Chassis

Install and maintain

NetApp
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Table of Contents

Chassis

Chassis replacement workflow - AFX 1K

Get started with replacing the chassis of your AFX 1K storage system by reviewing the replacement requirements, shutting down the controller, replacing the chassis, and verifying system operations.

1. **Review the chassis replace requirements**

Review the chassis replacement requirements.

2. **Prepare for the chassis replacement**

Prepare to replace the chassis by locating the system, gathering system credentials and necessary tools, verifying the replacement chassis was received, and labeling the system cables.

3. **Shut down the controller**

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

4. **Replace the chassis**

Replace the chassis by moving the components from the impaired chassis to the replacement chassis.

5. **Complete the chassis replacement**

Complete the chassis replacement by bringing the controller up, giving back the controller, and returning the failed chassis to NetApp.

Requirements to replace the chassis - AFX 1K

Before replacing the chassis in your AFX 1K storage 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 chassis housing all the system components such as the fans, controller/CPU unit, NVRAM12, system management module, I/O cards and blanking modules, and PSUs.

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, fans, controller module, NVRAM12, system management module, I/O cards and blanking modules, and PSUs to the new chassis, and that the replacement chassis is a new component from NetApp.

What’s next?

After reviewing the requirements, get ready to replace the chassis.

Prepare to replace the chassis - AFX 1K

Prepare to replace the impaired chassis in your AFX 1K storage system by identifying the impaired chassis, verifying the replacement components, and labeling the cables and controller module.

Step 1: Locate and monitor your system

You should open a console session and save sessions logs for future reference, and also turn on the system location LED to find the impaired chassis.

Steps

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

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

      The Location LED remains lit for 30 minutes.

Step 2: Verify replacement components

You should verify that you received the necessary components, remove them from packaging, and save the packaging.

Steps

1. Before opening the packaging, you should look at the packaging label and verify:
   - Component part number.
   - Part description.
   - Quantity in the box.
2. Remove the contents from the packaging and use the packaging to returning the failed component to NetApp.

Step 3: Label the cables

You should label the cables before removing them from the I/O modules on the back of the system.

Steps

1. Label all the cables associated with the storage system. This aids recabling later in this procedure.
2. If you are not already properly grounded, ground yourself.

What's next?

After you've prepared to replace your AFX 1K chassis hardware, you need to shut down the controller.

Shut down the controller to replace the chassis - AFX 1K

Shut down the controller in your AFX 1K storage system to prevent data loss and ensure system stability when replacing the chassis.

To shut down the impaired controller, you must determine the status of the controller and, if necessary, perform a storage failover takeover of the controller so that the healthy controller continues to serve data from the impaired controller storage.

About this task

- If you have a cluster with more than four nodes, it must be in quorum. To view cluster information about your nodes, use the `cluster show` command. For more information about the `cluster show` command, see View node-level details in an ONTAP cluster.
- If the cluster is not in quorum or if the health or eligibility of any controller (other than the impaired controller) shows as false, you must correct the issue before shutting down the impaired controller. See Synchronize a node with the cluster.

Steps

1. If AutoSupport is enabled, suppress automatic case creation by invoking an AutoSupport message:

   ```
   system node autosupport invoke -node * -type all -message MAINT=<# of hours>h
   ```

   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 impaired controller:

   ```
   storage failover modify -node impaired-node -auto-giveback-of false
   ```

   When you see *Do you want to disable auto-giveback?*, enter `y`.

   a. If you are running ONTAP version 9.17.1 and the impaired controller cannot be brought up or is already taken over, you must take the HA interconnect link down from the healthy controller before booting up the impaired controller. This prevents the impaired controller from performing automatic giveback.

      ```
      system ha interconnect link off -node healthy-node -link 0
      ```

      ```
      system ha interconnect link off -node healthy-node -link 1
      ```

3. Take the impaired controller to the LOADER prompt:

If the impaired controller is displaying…	Then…
The LOADER prompt	Go to the next step.
System prompt or password prompt	Take over or halt the impaired controller from the healthy controller: `storage failover takeover -ofnode impaired_node_name -halt true` The *-halt true* parameter brings the impaired node to the LOADER prompt.

