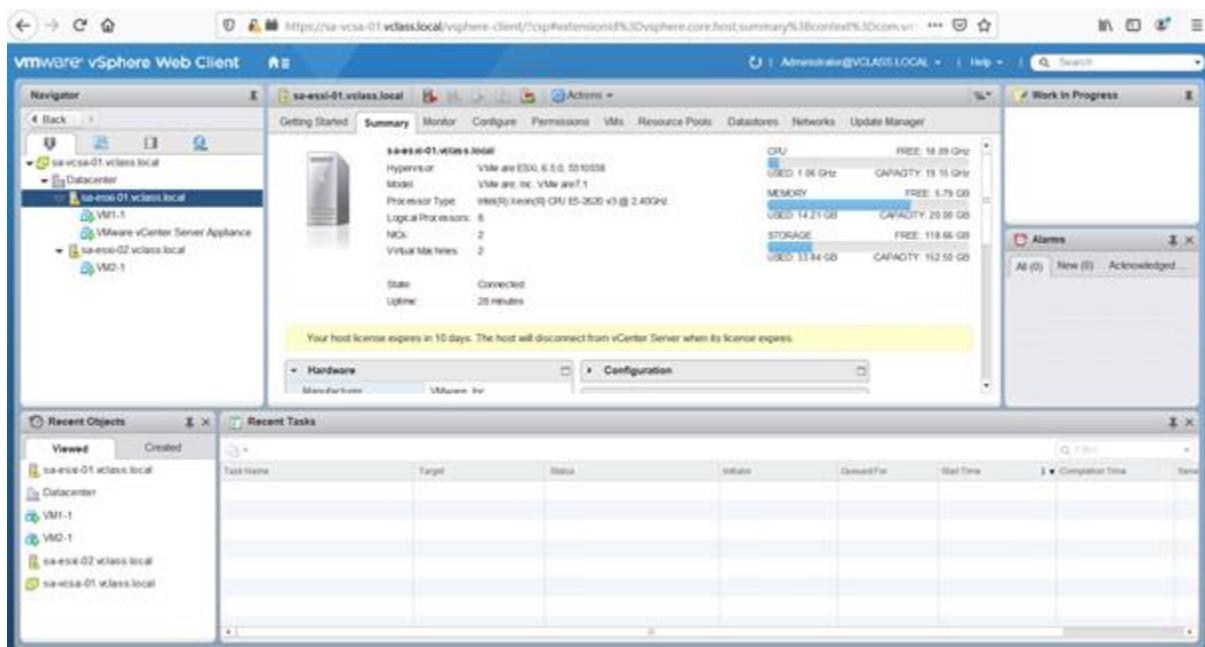
The screenshot shows the vSphere Client interface. The left sidebar shows a tree view with 'sa-vcsa-01.vclass.local' selected, which further expands to show 'Datacenter' with 'datastore1' and 'datastore1 (0)'. The main content area is titled 'datastore1 (1)' under the 'Actions' dropdown. The 'Summary' tab is selected, displaying details about the datastore: Location (ds://vmfs/volumes/5f657675-9392!f9c-8c22-000c2928f921), Type (VMFS 5), Hosts (1), Virtual machines (1), and VM templates (0). To the right of the summary are sections for 'Related Objects' and 'Custom Attributes'. Below the summary is a table for 'Recent Tasks' and 'Alarms', showing one completed task: 'Scan entity' targeting 'sa-esxi-01.vclass.local' by 'VCLASS.LOCAL\Admin...' at 09/20/2020, 6:38:16 AM.

Datastore page in UI client

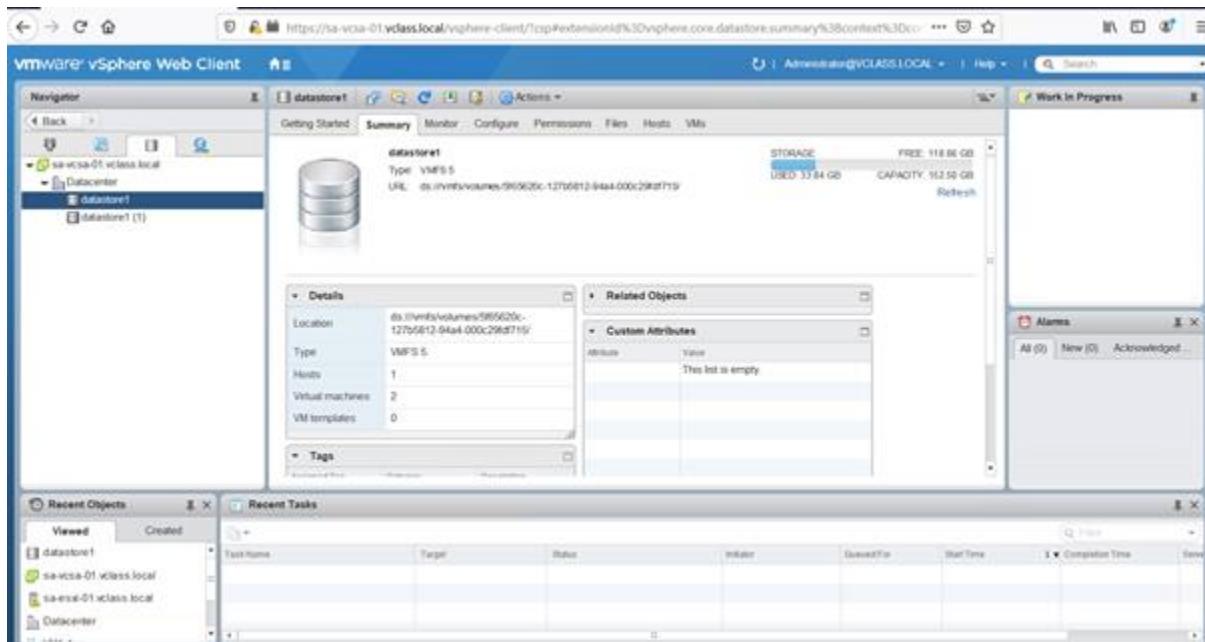
Task 2: Navigate vSphere Web Client

The screenshot shows the vSphere Web Client dashboard. The left sidebar, titled 'Navigator', shows a tree view with 'sa-vcsa-01.vclass.local' selected, leading to 'Datacenter' with 'sa-esxi-01.vclass.local' and 'sa-esxi-02.vclass.local' listed. The main content area is titled 'Datacenter' under the 'Actions' dropdown. It displays summary statistics: Hosts (2), Virtual Machines (3), Clusters (0), Datacenters (1), and Datastores (2). On the right, there are sections for 'Work in Progress' (empty), 'Alarms' (empty), and 'Recent Tasks' (empty). The bottom of the screen shows 'Recent Objects' and 'Recent Tasks' panels.

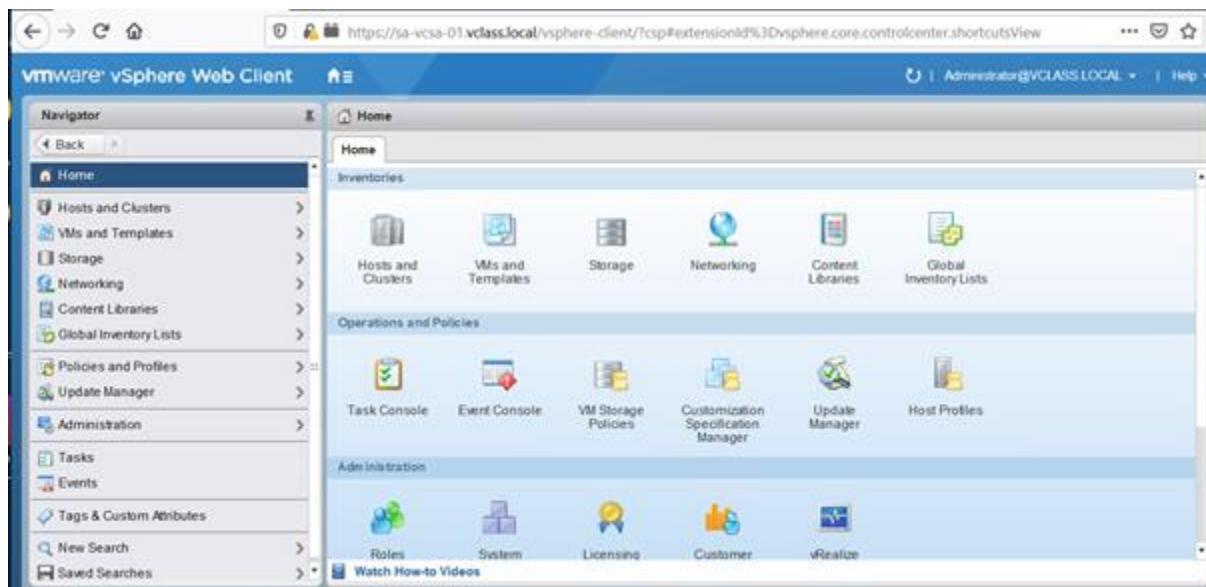
Dashboard after login vCenter using Web client



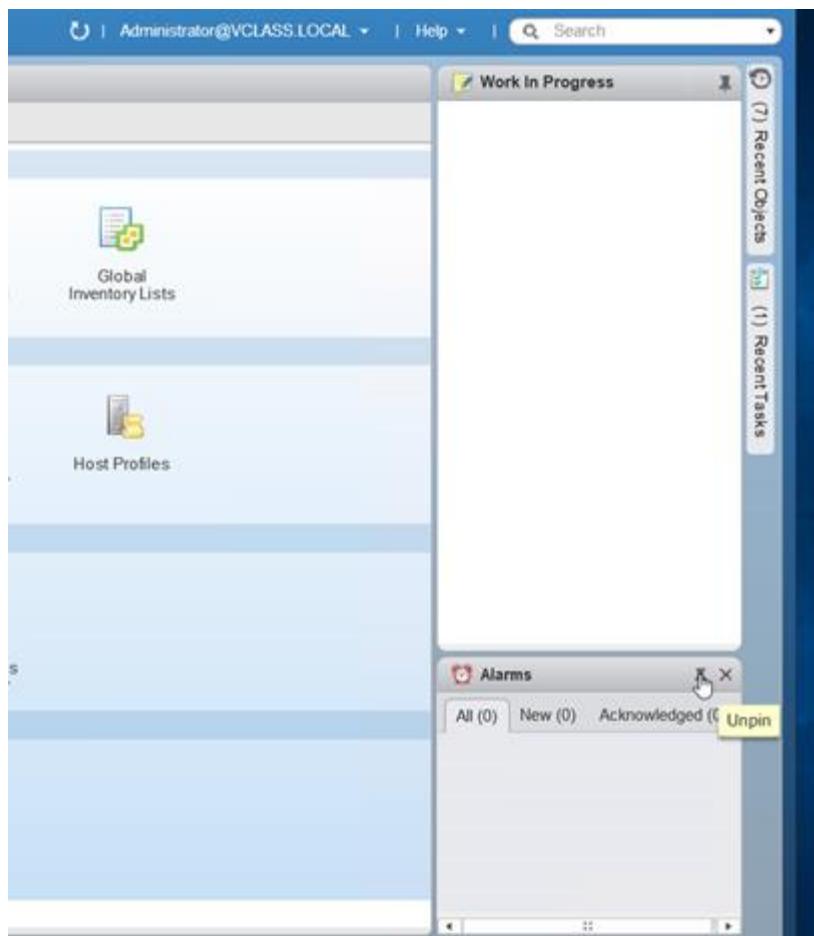
Summary information of sa-esxi-01.vcalss.local



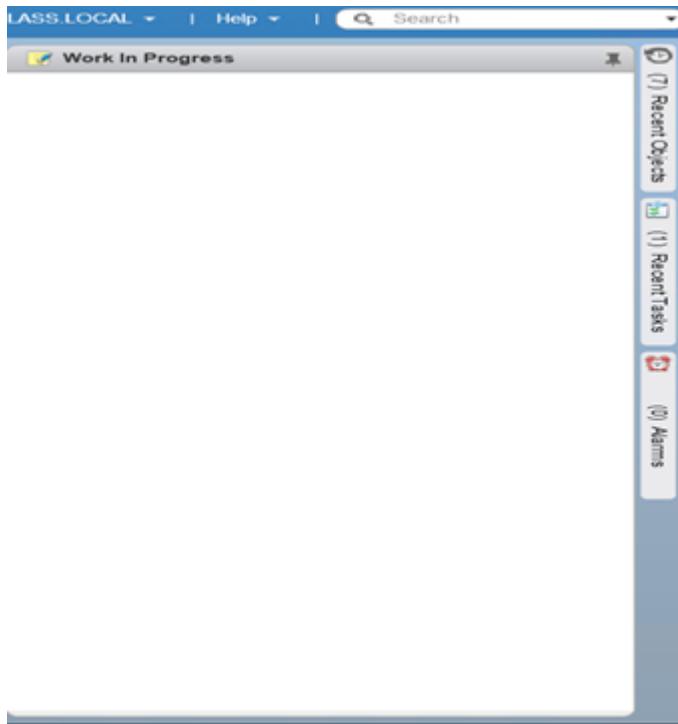
Datastore page in Web client



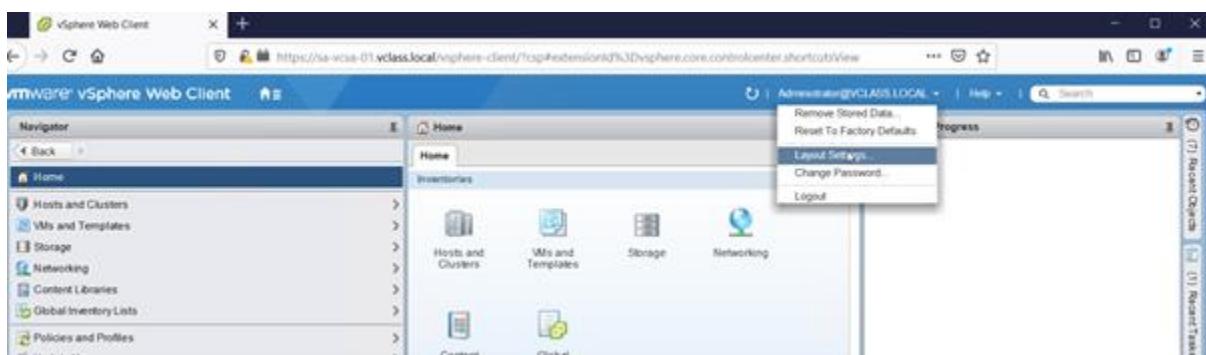
Web Client home page



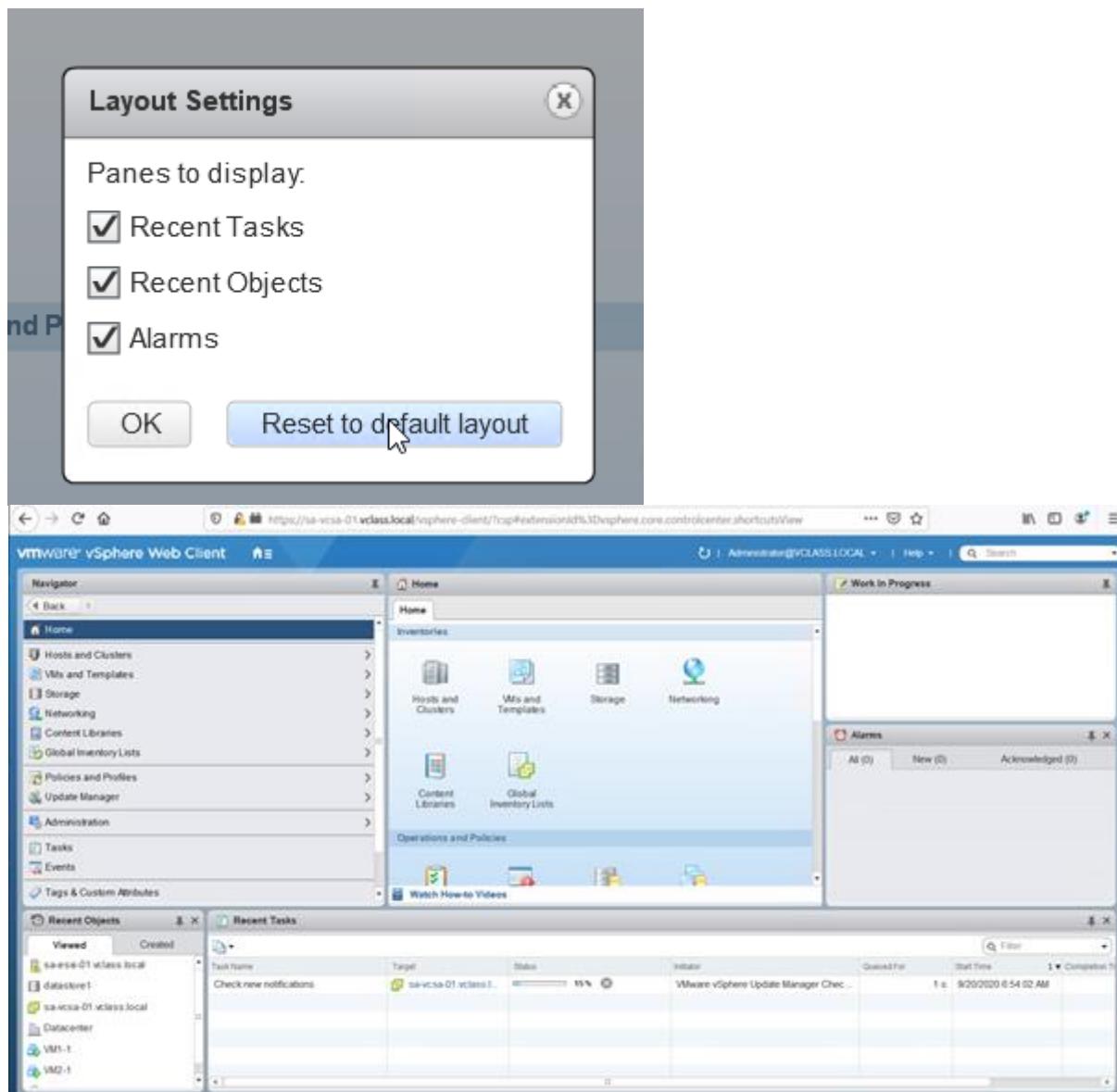
Before Pinning Alarm windows



After pinning Alram Windows



Going to rest dashboard layout of web Client

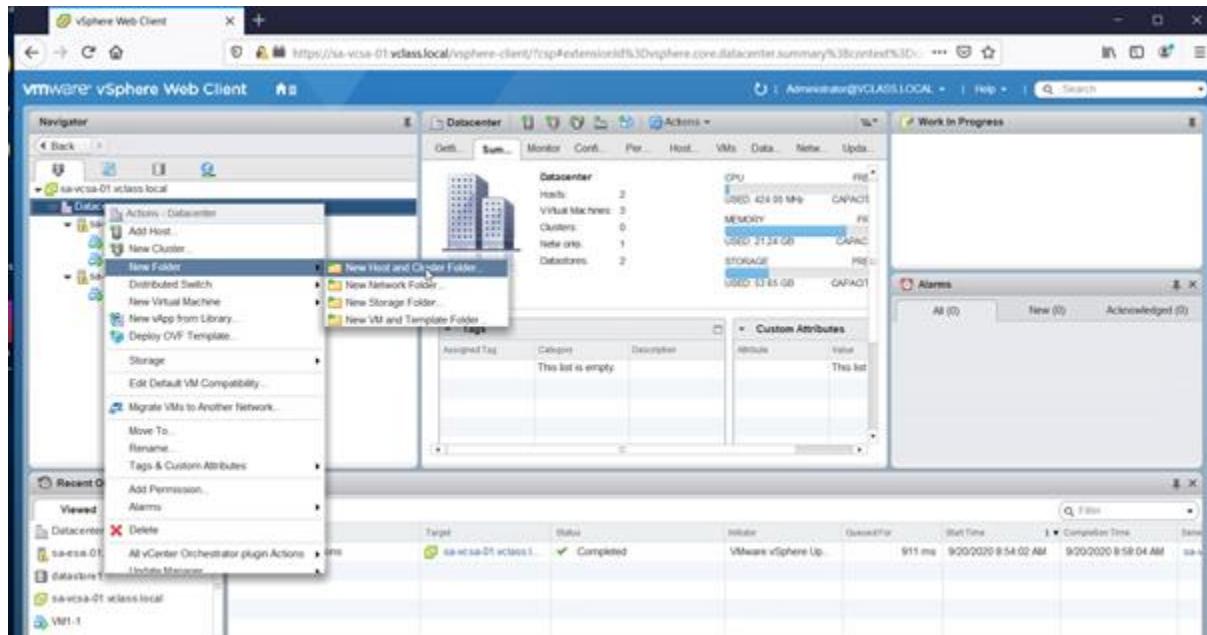


After Resetting dashboard layout of vCenter Web client

PRACTICAL 6

AIM: Creating Folders in vCenter Server Appliance.

