



Preinstallation Checklist for Cisco HyperFlex Edge

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Americas Headquarters

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
<http://www.cisco.com>
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 527-0883



CHAPTER 1

Overview

Cisco HyperFlex Pre-Install Interactive Tool

Cisco recommends using the HyperFlex Pre-Install Tool <https://hxpreinstall.cloudapps.cisco.com/> for pre-deployment planning. The tool enables a collection of HyperFlex cluster configuration parameters and enables a simple configuration transfer to either Intersight SaaS or the HyperFlex installer VM. The features and benefits of using the HyperFlex Pre-Install tool include:

- Create and validate a cluster configuration before starting installation.
- Multi-cluster import capability using a Microsoft Excel template.
- Push the cluster configuration directly to Intersight SaaS, resulting in automatic cluster profile creation.
- Download JSON configuration files for use with the HyperFlex OVA installer VM.
- Creation of PDF reports with the configuration for record keeping.
- Clone a cluster profile for easy scaling.



CHAPTER 2

Preinstallation Checklist for 2-Node Edge Deployments

Cisco recommends the use of Cisco Intersight for all HyperFlex Edge deployments to ensure a seamless global management experience. Cisco HyperFlex Edge 2-Node clusters require the use of Cisco Intersight for initial deployment and ongoing operations using the Invisible Cloud Witness. HyperFlex Edge 2-Node clusters cannot be deployed using the on-premises HyperFlex installer VM. The on-premises installer can be used to deploy HyperFlex Edge 3- and 4-Node clusters for customers who do not have access to Intersight. HyperFlex Edge 3- and 4-Node clusters can also be deployed using Cisco Intersight.

Cisco HyperFlex Edge offers both a 1 Gigabit Ethernet (GE) and a 10/25GE installation option. Both topologies support single top-of-rack (ToR) and dual ToR switch options for ultimate network flexibility and redundancy. A network topology is chosen during initial deployment and cannot be changed or upgraded without a full reinstallation. Choose your network topology carefully and with future needs in mind. Consider the following when determining the best topology for your cluster:

- Higher performance and future node expansion capabilities: Select the 10/25GE topology. You can choose Cisco VIC-based hardware or Intel NIC-Based adapters.
- Clusters that will never require node expansion, and instances where the ToR switch does not have 10GE ports available: Select the 1GE topology

Common Network Requirement Checklist

Before you begin installation, confirm that your environment meets the following specific software and hardware requirements.

VLAN Requirements



Important **Reserved VLAN IDs** - The VLAN IDs you specify must be supported in the Top of Rack (ToR) switch where the HyperFlex nodes are connected. For example, VLAN IDs 3968 to 4095 are reserved by Nexus switches and VLAN IDs 1002 to 1005 are reserved by Catalyst switches. Before you decide the VLAN IDs for HyperFlex use, make sure that the same VLAN IDs are available on your switch.

Network	VLAN ID	Description
Use a separate subnet and VLANs for each of the following networks:		
VLAN for VMware ESXi, and Cisco HyperFlex management		Used for management traffic among ESXi, HyperFlex, and VMware vCenter, and must be routable. Note This VLAN must have access to Intersight (Intersight is required for 2-Node deployment).
CIMC VLAN		Can be same or different from the Management VLAN. Note This VLAN must have access to Intersight (Intersight is required for 2-Node deployment).
VLAN for HX storage traffic		Used for raw storage traffic and requires only L2 connectivity.
VLAN for VMware vMotion		Used for vMotion VLAN.

Network	VLAN ID	Description
VLAN(s) for VM network(s)		Used for VM/application network. Note Can be multiple VLANs, each backed by a different VM portgroup in ESXi.

Supported vCenter Topologies

Use the following table to determine the topology supported for vCenter.

