Installation

Installation Tasks Summary

Microsoft Hyper-V Installation consists of the following steps:

Deploying HX Data Platform Installer

Deploy HX Data Platform Installer using **Microsoft Hyper-V Manager** to create a HX Data Platform Installer virtual machine.

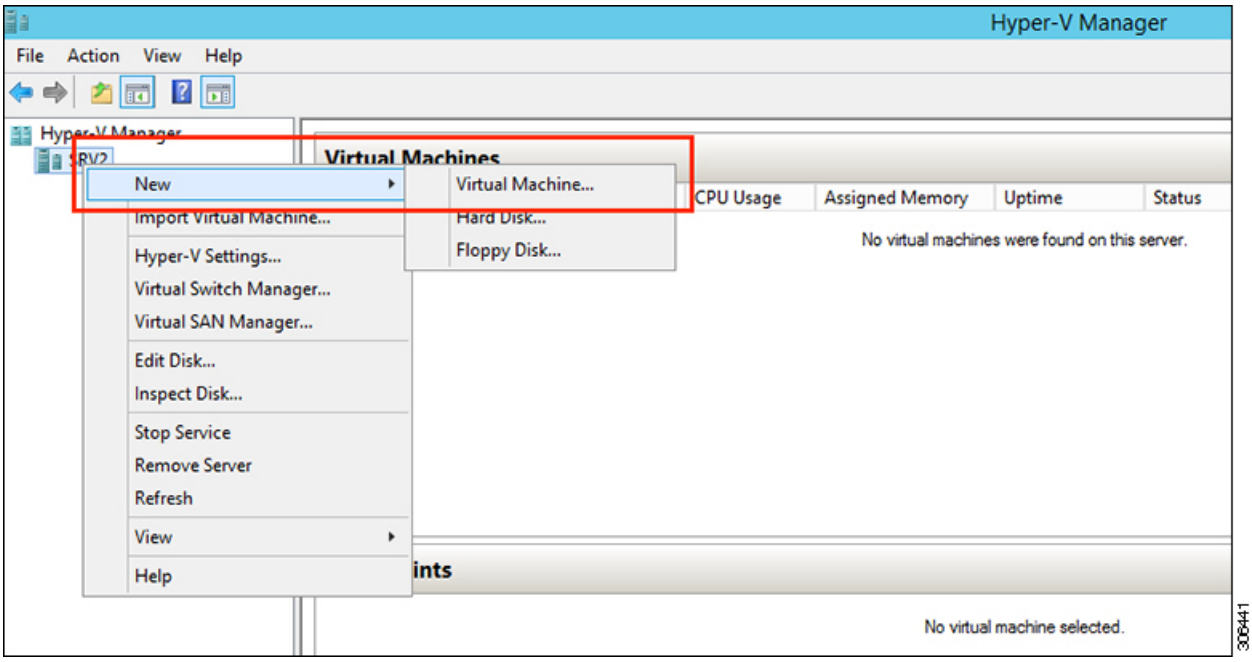
Procedure

Step 1 Locate and download the HX Data Platform Installer `.vhdx` zipped file (for example, **`Cisco-HX-Data-Platform-Installer-v3.5.1a-build-hyperv.vhdx.zip`**) from the Cisco Software Downloads site.

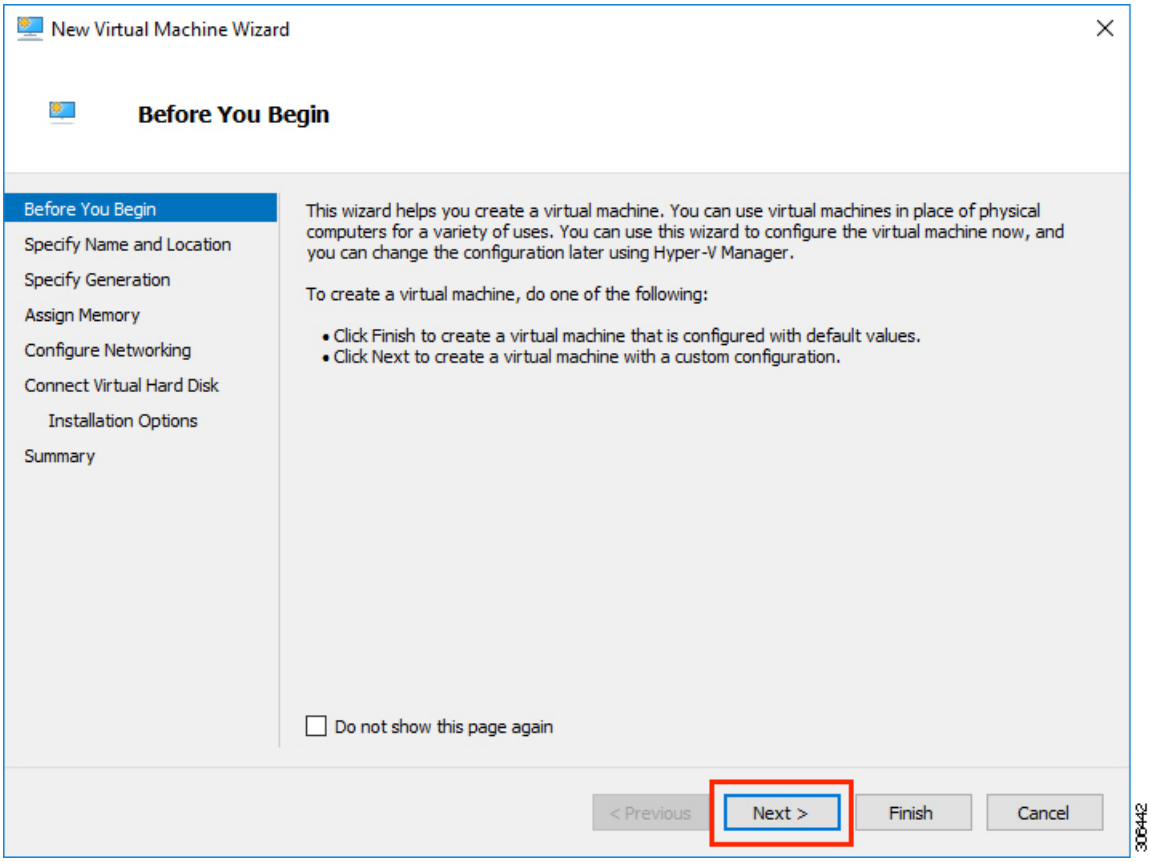
Step 2 Extract the zipped folder to your local computer and copy the `.vhdx` file to the Hyper-V host where you want to host the HX Data Platform Installer. For example, `\\hyp-v-host01\....\HX-Installer\Cisco-HX-Data-Platform-Installer-v3.5.1a-29499-hyperv.vhdx`

Step 3 In **Hyper-V Manager**, navigate to one of the Hyper-V servers.

Step 4 Select the Hyper-V server, and right click and select **New** > **Create a virtual machine**. The Hyper-V Manager New Virtual Machine Wizard displays.