Task 1: Create a Host and Cluster Folder

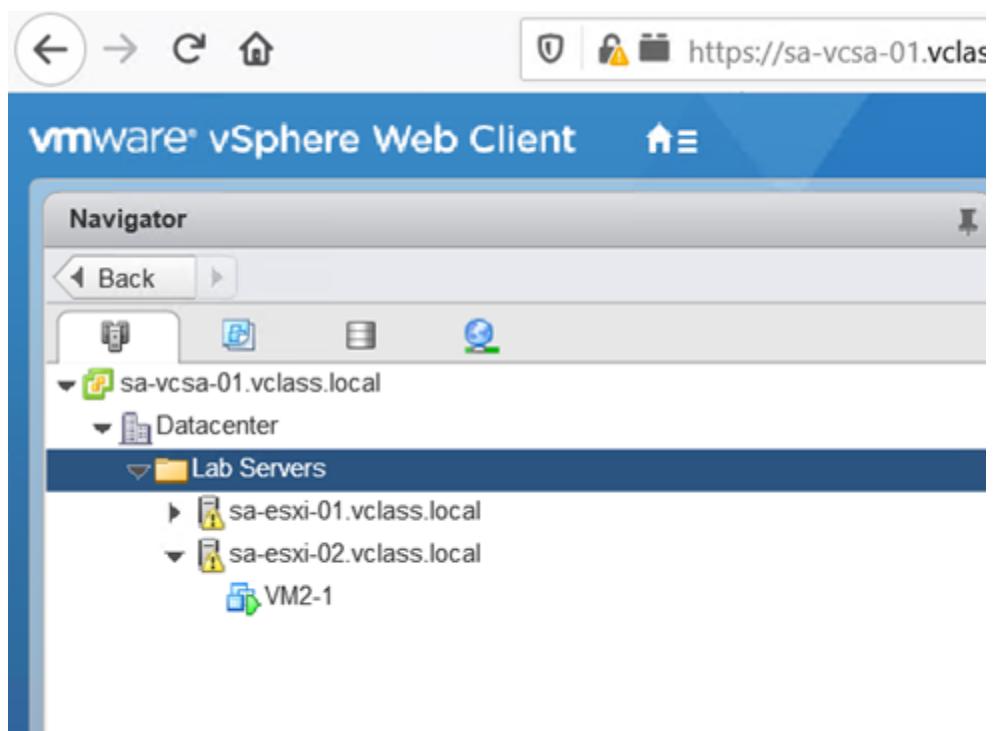


Enter a name for the folder:

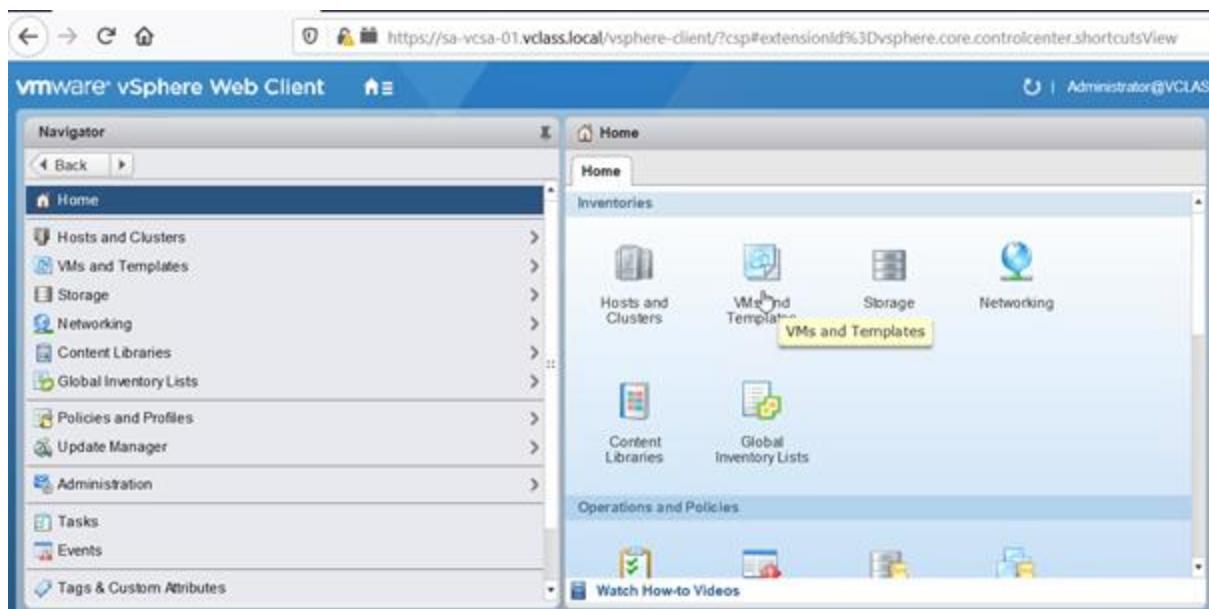
Lab Servers

OK

Cancel



Task 2: Create Virtual Machine and Template Folders



vSphere Web Client https://sa-vcsa-01.vclass.local/vsphere-client/?csp#extensionId%3Dvsphere.core.folder.gettingStarted%3BcontextId%3D

vmware vSphere Web Client sa-vcsa-01.vclass.local Administrator@VCLASS

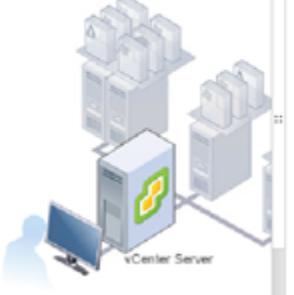
Navigator

Back > Datacenter LabVMs VM1-1 VM2-1 VMware vCenter Server Appliance

What is vCenter Server?

vCenter Server allows you to manage multiple ESXi hosts and the virtual machines on them. Because these environments can grow very large, vCenter Server provides useful management tools like the ability to organize the hosts and virtual machines into clusters with vSphere DRS and vSphere HA. Multiple vCenter Server systems can be managed by the vSphere Web Client so that their individual inventories can be presented and managed under one "pane of glass".

Any vCenter Server systems for which you have privileges and that have been registered with the Lookup Service, or added manually with the vCenter Registration Tool in the Administration section, will appear in your inventory to the left.



vSphere Web Client https://sa-vcsa-01.vclass.local/vsphere-client/?csp#extensionId%3Dvsphere.core.folder.gettingStarted%3BcontextId%3D

vmware vSphere Web Client sa-vcsa-01.vclass.local Administrator@VCLASS

Navigator

Back > Datacenter LabVMs VM1-1 VM2-1 Templates VMware vCenter Server Appliance

What is vCenter Server?

vCenter Server allows you to manage multiple ESXi hosts and the virtual machines on them. Because these environments can grow very large, vCenter Server provides useful management tools like the ability to organize the hosts and virtual machines into clusters with vSphere DRS and vSphere HA. Multiple vCenter Server systems can be managed by the vSphere Web Client so that their individual inventories can be presented and managed under one "pane of glass".

Any vCenter Server systems for which you have privileges and that have been registered with the Lookup Service, or added manually with the vCenter Registration Tool in the Administration section, will appear in your inventory to the left.

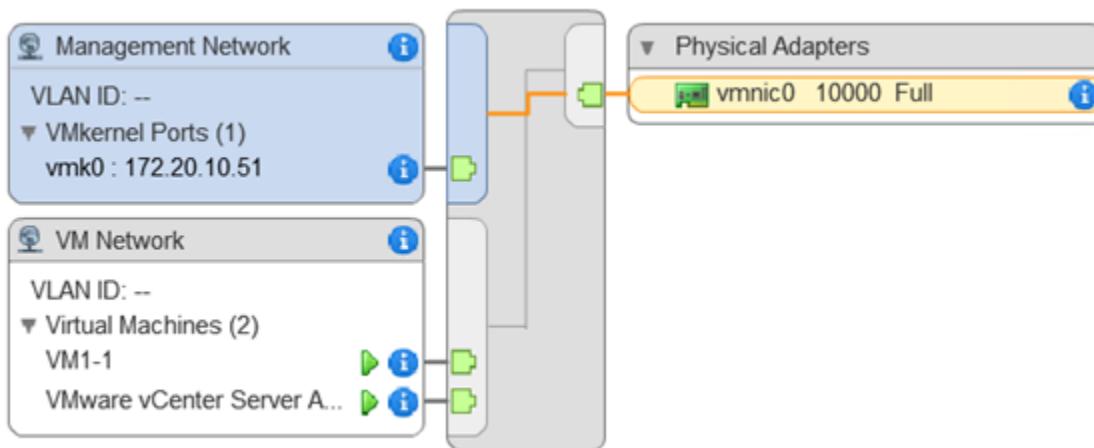


PRACTICAL 7

AIM: Using Standard Switches

Task 1: View the Standard Switch Configuration

The screenshot shows the VMware vSphere Web Client interface. The left sidebar lists hosts: sa-vcsa-01.vclass.local, Datacenter, Lab Servers, sa-esxi-01.vclass.local (selected), and sa-esxi-02.vclass.local. The top navigation bar shows the URL https://sa-vcsa-01.vclass.local/vsphere-client/?cap#extensionId%3Dvsphere.core.host.manage.settings.virtualSwitchesV... and the user Administrator@VCLASS.LOCAL. The central area has tabs: Getting St..., Summary, Monitor, Configure (selected), Permissions, VMs, Resource..., Datastores, Networks, Update Ma.... The 'Configure' tab is expanded, showing 'Virtual switches' selected. The main content area shows 'vSwitch0' as the default standard switch. It details the 'Management Network' (VLAN ID: --, VMkernel Ports (1): vmk0 : 172.20.10.51) and 'VM Network' (VLAN ID: --, Virtual Machines (2)). A physical adapter 'vmnic0 10000 Full' is connected to the Management Network port group.



Q1. What is the name of the default standard switch? vSwitch0

1. The default virtual switch is named vSwitch0.

Q2. Which physical adapter is the default standard switch connected to? vmnic0

2. The default switch is connected to the physical adapter vmnic0.

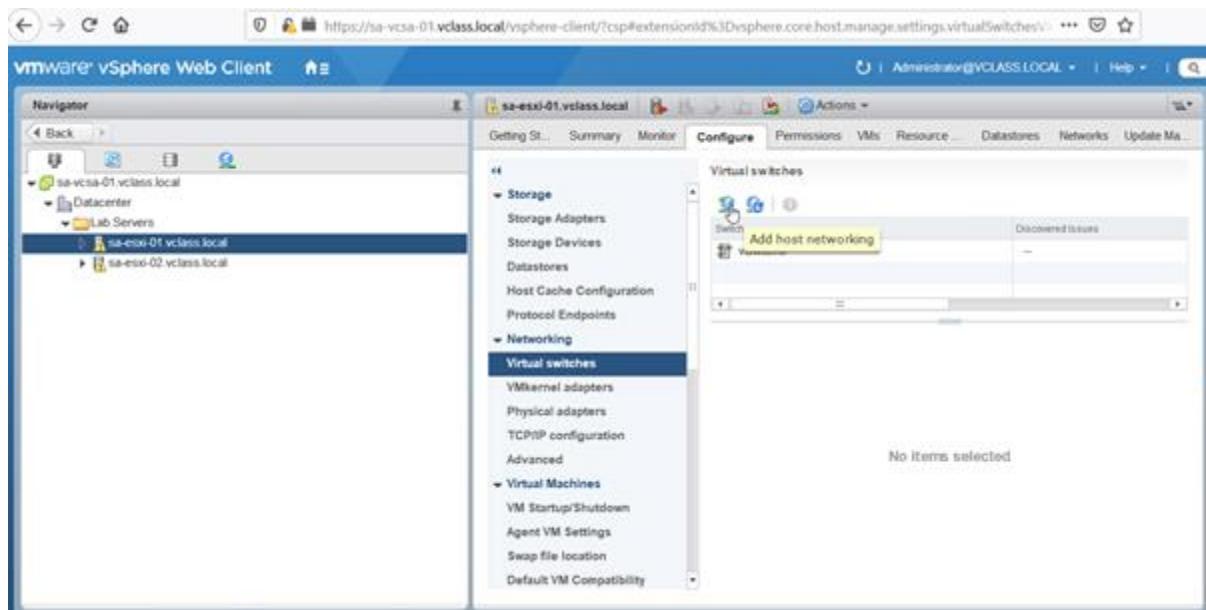
Q3. Which network is your virtual machine connected to? VM Network (Virtual machines are connected to this port group)

3. vSwitch0 contains a virtual machine port group named VM Network. Your virtual machine

is connected to the VM Network port group.

Q4. Which networks are connected to the default standard switch? Management Network and VM Network

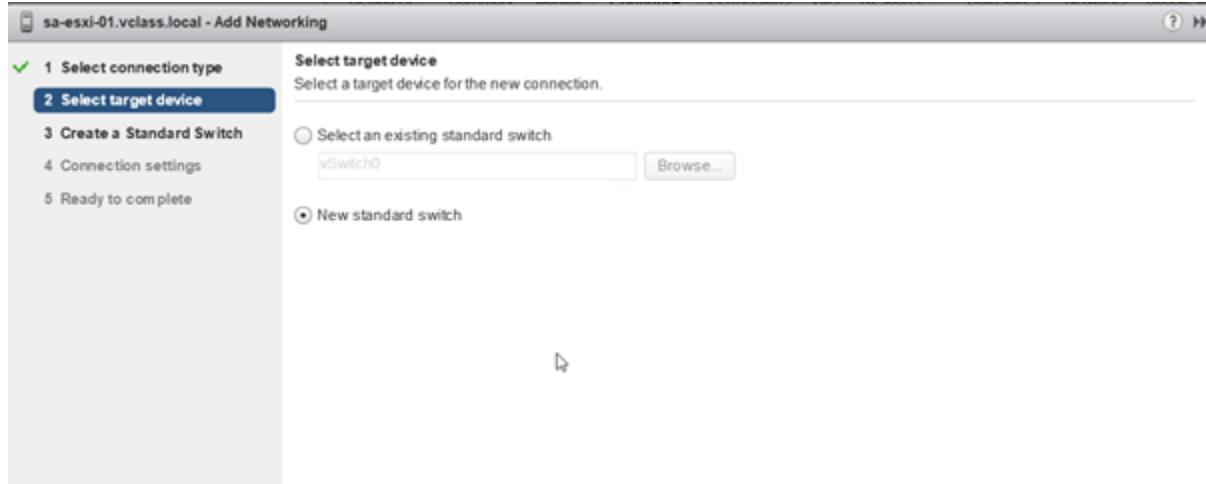
Task 2: Create a Standard Switch with a Virtual Machine Port Group



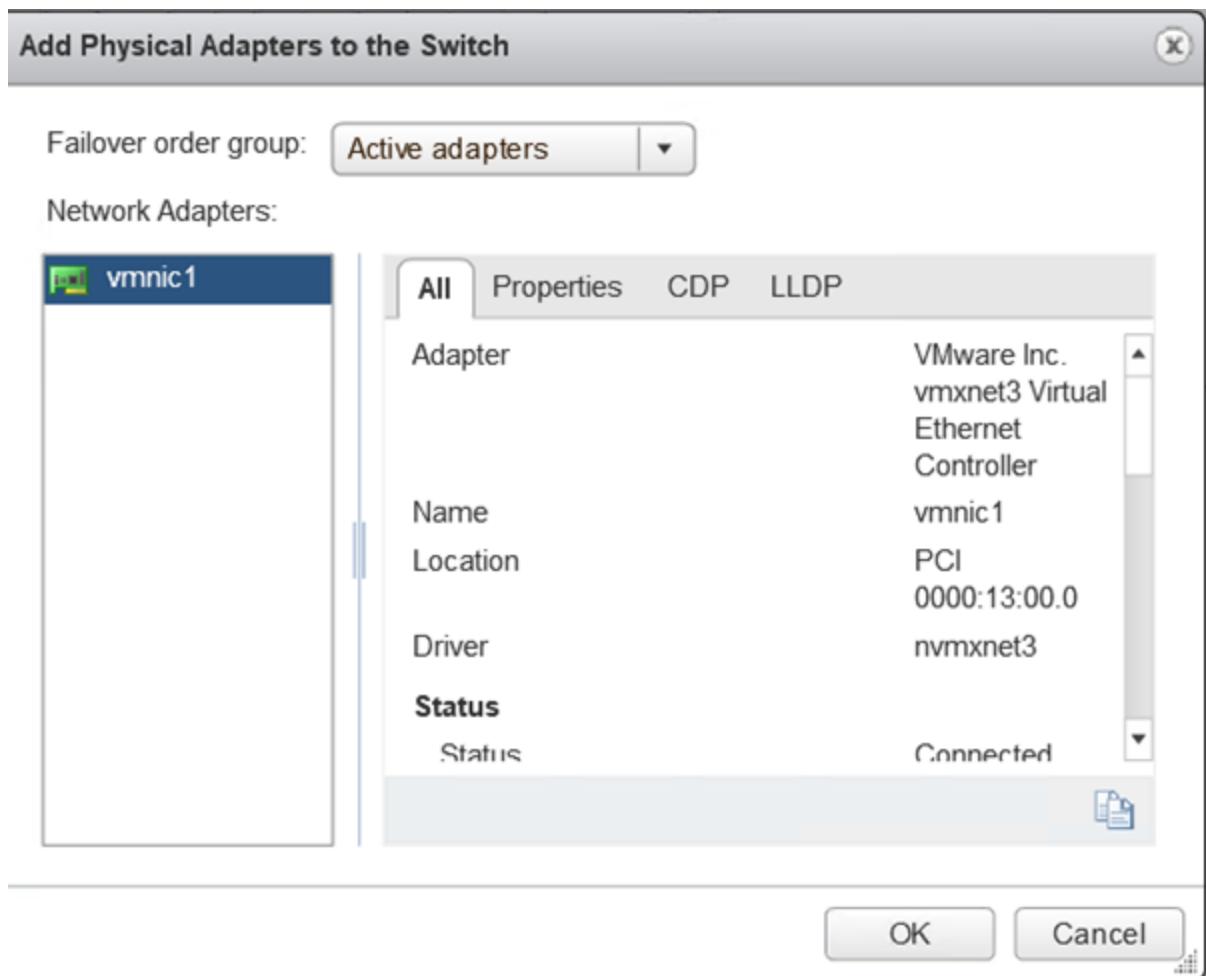
Virtual switch configuration page of sa-esxi-01



