Tasks and information related to several workflows

Active IQ Unified Manager

NetApp
September 26, 2026

This PDF was generated from https://docs.netapp.com/us-en/active-iq-unified-manager/health-checker/concept_cluster_components_and_why_they_can_be_in_contention.html on September 26, 2026. Always check docs.netapp.com for the latest.

Table of Contents

Tasks and information related to several workflows . . . 1
- Understand cluster component contention in Active IQ Unified Manager . . . 1
- View the Volume / Health details page in Active IQ Unified Manager . . . 3
  - Command buttons . . . 3
  - Capacity tab . . . 4
  - Configuration tab . . . 8
  - Protection tab . . . 10
  - History area . . . 16
  - Events list . . . 17
  - Related Annotations pane . . . 17
  - Related Devices pane . . . 17
  - Related Groups pane . . . 18
  - Related Alerts pane . . . 18
- View the Storage VM / Health details page in Active IQ Unified Manager . . . 18
  - Command buttons . . . 18
  - Health tab . . . 19
  - Capacity tab . . . 20
  - Configuration tab . . . 21
  - Network Interfaces tab . . . 23
  - Qtrees tab . . . 24
  - User and Group Quotas tab . . . 26
  - NFS Shares tab . . . 28
  - SMB Shares tab . . . 29
  - SAN tab . . . 31
  - Related Annotations pane . . . 32
  - Related Devices pane . . . 32
  - Related Groups pane . . . 32
  - Related Alerts pane . . . 33
- View the Cluster / Health details page in Active IQ Unified Manager . . . 33
  - Command buttons . . . 33
  - Health tab . . . 33
  - Capacity tab . . . 34
  - Configuration tab . . . 36
  - MetroCluster Connectivity tab . . . 39
  - MetroCluster Replication tab . . . 40
  - Network Interfaces tab . . . 40
  - Nodes tab . . . 41
  - Disks tab . . . 44
  - Related Annotations pane . . . 46
  - Related Devices pane . . . 46
  - Related Groups pane . . . 46
  - Related Alerts pane . . . 47
- View the Aggregate / Health details page in Active IQ Unified Manager . . . 47

Command buttons 47
Capacity tab 47
Disk Information tab 50
Configuration tab 53
History area 54
Events list 55
Related Devices pane 55
Related Alerts pane 56

Tasks and information related to several workflows

Understand cluster component contention in Active IQ Unified Manager

You can identify cluster performance issues when a cluster component goes into contention. The performance of workloads that use the component slow down and their response time (latency) for client requests increases, which triggers an event in Unified Manager.

A component that is in contention cannot perform at an optimal level. Its performance has declined, and the performance of other cluster components and workloads, called *victims*, might have increased latency. To bring a component out of contention, you must reduce its workload or increase its ability to handle more work, so that the performance can return to normal levels. Because Unified Manager collects and analyzes workload performance in five-minute intervals, it detects only when a cluster component is consistently overused. Transient spikes of overusage that last for only a short duration within the five-minute interval are not detected.

For example, a storage aggregate might be under contention because one or more workloads on it are competing for their I/O requests to be fulfilled. Other workloads on the aggregate can be impacted, causing their performance to decrease. To reduce the amount of activity on the aggregate, there are different steps you can take, such as moving one or more workloads to a less busy aggregate or node, to lessen the overall workload demand on the current aggregate. For a QoS policy group, you can adjust the throughput limit, or move workloads to a different policy group, so that the workloads are no longer being throttled.

Unified Manager monitors the following cluster components to alert you when they are in contention:

- **Network**

  Represents the wait time of I/O requests by the external networking protocols on the cluster. The wait time is time spent waiting for “transfer ready” transactions to finish before the cluster can respond to an I/O request. If the network component is in contention, it means high wait time at the protocol layer is impacting the latency of one or more workloads.

- **Network Processing**

  Represents the software component in the cluster involved with I/O processing between the protocol layer and the cluster. The node handling network processing might have changed since the event was detected. If the network processing component is in contention, it means high utilization at the network processing node is impacting the latency of one or more workloads.

  When using an All SAN Array cluster in an active-active configuration, the network processing latency value is displayed for both nodes so you can verify the nodes are sharing the load equally.

- **QoS Limit Max**

  Represents the throughput maximum (peak) setting of the storage Quality of Service (QoS) policy group assigned to the workload. If the policy group component is in contention, it means all workloads in the policy group are being throttled by the set throughput limit, which is impacting the latency of one or more of those workloads.

- **QoS Limit Min**

  Represents the latency to a workload that is being caused by QoS throughput minimum (expected) setting assigned to other workloads. If the QoS minimum set on certain workloads use the majority of the bandwidth to guarantee the promised throughput, other workloads will be throttled and see more latency.

- **Cluster Interconnect**

  Represents the cables and adapters with which clustered nodes are physically connected. If the cluster interconnect component is in contention, it means high wait time for I/O requests at the cluster interconnect is impacting the latency of one or more workloads.

- **Data Processing**

  Represents the software component in the cluster involved with I/O processing between the cluster and the storage aggregate that contains the workload. The node handling data processing might have changed since the event was detected. If the data processing component is in contention, it means high utilization at the data processing node is impacting the latency of one or more workloads.

- **Volume Activation**

  Represents the process that tracks the usage of all active volumes. In large environments where more than 1000 volumes are active, this process tracks how many critical volumes need to access resources through the node at the same time. When the number of concurrent active volumes exceeds the recommended maximum threshold, some of the non-critical volumes will experience latency as identified here.

- **MetroCluster Resources**

  Represents the MetroCluster resources, including NVRAM and interswitch links (ISLs), used to mirror data between clusters in a MetroCluster configuration. If the MetroCluster component is in contention, it means high write throughput from workloads on the local cluster or a link health issue is impacting the latency of one or more workloads on the local cluster. If the cluster is not in a MetroCluster configuration, this icon is not displayed.

- **Aggregate or SSD Aggregate Ops**

  Represents the storage aggregate on which the workloads are running. If the aggregate component is in contention, it means high utilization on the aggregate is impacting the latency of one or more workloads. An aggregate consists of all HDDs, or a mix of HDDs and SSDs (a Flash Pool aggregate), or a mix of HDDs and a cloud tier (a FabricPool aggregate). An “SSD Aggregate” consists of all SSDs (an all-flash aggregate), or a mix of SSDs and a cloud tier (a FabricPool aggregate).

- **Cloud Latency**

  Represents the software component in the cluster involved with I/O processing between the cluster and the cloud tier on which user data is stored. If the cloud latency component is in contention, it means that a large amount of reads from volumes that are hosted on the cloud tier are impacting the latency of one or more workloads.

- **Sync SnapMirror**

  Represents the software component in the cluster involved with replicating user data from the primary volume to the secondary volume in a SnapMirror Synchronous relationship. If the sync SnapMirror component is in contention, it means that the activity from SnapMirror Synchronous operations are impacting the latency of one or more workloads.

View the Volume / Health details page in Active IQ Unified Manager

You can use the Volume / Health details page to view detailed information about a selected volume, such as capacity, storage efficiency, configuration, protection, annotation, and events generated. You can also view information about the related objects and related alerts for that volume.

You must have the Application Administrator or Storage Administrator role.

Command buttons

The command buttons enable you to perform the following tasks for the selected volume:

- **Switch to Performance View**

  Enables you to navigate to the Volume / Performance details page.

- **Actions**
  - Add Alert

    Enables you to add an alert to the selected volume.

  - Edit Thresholds

    Enables you to modify the threshold settings for the selected volume.

  - Annotate

    Enables you to annotate the selected volume.

  - Protect

    Enables you to create either SnapMirror or SnapVault relationships for the selected volume.

  - Relationship

    Enables you to execute the following protection relationship operations:

    - Edit

      Launches the Edit Relationship dialog box which enables you to change existing SnapMirror policies, schedules, and maximum transfer rates for an existing protection relationship.

    - Abort

      Aborts transfers that are in progress for a selected relationship. Optionally, it enables you to remove the restart checkpoint for transfers other than the baseline transfer. You cannot remove the checkpoint for a baseline transfer.

    - Quiesce

      Temporarily disables scheduled updates for a selected relationship. Transfers that are already in

progress must complete before the relationship is quiesced.

- Break

  Breaks the relationship between the source and destination volumes and changes the destination to a read-write volume.

- Remove

  Permanently deletes the relationship between the selected source and destination. The volumes are not destroyed and the Snapshot copies on the volumes are not removed. This operation cannot be undone.

- Resume

  Enables scheduled transfers for a quiesced relationship. At the next scheduled transfer interval, a restart checkpoint is used, if one exists.

- Resynchronize

  Enables you to resynchronize a previously broken relationship.

- Initialize/Update

  Enables you to perform a first-time baseline transfer on a new protection relationship, or to perform a manual update if the relationship is already initialized.

- Reverse Resync

  Enables you to reestablish a previously broken protection relationship, reversing the function of the source and destination by making the source a copy of the original destination. The contents on the source are overwritten by the contents on the destination, and any data that is newer than the data on the common Snapshot copy is deleted.

◦ Restore

Enables you to restore data from one volume to another volume. For information, see Restoring data using the Volume / Health details page.

The Restore button and the Relationship operation buttons are not available for volumes that are in synchronous protection relationships.

- **View Volumes**

  Enables you to navigate to the Health: All Volumes view.

Capacity tab

The Capacity tab displays details about the selected volume, such as its physical capacity, logical capacity, threshold settings, quota capacity, and information about any volume move operation:

- **Capacity Physical**

  Details the physical capacity of the volume:

- Snapshot Overflow

  Displays the data space that is consumed by the Snapshot copies.

- Used

  Displays the space used by data in the volume.

- Warning

  Indicates that the space in the volume is nearly full. If this threshold is breached, the Space Nearly Full event is generated.

- Error

  Indicates that the space in the volume is full. If this threshold is breached, the Space Full event is generated.

- Unusable

  Indicates that the Thin-Provisioned Volume Space At Risk event is generated and that the space in the thinly provisioned volume is at risk because of aggregate capacity issues. The unusable capacity is displayed only for thinly provisioned volumes.

- Data graph

  Displays the total data capacity and the used data capacity of the volume.

  If autogrow is enabled, the data graph also displays the space available in the aggregate. The data graph displays the effective storage space that can be used by data in the volume, which can be one of the following:

  - Actual data capacity of the volume for the following conditions:
    - Autogrow is disabled.
    - Autogrow-enabled volume has reached the maximum size.
    - Autogrow-enabled thickly provisioned volume cannot grow further.
  - Data capacity of the volume after considering the maximum volume size (for thinly provisioned volumes and for thickly provisioned volumes when the aggregate has space for the volume to reach maximum size)
  - Data capacity of the volume after considering the next possible autogrow size (for thickly provisioned volumes that have an autogrow percentage threshold)

- Snapshot copies graph

  This graph is displayed only when the used Snapshot capacity or the Snapshot reserve is not zero.

Both the graphs display the capacity by which the Snapshot capacity exceeds the Snapshot reserve if the used Snapshot capacity exceeds the Snapshot reserve.

- **Capacity Logical**

  Displays the logical space characteristics of the volume. The logical space indicates the real size of the data that is being stored on disk without applying the savings from using ONTAP storage efficiency technologies.

- Logical Space Reporting

  Displays if the volume has logical space reporting configured. The value can be Enabled, Disabled, or Not applicable. “Not applicable” is displayed for volumes on older versions of ONTAP or on volumes that do not support logical space reporting.

- Used

  Displays the amount of logical space that is being used by data in the volume, and the percentage of logical space used based on the total data capacity.

- Logical Space Enforcement

  Displays whether logical space enforcement is configured for thinly provisioned volumes. When set to Enabled, the logical used size of the volume cannot be greater than the currently set physical volume size.

- **Autogrow**

  Displays whether the volume automatically grows when it is out of space.

