

HyperFlex Stretch Clusters Deployment Guide

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Introduction

A Hyperflex stretched cluster is a single cluster with geographically distributed nodes. Both sides of the cluster act as primary for certain user VMs. The data for these VMs is replicated synchronously on the other site. Stretched clusters enable you to access the entire cluster even if one of the sites were to completely go down. Typically these sites are connected with a low latency, dedicated, high-speed link between them.

HyperFlex Stretched Cluster enables you to deploy an Active-Active disaster avoidance solution for mission critical workloads requiring high uptime (near zero Recovery Time Objective) and no data loss (zero Recovery Point Objective).

Prerequisites

Requirements

- All the nodes in the cluster should be of the same M5 models (All HX220 M5) or (HX 240 M5)
- Only M5 node are supported in stretch Clusters
- Stretch clusters is only supported on ESXi HX platforms
- Each site should have a minimum of 2 nodes
- ALL the VLANs used on both clusters have to be SAME
- Stretch cluster configuration requires a Witness VM
- Stretch Clusters require the same number of IP addresses that is needed for a six node cluster

- Only one instance of vCenter is used for a stretch cluster
- vCenter with DRS and HA is required for the stretch cluster to work properly

Components Used

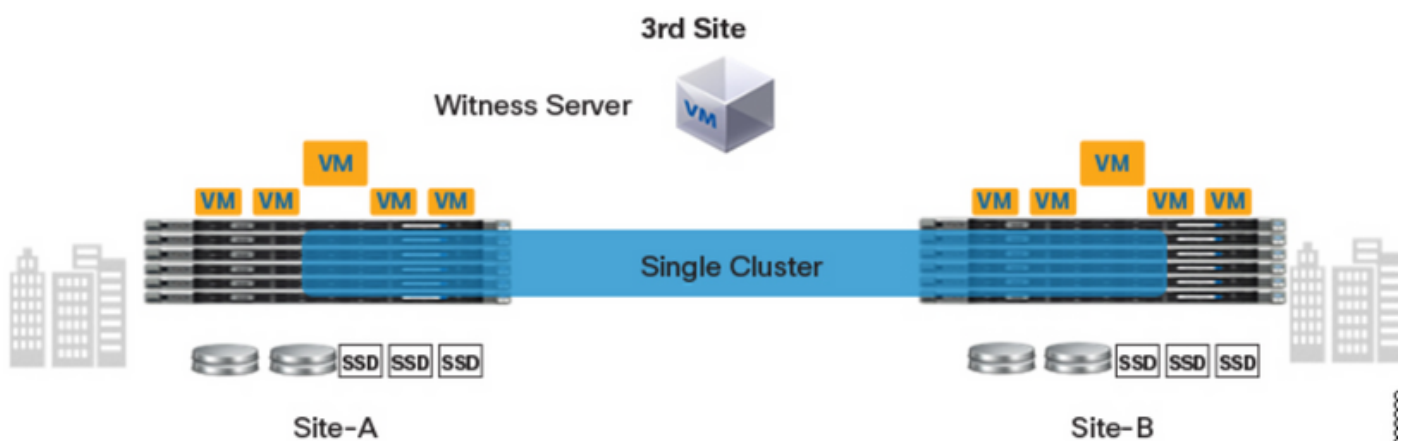
- HX Installer
- Cisco HX M5 servers
- VMWare vCenter
- Cisco UCSM
- VMWare ESXi

Other Requirements

- [Pre-installation Check List](#)
- [Deploying Witness VM](#)
- [Changing Witness VM Password](#)

