



## Expanding a Stretch Cluster

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### Cluster Expansion Guidelines

- Stretch cluster expansion supports both converged nodes and compute-only nodes.
- When adding a converged node, ensure that the configuration is symmetric across both sites. For instance if Site 1 is expanded with two nodes, Site 2 must also be expanded with two converged nodes.
- When adding compute nodes, ensure that you do not exceed the supported node count.

### Configuring the Sites for Expand Cluster

Expanding a Stretch Cluster includes various steps that are involved in adding a Compute-only or a Converged node to a Stretch Cluster. See [Cluster Expansion Workflow, on page 6](#) for more details.

Before executing the cluster expansion workflow, re-create the sites in the installer as they are deployed using this procedure.

#### Before you begin

- Complete the prerequisites for your install. or [Invisible Cloud Witness Preinstallation Checklist for All New Installs](#)
- Ensure that you have a functional, symmetric, and running Stretch Cluster.

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**Step 1** Log into the HX Data Platform Installer.

**Step 2** On the **Workflow** page, from the **Expand Cluster** drop-down list, select **Stretch Cluster**. Click **Continue**.

- Step 3** On the **Cluster** page, enter hostname and credentials of management cluster.
- Step 4** On the **Credentials** page, enter UCS Manager and Hypervisor credentials. See [Enter Credentials](#) for more details.
- Step 5** On the **Server Selection** page, configure the server ports and associate the new HX expansion nodes with the site. See [Associate HyperFlex Servers](#) for more details.
- Step 6** On the **Hypervisor Configuration** page, configure the subnet mask, gateway, and complete the hypervisor settings. See [Configure Hypervisor](#) for more details.
- Step 7** Click **Start** to begin site configuration for expand cluster. The **Progress** page displays the progress of various configuration tasks.

**Caution** Do not skip validation warnings.

See the **Warnings** section for more details.

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### What to do next

Using the HX Data Platform Installer, proceed to create your expanded HyperFlex Stretch Cluster. See [Cluster Expansion Workflow, on page 6](#) for more details.

## Enter Credentials

Enter UCS Manager credentials and hypervisor credentials for both the sites across the Stretch Cluster.

### Before you begin

- Complete the prerequisites for your install. or [Invisible Cloud Witness Preinstallation Checklist for All New Installs](#)
- Download and deploy the Witness VM<sup>1</sup>.

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- Step 1** Log in to the HX Data Platform Installer with root user credentials. For first time log in, you will be prompted to change the default password set in the factory.
- In a browser, enter the URL for the VM where HX Data Platform Installer was installed.
  - Enter the following login credentials.
    - Username: **root**
    - Password: **Cisco123**

c) Read the EULA, select the **I accept the terms and conditions** checkbox, and click **Login**.

- Step 2** In the **Change factory default password** screen, complete the following fields, and click **Change Password & Login**.

Field	Description
<b>New password</b>	Enter a new hypervisor password.
<b>Re-enter new password</b>	Re-enter the new hypervisor password.

<sup>1</sup> Applies to Witness VM only.

**Step 3** On the **Workflow** page, from the **Expand Cluster** drop-down list, select **Stretch Cluster**. Click **Continue**.

**Step 4** On the **Credentials** page, select **Configure Site**.

**Step 5** Enter the following credentials for UCS Manager:

#### UCS Manager Credentials for this site

Field	Description
UCS Manager Host Name field	Enter the UCS Manager FQDN or IP address. For example, <i>10.193.211.120</i> .
UCS Manager User Name field	Enter the administrative level username. For example, <i>&lt;admin&gt;</i> .
Password field	Enter the administrative level password. For example, <i>&lt;root&gt;</i> .
Site Name field	Specify a unique site name.
Org Name field	Specify a unique org name, to ensure isolation of the HyperFlex environment from the rest of the UCS domain.

**Step 6** Enter the following credentials for the Hypervisor:

#### Hypervisor Credentials

Field	Description
User Name field	Enter the administrative username. For example, <i>&lt;admin&gt;</i> username. The username is <b>root</b> for factory nodes.
Password	Enter the administrative level password.

**Step 7** Click **Continue** to begin associating HyperFlex Servers. See [Associate HyperFlex Servers, on page 3](#).

## Associate HyperFlex Servers

On the **Server Selection** page, the **Configuration** pane on the right displays a detailed list of the **Credentials** used. The **Server Selection** page displays a list of unassociated HX servers under the **Unassociated** tab, and the list of discovered servers under the **Associated** tab.

