Manage and monitor clusters and cluster object health

Active IQ Unified Manager

NetApp
October 07, 2026

This PDF was generated from https://docs.netapp.com/us-en/active-iq-unified-manager/health-checker/concept_understand_cluster_monitoring.html on October 07, 2026. Always check docs.netapp.com for the latest.

Table of Contents

Manage and monitor clusters and cluster object health . . . 1
- Understand cluster monitoring . . . 1
  - Understand cluster monitoring in Active IQ Unified Manager . . . 1
  - Understand node root volumes in Active IQ Unified Manager . . . 1
  - Understand events and thresholds for node root aggregates in Active IQ Unified Manager . . . 1
  - Understand quorum and epsilon in ONTAP clusters in Active IQ Unified Manager . . . 1
- View the cluster list and details in Active IQ Unified Manager . . . 2
- Check the health of clusters in a MetroCluster configuration in Active IQ Unified Manager . . . 3
  - Determine cluster health in MetroCluster over FC configuration . . . 3
  - Determine cluster health in MetroCluster over IP configuration . . . 5
- View the health and capacity status of All SAN Array clusters in Active IQ Unified Manager . . . 5
- View the node list and details in Active IQ Unified Manager . . . 5
- Generate a hardware inventory report for contract renewal in Active IQ Unified Manager . . . 6
- View the Storage VM list and details in Active IQ Unified Manager . . . 7
- View the aggregate list and details in Active IQ Unified Manager . . . 7
- View FabricPool capacity information in Active IQ Unified Manager . . . 8
- View storage pool details in Active IQ Unified Manager . . . 9
- View the volume list and details in Active IQ Unified Manager . . . 10
- View details about NFS shares in Active IQ Unified Manager . . . 10
- View details about SMB/CIFS shares in Active IQ Unified Manager . . . 11
- View the list of Snapshot copies in Active IQ Unified Manager . . . 12
- Delete Snapshot copies in Active IQ Unified Manager . . . 12
- Calculate reclaimable space for Snapshot copies in Active IQ Unified Manager . . . 13
- Understand cluster object windows and dialog boxes in Active IQ Unified Manager . . . 14

Manage and monitor clusters and cluster object health

Understand cluster monitoring

Understand cluster monitoring in Active IQ Unified Manager

You can add clusters to the Unified Manager database to monitor clusters for availability, capacity, and other details, such as CPU usage, interface statistics, free disk space, qtree usage, and chassis environmental.

Events are generated if the status is abnormal or when a predefined threshold is breached. If configured to do so, Unified Manager sends a notification to a specified recipient when an event triggers an alert.

Understand node root volumes in Active IQ Unified Manager

You can monitor the node root volume using Unified Manager. The best practice is that the node root volume should have sufficient capacity to prevent the node from going down.

When the used capacity of the node root volume exceeds 80 percent of the total node root volume capacity, the Node Root Volume Space Nearly Full event is generated. You can configure an alert for the event to get a notification. You can take appropriate actions to prevent the node from going down by using either ONTAP System Manager or the ONTAP CLI.

> The functionality of monitoring node root volumes is not available, if clusters run ONTAP 9.14.1 version or later.

Understand events and thresholds for node root aggregates in Active IQ Unified Manager

You can monitor the node root aggregate by using Unified Manager. The best practice is to thickly provision the root volume in the root aggregate to prevent the node from halting.

By default, capacity and performance events are not generated for root aggregates. Also, the threshold values used by Unified Manager are not applicable to the node root aggregates. Only a technical support representative can modify the settings for these events to be generated. When the settings are modified by the technical support representative, the capacity threshold values are applied to the node root aggregate.

You can take appropriate actions to prevent the node from halting by using either ONTAP System Manager or the ONTAP CLI.

> The functionality of monitoring node root aggregates is not available, if clusters run ONTAP 9.14.1 version or later.

