Replace an NVDIMM - AFF A800

ONTAP Systems

Doug Thompson, Martin Houser
October 22, 2021

Table of Contents

Replace an NVDIMM - AFF A800

You must replace the NVDIMM in the controller module when your system registers that the flash lifetime is almost at an end or that the identified NVDIMM is not healthy in general; failure to do so causes a system panic.

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

You must replace the failed component with a replacement FRU component you received from your provider.

Step 1: Shut down the impaired controller

You can shut down or take over the impaired controller using different procedures, depending on the storage system hardware configuration.

To shut down the impaired node, you must determine the status of the node and, if necessary, take over the node so that the healthy node continues to serve data from the impaired node storage.

About this task

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 AutoSupport is enabled, suppress automatic case creation by invoking an AutoSupport message: `system node autosupport invoke -node * -type all -message MAINT=number_of_hours_downh`

   The following AutoSupport message suppresses automatic case creation for two hours: `cluster1:*> system node autosupport invoke -node * -type all -message MAINT=2h`

2. Disable automatic giveback from the console of the healthy node: `storage failover modify –node local -auto-giveback false`
3. Take the impaired node to the LOADER prompt:

If the impaired node is displaying…	Then…
The LOADER prompt	Go to the next step.
Waiting for giveback…	Press Ctrl-C, and then respond `y` when prompted.

If the impaired node is displaying…	Then…
System prompt or password prompt (enter system password)	Take over or halt the impaired node: • For an HA pair, take over the impaired node from the healthy node: `storage failover takeover -ofnode impaired_node_name` When the impaired node shows Waiting for giveback…, press Ctrl-C, and then respond `y`.

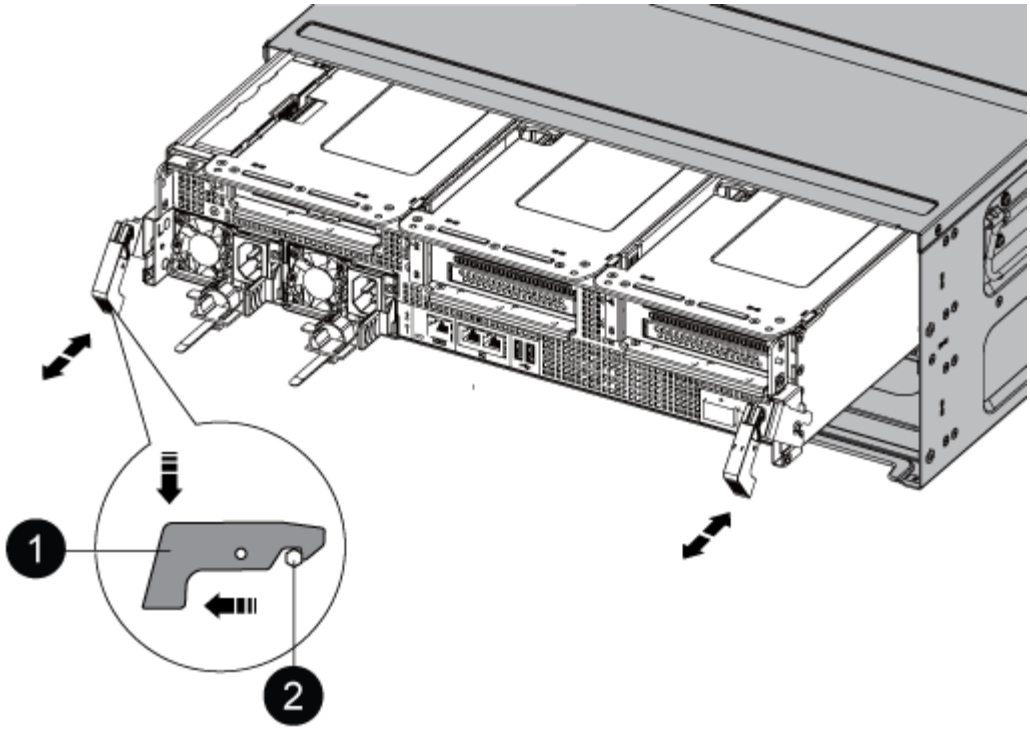
Step 2: Remove the controller module

You must remove the controller module from the chassis when you replace the controller module or replace a component inside the controller module.

