Replace H410C nodes

HCI

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NetApp®

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Replace H410C nodes

You should replace a compute node in the event of CPU failure, other motherboard issues, or if it does not power on. The instructions apply to H410C nodes. If you have a H410C compute node that runs NetApp HCI Bootstrap OS version 1.6P1 or later, you do not have to replace the node if the memory DIMM fails; you need replace only the failed DIMM. If the DIMMs in your node have not failed, you can use them in the replacement node.

> The replacement node should have the same version of NetApp HCI Bootstrap OS as the rest of the compute nodes in the NetApp HCI installation.

What you'll need

- You have determined that the compute node needs to be replaced.

- You have a replacement compute node.
  To order a replacement node, you should contact NetApp Support. The compute node is shipped to you with the Bootstrap OS installed.
  Nodes are shipped from the factory with the latest version of Bootstrap OS. You might need to perform the return to factory image (RTFI) process on the node in the following scenarios:

  - Your current NetApp HCI installation is running a version of Bootstrap OS earlier than the latest version. In this case, the RTFI process will downgrade the new node to the OS version that your NetApp HCI installation is running.

  - In case the node shipped from the factory is running an OS version earlier than the latest version, and your existing NetApp HCI installation is already running the latest version. In this case, the RTFI process will upgrade the OS version on the new node to the latest version.
    See How to RTFI using a USB key (login required) and How to RTFI by using the BMC (login required).

- You have an electrostatic discharge (ESD) wristband, or you have taken other antistatic precautions.

- You have labeled each cable that is connected to the compute node.

About this task

Alarms in the VMware vSphere Web Client alert you when a node fails. You should match the serial number of the failed node from the VMware vSphere Web Client with the serial number on the sticker at the back of the node.

When replacing an H410C compute node, consider the following:

- You can intermix the H410C compute node with existing NetApp HCI compute and storage nodes in the same chassis and cluster.

- The H410C compute node operates only on high-line voltage (200-240 VAC). You should ensure that the power requirements are met when you add H410C nodes to an existing NetApp HCI system.

Steps overview

Here is a high-level overview of the steps in this procedure:
Prepare to replace the compute node
Replace the compute node in the chassis
Remove the compute node asset in NetApp HCI 1.7 and later
Add the compute node to the cluster
Redeploy Witness Nodes for two and three-node storage clusters

Here are some additional tasks, which you might need to perform if your system has the specific conditions they are applicable to:
Remove Witness Nodes to free up compute resources
Change the password if you received a replacement node with a non-standard BMC password
Upgrade the BMC firmware on your node

Prepare to replace the compute node

You should migrate the virtual machines (VMs) hosted on the node to an available host, and remove the failed node from the cluster. You should get details about the failed node, such as serial number and networking information.

Steps

1. In the VMware vSphere Web Client, perform the steps to migrate the VMs to another available host.

   ![info icon] See the VMware documentation for the migration steps.

2. Perform the steps to remove the node from the inventory. The steps depend on the version of NetApp HCI in your current installation:

NetApp HCI version number	Steps
NetApp HCI 1.3 and later	1. Select the failed node, and select **Monitor > Hardware Status > Sensors**. 2. Note the serial number of the failed node. This helps you identify the node in the chassis by matching the serial number on the sticker at the back of the node with the serial number you noted. 3. Right-click the failed node and select **Connection > Disconnect**. 4. Select **Yes** to confirm the action. 5. Right-click the failed node and select **Remove from Inventory**. 6. Select **Yes** to confirm the action.
NetApp HCI versions earlier than 1.3	1. Right-click the node and select **Remove from Inventory**. 2. Select the failed node, and select **Monitor > Hardware Status > Sensors**. 3. Note the Node 0 serial number, which is the serial number of the failed node. This helps you identify the node in the chassis by matching the serial number on the sticker at the back of the node with the serial number you noted. 4. With the failed node selected, select **Manage > Networking > VMkernel adapters**, and copy the four IP addresses listed. You can reuse this information when you perform the initial network configuration steps in VMware ESXi.

Replace the compute node in the chassis

After you remove the failed node from the cluster, you can remove the node from the chassis, and install the replacement node.

> Ensure that you have antistatic protection before you perform the steps here.

Steps

1. Put on antistatic protection.

2. Unpack the new node, and set it on a level surface near the chassis.
   Keep the packaging material for when you return the failed node to NetApp.

3. Label each cable that is inserted at the back of the node that you want to remove.
   After you install the new node, you should insert the cables back into the original ports.

4. Disconnect all the cables from the node.

5. If you want to reuse the DIMMs, remove them.

6. Pull down the cam handle on the right side of the node, and pull the node out using both the cam handles.
   The cam handle that you should pull down has an arrow on it to indicate the direction in which it moves. The other cam handle does not move and is there to help you pull the node out.

   > ℹ️ Support the node with both your hands when you pull it out of the chassis.

7. Place the node on a level surface.
   You should package the node and return it to NetApp.

8. If you removed DIMMs from the failed node earlier, insert them into the replacement node.

9. Align the replacement node with the slot in the chassis into which you are installing the node.

10. Push the node in until you hear a click.

    > 🔥 Ensure that you do not use excessive force when sliding the node into the chassis.

    > ℹ️ Ensure that the node powers on. If it does not power on automatically, push the power button at the front of the node.

11. Reconnect the cables to the ports from which you originally disconnected them.
    The labels you had attached to the cables when you disconnected them help guide you.

    > 🔥 If the airflow vents at the rear of the chassis are blocked by cables or labels, it can lead to premature component failures due to overheating.
    > Do not force the cables into the ports; you might damage the cables, ports, or both.

    > 💡 Ensure that the replacement node is cabled in the same way as the other nodes in the chassis.