Understand quorum and epsilon in ONTAP clusters in Active IQ Unified Manager

Quorum and epsilon are important measures of cluster health and function that together

indicate how clusters address potential communications and connectivity challenges.

Quorum is a precondition for a fully functioning cluster. When a cluster is in quorum, a simple majority of nodes are healthy and can communicate with each other. When quorum is lost, the cluster loses the ability to accomplish normal cluster operations. Only one collection of nodes can have quorum at any one time because all of the nodes collectively share a single view of the data. Therefore, if two non-communicating nodes are permitted to modify the data in divergent ways, it is no longer possible to reconcile the data into a single data view.

Each node in the cluster participates in a voting protocol that elects one node master; each remaining node is a secondary. The master node is responsible for synchronizing information across the cluster. When quorum is formed, it is maintained by continual voting. If the master node goes offline and the cluster is still in quorum, a new master is elected by the nodes that remain online.

Because there is the possibility of a tie in a cluster that has an even number of nodes, one node has an extra fractional voting weight called epsilon. If the connectivity between two equal portions of a large cluster fails, the group of nodes containing epsilon maintains quorum, assuming that all of the nodes are healthy. For example, the following illustration shows a four-node cluster in which two of the nodes have failed. However, because one of the surviving nodes holds epsilon, the cluster remains in quorum even though there is not a simple majority of healthy nodes.

Epsilon is automatically assigned to the first node when the cluster is created. If the node that holds epsilon becomes unhealthy, takes over its high-availability partner, or is taken over by its high-availability partner, then epsilon is automatically reassigned to a healthy node in a different HA pair.

Taking a node offline can affect the ability of the cluster to remain in quorum. Therefore, ONTAP issues a warning message if you attempt an operation that will either take the cluster out of quorum or else put it one outage away from a loss of quorum. You can disable the quorum warning messages by using the cluster quorum-service options modify command at the advanced privilege level.

In general, assuming reliable connectivity among the nodes of the cluster, a larger cluster is more stable than a smaller cluster. The quorum requirement of a simple majority of half the nodes plus epsilon is easier to maintain in a cluster of 24 nodes than in a cluster of two nodes.

A two-node cluster presents some unique challenges for maintaining quorum. Two-node clusters use cluster HA, in which neither node holds epsilon; instead, both nodes are continuously polled to ensure that if one node fails, the other has full read-write access to data, as well as access to logical interfaces and management functions.

View the cluster list and details in Active IQ Unified Manager

You can use the Health: All Clusters view to view your inventory of clusters. The Capacity: All Clusters view enables you to view summarized information about storage capacity and utilization in all clusters.

Before you begin

You must have the Operator, Application Administrator, or Storage Administrator role.

You can also view details for individual clusters such as the cluster health, capacity, configuration, LIFs, nodes, and disks in that cluster by using the Cluster / Health details page.

The details in the Health: All Clusters view, Capacity: All Clusters view, and the Cluster / Health details page help you plan your storage. For example, before provisioning a new aggregate, you can select a specific cluster from the Health: All Clusters view and obtain capacity details to determine if the cluster has the required space.

Steps

1. In the left navigation pane, click **Storage** > **Clusters**.
2. In the View menu, select **Health: All Clusters** view to view health information, or **Capacity: All Clusters** view to view details about storage capacity and utilization in all clusters.
3. Click the name of a cluster to view complete details of the cluster in the **Cluster / Health** details page.

Related information

- Cluster / Health details page
- Performance: All Clusters view
- Monitoring MetroCluster configurations
- Viewing security status for clusters and Storage VMs
- What security criteria are being evaluated

Check the health of clusters in a MetroCluster configuration in Active IQ Unified Manager

You can use Active IQ Unified Manager (Unified Manager) to check the operational health of clusters, and their components, in MetroCluster over FC and MetroCluster over IP configurations. If the clusters were involved in a performance event detected by Unified Manager, the health status can help you determine whether a hardware or software issue contributed to the event.