1. If you are not already grounded, properly ground yourself.
2. Unplug the controller module power supplies from the source.
3. Release the power cable retainers, and then unplug the cables from the power supplies.
4. Loosen the hook and loop strap binding the cables to the cable management device, and then unplug the system cables and SFP and QSFP modules (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.
5. Remove the cable management device from the controller module and set it aside.
6. Press down on both of the locking latches, and then rotate both latches downward at the same time.

   The controller module moves slightly out of the chassis.



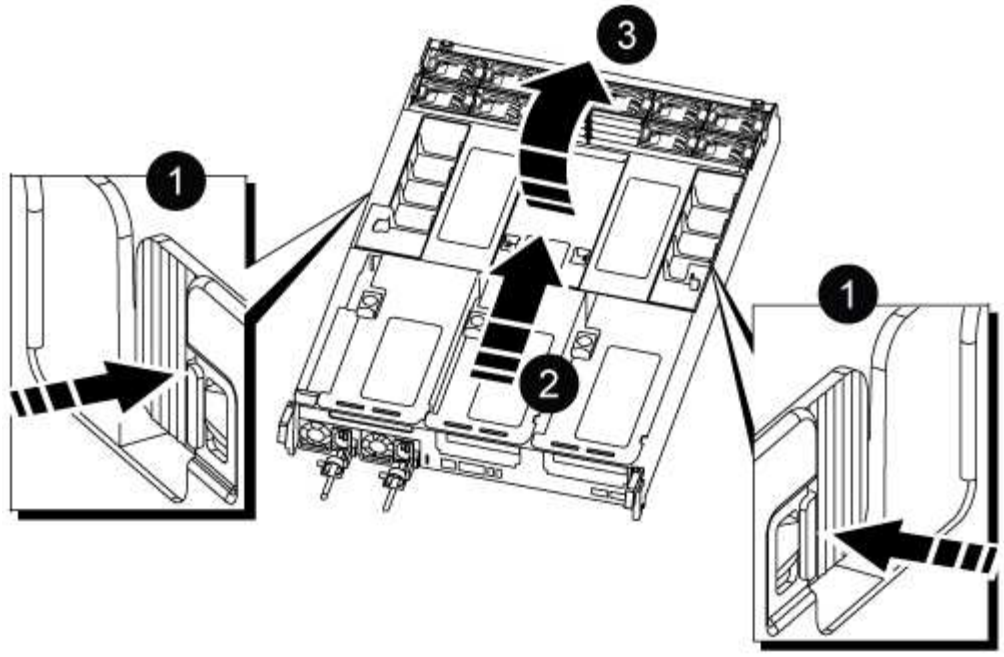
1	Locking latch
2	Locking pin

7. 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.

8. Place the controller module on a stable, flat surface, and then open the air duct:

   a. Press in the locking tabs on the sides of the air duct toward the middle of the controller module.
   b. Slide the air duct toward the fan modules, and then rotate it upward to its completely open position.



