Post Installation

Post Installation Tasks Summary

After successful cluster configuration, perform the following additional post installation tasks to ensure that the cluster is ready to serve VMs.

Task	Reference
Create the First Datastore	Create the First Datastore, on page 2
Assign a static IP address for Live Migration and VM Network	Configuring a Static IP Address for Live Migration and VM Network, on page 3
(Optional) Constrained Delegation	(Optional) Post Installation Constrained Delegation, on page 4
Configure Local Default Paths	Configure Local Default Paths, on page 5
Configure File Share Witness	Configuring a File Share Witness, on page 6
Checking the Windows Version on the Hyper-V Host	Checking the Windows Version on the Hyper-V Host, on page 12
Validate Failover Cluster Manager	Validate Failover Cluster Manager, on page 12
Testing Upstream Failover	Testing Upstream Failover for Storage Data Network
Deploying VMs on a Hyper-V cluster	Deploying VMs on a Hyper-V cluster, on page 14
Configuring HyperFlex Share to SCVMM	Configuring HyperFlex Share to SCVMM, on page 21
Re-enabling Windows Defender	Re-enabling Windows Defender, on page 23
VM Migration between standalone Hyper-V and HX Hyper-V hosts.	VM Migration between Hosts, on page 23

Create the First Datastore

Before you begin using the cluster, you must create a datastore. The datastore can be created in HX Connect UI.
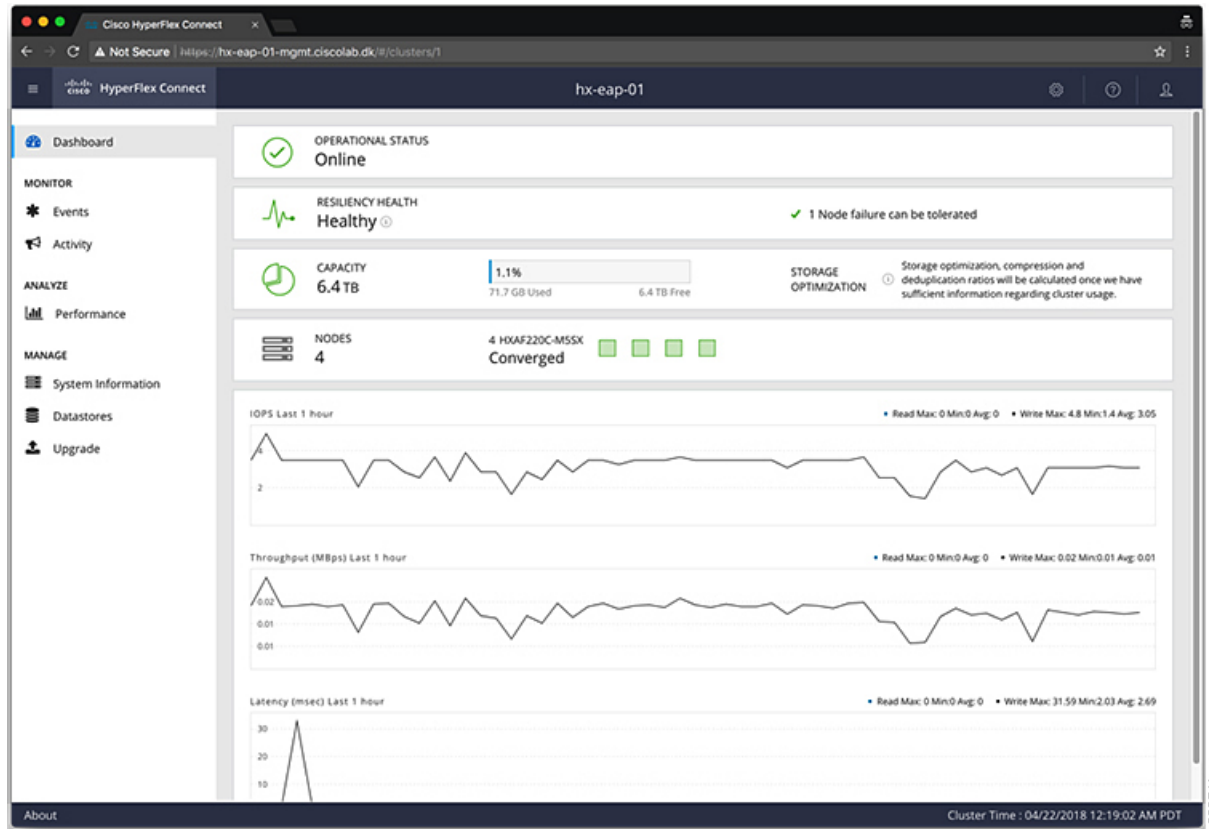
Procedure

Step 1   Launch HX Connect UI from a browser of your choice from *https://Cluster_IP/* or *https://FQDN*.
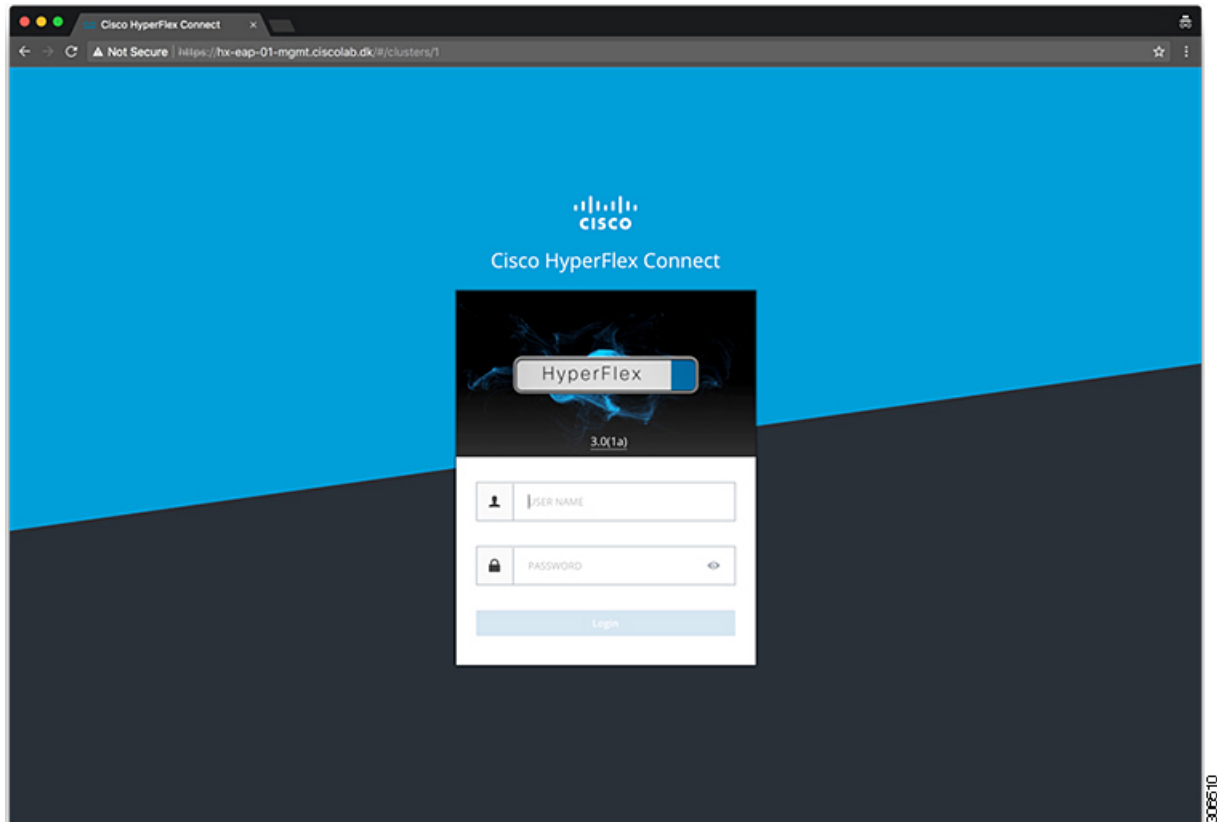
Step 2   Log in with the following credentials:

- **Username—hxadmin**

- **Password**—Use the password set during cluster installation.

Step 3   In the Navigation pane, select **Datastores**.

Step 4   In the Work pane, click **Create Datastore**.

Step 5   In the **Create Datastore** dialog box, complete the following fields:

Field	Description
Datastore Name	Enter a name for the datastore. Cisco recommends that you use all lower case characters for the datastore name.
Size	Select the size for the datastore.
Block Size	Select the block size for the datastore.

Note   Cisco recommends 8K block size and as few datastores as possible to ensure the best performance.

Configuring a Static IP Address for Live Migration and VM Network

Log into each Hyper-V node and execute the following commands in Power Shell to assign a static IP address for Live Migration and VM Network.

#	Command	Purpose
1	`New-NetIPAddress -ifAlias "vSwitch-hx-livemigration" -IPAddress 192.168.73.21 -PrefixLength 24`	Assigns a static IP address to the Live Migration network.
2	`New-NetIPAddress -ifAlias "vswitch-hx-vm-network" -IPAddress 192.168.74.21 -PrefixLength 24`	Assigns a static IP address to the VM network.

(Optional) Post Installation Constrained Delegation

⚠️

Attention   This step must be performed only if Constrained Delegation was not configured during initial installation. It is recommended that you perform this procedure using the HX Installer and not as part of post-installation.

Constrained Delegation gives granular control over impersonation. When the remote management requests are made to the Hyper-V hosts, it needs to make those requests to the storage on behalf of the caller. This is allowed if that host is trusted for delegation for the CIFS service principal of HX Storage.

Constrained Delegation requires that the option for the security setting **User Account Control: Behavior of the elevation prompt for Administrators in Admin Approval Mode** is set to **Elevate without Prompting**. This will prevent the global AD policy from overriding policy on HX OU.

Perform the following procedure *on each Hyper-V host in the HX Cluster* to configure using **Windows Active Directory Users and Computers**.

Procedure

Step 1   Click **Start**, click **Administrative Tools**, and then click **Active Directory Users and Computers**.

Step 2   Expand domain, and then expand the Computers folder.

Step 3   In the right pane, right-click on the computer name (for example, HX-Properties), and then click **Properties**.

Step 4   Click on the **Delegation** tab.

Step 5   Select **Trust this computer for delegation to specified services only**.

Step 6   Ensure that **Use any authentication protocol** is selected.