Remove the compute node asset in NetApp HCI 1.7 and later

In NetApp HCI 1.7 and later, after you physically replace the node, you should remove the compute node asset using the management node APIs. To use REST APIs, your storage cluster must be running NetApp Element software 11.5 or later and you should have deployed a management node running version 11.5 or later.

Steps

1. Enter the management node IP address followed by /mnode:
   `https://[IP address]/mnode`

2. Select **Authorize** or any lock icon and enter cluster admin credentials for permissions to use APIs.

   a. Enter the cluster user name and password.

   b. Select Request body from the type drop-down list if the value is not already selected.

   c. Enter the client ID as mnode-client if the value is not already populated.
      Do not enter a value for the client secret.

   d. Select **Authorize** to begin a session.

   > ℹ️ If you get the `Auth Error TypeError: Failed to fetch` error message after you attempt to authorize, you might need to accept the SSL certificate for the MVIP of your cluster. Copy the IP in the Token URL, paste the IP into another browser tab, and authorize again. If you attempt to run a command after the token expires, you get a `Error: UNAUTHORIZED` error. If you receive this response, authorize again.

3. Close the Available authorizations dialog box.

4. Select **GET/assets**.

5. Select **Try it out**.

6. Select **Execute**.
   Scroll down in the response body to the Compute section, and copy the parent and id values for the failed compute node.

7. Select **DELETE/assets/{asset_id}/compute-nodes/{compute_id}**.

8. Select **Try it out**.
   Enter the parent and id values you got in step 7.

9. Select **Execute**.

Add the compute node to the cluster

You should add the compute node back to the cluster. The steps vary depending on the version of

NetApp HCI you are running.

NetApp HCI 1.6P1 and later

You can use NetApp Hybrid Cloud Control only if your NetApp HCI installation runs on version 1.6P1 or later.

What you'll need
- Ensure that the vSphere instance NetApp HCI is using has vSphere Enterprise Plus licensing if you are expanding a deployment with Virtual Distributed Switches.
- Ensure that none of the vCenter or vSphere instances in use with NetApp HCI have expired licenses.
- Ensure that you have free and unused IPv4 addresses on the same network segment as existing nodes (each new node must be installed on the same network as existing nodes of its type).
- Ensure that you have the vCenter administrator account credentials ready.
- Ensure that each new node uses the same network topology and cabling as the existing storage or compute clusters.

Steps
1. Open a web browser and browse to the IP address of the management node. For example:
 <code><a href="https://<ManagementNodeIP&gt" class="bare">https://<ManagementNodeIP&gt;</code>

2. Log in to NetApp Hybrid Cloud Control by providing the NetApp HCI storage cluster administrator credentials.

3. In the Expand Installation pane, select **Expand**.

4. Log in to the NetApp Deployment Engine by providing the NetApp HCI storage cluster administrator credentials.

5. On the Welcome page, select **Yes**.

6. On the End User License page, perform the following actions:

   a. Read the VMware End User License Agreement.

   b. If you accept the terms, select **I accept** at the end of the agreement text.

7. Select **Continue**.

8. On the vCenter page, perform the following steps:

   a. Enter a FQDN or IP address and administrator credentials for the vCenter instance associated with your NetApp HCI installation.

   b. Select **Continue**.

   c. Select an existing vSphere datacenter to which to add the new compute node, or select **Create New Datacenter** to add the new compute nodes to a new datacenter.

> **i** If you select Create New Datacenter, the Cluster field is automatically populated.

    d. If you selected an existing datacenter, select a vSphere cluster with which the new compute nodes should be associated.

> **i** If NetApp HCI cannot recognize the network settings of the cluster you have selected, ensure that the vmkernel and vmnic mapping for the management, storage, and vMotion networks are set to the deployment defaults.

    e. Select **Continue**.

9. On the ESXi Credentials page, enter an ESXi root password for the compute node or nodes you are adding.
   You should use the same password that was created during the initial NetApp HCI deployment.

10. Select **Continue**.

11. If you created a new vSphere datacenter cluster, on the Network Topology page, select a network topology to match the new compute nodes you are adding.

> **i** You can only select the two-cable option if your compute nodes are using the two-cable topology and the existing NetApp HCI deployment is configured with VLAN IDs.

12. On the Available Inventory page, select the node you want to add to the existing NetApp HCI installation.

> **⚲** For some compute nodes, you might need to enable EVC at the highest level your vCenter version supports before you can add them to your installation. You should use the vSphere client to enable EVC for these compute nodes. After you enable it, refresh the **Inventory** page and try adding the compute nodes again.

13. Select **Continue**.

14. Optional: If you created a new vSphere datacenter cluster, on the Network Settings page, import network information from an existing NetApp HCI deployment by selecting the **Copy Setting from an Existing Cluster** checkbox.
    This populates the default gateway and subnet information for each network.

15. On the Network Settings page, some of the network information has been detected from the initial deployment. The new compute node is listed by serial number, and you should assign new network information to it. For the new compute node, perform the following steps:

    a. If NetApp HCI detected a naming prefix, copy it from the Detected Naming Prefix field, and insert it as the prefix for the new unique hostname you add in the **Hostname** field.

    b. In the **Management IP Address** field, enter a management IP address for the compute node

that is within the management network subnet.

   c. In the vMotion IP Address field, enter a vMotion IP address for the compute node that is within the vMotion network subnet.

   d. In the iSCSI A - IP Address field, enter an IP address for the first iSCSI port of the compute node that is within the iSCSI network subnet.

   e. In the iSCSI B - IP Address field, enter an IP address for the second iSCSI port of the compute node that is within the iSCSI network subnet.

16. Select **Continue**.

17. On the Review page in the Network Settings section, the new node is shown in bold text. If you need to make changes to the information in any section, perform the following steps:

   a. Select **Edit** for that section.

   b. When finished making changes, click Continue on any subsequent pages to return to the Review page.

