



Chassis

Install and maintain

NetApp
February 06, 2026

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Chassis

Chassis replacement workflow - FAS500f

Get started with replacing the chassis of your FAS500f storage system by reviewing the replacement requirements, shutting down the controllers, replacing the chassis, and verifying system operations.

1

Review the chassis replacement requirements

Review the chassis replacement requirements, including system compatibility, required tools, ONTAP credentials, and component functionality verification.

2

Prepare for the chassis replacement

Prepare for the chassis replacement by locating the system, gathering credentials and tools, verifying the replacement chassis, and labeling cables.

3

Shut down the controllers

Shut down the controllers to perform chassis maintenance safely.

4

Replace the chassis

Move the components from the impaired chassis to the replacement chassis.

5

Complete the chassis replacement

Complete the replacement by booting the controllers, performing giveback, and returning the failed chassis to NetApp.

Requirements to replace the chassis - FAS500f

Before replacing the chassis in your FAS500f system, ensure you meet the necessary requirements for a successful replacement. This includes verifying all other components in the system are functioning properly, verifying that you have local administrator credentials for ONTAP, the correct replacement chassis, and the necessary tools.

The chassis is the physical enclosure housing all the controller components such as the controller/CPU unit, power supply, and I/O.

Review the following requirements.

- Make sure all other components in the system are functioning properly; if not, contact [NetApp support](#) for assistance.
- Obtain local administrator credentials for ONTAP if you don't have them.

- Make sure that you have the necessary tools and equipment for the replacement.
- You can use the chassis replacement procedure with all versions of ONTAP supported by your system.
- The chassis replacement procedure is written with the assumption that you are moving the bezel, NVMe drives, and controller modules to the new chassis, and that the replacement chassis is a new component from NetApp.
- The chassis replacement procedure is disruptive. For a two-node cluster, you will have a complete service outage and a partial outage in a multi-node cluster.

What's next?

After reviewing the requirements, [prepare to replace the chassis](#).

Prepare to replace the chassis - FAS500f

Prepare to replace the impaired chassis in your FAS500f system by identifying the impaired chassis, verifying the replacement components, and labeling the cables and controller modules.

Steps

1. Connect to the serial console port to interface with and monitor the system.
2. Turn on the controller's Location LED:
 - a. Use the `system controller location-led show` command to display the current state of the Location LED.
 - b. Turn on the Location LED:

```
system controller location-led modify -node node1 -state on
```

The Location LED remains lit for 30 minutes.

3. Before opening the packaging, examine the packaging label and verify the following:
 - Component part number
 - Part description
 - Quantity in the box
4. Remove the contents from the packaging and save the packaging for returning the failed component to NetApp.
5. Label all cables connected to the storage system. This ensures proper recabling later in this procedure.
6. Ground yourself if not already grounded.

What's next?

After you've prepared to replace your FAS500f chassis hardware, you need to [shut down the controllers](#).

Shut down the controllers - FAS500f

Shut down the controllers in your FAS500f storage system to prevent data loss and ensure system stability when replacing the chassis.

This procedure is for systems with two node configurations. For more information about graceful shutdown

when servicing a cluster, see [Gracefully shutdown and power up your storage system Resolution Guide - NetApp Knowledge Base](#).

Before you begin

- Make sure you have the necessary permissions and credentials:
 - Local administrator credentials for ONTAP.
 - BMC accessibility for each controller.
- Make sure you have the necessary tools and equipment for the replacement.
- As a best practice before shutdown, you should:
 - Perform additional [system health checks](#).
 - Upgrade ONTAP to a recommended release for the system.
 - Resolve any [Active IQ Wellness Alerts and Risks](#). Make note of any faults presently on the system, such as LEDs on the system components.

Steps

1. Log into the cluster through SSH or log in from any node in the cluster using a local console cable and a laptop/console.
2. Stop all clients/host from accessing data on the NetApp system.
3. Suspend external backup jobs.
4. If AutoSupport is enabled, suppress case creation and indicate how long you expect the system to be offline:

```
system node autosupport invoke -node * -type all -message "MAINT=2h Replace chassis"
```

5. Identify the SP/BMC address of all cluster nodes:

```
system service-processor show -node * -fields address
```

6. Exit the cluster shell:

```
exit
```

7. Log into SP/BMC over SSH using the IP address of any of the nodes listed in the output from the previous step to monitor progress.

If you are using a console/laptop, log into the controller using the same cluster administrator credentials.

8. Halt the two nodes located in the impaired chassis:

```
system node halt -node <node1>,<node2> -skip-lif-migration-before-shutdown true -ignore-quorum-warnings true -inhibit-takeover true
```



For clusters using SnapMirror synchronous operating in StrictSync mode: `system node halt -node <node1>,<node2> -skip-lif-migration-before-shutdown true -ignore-quorum-warnings true -inhibit-takeover true -ignore-strict-sync-warnings true`

9. Enter **y** for each controller in the cluster when you see:

```
Warning: Are you sure you want to halt node <node_name>? {y|n}:
```

10. Wait for each controller to halt and display the LOADER prompt.

What's next?

After shutting down the controllers, [replace the chassis](#).

Replace the chassis - FAS500f

Replace the chassis in your FAS500f system when a hardware failure requires it. The replacement process involves removing the controllers and power supply units (PSUs), removing the drives, installing the replacement chassis, and reinstalling the chassis components.