+

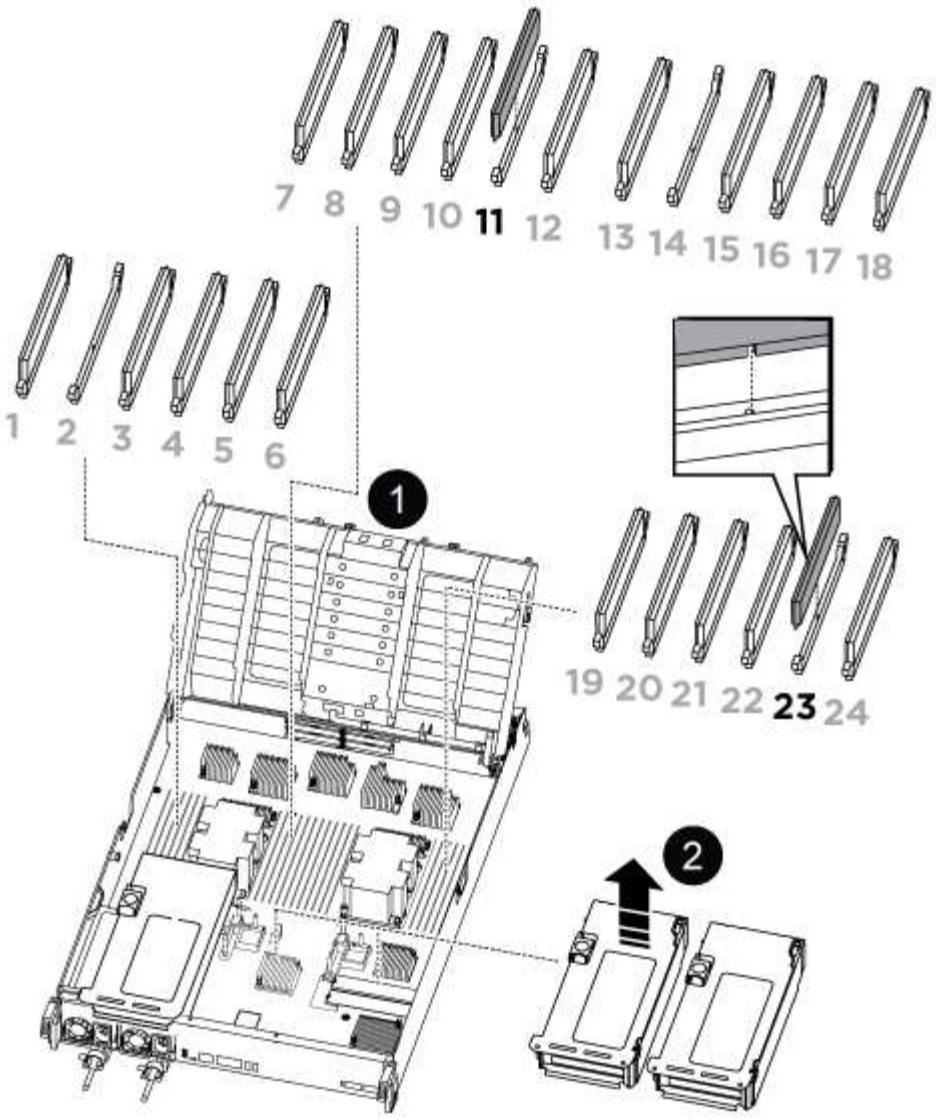
1	Air duct locking tabs
2	Slide air duct towards fan modules
3	Rotate air duct towards fan modules

Step 3: Replace the NVDIMM

To replace the NVDIMM, you must locate it in the controller module using the NVDIMM map label on top of the air duct or locating it using the LED next to the NVDIMM, and then replace it following the specific sequence of steps.

The NVDIMM LEDs blinks while destaging contents when you halt the system. After the destage is complete, the LED turns off.

1. If you are removing or moving an NVDIMM, unlock the locking latch on the riser, and then remove the applicable riser.



1	Air duct cover
2	Riser 2 and NVDIMM 11

2. Note the orientation of the NVDIMM in the socket so that you can insert the NVDIMM in the replacement controller module in the proper orientation.
3. Eject the NVDIMM from its slot by slowly pushing apart the two NVDIMM ejector tabs on either side of the NVDIMM, and then slide the NVDIMM out of the socket and set it aside.

   Carefully hold the NVDIMM by the edges to avoid pressure on the components on the NVDIMM circuit board.

4. Remove the replacement NVDIMM from the antistatic shipping bag, hold the NVDIMM by the corners, and then align it to the slot.

   The notch among the pins on the NVDIMM should line up with the tab in the socket.

5. Locate the slot where you are installing the NVDIMM.
6. Insert the NVDIMM squarely into the slot.

   The NVDIMM fits tightly in the slot, but should go in easily. If not, realign the NVDIMM with the slot and reinsert it.