Before you begin

- You must have the Operator, Application Administrator, or Storage Administrator role.
- You must have analyzed a performance event for a MetroCluster configuration and obtained the name of the cluster involved.
- Both clusters in the MetroCluster configuration over FC and IP must be monitored by the same instance of Unified Manager.

Determine cluster health in MetroCluster over FC configuration

Follow these steps for determining cluster health in a MetroCluster over FC configuration.

Steps

1. In the left navigation pane, click **Event Management** to display the event list.
2. In the filter panel, select all MetroCluster filters under the **Source Type** category. You see all events raised

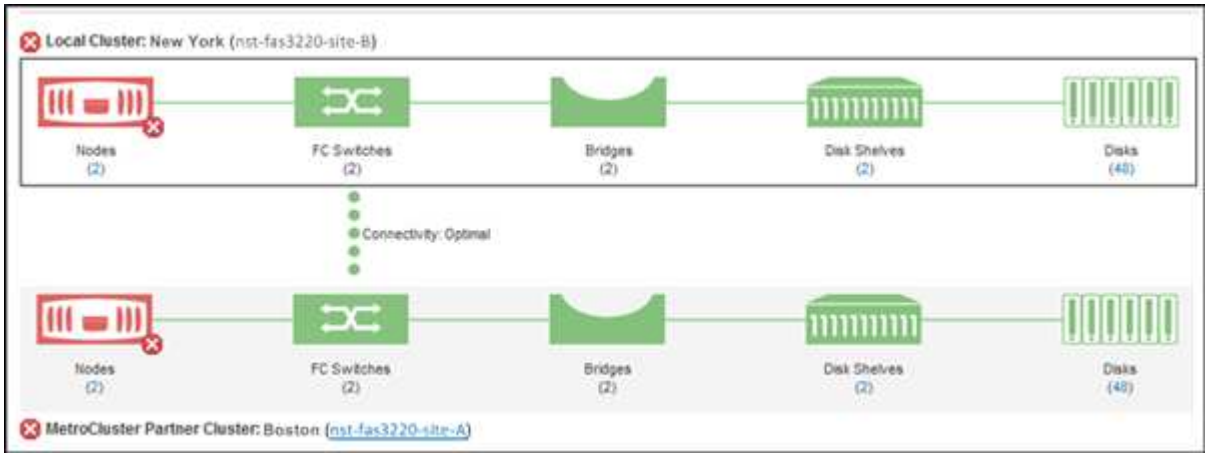
in your environment for all MetroCluster configurations.

3. Next to a MetroCluster event, click the name of the cluster.

   If no MetroCluster events are displayed, you can use the Search bar to search for the name of the cluster involved in the event related to you MetroCluster over FC configuration.

   The Health: All Clusters view is displayed with detailed information about the event.

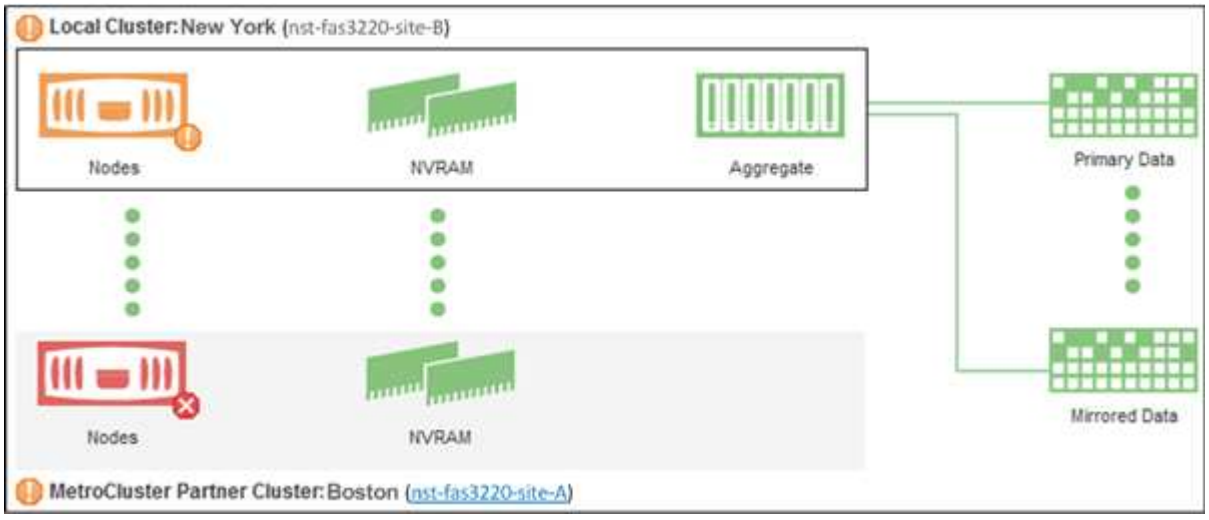
4. Select the **MetroCluster Connectivity** tab to display the health of the connection between the selected cluster and its partner cluster.



