Day-to-day administration

ONTAP System Manager

NetApp
December 07, 2020

Table of Contents

Day-to-day administration

Administration overview

ONTAP System Manager is a graphical management interface that enables you to use a web browser to manage storage systems and storage objects (such as disks, volumes, and storage tiers) and perform common management tasks related to storage systems.

Using the System Manager Dashboard, you can view at-a-glance information about important alerts and notifications, the efficiency and capacity of storage tiers and volumes, the nodes that are available in a cluster, the status of the nodes in an HA pair, the most active applications and objects, and the performance metrics of a cluster or a node.

With System Manager you can perform many common tasks, such as the following:

- Create a cluster, configure a network, and set up support details for the cluster.
- Configure and manage storage objects, such as disks, local tiers, volumes, qtrees, and quotas.
- Configure protocols, such as SMB/CIFS and NFS, and provision file sharing.
- Configure protocols such as FC, FCoE, NVMe, and iSCSI for block access.
- Create and configure network components, such as subnets, broadcast domains, data and management interfaces, and interface groups.
- Set up and manage mirroring and vaulting relationships.
- Perform cluster management, storage node management, and storage virtual machine (storage VM) management operations.
- Create and configure storage VMs, manage storage objects associated with storage VMs, and manage storage VM services.
- Monitor and manage high-availability (HA) configurations in a cluster.
- Configure service processors to remotely log in, manage, monitor, and administer the node, regardless of the state of the node.

Viewing and managing your network

Starting with System Manager 9.8, you can display a graphic that shows the components and configuration of your network.

The graphic displays when you select **Network** > **Overview** or when you select → from the **Network** section of the Dashboard.

The following categories of components are shown in the graphic:

- Hosts
- Storage ports
- Network interfaces
- Storage VMs
- Data access components

Each section shows additional details that you can hover your mouse over or select to perform network management and configuration tasks.

Examples

The following are some examples of the many ways you can interact with the graphic to view details about each component or initiate actions to manage your network:

- Click on a host to see its configuration: the ports, network interfaces, storage VMs, and data access components associated with it.
- Hover the mouse over the number of volumes in a storage VM to select a volume to view its details.
- Select an iSCSI interface to view its performance over the last week.
- Click on ⋮ next to a component to initiate actions to modify that component.
- Quickly determine where problems might occur in your network, indicated by an "X" next to unhealthy components.

Downloading network data for reporting

Starting with System Manager 9.8, you can download the data that is displayed in System Manager about your network.

When you display information in a *List View*, you can click **Download**, and the list of objects displayed is downloaded.

- The list is downloaded in comma-separated values (CSV) format.
- Only the data in the visible columns is downloaded.
- The CSV filename is formatted with the object name and a time stamp.

Search, filter, and sort information in System Manager

You can search for various actions and objects in System Manager. You can also search table data for specific entries.

System Manager provides two types of searching:

- Global searching

  When you enter a search argument in the field at the top of each page, System Manager searches throughout the interface to find matches. You can then sort and filter the results.

- Table-grid searching

  Starting with ONTAP 9.8, when you enter a search argument in the field at the top of a table grid, System Manager searches only the columns and rows of that table to find matches.

Global searching

At the top of each page in System Manager, you can use a global search field to search various objects and actions in the interface. For example, you can search for different objects by name, pages available in the navigator column (on the left side), various action items, like "Add Volume" or "Add License", and links to external help topics. You can also filter and sort the results.

> For better results, perform searching, filtering, and sorting one minute after logging in and five minutes after creating, modifying, or deleting an object.

- Getting search results
- Filtering search results
- Sorting search results

Getting search results

The search is not case-sensitive. You can enter a variety of text strings to find the page, actions, or topics you need. Up to 20 results are listed. If more results are found, you can click **Show more** to view all results. The following examples describe typical searches:

Type of search	Sample search string	Sample search results
By object name	vol_	vol_lun_dest on storage VM: svm0 (Volume) /vol/vol...est1/lun on storage VM: svm0 (LUN) svm0:vol_lun_dest1 role: Destination (Relationship)
By location in interface	volume	Add Volume (Action) Protection – Overview (Page) Recover deleted volume (Help)

Type of search	Sample search string	Sample search results
By actions	add	Add Volume (Action) Network – Overview (Page) Expand volumes and LUNs (Help)
By help content	san	Storage – Overview (Page) SAN overview (Help) Provision SAN storage for databases (Help)

Filtering search results

You can narrow the results with filters, as shown in the following examples:

Filter	Syntax	Sample search string
By object type	<type>:<objectName>	volume:vol_2
By object size	<type><size-symbol><number><units>	luns<500mb
By broken disks	"broken disk" or "unhealthy disk"	unhealthy disk
By network interface	<IP address>	172.22.108.21

Sorting search results

When you view all the search results, they are sorted alphabetically. You can sort the results by clicking

 and selecting how you want to sort the results.

