Replacing an NVRAM adapter

The NVRAM PCI adapter provides nonvolatile memory to your system and acts as a memory buffer. It also serves as the interconnect adapter in an HA pair. To replace the adapter, you must select the correct procedure for your system.

This procedure applies only to systems running
Data ONTAP® 8.1.x
or earlier versions

About this task

- This procedure is only for systems running Data ONTAP 8.1.x or earlier.
- In these procedures, *NVRAM* refers to the NVRAM8 adapter and its components.
- You must replace the failed component with a replacement FRU component you received from your provider.
- All other components in the system must be functioning properly; if not, you must contact technical support.

  Note: If you are replacing just the NVRAM adapter, you must remove the battery from that adapter and install it in the replacement adapter.
- The term *system* refers to FAS, V-Series, and SA systems within this platform family.

  The procedures apply to all platforms, unless otherwise indicated, except that clustered Data ONTAP procedures do not apply to SA systems.

Choices

- Replacing an NVRAM adapter in a system operating in 7-Mode on page 1
- Replacing an NVRAM adapter on a Cluster-Mode system on page 15
- Completing the replacement process on page 40

Replacing an NVRAM adapter in a system operating in 7-Mode

You must use a specific procedure to replace the adapter in a system operating in 7-Mode. Because the disk ownership ID is based on the NVRAM adapter serial number, as the last part of the procedure you must reassign the system ID of the new adapter to the disks attached to the system.

Steps

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3. Shutting down the target controller on page 5
4. Removing cables and media adapters from the NVRAM adapter on page 6
5. Opening the system on page 6

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6. Removing the NVRAM adapter on page 7
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12. Performing a final takeover and giveback from the impaired node on page 15

Noting the system ID (if it is a V-Series system)

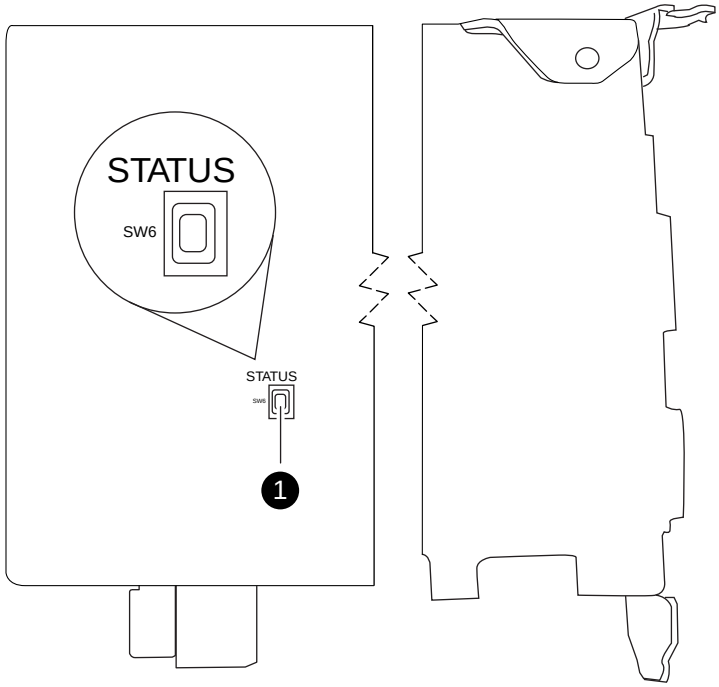
If you have a V-Series system, first note the system ID from the system configuration file.

Verifying that the new NVRAM adapter has no content in memory

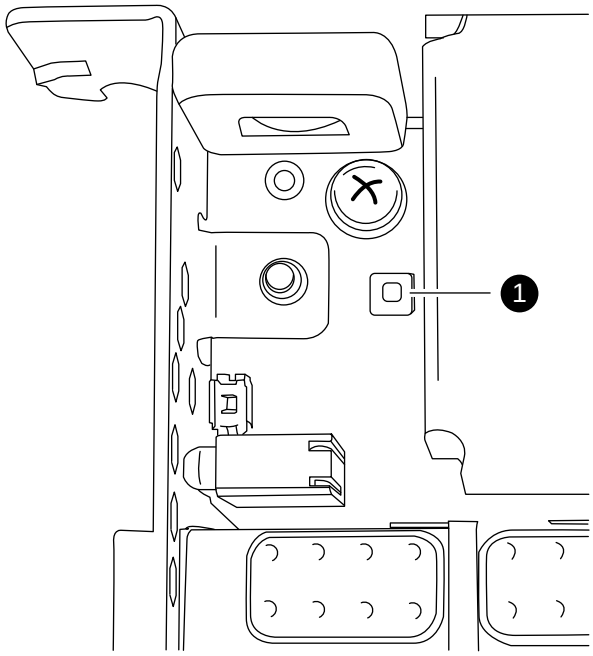
Before installing a replacement NVRAM adapter, you must ensure that the *new* NVRAM adapter (the adapter that is going to replace the bad adapter) has no content in the memory to avoid problems that might occur when it is installed in the system.

Steps

1. While pressing down the status button on the bottom of the NVRAM adapter, check the destage status LED on the board.



1	Button for activating the destage status LED

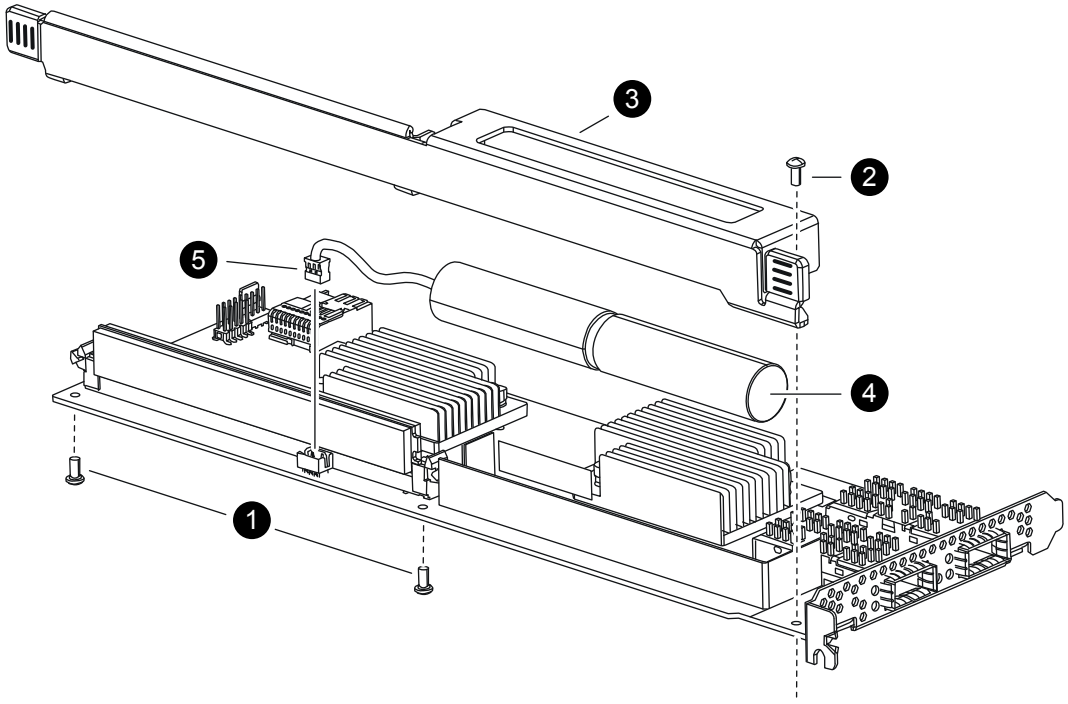


1	Destage status LED The LED remains illuminated while the destage status button is pressed.

If the LED is...	Then...
Green	The system was cleanly shut down and there is no customer data on the adapter.
Red	The adapter has content in the onboard flash.
Amber	This adapter is in an illegal or undefined state, typically caused by an unknown failure. You should not use the adapter when you encounter this status.

2. If the NVRAM adapter has content in the onboard flash, disconnect the battery to clear the flash:

a. Using the Phillips screwdriver, remove the three battery cover screws; there are two screws on the back of the adapter and one on the front near the lifting tab. After removing the screws, set them aside.



1	Back battery cover screws
2	Front battery cover screw
3	Battery cover
4	NVRAM battery
5	NVRAM battery plug

b. Slide the battery cover toward the top of the adapter until the screw mounting tabs clear the adapter, and then lift the battery cover clear.
c. Unplug the battery cable from the NVRAM adapter.
d. Wait a few seconds and then reattach the battery cable.

   Align the battery plug with the edge of the socket on the NVRAM adapter, and then plug in the battery and make sure that the cable connector has Pin 1 (arrow) facing toward the NVRAM adapter when installing it.
e. Press the status button and recheck the destage LED as described in Step 1 to confirm the onboard flash is clear.
f. Secure the battery holder to the NVRAM adapter using the screws you removed when detaching the battery holder.

   Attention: Do not over-tighten the cover screws because doing so could crack the adapter.

Shutting down the target controller

You shut down or take over the target controller using different procedures, depending on whether it is part of an HA pair or a stand-alone system.

Choices

- Shutting down a node in an HA pair on page 5
- Shutting down the node in a stand-alone system on page 6

Shutting down a node in an HA pair

To shut down the node, you must determine the status of the node and, if necessary, take over the node so that the partner continues to serve data from the node's storage.

About this task

Your system's configuration determines whether you turn off your power supplies after shutting down the node:

- If you have two controller modules in the same chassis, you must leave the power supplies turned on to provide power to the healthy node.
- If you have one controller module in the chassis that is either part of an HA pair or in a stand-alone configuration, you must turn off the power supplies in the impaired node chassis.

Steps

1. Check the status of the impaired node by entering the following command from the healthy node's console:

   `cf status`

2. Take one of the following actions, depending on the result of the `cf status` command:

If the status of the impaired node is that...	Then...
It has been taken over by the healthy node and halted	Go to step 5.
It has been taken over by the healthy node and shows the Waiting for giveback... message	Go to the next step.
It has taken over the healthy node	**a.** Resolve any issues on the healthy node that lead to the takeover. **b.** Give back the healthy node using the `cf giveback` command from the impaired node
The impaired node has not been taken over by the healthy node and is running	Enter the following command from the healthy node's prompt: `cf takeover`

3. Wait at least two minutes after takeover of the impaired node to ensure that the takeover completed successfully.
4. With the impaired node showing the Waiting for giveback message or halted, shut it down, depending on your configuration:

Is the Service Processor (SP) configured?	Then...
Yes	Log in to the SP and issue the following command: `system power off`
No, and the system is in a dual-chassis HA pair in which each controller is in a separate chassis.	Manually shut down the power supplies on the impaired node.

Is the Service Processor (SP) configured?	Then...
No, and the system is in a single-chassis HA pair in which both controllers are in the same chassis and share power supplies.	At the impaired node's prompt, press **Ctrl-C** and respond **Y** to halt the node.

5. If the system is in a dual-chassis HA pair, unplug both power cords from the power source.

Shutting down the node in a stand-alone system

For a node that is not configured with a high-availability (HA) partner, you must perform a clean shutdown (ensuring that all data has been written to disk) and disconnect the power supplies.

Steps

1. Halt the system from the system console:

   halt

2. If you are not already grounded, properly ground yourself.
3. Turn off the power supplies, unplug the power cords from the power source, and then remove the power cords.

Removing cables and media adapters from the NVRAM adapter

Before you remove the old NVRAM adapter from the controller module, you must remove the cables and, if you are using fiber interconnect cables, the media adapters.

Steps

1. If you are not already grounded, properly ground yourself.
2. Remove the cables and carefully remove any media converters (QSFPs) from the NVRAM adapter.

   Leave the cables in the cable management tray so that when you reinstall the cable management tray, the cables are already aligned.

Opening the system

To access components inside the controller module, you must open the system.