Topology	Description	Recommendation
Single vCenter	Virtual or physical vCenter that runs on an external server and is local to the site. A management rack mount server can be used for this purpose.	Highly recommended
Centralized vCenter	vCenter that manages multiple sites across a WAN.	Highly recommended
Nested vCenter	vCenter that runs within the cluster you plan to deploy.	Installation for a HyperFlex Edge cluster may be initially performed without a vCenter. Alternatively, you may deploy with an external vCenter and migrate it into the cluster. In either case, the cluster must be registered to a vCenter server before running production workloads. For the latest information, see the How to Deploy vCenter on the HX Data Platform tech note.

Customer Deployment Information

A typical two-node HyperFlex Edge deployment requires 9 IP addresses – 7 IP addresses for the management network and 2 IP addresses for the vMotion network.



Important All IP addresses must be IPv4. HyperFlex does not support IPv6 addresses.

CIMC Management IP Addresses

Server	CIMC Management IP Addresses
Server 1:	
Server 2:	

Server	CIMC Management IP Addresses
Subnet mask	
Gateway	
DNS Server	
NTP Server	
Note NTP configuration on CIMC is required for proper Intersight connectivity.	

Network IP Addresses



Note By default, the HX Installer automatically assigns IP addresses in the 169.254.X.X range as a /24 network, to the Hypervisor Data Network and the Storage Controller Data Network. This IP subnet is not user configurable.



Note Spanning Tree portfast trunk (trunk ports) should be enabled for all network ports.
Failure to configure portfast may cause intermittent disconnects during ESXi bootup and longer than necessary network re-convergence during physical link failure.

Management Network IP Addresses (must be routable)	
Hypervisor Management Network	Storage Controller Management Network
Server 1:	Server 1:
Server 2:	Server 2:
Storage Cluster Management IP address	Cluster IP:
Subnet mask	
Default gateway	

VMware vMotion Network IP Addresses

For vMotion services, you may configure a unique VMkernel port or, if necessary, reuse the vmk0 if you are using the management VLAN for vMotion (not recommended).

Server	vMotion Network IP Addresses (configured using the post_install script)
Server 1:	
Server 2:	

Server	vMotion Network IP Addresses (configured using the post_install script)
Subnet mask	
Gateway	

VMware vCenter Configuration



Note HyperFlex communicates with vCenter through standard ports. Port 80 is used for reverse HTTP proxy and may be changed with TAC assistance. Port 443 is used for secure communication to the vCenter SDK and may not be changed.

vCenter admin username <i>username@domain</i>	
vCenter admin password	
vCenter data center name Note An existing datacenter object can be used. If the datacenter doesn't exist in vCenter, it will be created.	
VMware vSphere compute cluster and storage cluster name Note Cluster name you will see in vCenter.	

Port Requirements



Important Ensure that the following port requirements are met in addition to the prerequisites listed for [Intersight Connectivity, on page 32](#).

If your network is behind a firewall, in addition to the standard port requirements, VMware recommends ports for VMware ESXi and VMware vCenter.

- CIP-M is for the cluster management IP.
- SCVM is the management IP for the controller VM.
- ESXi is the management IP for the hypervisor.

The comprehensive list of ports required for component communication for the HyperFlex solution is located in Appendix A of the [HX Data Platform Security Hardening Guide](#)



Tip If you do not have standard configurations and need different port settings, refer to [Table C-5 Port Literal Values](#) for customizing your environment.

Network Services



- Note**
- DNS and NTP servers should reside outside of the HX storage cluster.
 - Use an internally-hosted NTP server to provide a reliable source for the time.
 - All DNS servers should be pre-configured with forward (A) and reverse (PTR) DNS records for each ESXi host before starting deployment. When DNS is configured correctly in advance, the ESXi hosts are added to vCenter via FQDN rather than IP address.

Skipping this step will result in the hosts being added to the vCenter inventory via IP address and require users to change to FQDN using the following procedure: [Changing Node Identification Form in vCenter Cluster from IP to FQDN](#).