- **Space Guarantee**

  Displays the FlexVol volume setting control when a volume removes free blocks from an aggregate. These blocks are then guaranteed to be available for writes to files in the volume. The space guarantee can be set to one of the following:

  - None

    No space guarantee is configured for the volume.

  - File

    Full size of sparsely written files (for example, LUNs) is guaranteed.

  - Volume

    Full size of the volume is guaranteed.

  - Partial

    The FlexCache volume reserves space based on its size. If the FlexCache volume’s size is 100 MB or more, the minimum space guarantee is set to 100 MB by default. If the FlexCache volume’s size is less than 100 MB, the minimum space guarantee is set to the FlexCache volume’s size. If the FlexCache volume’s size is grown later, the minimum space guarantee is not incremented.

  The space guarantee is Partial when the volume is of type Data-Cache.

- **Details (Physical)**

  Displays the physical characteristics of the volume.

- **Total Capacity**

  Displays the total physical capacity in the volume.

- **Data Capacity**

  Displays the amount of physical space used by the volume (used capacity) and the amount of physical space that is still available (free capacity) in the volume. These values are also displayed as a percentage of the total physical capacity.

  When the Thin-Provisioned Volume Space At Risk event is generated for thinly provisioned volumes, the amount of space used by the volume (used capacity) and the amount of space that is available in the volume but cannot be used (unusable capacity) because of aggregate capacity issues is displayed.

- **Snapshot Reserve**

  Displays the amount of space used by the Snapshot copies (used capacity) and amount of space available for Snapshot copies (free capacity) in the volume. These values are also displayed as a percentage of the total snapshot reserve.

  When the Thin-Provisioned Volume Space At Risk event is generated for thinly provisioned volumes, the amount of space used by the Snapshot copies (used capacity) and the amount of space that is available in the volume but cannot be used for making Snapshot copies (unusable capacity) because of aggregate capacity issues is displayed.

- **Volume Thresholds**

  Displays the following volume capacity thresholds:

  - Nearly Full Threshold

    Specifies the percentage at which a volume is nearly full.

  - Full Threshold

    Specifies the percentage at which a volume is full.

- **Other Details**
  - Autogrow Max Size

    Displays the maximum size up to which the volume can automatically grow. The default value is 120% of the volume size on creation. This field is displayed only when autogrow is enabled for the volume.

  - Qtree Quota Committed Capacity

    Displays the space reserved in the quotas.

  - Qtree Quota Overcommitted Capacity

    Displays the amount of space that can be used before the system generates the Volume Qtree Quota Overcommitted event.

  - Fractional Reserve

    Controls the size of the overwrite reserve. By default, the fractional reserve is set to 100, indicating that 100 percent of the required reserved space is reserved so that the objects are fully protected for overwrites. If the fractional reserve is less than 100 percent, the reserved space for all the space-reserved files in that volume is reduced to the fractional reserve percentage.

- Snapshot Daily Growth Rate

  Displays the change (in percentage, or in KB, MB, GB, and so on) that occurs every 24 hours in the Snapshot copies in the selected volume.

- Snapshot Days to Full

  Displays the estimated number of days remaining before the space reserved for the Snapshot copies in the volume reaches the specified threshold.

  The Snapshot Days to Full field displays a Not Applicable value when the growth rate of the Snapshot copies in the volume is zero or negative, or when there is insufficient data to calculate the growth rate.

- Snapshot Autodelete

  Specifies whether Snapshot copies are automatically deleted to free space when a write to a volume fails because of lack of space in the aggregate.

- Snapshot Copies

  Displays information about the Snapshot copies in the volume.

  The number of Snapshot copies in the volume is displayed as a link. Clicking the link opens the Snapshot Copies on a Volume dialog box, which displays details of the Snapshot copies.

  The Snapshot copy count is updated approximately every hour; however, the list of Snapshot copies is updated at the time that you click the icon. This might result in a difference between the Snapshot copy count displayed in the topology and the number of Snapshot copies listed when you click the icon.

- **Volume Move**

  Displays the status of either the current or the last volume move operation that was performed on the volume, and other details, such as the current phase of the volume move operation which is in progress, source aggregate, destination aggregate, start time, end time, and estimated end time.

  Also displays the number of volume move operations that are performed on the selected volume. You can view more information about the volume move operations by clicking the **Volume Move History** link.

Configuration tab

The Configuration tab displays details about the selected volume, such as the export policy, RAID type, capacity and storage efficiency related features of the volume:

- **Overview**
  - Full Name

    Displays the full name of the volume.

  - Aggregates

    Displays the name of the aggregate on which the volume resides, or the number of aggregates on which the FlexGroup volume resides.

  - Tiering Policy

Displays the tiering policy set for the volume; if the volume is deployed on a FabricPool-enabled aggregate. The policy can be None, Snapshot Only, Backup, Auto, or All.

- Storage VM

  Displays the name of the SVM that contains the volume.

- Junction Path

  Displays the status of the path, which can be active or inactive. The path in the SVM to which the volume is mounted is also displayed. You can click the **History** link to view the most recent five changes to the junction path.

- Export Policy

  Displays the name of the export policy that is created for the volume. You can click the link to view details about the export policies, authentication protocols, and access enabled on the volumes that belong to the SVM.

- Style

  Displays the volume style. The volume style can be FlexVol or FlexGroup.

- Type

  Displays the type of the selected volume. The volume type can be Read-write, Load-sharing, Data-Protection, Data-cache, or Temporary.

- RAID Type

  Displays the RAID type of the selected volume. The RAID type can be RAID0, RAID4, RAID-DP, or RAID-TEC.

  Multiple RAID types may display for FlexGroup volumes because the constituent volumes for FlexGroups can be on aggregates of different types.

- SnapLock Type

  Displays the SnapLock Type of the aggregate that contains the volume.

- SnapLock Expiry

  Displays the expiry date of SnapLock volume.

- **Capacity**
  - Thin Provisioning

    Displays whether thin provisioning is configured for the volume.

  - Autogrow

    Displays whether the flexible volume grows automatically within an aggregate.

  - Snapshot Autodelete

Specifies whether Snapshot copies are automatically deleted to free space when a write to a volume fails because of lack of space in the aggregate.

- Quotas

  Specifies whether the quotas are enabled for the volume.

- **Efficiency**
  - Compression

    Specifies whether compression is enabled or disabled.

  - Deduplication

    Specifies whether deduplication is enabled or disabled.

  - Deduplication Mode

    Specifies whether the deduplication operation enabled on a volume is a manual, scheduled, or policy-based operation. If the mode is set to Scheduled, the operation schedule is displayed, and if the mode is set to a policy, the policy name is displayed.

  - Deduplication Type

    Specifies the type of deduplication operation running on the volume. If the volume is in a SnapVault relationship, the type displayed is SnapVault. For any other volume, the type is displayed as Regular.

  - Storage Efficiency Policy

    Specifies the name of the storage efficiency policy that has been assigned through Unified Manager to this volume. This policy can control the compression and deduplication settings.

- **Protection**
  - Snapshot Copies

    Specifies whether automatic Snapshot copies are enabled or disabled.

Protection tab

The Protection tab displays protection details about the selected volume, such as lag information, relationship type, and topology of the relationship.

- **Summary**

  Displays protection relationships (SnapMirror, SnapVault, or Storage VM DR) properties for a selected volume. For any other relationship type, only the Relationship Type property is displayed. If a primary volume is selected, only the Managed and Local Snapshot copy Policy are displayed. Properties displayed for SnapMirror and SnapVault relationships include the following:

  - Source Volume

    Displays the name of the selected volume's source if the selected volume is a destination.

  - Lag Status

Displays the update or transfer lag status for a protection relationship. The status can be Error, Warning, or Critical.

The lag status is not applicable for synchronous relationships.

- Lag Duration

  Displays the time by which the data on the mirror lags behind the source.

- Last Successful Update

  Displays the date and time of the most recent successful protection update.

  The last successful update is not applicable for synchronous relationships.

- Storage Service Member

  Displays either Yes or No to indicate whether or not the volume belongs to and is managed by a storage service.

- Version Flexible Replication

  Displays either Yes, Yes with backup option, or None. Yes indicates that SnapMirror replication is possible even if source and destination volumes are running different versions of ONTAP software. Yes with backup option indicates the implementation of SnapMirror protection with the ability to retain multiple versions of backup copies on the destination. None indicates that Version Flexible Replication is not enabled.

- Relationship Capability

  Indicates the ONTAP capabilities available to the protection relationship.

- Protection Service

  Displays the name of the protection service if the relationship is managed by a protection partner application.

- Relationship Type

  Displays any relationship type, including Asynchronous Mirror, Asynchronous Vault, Asynchronous MirrorVault, StrictSync, and Sync.

- Relationship State

  Displays the state of the SnapMirror or SnapVault relationship. The state can be Uninitialized, SnapMirrored, or Broken-Off. If a source volume is selected, the relationship state is not applicable and is not displayed.

- Transfer Status

  Displays the transfer status for the protection relationship. The transfer status can be one of the following:

  - Aborting

    SnapMirror transfers are enabled; however, a transfer abort operation that might include removal of

the checkpoint is in progress.

- Checking

  The destination volume is undergoing a diagnostic check and no transfer is in progress.

- Finalizing

  SnapMirror transfers are enabled. The volume is currently in the post-transfer phase for incremental SnapVault transfers.

- Idle

  Transfers are enabled and no transfer is in progress.

- In-Sync

  The data in the two volumes in the synchronous relationship are synchronized.

- Out-of-Sync

  The data in the destination volume is not synchronized with the source volume.

- Preparing

  SnapMirror transfers are enabled. The volume is currently in the pre-transfer phase for incremental SnapVault transfers.

- Queued

  SnapMirror transfers are enabled. No transfers are in progress.

- Quiesced

  SnapMirror transfers are disabled. No transfer is in progress.

- Quiescing

  A SnapMirror transfer is in progress. Additional transfers are disabled.

- Transferring

  SnapMirror transfers are enabled and a transfer is in progress.

- Transitioning

  The asynchronous transfer of data from the source to the destination volume is complete, and the transition to synchronous operation has started.

- Waiting

  A SnapMirror transfer has been initiated, but some associated tasks are waiting to be queued.

◦ Max Transfer Rate

Displays the maximum transfer rate for the relationship. The maximum transfer rate can be a numerical

value in either kilobytes per second (Kbps), Megabytes per second (Mbps), Gigabytes per second (Gbps), or Terabytes per second (Tbps). If No Limit is displayed, the baseline transfer between relationships is unlimited.

- SnapMirror Policy

  Displays the protection policy for the volume. DPDefault indicates the default Asynchronous Mirror protection policy, XDPDefault indicates the default Asynchronous Vault policy, and DPSyncDefault indicates the default Asynchronous MirrorVault policy. StrictSync indicates the default Synchronous Strict protection policy, and Sync indicates the default Synchronous policy. You can click the policy name to view details associated with that policy, including the following information:

  - Transfer priority
  - Ignore access time setting
  - Tries limit
  - Comments
  - SnapMirror labels
  - Retention settings
  - Actual Snapshot copies
  - Preserve Snapshot copies
  - Retention warning threshold
  - Snapshot copies with no retention settings In a cascading SnapVault relationship where the source is a data protection (DP) volume, only the rule “sm_created” applies.

- Update Schedule

  Displays the SnapMirror schedule assigned to the relationship. Positioning your cursor over the information icon displays the schedule details.

- Local Snapshot Policy

  Displays the Snapshot copy policy for the volume. The policy is Default, None, or any name given to a custom policy.

- Protected By

  Displays the type of protection used for the selected volume. For example, if a volume is protected by Consistency Group and SnapMirror volume relationships, this field displays both SnapMirror and Consistency Group. This field also provides a link that redirects you to the Relationships page to view the unified relationship status. The link is only applicable to constituent relationships.