   In this example, the names and the components of the local cluster and its partner cluster are displayed. A yellow or red icon indicates a health event for the highlighted component. The Connectivity icon represents the link between the clusters. You can point your mouse cursor to an icon to display event information or click the icon to display the events. A health issue on either cluster might have contributed to the performance event.

   Unified Manager monitors the NVRAM component of the link between the clusters. If the FC Switches icon on the local or partner cluster or the Connectivity icon is red, a link health issue might have caused the performance event.

5. Select the **MetroCluster Replication** tab.



   In this example, if the NVRAM icon on the local or partner cluster is yellow or red, a health issue with the

NVRAM might have caused the performance event. If there are no red or yellow icons on the page, a performance issue on the partner cluster might have caused the performance event.

Determine cluster health in MetroCluster over IP configuration

Follow these steps for determining cluster health in a MetroCluster over IP configuration.

Steps

1. In the left navigation pane, click **Event Management** to display the event list.
2. In the filter panel, under the **Source Type** category, select the `MetroCluster Relationship` filter. You see all events raised in your environment for all MetroCluster configurations.

   If you cannot see the reported MetroCluster events, you can use the Search bar to search by the name of the cluster involved in the event related to you MetroCluster over IP configuration.

3. Next to the relevant MetroCluster event, click the name of the cluster. The Clusters page is displayed with the details of that cluster. For information about determining health issues, see Monitor connectivity issues in MetroCluster over IP configuration.

View the health and capacity status of All SAN Array clusters in Active IQ Unified Manager

You can use the Cluster inventory pages to display the health and capacity status of your All SAN Array clusters.

Before you begin

You must have the Operator, Application Administrator, or Storage Administrator role.

You can view overview information for All SAN Array clusters in the Health: All Clusters view and Capacity: All Clusters view. Additionally, you can view details in the Cluster / Health details page.

Steps

1. In the left navigation pane, click **Storage** > **Clusters**.
2. Make sure that the “Personality” column is displayed in the **Health: All Clusters** view, or add it using the **Show / Hide** control.

   This column displays “All SAN Array” for your All SAN Array clusters.

3. Review the information.
4. To view information about storage capacity in those clusters, select the Capacity: All Clusters view.
5. To view detailed information about health and storage capacity in those clusters, click the name of an All SAN Array cluster.

   View the details in the Health, Capacity, and Nodes tabs in the Cluster / Health details page

View the node list and details in Active IQ Unified Manager

You can use the Health: All Nodes view to view the list of nodes in your clusters. You can

use the Cluster / Health details page to view detailed information about nodes that are part of the cluster that is monitored.

Before you begin

You must have the Operator, Application Administrator, or Storage Administrator role.

You can view details such as the node state, cluster that contains the node, aggregate capacity details (used and total), and raw capacity details (usable, spare, and total). You can also obtain information about HA pairs, disks shelves, and ports.