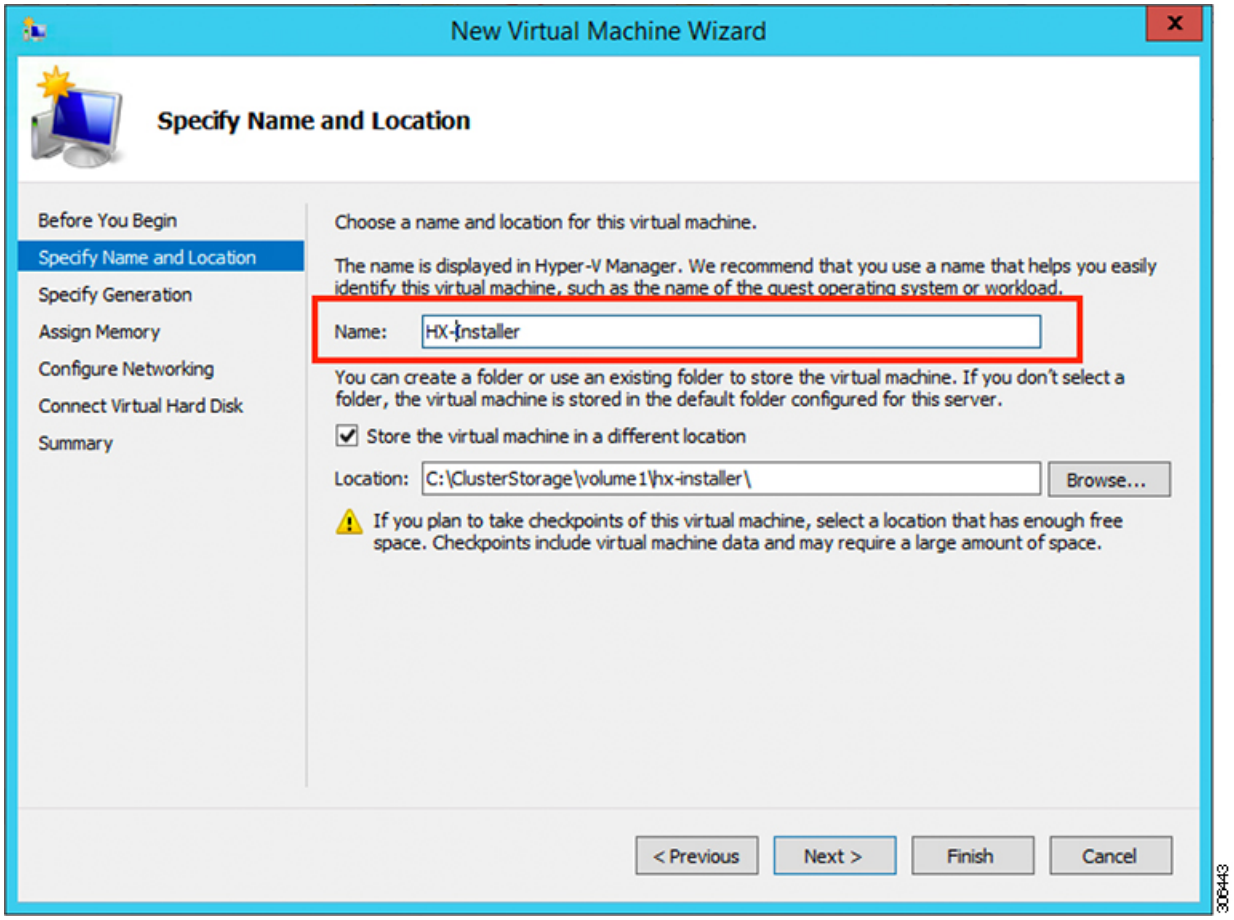


Step 5 In the **Before you Begin** page, click **Next**.

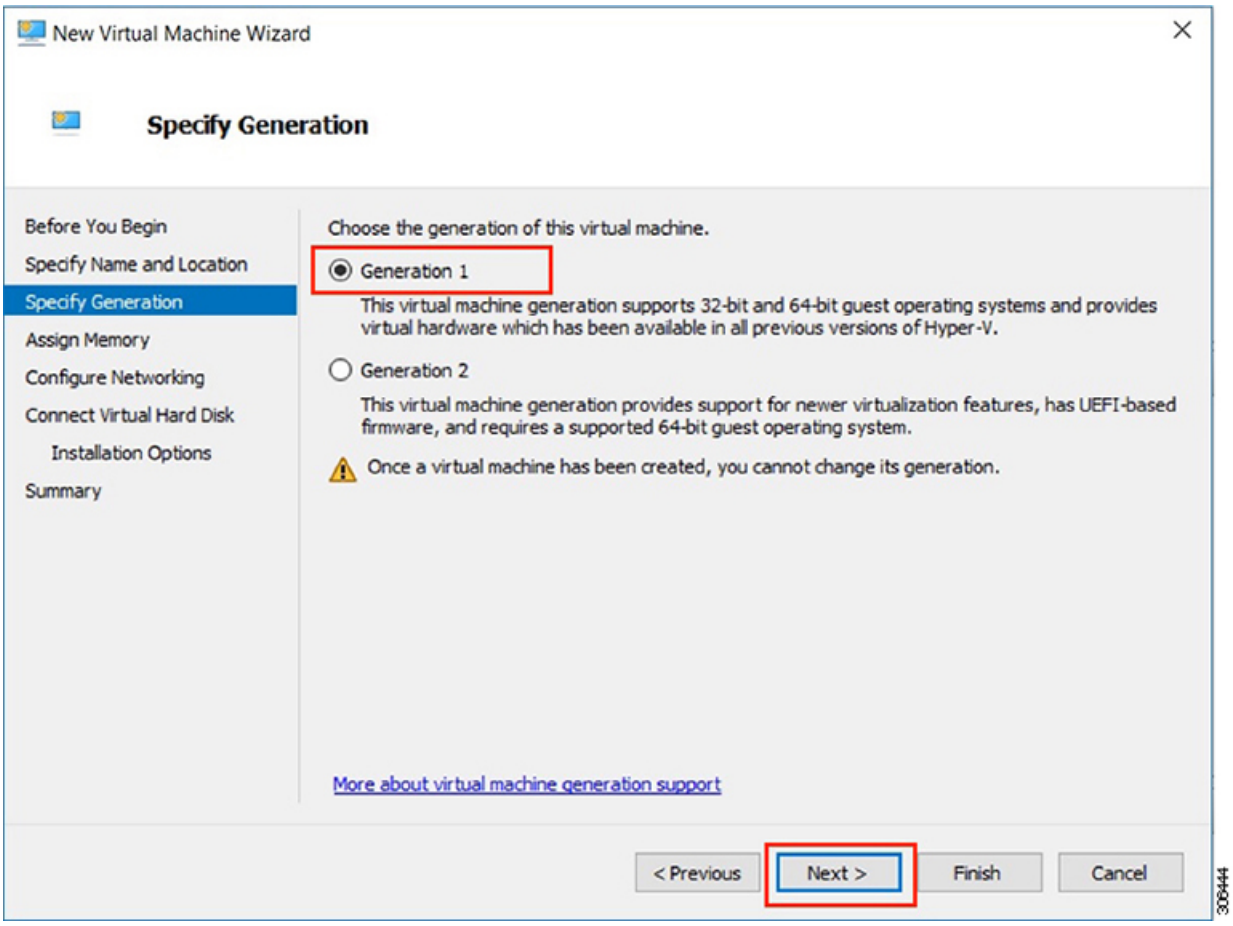


Step 6 In the **Specify Name and Location** page, enter a name and location for the virtual machine where the virtual machine configuration files will be stored. Click **Next**.

