Replacing the Real-Time Clock battery in a FAS22xx system

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.
  In this procedure, a *Cluster-Mode system* refers to a system running Data ONTAP 8.x in Cluster-Mode. A *7-Mode system* refers to a system running Data ONTAP 8.x in 7-Mode.
- All other components in the system must be functioning properly; if not, you must contact technical support.

Steps

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 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.

Steps

1. Check the status of the target 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	`cf status`
Cluster-Mode	`storage failover show`

2. 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.

If...	Then...
The partner node took over the target node	The target node is in a state where you can begin removing it from the system chassis.
The target node took over the partner node	a. Correct the problem that caused the takeover. b. Enter the `cf giveback` command (7-Mode) or `storage failover giveback -fromnode nodename` command (Cluster-Mode) from the target node console. c. Go back to the beginning of this procedure.

3. Take over the target node by entering one of the following commands from the partner node's console:

For...	Issue the command...
7-Mode	`cf takeover`
Cluster-Mode	`storage failover takeover -bynode node`

The target node is halted and can be removed for maintenance.

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

Shutting down a stand-alone controller

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

Steps

1. Enter the following commands from the system console:

If your system is configured in...	Then issue this command...
7-Mode	`halt`
Cluster-Mode	`halt local`

After you issue the command, 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 LED is marked with a battery symbol and is located on the controller module to the left of the label showing the MAC address. If the NVMEM LED is flashing, there is content in the NVMEM that has not been saved to disk. You need to reboot the controller module and proceed from the beginning of this procedure. 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, unplug both power cords from the power source, and then remove the power cords.