What's next?

After you've shut down the controller, you need to replace the chassis.

Replace the chassis - AFX 1K

Replace the chassis of your AFX 1K storage system when a hardware failure requires it. The replacement process involves removing the controller, I/O cards, NVRAM12 module, system management module, and power supply units (PSUs), installing the replacement chassis, and reinstalling the chassis components.

Step 1: Remove the PSUs and cables

You need to remove the two power supply units (PSUs) before removing the controller.

Steps

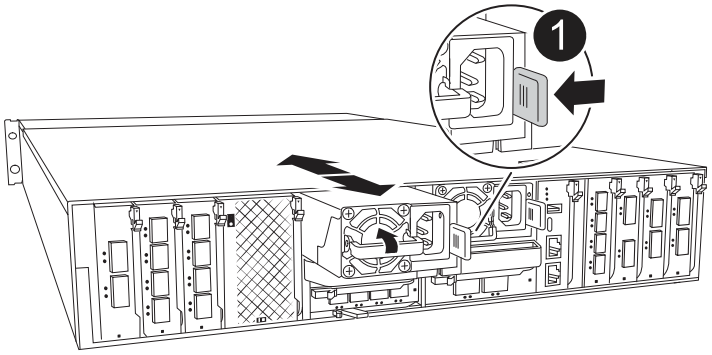
1. Remove the PSUs:
   a. If you are not already grounded, properly ground yourself.
   b. Unplug power cords from the PSUs.

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

   c. Remove the two PSUs from the rear of the chassis by rotating the PSU handle up so that you can pull the PSU out, press the PSU locking tab, and then pull PSU out of the chassis.

      The PSU is short. Always use two hands to support it when removing it from the controller module so that it does not suddenly swing free from the controller module and injure you.



1	Terracotta PSU locking tab

d. Repeat these steps for the second PSU.

2. Remove the cables:

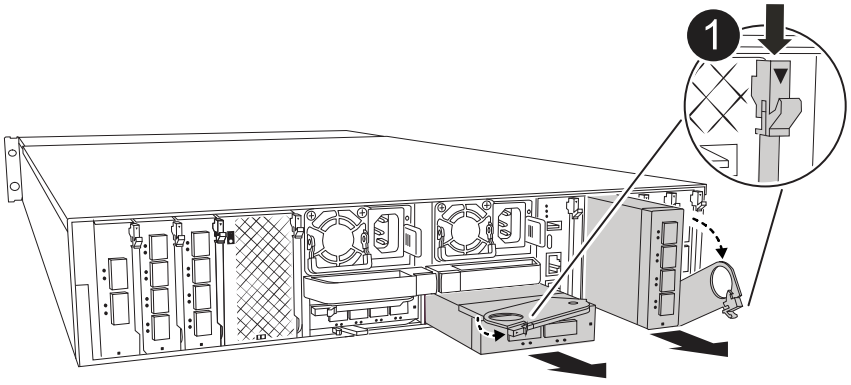
a. Unplug the system cables and any SFP and QSFP modules (if needed) from the controller module, but leave them in the cable management device to keep them organized.

Cables should have been labeled at the beginning of this procedure.

b. Remove the cable management device from the chassis and set it aside.

Step 2: Remove the I/O cards, NVRAM12, and system management module

1. Remove the target I/O module from the chassis:



1	I/O cam latch

a. Depress the cam button on the target module.

b. Rotate the cam latch away from the module as far as it will go.

c. Remove the module from the chassis by hooking your finger into the cam lever opening and pulling the module out of the chassis.

Make sure that you keep track of which slot the I/O module was in.

d. Set the I/O module aside and repeat these steps for any other I/O modules.

