# NetApp

# Manage clusters

System Manager Classic

NetApp
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## Dashboard window for System Manager - ONTAP 9.7 and earlier

The Dashboard window in ONTAP System Manager classic (available in ONTAP 9.7 and earlier) contains multiple panels that provide cumulative at-a-glance information about your system and its performance.

You can use the Dashboard window to view information about important alerts and notifications, the efficiency and capacity of aggregates and volumes, the nodes that are available in a cluster, the status of the nodes in a high-availability (HA) pair, the most active applications and objects, and the performance metrics of a cluster or a node.

- **Alerts and Notifications**

  Displays all alerts in red, such as emergency EMS events, offline node details, broken disk details, license entitlements that are at high risk, and offline network port details. Displays all notifications in yellow, such as health monitor notifications that occurred in the past 24 hours at the cluster level, license entitlements that are at medium risk, unassigned disk details, the number of migrated LIFs, volume move operations that failed, and volume move operations that required administrative intervention in the past 24 hours.

  The Alerts and Notifications panel displays up to three alerts and notifications beyond which a View-All link is displayed. You can click the View-All link to view more information about the alerts and notifications.

  The refresh interval for the Alerts and Notifications panel is one minute.

- **Cluster Overview**

  Displays the aggregates and volumes that are nearing capacity, the storage efficiency of a cluster or node, and the protection details of top volumes.

  The Capacity tab displays the top online aggregates that are nearing capacity, in descending order of used space.

  The Capacity tab provides a link to the number of volumes with the highest capacity utilized when you enter a valid value in the Volumes exceeding used capacity of field. It also displays the amount of inactive (cold) data available in the cluster.

  The Efficiency tab displays the storage efficiency savings for a cluster or node. You can view the total logical space used, total physical space used, and the overall savings. You can select a cluster or a specific node to view the storage efficiency savings. For System Manager 9.5, the space used for Snapshot copies is *not* included in the values for total logical space used, total physical space used, and overall savings. However, Beginning with System Manager 9.6, the space used for Snapshot copies is included in the values for total logical space used, total physical space used, and overall savings.

  The refresh interval for the Cluster Overview panel is 15 minutes.

  The Protection tab displays information about cluster-wide volumes that do not have defined protection relationships. Only the FlexVol volumes and FlexGroup volumes that meet the following criteria are displayed:

- The volumes are RW volumes and are online.

  - The aggregate containing the volumes is online.

  - The volumes have protection relationships and are not yet initialized. You can navigate to the Volumes window to view the volumes that do not have a defined protection relationship.

  The Protection tab also displays the top five SVMs that have the highest number of volumes that do not have defined protection relationships.

- **Nodes**

  Displays a pictorial representation of the number and names of the nodes that are available in the cluster, and the status of the nodes that are in an HA pair. You should position the cursor over the pictorial representation of the nodes to view the status of the nodes in an HA pair.

  You can view more information about all of the nodes by using the Nodes link. You can also click the pictorial representation to view the model of the nodes and the number of aggregates, storage pools, shelves, and disks that are available in the nodes. You can manage the nodes by using the Manage Nodes link. You can manage the nodes in an HA pair by using the Manage HA link.

  The refresh interval for the Nodes panel is 15 minutes.

- **Applications and Objects**

  You can use the Applications and Objects panel to display information about applications, clients, and files in a cluster.

  The Applications tab displays information about the top five applications of the cluster. You can view the top five applications based on either IOPS and latency (from low to high or from high to low) or capacity (from low to high or from high to low).

  You should click the specific bar chart to view more information about the application. The total space, used space, and available space are displayed for capacity, the IOPS details are displayed for IOPS, and the latency details are displayed for latency.

  You can click **View details** to open the Applications window of the specific application.

  The Objects tab displays information about the top five active clients and files in the cluster. You can view the top five active clients and files based on IOPS or throughput.

  > ℹ️ This information is displayed only for CIFS and NFS protocols.

  The refresh interval for the Applications and Objects panel is one minute.

