Managing and monitoring MetroCluster configurations

Active IQ Unified Manager 9.12

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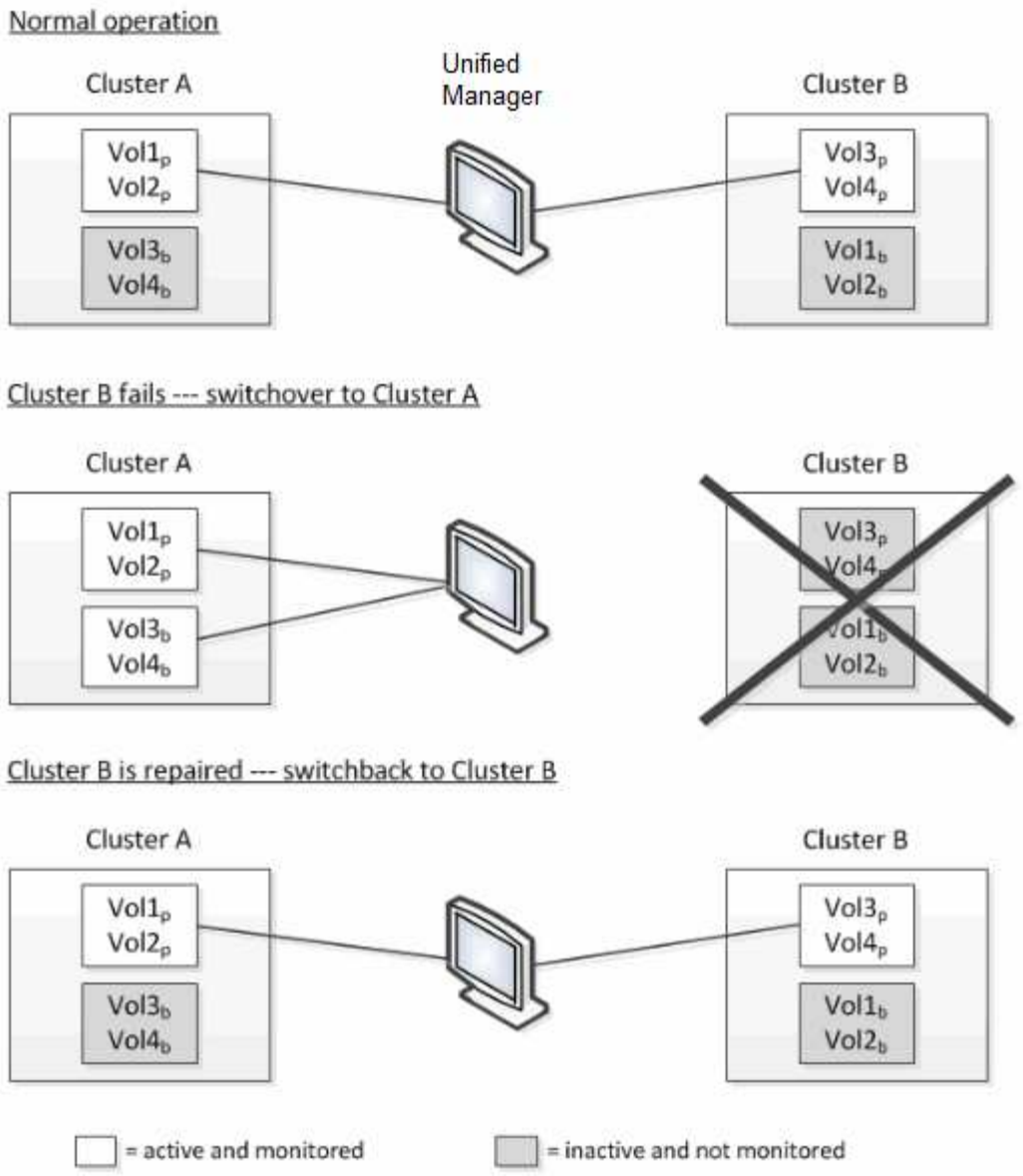
The monitoring support for MetroCluster configurations in the Unified Manager web UI enables you to check for any connectivity issues in your MetroCluster over FC and IP configurations. Discovering a connectivity issue early enables you to manage your MetroCluster configurations effectively.

Volume behavior during switchover and switchback

Events that trigger a switchover or switchback cause active volumes to be moved from one cluster to the other cluster in the disaster recovery group. The volumes on the cluster that were active and serving data to clients are stopped, and the volumes on the other cluster are activated and start serving data. Unified Manager monitors only those volumes that are active and running.

Because volumes are moved from one cluster to another, it is recommended that you monitor both clusters. A single instance of Unified Manager can monitor both clusters in a MetroCluster configuration, but sometimes the distance between the two locations necessitates using two Unified Manager instances to monitor both clusters. The following figure shows a single instance of Unified Manager:



The volumes with p in their names indicate the primary volumes, and the volumes with b in their names are mirrored backup volumes that are created by SnapMirror.