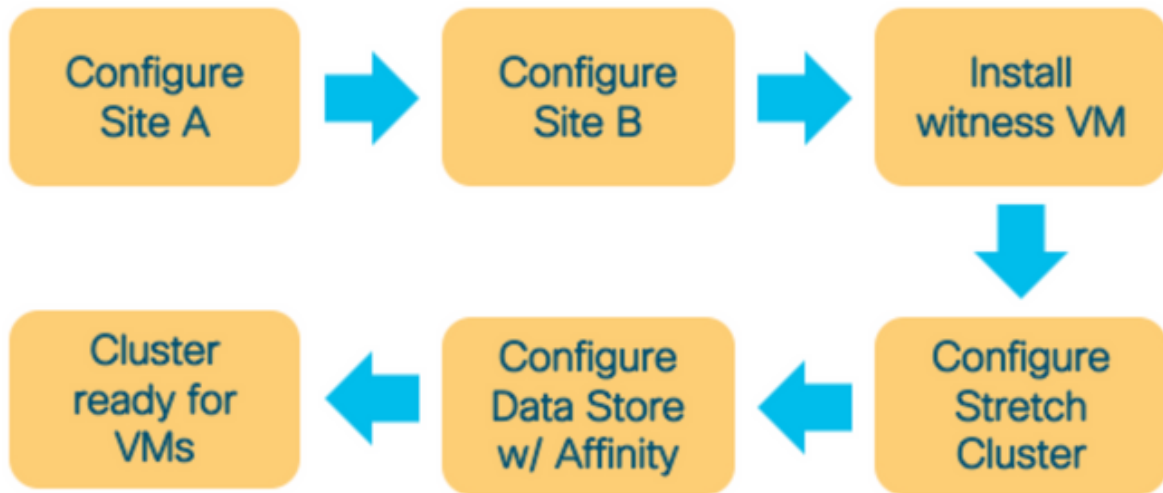
Configure

Network Diagram



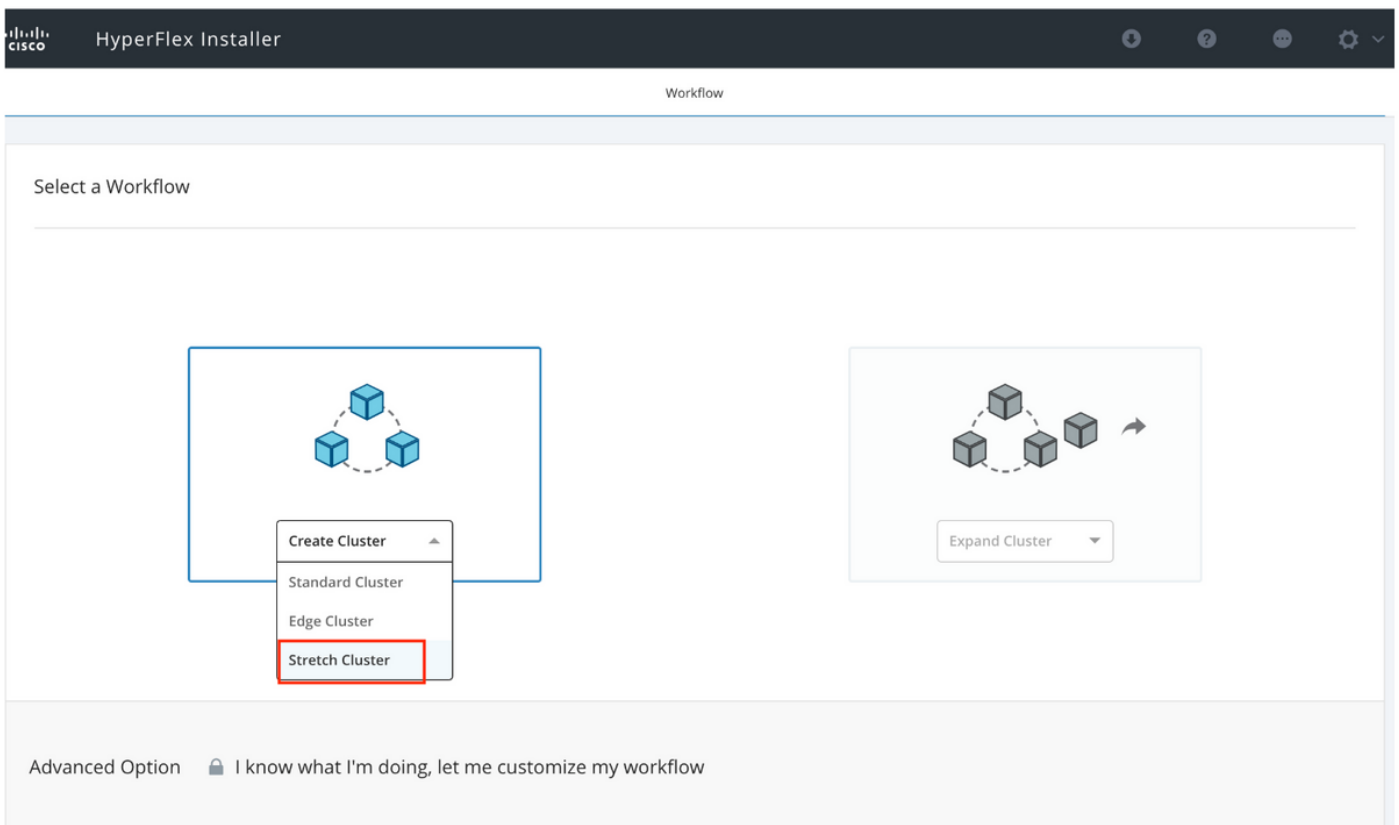
Configurations

All the configuration for a stretch cluster will be done from a single HX installer. The workflow for stretch cluster install steps is as shown below:

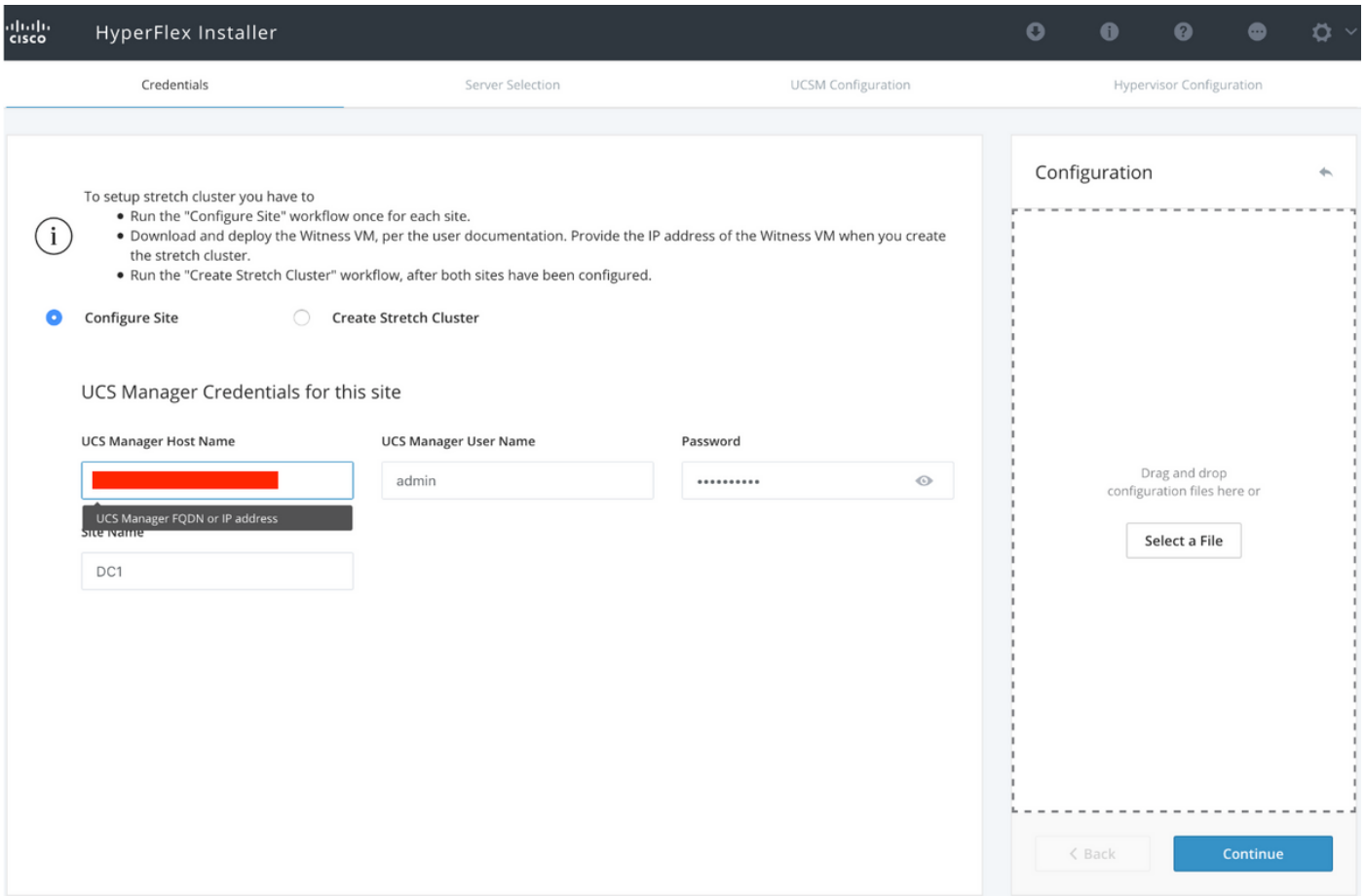


Configure Site A

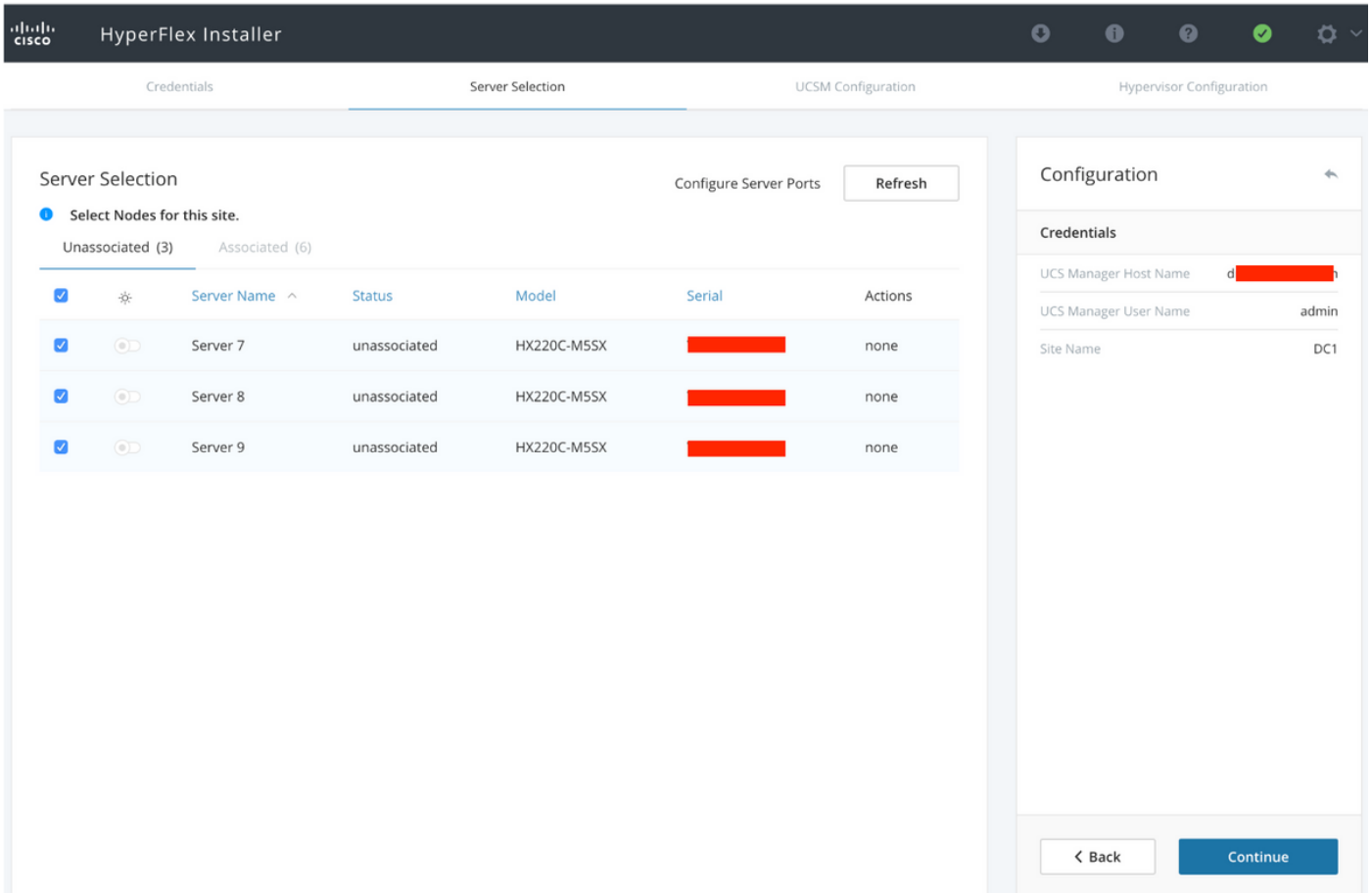
Step 1. Log on to the respective assigned HX installer to start the cluster configuration. If the installer is still showing the previous install status click on the wheel in the bar above and select Start Over to begin a fresh install. In the **Select a Workflow --> Create Cluster -->(select) Stretch Cluster**.



Step 2. In the configure site workflow enter the **UCSM credentials** and **DC** in the **Site Name**. Then click **Continue**.



Step 3. In the server selection, select the source servers and click **Continue**



Step 4. Under the **UCSM** configuration section enter the **VLAN ID** and **VLAN names**. In this

case we have used **Inband** for CIMC. Click **Continue**

HyperFlex Installer

Credentials | Server Selection | **UCSM Configuration** | Hypervisor Configuration

VLAN Configuration

VLAN for Hypervisor and HyperFlex management

VLAN Name	VLAN ID
hx-inband-mgmt-Pod-6	222

VLAN for HyperFlex storage traffic

VLAN Name	VLAN ID
hx-storage-data-Pod-6	3099

VLAN for VM vMotion

VLAN Name	VLAN ID
hx-vmotion-Pod-6	3093

VLAN for VM Network

VLAN Name	VLAN ID(s)
vm-network-Pod-6	3094

MAC Pool

MAC Pool Prefix: 00:25:85:06

'hx' IP Pool for Cisco IMC

IP Blocks	Subnet Mask	Gateway
[Redacted]	255.255.254.0	[Redacted]

Cisco IMC access management (Out of band or Inband)

Out of band In band

VLAN for inband Cisco IMC connectivity

VLAN Name	VLAN ID
hx-inband-cimc-Pod-6	222

> iSCSI Storage

> FC Storage

Advanced

UCS Server Firmware Version	HyperFlex Cluster Name	Org Name
3.2(3)	dm-j-hx-clus-6	HX-POD-6

Configuration Summary

Credentials

UCS Manager Host Name	dm-j-fi-2.cisco.com
UCS Manager User Name	admin
Site Name	DC1
Admin User name	root

Server Selection

Server 8	[Redacted] / HX220C-M55X
Server 9	[Redacted] / HX220C-M55X
Server 7	[Redacted] / HX220C-M55X

UCSM Configuration

VLAN Name	hx-inband-mgmt-Pod-6
VLAN ID	222
VLAN Name	hx-storage-data-Pod-6
VLAN ID	3099
VLAN Name	hx-vmotion-Pod-6
VLAN ID	3093
VLAN Name	vm-network-Pod-6
VLAN ID(s)	3094
MAC Pool Prefix	00:25:85:06
IP Blocks	[Redacted]
Subnet Mask	255.255.254.0
Gateway	[Redacted]
VLAN Name	hx-inband-cimc-Pod-6
VLAN ID	222
UCS Server Firmware Version	3.2(3)
HyperFlex Cluster Name	dm-j-hx-clus-6
Org Name	HX-POD-6
iSCSI Storage	false
VLAN A Name	hx-ext-storage-iscsi-a
VLAN B Name	hx-ext-storage-iscsi-b
FC Storage	false
WWN Pool	20:00:00:25:85:
VSAN A Name	hx-ext-storage-fc-a
VSAN B Name	hx-ext-storage-fc-b

[Back](#) [Continue](#)

Step 5. In the **Hypervisor Configuration** section provide all the requested information. Then click **Configure Site** to begin site configuration.