- **Performance**

  Displays the average performance metrics, read performance metrics, and write performance metrics of the cluster based on latency, IOPS, and throughput. The average performance metrics is displayed by default. You can click Read or Write to view the read performance metrics or write performance metrics, respectively. You can view the performance metrics of the cluster or a node.

  If the information about cluster performance cannot be retrieved from ONTAP, you cannot view the respective graph. In such cases, System Manager displays the specific error message.

  The refresh interval for the charts in the Performance panel is 15 seconds.

## Monitoring a cluster using the dashboard

The dashboard in System Manager enables you to monitor the health and performance of a cluster. You can also identify hardware problems and storage configuration issues by using the dashboard.

**Steps**

1. Click the **Dashboard** tab to view the health and performance dashboard panels.

# MetroCluster switchover and switchback

## About MetroCluster switchover and switchback

Beginning with ONTAP System Manager 9.6, you can use MetroCluster switchover and switchback operations after a disaster that renders all the nodes in the source cluster unreachable and powered off. You can also use the switchover workflow for a negotiated (planned) switchover in cases such as disaster recovery testing or a site going offline for maintenance.

### About MetroCluster switchover and switchback

Beginning with System Manager 9.6, you can use MetroCluster switchover and switchback operations to allow one cluster site to take over the tasks of another cluster site. This capability allows you to facilitate maintenance or recovery from disasters.

A switchover operation allows one cluster (Site A) to take over the tasks that another cluster (Site B) usually performs. After the switchover, the cluster that has been taken over (Site B) can be brought down for maintenance and repairs. After the maintenance is completed, Site B can come up and healing tasks are completed, then you can initiate a switchback operation that allows the repaired cluster (Site B) to resume the tasks it usually performs.

System Manager supports two kinds of switchover operations, based on the status of the remote cluster site:

- A negotiated (planned) switchover: You initiate this operation when you need to do planned maintenance on a cluster or test your disaster recovery procedures.

- An unplanned switchover: You initiate this operation when a disaster has occurred on a cluster (Site B) and you want another site or cluster (Site A) to take over the tasks of the cluster affected by the disaster (Site B) while you perform repairs and maintenance.

You perform the same steps in System Manager for both switchover operations. When you initiate a switchover, System Manager determines whether the operation is feasible and aligns the workload accordingly.

### MetroCluster switchover and switchback workflow

The overall process for switchover and switchback workflow includes the following three phases:

1. **Switchover**: The switchover process allows you to transfer control of the storage and client access from a source cluster site (Site B) to another cluster site (Site A). This operation helps you provide nondisruptive operations during testing and maintenance. In addition, this process also enables you to recover from a site failure. For disaster recovery testing or planned site maintenance, you can perform a MetroCluster switchover to transfer control to a disaster recovery (DR) site (Site A). Before you start the process, at least one of the surviving site nodes must be up and running before you perform the switchover. If a switchover operation previously failed on certain nodes on the DR site, the operation can be retried on all of those

nodes.

2. **Site B Operations**: After switchover is completed, System Manager completes the healing process for the MetroCluster IP configuration. Healing is a planned event, which gives you full control of each step to minimize downtime. Healing is a two-phase process that occurs on the storage and controller components to prepare the nodes at the repaired site for the switchback process. During the first phase, the process heals the aggregates by resynchronizing the mirrored plexes and then heals the root aggregates by switching them back to the disaster site.

   In the second phase, the site is made ready for the switchback process.

3. **Switchback**: After maintenance and repairs are performed on Site B, you initiate the switchback operation to return control of the storage and client access from Site A to Site B. For a successful switchback, the following conditions must exist:

   ◦ The home nodes and storage shelves must be powered on and reachable by nodes in Site A.

   ◦ System Manager must have successfully completed the healing phase before you can initiate the switchback operation.

   ◦ All the aggregates in Site A should be in mirrored status and cannot be in degraded or resyncing status.

   ◦ All previous configuration changes must be complete before performing a switchback operation. This prevents those changes from competing with the negotiated switchover or switchback operation.