DNS Servers <i><Primary DNS Server IP address, Secondary DNS Server IP address, ... ></i>	
NTP servers <i><Primary NTP Server IP address, Secondary NTP Server IP address, ... ></i>	
Time zone <i>Example: US/Eastern, US/Pacific</i>	

Connected Services

Enable Connected Services (Recommended) <i>Yes or No required</i>	
Email for service request notifications <i>Example: name@company.com</i>	

Proxy Server

- Use of a proxy server is optional if direct connectivity to Intersight is not available.

- When using a proxy, the device connectors in each server must be configured to use the proxy in order to claim the servers into an Intersight account. In addition, the proxy information must be provided in the HX Cluster Profile to ensure the HyperFlex Data Platform can be successfully downloaded.
- Use of username/password is optional

Proxy required: Yes or No	
Proxy Host	
Proxy Port	
Username	
Password	



CHAPTER 3

Preinstallation Checklist for 3- and 4-Node Edge Deployments

Cisco recommends the use of Cisco Intersight for all HyperFlex Edge deployments to ensure a seamless global management experience. Cisco HyperFlex Edge 3-Node and 4-Node clusters may be deployed either through Cisco Intersight, or an on-premises installer VM. Cisco HyperFlex Edge 2-Node clusters require the use of Cisco Intersight for initial deployment and ongoing operations using the Invisible Cloud Witness. HyperFlex Edge 2-Node clusters cannot be deployed using the on-premises HyperFlex installer VM.

Cisco HyperFlex Edge offers both a 1 Gigabit Ethernet (GE) and a 10/25GE installation option. Both topologies support single top-of-rack (ToR) and dual ToR switch options for ultimate network flexibility and redundancy. A network topology is chosen during initial deployment and cannot be changed or upgraded without a full reinstallation. Choose your network topology carefully and with future needs in mind. Consider the following when determining the best topology for your cluster:

- Higher performance and future node expansion capabilities: Select the 10/25GE topology. You can choose Cisco VIC-based hardware or Intel NIC-Based adapters.
- Clusters that will never require node expansion, and instances where the ToR switch does not have 10GE ports available: Select the 1GE topology

Common Network Requirement Checklist

Before you begin installation, confirm that your environment meets the following specific software and hardware requirements.

VLAN Requirements



Important **Reserved VLAN IDs** - The VLAN IDs you specify must be supported in the Top of Rack (ToR) switch where the HyperFlex nodes are connected. For example, VLAN IDs 3968 to 4095 are reserved by Nexus switches and VLAN IDs 1002 to 1005 are reserved by Catalyst switches. Before you decide the VLAN IDs for HyperFlex use, make sure that the same VLAN IDs are available on your switch.

Network	VLAN ID	Description
Use a separate subnet and VLANs for each of the following networks:		
VLAN for VMware ESXi, and Cisco HyperFlex management		Used for management traffic among ESXi, HyperFlex, and VMware vCenter, and must be routable. Note This VLAN must have access to Intersight (if deploying with Intersight).
CIMC VLAN		Can be same or different from the Management VLAN. Note This VLAN must have access to Intersight (if deploying with Intersight).
VLAN for HX storage traffic		Used for storage traffic and requires only L2 connectivity.
VLAN for VMware vMotion		Used for vMotion VLAN, if applicable. Note Can be the same as the management VLAN but not recommended.
VLAN(s) for VM network(s)		Used for VM/application network. Note Can be multiple VLANs separated by a VM portgroup in ESXi.

Supported vCenter Topologies

Use the following table to determine the topology supported for vCenter.

Topology	Description	Recommendation
Single vCenter	Virtual or physical vCenter that runs on an external server and is local to the site. A management rack mount server can be used for this purpose.	Highly recommended
Centralized vCenter	vCenter that manages multiple sites across a WAN.	Highly Recommended

Topology	Description	Recommendation
Nested vCenter	vCenter that runs within the cluster you plan to deploy.	Installation for a HyperFlex Edge cluster may be initially performed without a vCenter. Alternatively, you may deploy with an external vCenter and migrate it into the cluster. In either case, the cluster must be registered to a vCenter server before running production workloads. For the latest information, see the How to Deploy vCenter on the HX Data Platform tech note.