Steps

1. If you are not already grounded, properly ground yourself.
2. Loosen the hook and loop strap binding the cables to the cable management tray, and then unplug the system cables and SFPs (if needed), from the controller module, and keep track of where the cables were connected.

   Leave the cables in the cable management tray, so that when you reinstall the cable management tray, the cables are organized.
3. Grasp the cable management tray by the side, gently push one side of the tray so that the arm slides across and off the retaining pin, slide the other arm off the retaining pin on the other side of the controller module, and then lift it off the back of the controller module and set it aside.
4. Push in the release latch on the left side of the controller module and slide the controller module out of the system and set it on a stable, antistatic surface.

   Make sure that you support the bottom of the controller module with your free hand.

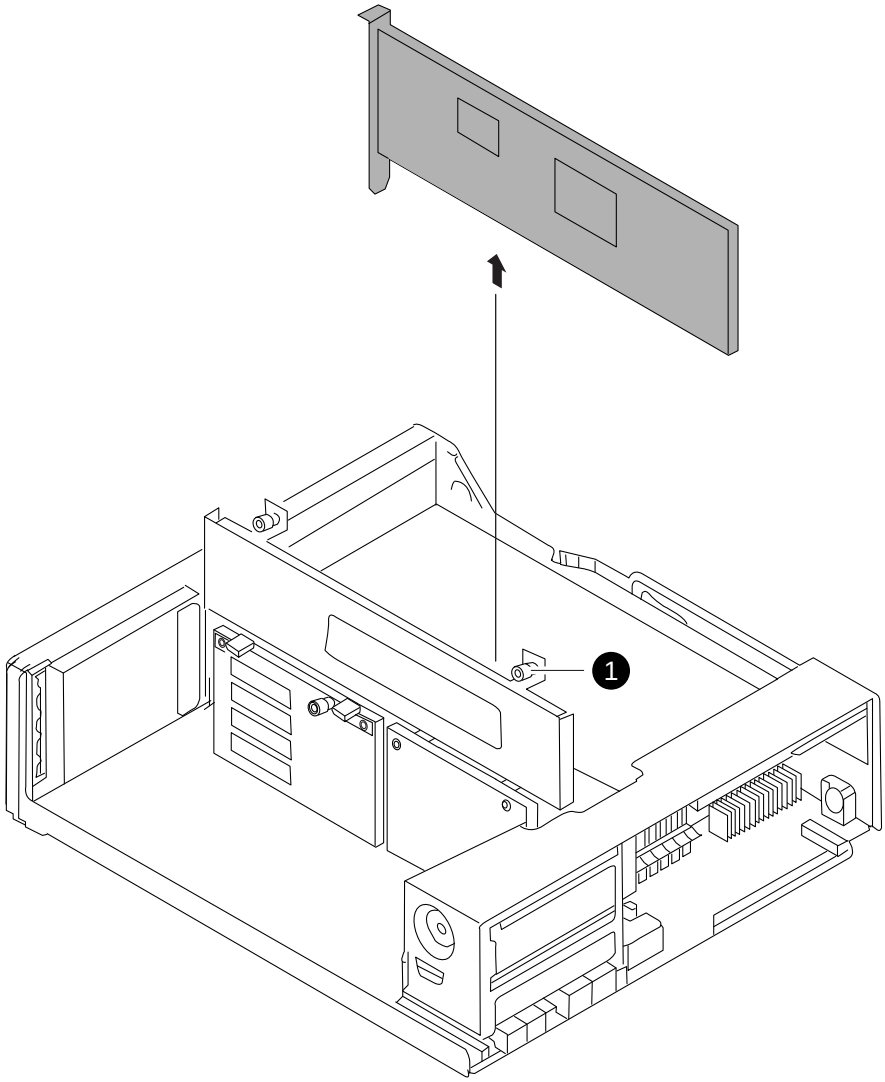
Removing the NVRAM adapter

To remove the NVRAM adapter from the controller module, you must perform a specific sequence of steps.

Steps

1. Check the NVRAM adapter to make sure that all LEDs are off, and then loosen the two thumbscrews on the NVRAM/storage adapter cover and remove the cover.

   The NVRAM/storage adapter cover is located in the middle of the controller module in slot 2.

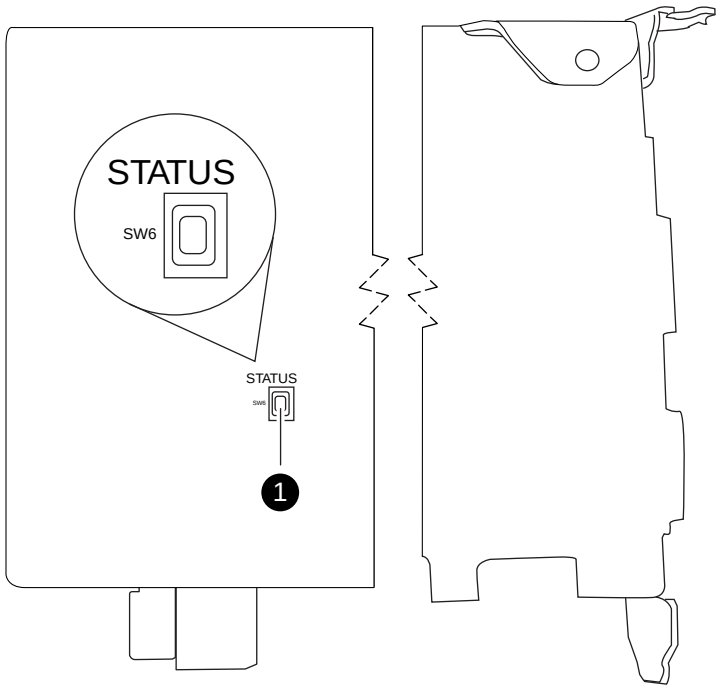


1	NVRAM/storage adapter cover thumbscrew There are two thumbscrews on the cover. **Note:** The NVRAM8 adapter is shown as the gray card lifted out of the controller module.

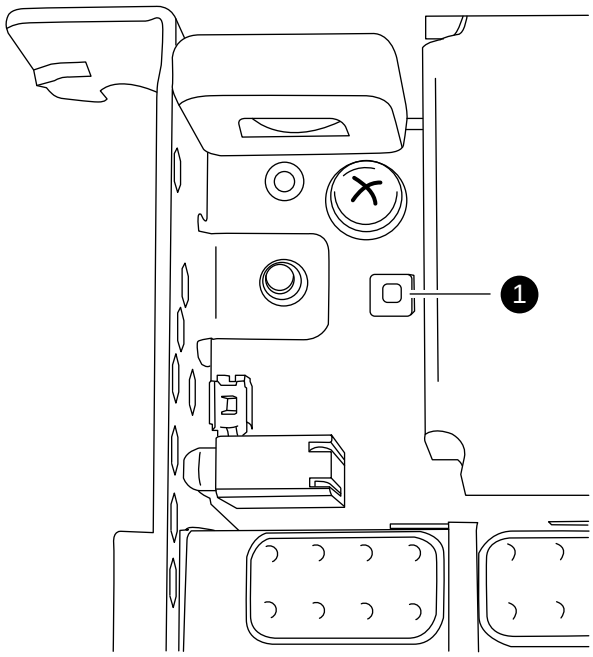
2. Remove the NVRAM adapter by grasping the adapter tabs, and lift the adapter straight out of the controller module and place it on an antistatic surface.

   Note: The replacement NVRAM adapter is not shipped with a battery. You must remove the battery from the old NVRAM adapter and install it in the replacement NVRAM adapter.

3. Press the status button on the bottom of the NVRAM adapter and check the destage status LED on the board.



1	Button for activating the destage status LED



1	Destage status LED

If the LED is...	Then...
Green	The system was cleanly shut down and there is no customer data on the adapter.

If the LED is...	Then...
Red	The system was not cleanly shut down and the adapter failed to erase the onboard flash. Complete the following substeps when you encounter this status: **a.** Reinstall the NVRAM adapter into the controller module. **b.** Reinstall the controller module into the system and recable it, making sure that you recable the power cables last. **Note:** If the controller module is part of an HA configuration, the controller module begins to boot as soon as it is inserted back into the chassis. **c.** Cleanly shut down the controller module using the `halt` command and wait until the LEDS are off on the NVRAM adapter. **d.** Remove the appropriate cables and open the system. **e.** Remove the NVRAM adapter, press the Status button, and check the LED again. If the LED is green, there is no data on the adapter and you can complete the RMA process. If the LED is red, there might still be data present on the adapter. If you are replacing the adapter, you should consider destroying it. If you are replacing the battery, complete that procedure. Contact technical support for more information.
Amber	This adapter is in an illegal or undefined state, typically caused by an unknown failure. You should always replace the adapter when you encounter this status.

Removing the NVRAM battery

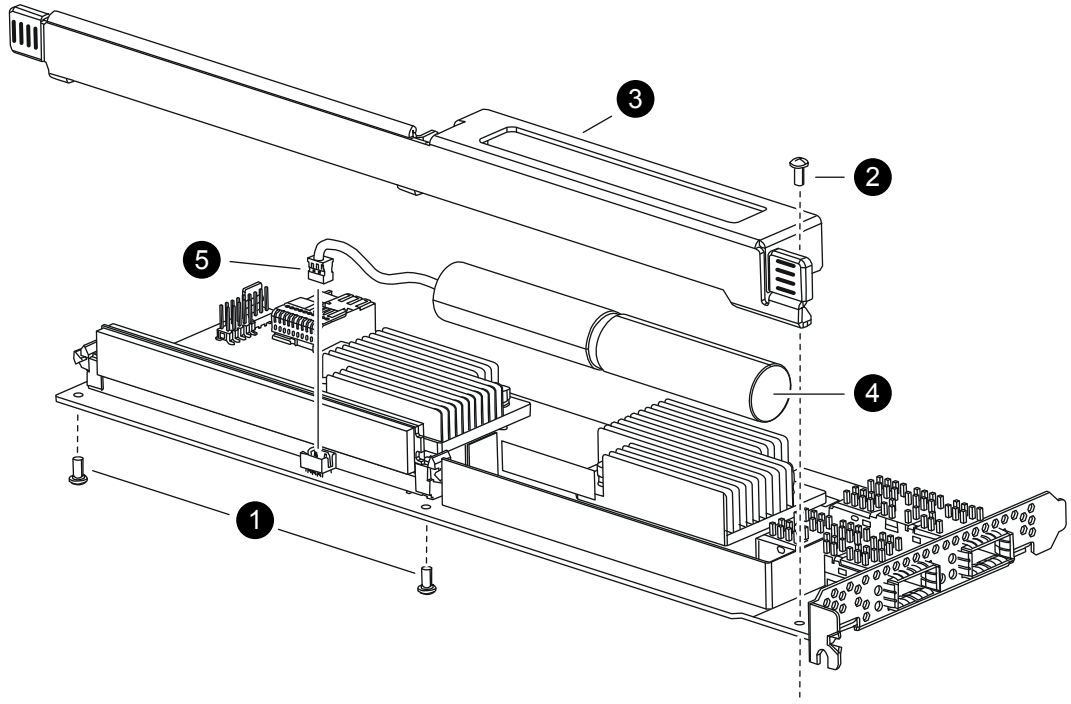
To remove the NVRAM battery in a controller module, you must perform a specific sequence of steps.

About this task

You need a Phillips screwdriver to remove the battery housing.

Steps

1. Using the Phillips screwdriver, remove the three battery cover screws; there are two screws on the back of the adapter and one on the front near the lifting tab. After removing the screws, set them aside.



1	Back battery cover screws
2	Front battery cover screw
3	Battery cover
4	NVRAM battery
5	NVRAM battery plug

2. Slide the battery cover toward the top of the adapter until the screw mounting tabs clear the adapter, and then lift the battery cover clear.
3. Unplug the battery cable from the NVRAM adapter.
4. Lift the battery cable out of the holder and then lift the battery from the holder.