During normal operation:

- Cluster A has two active volumes: Vol1p and Vol2p.
- Cluster B has two active volumes: Vol3p and Vol4p.
- Cluster A has two inactive volumes: Vol3b and Vol4b.
- Cluster B has two inactive volumes: Vol1b and Vol2b.

Information pertaining to each of the active volumes (statistics, events, and so on) is collected by Unified Manager. Vol1p and Vol2p statistics are collected by Cluster A, and Vol3p and Vol4p statistics are collected by Cluster B.

After a catastrophic failure causes a switchover of active volumes from Cluster B to Cluster A:

- Cluster A has four active volumes: Vol1p, Vol2p, Vol3b, and Vol4b.

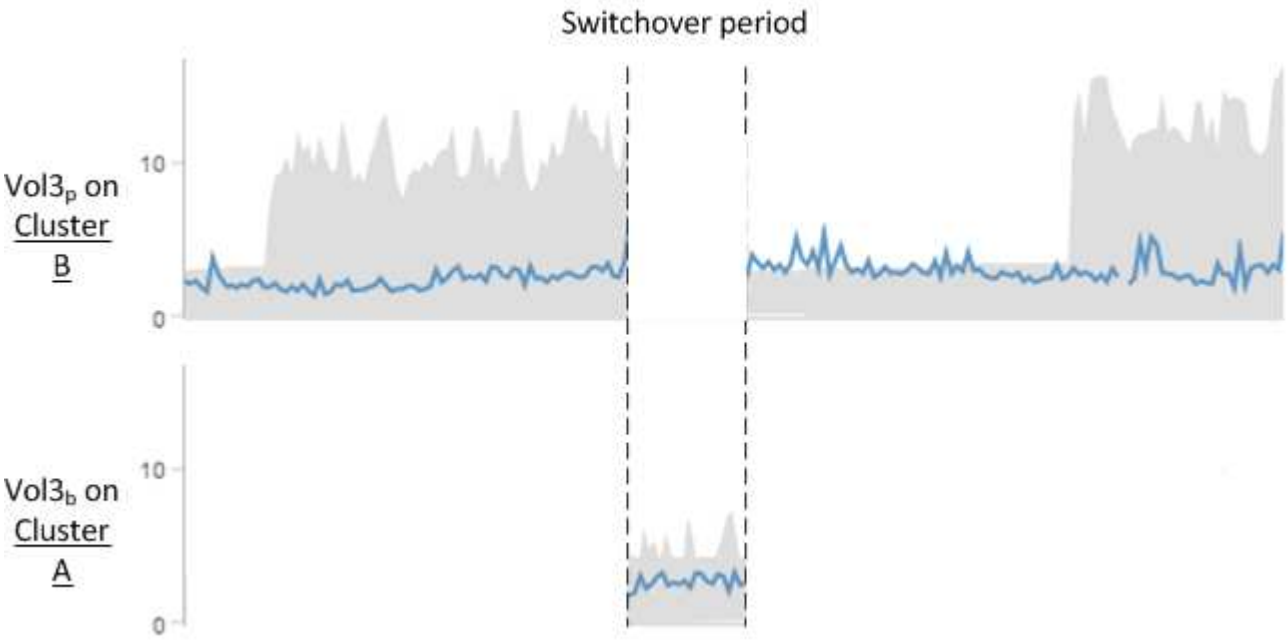
- Cluster B has four inactive volumes: Vol3p, Vol4p, Vol1b, and Vol2b.

As during normal operation, information pertaining to each of the active volumes is collected by Unified Manager. But in this case, Vol1p and Vol2p statistics are collected by Cluster A, and Vol3b and Vol4b statistics are also collected by Cluster A.

Note that Vol3p and Vol3b are not the same volumes, because they are on different clusters. The information in Unified Manager for Vol3p is not the same as Vol3b:

- During switchover to Cluster A, Vol3p statistics and events are not visible.
- On the very first switchover, Vol3b looks like a new volume with no historical information.

When Cluster B is repaired and a switchback is performed, Vol3p is active again on Cluster B, with the historical statistics and a gap of statistics for the period during the switchover. Vol3b is not viewable from Cluster A until another switchover occurs:



- MetroCluster volumes that are inactive, for example, Vol3b on Cluster A after switchback, are identified with the message “This volume was deleted”. The volume is not actually deleted, but it is not currently being monitored by Unified Manager because it is not the active volume.
- If a single Unified Manager is monitoring both clusters in a MetroCluster configuration, volume search returns information for whichever volume is active at that time. For example, a search for "Vol3" would return statistics and events for Vol3b on Cluster A if a switchover has occurred and Vol3 has become active on Cluster A.

