



# Installation

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- [Installation Tasks Summary, on page 1](#)

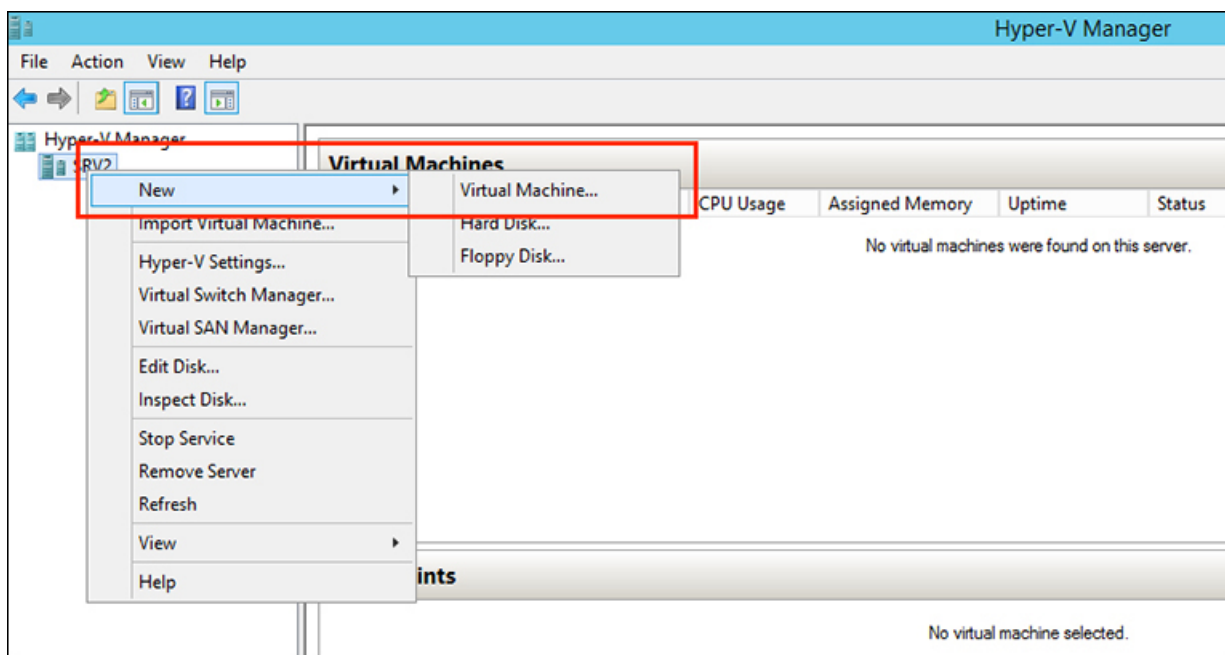
## Installation Tasks Summary

Microsoft Hyper-V Installation consists of the following steps:

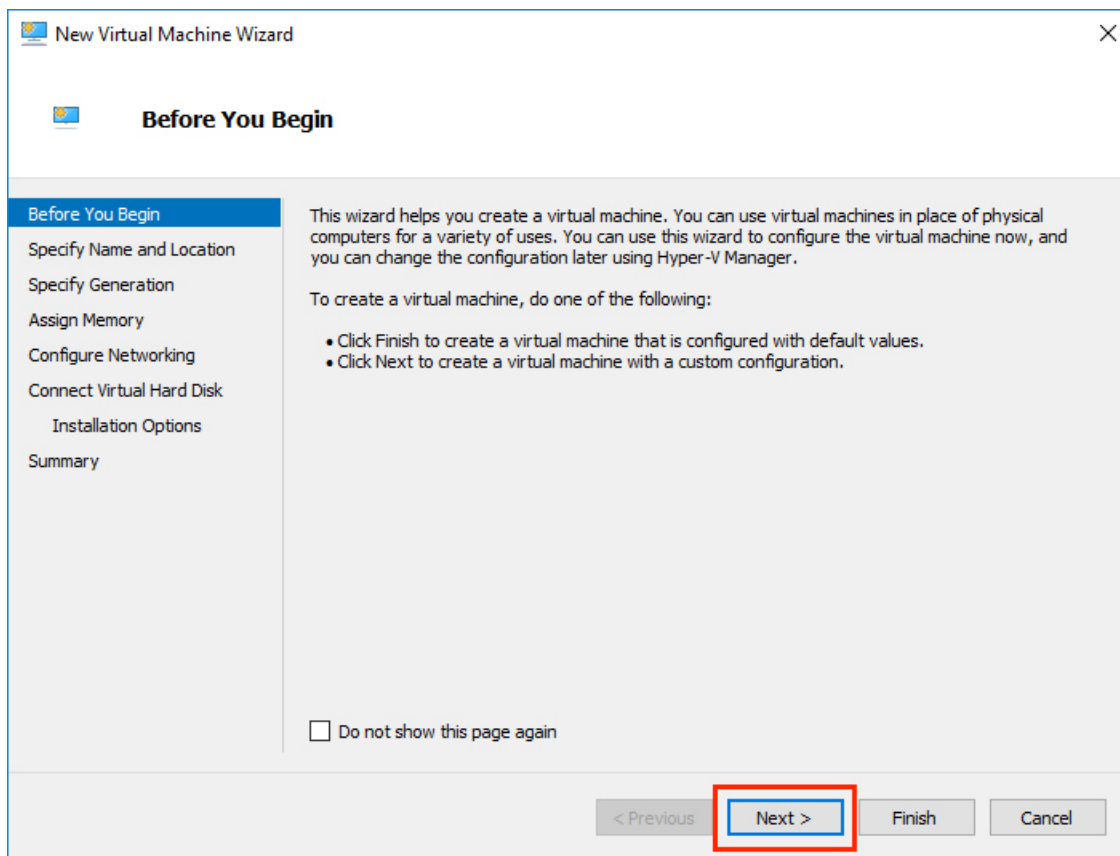
### Deploying HX Data Platform Installer