**MetroCluster switchover and switchback workflow flowchart**

The following flowchart illustrates the phases and processes that occur when you initiate switchover and switchback operations.
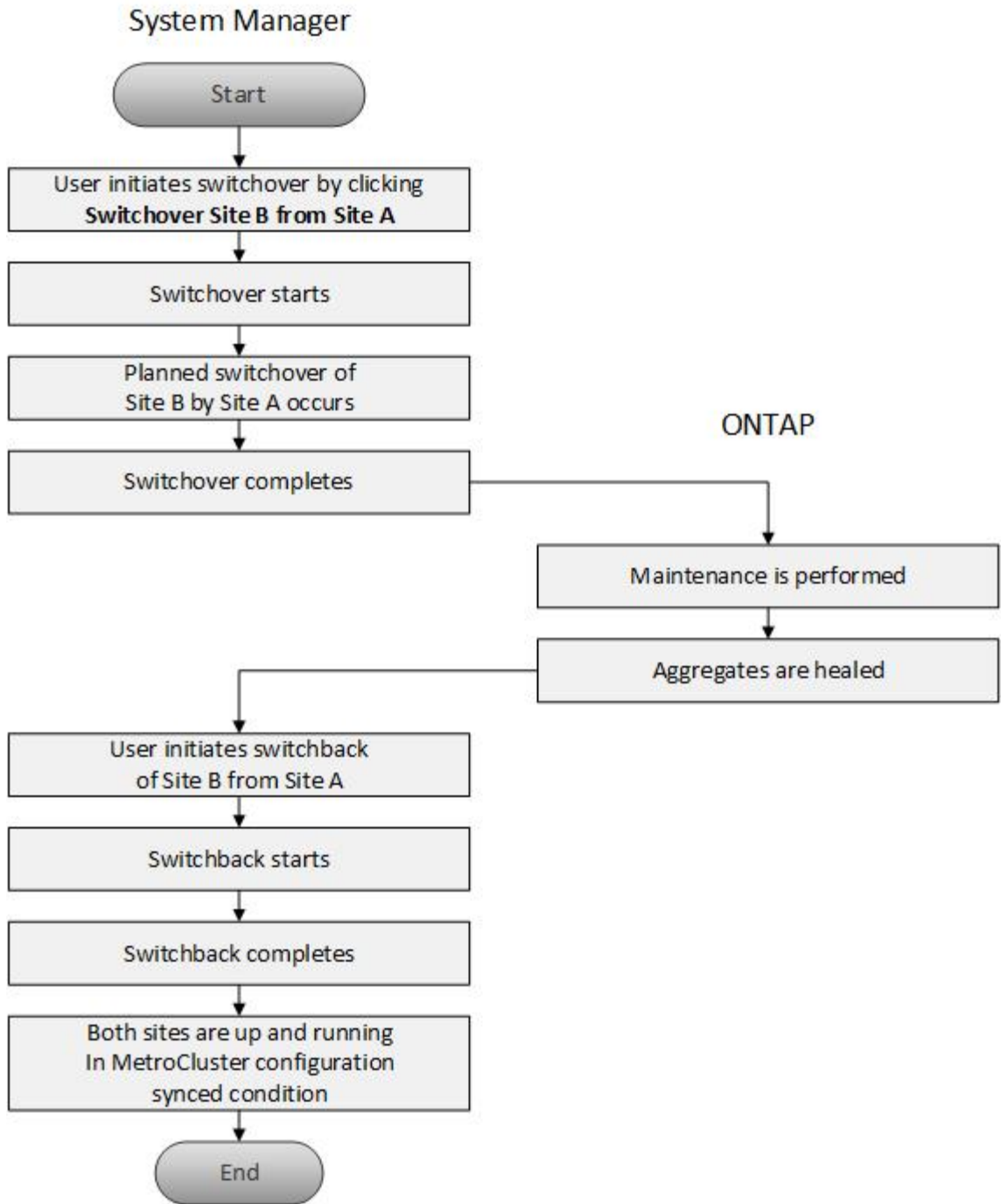
## Prepare for switchover and switchback operations

Before you perform switchover operations using ONTAP System Manager classic 9.6, you should verify that the necessary steps have been performed on the affected site.

