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Cisco HyperFlex Systems Installation Guide for Microsoft Hyper-V Release 5.0(x)

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Cisco HyperFlex Systems Installation Guide for Microsoft Hyper-V Release 5.0(x)



CHAPTER

Overview

- Introduction, on page 1
- Installation Workflow, on page 1

Introduction

This guide provides instructions on how to install and configure *Cisco HyperFlex Systems on Microsoft Hyper-V*.

To install *Cisco HyperFlex Systems on VMware ESXi*, refer to the installation guides available at: https://www.cisco.com/c/en/us/support/hyperconverged-systems/hyperflex-hx-data-platform-software/ products-installation-guides-list.html

To install *Cisco HyperFlex Systems for Edge (Remote and branch offices)*, refer to the deployment guides available at: https://www.cisco.com/c/en/us/support/hyperconverged-systems/ hyperflex-hx-data-platform-software/products-installation-and-configuration-guides-list.html

Installation Workflow

The following illustration and table summarize the installation workflow:



Task	Description	Reference
Preinstallation	Rack HyperFlex nodes, and set up Cisco UCS Fabric Interconnects (FIs).	See: Rack Cisco HyperFlex Nodes, on page 105
	Complete Preinstallation checklist.	Preinstallation Tasks Summary
Installation	Deploy HX Data Platform Installer using Microsoft Hyper-V Manager	Deploying HX Data Platform Installer
	Configure Cisco UCS Manager using HX Data Platform Installer.	Deploying a Hyper-V Cluster, on page 21
	Install Windows Server and Hyper V, Deploy HX Data Platform and create your initial cluster.	
	Install Windows Server and Hyper V, Deploy HX Data Platform and create your initial cluster.	
Post Installation	Post HX Cluster Configuration tasks.	Cluster Expansion—Converged Nodes, on page 99
		Create the First Datastore, on page 34



Preinstallation Information

• Preinstallation Information, on page 3

Preinstallation Information

To ease your installation, gather the following information that you would require during installation. Download the editable preinstallation sheet PDF.

Global Information

Cisco UCS Manager Version	DNS Server 1	
NTP Server 1	DNS Server 2	
NTP Server 2	Domain Name (AD)	
Time Zone	SCVMM Host	
SMTP		

Fabric Interconnect Information

Component	IP Address	Hostname	Username	Password	Description
FI-VIP			admin		
FI-A			admin		
FI-B			admin		
IP-Ext-Mgmt: (range)					Must be same subnet as FI mgmt at must at least have 1 ip pr. HX Node

I

Component	IP Address	Hostname	Username	Password	Description
Subnet					For EXT mgmt and FI mgmt
Default Gateway					For EXT mgmt and FI mgmt
HX Installer					
HX Installer Subnet					
HX Installer Gateway					

HX Installer Information

Table 1: HX Nodes Hostnames: Node 1

Field Name	User Entry	Field Name	User Entry
Hostname:		Data Subnet Mask:	
Node Management IP:		Data Default Gateway:	
Management Subnet Mask:		(Optional) Live Migration IP:	
Management Default Gateway:		Live Migration:Subnet	
Node Data IP		Live Migration: Subnet	
HX Controller Data IP		Live Migration Default Gateway:	

Table 2: HX Nodes Hostnames: Node 2

Field Name	User Entry	Field Name	User Entry
Hostname:		Data Subnet Mask:	
Node Management IP:		Data Default Gateway:	
Management Subnet Mask:		(Optional) Live Migration IP:	
Management Default Gateway:		Live Migration:Subnet	
Node Data IP		Live Migration: Subnet	

Field Name	User Entry	Field Name	User Entry
HX Controller Data IP		Live Migration Default Gateway:	

Table 3: HX Nodes Hostnames: Node 3

Field Name	User Entry	Field Name	User Entry
Hostname:		Data Subnet Mask:	
Node Management IP:		Data Default Gateway:	
Management Subnet Mask:		(Optional) Live Migration IP:	
Management Default Gateway:		Live Migration:Subnet	
Node Data IP		Live Migration: Subnet	
HX Controller Data IP		Live Migration Default Gateway:	

Table 4: HX Nodes Hostnames: Node 4

Field Name	User Entry	Field Name	User Entry
Hostname:		Data Subnet Mask:	
Node Management IP:		Data Default Gateway:	
Management Subnet Mask:		(Optional) Live Migration IP:	
Management Default Gateway:		Live Migration:Subnet	
Node Data IP		Live Migration: Subnet	
HX Controller Data IP		Live Migration Default Gateway:	

Table 5: HX Nodes Hostnames: Node 5

Field Name	User Entry	Field Name	User Entry
Hostname:		Data Subnet Mask:	
Node Management IP:		Data Default Gateway:	
Management Subnet Mask:		(Optional) Live Migration IP:	
Management Default Gateway:		Live Migration:Subnet	
Node Data IP		Live Migration: Subnet	

Field Name	User Entry	Field Name	User Entry
HX Controller Data IP		Live Migration Default Gateway:	

Table 6: HX Nodes Hostnames: Node 6

Field Name	User Entry	Field Name	User Entry
Hostname:		Data Subnet Mask:	
Node Management IP:		Data Default Gateway:	
Management Subnet Mask:		(Optional) Live Migration IP:	
Management Default Gateway:		Live Migration:Subnet	
Node Data IP		Live Migration: Subnet	
HX Controller Data IP		Live Migration Default Gateway:	

Table 7: HX Nodes Hostnames: Node 7

Field Name	User Entry	Field Name	User Entry
Hostname:		Data Subnet Mask:	
Node Management IP:		Data Default Gateway:	
Management Subnet Mask:		(Optional) Live Migration IP:	
Management Default Gateway:		Live Migration:Subnet	
Node Data IP		Live Migration: Subnet	
HX Controller Data IP		Live Migration Default Gateway:	

Table 8: HX Nodes Hostnames: Node 8

Field Name	User Entry	Field Name	User Entry
Hostname:		Data Subnet Mask:	
Node Management IP:		Data Default Gateway:	
Management Subnet Mask:		(Optional) Live Migration IP:	
Management Default Gateway:		Live Migration:Subnet	
Node Data IP		Live Migration: Subnet	

Field Name	User Entry	Field Name	User Entry
HX Controller Data IP		Live Migration Default Gateway:	

Table 9: Microsoft Cluster Name

Field Name	User Entry	Field Name	User Entry
Hostname:		Data Subnet Mask:	
Node Management IP:		Data Default Gateway:	
Management Subnet Mask:		(Optional) Live Migration IP:	
Management Default Gateway:		Live Migration:Subnet	
Node Data IP		Live Migration: Subnet	
HX Controller Data IP		Live Migration Default Gateway:	

Table 10: HX Connect UI

Field Name	User Entry	Field Name	User Entry
Hostname:		Data Subnet Mask:	
Node Management IP:		Data Default Gateway:	
Management Subnet Mask:		(Optional) Live Migration IP:	
Management Default Gateway:		Live Migration:Subnet	
Node Data IP		Live Migration: Subnet	
HX Controller Data IP		Live Migration Default Gateway:	

Table 11: HX File Cluster Name

Field Name	User Entry	Field Name	User Entry
Hostname:		Data Subnet Mask:	
Node Management IP:		Data Default Gateway:	
Management Subnet Mask:		(Optional) Live Migration IP:	
Management Default Gateway:		Live Migration:Subnet	
Node Data IP		Live Migration: Subnet	

Field Name	User Entry	Field Name	User Entry
HX Controller Data IP		Live Migration Default Gateway:	

VLAN Information

Usage	Name	Default VLAN ID	Chosen VLAN ID
Mgmt	hx-inband-mgmt	3091	
storage-data	hx-storage-data	3092	
Live Migration	hx-livemigrate	3093	
VM Network	vm-network	3094	

Hyper-V Information

HX Cluster Name	
Hyper-V Cluster Name	

Constrained Delegation

distinguished Name	
hxadmin password	



Preinstallation Checklist

- System Requirements, on page 9
- Guidelines and Limitations, on page 11
- Preinstallation Tasks Summary, on page 12

System Requirements

Hardware Requirements

Requirement	Description
Cisco HX Data Platform Servers	Cisco HyperFlex M5 Converged nodes: ¹
	• All Flash—Cisco HyperFlex HXAF240c M5, HXAF220c M5
	• Hybrid—Cisco HyperFlex HX240c M5, HX220c M5, HX240c-M5L
Cisco UCS Fabric Interconnects (FIs)	Cisco UCS Fabric Interconnects (FIs) 6200 and 6300
	Starting with 4.0(1b), Cisco UCS Fabric Interconnects (FIs) 6400

¹ Hyper-V support is limited to M5 servers.

HyperFlex Software and Firmware Requirements: HyperFlex Release 5.0(x)

For details about compatibility and software requirements for Cisco HX Release 5.0(x) review the Cisco HX Release 5.0(x) - Software Requirements chapter of the Cisco HyperFlex Software Requirements and Recommendations document.

Network Services

Network Service	Descriptio	Description		
DNS	Microsoft for the HX	Aicrosoft Active Directory and Active Directory integrated DNS are required or the HX Platform and must be outside of the cluster.		
	Standalone supported.	e DNS server is not supported. Non-Windows DNS servers are not		
NTP	Ensure that pu	t the time is synchronized between the controller VMs and the hosts. rpose, use the Active Directory Time Synchronization Engine.		
	Attention	Ensure that you use the Active Directory domain name as the NTP server when prompted by HX Data Platform Installer.		
	Note	Do not nest all of your Active Directory servers in your HyperFlex cluster. Active Directory should reside outside of the HyperFlex cluster so that if the cluster were to encounter issues, you could still authenticate.		
	Note	If you are using Active Directory as an NTP server, please make sure that the NTP server is setup according to Microsoft best practices. For more information, see Windows Time Service Tools and Settings. Please note that if the NTP server is not set correctly, time sync may not work, and you may need to fix the time sync on the client-side. For more information, see Synchronizing ESXi/ESX time with a Microsoft Domain Controller.		

Port Requirements

If your network is behind a firewall, in addition to the standard port requirements, Microsoft recommends ports for the Hyper-V Manager and Hyper-V cluster. Verify that the following firewall ports are open.

Port Number	Protocol	Direction	Usage
80	НТТР/ТСР	Inbound	HX Data Platform Installer
443	HTTPS /TCP	Inbound	HX Data Platform Installer
2068	virtual keyboard/Video/ Mouse (vKVM) / TCP	Inbound	hx-ext-mgmt IP pool (one IP per HX node)
22	SSH/TCP	Inbound/Outbound	HX Data Platform Installer
110 (secure POP port is TCP; 995)	POP3/TCP	Inbound/Outbound	
143 (secure IMAP port is TCP; 993)	IMAP4/TCP	Inbound/Outbound	
25	SMTP/TCP	Outbound	Mail Server

Port Number	Protocol	Direction	Usage
53 (external lookups)	DNS/TCP/UDP	Outbound	DNS
123	NTP/UDP	Outbound	NTP
161	SNMP Poll	Inbound	SNMP
162	SNMP Trap	Outbound	SNMP
8089	ТСР	Inbound	HX Data Platform Installer
445	SMB 2	Inbound	HX Controller VM
5986	НТТР/ТСР	Inbound/Outbound	HX CLI, HX Connect

Note For additional information about ports, see Appendix A of the Cisco HX Data Platform Security Hardening Guide.

Guidelines and Limitations

For best experience with Microsoft Hyper-V installation, you must follow the specific guidelines listed below.

- Use UCSM 4.0.1i with Cisco HyperFlex System installations for Hyper-V, Release 4.5(x).
- Adding HyperFlex nodes to Microsoft System Center 2016 Virtual Machine Manager (Windows VMM 2016) evaluation version will cause errors. Refer to Microsoft help article for a resolution for this issue.
- The following features are NOT supported in the current release:
 - SED Drives
 - Native Replication
 - Cisco HyperFlex Edge
 - Stretched Clusters
 - Intersight-based deployment
 - LAZ and scale beyond 8 nodes
 - HX M4 or M6 Hardware
 - Shared VHDX / VHD Sets
 - Only use the Hyper-V ReadyClone PowerShell script on a cluster node that is not in a paused state.

Preinstallation Tasks Summary

Ensure the following is installed and configured prior to installing and deploying HyperFlex.

Task	Description
Rack HyperFlex nodes including Cisco UCS Fabric Interconnects set up	See Rack Cisco HyperFlex Nodes, on page 105
Verify Cisco UCS Manager version	Ensure that you are using Cisco UCS Manager version 4.1(2a) or later. Refer to the Release Notes for Cisco HX Data Platform for the latest supported releases.
Verify VLANs	Configure the upstream switches to accommodate non-native VLANs. Cisco HX Data Platform Installer sets the VLANs as non-native by default.
Add DNS Records	You must add DNS A and PTR records for your installation. See: Adding DNS Records, on page 12
Configure Domain Administrator for Active Directory	See: Enabling Constrained Delegation, on page 12

Adding DNS Records

Prior to the installation you must add DNS A and PTR records to avoid installation failures.

Device	Description
Hyper-V host	For each host, add an A and PTR record.
Controller node	Controller VM IP address for the A record. This is eth0 on the management IP network.
Windows Failover Cluster	Windows Failover Cluster Object.
HX Connect UI	Cluster management IP address.

Refer to DNS Records, on page 110 section in this guide for the records shown as PowerShell commands to run directly on your environment.

Enabling Constrained Delegation

The steps in this topic must be completed to enable constrained delegation.

Constrained delegation is used to join computers to the Active Directory. You provide constrained delegation information through the HX Data Platform Installer. Constrained delegation uses a service account that is created manually. For example: hxadmin. This service account is then used to log into Active Directory, join the computers, and perform authentication from the HyperFlex Storage Controller VM. The Active Directory computer accounts applied to every node in the HyperFlex cluster include:

- Hyper-V host
- HyperFlex Storage Controller VM
- Hyper-V host cluster namespace
- Server Message Block (SMB) Share namespace for the HyperFlex cluster
- Step 1 Create an hxadmin domain user account as HX service account.
- **Step 2** Create an Organization Unit (OU) in Active Directory (AD), for example, HyperFlex.
 - a) Use the Active Directory Users and Computers management tool to create the OU. Select View > Advanced Features to enable advance features. Select the OU that you created. For example, HyperFlex > Properties > Attribute Editor.
 - b) Find the distinguished name attribute in the OU, and record the information as this will be required in the Constrained Delegation wizard of the HX Data Platform Installer wizard. The values will look like this:
 OU=HyperFlex, DC=contoso, DC=com.

Use the **Get-ADOrganizationalUnit** cmdlet to get an organizational unit (OU) object or to perform a search to get multiple OUs.

```
Get-ADOrganizationalUnit
[-AuthType <ADAuthType>]
[-Credential <PSCredential>]
-Filter <String>
[-Properties <String[]>]
[-ResultPageSize <Int32>]
[-ResultSetSize <Int32>]
[-SearchBase <String>]
[-SearchScope <ADSearchScope>]
[-Server <String>]
[<CommonParameters>]
```

- **Step 3** Use Active Directory Users and Computers management tool to grant full permissions for the hxadmin user for the newly created OU. Ensure that Advanced features are enabled. If not, go back to Step 2.
 - a) Select the OU that you created. For example, **HyperFlex** > **Properties** > **Security** > **Advanced**.
 - b) Click Change Owner and choose your hxadmin user.
 - c) Click Add in the Advanced view.
 - d) Select the principal and choose the hxadmin user. Then, choose **Full Control**, and click **OK**.



Installation

• Installation Tasks Summary, on page 15

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.

 Step 1
 Locate and download the HX Data Platform Installer.vhdx zipped file (for example, Cisco-HX-Data-Platform-Installer-v5.0.1a-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-v5.0.1a-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.

					Hyper-V Ma	nager
le Action	View Help					
Hyper-V Mar	Virtual	Machines	_			
N	New 🕨	Virtual Machine	CPU Usage	Assigned Memory	Uptime	Status
H V V	mport Virtual Machine Hyper-V Settings /irtual Switch Manager /irtual SAN Manager	Hard Disk Floppy Disk		No virtual machin	es were found on t	his server.
E	Edit Disk nspect Disk					
S R F	Stop Service Remove Server Refresh	-				
V	/iew +					
F	Help	ints				

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

🖳 New Virtual Machine Wizard	d	×
📒 🛛 Before You B	egin	
Before You Begin Specify Name and Location Specify Generation Assign Memory Configure Networking Connect Virtual Hard Disk Installation Options Summary	This wizard helps you create a virtual machine. You can use virtual machines in place of physical computers for a variety of uses. You can use this wizard to configure the virtual machine now, and you can change the configuration later using Hyper-V Manager. To create a virtual machine, do one of the following: • Click Finish to create a virtual machine that is configured with default values. • Click Next to create a virtual machine with a custom configuration. Do not show this page again	
	< Previous Next > Finish Cancel	ction of the second

- **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.

