
Replacing an RTC battery

You replace the real-time clock (RTC) battery in the controller module to ensure that your system's services and applications that depend on accurate time synchronization continue to function.

About this task

- You can use this procedure with all versions of Data ONTAP supported by your system.
- All other components in the system must be functioning properly; if not, you must contact technical support.

Steps

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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.

Shutting down a controller module in an HA pair

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

About this task

As part of this procedure, you either leave the power supplies on or turn them off, depending on your configuration:

- 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, you should turn off the power supplies in the chassis.

Steps

1. If running clustered Data ONTAP, check the status of the nodes in the cluster:
 - a. Enter the following command at the system console of either node:

```
cluster show
```

The command produces output similar to the following:

```
Node Health Eligibility
-----
```

```
node1 true      true
node2 true      true
node3 true      true
node4 true      true
4 entries were displayed.
```

b. Take one of the following actions, depending on the result of the command:

If...	Then...
All nodes show <code>true</code> for both health and eligibility.	Proceed to Step 3.
The impaired node shows <code>false</code> for health.	Proceed to the next step.
Any nodes show <code>false</code> for eligibility.	Resolve any cluster issues as needed before continuing with this procedure.
Any nodes other than the impaired node show <code>false</code> for health.	Correct the problems that cause the health issues on the nodes before continuing with this procedure.

2. Check the status of the impaired node (the node you want to perform maintenance on) by entering the following command at the system console of either node:

For...	Issue the command...
7-Mode	<code>cf status</code>
Clustered Data ONTAP	<code>storage failover show</code>

3. Take one of the following actions, depending on the result of the `cf status` or `storage failover show` command:

If...	Then...
Neither node is in takeover mode	Go to the next step in this procedure.
The healthy node took over the impaired node	The impaired node is in a state where you can begin removing it from the system chassis.
The impaired node took over the healthy node	<ul style="list-style-type: none"> a. Correct the problem that caused the takeover. b. Enter the <code>cf giveback</code> command (7-Mode) or <code>storage failover giveback <i>impaired_node_name</i></code> command (clustered Data ONTAP) from the impaired node console. c. Go back to the Step 1.

4. Take over and power down the impaired node by taking the following steps:

a. Enter one of the following commands from the healthy node's console and wait for the takeover to complete:

For systems operating in...	Issue the command...
7-Mode	<code>cf takeover</code>
Clustered Data ONTAP	<ul style="list-style-type: none"> • In Data ONTAP 8.1.0 or earlier: <code>storage failover takeover -fromnode <i>healthy_node_name</i></code> • In Data ONTAP 8.2 or later: <code>storage failover takeover -ofnode <i>impaired_node_name</i></code>

The impaired node is taken over and then automatically reboots and displays the `Waiting for giveback...` message.

Note: Leave the power supplies turned on to provide power to the healthy node.

- b. Wait at least two minutes after takeover of the impaired node to ensure that the takeover was completed successfully.
- c. With the impaired node showing the `waiting for giveback...` message, shut it down.

The method you use to shut down the node depends on whether remote management via a Service Processor (SP) is used.

Is the SP configured?	Then...
Yes	Log in to the impaired node's SP and issue the following command: <code>system power off</code>
No	At the impaired node's prompt, press <code>Ctrl-C</code> and respond <code>Y</code> to halt the node.

The impaired node is now in a state where you can proceed to the next task.

- 5. If you are not already grounded, properly ground yourself.

Shutting down a stand-alone controller module

For a stand-alone controller module, you must perform a clean shutdown to ensure that all data has been written to disk. You must also disconnect the power supplies.

Steps

- 1. Enter the following command from the system console of the impaired node:

If your system is configured in...	Then issue this command...
7-Mode	<code>halt</code>
Clustered Data ONTAP	<code>halt local</code>

After you issue the command and respond `Y` to halt the node, wait until the system stops at the `LOADER` prompt.

Attention: You must perform a clean system shutdown before replacing system components to avoid losing unwritten data in the nonvolatile memory (NVMEM). The NVMEM has a green LED on the rear of the controller module that blinks if there is data in the NVMEM that has not been saved to disk. You need to reboot the controller module and try halting it again. If repeated attempts to cleanly shut down the controller module fail, be aware that you might lose any data that was not saved to disk.