Steps

1. In the left navigation pane, click **Storage** > **Nodes**.
2. On the **Health: All Nodes** view, click the node whose details you want to view.

   The detailed information for the selected node is displayed in the Cluster / Health details page. The left pane displays the list of HA pairs. By default, the HA Details is open, which displays HA state details and events related to the selected HA pair.

3. To view other details about the node, perform the appropriate action:

To view…	Click…
Details about the disk shelves	**Disk Shelves**.
Port-related information	**Ports**.

For more information, see:

- Performance: All Nodes view
- Viewing node and aggregate available IOPS values
- Viewing node and aggregate performance capacity used values

Generate a hardware inventory report for contract renewal in Active IQ Unified Manager

You can generate a report that contains a complete list of cluster and node information; such as hardware model numbers and serial numbers, disk types and counts, installed licenses, and more. This report is helpful for contract renewal within secure sites (“dark” sites) that are not connected to the NetAppActive IQ platform.

Before you begin

You must have the Operator, Application Administrator, or Storage Administrator role.

Steps

1. In the left navigation pane, click **Storage** > **Nodes**.
2. Go to the **Health: All Nodes** view or **Performance: All Nodes** view.
3. Select **Reports** > ***** > Hardware Inventory Report*.

   The hardware inventory report is downloaded as a .csv file with complete information as of the current date.

4. Provide this information to your NetApp support contact for contract renewal.

View the Storage VM list and details in Active IQ Unified Manager

From the Health: All Storage VMs view, you can monitor your inventory of storage virtual machines (SVMs). You can use the Storage VM / Health details page to view detailed information about SVMs that are monitored.

Before you begin

You must have the Operator, Application Administrator, or Storage Administrator role.

You can view SVM details, such as the capacity, efficiency, and configuration of an SVM. You can also view information about the related devices and related alerts for that SVM.

Steps

1. In the left navigation pane, click **Storage** > **Storage VMs**.
2. Choose one of the following ways to view the SVM details:
   - To view information about the health of all SVMs in all clusters, in the View menu, select Health: All Storage VMs view.
   - To view the complete details, click the Storage VM name.

     You can also view the complete details by clicking **View Details** in the minimal details dialog box.
3. View the objects related to the SVM by clicking **View Related** in the minimal details dialog box.

Related information

- Storage VM: Health details page
- Performance: All Storage VMs view
- Security: Anti-ransomware view
- Viewing security status for clusters and Storage VMs
- Relationship: All Relationships view

View the aggregate list and details in Active IQ Unified Manager

From the Health: All Aggregates view, you can monitor your inventory of aggregates. The Capacity: All Aggregates view enables you to view information about the capacity and utilization of aggregates in all clusters.

Before you begin

You must have the Operator, Application Administrator, or Storage Administrator role.

You can view details such as aggregate capacity and configuration, and disk information from the Aggregate / Health details page. You can use these details before you configure the threshold settings if required.

Steps

1. In the left navigation pane, click **Storage** > **Aggregates**.
2. Choose one of the following ways to view the aggregate details:
   - To view information about the health of all aggregates in all clusters, in the View menu, select Health: All Aggregates view.
   - To view information about the capacity and utilization of all aggregates in all clusters, in the View menu, select Capacity: All Aggregates view.
   - To view the complete details, click the aggregate name.

     You can also view the complete details by clicking **View Details** in the minimal details dialog box.
3. View the objects related to the aggregate by clicking **View Related** from the minimal details dialog box.

Related information

- Aggregate / Health details page
- Performance: All Aggregates view
- Create a report to view aggregates reaching full capacity in Active IQ Unified Manager

View FabricPool capacity information in Active IQ Unified Manager

You can view FabricPool capacity information for clusters, aggregates, and volumes on the Capacity and Performance inventory and details pages for these objects. These pages also display FabricPool mirror information when a mirror tier has been configured.