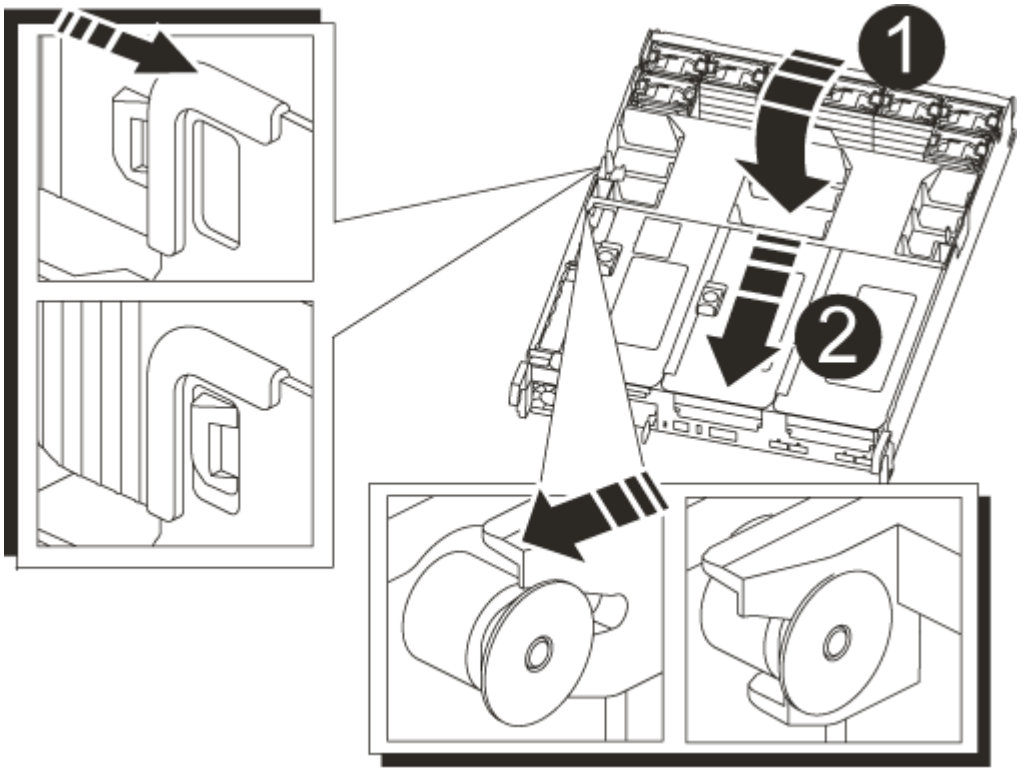
   Visually inspect the NVDIMM to verify that it is evenly aligned and fully inserted into the slot.

7. Push carefully, but firmly, on the top edge of the NVDIMM until the ejector tabs snap into place over the notches at the ends of the NVDIMM.
8. Reinstall any risers that you removed from the controller module.
9. Close the air duct.

Step 4: Reinstall the controller module and booting the system

After you replace a FRU in the controller module, you must reinstall the controller module and reboot it.

1. If you have not already done so, close the air duct:
   a. Swing the air duct all the way down to the controller module.
   b. Slide the air duct toward the risers until the locking tabs click into place.
   c. Inspect the air duct to make sure that it is properly seated and locked into place.



1	Locking tabs

2	Slide plunger

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.

   Do not completely insert the controller module in the chassis until instructed to do so.

3. Recable the system, as needed.

   If you removed the media converters (QSFPs or SFPs), remember to reinstall them if you are using fiber optic cables.

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. 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.

      Do not use excessive force when sliding the controller module into the chassis to avoid damaging 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.

   b. Rotate the locking latches upward, tilting them so that they clear the locking pins, and then lower them into the locked position.
   c. If you have not already done so, reinstall the cable management device.
   d. Interrupt the normal boot process by pressing `Ctrl-C`.

Step 4: Run diagnostics

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

Your system must be at the LOADER prompt to start diagnostics.

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

1. If the node to be serviced is not at the LOADER prompt, reboot the node: `system node halt -node node_name`

   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** from the displayed menu to enable running the diagnostics tests.

4. Select **Test Memory** from the displayed menu.
5. Select **NVDIMM Test** from the displayed menu.
6. 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.

Step 5: Return the failed part to NetApp

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.