3-Node Customer Deployment Information

A typical three-node HyperFlex Edge deployment requires 13 IP addresses – 10 IP addresses for the management network and 3 IP addresses for the vMotion network.



Important All IP addresses must be IPv4. HyperFlex does not support IPv6 addresses.

4-Node Customer Deployment Information

A typical four-node HyperFlex Edge deployment requires 17 IP addresses – 13 IP addresses for the management network and 4 IP addresses for the vMotion network.



Important All IP addresses must be IPv4. HyperFlex does not support IPv6 addresses.

CIMC Management IP Addresses

Server	CIMC Management IP Addresses
Server 1:	
Server 2:	
Server 3:	
Server 4:	
Subnet mask	
Gateway	
DNS Server	

Server	CIMC Management IP Addresses
NTP Server	
Note NTP configuration on CIMC is required for proper Intersight connectivity.	

Network IP Addresses



Note By default, the HX Installer automatically assigns IP addresses in the 169.254.1.X range, to the Hypervisor Data Network and the Storage Controller Data Network. This IP subnet is not user configurable.



Note Spanning Tree portfast trunk (trunk ports) should be enabled for all network ports.
Failure to configure portfast may cause intermittent disconnects during ESXi bootup and longer than necessary network re-convergence during physical link failure.

Management Network IP Addresses (must be routable)	
Hypervisor Management Network	Storage Controller Management Network
Server 1:	Server 1:
Server 2:	Server 2:
Server 3:	Server 3:
Server 4:	Server 4:
Storage Cluster Management IP address	Cluster IP:
Subnet mask	
Default gateway	

VMware vMotion Network IP Addresses

For vMotion services, you may configure a unique VMkernel port or, if necessary, reuse the vmk0 if you are using the management VLAN for vMotion (not recommended).

Server	vMotion Network IP Addresses (configured using the post_install script)
Server 1:	
Server 2:	
Server 3:	

Server	vMotion Network IP Addresses (configured using the post_install script)
Server 4:	
Subnet mask	
Gateway	

VMware vCenter Configuration



Note HyperFlex communicates with vCenter through standard ports. Port 80 is used for reverse HTTP proxy and may be changed with TAC assistance. Port 443 is used for secure communication to the vCenter SDK and may not be changed.

vCenter admin username <i>username@domain</i>	
vCenter admin password	
vCenter data center name Note An existing datacenter object can be used. If the datacenter doesn't exist in vCenter, it will be created.	
VMware vSphere compute cluster and storage cluster name Note Cluster name you will see in vCenter.	

Port Requirements



Important Ensure that the following port requirements are met in addition to the prerequisites listed for [Intersight Connectivity, on page 32](#).

If your network is behind a firewall, in addition to the standard port requirements, VMware recommends ports for VMware ESXi and VMware vCenter.

- CIP-M is for the cluster management IP.
- SCVM is the management IP for the controller VM.
- ESXi is the management IP for the hypervisor.

The comprehensive list of ports required for component communication for the HyperFlex solution is located in Appendix A of the [HX Data Platform Security Hardening Guide](#)



Tip If you do not have standard configurations and need different port settings, refer to [Table C-5 Port Literal Values](#) for customizing your environment.

Network Services



- Note**
- DNS and NTP servers should reside outside of the HX storage cluster.
 - To ensure your cluster works properly and to avoid any issues when your cluster is deployed through Intersight, create the A and PTR DNS records for the SCVMs hostnames.
 - Use an internally-hosted NTP server to provide a reliable source for the time.
 - All DNS servers should be pre-configured with forward (A) and reverse (PTR) DNS records for each ESXi host before starting deployment. When DNS is configured correctly in advance, the ESXi hosts are added to vCenter via FQDN rather than IP address.
- Skipping this step will result in the hosts being added to the vCenter inventory via IP address and require users to change to FQDN using the following procedure: [Changing Node Identification Form in vCenter Cluster from IP to FQDN](#).

