NetApp

Manage MetroCluster sites with System Manager

ONTAP 9

NetApp
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MetroCluster site management overview with System Manager

Beginning with ONTAP 9.8, you can use System Manager as a simplified interface for managing a configuration of a MetroCluster setup.

A MetroCluster configuration allows two clusters to mirror data to each other so if one cluster goes down, the data isn't lost.

Typically, an organization sets up the clusters in two separate geographical locations. An administrator at each location sets up a cluster and configures it. Then one of the administrators can set up the peering between the clusters so that they can share data.

The organization can also install an ONTAP Mediator in a third location. The ONTAP Mediator service monitors the status of each cluster. When one of the clusters detects that it cannot communicate with the partner cluster, it queries the monitor to determine if the error is a problem with the cluster system or with the network connection.

If the problem is with the network connection, the system administrator performs troubleshooting methods to correct the error and reconnect. If the partner cluster is down, the other cluster initiates a switchover process to control the data I/O for both clusters.

You can also perform a switchover to bring down one of the cluster systems for planned maintenance. The partner cluster handles all data I/O operations for both clusters until you bring up the cluster on which you performed maintenance and perform a switchback operation.

You can manage the following operations:

- Set up an IP MetroCluster site
- Set up IP MetroCluster peering
- Configure an IP MetroCluster site
- Perform IP MetroCluster switchover and switchback
- Troubleshoot problems with IP MetroCluster configurations
- Upgrade ONTAP on MetroCluster clusters

Set up an IP MetroCluster site

Beginning with ONTAP 9.8, you can use System Manager to set up an IP configuration of a MetroCluster site.

A MetroCluster site consists of two clusters. Typically, the clusters are located in different geographical locations.

Before you start
- Your system should already be installed and cabled according to the Installation and Setup Instructions that came with the system.

- Cluster network interfaces should be configured on each node of each cluster for intra-cluster communication.

Assign a node-management IP address

Windows System

You should connect your Windows computer to the same subnet as the controllers. This will automatically assign a node-management IP address to your system.

Steps

1. From the Windows system, open the **Network** drive to discover the nodes.

2. Double-click the node to launch the cluster setup wizard.

Other systems

You should configure the node-management IP address for one of the nodes in your cluster. You can use this node-management IP address to launch the cluster set up wizard.

See Creating the cluster on the first node for information about assigning a node-management IP address.

Initialize and configure the cluster

You initialize the cluster by setting an administrative password for the cluster and setting up the cluster management and node management networks. You can also configure services like a DNS server to resolve host names and an NTP server to synchronize time.

Steps

1. On a web browser, enter the node-management IP address that you have configured: "https://node-management-IP"

   System Manager automatically discovers the remaining nodes in the cluster.

2. In the **Initialize Storage System** window, perform the following:

   a. Enter cluster management network configuration data.

   b. Enter Node management IP addresses for all the nodes.

   c. Provide domain name servers (DNS) details.

   d. In the **Other** section, select the check box labeled **Use time service (NTP)** to add the time servers.

When you click **Submit**, wait for the cluster to be created and configured. Then, a validation process occurs.

What's Next?
After both clusters have been set up, initialized, and configured, perform the following procedure:

- Set up IP MetroCluster peering

Configure ONTAP on a new cluster video

Set up IP MetroCluster peering

Beginning with ONTAP 9.8, you can manage an IP configuration of a MetroCluster operation with System Manager. After setting up two clusters, you set up peering between them.

Before you start

You should have completed the following procedure to set up two clusters:

- Set up an IP MetroCluster site

Certain steps of this process are performed by different system administrators located at the geographical sites of each cluster. For the purposes of explaining this process, the clusters are called "Site A cluster" and "Site B cluster".

Performing the peering process from Site A

This process is performed by a system administrator at Site A.

Steps

1. Log in to Site A cluster.

2. In System Manager, select **Dashboard** from the left navigation column to display the cluster overview.

   The dashboard shows the details for this cluster (Site A). In the **MetroCluster** section, Site A cluster is shown on the left.

3. Click **Attach Partner Cluster**.

4. Enter the details of the network interfaces that allow the nodes in Site A cluster to communicate with the

nodes in Site B cluster.

5. Click **Save and Continue**.

6. On the **Attach Partner Cluster** window, select **I do not have a passphrase**, which lets you generate a passphrase.

7. Copy the generated passphrase and share it with the system administrator at Site B.

8. Select **Close**.

Performing the peering process from Site B

This process is performed by a system administrator at Site B.

Steps

1. Log in to Site B cluster.

2. In System Manager, select **Dashboard** to display the cluster overview.

   The dashboard shows the details for this cluster (Site B). In the MetroCluster section, Site B cluster is shown on the left.

