Replacing the chassis

To replace the chassis, you must move the power supplies, fans, and controller modules from the impaired chassis to the new chassis, and swap out the impaired chassis from the equipment rack or system cabinet with the new chassis of the same model as the impaired chassis.

Before you begin

All other components in the system must be functioning properly; if not, you must contact technical support.

About this task

• You can use this procedure with all versions of ONTAP supported by your system.
• This procedure is written with the assumption that you are moving the controller module or modules to the new chassis, and that the chassis is a new component from NetApp.

Steps

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2. Swapping out a power supply on page 2
3. Swapping out a fan on page 4
4. Removing the controller module on page 5
5. Replacing a chassis from within the equipment rack or system cabinet on page 6
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7. Verifying and setting the HA state of the chassis on page 8
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9. Completing the replacement process on page 11

Shutting down the node

You must shut down the node or nodes in the chassis prior to moving them to the new chassis.

Before you begin

• If you have a cluster with more than two nodes, it must be in quorum. If the cluster is not in quorum or a healthy node shows false for eligibility and health, you must correct the issue before shutting down the impaired node.

ONTAP 9 System Administration Reference

Steps

1. If your system has two controller modules, disable the HA pair.

<table>
<thead>
<tr>
<th>If your system is running clustered ONTAP with...</th>
<th>Then...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two nodes in the cluster</td>
<td>cluster ha modify -configured false</td>
</tr>
<tr>
<td></td>
<td>storage failover modify -node node0 -enabled false</td>
</tr>
</tbody>
</table>
If your system is running clustered ONTAP with...

| More than two nodes in the cluster | storage failover modify -node node0 -enabled false |

2. Halt the node, pressing \texttt{y} when you are prompted to confirm the halt:

\begin{verbatim}
    system node halt -node node_name
\end{verbatim}

The confirmation message looks like the following:

\begin{verbatim}
Warning: Rebooting or halting node "node_name" in an HA-enabled cluster may result in client disruption or data access failure. To ensure continuity of service, use the "storage failover takeover" command. Are you sure you want to halt node "node_name"? {y|n}:
\end{verbatim}

\textbf{Attention:} You must perform a clean system shutdown before replacing the chassis to avoid losing unwritten data in the nonvolatile memory (NVMEM). If the NVMEM LED is flashing, there is content in the NVMEM that has not been saved to disk. You need to reboot the node and start from the beginning of this procedure. If repeated attempts to cleanly shut down the node fail, be aware that you might lose any data that was not saved to disk.

3. Where applicable, halt the second node to avoid a possible quorum error message in an HA pair configuration:

\begin{verbatim}
    system node halt -node second_node_name -ignore-quorum-warnings true
\end{verbatim}

\section*{Swapping out a power supply}

Swapping out a power supply when replacing a chassis involves turning off, disconnecting, and removing the power supply from the old chassis and installing and connecting it on the replacement chassis.

\section*{Steps}

1. If you are not already grounded, properly ground yourself.

2. Turn off the power supply and disconnect the power cables:
   a. Turn off the power switch on the power supply.
   b. Open the power cable retainer, and then unplug the power cable from the power supply.
   c. Unplug the power cable from the power source.

3. Press down the release latch on the power supply cam handle, and then lower the cam handle to the fully open position to release the power supply from the mid plane.
1. Power supply
2. Cam handle release latch
3. Power and Fault LEDs
4. Cam handle
5. Power cable locking mechanism

4. Use the cam handle to slide the power supply out of the system.
Caution: When removing a power supply, always use two hands to support its weight.

5. Repeat the preceding steps for any remaining power supplies.

6. Using both hands, support and align the edges of the power supply with the opening in the system chassis, and then gently push the power supply into the chassis using the cam handle.
   
   The power supplies are keyed and can only be installed one way.
   
   Attention: Do not use excessive force when sliding the power supply into the system. You can damage the connector.

7. Push firmly on the power supply cam handle to seat it all the way into the chassis, and then push the cam handle to the closed position, making sure that the cam handle release latch clicks into its locked position.

8. Reconnect the power cable and secure it to the power supply using the power cable locking mechanism.
   
   Attention: Only connect the power cable to the power supply. Do not connect the power cable to a power source at this time.

Swapping out a fan

To swap out a fan module when replacing the chassis, you must perform a specific sequence of tasks.

Steps

1. If you are not already grounded, properly ground yourself.

2. Remove the bezel (if necessary) with two hands, by grasping the openings on each side of the bezel, and then pulling it toward you until the bezel releases from the four ball studs on the chassis frame.