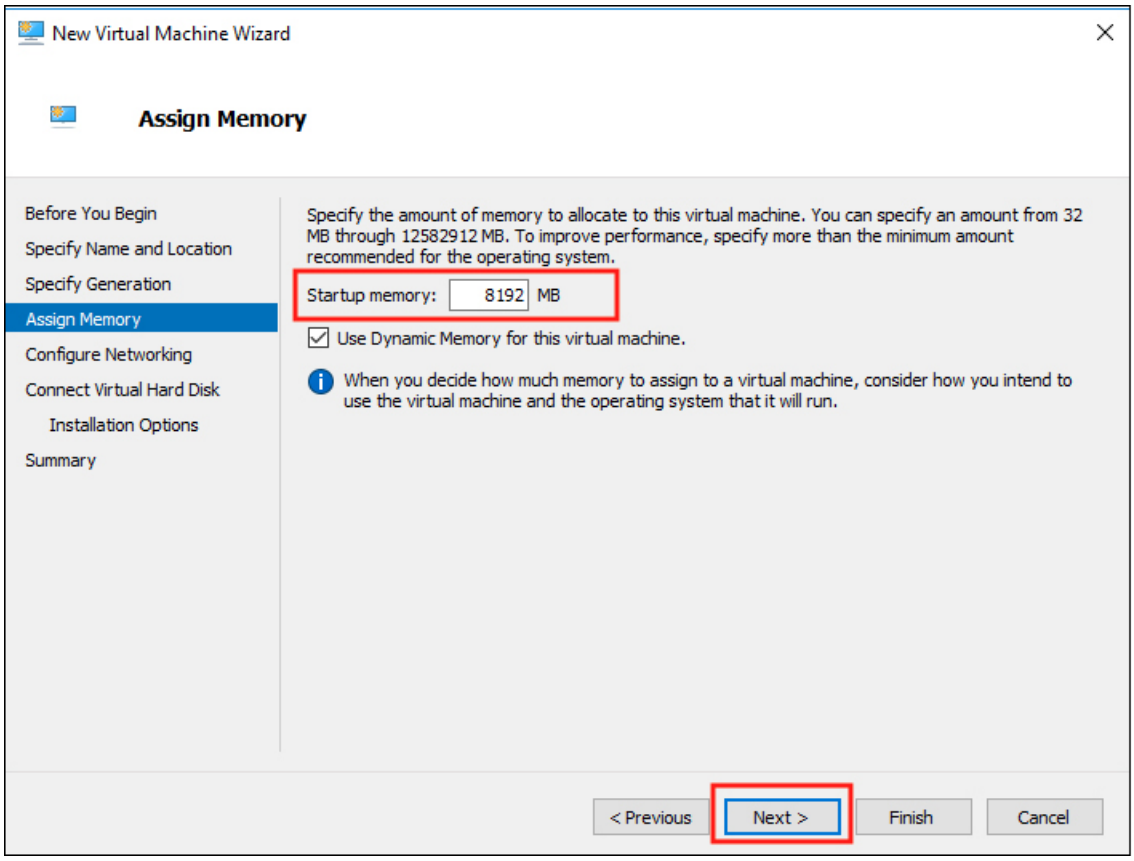
Note As a best practice, store the VM together with the `.vhdx` file.



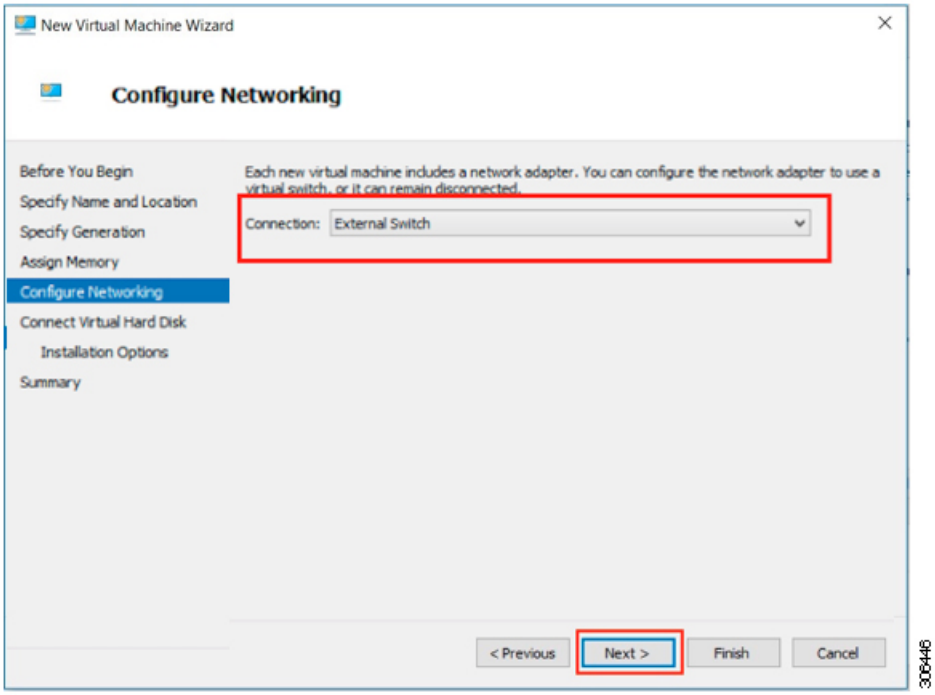
Step 7 In the **Specify Generation** page, select **Generation 1**. Click **Next**. If you select Generation 2, the VM may not boot.



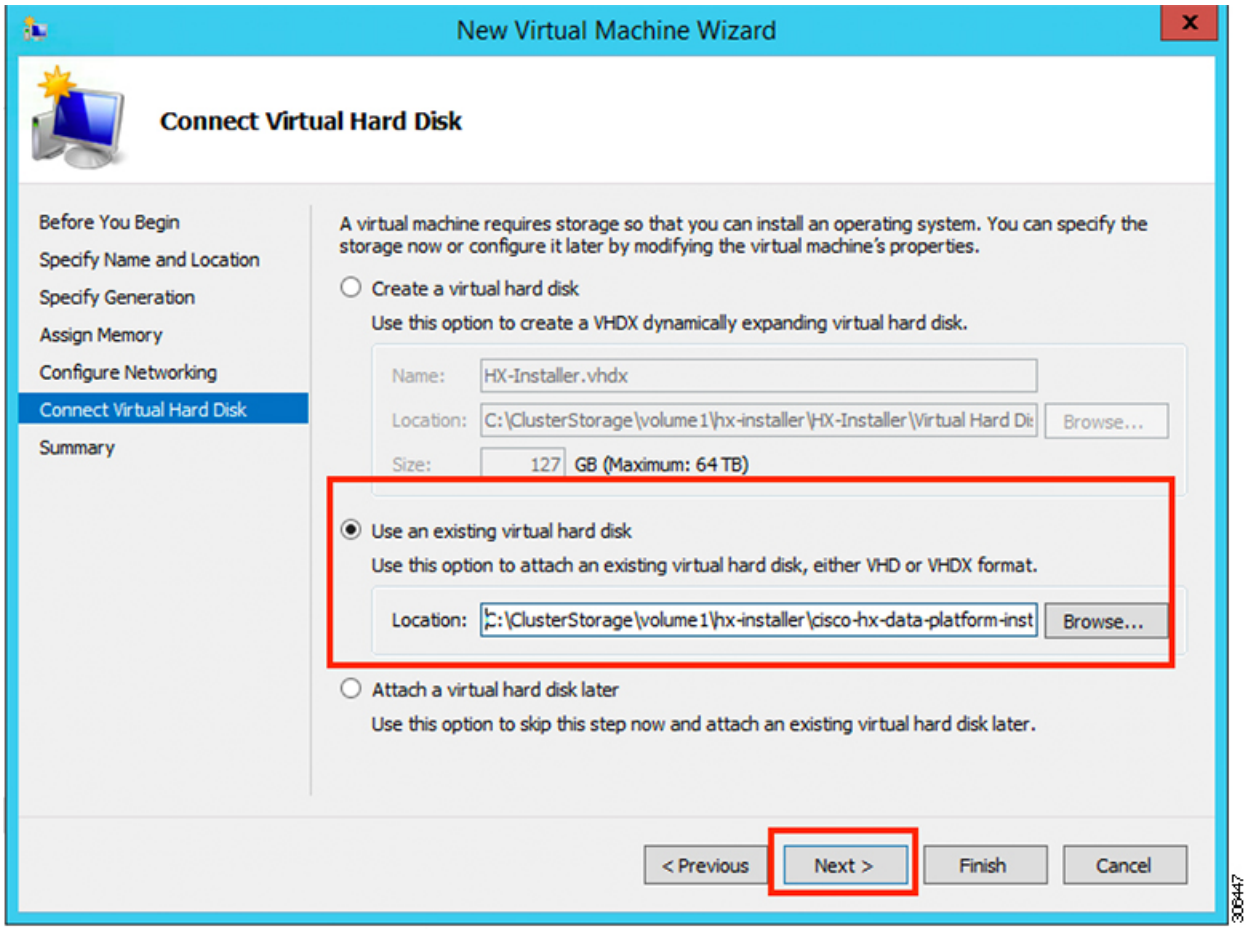
Step 8 In the **Assign Memory** page, set the start up memory value to `4096 MB`. Click **Next**.