New Virtual Machine Wiza	ard × eration
Before You Begin Specify Name and Location Specify Generation Assign Memory	Choose the generation of this virtual machine. O Generation 1 This virtual machine generation supports 32-bit and 64-bit guest operating systems and provides virtual hardware which has been available in all previous versions of Hyper-V.
Configure Networking Connect Virtual Hard Disk Installation Options Summary	 Generation 2 This virtual machine generation provides support for newer virtualization features, has UEFI-based firmware, and requires a supported 64-bit guest operating system. Once a virtual machine has been created, you cannot change its generation.
	More about virtual machine generation support
	< Previous Next > Finish Cancel

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

🖳 New Virtual Machine Wizar	d	×
📒 🛛 Assign Memo	ry	
Before You Begin Specify Name and Location Specify Generation Assign Memory Configure Networking Connect Virtual Hard Disk Installation Options Summary	Specify the amount of memory to allocate to this virtual machine. You can specify an amount from 32 MB through 12582912 MB. To improve performance, specify more than the minimum amount recommended for the operating system. Startup memory: 8192 MB Use Dynamic Memory for this virtual machine. If When you decide how much memory to assign to a virtual machine, consider how you intend to use the virtual machine and the operating system that it will run.	
	< Previous Next > Finish Cancel	

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**.

New Virtual Machine Wiza	rd	×
Configure	Networking	
Before You Begin Specify Name and Location Specify Generation Assign Memory Configure Networking Connect Virtual Hard Disk Installation Options Summary	Each new virtual machine includes a network adapter. You can configure the network adapt virtual switch. or it can remain disconnected. Connection: External Switch v	er to use a
	< Previous Next > Finish	Cancel

Step 10In 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.

b	New Virtual Machine Wizard
Connect Vi	rtual Hard Disk
Before You Begin Specify Name and Location Specify Generation Assign Memory Configure Networking Connect Virtual Hard Disk Summary	A virtual machine requires storage so that you can install an operating system. You can specify the storage now or configure it later by modifying the virtual machine's properties. Create a virtual hard disk Use this option to create a VHDX dynamically expanding virtual hard disk. Name: HX-Installer.vhdx Location: C:\ClusterStorage\volume1\/hx-installer./HX-Installer.Virtual Hard DE Browse Size: 127 GB (Maximum: 64 TB) Cuse an existing virtual hard disk Use this option to attach an existing virtual hard disk, either VHD or VHDX format. Location: [::\ClusterStorage\volume1\/hx-installer./bicco-hx-data-platform-inst] Browse Cocation: [::\ClusterStorage\volume1\/hx-installer./bicco-hx-data-platform-inst] Browse
	< Previous Next > Finish Cancel

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

🖳 New Virtual Machine Wiza	rd ×
Completing	the New Virtual Machine Wizard
Before You Begin Specify Name and Location Specify Generation Assign Memory Configure Networking Connect Virtual Hard Disk Summary	You have successfully completed the New Virtual Machine Wizard. You are about to create the following virtual machine. Description: Name: HX-Installer Generation: Generation 1 Memory: 8192 MB Network: newprivate Hard Disk: C:\Users\Administrator.WIN-5RKBSHE0CFP\Desktop\ztemp\build\Cisco-HX-Data-Platfor
	To create the virtual machine and dose the wizard, dick Finish.
	< Previous Next > Finish Cancel

- **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.

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 # Static IP address fr the installer VM netmask 255.255.0.0 # netmask for the Static IP address gateway XX.XX.XX # gateway for the Static IP address dns-nameservers XX.XX.X.XX #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.

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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
UCS Manager Credentials	I	
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	l	
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.	hxadmin
	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.	
Password	Password for the HX service account.	Cisco123
Constrained Delegation	I	_1

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Field	Description	Example Value
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.

ili ili cisco	HyperFlex Installer					0	0	0	0	Ø ~
	Credentials	Server Selection	UCSM Configuration	Hypervisor Configuration	IP A	vddresses		Cluster	Configuratio	20
UCS UCS M eng	i Manager Credentials Aanager Host Name g-fi62.eng.storvisor.com	UCS Manager User admin	Name	Password @	•	Cont	iguratior	ו 		4
Doma cio HX Se spi	nain Information in Name ud.local uvice Account hxadmin Configure Constrained Delegation	DNS Server(s) 10.64.16.91 Password 	∲ ⊗ ⊖ Configu	re Constrained Delegation later						
a Ac	Use HX Service Account bomain Administrator User Name speduser dvanced Attributes (optior	Password 	₽ ⊘				configu	Prag and drop gration files he Select a File	the or	
Doma 10/	sin Controller () 64.16.91	Organization Unit (OU=hyperflex n	odes,OU=shypalak,OU=							
							(Back		Iontinue	

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.

()+- :0	Hyper	Flex Installer	6						0	0	0	0	¢
0	redentials		Server Selection	UCSM Co	nfiguration	Hypervisor Configur	ation	IP Add	iresses		Cluster	Configuration	
Server	Selection Selection	on -V only runs on MS	servers. The list belo	w is restricted to M5 s	Con ervers.	figure Server Ports	Refresh		Confi	guration			4
Unass	sociated	(1) Associated	1 (23)						UCS Ma	nager Host N	lame eng-fi	62.eng.storvis	ior.c
	*	Server Name	Status	Model	Serial	Assoc State	Actions		UCS Ma	nager User N	lame	əd	Imin
	(CD	Server 16	unassociated	HX220C-M5SX	WZP22130EN7	none	none		Domain	Name		cloud.	oca
									HX Serv	ice Account		sphxad	Imir
									Constra	ined Delegat	ion	,	true
									Domain	Administrat	or User Nam	e spode	use
									Time Zo	ne	Pad	fic Standard T	ime
									DNS Ser	rver(s)		10.64.1	6.91
									Domain	Controller		10.64.1	6.91
									Organiz	ation Unit C	U=hyperflex ak,OU=test,D	nodes,OU=sh C=cloud,DC=l	iyp: oca
									<	Back		Continue	

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

VLAN for Hypervisor and Hype	rFlex management	VLAN for HyperFlex storage	e traffic
VLAN Name	VLAN ID	VLAN Name	VLAN ID
hx-inband-mgmt		hx-storage-data	
VLAN for VM Live Migration		VLAN for VM Network	
VLAN Name	VLAN ID	VLAN Name	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 Prefix			
00:25:B5: F3			
'hx-ext-mgmt' IP Pool for Cisc	to IMC		
IP Blocks	Subnet Mask	Gateway	
IP Blocks 10.42.18.100-200	Subnet Mask 255.255.255.0	Gateway 10.42.18.1	

- **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.
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).

Field	Description			
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)	stall 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 Hyperv	isor 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				
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	1	1				

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Field	Description	Example Value
Static IP address	Management IP address for each host	10.101.251.41
	Addresses and Hostnames Sequential as checked then the installer will automatically fill the rest of the servers sequential from the first.	
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.ImportantVerify 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	I	I	
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 Configuring a Static IP Address for Live Migration and VM Network, on page 35.		
Advanced Attributes (optional)	· •		

Field	Description	Example Va	alue
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 Ciscol23 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)	
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	

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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.	
Auto Support		<u>.</u>
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.	
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		1

Field	Description	Example Value
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.

Cisco HX Cluster			Configuration +
Cluster Name (SMB Access Point)	Replication Factor	Failover Cluster Name 🕔	Credentials
hx-eap-01	3 0	HX-EAP-CLU01	Domain Name Ciscolab.dk
			HX Service Account hxadmin
			Time Zone Romance Standard Time
Controller VM			Local Administrator User Name Administrator
Create Admin Password	Confirm Admin Password		IP Addresses
••••••			Cluster Name (SMB Access Point) hx-eap-01
			Management Cluster HX-EAP-01-MGMT
System Services			Data Cluster 10.101.252.50
	MTD Francisco	Out Demain Name	Management Subnet Mask 255.255.255.0
DNS Server(S)	NIP server(s)	DNS Domain Name	Data Subnet Mask 255.255.255.0
10.99.2.200,10.99.2.201	Ciscolab.dik	ciscolab.dk	Management Gateway 10.101.251.1
Time Zone			Data Gateway 10.101.252.1
(UTC+01:00) Brussels, Copenhagen, Madrid,	Paris 0		Server 0
			Management Hypervisor HX-EAP-1.Ciscolab.dk
Auto Support			Management Storage HX-EAP-1- Controller CNTL.Ciscolab.dk
Auto Support	Send service ticket notifications to		Data Hypervisor 10.101.252.41
 Enable Connected Services (Recommended) 	lagranbe@cisco.com		Data Storage Controller 10.101.252.51
			Server 1
Advanced Networking			Management Hypervisor HX-EAP-2.Ciscolab.dk
Management VLAN Tag	Management vSwitch		Management Storage HX-EAP-2- Controller CNTL.Ciscolab.dk
2996	vswitch-hx-inband-momt		Data Hypervisor 10.101.252.42
			Data Storage Controller 10.101.252.52
Data VLAN Tag	Data vSwitch		Server 2
2997	vswitch-hx-storage-data		Management Hypervisor HX-EAP-3.Ciscolab.dk
			Manazement Storaze HX-EAP-3-
Advanced Configuration			K Back Start
Jumbo Frames	Disk Partitions	Virtual Desktop (VDI)	
 Enable Jumbo Frames on Data Network 	Clean up disk partitions	 Optimize for VDI only deployment 	

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.


Post Installation

• Post Installation Tasks Summary, on page 33

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 34
Assign a static IP address for Live Migration and VM Network	Configuring a Static IP Address for Live Migration and VM Network, on page 35
(Optional) Constrained Delegation	(Optional) Post Installation Constrained Delegation, on page 36
Configure Local Default Paths	Configure Local Default Paths, on page 37
Configure File Share Witness	Configuring a File Share Witness, on page 38
Checking the Windows Version on the Hyper-V Host	Checking the Windows Version on the Hyper-V Host, on page 44
Validate Failover Cluster Manager	Validate Failover Cluster Manager, on page 44
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 46
Configuring HyperFlex Share to SCVMM	Configuring HyperFlex Share to SCVMM, on page 53
Re-enabling Windows Defender	Re-enabling Windows Defender, on page 55
VM Migration between standalone Hyper-V and HX Hyper-V hosts.	VM Migration between Hosts, on page 55

Create the First Datastore

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

Step 1

Launch HX Connect UI from a browser of your choice from https://Cluster_IP/ or https://FQDN.

Gisco HyperFlex Connect x			ā
← → C ▲ Not Secure https://hx-eap-01-mgmt.ciscolab.dk/#/clusters/1			☆ :
	ahaha cisco	•	
	Cisco HyperFlex	Connect	
	A. C. M.		
	HyperFlex	×	
	2011	4	
	3.0(18)		
	1 USER NAME		
	PASSWORD	0	
	-		
	Legin		

- **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**.

Cisco HyperFlex Connect	×		
= "dud" HyperFlex Connect	eap-u i-inginicascolad.ak #/clusters/i	ap-01	0 0 L
Dashboard MONITOR	OPERATIONAL STATUS Online		
★ Events Artivity	- ↓ • RESILIENCY HEALTH Healthy ⊙	✓ 1 Node failure can be tolerated	
ANALYZE	CAPACITY 1.1% 6.4 TB 71.7 G8 Used	6.4 TB Free OPTIMIZATION Storage optimization 6.4 TB Free OPTIMIZATION	compression and will be calculated once we have a regarding cluster usage.
MANAGE	4 HOAF220C-M55X 4 Converged		
System Information	10PS Last 1 hour	Read Max: 0 Min:0 Arg: 0	Write Max: 4.8 Min:1.4 Avg: 3.05
1 Upgrade	^		~
	Throughput (MBps) Last 1 hour	Read Marc 0 Min 0 Arg; 0	Write Max: 0.02 Min:0.01 Avg; 0.01
	602 001 001		\sim
	20 20 20 20 20 20 20 20 20 20 20 20 20 2	Read Max: 0 Min:0 Avg: 0	Write Max: 31.59 Min:2.03 Avg: 2.69
About	10 /	Cluster Ti	me : 04/22/2018 12:19:02 AM PDT

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**.

- 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.

	НХ	-EAP-1 Pr	operties		? X
Location	Managed By	Object S	Security	Dial-in	Attribute Editor
General O	perating System	Member Of	Delegati	ion Pass	word Replication
General Operating System Member Or Delegation Password Replication Delegation is a security-sensitive operation, which allows services to act on behalf of another user. O Do not trust this computer for delegation O Trust this computer for delegation to any service (Kerberos only) Image: Trust this computer for delegation to specified services only O Use Kerberos only					
Services to	y authentication pro	t can present	delegated c	redentials:	
Service 1	Type User or Con	nputer	Port	Service	• Ni
cifs	hx-eap-01.0	Ciscolab.dk			
cifs	HX-EAP-1				
					_
<					>
Expand	led	1	Add	Remove	

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.

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....

🝓 Failover Cluster Manager				-	o x	
File Action View Help						
Sallover Cluster Manager	Cluster HX-EAP-CLU01.ciscolab.dk		^	Actions		- Iddrei
場 HX-EAP-CLU01.ciscolab.dk	The Summany of Churter LIV EAD (110)			HX-EAP-CLU01.ciscolab.dk		
Nodes	IX-EAP-CLU01 has 0 clustered roles and 4 r	vodes.		N Configure Role		.0ad5i
> 🛃 Storage	Name: HX-EAP-CLU01.ciscolab.dk	Networks: hx-lvenigrate.hx-mgn	t, hx-storage	💐 Validate Cluster		
Its Cluster Events	Current Host Server: HX/EAP-2	Subnets: 3 IPv4 and 0 IPv6		View Validation Report		
6	Recent Cluster Events: None in the last 3 hours	Storage Spaces Direct (S20):	Disabled	P Add Node		
	Waress, Nore			Close Connection		
	Configure			Reset Recent Events		255.50
	Configure high availability for a specific clustered role, add	one or more servers (nodes), or cop	y roles from a cluster	More Actions	Configure C	luster Quorum Settings
	running Windows Server 2016 or supported previous versio	ons of Windows Server.		View	Copy Cluste	r Roles
	C Compute Note:	Ealover outer topics on the to	2	Refresh	Shut Down (Cluster
	P Add Node			Dis Properties	Destroy Che	ter
	To Copy Queter Roles			Help	very en	fa du Burran
	Ouster-Aware Ubdating				Move Core o	Cluster Resources >
					Cluster-Awa	ire Updating
	Navigate Bata P Bata	🖉 Sazanze				puter
	Cluster Core Resources					
	Name	Status	Information			
	Server Name					
	B Marte: HX-EAP-CLU01	Online				
	Ouster Infrastructure					
	Wrtual Machine Ouster WMI	Online				
						8
This action starts a wizard that guides you through configuring	< the cluster quorum settings.		> ×	1		

Step 3 The **Configure Cluster Quorum** wizard is launched. Click **Next**.

📲 Configure Cluster	Quorum Wizard	×
Before Yo	bu Begin	
Before You Begin Select Quorum Configuration Option Select Quorum Witness Confirmation Configure Cluster Quorum Settings Summary	This wizard guides you through configuring the quorum for your failover cluster. The relevant cluster elements are the nodes and, in some quorum configurations, a disk witness or file share witness. The quorum configuration affects the availability of your cluster. A sufficient number of cluster elements must be online, or the cluster Tosses quorum" and must stop running. Note that the full function of a cluster depends not only on the quorum, but also on the capacity of each node to support the clustered roles. Important: Run this wizard only if you have determined that you need to change the quorum configuration for your cluster. When you create a cluster, the cluster software automatically chooses a quorum configuration that will provide the highest availability for your cluster. To continue, click Next. Failover Cluster Quorum and Witness Configuration Options Do not show this page again	
	Next > Cancel]

Step 4 In the Select Quorum Configuration Option screen, choose Select the quorum witness. Click Next.

I

🖺 Configure Cluste	r Quorum Wizard	×
Select Q	uorum Configuration Option	
Before You Begin Select Quorum Configuration Option Select Quorum Witness Configure Cluster Quorum Settings Summary	Select a quorum configuration for your cluster. Use default quorum configuration The cluster determines quorum management options, including the quorum witness. Select the quorum witness You can add or change the quorum witness. The cluster determines the other quorum management options. Advanced quorum configuration You determine the quorum management options, including the quorum witness. Failover Cluster Quorum and Witness Configuration Options	

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

Configure Cluste	r Quorum Wizard	×
Select Q	uorum Witness	
Before You Begin Select Quorum Configuration Option	Select a quorum witness option to add or change the quorum witness for your cluster configuration. As a best practice, configure a quorum witness to help achieve the highest availability of the cluster.	
Select Quorum Witness	 Configure a disk witness Adds a quorum vote of the disk witness 	
Configure File Share Witness Confirmation	 Configure a file share witness Adds a quorum vote of the file share witness 	
Configure Cluster Quorum Settings Summary	 Configure a cloud witness Adds a quorum vote of the cloud witness Do not configure a quorum witness 	
	Failover Cluster Quorum and Witness Configuration Options	
	< Previous Next > Cancel	

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

I

體 Configure Cluster Quorum Wizard		
Configure	e File Share Witness	
Before You Begin Select Quorum Configuration Option	Please select a file share that will be used by the file share witness resource. This file share must not be hosted by this cluster. It can be made more available by hosting it on another cluster.	
Select Quorum Witness	File Share Path:	
Configure File Share Witness	\\HX-EAP-01.ciscolab.dk\DS1_8K Browse]
Confirmation		
Configure Cluster Quorum Settings		
Summary		
	< Previous Next > Cancel	

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

體 Configure Cluster Quorum Wizard		×
Configure	e Cluster Quorum Settings	
Before You Begin	Please wait while the quorum settings are configured.	
Select Quorum Configuration Option		
Select Quorum Witness		
Configure File Share Witness		
Confirmation		
Configure Cluster Quorum Settings		
Summary		
	Cancel	0.544

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.

