Replacing the RTC battery

You replace the real-time clock (RTC) battery in the controller module so 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 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 impaired controller on page 1
2. Opening the controller module on page 3
3. Replacing the RTC battery on page 5
4. Installing the controller on page 6
5. Healing and switching back aggregates in a two-node MetroCluster configuration on page 8
6. Completing the replacement process on page 10

Shutting down the impaired controller

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

Choices

• Shutting down the impaired node on page 1
• Shutting down a node in a two-node MetroCluster configuration running ONTAP on page 2

Shutting down the impaired node

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

Before you begin

• If you have a cluster with more than two nodes, it must be in quorum. If the cluster is not in quorum or a healthy node shows false for eligibility and health, you must correct the issue before shutting down the impaired node.

Steps
1. If the impaired node is part of an HA pair, disable automatic giveback from the console of the healthy node:
   
   ```bash
   storage failover modify -node local -auto-giveback false
   ```

2. Take the impaired node to the LOADER prompt:
### If the impaired node is displaying... Then...

<table>
<thead>
<tr>
<th>The LOADER prompt</th>
<th>Go to the next step.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waiting for giveback...</td>
<td>Press Ctrl-C, and then respond <strong>y</strong>.</td>
</tr>
</tbody>
</table>
| System prompt or password prompt | Take over or halt the impaired node:  
  
  `storage failover takeover -ofnode impaired_node_name`
  
  When the impaired node shows Waiting for giveback..., press Ctrl-C, and then respond **y**. |

---

**Shutting down a node in a two-node MetroCluster configuration running ONTAP**

To shut down the impaired node, you must determine the status of the node and, if necessary, switch over the node so that the healthy node continues to serve data from the impaired node storage.

**About this task**

You must leave the power supplies turned on at the end of this procedure to provide power to the healthy node.

**Steps**

1. Check the MetroCluster status to determine whether the impaired node has automatically switched over to the healthy node:
   
   ```
   metrocluster show
   ```

2. Depending on whether an automatic switchover has occurred, proceed according to the following table:

<table>
<thead>
<tr>
<th>If the impaired node...</th>
<th>Then...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has automatically switched over</td>
<td>Proceed to the next step.</td>
</tr>
</tbody>
</table>
   | Has not automatically switched over| Perform a planned switchover operation from the healthy node:  
   |                               | `metrocluster switchover`                       |

   If has not automatically switched over and planned switchover with the `metrocluster switchover` command fails:

   a. Halt the impaired node:
   
   ```
   system node halt
   ```

   b. Perform a forced switchover operation:
   
   ```
   metrocluster switchover -forced on disaster true
   ```

3. Resynchronize the data aggregates by running the `metrocluster heal -phase aggregates` command from the surviving cluster.

**Example**

```
controller_A_1::> metrocluster heal -phase aggregates
[Job 130] Job succeeded: Heal Aggregates is successful.
```  

If the healing is vetoed, you have the option of reissuing the `metrocluster heal` command with the `-override-vetoes` parameter. If you use this optional parameter, the system overrides any soft vetoes that prevent the healing operation.

4. Verify that the operation has been completed by using the `metrocluster operation show` command.
5. Check the state of the aggregates by using the `storage aggregate show` command.

Example

```
controller_A_1::> storage aggregate show
Aggregate     Size Available Used% State   #Vols  Nodes            RAID Status
--------- -------- --------- ----- ------- ------ ---------------- ------------
... aggr_b2    227.1GB   227.1GB    0% online       0 mcc1-a2          raid_dp, mirrored, normal...
```

6. Heal the root aggregates by using the `metrocluster heal -phase root-aggregates` command.

Example

```
mcc1A::> metrocluster heal -phase root-aggregates
[Job 137] Job succeeded: Heal Root Aggregates is successful
```

If the healing is vetoed, you have the option of reissuing the `metrocluster heal` command with the `-override-vetoes` parameter. If you use this optional parameter, the system overrides any soft vetoes that prevent the healing operation.

7. Verify that the heal operation is complete by using the `metrocluster operation show` command on the destination cluster:

Example

```
mcc1A::> metrocluster operation show
Operation: heal-root-aggregates
State: successful
End Time: 7/29/2016 20:54:42
Errors: -
```

8. On the impaired controller module, disconnect the power supplies.

### Opening the controller module

To access components inside the controller, you must first remove the controller module from the system and then remove the cover on the controller module.

**Steps**

1. If you are not already grounded, properly ground yourself.
2. Unplug the cables from the impaired controller module, and keep track of where the cables were connected.
3. Slide the orange button on the cam handle downward until it unlocks.
4. Rotate the cam handle so that it completely disengages the controller module from the chassis, and then slide the controller module out of the chassis. 

Make sure that you support the bottom of the controller module as you slide it out of the chassis.

5. Place the controller module lid-side up on a stable, flat surface, press the blue button on the cover, slide the cover to the back of the controller module, and then swing the cover up and lift it off of the controller module.
Replacing the RTC battery

To replace the RTC battery, you must locate the failed battery in the controller module, remove it from the holder, and then install the replacement battery in the holder.

**Steps**

1. If you are not already grounded, properly ground yourself.
2. Locate the RTC battery.
3. Gently push the battery away from the holder, rotate it away from the holder, and then lift it 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.

4. Remove the replacement battery from the antistatic shipping bag.

5. Locate the empty battery holder in the controller module.

6. Note the polarity of the RTC battery, and then insert it into the holder by tilting the battery at an angle and pushing down.

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

8. Reinstall the controller module cover.

### Installing the controller

After you install the replacement component into the controller module, you must reinstall the controller module into the system chassis and boot the operating system.