- Consistency Group

  For volumes protected by SnapMirror active sync relationships, this column displays the Consistency Group of the volume.

- **Views**

  Displays the protection topology of the selected volume. The topology includes graphical representations of all volumes that are related to the selected volume. The selected volume is indicated by a dark gray border, and lines between volumes in the topology indicate the protection relationship type. The direction of the relationships in the topology are displayed from left to right, with the source of each relationship on the left

and the destination on the right.

Double bold lines specify an Asynchronous Mirror relationship, a single bold line specifies an Asynchronous Vault relationship, double single lines specify an Asynchronous MirrorVault relationship, and a bold line and non-bold line specifies a Synchronous relationship. The table below indicates if the Synchronous relationship is StrictSync or Sync.

Right-clicking a volume displays a menu from which you can choose either to protect the volume or restore data to it. Right-clicking a relationship displays a menu from which you can choose to either edit, abort, quiesce, break, remove, or resume a relationship.

The menus will not display in the following instances:

- If RBAC settings do not allow this action, for example, if you have only operator privileges
- If the volume is in a synchronous protection relationship
- When the volume ID is unknown, for example, when you have an intercluster relationship and the destination cluster has not yet been discovered Clicking another volume in the topology selects and displays information for that volume. A question mark ( ) in the upper-left corner of a volume indicates that either the volume is missing or that it has not yet been discovered. It might also indicate that the capacity information is missing. Positioning your cursor over the question mark displays additional information, including suggestions for remedial action.

The topology displays information about volume capacity, lag, Snapshot copies, and last successful data transfer if it conforms to one of several common topology templates. If a topology does not conform to one of those templates, information about volume lag and last successful data transfer is displayed in a relationship table under the topology. In that case, the highlighted row in the table indicates the selected volume, and, in the topology view, bold lines with a blue dot indicate the relationship between the selected volume and its source volume.

Topology views include the following information:

- Capacity

  Displays the total amount of capacity used by the volume. Positioning your cursor over a volume in the topology displays the current warning and critical threshold settings for that volume in the Current Threshold Settings dialog box. You can also edit the threshold settings by clicking the **Edit Thresholds** link in the Current Threshold Settings dialog box. Clearing the **Capacity** check box hides all capacity information for all volumes in the topology.

- Lag

  Displays the lag duration and the lag status of the incoming protection relationships. Clearing the **Lag** check box hides all lag information for all volumes in the topology. When the **Lag** check box is dimmed, then the lag information for the selected volume is displayed in the relationship table below the topology, as well as the lag information for all related volumes.

- Snapshot

  Displays the number of Snapshot copies available for a volume. Clearing the **Snapshot** check box hides all Snapshot copy information for all volumes in the topology. Clicking a Snapshot copy icon ( ) displays the Snapshot copy list for a volume. The Snapshot copy count displayed next to the icon is updated approximately every hour; however, the list of Snapshot copies is updated at the time that you click the icon. This might result in a difference between the Snapshot copy count displayed in the topology and the number of Snapshot copies listed when you click the icon.

- Last Successful Transfer

  Displays the amount, duration, time, and date of the last successful data transfer. When the **Last Successful Transfer** check box is dimmed, then the last successful transfer information for the selected volume is displayed in the relationship table below the topology, as well as the last successful transfer information for all related volumes.

  - **History**

    Displays in a graph the history of incoming SnapMirror and SnapVault protection relationships for the selected volume. There are three history graphs available: incoming relationship lag duration, incoming relationship transfer duration, and incoming relationship transfer size. History information is displayed only when you select a destination volume. If you select a primary volume, the graphs are empty, and the message No data found is displayed. If the volumes are protected by Consistency Group and SnapMirror synchronous relationships, information for the relationship transfer duration and relationship transfer size is not displayed.

  You can select a graph type from the drop-down list at the top of the History pane. You can also view details for a specific time period by selecting either 1 week, 1 month, or 1 year. History graphs can help you identify trends: for example, if large amounts of data are being transferred at the same time of the day or week, or if the lag warning or lag error threshold is consistently being breached, you can take the appropriate action. Additionally, you can click the **Export** button to create a report in CSV format for the chart that you are viewing.

Protection history graphs display the following information:

- **Relationship Lag Duration**

  Displays seconds, minutes, or hours on the vertical (y) axis, and displays days, months, or years on the horizontal (x) axis, depending on the selected duration period. The upper value on the y axis indicates the maximum lag duration reached in the duration period shown in the x axis. The horizontal orange line on the graph depicts the lag error threshold, and the horizontal yellow line depicts the lag warning threshold. Positioning your cursor over these lines displays the threshold setting. The horizontal blue line depicts the lag duration. You can view the details for specific points on the graph by positioning your cursor over an area of interest.

- **Relationship Transfer Duration**

  Displays seconds, minutes, or hours on the vertical (y) axis, and displays days, months, or years on the horizontal (x) axis, depending on the selected duration period. The upper value on the y axis indicates the maximum transfer duration reached in the duration period shown in the x axis. You can view the details of specific points on the graph by positioning your cursor over the area of interest.

  This chart is not available for volumes that are in synchronous protection relationships.

- **Relationship Transferred Size**

  Displays bytes, kilobytes, megabytes, and so on, on the vertical (y) axis depending on the transfer size, and displays days, months, or years on the horizontal (x) axis depending on the selected time period. The upper value on the y axis indicates the maximum transfer size reached in the duration period shown in the x axis. You can view the details for specific points on the graph by positioning your cursor over an area of interest.

  This chart is not available for volumes that are in synchronous protection relationships.

History area

The History area displays graphs that provide information about the capacity and space reservations of the selected volume. Additionally, you can click the **Export** button to create a report in CSV format for the chart that you are viewing.

Graphs might be empty and the message No data found displayed when the data or the state of the volume remains unchanged for a period of time.

You can select a graph type from the drop-down list at the top of the History pane. You can also view details for a specific time period by selecting either 1 week, 1 month, or 1 year. History graphs can help you identify trends—for example, if the volume usage is consistently breaching the Nearly Full threshold, you can take the appropriate action.

History graphs display the following information:

- **Volume Capacity Used**

  Displays the used capacity in the volume and the trend in how volume capacity is used based on the usage history, as line graphs in bytes, kilobytes, megabytes, and so on, on the vertical (y) axis. The time period is displayed on the horizontal (x) axis. You can select a time period of a week, a month, or a year. You can view the details for specific points on the graph by positioning your cursor over a particular area. You can hide or display a line graph by clicking the appropriate legend. For example, when you click the Volume Used Capacity legend, the Volume Used Capacity graph line is hidden.

- **Volume Capacity Used vs Total**

  Displays the trend in how volume capacity is used based on the usage history, as well as the used capacity, total capacity, and details of the space savings from deduplication and compression, as line graphs, in bytes, kilobytes, megabytes, and so on, on the vertical (y) axis. The time period is displayed on the horizontal (x) axis. You can select a time period of a week, a month, or a year. You can view the details for specific points on the graph by positioning your cursor over a particular area. You can hide or display a line graph by clicking the appropriate legend. For example, when you click the Trend Capacity Used legend, the Trend Capacity Used graph line is hidden.

- **Volume Capacity Used (%)**

  Displays the used capacity in the volume and the trend in how volume capacity is used based on the usage history, as line graphs, in percentage, on the vertical (y) axis. The time period is displayed on the horizontal (x) axis. You can select a time period of a week, a month, or a year. You can view the details for specific points on the graph by positioning your cursor over a particular area. You can hide or display a line graph by clicking the appropriate legend. For example, when you click the Volume Used Capacity legend, the Volume Used Capacity graph line is hidden.

- **Snapshot Capacity Used (%)**

  Displays the Snapshot reserve and Snapshot warning threshold as line graphs, and the capacity used by the Snapshot copies as an area graph, in percentage, on the vertical (y) axis. The Snapshot overflow is represented with different colors. The time period is displayed on the horizontal (x) axis. You can select a time period of a week, a month, or a year. You can view the details for specific points on the graph by positioning your cursor over a particular area. You can hide or display a line graph by clicking the appropriate legend. For example, when you click the Snapshot Reserve legend, the Snapshot Reserve graph line is hidden.

Events list

The Events list displays details about new and acknowledged events:

- **Severity**

  Displays the severity of the event.

- **Event**

  Displays the event name.

- **Triggered Time**

  Displays the time that has elapsed since the event was generated. If the time elapsed exceeds a week, the timestamp when the event was generated is displayed.

Related Annotations pane

The Related Annotations pane enables you to view annotation details associated with the selected volume. The details include the annotation name and the annotation values that are applied to the volume. You can also remove manual annotations from the Related Annotations pane.

Related Devices pane

The Related Devices pane enables you to view and navigate to the SVMs, aggregates, qtrees, LUNs, and Snapshot copies that are related to the volume:

- **Storage Virtual Machine**

  Displays the capacity and the health status of the SVM that contains the selected volume.

- **Aggregate**

  Displays the capacity and the health status of the aggregate that contains the selected volume. For FlexGroup volumes, the number of aggregates that comprise the FlexGroup is listed.

- **Volumes in the Aggregate**

  Displays the number and capacity of all the volumes that belong to the parent aggregate of the selected volume. The health status of the volumes is also displayed, based on the highest severity level. For example, if an aggregate contains ten volumes, five of which display the Warning status and the remaining five display the Critical status, then the status displayed is Critical. This component does not appear for FlexGroup volumes.

- **Qtrees**

  Displays the number of qtrees that the selected volume contains and the capacity of qtrees with quota that the selected volume contains. The capacity of the qtrees with quota is displayed in relation to the volume data capacity. The health status of the qtrees is also displayed, based on the highest severity level. For example, if a volume has ten qtrees, five with Warning status and the remaining five with Critical status, then the status displayed is Critical.

- **NFS Shares**

Displays the number and status of the NFS shares associated with the volume.

- **SMB Shares**

  Displays the number and status of the SMB/CIFS shares.

- **LUNs**

  Displays the number and total size of all the LUNs in the selected volume. The health status of the LUNs is also displayed, based on the highest severity level.

- **User and Group Quotas**

  Displays the number and status of the user and user group quotas associated with the volume and its qtrees.

- **FlexClone Volumes**

  Displays the number and capacity of all the cloned volumes of the selected volume. The number and capacity are displayed only if the selected volume contains any cloned volumes.

- **Parent Volume**

  Displays the name and capacity of the parent volume of a selected FlexClone volume. The parent volume is displayed only if the selected volume is a FlexClone volume.

Related Groups pane

The Related Groups pane enables you to view the list of groups associated with the selected volume.

Related Alerts pane

The Related Alerts pane enables you to view the list of alerts that are created for the selected volume. You can also add an alert by clicking the Add Alert link or edit an existing alert by clicking the alert name.

View the Storage VM / Health details page in Active IQ Unified Manager

You can use the Storage VM / Health details page to view detailed information about the selected storage VM, such as its health, capacity, configuration, data policies, logical interfaces (LIFs), LUNs, qtrees, user, user group quotas, and protection details . You can also view information about the related objects and related alerts for the storage VM.

You can monitor only data storage VM.

Command buttons

The command buttons enable you to perform the following tasks for the selected storage VM:

- **Switch to Performance View**

  Enables you to navigate to the Storage VM / Performance details page.

- **Actions**
  - Add Alert

    Enables you to add an alert to the selected storage VM.

  - Annotate

    Enables you to annotate the selected storage VM.

- **View Storage VMs**

  Enables you to navigate to the Health: All Storage VMs view.

Health tab

The Health tab displays detailed information about data availability, data capacity, and protection issues of various objects such as volumes, aggregates, NAS LIFs, SAN LIFs, LUNs, protocols, services, NFS shares, and CIFS shares.

You can click the graph of an object to view the filtered list of objects. For example, you can click the volume capacity graph that displays warnings to view the list of volumes that have capacity issues with severity as warning.