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

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- Step 1** Locate and download the HX Data Platform Installer .vhdx zipped file ( for example, **Cisco-HX-Data-Platform-Installer-v4.5.1a-33133-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-v4.5.1a-33133-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.

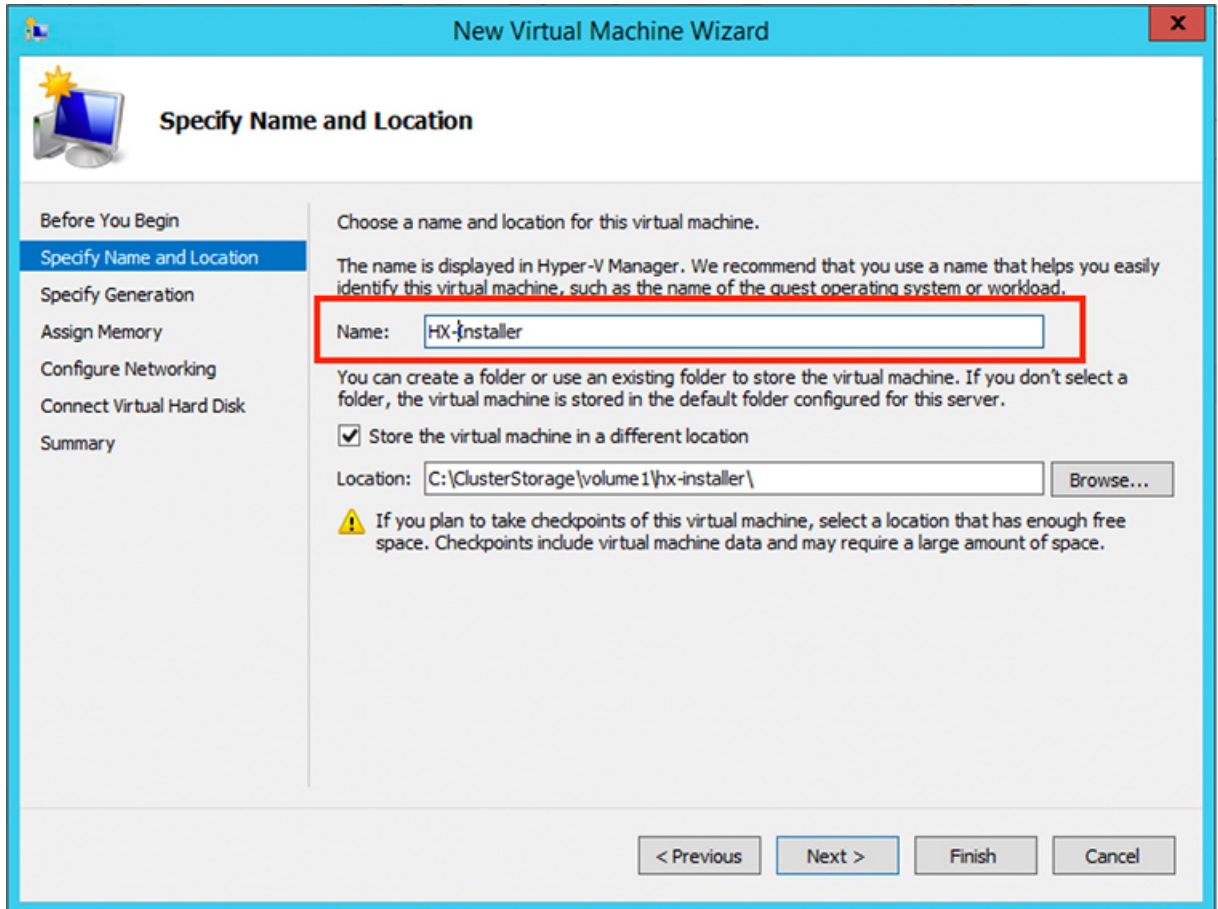


**Step 5** In the **Before you Begin** page, click **Next**.



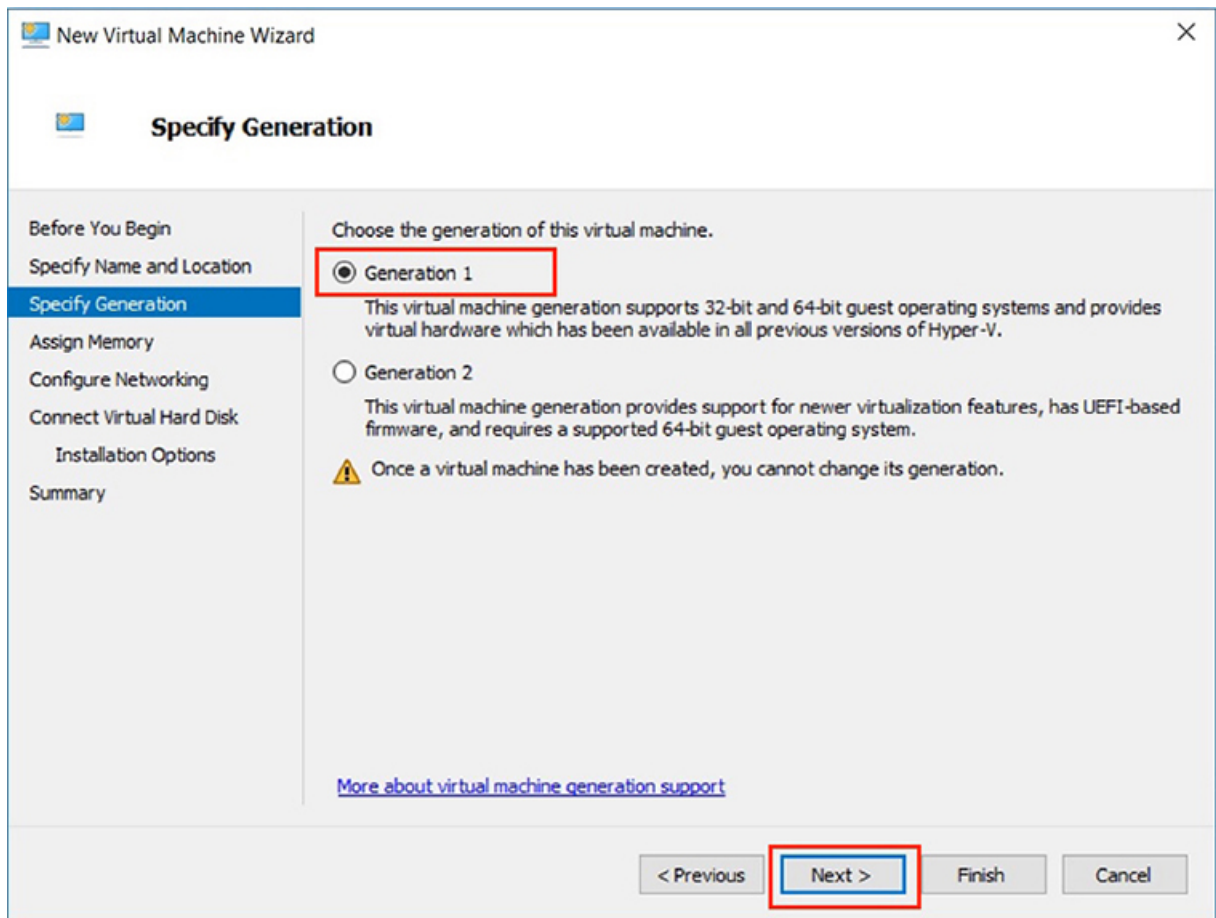
**Step 6** In the **Specify Name and Location** page, enter a name and location for the virtual machine where the virtual machine configuration files will be stored. Click **Next**.