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

Opening the system

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

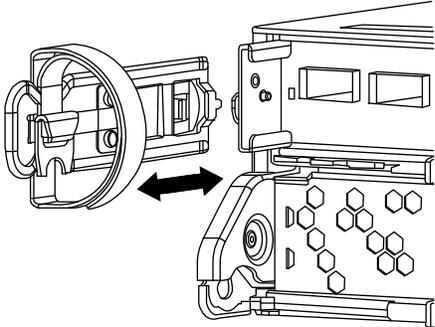
Steps

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

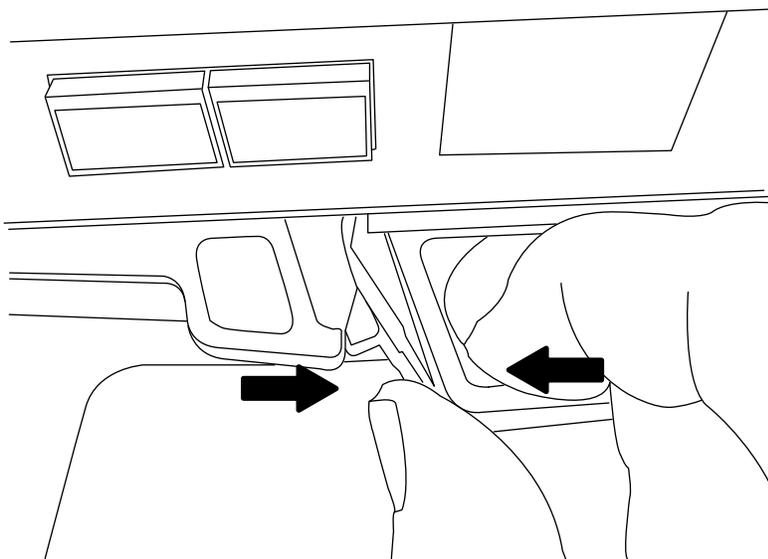
Leave the cables in the cable management arm so that when you reinstall the cable management arm, the cables are organized.

3. Remove the cable management arms from the left and right sides of the controller module and set them aside.

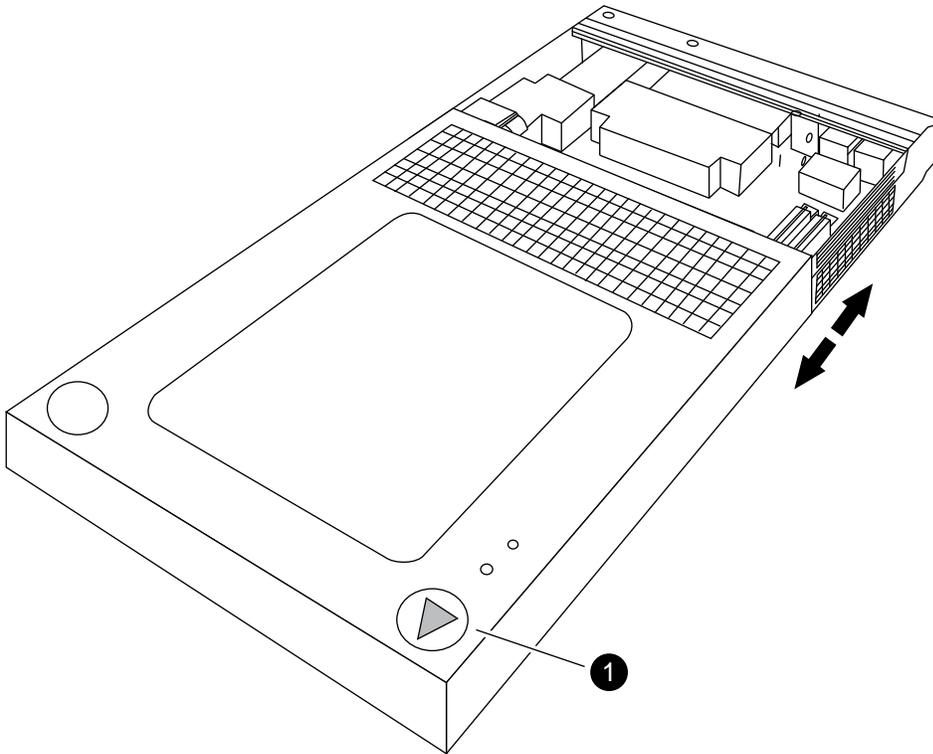
The illustration shows the cable management arms on a FAS2552 system. The procedure is the same for all FAS2500 systems.



4. Squeeze the latch on the cam handle until it releases, as shown in the following illustration. Open the cam handle fully to release the controller module from the midplane, and then, using two hands, pull the controller module out of the chassis.



5. Turn the controller module over and open it by pressing the button to release the cover, and then slide the cover out.