HyperFlex Installer

Credentials Server Selection **UCSM Configuration** Hypervisor Configuration

VLAN Configuration

VLAN for Hypervisor and HyperFlex management

VLAN Name: VLAN ID:

VLAN for HyperFlex storage traffic

VLAN Name: VLAN ID:

VLAN for VM vMotion

VLAN Name: VLAN ID:

VLAN for VM Network

VLAN Name: VLAN ID(s):

MAC Pool

MAC Pool Prefix:

'hx' IP Pool for Cisco IMC

IP Blocks: Subnet Mask: Gateway:

Cisco IMC access management (Out of band or Inband)

Out of band In band

VLAN for inband Cisco IMC connectivity

VLAN Name: VLAN ID:

> iSCSI Storage

> FC Storage

Advanced

UCS Server Firmware Version: HyperFlex Cluster Name: Org Name:

Configuration

Credentials

UCS Manager Host Name:

UCS Manager User Name:

Site Name:

Admin User name:

Server Selection

Server 8: / HX220C-M55X

Server 9: / HX220C-M55X

Server 7: / HX220C-M55X

UCSM Configuration

VLAN Name:

VLAN ID:

VLAN Name:

VLAN ID:

VLAN Name:

VLAN ID:

VLAN Name:

VLAN ID(s):

MAC Pool Prefix:

IP Blocks:

Subnet Mask:

Gateway:

VLAN Name:

VLAN ID:

UCS Server Firmware Version:

HyperFlex Cluster Name:

Org Name:

iSCSI Storage:

VLAN A Name:

VLAN B Name:

FC Storage:

WWN Pool:

VSAN A Name:

VSAN B Name:

Step 6. Confirm that the **Site A** Hypervisor Configuration is **Successful**.

Start Config Installer Validations UCSM Configuration Hypervisor Configuration

✓ Hypervisor Configuration Successful

Hypervisor Configuration - Overall **Succeeded**

- ✓ Login to UCS API
- ✓ Configuring static ip on the specified ESXi servers
- ✓ Configuring static ip on a ESXi server
- ✓ Login to ESXi through SoL with user specified username and password
- ✓ Logout from UCS API
- ✓ CONFIGURATION COMPLETED SUCCESSFULLY

Configure Site B

Step 1. Click on the **wheel** and select **Configure Site** to begin the **Site B** configuration as shown below.

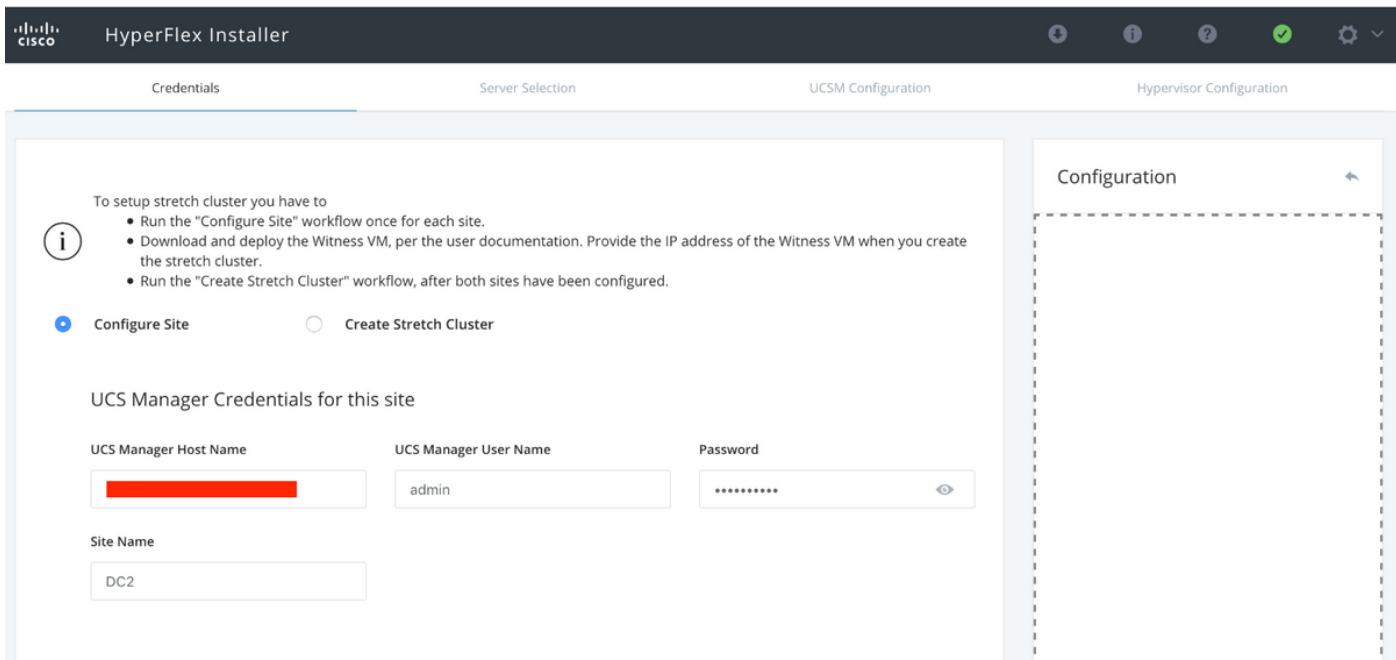
Start Config Installer Validations UCSM Configuration Hypervisor Configuration