- **Availability Issues**

  Displays, as a graph, the total number of objects, including objects that have availability issues and objects that do not have any availability-related issues. The colors in the graph represent the different severity levels of the issues. The information below the graph provides details about availability issues that can impact or have already impacted the availability of data in the storage VM. For example, information is displayed about the NAS LIFs and the SAN LIFs that are down and volumes that are offline.

  You can also view information about the related protocols and services that are currently running, and the number and status of NFS and CIFS shares.

- **Capacity Issues**

  Displays, as a graph, the total number of objects, including objects that have capacity issues and objects that do not have any capacity-related issues. The colors in the graph represent the different severity levels of the issues. The information below the graph provides details about capacity issues that can impact or have already impacted the capacity of data in the storage VM. For example, information is displayed about aggregates that are likely to breach the set threshold values.

- **Protection Issues**

  Provides a quick overview of storage VM protection-related health by displaying, as a field dialog box, the total number of relationships, including relationships that have protection issues and relationships that do not have any protection-related issues. You can also view the status of the storage VM DR relationship for the selected storage VM. The storage VM DR relationships events are displayed here and clicking on the events takes you to the event details page. When unprotected volumes exist, clicking on the link takes you to the Health: All Volumes view where you can view a filtered list of the unprotected volumes on the storage VM. The colors in the graph represent the different severity levels of the issues. Clicking a graph takes you to the Relationship: All Relationships view, where you can view a filtered list of protection relationship details. The information below the graph provides details about protection issues that can impact or have already impacted the protection of data in the storage VM. For example, information is displayed about volumes that have a Snapshot copy reserve that is almost full or about SnapMirror relationship lag issues.

Capacity tab

The Capacity tab displays detailed information about the data capacity of the selected SVM.

The following information is displayed for an Storage VM with FlexVol volume or FlexGroup volume:

- **Capacity**

  The Capacity area displays details about the used and available capacity allocated from all volumes:

  - Total Capacity

    Displays the total capacity of the Storage VM.

  - Used

    Displays the space used by data in the volumes that belong to the Storage VM.

  - Guaranteed Available

    Displays the guaranteed available space for data that is available for volumes in the Storage VM.

  - Unguaranteed

    Displays the available space remaining for data that is allocated for thinly provisioned volumes in the Storage VM.

- **Volumes with Capacity Issues**

  The Volumes with Capacity Issues list displays, in tabular format, details about the volumes that have capacity issues:

  - Status

    Indicates that the volume has a capacity-related issue of an indicated severity.

    You can move the pointer over the status to view more information about the capacity-related event or events generated for the volume.

    If the status of the volume is determined by a single event, you can view information such as the event name, time and date when the event was triggered, the name of the administrator to whom the event is assigned, and the cause of the event. You can use the **View Details** button to view more information about the event.

    If the status of the volume is determined by multiple events of the same severity, the top three events are displayed with information such as the event name, time and date when the events were triggered, and the name of the administrator to whom the event is assigned. You can view more details about each of these events by clicking the event name. You can also click the **View All Events** link to view the list of generated events.

    > ⓘ A volume can have multiple events of the same severity or different severities. However, only the highest severity is displayed. For example, if a volume has two events with severities of Error and Warning, only the Error severity is displayed.

  - Volume

Displays the name of the volume.

- Used Data Capacity

  Displays, as a graph, information about the volume capacity usage (in percentage).

- Days to Full

  Displays the estimated number of days remaining before the volume reaches full capacity.

- Thin Provisioned

  Displays whether space guarantee is set for the selected volume. Valid values are Yes and No.

- Aggregates

  For FlexVol volumes, displays the name of the aggregate that contains the volume. For FlexGroup volumes, displays the number of aggregates that are used in the FlexGroup.

Configuration tab

The Configuration tab displays configuration details about the selected storage VM, such as its cluster, root volume, the type of volumes it contains (FlexVol volumes), policies, and protection created on the storage VM:

- **Overview**
  - Cluster

    Displays the name of the cluster to which the storage VM belongs.

  - Allowed Volume Type

    Displays the type of volumes that can be created in the storage VM. The type can be FlexVol or FlexVol/FlexGroup.

  - Root Volume

    Displays the name of the root volume of the storage VM.

  - Allowed Protocols

    Displays the type of protocols that can be configured on the storage VM. Also, indicates if a protocol is up (), down (), or is not configured ().

- **Data Network Interfaces**
  - NAS

    Displays the number of NAS interfaces that are associated with the storage VM. Also, indicates if the interfaces are up () or down ().

  - SAN

    Displays the number of SAN interfaces that are associated with the storage VM. Also, indicates if the interfaces are up () or down ().

- FC-NVMe

  Displays the number of FC-NVMe interfaces that are associated with the Storage VM. Also, indicates if the interfaces are up ( ) or down ( ).

- **Management Network Interfaces**
  - Availability

    Displays the number of management interfaces that are associated with the Storage VM. Also, indicates if the management interfaces are up ( ) or down ( ).

- **Policies**
  - Snapshots

    Displays the name of the Snapshot policy that is created on the Storage VM.

  - Export Policies

    Displays either the name of the export policy if a single policy is created or displays the number of export policies if multiple policies are created.

- **Protection**
  - Storage VM DR

    Displays whether the selected storage VM is protected, destination, or unprotected and the name of the destination on which the storage VM is protected. If the selected storage VM is destination, then the details of source storage VM are displayed. In case of fan-out, this field displays the number of total destination storage VMs on which the storage VM is protected. The count link takes you to the storage VM relationship grid filtered on source storage VM.

  - Protected Volumes

    Displays the number of protected volumes on the selected storage VM out of the total volumes. If you are viewing a destination storage VM, then the number link is for the destination volumes of the selected storage VM.

  - Unprotected Volumes

    Displays the number of unprotected volumes on the selected storage VM.

- **Services**
  - Type

    Displays the type of service that is configured on the storage VM. The type can be Domain Name System (DNS) or Network Information Service (NIS).

  - State

    Displays the state of the service, which can be Up ( ), Down ( ), or Not Configured ( ).

  - Domain Name

    Displays the fully qualified domain names (FQDNs) of the DNS server for the DNS services or NIS server for the NIS services. When the NIS server is enabled, the active FQDN of the NIS server is

displayed. When the NIS server is disabled, the list of all the FQDNs are displayed.

- IP Address

  Displays the IP addresses of the DNS or NIS server. When the NIS server is enabled, the active IP address of the NIS server is displayed. When the NIS server is disabled, the list of all the IP addresses are displayed.

Network Interfaces tab

The Network Interfaces tab displays details about the data network interfaces (LIFs) that are created on the selected storage VM:

- **Network Interface**

  Displays the name of the interface that is created on the selected storage VM.

- **Operational Status**

  Displays the operational status of the interface, which can be Up (), Down (), or Unknown (). The operational status of an interface is determined by the status of its physical ports.

- **Administrative Status**

  Displays the administrative status of the interface, which can be Up (), Down (), or Unknown (). The administrative status of an interface is controlled by the storage administrator to make changes to the configuration or for maintenance purposes. The administrative status can be different from the operational status. However, if the administrative status of an interface is Down, the operational status is Down by default.

- **IP Address / WWPN**

  Displays the IP address for Ethernet interfaces and the World Wide Port Name (WWPN) for FC LIFs.

- **Protocols**

  Displays the list of data protocols that are specified for the interface, such as CIFS, NFS, iSCSI, FC/FCoE, FC-NVMe, and FlexCache.

- **Role**

  Displays the interface role. The roles can be Data or Management.

- **Home Port**

  Displays the physical port to which the interface was originally associated.

- **Current Port**

  Displays the physical port to which the interface is currently associated. If the interface is migrated, the current port might be different from the home port.

- **Port Set**

  Displays the port set to which the interface is mapped.

- **Failover Policy**

  Displays the failover policy that is configured for the interface. For NFS, CIFS, and FlexCache interfaces, the default failover policy is Next Available. Failover policy is not applicable for FC and iSCSI interfaces.

- **Routing Groups**

  Displays the name of the routing group. You can view more information about the routes and the destination gateway by clicking the routing group name.

  Routing groups are not supported for ONTAP 8.3 or later and therefore a blank column is displayed for these clusters.

- **Failover Group**

  Displays the name of the failover group.

Qtrees tab

The Qtrees tab displays details about qtrees and their quotas. You can click the **Edit Thresholds** button if you want to edit the health threshold settings for qtree capacity for one or more qtrees.

Use the **Export** button to create a comma-separated values (.csv) file containing the details of all the monitored qtrees. When exporting to a CSV file you can choose to create a qtrees report for the current storage VM, for all storage VMs in the current cluster, or for all storage VMs for all clusters in your data center. Some additional qtrees fields appear in the exported CSV file.

- **Status**

  Displays the current status of the qtree. The status can be Critical (), Error (), Warning (), or Normal ().

  You can move the pointer over the status icon to view more information about the event or events generated for the qtree.

  If the status of the qtree is determined by a single event, you can view information such as the event name, time and date when the event was triggered, the name of the administrator to whom the event is assigned, and the cause of the event. You can use **View Details** to view more information about the event.

  If the status of the qtree is determined by multiple events of the same severity, the top three events are displayed with information such as the event name, time and date when the events were triggered, and the name of the administrator to whom the event is assigned. You can view more details about each of these events by clicking the event name. You can also use **View All Events** to view the list of generated events.

  > A qtree can have multiple events of the same severity or different severities. However, only the highest severity is displayed. For example, if a qtree has two events with severities of Error and Warning, only the Error severity is displayed.

- **Qtree**

  Displays the name of the qtree.

- **Cluster**

  Displays the name of the cluster containing the qtree. Appears only in the exported CSV file.

- **Storage Virtual Machine**

  Displays the storage virtual machine (SVM) name containing the qtree. Appears only in the exported CSV file.

- **Volume**

  Displays the name of the volume that contains the qtree.

  You can move the pointer over the volume name to view more information about the volume.

- **Quota Set**

  Indicates whether a quota is enabled or disabled on the qtree.

- **Quota Type**

  Specifies if the quota is for a user, user group, or a qtree. Appears only in the exported CSV file.

- **User or Group**

  Displays the name of the user or user group. There will be multiple rows for each user and user group. When the quota type is qtree or if the quota is not set, then the column is empty. Appears only in the exported CSV file.

- **Disk Used %**

  Displays the percentage of disk space used. If a disk hard limit is set, this value is based on the disk hard limit. If the quota is set without a disk hard limit, the value is based on the volume data space. If the quota is not set or if quotas are off on the volume to which the qtree belongs, then “Not applicable” is displayed in the grid page and the field is blank in the CSV export data.

- **Disk Hard Limit**

  Displays the maximum amount of disk space allocated for the qtree. Unified Manager generates a critical event when this limit is reached and no further disk writes are allowed. The value is displayed as “Unlimited” for the following conditions: if the quota is set without a disk hard limit, if the quota is not set, or if quotas are off on the volume to which the qtree belongs.

- **Disk Soft Limit**

  Displays the amount of disk space allocated for the qtree before a warning event is generated. The value is displayed as “Unlimited” for the following conditions: if the quota is set without a disk soft limit, if the quota is not set, or if quotas are off on the volume to which the qtree belongs. By default, this column is hidden.

- **Disk Threshold**

  Displays the threshold value set on the disk space. The value is displayed as “Unlimited” for the following conditions: if the quota is set without a disk threshold limit, if the quota is not set, or if quotas are off on the volume to which the qtree belongs. By default, this column is hidden.

- **Files Used %**

  Displays the percentage of files used in the qtree. If the file hard limit is set, this value is based on the file hard limit. No value is displayed if the quota is set without a file hard limit. If the quota is not set or if quotas are off on the volume to which the qtree belongs, then “Not applicable” is displayed in the grid page and the

field is blank in the CSV export data.