Table-grid searching

Starting with ONTAP 9.8, whenever System Manager displays information in a table-grid format, a search button appears at the top of the table.

When you click **Search**, a text field appears in which you can enter a search argument. System Manager searches the entire table and displays only the rows that contain text that matches your search argument.

You can use an asterisk (*) as a "wildcard" character as a substitute for characters. For example, searching for vol* might provide rows that contain the following:

- vol_122_D9

- vol_lun_dest1

- vol2866

- volspec1

- volum_dest_765

- volume

- volume_new4

- volume9987

Enable new features by adding license keys

Some ONTAP features are enabled by license keys. You can add license keys using ONTAP System Manager.

Steps

1. Click **Cluster** > **Settings**.

2. Under **License**, click ➡.

3. Click **Add**.

Reboot, shut down, take over, and give back nodes

You should switch a node's workload to its HA partner (takeover) before rebooting or shutting down the node.

Steps

1. Click **Cluster** > **Overview**.

2. Under **Nodes**, click ⋮.

3. Click the node and select the desired action.

Troubleshoot hardware problems

Starting with ONTAP 9.8, you can use System Manager to view the configuration of hardware on your network and troubleshoot problems that might arise.

Before you Start

For ONTAP 9.8, System Manager provides a *preview* of the capability to view hardware configurations. The preview only shows a limited number of AFF models.

Steps

1. In System Manager, select **Cluster** > **Hardware**.

2. Hover your mouse over components to view status and other details.

You can view various types of information:

- Information about nodes
- Information about disk shelves
- Information about storage switches

Information about nodes

You can view the following:

Nodes:

- Front and rear views are displayed.
- Models with an internal disk shelf also show the disk layout in the front view.
- For ONTAP 9.8, only platform models C190, A220, A300, A400, and A700 are shown.

Ports:

- Console ports are not shown in this preview.
- A port is red if it is down.
- The status of a port and other details are shown when you hover over the port.

FRUs:

Information about FRUs appears only when the state of a FRU is non-optimal.

- Failed PSUs in nodes or chassis.
- High temperatures detected in nodes.
- Failed fans on the nodes or chassis.

Adapter cards:

- Cards with defined part number fields are shown in the slots if external cards has been inserted.
- Ports on cards are shown.
- Certain cards are shown with specific images of the cards. If the card is not in the list of part numbers supported, then a generic graphic is displayed.

FlashCache:

- Details about FlashCache are shown like an adapter card if slot information is available.

Information about disk shelves

You can view the following:

Disk shelves:

- Front and rear views are displayed.

Shelf ports:

- Port status is displayed.

- Remote port information is shown if the port is connected.

Shelf FRUs:

- PSU failure information is shown.

Information about storage switches

- The display shows switches that act as storage switches used to connect shelves to nodes.

- For ONTAP 9.8, the following model can be viewed: X190100 (Cisco Nexus 3232).

You can view the following:

- **Storage switch** information includes switch name, IP address, serial number, SNMP version, and system version.

- **Storage switch port** information includes identity name, identity index, state, and other details, including remote connection.

Manage MetroCluster sites

Starting 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

Starting 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.

NetApp ONTAP 9.7 System Manager

Configure ONTAP on a New Cluster

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

Set up IP MetroCluster peering

Starting 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

Starting 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.

1. 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 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.

> ℹ️ 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 9.7 for switchover and switchback
- Use System Manager 9.8 for switchover and switchback

Use System Manager 9.7 for switchover and switchback

Steps

1. Log in to System Manager 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 9.8 for switchover and switchback

Perform a planned switchover (ONTAP 9.8)

Steps

1. Log in to System Manager 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.

   > ℹ️ 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 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.

   > ℹ️ 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 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.

Troubleshoot problems with IP MetroCluster configurations

Starting 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**.

   > 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.

Update ONTAP on MetroCluster clusters

You can use System Manager to upgrade both clusters in a MetroCluster configuration to a newer version of ONTAP. During the upgrade, the storage service remains online.

- Upload the ONTAP image using a local drive or from an HTTP server on both clusters of the MetroCluster configuration.