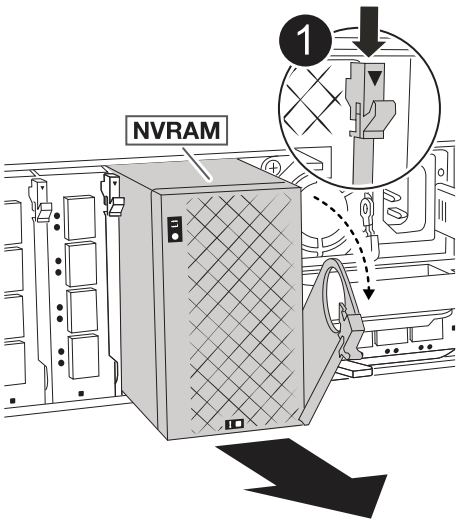
2. Remove the NVRAM12 module:

   a. Depress the locking cam button.

      The cam button moves away from the chassis.

   b. Rotate the cam latch down as far as it will go.

   c. Remove the NVRAM module from the chassis by hooking your finger into the cam lever opening and pulling the module out of the chassis.



1	NVRAM12 cam latch

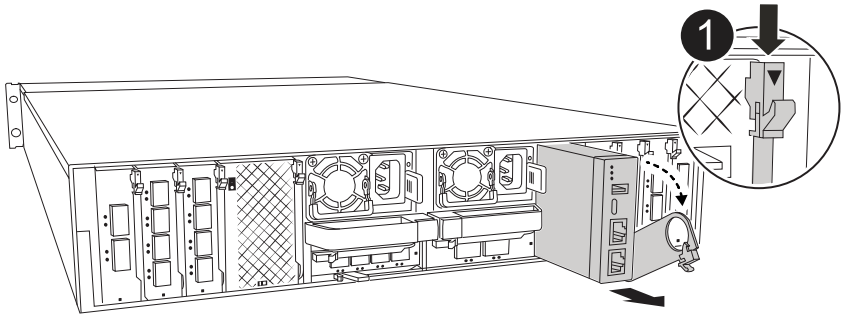
   d. Set the NVRAM module on a stable surface.

3. Remove the system management module:

   a. Depress the cam button on the System Management module.

   b. Rotate the cam lever down as far as it will go.

   c. Loop your finger into the hole on the cam lever and pull the module straight out of the system.

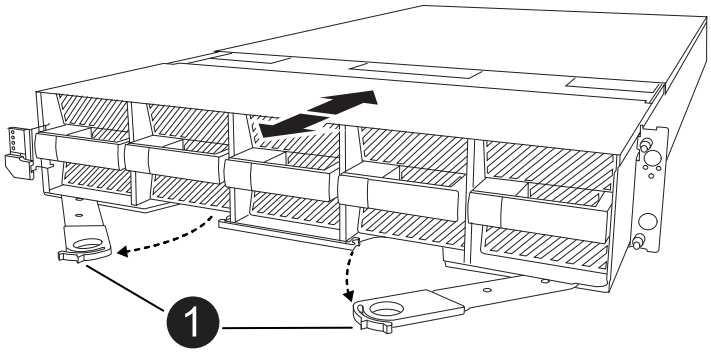


1	System Management module cam latch

Step 3: Remove the controller module

1. On the front of the unit, hook your fingers into the holes in the locking cams, squeeze the tabs on the cam levers, and gently, but firmly rotate both latches toward you at the same time.

   The controller module moves slightly out of the chassis.



1	Locking cam latches

2. 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.

Step 4: Replace the impaired chassis

Remove the impaired chassis and install the replacement chassis.

Steps

1. Remove the impaired chassis:
   a. Remove the screws from the chassis mount points.
   b. Slide the impaired chassis off the rack rails in a system cabinet or equipment rack, and then set it aside.
2. Install the replacement chassis:
   a. 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.
   b. Slide the chassis all the way into the equipment rack or system cabinet.
   c. Secure the front of the chassis to the equipment rack or system cabinet, using the screws you removed from the impaired chassis.

Step 5: Install the chassis components

After the replacement chassis is installed, you need to install the controller module, recable the I/O modules and system management module, and then reinstall and plug in the PSUs.