- **File Hard Limit**

  Displays the hard limit for the number of files permitted on the qtrees. The value is displayed as “Unlimited” for the following conditions: if the quota is set without a file hard limit, if the quota is not set, or if quotas are off on the volume to which the qtree belongs.

- **File Soft Limit**

  Displays the soft limit for the number of files permitted on the qtrees. The value is displayed as “Unlimited” for the following conditions: if the quota is set without a file soft limit, if the quota is not set, or if quotas are off on the volume to which the qtree belongs. By default, this column is hidden.

User and Group Quotas tab

Displays details about the user and user group quotas for the selected storage VM. You can view information such as the status of the quota, name of the user or user group, soft and hard limits set on the disks and files, amount of disk space and number of files used, and the disk threshold value. You can also change the email address associated with a user or user group.

- **Edit Email Address command button**

  Opens the Edit Email Address dialog box, which displays the current email address of the selected user or user group. You can modify the email address. If the **Edit Email Address** field is blank, the default rule is used to generate an email address for the selected user or user group.

  If more than one user has the same quota, the names of the users are displayed as comma-separated values. Also, the default rule is not used to generate the email address; therefore, you must provide the required email address for notifications to be sent.

- **Configure Email Rules command button**

  Enables you to create or modify rules to generate an email address for the user or user group quotas that are configured on the storage VM. A notification is sent to the specified email address when there is a quota breach.

- **Status**

  Displays the current status of the quota. The status can be Critical (), Warning (), or Normal ().

  You can move the pointer over the status icon to view more information about the event or events generated for the quota.

  If the status of the quota is determined by a single event, you can view information such as the event name, time and date when the event was triggered, the name of the administrator to whom the event is assigned, and the cause of the event. You can use **View Details** to view more information about the event.

  If the status of the quota is determined by multiple events of the same severity, the top three events are displayed with information such as the event name, time and date when the events were triggered, and the name of the administrator to whom the event is assigned. You can view more details about each of these events by clicking the event name. You can also use **View All Events** to view the list of generated events.

  A quota can have multiple events of the same severity or different severities. However, only the highest severity is displayed. For example, if a quota has two events with severities of

Error and Warning, only the Error severity is displayed.

- **User or Group**

  Displays the name of the user or user group. If more than one user has the same quota, the names of the users are displayed as comma-separated values.

  The value is displayed as “Unknown” when ONTAP does not provide a valid user name because of SecD errors.

- **Type**

  Specifies if the quota is for a user or a user group.

- **Volume or Qtree**

  Displays the name of the volume or qtree on which the user or user group quota is specified.

  You can move the pointer over the name of the volume or qtree to view more information about the volume or qtree.

- **Disk Used %**

  Displays the percentage of disk space used. The value is displayed as “Not applicable” if the quota is set without a disk hard limit.

- **Disk Hard Limit**

  Displays the maximum amount of disk space allocated for the quota. Unified Manager generates a critical event when this limit is reached and no further disk writes are allowed. The value is displayed as “Unlimited” if the quota is set without a disk hard limit.

- **Disk Soft Limit**

  Displays the amount of disk space allocated for the quota before a warning event is generated. The value is displayed as “Unlimited” if the quota is set without a disk soft limit. By default, this column is hidden.

- **Disk Threshold**

  Displays the threshold value set on the disk space. The value is displayed as “Unlimited” if the quota is set without a disk threshold limit. By default, this column is hidden.

- **Files Used %**

  Displays the percentage of files used in the qtree. The value is displayed as “Not applicable” if the quota is set without a file hard limit.

- **File Hard Limit**

  Displays the hard limit for the number of files permitted on the quota. The value is displayed as “Unlimited” if the quota is set without a file hard limit.

- **File Soft Limit**

  Displays the soft limit for the number of files permitted on the quota. The value is displayed as “Unlimited” if the quota is set without a file soft limit. By default, this column is hidden.

- **Email Address**

  Displays the email address of the user or user group to which notifications are sent when there is a breach in the quotas.

NFS Shares tab

The NFS Shares tab displays information about 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. NFS shares will not be displayed in the following conditions: if the volume is not mounted or if the protocols associated with the export policy for the volume do not contain NFS shares.

- **Status**

  Displays the current status of the NFS shares. The status can be Error ( ) or Normal ( ).

- **Junction Path**

  Displays the path to which the volume is mounted. If an explicit NFS exports policy is applied to a qtree, the column displays the path of the volume through which the qtree can be accessed.

- **Junction Path Active**

  Displays whether the path to access the mounted volume is active or inactive.

- **Volume or Qtree**

  Displays the name of the volume or qtree to which the NFS export policy is applied. If an NFS export policy is applied to a qtree in the volume, the column displays both the names of the volume and the qtree.

  You can click the link to view details about the object in the respective details page. If the object is a qtree, links are displayed for both the qtree and the volume.

- **Volume State**

  Displays the state of the volume that is being exported. The state can be Offline, Online, Restricted, or Mixed.

  - Offline

    Read or write access to the volume is not allowed.

  - Online

    Read and write access to the volume is allowed.

  - Restricted

    Limited operations, such as parity reconstruction, are allowed, but data access is not allowed.

  - Mixed

    The constituents of a FlexGroup volume are not all in the same state.

- **Security Style**

  Displays the access permission for the volumes that are exported. The security style can be UNIX, Unified, NTFS, or Mixed.

  - UNIX (NFS clients)

    Files and directories in the volume have UNIX permissions.

  - Unified

    Files and directories in the volume have a unified security style.

  - NTFS (CIFS clients)

    Files and directories in the volume have Windows NTFS permissions.

  - Mixed

    Files and directories in the volume can have either UNIX permissions or Windows NTFS permissions.

- **UNIX Permission**

  Displays the UNIX permission bits in an octal string format, which is set for the volumes that are exported. It is similar to the UNIX style permission bits.

- **Export Policy**

  Displays the rules that define the access permission for volumes that are exported. You can click the link to view details about the rules associated with the export policy such as the authentication protocols and the access permission.

SMB Shares tab

Displays information about the SMB shares on the selected storage VM. You can view information such as the status of the SMB share, share name, path associated with the storage VM, the status of the junction path of the share, containing object, state of the containing volume, security data of the share, and export policies defined for the share. You can also determine whether an equivalent NFS path for the SMB share exists.

Shares in folders are not displayed in the SMB Shares tab.

- **View User Mapping command button**

  Launches the User Mapping dialog box.

  You can view the details of user mapping for the storage VM.

- **Show ACL command button**

  Launches the Access Control dialog box for the share.

  You can view user and permission details for the selected share.

- **Status**

Displays the current status of the share. The status can be Normal ( ) or Error ( ).

- **Share Name**

  Displays the name of the SMB share.

- **Path**

  Displays the junction path on which the share is created.

- **Junction Path Active**

  Displays whether the path to access the share is active or inactive.

- **Containing Object**

  Displays the name of the containing object to which the share belongs. The containing object can be a volume or a qtree.

  By clicking the link, you can view details about the containing object in the respective Details page. If the containing object is a qtree, links are displayed for both qtree and volume.

- **Volume State**

  Displays the state of the volume that is being exported. The state can be Offline, Online, Restricted, or Mixed.

  - Offline

    Read or write access to the volume is not allowed.

  - Online

    Read and write access to the volume is allowed.

  - Restricted

    Limited operations, such as parity reconstruction, are allowed, but data access is not allowed.

  - Mixed

    The constituents of a FlexGroup volume are not all in the same state.

- **Security**

  Displays the access permission for the volumes that are exported. The security style can be UNIX, Unified, NTFS, or Mixed.

  - UNIX (NFS clients)

    Files and directories in the volume have UNIX permissions.

  - Unified

    Files and directories in the volume have a unified security style.

- NTFS (CIFS clients)

  Files and directories in the volume have Windows NTFS permissions.

- Mixed

  Files and directories in the volume can have either UNIX permissions or Windows NTFS permissions.

- **Export Policy**

  Displays the name of the export policy applicable to the share. If an export policy is not specified for the storage VM, the value is displayed as Not Enabled.

  You can click the link to view details about the rules associated with the export policy, such as access protocols and permissions. The link is disabled if the export policy is disabled for the selected storage VM.

- **NFS Equivalent**

  Specifies whether there is an NFS equivalent for the share.

SAN tab

Displays details about LUNs, initiator groups, and initiators for the selected storage VM. By default, the LUNs view is displayed. You can view details about the initiator groups in the Initiator Groups tab and details about initiators in the Initiators tab.

- **LUNs tab**

  Displays details about the LUNs that belong to the selected storage VM. You can view information such as the LUN name, LUN state (online or offline), the name of the file system (volume or qtree) that contains the LUN, the type of host operating system, the total data capacity and serial number of the LUN. The LUN Performance column provides a link to the LUN/Performance details page.

  You can also view information whether thin provisioning is enabled on the LUN and if the LUN is mapped to an initiator group. If it is mapped to an initiator, you can view the initiator groups and initiators that are mapped to the selected LUN.

- **Initiator Groups tab**

  Displays details about initiator groups. You can view details such as the name of the initiator group, the access state, the type of host operating system that is used by all the initiators in the group, and the supported protocol. When you click the link in the access state column, you can view the current access state of the initiator group.

  - **Normal**

    The initiator group is connected to multiple access paths.

  - **Single Path**

    The initiator group is connected to a single access path.

  - **No Paths**

    There is no access path connected to the initiator group.

You can view whether initiator groups are mapped to all the interfaces or specific interfaces through a port set. When you click the count link in the Mapped interfaces column, either all interfaces are displayed or specific interfaces for a port set are displayed. Interfaces that are mapped through the target portal are not displayed. The total number of initiators and LUNs that are mapped to an initiator group is displayed.

You can also view the LUNs and initiators that are mapped to the selected initiator group.

- **Initiators tab**

  Displays the name and type of the initiator and the total number of initiator groups mapped to this initiator for the selected storage VM.

```
initiator groups that are mapped to the selected initiator group.
```

Related Annotations pane

The Related Annotations pane enables you to view the annotation details associated with the selected storage VM. Details include the annotation name and the annotation values that are applied to the storage VM. You can also remove manual annotations from the Related Annotations pane.

Related Devices pane

The Related Devices pane enables you to view the cluster, aggregates, and volumes that are related to the storage VM:

- **Cluster**

  Displays the health status of the cluster to which the storage VM belongs.

- **Aggregates**

  Displays the number of aggregates that belong to the selected storage VM. The health status of the aggregates is also displayed, based on the highest severity level. For example, if an storage VM contains ten aggregates, five of which display the Warning status and the remaining five display the Critical status, then the status displayed is Critical.

- **Assigned Aggregates**

  Displays the number of aggregates that are assigned to an storage VM. The health status of the aggregates is also displayed, based on the highest severity level.

- **Volumes**

  Displays the number and capacity of the volumes that belong to the selected storage VM. The health status of the volumes is also displayed, based on the highest severity level. When there are FlexGroup volumes in the storage VM, the count also includes FlexGroups; it does not include FlexGroup constituents.

Related Groups pane

The Related Groups pane enables you to view the list of groups associated with the selected storage VM.

Related Alerts pane

The Related Alerts pane enables you to view the list of alerts that are created for the selected storage VM. You can also add an alert by clicking the **Add Alert** link or edit an existing alert by clicking the alert name.

View the Cluster / Health details page in Active IQ Unified Manager

The Cluster / Health details page provides detailed information about a selected cluster, such as health, capacity, and configuration details. You can also view information about the network interfaces (LIFs), nodes, disks, related devices, and related alerts for the cluster.

The status next to the cluster name, for example (Good), represents the communication status; whether Unified Manager can communicate with the cluster. It does not represent the failover status or overall status of the cluster.