DNS Servers <i><Primary DNS Server IP address, Secondary DNS Server IP address, ... ></i>	
NTP servers <i><Primary NTP Server IP address, Secondary NTP Server IP address, ... ></i>	
Time zone <i>Example: US/Eastern, US/Pacific</i>	

Connected Services

Enable Connected Services (Recommended) <i>Yes or No required</i>	
Email for service request notifications <i>Example: name@company.com</i>	

Proxy Server

- Use of a proxy server is optional if direct connectivity to Intersight is not available.
- When using a proxy, the device connectors in each server must be configured to use the proxy in order to claim the servers into an Intersight account. In addition, the proxy information must be provided in the HX Cluster Profile to ensure the HyperFlex Data Platform can be successfully downloaded.
- Use of username/password is optional

Proxy required: Yes or No	
Proxy Host	
Proxy Port	
Username	
Password	



CHAPTER 4

Preinstallation Checklist for 2-Node 2-Room Deployments

- [2-Node 2-Room Network Topology, on page 63](#)

2-Node 2-Room Network Topology

HyperFlex Edge offers many flexible deployment options depending on workload requirements. Standard topologies are covered in [Select your 2-Node Network Topology, on page 7](#) and [Selecting your 3- or 4-Node Network Topology, on page 35](#) that include single switch, dual switch, 1GE, 10GE, and 25GE options. Some designs call for placing a two-node cluster “stretched” across two rooms within a building or a campus. This type of network topology will further be referred to as a 2-node 2-room design to distinguish this type of topology from a full HyperFlex Stretched Cluster deployment.

This design is sometimes chosen as an attempt to boost the cluster availability and its ability to tolerate certain failure scenarios. Cisco does not currently recommend deploying this type of topology and recommends a properly designed 2-node cluster within the same rack.

Common Network Requirement Checklist

Before you begin installation, confirm that your environment meets the following specific software and hardware requirements.

VLAN Requirements



Important **Reserved VLAN IDs** - The VLAN IDs you specify must be supported in the Top of Rack (ToR) switch where the HyperFlex nodes are connected. For example, VLAN IDs 3968 to 4095 are reserved by Nexus switches and VLAN IDs 1002 to 1005 are reserved by Catalyst switches. Before you decide the VLAN IDs for HyperFlex use, make sure that the same VLAN IDs are available on your switch.

Network	VLAN ID	Description
Use a separate subnet and VLANs for each of the following networks:		
VLAN for VMware ESXi, and Cisco HyperFlex management		Used for management traffic among ESXi, HyperFlex, and VMware vCenter, and must be routable. Note This VLAN must have access to Intersight (Intersight is required for 2-Node deployment).
CIMC VLAN		Can be same or different from the Management VLAN. Note This VLAN must have access to Intersight (Intersight is required for 2-Node deployment).
VLAN for HX storage traffic		Used for raw storage traffic and requires only L2 connectivity.
VLAN for VMware vMotion		Used for vMotion VLAN.
VLAN(s) for VM network(s)		Used for VM/application network. Note Can be multiple VLANs, each backed by a different VM portgroup in ESXi.

Supported vCenter Topologies

Use the following table to determine the topology supported for vCenter.

Topology	Description	Recommendation
Single vCenter	Virtual or physical vCenter that runs on an external server and is local to the site. A management rack mount server can be used for this purpose.	Highly recommended
Centralized vCenter	vCenter that manages multiple sites across a WAN.	Highly recommended
Nested vCenter	vCenter that runs within the cluster you plan to deploy.	Installation for a HyperFlex Edge cluster may be initially performed without a vCenter. Alternatively, you may deploy with an external vCenter and migrate it into the cluster. In either case, the cluster must be registered to a vCenter server before running production workloads. For the latest information, see the How to Deploy vCenter on the HX Data Platform tech note.

Customer Deployment Information

A typical two-node HyperFlex Edge deployment requires 9 IP addresses – 7 IP addresses for the management network and 2 IP addresses for the vMotion network.