Installing the NVRAM battery

To install the NVRAM battery in a controller module, you must perform a specific sequence of steps.

Before you begin

You need a Phillips screwdriver to install the battery housing.

Steps

1. Remove the battery cover on the adapter, if necessary.
2. Seat the battery in the battery holder on the controller module.

3. Thread the battery cable into the retaining bracket on the battery holder.
4. Align the battery plug with the edge of the socket on the NVRAM adapter, and then plug in the battery.

   Make sure that the cable connector has Pin 1 (arrow) facing toward the NVRAM adapter when installing it.
5. Slide the battery holder onto the adapter with the battery side facing the adapter, and align the screw-mounting tabs on the board with the screw holes on the battery holder.
6. Secure the battery holder to the NVRAM adapter using the screws you removed when removing the battery holder.

   Attention: Do not over-tighten the cover screws because doing so could crack the adapter.

Installing the NVRAM adapter

To install the new NVRAM adapter you must select the correct slot.

Steps

1. Open the NVRAM/storage adapter cover in the center of the controller module, if necessary.
2. Align the NVRAM adapter with the slot 2 slot guides furthest from the cam handle, and exert even pressure to seat the adapter in the socket.
3. Close the NVRAM/storage adapter cover and tighten the cover thumbscrews.

Reinstalling the controller module and entering Maintenance mode

After you replace a component within the controller module, you must reinstall the controller module in the system chassis and boot it to a state where you can run diagnostic tests on the replaced component.

Steps

1. Align the end of the controller module with the opening in the chassis, if necessary, and then gently push the controller module halfway into the system.

   Note: Do not completely insert the controller module in the chassis until instructed to do so.
2. Recable the system, as needed.

   If you removed the media converters (SFPs), remember to reinstall them if you are using fiber optic cables.
3. Complete the reinstall of the controller module:

If your system is in...	Then perform these steps...
An HA pair in which both controller modules are in the same chassis	**a.** Be prepared to interrupt the boot process. The controller module begins to boot as soon as it is fully seated in the chassis. **b.** With the cam handle in the open position, firmly push the controller module in until it meets the midplane and is fully seated, and then close the cam handle to the locked position. **Attention:** Do not use excessive force when sliding the controller module into the chassis; you might damage the connectors. **c.** As the system begins to boot, press **Ctrl-C** to interrupt the boot process when you see the message `Press Ctrl-C for Boot Menu`. **Note:** If you miss the prompt and the controller module boots to Data ONTAP, enter **halt** and at the LOADER prompt enter **boot_ontap**, and press **Ctrl-C** when prompted, and then repeat this step. **d.** From the boot menu, select the option for Maintenance mode. **e.** If you have not already done so, reinstall the cable management trayarm, and then tighten the thumbscrew on the cam handle on back of the controller module. **f.** Bind the cables to the cable management device with the hook and loop strap.
A stand-alone configuration or an HA pair in which both controller modules are in separate chassis	**a.** With the cam handle in the open position, firmly push the controller module in until it meets the midplane and is fully seated, and then close the cam handle to the locked position. **Attention:** Do not use excessive force when sliding the controller module into the chassis; you might damage the connectors. **b.** Reconnect the power cables to the power supplies and to the power sources, turn on the power to start the boot process, and then press **Ctrl-C** to interrupt the boot process when you see the message `Press Ctrl-C for Boot Menu`. **Note:** If you miss the prompt and the controller module boots to Data ONTAP, enter **halt** and at the LOADER prompt enter **boot_ontap**, and press **Ctrl-C** when prompted, and then repeat this step. **c.** From the boot menu, select the option for Maintenance mode. **d.** If you have not already done so, reinstall the cable management trayarm, and then tighten the thumbscrew on the cam handle on back of the controller module. **e.** Bind the cables to the cable management device with the hook and loop strap.

Important: During the boot process, you might see the following prompts:

- A prompt warning of a system ID mismatch and asking to override the system ID.
- A prompt warning that when entering Maintenance mode in a HA configuration you must ensure that the healthy node remains down.

You can safely respond **Y** to these prompts.

4. Select the option to boot to Maintenance mode from the displayed menu.

Reassigning disks on a system operating in 7-Mode

You must reassign disks before you boot the software. Some of the steps are different depending on whether the system is stand-alone or in an HA pair.

About this task

- You must apply the commands in these steps on the correct systems:
  - The *impaired node* is the node on which you are performing maintenance.
  - The *healthy node* is the HA partner of the impaired node.

- Do not issue any commands relating to aggregates until the entire procedure is completed.
- If your system has 500 or more disk drives, the version of Data ONTAP you are running determines whether you can reassign the disks:

If you are running this version of Data ONTAP…	Then…
◦ 8.0.3 or later in the 8.0 release family ◦ 8.1.1 or later in the 8.1 release family	The operation is supported but you must contact technical support for assistance.
◦ Any release in the 7.3 release family ◦ 8.0.2 or earlier in the 8.0 release family ◦ 8.1 in the 8.1 release family	You cannot reassign more than 500 disks from one controller to another by using the `disk reassign` command. If you try to do so, the system reports an error and you must contact technical support.

Steps

1. If you have not already done so, reboot the impaired node, interrupt the boot process by entering Ctrl-C, and then select the option to boot to Maintenance mode from the displayed menu.

   You must enter **y** when prompted to override the system ID due to a system ID mismatch.

2. View the new system IDs by entering the following command:

   `disk show -v`

   Note: Make note of the new system ID, which is displayed in the Local System ID field.

   #### Example

   The example contains the following information:

   - *system-2* is the impaired node, which is undergoing maintenance.
   - *system-1* is the healthy node.
   - The new system ID is *118065481*.
   - The old system ID is *118073209*, which is still assigned to the disks owned by system-2.

```
*> disk show -v
Local System ID: 118065481

  DISK   OWNER                  POOL   SERIAL NUMBER   HOME
-------- -------------          -----  -------------   -------------
0b.29    system-1  (118065578)  Pool0  J8XJE9LC        system-1  (118065578)
0a.27    system-2  (118073209)  Pool0  J8Y478RC        system-2  (118073209)
.
.
.
```

3. If the controller module is in an HA pair, on the healthy node, enter the following command to ensure that any coredumps on the impaired node are saved:

   `partner savecore`

4. Reassign disk ownership based on your system's configuration:

If the controller module is...	Then perform these steps on the applicable node...
In an HA pair	**a.** Halt the impaired node by entering the following command on the impaired node: **`halt`** **b.** Confirm that the impaired node has been taken over by entering the following command on the healthy node: **`cf status`** If the impaired node has not been taken over, you should use the `cf takeover` command on the healthy node to take it over. **c.** On the healthy node, enter the following command to enter advanced privilege mode: **`priv set advanced`** **d.** On the healthy node, reassign disk ownership (for FAS systems) or LUN ownership (for V-Series systems), by using the system ID information obtained from the `disk show -v` command: **`disk reassign -s old system ID -d new system ID`** Continuing the example seen in Step 2: • The *`old system ID`* is *118073209*. • The *`new system ID`* is *118065481*.
Stand-alone	Reassign disk ownership by entering the following command at the Maintenance mode prompt of the *impaired* node: **`disk reassign -s old system ID -d new system ID`** Continuing the example seen in Step 2: • The *`old system ID`* is *118073209*. • The *`new system ID`* is *118065481*.

5. Verify that the disks (or V-Series LUNs) were assigned correctly by entering the following command:

`disk show -v`

Note: If your system is in an HA pair, you must run this command on the healthy node.

Example

Make sure that the disks belonging to the impaired node show the new system ID for the impaired node. In the following example, the disks owned by system-2 now show the new system ID, 118065481:

```
system-1> disk show -v
  DISK  OWNER                POOL   SERIAL NUMBER  HOME
------- -------------         -----  -------------  -------------
0b.17   system-2  (118065481) Pool0  J8Y0TDZC       system-2  (118065481)
0a.17   system-1  (118065578) Pool0  J8Y09DXC       system-1  (118065578)
.
.
.
```

6. If you have a stand-alone system, exit Maintenance mode by entering the following command on the impaired node:

`halt`

7. After the impaired node displays the LOADER prompt, enter the following command to boot the operating system:

`boot_ontap`

For a system in an HA pair, this command puts the node in Waiting for Giveback state.

8. If the system is in an HA pair, do a giveback and confirm that the HA pair is healthy:

a. On the healthy node, enter the following command to return to standard privilege mode:

```
priv set admin
```

b. On the healthy node, return storage to the impaired node by entering the following command:

```
cf giveback
```

c. After the giveback operation is complete, enter the following command to check that the HA pair is healthy and takeover is possible:

```
cf show
```

Performing a final takeover and giveback from the impaired node

To ensure that the disk reassignment is successful and prevent possible system panics, you must perform a final takeover and giveback from the impaired node.

About this task

These steps must be taken if you are operating Data ONTAP 8.0.x or 8.1.x.

It is important that you apply the commands in these steps on the correct system:

- The *healthy node* is the HA partner of the impaired node.
- The *impaired node* is the node on which you are performing maintenance.

Steps

1. Take over the healthy node by entering the following command from the impaired node's console:

   ```
   cf takeover
   ```

2. Return control to the healthy node by entering the following command from the impaired node's console:

   ```
   cf giveback
   ```

   A successful giveback ends with a message on the healthy node indicating successful giveback.

   Note: If `Waiting for Giveback` is not displayed prior to giveback, reboot the controller module. If this continues, contact technical support.

Replacing an NVRAM adapter on a Cluster-Mode system

To replace the adapter on a Cluster-Mode system, you must determine whether you can administer the node in which the adapter is installed, and then replace the adapter. You must also reassign the system ID of the new adapter to the disks attached to the system.

Before you begin

If your system does not meet the following criteria, you must contact technical support:

- Storage failover must be enabled for your cluster.
- Storage failover must be configured to send storage home automatically.
  If it is not, you can use the `storage failover` command to enable `auto-giveback`.

About this task

You must replace the failed component with a replacement FRU component you received from your provider.

Choices

- Replacing an NVRAM adapter operating in clustered Data ONTAP in normal mode on page 16
- Replacing an NVRAM adapter on a system running clustered Data ONTAP in takeover mode on page 28

Replacing an NVRAM adapter operating in clustered Data ONTAP in normal mode

Replacing an NVRAM adapter in normal mode means that the adapter is failing intermittently, but both nodes in the failover pair are still functioning and can be administered and shut down cleanly.