Command buttons

The command buttons enable you to perform the following tasks for the selected cluster:

- **Switch to Performance View**

  Enables you to navigate to the Cluster / Performance details page.

- **Actions**
  - Add Alert: Opens the Add Alert dialog box, which enables you to add an alert to the selected cluster.
  - Rediscover: Initiates a manual refresh of the cluster, which enables Unified Manager to discover recent changes to the cluster.

    If Unified Manager is paired with OnCommand Workflow Automation, the rediscovery operation also reacquires cached data from WFA, if any.

    After the rediscovery operation is initiated, a link to the associated job details is displayed to enable tracking of the job status.

  - Annotate: Enables you to annotate the selected cluster.
- **View Clusters**

  Enables you to navigate to the Health: All Clusters view.

Health tab

Displays detailed information about the data availability and data capacity issues of various cluster objects such as nodes, SVMs, and aggregates. Availability issues are related to the data-serving capability of the cluster objects. Capacity issues are related to the data-storing capability of the cluster objects.

You can click the graph of an object to view a filtered list of the objects. For example, you can click the SVM capacity graph that displays warnings to view a filtered list of SVMs. This list contains SVMs that have volumes or qtrees that have capacity issues with a severity level of Warning. You can also click the SVMs availability graph that displays warnings to view the list of SVMs that have availability issues with a severity level of

Warning.

Availability Issues

Graphically displays the total number of objects, including objects that have availability issues and objects that do not have any availability-related issues. The colors in the graph represent the different severity levels of the issues. The information below the graph provides details about availability issues that can impact or have already impacted the availability of data in the cluster. For example, information is displayed about disk shelves that are down and aggregates that are offline.

The data displayed for the SFO bar graph is based on the HA state of the nodes. The data displayed for all other bar graphs is calculated based on the events generated.

Capacity Issues

Graphically displays the total number of objects, including objects that have capacity issues and objects that do not have any capacity-related issues. The colors in the graph represent the different severity levels of the issues. The information below the graph provides details about capacity issues that can impact or have already impacted the capacity of data in the cluster. For example, information is displayed about aggregates that are likely to breach the set threshold values.

Capacity tab

Displays detailed information about the capacity of the selected cluster.

Capacity

Displays the data capacity graph about the used capacity and available capacity from all allocated aggregates:

- Logical Space Used

  The real size of the data that is being stored on all aggregates on this cluster without applying the savings from using ONTAP storage efficiency technologies. This does not include Snapshot copies.

- Data Reduction

  Displays the ratio without Snapshot copies and with two significant digits, for example, 1.8 to 1. This ratio is based on the configured ONTAP storage efficiency settings.

- Used

  The physical capacity that is used by data on all aggregates. This does not include the capacity that is used for parity, right-sizing, and reservation.

- Available

  Displays the capacity available for data.

- Spares

  Displays the storable capacity available for storage in all the spare disks.

- Provisioned

Displays the capacity that is provisioned for all the underlying volumes.

Details

Displays detailed information about the used and available capacity. The calculation excludes the root aggregate data.

- Total Capacity

  Displays the total capacity of the cluster. This does not include the capacity that is assigned for parity.

- Used

  Displays the capacity that is used by data. This does not include the capacity that is used for parity, right-sizing, and reservation.

- Available

  Displays the capacity available for data.

- Provisioned

  Displays the capacity that is provisioned for all the underlying volumes.

- Spares

  Displays the storable capacity available for storage in all the spare disks.

Cloud Tier

Displays the total cloud tier capacity used, and the capacity used for each connected cloud tier for FabricPool-enabled aggregates on the cluster. A FabricPool can be either licensed or unlicensed.

Physical Capacity Breakout by Disk Type

The Physical Capacity Breakout by Disk Type area displays detailed information about the disk capacity of the various types of disks in the cluster. By clicking the disk type, you can view more information about the disk type from the Disks tab.

- Total Usable Capacity

  Displays the available capacity and spare capacity of the data disks.

- HDD

  Graphically displays the used capacity and available capacity of all the HDD data disks in the cluster. The dotted line represents the spare capacity of the data disks in the HDD.

- Flash
  - SSD Data

    Graphically displays the used capacity and available capacity of the SSD data disks in the cluster.

  - SSD Cache

Graphically displays the storable capacity of the SSD cache disks in the cluster.

- SSD Spare

  Graphically displays the spare capacity of the SSD, data, and cache disks in the cluster.

- Unassigned Disks

  Displays the number of unassigned disks in the cluster.

Aggregates with Capacity Issues list

Displays in tabular format details about the used capacity and available capacity of the aggregates that have capacity risk issues.

- Status

  Indicates that the aggregate has a capacity-related issue of a certain severity.

  You can move the pointer over the status to view more information about the event or events generated for the aggregate.

  If the status of the aggregate is determined by a single event, you can view information such as the event name, time and date when the event was triggered, the name of the administrator to whom the event is assigned, and the cause of the event. You can click the **View Details** button to view more information about the event.

  If the status of the aggregate is determined by multiple events of the same severity, the top three events are displayed with information such as the event name, time and date when the events are triggered, and the name of the administrator to whom the event is assigned. You can view more details about each of these events by clicking the event name. You can also click the **View All Events** link to view the list of generated events.

  An aggregate can have multiple capacity-related events of the same severity or different severities. However, only the highest severity is displayed. For example, if an aggregate has two events with severity levels of Error and Critical, only the Critical severity is displayed.

- Aggregate

  Displays the name of the aggregate.

- Used Data Capacity

  Graphically displays information about the aggregate capacity usage (in percentage).

- Days to Full

  Displays the estimated number of days remaining before the aggregate reaches full capacity.

Configuration tab

Displays details about the selected cluster, such as IP address, contact, and location:

Cluster Overview

- Management Interface

  Displays the cluster-management LIF that Unified Manager uses to connect to the cluster. The operational status of the interface is also displayed.

- Host Name or IP Address

  Displays the FQDN, short name, or the IP address of the cluster-management LIF that Unified Manager uses to connect to the cluster.

- FQDN

  Displays the fully qualified domain name (FQDN) of the cluster.

- OS Version

  Displays the ONTAP version that the cluster is running. If the nodes in the cluster are running different versions of ONTAP, then the earliest ONTAP version is displayed.

- Contact

  Displays details about the administrator whom you should contact in case of issues with the cluster.

- Location

  Displays the location of the cluster.

- Personality

  Identifies if this is an All SAN Array configured cluster.

Remote Cluster Overview

Provides details about the remote cluster in a MetroCluster configuration. This information is displayed only for MetroCluster configurations.

- Cluster

  Displays the name of the remote cluster. You can click the cluster name to navigate to the details page of the cluster.

- Host name or IP Address

  Displays the FQDN, short name, or IP address of the remote cluster.

- Location

  Displays the location of the remote cluster.

MetroCluster Overview

Provides details about the local cluster in a MetroCluster over FC or MetroCluster over IP configurations. This information is displayed only for MetroCluster over FC or IP configurations.

- Type

  Displays whether the MetroCluster type is two-node or four-node. For MetroCluster over IP, only four-node is supported.

- Configuration

  Displays the MetroCluster configuration over FC and IP, which can have the following values:

For FC

- Stretch Configuration with SAS cables
- Stretch Configuration with FC-SAS bridge
- Fabric Configuration with FC switches

  For a four-node MetroCluster, only Fabric Configuration with FC switches is supported.

For IP

- IP configuration with Ethernet switches (L2 or L3, depending on how the cluster is configured)
  - Automated Unplanned Switch Over (AUSO)

    Displays whether automated unplanned switchover is enabled for the local cluster. By default, AUSO is enabled for all clusters in a two-node MetroCluster configuration in Unified Manager. You can use the command-line interface to change the AUSO setting. This is supported for only MetroCluster over FC.

  - Switch-Over mode

    Displays the switch-over mode for the MetroCluster over IP configuration. The available values are: `Active`, `Negotiated Switchover`, and `Automatic Unplanned Switchover`.

Nodes

- Availability

  Displays the number of nodes that are up ( ) or down ( ) in the cluster.

- OS Versions

  Displays the ONTAP versions that the nodes are running as well as the number of nodes running a particular version of ONTAP. For example, 9.6 (2), 9.3 (1) specifies that two nodes are running ONTAP 9.6, and one node is running ONTAP 9.3.

Storage Virtual Machines

- Availability

  Displays the number of SVMs that are up ( ) or down ( ) in the cluster.

Network Interfaces

- Availability

Displays the number of non-data LIFs that are up ( ) or down ( ) in the cluster.

- Cluster-Management Interfaces

  Displays the number of cluster-management LIFs.

- Node-Management Interfaces

  Displays the number of node-management LIFs.

- Cluster Interfaces

  Displays the number of cluster LIFs.

- Intercluster Interfaces

  Displays the number of intercluster LIFs.

Protocols

- Data Protocols

  Displays the list of licensed data protocols that are enabled for the cluster. The data protocols include iSCSI, CIFS, NFS, NVMe, and FC/FCoE.

Protection

- Mediators

  Displays whether the cluster supports mediators and the connectivity status of the mediator. It indicates whether the mediator is configured, and if configured, it displays the status of the mediators.

  - Not Applicable

    Displays when the cluster doesn't support mediators.

  - Not Configured

    Displays when the cluster supports mediators, but the mediator is not configured.

  - IP Address

    Displays when the cluster supports mediators and the mediator is configured. The mediator status is indicated by color. The color green indicates the mediator status is reachable. The color red indicates the mediator status is unreachable.

Cloud Tiers

Lists the names of the cloud tiers to which this cluster is connected. It also lists the type (Amazon S3, Microsoft Azure Cloud, IBM Cloud Object Storage, Google Cloud Storage, Alibaba Cloud Object Storage, or StorageGRID), and the states of the cloud tiers (Available or Unavailable).

MetroCluster Connectivity tab

Displays the issues and connectivity status of the cluster components in the MetroCluster over FC

configuration. A cluster is displayed in a red box when the disaster recovery partner of the cluster has issues.

> The MetroCluster Connectivity tab is displayed only for clusters that are in a MetroCluster over FC configuration.

You can navigate to the details page of a remote cluster by clicking the name of the remote cluster. You can also view the details of the components by clicking the count link of a component. For example, clicking the count link of the node in the cluster displays the node tab in the details page of the cluster. Clicking the count link of the disks in the remote cluster displays the disk tab in the details page of the remote cluster.

> When managing an eight-node MetroCluster configuration, clicking the count link of the Disk Shelves component displays only the local shelves of the default HA pair. Also, there is no way to display the local shelves on the other HA pair.

You can move the pointer over the components to view the details and the connectivity status of the clusters in case of any issue and to view more information about the event or events generated for the issue.

If the status of the connectivity issue between components is determined by a single event, you can view information such as the event name, time and date when the event was triggered, the name of the administrator to whom the event is assigned, and the cause of the event. The View Details button provides more information about the event.

If status of the connectivity issue between components is determined by multiple events of the same severity, the top three events are displayed with information such as the event name, time and date when the events are triggered, and the name of the administrator to whom the event is assigned. You can view more details about each of these events by clicking the event name. You can also click the **View All Events** link to view the list of generated events.

MetroCluster Replication tab

Displays the status of the data that is being replicated in a MetroCluster over FC configuration. You can use the MetroCluster Replication tab to ensure data protection by synchronously mirroring the data with the already peered clusters. A cluster is displayed in a red box when the disaster recovery partner of the cluster has issues.

> The MetroCluster Replication tab is displayed only for clusters that are in a MetroCluster over FC configuration.

In a MetroCluster environment, you can use this tab to verify the logical connections and peering of the local cluster with the remote cluster. You can view the objective representation of the cluster components with their logical connections. This helps to identify the issues that might occur during mirroring of metadata and data.

In the MetroCluster Replication tab, local cluster provides the detailed graphical representation of the selected cluster and MetroCluster partner refers to the remote cluster.

