
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

1. [Shutting down the target controller](#) on page 1
2. [Opening the system](#) on page 6
3. [Removing an RTC battery](#) on page 8
4. [Installing an RTC battery](#) on page 9
5. [Reinstalling the controller module and booting the system](#) on page 10
6. [Running diagnostics on the RTC battery](#) on page 11
7. [Resetting the date and time on the system](#) on page 14
8. [Completing the replacement process](#) on page 15

Shutting down the target controller

You shut down or take over the target controller using different procedures, depending on the storage system hardware configuration.

Choices

- [Shutting down a controller module in an HA pair](#) on page 1
- [Shutting down a controller module in a two-node MetroCluster configuration](#) on page 5
- [Shutting down a stand-alone controller module](#) on page 6

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 the system is running clustered Data ONTAP, check the status of the nodes in the cluster:

a. Change to the advance privilege level:

```
set -privilege advanced
```

b. Enter the following command at the system console of either node:

```
cluster show -epsilon *
```

The command produces output similar to the following:

Node	Health	Eligibility	Epsilon
node1	true	true	true
node2	true	true	false
node3	true	true	false
node4	true	true	false

4 entries were displayed.

Note: Epsilon must not be on a node to be replaced.

Note: In a cluster with a single HA pair, Epsilon will not be assigned to either node.

c. 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 and Epsilon is not assigned to the impaired node.	<p>a. Exit advanced mode:</p> <pre>set -privilege admin</pre> <p>b. Proceed to Step 3.</p>
All nodes show <code>true</code> for both health and eligibility and Epsilon is assigned to the impaired node	<p>Complete the following steps to move Epsilon:</p> <p>a. Remove Epsilon from the node:</p> <pre>cluster modify -node node1 -epsilon false</pre> <p>b. Assign Epsilon to a node in the cluster:</p> <pre>cluster modify -node node4 -epsilon true</pre> <p>c. Exit advanced mode:</p> <pre>set -privilege admin</pre> <p>d. Go to Step 3.</p>

If...	Then...
The impaired node shows <code>false</code> for health and is the Epsilon node.	Complete the following steps: <ol style="list-style-type: none"> a. Change to the advance privilege level: <code>set -privilege advanced</code> b. Remove Epsilon from the node: <code>cluster modify -node node1 -epsilon false</code> c. Assign Epsilon to a node in the cluster: <code>cluster modify -node node4 -epsilon true</code> d. Exit advanced mode: <code>set -privilege admin</code> e. Proceed to the next step.
The impaired node shows <code>false</code> for health and is not the Epsilon node.	<ol style="list-style-type: none"> a. Exit advanced mode: <code>set -privilege admin</code> b. Proceed to the next step.
Any nodes show <code>false</code> for eligibility.	<ol style="list-style-type: none"> a. Resolve any cluster issues as needed before continuing with this procedure. b. Exit advanced mode: <code>set -privilege admin</code>
Any nodes other than the impaired node show <code>false</code> for health.	<ol style="list-style-type: none"> a. Correct the problems that cause the health issues on the nodes before continuing with this procedure. b. Exit advanced mode: <code>set -privilege admin</code>
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 <code>cf status</code> or <code>storage failover show</code> 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.

If...	Then...
The impaired node took over the healthy node	<ol style="list-style-type: none"> a. Correct the problem that caused the takeover. b. Enter the cf giveback command (7-Mode) or storage failover giveback <i>impaired_node_name</i> 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	cf takeover
Clustered Data ONTAP	<ul style="list-style-type: none"> • In Data ONTAP 8.1.0 or earlier: storage failover takeover -fromnode <i>healthy_node_name</i> • In Data ONTAP 8.1.1 or later: storage failover takeover -ofnode <i>impaired_node_name</i> • In Data ONTAP 8.2 or later: storage failover takeover -ofnode <i>impaired_node_name</i>

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

- 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 and whether or not the system is in a dual-chassis or single-chassis configuration.

Is the SP configured?	Then...
Yes	Log in to the impaired node's SP and issue the following command: system power off
No, and the system is in a dual-chassis HA pair in which each controller module is in a separate chassis.	Proceed to Step 5.
No, and the system is in a single-chassis HA pair in which both controller modules 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.

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.
6. If the system is in a dual-chassis HA pair, turn off the power supplies for the impaired node.