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

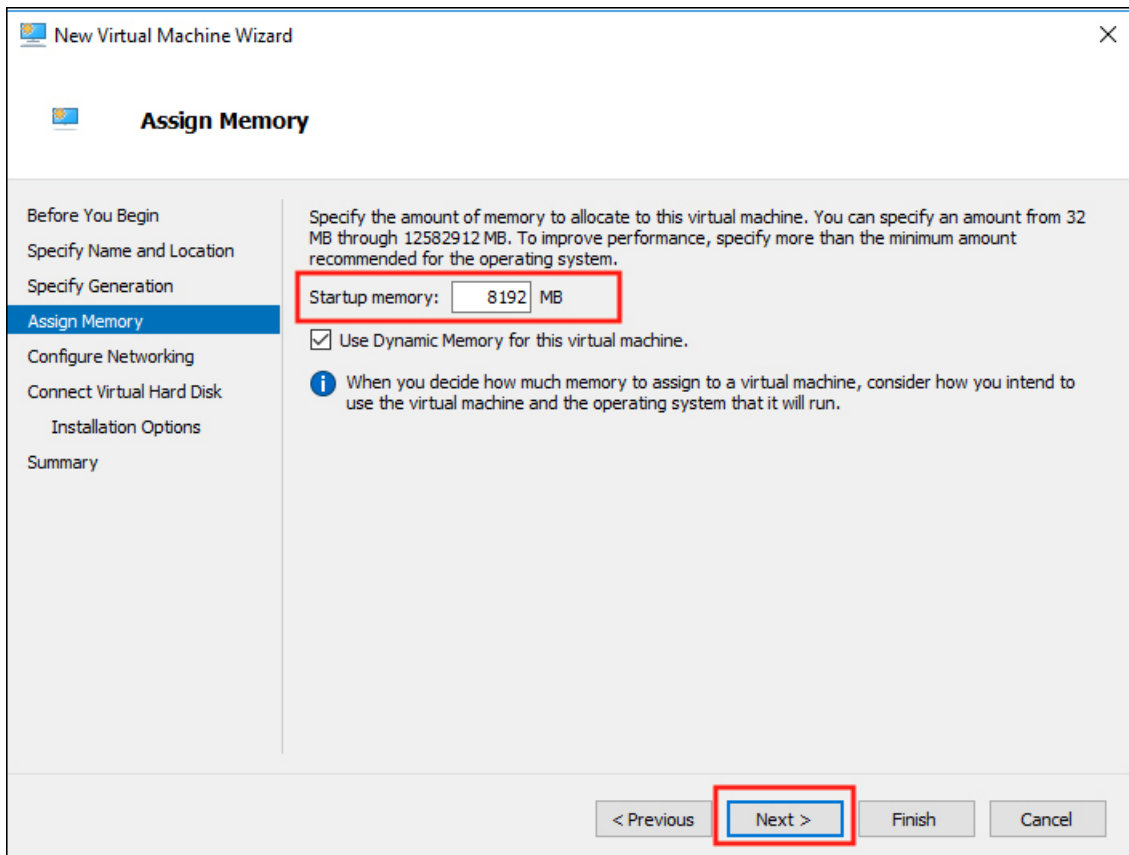


The screenshot shows the 'New Virtual Machine Wizard' dialog box, specifically the 'Specify Name and Location' step. The window title is 'New Virtual Machine Wizard'. The left sidebar contains a list of steps: 'Before You Begin', 'Specify Name and Location' (highlighted), 'Specify Generation', 'Assign Memory', 'Configure Networking', 'Connect Virtual Hard Disk', and 'Summary'. The main area contains the following text: 'Choose a name and location for this virtual machine. The name is displayed in Hyper-V Manager. We recommend that you use a name that helps you easily identify this virtual machine, such as the name of the guest operating system or workload.' Below this is a text box for 'Name' containing 'HX-Installer', which is highlighted with a red rectangle. The next section says: 'You can create a folder or use an existing folder to store the virtual machine. If you don't select a folder, the virtual machine is stored in the default folder configured for this server.' There is a checked checkbox for 'Store the virtual machine in a different location'. Below that is a text box for 'Location' containing 'C:\ClusterStorage\volume 1\hx-installer\'. At the bottom of the main area is a warning icon and text: 'If you plan to take checkpoints of this virtual machine, select a location that has enough free space. Checkpoints include virtual machine data and may require a large amount of space.' At the bottom of the dialog are four buttons: '< Previous', 'Next >', 'Finish', and 'Cancel'. A small vertical number '306443' is visible on the right edge of the dialog box.

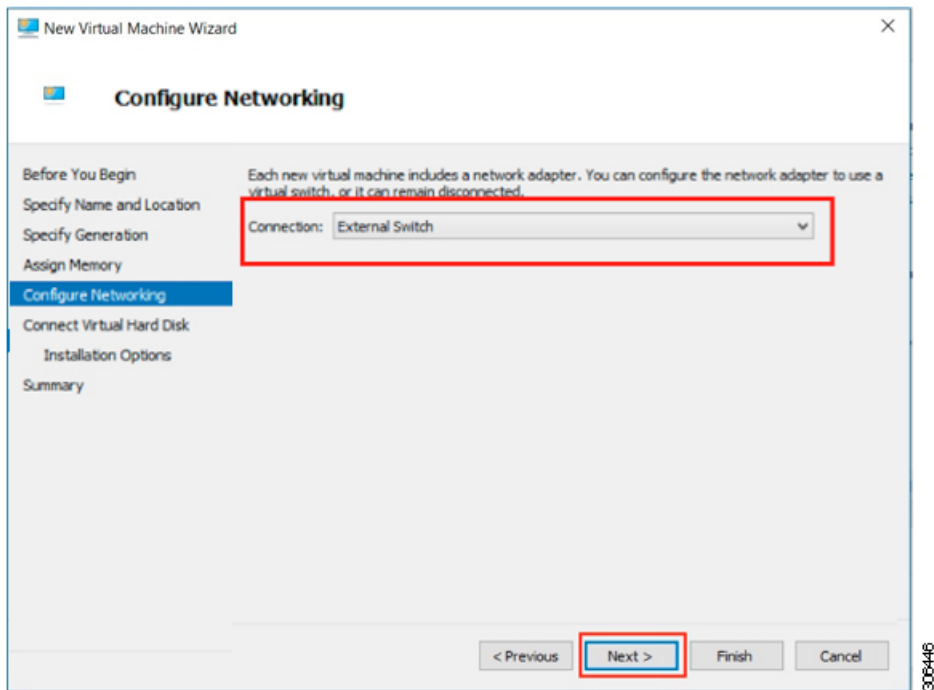
**Step 7** In the **Specify Generation** page, select **Generation 1**. Click **Next**. If you select Generation 2, the VM may not boot.



