Preinstallation Checklist

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	Description
DNS	Microsoft Active Directory and Active Directory integrated DNS are required for the HX Platform and must be outside of the cluster. Standalone DNS server is not supported. Non-Windows DNS servers are not supported.
NTP	Ensure that the time is synchronized between the controller VMs and the hosts. For that purpose, 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	HTTP/TCP	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	TCP	Inbound	HX Data Platform Installer
445	SMB 2	Inbound	HX Controller VM
5986	HTTP/TCP	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
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 4
Configure Domain Administrator for Active Directory	See: Enabling Constrained Delegation, on page 4

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 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**.