Replace a DIMM - NS224 shelves

ONTAP Systems

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October 09, 2021

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You can replace a faulty DIMM nondisruptively in an NS224 drive shelf that is powered on, and while I/O is in progress.

Before you begin

- The shelf's partner NSM module must be up and running, and be cabled correctly so that your shelf maintains connectivity when you remove the NSM module with the failed FRU (target NSM module).

  NetApp Downloads: Config Advisor

- All other components in the system, including the other three DIMMs, must be functioning properly.

About this task

- Allow at least 70 seconds between removal and installation of the NVMe shelf module (NSM).

  This allows enough time for ONTAP to process the NSM removal event.

- **Best practice:** The best practice is to have current versions of NVMe shelf module (NSM) firmware and drive firmware on your system before replacing FRU components.

  Do not revert firmware to a version that does not support your shelf and its components.

  NetApp Downloads: Disk Shelf Firmware

  NetApp Downloads: Disk Drive Firmware

- If needed, you can turn on the shelf's location (blue) LEDs to aid in physically locating the affected shelf: `storage shelf location-led modify -shelf-name shelf_name -led-status on`

  If you do not know the *`shelf_name`* of the affected shelf, run the `storage shelf show` command.

  A shelf has three location LEDs: one on the operator display panel and one on each NSM module. Location LEDs remain illuminated for 30 minutes. You can turn them off by entering the same command, but using the `off` option.

- When you unpack the replacement DIMM, save all packing materials for use when you return the failed DIMM.

  If you need the RMA number or additional help with the replacement procedure, contact technical support at NetApp Support, 888-463-8277 (North America), 00-800-44-638277 (Europe), or +800-800-80-800 (Asia/Pacific).

- You can use the following video or the written steps to replace a DIMM.

  Replacing a DIMM in an NS224 drive shelf

Steps

1. Properly ground yourself.
2. Disconnect the cabling from the NSM module that contains the FRU that you are replacing:
   a. Disconnect the power cord from the power supply by opening the power cord retainer, and then unplug

the power cord from the power supply.

Power supplies do not have a power switch.

b. Disconnect the storage cabling from the NSM module ports.

Make a note of the NSM module ports that each cable is connected to. You reconnect the cables to the same ports when you reinsert the NSM module, later in this procedure.

3. Remove the NSM module from the shelf:

a. Loop your index fingers through the finger holes of the latching mechanisms on either side of the NSM module.

If you are removing the bottom NSM module, and if the bottom rail is obstructing access to the latching mechanisms, place your index fingers through the finger holes from the inside (by crossing your arms).

b. With your thumbs, press down and hold the orange tabs on top of the latching mechanisms.

The latching mechanisms raise, clearing the latching pins on the shelf.

c. Gently pull until the NSM module is about one third of the way out of the shelf, grasp the NSM module sides with both hands to support its weight, and then place it on a flat stable surface.

When you begin pulling, the latching mechanism arms extend from the NSM module and lock in their fully extended position.

4. Loosen the NSM module cover thumb screw and open the cover.

The FRU label on the NSM module cover shows the location of the four DIMMs, two on either side of the heat sink, in the center of the NSM module.

5. Physically identify the faulty DIMM.

When a DIMM is faulty, the system logs a warning message to the system console indicating which DIMM is faulty. Additionally, the DIMM attention (amber) LED, located on the board next to the DIMM slot, illuminates.

The LED for the faulty DIMM remains illuminated for 10 minutes after you remove the NSM module from the shelf.

6. Replace the faulty DIMM:

a. Note the orientation of the DIMM in the slot so that you can insert the replacement DIMM using the same orientation.

b. Eject the DIMM from its slot by slowly pushing apart the ejector tabs at both ends of the DIMM slot, and then lift the DIMM out of the slot.

Carefully hold the DIMM by the corners or edges to avoid pressure on the DIMM circuit board components.

The ejector tabs remain in the open position.

c. Remove the replacement DIMM from its antistatic shipping bag.

d. Hold the DIMM by the corners, and then insert the DIMM squarely into a slot.

   The notch on the bottom of the DIMM, among the pins, should line up with the tab in the slot.

   When inserted correctly, the DIMM should go in easily but fit tightly in the slot. If not, reinsert the DIMM.

e. Push down carefully, but firmly, on the top edge of the DIMM until the ejector tabs snap into place over the notches at both ends of the DIMM.

7. Close the NSM module cover, and then tighten the thumb screw.
8. Reinsert the NSM module into the shelf:
   a. Make sure that the latching mechanism arms are locked in the fully extended position.
   b. Using both hands, gently slide the NSM module into the shelf until the weight of the NSM module is fully supported by the shelf.
   c. Push the NSM module into the shelf until it stops (about half an inch from the back of the shelf).

      You can place your thumbs on the orange tabs on the front of each finger loop (of the latching mechanism arms) to push in the NSM module.

   d. Loop your index fingers through the finger holes of the latching mechanisms on either side of the NSM module.

      If you are inserting the bottom NSM module, and if the bottom rail is obstructing access to the latching mechanisms, place your index fingers through the finger holes from the inside (by crossing your arms).

   e. With your thumbs, press down and hold the orange tabs on top of the latching mechanisms.
   f. Gently push forward to get the latches over the stop.
   g. Release your thumbs from the tops of the latching mechanisms, and then continue pushing until the latching mechanisms snap into place.

      The NSM module should be fully inserted into the shelf and flush with the edges of the shelf.

9. Reconnect the cabling to the NSM module:
   a. Reconnect the storage cabling to the same two NSM module ports.

      Cables are inserted with the connector pull-tab facing up. When a cable is inserted correctly, it clicks into place.

   b. Reconnect the power cord to the power supply, and then secure the power cord with the power cord retainer.

      When functioning correctly, a power supply's bicolored LED illuminates green.

      Additionally, both NSM module port LNK (green) LEDs illuminate. If a LNK LED does not illuminate, reseat the cable.

10. Verify that the attention (amber) LEDs on the NSM module containing the failed DIMM and the shelf operator display panel are no longer illuminated.

    The NSM module attention LEDs turn off after the NSM module reboots and no longer detects a DIMM

issue. This can take three to five minutes.

11. Verify that the NSM module is cabled correctly, by running Active IQ Config Advisor.

    If any cabling errors are generated, follow the corrective actions provided.

    NetApp Downloads: Config Advisor