Cluster connectivity status definitions for MetroCluster over FC configuration

Connectivity between the clusters in a MetroCluster over FC configuration can be one of the following statuses: Optimal, Impacted, or Down. Understanding the connectivity statuses enables you to manage your MetroCluster configurations effectively.

Connectivity status	Description	Icon displayed
Optimal	Connectivity between the clusters in the MetroCluster configuration is normal.	
Impacted	One or more errors compromise the status of failover availability; however, both of the clusters in the MetroCluster configuration are still up. For example, when the ISL link is down, when the intercluster IP link is down, or when the partner cluster is not reachable.	
Down	Connectivity between the clusters in the MetroCluster configuration is down because one or both of the clusters are down or the clusters are in failover mode. For example, when the partner cluster is down because of a disaster or when there is a planned switchover for testing purposes.	Switchover with errors: Switchover successful:

Data mirroring status definitions for MetroCluster over FC

MetroCluster over FC configurations provide data mirroring and the additional ability to initiate a failover if an entire site becomes unavailable. The status of data mirroring between the clusters in a MetroCluster over FC configuration can either be Normal or Mirroring Unavailable. Understanding the status enables you to manage your MetroCluster configurations effectively.

Data mirroring status	Description	Icon displayed
Normal	Data mirroring between the clusters in the MetroCluster configuration is normal.	

Data mirroring status	Description	Icon displayed
Mirroring Unavailable	Data mirroring between the clusters in the MetroCluster configuration is unavailable because of switchover. For example, when the partner cluster is down because of a disaster or when there is a planned switchover for testing purposes.	Switchover with errors:  Switchover successful: 

Monitoring MetroCluster configurations

You can monitor connectivity issues in your MetroCluster configuration. The details include the status of the components and connectivity within a cluster and the connectivity status between the clusters in the MetroCluster configuration. Here, you will get to know how to monitor connectivity issues in clusters protected by MetroCluster over FC and MetroCluster over IP configurations.

You can monitor the MetroCluster configurations from the following views from the Active IQ Unified Manager left navigation pane:

- **Storage** > **Clusters** > **Protection: MetroCluster** view
- **Protection** > **Relationships** > **Relationship: MetroCluster** view

Unified Manager uses system health alerts to indicate the status of the components and connectivity in the MetroCluster configuration.

What you'll need

- Both the local and remote clusters in a MetroCluster configuration must be added to Active IQ Unified Manager.
- In a MetroCluster over IP configuration, if a Mediator is to be supported, the Mediator should be configured and added to the cluster by corresponding API.
- You must have the Operator, Application Administrator, or Storage Administrator role.

Monitor connectivity issues in MetroCluster over FC configuration

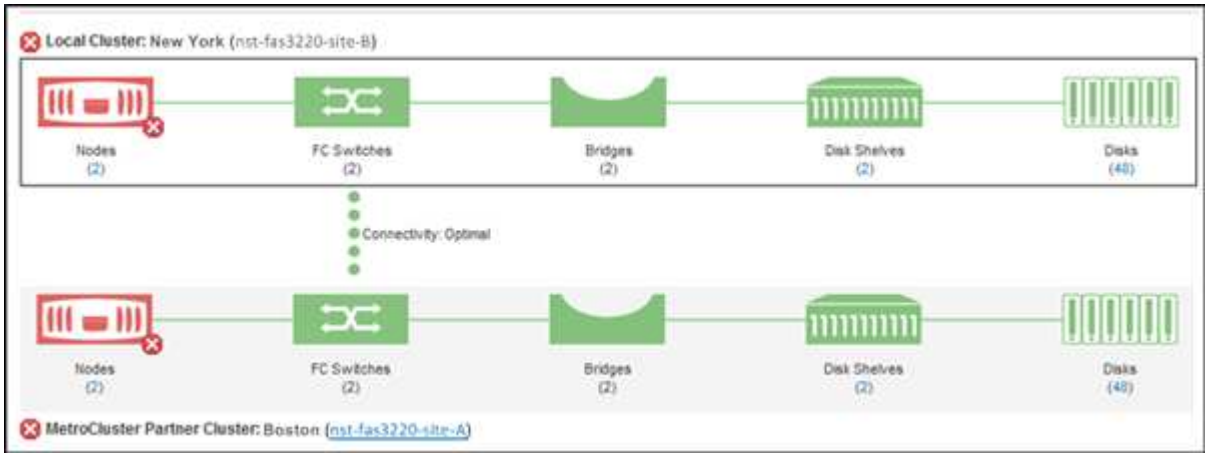
For clusters in a MetroCluster over FC configuration, the connectivity charts are displayed on the **Cluster / Health** details page. Follow these steps.

Steps

1. In the left navigation pane, click **Storage** > **Clusters**.

   A list of all of the monitored clusters is displayed.