18. Optional: If you do not want to send cluster statistics and support information to NetApp-hosted SolidFire Active IQ servers, clear the final checkbox.
    This disables real-time health and diagnostic monitoring for NetApp HCI. Disabling this feature removes the ability for NetApp to proactively support and monitor NetApp HCI to detect and resolve problems before production is affected.

19. Select **Add Nodes**.
    You can monitor the progress while NetApp HCI adds and configures the resources.

20. Optional: Verify that the new compute node is visible in vCenter.

NetApp HCI 1.4 P2, 1.4, and 1.3

If your NetApp HCI installation runs version 1.4P2, 1.4, or 1.3, you can use the NetApp Deployment Engine to add the node to the cluster.

What you'll need

- Ensure that the vSphere instance NetApp HCI is using has vSphere Enterprise Plus licensing if you are expanding a deployment with Virtual Distributed Switches.

- Ensure that none of the vCenter or vSphere instances in use with NetApp HCI have expired licenses.

- Ensure that you have free and unused IPv4 addresses on the same network segment as existing nodes (each new node must be installed on the same network as existing nodes of its type).

- Ensure that you have the vCenter administrator account credentials ready.

- Ensure that each new node uses the same network topology and cabling as the existing storage or compute clusters.

Steps

1. Browse to the management IP address of one of the existing storage nodes:
   `http://<storage_node_management_IP_address>/`

2. Log in to the NetApp Deployment Engine by providing the NetApp HCI storage cluster administrator credentials.

3. Select **Expand Your Installation**.

4. On the Welcome page, select **Yes**.

5. On the End User License page, perform the following actions:

   a. Read the VMware End User License Agreement.

   b. If you accept the terms, select **I accept** at the end of the agreement text.

6. Select **Continue**.

7. On the vCenter page, perform the following steps:

   a. Enter a FQDN or IP address and administrator credentials for the vCenter instance associated with your NetApp HCI installation.

   b. Select **Continue**.

   c. Select an existing vSphere datacenter to which to add the new compute node.

   d. Select a vSphere cluster with which the new compute node should be associated.

   > **ⓘ** If you are adding a compute node with a CPU generation that is different than the CPU generation of the existing compute nodes and Enhanced vMotion Compatibility (EVC) is disabled on the controlling vCenter instance, you should enable EVC before proceeding. This ensures vMotion functionality after expansion is complete.

   e. Select **Continue**.

8. On the ESXi Credentials page, create ESXi administrator credentials for the compute node you are adding.
   You should use the same master credentials that were created during the initial NetApp HCI deployment.

9. Select **Continue**.

10. On the Available Inventory page, select the node you want to add to the existing NetApp HCI installation.

    > **💡** For some compute nodes, you might need to enable EVC at the highest level your vCenter version supports before you can add them to your installation. You should use the vSphere client to enable EVC for these compute nodes. After you enable it, refresh the Inventory page and try adding the compute nodes again.

11. Select **Continue**.

12. On the Network Settings page, perform the following steps:

    a. Verify the information detected from the initial deployment.

    b. Each new compute node is listed by serial number, and you should assign new network information to it. For each new storage node, perform the following steps:

        i. If NetApp HCI detected a naming prefix, copy it from the Detected Naming Prefix field, and insert it as the prefix for the new unique hostname you add in the Hostname field.

        ii. In the Management IP Address field, enter a management IP address for the compute node that is within the management network subnet.

        iii. In the vMotion IP Address field, enter a vMotion IP address for the compute node that is within the vMotion network subnet.

        iv. In the iSCSI A - IP Address field, enter an IP address for the first iSCSI port of the compute node that is within the iSCSI network subnet.

        v. In the iSCSI B - IP Address field, enter an IP address for the second iSCSI port of the compute node that is within the iSCSI network subnet.

    c. Select **Continue**.

13. On the Review page in the Network Settings section, the new node is shown in bold text. If you want to make changes to information in any section, perform the following steps:

    i. Select **Edit** for that section.

    ii. When finished making changes, select **Continue** on any subsequent pages to return to the Review page.

14. Optional: If you do not want to send cluster statistics and support information to NetApp-hosted Active IQ servers, clear the final checkbox.
    This disables real-time health and diagnostic monitoring for NetApp HCI. Disabling this feature removes the ability for NetApp to proactively support and monitor NetApp HCI to detect and resolve problems before production is affected.

15. Select **Add Nodes**.
    You can monitor the progress while NetApp HCI adds and configures the resources.

16. Optional: Verify that the new compute node is visible in vCenter.

NetApp HCI 1.2, 1.1, and 1.0

After you physically replace the node, you should add it back to the VMware ESXi cluster and perform several networking configurations so that you can use all the available functionalities.

> ℹ️ You should have a console or keyboard, video, mouse (KVM) to perform these steps.

Steps

1. Install and configure VMware ESXi version 6.0.0 as follows:

    a. On the remote console or KVM screen, select **Power Control** > **Set Power Reset**.

This restarts the node.

b. In the Boot Menu window that opens, select **ESXi Install** by pressing the Down Arrow key.

> ℹ️ This window stays open for only five seconds. If you do not make the selection in five seconds, you should restart the node again.

c. Press **Enter** to start the installation process.

d. Complete the steps in the installation wizard.

> ℹ️ When asked to select the disk to install ESXi on, you should select the second disk drive in the list by selecting the Down Arrow key. When asked to enter a root password, you should enter the same password that you configured in the NetApp Deployment Engine when you set up NetApp HCI.

e. After the installation is complete, press **Enter** to restart the node.

> ℹ️ By default, the node restarts with the NetApp HCI Bootstrap OS. You should perform a one-time configuration on the node for it to use VMware ESXi.