**Steps**

1. If you are recovering from a disaster on Site B, you must perform the following steps:

   a. Repair or replace any damaged disks or hardware.

   b. Restore power.

   c. Rectify error issues that occur.

d. Bring up the disaster site.

2. Ensure the following conditions exist in your cluster:

   ◦ Both sites are in Active state if you are performing a planned switchover.

   ◦ The MetroCluster system uses configuration type "IP_Fabric".

   ◦ Both sites are operating with a two-node configuration (two nodes in each cluster). Sites with a single-node or four-node configuration are not supported for switchover and switchback operations using System Manager.

3. If you are launching the remote site (Site B) from the local site (Site A), ensure that Site B is running System Manager 9.6 or a later version.

**Rename the MetroCluster local site (Site A) with System Manger - ONTAP 9.7 and earlier**

You can use ONTAP System Manager classic (available in ONTAP 9.7 and earlier) to rename the MetroCluster local site (Site A) in a cluster.

**Steps**

1. Click **Configuration** > **Configuration Updates**.

2. Click **Update cluster name**.

3. Update the name in the text box, then click **Submit**.

   You can view the updated name when the MetroCluster Site A status is displayed.

4. To display the updated name of MetroCluster Site A when viewing it from the remote site (Site B), execute the following command within the CLI on the remote site (Site B): `cluster peer modify-local-name`

## Performing a negotiated switchover

Beginning with System Manager 9.6, you can initiate a negotiated (planned) switchover of a MetroCluster site. This operation is useful when you want to perform disaster recovery testing or planned maintenance on the site.

**Steps**

1. In System Manager, use the cluster administrator credentials to log on to the local MetroCluster site (Site A).

2. Click **Configuration** > **MetroCluster**

   TheMetroCluster Switchover/Switchback Operations window displays.

3. Click **Next**.

   The MetroCluster Switchover and Switchback Operations window displays the status of the operations, and System Manager verifies whether a negotiated switchover is possible.

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

   ◦ If validation is successful, proceed to Step 5.

   ◦ If validation fails, but Site B is up, then an error has occurred, such as a problem with a subsystem or NVram mirroring is not synchronized. You can perform either of the following processes:

     ▪ Fix the issue that is causing the error, click **Close**, and then start again at Step 1.

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

   A warning message displays, warning you that the switchover operation stops all data SVMs on Site B and restarts them on Site A.

6. If you want to proceed, click **Yes**.

   The switchover process begins. The states of Site A and Site B are displayed above the graphic representations of their configurations. If the switchover operation fails, an error message displays. Click **Close**. Correct any errors and start again at Step 1

7. Wait until System Manager shows that healing has been completed.

   When healing is completed, Site B is operational, and systems prepare for the switchback process.

   When the preparations for the switchback process are complete, the **Switchback from Site A to Site B** button is active at the bottom of the window.

8. To proceed with the switchback operation, perform the steps in Performing a switchback.

## Performing a unplanned switchover

Beginning with System Manager 9.6, you can initiate an unplanned switchover of a MetroCluster site. This operation is useful after an outage event or disaster event.

**Before you begin**

Your MetroCluster is running in normal operating condition; however, the nodes in the local cluster (Site A) are up, but the nodes in the remote cluster (Site B) are down.

**Steps**

1. Verify that Site B is actually down.

   A connection error might make Site B appear to be down.

   > ⓘ  Starting the switchover process with Site B up could cause disastrous results.

2. In System Manager, log on to the local MetroCluster site (Site A) using the cluster administrator credentials.

3. Click **Configuration** > **MetroCluster**

   TheMetroCluster Switchover/Switchback Operations window displays.

4. Click **Next**.

   The MetroCluster Switchover/Switchback Operations window displays the status of the operations, and System Manager verifies whether a negotiated switchover is feasible.

5. When the validation process is complete, click **Switchover Site B to Site A** to initiate the switchover

process.

