Performance Cluster Landing page

Active IQ Unified Manager

NetApp
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Performance Cluster Landing page

The Performance Cluster Landing page displays the high-level performance status of a selected cluster. The page enables you to access complete details of each performance counter for the storage objects on the selected cluster.

The Performance Cluster Landing page includes four tabs that separate the cluster details into four areas of information:

- Summary page
  - Cluster Events pane
  - MB/s and IOPS performance charts
  - Managed Objects pane
- Top Performers page
- Explorer page
- Information page

Performance Cluster Summary page

The Performance Cluster Summary page provides a summary of the active events, IOPS performance, and MB/s performance for a cluster. This page also includes the total count of the storage objects in the cluster.

Cluster performance events pane

The Cluster performance events pane displays performance statistics and all active events for the cluster. This is most helpful when monitoring your clusters and all cluster-related performance and events.

All Events on this Cluster pane

The All Events on this Cluster pane displays all active cluster performance events for the preceding 72 hours. The Total Active Events is displayed at the far left; this number represents the total of all New and Acknowledged events for all storage objects in this cluster. You can click the Total Active Events link to navigate to the Events Inventory page, which is filtered to display these events.

The Total Active Events bar graph for the cluster displays the total number of active critical and warning events:

- Latency (total for nodes, aggregates, SVMs, volumes, LUNs, and namespaces)
- IOPS (total for clusters, nodes, aggregates, SVMs, volumes, LUNs, and namespaces)
- MB/s (total for clusters, nodes, aggregates, SVMs, volumes, LUNs, namespaces, ports, and LIFs)
- Performance Capacity Used (total for nodes and aggregates)
- Utilization (total for nodes, aggregates, and ports)
- Other (cache miss ratio for volumes)

The list contains active performance events triggered from user-defined threshold policies, system-defined

threshold policies, and dynamic thresholds.

Graph data (vertical counter bars) is displayed in red ( ) for critical events, and yellow ( ) for warning events. Position your cursor over each vertical counter bar to view the actual type and number of events. You can click **Refresh** to update the counter panel data.

You can show or hide critical and warning events in the Total Active Events performance graph by clicking the **Critical** and **Warning** icons in the legend. If you hide certain event types, the legend icons are displayed in gray.

Counter panels

The counter panels display cluster activity and performance events for the preceding 72 hours, and includes the following counters:

- **IOPS counter panel**

  IOPS indicates the operating speed of the cluster in number of input/output operations per second. This counter panel provides a high-level overview of the cluster's IOPS health for the preceding 72-hour period. You can position your cursor over the graph trend line to view the IOPS value for a specific time.

- **MB/s counter panel**

  MB/s indicates how much data has been transferred to and from the cluster in megabytes per second. This counter panel provides a high-level overview of the cluster's MB/s health for the preceding 72-hour period. You can position your cursor over the graph trend line to view the MB/s value for a specific time.

The number at the top right of the chart in the gray bar is the average value from the last 72-hour period. Numbers shown at the bottom and top of the trend line graph are the minimum and maximum values for the last 72-hour period. The gray bar below the chart contains the count of active (new and acknowledged) events and obsolete events from the last 72-hour period.

The counter panels contain two types of events:

- **Active**

  Indicates that the performance event is currently active (new or acknowledged). The issue causing the event has not corrected itself or has not been resolved. The performance counter for the storage object remains above the performance threshold.

- **Obsolete**

  Indicates that the event is no longer active. The issue causing the event has corrected itself or has been resolved. The performance counter for the storage object is no longer above the performance threshold.

For **Active Events**, if there is one event, you can position your cursor over the event icon and click the event number to link to the appropriate Event Details page. If there is more than one event, you can click **View all Events** to display the Events Inventory page, which is filtered to show all events for the selected object counter type.

Managed Objects pane

The Managed Objects pane in the Performance Summary tab provides a top-level overview of the storage object types and counts for the cluster. This pane enables you to

track the status of the objects in each cluster.

The managed objects count is point-in-time data as of the last collection period. New objects are discovered at 15-minute intervals.

Clicking the linked number for any object type displays the object performance inventory page for that object type. The object inventory page is filtered to show only the objects on this cluster.

The managed objects are:

- **Nodes**

  A physical system in a cluster.

- **Aggregates**

  A set of multiple redundant array of independent disks (RAID) groups that can be managed as a single unit for protection and provisioning.