 Cluster Core Resources 			
Name	Status	Information	^
Name: HX-EAP-CLU01	(Online		
Cluster Infrastructure			
🗟 Virtual Machine Cluster WMI	(Online		
File Share Witness			
🔜 File Share Witness (\\HX-EAP-01.ciscolab.dk\DS1_8K)	(Online		~
<			>

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Checking the Windows Version on the Hyper-V Host

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

- **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

Step 1 Open the Failover Cluster Manager and click **Validate Cluster** and then click **Next**.

Witness: File Share Witness (\\HYPER4-SMB.hx.local\chris_quor	num)	^ Act	tions
			HV	PER4-FO.hx.local
 Configure 			89	Configure Role
Configure high availability for a 2016 or supported previous ve	a specific clustered role, add one or rsions of Windows Server.	more servers (nodes), or copy roles from a cluster running Windows Server	-	Validate Cluster
To Configure Role		Fallover cluster topics on the Web	1	View Validation Report
Validate Ouster			2	Add Node
Add Node			1	Close Connection
Copy Cluster Roles			Ð	Reset Recent Events
P Ouster-Aware Updating				More Actions
				View
 Navigate 			a	Refresh
		(F) Course		Properties
Networks	Custer Events		2	Help

Step 2

Select Run all tests (recommended) and then click Next.

💐 Validate a Config	guration Wizard	×
Testing	Options	
Before You Begin Testing Options Confirmation Validating Summary	Choose between running all tests or running selected tests. The tests examine the Cluster Configuration, Hyper-V Configuration, Inventory, Network, Storage, and System Configuration. Microsoft supports a cluster solution only if the complete configuration (servers, network, and storage) can pass all tests in this wizard. In addition, all hardware components in the cluster solution must be "Certified for Windows Server 2016." Run all tests (recommended) Run only tests I select <u>More about cluster validation tests</u>	
	< Previous Next > Cancel	

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.

Validate a Config	juration Wizard			
Validatin	ng			
ore You Begin ting Options	The following v amount of time	ralidation tests are running. Depending on the test select	tion, this may take a signific	ant
fimation	Progress	Test	Result	^
	100%	List Environment Variables	The test passed.	
dating	100%	List Host Guardian Service client configuration	The test passed.	
Summary	100%	List Memory Information	The test passed.	
	100%	List Operating System Information	The test passed.	
	100%	List Plug and Play Devices	The test passed.	
	100%	List Running Processes	The test passed.	
	100%	List Services Information	The test passed.	
	0%	List Software Updates	Test is currently ru	nnii 🗸
	<			>

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, Install RSAT tools on the Management Station or Host, on page 46.
- 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, Creating VMs using Hyper-V Manager, on page 51.

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.

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**.

Dashboard Local Server	WELCOME TO SERVER MANAGER	
Before you begin Before You Begin Installation Type Server Selection Server Roles Reatures Confirmation Results	DESTINATION SERVER Honolulu HIGHYDDMLIDCAL This wizard helps you install roles, role services, or features. You determine which roles, role services, or features to install based on the computing needs of your organization, such as sharing documents, or hosting a website. To remove roles, role services, or features: Start the Remove Roles and Features Wizard Before you continue, verify that the following tasks have been completed: • The Administrator account has a strong password • Network settings, such as static IP addresses, are configured • The most current security updates from Windows Update are installed If you must verify that any of the preceding prerequisites have been completed, close the wizard, complete the steps, and then run the wizard again. To continue, click Next.	
	Skip this page by default	

- 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**.

I

	anager 🖲 Dashboard 🛛 🗸 🕫 🖡 Manage Tools View	Help
Dashboard	WELCOME TO SERVER MANAGER	
Local Server		-
🚵 Add Roles and Features Wizard	- 🗆 X	
Select destination	SELVEL DESTINATION SERVER Honolikul HUHVDOM LOCAL	
Refore You Benin	Select a server or a virtual hard disk on which to install roles and features.	
Installation Type	Select a server from the server pool	
Server Selection	Select a virtual hard disk	
Server Roles	Server Pool	
Features	Phase -	
	Filter:	
	Name IP Address Operating System	-
	Honolulu HXHVDOM LO 10.29.149.224 Microsoft Windows Server 2016 Datacenter Evaluation	
	1 Computer(s) found	
	This page shows servers that are running Windows Server 2012 or a newer release of Windows Server,	
	and that have been added by using the Add Servers command in Server Manager. Offline servers and newly-added servers from which data collection is still incomplete are not shown.	

- **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.

Server Ma	welcome to server manager	Manage Tools View Help
ocal Server		
Add Roles and Features Wizard		DESTINATION SERVER
Before You Begin Installation Type Server Roles Features Confirmation Results	Select one or more features to install on the selected server. Peatures Cuality Windows Audio Video Experience Remote Offreential Compression Remote Assistance Remote Server Administration Tools SMIP Server Tools BITS Server Extensions Tools Sime Extensions Tools Sime Extensions Tools Sime Related to Data Entryption Administration BITS Server Custer Module for Windows Pre- Feature Administration Tools Sime Related to Tools Feature Additional Server Module for Windows Pre- Feature Additional Server Vieture Management (PAM) Client Discussed Server Vieture Management Tools Discussed Vietures Module For Windows Pre- Discussed Vieture Module For Windows Pre- Discussed Vieture Module For Windows Pre- Discussed Vieture Vieture Module For Windows Pre- Discussed Vieture Vieture Vieture Server Vieture Management Tools Discussed Vieture Vieture Vieture Vieture Server Vieture Vietu	Description Failover Clustering Tools include the Failover Cluster Manager snap-in, the Cluster-Avare Updating interface, and the Failover Cluster module for Windows PowerShell, Additional tools are the Failover Cluster Automation Server and the Failover Cluster Command Interface.

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.

Server Ma	nager > Dashboard • 💬 🍊 Manage Tools View	Не
Jachboard	WELCOME TO SERVER MANAGER	
ocal Server		
Add Roles and Features Wizard	>	<
Installation progre	DESTINATION SERVER	
installation progre	Honouru.HXHYDOM.LOCAL	
Refore You Regin	View installation progress	
	Feature installation	
	Installation succeeded on Honolulu.HXHVDOM.LOCAL	
	Remote Server Administration Tools	
Confirmation	Feature Administration Tools	
Results	Failover Clustering Tools Failover Cluster Management Tools	
	Failover Cluster Module for Windows PowerShell	
	Role Administration Tools	
	Hyper-V Management Tools	
	Hyper-V Module for Windows PowerShell	
	nyper-v doi management toots	
	You can close this without internuction running tasks. View task progress or open this	
	page again by clicking Notifications in the command bar, and then Task Details.	
	Export configuration settings	
	107	_

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.

- 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, on page 51

Creating VMs using Hyper-V Manager

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

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.

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
```

```
10.10.100 \\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 FixScymmAccess.py script must be invoked with python3.

Note FixScvmmAccess.py requires root access.

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
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: python3 /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).

- 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**.

	File Share Sto	orage					
itatus	The following file	e shares will be av	ailable as storage	locations for VM	ls deploy	ed to no	des in this cluster:
indiable Steeres	File Share Path		Access Status	Classification	Free	pace	Total Capacity
wallable storage	Add File Share				×	GB	1,024.00 GB
ile Share Storage	Specify a vali	id SMR share	nath to use fo	or VM			
Shared Volumes	deployment	a sine share	patir to use it				
/irtual Switches	File share path:	Whyperv-team.	hv-ad1.local\ds1		٣		
	list or enter the U For managed shar computer account management account Directory comput cluster management To bring a file sha	JNC path for an ur ares, VMM grants I the for the virtualiza- count. For unmana- ter account for the ent account have are into managem the Providers node	Imanaged file sha file share access to tion cluster and th ged file shares, en i virtualization clu- access to the file : ent: in the VMM c e, and then click "	re. the Active Dire the VMM cluster issure that the Ac ster and the VM share. onsole, open the add Storage Des	ctory tive M e Fabric rice."		
	workspace, click t			ок Са	incel		

Step 5 When mapping completes, the share is added as shown in the screenshot below.

ucsouwic.HV-AD1.local Pr	operties				
General	File Share Storage				
Status	The following file shares will be av	ailable as storage	locations for VMs	deployed to no	des in this cluster:
Available Storage	File Share Path	Access Status	Classification	Free Space	Total Capacity
Available Storage	\\hyperv-team.hv-ad1.local\ds1	0	Remote Storage	897.12 GB	1,024.00 GB
File Share Storage					
Shared Volu File Share Storage]				
Virtual Switches					
Custom Properties					
			Repai	r Add	. Remove
View Script				04	Cancel

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.
- 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.

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**.

ADAPTERS AND	INTERFACE	S	TASKS 💌
Network Adapters	Team Interfa	ces	
Adapter	Speed	d Sta	ate Reason
hv-livemigrate-a	40 Gb	ops 🕤	Active
hv-livemigrate-b	40 Gb	ops 🔿	Standby
▲ team-hx-sto	orage-data (2)	
storage-data-a	40 Gb	ops 💿	Add to New Team
storage-data-b	40 Gb	ops 🔿	Remove From Team "team-hx-storage-data"
Name	Sent	Received	Disable
Bytes:	1,851,401	1,504,781	Properties
Packets:	7,709	8,259	
Packets discarded:	0	0	
Bytes/Second:	181,740	175,152	
Packets/Second:	455	478	Activate

This forces the storage-data-b interface on FI-B to become the active path for data.

L

ADAPTERS AND IN	TERFACES		TASKS 🔻
Network Adapters	am Interfaces		
Adapter	Speed	State Reason	
hv-livemigrate-a	40 Gbps	Active	^
hv-livemigrate-b	40 Gbps	Standby	
▲ team-hx-stora	ge-data (2)		
storage-data-a	Disabled	× Faulted Not found	
storage-data-b	40 Gbps	Active Active storage data p	ath ~

Test jumbo pings from local powershell window to remote host storage data ip addresses. For example:

Step 5

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**.

ADAPTERS AND INT	ERFACES			TASKS	•
Network Adapters Tea	m Interfaces				
Adapter	Speed	State	Reason		
hv-livemigrate-a	Add to New	Team			î
hv-livemigrate-b	Remove Fro	m Team "tea	m-hx-livemigration"		
🔺 team-hx-sto	Enable				
storage-data-a	Properties				
storage-data-b	40 Gbps	Stand	lby		~

ADAPTERS AND INTE	RFACES		TASKS	-
Network Adapters Team	Interfaces			
Adapter	Speed	State	Reason	
hv-livemigrate-a	40 Gbps	Active		$^{\circ}$
hv-livemigrate-b	40 Gbps	Standby	Original Configuration	
team-hx-storage-	data (2)			
storage-data-a	40 Gbps	Active		1
storage-data-b	40 Gbps	Standby	6	~

Adding VLANs after Installation

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

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

da da da	UCS Manager			8 1 1 1 1 1 1 1 1 1 1	2			• •) C
*	Al	LAN / LAN Cloud / VLANs								
-	* LAN Coud	Ty Advanced Filter + Ex	or @ Prix							0
	Fabric A	Name	ID .	Type	Transport	Native	VLAN Sharing	Primary VLAN Name	Multicast Policy Name	
	 Fabric B 	VLAN default (1)	1	Lan	Ether	Yes	None			
	God System Class LAN Pin Groups	VLAN he inband-cim.	570	Lan	Ether Ether	No	None		HyperFiex	
2	Threshold Policies VLAN Groups	VLAN he-inband-mp.	240	Lan	Dher	No	None		HyperFiex	
	VAN	VLAN for-inband-mg.	240 998	Lan Lan	Ether Filtur	NO	None		HyperFex	
16	VLAN hx-inband-cinc-570 (570) VLAN hx-inband-inget (240) VLAN hx-inband-inget-1024 (240	General Org Perm	issions V.	AN Group Membership Faults D Properties	ers					1
	VLAN hs-inband-ingint-210 (210) VLAN hs-inband-ingint-240 (240) VLAN hs-inband-ingint-ucs1021 (VLAN hs-inband-regi=50 (310) VLAN hs-inbangiate (540) VLAN hs-inbangiate (540)	Actions Insulty (C.O): Cry Perm Desire	0	0 Name Name VLAV Namerik Type Latale Cener Mutical Policy Nem	: default Yas Las External Local root sets *		W.ANID 1 Febre ID Deal If Type Writed Transport Type Ether Create Multicast Policy			
	VLAN hx-hvemigrane-540 (540) VLAN hx-storage-data (540) VLAN hx-storage-data-1024 (540) VLAN hx-storage-data-310 (310)			Muticati Policy Inda Sharina Tape	ce : org-neotime-pole : R None () Prime	ry-default rv ∩ltesteted ∩Community				

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

	VLANa	VLANs									
VLAN ucs1110-hx-inband-cimc (\$70)											
VLAN ucs1110-fw-inband-mgmt (240)	Ty Advanced Fitt	ter + Expor	0 @ Pret								
VLAN ucs1110-tx-liverrigrate (540)	Name			10	Type	Transport	Native	VLAN Sharing	Primary VLAN Name	Multicast Policy Name	
VLAN ucs1110-tx-storage-data (340)	VLAN ucs11	18-hx-inberg	5-cimc (570)	570	Lan	Ether	No	None		HyperFlex.	
VLAN ucs1110-um-network (440)	VLAN ups11	18-hx-inban	5-mgmt (240)	240	Lan	Ether	No	None		HyperFilex	
VLAN ucs1110-sm-network440 (440)	VLAN uce11	18-to-lveni	grate (540)	540	Lan	Ether	No	None		HyperFlex	
VLAN ucs1110-sm-network441 (441)	VLAN ucs11	18-tx-storag	e-data (340)	340	Lan	Ether	No	None		HyperFlex	
VLAN ucs1118-tw-inband-cimc (\$70)	VLAN uce11	18-ha-whole	on (540)	540	Lan	Ether	No	None		HyperFlex	
VLAN ucs1118-tw-inband-mpmt (240)	VLAN ups11	18-arti-raphe	ork (440)	440	Lan	Ether	No	None		HyperFlex	
VLAN ucs1118-tw-liverrigrate (540)	VLAN ups11	18-um-netwo	09440 (440)	440	Lan	Ether	No	None		Hyperfiles	
VLAN ucs1118-tw-storage-data (340)	VLAN uce11	18-vm-netw	ork441 (441)	441	Lan	Ether	No	None		HyperFlex	
VLAN ucs1118-hs-vmotion (\$40)		Quest Desire Onto									
VLAN ucs1118-um-network (440)						9					
VLAN ucs1118-um-network440 (440)	Outsits										
VLAN ucs1118-sm-network441 (441)	[during]	Annual de desenante et la factor de la companya de									
VLAN vm-network (440)	Contras	General Dig Permissions VLAX Drug Membership Faults Evens									
VLAN vm-network-1021 (440)	Fault Summa	ary			Properties						
VLAN vm-network-1024 (440)	0	•	0	0	Name	and the second data		MAND - 441			
VLAN vm-network-410 (410)	0	~						for a set			
VLAN vm-network-640 (640)					Native VLAN			Fabric ID : Deat			
VLAN vm-network410 (410)	Actions				Network Type	Lan		if Type : Virtual			
VLAN vm-network440 (440)					Locale	External		Transport Type : Ether			
VI 88	Modhi VLAN	Cho Permas	one		Chamar	- I weat					
APpend and concerning the law l											

