Replacing the chassis

To replace the chassis, you must move the controller modules and SSD drives from the impaired chassis to the replacement chassis, and then remove the impaired chassis from the equipment rack or system cabinet and install the replacement chassis in its place.

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 SSD drives and controller modules to the new chassis, and that the replacement chassis is a new component from NetApp.

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Shutting down the nodes

You must shut down the 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 node that is not the impaired node shows false for eligibility and health, correct the issue before shutting down the impaired node.

Steps
1. If you have a cluster with more than two nodes, check the health and Epsilon from advanced mode:
   
   `cluster show -epsilon *`
   
   If the cluster is not in quorum or a node that is not the impaired node shows false for eligibility and health, correct the issue before proceeding to the next step.
   
   If Epsilon resides in the impaired node:
   
   a. Remove Epsilon from the impaired node:
      
      `cluster modify -node impaired_node -epsilon false`
   
   b. Assign Epsilon to a healthy node in the cluster:
2. 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>
<tr>
<td>More than two nodes in the cluster</td>
<td>storage failover modify -node node0 -enabled false</td>
</tr>
</tbody>
</table>

3. Halt the node, pressing y when you are prompted to confirm the halt:

   system node halt -node node_name

   The confirmation message looks like the following:

   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}:

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

4. Repeat the preceding step for the second controller module.

   To avoid a possible quorum error message in an HA pair configuration, halt the second node:

   system node halt -node second_node_name -ignore-quorum-warnings true

### Removing the controller modules

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

**Steps**

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

2. Unplug the controller module power supply from the source, and then unplug the cable from the power supply.

3. 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.

4. Remove the cable management device from the controller module and set it aside.

5. Press down on both of the locking latches, and then rotate both latches downward at the same time.

   The controller moves slightly out of the chassis.
6. 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.

7. Set the controller module aside in a safe place, and repeat these steps for the other controller module in the chassis.

**Moving disk drives to the new chassis**

You need to move the disk drives from each bay opening in the old chassis to the same bay opening in the new chassis.

**Steps**

1. Gently remove the bezel from the front of the system.
2. Remove the disk drives:
a. Press the release button at the top of the carrier face below the LEDs.

b. Pull the cam handle to its fully open position to unseat the disk drive from the midplane, and then gently slide the disk drive out of the disk shelf.

The disk drive should disengage from the chassis, allowing it to slide free of the chassis.

**Attention:** When removing a disk drive, always use two hands to support its weight.

**Attention:** Disk drives are fragile. Handle them as little as possible to prevent damage to them.

3. Align the disk drive from the old chassis with the same bay opening in the new chassis.

4. Gently push the disk drive into the chassis as far as it will go.

The cam handle engages and begins to lift upward.

5. Firmly push the disk drive the rest of the way into the chassis, and then lock the cam handle by pushing it up and against the disk drive holder.

Be sure to close the cam handle slowly so that it aligns correctly with the front of the drive carrier. You will hear it click when it is secure.

6. Repeat the process for the remaining disk drives in the system.
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.
2. With three people, slide the old chassis off the rack rails in a system cabinet or equipment rack and set it aside.
3. If you are not already grounded, properly ground yourself.
4. Using 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 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 controllers

After you install the controller module into the new chassis, boot it to a state where you can run the 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.

Note: The system might update system firmware when it boots. Do not abort this process.

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, and then reconnect the management port.
4. Plug the power cord into the power supply, reinstall the power cable locking collar, and then connect the power supply to the power source.
5. Complete the reinstallation of the controller module:
   a. If you have not already done so, reinstall the cable management device.
   b. Firmly push the controller module into the chassis until it meets the midplane and is fully seated.
      
      The locking latches rise when the controller module is fully seated.
      
      Attention: Do not use excessive force when sliding the controller module into the chassis; you might damage the connectors.
      
      The controller module begins to boot as soon as it is fully seated in the chassis. Be prepared to interrupt the boot process.
   c. Rotate the locking latches upward, tilting them so that they clear the locking pins, and then lower them into the locked position.
d. Interrupt the boot process by pressing **Ctrl-C** when you see **Press Ctrl-C for Boot Menu**.

e. Select the option to boot to Maintenance mode from the displayed menu.

6. Repeat the preceding steps to install the second controller into the new chassis.

### Running diagnostics

After you have replaced a component in your system, you should run diagnostic tests on that component.

**Before you begin**

Your system must be at the LOADER prompt to start 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, reboot the node:
   
   ```
   halt
   ```

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

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

   ```
   boot_diags
   ```

3. Select **Scan system** and **Test system** from the displayed menu.

**Example**

```plaintext
Copyright (c) 2016 NetApp Inc. All rights reserved.

#### AFF A700s System-Level HW Diagnostics 01.06.09 ####
#### System        PN: 000092576+10                 ####
#### System        SN: SHFFG1631000296              ####
#### Controller-A  PN: TEMP-S000092338              ####
#### Controller-A  SN: 2BJJ0267S01W                 ####
1) Scan system
2) Test system
3) Test memory
4) Show VPD information
5) Show FW revision
6) Show MAC address
7) Show logs
8) Reboot (BMC power cycle) controller to LOADER
Select a number 1-8 to execute the respective command:
```

4. Proceed based on the result of the preceding step:

   - If the test failed, correct the failure, and then rerun the test.
   - If the test reported no failures, select **Reboot** from the menu to reboot the system.

### 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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