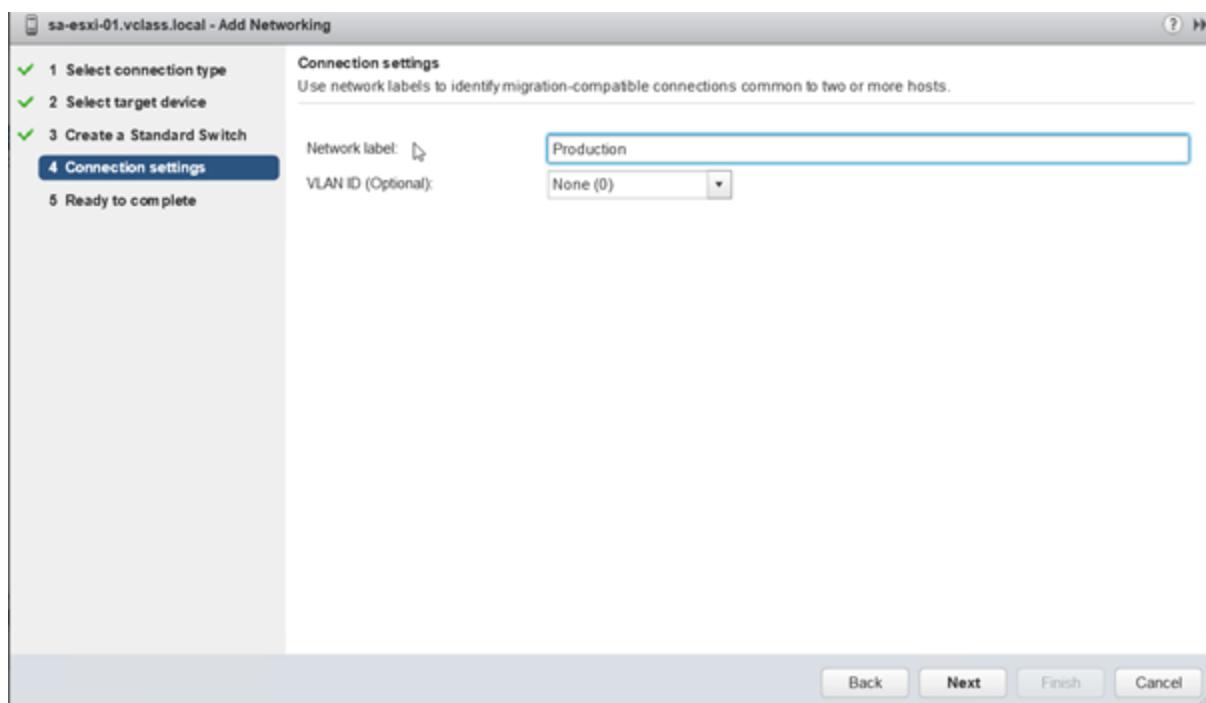
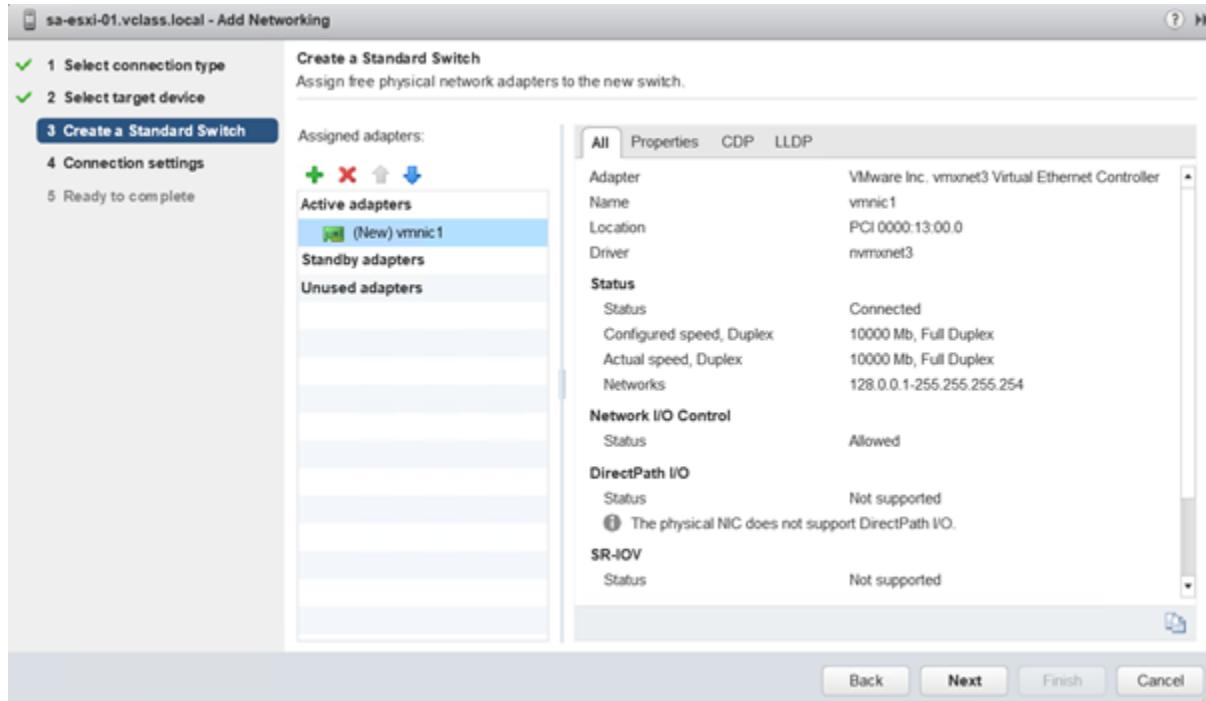
Create port group



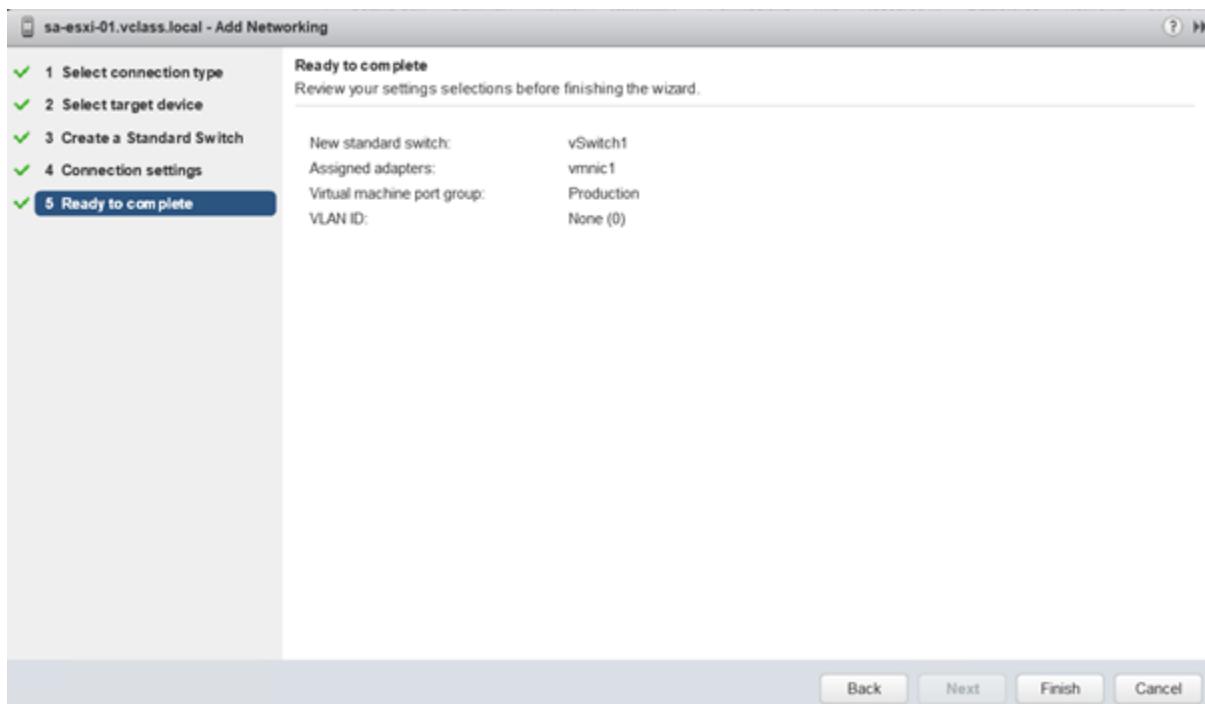
Create new virtual switch



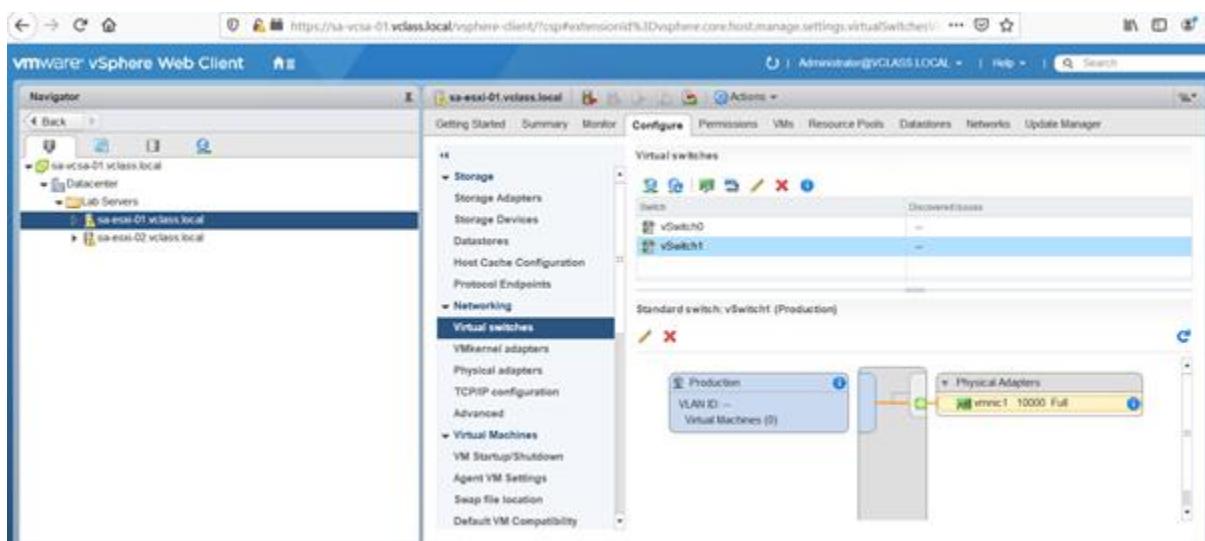
Assign physical network vmnic1 for newly created vSwitch1



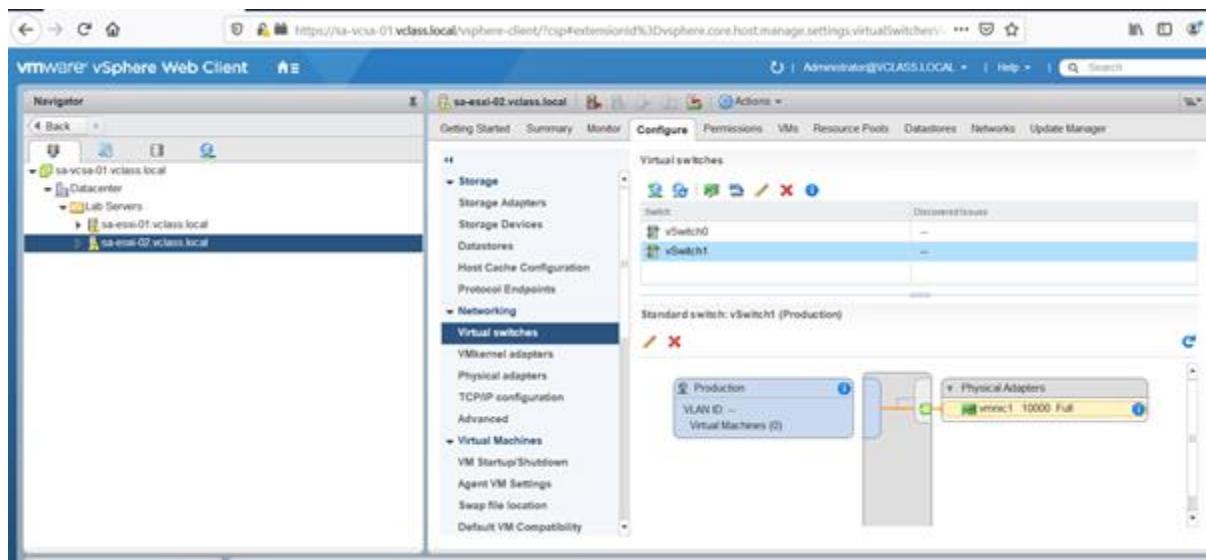
Create Port-group named “production”



Create Port-group named “production”

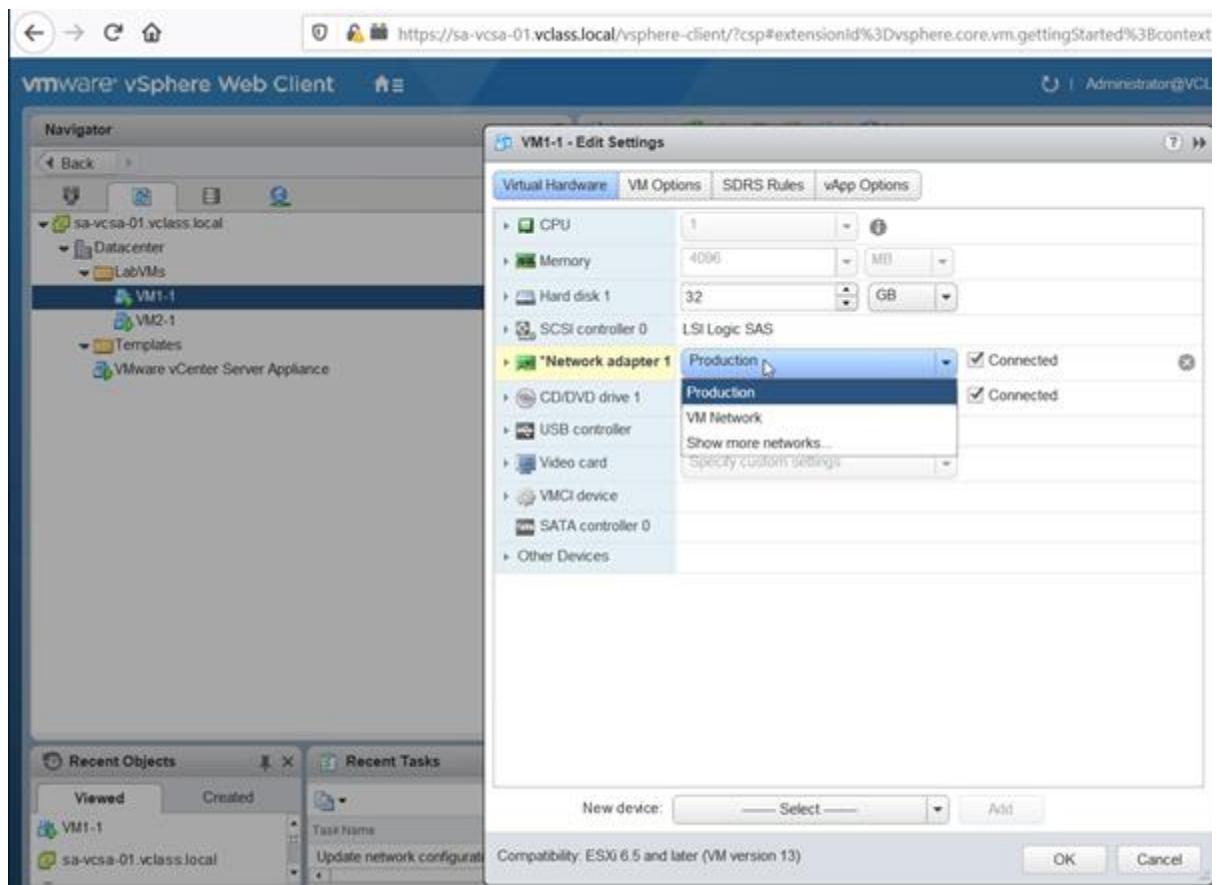


Final vSwitch1 details in sa-esxi-01

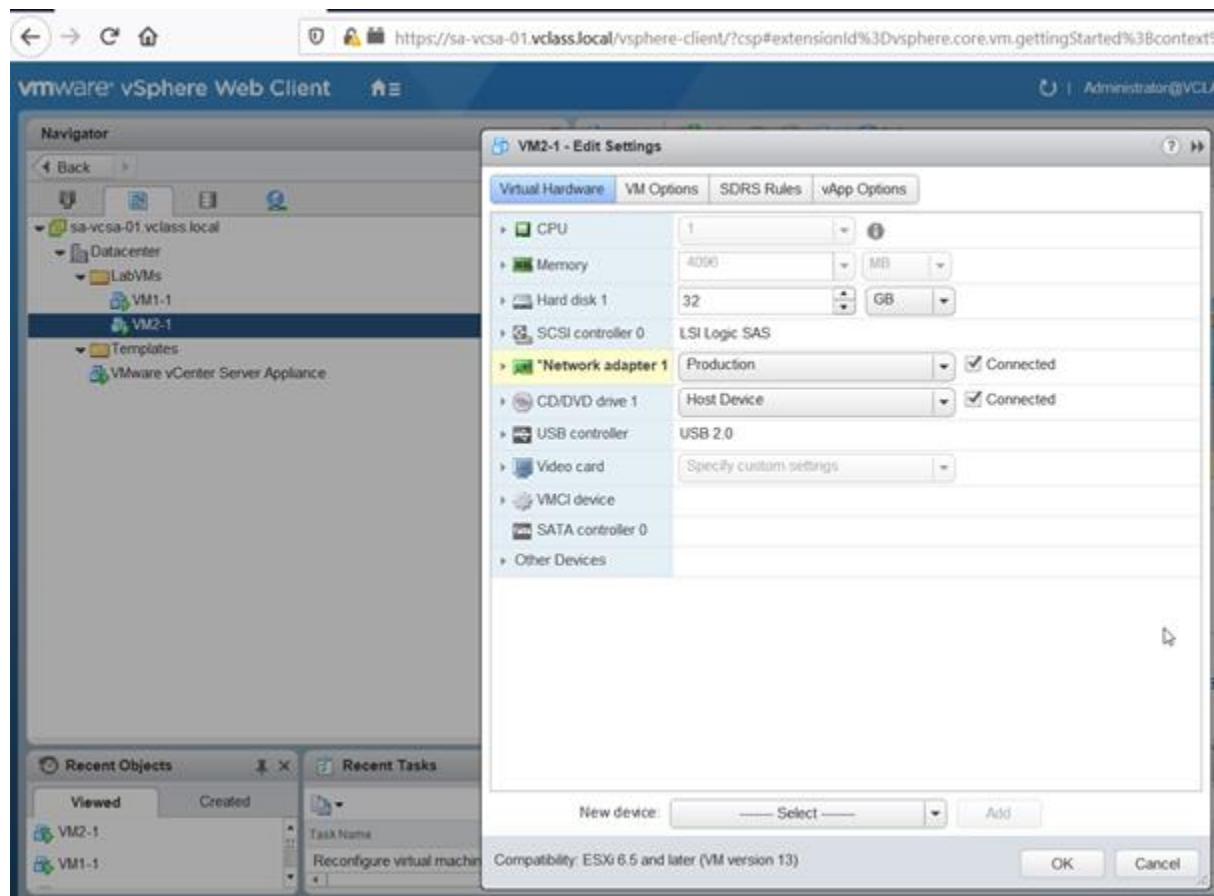


Final vSwitch1 details in sa-esxi-02

Task 3: Attach Your Virtual Machines to the New Virtual Machine Port Group



Assign Production port group to VM1-1



Assign Production port group to VM1-2

```
vSphere Web Client | VM1-2 | VM1-1 | + | https://sa-vcsa-01.vclass.local:9443/vsphere-client/webconsole.html?vmId=vm-32&vmName=VM1-1&serverGuid=53e5f1... | Enforce US Keyboard

VM1-1

Command Prompt
Microsoft Windows [Version 10.0.17134.1]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\VM1-1>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet0:

Connection-specific DNS Suffix . : mshome.net
Link-local IPv6 Address . . . . . fe80::95f:efaa:db88:8247%10
IPv4 Address . . . . . 192.168.137.86
Subnet Mask . . . . . 255.255.255.0
Default Gateway . . . . . 192.168.137.1

C:\Users\VM1-1>ping 192.168.137.1

Pinging 192.168.137.1 with 32 bytes of data:
Reply from 192.168.137.1: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.137.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Users\VM1-1>
```

Ping default gateway from VM1-1 (in sa-esxi-01)

```
vSphere Web Client | VM1-2 | VM1-1 | + | https://sa-vcsa-01.vclass.local:9443/vsphere-client/webconsole.html?vmId=vm-55&vmName=VM1-2&serverGuid=53e5f1... | Enforce US Keyboard

VM1-2

Command Prompt
Microsoft Windows [Version 10.0.17134.1]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\admin>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet0:

Connection-specific DNS Suffix . : mshome.net
Link-local IPv6 Address . . . . . fe80::8182:7c2b:3f79:bfd3%3
IPv4 Address . . . . . 192.168.137.126
Subnet Mask . . . . . 255.255.255.0
Default Gateway . . . . . 192.168.137.1

C:\Users\admin>ping 192.168.137.1

Pinging 192.168.137.1 with 32 bytes of data:
Reply from 192.168.137.1: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.137.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Users\admin>
```

Ping default gateway from VM1-2 (in sa-esxi-02)