Configuration

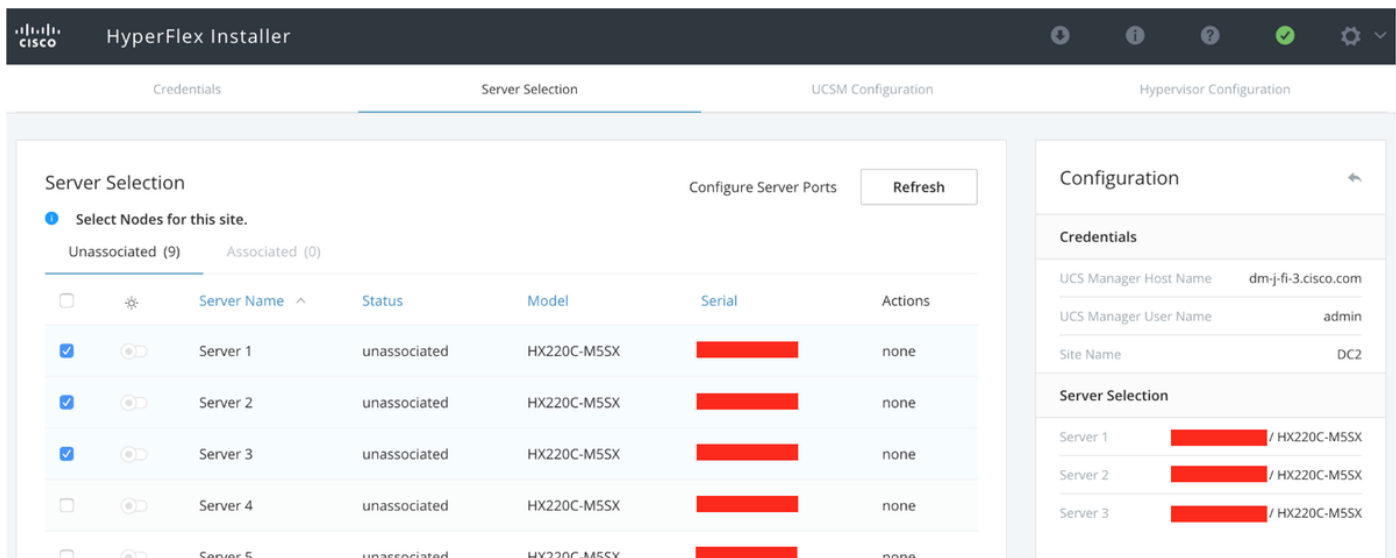
Credentials

- Configure Site
- Create Stretch Cluster
- Log Out (root)

Step 2. In the **Configure Site** workflow enter the Target **UCSM** credentials and Target **DC** in the Site Name. Then click **Continue**.



Step 3. In the server selection, select the source servers and click **Continue**



Step 4. Under the **UCSM configuration** section enter the **VLAN ID** and **VLAN names**. In this case we have used **Inband** for CIMC. Click **Continue**

HyperFlex Installer

Credentials Server Selection **UCSM Configuration** Hypervisor Configuration

VLAN Configuration

VLAN for Hypervisor and HyperFlex management

VLAN Name: VLAN ID:

VLAN for HyperFlex storage traffic

VLAN Name: VLAN ID:

VLAN for VM vMotion

VLAN Name: VLAN ID:

VLAN for VM Network

VLAN Name: VLAN ID(s):

MAC Pool

MAC Pool Prefix:

'hx' IP Pool for Cisco IMC

IP Blocks: Subnet Mask: Gateway:

Cisco IMC access management (Out of band or Inband)

Out of band In band

VLAN for inband Cisco IMC connectivity

VLAN Name: VLAN ID:

> iSCSI Storage

> FC Storage

Advanced

UCS Server Firmware Version: HyperFlex Cluster Name: Org Name:

Configuration

Credentials

UCS Manager Host Name:

UCS Manager User Name:

Site Name:

Server Selection

Server 1: / HX220C-M55X

Server 2: / HX220C-M55X

Server 3: / HX220C-M55X

Step 5. In the **Hypervisor Configuration** section provide all the requested information. Then click **Configure Site** to begin site configuration.

HyperFlex Installer

Credentials Server Selection UCSM Configuration Hypervisor Configuration

Configure common Hypervisor Settings

Subnet Mask: 255.255.254.0 Gateway: [REDACTED] DNS Server(s): [REDACTED]

Hypervisor Settings

Make IP Addresses and Hostnames Sequential

#	Name	Serial	Static IP Address	Hostname
1	Server 1	[REDACTED]	[REDACTED]	dm-j-hx-21
2	Server 2	[REDACTED]	[REDACTED]	dm-j-hx-22
3	Server 3	[REDACTED]	[REDACTED]	dm-j-hx-23

Hypervisor Credentials

Admin User name: root Hypervisor Password: [REDACTED]

Configuration

Credentials

UCS Manager Host Name: [REDACTED]
UCS Manager User Name: admin
Site Name: DC2
Admin User name: root

Server Selection

Server 1: [REDACTED] / HX220C-M5SX
Server 2: [REDACTED] / HX220C-M5SX
Server 3: [REDACTED] / HX220C-M5SX

UCSM Configuration

VLAN Name: hx-inband-mgmt
VLAN ID: 222
VLAN Name: hx-storage-data
VLAN ID: 3099
VLAN Name: hx-vmotion
VLAN ID: 3093
VLAN Name: vm-network
VLAN ID(s): 3094
MAC Pool Prefix: 00:25:B5:07
IP Blocks: [REDACTED]
Subnet Mask: 255.255.254.0
Gateway: [REDACTED]
VLAN Name: hx-inband-cimc-Pod-7
VLAN ID: 222
UCS Server Firmware Version: 3.2(3h)

[← Back](#) [Configure Site](#)

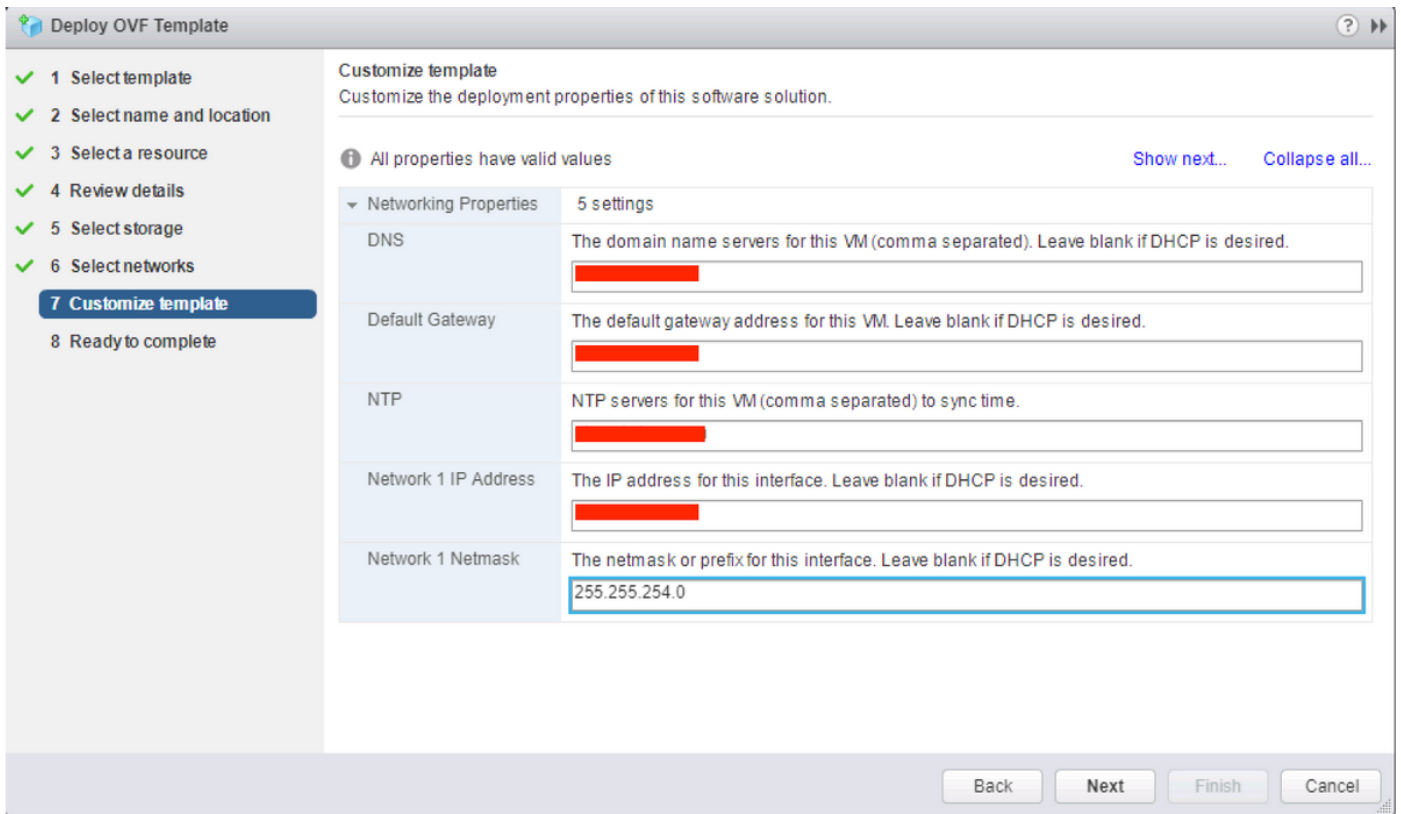
Step 6. Confirm that the **Site B** Hypervisor Configuration is **Successful**.