3. Press down the release latch on the fan module cam handle, and then pull the cam handle downward.
   
   The fan module moves a little bit away from the chassis.
4. Pull the fan module straight out from the chassis, making sure that you support it with your free hand so that it does not swing out of the chassis.

   **Caution:** The fan modules are short. Always support the bottom of the fan module with your free hand so that it does not suddenly drop free from the chassis and injure you.

5. Set the fan module aside.

6. Repeat the preceding steps for any remaining fan modules.

7. Insert the fan module into the replacement chassis by aligning it with the opening, and then sliding it into the chassis.

8. Push firmly on the fan module cam handle so that it is seated all the way into the chassis.

   The cam handle raises slightly when the fan module is completely seated.

9. Swing the cam handle up to its closed position, making sure that the cam handle release latch clicks into the locked position.

10. Repeat these steps for the remaining fan modules.

11. Align the bezel with the ball studs, and then gently push the bezel onto the ball studs.

### Removing the controller module

To replace the chassis, you must remove the controller module or modules from the old chassis.

**Steps**

1. If you are not already grounded, properly ground yourself.

2. Loosen the hook and loop strap binding the cables to the cable management device, and then unplug the system cables and SFPs (if needed) from the controller module, keeping track of where the cables were connected.

   Leave the cables in the cable management device so that when you reinstall the cable management device, the cables are organized.

3. Remove and set aside the cable management devices from the left and right sides of the controller module.
4. Loosen the thumbscrew on the cam handle on the controller module.

5. Pull the cam handle downward and begin to slide the controller module out of the chassis. Make sure that you support the bottom of the controller module as you slide it out of the chassis.

6. Set the controller module aside in a safe place, and repeat these steps if you have another controller module in the chassis.

**Replacing a chassis from within the equipment rack or system cabinet**

You must remove the existing chassis from the equipment rack or system cabinet before you can install the replacement chassis.

**Steps**

1. Remove the screws from the chassis mount points.  
   **Note:** If the system is in a system cabinet, you might need to remove the rear tie-down bracket.

2. With the help of two or three people, slide the old chassis off the rack rails in a system cabinet or L brackets in an equipment rack and set it aside.

3. If you are not already grounded, properly ground yourself.

4. Using two or three people, install the replacement chassis into the equipment rack or system cabinet by guiding the chassis onto the rack rails in a system cabinet or L brackets in an equipment rack.

5. Slide the chassis all the way into the equipment rack or system cabinet.

6. Secure the front of the chassis to the equipment rack or system cabinet, using the screws you removed from the old chassis.
Installing the controller

After you install the controller module and any other components into the new chassis, boot it to a state where you can run the interconnect diagnostic test.

About this task

For HA pairs with two controller modules in the same chassis, the sequence in which you install the controller module is especially important because it attempts to reboot as soon as you completely seat it in the chassis.

Steps

1. If you are not already grounded, properly ground yourself.

2. Align the end of the controller module with the opening in the chassis, and then gently push the controller module halfway into the system.
   
   **Note:** Do not completely insert the controller module in the chassis until instructed to do so.

3. Recable the console to the controller module, and then reconnect the management port.

4. Repeat the preceding steps if there is a second controller to install in the new chassis.

5. Complete the installation of the controller module:

<table>
<thead>
<tr>
<th>If your system is in...</th>
<th>Then perform these steps...</th>
</tr>
</thead>
</table>
| An HA pair              | a. With the cam handle in the open position, firmly push the controller module in until it meets the midplane and is fully seated, and then close the cam handle to the locked position. Tighten the thumbscrew on the cam handle on back of the controller module.  
  **Attention:** Do not use excessive force when sliding the controller module into the chassis to avoid damaging the connectors.  
  b. If you have not already done so, reinstall the cable management device.  
  c. Bind the cables to the cable management device with the hook and loop strap.  
  d. Repeat the preceding steps for the second controller module in the new chassis. |
| A stand-alone configuration | a. With the cam handle in the open position, firmly push the controller module in until it meets the midplane and is fully seated, and then close the cam handle to the locked position. Tighten the thumbscrew on the cam handle on back of the controller module.  
  **Attention:** Do not use excessive force when sliding the controller module into the chassis to avoid damaging the connectors.  
  b. If you have not already done so, reinstall the cable management device.  
  c. Bind the cables to the cable management device with the hook and loop strap.  
  d. Reinstall the blanking panel and then go to the next step. |

6. Connect the power supplies to different power sources, and then turn them on.

7. Boot each node to Maintenance mode:

   a. As each node starts the booting, press Ctrl-C to interrupt the boot process when you see the message Press Ctrl-C for Boot Menu.
Note: If you miss the prompt and the controller modules boot to ONTAP, enter `halt`, and then at the LOADER prompt enter `boot_ontap`, press `Ctrl-C` when prompted, and then repeat this step.

b. From the boot menu, select the option for Maintenance mode.