Shutting down a controller module in a two-node MetroCluster configuration

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

Steps

1. If the system is 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. Use the `metrocluster check run`, `metrocluster check show` and `metrocluster check config-replication show` commands to make sure no configuration updates are in progress or pending.

3. If the impaired node has not switched over, perform the switchover operation from the healthy node:

```
metrocluster switchover
```

4. Monitor the completion of the switchover:

```
metrocluster operation show
```

Example

```
mccl1A::*> metrocluster operation show
Operation: Switchover
Start time: 10/4/2012 19:04:13
State: in-progress
End time: -
Errors:

mccl1A::*> metrocluster operation show
Operation: Switchover
Start time: 10/4/2012 19:04:13
```

```
State: successful
End time: 10/4/2012 19:04:22
Errors: -
```

5. Shut down the impaired node.

The method you use to shut down the node depends on whether remote management using 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 Ctrl-C and respond y to halt the node.

6. 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 NVRAM.

The NVRAM has a green LED on the rear of the controller module that blinks while destaging data to the flash memory when you halt the system. After the destage is complete, the LED turns off.

- If power is lost without a clean shutdown, the NVRAM LED will flash until the destage is complete, and then the LED will turn off.
- If the LED is on and power is on, unwritten data is stored on NVRAM. This typically occurs during an uncontrolled shutdown after Data ONTAP had successfully booted.

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

If you want to access components inside the controller module, you must open the system.

Steps

1. If you are not already grounded, properly ground yourself.

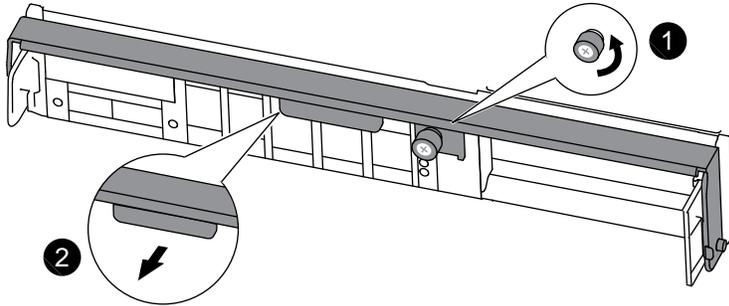
- Loosen the hook and loop strap binding the cables to the cable management device, and then unplug the system cables and SFPs (if needed) from the controller module, and keep track of where the cables were connected.

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

- Remove the cable management device from the controller module and set it aside.

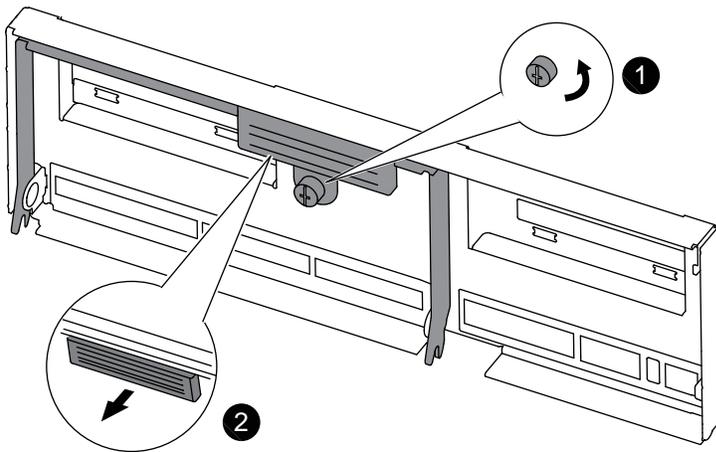
Note: The 8020 controller module uses cable management arms, while the rest of the 80xx family uses a cable management tray.

- Loosen the thumbscrew on the cam handle of the controller module .



8020 controller module cam handle

1	Thumbscrew
2	Cam handle



Any other 80xx controller module cam handle

1	Thumbscrew
2	Cam handle

- Pull the cam handle downward and begin to slide the controller module out of the chassis.

If you have...	Then...
A 8020 system	Slide the controller module completely out of the system. Note: Make sure that you support the bottom of the controller module with your free hand and set it aside.
Any other 80xx model	Slide the controller module out of the system until it catches, press the release latch on the left side of the controller module, and then slide the controller module out of the system and set it aside. Note: Make sure that you support the bottom of the controller module with your free hand.