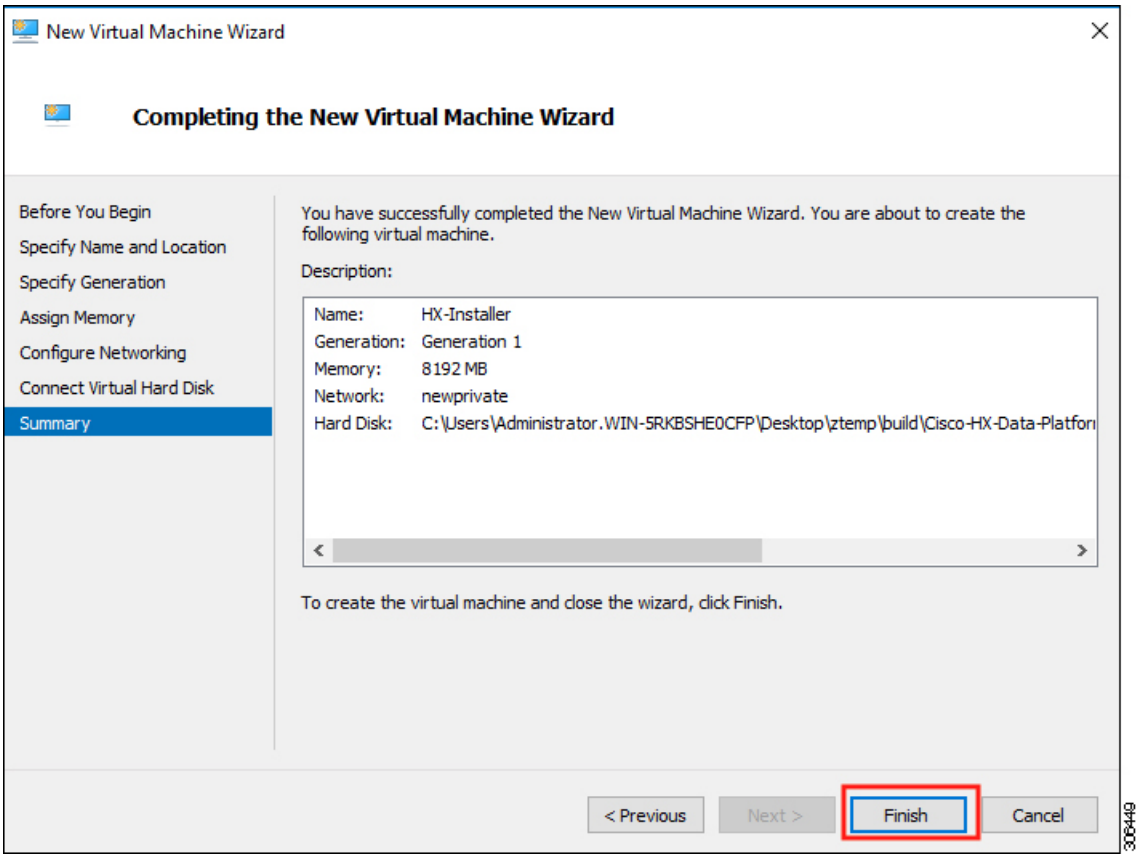
Step 9 In the **Configure Networking** page, select a network connection for the virtual machine to use from a list of existing virtual switches. Click **Next**.



Step 10 In the **Connect Virtual Hard Disk** page, select **Use an existing virtual hard disk**, and browse to the folder on your Hyper-V host that contains the `.vhdx` file. Click **Next**.



Step 11 In the **Summary** page, verify that the list of options displayed are correct. Click **Finish**.



Step 12 After the VM is created, power it ON, and launch the GUI.

a) Right-click on the VM and choose **Connect**.

b) Choose **Action** > **Start (Ctrl+S)**.

c) When the VM is booted, make a note of the URL (IP address of the VM). You will need this information in the following steps in the installation.

d) Log in using the HX Installer default credentials **Cisco123**.

Configuring a Static IP Address on HX Data Platform Installer

During a default installation of the VM, the HX Installer will try and automatically obtain an IP address using DHCP. To ensure that you have the same IP address at every boot, you can assign a static IP address on the VM

Use the following commands to configure your network interface (/etc/network/interfaces) with a static IP address. Make sure you change the relevant settings to suit your network.

Note Network guidelines are:

- Should be able to connect to the Active Directory (AD).
- Use the network to stream OS media from Hyper-V Installer to Hyper-V host for Windows Install.

Procedure

Step 1 Run the following command: **ifdown eth0**.

Warning This step ensures that the interface is down before performing the static IP configuration. Failure to do so could lead to issues during the installation process that may require TAC support.

Step 2 Using your favorite editor, edit the `/etc/network/eth0.interface` file to match your environment. For example, add the following lines in the file:

```
auto eth0 # eth0 interface
iface eth0 inet static # configures static IP for the eth0 interface
metric 100
address XX.XX.XX.XX # Static IP address fr the installer VM
netmask 255.255.0.0 # netmask for the Static IP address
gateway XX.XX.X.X # gateway for the Static IP address
dns-nameservers XX.XX.X.XXX #DNS name servers used by the HX installer
dns-search <DNS_Search_Name>.local # DNS search domain name used by the installer
```

Step 3 Save the file so that the changes take effect.

Step 4 Run the following command: **ifup eth0**

Step 5 Reboot the installer VM.

Deploying a Hyper-V Cluster

After downloading and deploying Cisco HX Data Platform Installer, perform the following procedure to deploy your Hyper-V cluster. The following subtasks are also completed as part of this procedure.

- Cisco UCS Manager configuration
- Hyper-V installation
- Windows OS Installation
- Initial cluster creation

Before you begin

Prior to deploying your Hyper-V cluster, ensure that you have the **Windows 2016 Datacenter edition ISO** or the **Windows Server 2019 Datacenter-Desktop Experience ISO** available.