These pages display information such as the available capacity on the local performance tier and on the cloud tier, how much capacity is being used in both tiers, which aggregates are attached to a cloud tier, and which volumes are implementing the FabricPool features by moving certain information to the cloud tier.

When a cloud tier is mirrored to another cloud provider (the “mirror tier”) then both cloud tiers are displayed in the Aggregate / Health details page.

Steps

1. Perform one of the following:

To view capacity information for…	Do this…
Clusters	a. On the Capacity: All Clusters view, click a cluster. b. On the Cluster / Health details page, click the **Configuration** tab. The display shows the names of any cloud tiers to which this cluster is connected.

To view capacity information for…	Do this…
Aggregates	a. On the Capacity: All Aggregates view, click an aggregate where the Type field indicates “SSD (FabricPool)” or “HDD (FabricPool)”. b. On the Aggregate / Health details page, click the **Capacity** tab. The display shows the total capacity used in the cloud tier. c. Click the **Disk Information** tab. The display shows the name of the cloud tier and the capacity used. d. Click the **Configuration** tab. The display shows the name of the cloud tier and other detailed information about the cloud tier.
Volumes	a. On the Capacity: All Volumes view, click a volume where a policy name appears in the “Tiering Policy” field. b. On the Volume / Health details page, click the **Configuration** tab. The display shows the name of the FabricPool tiering policy assigned to the volume.

2. In the **Workload Analysis** page you can select “Cloud Tier View” in the **Capacity Trend** area to see the capacity being used in the local Performance Tier and in the Cloud Tier over the previous month.

For more information on FabricPool aggregates, see Disks and aggregates overview.

View storage pool details in Active IQ Unified Manager

You can view the details of the storage pool to monitor the storage pool health, total and available cache, and used and available allocations.

Before you begin

You must have the Operator, Application Administrator, or Storage Administrator role.

Steps

1. In the left navigation pane, click **Storage** > **Aggregates**.
2. Click an aggregate name.

   The details of the selected aggregate are displayed.

3. Click the **Disk Information** tab.

   Detailed disk information is displayed.

The Cache table is displayed only when the selected aggregate is using a storage pool.

4. In the Cache table, move the pointer over the name of the required storage pool.

   The details of the storage pool are displayed.

View the volume list and details in Active IQ Unified Manager

From the Health: All Volumes view, you can monitor your inventory of volumes. The Capacity: All Volumes view enables you to view information about the capacity and utilization of volumes in a cluster.

Before you begin

You must have the Operator, Application Administrator, or Storage Administrator role.

You can also use the Volume / Health details page to view detailed information about volumes that are monitored, including the capacity, efficiency, configuration, and protection of the volumes. You can also view information about the related devices and related alerts for a specific volume.

Steps

1. In the left navigation pane, click **Storage** > **Volumes**.
2. Choose one of the following ways to view the volume details:
   - To view detailed information about the health of volumes in a cluster, in the View menu, select Health: All Volumes view.
   - To view detailed information about the capacity and utilization of volumes in a cluster, in the View menu, select Capacity: All Volumes view.
   - To view the complete details, click the volume name.

     You can also view the complete details by clicking **View Details** in the minimal details dialog box.
3. **Optional:** View the objects related to the volume by clicking **View Related** from the minimal details dialog box.

Related information

- Volume: Health details page
- Performance: All Volumes view
- Security: Anti-ransomware view
- Viewing volume protection relationships
- Creating a report to view available volume capacity charts

View details about NFS shares in Active IQ Unified Manager

You can view details about all NFS shares, such as its status, the path associated with the volume (FlexGroup volumes or FlexVol volumes), access levels of clients to the NFS shares, and the export policy defined for the volumes that are exported. Use the Health:

All NFS Shares view to see all NFS shares on all monitored clusters, and use the Storage VM / Health details page to view all NFS shares on a specific storage virtual machine (SVM).