The screenshot shows the HyperFlex Installer progress bar with five steps: Start, Config Installer, Validations, UCSM Configuration, and Hypervisor Configuration. The Hypervisor Configuration step is highlighted with a red box and a green checkmark, indicating it is successful. Below the progress bar, a red-bordered box contains the text "Hypervisor Configuration Successful". The detailed configuration steps for Hypervisor Configuration are listed below, all with green checkmarks indicating success.

Hypervisor Configuration - Overall	
Succeeded	✓ Login to UCS API
	✓ Configuring static ip on the specified ESXi servers
	✓ Configuring static ip on a ESXi server
	✓ Login to ESXi through SoL with user specified username and password
	✓ Logout from UCS API
	✓ CONFIGURATION COMPLETED SUCCESSFULLY

HX Witness VM Deployment

- This is an **important** step before proceeding further. The HX witness VM needs to be up and running and reachable for the install to succeed.
- An OVA image needs to be deployed on a ESXi host.
- Please test connectivity to this VM and make sure login works.
- Refer the below for OVA install properties.



Create Stretch Cluster

Step 1.

- To begin configuring the stretch cluster navigate to the **Wheel** on the installer and **select Create Stretch Cluster** to begin the stretch cluster configuration.
- In the credentials screen provide the **source (Site A)** and **Target (Site B) UCSM** and its credentials, **Site name**, **UCSM Org name**, **vCenter** and **Hypervisor** credentials. Click **Continue** to proceed to the **Server Selction** screen.

HyperFlex Installer

Credentials Server Selection IP Addresses Cluster Configuration

Configuration

To setup stretch cluster you have to

- Run the "Configure Site" workflow once for each site.
- Download and deploy the Witness VM, per the user documentation. Provide the IP address of the Witness VM when you create the stretch cluster.
- Run the "Create Stretch Cluster" workflow, after both sites have been configured.

Configure Site Create Stretch Cluster

UCS Manager Credentials for Site 1

UCS Manager Host Name: [Redacted] User Name: admin Password: [Redacted]

Site Name: DC1 Org Name: HX-POD-6

UCS Manager Credentials for Site 2

UCS Manager Host Name: [Redacted] User Name: admin Password: [Redacted]

Site Name: DC2 Org Name: HX-POD-7

vCenter Credentials

vCenter Server: [Redacted] User Name: administrator@vsphere.local Admin Password: [Redacted]

Hypervisor Credentials

Admin User name: root

The hypervisor on this node uses the factory default password

Hypervisor Password: [Redacted]

Drag and drop configuration files here or
[Select a File](#)

< Back Continue

Step 2. Make sure that all the servers (both source and target servers) are show as selected. Then click **Continue**,

HyperFlex Installer

Credentials Server Selection IP Addresses Cluster Configuration

Server Selection

Select Nodes for this site.

Associated (6)

<input checked="" type="checkbox"/>		Server Name	Site	Status	Model	Serial	Service Profile	Actions
<input checked="" type="checkbox"/>	<input type="radio"/>	Server 8	DC1	ok	HX220C-M5SX	[REDACTED]	org-root/org-HX-POD-6/ls-rack-unit-8	Actions
<input checked="" type="checkbox"/>	<input type="radio"/>	Server 9	DC1	ok	HX220C-M5SX	[REDACTED]	org-root/org-HX-POD-6/ls-rack-unit-9	Actions
<input checked="" type="checkbox"/>	<input type="radio"/>	Server 7	DC1	ok	HX220C-M5SX	[REDACTED]	org-root/org-HX-POD-6/ls-rack-unit-7	Actions
<input checked="" type="checkbox"/>	<input type="radio"/>	Server 2	DC2	ok	HX220C-M5SX	[REDACTED]	org-root/org-HX-POD-7/ls-rack-unit-2	Actions
<input checked="" type="checkbox"/>	<input type="radio"/>	Server 3	DC2	ok	HX220C-M5SX	[REDACTED]	org-root/org-HX-POD-7/ls-rack-unit-3	Actions
<input checked="" type="checkbox"/>	<input type="radio"/>	Server 1	DC2	ok	HX220C-M5SX	[REDACTED]	org-root/org-HX-POD-7/ls-rack-unit-1	Actions

Configuration

Credentials

UCS Manager Host Name 1 [REDACTED]

User Name: admin

UCS Manager Host Name 2 [REDACTED]

User Name: admin

Site Name: DC1

Org Name 1: HX-POD-6

Site Name: DC2

Org Name 2: HX-POD-7

vCenter Server [REDACTED]

User Name: administrator@vsphere.local

Admin User name: root

Step 3. In the **IP Address Section**, provide the **Hypervisor** and **Storage controller mgmt** (Public routable) IP as well as their **DATA** (Private non routable) IP. Also, provide the **cluster IP** for both **Management and Data networks**. Click **Continue**.