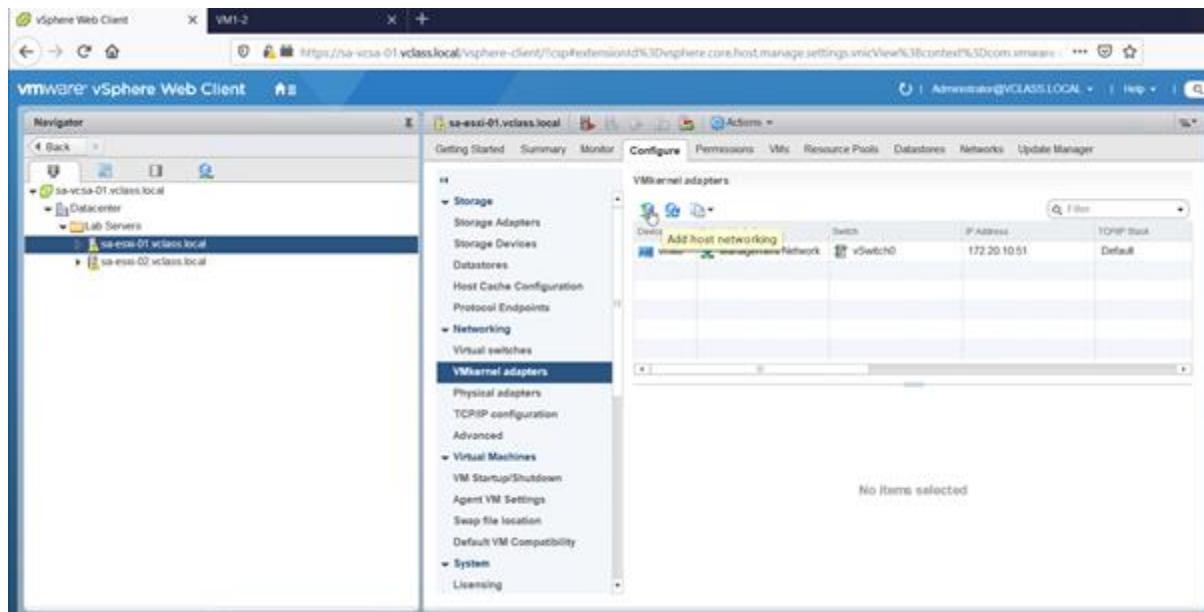
Both VM-1-1 and VM1-2 are able to ping their default gateway 192.168.137.1

PRACTICAL 8

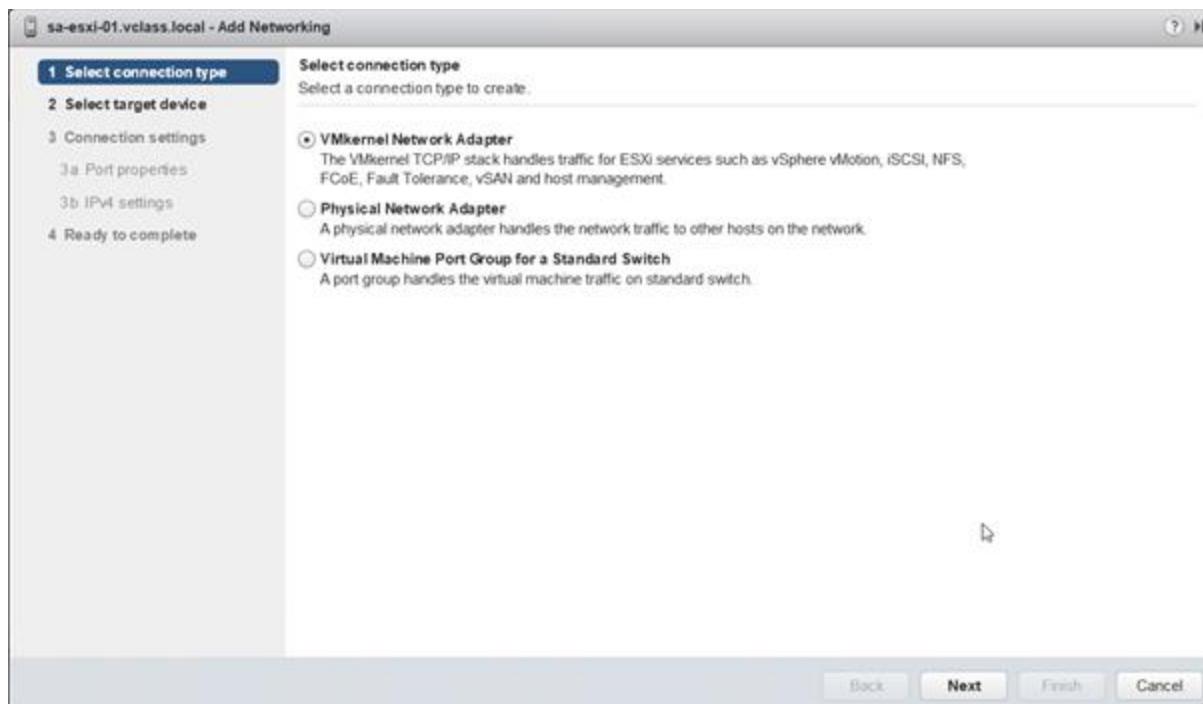
AIM: Accessing iSCSI Storage

This LAB depends on external iSCSI /NFS storage. Below lab tasks uses 172.20.11.10/24 as iSCSI host and it consists of two LUNs. Each LUNs capacity is 49GB.

Task 1: Add a VMkernel Port Group to a Standard Switch

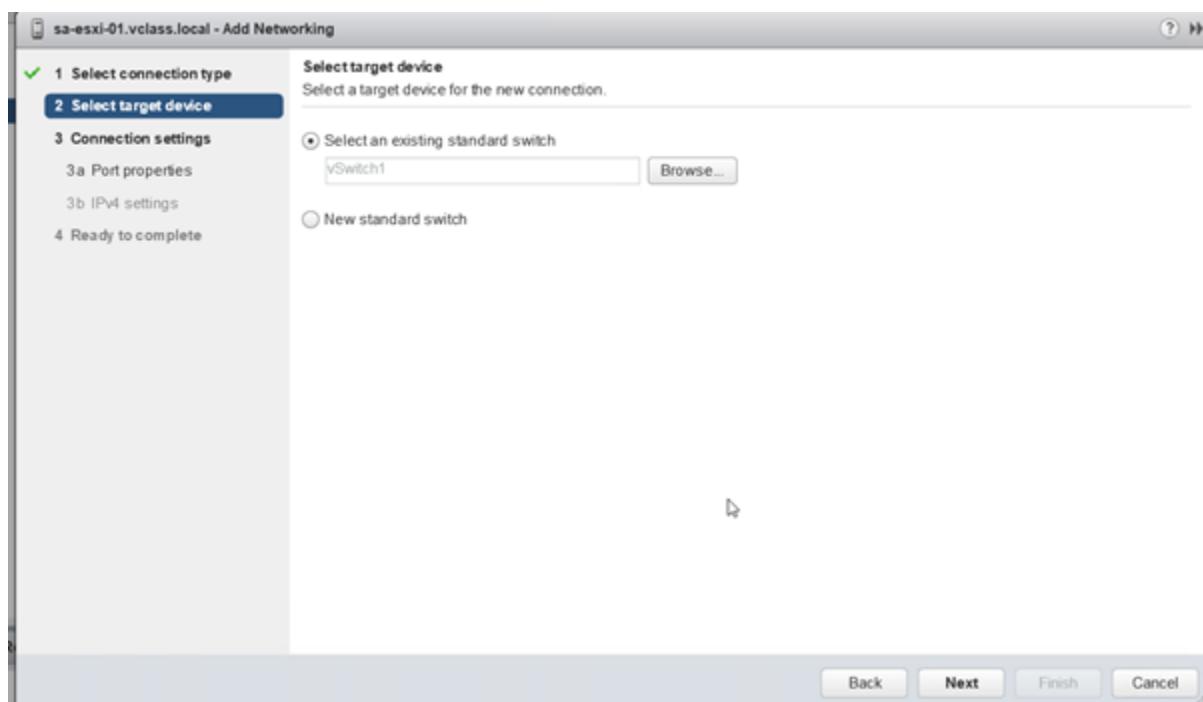


Navigate VMkernal adapters in vCenter web client

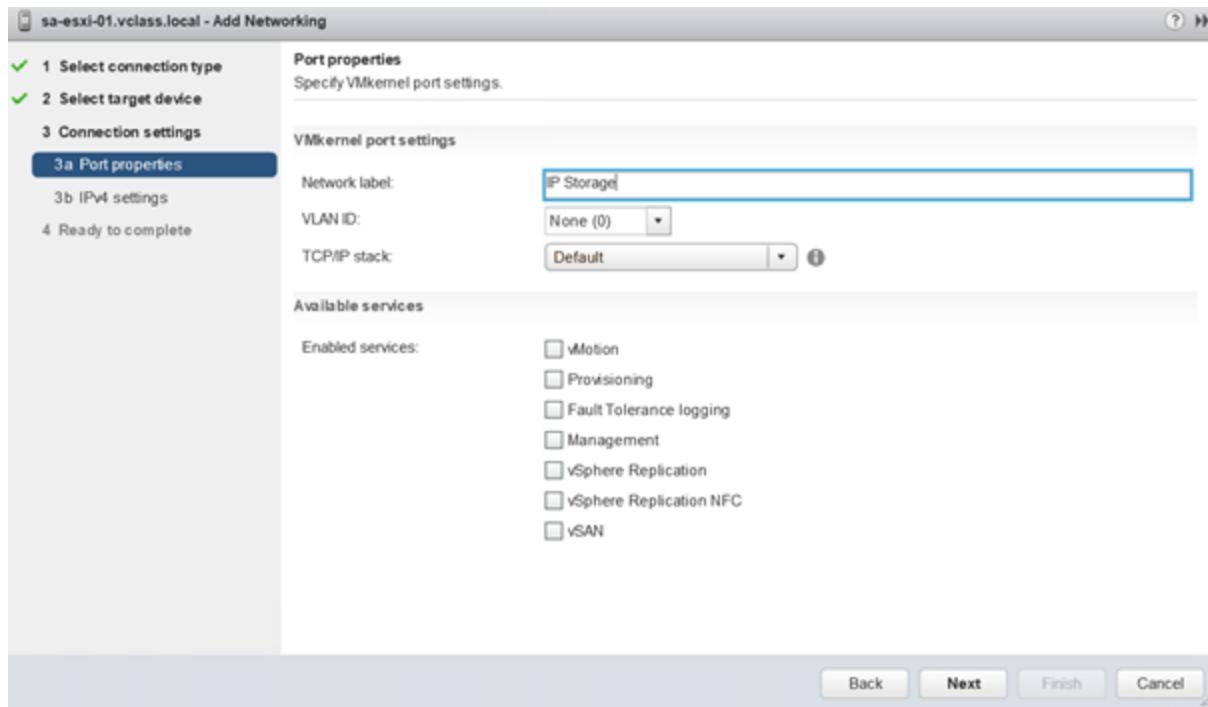


Select VMkernal network adaptor type

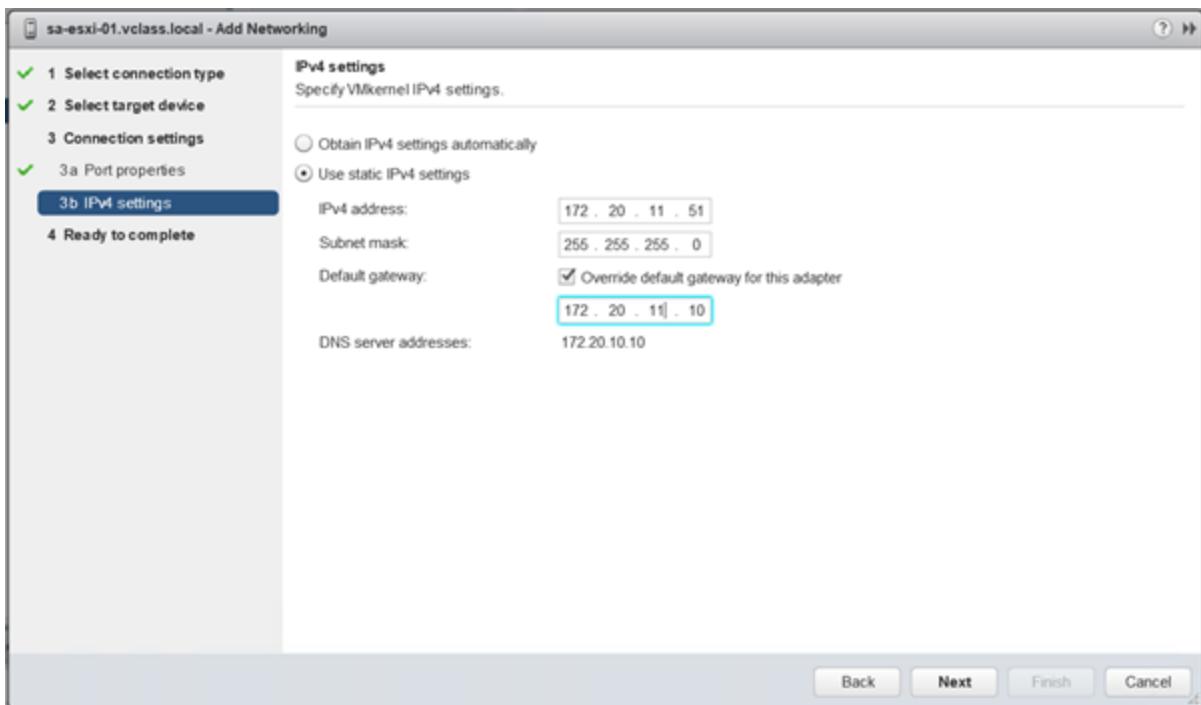
Configure VMkernal network adaptor for storage network



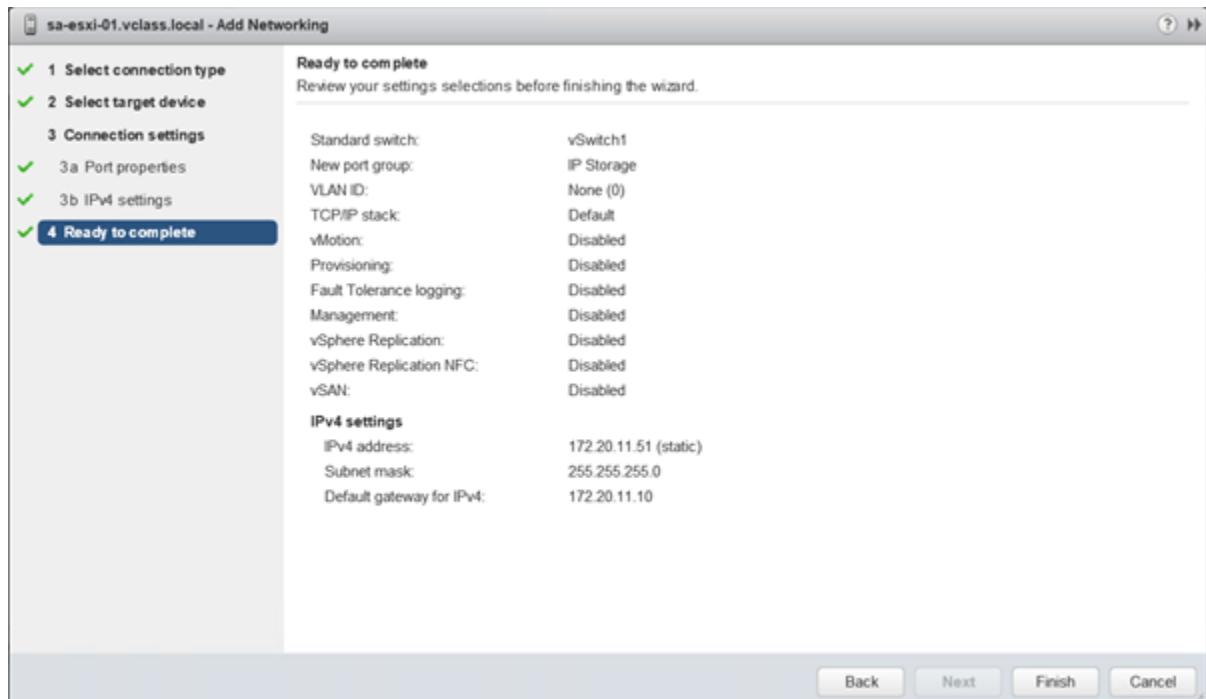
LAB says to use existing vSwitch but I am going to allocate a newly created vSwitch which is vSwitch1 to simulate separate storage network .



Create separate port group for storage network



172.20.11.51/24 is assigned for storage network adaptor in sa-esxi-01 and 172.20.11.52 is assigned for the same in sa-esxi-02.



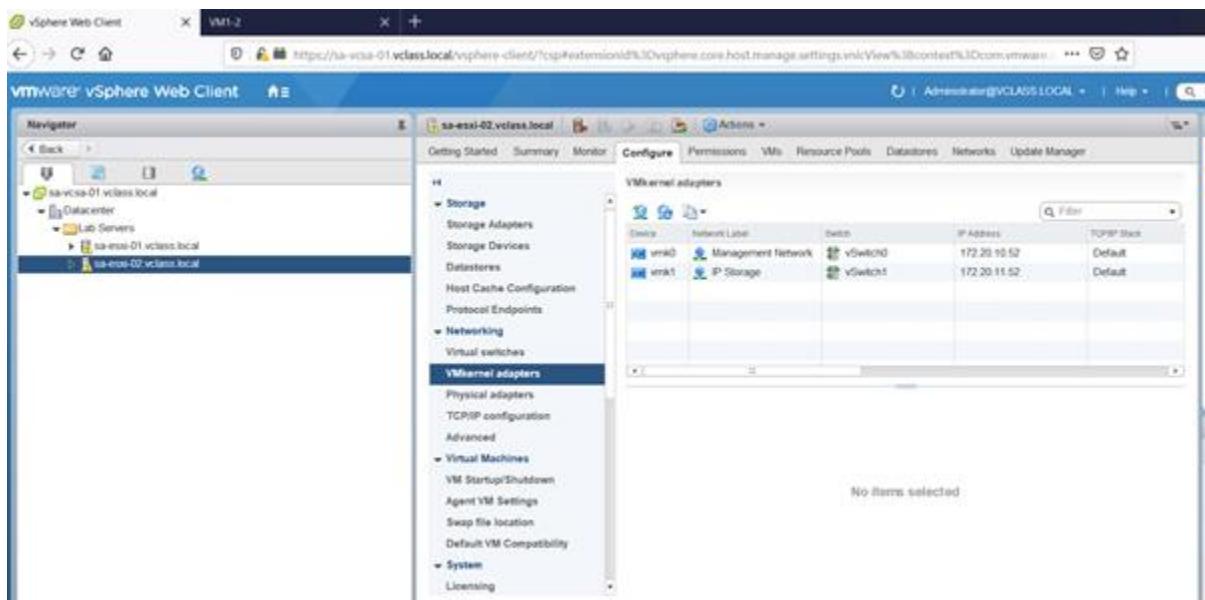
Final Storage network settings

The screenshot shows the vSphere Web Client interface for host 'sa-esxi-01.vclass.local'. The left sidebar shows the navigation tree with 'sa-esxi-01.vclass.local' selected. The right pane displays the 'VMkernel adapters' configuration under the 'Configure' tab. The table lists two VMkernel adapters:

| Device | Network Label | Switch | IP Address | TCP/IP Stack |
|--------|--------------------|----------|--------------|--------------|
| vmk0 | Management Network | vSwitch0 | 172.20.10.51 | Default |
| vmk1 | IP Storage | vSwitch1 | 172.20.11.51 | Default |

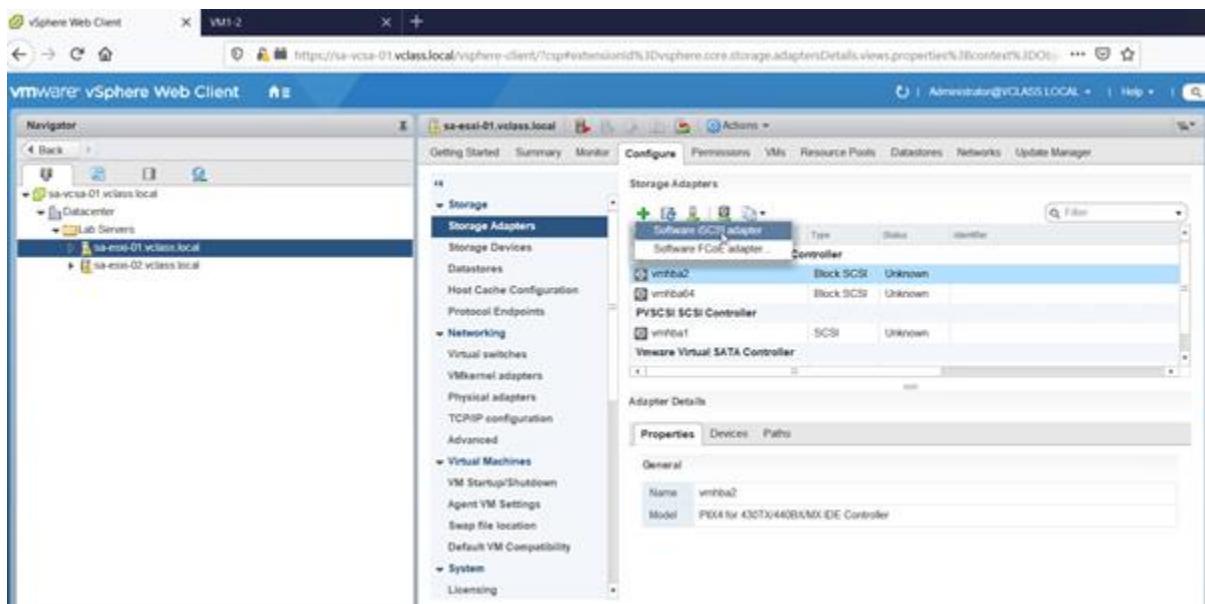
A message at the bottom right states 'No items selected'.