Step 7   Click **Add**. In the **Add Services** dialog box, click **Users or Computers**, and then browse or type the name of the Service Type (such as CIFS). Click OK. The following illustration can be used as an example.
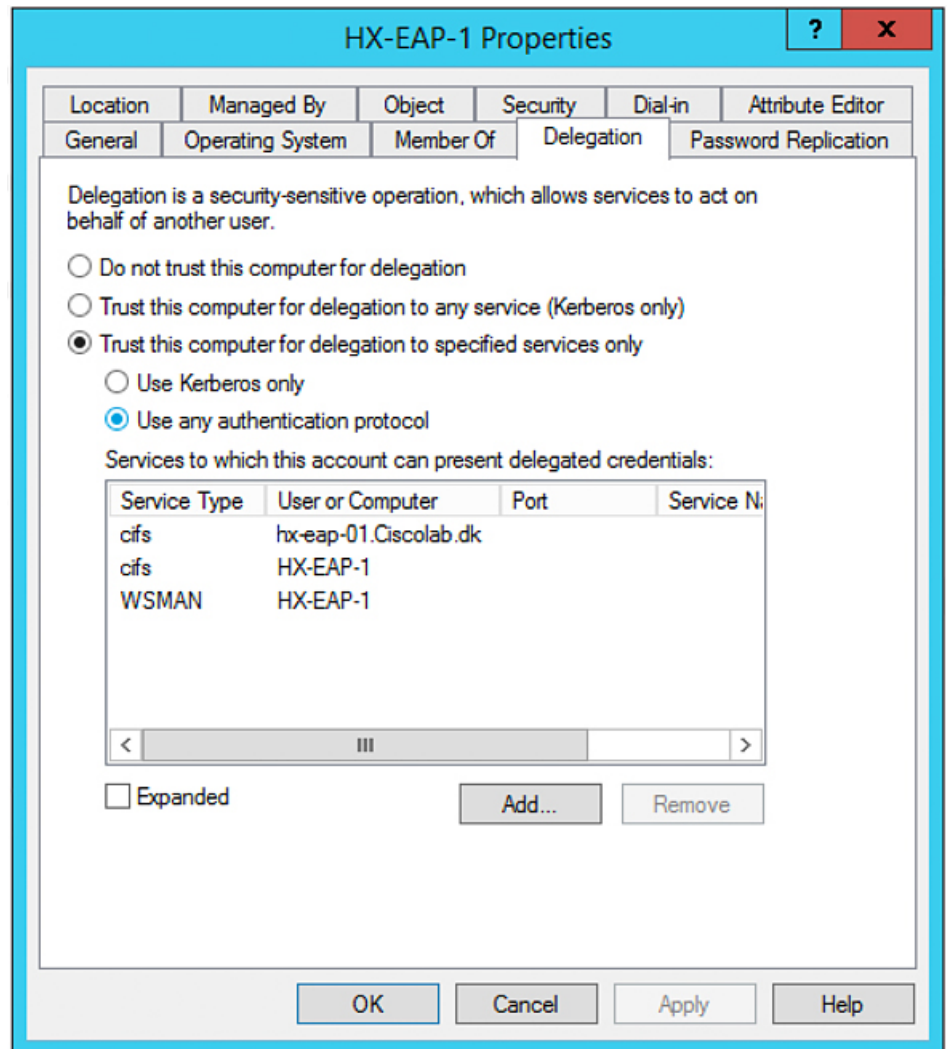
Step 8   Repeat these steps for all nodes.

Configure Local Default Paths

Configure the default local path for the VMs to ensure that they will be on the HX cluster datastore.

Run the following commands in PowerShell:

```
$Creds = Get-Credential -Message "User Credentials" -UserName <<current logon username>>
$hosts = ("hostname1","hostname2","hostname3","hostname4")
Invoke-Command -ComputerName $hosts -Credential $Creds -ScriptBlock {Set-VMHost
-VirtualHardDiskPath
"\\HX-EAP-01.ciscolab.dk\DS1_8K" -VirtualMachinePath "\\HX-EAP-01.ciscolab.dk\DS1_8K"}
```

Note   The username should either be a Domain admin account or the HX service account. The local Administrator on the Hyper-V host will not work.

Note   Remember to change the variables to suit your environment.

Configuring a File Share Witness

As a Microsoft best practice, ensure that you configure a Quorum witness datastore. Use the following procedure to configure a File Share Witness using **Failover Cluster Manager** (FCM). A File Share Witness ensures high availability of the failover cluster when nodes on the network fail. Specifically, a File Share Witness is needed to maintain a failover cluster quorum, which is designed to prevent split-brain scenarios that may happen when a partition in the network and subsets of nodes cannot communicate with each other. For more information, see "Understanding cluster and pool quorum".

Note   In an HX cluster, the storage is designed to be highly available and no host should lose access to the storage. In the event that one host does stop writing to the datastore, Microsoft's storage resiliency behavior kicks in. The host repeatedly retries to establish a connection with the storage for 30 mins by default. During this time, the user VMs may be paused. If it cannot connect after 30 mins, the VM moves to a 'stopped' state.

The following procedure describes how to configure a File Share Witness for Microsoft Windows 2016. If you are deploying Microsoft Windows 2019, do not use HyperFlex Share or any other file share as a witness. Microsoft has identified a defect in Windows 2019, which will be resolved in a subsequent patch release. Until such time, you must configure the Microsoft Windows 2019 Failover cluster without any witness.

Note
- If you are using Microsoft Windows 2019 and planning to use any file share (including HX share) as a file share witness, you must install the https://support.microsoft.com/en-us/help/4497934 patch before configuring.

- If you do not want to use file share as a quorum witness, then you can use other quorum methods described by Microsoft Windows 2019.

Before you begin

Microsoft released a security patch on November 12, 2019 that applies to Windows 2019. If you are running Windows 2019, upgrade your Hyper-V hosts with the patch at the path level, before using the following procedure to configure a file share witness. For more information, see the Microsoft article "November 12, 2019—KB4523205 (OS Build 17763.864)".

Procedure

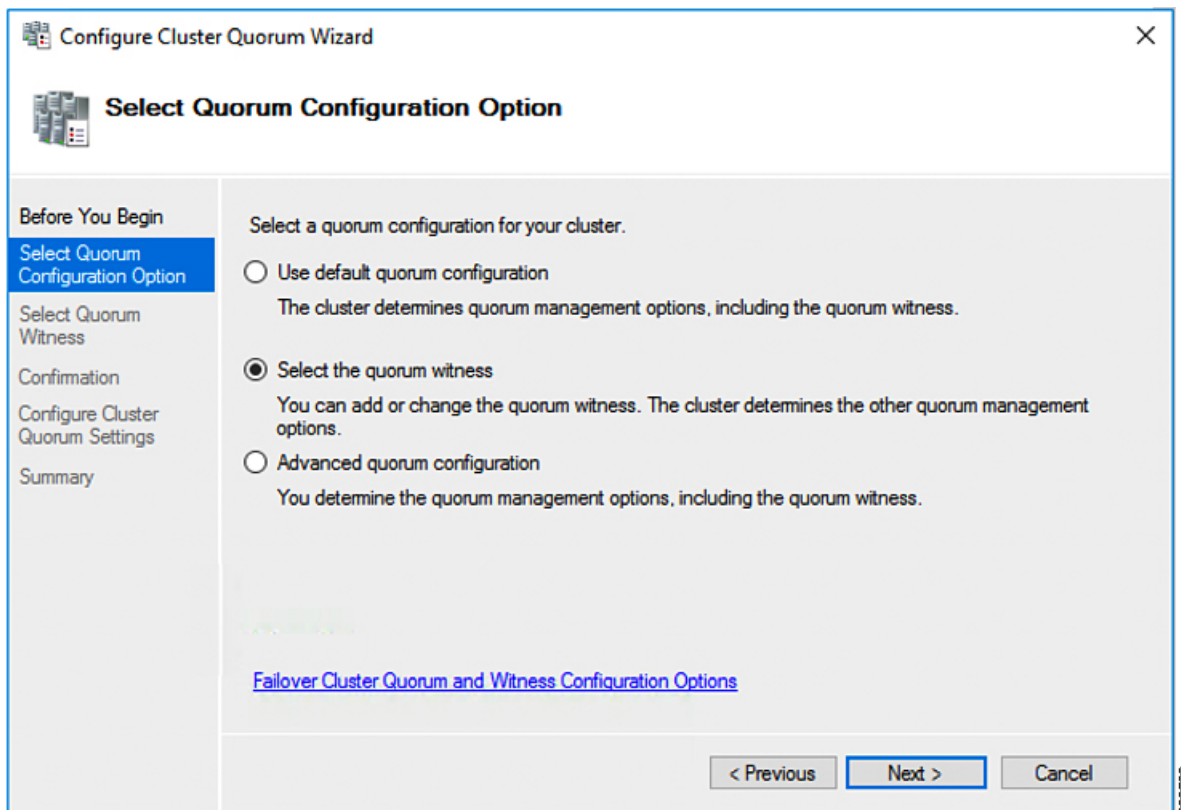**Step 1**   Launch FCM.