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. Unplug the system cables and SFPs from the controller module, as needed, 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.
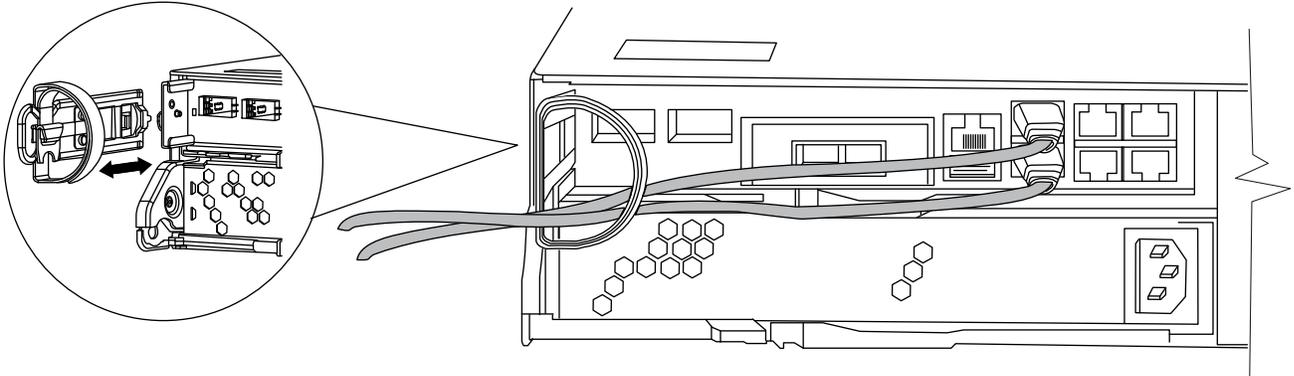
4. Squeeze the latch on the cam handle until it releases, open the cam handle fully to release the controller module from the midplane, and then, using two hands, pull the controller module out of the chassis.
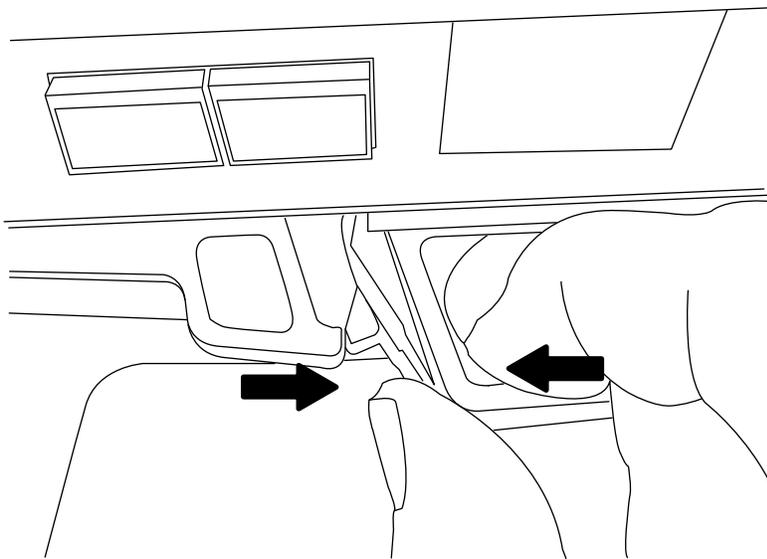
5. Turn the controller module over and open it by sliding the blue tabs to release the cover, and then swing the cover up and open.
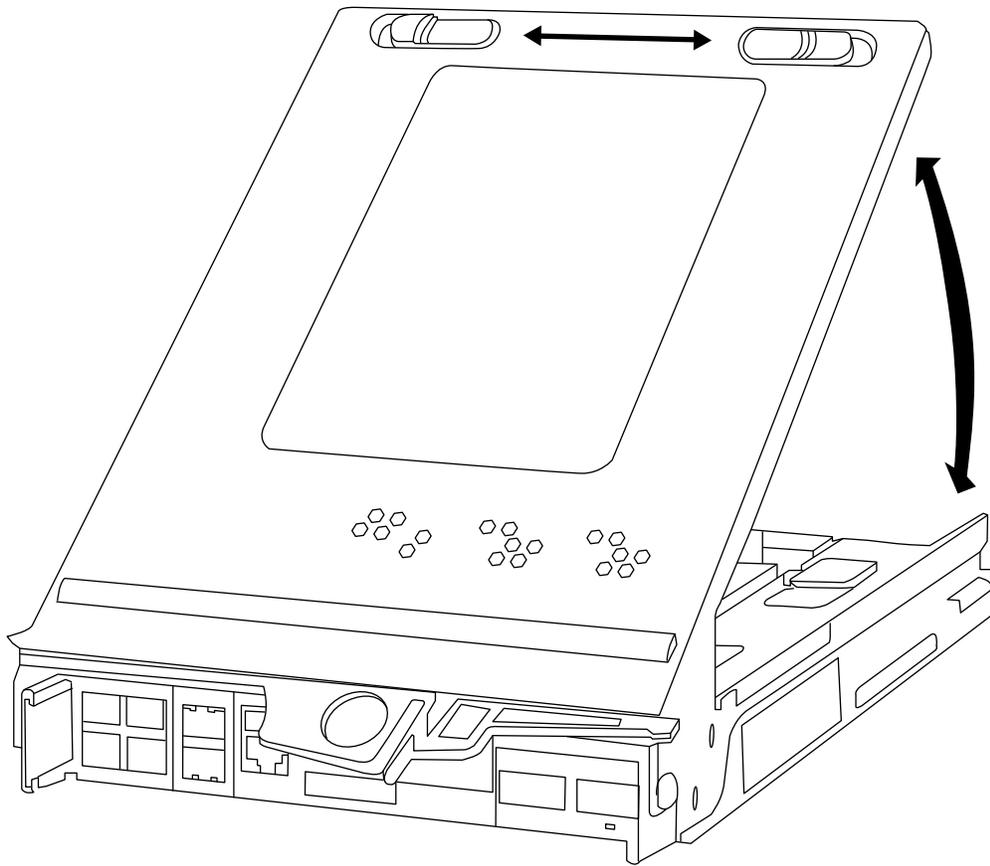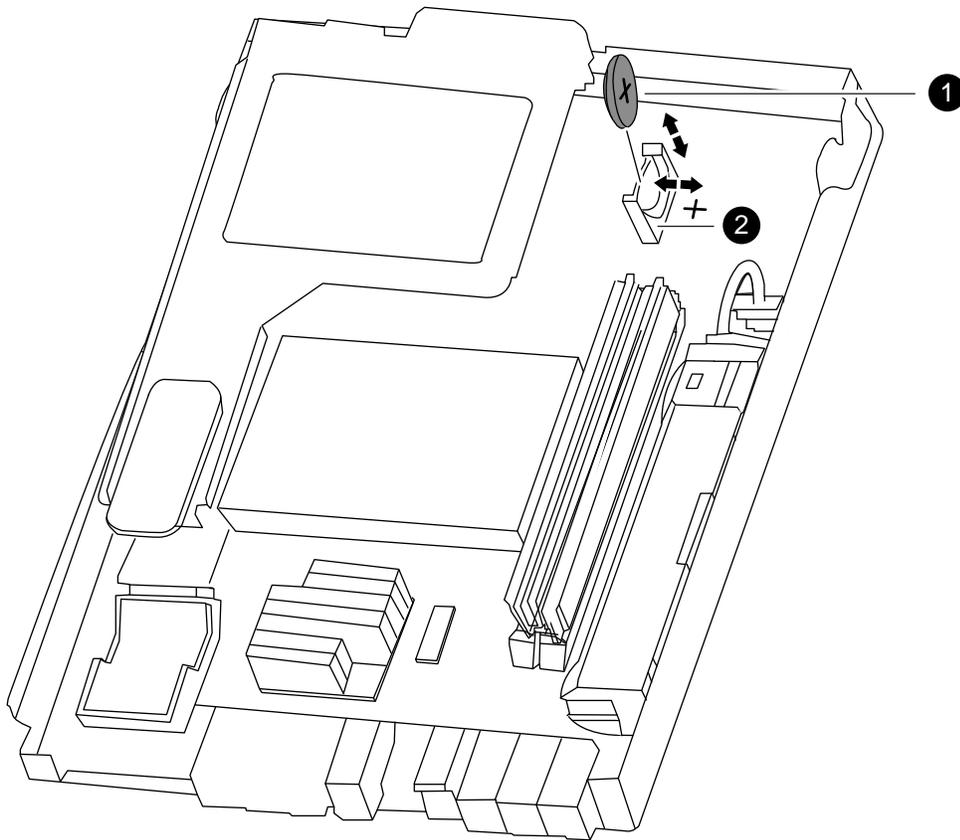
Removing an RTC battery