Summary of storage network adaptor in sa-esxi-01

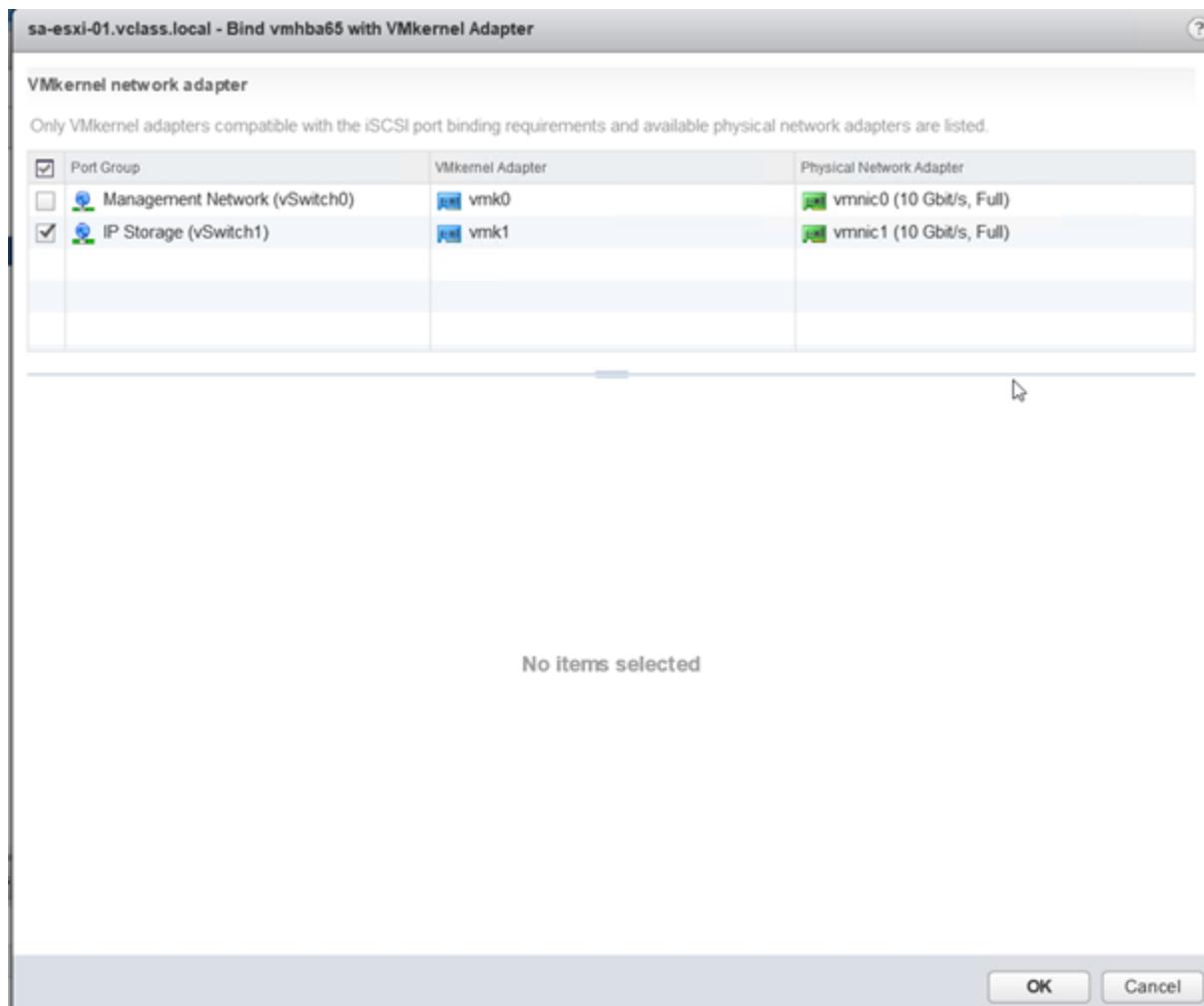


Summary of storage network adaptor in sa-esxi-02

Task 2: Configure the iSCSI Software Adapter and Connect It to the Storage



Configuring iSCSI soft adaptor



Binding previous storage physical adaptor called “IP Storage” into iSCSI soft adaptor

Binding previous storage physical adaptor called “IP Storage” into iSCSI soft adaptor

Prepare to add iSCSI targets

vmhba65 - Add Send Target Server



iSCSI Server: 172.20.11.10

Port: 3260

Authentication Settings

Inherit settings from parent

OK

Cancel

iSCSI target is 172.20.11.10 which is the storage provider (aka Netapp). we use 172.20.11.x subnet as this is the storage IP to communicate iSCSI target server which 172.20.11.10

The screenshot shows the vSphere Web Client interface for a host named 'sa-esxi-01.vclass.local'. The left sidebar is expanded to show the 'Storage' section, specifically the 'Storage Adapters' subsection. In the main pane, the 'iSCSI Software Adapter' is selected. The 'Targets' tab is active in the 'Adapter Details' panel, which displays a list of targets. One target is listed: 'iSCSI server' with the IP address '172.20.11.10:3260'. A tooltip is visible above the 'Add...' button, stating: 'Rescans all storage adapters on the host to discover newly added storage devices and/or VMFS volumes.'

iSCSI target has been assigned successfully

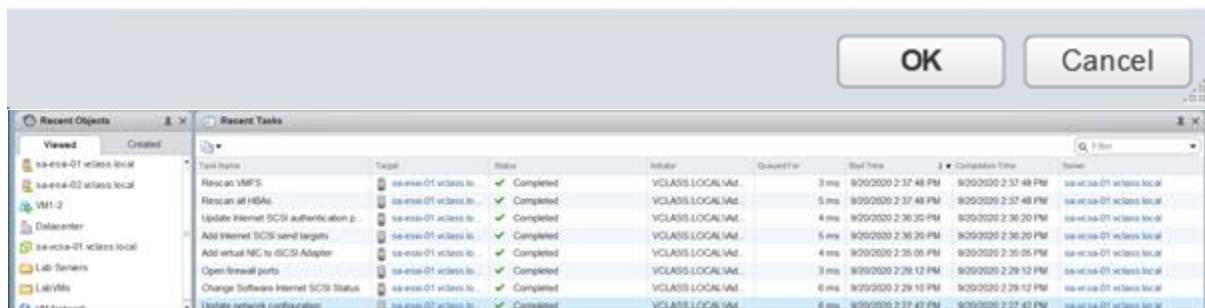
This screenshot is identical to the previous one, showing the vSphere Web Client interface for host 'sa-esxi-01.vclass.local'. The 'Storage' section is still expanded. The 'PVSCSI SCSI Controller' adapter is selected in the 'Storage Adapters' list. A mouse cursor is hovering over the 'Rescan...' button in the toolbar, which is highlighted with a yellow background. The same tooltip as in the previous screenshot is displayed: 'Rescans all storage adapters on the host to discover newly added storage devices and/or VMFS volumes.'

Discover the storage array after configuring iSCSI network in existing host. Which would scan the storage network

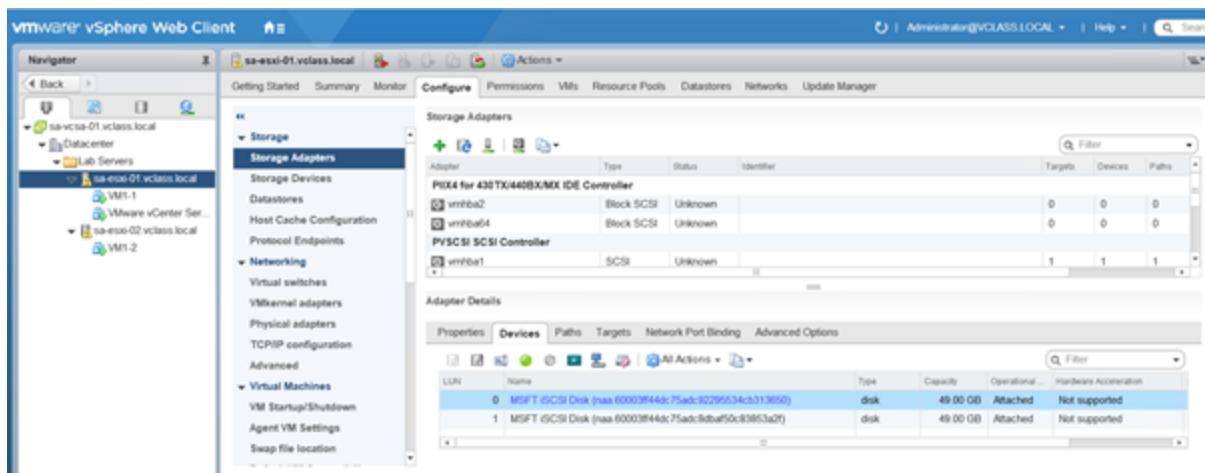
sa-esxi-01.vclass.local - Rescan Storage

Scan for new Storage Devices
Rescan all host bus adapters for new storage devices.
Rescanning all adapters can be slow.

Scan for new VMFS Volumes
Rescan all known storage devices for new VMFS volumes that have been added since the last scan. Rescanning known storage for new file systems is faster than rescanning for new storage.



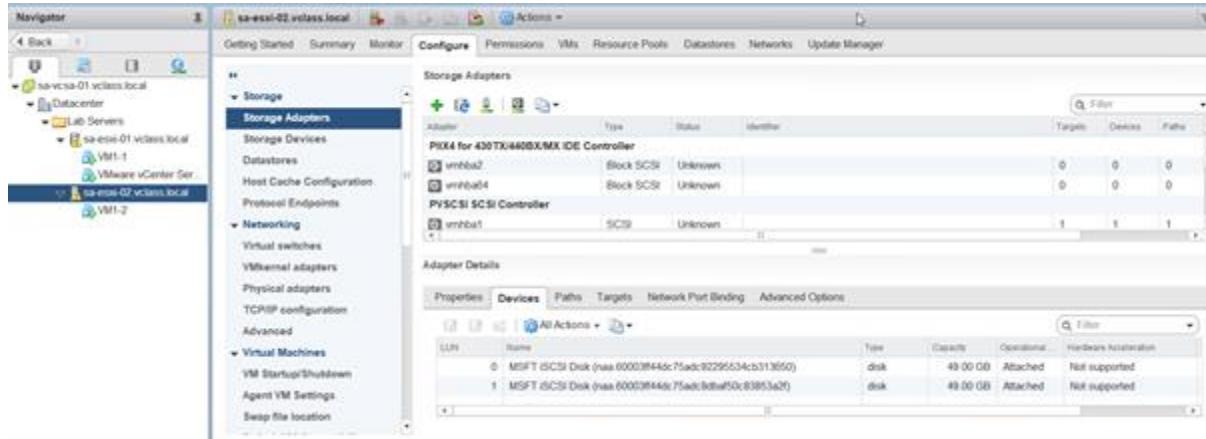
iSCSI storage scanning performance can be seen in alerts



iSCSI storage has been mounted successfully, LUN 0 & LUN 1

Verify that one or more LUNs appear and record the values.

- LUN number : 0 and 1.
- Capacity : Each Disk 49 GB.
- Operational state : Attached.
- Hardware Acceleration : Not Supported.



The above same tasks are executed in sa-esxi-02 and iSCSI storage has been mounted successfully. LUN 0 & LUN 1

PRACTICAL 9

AIM: Managing VMFS Datastores.

Task 1: Rename a VMFS Datastore:

The screenshot shows the 'Configure' tab selected in the top navigation bar. Under 'Settings', the 'General' section is highlighted. On the right, the 'vCenter Server Settings' pane is displayed, showing various configuration options like 'Database', 'Runtime settings', and 'Ports'. The URL in the browser is <https://sa-vcsa-01.vclass.local/vsphere-client/csp#extensionId%3Dvsphere.core.folder.manage.settings.vcGeneralSettingView%3Bcontext%3D>.

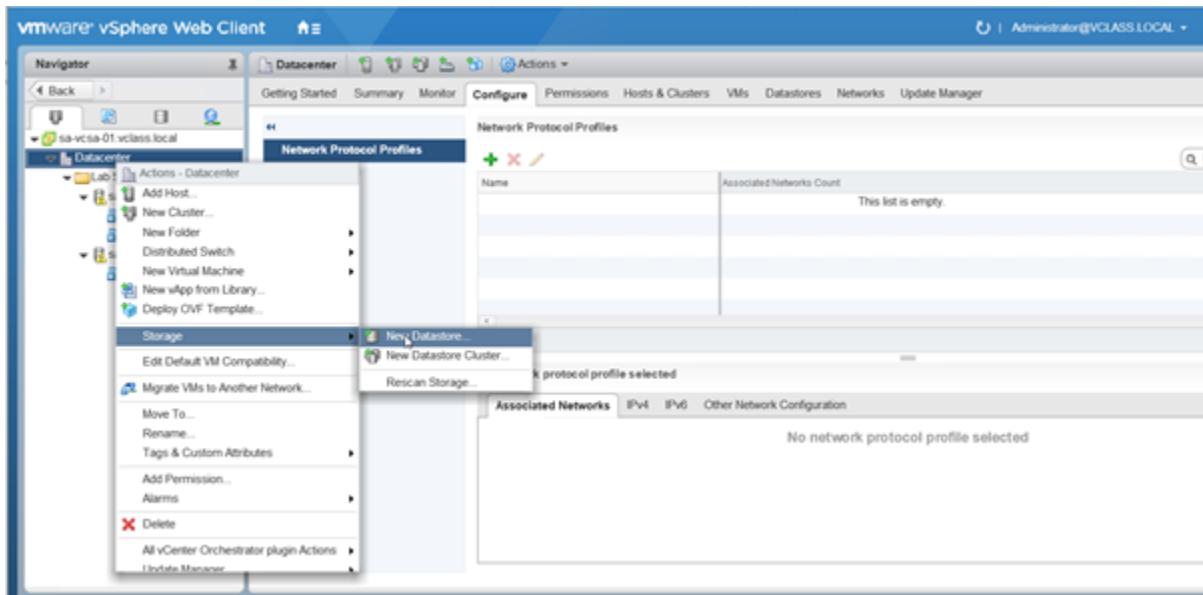
Renaming default names in datastore.

The screenshot shows the 'Files' tab selected in the top navigation bar. The left sidebar shows a tree view of datastores: Local01-1 and Local02-1. The main pane displays the contents of Local01-1, which includes folders like 'add sf', 'VM1-1', and 'VMware vCenter Server Appliance'. A table below lists these items with columns for Name, Size, Modified, Type, and Path. The URL in the browser is <https://sa-vcsa-01.vclass.local/vsphere-client/csp#extensionId%3Dvsphere.core.datastore.manage.filesView%3Bcontext%3Dcom.vmware.com>.

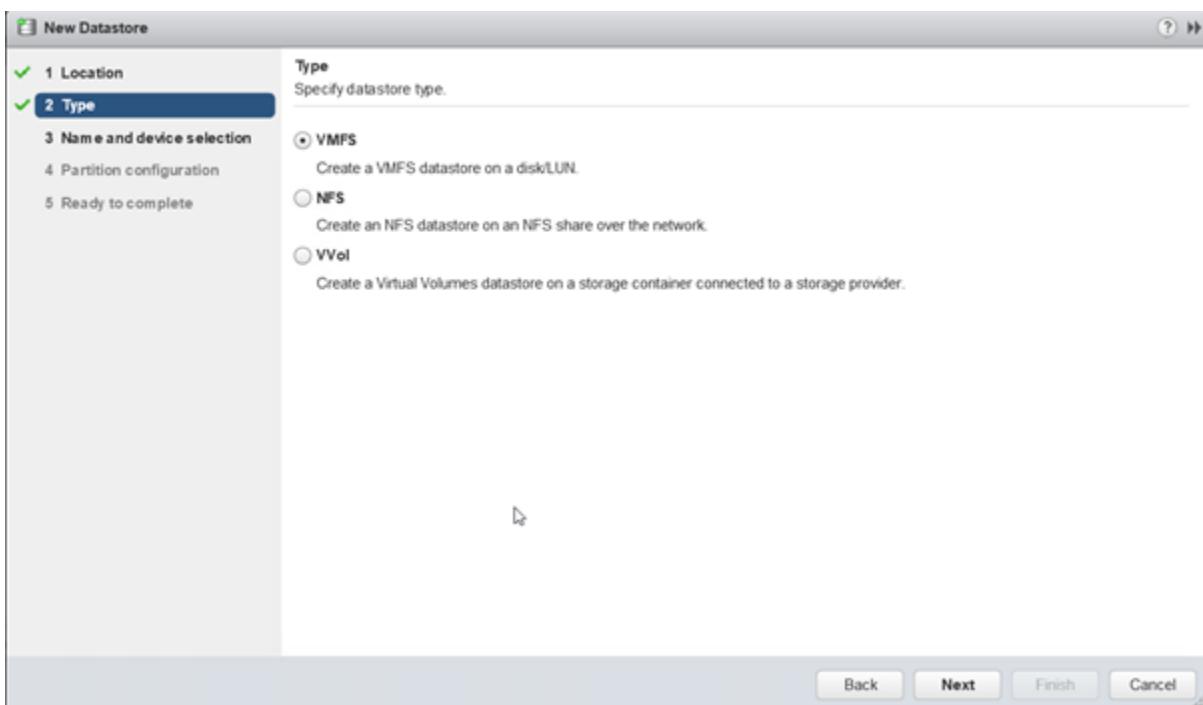
| Name | Size | Modified | Type | Path |
|--------------------------|------|----------|--------|-------------------------------|
| add sf | | | Folder | [Local01-1] add sf |
| VM1-1 | | | Folder | [Local01-1] VM1-1 |
| VMware vCenter Server... | | | Folder | [Local01-1] VMware vCenter... |

View after renaming local datastores

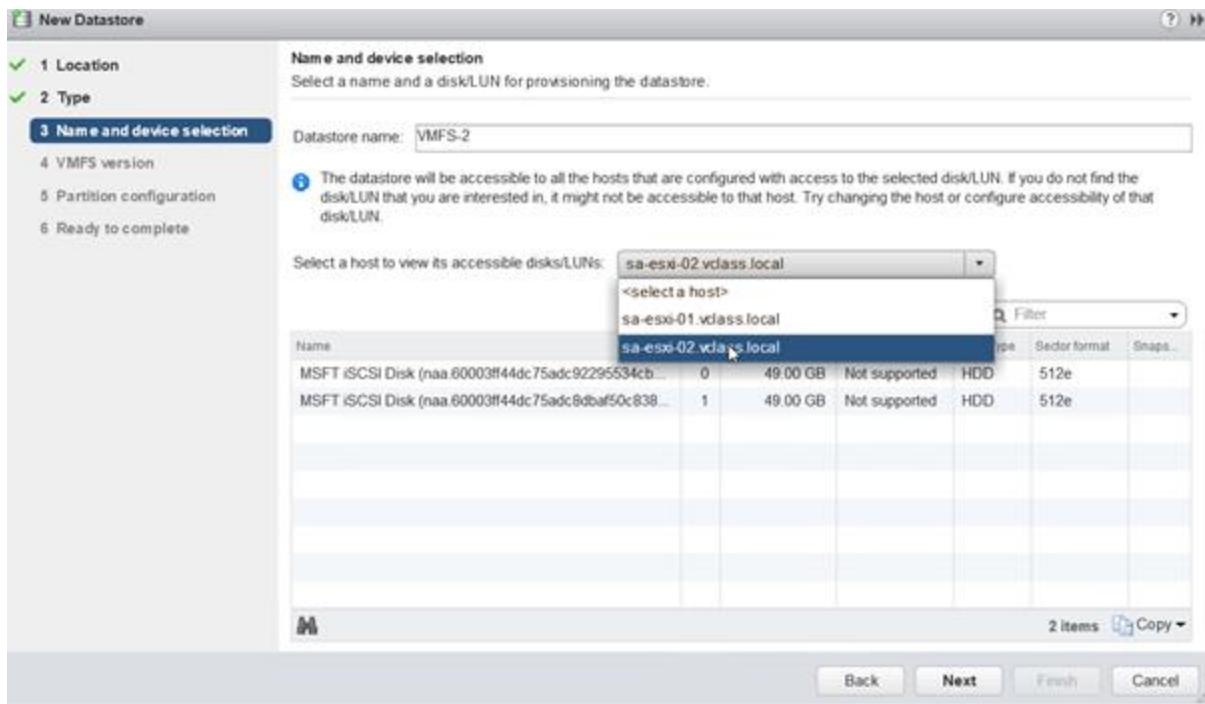
Task 2: Create VMFS Datastores for the ESXi Host