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

cisco.	UCS Manager	8	9 4 9		
-	(management)		··· // //		
m		LONE / LON CAULE / VLONE			
	VLAN ucs1110-hx-inband-cime (570)	TONI .			
	VLAN ucs1110-bx-inband-mgmt (240)	S Abacost II Create VI ANs		(0 ×	0
*	VLAN ucs1110-hs-luemigrate (540)	None Citodio VENTS		Samp	Primary VLAN Name Multicast Policy Name
	VLAN ucs1110-hx-storage-data (340)	VLAN unst VLAN Name/Prefs : ucs1118-um-network	42		Hyperfiles
_	VLAN ucs1110-vm-network (440)	VLAN upon Multicast Policy Name : +not set> +	Create Multicast Policy		HyperFiles
	VLAN ucs1110-vm-network440 (440)	VLAN until + Common/Statut - Fabric A - Fabric B - Box	Fabrica Configured Differently		Hyperfiles
	VLAN ucs1110-vm-network441 (441)	VLAN ups? You are creating global VLANs that map to the same	VLAN IDs in all available fabrics.		HyperFlox
-	VLAN ucs1118-hs-inband-cimc (570)	VLAN user VLAN U	8,35,40-45', '23', '23,34-45')		HyperFiles
=	VLAN ucs1118-hx-inband-ingmt (240)	VLAN JUST Station Time : Cr. None O Dimension Company	Community		Hyperflies
	VLAN ucs1118-ha-buenepute (540)	VLAN upp	Joannany		HyperFies
30	VLAN uos1118-ts-storage-data (D40)	WLAN JOST			Howfree
	VLAN uns1118-um-metacoli (445)	and the second se			
	VLAN ups1118-um-network40 (445)				
	VLAN ucs1118-vm-network441 (441)	Details			
	VLAN vm-metwork (440)				
	VLAN wm-metacork-1021 (440)	General			
	VLAN wm-network -1024 (640)	Fault Surray			
	VLAN um-network-410 (410)	0		447	
	VLAN wm-network-440 (440)	S			
	VLAN vm-network#10 (#10)		Check Over	tap Cancel Man	
	VLAN vm-network.640 (640)	Actiona		17 La	
	VLAN vm-network57 (57)				
	Applances				
	Fabric A				
cisco		0	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
-					
-m		LAN / LAN Cloud / YLANs			
	VLAN use1110-he-inband-cime (\$20)	VLANs			
	VLAN uos1110-ter-inkand-mare (240)	Sy Advanced Filter + Export Print			0
8	VLAN ucs1110-he-livemigrate (540)	Name * 10	Type Transport	Native VLAN Sharing	Primary VLAN Name Multicast Policy Name
-	VLAN ucs1110-tw-storage-data (340)	Mark and 1118 day interest rates (\$770 \$70	Las Etter	No. No.	happen and
-	VLAN ucs1110-vm-network (440)		Las film	No. No.	
0	VLAN ucs1110-vm-network440 (440)	WAN unt 1118-ba-deaminante (Sell) 540	Las Etter	No. No.	
	VLAN ucs1110-vm-network441 (441)	WAN until 118-ba-monage-data (142) 340	Las Eller	No. No.	
=	VLAN ucs1118-tw-inband-cimc (SP08	VAN constitution manager canadiant	Lan filter	No. Norm	
-	VLW ups1118-tw-inband-ingent (240)	MAN west 118 year restance (a)		Nerve	Inconflar
	VLAN ucs1118-he-liversignate (540)	VUN vol 118 vm entrop 14		×	Provider
40	VLAN ucs1118-tx-storage-data (340)	VLAN west1118-yes-network 641 Successfully created fabr	oflan/net-ucs1118-vm-network442.	None	HapperFlass
	VLAN ucs1118-hs-vmotion (540)	The traffic on this VLAN a	If flow on all uplink ports which are not part of any	Network Group.	
	VLAN uce1118-vm-network (440)	And a state of the second s		(at)	
	VLAN ucs1118-vm-network480 (440)				
	VLW GETTIE VIII NEWORKET (441)	Details			
	VOVPORTING VIEW AND AND A REPORT OF A REPO	General Org Permissions VLAN Group Membership	Faults Events		
	M AN UNCOMPANY (440)	Ind formers			
	M AN UNIVERSITY AND AND	Property			
	VI. M. um-remark - #15 (#10)	8 0 0 Name	default	VLAN ID : 1	9 1))
	VLAN vm-nement-645 (645)	0 0 0 0 Native	ILAN Yes	Fabric ID : Deal	
	VEAN vm-network410 64108	Netwo	k Type : Lan	# Type : Virtual	
	VLAN vm-network440 (440)	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	** *		
	VLAN vm-network57 (57)				
	Applances				
L					

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

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



Cluster Expansion—Compute-only Nodes

- Overview, on page 61
- Pre-expansion Checklist, on page 61
- Cluster Expansion M5 Blade Servers (M.2 SATA) or M4 Blade Servers (Local SAS Drives), on page 64
- Cluster Expansion M4 Blade Servers (Fibre Chanel SAN), on page 87

Overview

You can add converged or compute-only nodes to expand a Hyper-V cluster. Below is the list of supported converged and compute-only nodes in Hyper-V clusters.

- Converged Nodes—HX220c M5, HX240c M5, HX220c AF M5, HX240c AF M5
- Compute-only Nodes—B200 M5, B200 M4 Blade Servers, and C220 M5 C-Series Rack Servers

The following procedure describes adding **compute-only** nodes to expand a Hyper-V cluster. This expansion workflow includes Windows OS installation and is not performed as part of cluster creation using HX Installer. To expand Hyper-V clusters with converged nodes, refer to Cluster Expansion—Converged Nodes, on page 99.

Pre-expansion Checklist

To add **compute-only** nodes to expand your Hyper-V cluster, complete the following pre-expansion checklist that summarizes key requirements, considerations and tasks.



Note The following checklist applies to Cisco HX Release 5.0(x).

I

Requirement/Task	Description	escription			
Supported Versions and	HX Data P	latform			
Platforms	3.5(2a) and	later			
	Important	HXDP Release 3.5(2a) is the minimum supported release.			
	Compute-o	only Nodes and Storage Options			
	Attention	UCS B200 M5 blade servers with M.2 SATA drives.			
		HW RAID M.2 (UCS-M2-HWRAID and HX-M2-HWRAID) is not supported on Compute-only nodes.			
		UCS B200 M4 blade servers with local SAS or Fibre Channel SANs.			
	Windows I	SO			
	Customer p	rovided Windows 2016 Datacenter edition ISO.			
Maximum Compute to Converged ratio	1:1				
Maximum Cluster Size	A single clu	ster can have a maximum of 32 nodes.			
Network Speed	Mixing network converged r network concompute-on	work speeds between compute-only nodes and HyperFlex nodes is not recommended. For example, if the existing nnectivity of the converged nodes is 40 GbE, then the ally nodes should also be connected at 40 Gb speeds.			
Determine Boot Disk Connection	Based on yo want to add	our topology, and the type of compute-only nodes that you , choose one of the following expansion scenarios:			
	• Cluster drives,	r Expansion for UCS M5 blade servers with M.2 SATA , or UCS M4 blade servers with Local SAS drives			
	Note	HW RAID M.2 (UCS-M2-HWRAID and HX-M2-HWRAID) is not supported on Compute-only nodes.			
	• Cluster	r Expansion for UCS M4 blade servers with Fibre Channel			
Boot Disk Capacity	Ensure that during Wind you may ch	you have only ONE boot disk of size greater than 240GB dows OS installation. After cluster expansion is complete, oose additional disks.			

Requirement/Task	Description	1
Stage HyperFlex Driver Image	The Windo on a shared UCS Mana download a a shared loo	ws ISO and HyperFlex Driver image files must be placed location (such as HX Installer) that is reachable from Cisco ger and the out-of-band subnet. Use the following steps to and host the HyperFlex Driver Image and Windows ISO in cation within the installer VM
	Note	Windows is configured to boot to UEFI mode starting Cisco HX Release 4.5 and later.
	Note	These steps apply to both Windows Server 2016 and Windows Server 2019 .
	1. Copy th comma	ne HyperFlex Driver Image. For example, run the following nd:
	rsync - /opt/spi install.i	avzP ringpath/packages/latest.img/var/www/localhost/images/ img
	2. Mount comma	the HyperFlex Driver Image. For example, run the following nd:
	mkdir /var/wy	-p /mnt/install-img && mount -o loop,rw ww/localhost/images/install.img /mnt/install-img
	3. Copy thand run	ne answer file specific files for your Windows Server Version the following command:
	Windo	ws Server 2016
	cp/opt/sj Autour	pringpath/packages/FactoryUnattendXML/WindowsServer2016/ nattend.xml.uefi /mnt/installimg/Autounattend.xml
	Windo	ws Server 2019
	cp /opt/spr Autour	ingpath/packages/FactoryUnattendXML/WindowsServer2019/ nattend.xml.uefi /mnt/install-img/Autounattend.xml
	4. Unmou followi	nt the HyperFlex Driver Image. For example, run the ng command:
	umoun	t /mnt/install-img
	Note	You cannot install Windows Server 2019 or 2016 on SD cards.
	Note	The DiskID referenced in autounattend.xml should correctly point to the local disk on the compute node where the OS is installed.
Multipathing with Fibre Channel SAN	Do NOT us	e multipathing with Fibre Channel SANs.

Requirement/Task	Description
Fabric Interconnect Support	Compute-only node expansion is supported only when the compute node are on the same Fabric Interconnects.

Cluster Expansion - M5 Blade Servers (M.2 SATA) or M4 Blade Servers (Local SAS Drives)

Procedure Overview

The Hyper-V cluster expansion procedure for adding UCS M5 Blade Servers (M.2 SATA) Or M4 Blade Servers (Local SAS Drives) consists of the following sequence of tasks:

- 1. Pre-expansion Checklist
- 2. Cisco UCS Manager Configuration, on page 64
- 3. Microsoft OS Installation, on page 70
- 4. Hypervisor Configuration, HXDP Software Installation and Cluster Expansion, on page 79
- 5. Perform the following post installation steps:
 - Configuring a Static IP Address for Live Migration and VM Network, on page 35
 - (Optional) Post Installation Constrained Delegation, on page 36
 - Configure Local Default Paths, on page 37
 - Checking the Windows Version on the Hyper-V Host, on page 44

Cisco UCS Manager Configuration

The following procedure describes configuring Cisco UCS Manager using HX Installer.

Step 1 Log into the HX Data Platform Installer using the following steps:

- a) In a browser, enter the URL for the VM where HX Data Platform Installer was installed.
- b) Use the credentials: username: root, password: Cisco123
 - **Important** Systems ship with a default password of Ciscol23 that must be changed during installation. You cannot continue installation unless you specify a new user supplied password.
- c) Read the EULA. Click I accept the terms and conditions. Click Login.
- Step 2 In the Select a Workflow page, select Expand Cluster > Compute Node.

listo HyperFle	x Installer	Workflow	0 6
Select a Workflow	W		
	Cluster Creation with HyperFlex (Fl)	Expand Clus Converged 1 Compute No	ter Avode
Advanced Option	🔒 l know what I'm doing, let me customize my w	vorkflow	011000

Step 3 In the next screen, click Run UCS Manager Configuration and then Continue.

cisco	HyperFlex Installer			0	0	۲	Ø ~
			Workflow				
Selec	t a Workflow						
		Is OS installed on the !	lode				
			Run UCS Manager Configuration				
		0	Run Hypervisor Configuration				
		0	Deploy HX Software				
	.0	Create HX Cluster	Expand HX Cluster				
⊜ Sh	ow me the standard workflows				I	Continu	•

Caution Do not choose any other workflow option at this point.

Step 4 Click **Confirm** in the pop-up that displays.

Warning	×
You have selected a custom option that splits the installation or expansion workflow. You must complete all tasks in the workflow to ensure a worki If your nodes are data-at-rest encryption capable, custom installation is not supported. Cancel to return to the standard workflow. Confirm and Proceed to continue with a custom workflow.	ng HX storage cluster.
Cancel	nfirm and Proceed

Step 5 In the **Credentials** page, complete the following fields for UCS Manager.

Field	Description
UCS Manager Host Name	FQDN or the VIP address of the UCS Manager.
UCS Manager User Name and Password	Administrator user and password or a user with UCS Manager administrative privileges.

Use the following illustration as a reference for entering values in this page.

dialia HyperFlex Installer			0	0	0	0	0 ~
Credentials		Server Selection		UCSM Configu	ration		
UCS Manager Credentials UCS Manager Host Name 10.05.121.240	UCS Manager User Name admin	Password	Con	figuration configur Si	ag and drop ation files h	rere or:	*
				< Back		Continue	

Click **Continue** to proceed. The installer will now try to connect to the UCS Manager and query for available servers. The configuration pane will be populated as the installer progresses. After the query finishes a screen with the available servers is displayed.

Step 6

In the Server Selection page, choose all the servers that you want to install in the cluster and click Continue.



Step 7 In the UCSM Configuration page, complete the following fields for VLAN Configuration.

HyperFlex needs to have at least 4 VLANs to function, each needs to be on different IP subnets and extended from the fabric interconnects to the connecting uplink switches, to ensure that traffic can flow from the Primary Fabric Interconnect (Fabric A) to the Subordinate Fabric Interconnect (Fabric B).

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

Use the following illustration as a reference for entering values in this page.

VLAN for Hypervisor and Hype	erFlex management	VLAN for HyperFlex storage	e traffic
VLAN Name	VLAN ID	VLAN Name	VLAN ID
hx-inband-mgmt		hx-storage-data	
VLAN for VM Live Migration		VLAN for VM Network	
VLAN Name	VLAN ID	VLAN Name	VLAN ID(s)

Note

• Do not use VLAN 1 as it is not best practice and can cause issues with disjoint layer 2.

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

- **Caution** Renaming the 4 core networks is not supported.
- **Step 8** Enter the remaining network configuration for MAC Pool, 'hx' IP Pool for Cisco IMC, Cisco IMC access management (Out of band or in band)

Field	Description	Value		
MAC Pool				
MAC pool prefix	MAC address pool for the HX cluster, to be configured in UCSM by the installer. Ensure that the mac address pool isn't used anywhere else in your layer 2 environment.	00:25:b5: xx		
'hx' IP Pool for Cisco IMC				
IP Blocks	The range of IP addresses that are used for Out-Of-Band management of the HyperFlex nodes.	10.193.211.124127		
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 (Out of band or In band)				
In band (recommended) Out of Band	Select the option that was used for converged-nodes cluster creation.			
Note

• The Out-Of-Band network needs to be on the same subnet as UCS Manager.

• You can add multiple blocks of addresses as a comma separated line.

MAC POOL			
MAC Pool Prefix			
00:25:85:			
'hx-ext-mgmt' IP Pool for Out-of-b	and CIMC		
'hx-ext-mgmt' IP Pool for Out-of-b IP Blocks	and CIMC Subnet Mask	Gateway	

Important If you choose to expand your Hyper-V cluster using M4 blade servers with FC SAN boot option, you must enable FC Storage. Complete the fields for FC Storage.

Table 12: (Optional) Applicable for M4 blade servers with FC SAN

Field	Description	Example Value
FC Storage	Checkbox that indicates if FX Storage should be enabled.	Check to enable FC Storage
WWxN Pool	WxN 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. 2	
VSAN A Name	The name of the VSAN for the primary fabric interconnect (FI-A). By default, this is set to hx-ext-storage-fc-a.	hx-ext-storage-fc-a
VSAN A ID	The unique identifier assigned to the network for the primary fabric interconnect (FI-A).	70
VSAN B Name	The name of the VSAN for the subordinate fabric interconnect (FI-B). By default, this is set to hx-ext-storage-fc-b.	hx-ext-storage-fc-b
VSAN B ID	The unique identifier assigned to the network for the subordinate fabric interconnect (FI-B).	70

Step 9 Advanced Section

Field	Description E	
UCS Firmware Server Version	Choose the appropriate UCS Server Firmware version.	3.2(3a)
HyperFlex Cluster Name	This user defined name will be used as part of the service profile naming In UCSM for easier identification.	

Field	Description	Example Value	
Org Name	The org. name is used for isolating the HX environment from the rest of the UCS platform to ensure consistency.	HX-Cluster1	

Step 10 When you click Start, the installer validates your input and then begins configuring UCS Manager.Step 11 When the HX Data Platform Installer is finished, then you are ready to proceed to next step.

Start	Validations	UCSM Configuration
✓ UCSM Configuration Success	sful	

Microsoft OS Installation

For Microsoft OS installation, you will need to first configure a vMedia policy in Cisco UCS Manager to map the following two image files:

- Customer provided Windows 2016 Datacenter edition ISO or Windows Server 2019 Datacenter-Desktop Experience ISO, and
- Cisco provided Cisco HyperFlex Driver image.

Note Ensure network connectivity exists between the fileshare and all server management IP addresses.

Step 1 Launch Cisco UCS Manager:

- a) In your web browser, type the Cisco UCS Manager IP address.
- b) Click Launch UCS Manager.
- c) In the login screen, enter the with the username as **admin** and the password set in the beginning of the installation. Click **Log in**.
- **Step 2** Create a vMedia policy for the Windows OS and Cisco driver images:
 - a) In the Navigation pane, click Servers.
 - b) Expand Servers > Policies > root > Sub-Organizations > hx-cluster_name > vMedia Policies
 - c) Right-click vMedia Policies and select Create vMedia Policy HyperFlex.

A FI	I-6332-A - Unified Comp ×		θ	-	п х	
€ ⇒	C A Not secure https://10.29.14	9.205/app/3_2_3a/index.html			Q 🕁 🗄	
altalta cisco	UCS Manager		00	• •	• •	
馬	Policies	Policies / root / vMedia Policies				
	• Policies	vMedia Policies				Ĺ
	• root	+ - Ty Advanced Filter + Export + Print			٥	
	 Adapter Policies 	Name Type				Ĺ
56	 BIOS Defaults 	No data available				
=	 BIOS Policies 					
	 Boot Policies 					Ĺ
Q	 Diagnostics Policies 					Ĺ
	 Graphics Card Policies 					Ĺ
	 Host Firmware Packages 					Ĺ
	 IPMI Access Profiles 					
	 KVM Management Policies 					
10	 Local Disk Config Policies 					
	Maintenance Policies					
	 Management Firmware Packages 					Ĺ
	Memory Policy					Ĺ
	 Power Control Policies 					
	 Power Sync Policies 					
	 Scrub Policies 					
	 Serial over LAN Policies 					
	 Server Pool Policies 					
	 Server Pool Policy Qualifications 					
	Threshold Policies					
	 ISCSI Authentication Profiles 					
	vMedia Policine Croate uMedia Pelicu					¥
	 vNIC/vHBA Placement Poticies 					18

d) In the Create vMedia Policy dialog box, complete the following fields:

Field Name	Descripti	Description		
Name	The name	The name of the vMedia policy. For example, <i>HX-vMedia</i> .This name can be between 1 and 16 alphanumeric characters. You cannot use spaces or any special characters other than - (hyphen), _ (underscore), : (colon), and . (period), and you cannot change this name after the object is saved.		
	This nam use space (colon), a saved.			
Description	A descrip where an	otion of the policy. We recommend including information about d when the policy should be used. Maximum 115 characters.		
Retry on Mount Failure	Designate This can	es if the vMedia will continue mounting when a mount failure occurs. be:		
	• Yes			
	• No			
	Note	The default setting is Yes . When Yes is selected the remote server will continue to try to mount the vMedia mount process until it is successful, or you disable this option. If you select No, a warning message will appear indicating retry on mount failure will not work in case of mount failure.		