Step 2   In the navigation pane, select your cluster. Then, in the **Actions** pane, select **More Actions** > **Configure Cluster Quorum Settings...**.
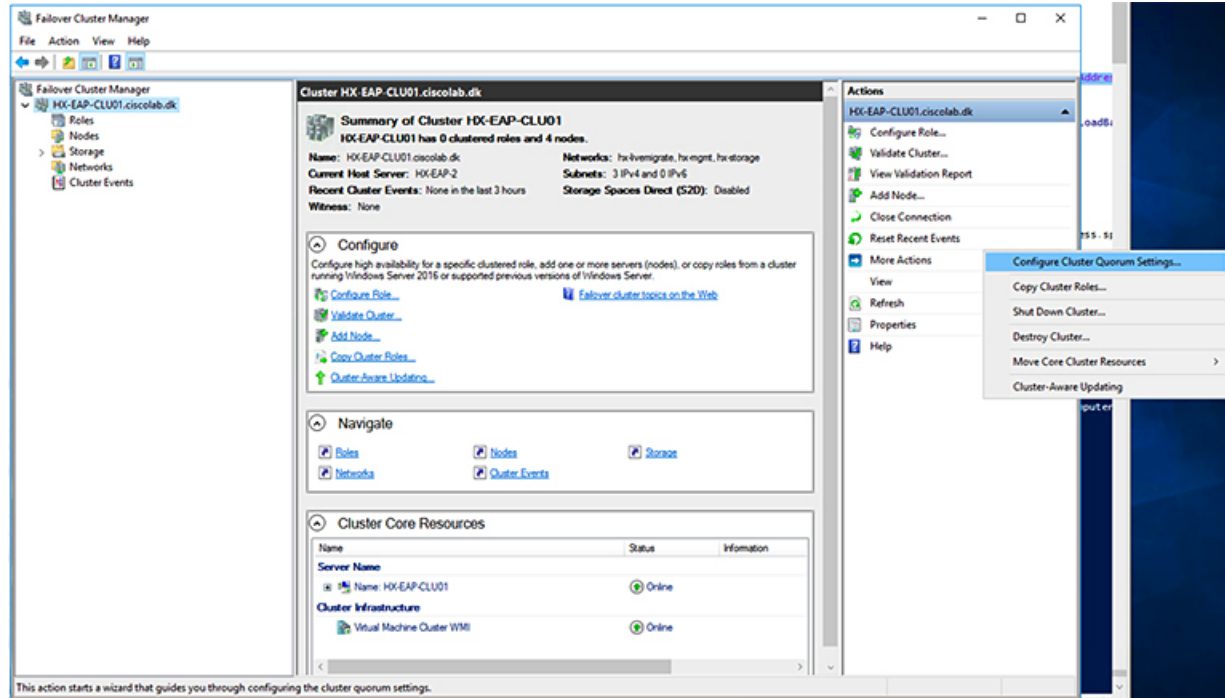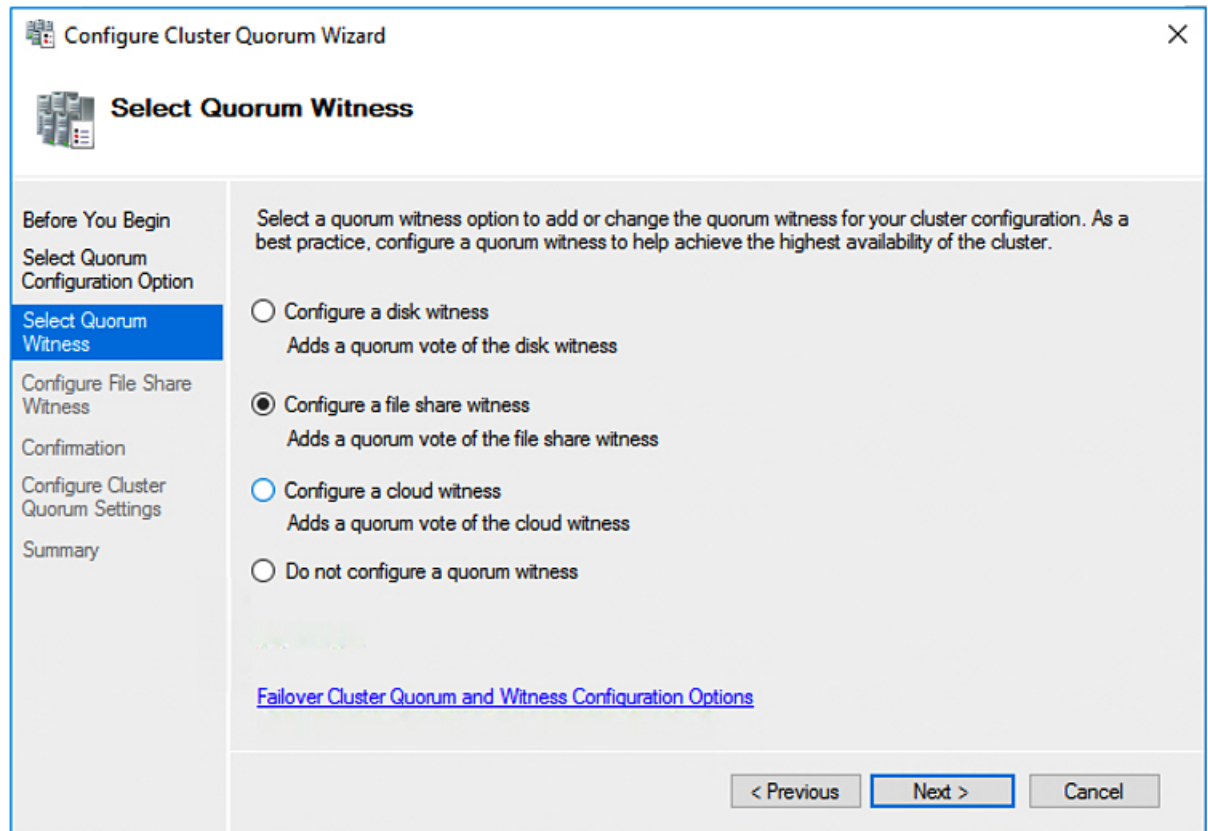

Step 3   The **Configure Cluster Quorum** wizard is launched. Click **Next**.
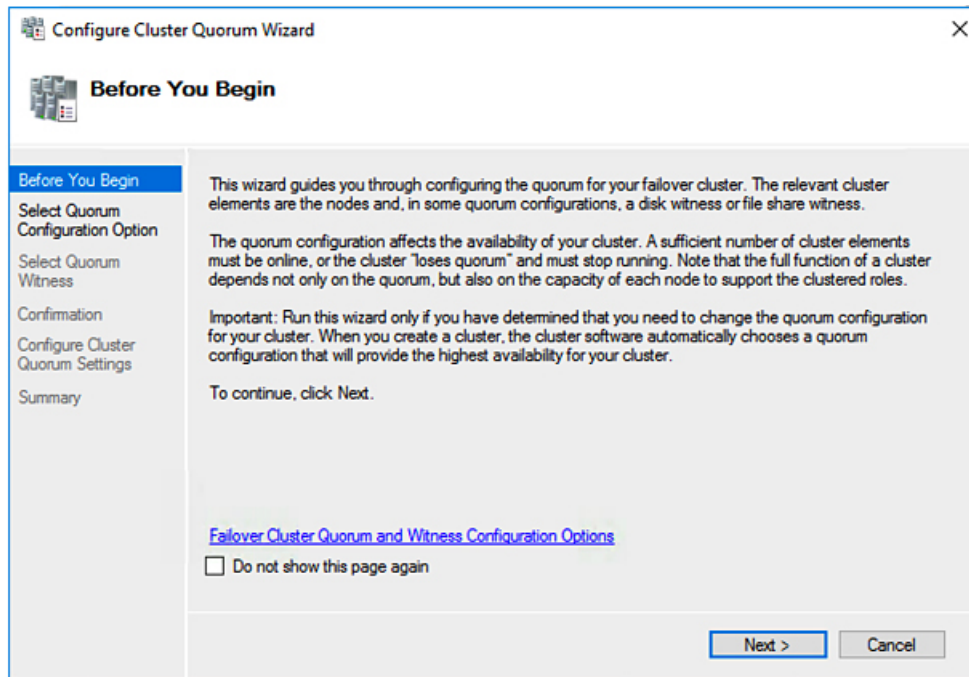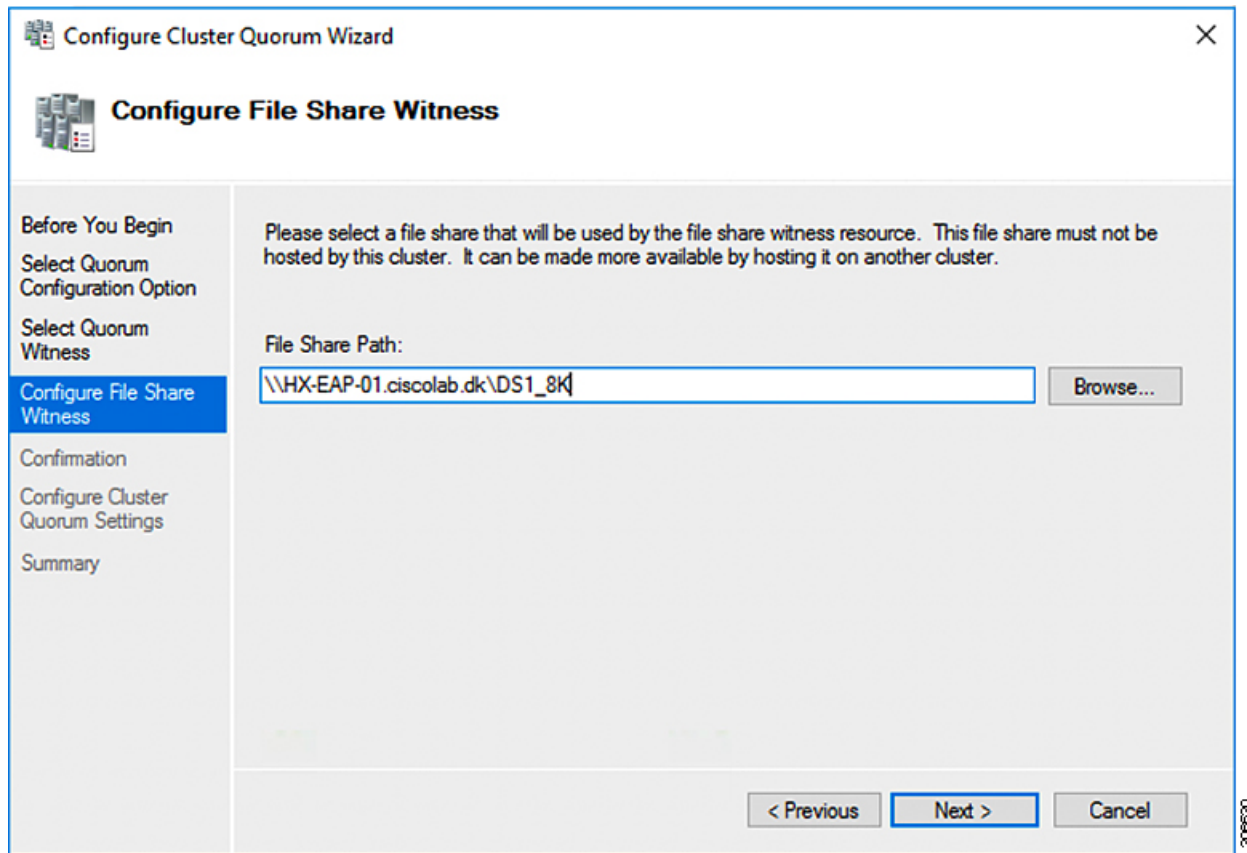
Step 4   In the **Select Quorum Configuration Option** screen, choose **Select the quorum witness**. Click **Next**.
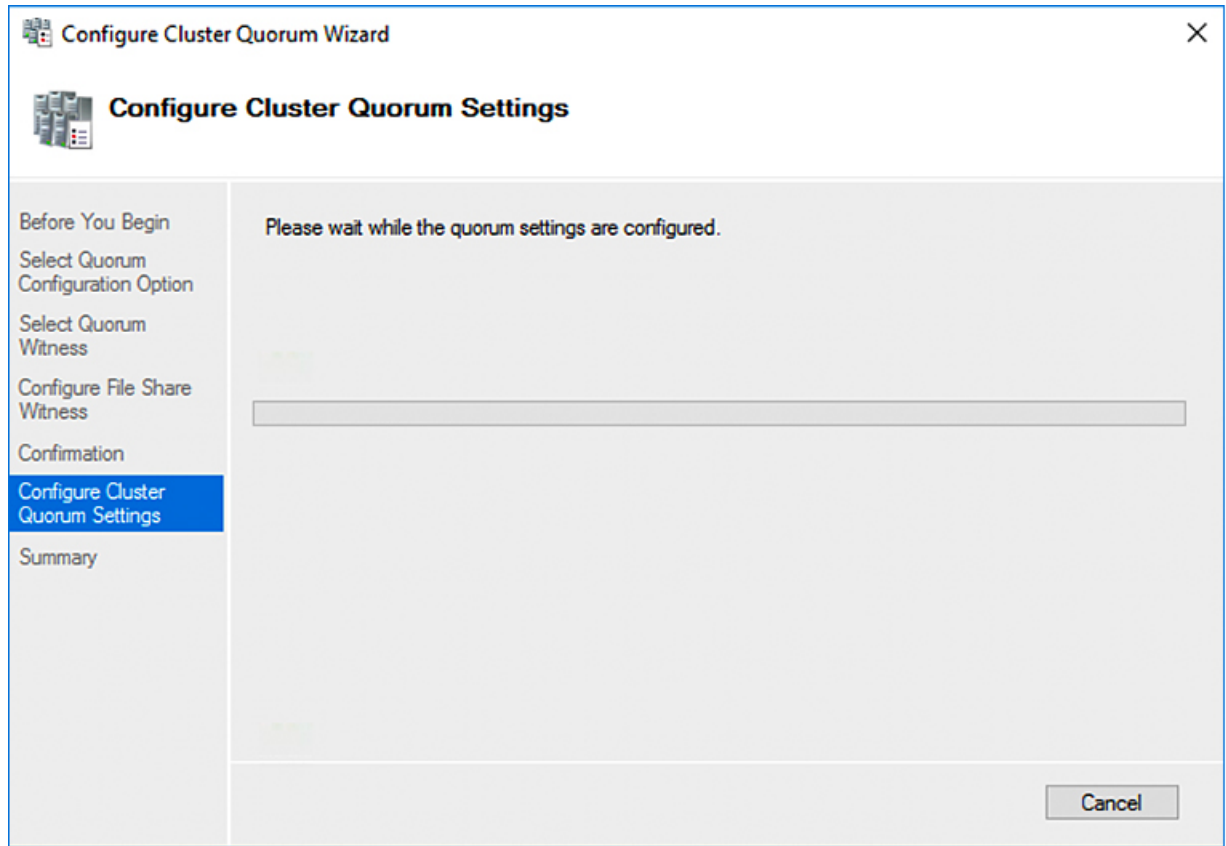