Steps

1. Log in to System Manager.

2. Select **Cluster** > **Update**.

   The **ONTAP Update** window displays a list of images that are available to upload.

3. Hover over any image name that you do *NOT* want to upload, and click the trash can icon.

4. Select the radio button next to the image name that you want to update, and click **Update**.

5. Wait for the system to validate the images.

   When the images are successfully validated, the update process begins to install a new version of ONTAP on both clusters.

   You can click **Pause** at any time to pause the updating process.

6. When the update process is completed, click **Relaunch System Manager**.

Clone volumes and LUNs for testing

You can clone volumes and LUNs to create temporary, writable copies for testing. The clones reflect the current, point-in-time state of the data. You can also use clones to give additional users access to data without giving them access to production data.

> **ℹ** The FlexClone license should be installed on the storage system.

Cloning a volume

Create a clone of a volume, as follows:

Steps

1. Click **Storage** > **Volumes**.

2. Click ⋮ next to the name of the volume you want to clone.

3. Select **Clone** from the list.

4. Specify a name for the clone and complete the other selections.

5. Click **Clone** and verify that the volume clone appears in the list of volumes.

Alternatively, you can clone a volume from the **Overview** that displays when you view volume details.

Cloning a LUN

Create a clone of a LUN, as follows:

Steps

1. Click **Storage** > **LUNs**.

2. Click ⋮ next to the name of the LUN you want to clone.

3. Select **Clone** from the list.

4. Specify a name for the clone and complete the other selections.

5. Click **Clone** and verify that the LUN clone appears in the list of LUNs.

Alternatively, you can clone a LUN from the **Overview** that displays when you view LUN details.

When you create a LUN clone, System Manager automatically enables the deletion of the clone when space is needed.

Modify QoS

Beginning in ONTAP 9.8, when you provision storage, QoS is enabled by default. You can disable QoS or choose a custom QoS policy during the provisioning process. You can also modify QoS after your storage has been provisioned.

Steps

1. In ONTAP System Manager, click **Storage** and select **Volumes**.

2. Next to the volume for which you want to modify QoS, click ⋮ and select **Edit**.

Update ONTAP

Update ONTAP

You can nondisruptively update the version of ONTAP on your cluster.

The update process checks your hardware platform and configuration to verify that your system is supported by the ONTAP version to which you are upgrading. ONTAP automatically shifts workloads during an upgrade between clusters so you can continue serving data.

This procedure updates your system to the specified version of ONTAP. It is assumed that your hardware platform and configuration is supported for the target release.

1. If you want to download the software image to an HTTP or FTP server on your network, copy the software image from the NetApp support site to the directory on the HTTP or FTP server from which the image will be served.

   If you want to download the software image to a local folder, then click the software image on the NetApp support site, select **Save As**, and then choose the local folder to place the image.

2. In ONTAP System Manager, click **Cluster** > **Overview**.

3. In the right corner of the Overview pane, click ⋮.

4. Click **ONTAP Update**.

Update ONTAP on MetroCluster clusters

You can use System Manager to upgrade both clusters in a MetroCluster configuration to a newer version of ONTAP. During the upgrade, the storage service remains online.

Before you start

- Upload the ONTAP image using a local drive or from an HTTP server on both clusters of the MetroCluster configuration.

Steps

1. Log in to System Manager.

2. Select **Cluster** > **Update**.

   The **ONTAP Update** window displays a list of images that are available to upload.

3. Hover over any image name that you do *NOT* want to upload, and click the trash can icon.

4. Select the radio button next to the image name that you want to update, and click **Update**.

5. Wait for the system to validate the images.

   When the images are successfully validated, the update process begins to install a new version of ONTAP on both clusters.

   You can click **Pause** at any time to pause the updating process.

6. When the update process is completed, click **Relaunch System Manager**.

Update firmware

You can apply a firmware updated to supported devices in your cluster, such as disks, disk shelves, the Disk Qualification Package (DQP) the service processor (SP),

or the Baseboard Management Controller (BMC).

Steps

1. Copy the needed firmware update files from the NetApp support site.

   You can copy the files to an HTTP or FTP server on your network or to a local folder.

2. In ONTAP System Manager, click **Cluster** > **Overview**.

3. In the right corner of the Overview pane, click ⋮ and select **ONTAP Update**.

4. Click **Firmware Update**, select **From Server** or **Local Client** and provide the server URL or the file location.

You can monitor or verify the update under **Firmware Update Summary**.