Refer to the following screenshot as an example:

Create	e vMedia Po	olicy						? ×
Name Descriptio Retry on M vMedia M	: HX- n : Mount Failure : N Mounts	vMedia						
+ -	Ty Advanced Filter	♠ Export	n Print					٥
Name	Туре	Protocol	Authentica	Server	Filename	Remote Pa	User	Remap on
			(+) A	dd 🖲 Delet	e 🛈 Info			
							ОК	Cancel

e) On the icon bar under the vMedia Mounts pane, click + Add. In the Create vMedia Mount dialog box, complete the following fields:

Field Name	Description	Example Value
Name	Name for the mount point.	Windows-ISO
Description	Can be used for more information.	Windows Server 2016 image or Windows Server 2019 image
Device Type	Type of image that you want to mount. This can be: • CDD —Scriptable vMedia CD. • HDD —Scriptable vMedia HDD.	CDD
Protocol	The protocol used for accessing the share where the ISO files are located.	НТТР
Hostname/IP Address	IP address or FQDN of the server hosting the images.	10.101.1.92
Image Name Variable	This value is not used in HyperFlex installation.	None

Field Name	Description	Example Value
Remote File	The filename of the ISO file that you want to mount.	
Remote Path	The path on the remote server to where the file resides	
Username	If you use CIFS or NFS a username might be necessary	
Password	If you use CIFS or NFS a password might be necessary	

Refer to the screenshot below as an example:

Create vMed	a Mount	? ×
Name	Windows-ISO	
Description	Windows Server 2016 Image	
Device Type		
Protocol		
Hostname/IP Address	10.29.149.212	
Image Name Variable	None Service Profile Name	_
Remote File	en_windows_server_2016_x64_dvd_9327751.iso	
Remote Path	/images/	
Username		
Password		
Remap on Eject		_
	ок	Cancel

f) Click **OK**. When you click **OK**, you will now be returned to the **vMedia Policies** screen, and you should see the information that you just submitted.

g) Repeat Steps 2e and 2f, however, change the type to HDD and the remote file name to the Cisco HyperFlex driver image.

306770

h) At the end of this step, the two vMedia mounts will be listed in the Create vMedia Policy screen as shown in the following screenshot:

ame ascription	: HX-	vMedia					
try on Mount Media Moun	Failure : ON	o 💿 Yes					
+ - Ter	Advanced Filter	Export Protocol	Print Authentica	Server	Filename	Remote Pa	User Remap on
HX-Cis	HDD	HTTP	Default	10.29.149	HXInstall	/images/	No
Windo	CDD	HTTP	Default	10.29.149	en_windo	/images/	No
			(A) 4	dd 🗍 Dalara	() into		
			• A	Delete	0 110		

Step 3 Associate the vMedia Policy to a Service Profile:

a) In the Navigation pane, select Servers > Service Profile Templates > root > Sub-Organizations > hx-cluster_name > Service Template compute-nodes, or compute-nodes-m5



- b) Click the vMedia Policy tab. Then, click Modify vMedia Policy
- c) Choose the vMedia Policy that you created earlier from the drop-down selection, and click OK twice.

dia Policy:	HyperFlex 🔻			_			
	Select vMedia	Policy to us	e				
ſ	Create a Speci	fic vMedia	Policy				
ame	vMedia Policies						
escription etc/ on M	HX-vMedia			nstall software o	n HyperFlex ser	vers	
vMedia M	HyperFlex]			
+ -	Ty Advanced Filter	♠ Export	🖶 Print				
	-			Carrier	Filesense	Domete Dath	Lines

d) Under the General tab, verify that the vMedia policy is added to the Service Profile.

cisco.	UCS Manager	8	V 🐴 🗘 4 1 1			•
æ	Service Profiles +	Service Profiles / root / Sub- Organizations	/ HyperFlex / Service Profil			
8	 Service Profiles root 	General Storage Network	iSCSI vNICs vMedia Policy	Boot Order Virtual N	Achines FC Zones	Policies Se
器	 Sub-Organizations HyperFlex 	Actions Modify vMedia Policy	Global vMedia Policy Name : HX-v	vMedia		
₽	rack-unit-1 (HXCLUS)		vMedia Policy Instance : org-r Description :	root/mnt-cfg-policy-HX-vN	ledia	
Q	 rack-unit-2 (HXCLUS) rack-unit-3 (HXCLUS) 		vMedia Mounts			
≡	 rack-unit-4 (HXCLUS) Sub-Organizations 		+ - Ty Advanced Filter Name Type		Server Filename	Remote P
-			HX-Cis HDD	HTTP None	10.29.149 HXInstall-	/images/
			Windo CDD	HTTP None	10.29.149 en_winds	o /images/

Step 4 Modify Boot Policy and set the boot order to have CIMC CD/DVD to the list:

- a) In the Navigation pane, click the Servers tab.
- b) Expand Servers > Policies > root > > Boot Policies > hx-compute, or hx-compute-m5

C A Not secure https://192.168.	99.11/app/4_0_25/index.html							\$	000
JCS Manager		8 9 9	0 23				(•••
M .	Servers / Policies / root / Sub- Organizations / sca	le-mx / Boot Policies / Boot Policy							
 Server Pool Policies 	General Events								
 Server Pool Policy Qualifications 									
 Threshold Policies 	Actiona	ProperDes							
 GCSI Authentication Profiles 	Delete	Name	hx-compute-m5						
 vMedia Policies 	Show Policy Usage	Description	Recommended boot policy for Hyper	Flex servers					
 vNC/vH6A Placement Policies 	Use Global	Owner	Local						
 Sub-Organizations 		Reboot on Boot Order Charge							
 scale-ms. 		Enforce VMCAMBA/ISCSI Name	. *						
 Adapter Policies 		Doot Mode	Cleanly Other						
 BIOS Policies 	Warning								
 Boot Policies 									
	The hope foreigner, have not indicate a build	oot outer suspence							
Boot Policy ha-compute	The type (primary/secondary) does not indicate a b The effective order of boot devices within the same	cot order presence. device class (LAN/Storage/SCSI) is determined by P	Cie bus scan order.						
Boot Policy har-compute Boot Policy har-compute	The type (primary/secondary) does not indicate a b The effective order of boot devices within the same if Enforce vNC/vHASIGE Nume is selected and if it is not selected, the vNCs/vHB/s are selected if	cot order presence. device class (LAVERorage/SCSI) is determined by P the vNC/VMBA/SCSI does not exist, a config error a freey exist, otherwise the uNC/VMBA with the lowest	'Oe bus scan order. Il be reported. POe bus scan order is used.						
Boot Policy ha-compute Boot Policy ha-compute	The type (primary/secondary) does not indicate a b The effective order of boot devices within the same if forfaces wRCvHBARS(SCI Name is exected and if it is not selected, the vNCs/vHBAs are selected at	oot order presence. device class (UAVERcrage/SCEE) is determined by F the VHC/VHEASCE does not exist, a config error in the VHC/VHEASCE the VHC/VHEA with the lowest they exist, otherwise the VHC/VHEA with the lowest	Cle bus scan order. al be reported. PCle bus scan order is used.						
Boot Policy In-compute Root Policy In-compute end Boot Policy In-scorepute end Boot Policy HyporFlax	The type (primary)secondary) does not reducite a bit the effects order of boot downon within the same if Enforce ANIC/HEANSCO Name is selected and if it is not selected, the VVCA/HEANSCO Name is selected if (0) I search the force.	cot order presence. device class (LANStorage/ACUS) is determined by if the VAC/HEA/SCO does not exet, a config ency as they exist, otherwise the VAC/HEA with the lowest Road flocks	Cle bus scar order. Il be reported. PCle bus scan order is used.						
Boot Policy ha-compute Boot Policy ha-compute and Boot Policy Ha-compute and Boot Policy HyperFlex Boot Policy HyperFlex	The type [prenary/tecondwol does not induct a b The efficience offer of bod devices within the same if Enforce offerChetRASCCI Nome is selected and if it is not selected, the offerChetRaSca are selected at (oct order presence. driven dass (JAV/Brage/MCB) is determined by 1 the VACAVBA/MCB alone not exist, a config error a ("they exist, otherwise the VACAVBA with the lowest Beet Onder +	Cie bus scan order. d be reported. PCie bus scan order is vend.						0
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c) In the **Boot Order** configuration pane, click **CIMC Mounted CD/DVD**. Then, click **Add CIMC Mounted CD/DVD** to add this to the boot order. Move it to the top of the boot order using the **Move up** button.

Important As shown in the screenshot below, the CIMC Mounted CD/DVD option must be highest in the boot order preceding the other options, Embedded Local Disk and CD/DVD.

Boot Order									
+ - Ty Advanced Filt	er 🛧 Exp	ort 🖷 Prir	t						0
Name	Order	vNIC/v	Туре	LUN N	WWN	Slot N	Boot N	Boot P	Descri
CIMC Mounted CD	1								
CD/DVD	2								
Local Disk	3								
		1 Mo	ve Up	Move Dow	n 🖻 De	ete			

d) Click Save Changes, and click OK in the Success dialog box. The modified boot policy is saved.

Step 5 Verify successful vMedia mounting:

- a) On the **Equipment** tab, select one of the servers.
- b) Click **Inventory** > **CIMC**, scroll down and ensure for mount entry #1(OS image) and mount entry #2 (Cisco HyperFlex driver image) you see status as **Mounted** and there are no failures.

cisco	UCS Manager		8 🔽 🙆 0 4 1	⊘ 1			9909 6
ж	All	Equipment / Rack-Mou	ints / Servers / Server 1				
	 Equipment Chassis 	General Invent	Virtual Machines	Hybrid Display Installed I Memory Adapters HI	Firmware SEL Logs	CIMC Sessions VIF P	aths Power Control Monitor> >
윦	 Rack-Mounts FEX 			Boot-loader Version: 3.1 Running Version : 3.1(3a)	(3a)		
-	Server 1			Backup Version : 3.1(2d) Update Status : Ready	r.		
₽	 Server 2 Server 3 			Startup Version : 3.1(3a) Activate Status : Ready Actual vMedia Mounts			
	Server 4 Fabric Interconnects			Actual Mount Entry 1			
Jo	 Fabric Interconnect A (primary) Fans 			Mapping Name Protocol	Windows-ISO HTTP	Type Server	CDD 10.29.149.212
	Fixed Module PSUs			Port :	80 /images/	Filename : en_window User	vs_server_2016_x64_dvd_93277!
	 Fabric Interconnect B (subordinate) Fans 			Status : Authentication Protocol :	Mounted None	Mount Failure Reason Remap on Eject	: None : No
	Ethernet Ports			Actual Mount Entry 2	HX-Cisco-Driver	Type	: HDD
	PSUs			Protocol :	HTTP	Server	: 10.29.149.212
	 Policies Port Auto-Discovery Policy 						DatacenterCore-v3.0.1b- 29665.img
				Remote Path	/images/	User	
				Status : Authentication Protocol :	Mounted None	Mount Failure Reason Remap on Eject	: None : No

- c) In the menu bar, click **Servers** and choose the first HyperFlex service profile.
- d) Click the General tab and choose Actions > KVM Console>>.
 - **Note** The KVM console will try to open in a new browser. Be aware of any pop-up blockers. Allow the pop-ups and re-open the KVM

cisco	UCS Manager			٥		1	
	Service Profiles	Service Profiles	s / root	/ Sub-Organizat	tions / HyperF	lex / Service Profile	rack-un
	Service Profiles root	General	Stora	ge Network	ISCSI VNIC	s vMedia Policy	Boot Order Virtual M
	 Sub-Organizations 	Fault Summa	ry			Properties	
	 HyperFlex 	8	V		0		
	 rack-unit-1 (HXCLUS) 	0	0	0	0		This service pr
Q	 rack-unit-2 (HXCLUS) rack-unit-3 (HXCLUS) 	Status					the sen To modify this sen
	 rack-unit-4 (HXCLUS) 	Overall Status	s: † 0	к		Name	: rack-unit-1
	Sub-Organizations	(+) Status	Details			User Label	: HXCLUS
						Description	:
		Actions	10				
J _0			owner St	KVM Co	nsole-Sele	ect IP Address	×
				 Service Profile d 10.29.149 	erived: 9.191 (Outband	1)	
		Shutdown Ser	ver		Loungh Invest		Cancel
		Reset			g Launch Java		Gancel
		KVM Console	>>			Template Instance	e : org-root/org-Hyp
						Assigned S	Server or Server Pool

- e) Reboot the host, launch the KVM Console, and power on the server to monitor the progress of the Windows installation. You should see the **Loading Files** screen appear. Windows should install automatically without user intervention.
 - **Note** The option to install Windows automatically without user intervention is applicable for fresh or first-time installations only. For reinstallations, or if the node already contains a Windows partition, you will need to respond to the prompt to "Press any key to boot from CD/DVD".

You should see a blue screen and within a few moments you should see the **Setup is starting** message. The host will reboot a few times. If automated installation does not begin, double-check that both images are mounted to the server.

- f) The installation is complete when you get a clear command prompt at c:\users\administrator>. This is applicable for both Windows Core and Desktop Experience installations. It may take several minutes for the Driver Image to be copied and installed.
 - Note Ignore the prompt with the **The system cannot find the file specified** message.
 - **Important** Ensure that you have completed **Steps e and f**, on ALL servers that will be part of the HX cluster.
 - **Note** If Microsoft Windows OS is already installed on the node, you must click **any** key to continue when the node boots back up so that the fresh OS installation can happen.

If you haven't clicked **any** key to continue, and an existing node with a previous OS installed is used to expand, then the new installation is skipped causing further expansion to fail.

g) Log into each server and verify the following:

Run the powershell command: Get-ScheduledTask -TaskName HXInstallbootstraplauncherTask. Verify that the HX Install Bootstrap Launcher task is running. Sample output as follows:

TaskPath	TaskName	State
\	HXInstallbootstraplaund	cherTask Running

Validate that the log line "Done with HX PostSysPrepSetup" exists in C:\ProgramData\Cisco\HyperFlex\Install\Log\PostSysprepSetup.log.

Run powershell command: Get-Command Get-VMSwitch. Verify that the command runs successfully (no exception). Sample output as follows:

CommandType	Name	Version	Source
Cmdlet	Get-VMSwitch	2.0.0.0	Hyper-V

Step 6 Reset the vMedia policy back to the default HyperFlex policy:

- a) Update the vMedia policy for compute nodes. Go to Servers > Service Profile Templates > root > Sub-Organizations > hx-cluster_name > Service Template compute-nodes, or compute-nodes-m5. Then, click on Modify vMedia Policy.
- b) Under the vMedia Policy drop-down selection, choose "HyperFlex" policy.

Step 7 Restore the boot order to the one before installation:

- a) In the Navigation pane, click the Servers tab.
- b) Expand Servers > Policies > root > > Boot Policies > hx-compute, or hx-compute-m5
- c) In the **Boot Order** configuration pane, use the **Move Down** button to move **CIMC Mounted CD/DVD** option to the bottom of the list.

Step 8 Change the local Administrator password to match the password on the existing cluster.

- a) Log into the newly-installed compute node.
- b) Open a command prompt.
- c) Run the following command: net user Administrator <password>.

Step 9 Update the password for HXInstallbootstraplauncherTask and verify that it is Running:

a) Stop the scheduled task "HXInstallbootstraplauncherTask" if it is running.

For example:

Get-ScheduledTask -TaskName "HXInstallbootstraplauncherTask" | Stop-ScheduledTask

b) Update task credentials.

For example:

```
Get-ScheduledTask -TaskName "HXInstallbootstraplauncherTask" | Set-ScheduledTask -User "Administrator" -Password <password>
```

c) Start the scheduled task and verify that it is Running.

For example:

```
Get-ScheduledTask -TaskName "HXInstallbootstraplauncherTask" | Start-ScheduledTask
Get-ScheduledTask -TaskName "HXInstallbootstraplauncherTask"
```

Hypervisor Configuration, HXDP Software Installation and Cluster Expansion

After the installation of Windows OS is completed, perform the following steps to configure the hypervisor, install the HX Data Platform Software and expand the cluster.

- **Step 1 Re-open** the HX Data Platform Installer and log in.
- **Step 2** You might need to "start over" because the previous workflow was finished. Click on the gear icon in the top right corner and select **Start Over**.

Step 3 In the Select a Workflow page, select Expand Cluster > Compute Node.



Step 4In the Select a Workflow page, select Expand HX Cluster. Leave the Is OS installed on the Node, Run Hypervisor
Configuration and Deploy HX Software checkboxes selected.

Select a Workflow		
		_
	8 Is OS installed on the Node	
	Run UCS Manager Configuration	
	Run Hypervisor Configuration	
	Deploy HX Software	
	Create HX Cluster 18 Expand HX Cluster	
Show me the standard workflows	Continu	

Step 5 In the **Warning** dialog box, click **Confirm and Proceed**.