Step 5   In the **Select Quorum Witness** screen, choose **Configure a file share witness**. Click **Next**.

Step 6   In the **Configure File Share Witness** screen, specify the path to the File Share. Click **Next**.

Step 7   In the **Confirmation** screen, click **Next**.

Step 8 In the **Summary** screen, click **Finish** to close the wizard.

Step 9 Alternatively, you can configure a file share witness using Windows PowerShell.

a) Open a Windows PowerShell console as an administrator.

b) Type **Set-ClusterQuorum -FileShareWitness <File Share Witness Path>**

c) You should now see the File Share Witness configured for your cluster. When you navigate to your File Share Witness share you will see a folder created for your cluster.
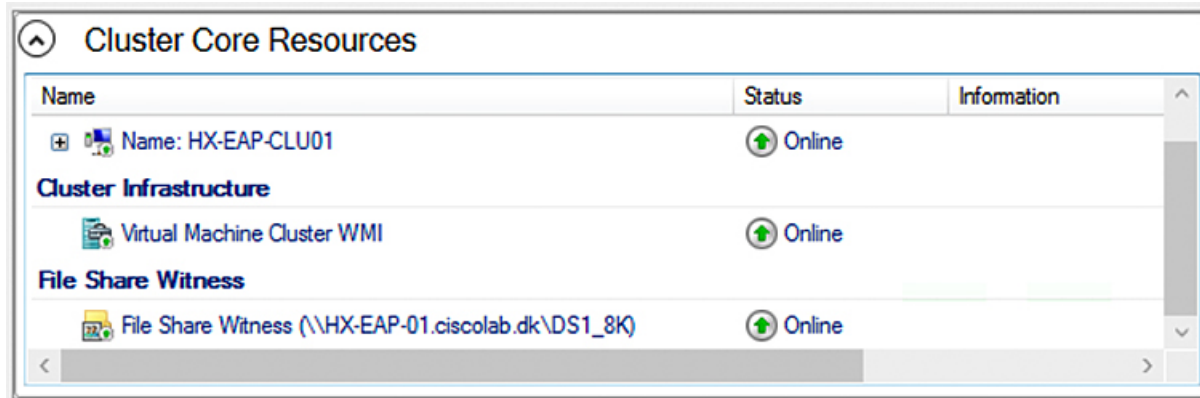
Checking the Windows Version on the Hyper-V Host

Follow the steps below to check the version of Windows installed.

Procedure

Step 1 Log into the Hyper-V server as an administrator or HX Service Administrator account.

Step 2 In Powershell, run the following command:

C:\Users\adminhyperflex> Get-ItemProperty 'HKLM:\SOFTWARE\Microsoft\Windows NT\CurrentVersion'

Step 3 Verify the installed Windows version in the result of the command output.

Following is a sample output if you have installed Windows Server 2016.

```
ProductName : Windows Server 2016 Datacenter
ReleaseId : 1607
SoftwareType : System
UBR : 447
```

Following is a sample output if you have installed Windows Server 2019.

```
ProductName : Windows Server 2019 Datacenter
ReleaseId : 1809
SoftwareType : System
UBR : 107
```

Step 4 In addition, verify the following:

- For Windows Server 2016 Datacenter Core and Desktop Experience, the Windows 2016 ISO image should be Update Build Revision (UBR) 1884 at a minimum. If not, upgrade the HyperV servers to the latest update. Refer to the *Microsoft Knowledge Base article: KB4467691*.

- If you are using a standalone Hyper-V manager outside HX nodes, then the Hyper-V management server should have a version UBR number greater than 1884. You must upgrade the Hyper-V management server if the version is 1884 or earlier.

- For Windows Server 2019 Desktop Experience, the Windows 2019 ISO image should be Update Build Revision (UBR) 107 at a minimum.
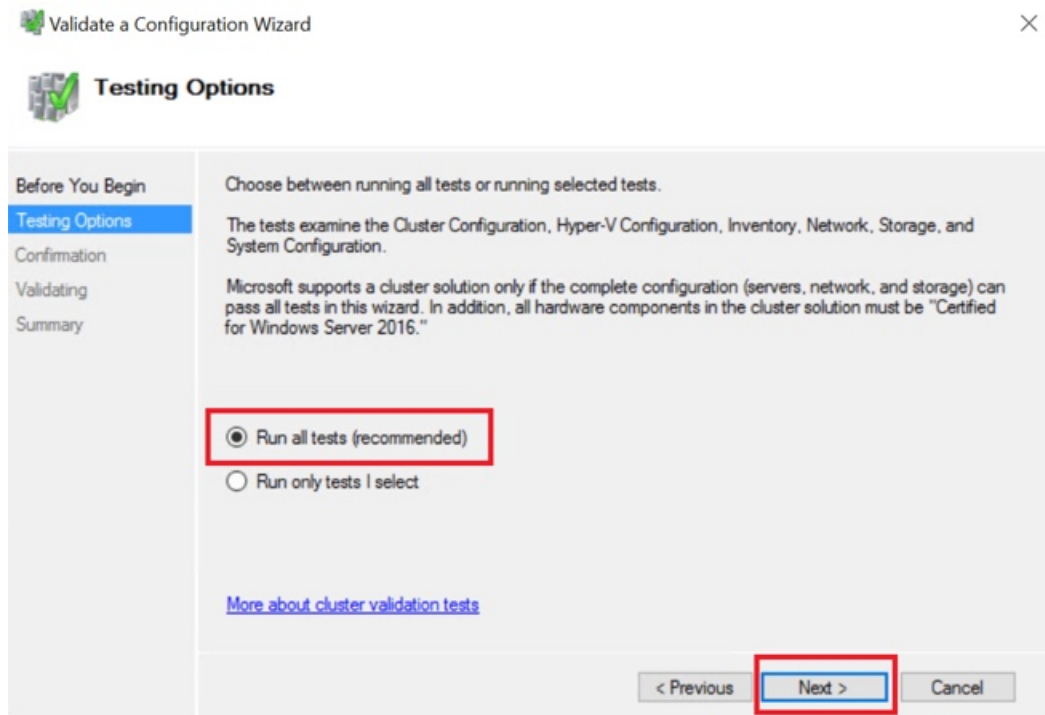
Validate Failover Cluster Manager

Procedure

Step 1 Open the Failover Cluster Manager and click **Validate Cluster** and then click **Next**.
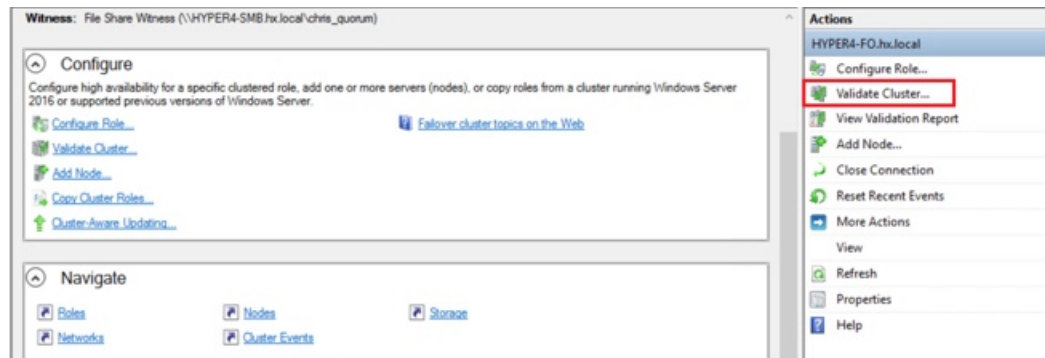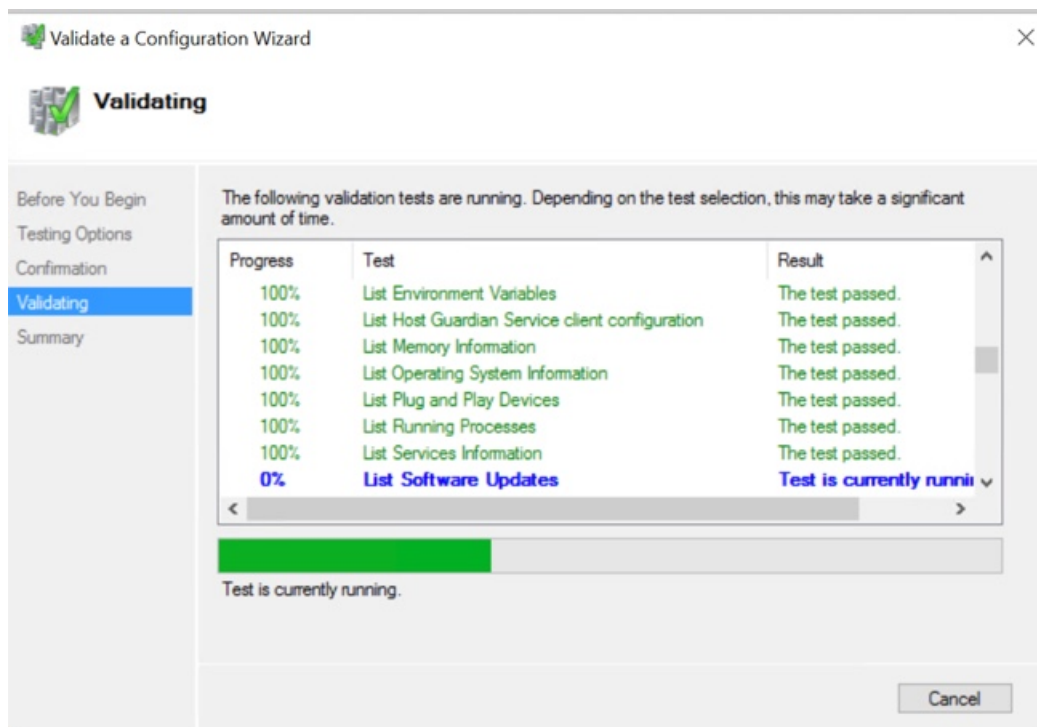
Step 2   Select **Run all tests (recommended)** and then click **Next**.