### About this task

For HA pairs with two controller modules in the same chassis, the sequence in which you install the controller module is especially important because it attempts to reboot as soon as you completely seat it in the chassis.
Steps

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

2. If you have not already done so, replace the cover on the controller module.

3. 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.

4. Complete the reinstallation of the controller module:
   
The controller module begins to boot as soon as it is fully seated in the chassis.

<table>
<thead>
<tr>
<th>If your system is in...</th>
<th>Then perform these steps...</th>
</tr>
</thead>
</table>
| An HA pair             | 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 to avoid damaging the connectors. |
|                        | b. If you have not already done so, reinstall the cable management device. |
|                        | c. If you have not already done so, reconnect the cables to the controller module. |
|                        | d. Bind the cables to the cable management device with the hook and loop strap. |
| A two-node MetroCluster configuration | 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 to avoid damaging the connectors. |
|                        | b. If you have not already done so, reinstall the cable management device. |
|                        | c. If you have not already done so, reconnect the cables to the controller module. |
|                        | d. Bind the cables to the cable management device with the hook and loop strap. |
|                        | e. Reconnect the power cables to the power supplies and to the power sources, and then turn on the power to start the boot process. |

5. Return the node to normal operation:

<table>
<thead>
<tr>
<th>If your system is in...</th>
<th>Issue this command from the partner’s console...</th>
</tr>
</thead>
<tbody>
<tr>
<td>An HA pair</td>
<td><code>storage failover giveback -ofnode impaired_node_name</code></td>
</tr>
</tbody>
</table>
| A two-node MetroCluster configuration | Proceed to the next step.  
The MetroCluster healing and switchback procedures are done in the next task in the replacement process. |

6. If automatic giveback was disabled, reenable it:

   `storage failover modify -node local -auto-giveback true`
Healing and switching back aggregates in a two-node MetroCluster configuration

After you have completed the FRU replacement in a two-node MetroCluster configuration, you can perform the MetroCluster healing and switchback operations. These operations return the configuration to its normal operating state, with the sync-source storage virtual machines (SVMs) on the formerly impaired site now active and serving data from the local disk pools.

About this task

This task only applies to two-node MetroCluster configurations.

Steps

1. Resynchronize the aggregates by using the `metrocluster heal -phase aggregates` command from the surviving cluster.

   Example
   
   ```
   controller_A_1::> metrocluster heal -phase aggregates
   [Job 130] Job succeeded: Heal Aggregates is successful.
   ```

   If the healing is vetoed, you have the option of reissuing the `metrocluster heal` command with the `-override-vetoes` parameter. If you use this optional parameter, the system overrides any soft vetoes that prevent the healing operation.

2. Verify that the operation was completed successfully by using the `metrocluster operation show` command.

   Example
   
   ```
   controller_A_1::> metrocluster operation show
   Operation: heal-aggregates
   State: successful
   Start Time: 7/25/2014 18:45:55
   End Time: 7/25/2014 18:45:56
   Errors: -
   ```

3. Check the state of the aggregates by using the `storage aggregate show` command.

   Example

   ```
   controller_A_1::> storage aggregate show
   2
   Aggregate     Size     Available  Used% State   #Vols  Nodes            RAID Status
   --------- -------- --------- ----- ------- ------ ---------------- ------------
   ... aggr_b2    227.1GB   227.1GB  0% online       0 mcc1-a2          raid_dp, mirrored,
   normal...
   ```

4. Switch back the mirrored aggregates by using the `metrocluster healing -phase root-aggregates` command.

   Example
   
   ```
   mcc1A::> metrocluster heal -phase root-aggregates
   [Job 137] Job succeeded: Heal Root Aggregates is successful
   ```

   If the healing is vetoed, you have the option of reissuing the `metrocluster heal` command with the `-override-vetoes` parameter. If you use this optional parameter, the system overrides any soft vetoes that prevent the healing operation.
5. Verify that the heal operation was completed successfully by using the `metrocluster operation show` command on the healthy cluster:

   **Example**

   ```
mcc1A::> metrocluster operation show
   Operation: heal-root-aggregates
   State: successful
   End Time: 7/29/2014 20:54:42
   Errors: -
   ```

6. Verify that all nodes are in the `enabled` state:

   `metrocluster node show`

   **Example**

   ```
   cluster_B::> metrocluster node show
   DR                           Configuration  DR
   Group Cluster Node           State          Mirroring Mode
   ----- ------- -------------- -------------- --------- -------------------
   1     cluster_A
         controller_A_1 configured     enabled   heal roots completed
   cluster_B
         controller_B_1 configured     enabled   waiting for switchback recovery
   2 entries were displayed.
   ```

7. Verify that resynchronization is complete on all SVMs:

   `metrocluster vserver show`

8. Verify that any automatic LIF migrations being performed by the healing operations were completed successfully:

   `metrocluster check lif show`

9. Perform the switchback by using the `metrocluster switchback` command from any node in the surviving cluster.

10. Verify that the switchback operation has completed:

    `metrocluster show`

    **Example**

    ```
    The switchback operation is still running when a cluster is in the waiting-for-switchback state:
    ```

    ```
    cluster_B::> metrocluster show
    Cluster              Configuration State    Mode
    -------------------    -------------------     ---------
    Local: cluster_B configured              normal
    Remote: cluster_A configured              normal
    ```

    The switchback operation is complete when the clusters are in the normal state:

    ```
    cluster_B::> metrocluster show
    Cluster              Configuration State    Mode
    -------------------    -------------------     ---------
    Local: cluster_B configured              normal
    Remote: cluster_A configured              normal
    ```

    If a switchback is taking a long time to finish, you can check on the status of in-progress baselines by using the `metrocluster config-replication resync-status show` command.

11. Reestablish any SnapMirror or SnapVault configurations.
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.

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