2. Configure VMware ESXi on the node as follows:

a. In the NetApp HCI Bootstrap OS terminal user interface (TUI) login window, enter the following information:

   i. User name: element

   ii. Password: catchTheFire!

b. Press the Down Arrow key to select **OK**.

c. Press **Enter** to log in.

d. In the main menu, use the Down Arrow key to select **Support Tunnel** > **Open Support Tunnel**.

e. In the window that is displayed, enter the port information.

> ℹ️ You should contact NetApp Support for this information. NetApp Support logs in to the node to set the boot configuration file and complete the configuration task.

f. Restart the node.

3. Configure the management network as follows:

a. Log in to VMware ESXi by entering the following credentials:

   i. User name: root

   ii. Password: The password you set when you installed VMware ESXi.

> ℹ️ The password should match what you configured in the NetApp Deployment Engine when you set up NetApp HCI.

   b. Select **Configure Management Network**, and press **Enter**.

   c. Select **Network Adapters**, and press **Enter**.

   d. Select **vmnic2** and **vmnic3**, and press **Enter**.

   e. Select **IPv4 Configuration**, and press the Spacebar on the keyboard to select the static configuration option.

   f. Enter the IP address, subnet mask, and default gateway information, and press **Enter**.
   You can reuse the information that you copied before you removed the node. The IP address you enter here is the Management Network IP address that you copied earlier.

   g. Press **Esc** to exit the Configure Management Network section.

   h. Select **Yes** to apply the changes.

4. Add the node (host) to the cluster and configure networking so that the node is synchronized with the other nodes in the cluster as follows:

   a. In the VMware vSphere Web Client, select **Hosts and Clusters**.

   b. Right-click the cluster that you want to add the node to, and select **Add Host**.
   The wizard guides you through adding the host.

> ℹ️ When you are asked to enter the user name and password, use the following credentials:
> User name: root
> Password: The password you configured in the NetApp Deployment Engine when you set up NetApp HCI

It might take a few minutes for the node to get added to the cluster. After the process is complete, the newly added node is listed under the cluster.

   c. Select the node, and then select **Manage** > **Networking** > **Virtual switches**, and perform the following steps:

      i. Select **vSwitch0**.
   You should see only vSwitch0 listed in the table that is displayed.

      ii. In the graphic that is displayed, select **VM Network**, and click **X** to remove the VM Network port group.

Standard switch: vSwitch0 (VM Network)

Management Network
VLAN ID: --
▼ VMkernel Ports (1)
vmk0 :

VM Network
VLAN ID: --
Virtual Machines (0)

Physical Adapters
vmnic2   1000 Full
vmnic3   1000 Full
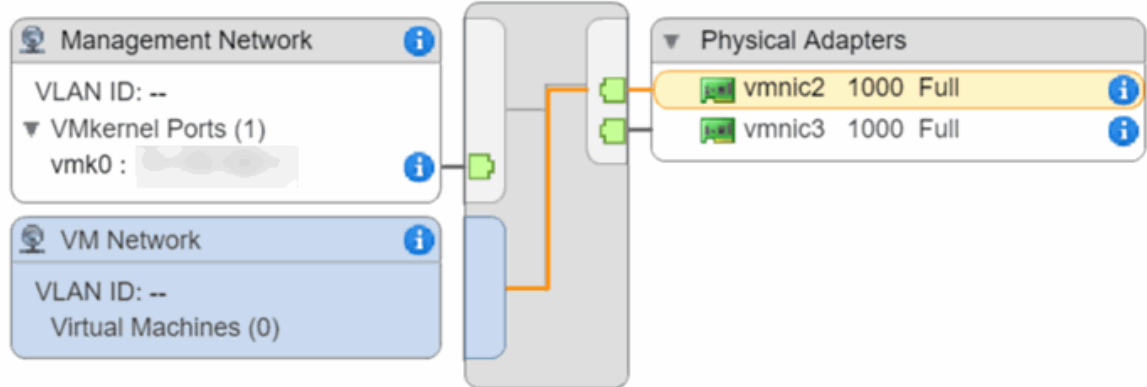
iii. Confirm the action.

iv. Select **vSwitch0**, and then select the pencil icon to edit the settings.

v. In the vSwitch0 - Edit settings window, select **Teaming and failover**.

vi. Ensure that vmnic3 is listed under Standby adapters, and select **OK**.

vii. In the graphic that is displayed, select **Management Network**, and select the pencil icon to edit the settings.

Standard switch: vSwitch0 (Management Network)

Management Network
VLAN ID: --
▼ VMkernel Ports (1)
vmk0 :

Physical Adapters
vmnic2   1000 Full
vmnic3   1000 Full
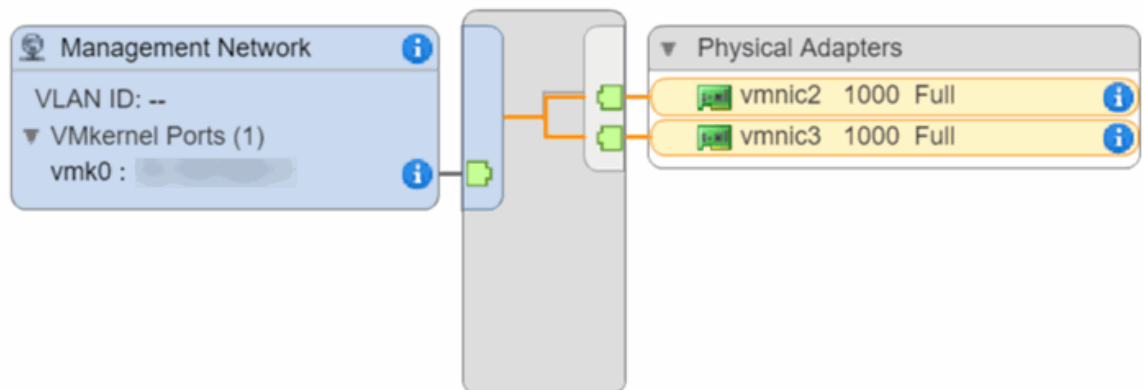
viii. In the Management Network - Edit settings window, select **Teaming and failover**.

