

- **vswitch-hx-inband-mgmt**—Used for ESXi management and storage controller management.
- **vswitch-hx-storage-data**—Used for ESXi storage data and HX Data Platform replication.

The vswitch-hx-inband-mgmt and vswitch-hx-storage-data vSwitches further divide into two port groups with assigned static IP addresses to handle traffic between the storage cluster and ESXi host.

- **vswitch-hx-vmotion**—Used for VM and storage VMware vMotion.

This vSwitch has one port group for management, defined through VMware vSphere, which connects to all of the hosts in the vCenter cluster.

- **vswitch-hx-vm-network**—Used for VM data traffic.

You can add or remove VLANs on the corresponding vNIC templates in Cisco UCS Manager, and create port groups on the vSwitch.



Note

- HX Data Platform Installer creates the vSwitches automatically.
- Ensure that you enable the following services in vSphere after you create the HX Storage Cluster:
 - DRS (vSphere Enterprise Plus only)
 - vMotion
 - High Availability

Port Requirements

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.

Verify that the following firewall ports are open:

Time Server

Port Number	Service/Protocol	Source	Port Destinations	Essential Information
123	NTP/UDP	Each ESXi Node Each SCVM Node UCSM	Time Server	Bidirectional

HX Data Platform Installer

Port Number	Service/Protocol	Source	Port Destinations	Essential Information
22	SSH/TCP	HX Data Platform Installer	Each ESXi Node	Management addresses
			Each SCVM Node	Management addresses
			CIP-M	Cluster management
			UCSM	UCSM management addresses
80	HTTP/TCP	HX Data Platform Installer	Each ESXi Node	Management addresses
			Each SCVM Node	Management addresses
			CIP-M	Cluster management
			UCSM	UCSM management addresses
443	HTTPS/TCP	HX Data Platform Installer	Each ESXi Node	Management addresses
			Each SCVM Node	Management addresses
			CIP-M	Cluster management
			UCSM	UCSM management addresses
8089	vSphere SDK/TCP	HX Data Platform Installer	Each ESXi Node	Management addresses
902	Heartbeat/UDP/TCP	HX Data Platform Installer	vCenter	
			Each ESXi Node	
None	Ping/ICMP	HX Data Platform Installer	ESXi IPs CVM IPs	Management addresses
9333	UDP/TCP	HX Data Platform Installer	CIP-M	Cluster management

Mail Server

Optional for email subscription to cluster events.

Port Number	Service/Protocol	Source	Port Destinations	Essential Information
25	SMTP/TCP	Each SCVM Node CIP-M UCSM	Mail Server	Optional

Monitoring

Optional for monitoring UCS infrastructure.

Port Number	Service/Protocol	Source	Port Destinations	Essential Information
161	SNMP Poll/UDP	Monitoring Server	UCSM	Optional
162	SNMP Trap/UDP	UCSM	Monitoring Server	Optional

Name Server

Port Number	Service/Protocol	Source	Port Destinations	Essential Information
53 (external lookups)	DNS/TCP/UDP	Each ESXi Node	Name Server	Management addresses
		Each SCVM Node	Name Server	Management addresses
		CIP-M	Name Server	Cluster management
		UCSM	Name Server	

vCenter

Port Number	Service/Protocol	Source	Port Destinations	Essential Information
80	HTTP/TCP	vCenter	Each SCVM Node CIP-M	Bidirectional
443	HTTPS (Plug-in)/TCP	vCenter	Each ESXi Node Each SCVM Node CIP-M	Bidirectional
7444	HTTPS (VC SSO)/TCP	vCenter	Each ESXi Node Each SCVM Node CIP-M	Bidirectional
9443	HTTPS (Plug-in)/TCP	vCenter	Each ESXi Node Each SCVM Node CIP-M	Bidirectional
5989	CIM Server/TCP	vCenter	Each ESXi Node	
9080	CIM Server/TCP	vCenter	Each ESXi Node	Introduced in ESXi Release 6.5

Port Number	Service/Protocol	Source	Port Destinations	Essential Information
902	Heartbeat/TCP/UDP	vCenter	Each ESXi Node	This port must be accessible from each host. Installation results in errors if the port is not open from the HX Installer to the ESXi hosts.

User

Port Number	Service/Protocol	Source	Port Destinations	Essential Information
22	SSH/TCP	User	Each ESXi Node	Management addresses
			Each SCVM Node	Management addresses
			CIP-M	Cluster management
			HX Data Platform Installer	
			UCSM	UCSM management addresses
			vCenter	
			SSO Server	
80	HTTP/TCP	User	Each SCVM Node	Management addresses
			CIP-M	Cluster management
			UCSM	
			HX Data Platform Installer	
			vCenter	
443	HTTPS/TCP	User	Each SCVM Node	
			CIP-M	
			UCSM	UCSM management addresses
			HX Data Platform Installer	
			vCenter	

Port Number	Service/Protocol	Source	Port Destinations	Essential Information
7444	HTTPS (SSO)/TCP	User	vCenter SSO Server	
9443	HTTPS (Plug-in)/TCP	User	vCenter	

SSO Server

Port Number	Service/Protocol	Source	Port Destinations	Essential Information
7444	HTTPS (SSO)/TCP	SSO Server	Each ESXi Node Each SCVM Node CIP-M	Bidirectional

Stretch Witness

Required only when deploying HyperFlex Stretched Cluster.