2. From the **Protection: MetroCluster** view, click the name of the cluster for which you want to view MetroCluster over FC configuration details. Alternately, you can filter by clusters in a MetroCluster configuration.
3. In the **Cluster / Health** details page, click the **MetroCluster Connectivity** tab. The **MetroCluster Connectivity** tab is available for only MetroCluster over FC configurations.



The topology of the MetroCluster configuration is displayed in the corresponding cluster object area. You can use the information displayed in the Cluster / Health details page to rectify any connectivity issues. For example, if the connectivity between the node and the switch in a cluster is down, the following icon is displayed:

If you move the pointer over the icon, you can view detailed information about the generated event.

If you discover connectivity issues in your MetroCluster configuration, you must log in to System Manager or access the ONTAP CLI to resolve the issues.

For more information about determining cluster health, see Determining cluster health in MetroCluster over FC configuration.

Monitor connectivity issues in MetroCluster over IP configuration

For clusters in a MetroCluster over IP configuration, the connectivity charts are displayed on the **Clusters** page. Follow these steps.

Steps

1. In the left navigation pane, click **Storage** > **Clusters**.

   A list of all of the monitored clusters is displayed.

2. From the **Protection: MetroClusters** view, click the name of the cluster for which you want to view MetroCluster over IP configuration details. Alternately, you can filter by clusters in a MetroCluster configuration.
3. Expand the row by clicking the caret v icon. The caret icon appears for only a cluster that this protected by MetroCluster over IP configuration.

   You can view the topology of the source and mirror sites, as well as the Mediator, if any, used for the connection. You can view the following information:

- Connectivity across the sites
- Health and availability issues, if any, on both the sites
- Mediator-related issues
- Replication related issues.

> The following statuses are reported: Critical (✕), Error (!), or Normal (✓). You can also view the aggregate data replication status of the primary and mirror data in the same topology.

In the following diagram, you can see that the intersite connectivity between the source and destination clusters is unavailable, and the Mediator between them is not configured.

4. Click the status icon. A message with the error definition is displayed. If an event has been raised for the issue in your MetroCluster over IP configuration, you can click the **View Event** button on the message and view the event details. When you have resolved the issue and the event, the status icon in this topology turns to normal (✓).
5. You can view further configuration details in the **MetroCluster Overview** and **Protection** sections on the **Configuration** tab of the **Cluster / Health** details page.

> Only for a MetroCluster over IP configuration, you can have view the cluster topology on the **Clusters** page. For clusters in a MetroCluster over FC configuration, the topology is displayed on the **MetroCluster Connectivity** tab on the **Cluster / Health** details page.

Related information

- Cluster / Health details page
- For information about **Relationship:MetroCluster** view, see Monitoring MetroCluster configurations.
- For information about **Relationship: Last 1 month Transfer Status** view, see Relationship: Last 1 month Transfer Status view.
- For information about **Relationship: Last 1 month Transfer Rate** view, see Relationship: Last 1 month Transfer Rate view.
- For information about **Relationship: All Relationships** view, see Relationship: All Relationships view.

Monitoring MetroCluster replication

You can monitor and diagnose the overall health condition of the logical connections while mirroring the data. You can identify the issues or any risk that interrupts mirroring of cluster components such as aggregates, nodes, and storage virtual machines.

Unified Manager uses system health alerts to monitor the status of the components and connectivity in the MetroCluster configuration.

What you'll need

Both the local and remote cluster in the MetroCluster configuration must be added to Unified Manager

Viewing replication for MetroCluster over IP configurations

For MetroCluster over IP configurations, the data replication status is displayed in the topology peek view for a cluster protected by MetroCluster over IP from the following views from the Unified Manager left navigation pane:

- **Storage** > **Clusters** > **Protection: MetroCluster** view
- **Protection** > **Relationships** > **Relationship: MetroCluster** view

For information, see Monitor connectivity issues in MetroCluster over IP.

Viewing replication for MetroCluster over FC configurations

Follow these steps to determine any issues in the data replication for MetroCluster over FC configuration.

Steps

1. In the left navigation pane, click **Storage** > **Clusters**.

   A list of the monitored clusters is displayed.

2. From the **Health: All Clusters** view, click the name of the cluster for which you want to view MetroCluster replication details. On the **Cluster / Health details** page, click the **MetroCluster Replication** tab.

   The topology of the MetroCluster configuration to be replicated is displayed at the local site in the corresponding cluster object area with the information about the remote site where the data is being mirrored. If you move the pointer over the icon, you can view detailed information about the generated event.

You can use the information displayed in the Cluster / Health details page to rectify any replication issues. If you discover mirroring issues in your MetroCluster configuration, you must log in to System Manager or access the ONTAP CLI to resolve the issues.

Related information

Cluster / Health details page