Important All IP addresses must be IPv4. HyperFlex does not support IPv6 addresses.

CIMC Management IP Addresses

Server	CIMC Management IP Addresses
Server 1:	
Server 2:	
Subnet mask	
Gateway	
DNS Server	
NTP Server	
Note	NTP configuration on CIMC is required for proper Intersight connectivity.

Network IP Addresses

Note By default, the HX Installer automatically assigns IP addresses in the 169.254.X.X range as a /24 network, to the Hypervisor Data Network and the Storage Controller Data Network. This IP subnet is not user configurable.



Note Spanning Tree portfast trunk (trunk ports) should be enabled for all network ports. Failure to configure portfast may cause intermittent disconnects during ESXi bootup and longer than necessary network re-convergence during physical link failure.

Management Network IP Addresses (must be routable)	
Hypervisor Management Network	Storage Controller Management Network
Server 1:	Server 1:
Server 2:	Server 2:
Storage Cluster Management IP address	Cluster IP:
Subnet mask	
Default gateway	

VMware vMotion Network IP Addresses

For vMotion services, you may configure a unique VMkernel port or, if necessary, reuse the vmk0 if you are using the management VLAN for vMotion (not recommended).

Server	vMotion Network IP Addresses (configured using the post_install script)
Server 1:	
Server 2:	
Subnet mask	
Gateway	

VMware vCenter Configuration

Note HyperFlex communicates with vCenter through standard ports. Port 80 is used for reverse HTTP proxy and may be changed with TAC assistance. Port 443 is used for secure communication to the vCenter SDK and may not be changed.

vCenter admin username <i>username@domain</i>	
vCenter admin password	
vCenter data center name Note An existing datacenter object can be used. If the datacenter doesn't exist in vCenter, it will be created.	
VMware vSphere compute cluster and storage cluster name Note Cluster name you will see in vCenter.	

Port Requirements



Important Ensure that the following port requirements are met in addition to the prerequisites listed for [Intersight Connectivity](#), on page 32.

If your network is behind a firewall, in addition to the standard port requirements, VMware recommends ports for VMware ESXi and VMware vCenter.

- CIP-M is for the cluster management IP.
- SCVM is the management IP for the controller VM.
- ESXi is the management IP for the hypervisor.

The comprehensive list of ports required for component communication for the HyperFlex solution is located in Appendix A of the [HX Data Platform Security Hardening Guide](#)



Tip If you do not have standard configurations and need different port settings, refer to [Table C-5 Port Literal Values](#) for customizing your environment.

Network Services



Note

- DNS and NTP servers should reside outside of the HX storage cluster.
- Use an internally-hosted NTP server to provide a reliable source for the time.
- All DNS servers should be pre-configured with forward (A) and reverse (PTR) DNS records for each ESXi host before starting deployment. When DNS is configured correctly in advance, the ESXi hosts are added to vCenter via FQDN rather than IP address.

Skipping this step will result in the hosts being added to the vCenter inventory via IP address and require users to change to FQDN using the following procedure: [Changing Node Identification Form in vCenter Cluster from IP to FQDN](#).

DNS Servers <i><Primary DNS Server IP address, Secondary DNS Server IP address, ... ></i>	
NTP servers <i><Primary NTP Server IP address, Secondary NTP Server IP address, ... ></i>	
Time zone <i>Example: US/Eastern, US/Pacific</i>	

Connected Services

Enable Connected Services (Recommended) <i>Yes or No required</i>	
Email for service request notifications <i>Example: name@company.com</i>	

Proxy Server

- Use of a proxy server is optional if direct connectivity to Intersight is not available.
- When using a proxy, the device connectors in each server must be configured to use the proxy in order to claim the servers into an Intersight account. In addition, the proxy information must be provided in the HX Cluster Profile to ensure the HyperFlex Data Platform can be successfully downloaded.
- Use of username/password is optional

Proxy required: Yes or No	
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Proxy Host	
Proxy Port	
Username	
Password	