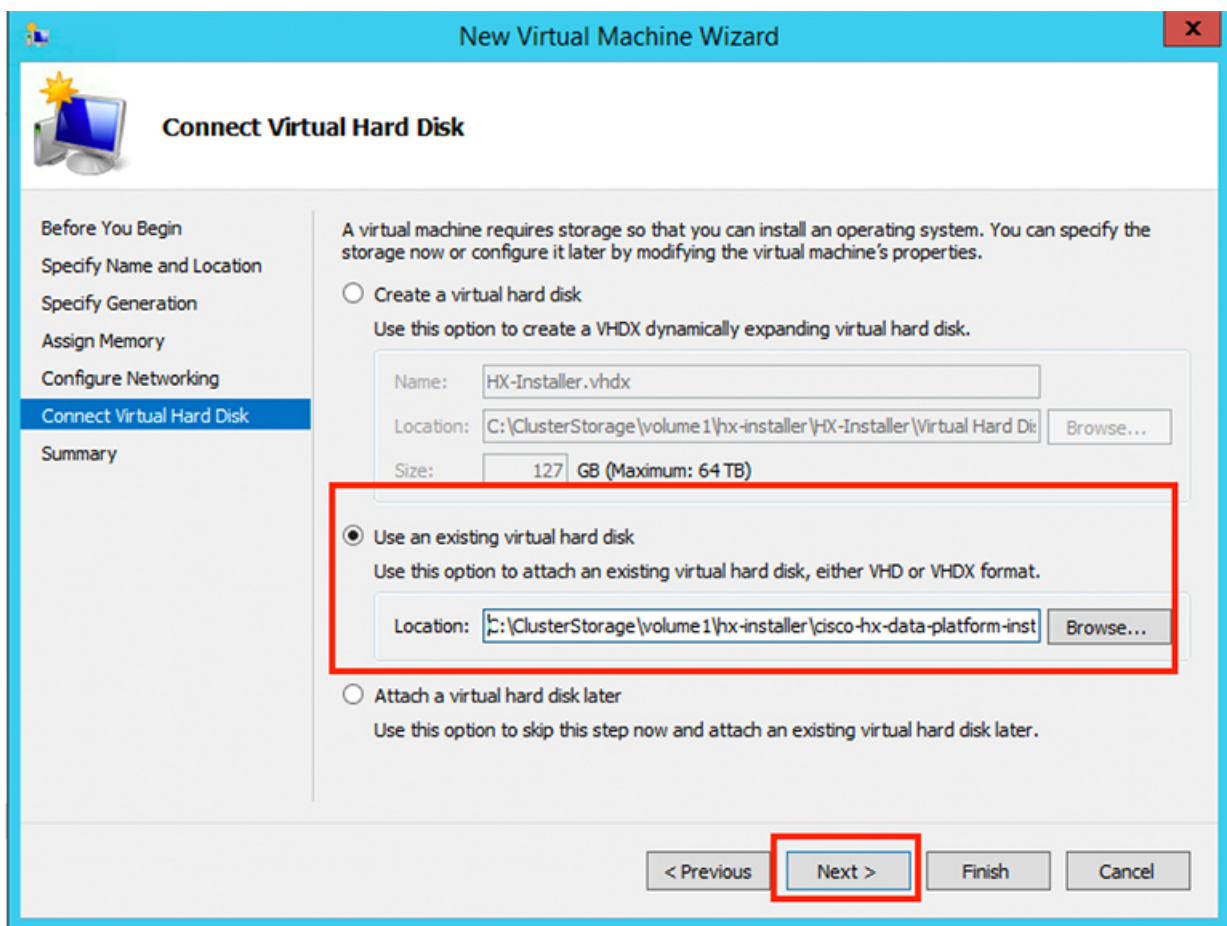
**Step 8** In the **Assign Memory** page, set the start up memory value to **4096 MB**. Click **Next**.