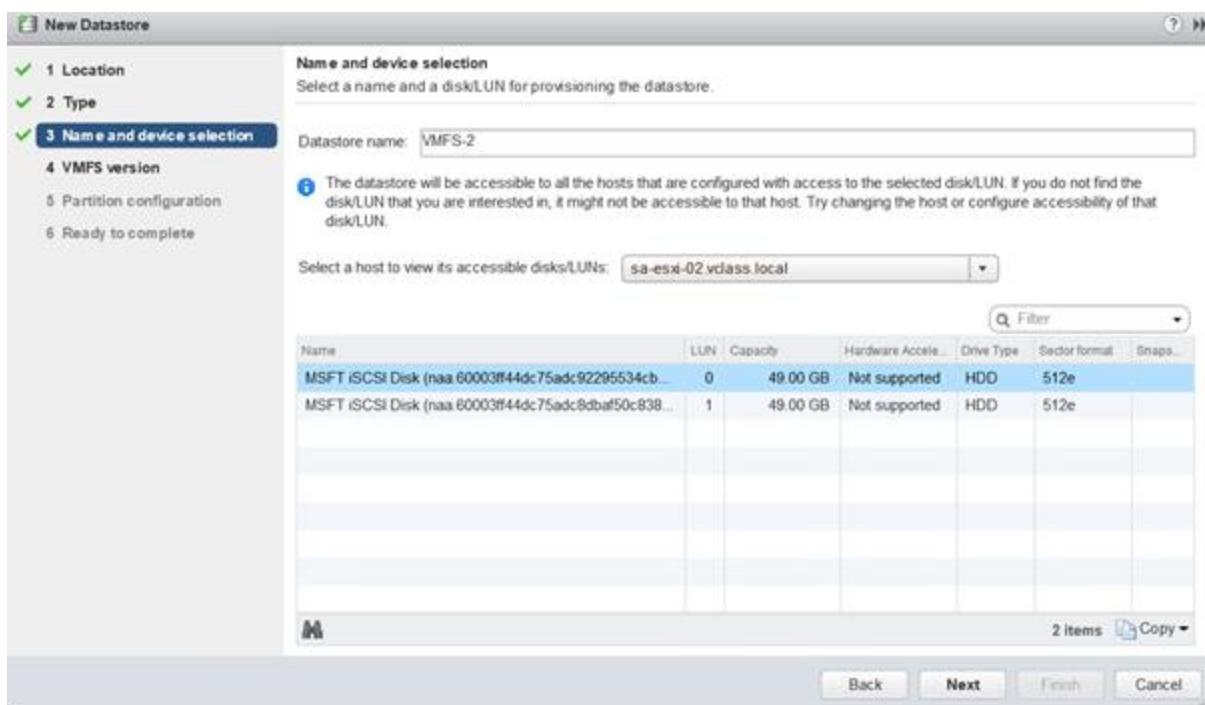
Creating new VMFS type of datastore



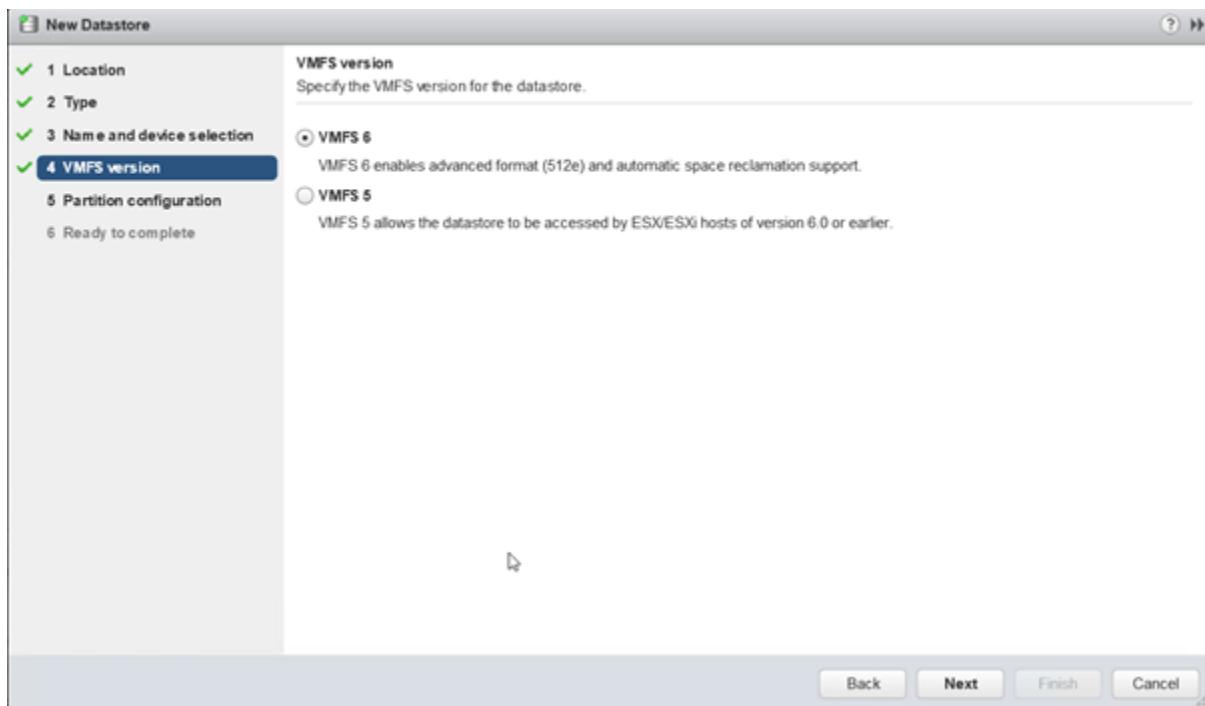
Selecting storage type as VFMS



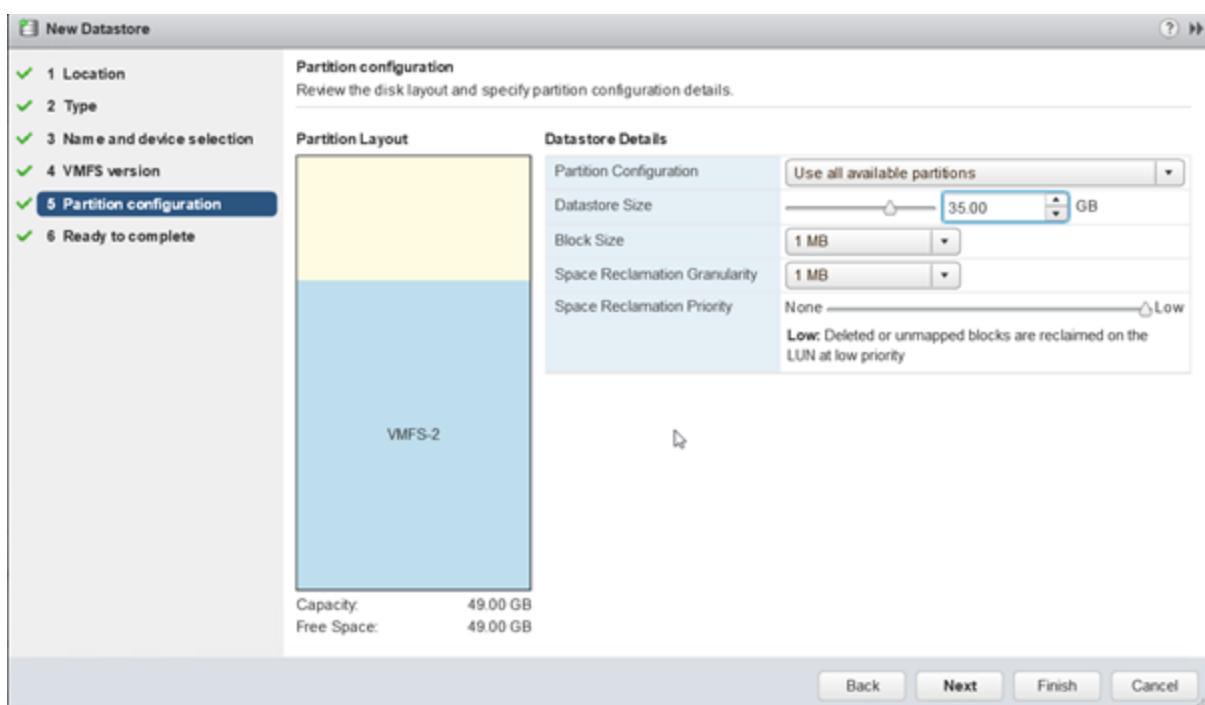
Accessing sa-esxi-2 LUNs



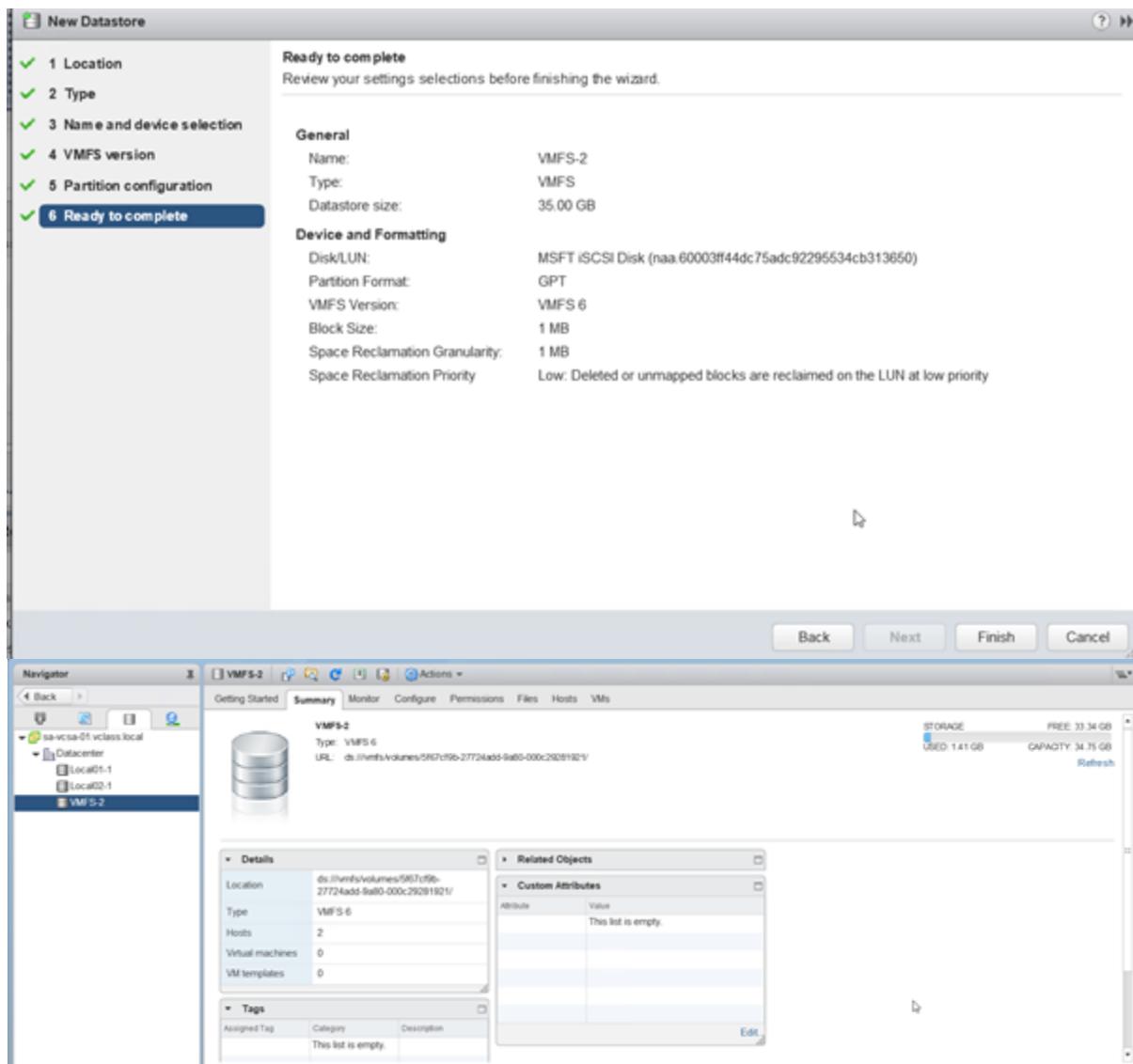
Sa-esxi-02 has two LUNs, selecting LUN 0



Select highest VMFS version which is 6

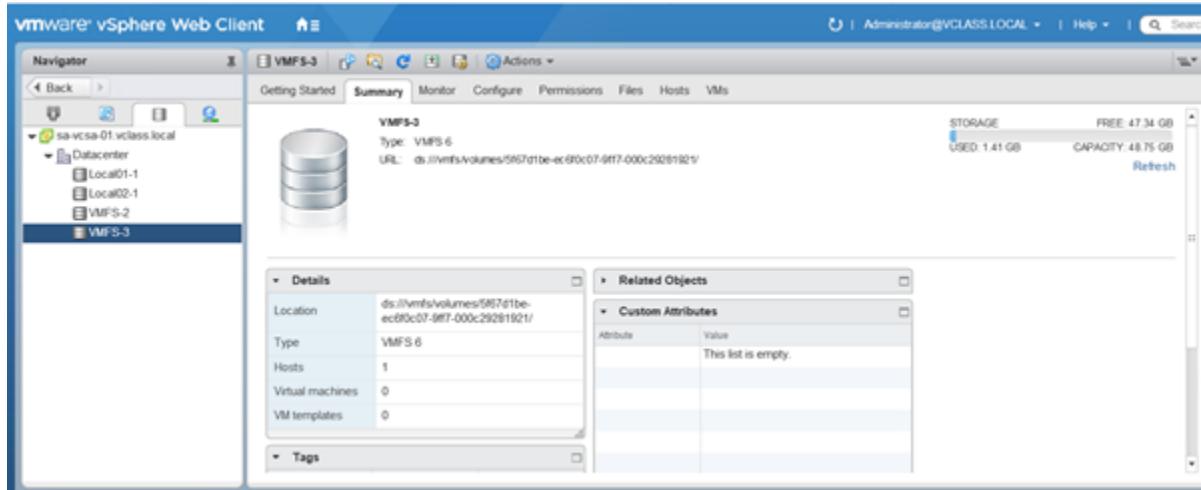


Only allocate 35GB out of 49GB



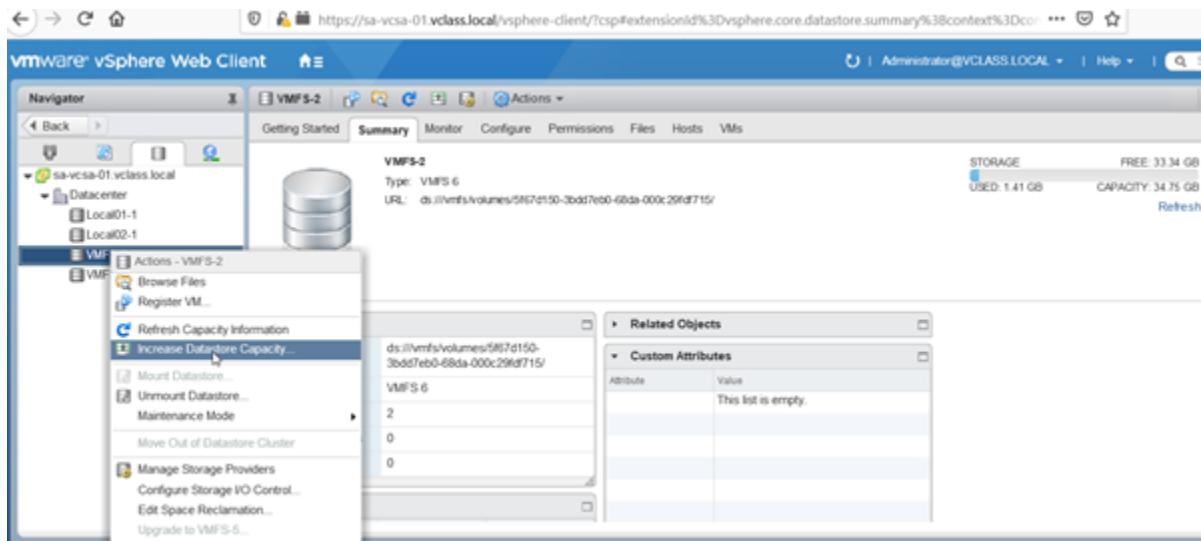
Summary page of VMFS-2 datastore

Click the **Summary** tab and record the value for storage capacity. 34.75GB.