HyperFlex Installer

Credentials Server Selection IP Addresses Cluster Configuration

IP Addresses

Make IP Addresses Sequential

ID	Name	Site	Management - VLAN		Data - VLAN (FQDN or IP Address)	
			Hypervisor	Storage Controller	Hypervisor	Storage Controller
9	Server 9	DC1	[Redacted]	[Redacted]	192.168.[Redacted]	92.168.[Redacted]
8	Server 8	DC1	[Redacted]	[Redacted]	192.168.[Redacted]	92.168.[Redacted]
7	Server 7	DC1	[Redacted]	[Redacted]	192.168.[Redacted]	92.168.[Redacted]
3	Server 3	DC2	[Redacted]	[Redacted]	192.168.[Redacted]	92.168.[Redacted]
2	Server 2	DC2	[Redacted]	[Redacted]	192.168.[Redacted]	92.168.[Redacted]
1	Server 1	DC2	[Redacted]	[Redacted]	192.168.[Redacted]	92.168.[Redacted]

	Management	Data
Cluster IP Address	[Redacted]	192.168.[Redacted]
Subnet Mask	255.255.254.0	255.255.255.0
Gateway	[Redacted]	
Witness IP	[Redacted]	

Configuration

Credentials

UCS Manager Host Name 1 [Redacted]
User Name admin

UCS Manager Host Name 2 [Redacted]
User Name admin

Site Name DC1
Org Name 1 HX-POD-6
Site Name DC2
Org Name 2 HX-POD-7

vCenter Server [Redacted]
User Name administrator@vsphere.local
Admin User name root

Server Selection

Server 2 [Redacted] / HX220C-M5SX
Server 3 [Redacted] / HX220C-M5SX
Server 1 [Redacted] / HX220C-M5SX
Server 8 [Redacted] / HX220C-M5SX
Server 9 [Redacted] / HX220C-M5SX
Server 7 [Redacted] / HX220C-M5SX

Step 4. Under the **Cluster Configuration**, enter the **Controller VM** passwords, **vCenter configuration** details, **system services** details. Under the **Advanced Networking** section configure same **Management** and **Data** VLANs for both sites. Then click **Start** to begin the cluster configurations.

Cisco HX Cluster

Cluster Name: dm-j-hx-clus-6

Replication Factor: 2+2

Controller VM

Create Admin Password: [Redacted]

Confirm Admin Password: [Redacted]

vCenter Configuration

vCenter Datacenter Name: HX-Stretch

vCenter Cluster Name: dm-j-hx-clus-6

System Services

DNS Server(s): [Redacted]

NTP Server(s): [Redacted].cisco.com

DNS Domain Name: cisco.com

Time Zone: (UTC-08:00) Pacific Time

Auto Support

Auto Support: Enable Connected Services (Recommended)

Send service ticket notifications to: [Redacted]

Advanced Networking

Management VLAN Tag - Site 1: 222

Management VLAN Tag - Site 2: 222

Management vSwitch: vswitch-hx-inband-mgmt

Data VLAN Tag - Site 1: 3099

Data VLAN Tag - Site 2: 3099

Data vSwitch: vswitch-hx-storage-data

Advanced Configuration

Jumbo Frames: Enable Jumbo Frames on Data Network

Disk Partitions: Clean up disk partitions

Virtual Desktop (VDI): Optimize for VDI only deployment

Configuration

Credentials

UCS Manager Host Name 1: [Redacted] m

User Name: admin

UCS Manager Host Name 2: [Redacted] m

User Name: admin

Site Name: DC1

Org Name 1: HX-POD-6

Site Name: DC2

Org Name 2: HX-POD-7

vCenter Server: [Redacted]

User Name: administrator@vsphere.local

Admin User name: root

Server Selection

Server 2: [Redacted] / HX220C-M55X

Server 3: [Redacted] / HX220C-M55X

Server 1: [Redacted] / HX220C-M55X

Server 8: [Redacted] / HX220C-M55X

Server 9: [Redacted] / HX220C-M55X

Server 7: [Redacted] / HX220C-M55X

IP Addresses

Cluster Name: dm-j-hx-clus-6

Management Cluster: [Redacted].cisco.com

Data Cluster: [Redacted]

Management Subnet Mask: 255.255.254.0

Data Subnet Mask: 255.255.255.0

Management Gateway: [Redacted]

Witness IP: [Redacted]

Server 9 (WZP22370075)

Management Hypervisor: [Redacted]

Management Storage Controller: [Redacted] 9

Data Hypervisor: [Redacted]

Data Storage Controller: [Redacted]

Server 3 (WZP22370078)

[Redacted]

< Back
Start

Step 5. Confirm that the Cluster creation completes Successfully.

Progress
Summary

✓
Cluster Creation Successful
View Summary >

Cluster Creation ▾

Cluster Creation - Overall

Succeeded

- ✓
Preparing Storage Cluster
- ✓
Configuring Cluster Resource Manager
- ✓
updateClusterSEDStatus

192.168. [redacted]

In Progress

✓
Configuring NTP Services

192.168. [redacted]

In Progress

✓
Configuring NTP Services

192.168. [redacted]

In Progress

✓
Configuring NTP Services

192.168. [redacted]

In Progress

✓
Configuring NTP Services

192.168. [redacted]

In Progress

✓
Configuring NTP Services

192.168. [redacted]

In Progress

✓
Configuring NTP Services

Configuration

Credentials

UCS Manager Host Name 1 [redacted]

User Name admin

UCS Manager Host Name 2 [redacted]

User Name admin

Site Name DC1

Org Name 1 HX-POD-6

Site Name DC2

Org Name 2 HX-POD-7

vCenter Server [redacted]

User Name administrator@vsphere.local

Admin User name root

Server Selection

Server 2 [redacted] / HX220C-M5SX

Server 3 [redacted] / HX220C-M5SX

Server 1 [redacted] / HX220C-M5SX

Server 8 [redacted] / HX220C-M5SX

Server 9 [redacted] / HX220C-M5SX

Server 7 [redacted] / HX220C-M5SX

IP Addresses

Cluster Name dm-j-stretch-1

Management Cluster [redacted]

Data Cluster 192.168. [redacted]

Management Subnet Mask 255.255.254.0

Data Subnet Mask 255.255.255.0

Management Gateway [redacted]

