### Managing HX Storage Clusters

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### Changing the Cluster Access Policy Level

**Step 1**
The storage cluster must be in a healthy state prior to changing the Cluster Access Policy to strict.

**Step 2**
From the command line of a storage controller VM in the storage cluster, type:

```bash
# stcli cluster get-cluster-access-policy
# stcli cluster set-cluster-access-policy --name {strict,lenient}
```

### Rebalancing the Cluster

The storage cluster is rebalanced on a regular schedule. It is used to realign the distribution of stored data across changes in available storage and to restore storage cluster health. If you add or remove a node in the storage cluster, you can manually initiate a storage cluster rebalance using the `stcli rebalance` command.

**Note**
Rebalancing might take some time depending on the disk capacity used on the failed node or disk.

**Step 1**
Start rebalancing the storage cluster.

a) Login to a controller VM in the storage cluster.
b) From the controller VM command line, run the command:

```bash
# stcli rebalance start --force
```
Step 2  Verify rebalancing status from the storage controller VM.

a) Enter the following on the command line:

```
# stcli rebalance status
rebalanceStatus: 
rebalanceState: cluster_rebalance_ongoing
percentComplete: 10
rebalanceEnabled: True
```

b) Reenter the command to monitor progress:

```
# stcli rebalance status
rebalanceStatus: 
percentComplete: 0
rebalanceState: cluster_rebalance_not_running
rebalanceEnabled: True
```

c) Reenter the command line to confirm the process completes:

```
# stcli rebalance status
rebalanceStatus: 
rebalanceState: cluster_rebalance_not_running
rebalanceEnabled: True
```

This sample indicates that rebalance is enabled, and ready to perform a rebalance, but is not currently rebalancing the storage cluster.

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Checking Cluster Rebalance and Self Healing Status

The storage cluster is rebalanced on a regular schedule and when the amount of available storage in the cluster changes. A rebalance is also triggered when there is a change in the amount of available storage. This is an automatic self healing function.

You can check rebalance status through the HX Data Platform plug-in or through the storage controller VM command line.

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Step 1  Checking rebalancing status through HX Data Platform plug-in.

a) From the vSphere Web Client Navigator, select vCenter Inventory Lists > Cisco HyperFlex Systems > Cisco HX Data Platform > cluster > Summary.

The Status portlet lists the Self healing status.

The Self healing status field lists the rebalance activity or N/A, when rebalance is not currently active.

Step 2  Checking rebalancing status through the storage controller VM command line.

a) Login to a controller VM using ssh.

b) From the controller VM command line, run the command.

```
# stcli rebalance status
```

The following output indicates that rebalance is not currently running on the storage cluster.

```
rebalanceStatus: 
percentComplete: 0
```
Handling Out of Space Errors

If your system displays an Out of Space error, you can either add a node to increase free capacity or delete existing unused VMs to release space.

When there is an Out of Space condition, the VMs are unresponsive.

Note

Do not delete storage controller VMs. Storage controller VM names have the prefix stCtlVM.

Step 1
To add a node, use the Expand Cluster feature of the HX Data Platform Installer.

Step 2
To delete unused VMs, complete the following:

a) Determine which guest VMs you can delete. You can consider factors such as disk space used by the VM or naming conventions.

b) Go to vCenter > Virtual Machines to display the virtual machines in the inventory.

c) Double-click a VM that you want to delete.

d) Select the Summary > Answer Questions to display a dialog box.

e) Click the Cancel radio button and click OK.

f) Power off the VM.

g) Delete the VM.

Step 3
After the Out of Space condition is cleared, complete the following:

a) Go to vCenter > Virtual Machines to display the VM in the inventory.

b) Double-click a VM that you want to use.

c) Select the Summary > Answer Questions to display a dialog box.

d) Click the Retry radio button and click OK.

Checking Cleaner Schedule

The stcli cleaner command typically runs in the background continuously. cleaner goes into sleep mode when it is not needed and wakes when policy defined conditions are met. For example, if your storage cluster is experiencing ENOSPC condition, the cleaner automatically runs at High Priority.

Do not expand the cluster while the cleaner is running. Check the cleaner schedule or adjust the schedule, as needed.

Step 1
Login to any controller VM in the storage cluster. Run the listed commands from the controller VM command line.
Step 2  View the cleaner schedule.

```
# stcli cleaner get-schedule --id ID | --ip NAME
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>--id ID</td>
<td>ID of storage cluster node</td>
</tr>
<tr>
<td>--ip NAME</td>
<td>IP address of storage cluster node</td>
</tr>
</tbody>
</table>

Planning to Move a Storage Cluster Between vCenters

When you rename the vCenter datacenter or vCenter cluster, you must re-register the HX storage cluster. Moving a storage cluster from one vCenter cluster to another requires the listed steps. See the following topics for detailed information.

1. Meet the prerequisites to this task. See Moving the Storage Cluster from a Current vCenter Server to a New VCenter Server, on page 4.

2. Delete the cluster from the old vCenter, create a new cluster on the new vCenter. Use the same cluster name. See Moving the Storage Cluster from a Current vCenter Server to a New VCenter Server, on page 4.

3. Unregister HX Data Platform using the vCenter Extension Manager. See Unregistering a Storage Cluster from a vCenter Cluster, on page 5

4. Use the `stcli cluster reregister` command to associate the HX Storage Cluster with a new vCenter. See Registering a Storage Cluster with a New vCenter Cluster, on page 8.

Moving the Storage Cluster from a Current vCenter Server to a New VCenter Server

Before you begin

- If your HX Cluster is running HX Data Platform version older than 1.8(1c), upgrade before attempting to reregister to a new vCenter.
- Perform this task during a maintenance window.
- Ensure the cluster is healthy and upgrade state is OK and Healthy. You can view the state using the `stcli` command from the controller VM command line.