ix. Move vmnic3 to Standby adapters by using the arrow icon, and select **OK**.

d. From the Actions drop-down menu, select **Add Networking**, and enter the following details in the window that is displayed:

i. For connection type, select **Virtual Machine Port Group for a Standard Switch**, and select **Next**.

   ii. For target device, select the option to add a new standard switch, and select **Next**.

   iii. Select +.

   iv. In the Add Physical Adapters to Switch window, select vmnic0 and vmnic4, and select **OK**.
vmnic0 and vmnic4 are now listed under Active adapters.

   v. Select **Next**.

   vi. Under connection settings, verify that VM Network is the network label, and select **Next**.

   vii. If you are ready to proceed, select **Finish**.
vSwitch1 is displayed in the list of virtual switches.

e. Select **vSwitch1**, and select the pencil icon to edit the settings as follows:

   i. Under Properties, set MTU to 9000, and select **OK**.
In the graphic that is displayed, select **VM Network**, and click the pencil icon to edit the settings as follows:

f. Select **Security**, and make the following selections:

   i. Select **Teaming and failover**, and select the **Override** checkbox.

   ii. Move vmnic0 to Standby adapters by using the arrow icon.

   iii. Select **OK**.

g. With vSwitch1 selected, from the Actions drop-down menu, select **Add Networking**, and enter the following details in the window that is displayed:

   i. For connection type, select **VMkernel Network Adapter**, and select **Next**.

   ii. For target device, select the option to use an existing standard switch, browse to vSwitch1, and select **Next**.

   iii. Under port properties, change the network label to vMotion, select the checkbox for vMotion traffic under Enable services, and select **Next**.

   iv. Under IPv4 settings, provide the IPv4 information, and select **Next**.
The IP address you enter here is the vMotion IP address that you copied earlier.

   v. If you are ready to proceed, select **Finish**.

h. In the graphic that is displayed, select vMotion, and select the pencil icon to edit the settings as follows:

   i. Select **Security**, and make the following selections:

Promiscuous mode:	☑ Override	Accept ▼
MAC address changes:	☑ Override	Reject ▼
Forged transmits:	☑ Override	Accept ▼

    ii. Select **Teaming and failover**, and select the **Override** checkbox.

    iii. Move vmnic4 to Standby adapters by using the arrow icon.

    iv. Select **OK**.

i. With vSwitch1 selected, from the Actions drop-down menu, select **Add Networking** and enter the following details in the window that is displayed:

    i. For connection type, select **VMkernel Network Adapter**, and select **Next**.

    ii. For target device, select the option to add a new standard switch, and select **Next**.

    iii. Select +.

    iv. In the Add Physical Adapters to Switch window, select vmnic1 and vmnic5, and select **OK**. vmnic1 and vmnic5 are now listed under Active adapters.

    v. Select **Next**.

    vi. Under port properties, change the network label to iSCSI-B, and select **Next**.

    vii. Under IPv4 settings, provide the IPv4 information, and select **Next**. The IP address you enter here is the iSCSI-B IP address that you copied earlier.

    viii. If you are ready to proceed, select **Finish**. vSwitch2 is displayed in the list of virtual switches.

j. Select **vSwitch2**, and select the pencil icon to edit the settings as follows:

    i. Under Properties, set MTU to 9000, and select **OK**.

k. In the graphic that is displayed, select **iSCSI-B**, and select the pencil icon to edit the settings as follows:

    i. Select **Security**, and make the following selections:

Promiscuous mode:	☑ Override	Accept ▼
MAC address changes:	☑ Override	Reject ▼
Forged transmits:	☑ Override	Accept ▼

    ii. Select **Teaming and failover**, and select the **Override** checkbox.

    iii. Move vmnic1 to Unused adapters by using the arrow icon.

    iv. Select **OK**.

l. From the Actions drop-down menu, select **Add Networking** and enter the following details in the window that is displayed:

    i. For connection type, select **VMkernel Network Adapter**, and select **Next**.

    ii. For target device, select the option to use an existing standard switch, browse to vSwitch2, and select **Next**.

    iii. Under port properties, change the network label to iSCSI-A, and select **Next**.

    iv. Under IPv4 settings, provide the IPv4 information, and select **Next**.
The IP address you enter here is the iSCSI-A IP address that you copied earlier.

    v. If you are ready to proceed, select **Finish**.

m. In the graphic that is displayed, select **iSCSI-A**, and select the pencil icon to edit the settings as follows:

    i. Select **Security**, and make the following selections:

    ii. Select **Teaming and failover**, and select the **Override** checkbox.

    iii. Move vmnic5 to Unused adapters by using the arrow icon.

    iv. Select **OK**.

n. With the newly added node selected and the Manage tab open, select **Storage** > **Storage Adapters**, and perform the following steps:

    i. Select + and select **Software iSCSI Adapter**.

    ii. To add the iSCSI adapter, select **OK** in the dialog box.

    iii. Under Storage Adapters, select the iSCSI adapter, and from the Properties tab, copy the iSCSI Name.

| Properties | Devices | Paths | Targets | Network Port Binding | Advanced Options |

Status Enabled

General

Name	vmhba40
Model	iSCSI Software Adapter
iSCSI Name	
iSCSI Alias	

ℹ️   You need the iSCSI Name when you create the initiator.

o. Perform the following steps in the NetApp SolidFire vCenter Plug-in:

   i. Select **Management** > **Initiators** > **Create**.

   ii. Select **Create a Single Initiator**.

   iii. Enter the IQN address you copied earlier in the IQN/WWPN field.

   iv. Select **OK**.

   v. Select **Bulk Actions**, and select **Add to Volume Access Group**.

   vi. Select **NetApp HCI**, and select **Add**.

p. In the VMware vSphere Web Client, under Storage Adapters, select the iSCSI adapter, and perform the following steps:

   i. Under Adapter Details, select **Targets** > **Dynamic Discovery** > **Add**.

   ii. Enter the SVIP IP address in the iSCSI Server field.