To replace the chassis, you move the power supplies, hard drives, and controller module from the impaired chassis to the new chassis, and swap out the impaired chassis from with the new chassis of the same model as the impaired chassis.

Step 1: Remove the controller modules

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

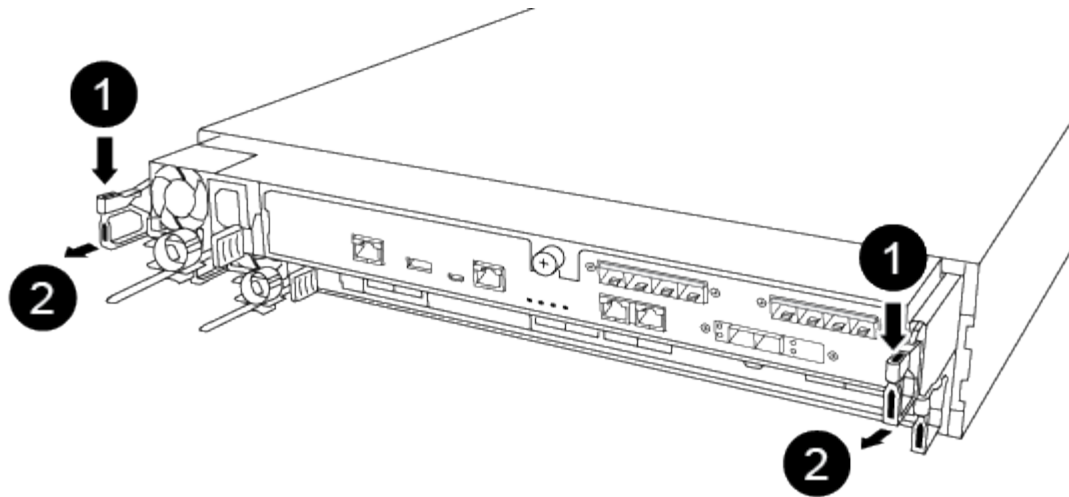
Use the following video or the tabulated steps to replace the chassis; it assumes the removal and replacement of the bezel:

[Animation - Replace the chassis](#)

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. Insert your forefinger into the latching mechanism on either side of the controller module, press the lever with your thumb, and gently pull the controller a few inches out of the chassis.



If you have difficulty removing the controller module, place your index fingers through the finger holes from the inside (by crossing your arms).



1	Lever
2	Latching mechanism

5. Using both hands, grasp the controller module sides and gently pull it out of the chassis and set it on a flat, stable surface.
6. Set the controller module aside in a safe place, and repeat these steps for the other controller module in the chassis.

Step 2: Move drives to the new chassis

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

1. Gently remove the bezel from the front of the system.
2. Remove the 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 drive from the midplane, and then gently slide the drive out of the chassis.

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



When removing a drive, always use two hands to support its weight.



Drives are fragile. Handle them as little as possible to prevent damage to them.

3. Align the drive from the old chassis with the same bay opening in the new chassis.
4. Gently push the drive into the chassis as far as it will go.

The cam handle engages and begins to rotate upward.

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

and against the drive holder.

Be sure to close the cam handle slowly so that it aligns correctly with the front of the drive carrier. It clicks when it is secure.

6. Repeat the process for the remaining drives in the system.

Step 3: Replace 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.

1. Remove the screws from the chassis mount points.
2. With two people, slide the old chassis off the rack rails in a system cabinet or equipment rack, and then set it aside.
3. If you are not already grounded, properly ground yourself.
4. Using two 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.
7. If you have not already done so, install the bezel.

Step 4: Install the controller modules

After you install the controller modules into the new chassis, you need to boot the system.

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.

1. 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.

2. Recable the console to the controller module, and then reconnect the management port.
3. Insert the controller module into the chassis:
 - a. Ensure the latching mechanism arms are locked in the fully extended position.
 - b. Using both hands, align and gently slide the controller module into the latching mechanism arms until it stops.
 - c. Place your index fingers through the finger holes from the inside of the latching mechanism.
 - d. Press your thumbs down on the orange tabs on top of the latching mechanism and gently push the controller module over the stop.
 - e. Release your thumbs from the top of the latching mechanisms and continue pushing until the latching mechanisms snap into place.

The controller module should be fully inserted and flush with the edges of the chassis.

- a. Plug the power cords into the power supplies, reinstall the power cable locking collar, and then connect the power supplies to the power source.

The controller module begins to boot as soon as power is restored. Be prepared to interrupt the boot process.

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

What's next?

After you have replaced the impaired FAS500f chassis and reinstalled the components, you need to [complete the chassis replacement](#)

Complete the chassis replacement - FAS500f

Reboot the controllers, verify system health, and return the failed part to NetApp to complete the final step in the FAS500f chassis replacement procedure.

You must verify the HA state of the chassis, and return the failed part to NetApp, as described in the RMA instructions shipped with the kit.

Step 1: Verify and set 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.

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`
- `mcc`
- `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. Reinstall the bezel on the front of the system.

Step 2: Return the failed part to NetApp

Return the failed part to NetApp, as described in the RMA instructions shipped with the kit. See the [Part Return and Replacements](#) page for further information.

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