**Step 9**

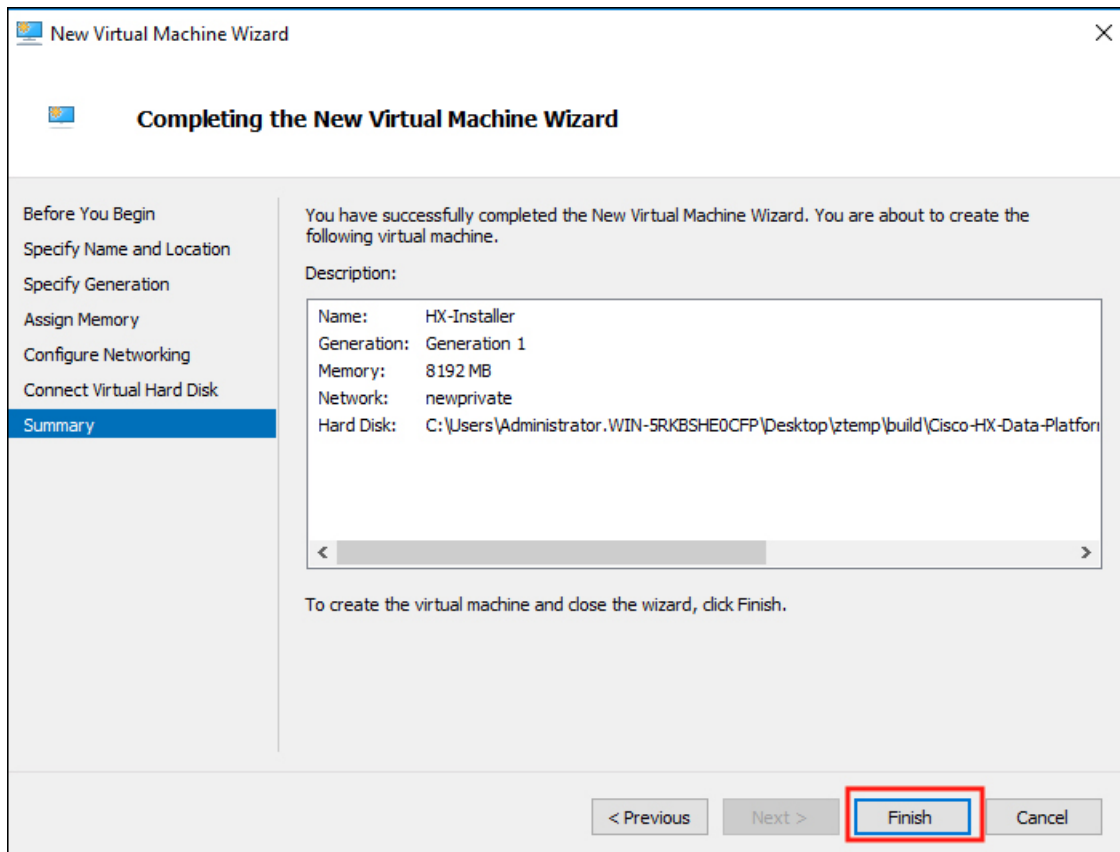
In the **Configure Networking** page, select a network connection for the virtual machine to use from a list of existing virtual switches. Click **Next**.



**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 `.vhd` 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.

- Right-click on the VM and choose **Connect**.
- Choose **Action > Start (Ctrl+S)**.
- 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.
- 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.

**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.

**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
<b>UCS Manager Credentials</b>		
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
<b>Domain Information</b>		
Domain Name	Active Directory domain name that the HyperFlex cluster.	contoso.com
HX Service Account	<p>The HX service account that was created in the preinstallation phase.</p> <p>HX Service account should have full access to the organizational unit used for the cluster.</p> <p><b>Note</b> 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.</p>	hxadmin
Password	Password for the HX service account.	Cisco123
<b>Constrained Delegation</b>		
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 screenshot shows the 'HyperFlex Installer' interface with the 'Credentials' tab selected. The page is divided into two main sections: 'UCS Manager Credentials' and 'Domain Information'. The 'UCS Manager Credentials' section includes fields for 'UCS Manager Host Name' (eng-fib2.eng.storvisor.com), 'UCS Manager User Name' (admin), and 'Password' (masked). The 'Domain Information' section includes fields for 'Domain Name' (cloud.local), 'DNS Server(s)' (10.64.16.91), 'HX Service Account' (sphxadmin), and 'Password' (masked). Below these are radio buttons for 'Configure Constrained Delegation now (recommended)' (selected) and 'Configure Constrained Delegation later'. There are also checkboxes for 'Use HX Service Account' and 'Domain Administrator User Name' (spcduser) with a 'Password' field (masked). An 'Advanced Attributes (optional)' section includes 'Domain Controller' (10.64.16.91) and 'Organization Unit' (OU=hyperflex nodes,OU=shypalak,OU=). On the right side, there is a 'Configuration' panel with a dashed border and a 'Select a File' button. At the bottom right, a 'Continue' button is highlighted with a red box.

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.

The screenshot displays the 'Server Selection' step in the HyperFlex Installer. The interface includes a navigation bar with tabs for Credentials, Server Selection, UCSM Configuration, Hypervisor Configuration, IP Addresses, and Cluster Configuration. The 'Server Selection' tab is active, showing a table of servers. A red box highlights the 'Unassociated (1)' and 'Associated (23)' counts. The table contains one row for 'Server 16' with status 'unassociated'. A 'Refresh' button is located above the table. On the right, the 'Configuration' panel shows various settings under the 'Credentials' section. At the bottom right, a red box highlights the 'Continue' button.

Server Name	Status	Model	Serial	Assoc State	Actions
Server 16	unassociated	HX220C-M5SX	WZP22130EN7	none	none

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

The screenshot shows a 'VLAN Configuration' window with four sections:

- VLAN for Hypervisor and HyperFlex management:** Fields for 'VLAN Name' (containing 'hx-inband-mgmt') and 'VLAN ID'.
- VLAN for HyperFlex storage traffic:** Fields for 'VLAN Name' (containing 'hx-storage-data') and 'VLAN ID'.
- VLAN for VM Live Migration:** Fields for 'VLAN Name' (containing 'hx-livemigrate') and 'VLAN ID'.
- VLAN for VM Network:** Fields for 'VLAN Name' (containing 'vm-network') and 'VLAN ID(s)'.