```
# stcli cluster info
```

Check response for:

upgradeState: ok
healthState: healthy

- Ensure vCenter must be up and running.
• Snapshot schedules are not moved with the storage cluster when you move the storage cluster between vCenter clusters.

Step 1
From the current vCenter, delete the cluster.
This is the vCenter cluster specified when the HX storage cluster was created.

Step 2
On the new vCenter, create a new cluster using the same cluster name.

Step 3
Add ESX hosts to new vCenter in the newly created cluster.

What to do next
Proceed to Unregistering a Storage Cluster from a vCenter Cluster, on page 5.

Unregistering a Storage Cluster from a vCenter Cluster

This step is optional and not required. It is recommended to leave the HX Data Platform Plug-in registration alone in the old vCenter.

Before you begin
As part of the task to move a storage cluster from one vCenter server to another vCenter server, complete the steps in Moving the Storage Cluster from a Current vCenter Server to a New vCenter Server, on page 4.

Note
• If multiple HX clusters are registered to the same vCenter, do not attempt this procedure until all HX clusters have been fully migrated to different vCenter. Running this procedure is disruptive to any existing HX clusters registered to the vCenter.

Step 1
Complete the steps in Unregistering and Removing EAM Extensions, on page 6.
This is the step that removes (unregisters) the HX cluster from the old vCenter server.
Also, if there are more ESX agencies than the number of HX clusters installed on the given vSphere server, it is likely there are stale EAM configurations that need cleanup.

Step 2
Complete the steps in Removing HX Data Platform Files from the vSphere Client, on page 7.

Step 3
Complete the steps in Verifying HX Cluster is Unregistered from vCenter, on page 8.

What to do next
Proceed to Registering a Storage Cluster with a New vCenter Cluster, on page 8.
Unregistering and Removing EAM Extensions

If you have partially installed or uninstalled HX Data Platform, or unregistered a HX cluster where there are more agencies than the number of HX clusters installed on the given vSphere, sometimes a stale ESX Agent Manager (EAM) for the HX Data Platform extension remains. Remove stale extensions using the Managed Object Browser (MOB) extension manager.

Before you begin

• Download the vsphere ESX Agent Manager SDK, if you have not already done so.

• If multiple HX clusters are registered to the same vCenter, do not attempt this procedure until all HX clusters have been fully migrated to a different vCenter. Running this procedure is disruptive to any existing HX clusters registered to the vCenter.

• Remove the datacenter from your vsphere cluster.

Step 1
Identify the HX cluster UUID.

Every agency has a field cluster_domain_id which refers to the underlying vsphere extension. This extension ID uses a Managed Object ID (moid).

If you have multiple HyperFlex clusters, ensure that you select the correct cluster ID to unregister.

From a storage controller VM command line, run the command:

# stcli cluster info | grep vCenterClusterId:
vCenterClusterId: domain-c26

Step 2
To unregister the storage cluster extension: Login to the vCenter server MOB extension manager

First unregister the HyperFlex cluster.

a) In a browser, enter the path and command.

https://vcenter_server/mob/?moid=ExtensionManager

vcenter_server is the IP address of the vCenter where the storage cluster is currently registered.

b) Enter administrator login credentials.

Step 3
Locate the HX storage cluster extensions with the cluster IDs. Scroll through the Properties > extensionList to locate the storage cluster extensions:

com.springpath.sysmgmt.cluster_domain_id and com.springpath.sysmgmt.uuid.cluster_domain_id

Copy each of these strings into your clipboard. Exclude the double quotes (") on either end of string, if there are any.

Step 4
Unregister each storage cluster extension.

a) From the Methods table click UnregisterExtension.

b) In the UnregisterExtension popup, enter an extension key value, com.springpath.sysmgmt.cluster_domain_id.

For example: com.springpath.sysmgmt.domain-26

c) Click Invoke Method.

Step 5
To remove stale EAM extensions: Login to the vCenter server MOB ESX agencies extension manager.

Second remove stale EAM extensions that were associated with the HyperFlex cluster.
a) In a browser, enter the path and command.

https://vcenter_server/eam/mob/

vcenter_server is the IP address of the vCenter where the storage cluster is currently registered.

b) Enter administrator login credentials.

Step 6 Locate the stale HX storage cluster ESX agency extensions with the cluster IDs.
a) Scroll through the Properties > agency > Value.
b) Click an agency value.
c) In the Agency window, check the Properties > solutionID > Value extension. Verify has the correct cluster_domain_id.

For example: com.springpath.sysgmt.domain-26

Step 7 Remove stale ESX agency extensions.
a) From the Agency window, Methods table select a method.

Stale ESX agencies can be removed using either the destroyAgency or uninstall.

b) In the method popup, click Invoke Method.

Step 8 Refresh the ExtensionManager tab and verify that the extensionList entry does not include com.springpath.sysgmt.cluster_domain_id extensions.

Step 9 Restart the vSphere Client services.

The HX Data Platform extensions are removed when the vSphere Client services are restarted. Restarting the vSphere client service temporarily disables access to vCenter through the browser.

For additional information, see the VMware KB, Stopping, starting, or restarting VMware vCenter Server Appliance 6.0 services (2109887).

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Removing HX Data Platform Files from the vSphere Client

This task is a step in unregistering a HX Storage Cluster from vCenter.

Remove the HX Data Platform files from the vSphere Client. Select a method.

Linux vCenter

a) Login to the Linux vCenter server using ssh as a root user.
b) Change to the folder containing the HX Data Platform Plug-in folder.

For vCenter 6.0