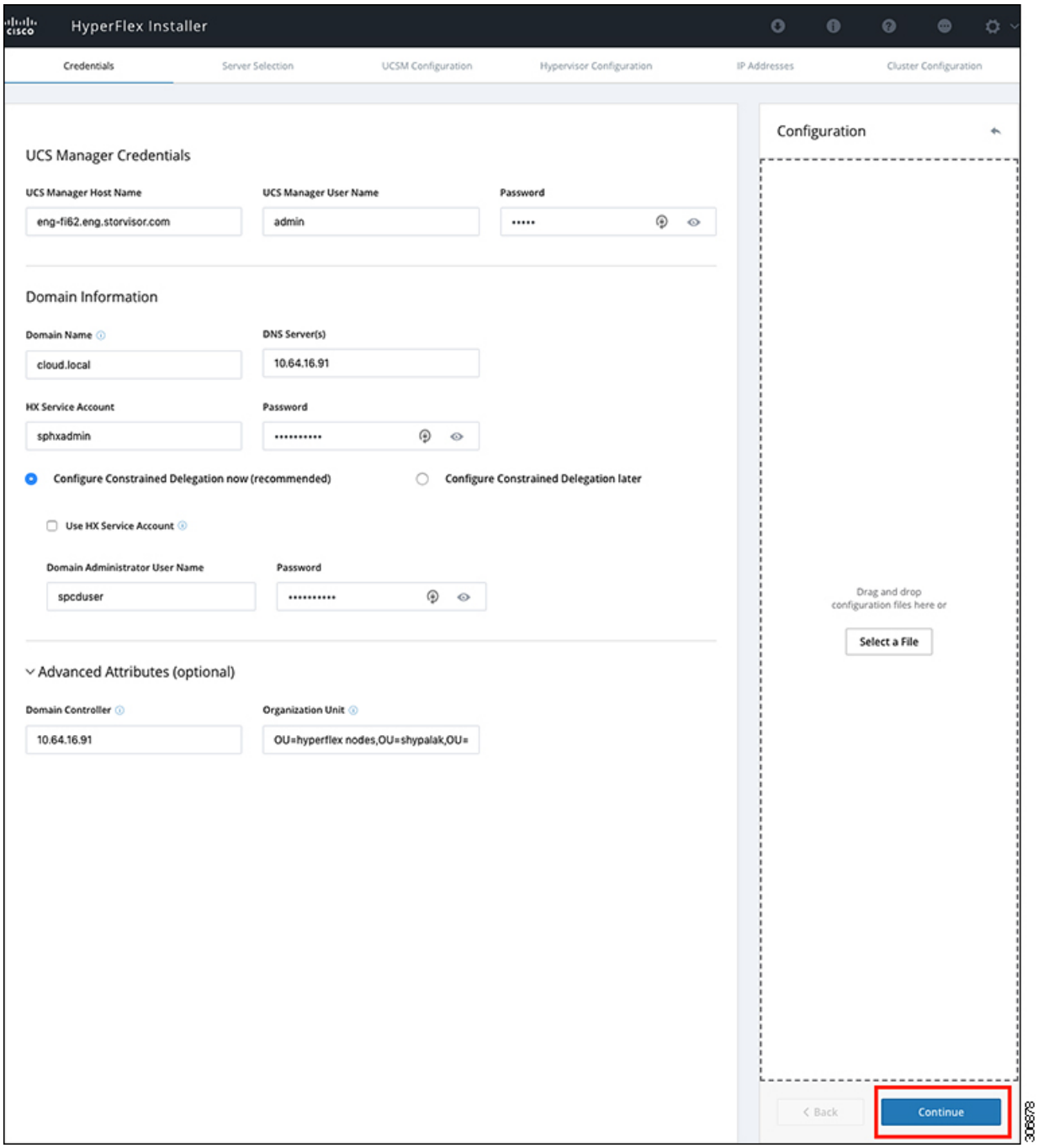
Procedure

Step 1 Launch HX Data Platform Installer and log in.

Step 2 In the **Select a Workflow** screen, click **Cluster Creation with HyperFlex (FI)**, complete information for the UCS Manager, Domain Information and Hypervisor Credentials.

Field	Description	Example Value
UCS Manager Credentials		
UCS Manager Host Name	FQDN or the IP address for UCS Manager	eng.fi356.abc.com
UCS Manager User Name	The name for the administrator or a user with UCS Manager administrator privileges.	admin
Password	The password for UCS Manager.	Xyz$1234
Domain Information		
Domain Name	Active Directory domain name that the HyperFlex cluster.	contoso.com
HX Service Account	The HX service account that was created in the preinstallation phase. HX Service account should have full access to the organizational unit used for the cluster. **Note** Verify that the Active Directory policies allow HX service account to have effective permissions to “Write servicePrincipalName” on the computer object created for smb namespace.	hxadmin
Password	Password for the HX service account.	Cisco123
Constrained Delegation		
HX Service Account	Required for Constrained Delegation. The user must be a domain administrator.	sphxadmin
Password	Password for the HX Service Account	
Configure Constrained Delegation now (recommended) or Configure Constrained Delegation later	Select one of the checkboxes. Constrained Delegation is required for VM Live Migration.	

Use the following screenshot as a reference to complete the fields in this page.



The HX Data Platform Installer now connects to UCS Manager and fetches the lists the relevant servers for the HX cluster. The HX Data Platform Installer now validates UCS Firmware.

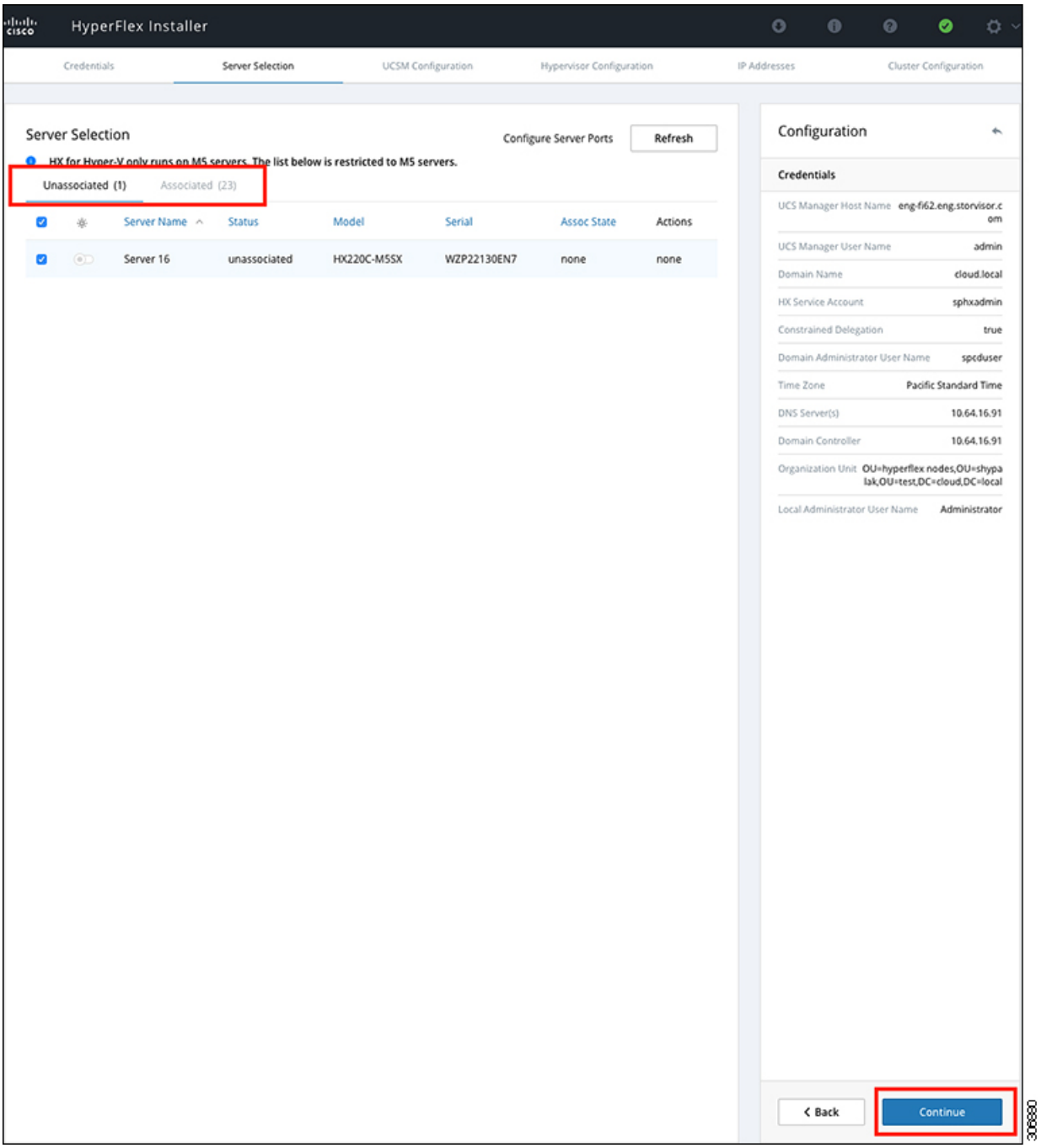
Click **Continue**.

