



Hot-removing storage from a MetroCluster FC configuration

ONTAP MetroCluster

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Hot-removing storage from a MetroCluster FC configuration

You can hot-remove drive shelves—physically remove shelves that have had the aggregates removed from the drives—from a MetroCluster FC configuration that is up and serving data. You can hot-remove one or more shelves from anywhere within a stack of shelves or remove a stack of shelves.

- Your system must be a multipath HA, multipath, quad-path HA, or quad-path configuration.
- In a four-node MetroCluster FC configuration, the local HA pair cannot be in a takeover state.
- You must have already removed all aggregates from the drives in the shelves that you are removing.



If you attempt this procedure on non-MetroCluster FC configurations with aggregates on the shelf you are removing, you could cause the system to fail with a multidrive panic.

Removing aggregates involves splitting the mirrored aggregates on the shelves you are removing, and then re-creating the mirrored aggregates with another set of drives.

Disk and aggregate management

- You must have removed drive ownership after removing the aggregates from the drives in the shelves that you are removing.

Disk and aggregate management

- If you are removing one or more shelves from within a stack, you must have factored the distance to bypass the shelves that you are removing.

If the current cables are not long enough, you need to have longer cables available.

This task applies to the following MetroCluster FC configurations:

- Direct-attached MetroCluster FC configurations, in which the storage shelves are directly connected to the storage controllers with SAS cables
- Fabric-attached or bridge-attached MetroCluster FC configurations, in which the storage shelves are connected using FC-to-SAS bridges

Steps

1. Verify the operation of the MetroCluster configuration in ONTAP:

- a. Check whether the system is multipathed:

```
node run -node node-name sysconfig -a
```

- b. Check for any health alerts on both clusters:

```
system health alert show
```

- c. Confirm the MetroCluster configuration and that the operational mode is normal:

```
metrocluster show
```

- d. Perform a MetroCluster check:

```
metrocluster check run
```

- e. Display the results of the MetroCluster check:

```
metrocluster check show
```

- f. Check for any health alerts on the switches (if present):

```
storage switch show
```

- g. Run Config Advisor.

[NetApp Downloads: Config Advisor](#)

- h. After running Config Advisor, review the tool's output and follow the recommendations in the output to address any issues discovered.

2. Set the privilege level to advanced:

```
set -privilege advanced
```

3. Verify that no mailbox drive is on the shelves: **storage failover mailbox-disk show**

4. Remove the shelf according to the steps for the relevant scenario.

Scenario	Steps
To remove an aggregate when the shelf contains either unmirrored, mirrored, or both types of aggregate...	<p>a. Use the storage aggregate delete -aggregate <i>aggregate name</i> command to remove the aggregate.</p> <p>b. Use the standard procedure to remove ownership of all drives in that shelf, and then physically remove the shelf.</p> <p>Follow the instructions in the <i>SAS Disk Shelves Service Guide</i> for your shelf model to hot-remove shelves.</p>

Scenario	Steps
<p>To remove a plex from a mirrored aggregate, you need to unmirror the aggregate.</p>	<p>a. Identify the plex that you want to remove by using the run -node local sysconfig -r command.</p> <p>In the following example, you can identify the plex from the line Plex /dpg_mcc_8020_13_a1_aggr1/plex0. In this case, the plex to specify is plex0.</p> <pre> dpgmcc_8020_13_a1a2::storage aggregate> run -node local sysconfig -r *** This system has taken over dpg-mcc-8020-13-a1 Aggregate dpg_mcc_8020_13_a1_aggr1 (online, raid_dp, mirrored) (block checksums) Plex /dpg_mcc_8020_13_a1_aggr1/plex 0 (online, normal, active, pool0) RAID group /dpg_mcc_8020_13_a1_aggr1/plex 0/rg0 (normal, block checksums) RAID Disk Device HA SHELF BAY CHAN Pool Type RPM Used (MB/blks) Phys (MB/blks) ----- ----- ----- dparity mcc-cisco-8Gb- fab-2:1-1.126L16 0c 32 15 FC:B 0 SAS 15000 272000/557056000 274845/562884296 parity mcc-cisco-8Gb- fab-2:1-1.126L18 0c 32 17 FC:B 0 SAS 15000 272000/557056000 274845/562884296 data mcc-cisco-8Gb- fab-2:1-1.126L19 0c 32 18 FC:B 0 SAS 15000 272000/557056000 </pre>

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FC:B 0 SAS 15000

272000/557056000

274845/562884296

data mcc-cisco-8Gb-

fab-3:1-1.126L22 0d 32 21

FC:B 0 SAS 15000

272000/557056000

274845/562884296

1/rg0 (normal, block

checksums)

7/dpg_mcc-8020_13_a1_aggr1/plex

1 (online, normal, active

pool1)

RAID controller

7/dpg_mcc-8020_13_a1_aggr1/plex

1/rg0 (normal, block

checksums)

RAID Disk Device

Data and Computer Software clause of DFARS

RPM Used (MB/blks)

Phys

(MB/blks)

```
280104/573653840
      data      mcc-cisco-8Gb-
fab-3:1-1.126L45 0d      34  18
FC:A    1    SAS 15000
272000/557056000
280104/573653840
```

- b. Use the **storage aggregate plex delete -aggregate *aggr_name* -plex *plex_name*** command to remove the plex.

plex defines the plex name, such as plex3 or plex6.

- c. Use the standard procedure to remove ownership of all drives in that shelf, and then physically remove the shelf.

Follow the instructions in the *SAS Disk Shelves Service Guide* for your shelf model to hot-remove shelves.