Manage storage

Expand storage

You can increase the size of your volume or LUN so that more space is available to your host. The size of a LUN cannot exceed the size of the containing volume.

- Increase the size of a volume
- Increase the size of a LUN

Also, you can add a LUN to an existing volume. The processes are different for using System Manager with ONTAP 9.7 or 9.8

- Add a LUN to an existing volume (ONTAP 9.7)
- Add a LUN to an existing volume (ONTAP 9.8)

Also, starting with ONTAP 9.8, you can use System Manager to add a LUN to an existing volume.

Increase the size of a volume

Steps

1. Click **Storage** > **Volumes**.

2. Hover over the name of the volume you want to increase in size.

3. Click ⋮.

4. Select **Edit**.

5. Increase the capacity value.

Increase the size of a LUN

Steps

1. Click **Storage** > **LUNs**.

2. Hover over the name of the LUN you want to increase in size.

3. Click ⋮.

4. Select **Edit**.

5. Increase the capacity value.

Add a LUN to an existing volume (ONTAP 9.7)

To use System Manager with ONTAP 9.7 to add a LUN to an existing volume, you should switch to the Classical View first.

Steps

1. Log in to System Manager in ONTAP 9.7.

2. Click **Classical View**.

3. Select **Storage** > **LUNs** > **Create**

4. Specify the details to create the LUN.

5. Specify to which existing volume or qtree the LUN should be added.

Add a LUN to an existing volume (ONTAP 9.8)

Starting with ONTAP 9.8, you can use System Manager to add a LUN to an existing volume that already has a least one LUN.

Steps

1. Click **Storage** > **LUNs**.

2. Click **Add**+.

3. Complete the fields in the **Add LUNs** window.

4. Select **More Options**.

5. Select the checkbox labeled **Group with related LUNs**.

6. In the drop-down field, select a LUN that exists on the volume to which you want to add another LUN.

7. Complete the rest of the fields. For **Host Mapping**, click one of the radio buttons:

   ◦ **Existing initiator group** lets you select an existing group from a list.

◦ **New initiator group** lets you enter a new group in the field.

Add disks to a local tier (Add capacity to aggregate)

You can increase the size of an existing aggregate (local tier) by adding capacity disks.

Steps

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

2. Click **Hardware and Diagnostics** > **Aggregates**.

3. Select the aggregate to which you want to add capacity disks, and then click **Actions** > **Add Capacity**.

   You should add disks that are of the same size as the other disks in the aggregate.

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

5. Click **Storage** > **Tiers** to verify the size of the new aggregate.

Add cache to a local tier

Provision cache by converting an existing local tier (aggregate) to a Flash Pool aggregate by adding SSDs. Flash Pool aggregates enable you to deploy flash as high performance cache for your working data set while using lower-cost HDDs for less frequently accessed data.

Steps

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

2. Click Hardware and **Diagnostics** > **Aggregates**.

3. Select the aggregate, and then click **Actions** > **Add Cache**.

   Select the cache source as storage pools or dedicated SSDs.

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

5. Click **Storage** > **Tiers** to verify the size of the new aggregate.

Add nodes to cluster

You can increase the size and capabilities of your cluster by adding new nodes.

Before you Start

You should have already cabled the new nodes to the cluster.

There are separate processes for working with System Manager in ONTAP 9.7 or ONTAP 9.8.

- [Adding nodes to a cluster with System Manager 9.7](#)

- [Adding nodes to a cluster with System Manager 9.8](#)

Adding nodes to a cluster with System Manager 9.7

Steps

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

2. Click **Configurations** > **Cluster Expansion**.

   System Manager automatically discovers the new nodes.

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

4. Click **Cluster** > **Overview** to view the new nodes.

Adding nodes to a cluster with System Manager 9.8

Steps

1. Select **Cluster** > **Overview**.

   The new controllers are shown as nodes connected to the cluster network but are not in the cluster.

2. Click **Add**.

   ◦ The nodes are added into the cluster.

   ◦ Storage is allocated implicitly.

Manage storage efficiency policies

Starting with ONTAP 9.8, you can use System Manager to enable, disable, add, edit, or delete efficiency policies for storage VMs on FAS systems.

> ℹ️ This function is not available on AFF systems.

Steps

1. Select **Storage** > **Storage VMs**

2. Select the storage VM for which you want to manage efficiency policies.

3. On the **Settings** tab, select ➔ in the **Efficiency Policy** section. The efficiency policies for that storage VM are displayed.