Steps

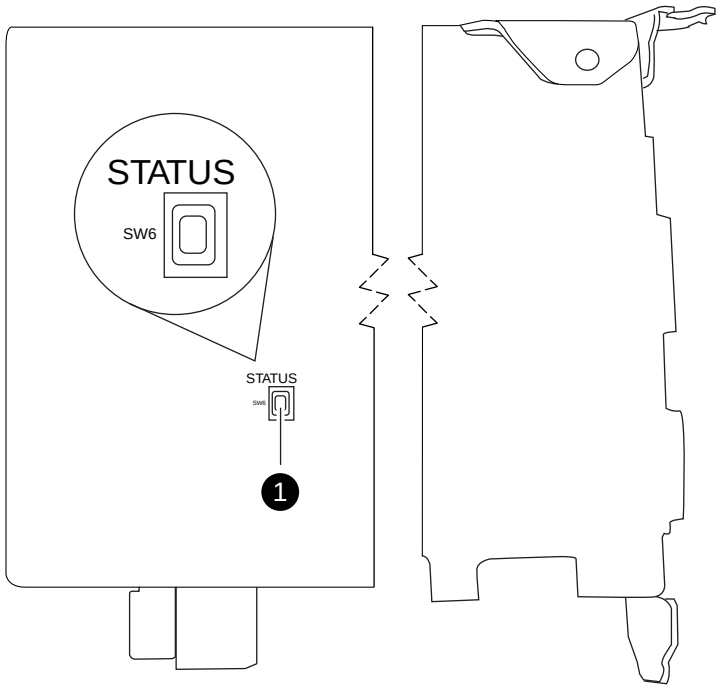
1. Verifying that the new NVRAM adapter has no content in memory on page 16
2. Preparing the node for NVRAM replacement on page 19
3. Removing cables and media adapters from the NVRAM adapter on page 19
4. Opening the system on page 19
5. Removing the NVRAM adapter on page 20
6. Removing the NVRAM battery on page 22
7. Installing the NVRAM battery on page 23
8. Installing the NVRAM adapter on page 24
9. Reinstalling the controller module and entering Maintenance mode on page 24
10. Reassigning disks on a Cluster-Mode system in normal mode on page 25
11. Reenabling storage failover on page 27
12. Performing a final takeover and giveback from the impaired node on page 28

Verifying that the new NVRAM adapter has no content in memory

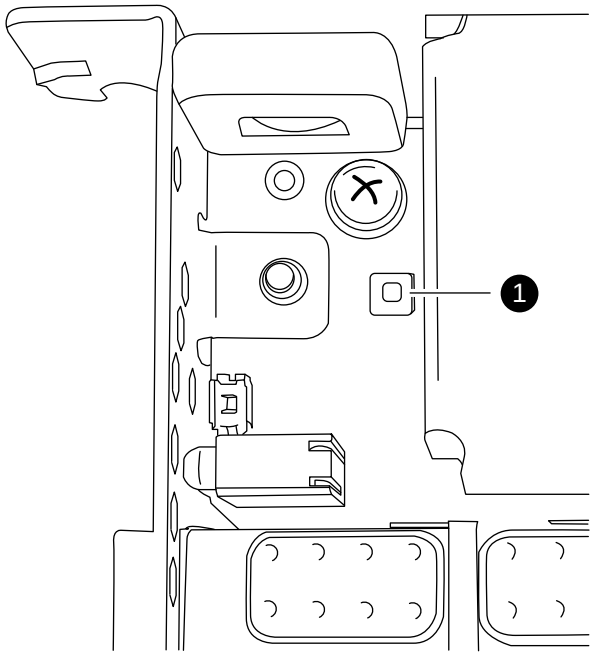
Before installing a replacement NVRAM adapter, you must ensure that the *new* NVRAM adapter (the adapter that is going to replace the bad adapter) has no content in the memory to avoid problems that might occur when it is installed in the system.

Steps

1. While pressing down the status button on the bottom of the NVRAM adapter, check the destage status LED on the board.



1	Button for activating the destage status LED

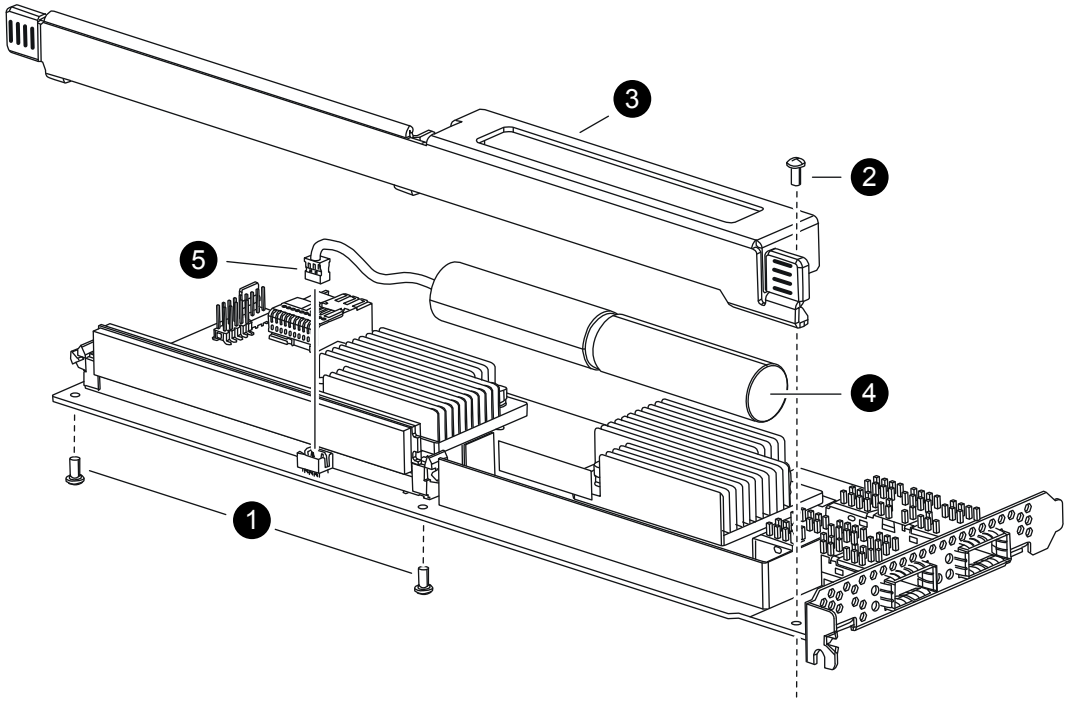


1	Destage status LED The LED remains illuminated while the destage status button is pressed.

If the LED is...	Then...
Green	The system was cleanly shut down and there is no customer data on the adapter.
Red	The adapter has content in the onboard flash.
Amber	This adapter is in an illegal or undefined state, typically caused by an unknown failure. You should not use the adapter when you encounter this status.

2. If the NVRAM adapter has content in the onboard flash, disconnect the battery to clear the flash:

a. Using the Phillips screwdriver, remove the three battery cover screws; there are two screws on the back of the adapter and one on the front near the lifting tab. After removing the screws, set them aside.



1	Back battery cover screws
2	Front battery cover screw
3	Battery cover
4	NVRAM battery
5	NVRAM battery plug

b. Slide the battery cover toward the top of the adapter until the screw mounting tabs clear the adapter, and then lift the battery cover clear.
c. Unplug the battery cable from the NVRAM adapter.
d. Wait a few seconds and then reattach the battery cable.

   Align the battery plug with the edge of the socket on the NVRAM adapter, and then plug in the battery and make sure that the cable connector has Pin 1 (arrow) facing toward the NVRAM adapter when installing it.
e. Press the status button and recheck the destage LED as described in Step 1 to confirm the onboard flash is clear.
f. Secure the battery holder to the NVRAM adapter using the screws you removed when detaching the battery holder.

   Attention: Do not over-tighten the cover screws because doing so could crack the adapter.

Preparing the node for NVRAM replacement

You must get the system ID and disable storage failover prior to replacing the NVRAM adapter.

Steps

1. On the node where the NVRAM adapter is being replaced, log into the management interface (ngsh) with administrator privileges.
2. Enter the following command to obtain the system ID of the faulty NVRAM adapter:

   `system show -inventory`

   Make sure that you record the 10-digit system ID, because you will need it later when you reassign disks.
3. Disable the HA or storage failover.

   The following examples assume that you are disabling storage failover on a node named *node0* and its failover partner:

If your cluster has...	Then issue this command...
Two nodes	**`node0::> cluster ha modify -configured false`** **`node::> storage failover modify -node node0 -enabled false`**
More than two nodes	**`node::> storage failover modify -node node0 -enabled false`**

4. If necessary, shut down the node on which you are replacing the NVRAM adapter by entering the following command from the system console:

   `node::> system halt -inhibit-takeover true -node node0`
5. Follow the on-screen instructions and wait for the boot environment prompt prompt to appear before proceeding.

Removing cables and media adapters from the NVRAM adapter

Before you remove the old NVRAM adapter from the controller module, you must remove the cables and, if you are using fiber interconnect cables, the media adapters.

Steps

1. If you are not already grounded, properly ground yourself.
2. Remove the cables and carefully remove any media converters (QSFPs) from the NVRAM adapter.

   Leave the cables in the cable management tray so that when you reinstall the cable management tray, the cables are already aligned.

Opening the system

To access components inside the controller module, you must open the system.

Steps

1. If you are not already grounded, properly ground yourself.
2. Loosen the hook and loop strap binding the cables to the cable management tray, and then unplug the system cables and SFPs (if needed), from the controller module, and keep track of where the cables were connected.

   Leave the cables in the cable management tray, so that when you reinstall the cable management tray, the cables are organized.

3. Grasp the cable management tray by the side, gently push one side of the tray so that the arm slides across and off the retaining pin, slide the other arm off the retaining pin on the other side of the controller module, and then lift it off the back of the controller module and set it aside.
4. Push in the release latch on the left side of the controller module and slide the controller module out of the system and set it on a stable, antistatic surface.

   Make sure that you support the bottom of the controller module with your free hand.

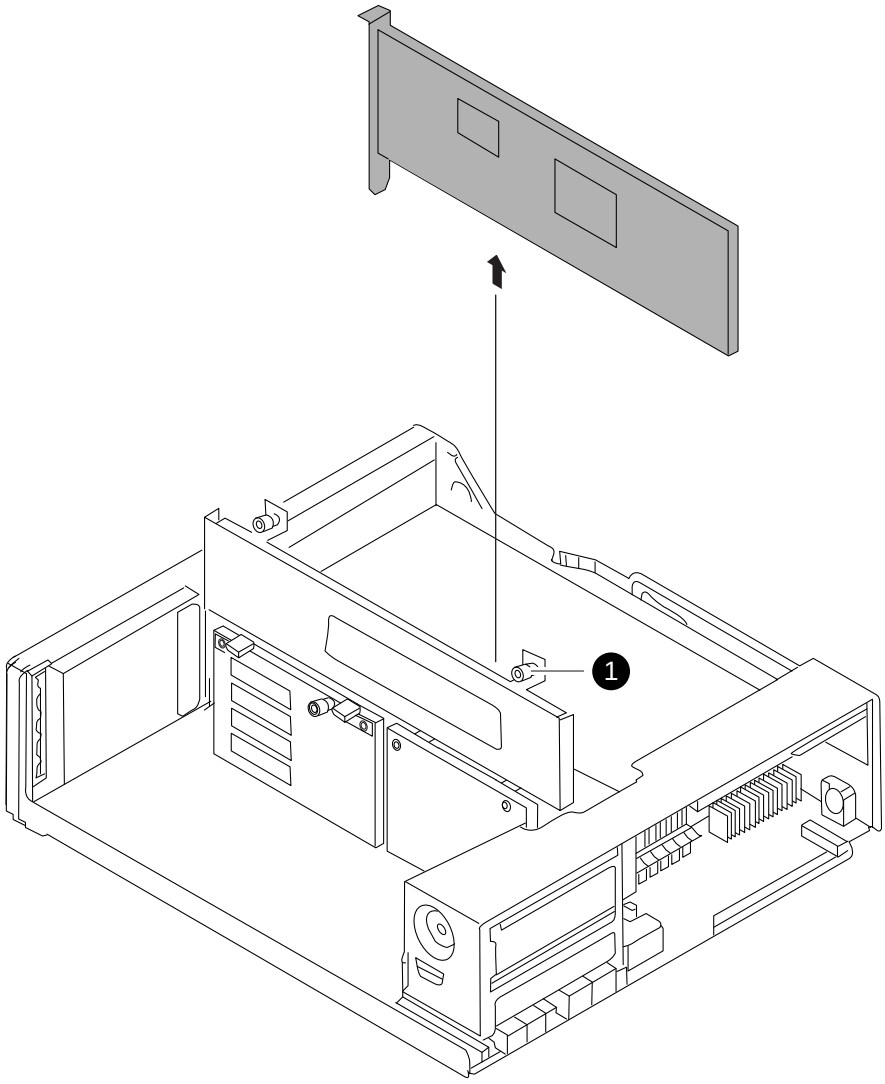
Removing the NVRAM adapter

To remove the NVRAM adapter from the controller module, you must perform a specific sequence of steps.

Steps

1. Check the NVRAM adapter to make sure that all LEDs are off, and then loosen the two thumbscrews on the NVRAM/storage adapter cover and remove the cover.

   The NVRAM/storage adapter cover is located in the middle of the controller module in slot 2.