Field	Description
Locator LED column	Turn on to locate a server.
Server Name column	Name that is assigned to the server.

Field	Description
Status column	<ul style="list-style-type: none"> <li>• Inaccessible</li> <li>• Ok</li> </ul>
Model column	Displays the server model.
Serial column	Displays the serial number of the server.
Service Profile column [Only for Associated Servers]	Service profile that is assigned to the server.
Actions drop-down list	<ul style="list-style-type: none"> <li>• <b>Launch KVM Console</b>—Choose this option to launch the KVM Console directly from the HX Data Platform Installer.</li> <li>• <b>Disassociate Server</b>—Choose this option to remove a service profile from that server.</li> </ul>

### Before you begin

Ensure that you completed entering UCS Manager, vCenter, and Hypervisor credentials on the **Credentials** page. See [Enter Credentials, on page 2](#).

**Step 1** Click the **Configure Server Ports** button to discover any new HX nodes. In the **Configure Server Ports** dialog box, list all ports to be configured as server ports. Click **Configure**.

**Note** Typically, the server ports are configured in Cisco UCS Manager before you start the configuration.

**Step 2** Select the servers under the **Unassociated** tab to include in the HyperFlex cluster.

If HX servers do not appear in this list, check Cisco UCS Manager and ensure that they have been discovered.

**Note** If there are no unassociated servers, the following error message is displayed:

No unassociated servers found. Login to UCS Manager and ensure server ports are enabled.

**Step 3** Click **Continue** to configure Hypervisor. See [Configure Hypervisor, on page 4](#).

## Configure Hypervisor

**Step 1** In the **Configure Common Hypervisor Settings** section, complete the following fields:

Field	Description
Subnet Mask field	Set the subnet mask to the appropriate level to limit and control IP addresses. For example, <i>255.255.0.0</i> .

Field	Description
Gateway field	IP address of gateway. For example, <i>10.193.0.1</i> .
DNS Server(s) field	IP address for the DNS Server.  <b>Note</b> <ul style="list-style-type: none"> <li>• If you do not have a DNS server, do not enter a hostname in any of the fields on the <b>Cluster Configuration</b> page of the HX Data Platform Installer. Use only static IP addresses and hostnames for all ESXi hosts.</li> <li>• If you are providing more than one DNS server, check carefully to ensure that both DNS servers are correctly entered, separated by a comma.</li> </ul>
DNS Domain Name field	Enter the DNS FQDN or IP address.

**Step 2** On the **Hypervisor Settings** section, select **Make IP Addresses and Hostnames Sequential** to make the IP addresses sequential. Complete the following fields:

**Note** You can rearrange the servers using drag and drop.

Field	Description
Name column	Name assigned to the server.
Locator LED column	Turn on to locate a server.
Serial column	Displays the serial number of the server.
Static IP Address column	Input static IP addresses and hostnames for all ESXi hosts.
Hostname column	Do not leave the hostname fields empty.

**Step 3** In the **Advanced Configuration** section, select **Clean up disk partitions** to remove all existing data and partitions from all nodes added to the storage cluster.

**Important**

- Do not select this option for factory prepared systems. The disk partitions on factory prepared systems are properly configured. For manually prepared servers, select this option to delete existing data and partitions.
- Ensure that you backup any data which must be retained.

**Step 4** Click **Start** to begin site configuration for expand cluster. The **Progress** page displays the progress of various configuration tasks.

**Caution** Do not skip validation warnings.

See the **Warnings** section for more details.

**What to do next**

Run the Cluster Expansion workflow from the HX Data Platform Installer to create your HyperFlex Stretch Cluster expansion. See [Cluster Expansion Workflow, on page 6](#) for more details.

## Cluster Expansion Workflow

The following cluster expansion workflow summarizes the steps that are involved in adding a Compute-only or a Converged node to a Stretch Cluster, using the HX Data Platform installer.

Step	Description	Reference
1.	Enter UCS Manager Credentials for Site A and Site B, vCenter credentials, and the Hypervisor Credentials.	<a href="#">Enter Credentials, on page 6</a>
2.	Configure the server ports and associate HyperFlex servers.	<a href="#">Associate HyperFlex Servers, on page 9</a>
3.	Configure hypervisor, IP addresses, and start the cluster expansion process.	<a href="#">Configure Nodes, on page 10</a>

## Enter Credentials

**Before you begin**

- Complete the cluster expansion prerequisites.
- Run the *Configure Site* workflow once for each site. Refer to the [Invisible Cloud Witness Preinstallation Checklist for All New Installs](#) for more details.

