



Replace an NSM module - NS224 shelves

ONTAP Systems

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October 09, 2021

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Replace an NSM module - NS224 shelves

You can replace an impaired NVMe shelf module (NSM) 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 failed NSM module.

[NetApp Downloads: Config Advisor](#)

- All other components in the system must be functioning properly.

About this task

- Replacing the NSM module involves moving the DIMMs, fans and power supply from the impaired NSM module to the replacement NSM module.

You do not move the real-time clock (RTC) battery or boot media. They come preinstalled in the replacement NSM module.

- 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](#)

- Shelf (NSM) firmware is automatically updated (nondisruptively) on a new NSM module that has a non-current firmware version.

NSM module firmware checks occur every 10 minutes. An NSM module firmware update can take up to 30 minutes.

- 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 NSM module, save all packing materials for use when you return the failed NSM module.

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 an NSM module.

[Replacing an NSM module in an NS224 drive shelf](#)

Steps

1. Properly ground yourself.
2. Physically identify the impaired NSM module.

The system logs a warning message to the system console indicating which module is impaired. Additionally, the attention (amber) LED on the drive shelf operator display panel and the impaired module illuminate.

3. Disconnect the cabling from the impaired NSM module:
 - 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 on the replacement NSM module, later in this procedure.

4. 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.

5. Unpack the replacement NSM module, and set it on a level surface near the impaired NSM module.
6. Open the cover of the impaired NSM module and the replacement NSM module by loosening the thumbscrew on each cover.



The FRU label on the NSM module cover shows the location of the DIMMs and fans.

7. Move the DIMMs from the impaired NSM module to the replacement NSM module.
 - a. Note the orientation of the DIMMs in the slots so that you can insert the DIMMs into the replacement

NSM module using the same orientation.

- b. Eject a 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. Hold the DIMM by the corners, and then insert the DIMM squarely into a slot on the replacement NSM module.

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.

- d. 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.
 - e. Repeat substeps 7a through 7d for the remaining DIMMs.
8. Move the fans from the impaired NSM module to the replacement NSM module.
 - a. Firmly grasp a fan from the sides, where the blue touch points are located, and then lift it vertically to disconnect it from the socket.

You might need to gently rock the fan back and forth to disconnect it before lifting it out.

- b. Align the fan with the guides in the replacement NSM module, and then push down until the fan module connector is fully seated in the socket.
 - c. Repeat substeps 8a and 8b for the remaining fans.
9. Close the cover of each NSM module, and then tighten each thumbscrew.
 10. Move the power supply from the impaired NSM module to the replacement NSM module.

- a. Rotate the cam handle to its open (horizontal) position, and then grasp it.
- b. With your thumb, press the blue tab to release the locking mechanism.
- c. Pull the power supply out of the NSM module while using your other hand to support its weight.
- d. Using both hands, support and align the edges of the power supply with the opening in the replacement NSM module.
- e. Gently push the power supply into the NSM module until the locking mechanism clicks into place.



Do not use excessive force or you might damage the internal connector.

- f. Rotate the cam handle to the closed position.
11. Insert the replacement 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.

12. 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, reseal the cable.

13. Verify that the attention (amber) LED on the shelf operator display panel is no longer illuminated.

The operator display panel attention LED turns off after the NSM module reboots. This can take three to five minutes.

14. 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](#)

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