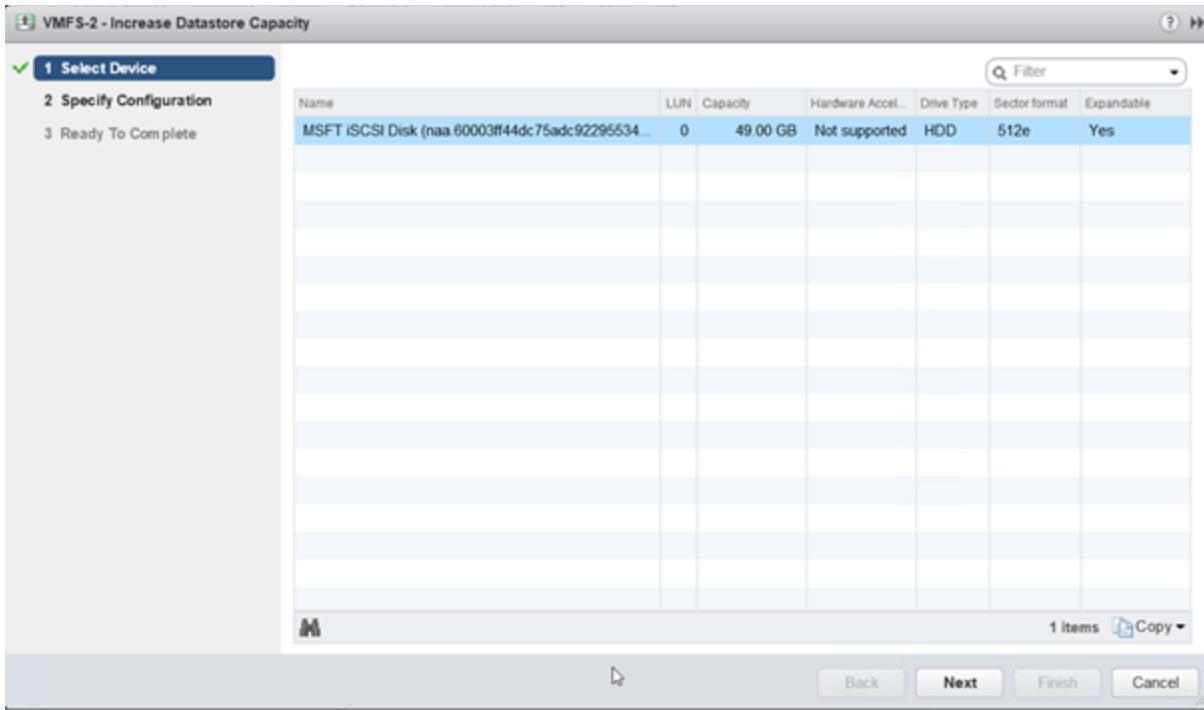


Above task-2 has been repeated for sa-esxi-02 host however we allocated full disk space here.
Datastore name here would be VMFS-3

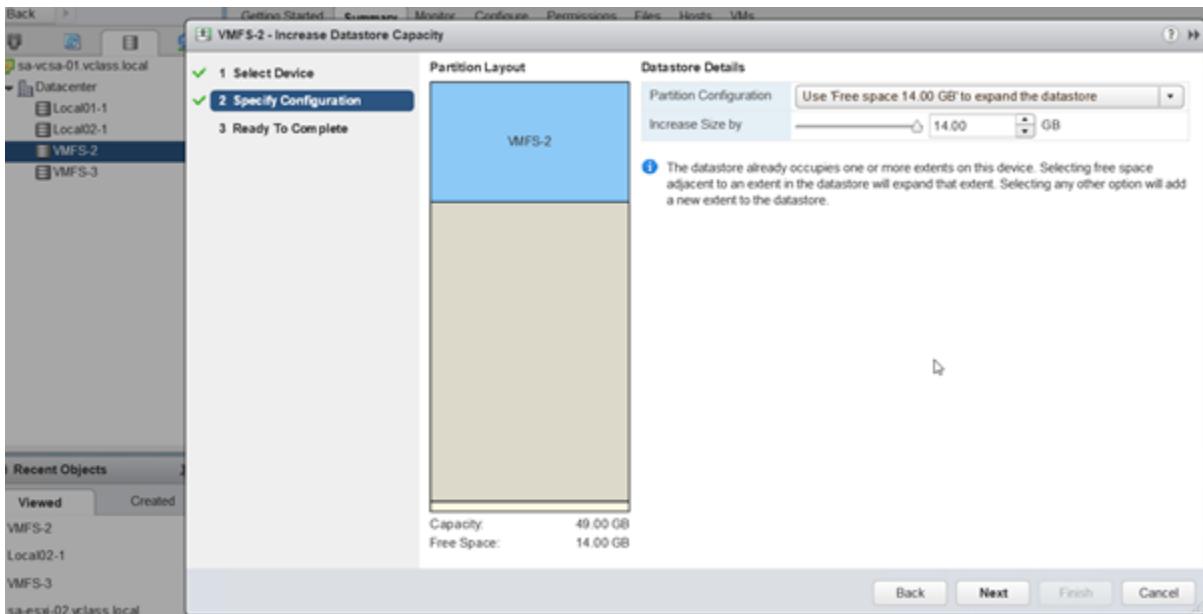
Task 3: Expand a VMFS Datastore to Consume Unused Space on a LUN



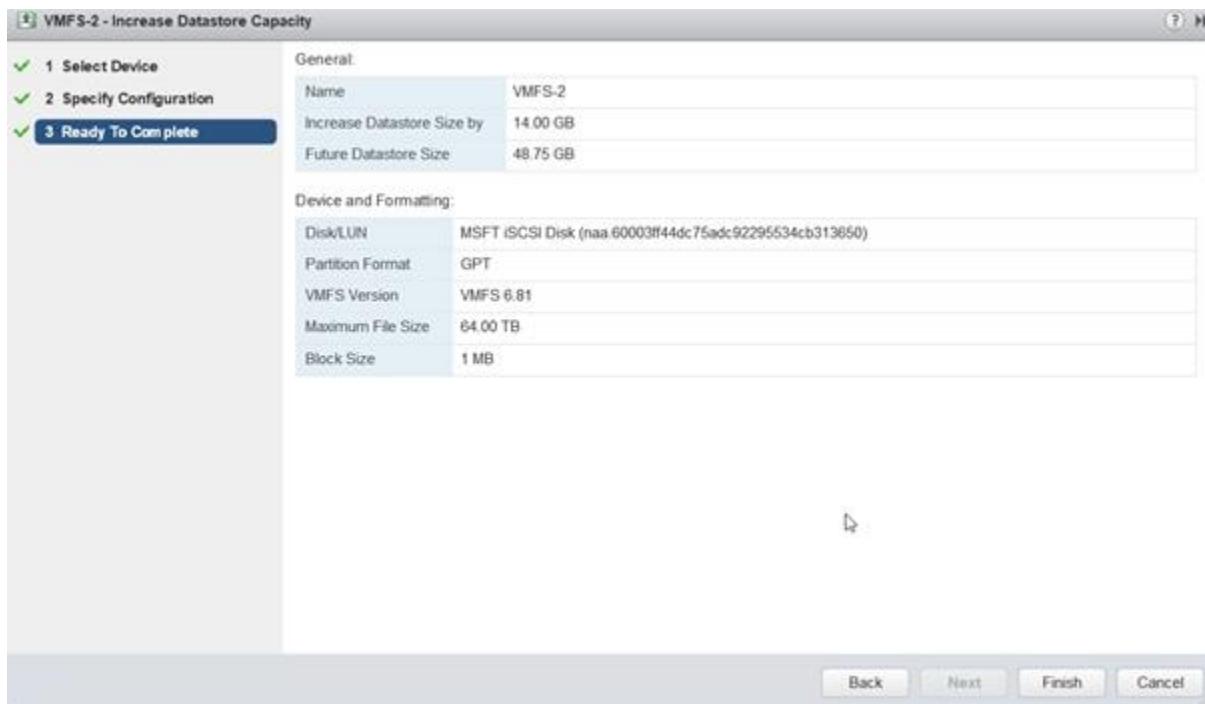
We are going to merging remaining free space in LUN 0 to same VMFS-2 datastore



Select LUN 0 in sa-esxi-01



Select free space to merged



Select free space to merge

After merging free space VMFS-2 store is now at its full capacity which is 48.75GB
 Click the **Summary** tab and record the value for storage capacity. 48.75GB

Task 4: Remove a VMFS Datastore

We are going to remove VMFS-3 datastore which has been created in Task 2.
This task shows deleting VMFS datastore in vCenter.

Log in - VMware ESXi X Log in - VMware ESXi X VMware Appliance Management X

https://sa-vcsa-01.vclass.local/vsphere-client/?csp#extensionId%3D

vmware vSphere Web Client

Navigator

VMFS-3

Getting Started Summary Monitor Configure Permissions Files Hosts

VMFS-3

Type: VMFS 6

URL: ds://vmfs/volumes/5f67d1be-ec6f0c07-9ff7-000c29281921/

sa-vcsa-01.vclass.local Datacenter Local01-1 Local02-1 VMFS-2 VMFS Actions - VMFS-3

- Actions - VMFS-3
- Browse Files
- Register VM...
- Refresh Capacity Information
- Increase Datastore Capacity...
- Mount Datastore...
- Unmount Datastore...
- Maintenance Mode
- Move Out of Datastore Cluster
- Manage Storage Providers
- Configure Storage I/O Control...
- Edit Space Reclamation...
- Upgrade to VMFS-5...
- Settings
- Move To...
- Rename...
- Tags & Custom Attributes
- Add Permission...
- Alarms

Related Objects

Custom Attribute

ds://vmfs/volumes/5f67d1be-ec6f0c07-9ff7-000c29281921/

VMFS 6

2
0
0

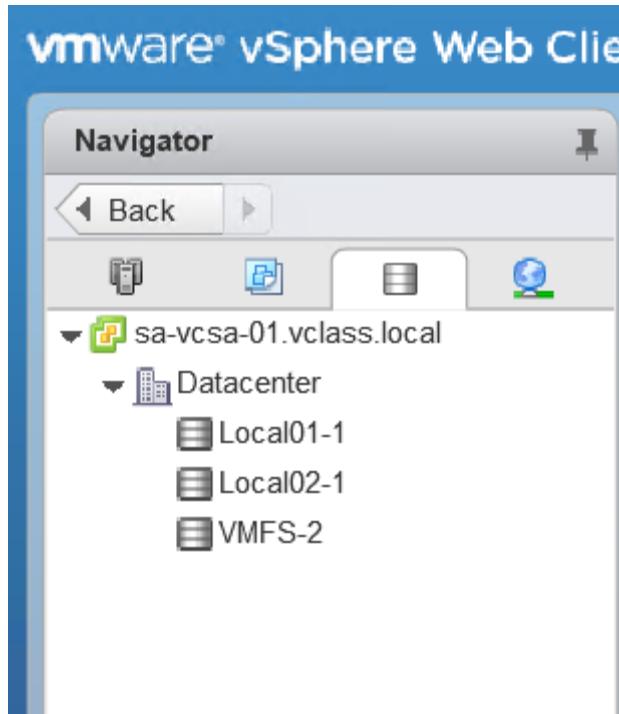
Recent Objects

Viewed

- VMFS-3
- VMFS-2
- Local02-1
- sa-esxi-02.vclass.local
- sa-esxi-01.vclass.local

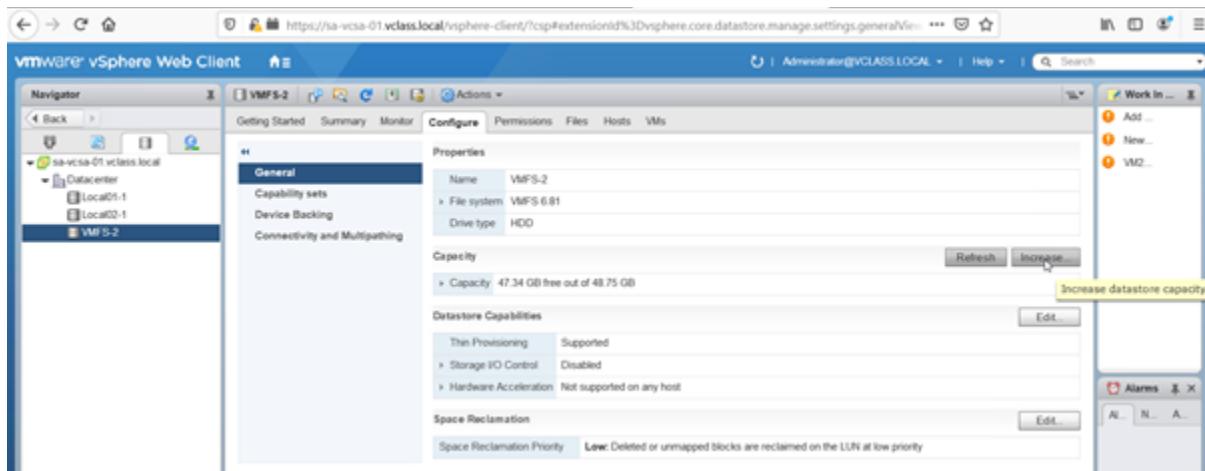
Delete Datastore

| | Target | Status |
|--------------------|-------------------------|-----------|
| File updates | sa-esxi-01.vclass.local | Completed |
| File updates | sa-esxi-02.vclass.local | Completed |
| Information for... | sa-esxi-02.vclass.local | Completed |
| File updates | sa-esxi-01.vclass.local | Completed |

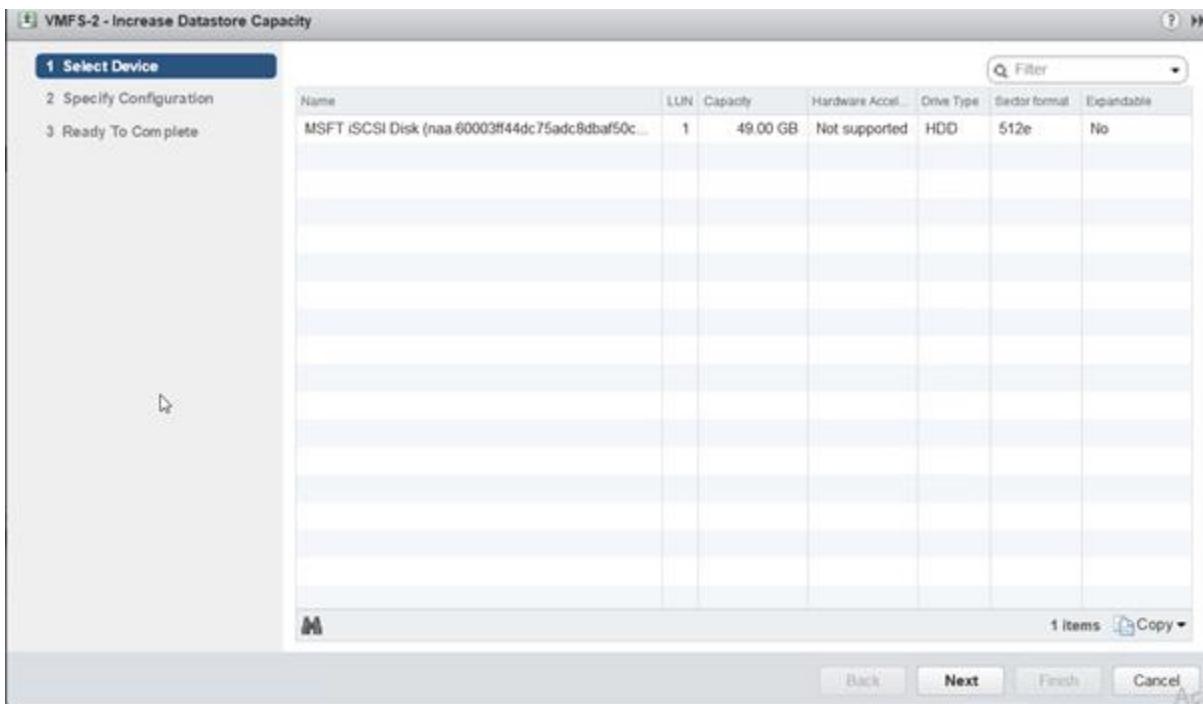


Task 5: Extend a VMFS Datastore

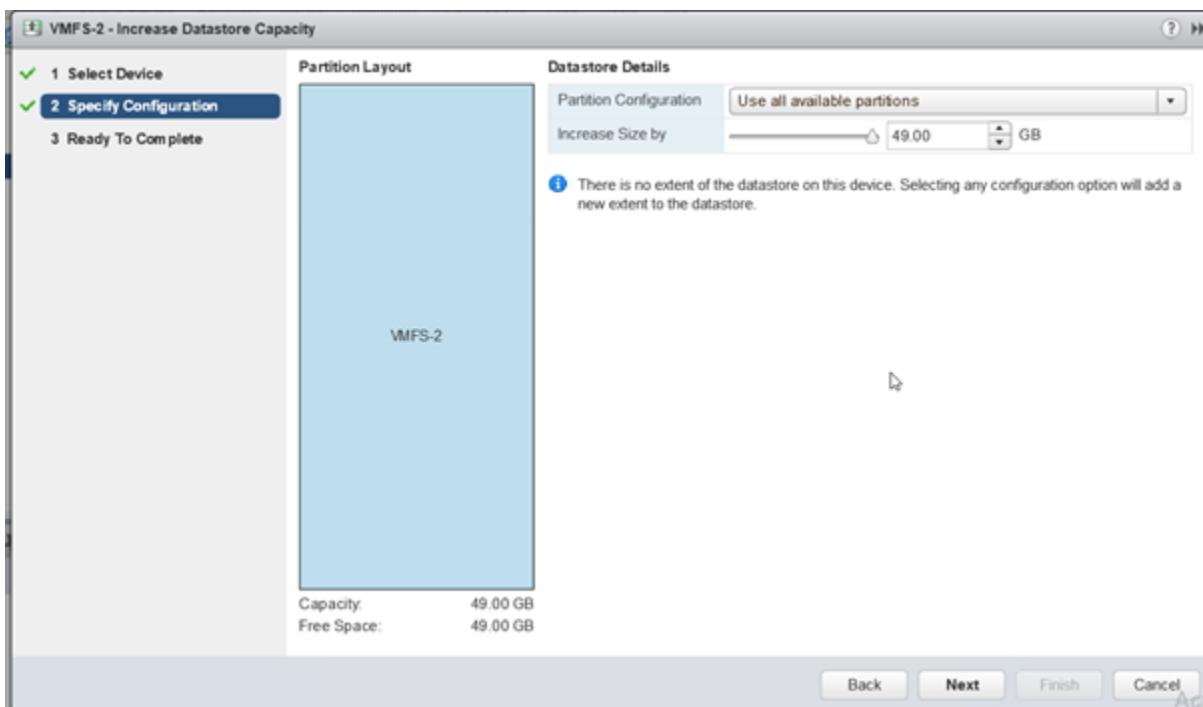
This task is extending the capacity of VMFS-2 datastore by merging LUN 0 and LUN1 storage together. And finally rename it as Shared-VMFS. Which would be accessible to both sa-esxi-01 and sa-esxi-02 hosts.



Navigate general page in VMFS-2.



Select unassigned LUN which is spare by deleting VMFS-3 in task 4



Allocate LUN 1 it's full space

The screenshot shows two windows from the VMware vSphere Web Client.

Top Window: VMFS-2 - Increase Datastore Capacity

- Step Progress:** 1 Select Device, 2 Specify Configuration, 3 Ready To Complete (highlighted).
- General:**

| | |
|----------------------------|----------|
| Name | VMFS-2 |
| Increase Datastore Size by | 49.00 GB |
| Future Datastore Size | 97.75 GB |
- Device and Formatting:**

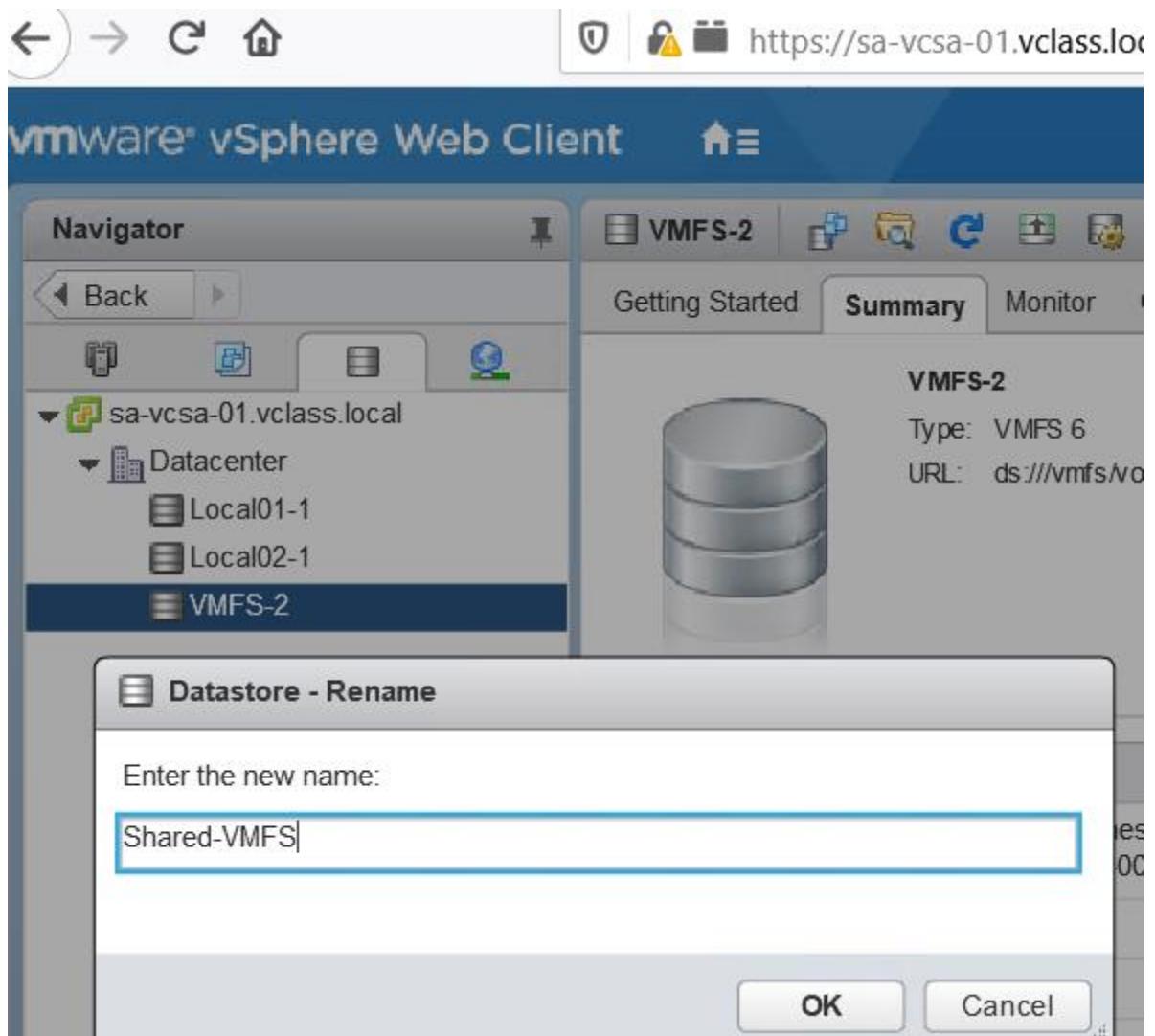
| | |
|-------------------|--|
| Disk/LUN | MSFT iSCSI Disk (naa.60003ff44dc75adc8dbaf50c83853a2f) |
| Partition Format | GPT |
| VMFS Version | VMFS 6.81 |
| Maximum File Size | 64.00 TB |
| Block Size | 1 MB |

Bottom Window: VMware vSphere Web Client - Summary Tab

- Navigator:** Shows the hierarchy: sa-vcsa-01.vclass.local > Datacenter > VMFS-2.
- Summary Tab:**
 - VMFS-2:** Type: VMFS 6, URL: ds://vmfs/volumes/5f67d150-3bdd7eb0-68da-000c29fd715/
 - Storage Metrics:** USED: 1.41 GB, FREE: 96.09 GB, CAPACITY: 97.50 GB
- Details Panel:**

| | |
|------------------|---|
| Location | ds://vmfs/volumes/5f67d150-3bdd7eb0-68da-000c29fd715/ |
| Type | VMFS 6 |
| Hosts | 2 |
| Virtual machines | 0 |
| VM templates | 0 |
- Related Objects Panel:**
 - Custom Attributes:** This list is empty.