Before you begin

- NFS license must be enabled on the cluster.
- Network interfaces serving the NFS shares must be configured.
- You must have the Operator, Application Administrator, or Storage Administrator role.

Step

1. In the left navigation pane, follow the steps below depending on whether you want to view all NFS shares or just the NFS shares for a particular SVM.

To…	Follow these steps…
View all NFS shares	Click **Storage** > **NFS Shares**
View NFS shares for single SVM	a. Click **Storage** > **Storage VMs** b. Click the SVM for which you want to view the NFS shares details. c. In the Storage VM / Health details page, click the **NFS Shares** tab.

For more information, see Provisioning file share volumes and Provisioning CIFS and NFS file shares by using APIs.

View details about SMB/CIFS shares in Active IQ Unified Manager

You can view details about all SMB/CIFS shares, such as the share name, junction path, containing objects, security settings, and export policies defined for the share. Use the Health: All SMB Shares view to see all SMB shares on all monitored clusters, and use the Storage VM / Health details page to view all SMB shares on a specific storage virtual machine (SVM).

Before you begin

- CIFS license must be enabled on the cluster.
- Network interfaces serving the SMB/CIFS shares must be configured.
- You must have the Operator, Application Administrator, or Storage Administrator role.

Shares in folders are not displayed.

Step

1. In the left navigation pane, follow the steps below depending on whether you want to view all SMB/CIFS shares or just the shares for a particular SVM.

To…	Follow these steps…
View all SMB/CIFS shares	Click **Storage** > **SMB Shares**
View SMB/CIFS shares for single SVM	a. Click **Storage** > **Storage VMs** b. Click the SVM for which you want to view the SMB/CIFS share details. c. In the Storage VM / Health details page, click the **SMB Shares** tab.

For more information, see Provisioning CIFS and NFS file shares by using APIs.

View the list of Snapshot copies in Active IQ Unified Manager

You can view the list of Snapshot copies for a selected volume. You can use the list of Snapshot copies to calculate the amount of disk space that can be reclaimed if one or more Snapshot copies are deleted, and you can delete the Snapshot copies if required.

Before you begin

- You must have the Operator, Application Administrator, or Storage Administrator role.
- The volume containing the Snapshot copies must be online.

Steps

1. In the left navigation pane, click **Storage** > **Volumes**.
2. In the **Health: All Volumes** view, select the volume that contains the Snapshot copies you want to view.
3. In the **Volume / Health** details page, click the **Capacity** tab.
4. In **Details** pane of the **Capacity** tab, in the Other Details section, click the link next to **Snapshot Copies**.

   The number of Snapshot copies is a link that displays the list of Snapshot copies.

Related information

Health/Volumes page

Delete Snapshot copies in Active IQ Unified Manager

You can delete a Snapshot copy to conserve space or to free disk space, or you can delete the Snapshot copy if it is no longer required.

Before you begin

You must have the Application Administrator or Storage Administrator role.

The volume must be online.

To delete a Snapshot copy that is busy or locked, you must have released the Snapshot copy from the application that was using it.

- You cannot delete the base Snapshot copy in a parent volume if a FlexClone volume is using that

Snapshot copy.

The base Snapshot copy is the Snapshot copy that is used to create the FlexClone volume and displays the status `Busy` and Application Dependency as `Busy, Vclone` in the parent volume.

- You cannot delete a locked Snapshot copy that is used in a SnapMirror relationship.

  The Snapshot copy is locked and is required for the next update.

Steps

1. In the left navigation pane, click **Storage** > **Volumes**.
2. In the **Health: All Volumes** view, select the volume that contains the Snapshot copies you want to view.

   The list of Snapshot copies is displayed.

3. In the **Volume / Health** details page, click the **Capacity** tab.
4. In **Details** pane of the **Capacity** tab, in the Other Details section, click the link next to **Snapshot Copies**.

   The number of Snapshot copies is a link that displays the list of Snapshot copies.