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.

❶	RTC battery
❷	RTC battery holder

2. 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 positive side of the battery with the large "+" on the motherboard and insert the battery into the holder by tilting the battery at an angle and pushing down.

   The positive side of the battery should face toward the NVMEM battery, as shown in the previous illustration.

5. Visually inspect the battery to make sure that it is completely installed into the holder and that the polarity is correct.

   There is a large "+" on the motherboard indicating battery polarity.

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

Note: 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. Close and latch the controller module cover, if necessary.

2. Reinstall the cable management arms and recable the controller module, as needed.

   When recabling, remember to reinstall the media converters (SFPs) if you are using fiber cables.

3. Reinstall the controller module:

If your system is in...	Then perform these steps...
An HA pair	**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, insert the controller module into the chassis, firmly pushing until the controller module meets the midplane, and then close the cam handle so that the latch clicks into the locked position and the controller module is fully seated. **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.
A stand-alone configuration	**a.** With the cam handle in the open position, insert the controller module motherboard tray into the chassis, firmly pushing until the controller module meets the midplane, and then close the cam handle so that the latch clicks into the locked position and the controller module is fully seated. **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.

The boot process is halted at either the Boot menu or the LOADER prompt.

Related information

System-Level Diagnostics Guide

Running diagnostics on the RTC battery

After installing the RTC battery, you should run diagnostics.

Steps

1. Complete the applicable step, depending on where the node halted during the boot process:

If the node halted at the...	Then...
LOADER prompt	Continue with the procedure.
Boot menu	a. Select the Maintenance mode option from the displayed menu. b. Enter the following command at the prompt: **halt** After you issue the command, wait until the system stops at the LOADER prompt. c. Continue with the procedure.

2. 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.

   The Maintenance mode prompt (*>) appears.

3. Enter the following command at the Maintenance mode prompt:

   sldiag

   For details about the sldiag command, see the sldiag man page.

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

   sldiag device clearstatus

5. 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.

6. 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.

7. 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>

8. 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.

9. 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 firmware prompt to reboot the storage system: **boot_ontap** e. If your system is in an HA pair, enter the cf giveback command (7-Mode) or storage failover giveback command (Cluster-Mode) from the partner node console. You have completed system-level diagnostics.
Resulted in some test failures	Determine the cause of the problem: 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 target chassis: • If you have two controller modules in the chassis, leave the power supplies turned on to provide power to the partner node. • 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 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 target node, interrupting the boot by pressing Ctrl-c: • If you have two controller modules in the chassis, fully seat the controller module 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. Rerun the system-level diagnostic tests.

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]mmddhhmm>[.<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 or the contains more information about setting the system date and time.

Example
The following command sets the date and time to 22 May 2012 at 9:25 a.m. on a 7-Mode system:

date 201205220925

Example
The following command sets the date and time to 22 May 2012 at 9:25 a.m. on a Cluster-Mode system:

system date modify -node system1 -date "05/22/2012 09:25:00"

Related information

Documentation on the NetApp Support Site: 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 *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: now.netapp.com/NOW/knowledge/docs/hardware/ hardware_index.shtml

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You can also contact us in the following ways:

- NetApp, Inc., 495 East Java Drive, Sunnyvale, CA 94089 U.S.
- Telephone: +1 (408) 822-6000
- Fax: +1 (408) 822-4501
- Support telephone: +1 (888) 463-8277

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