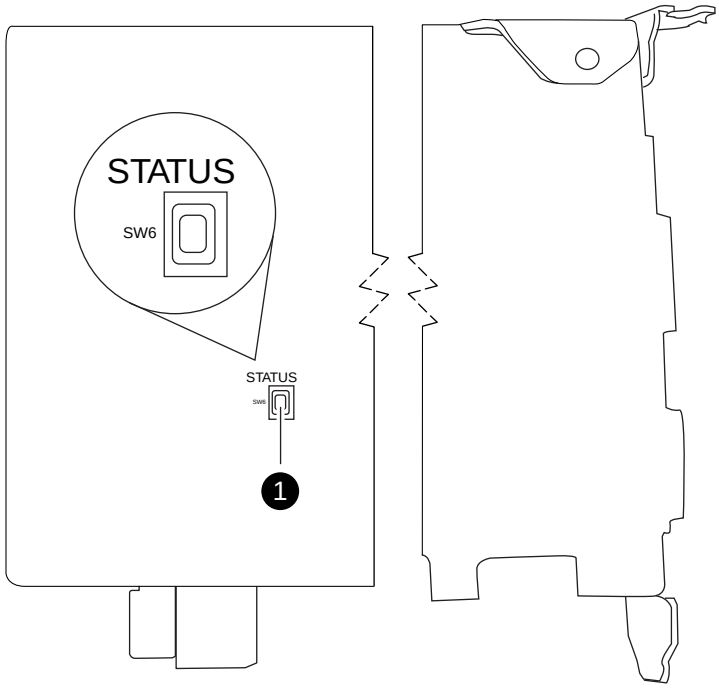


1	NVRAM/storage adapter cover thumbscrew There are two thumbscrews on the cover. **Note:** The NVRAM8 adapter is shown as the gray card lifted out of the controller module.

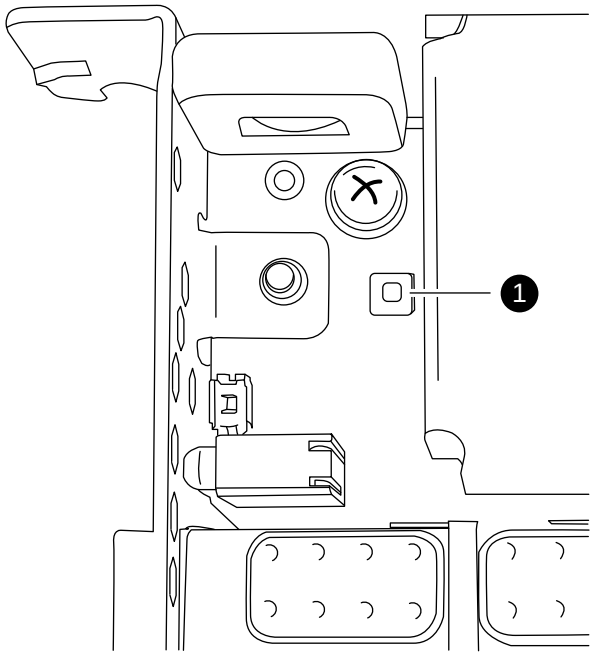
2. Remove the NVRAM adapter by grasping the adapter tabs, and lift the adapter straight out of the controller module and place it on an antistatic surface.

   Note: The replacement NVRAM adapter is not shipped with a battery. You must remove the battery from the old NVRAM adapter and install it in the replacement NVRAM adapter.

3. Press the status button on the bottom of the NVRAM adapter and check the destage status LED on the board.



1	Button for activating the destage status LED



1	Destage status LED

If the LED is...	Then...
Green	The system was cleanly shut down and there is no customer data on the adapter.
Red	The system was not cleanly shut down and the adapter failed to erase the onboard flash. Complete the following substeps when you encounter this status: **a.** Reinstall the NVRAM adapter into the controller module. **b.** Reinstall the controller module into the system and recable it, making sure that you recable the power cables last. **Note:** If the controller module is part of an HA configuration, the controller module begins to boot as soon as it is inserted back into the chassis. **c.** Cleanly shut down the controller module using the `halt` command and wait until the LEDS are off on the NVRAM adapter. **d.** Remove the appropriate cables and open the system. **e.** Remove the NVRAM adapter, press the Status button, and check the LED again. If the LED is green, there is no data on the adapter and you can complete the RMA process. If the LED is red, there might still be data present on the adapter. If you are replacing the adapter, you should consider destroying it. If you are replacing the battery, complete that procedure. Contact technical support for more information.
Amber	This adapter is in an illegal or undefined state, typically caused by an unknown failure. You should always replace the adapter when you encounter this status.

Removing the NVRAM battery

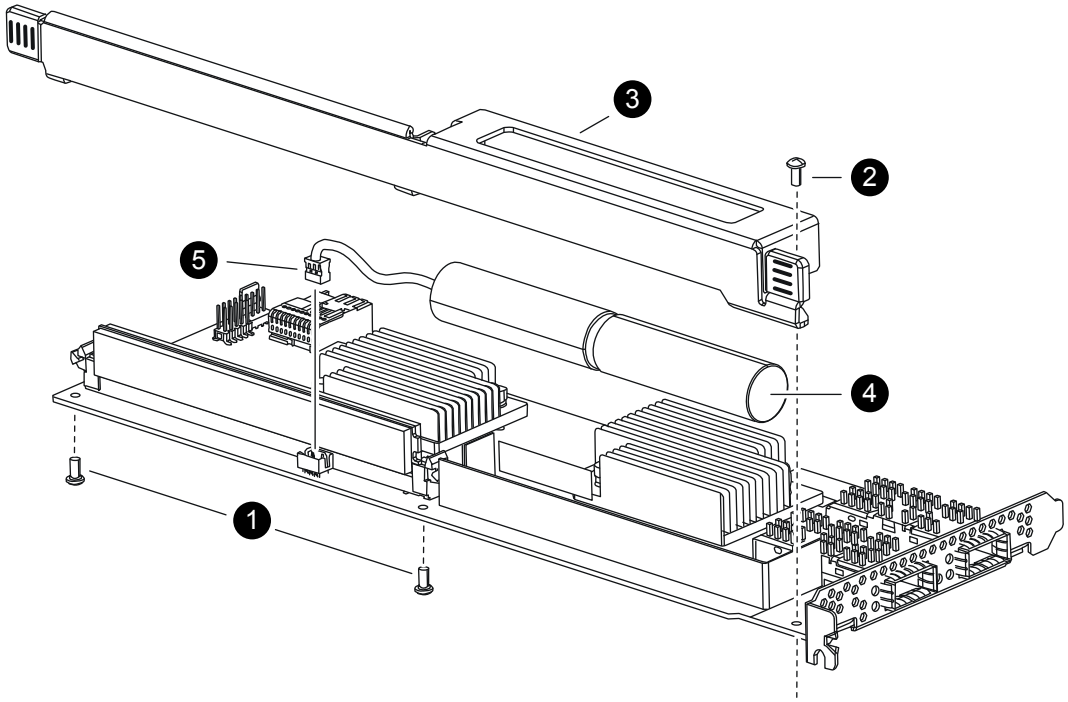
To remove the NVRAM battery in a controller module, you must perform a specific sequence of steps.

About this task

You need a Phillips screwdriver to remove the battery housing.

Steps

1. Using the Phillips screwdriver, remove the three battery cover screws; there are two screws on the back of the adapter and one on the front near the lifting tab. After removing the screws, set them aside.



1	Back battery cover screws
2	Front battery cover screw
3	Battery cover
4	NVRAM battery
5	NVRAM battery plug

2. Slide the battery cover toward the top of the adapter until the screw mounting tabs clear the adapter, and then lift the battery cover clear.
3. Unplug the battery cable from the NVRAM adapter.
4. Lift the battery cable out of the holder and then lift the battery from the holder.

Installing the NVRAM battery

To install the NVRAM battery in a controller module, you must perform a specific sequence of steps.

Before you begin

You need a Phillips screwdriver to install the battery housing.

Steps

1. Remove the battery cover on the adapter, if necessary.
2. Seat the battery in the battery holder on the controller module.
3. Thread the battery cable into the retaining bracket on the battery holder.
4. Align the battery plug with the edge of the socket on the NVRAM adapter, and then plug in the battery.

   Make sure that the cable connector has Pin 1 (arrow) facing toward the NVRAM adapter when installing it.
5. Slide the battery holder onto the adapter with the battery side facing the adapter, and align the screw-mounting tabs on the board with the screw holes on the battery holder.
6. Secure the battery holder to the NVRAM adapter using the screws you removed when removing the battery holder.

   Attention: Do not over-tighten the cover screws because doing so could crack the adapter.

Installing the NVRAM adapter

To install the new NVRAM adapter you must select the correct slot.

Steps

1. Open the NVRAM/storage adapter cover in the center of the controller module, if necessary.
2. Align the NVRAM adapter with the slot 2 slot guides furthest from the cam handle, and exert even pressure to seat the adapter in the socket.
3. Close the NVRAM/storage adapter cover and tighten the cover thumbscrews.

Reinstalling the controller module and entering Maintenance mode

After you replace a component within the controller module, you must reinstall the controller module in the system chassis and boot it to a state where you can run diagnostic tests on the replaced component.

Steps

1. Align the end of the controller module with the opening in the chassis, if necessary, and then gently push the controller module halfway into the system.

   Note: Do not completely insert the controller module in the chassis until instructed to do so.
2. Recable the system, as needed.

   If you removed the media converters (SFPs), remember to reinstall them if you are using fiber optic cables.
3. Complete the reinstall of the controller module:

If your system is in...	Then perform these steps...
An HA pair in which both controller modules are in the same chassis	**a.** Be prepared to interrupt the boot process. The controller module begins to boot as soon as it is fully seated in the chassis. **b.** With the cam handle in the open position, firmly push the controller module in until it meets the midplane and is fully seated, and then close the cam handle to the locked position. **Attention:** Do not use excessive force when sliding the controller module into the chassis; you might damage the connectors. **c.** As the system begins to boot, press **Ctrl-C** to interrupt the boot process when you see the message `Press Ctrl-C for Boot Menu`. **Note:** If you miss the prompt and the controller module boots to Data ONTAP, enter **halt** and at the LOADER prompt enter **boot_ontap**, and press **Ctrl-C** when prompted, and then repeat this step. **d.** From the boot menu, select the option for Maintenance mode. **e.** If you have not already done so, reinstall the cable management trayarm, and then tighten the thumbscrew on the cam handle on back of the controller module. **f.** Bind the cables to the cable management device with the hook and loop strap.
A stand-alone configuration or an HA pair in which both controller modules are in separate chassis	**a.** With the cam handle in the open position, firmly push the controller module in until it meets the midplane and is fully seated, and then close the cam handle to the locked position. **Attention:** Do not use excessive force when sliding the controller module into the chassis; you might damage the connectors. **b.** Reconnect the power cables to the power supplies and to the power sources, turn on the power to start the boot process, and then press **Ctrl-C** to interrupt the boot process when you see the message `Press Ctrl-C for Boot Menu`. **Note:** If you miss the prompt and the controller module boots to Data ONTAP, enter **halt** and at the LOADER prompt enter **boot_ontap**, and press **Ctrl-C** when prompted, and then repeat this step. **c.** From the boot menu, select the option for Maintenance mode. **d.** If you have not already done so, reinstall the cable management trayarm, and then tighten the thumbscrew on the cam handle on back of the controller module. **e.** Bind the cables to the cable management device with the hook and loop strap.

Important: During the boot process, you might see the following prompts:

- A prompt warning of a system ID mismatch and asking to override the system ID.
- A prompt warning that when entering Maintenance mode in a HA configuration you must ensure that the healthy node remains down.

You can safely respond **Y** to these prompts.

Reassigning disks on a Cluster-Mode system in normal mode

You must assign the NVRAM system ID of the new NVRAM adapter to the disks in the system.