**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
Cisco IMC access management	In-band or Out of band	Out of band

**MAC Pool**

MAC Pool Prefix



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'hx-ext-mgmt' IP Pool for Cisco IMC

IP Blocks	Subnet Mask	Gateway
10.42.18.100-200	255.255.255.0	10.42.18.1

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Cisco IMC access management (Out of band or Inband)

In band (recommended) ⓘ
  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
<b>Enable iSCSI Storage</b> check box	Select to configure iSCSI storage.
<b>VLAN A Name</b>	Name of the VLAN associated with the iSCSI vNIC, on the primary Fabric Interconnect (FI-A).
<b>VLAN A ID</b>	ID of the VLAN associated with the iSCSI vNIC, on the primary Fabric Interconnect (FI-A).
<b>VLAN B Name</b>	Name of the VLAN associated with the iSCSI vNIC, on the subordinate Fabric Interconnect (FI-B).
<b>VLAN B ID</b>	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
<b>Enable FC Storage</b> check box	Select to enable FC Storage.
<b>WWxN Pool</b>	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.
<b>VSAN A Name</b>	The name of the VSAN for the primary Fabric Interconnect (FI-A). Default—hx-ext-storage-fc-a.

Field	Description
<b>VSAN A ID</b>	The unique identifier assigned to the network for the primary Fabric Interconnect (FI-A).  <b>Caution</b> 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.
<b>VSAN B Name</b>	The name of the VSAN for the subordinate Fabric Interconnect (FI-B).  Default— <code>hx-ext-storage-fc-b</code> .
<b>VSAN B ID</b>	The unique identifier assigned to the network for the subordinate Fabric Interconnect (FI-B).  <b>Caution</b> 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
<b>Bare metal configuration</b>		
Install Hypervisor (Hyper-V)	By default, the Install Hypervisor (Hyper-V) checkbox is selected for Windows OS installation on a bare metal node. Click <b>Browse</b> 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: <ul style="list-style-type: none"> <li>• Windows Server 2016 Datacenter (Desktop Experience)</li> <li>• Windows Server 2016 Datacenter (CORE)</li> </ul>	
<b>Configure common Hypervisor Settings</b>		
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
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
<b>Hypervisor Settings</b>		

Field	Description	Example Value
Static IP address	Management IP address for each host  <b>Note</b> If you leave the checkbox <b>Make IP Addresses and Hostnames Sequential</b> 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
<b>Domain Information</b>		
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.  <b>Important</b> Verify that the Active Directory policies allow HX service account to have effective permissions to “ <b>Write servicePrincipalName</b> ” on the computer object created for <b>smb</b> namespace.	hxadmin
Password	Password for the HX service account.	
<b>Constrained Delegation</b>		
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.
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 <a href="#">Configuring a Static IP Address for Live Migration and VM Network</a> .	
<b>Advanced Attributes (optional)</b>		



Field	Description	Example Value
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
<b>Hypervisor Credentials</b>		
Hypervisor Local Administrator User Name	Local administrator username on the Hyper-V hosts	Default username/password: administrator/Cisco123  <b>Important</b> Systems ship with a default password of <code>Cisco123</code> 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
<b>Cisco HX Cluster</b>		
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)
Failover Cluster Name	The name used for the Windows Failover Cluster.	
<b>Controller VM</b>		
Create Admin Password		
Confirm Administrator Password		
<b>System Services</b>		
DNS Servers	Comma separated lists of DNS Servers.	10.99.2.200, 10.99.2.201

Field	Description	Example Value
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.	
<b>Auto Support</b>		
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.	<i>email_address</i>
<b>Advance Networking</b>		
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.	
<b>Advanced Configuration</b>		
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.	
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.	
<b>Hypervisor Settings</b>		

Field	Description	Example Value
Primary DNS suffix	Completed in earlier steps in the installation.	
Additional DNS suffixes	Complete this field if you need more suffixes appended on your Hyper-V hosts.	

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

The screenshot displays the 'Cisco HX Cluster' configuration wizard. The main configuration area is divided into several sections:

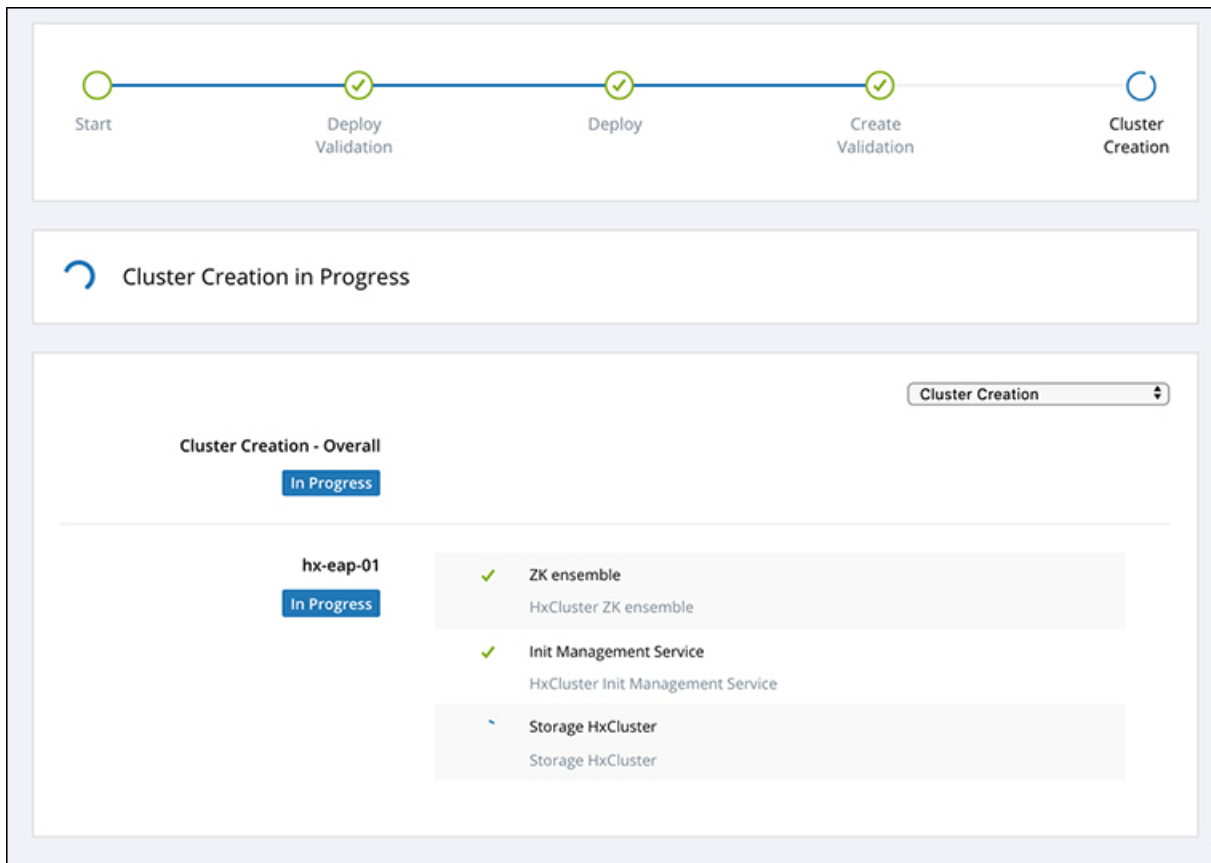
- Cluster Name (SMB Access Point):** Input field contains 'hx-eap-01'.
- Replication Factor:** Dropdown menu set to '3'.
- Failover Cluster Name:** Input field contains 'HX-EAP-CLU01'.
- Controller VM:** Includes 'Create Admin Password' and 'Confirm Admin Password' fields, both masked with dots.
- System Services:**
  - DNS Server(s):** Input field contains '10.99.2.200,10.99.2.201'.
  - NTP Server(s):** Input field contains 'Ciscolab.dk'.
  - DNS Domain Name:** Input field contains 'ciscolab.dk'.
  - Time Zone:** Dropdown menu set to '(UTC+01:00) Brussels, Copenhagen, Madrid, Paris'.
- Auto Support:**
  - Auto Support:** Checkmark for 'Enable Connected Services (Recommended)'.
  - Send service ticket notifications to:** Input field contains 'lagranbe@cisco.com'.
- Advanced Networking:**
  - Management VLAN Tag:** Input field contains '2996'.
  - Management vSwitch:** Input field contains 'vswitch-hx-inband-mgmt'.
  - Data VLAN Tag:** Input field contains '2997'.
  - Data vSwitch:** Input field contains 'vswitch-hx-storage-data'.
- Advanced Configuration:**
  - Jumbo Frames:** Checkmark for 'Enable Jumbo Frames on Data Network'.
  - Disk Partitions:** Checkmark for 'Clean up disk partitions'.
  - Virtual Desktop (VDI):** Unchecked for 'Optimize for VDI only deployment'.

The right-hand sidebar, titled 'Configuration', provides a summary of the settings:

- Credentials:** Domain Name: Ciscolab.dk; HX Service Account: hxadmin; Time Zone: Romance Standard Time; Local Administrator User Name: Administrator.
- IP Addresses:** Cluster Name (SMB Access Point): hx-eap-01; Management Cluster: HX-EAP-01-MGMT; Data Cluster: 10.101.252.50; Management Subnet Mask: 255.255.255.0; Data Subnet Mask: 255.255.255.0; Management Gateway: 10.101.251.1; Data Gateway: 10.101.252.1.
- Server 0:** Management Hypervisor: HX-EAP-1.Ciscolab.dk; Management Storage Controller: HX-EAP-1-CNTL.Ciscolab.dk; Data Hypervisor: 10.101.252.41; Data Storage Controller: 10.101.252.51.
- Server 1:** Management Hypervisor: HX-EAP-2.Ciscolab.dk; Management Storage Controller: CNTL.Ciscolab.dk; Data Hypervisor: 10.101.252.42; Data Storage Controller: 10.101.252.52.
- Server 2:** Management Hypervisor: HX-EAP-3.Ciscolab.dk; Management Storage: HX-EAP-3-.

At the bottom of the wizard, there are 'Back' and 'Start' buttons.

**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.



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## 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](#).