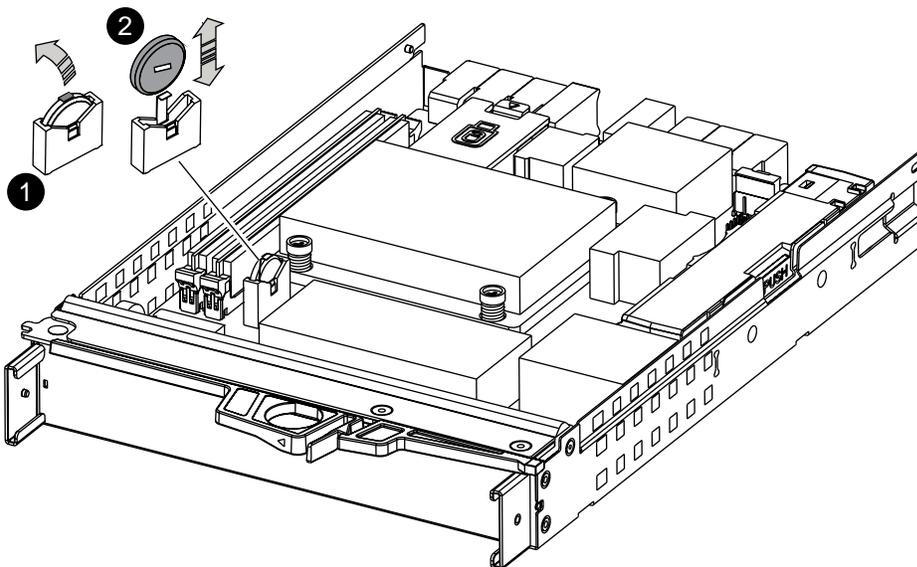
1	Button to release controller module cover
----------	---

Removing an RTC battery

You must follow a specific sequence of steps to remove the RTC battery from the controller module.

Steps

1. Locate the RTC battery at the right-rear of the controller module.



1	RTC battery holder
2	RTC battery

2. With your fingernail, gently pry the retaining clip away from the top edge of the battery.
Attention: Do not pry the clip too roughly; the clip bends if you apply too much force.
3. Grasp the sides of the battery with your thumb and forefinger, lift the battery out of the holder, and set it aside.

Installing an RTC battery

You must follow a specific sequence of steps to install a RTC battery.

Steps

1. If you are not already grounded, properly ground yourself.
2. Remove the replacement battery from the antistatic shipping bag.
3. Locate the empty battery holder in the controller module.
4. Align the negative side of the battery away from the NVMEM battery, as shown in the previous illustration and insert the battery into the holder by tilting the battery at an angle and pushing down.
5. Visually inspect the battery to make sure that it is completely installed into the holder and that the polarity is correct.

Reinstalling the controller module and booting the system

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.

About this task

For HA pairs, the sequence in which you reinstall the controller module is especially important because it attempts to reboot as soon as you completely seat it in the chassis.

Steps

1. Close the controller module by sliding the cover over it until the release button clicks to confirm the closure.
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.
Note: Do not completely insert the controller module in the chassis until instructed to do so.
3. Reinstall the cable management arms and recable the controller module, as needed.
 If you removed the media converters (SFPs), remember to reinstall them if you are using fiber optic cables.
4. Complete the reinstall of the controller module:

If your system is in... **Then perform these steps...**

- | | |
|-----------------------------|---|
| An HA pair | <ol style="list-style-type: none">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 <code>Press Ctrl-C for Boot Menu</code>.

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 , 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 | <ol style="list-style-type: none">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 <code>Press Ctrl-C for Boot Menu</code>.

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 , 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. |
-

Running diagnostics on the RTC battery

After installing the RTC battery, you should run diagnostics.

Steps

1. If the boot process was interrupted too late and the Boot Menu appeared, perform the following steps:
 - a. Select the Maintenance mode option from the displayed menu.
 - b. After the system boots to Maintenance mode, enter the following command at the prompt:

halt

After you issue the command, wait until the system stops at the **LOADER** prompt.

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

- A prompt warning that when entering Maintenance mode in an HA configuration you must ensure that the healthy node remains down.

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

2. On the node with the replaced component, enter the following command at the **LOADER** prompt:

```
boot_diags
```

Note: You must enter this command from the **LOADER** prompt for system-level diagnostics to function properly. The `boot_diags` command starts special drivers designed specifically for system-level diagnostics.

Important: During the `boot_diags` process, you might see the following prompts:

- A prompt warning that when entering Maintenance mode in an HA configuration you must ensure that the partner remains down.

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

The Maintenance mode prompt (`*>`) appears.

3. Clear the status logs by entering the following command:

```
sldiag device clearstatus
```

4. Verify that the log is cleared by entering the following command:

```
sldiag device status
```

The following default response is displayed:

```
SLDIAG: No log messages are present.
```

5. Run the sensor-related environmental tests for the RTC battery by entering the following command from the Maintenance mode prompt:

```
sldiag device run -dev env
```

Note: See the *System-Level Diagnostics Guide* for a description of the types of tests you can run.

