



# Descriptions of the counter charts

## OnCommand Unified Manager 9.5

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# Descriptions of the counter charts

You use the Performance Explorer counter charts to view and compare performance data for selected storage objects. These charts can help you to understand performance trends and isolate and resolve performance issues.

## Latency performance counter charts

The Performance Explorer Latency counter charts display the number of milliseconds that are required for the selected storage object to respond to application requests.

The popup window that is displayed when your cursor is in the chart area shows the specific counter values at specific times.

The bottom of the chart page displays information for the minimum, maximum, average, and 95th percentile latency for the selected time range.

There are three types of Latency charts available:

### Latency - Total counter chart

Displays the number of milliseconds required to respond to application requests. The average latency values are I/O weighted.

### Latency - Breakdown counter chart

Displays the same latency data separated into read, write, and other latency.

This chart option applies when the selected object is an SVM, node, aggregate, volume, or LUN.

### Latency - Cluster Components counter chart

Displays the latency data by cluster component. This enables you to identify the cluster component that is responsible for the latency. By hovering your cursor in the chart you can view the exact latency contribution for each component.

This chart option applies when the selected object is an SVM, node, aggregate, volume, or LUN.

## Zoom View button

Displays a magnified view of the counter chart data.

- Events


The occurrence of critical, warning, and informational events are indicated on the time lines above the charts.

- Thresholds

The dashed, horizontal line indicates the utilization warning threshold value set in Unified Manager.

The solid red line indicates the utilization critical threshold value set in Unified Manager.

- Counters

The counters in the left pane show which counter values are being displayed. Deselecting or selecting the  that is associated with a counter hides and shows that counter information from the chart and can help when comparing object latency.

## IOPS performance counter charts

The Performance Explorer IOPS counter charts display the number of input/output operations processed per second by the selected storage object.

The popup window that is displayed when your cursor is in the chart area shows the specific counter values at specific times.

When displayed in Zoom view, the volume and LUN IOPS charts also display Quality of Service (QoS) maximum and minimum throughput threshold settings, if configured in ONTAP. The IOPS/TB charts display QoS peak and expected throughput threshold settings, if configured.

When viewing a volume or LUN that is sharing the IOPS of a shared QoS policy, a line for “Total Workload IOPS” is displayed to show the IOPS that are being used by all other workloads sharing this policy.

The bottom of the chart page displays information for the minimum, maximum, average, and 95th percentile IOPS for the selected time range.

There are four types of IOPS charts available:

### IOPS - Total counter chart

Displays the number of input/output operations processed per second.

### IOPS - Breakdown counter chart

Displays the same IOPS data separated into read, write, and other IOPS.

This chart option applies when the selected object is an SVM, node, aggregate, volume, or LUN.

### IOPS - Protocols counter chart

Displays the same IOPS data, but for SVMs the performance data is separated into individual components for CIFS, NFS, FCP, NVMe, and iSCSI protocol traffic.

### IOPS/TB - Total counter chart

Displays the number of input/output operations processed per second based on the total logical space that is being consumed by the volume, in terabytes. Also called I/O density, this counter measures how much performance can be delivered by a given amount of storage capacity.

This chart option is available only when the selected object is a volume. It displays performance data only when the logical capacity used by the volume is greater than or equal to 1 TB. Gaps will be displayed in the chart when the used capacity falls below 1 TB during the selected timeframe.



In some situations the IOPS/TB chart might show large spikes in data while the IOPS chart does not show the same behavior. This is a known limitation where some performance data is captured less frequently than other performance data. This chart will typically return to normal operation in 5 or 10 minutes when the collection cycles are synchronized.

## Zoom View button

Displays a magnified view of the counter chart data.

- Events


The occurrence of critical, error, warning, and informational events are indicated on the time lines above the charts.

- Thresholds

The dashed, horizontal line indicates the utilization warning threshold value set in Unified Manager.

The solid red line indicates the utilization critical threshold value set in Unified Manager.

- Counters

The counters in the left pane show which counter values are being displayed. Deselecting or selecting the  that is associated with a counter hides and shows that counter information from the chart and can help when comparing object IOPS.

## MBps performance counter charts

The Performance Explorer MBps counter charts display the number of megabytes of data transferred to and from the selected object per second.

The popup window that is displayed when your cursor is in the chart area shows the specific counter values at specific times.

When displayed in Zoom view, the volume and LUN charts also display Quality of Service (QoS) maximum MBps throughput threshold settings, if configured in ONTAP.

When viewing a volume or LUN that is sharing the MBps of a shared QoS policy, a line for “Total Workload MBps” is displayed to show the MBps that are being used by all other workloads sharing this policy.

The bottom of the chart page displays information for the minimum, maximum, average, and 95th percentile MBps for the selected time range.

There are two types of MBps charts available:

### MBps - Total counter chart

Displays the number of megabytes of data transferred to and from the selected object per second.

### MBps - Breakdown counter chart

Displays the same MBps data separated into disk read, Flash Cache read, write, and other operations.

This chart option applies when the selected object is an SVM, node, aggregate, volume, or LUN.



Flash Cache data is displayed only for nodes, and only when a Flash Cache module is installed in the node.