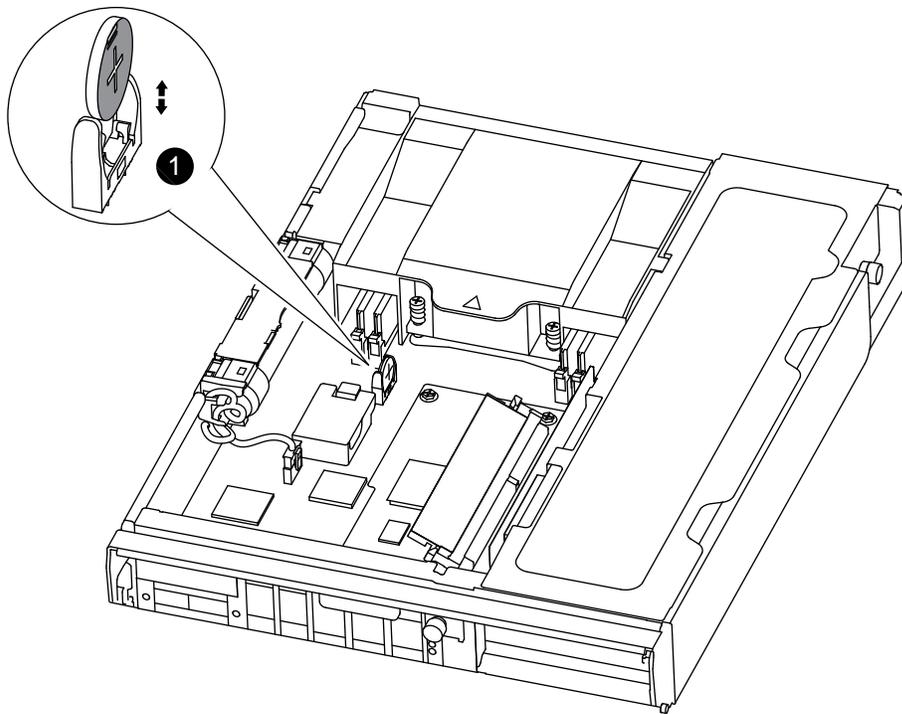
Removing an RTC battery

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

Steps

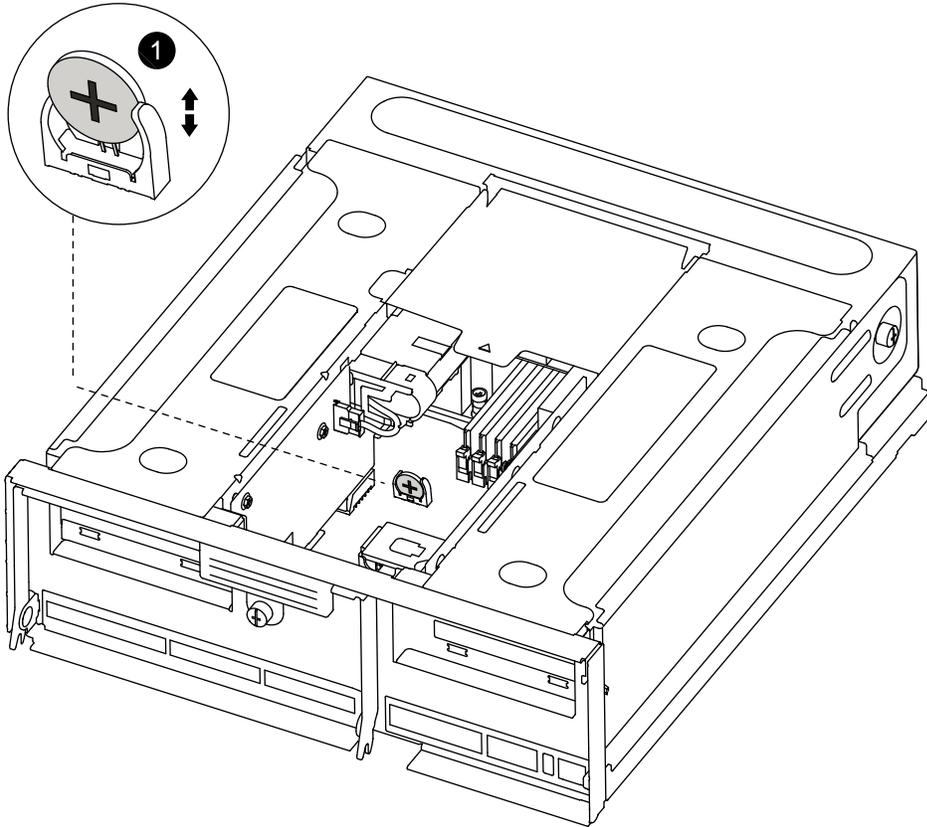
1. Locate the RTC battery in the controller module.