Step 3 On the **Server Selection** page, view all the associated and unassociated servers under the **Associated** and **Unassociated** tabs respectively.

Under the **Unassociated** tab, you can choose to add any nodes to the existing cluster.

Under the **Associated** tab, you can choose to unassociate servers from the existing cluster.

Use the following screenshot as a reference to complete the fields in this page.



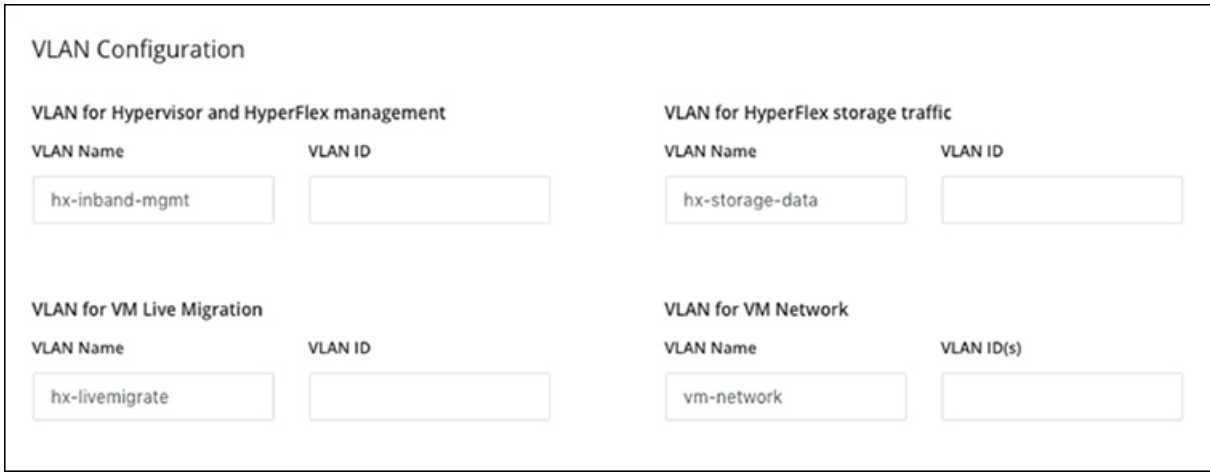
Click **Continue**.

Step 4 On the **UCSM Configuration** page, use the guidance below to complete the VLAN Configuration, Mac Pool, Cisco IMC access management (Out-of-band or in band) sub-sections.

a) **VLAN Configuration**—A minimum of 4 VLANs are required, and each VLAN needs to be on a different IP subnet and extended from the fabric interconnects to the connecting uplink switches. This will ensure that traffic can flow from the Primary Fabric Interconnect (Fabric A) to the Subordinate Fabric Interconnect (Fabric B).

Use the following table and illustration as reference for entering values in this screen.

Example VLAN Name	Example VLAN ID	Usage
hx-inband-mgmt	10	Hyper-V and HyperFlex VM Management.
hx-storage-data	20	HyperFlex Storage traffic
hx-livemigrate	30	Hyper-V Live Migration network
vm-network	100,101	VM guest network



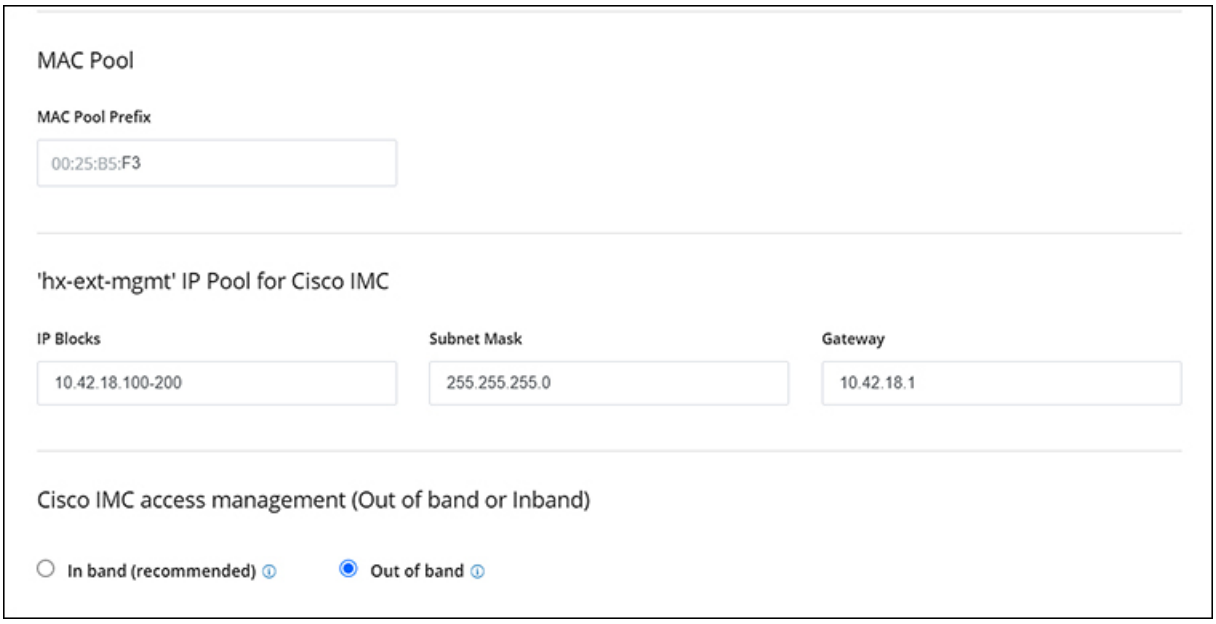
Note The use of VLAN 1 may cause issues with disjoint layer 2.

The `vm-network` can be multiple VLANs added as a comma separated list.

b) **MAC Pool**— Use the following table and illustration to complete the remaining network configuration settings.

