



Performing aggregate healing and restoring mirrors (MetroCluster IP configurations)

ONTAP MetroCluster

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Performing aggregate healing and restoring mirrors (MetroCluster IP configurations)

After replacing hardware and assigning disks, in systems running ONTAP 9.5 or earlier you can perform the MetroCluster healing operations. In all versions of ONTAP, you must then confirm that aggregates are mirrored and, if necessary, restart mirroring.

About this task

Starting with ONTAP 9.6, the healing operations are performed automatically when the disaster site nodes boot up. The healing commands are not required.

These steps are performed on the surviving cluster.

Steps

1. If you are using ONTAP 9.6 or later, you must verify that automatic healing completed successfully:
 - a. Confirm that the heal-aggr-auto and heal-root-aggr-auto operations completed:

```
metrocluster operation history show
```

The following output shows that the operations have completed successfully on cluster_A.

```
cluster_B::*> metrocluster operation history show
Operation                               State      Start Time      End
Time
-----
heal-root-aggr-auto                    successful  2/25/2019 06:45:58
2/25/2019 06:46:02
heal-aggr-auto                         successful  2/25/2019 06:45:48
2/25/2019 06:45:52
.
```

- b. Confirm that the disaster site is ready for switchback:

```
metrocluster node show
```

The following output shows that the operations have completed successfully on cluster_A.

```
cluster_B::*> metrocluster node show
DR
Group Cluster Node          Configuration  DR
-----
-----
1      cluster_A
      node_A_1      configured    enabled    heal roots
completed
      node_A_2      configured    enabled    heal roots
completed
      cluster_B
      node_B_1      configured    enabled    waiting for
switchback recovery
      node_B_2      configured    enabled    waiting for
switchback recovery
4 entries were displayed.
```

2. If you are using ONTAP 9.5 or earlier, you must perform aggregate healing:

a. Verify the state of the nodes:

```
metrocluster node show
```

The following output shows that switchover has completed, so healing can be performed.

```
cluster_B::> metrocluster node show
DR
Group Cluster Node          Configuration  DR
-----
-----
1      cluster_B
      node_B_1      configured    enabled    switchover
completed
      node_B_2      configured    enabled    switchover
completed
      cluster_A
      node_A_1      configured    enabled    waiting for
switchback recovery
      node_A_2      configured    enabled    waiting for
switchback recovery
4 entries were displayed.

cluster_B::>
```

b. Perform the aggregates healing phase:

```
metrocluster heal -phase aggregates
```

The following output shows a typical aggregates healing operation.

```
cluster_B::*> metrocluster heal -phase aggregates
[Job 647] Job succeeded: Heal Aggregates is successful.

cluster_B::*> metrocluster operation show
  Operation: heal-aggregates
    State: successful
  Start Time: 10/26/2017 12:01:15
  End Time: 10/26/2017 12:01:17
  Errors: -

cluster_B::*>
```

c. Verify that aggregate healing has completed and the disaster site is ready for switchback:

```
metrocluster node show
```

The following output shows that the "heal aggregates" phase has completed on cluster_A.

```
cluster_B::> metrocluster node show
```

DR	Configuration	DR
Group Cluster Node	State	Mirroring Mode
1	cluster_A	
	node_A_1	configured enabled heal
aggregates completed		
	node_A_2	configured enabled heal
aggregates completed		
cluster_B		
	node_B_1	configured enabled waiting for
switchback recovery		
	node_B_2	configured enabled waiting for
switchback recovery		
4 entries were displayed.		

```
cluster_B::>
```

3. If disks have been replaced, you must mirror the local and switched-over aggregates:

a. Display the aggregates:

```
storage aggregate show
```

```

cluster_B::> storage aggregate show
cluster_B Aggregates:
Aggregate      Size Available Used% State  #Vols  Nodes
RAID Status
-----
node_B_1_aggr0 1.49TB  74.12GB   95% online    1 node_B_1
raid4,
normal
node_B_2_aggr0 1.49TB  74.12GB   95% online    1 node_B_2
raid4,
normal
node_B_1_aggr1 3.14TB  3.04TB    3% online   15 node_B_1
raid_dp,
normal
node_B_1_aggr2 3.14TB  3.06TB    3% online   14 node_B_1
raid_tec,
normal
node_B_1_aggr1 3.14TB  2.99TB    5% online   37 node_B_2
raid_dp,
normal
node_B_1_aggr2 3.14TB  3.02TB    4% online   35 node_B_2
raid_tec,
normal

cluster_A Switched Over Aggregates:
Aggregate      Size Available Used% State  #Vols  Nodes
RAID Status
-----
node_A_1_aggr1 2.36TB  2.12TB   10% online   91 node_B_1
raid_dp,
normal
node_A_1_aggr2 3.14TB  2.90TB    8% online   90 node_B_1
raid_tec,
normal
node_A_2_aggr1 2.36TB  2.10TB   11% online   91 node_B_2
raid_dp,

```

```

normal
node_A_2_aggr2 3.14TB  2.89TB    8% online    90 node_B_2
raid_tec,

normal
12 entries were displayed.

cluster_B::>

```

b. Mirror the aggregate:

```
storage aggregate mirror -aggregate aggregate-name
```