6. View the status of the test by entering the following command:

```
sldiag device status
```

Your storage system provides the following output while the tests are still running:

```
There are still test(s) being processed.
```

After all the tests are complete, the following response appears by default:

```
*> <SLDIAG:_ALL_TESTS_COMPLETED>
```

7. Verify that no hardware problems resulted from the addition or replacement of hardware components on your system by entering the following command:

```
sldiag device status [-dev devtype] [-name device] -long -state failed
```

System-level diagnostics returns you to the prompt if there are no test failures, or lists the full status of failures resulting from testing the component.

8. Proceed based on the result of the preceding step:

If the system-level diagnostics tests...	Then...
Were completed without any failures	<p>a. Clear the status logs by entering the following command:</p> <pre>sldiag device clearstatus</pre> <p>b. Verify that the log is cleared by entering the following command:</p> <pre>sldiag device status</pre> <p>The following default response is displayed: SLDIAG: No log messages are present.</p> <p>c. Exit Maintenance mode by entering the following command:</p> <pre>halt</pre> <p>d. Enter the following command at the LOADER prompt to boot the storage system:</p> <pre>boot_ontap</pre> <p>e. If your system is in an HA pair, enter the <code>cf giveback</code> command (7-Mode Data ONTAP) or <code>storage failover giveback</code> command (clustered Data ONTAP) from the partner node's console.</p> <p>You have completed system-level diagnostics.</p>
Resulted in some test failures	<p>Determine the cause of the problem:</p> <p>a. Exit Maintenance mode by entering the following command:</p> <pre>halt</pre> <p>After you issue the command, wait until the system stops at the LOADER prompt.</p> <p>b. Turn off or leave on the power supplies, depending on how many controller modules are in the chassis:</p> <ul style="list-style-type: none"> • If you have two controller modules in the chassis, leave the power supplies turned on to provide power to the other controller module. • If you have one controller module in the chassis, turn off the power supplies and unplug them from the power sources. <p>c. Check the controller module you are servicing and verify that you have observed all the considerations identified for running system-level diagnostics, that cables are securely connected, and that hardware components are properly installed in the storage system.</p> <p>d. Boot the controller module you are servicing, interrupting the boot by pressing Ctrl-C when prompted. This takes you to the Boot Menu:</p> <ul style="list-style-type: none"> • If you have two controller modules in the chassis, fully seat the controller module you are servicing in the chassis. The controller module boots up when fully seated. • If you have one controller module in the chassis, connect the power supplies and turn them on. <p>e. Select Boot to maintenance mode from the menu.</p> <p>f. Exit Maintenance mode by entering the following command:</p> <pre>halt</pre> <p>After you issue the command, wait until the system stops at the LOADER prompt.</p> <p>g. Enter <code>boot_diags</code> at the prompt and rerun the system-level diagnostic test.</p>

Related information

[System-Level Diagnostics Guide](#)

Resetting the date and time on the system

After you reconnect the battery and reboot Data ONTAP, you must check the date and time on the system and reset them.

Steps

1. Display the current date on the node or nodes by entering the following command:

For...	Issue the command...
7-Mode	date Note: If your system is in an HA pair, make sure that you display the date and time on the partner node and set the target node to those values.
Cluster-Mode	system date show Note: Make sure that you display the date and time on the other nodes in the cluster and set the target node to those values.

2. Set the date by entering the following command:

For...	Issue the command...
7-Mode	date [-u] [[[CC]yy]mmdhmm>[.<ss>]] -u sets the date and time to Greenwich Mean Time instead of the local time. CC is the first two digits of the current year. yy is the second two digits of the current year. mm is the current month. If the month is omitted, the default is the current month. dd is the current day. If the day is omitted, the default is the current day. hh is the current hour, using a 24-hour clock. mm is the current minute. ss is the current second. If the seconds are omitted, the default is 0.
Cluster-Mode	system date modify -node node_name -date date_and_time node_name is the target node. date_and_time is the date and time setting for the node, in the format MM/DD/YYYY HH:MM:SS.

Note: The *Data ONTAP System Administration Guide for 7-Mode* or the *Clustered Data ONTAP System Administration Guide for Cluster Administrators* contains more information about setting the system date and time.

Example

The following command sets the date and time to 22 May 2014 at 9:25 a.m. on a system operating in 7-Mode:

```
date 201405220925
```

Example

The following command sets the date and time to 22 May 2014 at 9:25 a.m. on a system running clustered Data ONTAP:

```
system date modify -node system1 -date "05/22/2014 09:25:00"
```

Related information

[Documentation on the NetApp Support Site: support.netapp.com](http://support.netapp.com)

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 the NetApp Support Site, 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](http://support.netapp.com)

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