```bash
# cd /etc/vmware/vsphere-client/vc-packages/vsphere-client-serenity/
```

For vCenter 5.5

```bash
# cd /var/lib/just/vmware/vsphere-client/vc-packages/vsphere-client-serenity/
```
c) Remove the HX Data Platform Plug-in folder and files.

```bash
# rm -rf com.springpath*
```
d) Restart the vSphere Client.
Verifying HX Cluster is Unregistered from vCenter

This task is a step in unregistering a HX Storage Cluster from vCenter. Verify the HX cluster is no longer on the old vCenter.

Before you begin

Complete the steps in:

• Unregistering and Removing EAM Extensions, on page 6
• Removing HX Data Platform Files from the vSphere Client, on page 7

Step 1 Logout out of the old vCenter.

Step 2 Login in again to the old vCenter and verify the HX Data Platform Plug-in has been removed.

Registering a Storage Cluster with a New vCenter Cluster

Before you begin

As part of the task to move a storage cluster from one vCenter server to another vCenter server, complete the steps in Unregistering a Storage Cluster from a vCenter Cluster, on page 5.

Step 1 Login to a controller VM.

Step 2 Run the stcli cluster reregister command.

Apply additional listed options as needed.

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Option</th>
<th>Required or Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>--vcenter-cluster</td>
<td>Required</td>
<td>Name of the new vCenter cluster.</td>
</tr>
<tr>
<td></td>
<td>NEWVCENTERCLUSTER</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>--vcenter-datacenter</td>
<td>Required</td>
<td>Name of the new vCenter datacenter.</td>
</tr>
<tr>
<td></td>
<td>NEWDATACENTER</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>--vcenter-password</td>
<td>Optional</td>
<td>Password of the new vCenter administrator.</td>
</tr>
<tr>
<td></td>
<td>NEWVCENTERPASSWORD</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>--vcenter-sso-url</td>
<td>Optional</td>
<td>URL of the new vCenter SSO server. This is inferred from --vcenter-url, if not specified.</td>
</tr>
<tr>
<td></td>
<td>NEWVCENTERSSOURL</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>--vcenter-url</td>
<td>Required</td>
<td>URL of the new vCenter, &lt;vcentername&gt;. Where &lt;vcentername&gt; can be FQDN or IP.</td>
</tr>
<tr>
<td></td>
<td>NEWVCENTERURL</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>--vcenter-user</td>
<td>Required</td>
<td>User name of the new vCenter administrator.</td>
</tr>
<tr>
<td></td>
<td>NEWVCENTERUSER</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Example response:

Reregister StorFS cluster with a new vCenter ...  
Enter NEW vCenter Administrator password:  
Waiting for Cluster creation to finish ...

If, after your storage cluster is re-registered, your compute only nodes fail to register with EAM, or are not present in the EAM client, and not under the resource pool, then contact TAC to complete the compute node reregister.

Step 3  
If you have compute nodes on your cluster, after completing the reregister, re-add the compute nodes.

```
# stcli node add --node-ips <computeNodeIP> --controller-root-password <ctlvm-pwd> --esx-username <esx-user> --esx-password <esx-pwd>
```

Step 4  
Re-enter your snapshot schedules.

Snapshot schedules are not moved with the storage cluster when you move the storage cluster between vCenter clusters.

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**Renaming Clusters**

After you create a HX Data Platform storage cluster, you can rename it without disrupting any processes.

**Note**  
These steps apply to renaming the HX Cluster, not the vCenter cluster.

Step 1  
From the vSphere Web Client Navigator, select vCenter Inventory Lists > Cisco HyperFlex Systems > Cisco HX Data Platform > cluster to rename.
Step 2  Open the Rename Cluster dialog box. Either right-click on the storage cluster or click the Actions drop-down list at the top of the tab.

Step 3  Select Rename Cluster.

Step 4  Enter a new name for the storage cluster in the text field.

HX cluster names cannot exceed 50 characters.

Step 5  Click OK to apply the new name.