The following illustrations show the location of the RTC battery.



The RTC battery in a 8020 system

1	RTC battery and holder
---	------------------------



The RTC battery in the other 80xxsystems

1	RTC battery and holder
----------	------------------------

- Place your thumb or forefinger on the battery, gently push the battery away from the holder, rotate it away from the holder, and then lift the battery out of the holder.

Note: Note the polarity of the battery as you remove it from the holder. The battery is marked with a plus sign and must be positioned in the holder correctly. A plus sign near the holder tells you how the battery should be positioned.

Installing an RTC battery

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

Steps

- If you are not already grounded, properly ground yourself.
- Remove the replacement battery from the antistatic shipping bag.
- Locate the empty battery holder in the controller module.
- Note the polarity of the RTC battery and insert it into the holder by tilting the battery at an angle and pushing down.
- 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 with two controller modules in the same chassis, 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. 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.

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	<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. Boot to Maintenance mode by entering halt to go to the LOADER prompt:<ul style="list-style-type: none">• If you are running Data ONTAP 8.2.1 and earlier, enter boot_ontap, and press Ctrl-C when prompted to go to the boot menu, and then select Maintenance mode from the menu.• If you are running Data ONTAP 8.2.2 and later, enter boot_ontap maint at the LOADER prompt.d. If you have not already done so, reinstall the cable management device, 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.

If your system is in...	Then perform these steps...
A stand-alone configuration or an HA pair in which both controller modules are in separate chassis	<p>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.</p> <p>Attention: Do not use excessive force when sliding the controller module into the chassis; you might damage the connectors.</p> <p>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>.</p> <p>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.</p> <p>c. From the boot menu, select the option for Maintenance mode.</p> <p>d. If you have not already done so, reinstall the cable management device, and then tighten the thumbscrew on the cam handle on back of the controller module.</p> <p>e. Bind the cables to the cable management device with the hook and loop strap.</p>

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 prompt:

- 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 the prompt.

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 prompt:

- 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 the prompt.

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

- a. Clear the status logs by entering the following command:
sldiag device clearstatus
- b. 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.
- c. Exit Maintenance mode by entering the following command:
halt
- d. Enter the following command at the LOADER prompt to boot the storage system:
boot_ontap
- e. Return the replacement node to normal operation:

If your system is in a...	Issue this command from the partner's console...
HA pair running 7-Mode Data ONTAP	<code>cf giveback</code>
HA pair running clustered Data ONTAP	<code>storage failover giveback</code>
Two-node MetroCluster running clustered Data ONTAP	<code>metrocluster switchback</code>
Standalone configuration	None required

You have completed system-level diagnostics.

If the system-level diagnostics tests...	Then...
Resulted in some test failures	<p>Determine the cause of the problem:</p> <ol style="list-style-type: none"> a. Exit Maintenance mode by entering the following command: halt After you issue the command, wait until the system stops at the LOADER prompt. b. Turn off or leave on the power supplies, depending on how many controller modules are in the chassis: <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. 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. d. Boot the controller module you are servicing, interrupting the boot by pressing Ctrl-C when prompted. This takes you to the Boot Menu: <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. e. Select Boot to maintenance mode from the menu. f. Exit Maintenance mode by entering the following command: halt After you issue the command, wait until the system stops at the LOADER prompt. g. Enter boot_diags at the prompt and rerun the system-level diagnostic test.

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	<p>date</p> <p>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.</p>

For...	Issue the command...
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]mddhmm>[.<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 -date date_and_time <i>date_and_time</i> 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 -date "05/22/2014 09:25:00"
```

Related information

[Documentation on the NetApp Support Site: mysupport.netapp.com](http://mysupport.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 NetApp Support, 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

Safety Information and Regulatory Notices at support.netapp.com

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