About this task

- Storage failover must be disabled and the node undergoing maintenance must be in normal mode; that is, its storage must not be taken over.
- All commands in this procedure are issued on the system with the new NVRAM adapter.
- This procedure does not apply to Data ONTAP GX, only clustered Data ONTAP.

- If your system has 500 or more disk drives, the version of Data ONTAP you are running determines whether you can reassign the disks:

If you are running this version of Data ONTAP…	Then…
◦ 8.0.3 or later in the 8.0 release family ◦ 8.1.1 or later in the 8.1 release family	The operation is supported but you must contact technical support for assistance.
◦ 8.0.2 or earlier in the 8.0 release family ◦ 8.1 in the 8.1 release family	You cannot reassign more than 500 disks from one controller to another by using the `disk reassign` command. If you try to do so, the system reports an error and you must contact technical support.

Steps

1. Turn the power on to reboot the system if you have not already done so.
2. Enter Maintenance mode if you have not already done so.
3. From the healthy node, ensure that any coredumps on the impaired node are saved:
   a. From the healthy node, enter the following command to change to the advanced privilege level:

      `set -privilege advanced`

      You can respond **`Y`** when prompted to continue into advanced mode. The advanced mode prompt appears (*>).
   b. From the healthy node, enter the following command:

      `system node run -node local-node-name partner savecore`
   c. Wait for savecore command to complete before issuing the giveback.

      You can enter the following command to monitor the progress of the savecore command:

      `system node run -node local-node-name partner savecore -s`
   d. From the healthy node, enter the following command to return to the admin privilege level:

      `set -privilege admin`
4. View the new system IDs by entering the following command:

   `disk show -v`

```
*> disk show -v
Local System ID: 118065481

  DISK   OWNER                  POOL   SERIAL NUMBER   HOME
-------- -------------          -----  -------------   -------------
0b.29    system-1  (118065578)  Pool0  J8XJE9LC        system-1  (118065578)
0a.27    system-2  (118073209)  Pool0  J8Y478RC        system-2  (118073209)
.
.
.
```

   Note: Make note of the new system ID, which is displayed in the Local System ID field. The preceding example contains the following information:

   - *system-2* is the impaired node, which is undergoing maintenance.
   - *system-1* is the healthy node.
   - The new system ID (Local System ID) is *118065481*.
   - The old system ID is *118073209*, which is still assigned to the disks owned by system-2.
5. Reassign disk ownership by entering the following at the Maintenance mode prompt:

   `disk reassign -s old system ID -d new system ID`

Continuing the preceding example:

- The *old system ID* is *118073209*.
- The *new system ID* is *118065481*.

6. Exit Maintenance mode by entering the following command:

   halt

7. On the impaired node, enter the following command at the LOADER prompt to set the *bootarg.mgwd.autoconf.disable* variable to `true` to disable auto configuration:

   setenv bootarg.mgwd.autoconf.disable true

8. On the impaired node, enter the following command at the LOADER prompt to ensure that the new controller module boots in clustered Data ONTAP:

   setenv bootarg.init.boot_clustered true

9. Boot the Data ONTAP software by entering the following command:

   autoboot

10. As the software starts, access the boot menu by pressing Ctrl-C.

11. Select the option to `Update flash from backup config`. from the displayed menu and press **y** when prompted to continue.

12. Boot the Data ONTAP software by entering the following command:

    autoboot

13. Answer **y** at the prompt to confirm the system ID mismatch:

```
WARNING: System id mismatch. This usually occurs when moving CF cards!
Override system id (y|n) ? [n] y
```

The startup sequence proceeds and then reboots to implement the configuration from backup.

Reenabling storage failover

You must reenable storage failover.

Step

1. Enable storage failover:

If your cluster has...	Then issue this command...
Two nodes	Use the `storage failover modify` and `cluster ha modify` commands to enable two-node high availability. The following example assumes that you are enabling storage failover on a node named node0 and its failover partner: **node::> storage failover modify -node node0 -enabled true** **node::> cluster ha modify -configured true**
More than two nodes	Use the `storage failover modify` command. The following example assumes that you are enabling storage failover on a node named node0 and its failover partner: **node::> storage failover modify -node node0 -enabled true**

Performing a final takeover and giveback from the impaired node

To ensure that the disk reassignment is successful, you must perform a final takeover and giveback from the impaired node.

About this task

These steps must be taken if you are operating Data ONTAP 8.0.x or 8.1.x.

It is important that you apply the commands in these steps on the correct system:

- The *impaired node* is the node on which you are performing maintenance.
- The *healthy node* is the HA partner of the impaired node.

Steps

1. Take over the healthy node by entering the following command from the impaired node's console:

   `storage failover takeover -bynode impaired-node-name`

2. Return control to the healthy node by entering the following command from the impaired node's console:

   `storage failover giveback -fromnode impaired-node`

   A successful giveback ends with a message on the healthy node indicating successful giveback.

   Note: If `Waiting for Giveback` is not displayed prior to giveback, reboot the controller module. If this continues, contact technical support.

Replacing an NVRAM adapter on a system running clustered Data ONTAP in takeover mode

When an NVRAM adapter has completely failed, the storage owned by the node on which it is installed has been taken over by its partner node. In addition, the node cannot be administered or shut down cleanly. To replace the NVRAM adapter, you must perform a specific sequence of steps.

About this task

This procedure uses the following terminology:

- The *impaired node* is the node on which you are performing maintenance.
- The *healthy node* is the HA partner of the impaired node.

Steps

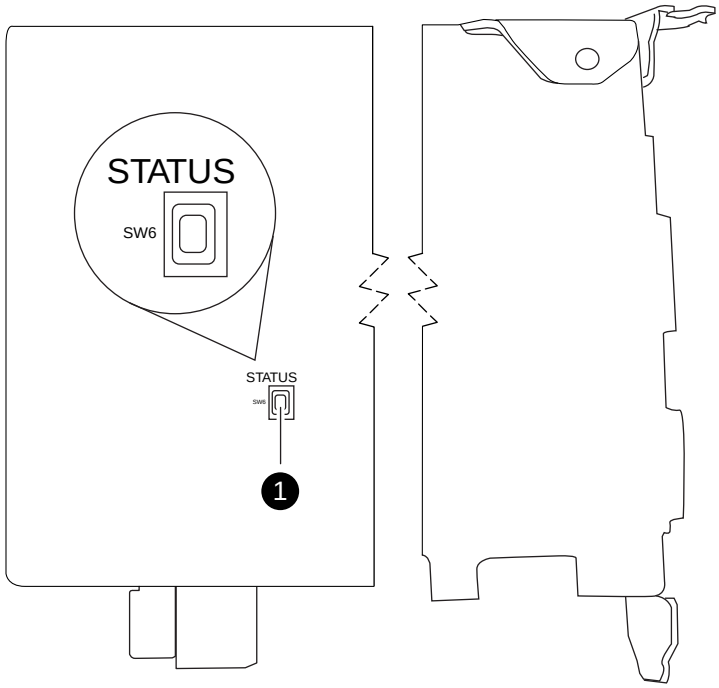
1. Verifying that the new NVRAM adapter has no content in memory on page 29
2. Removing cables and media adapters from the NVRAM adapter on page 31
3. Opening the system on page 31
4. Removing the NVRAM adapter on page 31
5. Removing the NVRAM battery on page 34
6. Installing the NVRAM battery on page 35
7. Installing the NVRAM adapter on page 36
8. Reinstalling the controller module and entering Maintenance mode on page 36
9. Reassigning disks on a system operating in clustered Data ONTAP on page 37
10. Performing a final takeover and giveback from the impaired node on page 40

Verifying that the new NVRAM adapter has no content in memory

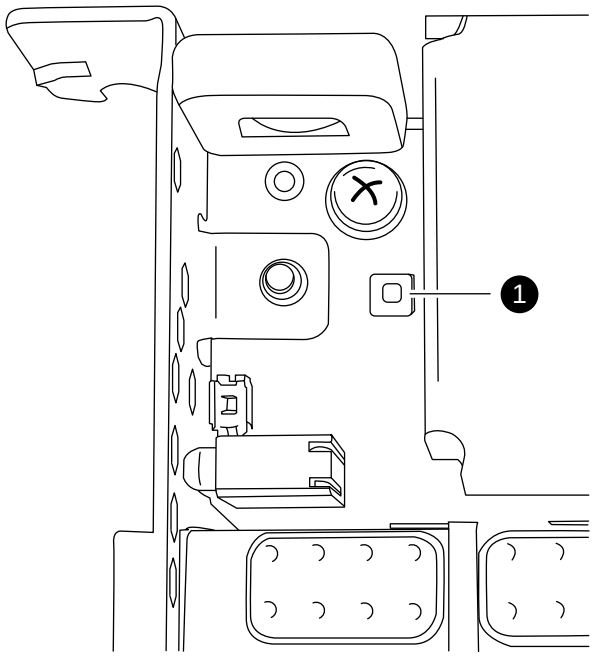
Before installing a replacement NVRAM adapter, you must ensure that the *new* NVRAM adapter (the adapter that is going to replace the bad adapter) has no content in the memory to avoid problems that might occur when it is installed in the system.

Steps

1. While pressing down the status button on the bottom of the NVRAM adapter, check the destage status LED on the board.



1	Button for activating the destage status LED

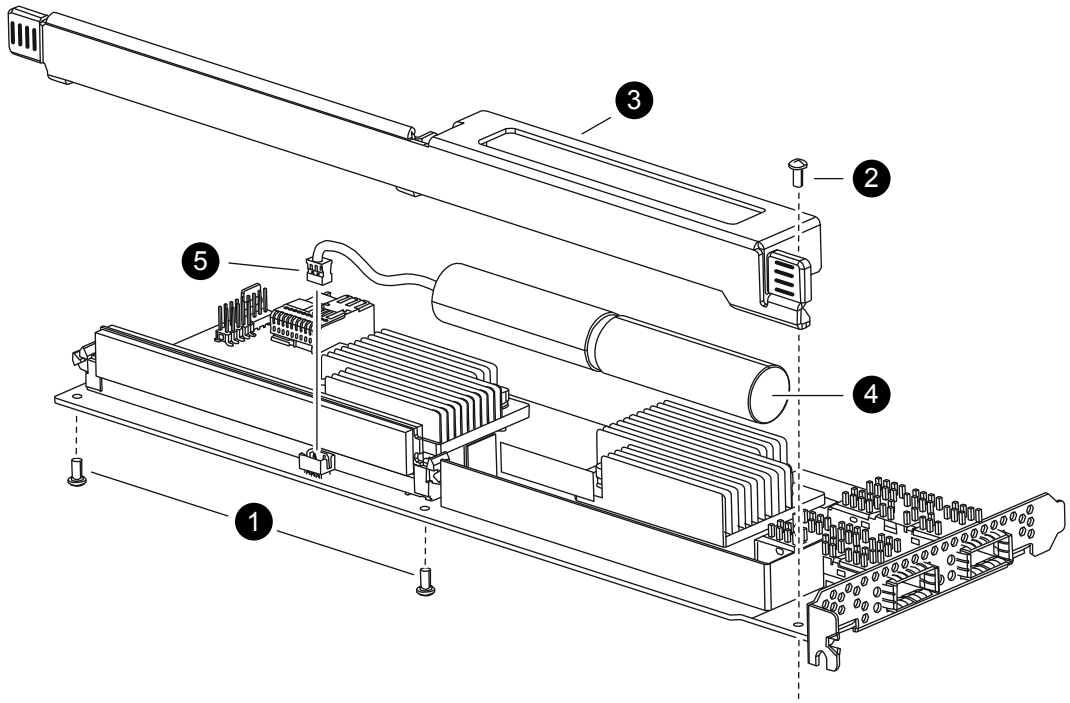


1	Destage status LED The LED remains illuminated while the destage status button is pressed.

If the LED is...	Then...
Green	The system was cleanly shut down and there is no customer data on the adapter.
Red	The adapter has content in the onboard flash.
Amber	This adapter is in an illegal or undefined state, typically caused by an unknown failure. You should not use the adapter when you encounter this status.