After clicking **Next**, the validation procedure starts running.

Step 3   Verify that there are no validation failures. If there are any validation failures, click **View Report** and address any results that show **Failed**.

Deploying VMs on a Hyper-V cluster

Deploying VMs on a Hyper-V cluster is a multi-step process as described below:

- **Install Remote Server Administration Tools (RSAT) on the management station/host**—You must install administrator tools such as Hyper-V Manager and Failover Cluster Manager as features Server Manager. For more information see, .

- **Manage VMs**—Connecting to all the Hyper-V nodes in the HX cluster and creating new VMs can be accomplished using either Hyper-V Manager or Failover Cluster Manager. For more information see, .

Install RSAT tools on the Management Station or Host

To install RSAT, complete the following steps:

Before you begin

RSAT tool installation requires the following:

- A server from which you can install, manage, monitor the VMs on the Hyper-V HX cluster.

- Administrator tools such as Hyper-V Manager, FCM, PowerShell, SCVMM.

Procedure

Step 1   In Server Manager, click **Manage** and then select **Add Roles and Features**. The **Add Roles and Features** wizard appears.
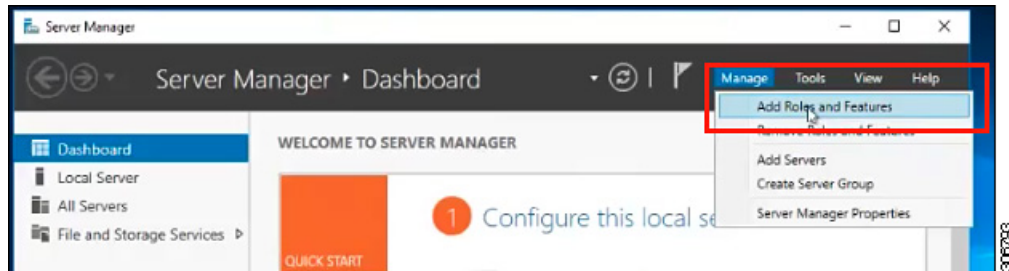
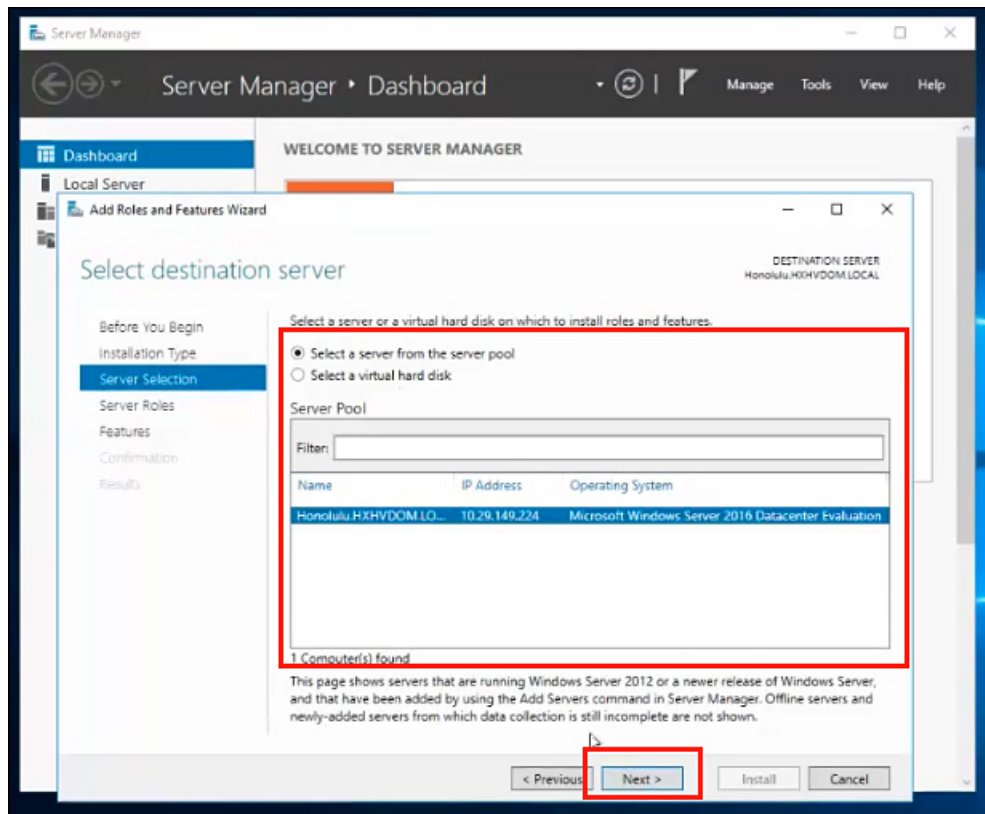**Step 2**   In the **Before you begin** page, click **Next**.
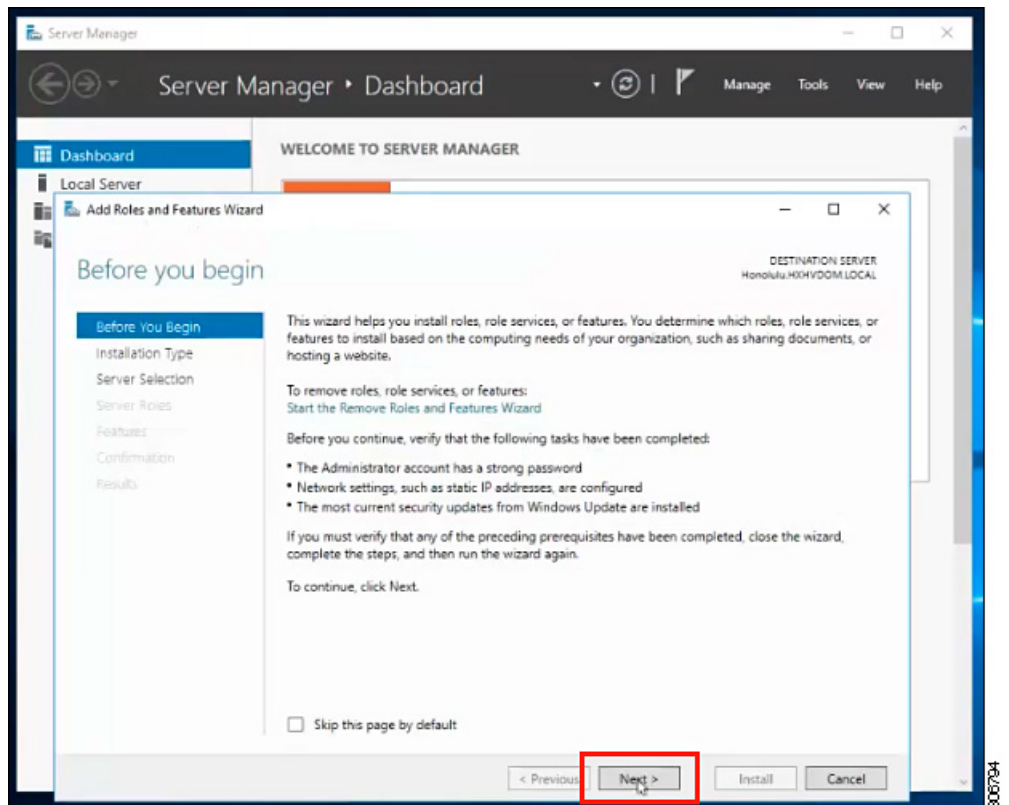
Step 3   In the **Select installation type** page, select **Role-based or feature-based installation**. Click **Next**.

Step 4   In the **Server Selection** page, select your server from the list. This server belongs to the same domain as the HX cluster. Click **Next**.

Step 5   In the **Select Roles** page, click **Next**.

Step 6   In the **Features** page, select **Remote Server Administration Tools** > **Feature Administration Tools** > **Failover Clustering Tools**, and **Role Administration Tools** > **Hyper-V Management Tools** > **Failover Clustering Tools**. Click **Next**.
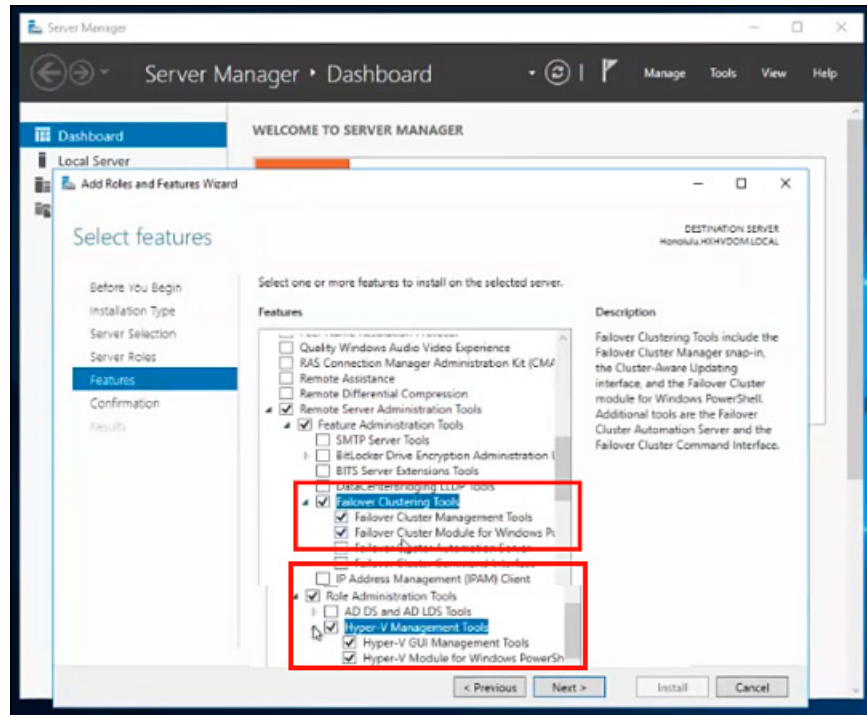
Step 7 In the **Confirmation** page, click **Install**. Leave the **Restart the destination server if required** checkbox unchecked.