ℹ️   To get the SVIP IP address, select **NetApp Element Management**, and copy the SVIP IP address.
Leave the default port number as is. It should be 3260.

   iii. Select **OK**.
A message recommending a rescan of the storage adapter is displayed.

   iv. Select the rescan icon.
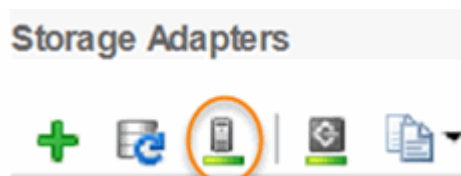
Storage Adapters

   v. Under Adapter Details, select **Network Port Binding**, and select +.

   vi. Select the check boxes for iSCSI-B and iSCSI-A, and click OK.

A message recommending a rescan of the storage adapter is displayed.

vii. Select the rescan icon.

After the rescan is complete, verify if the volumes in the cluster are visible on the new compute node (host).

Redeploy Witness Nodes for two and three-node storage clusters

After you physically replace the failed compute node, you should redeploy the NetApp HCI Witness Node VM if the failed compute node was hosting the Witness Node. These instructions apply only to compute nodes that are part of a NetApp HCI installation with two or three-node storage clusters.

What you'll need

- Gather the following information:

  ○ Cluster name from the storage cluster

  ○ Subnet mask, gateway IP address, DNS server, and domain information for the management network

  ○ Subnet mask for the storage network

- Ensure that you have access to the storage cluster to be able to add the Witness Nodes to the cluster.

- Consider the following conditions to help you decide whether to remove the existing Witness Node from VMware vSphere Web Client or the storage cluster:

  ○ If you want to use the same VM name for the new Witness Node, you should delete all the references to the old Witness Node from vSphere.

  ○ If you want to use the same host name on the new Witness Node, you should first remove the old Witness Node from the storage cluster.

  > ℹ️ You cannot remove the old Witness Node if your cluster is down to only two physical storage nodes (and no Witness Nodes). In this scenario, you should add the new Witness Node to the cluster first before removing the old one.
  > You can remove the Witness Node from the cluster using the NetApp Element Management extension point.

When should you redeploy Witness Nodes?

You should redeploy Witness Nodes in the following scenarios:

- You replaced a failed compute node that is part of a NetApp HCI installation, which has a two or three-node storage cluster and the failed compute node was hosting a Witness Node VM.

- You performed the return to factory image (RTFI) procedure on the compute node.

- The Witness Node VM is corrupted.
- The Witness Node VM was accidentally removed from ESXi.
  The VM is configured using the template that is created as part of initial deployment using the NetApp Deployment Engine. Here is an example of what a Witness Node VM looks like:
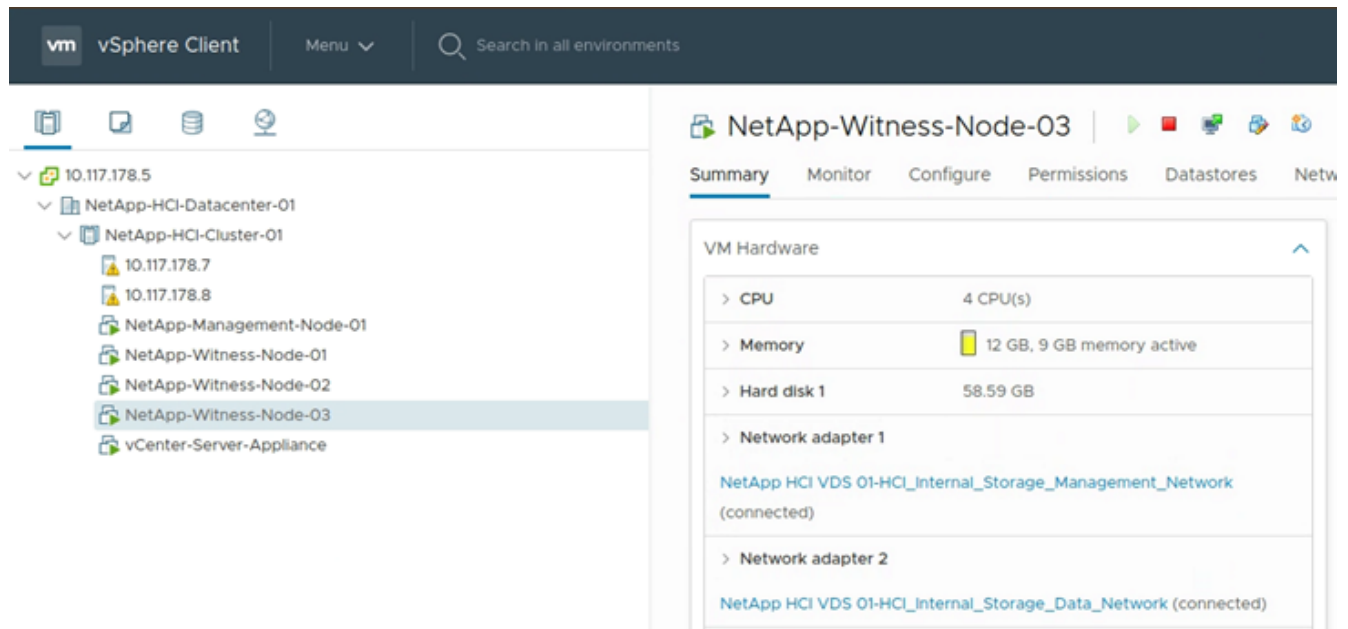
Steps