After allocating LUN0 and LUN1 storage space to VMFS-2 store the total capacity has been increased up to 97.5 GB
 Record the new value for Total Capacity in the **Summary** tab. 97.50



The screenshot shows the VMware vSphere Web Client interface with the 'Shared-VMFS' datastore selected in the Navigator pane. The Summary tab is active. The 'Details' panel displays the following information:

| | |
|------------------|---|
| Location | ds://vmfs/volumes/5857d150-3bed7eb0-68da-000c29fd715/ |
| Type | VMFS-6 |
| Hosts | 2 |
| Virtual machines | 0 |
| VM templates | 0 |

The 'Related Objects' panel shows a section for 'Custom Attributes' which is currently empty. On the right side of the screen, a storage summary table provides details about the datastore's usage:

| | |
|-----------|----------------|
| STORAGE | FREE: 94.95 GB |
| USED: | 1.41 GB |
| CAPACITY: | 97.59 GB |

Buttons for 'Refresh' and 'Edit' are located at the bottom right of the storage summary table.

Finally, VMFS-2 datastore has been renamed as “Shared-VMFS” in keeping the idea of using a shared storage for VMs resided in both sa-esxi-01 and sa-esxi-02

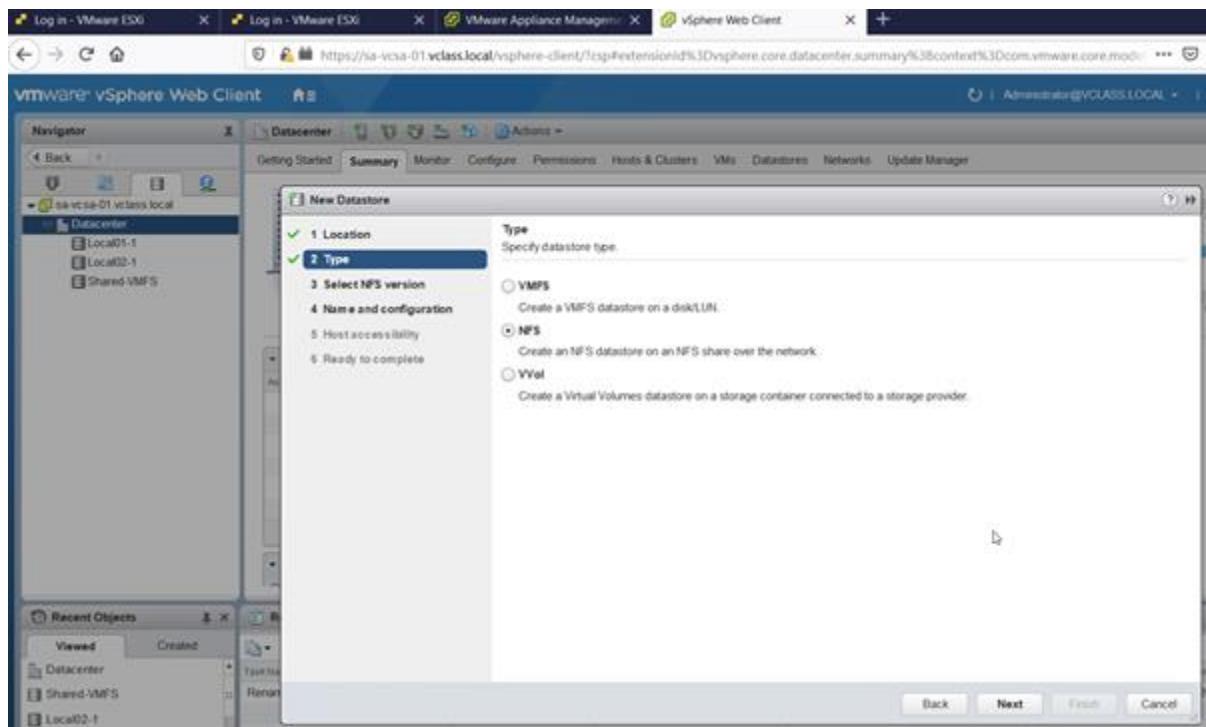
Task 6: Create a second Shared VMFS Datastore Using iSCSI

This task cannot be completed due to lack of free storage LUNs. This LAB is intended to create a shared iSCSI storage again for future LABs. However, we can use same datastore (Shared-VMFS) which created in Task-5

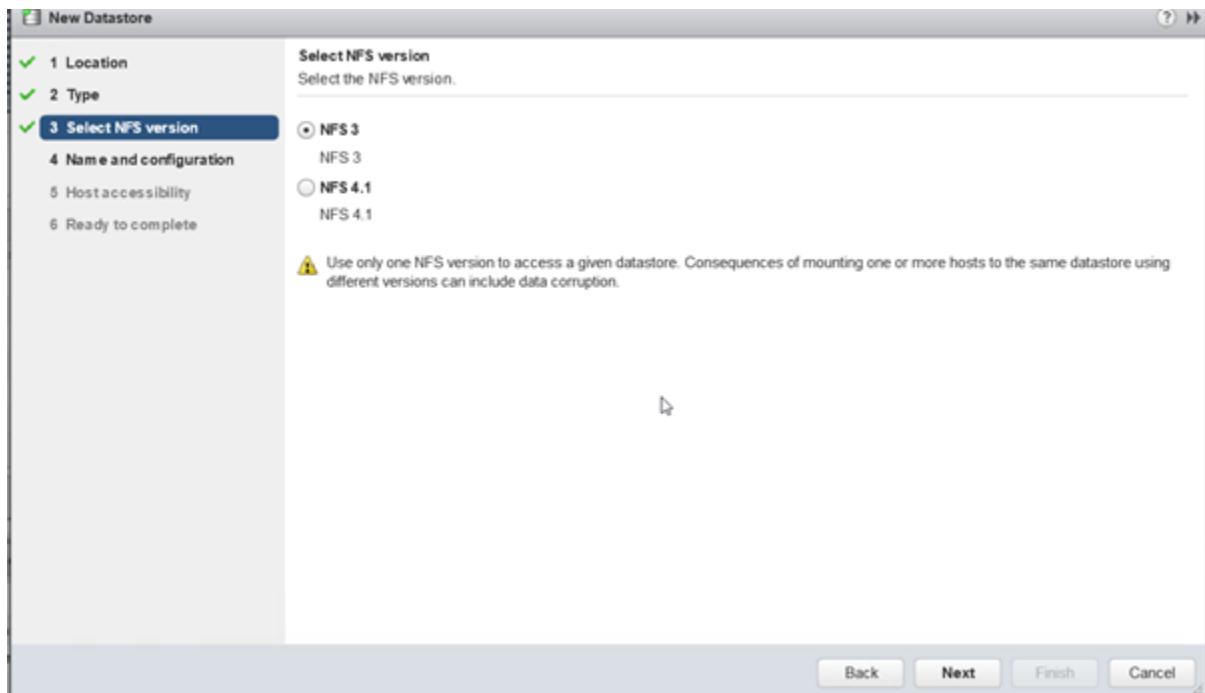
PRACTICAL 10

AIM: Accessing NFS Storage

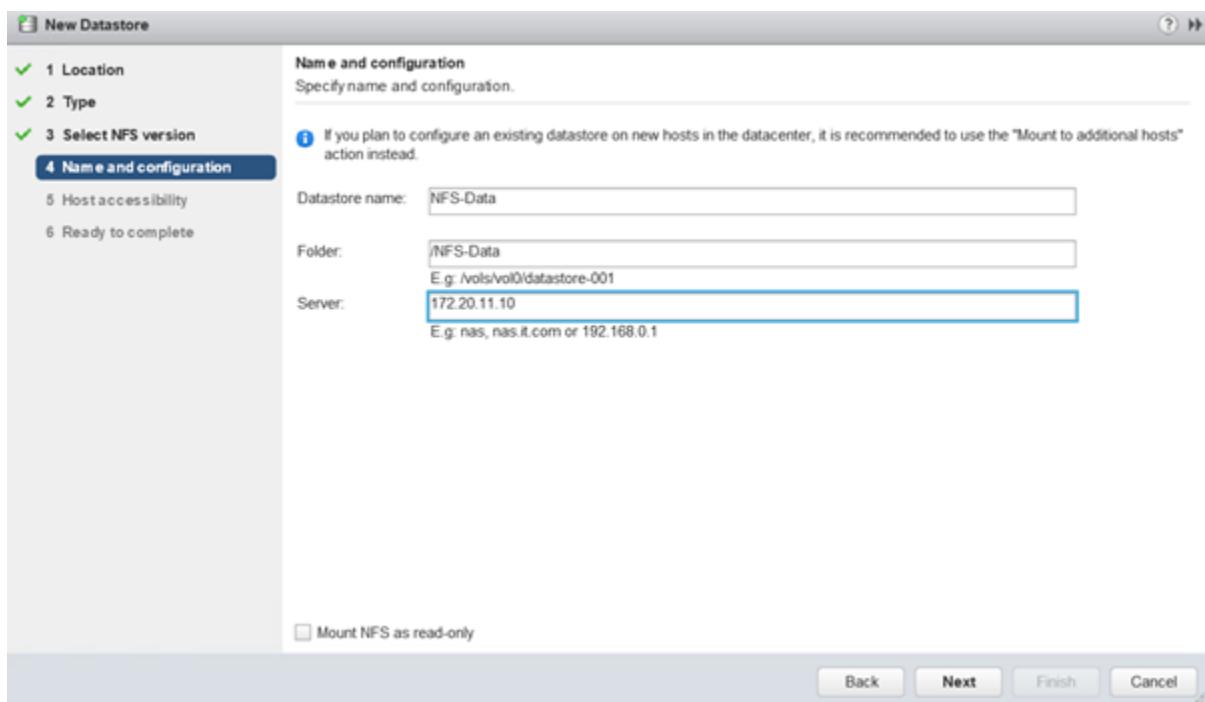
Task 1: Configure Access to NFS Datastores



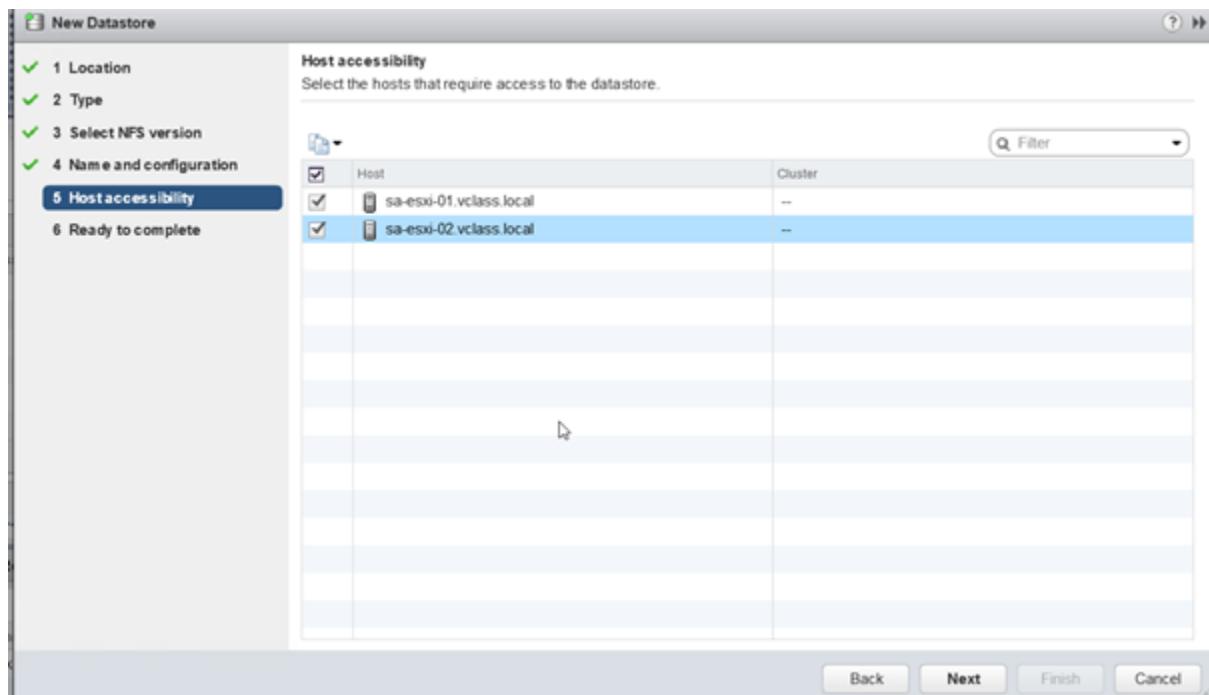
Navigate to add new datastore and select datastore type as NFS



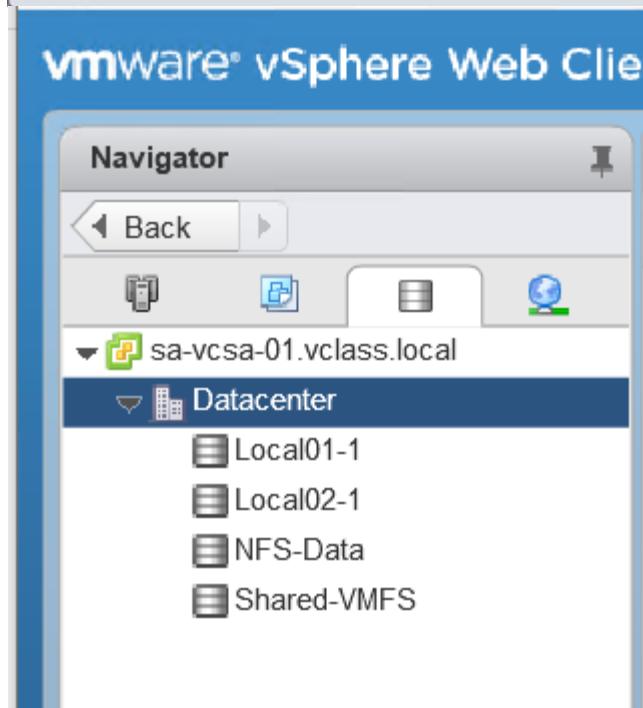
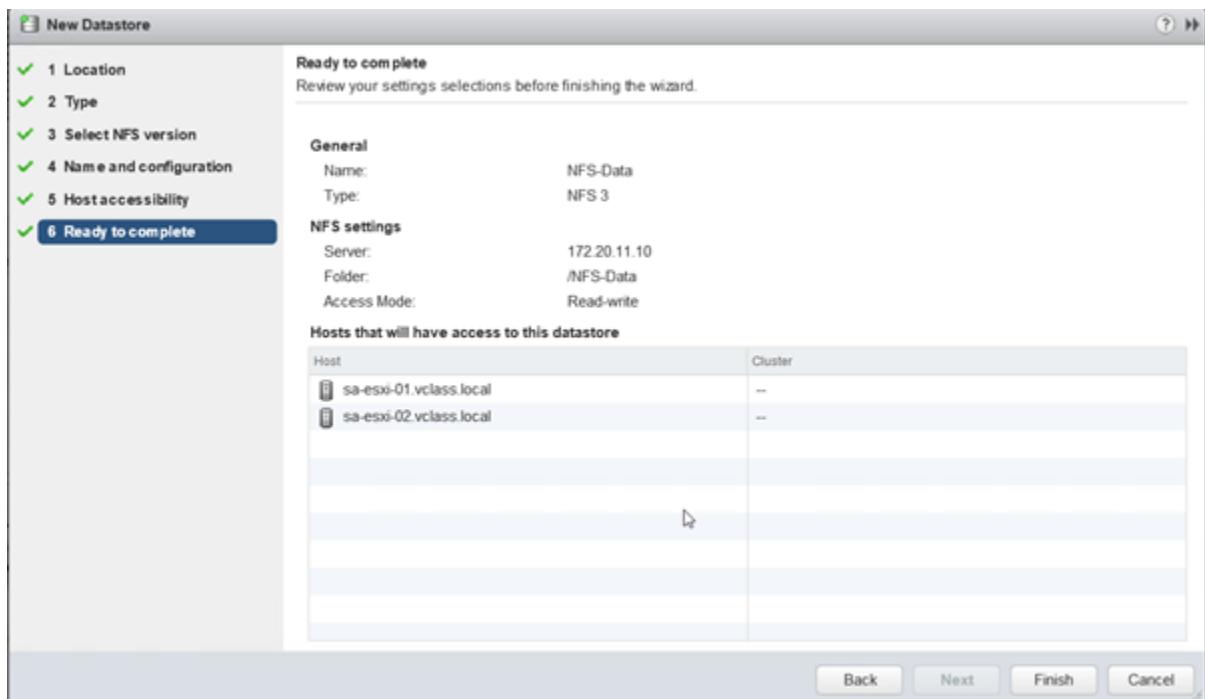
Select NFS version as 3



Provide datastore name as NFS-Data , root folder is /NFS-Data , NFS remote server IP address 172.20.11.10.

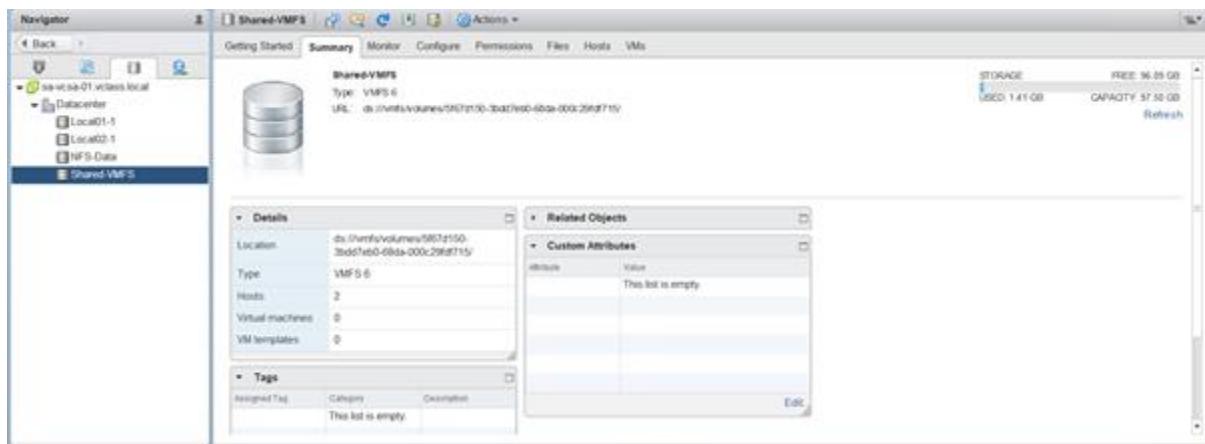


Select NFS datastore to be accessible to both of existing hosts.



Now NFS datastore in the vCenter inventory

Task 2: View NFS Storage Information



Summary page of NFS datastore

- The datastore type : VMFS6
- The capacity of the datastore : 97.50GB
- The free space of the datastore : 96.09GB
- The used space of the datastore : 1.41GB