Step 8 The **Installation Progress** page displays installation progress. When installation completes, click **Close** to exit the wizard.
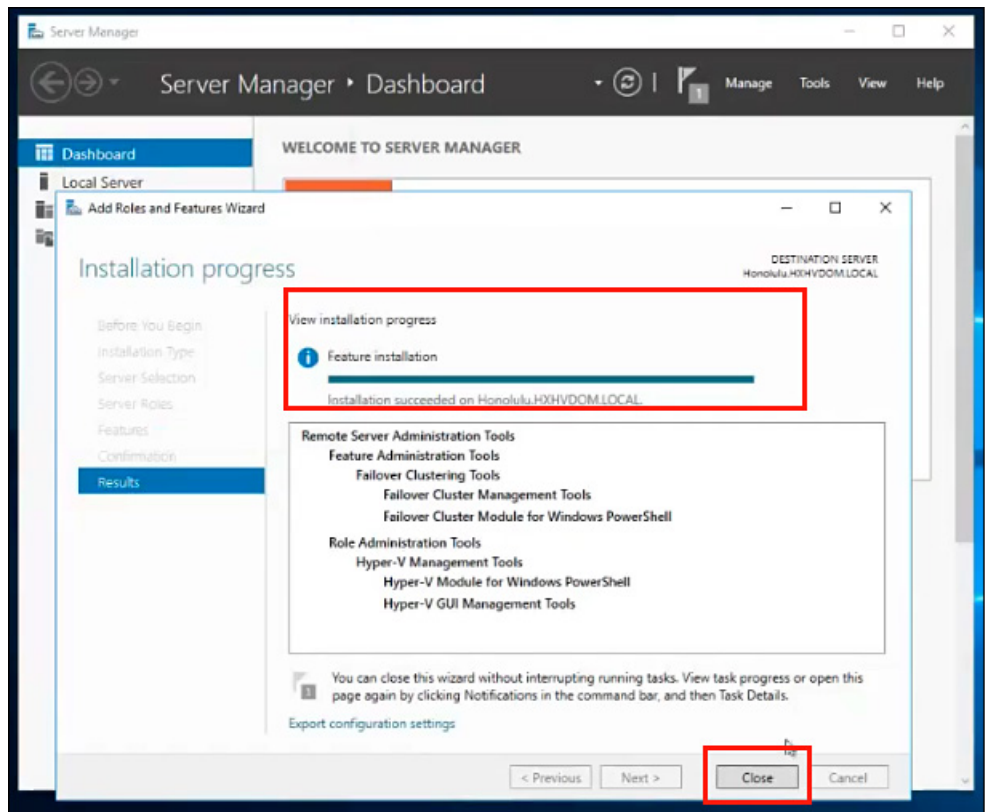
Managing VMs using Hyper-V Manager

Connecting to Hyper-V Nodes

Complete the following steps to connect to all the Hyper-V nodes in the Hyper-V HX Cluster.

Procedure

Step 1	Open the **Server Manager** dashboard and click **Tools**. Then, click **Hyper-V Manager**. The **Hyper-V Manager** console appears.
Step 2	In the left pane, select **Hyper-V Manager** and click **Connect to Server...**.
Step 3	In the **Select Computer** dialog box, select **Another computer** and type in the name of the Hyper-V node (for example, HXHV1) that belongs to the Hyper-V cluster. Click **OK**.
Step 4	Repeat all of the above steps for each node in the Hyper-V HX cluster.

Note For a fresh installation, the storage controller virtual machine (StCtlVM) in the only virtual machine that appears in **Virtual Machines** pane in the **Hyper-V Manager** console. Virtual machines appear in the list under this pane as they are added in each node. For more information on how to create VMs using Hyper-V Manager, see:

Creating VMs using Hyper-V Manager

Complete the following steps to create VMs using Hyper-V Manager.

Procedure

Step 1	Open **Hyper-V Manager**.
Step 2	Select the Hyper-V server, and right click and select **New** > **Create a virtual machine**. The **Hyper-V Manager New Virtual Machine** wizard displays.
Step 3	In the **Before you Begin** page, click **Next**.
Step 4	In the **Specify Name and Location** page, enter a name for the virtual machine configuration file. The location for the virtual machine click **Next**.
Step 5	In the **Specify Generation** page, choose either **Generation 1** or **Generation 2**.
Step 6	In the **Assign Memory** page, set the start memory value 2048 MB. Click **Next**.
Step 7	In the **Configure Networking** page, select a network connection for the virtual machine to use from a list of existing virtual switches.
Step 8	In the **Connect Virtual Hard Disk** page, select **Create a Virtual Hard Disk** page, and enter the name, location and size for the virtual hard disk. Click **Next**.
Step 9	In the **Installation Options**, you can leave the default option **Install an operating system later** selected. Click **Next**.
Step 10	In the Summary page, verify that the list of options displayed are correct. Click **Finish**.
Step 11	In Hyper-V Manager, right-click the virtual machine and click **Connect**.
Step 12	In the **Virtual Machine Connection** window, select **Action** > **Start**.

Managing VMs using Failover Cluster Manager

Creating VMs using Failover Cluster Manager

Complete the following steps to connect to the Windows Failover cluster (installed along with the Hyper-V HX cluster) and create new VMs using Failover Cluster Manager.

Procedure

Step 1	In the **Failover Cluster Manager** console, under the **Actions** pane, click **Connect to Server...**
Step 2	In the **Select Cluster** dialog box, click **Browse** to navigate to the Hyper-V HX cluster. Click **OK**.
Step 3	In the left pane, click **Roles** > **Virtual Machines...** > **New Virtual Machines...**.

Step 4	In the **New Virtual Machine** dialog box, search and select the Hyper-V node where you wish to create new VMs. Click **OK**. The **New Virtual Machine** wizard appears.	
Step 5	In the **Before You Begin** page, click **Next**.	
Step 6	In the **Specify Name and Location** page, choose a name for the VM, and specify the location or drive where the VM will be stored. Click **Next**.	
Step 7	In the **Specify Generation** page, select the generation of virtual machine you want to use (Generation 1 or Generation 2) and click **Next**.	
Step 8	In the **Assign Memory** page, enter the amount of memory that you want for the VM. Click **Next**.	
Step 9	In the **Connect Virtual Hard Disk** page, enter the name, location and hard drive size. Click **Next**.	
Step 10	In the **Installation Options** page, select the install location for the OS. Click **Next**.	
Step 11	In the **Summary** page, review the options selected and click **Finish**.	
Step 12	Right-click on the newly created VM, and click **Connect...**. In the **Virtual Machine Connection** window, click **Start**.	

> **Note** By default, the Failover Cluster Manager will assign a default name for the 4 networks created. It is recommended to rename these network names.

What to do next

To enable redirection of datastore access requests from outside the HX cluster boundary through the management path, add the following entry to the hosts file on the (remote) machine running Hyper-V manager, Failover Cluster Manager, or SCVMM Console. For example, edit `C:\Windows\System32\drivers\etc\hosts` and add:

```
cluster_mgmt_ip \\smb_namespace_name\datastore_name

10.10.10.100 \\hxcluster.company.com\ds1
```

Opening Data Path Access to the SCVMM Host

To open data path access to the SCVMM host, complete the following steps:

Before you begin

Beginning with Cisco HX Release 4.5 the `FixScvmmAccess.py` script must be invoked with python3.

> **Note** `FixScvmmAccess.py` requires root access.

Procedure

	Command or Action	Purpose
Step 1	Launch a secure shell login session to the cluster management IP address.	
Step 2	Determine the ensemble members in the cluster by reviewing the following information:	`root@ucs900scvm:~# cat /etc/springpath/storfs.cfg	grep crmZKEnsemble`

	Command or Action	Purpose
		crmZKEnsemble=10.107.48.14:2181,10.107.48.15:2181,10.107.48.16:2181 `root@ucs900scvm:~#`
Step 3	From the current SSH login session, launch an SSH session to any of the IP addresses displayed for the **crmZKEnsemble** parameter.	
Step 4	Run the following script without any additional parameters:	`python /opt/springpath/storfs-hyperv/FixScvmmAccess.py` The script prompts you to enter the SCVMM IP address.
Step 5	Add the SCVMM IP address and exit the SSH session.	

Configuring HyperFlex Share to SCVMM

Before you begin

Edit the `/etc/hosts` file on the host running the VMM admin console to resolve the **smb** access point to the cluster management IP address of HyperFlex cluster. This IP address is typically used to launch Cisco HX Connect.

```
The complete path is : C:\Windows\System32\drivers\etc
Open the "hosts" file in the above directory in Notepad or any other text editor and add
the following entry in the bottom :

<CMIP>  <smb_share_namespace>

CMIP will be the Cluster Management IP which is usually used to open HX connect UI.

For example,
10.10.10.1    hxhvsmb.example.com
```

Note   For SCVMM Run As account, it is recommended to use **hxadmin** (or any other Domain Admin account which has **FULL** permissions) for the corresponding HyperFlex Organization Unit (OU) in the Active Directory (AD).
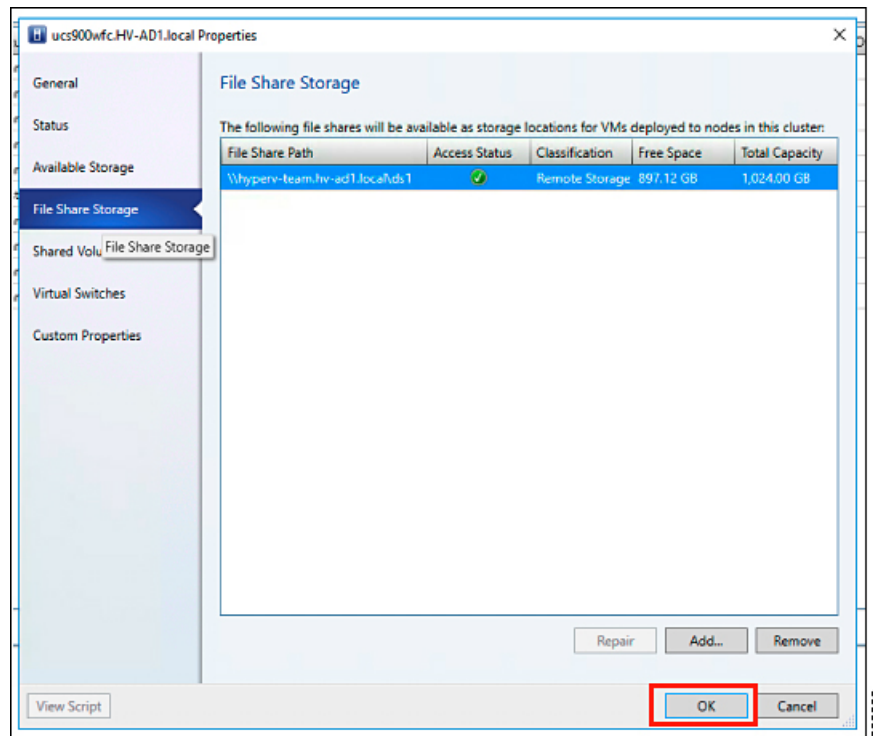
Procedure