3. Click **Attach Partner Cluster** to start the peering process.

4. Enter the details of the network interfaces that allow the nodes in Site B cluster to communicate with the nodes in Site A cluster.

5. Click **Save and Continue**.

6. On the **Attach Partner Cluster** window, select **I have a passphrase**, which lets you enter the passphrase that you received from the system administrator at Site A.

7. Select **Peer** to complete the peering process.

What's next?

After the peering process is successfully completed, you configure the clusters. See Configure an IP MetroCluster site.

Configure an IP MetroCluster site

Beginning with ONTAP 9.8, you can manage an IP configuration of a MetroCluster operation with System Manager. After setting up two clusters and peering them, you configure each cluster.

Before you start

You should have completed the following procedures:

- Set up an IP MetroCluster site
- Set up IP MetroCluster peering

Configure the connection between clusters

Steps

1. Log in to System Manager on one of the sites, and select **Dashboard**.

   In the **MetroCluster** section, the graphic shows the two clusters that you set up and peered for the

MetroCluster sites. The cluster you are working from (local cluster) is shown on the left.

2. Click **Configure MetroCluster**. From this window, you can perform the following tasks:

    a. The nodes for each cluster in the MetroCluster configuration are shown. Use the drop-down lists to select which nodes in the local cluster will be disaster recovery partners with which nodes in the remote cluster.

    b. Click the check box if you want to configure an ONTAP Mediator service. See Configure the ONTAP Mediator service.

    c. If both clusters have a license to enable encryption, the **Encryption** section is displayed.

       To enable encryption, enter a passphrase.

    d. Click the check box if you want to configure MetroCluster with shared layer 3 network.

    > (i)   The HA partner nodes and network switches connecting to the nodes must have a matching configuration.

3. Click **Save** to configure the MetroCluster sites.

    On the **Dashboard**, in the **MetroCluster** section, the graphic shows a check mark on the link between the two clusters, indicating a healthy connection.

Configure the ONTAP Mediator service

The ONTAP Mediator service is typically installed at a geographic location separate from either location of the clusters. The clusters communicate regularly with the service to indicate that they are up and running. If one of the clusters in the MetroCluster configuration detects that the communication with its partner cluster is down, it checks with the ONTAP Mediator to determine if the partner cluster itself is down.

Before you start

Both clusters at the MetroCluster sites should be up and peered.

Steps

1. In System Manager in ONTAP 9.8, select **Cluster > Settings**.

2. In the **Mediator** section, click ⚙.

3. On the **Configure Mediator** window, click **Add+**.

4. Enter the configuration details for the ONTAP Mediator.

Perform IP MetroCluster switchover and switchback

You can switch over control from one IP MetroCluster site to the other to perform maintenance or recover from an issue.

> (i)   Switchover and switchback procedures are supported only for IP MetroCluster configurations.

Overview of switchover and switchback

A switchover can occur in two instances:

- **A planned switchover**

   This switchover is initiated by a system administrator using System Manager. The planned switchover allows a system administrator of a local cluster to switch control so that the data services of the remote cluster are handled by the local cluster. Then, a system administrator at the remote cluster location can perform maintenance on the remote cluster.

- **An unplanned switchover**

   In some cases, when a MetroCluster cluster goes down or the connections between the clusters are down, ONTAP will automatically initiate a switchover procedure so that the cluster that is still running handles the data handling responsibilities of the down cluster.

   At other times, when ONTAP cannot determine the status of one of the clusters, the system administrator of the site that is working initiates the switchover procedure to take control of the data handling responsibilities of the other site.

For any type of switchover procedure, the data servicing capability is returned to the cluster by using a *switchback* process.

You perform different switchover and switchback processes for ONTAP 9.7 and 9.8:

- Use System Manager in ONTAP 9.7 for switchover and switchback
- Use System Manager in ONTAP 9.8 for switchover and switchback

Use System Manager in ONTAP 9.7 for switchover and switchback

Steps

1. Log in to System Manager in ONTAP 9.7.

2. Click **(Return to classic version)**.

3. Click **Configuration > MetroCluster**.

   System Manager verifies whether a negotiated switchover is possible.

4. Perform one of the following substeps when the validation process has completed:

   a. If validation fails, but Site B is up, then an error has occurred. For example, there might be a problem with a subsystem, or NVRAM mirroring might not be synchronized.

      i. Fix the issue that is causing the error, click **Close**, and then start again at Step 2.

      ii. Halt the Site B nodes, click **Close**, and then perform the steps in Performing an unplanned switchover.

   b. If validation fails, and Site B is down, then most likely there is a connection problem. Verify that Site B is really down, then perform the steps in Performing an unplanned switchover.