Warning		×
You have selected a custom option that splits the i complete all tasks in the workflow to ensure a wor If your nodes are data-at-rest encryption capable, Cancel to return to the standard workflow. Confirm and Proceed to continue with a custom w	nstallation or expansion workflow. king HX storage cluster. custom installation is not supported orkflow.	You must
	Cancel	and Proceed

Step 6 In the **Cluster** page, complete the following fields:

Field	Description	Example Value
HX Cluster Management IP	The management IP address for the HX cluster	10.104.252.135
Cluster Admin User	Administrator username	admin
Password	Administrator password	

dialis HyperFlex Installer							0	0 ~
Cluster	Credentials	Node Selection	Hypervisor Configuration	on		Node Cor	nfiguration	
Cluster Cluster HX Cluster Management IP 10.104.252.135	Credentals Cluster Admin User admin	Node Selection Password	Hypervisor Configuration	Config	guration confgr	Node Cor	nfiguration	4
					Back	Select a Fil	e Continue	

Step 7 In the **Credentials** page, complete the following fields:

Table 13: UCS Manager Credentials

Field		
UCS Manager Host Name	FQDN or the VIP address of UCSM.	
UCS Manager User Name	Admin user or a user with UCSM admin rights.	
Password	Password for the UCS Manager User Name.	

Table 14: Domain Information

Field		
HX Service Account	The HX service account that was created in the preinstallation phase.	hxadmin
Password	Password for the HX service account.	
Configure Constrained Delegation now (recommended) Constrained Delegation later	Select one of the checkboxes. Constrained Delegation is required for VM Live Migration.	

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

Custer Credentials Node Selection Hypervisor Configuration Node Configuration animested to::::::::::::::::::::::::::::::::::::	Cutter Credencials Node Selection Hypervisor Configuration Innected to::::::::::::::::::::::::::::::::::::	Custer Credentials Node Selection Hypenitor Configuration Node Configuration nmexted to::::::::::::::::::::::::::::::::::::	HyperFlex Installer	r						0	¢
onnected to::::::::::::::::::::::::::::::::::::	Demented for: 10.104.252.135 Demented View Manager User Name CS Manager Credentials CS Manager Viser Name UCS Manager User Name Password Domain Information KService Account Password Configure Constrained Delegation nater User MS Service Account User MS Service Account User MS Service Account User MS Service	nneered to::::::::::::::::::::::::::::::::::::	Cluster	Credentials	Node Selection	Hypervisor Configura	ition		Node Confi	guration	
onnected to::::::::::::::::::::::::::::::::::::	Interested to::::::::::::::::::::::::::::::::::::	Interceted to::::::::::::::::::::::::::::::::::::					Con	figuration			•
CS Manager Credentials S Manager Hoss Name UCS Manager User Name Password admin unin formation UService Account Password tuadmin unin	CS Manager Credentials S Manager Host Name UCS Manager User Name Password admin admin Fastword Fastword Fastword Fastword Fastword Configure Constrained Delegation later	CS Manager Credentials SManager Host Name UCS Manager User Name Password admin admin admin Fassword Fassword Fassword Configure Constrained Delegation now (recommended) Use HX Service Account ©	nnected to: 10.104.2 ate: ONLINE kalth: HEALTH	252.135 Y			Clust	er gement Cluste	r .	10.104.2	52.1
Service Account Password vadmin Image: Comparison of the service account of the service a	Service Account Password wadmin Image: Configure Constrained Delegation later Configure Constrained Delegation later It Use HK Service Account ©	Service Account Password Service Account Password Configure Constrained Delegation now (recommended) Image: Configure Constrained Delegation later Image: Wide HX Service Account Image: Configure Constrained Delegation later	CS Manager Credentials 5 Manager Host Name 10.65.121.240	UCS Manager User Name admin	Password	٢					
	Configure Constrained Delegation later Ø Use HX Service Account ①	Configure Constrained Delegation later	Service Account	Password	Ø						

Step 8 In the Node Selection page, choose all the servers that you want to install in the cluster and click Continue.

cisco	•	Нур	erFlex Insta	iller						•	0	Ø	0	0
		c	luster		Creden	cials	N	ode Selection	Hypervisor Configurat	ion		Node Cor	figuration	
2	ierve	er Sele X for Hy	ction	n M5 serve	rs. The list belo	w is restricted to M	5 servers.	Configure Server Ports	Refresh	Cont	figuration	n		*
	Un	associat	ed (1) Asso	ciated (2)						Cluste	Hr .			
		\$	Server Name	 Status 	Model	Serial	Assoc State	Service Profile	Actions	Manaj	pement Clust	er	10.104.2	.52.135
					LICSB-R200-			ore root/ore to perflex/in.		Crede	ntials			
	8	00	Server 5	ok	M5	WZP2208115W	associated	rack-unit-5	Actions ~	UCS N	lanager Host	Name	10.65.1	21.240
		(D)	Server 1/1	ok	UCSB-B200-	FCH2141JBKY	associated	org-roos/org-HyperFlex/Is-	Actions ~	UCS M	lanager User	Name		admin
					M5			chassis-1_blade-1		HX Ser	rvice Account		h	xadmin
										Time 7	ained Delega	ition Di	nife Standar	true
										Organ	ization Unit	OU+Hyperi	Flex.DC=hxh	vdom1,
										_			D	C=local
											(Back		Continue	

Step 9 In the **Hypervisor Configuration** page, complete the following fields for **VLAN Configuration**, **Hypervisor Settings**, and **Hypervisor Credentials**.

VLAN Configuration—HyperFlex needs to have at least 4 VLANs, each needs to be on different IP subnets and extended from the fabric interconnects to the connecting uplink switches, to ensure that traffic can flow from the Primary Fabric Interconnect (Fabric A) to the Subordinate Fabric Interconnect (Fabric B).

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

resarior hypernson and hype	erFlex management	VLAN for HyperFlex storage	traffic
VLAN Name	VLAN ID	VLAN Name	VLAN ID
hx-inband-mgmt		hx-storage-data	
VLAN for VM Live Migration		VLAN for VM Network	
VLAN Name	VLAN ID	VLAN Name	VLAN ID(s)

Hypervisor Settings—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.

Hypervisor Credentials— Enter the Local administrator username on the Hyper-V hosts. Click Continue.

Step 10	In the Node Configuration page,	complete the fields for	Hypervisor Setting	gs and IP Addresses.
---------	--	-------------------------	--------------------	----------------------

Field	Description	Example Value
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.	10.101.251.1

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

	Cluster		Credentials		Node	Selection	Hy	pervisor Configurati	on	Node Configuration
ypervis	sor Settings								Configuration	
bnet Mas	k		Gateway			ONS Server(s)			Cluster	
255.255.2	255.0		10.104.252.1			10.104.252	.44		Management Cluster	10.104.252.13
over Clu	ster Name 💿								Credentials	
ohvwfo									UCS Manager Host Na	me 10.65.121.240
									UCS Manager User Na	ime admir
									HX Service Account	hxadmir
Addre	isses						Add Compute	Server	Constrained Delegatio	n trui
Make H	Hypervisor Name	e and IP Address Se	quencial						Time Zone	Pacific Standard Time
nary DN	S Suffix (1)		Additional DNS Suf	fixes					Organization Unit O	U=HyperFlex,DC=hxhvde m1,DC=loca
	M1.LOCAL								Local Administrator A	ccount Administrato
						0	10.001.0170		Node Selection	
			(HXHVD	OM1.LOCAL)		(Hostna	me or IP Address)		Server 1/1 FCH21	41JBKY / UCSB-8200-MS
									Server 5 WZP22081	115W / UCSC-C220-M55)
					NO COMPANY AND		Storage Controller	0		
٥	Namerr	Hypervisor	③ Storage	Controller U	hypernaut				Hypervisor Configu	ration
•	Name^ Server 1/1	Hypervisor	Storage	Controller @					Hypervisor Configu VLAN Name	hx-inband-mgm
•	Name^ Server 1/1 compute	Hypervisor huhvbco2	Storage	Controller @	192.168.11	.87			Hypervisor Configur VLAN Name VLAN ID	hx-inband-mgm 61:
•	Name^ Server 1/1 compute Server 5	Hypervisor hxhvbco2	Storage	controller ()	192.168.11	.87			VLAN Name VLAN ID VLAN Name	hx-inband-mgm 613 hx-storage-data
• 00	Name^ Server 1/1 compute Server 5 compute	Hypervisor huhvboo2 huhvroo1	Storage	Controller ()	192.168.11	.87			Hypervisor Configur VLAN Name VLAN ID VLAN Name VLAN ID	hx-inband-mgm 611 hx-storage-dat 3172
• 01	Name^ Server 1/1 compute Server 5 compute	Hypervisor huhvboo2 huhvroo1	© Storage	Controller ()	192.168.11	.87			Hypervisor Configur VLAN Name VLAN ID VLAN Name VLAN ID VLAN Name	hu-inband-mgm 612 hu-storage-datu 3172 hu-livemigratu
•	Namen Server 1/1 compute Server 5 compute	Hypervisor Ituthvbco2 Ituthvrco1	Storage	Controller ()	192.188.11	.87			Hypervisor Configu VLAN Name VLAN ID VLAN Name VLAN Name VLAN Name VLAN ID	hu-inband-mgm 612 hu-storage-dat 3172 hu-livemigrati 3172
•	Namen Server 1/1 compute Server 5 compute	Hypervisor huhvisoo2 huhvisoo1	© Storage		192.168.11	.87			Hypervisor Configu VLAN Name VLAN ID VLAN ID VLAN Name VLAN ID VLAN Name	hve-inband-mgm 612 hve-storage-dat 3172 hve-livemigrat 3172 vm-networi
• 00	Name^ Server 1/1 compute Server 5 compute	Hypervisor hstivisoc2 hstivisoc1	© Storage		192.188.11	.87			Hypervisor Configur VLAN Name VLAN ID VLAN ID VLAN ID VLAN ID VLAN ID VLAN ID VLAN ID VLAN ID VLAN ID(s)	kwinband-mgm hwinband-mgm 611 hwistorage-dat 3172 hwilivemigrass 3175 3176 31763177

Click Start to begin the Hypervisor Configuration. The installation now continues and configures the Hypervisor hosts.

Step 11 In the **Warning** dialog box, click **Confirm and Proceed**.



Step 12 The **Progress** screen displays the status of the hypervisor configuration and cluster expansion.

cisco	HyperFlex Installer									0	Ø
				Progress							
0	(O)	0					Conf	iguration	n		
Start	Config	Hypervisor Configuration	Deploy Validation	Deploy	Expansion Validation	Cluster Expansion	Cluste	æ			
							Manag	ement Clust	er	10.104.252	135
							Crede	ntials			
1.6	Hypervisor Configuration in	n Progress					UCS M	anager Host	Name	10.65.121	.240
							UCS M	anager User	Name	ad	imin
							HX Ser	vice Account		hxad	ímin
				Hypervis	or Configuration	•	Constr	ained Delega	ation		true
,	Hypervisor Configuration - Overal	1	Login to UCS API				Time Z	one	Pacif	fic Standard T	lime
	In Progress	1	Quering vMedia mount st	atus			Organi	zation Unit	OU=Hype	rFlex,DC=hxh m1,DC=l	ivdo local
		1	Inventorying org of specif	ied servers			Local A	dministrator	r Account	Administr	ator
		×	Inventorying physical serv	iers			Node	Selection			
		1	Logout from UCS API				Server	1/1 FCH	42141JBKY	/ UCSB-8200	-M5
		× .	CONFIGURATION COMPL	ETED SUCCESSFULLY			Server	5 WZP220	0811SW / 1	UCSC-C220-M	155X
		U	Waiting for all servers to a	equire IP address			Hyper	visor Config	guration		
							VLAN	lame		hx-inband-m	gmt
	blade-1	U	Waiting for server to acqu	ire IP address			VLANI	D			613
	in Progress						VLAN	lame		hx-storage-	data
	rack-unit-5		Waiting for security arou	ira ID addrass			VLANI	D		3	3172
	In Progress	Ŭ					VLAN	lame		hx-livemig	rate
							VLANI	D		3	3173
							VLAN	lame		vm-netv	vork
							VLANI	D(s)		3176,3	8174
							Subnet	Mask		255.255.2	55.0
							Gatewi	17		10.104.2	52.1



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diadas cisco	HyperFlex	Installer							8				٥
		P	rogress					Summ	ary				
Cluste	er Name hxh	vsmb ONUNE	HEALTHY										
Versio	'n			3.5.2a-31586		Domain Nar	me				ю	HVDOM1.U	OCAL
Cluste	r Management li	P Address	hothycip.H0HV	DOM1.LOCAL		Failover clu:	ster Nam	e				hod	hvwfc
Cluste	r Data IP Addres	5	1	92.168.11.135		DNS Server	(5)					10.104.2	52,44
Replic	ation Factor			Three copies		NTP Server(s)					10.104.2	52.44
Availa	ble Capacity			10.7 TB									
Serve	el	Serial Number	Management Hypervisor	Managemen	t Storage Cont	troller	Data N	letwork Hypervisor	Da	ta Networ	k Storage (Controller	
HXAF	F240C-M55X	WZP22020L9E	10.104.252.127	10.104.252.1	31		192.16	8.11.127	19	2.168.11.1	81		
UCSO	C+C220-M55X	WZP2208115W	10.104.252.87				192.16	8.11.86					
HXAF	P240C-M55X	WZP22020L96	10.104.252.129	10.104.252.1	33		192.16	8.11.129	19	2.168.11.1	33		
HXAF	P240C-M55X	WZP220216WY	10.104.252.128	10.104.252.1	32		192.16	8.11.128	19	2.168.11.1	32		
UCSE	8-8200-M5	FCH2141JBKY	10.104.252.86				192.16	8.11.87					
HXAF	240C-M55X	WZP22020L9B	10.104.252.130	10.104.252.12	34		192.16	8.11.130	19	2.168.11.1	34		
								Back to Workflow S	election	L	unch Hype	rFlex Conn	ect

To log into HX Connect, click **Launch HX Connect**. The HX Connect **Dashboard** page displays cluster health, operational status and information for the newly added compute-only nodes in the cluster.

≡ ^{-diadia} HyperFlex	Connect	hxhvsmb	© © 2
Oashboard		OPERATIONAL STATUS Online	
MONITOR		Healthy ⊙	✓ 1 Node failure can be tolerated
ANALYZE		CAPACITY 1.1% 10.7 TB 119.5 GB Used 10	Storage optimization, compression and deduplication retiss will be optimized normation regarding duster usage.
MANAGE	n	NODES 4 HXAF240C- MSSX 6 Converged	2 NODES Compute
T Upgrade		IOPS Last 1 hour	Read Mac: 0 Min:0 Aug: 0 Verse Mac: 3.4 Min:1.3 Aug: 1.0
		Throughput (MBps) Last 1 hour	Read Marc 0 Mint0 Arg: 0 Write Marc 0.01 Mint0 Arg: 0.01
		Latency (msec) Last 1 hour	Reed Max: 0 Min:0 Arg:0 Write Max: 1.69 Min:1.15 Arg:1.27
About			Cluster Time : 12/13/2018 11:17:42 AM PST

Cluster Expansion - M4 Blade Servers (Fibre Chanel SAN)

Overview

The Hyper-V cluster expansion procedure for UCS B200 M4 blade servers with Fibre Channel storage boot option consists of the following sequence of tasks:

- 1. Pre-expansion Checklist
- 2. Cisco UCS Manager Configuration
- 3. Microsoft Windows OS Installation, on page 87
- 4. Hypervisor Configuration, HXDP Software Installation and Cluster Expansion
- 5. Perform the following post installation steps:
 - Configuring a Static IP Address for Live Migration and VM Network, on page 35
 - (Optional) Post Installation Constrained Delegation, on page 36
 - Configure Local Default Paths, on page 37
 - Checking the Windows Version on the Hyper-V Host, on page 44

Microsoft Windows OS Installation

This procedure is when you wish to expand your Hyper-V cluster by adding UCS B200 M4 Blade servers (compute-only nodes) and enable Fibre Channel SAN boot option.

	Launch UCS Wanager and log III.
Step 2	Perform the following steps to clone a Service Profile template:
	a) In the Navigation pane, click Servers.
	b) Expand the node for the organization where you want to clone and select Create a Clone
	c) In the Create Clone from Service Profile dialog box, enter a name you to use for the new profile in the Clone Name field (Example: hx-compute. Click OK .
Step 3	Perform the following steps to enable FC Zoning:
	a) In the Navigation pane, go to SAN > VSAN.
	b) Ensure that the Enabled radio-button is selected under FC Zoning .
Step 4	Unbind your blade server from the current Service Profile template, and bind it to the newly created template in Step 2.
Step 5	Perform the following steps to mount the HyperFlex Driver Image file and modify the autounattend.xml file:
	 Connect to your HX Installer VM and navigate to the shared folder that contains the Windows ISO and HyperFlex Driver Image files.
	b) Run the following commands to mount the HyperFlex image:

```
mkdir /mnt/hx-img
mount /var/www/localhost/images/latest.img /mnt/hx-img
```

- c) Open the autounattend.xml file, search for DiskID and change the value from 0 to the value in Windows PE (WinPE).
- **Step 6** Perform the following steps to configure a SAN boot policy:
 - a) Select the newly created Service Profile Template from Step 2 and go to the **Boot Order** tab. Click **Modify Boot Policy**. In the **Modify Boot Policy** page, click **Create Boot Policy**.
 - b) Expand vHBAs, select Add SAN Boot, and in the name field, type the name of the vHBA(Example: hx-ext-fc-a).
 - c) Select **Primary** and click **OK**.
 - d) In the Add SAN Boot Target, leave the Boot Target LUN set to 0. In the Boot Target WWPN field, type the WWPN from your storage array. Verify Type is set to Primary and click OK.