Verifying and setting the HA state of the chassis

You must verify the HA state of the chassis, and, if necessary, update the state to match your system configuration.

Steps

1. In Maintenance mode, from either controller module, display the HA state of the local controller module and chassis:
   
   `ha-config show`

   The HA state should be the same for all components.

2. If the displayed system state for the chassis does not match your system configuration:
   
   a. Set the HA state for the chassis:
      
      `ha-config modify chassis HA-state`

      The value for `HA-state` can be one of the following:

      • `ha`
      • `mccip`
      • `non-ha`

   b. Confirm that the setting has changed:
      
      `ha-config show`

3. If you have not already done so, recable the rest of your system.

4. The next step depends on your system configuration.

<table>
<thead>
<tr>
<th>If your system is in...</th>
<th>Then...</th>
</tr>
</thead>
</table>
   | A stand-alone configuration | a. Exit Maintenance mode: 
                                  | `halt`
   |                          | b. Go to "Completing the replacement process on page 11."

   | An HA pair with a second controller module | Exit Maintenance mode: 
                                              | `halt`
                                              | The LOADER prompt appears.

Running system-level diagnostics

After installing a new chassis, you should run interconnect diagnostics.

Before you begin

Your system must be at the LOADER prompt to start System Level Diagnostics.
About this task

All commands in the diagnostic procedures are issued from the node where the component is being replaced.

Steps

1. If the node to be serviced is not at the LOADER prompt, perform the following steps:
   a. Select the Maintenance mode option from the displayed menu.
   b. After the node boots to Maintenance mode, halt the node:
      
```bash
halt
```

After you issue the command, you should wait until the system stops at the LOADER prompt.

**Important:** During the boot process, you can safely respond `y` to prompts:

2. Repeat the previous step on the second node if you are in an HA configuration.
   **Note:** Both controllers must be in Maintenance mode to run the interconnect test.

3. At the LOADER prompt, access the special drivers specifically designed for system-level diagnostics to function properly:
   
```bash
boot_diags
```

During the boot process, you can safely respond `y` to the prompts until the Maintenance mode prompt (`*>`) appears.

4. Enable the interconnect diagnostics tests from the Maintenance mode prompt:
   
```bash
sldiag device modify -dev interconnect -sel enable
```

The interconnect tests are disabled by default and must be enabled to run separately.

5. Run the interconnect diagnostics test from the Maintenance mode prompt:
   
```bash
sldiag device run -dev interconnect
```

You only need to run the interconnect test from one controller.

6. Verify that no hardware problems resulted from the replacement of the chassis:
   
```bash
sldiag device status -dev interconnect -long -state failed
```

System-level diagnostics returns you to the prompt if there are no test failures, or lists the full status of failures resulting from testing the component.

7. Proceed based on the result of the preceding step.
If the system-level diagnostics tests... Then...

Were completed without any failures

<table>
<thead>
<tr>
<th>If your system is running ONTAP...</th>
<th>Then...</th>
</tr>
</thead>
</table>
| With two nodes in the cluster     | Issue these commands:  
  node::> cluster ha modify - configured true  
  node::> storage failover modify -node node0 -enabled true |
| With more than two nodes in the cluster | Issue this command:  
  node::> storage failover modify -node node0 -enabled true |
| In a two-node MetroCluster configuration | Proceed to the next step.  
  The MetroCluster healing and switchback procedures are done in the next task in the replacement process. |
| In a stand-alone configuration     | You have no further steps in this particular task. |

You have completed system-level diagnostics.
<table>
<thead>
<tr>
<th>If the system-level diagnostics tests...</th>
<th>Then...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resulted in some test failures</td>
<td>Determine the cause of the problem.</td>
</tr>
</tbody>
</table>
|                                          | a. Exit Maintenance mode:  
                                   |    \texttt{halt}        |
|                                          | b. Perform a clean shutdown, and then disconnect the power supplies. |
|                                          | c. Verify that you have observed all of the considerations identified for running system-level diagnostics, that cables are securely connected, and that hardware components are properly installed in the storage system. |
|                                          | d. Reconnect the power supplies, and then power on the storage system. |
|                                          | e. Rerun the system-level diagnostics test. |

**Completing the replacement process**

After you replace the part, you can return the failed part to NetApp, as described in the RMA instructions shipped with the kit. Contact technical support at NetApp Support, 888-463-8277 (North America), 00-800-44-638277 (Europe), or +800-800-80-800 (Asia/Pacific) if you need the RMA number or additional help with the replacement procedure.

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