5. Click **Switchover from Site B to Site A** to initiate the switchover process.

6. Click **Switch to the new experience**.

Use System Manager in ONTAP 9.8 for switchover and switchback

Perform a planned switchover (ONTAP 9.8)

Steps

1. Log in to System Manager in ONTAP 9.8.

2. Select **Dashboard**. In the **MetroCluster** section, the two clusters are shown with a connection.

3. In the local cluster (shown on the left), click ⋮ , and select **Take control of remote site**.

   After the switchover request is validated, control is transferred from the remote site to the local site, which performs data service requests for both clusters.

   The remote cluster reboots, but the storage components are not active, and the cluster does not service data requests. It is now available for planned maintenance.

   > ⓘ The remote cluster should not be used for data servicing until you perform a switchback.

Perform an unplanned switchover (ONTAP 9.8)

An unplanned switchover might be initiated automatically by ONTAP. If ONTAP cannot determine if a switchback is needed, the system administrator of the MetroCluster site that is still running initiates the switchover with the following steps:

Steps

1. Log in to System Manager in ONTAP 9.8.

2. Select **Dashboard**.

   In the **MetroCluster** section, the connection between the two clusters is shown with an "X" on it, meaning a connection cannot be detected. Either the connections or the cluster is down.

3. In the local cluster (shown on the left), click ⋮ , and select **Take control of remote site**.

   After the switchover request is validated, control is transferred from the remote site to the local site, which performs data service requests for both clusters.

   The cluster must be repaired before it is brought online again.

   > ⓘ After the remote cluster is brought online again, it should not be used for data servicing until you perform a switchback.

Perform a switchback (ONTAP 9.8)

Before you start

Whether the remote cluster was down due to planned maintenance or due to a disaster, it should now be up and running and waiting for the switchback.

Steps

1. On the local cluster, log in to System Manager in ONTAP 9.8.

2. Select **Dashboard**.

   In the **MetroCluster** section, the two clusters are shown.

3. In the local cluster (shown on the left), click ⋮ , and select **Take back control**.

    The data is *healed* first, to ensure data is synchronized and mirrored between both clusters.

4. When the data healing is complete, click ⋮ , and select **Initiate switchback**.

    When the switchback is complete, both clusters are active and servicing data requests. Also, the data is being mirrored and synchronized between the clusters.

Modify address, netmask, and gateway in a MetroCluster IP

Beginning with ONTAP 9.10.1, you can change the following properties of a MetroCluster IP interface: IP address and mask, and gateway. You can use any combination of parameters to update.

You might need to update these properties, for example, if a duplicate IP address is detected or if a gateway needs to change in the case of a layer 3 network due to router configuration changes. You can only change one interface at a time. There will be traffic disruption on that interface until the other interfaces are updated and connections are reestablished.

> ⓘ You must make the changes on each port. Similarly, network switches also need to update their configuration. For example, if the gateway is updated, ideally it is changed on both nodes of an HA pair, since they are same. Plus the switch connected to those nodes also needs to update its gateway.

Step
Update the IP address, netmask, and gateway for a each node and interface.

Troubleshoot problems with IP MetroCluster configurations

Beginning with ONTAP 9.8, System Manager monitors the health of IP MetroCluster configurations and helps you identify and correct problems that might occur.

Overview of the MetroCluster Health Check

System Manager periodically checks the health of your IP MetroCluster configuration. When you view the MetroCluster section in the Dashboard, usually the message is "MetroCluster systems are healthy."

However, when a problem occurs, the message will show the number of events. You can click on that message and view the results of the health check for the following components:

- Node
- Network Interface
- Tier (Storage)
- Cluster
- Connection
- Volume
- Configuration Replication

The **Status** column identifies which components have problems, and the **Details** column suggests how to correct the problem.

MetroCluster troubleshooting

Steps

1. In System Manager, select **Dashboard**.

2. In the **MetroCluster** section, notice the message.

    a. If the message indicates that your MetroCluster configuration is healthy, and the connections between the clusters and the ONTAP Mediator are healthy (shown with check marks), then you have no problems to correct.

    b. If the message lists the number of events, or the connections have gone down (shown with an "X"), then continue to the next step.

3. Click the message that shows the number of events.

    The MetroCluster Health Report displays.

4. Troubleshoot the problems that appear in the report using the suggestions in the **Details** column.

5. When all the problems have been corrected, click **Check MetroCluster Health**.

   > ℹ️ The MetroCluster Health Check uses an intensive amount of resources, so it is recommended that you perform all your troubleshooting tasks before running the check.

   The MetroCluster Health Check runs in the background. You can work on other tasks while you wait for it to finish.