- **Ports**

  A physical connection point on nodes that is used to connect to other devices on a network.

- **Storage VMs**

  A virtual machine providing network access through unique network addresses. An SVM might serve data out of a distinct namespace, and is separately administrable from the rest of the cluster.

- **Volumes**

  A logical entity holding accessible user data through one or more of the supported access protocols. The count includes both FlexVol volumes and FlexGroup volumes; it does not include FlexGroup constituents.

- **LUNs**

  The identifier of a Fibre Channel (FC) logical unit or an iSCSI logical unit. A logical unit typically corresponds to a storage volume, and is represented within a computer operating system as a device.

- **Network Interfaces**

  A logical network interface representing a network access point to a node. The count includes all interface types.

Top Performers page

The Top Performers page displays the storage objects that have the highest performance or the lowest performance, based on the performance counter you select. For example, in the Storage VMs category, you can display the SVMs that have the highest IOPS, or the highest latency, or the lowest MB/s. This page also shows if any of the top performers have any active performance events (New or Acknowledged).

The Top Performers page displays a maximum of 10 of each object. Note that the Volume object includes both FlexVol volumes and FlexGroup volumes.

- **Time Range**

  You can select a time range for viewing the top performers; the selected time range applies to all storage objects. Available time ranges:

  - Last Hour
  - Last 24 Hours
  - Last 72 Hours (default)
  - Last 7 Days

- **Metric**

  Click the **Metric** menu to select a different counter. Counter options are unique to the object type. For example, available counters for the **Volumes** object are **Latency**, **IOPS**, and **MB/s**. Changing the counter reloads the panel data with the top performers based on the selected counter.

  Available counters:

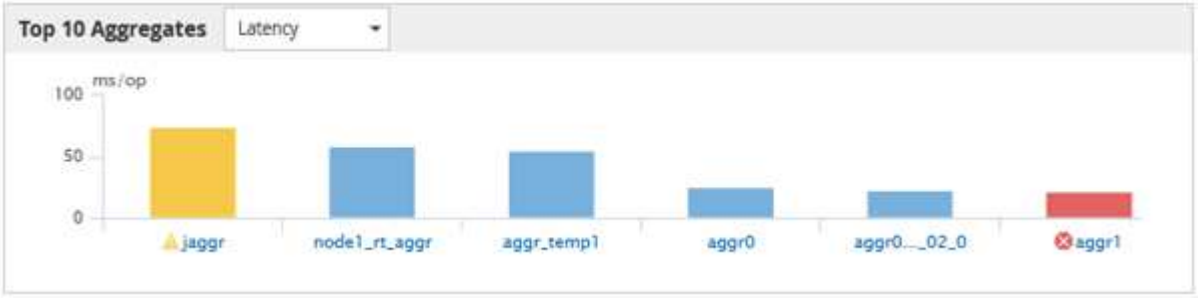
  - Latency
  - IOPS
  - MB/s
  - Performance Capacity Used (for nodes and aggregates)
  - Utilization (for nodes and aggregates)

- **Sort**

  Click the **Sort** menu to select an ascending or descending sort for the selected object and counter. The options are **Highest to lowest** and **Lowest to highest**. These options enable you to view the objects with the highest performance or the lowest performance.

- **Counter bar**

  The counter bar in the graph shows the performance statistics for each object, represented as a bar for that item. The bar graphs are color-coded. If the counter is not breaching a performance threshold, the counter bar is displayed in blue. If a threshold breach is active (a new or acknowledged event), the bar is displayed in the color for the event: warning events are displayed in yellow ( ), and critical events are displayed in red ( ). Threshold breaches are further indicated by severity event indicator icons for warning and critical events.



  For each graph, the X axis displays the top performers for the selected object type. The Y axis displays units applicable to the selected counter. Clicking the object name link below each vertical bar graph element navigates to the Performance Landing page for the selected object.

- **Severity Event indicator**

  The **Severity Event** indicator icon is displayed at the left of an object name for active critical ( ) or warning ( ) events in the top performers graphs. Click the **Severity Event** indicator icon to view:

  - **One event**

    Navigates to the Event details page for that event.

  - **Two or more events**

    Navigates to the Event inventory page, which is filtered to display all events for the selected object.

- **Export button**

  Creates a `.csv` file that contains the data that appears in the counter bar. You can choose to create the file for the single cluster you are viewing or for all clusters in the data center.

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