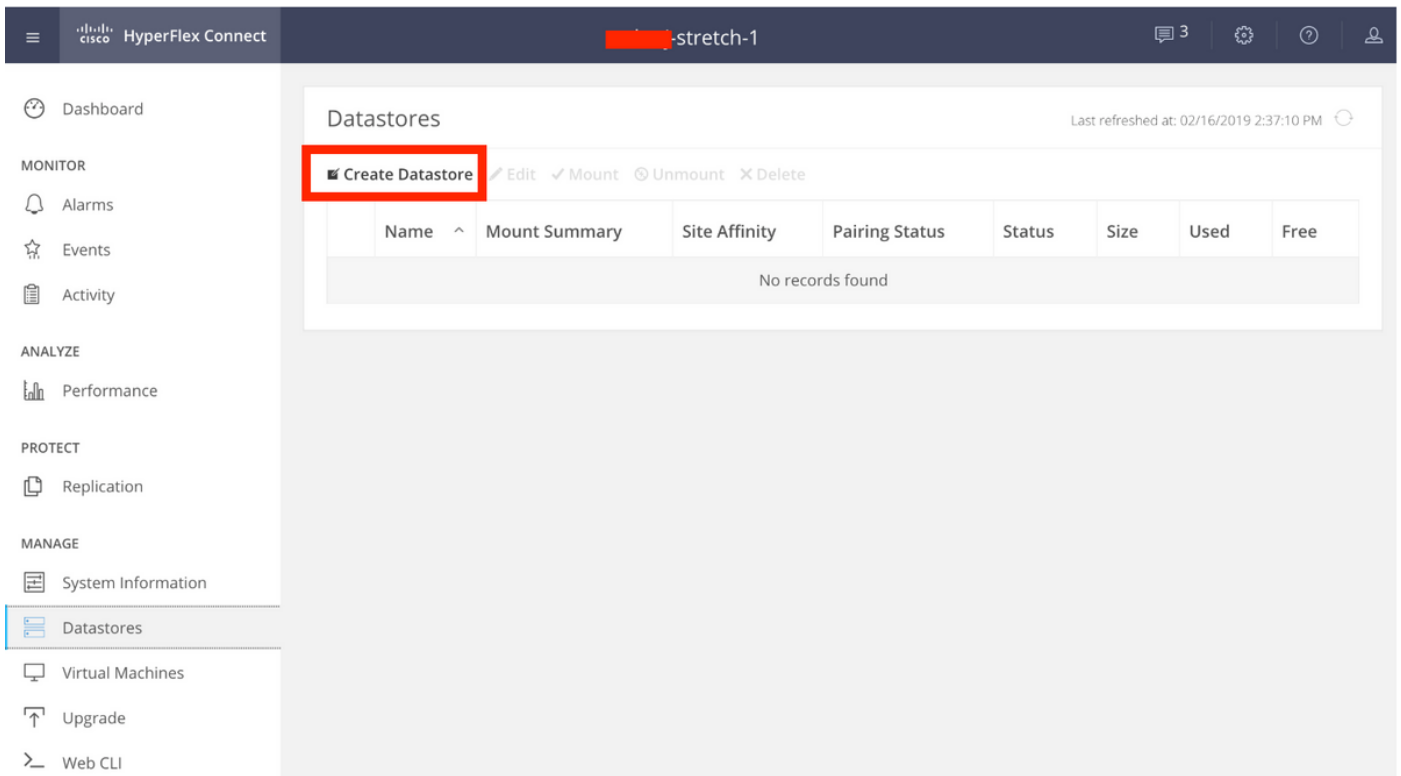
Witness IP [redacted]

Server 9 (WZP22370075)

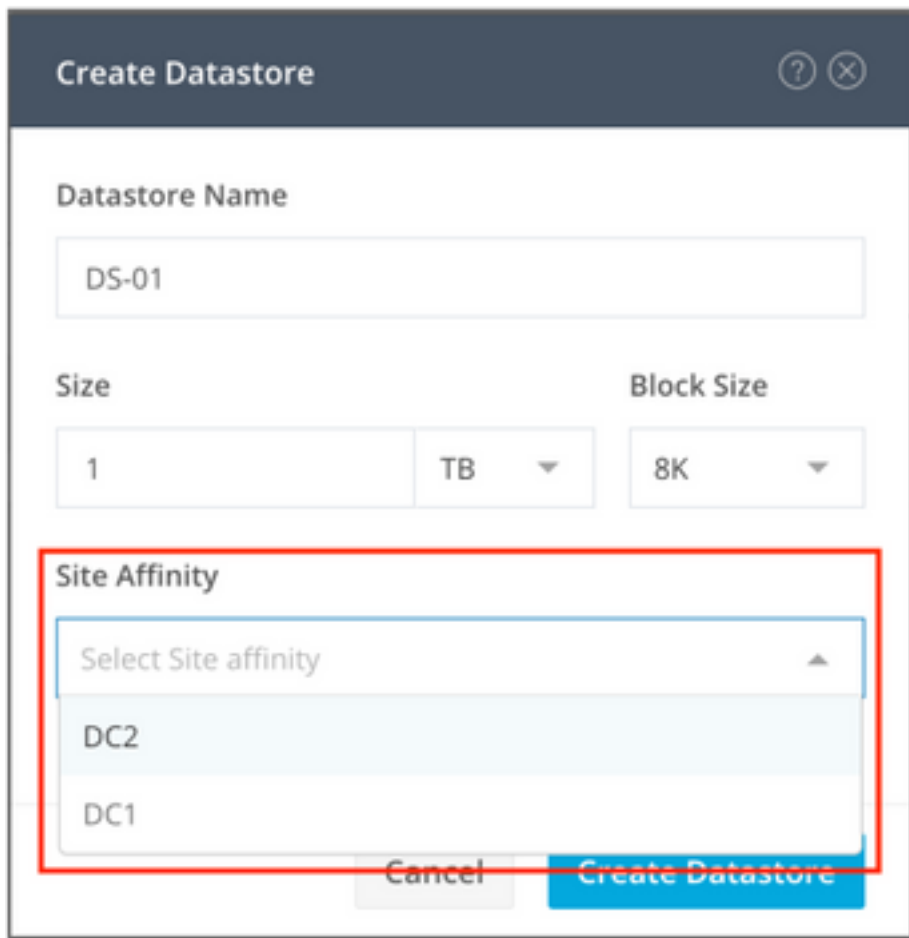
Verify

Datstore creation

Step 1. The datastore creation on a stretch cluster is similar to the a datastore creation on a normal cluster. The only difference is while creating a datastore in a stretch cluster is defining site affinity. In the **Hyperflex Connect UI** navigate to the **Datstores** and click **Create Datastore**



Step 2. Create a dataset and select its size. Then in the **additional step**, under the **Site Affinity** drop down select one of the two sites. then click **Create Dataset**



Step 3. Confirm the status of the newly created dataset that it shows as **MOUNTED** and also shows its **site affinity**.

Datastores

Last refreshed at: 02/16/2019 2:41:02 PM 

Create Datastore  Edit  Mount  Unmount  Delete



Filter

	Name ^	Mount Summary	Site Affinity	Pairing Status	Status	Size	Used	Free
<input type="checkbox"/>	DS-01	MOUNTED	DC1	Unpaired	Normal	1 TB	0 B	1 TB

Showing 1 - 1 of 1