Network Interfaces tab

Displays details about all the non-data LIFs that are created on the selected cluster.

Network Interface

Displays the name of the LIF that is created on the selected cluster.

Operational Status

Displays the operational status of the interface, which can be Up (), Down (), or Unknown (). The operational status of a network interface is determined by the status of its physical ports.

Administrative Status

Displays the administrative status of the interface, which can be Up (), Down (), or Unknown (). You can control the administrative status of an interface when you make changes to the configuration or during maintenance. The administrative status can be different from the operational status. However, if the administrative status of a LIF is Down, the operational status is Down by default.

IP Address

Displays the IP address of the interface.

Role

Displays the role of the interface. Possible roles are Cluster-Management LIFs, Node-Management LIFs, Cluster LIFs, and Intercluster LIFs.

Home Port

Displays the physical port to which the interface was originally associated.

Current Port

Displays the physical port to which the interface is currently associated. After LIF migration, the current port might be different from the home port.

Failover Policy

Displays the failover policy that is configured for the interface.

Routing Groups

Displays the name of the routing group. You can view more information about the routes and the destination gateway by clicking the routing group name.

Routing groups are not supported for ONTAP 8.3 or later and therefore a blank column is displayed for these clusters.

Failover Group

Displays the name of the failover group.

Nodes tab

Displays information about nodes in the selected cluster. You can view detailed information about the HA pairs, disk shelves, and ports:

HA Details

Provides a pictorial representation of the HA state and the health status of the nodes in the HA pair. The health

status of the node is indicated by the following colors:

- **Green**

  The node is in a working condition.

- **Yellow**

  The node has taken over the partner node or the node is facing some environmental issues.

- **Red**

  The node is down.

You can view information about the availability of the HA pair and take required action to prevent any risks. For example, in the case of a possible takeover operation, the following message is displayed: Storage failover possible.

You can view a list of the events related to the HA pair and its environment, such as fans, power supplies, NVRAM battery, flash cards, service processor, and connectivity of disk shelves. You can also view the time when the events were triggered.

You can view other node-related information, such as the model number.

If there are single-node clusters, you can also view details about the nodes.

Disk Shelves

Displays information about the disk shelves in the HA pair.

You can also view events generated for the disk shelves and the environmental components, and the time when the events were triggered.

- **Shelf ID**

  Displays the ID of the shelf where the disk is located.

- **Component Status**

  Displays environmental details of the disk shelves, such as power supplies, fans, temperature sensors, current sensors, disk connectivity, and voltage sensors. The environmental details are displayed as icons in the following colors:

  - **Green**

    The environmental components are in working properly.

  - **Grey**

    No data is available for the environmental components.

  - **Red**

    Some of the environmental components are down.

- **State**

Displays the state of the disk shelf. The possible states are Offline, Online, No status, Initialization required, Missing, and Unknown.

- **Model**

  Displays the model number of the disk shelf.

- **Local Disk Shelf**

  Indicates whether the disk shelf is located on the local cluster or the remote cluster. This column is displayed only for clusters in a MetroCluster configuration.

- **Unique ID**

  Displays the unique identifier of the disk shelf.

- **Firmware Version**

  Displays the firmware version of the disk shelf.

Ports

Displays information about the associated FC, FCoE, and Ethernet ports. You can view details about the ports and the associated LIFs by clicking the port icons.

You can also view the events generated for the ports.

You can view the following port details:

- Port ID

  Displays the name of the port. For example, the port names can be e0M, e0a, and e0b.

- Role

  Displays the role of the port. The possible roles are Cluster, Data, Intercluster, Node-Management, and Undefined.

- Type

  Displays the physical layer protocol used for the port. The possible types are Ethernet, Fibre Channel, and FCoE.

- WWPN

  Displays the World Wide Port Name (WWPN) of the port.

- Firmware Rev

  Displays the firmware revision of the FC/FCoE port.

- Status

  Displays the current state of the port. The possible states are Up, Down, Link Not Connected, or Unknown ().

You can view the port-related events from the Events list. You can also view the associated LIF details, such as LIF name, operational status, IP address or WWPN, protocols, name of the SVM associated with the LIF, current port, failover policy and failover group.

Disks tab

Displays details about the disks in the selected cluster. You can view disk-related information such as the number of used disks, spare disks, broken disks, and unassigned disks. You can also view other details such as the disk name, disk type, and the owner node of the disk.

Disk Pool Summary

Displays the number of disks, which are categorized by effective types (FCAL, SAS, SATA, MSATA, SSD, NVMe SSD, SSD CAP, Array LUN, and VMDISK), and the state of the disks. You can also view other details, such as the number of aggregates, shared disks, spare disks, broken disks, unassigned disks, and unsupported disks. If you click the effective disk type count link, disks of the selected state and effective type are displayed. For example, if you click the count link for the disk state Broken and effective type SAS, all disks with the disk state Broken and effective type SAS are displayed.

Disk

Displays the name of the disk.

RAID Groups

Displays the name of the RAID group.

Owner Node

Displays the name of the node to which the disk belongs. If the disk is unassigned, no value is displayed in this column.

State

Displays the state of the disk: Aggregate, Shared, Spare, Broken, Unassigned, Unsupported or Unknown. By default, this column is sorted to display the states in the following order: Broken, Unassigned, Unsupported, Spare, Aggregate, and Shared.

Local Disk

Displays either Yes or No to indicate whether the disk is located on the local cluster or the remote cluster. This column is displayed only for clusters in a MetroCluster configuration.

Position

Displays the position of the disk based on its container type: for example, Copy, Data, or Parity. By default, this column is hidden.

Impacted Aggregates

Displays the number of aggregates that are impacted due to the failed disk. You can move the pointer over the count link to view the impacted aggregates and then click the aggregate name to view details of the aggregate. You can also click the aggregate count to view the list of impacted aggregates in the Health: All Aggregates view.

No value is displayed in this column for the following cases:

- For broken disks when a cluster containing such disks is added to Unified Manager
- When there are no failed disks

Storage Pool

Displays the name of the storage pool to which the SSD belongs. You can move the pointer over the storage pool name to view details of the storage pool.

Storable Capacity

Displays the disk capacity that is available for use.

Raw Capacity

Displays the capacity of the raw, unformatted disk before right-sizing and RAID configuration. By default, this column is hidden.

Type

Displays the types of disks: for example, ATA, SATA, FCAL, or VMDISK.

Effective Type

Displays the disk type assigned by ONTAP.

Certain ONTAP disk types are considered equivalent for the purposes of creating and adding to aggregates, and spare management. ONTAP assigns an effective disk type for each disk type.

Spare Blocks Consumed %

Displays in percentage the spare blocks that are consumed in the SSD disk. This column is blank for disks other than SSD disks.

Rated Life Used %

Displays in percentage an estimate of the SSD life used, based on the actual SSD usage and the manufacturer’s prediction of SSD life. A value greater than 99 indicates that the estimated endurance has been consumed, but may not indicate SSD failure. If the value is unknown, then the disk is omitted.

Firmware

Displays the firmware version of the disk.

RPM

Displays the revolutions per minute (RPM) of the disk. By default, this column is hidden.

Model

Displays the model number of the disk. By default, this column is hidden.

Vendor

Displays the name of the disk vendor. By default, this column is hidden.

Shelf ID

Displays the ID of the shelf where the disk is located.

Bay

Displays the ID of the bay where the disk is located.

Related Annotations pane

Enables you to view the annotation details associated with the selected cluster. The details include the annotation name and the annotation values that are applied to the cluster. You can also remove manual annotations from the Related Annotations pane.

Related Devices pane

Enables you to view device details that are associated with the selected cluster.

The details include properties of the device that is connected to the cluster such as the device type, size, count, and health status. You can click on the count link for further analysis on that particular device.

You can use MetroCluster Partner pane to obtain count and also details on the remote MetroCluster partner along with its associated cluster components such as nodes, aggregates, and SVMs. The MetroCluster Partner pane is displayed only for clusters in a MetroCluster configuration.

The Related Devices pane enables you to view and navigate to the nodes, SVMs, and aggregates that are related to the cluster:

MetroCluster Partner

Displays the health status of the MetroCluster partner. Using the count link, you can navigate further and obtain information about the health and capacity of the cluster components.

Nodes

Displays the number, capacity, and health status of the nodes that belong to the selected cluster. Capacity indicates the total usable capacity over available capacity.

Storage Virtual Machines

Displays the number of SVMs that belong to the selected cluster.

Aggregates

Displays the number, capacity, and the health status of the aggregates that belong to the selected cluster.

Related Groups pane

Enables you to view the list of groups that includes the selected cluster.

Related Alerts pane

The Related Alerts pane enables you to view the list of alerts for the selected cluster. You can also add an alert by clicking the Add Alert link or edit an existing alert by clicking the alert name.

Related information

Volumes page Viewing the cluster list and details

View the Aggregate / Health details page in Active IQ Unified Manager

You can use the Aggregate / Health details page to view detailed information about the selected aggregate, such as the capacity, disk information, configuration details, and events generated. You can also view information about the related objects and related alerts for that aggregate.

Command buttons

When monitoring a FabricPool-enabled aggregate, the committed and overcommitted values on this page are relevant only to the local, or performance tier, capacity. The amount of space available in the cloud tier is not reflected in the overcommitted values. Similarly, the aggregate threshold values are relevant only to the local performance tier.

The command buttons enable you to perform the following tasks for the selected aggregate:

- **Switch to Performance View**

  Enables you to navigate to the Aggregate / Performance details page.

- **Actions**
  - Add Alert

    Enables you to add an alert to the selected aggregate.

  - Edit Thresholds

    Enables you to modify the threshold settings for the selected aggregate.

- **View Aggregates**

  Enables you to navigate to the Health: All Aggregates view.

Capacity tab

The Capacity tab displays detailed information about the selected aggregate, such as its capacity, thresholds, and daily growth rate.

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

- **Capacity**

  Displays the data capacity graph and the Snapshot copies graph, which display capacity details about the aggregate:

  - Logical Space Used

    The real size of the data that is being stored on the aggregate without applying the savings from using ONTAP storage efficiency technologies.

  - Used

    The physical capacity used by data in the aggregate.

  - Overcommitted

    When space in the aggregate is overcommitted, the chart displays a flag with the overcommitted amount.

  - Warning

    Displays a dotted line at the location where the warning threshold is set; meaning space in the aggregate is nearly full. If this threshold is breached, the Space Nearly Full event is generated.

  - Error

    Displays a solid line at the location where the error threshold is set; meaning space in the aggregate is full. If this threshold is breached, the Space Full event is generated.

  - Snapshot Copies graph

    This graph is displayed only when the used Snapshot capacity or the Snapshot reserve is not zero.

  Both of the graphs display the capacity by which the Snapshot capacity exceeds the Snapshot reserve if the used Snapshot capacity exceeds the Snapshot reserve.

- **Cloud Tier**

  Displays the space used by data in the cloud tier for FabricPool-enabled aggregates. A FabricPool can be either licensed or unlicensed.

  When the cloud tier is mirrored to another cloud provider (the “mirror tier”) then both cloud tiers are displayed here.

- **Details**

  Displays detailed information about capacity.

  - Total Capacity

    Displays the total capacity in the aggregate.

  - Data Capacity

    Displays the amount of space used by the aggregate (used capacity) and the amount of available space in the aggregate (free capacity).

◦ Snapshot Reserve

Displays the used and free Snapshot capacity of the aggregate.

◦ Overcommitted Capacity

Displays the aggregate overcommitment. Aggregate overcommitment enables you to provide more storage than is actually available from a given aggregate, as long as not all of that storage is currently being used. When thin provisioning is in use, the total size of volumes in the aggregate can exceed the total capacity of the aggregate.

If you have overcommitted your aggregate, you must monitor its available space carefully and add storage as required to avoid write errors due to insufficient space.