You can perform the following tasks:

- **Enable or disable** an efficiency policy by clicking the toggle button in the Status column.

- **Add** an efficiency policy by clicking on **Add**+.

- **Edit** an efficiency policy by clicking on ⋮ to the right of the policy name and selecting **Edit**.
- **Delete** an efficiency policy by clicking on ⋮ to the right of the policy name and selecting **Delete**.

Recover deleted volumes

If you have accidently deleted one or more FlexVol volumes, you can recover these volumes. Starting in System Manager 9.8, you can also recover FlexGroup volumes. You can also delete the volumes permanently by purging the volumes.

The volume retention time can be set on a storage VM level. By default, the volume retention time is set to 12 hours.

Selecting deleted volumes

Steps

1. Click **Storage** > **Volumes**.
2. Click **More** > **Show Deleted Volumes**.
3. Select the volumes and click the desired action to recover or permanently delete the volumes.

Resetting the volume configurations

Deleting a volume deletes the associated configurations of the volume. Recovering a volume does not reset all the configurations. Perform the following tasks manually after recovering a volume to bring the volume back to its original state:

Steps

1. Rename the volume.
2. Set up a junction path (NAS).
3. Create mappings for LUNs in the volume (SAN).
4. Associate a Snapshot policy and export policy with the volume.
5. Add new quota policy rules for the volume.
6. Add a QOS policy for the volume.

Save storage space using compression, compaction, and deduplication

For volumes on non-AFF clusters, you can run deduplication, data compression, and data compaction together or independently to achieve optimal space savings.

- Deduplication eliminates duplicate data blocks.
- Data compression compresses the data blocks to reduce the amount of physical storage that is required.

- Data compaction stores more data in less space to increase storage efficiency.

> ℹ️ These tasks are supported for volumes on non-AFF clusters. Beginning with ONTAP 9.2, all inline storage efficiency features, such as inline deduplication and inline compression, are enabled by default on AFF volumes.
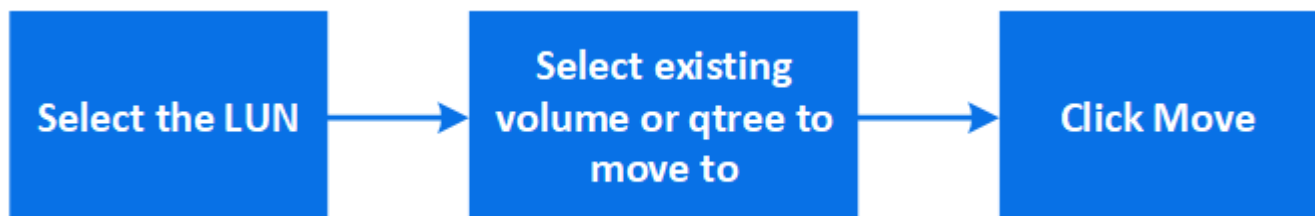
Steps

1. Click **Storage** > **Volumes**.

2. Next to the name of the volume for which you want to save storage, click ⋮.

3. Click **Edit** and scroll to **Storage Efficiency**.

4. *Optional*: If you want to enable background deduplication, ensure the checkbox is checked.

5. *Optional*: If you want to enable background compression, specify the storage efficiency policy and ensure the checkbox is checked.

6. *Optional*: If you want to enable inline compression, ensure the checkbox is checked.

Balance loads by moving LUNs

You can move a LUN to another volume within the storage VM to balance the load, or you can move it to a volume with a higher performance service level to improve performance.

Move restrictions

- A LUN cannot be moved to a qtree within the same volume.

- A LUN created from a file using the CLI cannot be moved with System Manager.

- LUNs that are online and serving data cannot be moved.

- LUNs cannot be moved if the allocated space in the destination volume cannot contain the LUN (even if autogrow is enabled on the volume).

- LUNs on SnapLock volumes cannot be moved with System Manager.

Steps

1. Click **Storage** > **LUNs**.

2. Select the LUN that you want to move and click **Move**.

3. Select an existing volume to which you want to move the LUN. If the volume contains qtrees, select

the qtree.

> **ℹ** While the Move operation is in progress, the LUN is displayed on both the origin and destination volume.

Balance loads by moving volumes to another tier

Starting with ONTAP 9.8, you can use System Manager to move a volume to another tier to balance the load.

Steps

1. Click **Storage** > **Volumes**.

2. Select the volume or volumes that you want to move, and then click **Move**.

3. Select an existing tier (aggregate) to which you want to move the volume or volumes.