Step 7 Create a vMedia policy for the Windows OS and Cisco driver images:

- a) In the Navigation pane, click Servers.
- b) Expand Servers > Policies > root > Sub-Organizations > hx-cluster_name > vMedia Policies
- c) Right-click vMedia Policies and select Create vMedia Policy HyperFlex.



d) In the Create vMedia Policy dialog box, complete the following fields:

Field Name	Descriptio	n
Name	The name	of the vMedia policy. For example, HX-vMedia.
	This name use spaces : (colon), a is saved.	can be between 1 and 16 alphanumeric characters. You cannot or any special characters other than - (hyphen), _ (underscore), nd . (period), and you cannot change this name after the object
Description	A descripti where and	on of the policy. We recommend including information about when the policy should be used. Maximum 115 characters.
Retry on Mount Failure	Designates occurs. Th	if the vMedia will continue mounting when a mount failure is can be:
	• Yes	
	• No	
	Note	The default setting is Yes . When Yes is selected the remote server will continue to try to mount the vMedia mount process until it is successful or you disable this option. If you select No, a warning message will appear indicating retry on mount failure will not work in case of mount failure.

Refer to the following screenshot as an example:

Create	e vMedia Po	olicy						• ×
Name Descriptio Retry on M vMedia	: HX- on : Mount Failure : Mounts	vMedia o • Yes						
+ -	Ty Advanced Filter	♠ Export	n Print					٥
Name	Туре	Protocol	Authentica	Server	Filename	Remote Pa	User	Remap on
			(+) Ad	dd 🖲 Delet	te 🛈 Info			
							ОК	Cancel

I

Field Name	Description	Example Value
Name	Name for the mount point.	Windows-ISO
Description	Can be used for more information.	Windows Server 2016 image
Device Type	Type of image that you want to mount. This can be:	CDD
	• CDD—Scriptable vMedia CD.	
	• HDD —Scriptable vMedia HDD.	
Protocol	The protocol used for accessing the share where the ISO files are located.	НТТР
Hostname/IP Address	IP address or FQDN of the server hosting the images.	10.101.1.92
Image Name Variable	This value is not used in HyperFlex installation.	None
Remote File	The filename of the ISO file that you want to mount.	
Remote Path	The path on the remote server to where the file resides	
Username	If you use CIFS or NFS a username might be necessary	
Password	If you use CIFS or NFS a password might be necessary	

e) On the icon bar under the vMedia Mounts pane, click + Add. In the Create vMedia Mount dialog box, complete the following fields:

Refer to the screenshot below as an example:

Create vMed	ia Mount	? ×
Name	: Windows-ISO	
Description	: Windows Server 2016 Image	
Device Type		
Protocol		
Hostname/IP Address	: 10.29.149.212	
Image Name Variable	: None Service Profile Name	
Remote File	: en_windows_server_2016_x64_dvd_9327751.iso	
Remote Path	: /images/	
Username	:	
Password	:	
Remap on Eject	: 🗆	
	ОК С	ancel
		8

f) Click **OK**. When you click **OK**, you will now be returned to the **vMedia Policies** screen, and you should see the information that you just submitted.

Create v	Media Po	olicy						?	×
Name Description Retry on Mount vMedia Moun	: HX- : : Failure : ON	vMedia							
+ - 72/	Advanced Filter	♠ Export	🖶 Print					\$	F
Name	Туре	Protocol	Authentica	Server	Filename	Remote Pa	User	Remap on	
windo	666	нир	Derault	10.29.149	en_windo	/images/		NO	
			(+) Ac	d 🖲 Delete	Info				
							ок	Cancel	

- g) Repeat Steps 2e and 2f, however, change the type to HDD and the remote file name to the Cisco HyperFlex driver image.
- h) At the end of this step, the two vMedia mounts will be listed in the Create vMedia Policy screen as shown in the following screenshot:

Create vN	Media F	Policy						? ×
Name Description Retry on Mount vMedia Mount	: H) : Failure : ts	K-vMedia						
+ - TA	Advanced Filte	r 🔶 Export	🖶 Print					0
Name	Туре	Protocol	Authentica	Server	Filename	Remote Pa	User	Remap on
HX-Cis	HDD	HTTP	Default	10.29.149	HXInstall	/images/		No
Windo	CDD	HTTP	Default	10.29.149	en_windo	/images/		No
			(+) 4	dd 🕅 Delete	0 Info			
			0.					
							ок	Cancel

Step 8 Associate the vMedia Policy to a Service Profile:

a) In the Navigation pane, select Servers > Service Profile Templates > root > Sub-Organizations > hx-cluster_name > Service Template compute-nodes, or compute-nodes-m5

₽	I-6332-A - Unified Comp ×	
← →	C A Not secure https://10.29.14	49.205/app/3_2_3a/index.html
ahah cisco	UCS Manager	
æ	Service Profile Templates	Service Profi / root / Sub- Organizations / HyperFlex / Service Tem
•	 Service Profile Templates 	General Storage Network iSCSI vNICs vMedia Policy Boot Order Policies
	▼ root	Actions
윪	 Sub-Organizations 	Modify vMedia Policy
	 HyperFlex 	Giobal vMedia Policy
1	 Service Template compute-nodes 	Name · Unmafflar
	Service Template compute-nodes-	vMedia Policy Instance : org-root/org-HyperFlex/mnt-cfg-policy-HyperFlex
▣	 Service Template hx-nodes 	Description : vMedia policy to install or re-install software on HyperFlex servers
-	Service Template hx-nodes-m5	Retry on Mount Failure : Yes
	 Sub-Organizations 	
		+ - Te Advanced Filter 🔶 Export 🚔 Print
		Name Type Protocol Authentic Server Filename Remote P
20		No data available

- b) Click the vMedia Policy tab. Then, click Modify vMedia Policy
- c) Choose the vMedia Policy that you created earlier from the drop-down selection, and click OK twice.

Modify v	Media Po	licy					
vMedia Policy:	HyperFlex	Doliou to ur	~	1			
C	Create a Speci	ific vMedia	Policy				
Description Retry on M	vMedia Policies HX-vMedia		nstall software o	n HyperFlex ser	vers		
vMedia M	HyperFlex	A Export	- Print	J			
Name	Туре	Protocol	Authen	ticat Server	Filename	Remote Path	User
				No data avail	able		

d) Under the General tab, verify that the vMedia policy is added to the Service Profile.

altalta cisco	UCS Manager	8	7 🙆 🚯 4 1 1		•
黒	Service Profiles	Service Profiles / root / Sub- Organizations /	HyperFlex / Service Profil		
2	 Service Profiles root 	C General Storage Network iS	CSI vNICs vMedia Policy Boot C	Order Virtual Machines	FC Zones Policies Se
꾦	 Sub-Organizations HyperFlex 	Actions Modify vMedia Policy	Global vMedia Policy Name : HX-vMedia		
1	rack-unit-1 (HXCLUS)		vMedia Policy Instance : org-root/mnt- Description :	-cfg-policy-HX-vMedia	
Q	 rack-unit-2 (HXCLUS) rack-unit-3 (HXCLUS) 		Retry on Mount Failure : Yes vMedia Mounts		
=	 rack-unit-4 (HXCLUS) Sub-Organizations 		+ - Ty Advanced Filter + Expo Name Type Protocol	art 🏾 e Print I Authentic Server	Filename Remote P
			HX-Cis HDD HTTP Windo CDD HTTP	None 10.29.149. None 10.29.149.	H0(Install /images/ en_windo /images/

Step 9 Modify Boot Policy and set the boot order to have CIMC CD/DVD to the list:

- a) In the Navigation pane, click the Servers tab.
- b) Expand Servers > Policies > root > > Boot Policies > hx-compute, or hx-compute-m5

	ico HyperFlex Connect X as https://w	scp2typercom/typer1 X 🔺 UT-R1-United Comp	Meddler x +							- 0 ^
÷ -	C A Not secure https://192.168.9	A11/app/4_0_2b/index.html							\$	0000
duala. 61660	UCS Manager		8 🛛	0 0 14 20				(000C
	Alt Sarver Pop Pulses Sarver Pop Pulse Qualitations Pravahol Pulses Calif Annocession Profess Addonte Pulses Addonte Pulses Sald-read Adapter Pulses Adapter Pulses Bool Pulses Bool Pulses Bool Pulses Bool Pulses Bool Pulses Bool Pulses Calif Pulse Calif Pulses Calif Pulses Calif Pulses Calif Pulses Calif Pulse Calif Pulses Calif Pulse Cal	Sensen / Policies / rost / Sobr Organizations / inco Concer Actions Onion Show Policy Dage Une Cond Warning The type (immeryteconder) does not induce a to	de-ma / Boot Palcies / Boot Policy Properties Nome Description Owner Inforce vPCL-replaceSci in Botor VPCL-replaceSci in Botor Worker Entors vPCL-replaceSci in Botor Mode cort order preserve.	: N=-compute=m5 : Recommended boot policy for Hype : Excel op : D : Eugrey Out	Pac 14/19/3					
J 0	Boot Policy hx-compute-ind Boot Policy hx-compute-ind Boot Policy Hunorflax	The effective order of boot devices within the same if Enforce vNICAVBANSCRI Name is selected and if it is not selected, the vNICa/MBRs are selected if	I device class (LAVSIccageIIOCS) a determined the VVC/VHBA/SCSI does not exist, a config er if they exist, otherwise the VVC/VHBA with the to	I by POle bus scan order. for will be reported, west POle bus scan order is used.						
*0	Boot Policy In-compute Root Policy In-compute-in Boot Policy MypeRites Boot Policy MypeRites -in5-	The effective order of boot devices within the same if Enforce VMCAVEMARKON Name is setticted and if it is not selected, the vMCAVMBAs are selected if (A) I occil Devices.	I divise class (UAVStorage/SCS) is determined for VVC/VHSASCS does not exit, a config or if they exist, otherwise the VVC/VHSA with the lo Boot Onder	I by PCIe bus scan order. no will be regorded. west PCie bus scan order is used.						
J 0	Boot Policy In-compute Boot Policy In-compute-in Boot Policy HyperFiles Boot Policy HyperFiles-in5 Boot Policy surface	The effective order of boot devoces within the same if Enforce ARC/HIBARSCE Remain a selected and if it an not selected, the ARCs/MBAe are selected if Local Devices	I drive class (JAN/Stocga/ACCS) is determined the VAC/HEAXSCS does not wask, a config an if they exist, otherwise the VAC/HEA with the lo Boot Order + T_Advanced Filter	Toy PCIe bue scan order. nor will be reported. erest PCIe bue scan order is vend. Φ Sount - Φ Print						0
J 0	Boot Palicy In-compute Boot Palicy In-compute-ref Boot Palicy MyserRex Boot Palicy MyserRex-m5 Boot Palicy subdot Boot Palicy subdot	The efficate order of local division within the same of Enderge AVX/MEARSES Manue is instituted and if it is not selected, the vMcAuHillina are selected if (a) Local Devices (b) CIMC Mounted vMedia	device data (LAV/Stocgard/CX) is determined to VLCV#8/XX20 data and exat, a config at fitting wait, otherwise the VVC/MBA with the to Best Onder + - Ty Advanced Filter hame Or	Ity POE bus stan order. In all be regorded well PCe bus scan order is used. 6 Doort	UUN Name	www.	Sut Number	Boot Name	Boot Parts	O Description
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c) (For M5 Servers only) In the Boot Order configuration pane, click CIMC Mounted CD/DVD. Then, click Add CIMC Mounted CD/DVD to add this to the boot order. Move it to the top of the boot order using the Move up button.

Important The CIMC Mounted CD/DVD option must be highest in the boot order preceding the other options, Embedded Local Disk and CD/DVD.

(For M4 Servers with Local SAS Drivers) In the Boot Order configuration pane, click vHBAs. Then, click Add SAN Boot to add this to the boot order.

d) Click **Save Changes**, and click **OK** in the **Success** dialog box. The modified boot policy is saved.

Step 10 Verify successful vMedia mounting:

- a) On the **Equipment** tab, select one of the servers.
- b) Click Inventory > CIMC, scroll down and ensure for mount entry #1(OS image) and mount entry #2 (Cisco HyperFlex driver image) you see status as Mounted and there are no failures.

alialia cisco	UCS Manager			8 V 4 1	0		0	990 000
墨	All	Equipment / Rack	-Mounts / \$	Servers / Server 1				
•	 Equipment Chassis 	General Motherboard	CIMC (Virtual Machines CPUs GPUs	Hybrid Display Installed F Memory Adapters HB	Firmware SEL Logs Cil BAs NICs ISCSI vNICs	MC Sessions VIF Po Storage	nths Power Control Monitor> >
*	 Rack-Mounts FEX 				Boot-loader Version: 3.1 Running Version : 3.1(3a)	(3a))		
Ŧ	Servers Server 1				Backup Version : 3.1(2d) Update Status : Ready	р.		
	 Server 2 Server 3 				Startup Version : 3.1(3a) Activate Status : Ready			
	Server 4				Actual vMedia Mounts Actual Mount Entry 1			
	Fabric Interconnect A (primary)				Mapping Name	Windows-ISO	Туре	CDD
-0	Fixed Module				Port	80	Filename : en_window	s_server_2016_x64_dvd_93277!
	PSUs Fabric Interconnect B (subordinate)				Remote Path :	/images/ Mounted	User : Mount Failure Reason :	None
	 Fans Fixed Module 				Authentication Protocol : Actual Mount Entry 2	None	Remap on Eject	No
	Ethernet Ports FC Ports				Mapping Name :	HX-Cisco-Driver	Туре	HDD
	 PSUs Policies 				Protocol :	HTTP 80	Server	10.29.149.212 HXInstall-HyperV-
	Port Auto-Discovery Policy				2 107			DatacenterCore-v3.0.1b- 29665.img
					Remote Path : Status :	/images/ Mounted	User Mount Failure Reason	None
					Authentication Protocol :	None	Remap on Eject	No

- c) In the menu bar, click Servers and choose the first HyperFlex service profile.
- d) Click the General tab and choose Actions > KVM Console>>.
 - **Note** The KVM console will try to open in a new browser. Be aware of any pop-up blockers. Allow the pop-ups and re-open the KVM



- e) Reboot the host, launch the KVM Console, and power on the server to monitor the progress of the Windows installation. You should see the Loading Files screen appear. Windows should install automatically without user intervention. You should see a blue screen and within a few moments you should see the Setup is starting message. If automated installation does not begin, double-check that both images are mounted to the server.
- f) Once Windows installation completes, a command prompt will show up. Wait for the installation to complete. The host will then reboot a few times. The installation is complete when you get a clear command prompt at c:\users\administrator>. It may take several minutes and reboot operations for the Driver Image to be copied and installed.
 - **Note** Ignore the prompt with the **The system cannot find the file specified** message.

Important Ensure that you have completed Steps e and f, on ALL servers that will be part of the HX cluster.

g) Log into each server, enter the command C>Users>Administrator>Get-ScheduledTask and verify that the HX Install Bootstrap Launcher task is running.

Step 11 Remove the vMedia policy from the service profile:

- a) To un-map the vMedia policy from the service profile, go to Servers > Service Profile Templates > root > Sub-Organizations > hx-cluster_name > Service Template compute-nodes, or compute-nodes-m5. Then, click on Modify vMedia Policy.
- b) Under the vMedia Policy drop-down selection, deselect the vMedia policy (*HX-vMedia*) previously used to map the two images.
- **Step 12** Restore the boot order to the one before installation:
 - a) In the Navigation pane, click the Servers tab.
 - b) Expand Servers > Policies > root > > Boot Policies > hx-compute, or hx-compute-m5
 - c) In the **Boot Order** configuration pane, use the **Move Down** button to move **CIMC Mounted CD/DVD** option to the bottom of the list.

Refer to the screenshot below for the boot order after it is restored in this step:

Boot Order							
+ - Ty Advanced Filte	er 🛧 Export 🚔 Print						\$
Name	VNIC/vHBA/iSCSI v	Туре	L. WWN	S	В	В	D
CIMC Mounted CD/	1						^
⊸ San	2						
SAN Primary	hx-ext-fc-a	Primary					
SAN Target Pr		Primary	0 20:7C:00:A0:98:53:05:56				
- SAN Secondary	hx-ext-fc-b	Secondary					~
↑ Move Up							
Set Usfi Boot Penanet	ters						

What to do next

At the end of this procedure, Windows OS is successfully installed. Then, continue to "Hypervisor Configuration, HXDP Software Installation and Cluster Expansion" to complete the remaining steps in the cluster expansion workflow.



Cluster Expansion—Converged Nodes

• Cluster Expansion—Converged Nodes, on page 99

Cluster Expansion—Converged Nodes

Before you begin

- Converged nodes can be added after cluster creation.
- This procedure includes Windows Operating System installation.
- Prior to cluster expansion, ensure that the Windows ISO file is available.
- For Hyper-V clusters running on releases earlier than 3.5(2a), cluster expansion is supported for **converged nodes** only.
- Step 1 Launch the Cisco HX Data Platform Installer.
- **Step 2** In the login page, enter the following credentials:

Username: root

Password (Default): Cisco123

Note Systems ship with a default password of Ciscol23 that must be changed during installation. You cannot continue installation unless you specify a new user supplied password.

Step 3 Check the I accept the terms and conditions checkbox, and click Login.

Step 4 On the Select a Workflow page, select Cluster Expansion.

Step 5 On the **Cluster** page, complete the following fields and click **Continue**.

Field	Description	
Cluster Management Hostname	The hostname for the existing cluster.	
User Name	Administrator username for the existing cluster.	
Password	Password for the administrator user of the HX cluster.	