Field	Description	Example Value
MAC pool prefix	MAC address pool for the HX cluster, to be configured in UCS Manager by HX Installer. Ensure that the mac address pool is not used anywhere else in your layer 2 environment.	00:25:b5:xx
IP blocks	The range of IP addresses that are used for Out-Of-Band management of the HyperFlex nodes.	10.193.211.124-127
Subnet Mask	The subnet mask for the Out-Of-Band network.	255.255.0.0
Gateway	The gateway address for the Out-Of-Band network.	10.193.0.1

Field	Description	Example Value
Cisco IMC access management	In-band or Out of band	Out of band



Step 5 If you want to add external storage, use the guidance below:

a) Configure **iSCSI Storage** by completing the following fields:

Field	Description
Enable iSCSI Storage check box	Select to configure iSCSI storage.
VLAN A Name	Name of the VLAN associated with the iSCSI vNIC, on the primary Fabric Interconnect (FI-A).
VLAN A ID	ID of the VLAN associated with the iSCSI vNIC, on the primary Fabric Interconnect (FI-A).
VLAN B Name	Name of the VLAN associated with the iSCSI vNIC, on the subordinate Fabric Interconnect (FI-B).
VLAN B ID	ID of the VLAN associated with the iSCSI vNIC, on the subordinate Fabric Interconnect (FI-A).

b) Configure **FC Storage** by completing the following fields:

Field	Description
Enable FC Storage check box	Select to enable FC Storage.

Field	Description
WWxN Pool	A WWN pool that contains both WW node names and WW port names. For each Fabric Interconnect, a WWxN pool is created for WWPN and WWNN.
VSAN A Name	The name of the VSAN for the primary Fabric Interconnect (FI-A). Default—`hx-ext-storage-fc-a`.
VSAN A ID	The unique identifier assigned to the network for the primary Fabric Interconnect (FI-A). **Caution** Do not enter VSAN IDs that are currently used on the UCS or HyperFlex system. If you enter an existing VSAN ID in the installer which utilizes UCS zoning, zoning will be disabled in your existing environment for that VSAN ID.
VSAN B Name	The name of the VSAN for the subordinate Fabric Interconnect (FI-B). Default—`hx-ext-storage-fc-b`.
VSAN B ID	The unique identifier assigned to the network for the subordinate Fabric Interconnect (FI-B). **Caution** Do not enter VSAN IDs that are currently used on the UCS or HyperFlex system. If you enter an existing VSAN ID in the installer which utilizes UCS zoning, zoning will be disabled in your existing environment for that VSAN ID.

Step 6 On the **Hypervisor Configuration** page, complete the following fields.

Field	Description	Example Value
Bare metal configuration		
Install Hypervisor (Hyper-V)	By default, the Install Hypervisor (Hyper-V) checkbox is selected for Windows OS installation on a bare metal node. Click **Browse** to select and upload the ISO file. Alternatively, drag and drop the ISO file into the area.	
Select the operating system you want to install	The operating system to install can be one of the following: • Windows Server 2016 Datacenter (Desktop Experience) • Windows Server 2016 Datacenter (CORE)	
Configure common Hypervisor Settings		
Subnet Mask	Subnet mask for the hypervisor hosts management network	255.255.255.0
Gateway	Default gateway for the hypervisor hosts management network	10.101.251.1

Field	Description	Example Value
DNS Servers	Comma separated list for the DNS Servers in the AD that the hypervisor hosts are going to be member of.	10.99.2.200,10.992.201
Hypervisor Settings		
Static IP address	Management IP address for each host **Note** If you leave the checkbox **Make IP Addresses and Hostnames Sequential** as checked then the installer will automatically fill the rest of the servers sequential from the first.	10.101.251.41
Hostname	Hostname for each host	HX-Hypv-01

Click **Continue**.

Step 7 **HX Data Platform Deployment**

Field	Description	Example Value
Domain Information		
Domain Name	Active Directory Domain that the cluster will be a part of.	contoso.com
HX Service Account	The HX service account that was created in the preinstallation phase. **Important** Verify that the Active Directory policies allow HX service account to have effective permissions to "**Write servicePrincipalName**" on the computer object created for **smb** namespace.	hxadmin
Password	Password for the HX service account.	
Constrained Delegation		
HX Service Account and Password	Required for Constrained Delegation.	
Use HX Service Account	Uses the HX service account for Constrained Delegation. The user must be a domain administrator.	Click checkbox if HX service account is provided.

Field	Description	Example Value
Configure Constrained Delegation now (recommended) or Configure Constrained Delegation later	Select one of the checkboxes. Constrained Delegation is required for VM Live Migration. To configure Constrained Delegation later, use the procedure described in Configuring a Static IP Address for Live Migration and VM Network.	
Advanced Attributes (optional)		
Domain Controller	FQDN for the Domain Controller that you want to use specifically for the installation.	dc.contoso.com
Organization Unit	The OU created during the preinstallation phase can be used here Then, the OU will be the home for the HX nodes in the Active Directory.	OU=HyperFlex, DC=contoso, DC=com
Hypervisor Credentials		
Hypervisor Local Administrator User Name	Local administrator username on the Hyper-V hosts	Default username/password: administrator/Cisco123 **Important** Systems ship with a default password of `Cisco123` that must be changed during installation. You cannot continue installation unless you specify a new user supplied password.

Click **Continue**.

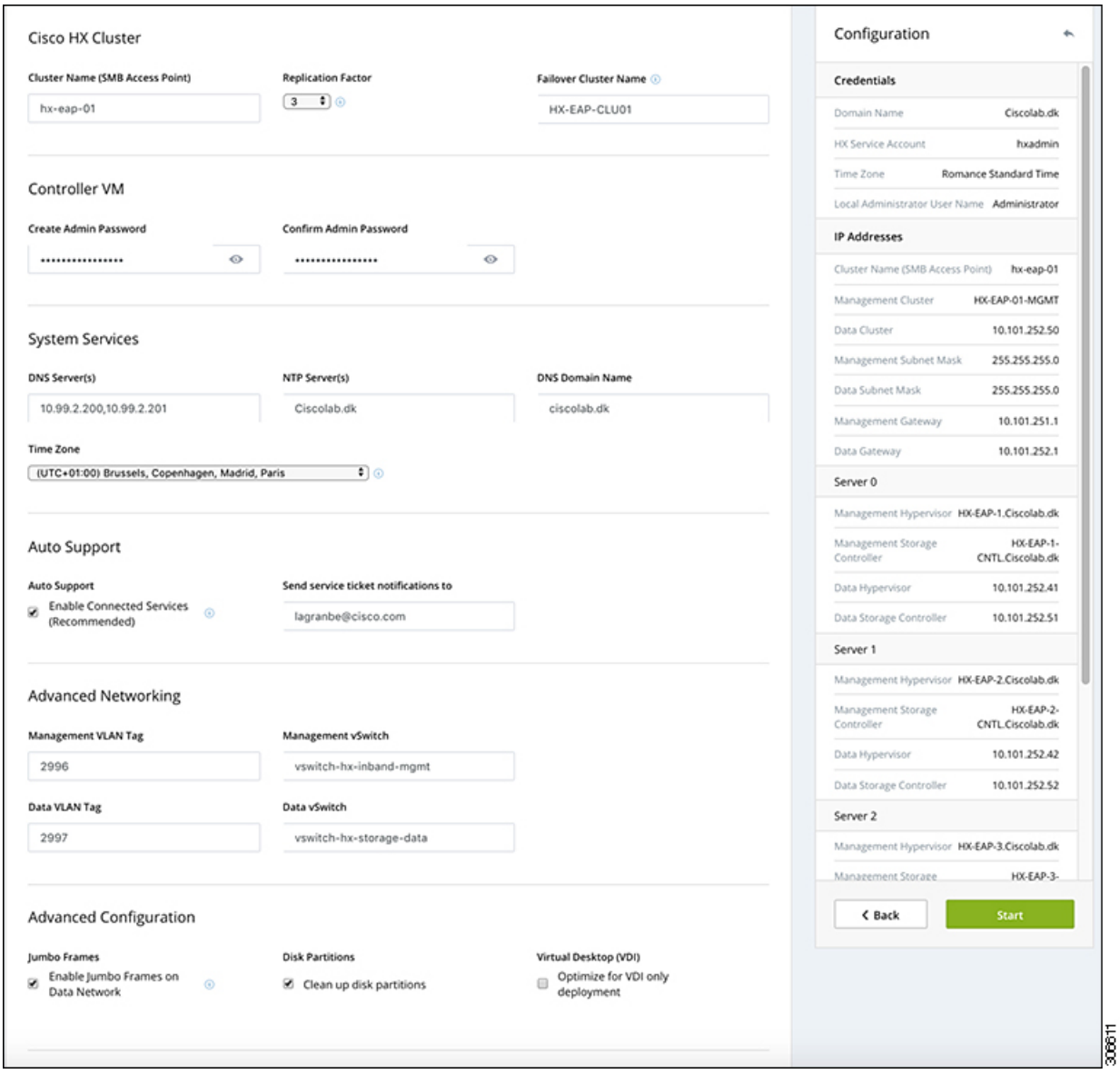
Step 8 On the **IP Addresses** page, use the table below to complete the fields in this page.