5. In the **Snapshot Copies** view, select the Snapshot copies you want to delete, and then click **Delete Selected**.

Calculate reclaimable space for Snapshot copies in Active IQ Unified Manager

You can calculate the amount of disk space that can be reclaimed if one or more Snapshot copies are deleted.

Before you begin

- You must have the Operator, Application Administrator, or Storage Administrator role.
- The volume must be online.
- The volume must be a FlexVol volume; this capability is not supported with FlexGroup volumes.

Steps

1. In the left navigation pane, click **Storage** > **Volumes**.
2. In the **Health: All Volumes** view, select the volume that contains the Snapshot copies you want to view.

   The list of Snapshot copies is displayed.

3. In the **Volume / Health** details page, click the **Capacity** tab.
4. In **Details** pane of the **Capacity** tab, in the Other Details section, click the link next to **Snapshot Copies**.

   The number of Snapshot copies is a link that displays the list of Snapshot copies.

5. In the **Snapshot Copies** view, select the Snapshot copies for which you want to calculate the reclaimable space.
6. Click **Calculate**.

   The reclaimable space (in percentage, and KB, MB, GB, and so on) on the volume is displayed.

7. To recalculate the reclaimable space, select the required Snapshot copies and click **Recalculate**.

Understand cluster object windows and dialog boxes in Active IQ Unified Manager

You can view all your clusters and cluster objects from the respective storage object page. You can also view the details from the corresponding storage object details page. You can now launch System Manager user interface from the following STORAGE and PROTECTION sections of the INVENTORY.

- Cluster Inventory, Cluster Health, and Cluster Performance pages
- Aggregate Inventory, Aggregate Health, and Aggregate Performance pages
- Volume Inventory, Volume Health, and Volume Performance pages
- Node Inventory and Node Performance pages
- StorageVM Inventory, StorageVM Health, and StorageVM Performance pages
- Protection relationship pages

Copyright information

Copyright © 2026 NetApp, Inc. All Rights Reserved. Printed in the U.S. No part of this document covered by copyright may be reproduced in any form or by any means—graphic, electronic, or mechanical, including photocopying, recording, taping, or storage in an electronic retrieval system—without prior written permission of the copyright owner.

Software derived from copyrighted NetApp material is subject to the following license and disclaimer:

THIS SOFTWARE IS PROVIDED BY NETAPP “AS IS” AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL NETAPP BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

NetApp reserves the right to change any products described herein at any time, and without notice. NetApp assumes no responsibility or liability arising from the use of products described herein, except as expressly agreed to in writing by NetApp. The use or purchase of this product does not convey a license under any patent rights, trademark rights, or any other intellectual property rights of NetApp.

The product described in this manual may be protected by one or more U.S. patents, foreign patents, or pending applications.

LIMITED RIGHTS LEGEND: Use, duplication, or disclosure by the government is subject to restrictions as set forth in subparagraph (b)(3) of the Rights in Technical Data -Noncommercial Items at DFARS 252.227-7013 (FEB 2014) and FAR 52.227-19 (DEC 2007).

Data contained herein pertains to a commercial product and/or commercial service (as defined in FAR 2.101) and is proprietary to NetApp, Inc. All NetApp technical data and computer software provided under this Agreement is commercial in nature and developed solely at private expense. The U.S. Government has a non-exclusive, non-transferrable, nonsublicensable, worldwide, limited irrevocable license to use the Data only in connection with and in support of the U.S. Government contract under which the Data was delivered. Except as provided herein, the Data may not be used, disclosed, reproduced, modified, performed, or displayed without the prior written approval of NetApp, Inc. United States Government license rights for the Department of Defense are limited to those rights identified in DFARS clause 252.227-7015(b) (FEB 2014).

Trademark information

NETAPP, the NETAPP logo, and the marks listed at http://www.netapp.com/TM are trademarks of NetApp, Inc. Other company and product names may be trademarks of their respective owners.