Step 1	Add the cluster to **System Center - Virtual Machine Manager (VMM)**.
Step 2	In the VMM console, go to **Fabric** > **Servers** > **All Hosts**.
Step 3	Right-click on the cluster and select **Properties**.
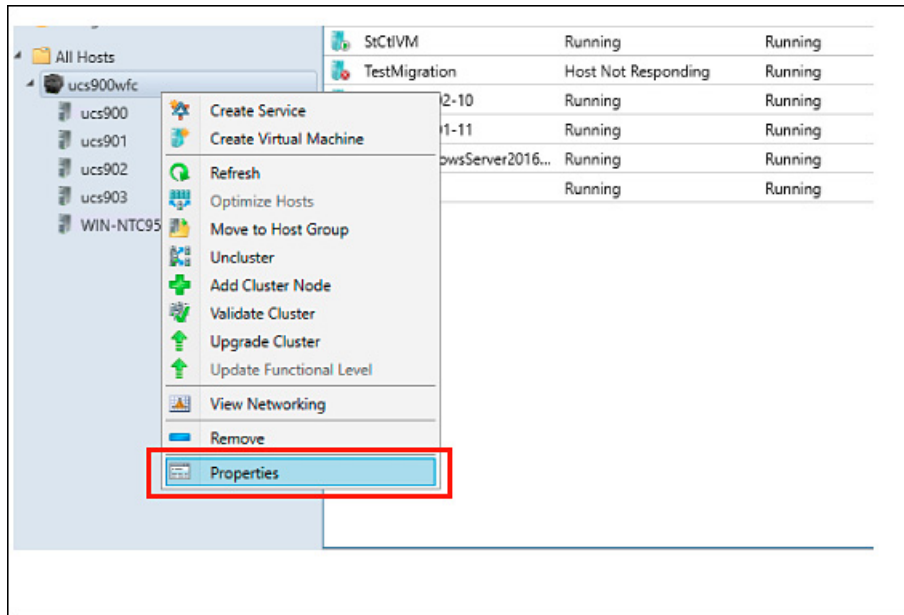
Step 4   In the **Properties** window, right-click **File Share Storage** > **Add File Storage**.
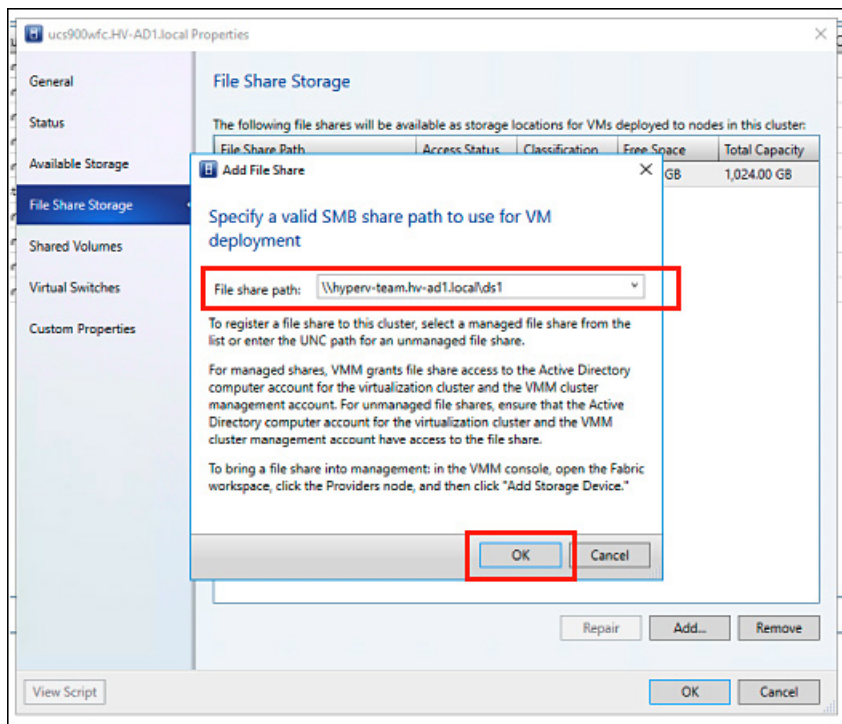
Step 5   When mapping completes, the share is added as shown in the screenshot below.

Step 6 Click **OK** and exit VMM. The HyperFlex Share is now mapped and VMs can be created on this share using SCVMM.

Re-enabling Windows Defender

Run the following commands to re-enable Windows Defender.

Install Defender from PowerShell

```
Install-WindowsFeature -Name Windows-Defender
```

(Optional) Install Defender GUI from PowerShell

```
Install-WindowsFeature -Name Windows-Defender-GUI
```

VM Migration between Hosts

Before you begin

Follow the steps below to perform VM migration between a standalone host and an HX Hyper-V host. Prior to performing this procedure, make sure that your environment meets the following prerequisites:

- The source and destination computers either belong to the same Active Directory domain or belong to domains that trust each other.

- In Failover Cluster Manager, configure Live Migration settings on both the source and destination Hyper-V hosts.

Procedure

Step 1	Open **Hyper-V Manager**.
Step 2	In the navigation pane, select, **HXHVINFRA2**.
Step 3	In the **Action** pane, click **Hyper-V Settings** > **Live Migrations**.
Step 4	In the **Live Migrations** pane, check **Enable incoming and outgoing live migrations**.
Step 5	Under **Incoming live migrations**, select **Use the IP addresses for live migration**. Click **Add**, and then click **OK**. This opens the Move Wizard.
Step 6	Use the wizard pages to choose the type of move, destination server, and options.
Step 7	On the **Summary** page, review your choices and then click **Finish**.

Testing Upstream Failover for Storage Data Network

Configure upstream (top-of-rack (ToR)) so storage data network jumbo frames communicate between FI-A and FI-B.

Note In some cases 1500 based frames are used because you are not able to configure ToR for jumbo frames as the cluster was previously configured to use 1500 sized frames. The ping test enables you to test basic 1500 frame connectivity across the ToR.

Procedure

Step 1	Log into a single Hyper-V Host as HX Service account.
Step 2	Open **Server Manager** > **Local Server**.
Step 3	Click on **Enabled** for NIC Teaming.
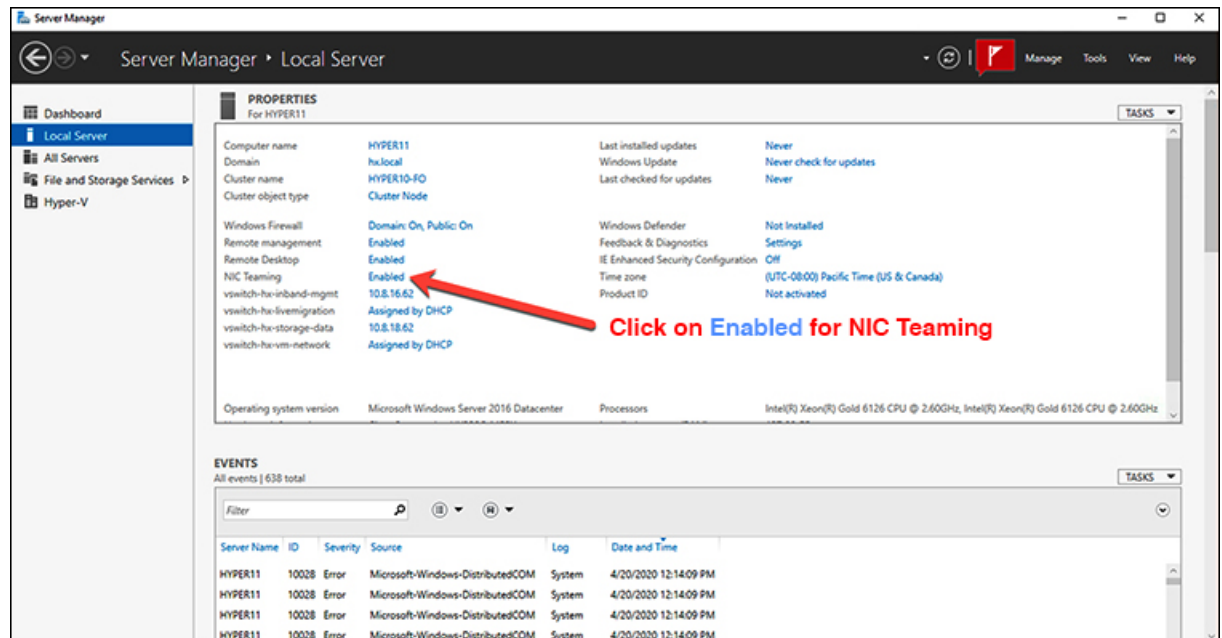
Step 4 Right mouse click on storage-data-a and select **Disable**.
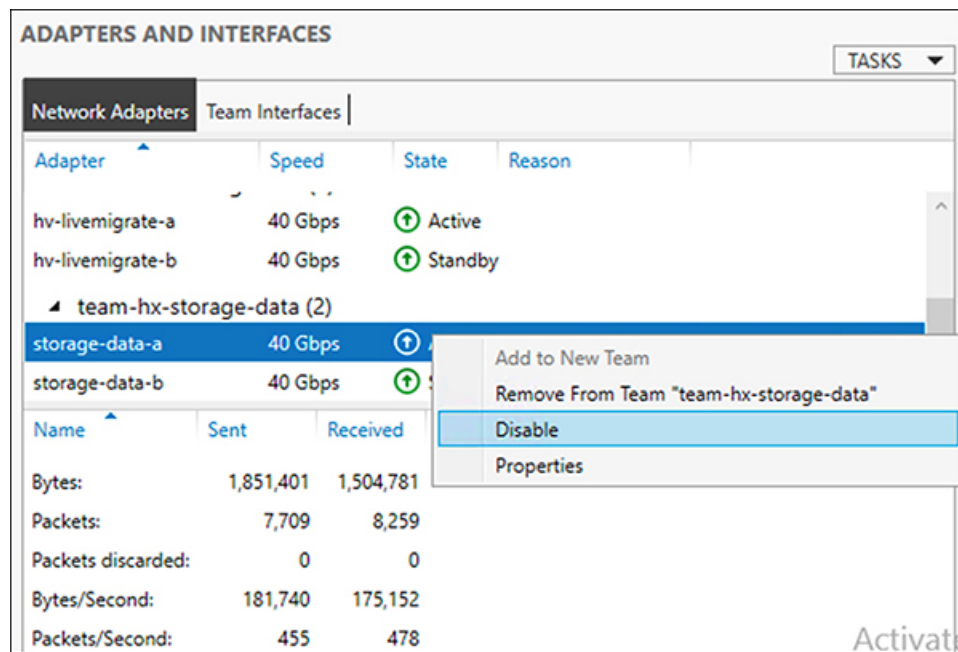
This forces the storage-data-b interface on FI-B to become the active path for data.
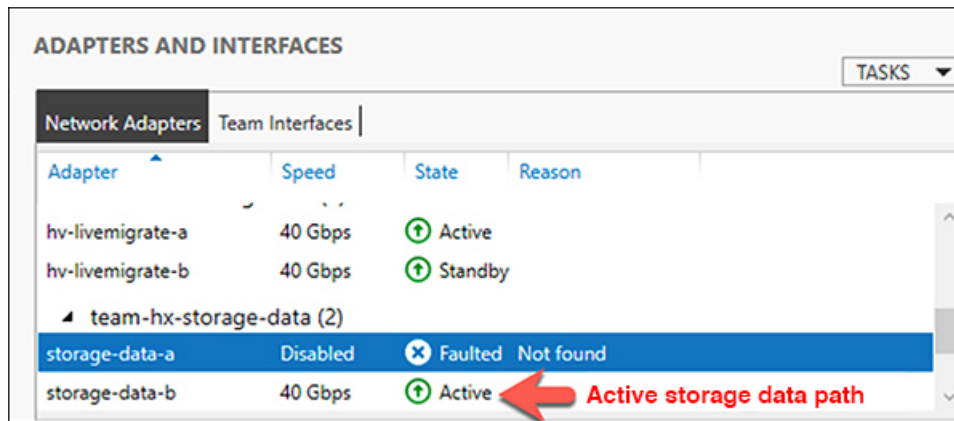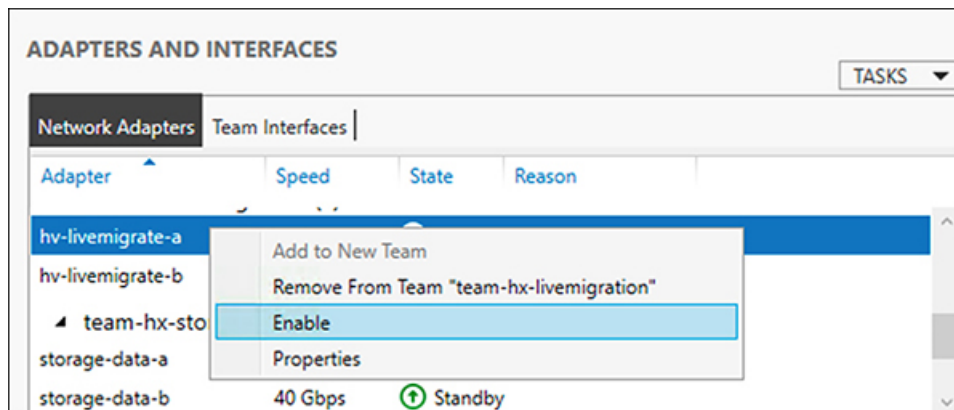
Step 5   Test jumbo pings from local powershell window to remote host storage data ip addresses. For example:

```
# ping -f -l 8000 <data_ip_address_of_other_hosts>
```


