Chassis

Install and maintain

NetApp
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Chassis

Chassis replacement workflow - ASA A70 and ASA A90

Follow these workflow steps to replace your chassis.

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To replace the chassis module, you must meet certain requirements.

2. **Shut down the controllers**

Shut down the controllers so you can perform maintenance on the chassis.

3. **Replace the chassis**

Replacing the chassis includes moving the power supplies, hard drives, and controller module from the impaired chassis to the new chassis, and swapping out the impaired chassis with the new chassis of the same model as the impaired chassis.

4. **Complete chassis replacement**

Verify the HA state of the chassis and return the failed part to NetApp.

Chassis replace requirements - ASA A70 and ASA A90

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

Before replacing the chassis, make sure to review the following requirements.

- Make sure all other components in the system are functioning properly; if not, contact technical support.
- 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.

Shut down the controllers - ASA A70 and ASA A90

This procedure is for 2-node, non-MetroCluster configurations only. If you have a system with more than two nodes, see How to perform a graceful shutdown and power up of one HA pair in a 4-node cluster.

Before you begin

You need:

- Local administrator credentials for ONTAP.
- NetApp onboard key management (OKM) cluster-wide passphrase if using storage encryption or NVE/NAE.
- BMC accessability for each controller.
- Stop all clients/host from accessing data on the NetApp system.
- Suspend external backup jobs.
- Necessary tools and equipment for the replacement.

If the system is a NetApp StorageGRID or ONTAP S3 used as FabricPool cloud tier, refer to the Gracefully shutdown and power up your storage system Resolution Guide after performing this procedure.

If using SSDs, refer to SU490: (Impact: Critical) SSD Best Practices: Avoid risk of drive failure and data loss if powered off for more than two months

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. Turn off AutoSupport and indicate how long you expect the system to be offline:

   ```
   system node autosupport invoke -node * -type all -message "MAINT=8h Power Maintenance"
   ```

3. Identify the SP/BMC address of all nodes:

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

4. Exit the cluster shell: `exit`
5. Log into SP/BMC over SSH using the IP address of any of the nodes listed in the output from the previous step.

   If your’re using a console/laptop, log into the controller using the same cluster administrator credentials.

   Open an SSH session to every SP/BMC connection so that you can monitor progress.

6. Halt the 2 nodes located in the impaired chassis:

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

7. Enter **y** for each controller in the cluster when you see *`Warning: Are you sure you want to halt node "cluster <node-name> number"? {y|n}:`*
8. Wait for each controller to halt and display the LOADER prompt.

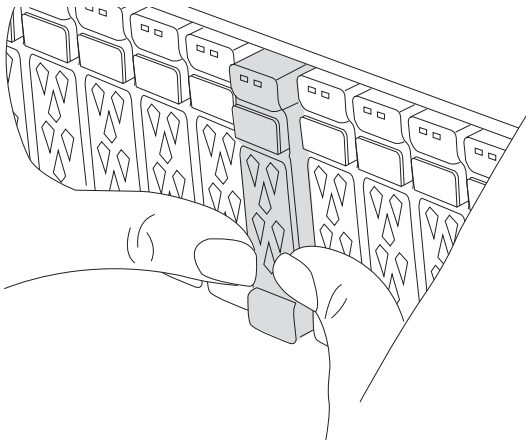
Move and replace hardware - ASA A70 and ASA A90

Move the hard drives, and controller module from the impaired chassis to the new chassis, and swap out the impaired chassis with the new chassis of the same model as the impaired chassis.

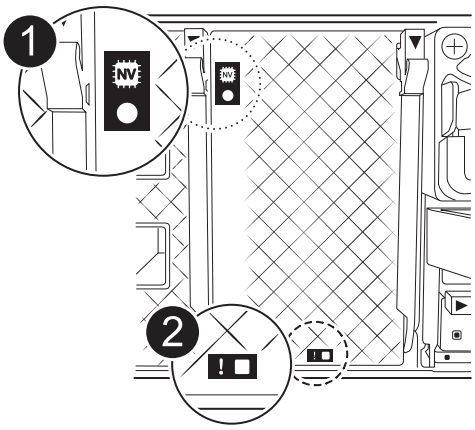
Step 1: Remove the controller module

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

1. On the front of the chassis, use your thumbs to firmly push each drive in until you feel a positive stop. This ensures that the drives are firmly seated against the chassis midplane.