2. If the NVRAM adapter has content in the onboard flash, disconnect the battery to clear the flash:

a. Using the Phillips screwdriver, remove the three battery cover screws; there are two screws on the back of the adapter and one on the front near the lifting tab. After removing the screws, set them aside.



1	Back battery cover screws
2	Front battery cover screw
3	Battery cover
4	NVRAM battery
5	NVRAM battery plug

b. Slide the battery cover toward the top of the adapter until the screw mounting tabs clear the adapter, and then lift the battery cover clear.

c. Unplug the battery cable from the NVRAM adapter.
d. Wait a few seconds and then reattach the battery cable.

   Align the battery plug with the edge of the socket on the NVRAM adapter, and then plug in the battery and make sure that the cable connector has Pin 1 (arrow) facing toward the NVRAM adapter when installing it.
e. Press the status button and recheck the destage LED as described in Step 1 to confirm the onboard flash is clear.
f. Secure the battery holder to the NVRAM adapter using the screws you removed when detaching the battery holder.

   Attention: Do not over-tighten the cover screws because doing so could crack the adapter.

Removing cables and media adapters from the NVRAM adapter

Before you remove the old NVRAM adapter from the controller module, you must remove the cables and, if you are using fiber interconnect cables, the media adapters.

Steps

1. If you are not already grounded, properly ground yourself.
2. Remove the cables and carefully remove any media converters (QSFPs) from the NVRAM adapter.

   Leave the cables in the cable management tray so that when you reinstall the cable management tray, the cables are already aligned.

Opening the system

To access components inside the controller module, you must open the system.

Steps

1. If you are not already grounded, properly ground yourself.
2. Loosen the hook and loop strap binding the cables to the cable management tray, and then unplug the system cables and SFPs (if needed), from the controller module, and keep track of where the cables were connected.

   Leave the cables in the cable management tray, so that when you reinstall the cable management tray, the cables are organized.
3. Grasp the cable management tray by the side, gently push one side of the tray so that the arm slides across and off the retaining pin, slide the other arm off the retaining pin on the other side of the controller module, and then lift it off the back of the controller module and set it aside.
4. Push in the release latch on the left side of the controller module and slide the controller module out of the system and set it on a stable, antistatic surface.

   Make sure that you support the bottom of the controller module with your free hand.

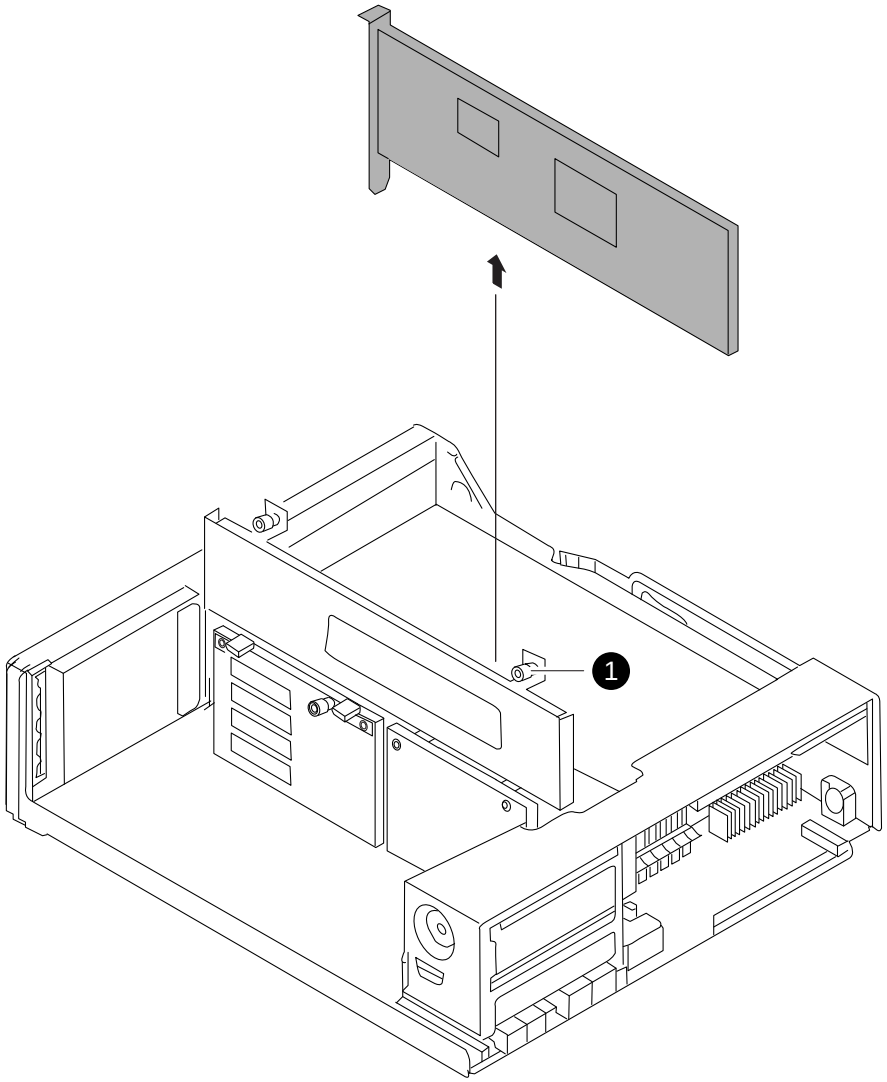
Removing the NVRAM adapter

To remove the NVRAM adapter from the controller module, you must perform a specific sequence of steps.

Steps

1. Check the NVRAM adapter to make sure that all LEDs are off, and then loosen the two thumbscrews on the NVRAM/storage adapter cover and remove the cover.

   The NVRAM/storage adapter cover is located in the middle of the controller module in slot 2.

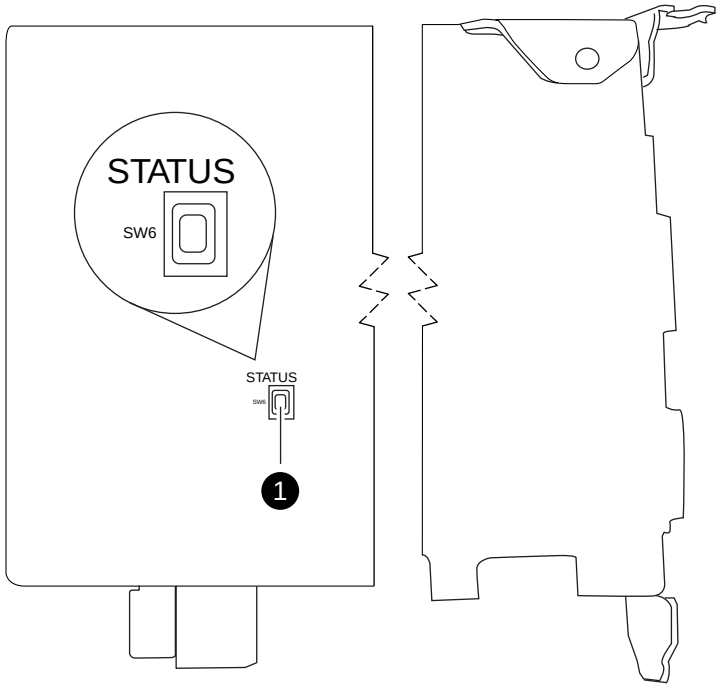


1	NVRAM/storage adapter cover thumbscrew There are two thumbscrews on the cover. **Note:** The NVRAM8 adapter is shown as the gray card lifted out of the controller module.

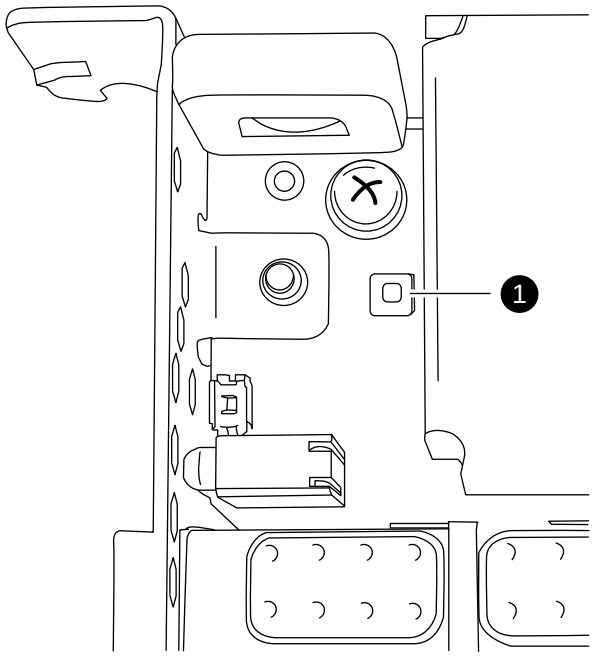
2. Remove the NVRAM adapter by grasping the adapter tabs, and lift the adapter straight out of the controller module and place it on an antistatic surface.

   Note: The replacement NVRAM adapter is not shipped with a battery. You must remove the battery from the old NVRAM adapter and install it in the replacement NVRAM adapter.

3. Press the status button on the bottom of the NVRAM adapter and check the destage status LED on the board.



1	Button for activating the destage status LED



1	Destage status LED

If the LED is...	Then...
Green	The system was cleanly shut down and there is no customer data on the adapter.

If the LED is...	Then...
Red	The system was not cleanly shut down and the adapter failed to erase the onboard flash. Complete the following substeps when you encounter this status: **a.** Reinstall the NVRAM adapter into the controller module. **b.** Reinstall the controller module into the system and recable it, making sure that you recable the power cables last. **Note:** If the controller module is part of an HA configuration, the controller module begins to boot as soon as it is inserted back into the chassis. **c.** Cleanly shut down the controller module using the `halt` command and wait until the LEDS are off on the NVRAM adapter. **d.** Remove the appropriate cables and open the system. **e.** Remove the NVRAM adapter, press the Status button, and check the LED again. If the LED is green, there is no data on the adapter and you can complete the RMA process. If the LED is red, there might still be data present on the adapter. If you are replacing the adapter, you should consider destroying it. If you are replacing the battery, complete that procedure. Contact technical support for more information.
Amber	This adapter is in an illegal or undefined state, typically caused by an unknown failure. You should always replace the adapter when you encounter this status.

Removing the NVRAM battery

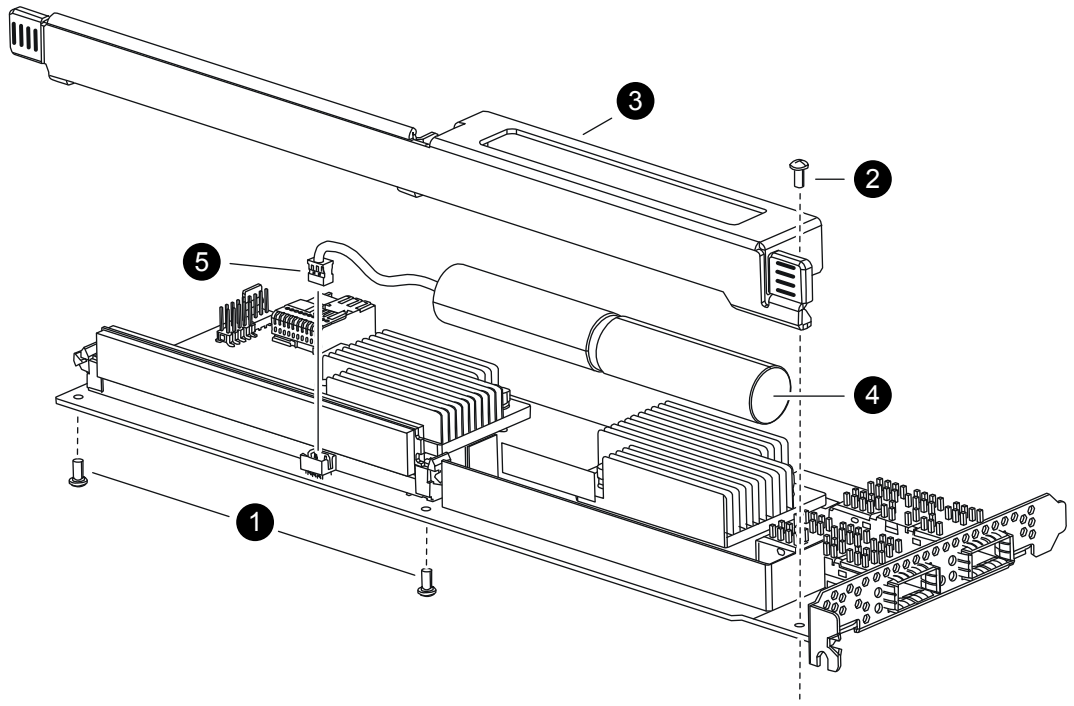
To remove the NVRAM battery in a controller module, you must perform a specific sequence of steps.