◦ Cloud Tier

Displays the space used by data in the cloud tier for FabricPool-enabled aggregates. A FabricPool can be either licensed or unlicensed. When the cloud tier is mirrored to another cloud provider (the mirror tier) then both cloud tiers are displayed here

◦ Total Cache Space

Displays the total space of the solid-state drives (SSDs) or allocation units that are added to a Flash Pool aggregate. If you have enabled Flash Pool for an aggregate but have not added any SSDs, then the cache space is displayed as 0 KB.

This field is hidden if Flash Pool is disabled for an aggregate.

◦ Aggregate Thresholds

Displays the following aggregate capacity thresholds:

- Nearly Full Threshold

  Specifies the percentage at which an aggregate is nearly full.

- Full Threshold

  Specifies the percentage at which an aggregate is full.

- Nearly Overcommitted Threshold

  Specifies the percentage at which an aggregate is nearly overcommitted.

- Overcommitted Threshold

  Specifies the percentage at which an aggregate is overcommitted.

◦ Other Details: Daily Growth Rate

Displays the disk space used in the aggregate if the rate of change between the last two samples continues for 24 hours.

For example, if an aggregate uses 10 GB of disk space at 2 pm and 12 GB at 6 pm, the daily growth rate (GB) for this aggregate is 2 GB.

- Volume Move

  Displays the number of volume move operations that are currently in progress:

  - Volumes Out

    Displays the number and capacity of the volumes that are being moved out of the aggregate.

    You can click the link to view more details, such as the volume name, aggregate to which the volume is moved, status of the volume move operation, and the estimated end time.

  - Volumes In

    Displays the number and remaining capacity of the volumes that are being moved into the aggregate.

    You can click the link to view more details, such as the volume name, aggregate from which the volume is moved, status of the volume move operation, and the estimated end time.

  - Estimated used capacity after volume move

    Displays the estimated amount of used space (as a percentage, and in KB, MB, GB, and so on) in the aggregate after the volume move operations are complete.

- **Capacity Overview - Volumes**

  Displays graphs that provide information about the capacity of the volumes contained in the aggregate. The amount of space used by the volume (used capacity) and the amount of available space (free capacity) in the volume is displayed. When the Thin-Provisioned Volume Space At Risk event is generated for thinly provisioned volumes, the amount of space used by the volume (used capacity) and the amount of space that is available in the volume but cannot be used (unusable capacity) because of aggregate capacity issues is displayed.

  You can select the graph you want to view from the drop-down lists. You can sort the data displayed in the graph to display details such as the used size, provisioned size, available capacity, fastest daily growth rate, and slowest growth rate. You can filter the data based on the storage virtual machines (SVMs) that contain the volumes in the aggregate. You can also view details for thinly provisioned volumes. You can view the details of specific points on the graph by positioning your cursor over the area of interest. By default, the graph displays the top 30 filtered volumes in the aggregate.

Disk Information tab

Displays detailed information about the disks in the selected aggregate, including the RAID type and size, and the type of disks used in the aggregate. The tab also graphically displays the RAID groups, and the types of disks used (such as SAS, ATA, FCAL, SSD, or VMDISK). You can view more information, such as the disk's bay, shelf, and rotational speed, by positioning your cursor over the parity disks and data disks.

- **Data**

  Graphically displays details about dedicated data disks, shared data disks, or both. When the data disks contain shared disks, graphical details of the shared disks are displayed. When the data disks contain dedicated disks and shared disks, graphical details of both the dedicated data disks and the shared data disks are displayed.

  - **RAID Details**

RAID details are displayed only for dedicated disks.

- Type

  Displays the RAID type (RAID0, RAID4, RAID-DP, or RAID-TEC).

- Group Size

  Displays the maximum number of disks allowed in the RAID group.

- Groups

  Displays the number of RAID groups in the aggregate.

◦ **Disks Used**

- Effective Type

  Displays the types of data disks (for example, ATA, SATA, FCAL, SSD, or VMDISK) in the aggregate.

- Data Disks

  Displays the number and capacity of the data disks that are assigned to an aggregate. Data disk details are not displayed when the aggregate contains only shared disks.

- Parity Disks

  Displays the number and capacity of the parity disks that are assigned to an aggregate. Parity disk details are not displayed when the aggregate contains only shared disks.

- Shared Disks

  Displays the number and capacity of the shared data disks that are assigned to an aggregate. Shared disk details are displayed only when the aggregate contains shared disks.

◦ **Spare Disks**

Displays the disk effective type, number, and capacity of the spare data disks that are available for the node in the selected aggregate.

When an aggregate is failed over to the partner node, Unified Manager does not display all of the spare disks that are compatible with the aggregate.

- **SSD Cache**

Provides details about dedicated cache SSD disks and shared cache SSD disks.

The following details for the dedicated cache SSD disks are displayed:

◦ **RAID Details**

- Type

  Displays the RAID type (RAID0, RAID4, RAID-DP or RAID-TEC).

- Group Size

  Displays the maximum number of disks allowed in the RAID group.

- Groups

  Displays the number of RAID groups in the aggregate.

◦ **Disks Used**

- Effective Type

  Indicates that the disks used for cache in the aggregate are of type SSD.

- Data Disks

  Displays the number and capacity of the data disks that are assigned to an aggregate for cache.

- Parity Disks

  Displays the number and capacity of the parity disks that are assigned to an aggregate for cache.

◦ **Spare Disks**

Displays the disk effective type, number, and capacity of the spare disks that are available for the node in the selected aggregate for cache.

When an aggregate is failed over to the partner node, Unified Manager does not display all of the spare disks that are compatible with the aggregate.

Provides the following details for the shared cache:

◦ **Storage Pool**

Displays the name of the storage pool. You can move the pointer over the storage pool name to view the following details:

- Status

  Displays the status of the storage pool, which can be healthy or unhealthy.

- Total Allocations

  Displays the total allocation units and the size in the storage pool.

- Allocation Unit Size

  Displays the minimum amount of space in the storage pool that can be allocated to an aggregate.

- Disks

  Displays the number of disks used to create the storage pool. If the disk count in the storage pool column and the number of disks displayed in the Disk Information tab for that storage pool do not match, then it indicates that one or more disks are broken and the storage pool is unhealthy.

- Used Allocation

Displays the number and size of the allocation units used by the aggregates. You can click the aggregate name to view the aggregate details.

- Available Allocation

  Displays the number and size of the allocation units available for the nodes. You can click the node name to view the aggregate details.

- **Allocated Cache**

  Displays the size of the allocation units used by the aggregate.

- **Allocation Units**

  Displays the number of allocation units used by the aggregate.

- **Disks**

  Displays the number of disks contained in the storage pool.

- **Details**
  - Storage Pool

    Displays the number of storage pools.

  - Total Size

    Displays the total size of the storage pools.

- **Cloud Tier**

  Displays the name of the cloud tier, if you have configured a FabricPool-enabled aggregate, and shows the total space used. When the cloud tier is mirrored to another cloud provider (the mirror tier) then the details for both cloud tiers are displayed here

Configuration tab

The Configuration tab displays details about the selected aggregate, such as its cluster node, block type, RAID type, RAID size, and RAID group count:

- **Overview**
  - Node

    Displays the name of the node that contains the selected aggregate.

  - Block Type

    Displays the block format of the aggregate: either 32-bit or 64-bit.

  - RAID Type

    Displays the RAID type (RAID0, RAID4, RAID-DP, RAID-TEC or Mixed RAID).

  - RAID Size

Displays the size of the RAID group.

- RAID Groups

  Displays the number of RAID groups in the aggregate.

- SnapLock Type

  Displays the SnapLock Type of the aggregate.

- **Cloud Tier**

  If this is a FabricPool-enabled aggregate, the details for the cloud tier are displayed. Some fields are different depending on the storage provider. When the cloud tier is mirrored to another cloud provider (the “mirror tier”) then both cloud tiers are displayed here.

  - Provider

    Displays the name of the storage provider, for example, StorageGRID, Amazon S3, IBM Cloud Object Storage, Microsoft Azure Cloud, Google Cloud Storage, or Alibaba Cloud Object Storage.

  - Name

    Displays the name of the cloud tier when it was created by ONTAP.

  - Server

    Displays the FQDN of the cloud tier.

  - Port

    The port being used to communicate with the cloud provider.

  - Access Key or Account

    Displays the access key or account for the cloud tier.

  - Container Name

    Displays the bucket or container name of the cloud tier.

  - SSL

    Displays whether SSL encryption is enabled for the cloud tier.

History area

The History area displays graphs that provide information about the capacity of the selected aggregate. Additionally, you can click the **Export** button to create a report in CSV format for the chart that you are viewing.

You can select a graph type from the drop-down list at the top of the History pane. You can also view details for a specific time period by selecting either 1 week, 1 month, or 1 year. History graphs can help you identify trends: for example, if the aggregate usage is consistently breaching the Nearly Full threshold, you can take the appropriate action.

History graphs display the following information:

- **Aggregate Capacity Used (%)**

  Displays the used capacity in the aggregate and the trend in how aggregate capacity is used based on the usage history as line graphs, in percentage, on the vertical (y) axis. The time period is displayed on the horizontal (x) axis. You can select a time period of a week, a month, or a year. You can view the details for specific points on the graph by positioning your cursor over a particular area. You can hide or display a line graph by clicking the appropriate legend. For example, when you click the Capacity Used legend, the Capacity Used graph line is hidden.

- **Aggregate Capacity Used vs Total Capacity**

  Displays the trend in how aggregate capacity is used based on the usage history, as well as the used capacity and the total capacity, as line graphs, in bytes, kilobytes, megabytes, and so on, on the vertical (y) axis. The time period is displayed on the horizontal (x) axis. You can select a time period of a week, a month, or a year. You can view the details for specific points on the graph by positioning your cursor over a particular area. You can hide or display a line graph by clicking the appropriate legend. For example, when you click the Trend Capacity Used legend, the Trend Capacity Used graph line is hidden.

- **Aggregate Capacity Used (%) vs Committed (%)**

  Displays the trend in how aggregate capacity is used based on the usage history, as well as the committed space as line graphs, as a percentage, on the vertical (y) axis. The time period is displayed on the horizontal (x) axis. You can select a time period of a week, a month, or a year. You can view the details for specific points on the graph by positioning your cursor over a particular area. You can hide or display a line graph by clicking the appropriate legend. For example, when you click the Space Committed legend, the Space Committed graph line is hidden.

Events list

The Events list displays details about new and acknowledged events:

- **Severity**

  Displays the severity of the event.

- **Event**

  Displays the event name.

- **Triggered Time**

  Displays the time that has elapsed since the event was generated. If the time elapsed exceeds a week, the timestamp for when the event was generated is displayed.

Related Devices pane

The Related Devices pane enables you to view the cluster node, volumes, and disks that are related to the aggregate:

- **Node**

  Displays the capacity and the health status of the node that contains the aggregate. Capacity indicates the total usable capacity over available capacity.

- **Aggregates in the Node**

Displays the number and capacity of all the aggregates in the cluster node that contains the selected aggregate. The health status of the aggregates is also displayed, based on the highest severity level. For example, if a cluster node contains ten aggregates, five of which display the Warning status and the remaining five of which display the Critical status, then the status displayed is Critical.

- **Volumes**

  Displays the number and capacity of FlexVol volumes and FlexGroup volumes in the aggregate; the number does not include FlexGroup constituents. The health status of the volumes is also displayed, based on the highest severity level.

- **Resource Pool**

  Displays the resource pools related to the aggregate.

- **Disks**

  Displays the number of disks in the selected aggregate.

Related Alerts pane

The Related Alerts pane enables you to view the list of alerts that are created for the selected aggregate. You can also add an alert by clicking the Add Alert link or edit an existing alert by clicking the alert name.

Related information

Viewing storage pool details

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.