Steps

1. Install the controller module:
   a. Align the end of the controller module with the opening in the front of the chassis, and then gently push

the controller all the way into the chassis.

b. Rotate the locking latches into the locked position.

2. Install the I/O cards at the rear of the chassis:
   a. Align the end of the I/O module with the same slot in the replacement chassis as in the impaired chassis, and then gently push the module all the way into the chassis.
   b. Rotate the cam latch upward into the locked position.
   c. Repeat these steps for any other I/O modules.
3. Install the system management module at the rear of the chassis:
   a. Align the end of the system management module with the opening in the chassis, and then gently push the module all the way into the chassis.
   b. Rotate the cam latch upward into the locked position.
   c. If you have not already done so, reinstall the cable management device and reconnect the cables to the I/O cards and system management module.

      If you removed the media converters (QSFPs or SFPs), remember to reinstall them.

      Make sure that the cables are connected according to the cable labels.
4. Install the NVRAM12 module in the back of the chassis at the rear of the chassis:
   a. Align the end of the NVRAM12 module with the opening in the chassis, and then gently push the module all the way into the chassis.
   b. Rotate the cam latch upward into the locked position.
5. Install the PSUs:
   a. Using both hands, support and align the edges of the PSU with the opening in the chassis.
   b. Gently push the PSU into the chassis until the locking tab clicks into place.

      The power supplies will only properly engage with the internal connector and lock in place one way.

      To avoid damaging the internal connector, do not use excessive force when sliding the PSU into the system.
6. Reconnect the PSU power cables to both of the PSUs and secure each power cable to the PSU using the power cable retainer.

   If you have DC power supplies, reconnect the power block to the power supplies after the controller module is fully seated in the chassis and secure the power cable to the PSU with the thumbscrews.

   The controller modules begin to boot as soon as PSUs are installed and power is restored.

What's next?

After replacing the impaired AFF A1K chassis and reinstalling its components, complete the chassis replacement.

Complete the chassis replacement - AFX 1K

Reboot the controller, verify system health, and return the failed part to NetApp to

complete the final step in the AFX 1K chassis replacement procedure.

Step 1: Boot the controllers and give back the controllers

After the controllers reboot, boot ONTAP and give back the controllers.

Steps

1. Check the console output:
   a. If the controller stop at the LOADER prompt, boot the controller with the `boot_ontap` command.
   b. Once the node boots and provides the login prompt, log into the partner controller and check that the replaced controller is ready for giveback with `storage failover show` command.
2. Perform the giveback:
   a. Connect the console cable to the partner controller.
   b. Press <enter> when console messages stop.
      - If you see the *login* prompt, go to the next step.
      - If you do not see login prompt, log into the partner node.
   c. Give back only the root with override-destination-checks option:

      ```
      storage failover giveback -ofnode impaired-node -only-root true -override
      -destination-checks true
      ```

      > The following command is only available in the Diagnostic mode privilege level. For more information on privilege levels, see Understand the privilege levels for ONTAP CLI commands.

      If you encounter errors, contact NetApp Support.

   d. Wait 5 minutes after the giveback report completes, and check failover status and giveback status:

      `storage failover show` and `storage failover show-giveback`

      > The following command is only available in the Diagnostic mode privilege level.

   e. If the HA internconnect links were taken down, bring them back up:

      ```
      system ha interconnect link on -node healthy-node -link 0

      system ha interconnect link on -node healthy-node -link 1
      ```

   f. Return the impaired controller to normal operation by giving back its storage:

      `storage failover giveback -ofnode` *`impaired_node_name`*

   g. If automatic giveback was disabled, reenable it: `storage failover modify -node` *`impaired_node_name`* `-auto-giveback-of` *`true`*
   h. If AutoSupport is enabled, restore/unsuppress automatic case creation: `system node autosupport invoke -node * -type all -message MAINT=END`

Step 2: Verify storage system health

After the controller gives back the storage, check the health using Active IQ Config Advisor.

Steps

1. After the giveback is complete, run Active IQ Config Advisor to verify the health of the storage system.
2. Correct any issues you encounter.

Step 3: 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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