About this task

You need a Phillips screwdriver to remove the battery housing.

Steps

1. Using the Phillips screwdriver, remove the three battery cover screws; there are two screws on the back of the adapter and one on the front near the lifting tab. After removing the screws, set them aside.



1	Back battery cover screws
2	Front battery cover screw
3	Battery cover
4	NVRAM battery
5	NVRAM battery plug

2. Slide the battery cover toward the top of the adapter until the screw mounting tabs clear the adapter, and then lift the battery cover clear.
3. Unplug the battery cable from the NVRAM adapter.
4. Lift the battery cable out of the holder and then lift the battery from the holder.

Installing the NVRAM battery

To install the NVRAM battery in a controller module, you must perform a specific sequence of steps.

Before you begin

You need a Phillips screwdriver to install the battery housing.

Steps

1. Remove the battery cover on the adapter, if necessary.
2. Seat the battery in the battery holder on the controller module.

3. Thread the battery cable into the retaining bracket on the battery holder.
4. Align the battery plug with the edge of the socket on the NVRAM adapter, and then plug in the battery.

   Make sure that the cable connector has Pin 1 (arrow) facing toward the NVRAM adapter when installing it.
5. Slide the battery holder onto the adapter with the battery side facing the adapter, and align the screw-mounting tabs on the board with the screw holes on the battery holder.
6. Secure the battery holder to the NVRAM adapter using the screws you removed when removing the battery holder.

   Attention: Do not over-tighten the cover screws because doing so could crack the adapter.

Installing the NVRAM adapter

To install the new NVRAM adapter you must select the correct slot.

Steps

1. Open the NVRAM/storage adapter cover in the center of the controller module, if necessary.
2. Align the NVRAM adapter with the slot 2 slot guides furthest from the cam handle, and exert even pressure to seat the adapter in the socket.
3. Close the NVRAM/storage adapter cover and tighten the cover thumbscrews.

Reinstalling the controller module and entering Maintenance mode

After installing the NVRAM adapter in the controller module, you must reinstall the controller module in the chassis, boot the system and interrupt the boot process to enter Maintenance mode.

Steps

1. Align the end of the controller module with the opening in the chassis, if necessary, and then gently push the controller module halfway into the system.

   Note: Do not completely insert the controller module in the chassis until instructed to do so.
2. Recable the system, as needed.

   If you removed the media converters (SFPs), remember to reinstall them if you are using fiber optic cables.
3. Complete the reinstall of the controller module:

If your system is in...	Then perform these steps...
An HA pair in which both controller modules are in the same chassis	**a.** Be prepared to interrupt the boot process. The controller module begins to boot as soon as it is fully seated in the chassis. **b.** With the cam handle in the open position, firmly push the controller module in until it meets the midplane and is fully seated, and then close the cam handle to the locked position. **Attention:** Do not use excessive force when sliding the controller module into the chassis; you might damage the connectors. **c.** As the system begins to boot, press **Ctrl-C** to interrupt the boot process when you see the message `Press Ctrl-C for Boot Menu`. **Note:** If you miss the prompt and the controller module boots to Data ONTAP, enter **halt** and at the LOADER prompt enter **boot_ontap**, and press **Ctrl-C** when prompted, and then repeat this step. **d.** From the boot menu, select the option for Maintenance mode. **e.** If you have not already done so, reinstall the cable management trayarm, and then tighten the thumbscrew on the cam handle on back of the controller module. **f.** Bind the cables to the cable management device with the hook and loop strap.
A stand-alone configuration or an HA pair in which both controller modules are in separate chassis	**a.** With the cam handle in the open position, firmly push the controller module in until it meets the midplane and is fully seated, and then close the cam handle to the locked position. **Attention:** Do not use excessive force when sliding the controller module into the chassis; you might damage the connectors. **b.** Reconnect the power cables to the power supplies and to the power sources, turn on the power to start the boot process, and then press **Ctrl-C** to interrupt the boot process when you see the message `Press Ctrl-C for Boot Menu`. **Note:** If you miss the prompt and the controller module boots to Data ONTAP, enter **halt** and at the LOADER prompt enter **boot_ontap**, and press **Ctrl-C** when prompted, and then repeat this step. **c.** From the boot menu, select the option for Maintenance mode. **d.** If you have not already done so, reinstall the cable management trayarm, and then tighten the thumbscrew on the cam handle on back of the controller module. **e.** Bind the cables to the cable management device with the hook and loop strap.

Important: During the boot process, you might see the following prompts:

- A prompt warning of a system ID mismatch and asking to override the system ID.
- A prompt warning that when entering Maintenance mode in a HA configuration you must ensure that the healthy node remains down.

You can safely respond **Y** to these prompts.

Reassigning disks on a system operating in clustered Data ONTAP

You must assign the NVRAM system ID of the new NVRAM adapter to the disks in the system.

About this task

- It is important that you apply the commands in these steps on the correct systems:
  - The *impaired node* is the node on which you are performing maintenance.
  - The *healthy node* is the HA partner of the impaired node.
- The impaired node must have been taken over by its partner.

If the impaired node has not been taken over, you should use the `cf takeover` command on the healthy node to take it over.

- If your system has 500 or more disk drives, the version of Data ONTAP you are running determines whether you can reassign the disks:

If you are running this version of Data ONTAP…	Then…
◦ 8.0.3 or later in the 8.0 release family ◦ 8.1.1 or later in the 8.1 release family	The operation is supported but you must contact technical support for assistance.
◦ 8.0.2 or earlier in the 8.0 release family ◦ 8.1 in the 8.1 release family	You cannot reassign more than 500 disks from one controller to another by using the `disk reassign` command. If you try to do so, the system reports an error and you must contact technical support.

Steps

1. Complete the following substeps on the healthy node:
   a. Log in as admin and enter the password.
   b. Enter the following command:

      `run local`
   c. Enter the following command to obtain the system ID of the failed NVRAM adapter:

      `disk show`

      #### Example

      The command displays system and disk information, as shown in the following example. The old system ID of impaired node, 101174200, appears to the right of the column labeled `HOME`:

      ```
      healthy_node> disk show
      DISK    OWNER                    HOME                     POOL
      -----   ---------                --------                 -----
      0b.18   healthy_node (103668010)  impaired_node (101174200)  Pool0
      [...]
      0b.22   healthy_node (103668010)  impaired_node (101174200)  Pool0
      [...]
      0b.20   healthy_node     (103668010)  impaired_node (101174200)  Pool0
      ```
   d. Write down the system ID.

      This is the old system ID, which you use later in this procedure.
2. Complete the following substeps on the impaired node:
   a. If you have not already done so, boot the system into Maintenance mode.
   b. Enter the following command to obtain the system ID of the new NVRAM adapter:

      `disk show`

      #### Example

      ```
      *> disk show
      disk show
      Local System ID: 0101166306
      ```
   c. Write down the system ID.

      This is the new system ID, which you use later in this procedure.
   d. Exit Maintenance mode and display the LOADER prompt by entering the following command:

halt

e. On the impaired node, enter the following command at the LOADER prompt to set the *bootarg.mgwd.autoconf.disable* variable to `true` to disable auto configuration:

setenv bootarg.mgwd.autoconf.disable true

f. On the impaired node, enter the following command at the LOADER prompt to ensure that the new controller module boots in clustered Data ONTAP:

setenv bootarg.init.boot_clustered true

Note: Do not issue any commands related to aggregates until the entire procedure is completed.

3. Complete the following substeps on the healthy node:

a. On the healthy node, enter the following command to ensure that any coredumps on the impaired node are saved:

system node run -node *local-node-name* partner savecore

b. On the healthy node node, enter the following command to enter advanced privilege mode:

priv set advanced

c. Enter the following command to assign the system ID of the new NVRAM adapter to the disks:

disk reassign -s *old_system_ID* -d *new_system_id*

Attention: Be sure to perform this step correctly. If disks are not assigned correctly, the nodes will panic.

old_system_ID represents the system ID you recorded in step 1d.

new_system_id represents the system ID you recorded in Step 2c.

d. Enter **y** at the following prompt:

Example

```
disk reassign -s 101174200 -o impaired_node -d 0101166306
Disk ownership will be updated on all disks previously belonging to
Filer with sysid 101174200.
Would you like to continue (y/n)? y
```

e. Enter the following command to ensure that the system IDs have been correctly reassigned to the disks:

disk show

f. Enter the following command to return to the admin privilege mode:

priv set admin

4. Complete the following substeps on the impaired node (the one containing the new NVRAM adapter):

a. Restart the node by entering the following command:

autoboot

b. As the software starts, access the boot menu by pressing Ctrl-C.

c. Update and synchronize the flash-based configuration by selecting the option `Update flash from backup config` from the displayed menu.

The impaired node boots and displays the `Waiting for giveback...` message.

d. Issue Ctrl-C to let the system complete booting up without a giveback.

It will then reboot a second time to implement the configuration from backup.

e. Boot the Data ONTAP software by entering the following command:

autoboot

f. Enter **y** when the startup process prompts you to confirm the system ID mismatch.

Example

```
WARNING: System id mismatch. This usually occurs when moving CF cards!
Override system id (y|n) ? [n] y
```

This puts the node in Waiting for Giveback state.

5. On the healthy node, return the storage to the node containing the new NVRAM adapter by entering the following command:

   storage failover giveback -fromnode local

6. After the giveback operation is complete, enter the following command to check that the HA pair is healthy and takeover is possible:

   storage failover show

Performing a final takeover and giveback from the impaired node

To ensure that the disk reassignment is successful, you must perform a final takeover and giveback from the impaired node.

About this task

These steps must be taken if you are operating Data ONTAP 8.0.x or 8.1.x.

It is important that you apply the commands in these steps on the correct system:

- The *impaired node* is the node on which you are performing maintenance.
- The *healthy node* is the HA partner of the impaired node.

Steps

1. Take over the healthy node by entering the following command from the impaired node's console:

   storage failover takeover -bynode *impaired-node-name*

2. Return control to the healthy node by entering the following command from the impaired node's console:

   storage failover giveback -fromnode *impaired-node*

   A successful giveback ends with a message on the healthy node indicating successful giveback.

   Note: If `Waiting for Giveback` is not displayed prior to giveback, reboot the controller module. If this continues, contact technical support.

Completing the replacement process

After you replace the part, you can return the failed part to NetApp, as described in the RMA instructions shipped with the kit. Contact technical support at *support.netapp.com*, 888-463-8277 (North America), 00-800-44-638277 (Europe), or +800-800-80-800 (Asia/Pacific) if you need the RMA number or additional help with the replacement procedure.

Disposing of batteries

Dispose of batteries according to local regulations regarding battery recycling or disposal. If you cannot properly dispose of the battery, return it to NetApp, as described in the RMA instructions shipped with the kit.

Related information

Warranty Agreement, Safety Information, and Regulatory Notices at support.netapp.com

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