2. Check the amber NVRAM that status LED located in slot 4/5 on the back of the impaired controller module is off. Look for the NV icon.



1	NVRAM status LED
2	NVRAM attention LED

If the NVRAM status LED is flashing, it could mean the controller module was not taken over or halted properly (uncommitted data). If the impaired controller module was not successfully taken over by the partner controller module, contact NetApp Support before continuing with this procedure.

The general behavior of the NVRAM status LED on the impaired controller module is as follows:

- The NVRAM status LED flashes when power is removed from the controller module and the storage system is in the "waiting for giveback" state, or the controller module is not taken over or halted properly (uncommitted data).
- The NVRAM status LED flashes when the controller module is removed from the chassis and could mean the controller module is not taken over or halted properly (uncommitted data). Confirm that the controller module has been cleanly takeover by the partner controller module or the impaired controller module shows `waiting for giveback`. Then, the flashing LED can be ignored (and the controller module can be removed from the chassis).

3. If you are not already grounded, properly ground yourself.
4. Unplug the controller module power supply cables from the controller module power supplies (PSU).

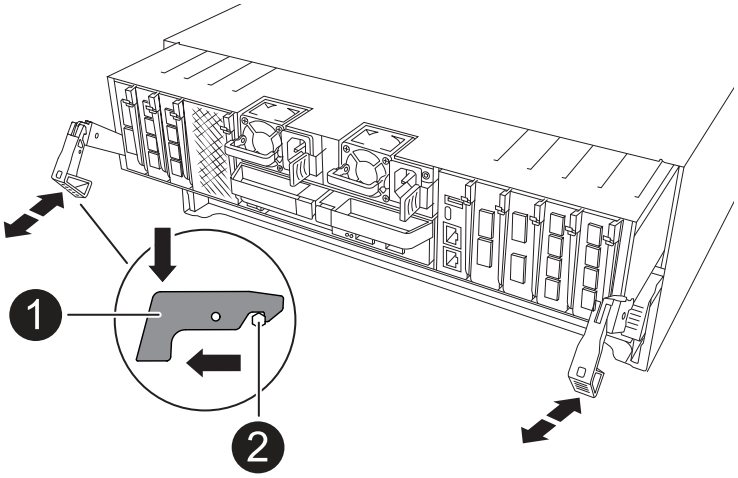
   If your system has DC power, disconnect the power block from the PSUs.

5. 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.

6. Remove the cable management device from the controller module.
7. 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	a Locking latch
2	Locking pin

8. Slide the controller module out of the chassis and place it on a flat, stable surface.

   Make sure that you support the bottom of the controller module as you slide it out of the chassis.

9. 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. Keep track of what drive bay each drive was from and set the drives aside on a static-free cart or table.

Step 3: Replace 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. 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.
4. Slide the chassis all the way into the equipment rack or system cabinet.
5. Secure the front of the chassis to the equipment rack or system cabinet, using the screws you removed from the old chassis.
6. Install the drives from the old chassis into the replacement chassis:
   a. Align the drive from the old chassis with the same bay opening in the new chassis.
7. Gently push the drive into the chassis as far as it will go.

   The cam handle engages and begins to rotate upward.

   a. 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 carrier.

      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.

   b. Repeat the process for the remaining drives in the system.
8. If you have not already done so, install the bezel.

Step 4: Reinstall the controller modules

Reinstall the controller module and reboot it.

1. Ensure the air duct is completely closed by rotating it down as far as it will go.

   It must lie flush against the controller module sheet metal.

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 transceivers (QSFPs or SFPs), remember to reinstall them if you are using fiber optic cables.

4. 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.

a. Rotate the locking latches upward into the locked position.

5. Plug the power cords into the power supplies.

> If you have DC power supplies, reconnect the power block to the power supplies after the controller module is fully seated in the chassis.

The controller module boots when power is restored. If it boots to the LOADER prompt, reboot the controller with the `boot_ontap` command.

6. Restore automatic giveback if you disabled it by using the `storage failover modify -node local -auto-giveback true` command.
7. If AutoSupport is enabled, restore/unsuppress automatic case creation by using the `system node autosupport invoke -node * -type all -message MAINT=END` command.
8. Repeat the preceding steps to install the second controller into the new chassis.

Complete the chassis replacement - ASA A70 and ASA A90

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` (not supported in ASA)

   b. Confirm that the setting has changed: `ha-config show`
3. If you have not already done so, recable the rest of your 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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