Field	Description	Example Value
Cisco HX Cluster		
Cluster Name (SMB Access Point)	The cluster name to be used as the FQDN for the datastores.	HX-EAP-01
Replication Factor	Select the number of redundant data replicas across the HX storage cluster. Options are 2 or 3. This cannot be changed after the cluster is created. 3 is recommended for production workloads.	3 (Default Value)

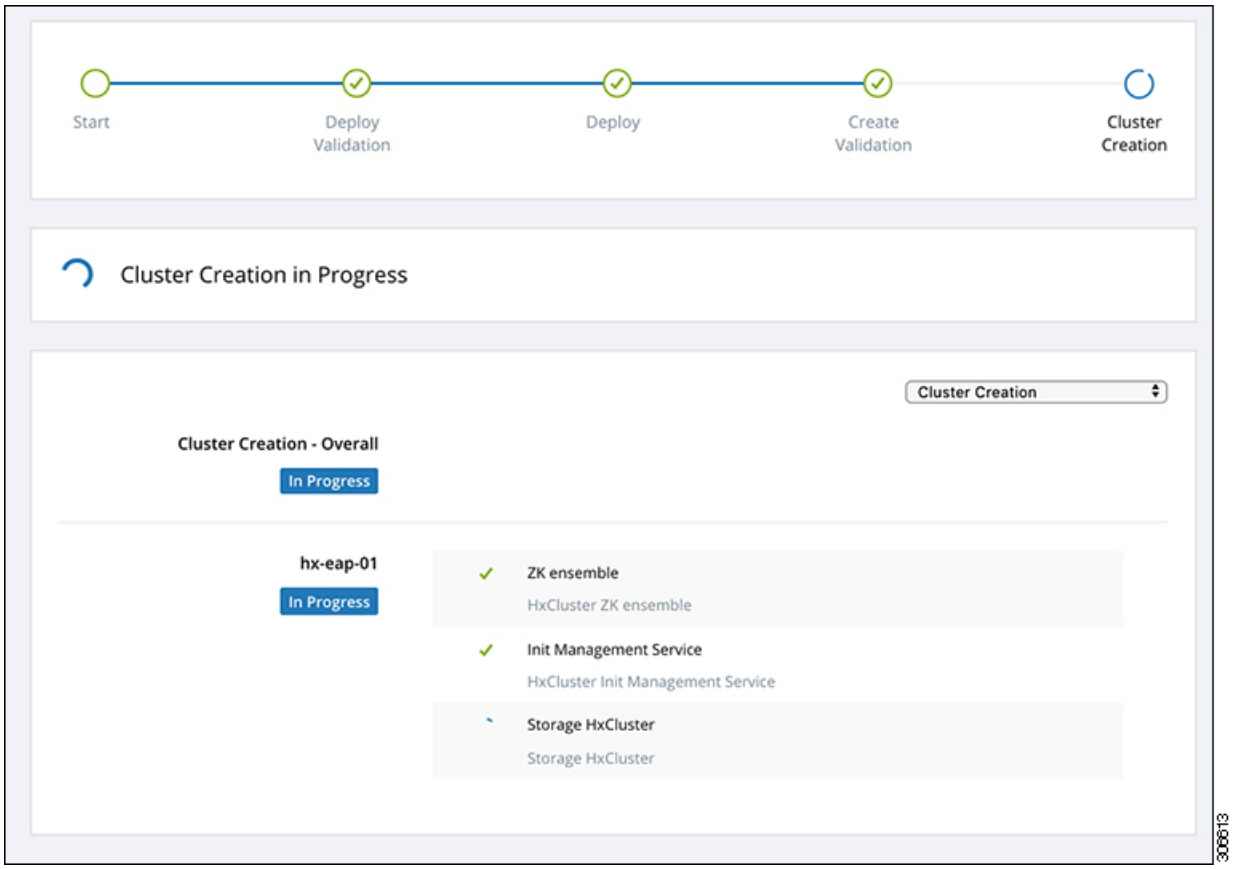
Field	Description	Example Value
Failover Cluster Name	The name used for the Windows Failover Cluster.	
Controller VM		
Create Admin Password		
Confirm Administrator Password		
System Services		
DNS Servers	Comma separated lists of DNS Servers.	10.99.2.200, 10.99.2.201
NTP Servers	The controller VMs needs must be in sync with Windows Active Directory, therefore you must point to your AD domain controllers for time synchronization.	dc1.contoso.com, dc2.contoso.com
DNS Domain Name	The domain name for the Active Directory.	contoso.com
Timezone	The timezone that you want the HX controllers to report in.	
Auto Support		
Enable Connected Services	Auto Support to ship telemetry data of the HX cluster to Cisco Support.	
Send Service ticket to	Email address or alias to receive a copy of the ticket sent to Cisco.	*email_address*
Advance Networking		
Management VLAN tag	VLAN used for the Management Network. This must be the same as used earlier in the installation process for the management network.	
Data VLAN tag	VLAN used for the Management network. This must be the same as used earlier in the installation process for the data network.	
Advanced Configuration		
Enable Jumbo Frames on Data network	Sets the MTU size for the storage data network on the host vSwitches and vNICs, and each storage controller VM. The default value is 9000. Ensure that jumbo frames run on the links connected to the storage VMs.	

Field	Description	Example Value
Disk Partitions	Removes all existing data and partitions from all nodes added to the storage cluster. You must backup any data that should be retained. Select this option to delete existing data and partitions. This is for manually prepared servers. Do not select this option for factory prepared systems. The disk partitions on factory prepared systems are properly configured.	
VDI	Configures for VDI only environments. To change the VDI settings after the storage cluster is created, shutdown or move the resources, make changes, and restart the cluster.	
Hypervisor Settings		
Primary DNS suffix	Completed in earlier steps in the installation.	
Additional DNS suffixes	Complete this field if you need more suffices appended on your Hyper-V hosts.	

Refer to the illustration below as a sample entries for the various fields in this page.



Step 9 Click **Start** to begin the deployment. The **Progress** page displays the progress of the configuration tasks: Start, Deploy Validation, Deploy, Create Validation, Cluster Creation.



Best Practices

Common best practices for Cisco HyperFlex with Microsoft Hyper-V installations are listed below.

- Do not perform updates to your Windows system out of band with regards to Cisco HyperFlex.
- If you are using Group Policy settings to configure the behavior of Windows Update (WU), ensure that they do not override the default settings configured by Cisco HyperFlex. Do not configure policies that specify downloading updates automatically and installing them on a schedule.

Note By default, Cisco HyperFlex disables automatic updates. The AU Options value is set to **2**: Notify of download and installation. For more information about Windows update settings, see Manage additional Windows Update settings.