Step 6 On the **Credentials** page, complete the following fields and click **Continue**.

Field	Description			
UCS Manager Credentials				
UCS Manager Hostname	Cisco UCS Manager FQDN or IP address			
UCS Manager User Name	Administrator user or a user with Cisco UCS Manager administrator privileges.			
Password	The password for UCS Manager.			
Domain Information				
HX Service Account	The HX Service account associated with the existing cluster.			
Password	The password for the HX Service account.			
Constrained Delegation	L			
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.			
HX Service Account Password	Required for Constrained Delegation.			
Use HX Service Account	Click the checkbox if HX service account is provided. If checked, the HX service account will be used for Constrained Delegation. The user must be a domain administrator.			
Username	Enter a domain level username.			
Password	Enter a domain level password.			
Hypervisor Credentials				
Local Administrator Account	Local administrator username for the Hyper-V hosts.			
Password	Password for the local administrator account.			

Step 7 On the Node 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.

- **Step 8** On the **UCSM Configuration** page, view or modify the auto-populated details for the VLAN configuration and MAC Pool information for the existing cluster. Then, click **Continue**.
- **Step 9** On the **Hypervisor Configuration** page, complete the following fields:

Field	Description
Install Hypervisor (Hyper-V)	By default, this checkbox is selected.
	Leave the checkbox selected to enable OS installation and network configuration. Click Browse to select and upload the ISO file. Alternatively, drag and drop the ISO file into the area.
	From Select the Operating System you wish to install choose one of the following
	Windows Server 2016 Datacenter (Desktop Experience)
	Windows Server 2016 Datacenter (Core)
	Windows Server 2019 Datacenter (Desktop Experience)

Click Continue.

Step 10 On the Node Configuration page, click Add Converged Server to add the servers to your existing cluster.

- Step 11 Click Start to begin the expansion. The Progress page displays the progress of the configuration tasks
- **Step 12** Perform the following post installation steps:
 - Configuring a Static IP Address for Live Migration and VM Network, on page 35
 - (Optional) Post Installation Constrained Delegation, on page 36
 - Configure Local Default Paths, on page 37
 - Checking the Windows Version on the Hyper-V Host, on page 44



Troubleshooting Information

• Troubleshooting, on page 103

Troubleshooting

This section contains troubleshooting information for issues seen during Hyper-V deployment.

Symptom or Scenario	Workaround or Recommendation
Cisco HX Release 4.5(x) installations with UCSM 4.1.2a and 4.1.2b are not supported.	Use UCSM 4.0.4i with a new Cisco HyperFlex System installation for Hyper-V, Release 4.5.
During cluster expansion deployment, one node fails with the following error message:	Reboot the failed node or log out and log back in.
failed in Task:'Enable And Run Scheduled Tasks' with Error	
The "retry deploy" did not work and the same node fails again.	
The Windows error logs also indicate that: "You don't have administrator privileges on the server", even though this node actually has the privileges.	
File Witness Share is not configured.	Create a File Witness Share and configure it as a Witness Share in Failover Cluster Manager (FCM). It is recommended that you not use the Witness Share created for anything else.
Waiting for Storage Controller VM (SCVM) times out.	Set the VLAN ID manually and retry, or,Delete the controller VM and retry.
HX Installer fails to join computers to the domain due to incorrect Active Directory credentials to HX Installer.	Restart the HX Installer in the "Deploying HX Data Platform Installer and Cluster Configuration" phase in installation, and provide the correct credentials.

Symptom or Scenario	Workaround or Recommendation		
Unreliable per node statistics displayed for a node in the duration when any of controller VMs are down in the cluster.	Use Windows side counters during the time when any of the controller VMs are down.		
The FQDN address for HX Connect may be inaccessible after successful cluster installation.	 The default Internet Explorer security setting on Windows 2008 prevents HX Connect accessibility with the FQDN name. As a workaround, try one of the following: Modify the Internet Explorer setting. Use an IP address. Use other supported browsers such as Chrome or Firefox. 		
For compute-only nodes, performance charts are unavailable in the HX Connect Dashboard page.	This is a l only node.		
Windows installation failed with the following error: Could not detect system partition. In addition, setupact.log shows that the setup could not detect any available disk as a valid boot device.	 Switch the boot policy to Embedded Disk (Any). For the Service Profile or Service Profile Template use a boot policy that mirrors hx-nodes-m5 than compute-nodes-m5. 		
Migration failed due to incompatible processors.	A cluster may not have a combination of different CPU types.		


Appendix

- Rack Cisco HyperFlex Nodes, on page 105
- Setting Up the Fabric Interconnects, on page 105
- How to upload the iso and img file to the installer VM using WinSCP, on page 109
- DNS Records, on page 110
- Updating HX Service Account Username and Password, on page 111

Rack Cisco HyperFlex Nodes

For details on the HyperFlex cluster and node limits, see **Cisco HX Data Platform Storage Cluster Specifications** in the latest version of the Release Notes for Cisco HX Data Platform.

For details on the installation of Cisco HyperFlex nodes, refer to respective links from the following table:

Type of Node To Be Installed	Reference
Converged Nodes	
HyperFlex HX220c M5 Nodes	Cisco HyperFlex HX220c M5 Node Installation Guides
HyperFlex HX240c M5 Nodes	Cisco HyperFlex HX240c M5 Node Installation Guides

Y

Note

Hyper-V is only supported on M5 servers.

Setting Up the Fabric Interconnects

Configure a redundant pair of fabric interconnects for high availability. Connect the two fabric interconnects directly using Ethernet cables between the L1 and L2 high availability ports. Connect Port L1 on fabric interconnect A to port L1 on fabric interconnect B, and Port L2 on fabric interconnect A to port L2 on fabric interconnects to continuously monitor the status of each other.

Verify and obtain the following information before connecting the fabric interconnects.

Item	Description		
Verify the physical connections of the fabric interconnects.	Console port for the first fabric interconnect must be physically connected to a computer or console server.		
	• Management Ethernet port (mgmt0) must be connected to an external hub, switch, or router.		
	• L1 ports on both the fabric interconnects must be directly connected to each other.		
	• L2 ports on both the fabric interconnects must be directly connected to each other.		
Verify console port parameters on the computer terminal.	• 9600 baud		
	• 8 data bits		
	• No parity		
	• 1 stop bit		
Obtain information for initial setup.	Collect the following information for initial setup:		
	System name		
	Password for admin account		
	Three static IP addresses		
	• Subnet mask for three static IP addresses		
	Default gateway IP address		
	• DNS server IP address		
	• Domain name for the system		

Both fabric interconnects must go through the same setup process. Set up the primary fabric interconnect and enable for cluster configuration. When you use the same process to set up the secondary fabric interconnect, it detects the first fabric interconnect as a peer.

Configure the Primary Fabric Interconnect Using GUI

You can either follow the procedure below for configuring the primary fabric interconnect or watch Cisco UCS Manager Initial Setup part 1.

Attention IPv4 addressing is required for HyperFlex.

Step 1 Power up the fabric interconnect.

You will see the power on self-test messages as the fabric interconnect boosts.

Step 2 If the system obtains a lease, go to step 6, otherwise, continue to the next step.

- **Step 3** Connect to the console port.
- **Step 4** At the installation method prompt, enter gui.
- **Step 5** If the system cannot access a DHCP server, you are prompted to enter the following information:
 - IPv4 address for the management port on the fabric interconnect.
 - IPv4 subnet mask for the management port on the fabric interconnect.
 - IPv4 address for the default gateway assigned to the fabric interconnect.
- **Step 6** Copy the web link from the prompt into a web browser and go to the Cisco UCS Manager GUI launch page.
- **Step 7** On the Cisco UCS Manager GUI launch page, select **Express Setup**.
- Step 8 On the Express Setup page, select Initial Setup and click Submit.
- **Step 9** In the **Cluster and Fabric Setup** area:
 - a) Click the Enable Clustering option.
 - b) For the Fabric Setup option, select Fabric A.
 - c) In the Cluster IP Address field, enter the IPv4 address that Cisco UCS Manager will use.
- **Step 10** In the **System Setup** area, complete the following fields:

Field	Description			
System Name field	The name assigned to the Cisco UCS domain.			
	In a standalone configuration, the system adds "-A" to the system name. In a cluster configuration, the system adds "-A" to the fabric interconnect assigned to fabric A, and "-B" to the fabric interconnect assigned to fabric B.			
Admin Password field	The password used for the Admin account on the fabric interconnect			
	Choose a strong password that meets the guidelines for Cisco UCS Manager passwords. This password cannot be blank.			
Confirm Admin Password field	The password used for the Admin account on the fabric interconnect.			
Mgmt IP Address field	The static IPv4 address for the management port on the fabric interconnect.			
Mgmt IP Netmask field or Mgmt IP Prefix field	The IPv4 subnet mask prefix for the management port on the fabric interconnect.			
	NoteThe system prompts for a Mgmt IP Netmask or a MgmtIP Prefix based on what address type you entered in the Mgmt IP Address field.			
Default Gateway field	The IPv4 address for the default gateway assigned to the management port on the fabric interconnect.			
	Note The system prompts for a Default Gateway address type based on what type you entered in the Mgmt IP Address field.			

Field	Description
DNS Server IP field	The IPv4 address for the DNS Server assigned to the fabric interconnect.
Domain Name field	The name of the domain in which the fabric interconnect resides.

Step 11 Click Submit.

A page displays the results of your setup operation.

Configure the Subordinate Fabric Interconnect Using GUI

You can either follow the procedure below for configuring the subordinate fabric interconnect or watch Cisco UCS Manager Initial Setup part 2.

Step 1 Power up the fabric interconnect. You will see the power-up self-test message as the fabric interconnect boots. Step 2 It the system obtains a lease, go to step 6, otherwise, continue to the next step. Step 3 Connect to the console port. Step 4 At the installation method prompt, enter gui. Step 5 If the system cannot access a DHCP server, you are prompted to enter the following information: • IPv4 address for the management port on the fabric interconnect • IPv4 subnet mask for the management port on the fabric interconnect • IPv4 address for the default gateway assigned to the fabric interconnect Step 6 Copy the web link from the prompt into a web browser and go to the Cisco UCS Manager GUI launch page. Step 7 On the Cisco UCS Manager GUI launch page, select Express Setup. Step 8 On the Express Setup page, select Initial Setup and click Submit. The fabric interconnect should detect the configuration information for the first fabric interconnect. Step 9 In the Cluster and Fabric Setup Area: a) Select the Enable Clustering option. b) For the **Fabric Setup** option, make sure **Fabric B** is selected. Step 10 In the System Setup Area, enter the password for the Admin account into the Admin Password of Master field. The Manager Initial Setup Area is displayed. Step 11 In the Manager Initial Setup Area, complete the following: Field Description Peer FI is IPv4 Cluster enabled. Please Provide Local Enter an IPv4 address for the Mgmt0 interface on the local Fabric Interconnect Mgmt0 IPv4 Address field fabric interconnect.

Step 12 Click Submit.

A page displays the results of your setup operation.

How to upload the iso and img file to the installer VM using WinSCP

You may choose to use the Installer VM as host for the ISO and IMG files to install Hyper-V. To accomplish that you need to upload the Windows ISO and the Cisco HyperFlex driver image to the installer.

For the purpose of this guide we will use WinSCP, you can use whatever SCP client you have available.

- Step 1 Download a SCP client for Windows. It could be WinSCP (https://winscp.net/eng/download.php) and install it on your workstation.
- Step 2 Connect to your installer VM from WinSCP. Username root and password 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.

Login	_ _ ×
Session	
Eile protocol:	
SCP	×
Host name:	Port number:
10.101.1.228	22
User name:	Password:
root	•••••
<u>S</u> ave ▼	A <u>d</u> vanced ▼
🔁 Login	Close Help

Step 3 Accept the key and add to the cache.

	Warning ? ×			
▲	Continue connecting to an unknown server and add its host key to a cache?			
The server's host key was not found in the cache. You have no guarantee that the server is the computer you think it is.				
	The server's Ed25519 key details are:			
	Algorithm: ssh-ed25519 256 SHA-256: wO0V4/jigyLFEuRBW/Np4JajlUcmN7aH06NMn9fwwN4= MD5: 5d:b4:d1:4b:6c:45:70:44:7c:7c:06:07:17:96:ac:b0			
If you trust this host, press Yes. To connect without adding host key to the cache, press No. To abandon the connection press Cancel.				
	Copy key fingerprints to dipboard			
	Yes 🔽 No Cancel Help			

- **Step 4** Once connected browse to the folder /var/www/localhost/images/ on the installer. Browse to where to local files are located on your machine.
- **Step 5** Transfer the files. File names can be copied if you access the URL in a browser: http://<controller_IP>/images/

• • • * Index of /images/ ×			Θ
\leftrightarrow \rightarrow C $@$ 10.101.1.228/images/			\$:
Index of /images/			
HXInstall-HyperV-v3.0.1a-29499.img en_windows_server_2016_x64_dvd_9718492.iso	14-Apr-2018 09:09 25-Sep-2017 09:18	655360000 5883301888	

DNS Records

Refer to the list below for the DNS records that must be added to your environment.

Add-DnsServerResourceRecordA -Name "" -ZoneName "Ciscolab.dk" -AllowUpdateAny -IPv4Address "" -TimeToLive 01:00:00 -CreatePtr -computername

Add-DnsServerResourceRecordA -Name "" -ZoneName "Ciscolab.dk" -AllowUpdateAny -IPv4Address "" -TimeToLive 01:00:00 -CreatePtr -computername

Add-DnsServerResourceRecordA -Name "" -ZoneName "Ciscolab.dk" -AllowUpdateAny -IPv4Address "" -TimeToLive 01:00:00 -CreatePtr -computername

Add-DnsServerResourceRecordA -Name "" -ZoneName "Ciscolab.dk" -AllowUpdateAny -IPv4Address "" -TimeToLive 01:00:00 -CreatePtr -computername

Add-DnsServerResourceRecordA -Name "" -ZoneName "Ciscolab.dk" -AllowUpdateAny -IPv4Address "" -TimeToLive 01:00:00 -CreatePtr -computername

Add-DnsServerResourceRecordA -Name "" -ZoneName "Ciscolab.dk" -AllowUpdateAny -IPv4Address "" -TimeToLive 01:00:00 -CreatePtr -computername

Add-DnsServerResourceRecordA -Name "" -ZoneName "Ciscolab.dk" -AllowUpdateAny -IPv4Address "" -TimeToLive 01:00:00 -CreatePtr -computername

Add-DnsServerResourceRecordA -Name "" -ZoneName "Ciscolab.dk" -AllowUpdateAny -IPv4Address "" -TimeToLive 01:00:00 -CreatePtr -computername

Add-DnsServerResourceRecordA -Name "" -ZoneName "Ciscolab.dk" -AllowUpdateAny -IPv4Address "" -TimeToLive 01:00:00 -CreatePtr -computername

Add-DnsServerResourceRecordA -Name "" -ZoneName "Ciscolab.dk" -AllowUpdateAny -IPv4Address "" -TimeToLive 01:00:00 -CreatePtr -computername

Add-DnsServerResourceRecordA -Name "" -ZoneName "Ciscolab.dk" -AllowUpdateAny -IPv4Address "" -TimeToLive 01:00:00 -CreatePtr -computername

Add-DnsServerResourceRecordA -Name "-CNTL" -ZoneName "Ciscolab.dk" -AllowUpdateAny -IPv4Address "" -TimeToLive 01:00:00 -CreatePtr -computername

Add-DnsServerResourceRecordA -Name "-CNTL" -ZoneName "Ciscolab.dk" -AllowUpdateAny -IPv4Address "" -TimeToLive 01:00:00 -CreatePtr -computername

Add-DnsServerResourceRecordA -Name "-CNTL" -ZoneName "Ciscolab.dk" -AllowUpdateAny -IPv4Address "" -TimeToLive 01:00:00 -CreatePtr -computername

Add-DnsServerResourceRecordA -Name "-CNTL" -ZoneName "Ciscolab.dk" -AllowUpdateAny -IPv4Address "" -TimeToLive 01:00:00 -CreatePtr -computername

Updating HX Service Account Username and Password

A new password must be updated within an HX Cluster if the password expired or was changed voluntarily. Perform the following step to update the Cisco HX Service Account Password.



Note

The access to VMs and datastores will still continue to work without the new password. However, the cluster will experience some issues with the Alert, Systems Status, Support Bundle and Datastore Access reporting.

Before you begin

Ensure that the Cisco HX Service Account User Name is in the following format:

username@domain.com

Step 1 Run the resethypervored -u command from one of the Storage Controller node within the cluster.

Example:

The following is an example of the command with sample output:

```
root@cvmhv1:~# resethypervcred -u
Enter service admin name:<hx-service-account>@domain.com
Enter service admin passwd:
Enter local admin name:administrator
Enter local admin passwd:
Hyperv creds updated successfully
```

Log into each controller vm as the root user and run restart hxHyperVSvcMgr.

After you have completed the reset and service restarts, then log into **HX Connect** as the HX Service Account User to verify your login works and HX Connect is displaying the cluster information.

Step 2 To change the HX Service Account username, run the resethypervored -u command.

Example:

```
root@cvmhv1:~# resethypervcred -u
Enter service admin name:hxadmin@domain.com
Enter service admin passwd:
Enter local admin name:administrator
Enter local admin passwd:
Hyperv creds updated successfully
```