**Step 1** Log into the Cisco HX Data Platform Installer.

- In your web browser, enter the IP address or the node name for the Cisco HX Data Platform Installer VM. Click **Accept** or **Continue** to bypass any SSL certificate errors. On the Cisco HX Data Platform Installer login, verify the Cisco HX Data Platform Installer **Build ID** in the lower right corner of the login screen.
- In the login page, enter the following credentials:

**Username:** `root`

**Password (Default):** `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.

- Read the EULA, check the **I accept the terms and conditions** check box, and click **Login**.

**Step 2** On the **Workflow** page, from the **Expand Cluster** drop-down list, select **Stretch Cluster**. Click **Continue**.

**Step 3** On the **Cluster** page, enter the following credentials:

To perform Stretch cluster expansion, you can import a JSON configuration file with the required configuration data. The following two steps are optional if importing a JSON file, otherwise you can input data into the required fields manually.

**Note** For a first-time installation, contact your Cisco representative to procure the factory preinstallation JSON file.

Field	Description
<b>Cluster Management FQDN/IP</b> field	Enter the HyperFlex cluster FQDN or IP address. For example, <i>10.193.211.120</i> .
<b>User Name</b> field	Enter the administrative level username. For example, <i>&lt;admin&gt;</i> .
<b>Password</b> field	Enter the administrative level password.

Click **Continue**.

**Step 4** On the **Credentials Page**, select **Expand Stretch Cluster**.

**Step 5** Enter the following credentials for UCS Manager:

#### UCS Manager Credentials for Site 1

Field	Description
<b>UCS Manager Hostname</b> field	UCS Manager FQDN or IP address for site 1. For example, <i>10.193.211.120</i> .
<b>User Name</b> field	Enter the administrative level username. For example, <i>&lt;admin&gt;</i> username.
<b>Password</b> field	Enter the administrative level password.
<b>Site Name</b> field	Specify a unique site name.
<b>Org Name</b> field	Specify a unique org name, to ensure isolation of the HyperFlex environment from the rest of the UCS domain.

#### UCS Manager Credentials for Site 2

Field	Description
<b>UCS Manager Host Name</b> field	Enter the UCS Manager FQDN or IP address for site 2. For example, <i>10.193.211.120</i> .
<b>User Name</b> field	Enter the administrative level username. For example, <i>&lt;admin&gt;</i> username.
<b>Password</b> field	Enter the administrative level password.
<b>Site Name</b> field	Specify a unique site name.

Field	Description
Org Name field	Specify a unique org name, to ensure isolation of the HyperFlex environment from the rest of the UCS domain.

**Step 6** Enter the following credentials for the vCenter.

#### vCenter Credentials

Field	Description
vCenter Server field	<p>Enter the vCenter server FQDN or IP address. For example, <i>10.193.211.120</i>.</p> <p><b>Note</b></p> <ul style="list-style-type: none"> <li>vCenter Server input is optional if building a nested vCenter. See the Nested vCenter TechNote for more details. A vCenter server is required before the cluster can be made operational.</li> <li>The vCenter address and credentials must have root level administrator permissions to the vCenter.</li> </ul>
User Name field	<p>Enter the administrative username. For example, <i>administrator@vsphere.local</i>.</p>
Admin Password field	<p>Enter the administrative level password. Enter the <i>&lt;root&gt;</i> password.</p>

**Step 7** Enter the following credentials for the Hypervisor:

#### Hypervisor Credentials

Field	Description
Admin User Name field	<p>Enter the administrative username. For example, <i>&lt;admin&gt;</i> username. The username is <b>root</b> for factory nodes.</p>
The hypervisor on this node uses the factory default password check box	<p>Select the check box, if you are changing the factory default password for the hypervisor. To enter the current hypervisor password, uncheck this check box. You can now enter the hypervisor password in the <b>Enter current hypervisor password</b> field.</p>
New Password	<p>Create a new password for the hypervisor. <b>Important</b> You are required to change the factory default password.</p>
Confirm New Password	Reenter the new password for the hypervisor.