1. In the VMware vSphere Web Client, select **Hosts and Clusters**.
2. Right-click the compute node that will host the Witness Node VM, and select **New Virtual Machine**.
3. Select **Deploy from template**, and select **Next**.
4. Follow the steps in the wizard:
   a. Select **Data Center**, locate the VM template, and select **Next**.
   b. Enter a name for the VM in the following format: NetApp-Witness-Node-##

      > ℹ️ ## should be replaced with a number.

   c. Leave the default selection for VM location as is, and select **Next**.
   d. Leave the default selection for the destination compute resource as is, and select **Next**.
   e. Select the local datastore, and select **Next**.
      Free space on the local datastore varies depending on the compute platform.
   f. Select **Power on virtual machine after creation** from the list of deploy options, and select **Next**.
   g. Review the selections, and select **Finish**.
5. Configure the management and storage network, and cluster settings for the Witness Node as follows:

a. In the VMware vSphere Web Client, select **Hosts and Clusters**.

b. Right-click the Witness Node, and power it on if it is not already powered on.

c. In the Summary view of the Witness Node, select **Launch Web Console**.

d. Wait for the Witness Node to boot up to the menu with the blue background.

e. Select anywhere inside the console to access the menu.

f. Configure the management network as follows:

    i. Press the down arrow key to navigate to Network, and then press **Enter** for OK.

    ii. Navigate to **Network config**, and then press **Enter** for OK.

    iii. Navigate to **net0**, and then press **Enter** for OK.

    iv. Press **Tab** till you get to the IPv4 field, and then if applicable, delete the existing IP in the field and enter the management IP information for the Witness Node. Check the subnet mask and gateway as well.

> **i** No VLAN tagging will be applied at the VM host level; tagging will be handled in vSwitch.

    v. Press **Tab** to navigate to OK, and press **Enter** to save changes.
After management network configuration, the screen returns to Network.

g. Configure the storage network as follows:

    i. Press the down arrow key to navigate to Network, and then press **Enter** for OK.

    ii. Navigate to **Network config**, and then press **Enter** for OK.

    iii. Navigate to **net1**, and then press **Enter** for OK.

    iv. Press **Tab** till you get to the IPv4 field, and then if applicable, delete the existing IP in the field and enter the storage IP information for the Witness Node.

    v. Press **Tab** to navigate to OK, and press **Enter** to save the changes.

    vi. Set MTU to 9000.

> **i** If MTU is not set before you add the Witness Node to the cluster, you see cluster warnings for inconsistent MTU settings. This can prevent garbage collection from running and cause performance problems.

    vii. Press **Tab** to navigate to OK, and press **Enter** to save changes.
After storage network configuration, the screen returns to Network.

h. Configure the cluster settings as follows:

    i. Press **Tab** to navigate to Cancel, and press **Enter.**

    ii. Navigate to **Cluster settings**, and then press **Enter** for OK.

    iii. Press **Tab** to navigate to Change Settings, and press **Enter** for Change Settings.

iv. Press **Tab** to navigate to Hostname field, and enter the host name.

v. Press the down arrow key to access the Cluster field and enter the cluster name from the storage cluster.

vi. Press the **Tab** key to navigate to OK button, and press **Enter**.

6. Add the Witness Node to the storage cluster as follows:

a. From the vSphere Web Client, access the NetApp Element Management extension point from the **Shortcuts** tab or the side panel.

b. Select **NetApp Element Management > Cluster**.

c. Select the **Nodes** sub-tab.

d. Select **Pending** from the drop-down list to view the list of nodes.
The Witness Node should appear in the pending nodes list.

e. Select the check box for the node you want to add, and select **Add node**.
When the action is complete, the node appears in the list of active nodes for the cluster.

Change the password if you received a replacement node with a non-standard BMC password

Some replacement nodes may be shipped with non-standard passwords for the baseboard management controller (BMC) UI. If you receive a replacement node with a non-standard BMC password, you should change the password to the default, ADMIN.

Steps

1. Identify whether you received a replacement node with a non-standard BMC password:

a. Look for a sticker under the IPMI port at the back of the replacement node that you received. If you locate a sticker under the IPMI port, it means that you received a node with a non-standard BMC password. See the following sample image:

b. Make a note of the password.

2. Log in to the BMC UI using the unique password found on the sticker.

3. Select **Factory Default**, and select the **Remove current settings and set the user defaults to ADMIN/ADMIN** radio button:

4. Select **Restore**.

5. Log out and then log back in to confirm that the credentials are now changed.

Upgrade the BMC firmware on your node

After you replace the compute node, you might have to upgrade the firmware version.
You can download the latest firmware file from the drop-down menu on the NetApp Support Site (login required).
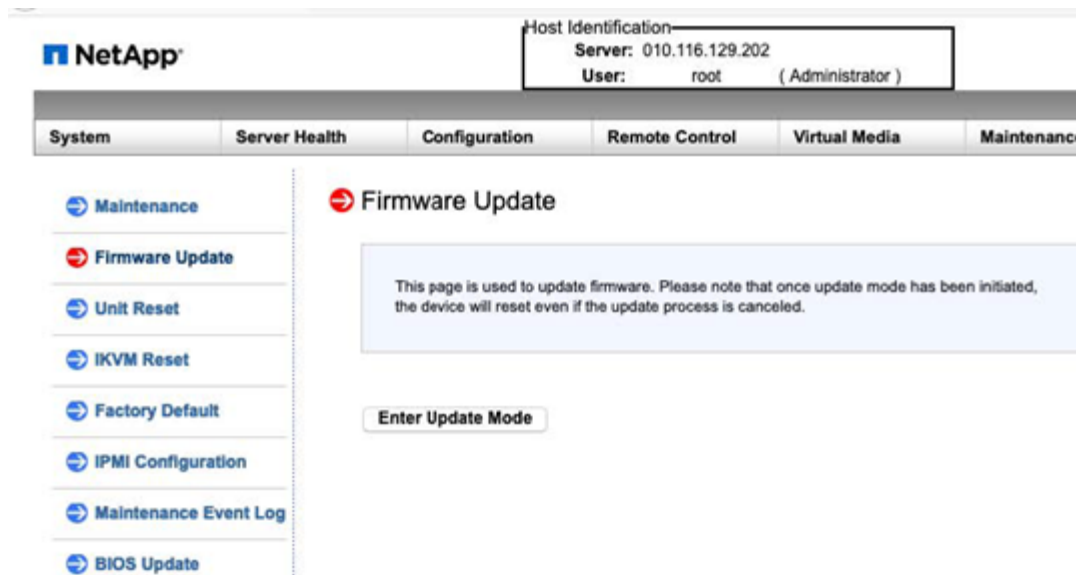
Steps

1. Log in to the baseboard management controller (BMC) UI.

2. Select **Maintenance** > **Firmware Update**.
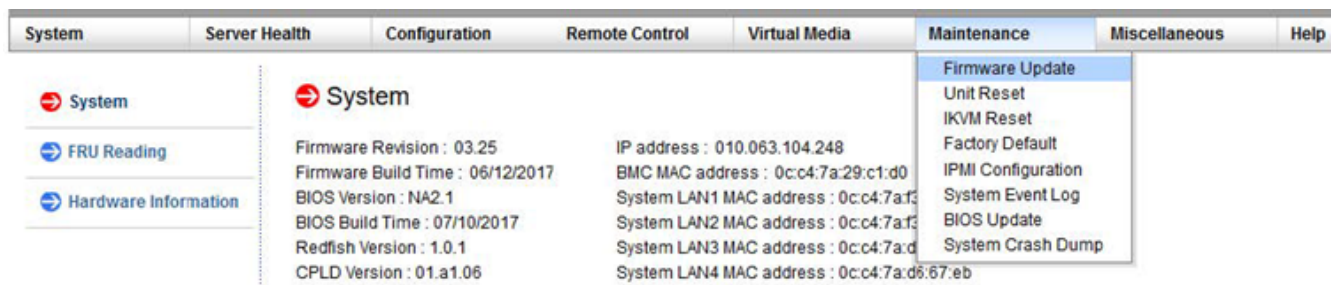
3. From within the BMC console, select **Maintenance**.
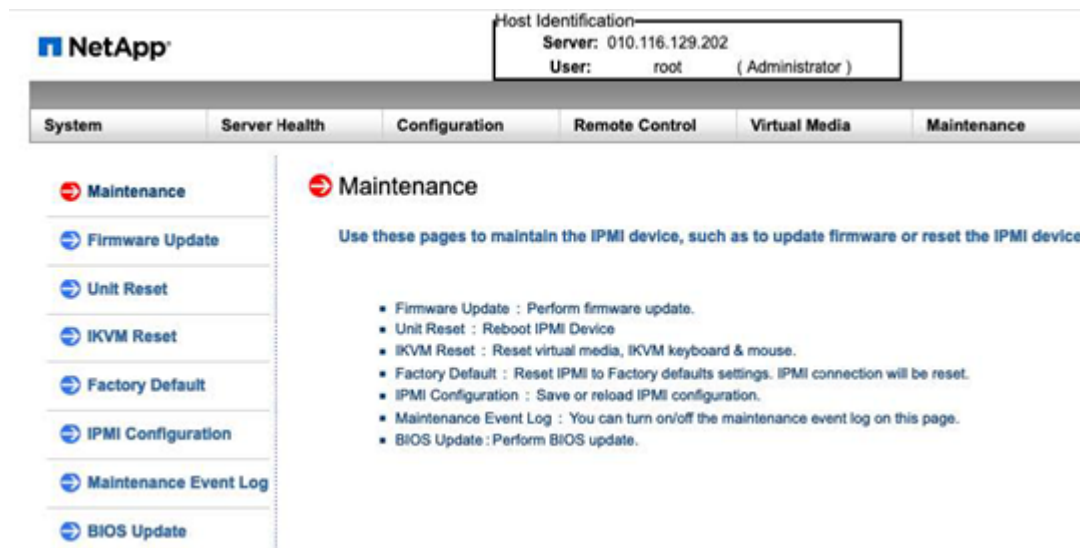
4. From within the Maintenance tab, select **Firmware Update** from the navigation on the left of the UI, and select **Enter Update Mode**.

5. Select **Yes** in the confirmation dialog box.

6. Select **Browse** to select the firmware image to upload, and select **Upload Firmware**.
Loading firmware from a location outside of the direct vicinity of the node might cause extended load times and possible timeouts.

7. Allow the preserve configuration checks, and select **Start Upgrade**.
The upgrade should take approximately 5 minutes. If your upload time exceeds 60 minutes, cancel the upload and transfer the file to a local machine within the vicinity of the node.
If your session times out, you might see a number of alerts while attempting to log back in to the firmware update area of the BMC UI. If you cancel the upgrade, you are redirected to the login page.

8. After the update is complete, select **OK**, and wait for the node to reboot.
Log in after the upgrade, and select **System** to verify that the **Firmware Revision** version matches the version you uploaded.

Find more information

- [NetApp HCI Documentation Center](#)
- [SolidFire and Element Software Documentation Center](#)