The following output shows a typical mirroring operation.

```

cluster_B::> storage aggregate mirror -aggregate node_B_1_aggr1

Info: Disks would be added to aggregate "node_B_1_aggr1" on node
"node_B_1" in
    the following manner:

    Second Plex

        RAID Group rg0, 6 disks (block checksum, raid_dp)
        Position  Disk                                Type
Size  -----
-----
      dparity    5.20.6                                SSD
-
      parity     5.20.14                               SSD
-
      data       5.21.1                                SSD
894.0GB
      data       5.21.3                                SSD
894.0GB
      data       5.22.3                                SSD
894.0GB
      data       5.21.13                               SSD
894.0GB

    Aggregate capacity available for volume use would be 2.99TB.

Do you want to continue? {y|n}: y

```

- c. Repeat the previous step for each of the aggregates from the surviving site.
- d. Wait for the aggregates to resynchronize; you can check the status with the `storage aggregate show` command.

The following output shows that a number of aggregates are resynchronizing.

```
cluster_B::> storage aggregate show

cluster_B Aggregates:
Aggregate      Size Available Used% State  #Vols  Nodes
RAID Status
-----
node_B_1_aggr0 1.49TB  74.12GB   95% online    1 node_B_1
raid4,
mirrored,
normal
node_B_2_aggr0 1.49TB  74.12GB   95% online    1 node_B_2
raid4,
mirrored,
normal
node_B_1_aggr1 2.86TB  2.76TB    4% online   15 node_B_1
raid_dp,
resyncing
node_B_1_aggr2 2.89TB  2.81TB    3% online   14 node_B_1
raid_tec,
resyncing
node_B_2_aggr1 2.73TB  2.58TB    6% online   37 node_B_2
raid_dp,
resyncing
node_B-2_aggr2 2.83TB  2.71TB    4% online   35 node_B_2
raid_tec,
resyncing

cluster_A Switched Over Aggregates:
Aggregate      Size Available Used% State  #Vols  Nodes
RAID Status
-----
```



```

-----
node_A_1_aggr1 1.86TB  1.62TB   13% online    91 node_B_1
raid_dp,

resyncing
node_A_1_aggr2 2.58TB  2.33TB   10% online    90 node_B_1
raid_tec,

resyncing
node_A_2_aggr1 1.79TB  1.53TB   14% online    91 node_B_2
raid_dp,

resyncing
node_A_2_aggr2 2.64TB  2.39TB    9% online    90 node_B_2
raid_tec,

resyncing
12 entries were displayed.

```

- e. Confirm that all aggregates are online and have resynchronized:

```
storage aggregate plex show
```

The following output shows that all aggregates have resynchronized.

```
cluster_A::> storage aggregate plex show
()
```

Aggregate Plex	Is Online	Is Resyncing	Resyncing Percent	Status
node_B_1_aggr0 plex0	true	false		- normal,active
node_B_1_aggr0 plex8	true	false		- normal,active
node_B_2_aggr0 plex0	true	false		- normal,active
node_B_2_aggr0 plex8	true	false		- normal,active
node_B_1_aggr1 plex0	true	false		- normal,active
node_B_1_aggr1 plex9	true	false		- normal,active
node_B_1_aggr2 plex0	true	false		- normal,active
node_B_1_aggr2 plex5	true	false		- normal,active
node_B_2_aggr1 plex0	true	false		- normal,active
node_B_2_aggr1 plex9	true	false		- normal,active
node_B_2_aggr2 plex0	true	false		- normal,active
node_B_2_aggr2 plex5	true	false		- normal,active
node_A_1_aggr1 plex4	true	false		- normal,active
node_A_1_aggr1 plex8	true	false		- normal,active
node_A_1_aggr2 plex1	true	false		- normal,active
node_A_1_aggr2 plex5	true	false		- normal,active
node_A_2_aggr1 plex4	true	false		- normal,active
node_A_2_aggr1 plex8	true	false		- normal,active
node_A_2_aggr2 plex1	true	false		- normal,active
node_A_2_aggr2 plex5	true	false		- normal,active

20 entries were displayed.

4. On systems running ONTAP 9.5 and earlier, perform the root-aggregates healing phase:

```
metrocluster heal -phase root-aggregates
```

```
cluster_B::> metrocluster heal -phase root-aggregates
[Job 651] Job is queued: MetroCluster Heal Root Aggregates Job.Oct 26
13:05:00
[Job 651] Job succeeded: Heal Root Aggregates is successful.
```

5. Verify that the "heal roots" phase has completed and the disaster site is ready for switchback:

The following output shows that the "heal roots" phase has completed on cluster_A.

```

cluster_B::> metrocluster node show
DR
Group Cluster Node          Configuration  DR
State          Mirroring Mode
-----
1      cluster_A
      node_A_1      configured    enabled    heal roots
completed
      node_A_2      configured    enabled    heal roots
completed
      cluster_B
      node_B_1      configured    enabled    waiting for
switchback recovery
      node_B_2      configured    enabled    waiting for
switchback recovery
4 entries were displayed.

cluster_B::>

```

Proceed to verify the licenses on the replaced nodes.

[Verifying licenses on the replaced nodes](#)

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