## Zoom View button

Displays a magnified view of the counter chart data.

- Events


The occurrence of critical, error, warning, and informational events are indicated on the time lines above the charts.

- Thresholds

The dashed, horizontal line indicates the utilization warning threshold value set in Unified Manager.

The solid red line indicates the utilization critical threshold value set in Unified Manager.

- Counters

The counters in the left pane show which counter values are being displayed. Deselecting or selecting the  that is associated with a counter hides and shows that counter information from the chart and can help when comparing object MBps.

## Utilization performance counter chart

The Performance Explorer Utilization counter chart displays the average percentage of the selected resource that is being used.

The popup window that is displayed when your cursor is in the chart area shows the specific counter values at specific times.

The bottom of the chart page displays information for the minimum, maximum, average, and 95th percentile utilization for the selected time range.

### Utilization - Total counter chart

Displays the average percentage of the selected resource that is being used. For nodes this indicates utilization of node resources (CPU and RAM), for aggregates this indicates utilization of the disks in the aggregate, and for ports this indicates the bandwidth utilization of the port.

This chart option applies when the selected object is a node, aggregate, or port.

## Zoom View button

Displays a magnified view of the counter chart data.

- Events

The occurrence of critical, warning, and informational events are indicated on the time lines above the


charts.

- Thresholds

The dashed, horizontal line indicates the utilization warning threshold value set in Unified Manager.

The solid red line indicates the utilization critical threshold value set in Unified Manager.

- Counters

The counters in the left pane show which counter values are being displayed. Deselecting or selecting the  that is associated with a counter hides and shows that counter information from the chart and can help when comparing object utilization.

## Performance Capacity Used performance counter charts

The Performance Explorer Performance Capacity Used counter charts display the percentage of performance capacity that is being consumed by the node or aggregate.



Performance capacity data is available only when the nodes in a cluster are installed with ONTAP 9.0 or later software.

These charts apply only when the selected object is a node or aggregate.

The popup window that is displayed when your cursor is in the chart area shows the specific counter values at specific times.

The bottom of the chart page displays information for the minimum, maximum, average, and 95th percentile performance capacity used for the selected time range.

There are two types of Performance Capacity Used charts available:

### Performance Capacity Used - Total counter chart

Displays the percentage of performance capacity that is being consumed by the node or aggregate.

- Green zone

The capacity value is under the warning threshold set in Unified Manager.

- Yellow zone

The capacity value is approaching the warning threshold set in Unified Manager.

- Red zone

The capacity value is above the warning threshold and approaching the maximum threshold set in Unified Manager.

### Performance Capacity Used - Breakdown counter chart

Displays the same percentage of performance capacity separated into user protocols, system background processes, and the amount of free performance capacity.

## Zoom View button

Displays a magnified view of the counter chart data.

- Events

The occurrence of critical, warning, and informational events are indicated on the time lines above the charts.


- Thresholds

The dashed, horizontal line indicates the capacity warning threshold value set in Unified Manager.

The solid red line indicates the capacity critical threshold value set in Unified Manager.

The solid black line at 100% is the recommended maximum performance capacity used value.

- Counters

The counters in the left pane show which counter values are being displayed. Deselecting or selecting the  that is associated with a counter can restrict the comparison.

## Available IOPS performance counter chart

The Performance Explorer Available IOPS counter chart displays the number of input/output operations per second that are currently available (free) on the selected storage object.

The popup window that is displayed when your cursor is in the chart area shows the specific counter values at specific times.

This chart option applies only when the selected object is a node or aggregate.

The bottom of the chart page displays information for the minimum, maximum, average, and 95th percentile performance capacity used for the selected time range.

## Available IOPS - Total counter chart

Displays the number of input/output operations per second that are currently available (free) on the selected storage object. This number is the result of subtracting the currently used IOPS from the total IOPS that Unified Manager calculates that the object can perform.



Available IOPS data is available only when the nodes in a cluster are installed with ONTAP 9.0 or later software.

## Zoom View button


Displays a magnified view of the counter chart data.

- Events

The occurrence of critical, warning, and informational events are indicated on the time lines above the charts.



- Counters

The counters in the left pane show which counter values are being displayed. Deselecting or selecting the  that is associated with a counter hides and shows that counter information from the chart and can help when comparing objects.

## Cache Miss Ratio performance counter chart

The Performance Explorer Cache Miss Ratio counter chart displays the percentage of read requests from client applications that are returned from the disk instead of being returned from the cache.

The popup window that is displayed when your cursor is in the chart area shows the specific counter values at specific times.

The bottom of the chart page displays information for the minimum, maximum, average, and 95th percentile cache miss ratio for the selected time range.

### Cache Miss Ratio - Total counter chart

Displays the percentage of read requests from client applications that are returned from the disk instead of being returned from the cache.

This chart option applies only when the selected object is a volume.


### Zoom View button

Displays a magnified view of the counter chart data.

- Events

The occurrence of critical, warning, and informational events are indicated on the time lines above the charts.

- Counters

The counters in the left pane show which counter values are being displayed. Deselecting or selecting the  that is associated with a counter hides and shows that counter information from the chart and can help when comparing objects.

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