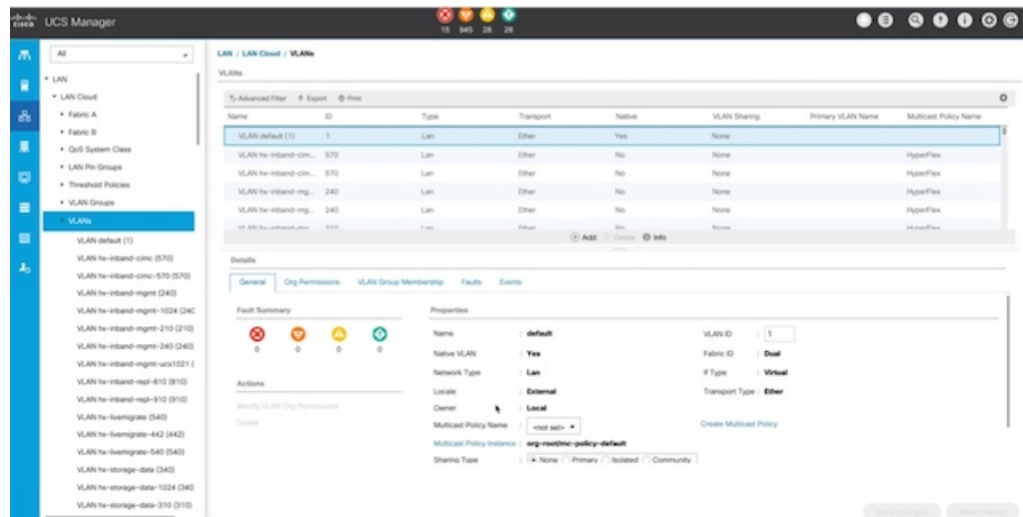**Step 6**   Reset the storage-data-a team interface to Active by right mouse-clicking and selecting **Enable**.

Adding VLANs after Installation

To add a VLAN to your cluster after installation is complete, perform the following:
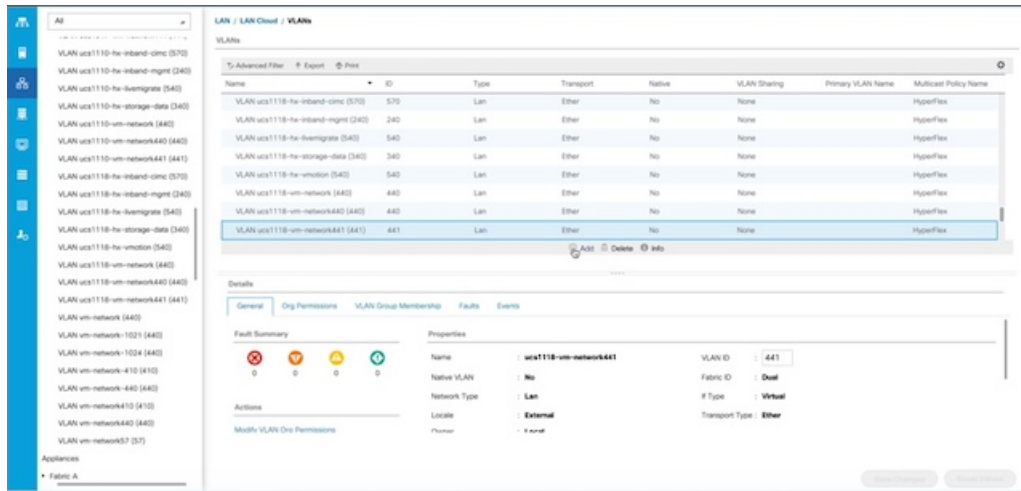
Procedure

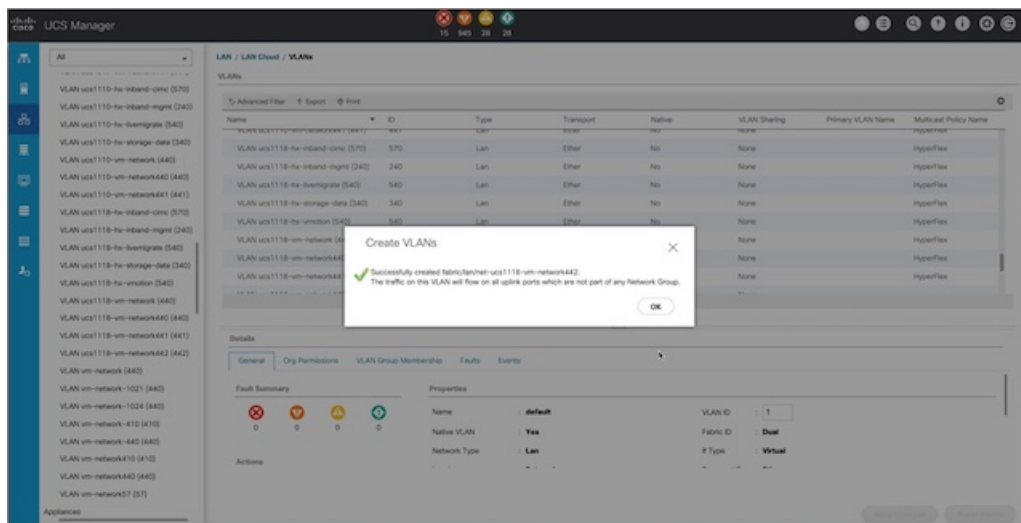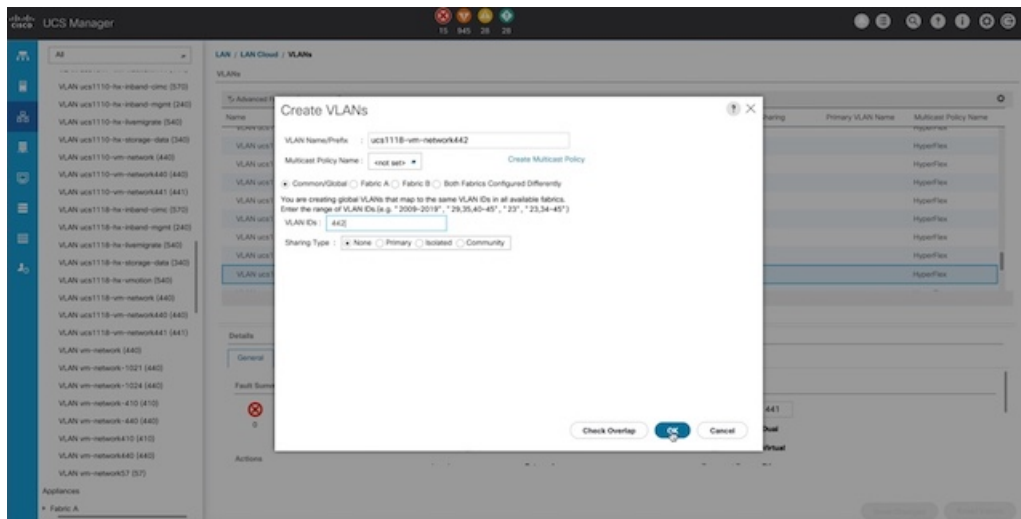**Step 1** In Cisco UCS Manager, navigate to **LAN** > **LAN Cloud** > **VLANs**:

Step 2 To add a new VLAN, click on the **Add** sign at the bottom of the VLAN table:

Step 3   Enter the **VLAN Name/Prefix** and **VLAN IDs**:

Step 4 Tag the new VLAN on the required Hyper-V VMs.

Note • There is no additional Hyper-V networking configuration needed.