**What to do next**

Click **Continue** to begin associating HyperFlex servers.

## Associate HyperFlex Servers

On the **Node Selection** page, the **Configuration** pane on the right displays a detailed list of the **Credentials** used. The **Server Selection** page displays a list of unassociated HX servers under the **Unassociated** tab, and the list of discovered servers under the **Associated** tab.

Field	Description
<b>Locator LED</b> column	Turn on to locate a server.
<b>Server Name</b> column	Name that is assigned to the server.
<b>Site</b> column	Name of the site where the server is physically located.
<b>Status</b> column	<ul style="list-style-type: none"> <li>• Inaccessible</li> <li>• Ok</li> </ul>
<b>Model</b> column	Displays the server model.
<b>Serial</b> column	Displays the serial number of the server.
<b>Service Profile</b> column [Only for Associated Servers]	Service profile that is assigned to the server.
<b>Actions</b> column	<ul style="list-style-type: none"> <li>• <b>Launch KVM Console</b>—Choose this option to launch the KVM Console directly from the HX Data Platform Installer.</li> <li>• <b>Disassociate Server</b>—Choose this option to remove a service profile from that server.</li> </ul>

**Before you begin**

Ensure that you completed entering UCS Manager credentials for both sites and vCenter credentials, and Hypervisor credentials on the **Credentials** page. See [Enter Credentials, on page 6](#).

**Step 1** Click the **Configure Server Ports** button to discover any new HX nodes. In the **Configure Server Ports** dialog box, list all ports to be configured as server ports. Click **Configure**.

**Note** Typically, the server ports are configured in Cisco UCS Manager before you start the configuration.

**Step 2** Select the servers under the **Unassociated** tab to include in the HyperFlex cluster.

If HX servers do not appear in this list, check Cisco UCS Manager and ensure that they have been discovered.

If there are no unassociated servers, the following error message is displayed:

No unassociated servers found. Login to UCS Manager and ensure server ports are enabled.

**Step 3** Click **Continue** to configure HyperFlex nodes. See [Configure Nodes, on page 10](#).

## Configure Nodes

On the **IP Addresses** page, complete the following:

### Before you begin

Associate servers on the HyperFlex cluster. See [Associate HyperFlex Servers, on page 9](#).

**Step 1** In the **IP Addresses** section, select **Make IP Addresses Sequential** to make the IP addresses sequential. When you enter IP addresses in the first row for Hypervisor, Storage Controller (Management) and Hypervisor, Storage Controller (Data) columns, the HX Data Platform Installer incrementally autofills the node information for the remaining nodes. The minimum number of nodes in the storage cluster is three. If you have more nodes, use the **Add** button to provide the address information.

You can add more compute-only or converged servers, by clicking **Add Compute Server** or **Add Converged Server**.

- Note**
- When adding a converged node, ensure that the configuration is symmetric across both sites. You can add as many compute nodes as needed. There is no restriction.
  - Compute-only nodes can be added only after the storage cluster is created.

For each HX node, enter the Hypervisor, Storage Controller, Management, and Data IP addresses. For the IP addresses, specify if the network belongs to the Data Network or the Management Network.

Field	Description
<b>Locator LED</b> column	Turn on to locate a server.
<b>Name</b> column	Displays the name assigned to the server.
<b>Site</b> column	Displays the site where the server is physically located.
<b>Management Hypervisor</b> field	Enter the static IP address that handles the Hypervisor management network connection between the ESXi host and the storage cluster.
<b>Management Storage Controller</b> field	Enter the static IP address that handles the storage controller VM management network connection between the storage controller VM and the storage cluster.
<b>Data Hypervisor</b> field	Enter the static IP address that handles the Hypervisor data network connection between the ESXi host and the storage cluster.
<b>Data Storage Controller</b> field	Enter the static IP address that handles the storage controller VM data network connection between the storage controller VM and the storage cluster.

**Step 2** In the **Advanced Configuration** section, select **Clean up disk partitions** to remove all existing data and partitions from all nodes added to the storage cluster.

- Important**
- Do not select this option for factory prepared systems. The disk partitions on factory prepared systems are properly configured. For manually prepared servers, select this option to delete existing data and partitions.
  - Ensure that you backup any data which must be retained.

**Step 3** Click **Start** to begin adding HyperFlex nodes to the Stretch cluster.

**Note** When adding nodes to the Stretch cluster, add only the nodes already associated with that cluster.

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