Port Number	Service/Protocol	Source	Port Destinations	Essential Information
2181 2888 3888	Zookeeper/TCP	Witness	Each CVM Node	Bidirectional, management addresses
8180	Exhibitor (Zookeeper lifecycle)/TCP	Witness	Each CVM Node	Bidirectional, management addresses
80	HTTP/TCP	Witness	Each CVM Node	Potential future requirement
443	HTTPS/TCP	Witness	Each CVM Node	Potential future requirement

Replication

Required only when configuring native HX asynchronous cluster to cluster replication.

Port Number	Service/Protocol	Source	Port Destinations	Essential Information
9338	Data Services Manager Peer/TCP	Each CVM Node	Each CVM Node	Bidirectional, include cluster management IP addresses
3049	Replication for CVM/TCP	Each CVM Node	Each CVM Node	Bidirectional, include cluster management IP addresses

Port Number	Service/Protocol	Source	Port Destinations	Essential Information
4049	Cluster Map/TCP	Each CVM Node	Each CVM Node	Bidirectional, include cluster management IP addresses
4059	NR NFS/TCP	Each CVM Node	Each CVM Node	Bidirectional, include cluster management IP addresses
9098	Replication Service	Each CVM Node	Each CVM Node	Bidirectional, include cluster management IP addresses
8889	NR Master for Coordination/TCP	Each CVM Node	Each CVM Node	Bidirectional, include cluster management IP addresses
9350	Hypervisor Service/TCP	Each CVM Node	Each CVM Node	Bidirectional, include cluster management IP addresses

SED Cluster

Port Number	Service/Protocol	Source	Port Destinations	Essential Information
443	HTTPS	Each SCVM Management IP (including cluster management IP)	UCSM (Fabric A, Fabric B, VIP)	Policy Configuration
5696	TLS	CIMC from each node	KVM Server	Key Exchange

UCSM

Port Number	Service/Protocol	Source	Port Destinations	Essential Information
443	Encryption etc./TCP	Each CVM Node	CIMC OOB	Bidirectional for each UCS node
81	KVM/HTTP	User	UCSM	OOB KVM
743	KVM/HTTP	User	UCSM	OOB KVM encrypted

Miscellaneous

Port Number	Service/Protocol	Source	Port Destinations	Essential Information
9350	Hypervisor Service/TCP	Each CVM Node	Each CVM Node	Bidirectional, include cluster management IP addresses

Port Number	Service/Protocol	Source	Port Destinations	Essential Information
9097	CIP-M Failover/TCP	Each CVM Node	Each CVM Node	Bidirectional for each CVM to other CVMs
111	RPC Bind/TCP	Each SCVM node	Each SCVM node	CVM outbound to Installer
8002	Installer/TCP	Each SCVM node	Installer	Service Location Protocol
8080	Apache Tomcat/TCP	Each SCVM node	Each SCVM node	stDeploy makes connection, any request with uri /stdeploy
8082	Auth Service/TCP	Each SCVM node	Each SCVM node	Any request with uri /auth/
9335	hxRoboControl/TCP	Each SCVM node	Each SCVM node	Robo deployments
443	HTTPS/TCP	Each CVM Mgmt IP including CIP-M	UCSM A/B and VIP	Policy Configuration
5696	TLS/TCP	CIMC from each node	KMS Server	Key Exchange
8125	UDP	Each SCVM node	Each SCVM node	Graphite
427	UDP	Each SCVM node	Each SCVM node	Service Location Protocol
32768 to 65535	UDP	Each SCVM node	Each SCVM node	SCVM outbound communication


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.

HyperFlex External Connections

External Connection	Description	IP Address/ FQDN/ Ports/Version	Essential Information
Intersight Device Connector	Supported HX systems are connected to Cisco Intersight through a device connector that is embedded in the management controller of each system.	HTTPS Port Number: 443 1.0.5-2084 or later (Auto-upgraded by Cisco Intersight)	All device connectors must properly resolve <code>svc.ucs-connect.com</code> and allow outbound-initiated HTTPS connections on port 443. The current HX Installer supports the use of an HTTP proxy. The IP addresses of ESXi management must be reachable from Cisco UCS Manager over all the ports that are listed as being needed from installer to ESXi management, to ensure deployment of ESXi management from Cisco Intersight.
Auto Support	Auto Support (ASUP) is the alert notification service provided through HX Data Platform.	SMTP Port Number: 25	Enabling Auto Support is strongly recommended because it provides historical hardware counters that are valuable in diagnosing future hardware issues, such as a drive failure for a node.
Post Installation Script	To complete the post installation tasks, you can run a post installation script on the Installer VM. The script pings across all network interfaces (management, vMotion, and storage network) to ensure full fabric availability. The script also validates the correct tagging of VLANs and jumbo frame configurations on the northbound switch.	HTTP Port Number: 80	The post install script requires name resolution to http://cs.co/hx-scripts via port 80 (HTTP).