A warning message displays, warning you that the switchover operation switches control from Site B to Site A. The status of Site B should be "UNREACHABLE", and all Site B nodes are shown in red text.

> ⓘ  As noted in Step 1, Site B must actually be down and not just unconnected. Also, you should be aware that the switchover operation might cause data loss.

6. If you want to proceed, ensure the check box is checked, and then click **Yes**.

   The switchover process begins. The states of Site A and Site B are displayed above the graphic representations of their configurations. If the switchover operation fails, an error message displays. Click **Close**. Correct any errors and start again at Step 1

7. Perform all required maintenance activities for Site B.

8. Ensure Site B is up.

   The healing process begins. When System Manager shows the healing is completed, Site B is operational and the systems prepare for the switchback process. The **Switchback from Site A to Site B** button appears at the bottom of the window.

9. Proceed to Performing a switchback to initiate the switchback operation.

## Performing a switchback

Beginning with System Manager 9.6, you can perform a switchback operation that restores control to the original MetroCluster site (Site B) after the system has completed a successful switchover operation.

**Before you begin**

Before you perform a switchback operation, you must complete the following tasks:

- You must prepare the MetroCluster sites by Performing a negotiated (planned) switchover or Performing an unplanned switchover.
- If errors occurred during the healing operation, you must follow the displayed instructions to fix them.
- If the state of the remote site is displayed as "Getting ready for switchback", then the aggregates are still resynchronizing. You should wait until the status of the remote site indicates that it is ready for switchback.

**About this task**

If a switchover operation is successful, the MetroCluster Switchover and Switchback Operations window displays. The window shows the status of both sites and provides a message that tells you the operation was successful.

**Steps**

1. Click **Switchback from Site A to Site B** to initiate the switchback operation.

   A warning message tells you that the switchback operation is returning MetroCluster control to Site B and that the process might take some time.

2. If you want to proceed, click **Yes**.

3. Perform one of the following substeps when the switchback process has completed:

- If the switchback operation is successful, click **Done** to acknowledge the completion of MetroCluster operations.

  (i) Until you acknowledge the completion of the switchback operation, System Manager continues to display a message that the operation has completed. You cannot initiate another operation or monitor subsequent switchover or switchback operations until you acknowledge the completion of the switchback operation.

- If the switchback operation is not successful, error messages display at the top of the status area. Make corrections if needed, and click **Switchback from Site A to Site B** to retry the process.

## MetroCluster Switchover and Switchback Operations window

Beginning with System Manager 9.6, you can use the MetroCluster Switchover and Switchback Operations window to initiate a negotiated (planned) switchover or an unplanned switchover from one site or cluster (Site B) to another site or cluster (Site A). After you perform maintenance or repairs on Site B, you can initiate a switchback from Site A to Site B and view the status of the operation in this window.

**Command Buttons**

- **Switchover Site B to Site A**

  Initiates the process that switches Site B over to Site A.

- **Switchback Site A to Site B**

  Initiates the process that switches Site A back to Site B.

**Other actions**

- **Navigate to Site B cluster**

  Enter the cluster management IP address of Site B.

- **Checkbox for unplanned switchover**

  If you want to initiate an unplanned switchover, check the box labeled **Continue with unplanned switchover**.

**Status areas**

As the system progresses through the process of switching over or switching back, System Manager displays status with the following methods:

- **Progress line graphic**

  Displays phases of the operations and indicates the phases that have been completed. The phases are Switchover, Site B Operations, and Switchback.

- **Show Details**

Displays a list of time-stamped system events as the MetroCluster operations progress.

- **Local: Site A**

  Displays a graphic of the configuration of the cluster at Site A, including the status of that site as it progresses through the phases of the operation.

- **Remote: Site B**

  Displays a graphic of the configuration of the cluster at Site B, including the status of that site as it progresses through the phases of the operation.

If you log in to Site B and view the MetroCluster Switchover and Switchback Operations window, then the status of Site A is shown as "INACTIVE" and the status of Site B is shown as "SWITCHOVER MODE".