



# **Understanding more about events**

## **Active IQ Unified Manager**

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# Understanding more about events

Understanding the concepts about events helps you to manage your clusters and cluster objects efficiently and to define alerts appropriately.

## Event state definitions

The state of an event helps you identify whether an appropriate corrective action is required. An event can be New, Acknowledged, Resolved, or Obsolete. Note that both New and Acknowledged events are considered to be active events.

The event states are as follows:

- **New**

The state of a new event.

- **Acknowledged**

The state of an event when you have acknowledged it.

- **Resolved**

The state of an event when it is marked as resolved.

- **Obsolete**

The state of an event when it is automatically corrected or when the cause of the event is no longer valid.



You cannot acknowledge or resolve an obsolete event.

## Example of different states of an event

The following examples illustrate the manual and automatic event state changes.

When the event Cluster Not Reachable is triggered, the event state is New. When you acknowledge the event, the event state changes to Acknowledged. When you have taken an appropriate corrective action, you must mark the event as resolved. The event state then changes to Resolved.

If the Cluster Not Reachable event is generated due to a power outage, then when the power is restored the cluster starts functioning without any administrator intervention. Therefore, the Cluster Not Reachable event is no longer valid, and the event state changes to Obsolete in the next monitoring cycle.

Unified Manager sends an alert when an event is in the Obsolete or Resolved state. The email subject line and email content of an alert provides information about the event state. An SNMP trap also includes information about the event state.

## Description of event severity types

Each event is associated with a severity type to help you prioritize the events that require

immediate corrective action.

- **Critical**

A problem occurred that might lead to service disruption if corrective action is not taken immediately.

Performance critical events are sent from user-defined thresholds only.

- **Error**

The event source is still performing; however, corrective action is required to avoid service disruption.

- **Warning**

The event source experienced an occurrence that you should be aware of, or a performance counter for a cluster object is out of normal range and should be monitored to make sure it does not reach the critical severity. Events of this severity do not cause service disruption, and immediate corrective action might not be required.

Performance warning events are sent from user-defined, system-defined, or dynamic thresholds.

- **Information**

The event occurs when a new object is discovered, or when a user action is performed. For example, when any storage object is deleted or when there are any configuration changes, the event with severity type Information is generated.

Information events are sent directly from ONTAP when it detects a configuration change.

## Description of event impact levels

Each event is associated with an impact level (Incident, Risk, Event, or Upgrade) to help you prioritize the events that require immediate corrective action.

- **Incident**

An incident is a set of events that can cause a cluster to stop serving data to the client and run out of space for storing data. Events with an impact level of Incident are the most severe. Immediate corrective action should be taken to avoid service disruption.

- **Risk**

A risk is a set of events that can potentially cause a cluster to stop serving data to the client and run out of space for storing data. Events with an impact level of Risk can cause service disruption. Corrective action might be required.

- **Event**

An event is a state or status change of storage objects and their attributes. Events with an impact level of Event are informational and do not require corrective action.

- **Upgrade**

Upgrade events are a specific type of event reported from the Active IQ platform. These events identify

issues where the resolution requires you to upgrade ONTAP software, node firmware, or operating system software (for security advisories). You may want to perform immediate corrective action for some of these issues, whereas other issues may be able to wait until your next scheduled maintenance.

## Description of event impact areas

Events are categorized into six impact areas (availability, capacity, configuration, performance, protection, and security) to enable you to concentrate on the types of events for which you are responsible.

- **Availability**

Availability events notify you if a storage object goes offline, if a protocol service goes down, if an issue with storage failover occurs, or if an issue with hardware occurs.

- **Capacity**

Capacity events notify you if your aggregates, volumes, LUNs, or namespaces are approaching or have reached a size threshold, or if the rate of growth is unusual for your environment.

- **Configuration**

Configuration events inform you of the discovery, deletion, addition, removal, or renaming of your storage objects. Configuration events have an impact level of Event and a severity type of Information.

- **Performance**

Performance events notify you of resource, configuration, or activity conditions on your cluster that might adversely affect the speed of data storage input or retrieval on your monitored storage objects.

- **Protection**

Protection events notify you of incidents or risks involving SnapMirror relationships, issues with destination capacity, problems with SnapVault relationships, or issues with protection jobs. Any ONTAP object (especially aggregates, volumes, and SVMs) that host secondary volumes and protection relationships are categorized in the protection impact area.

- **Security**

Security events notify you of how secure your ONTAP clusters, storage virtual machines (SVMs), and volumes are based on parameters defined in the [NetApp Security Hardening Guide for ONTAP 9](#).

Additionally, this area includes upgrade events that are reported from the Active IQ platform.

## How object status is computed

Object status is determined by the most severe event that currently holds a New or Acknowledged state. For example, if an object status is Error, then one of the object's events has a severity type of Error. When corrective action has been taken, the event state moves to Resolved.

# Dynamic performance event chart details

For dynamic performance events, the System Diagnosis section of the Event details page lists the top workloads with the highest latency or usage of the cluster component that is in contention. The performance statistics are based on the time the performance event was detected up to the last time the event was analyzed. The charts also display historical performance statistics for the cluster component that is in contention.

For example, you can identify workloads with high utilization of a component to determine which workload to move to a less-utilized component. Moving the workload would reduce the amount of work on the current component, possibly bringing the component out of contention. At the of this section is the time and date range when an event was detected and last analyzed. For active events (new or acknowledged), the last analyzed time continues to update.

The latency and activity charts display the names of the top workloads when you hover your cursor over the chart. Clicking the Workload Type menu at the right of the chart enables you to sort the workloads based on their role in the event, including *sharks*, *bullies*, or *victims*, and displays details about their latency and their usage on the cluster component in contention. You can compare the actual value to the expected value to see when the workload was outside its expected range of latency or usage. See *Workloads monitored by Unified Manager*.



When you sort by peak deviation in latency, system-defined workloads are not displayed in the table, because latency applies only to user-defined workloads. Workloads with very low latency values are not displayed in the table.

For more information about the dynamic performance thresholds, see *What events are*. For information about how Unified Manager ranks the workloads and determines the sort order, see *How Unified Manager determines the performance impact for an event*.

The data in the graphs shows 24 hours of performance statistics prior to the last time the event was analyzed. The actual values and expected values for each workload are based on the time the workload was involved in the event. For example, a workload might become involved in an event after the event was detected, so its performance statistics might not match the values at the time of event detection. By default, the workloads are sorted by peak (highest) deviation in latency.



Because Unified Manager retains a maximum of 30 days of 5-minute historical performance and event data, if the event is more than 30 days old, no performance data is displayed.

## • Workload Sort column

### ◦ Latency chart

Displays the impact of the event to the latency of the workload during the last analysis.

### ◦ Component Usage column

Displays details about the workload usage of the cluster component in contention. In the graphs, the actual usage is a blue line. A red bar highlights the event duration, from the detection time to the last analyzed time. For more information, see *Workload performance measurements*.



For the network component, because network performance statistics come from activity off the cluster, this column is not displayed.

- **Component Usage**

Displays the history of utilization, in percent, for the network processing, data processing, and aggregate components or the history of activity, in percent, for the QoS policy group component. The chart is not displayed for the network or interconnect components. You can point to the statistics to view the usage statistics at a specific point in time.

- **Total Write MB/s History**

For the MetroCluster Resources component only, shows the total write throughput, in megabytes per second (MBps), for all volume workloads that are being mirrored to the partner cluster in a MetroCluster configuration.

- **Event History**

Displays red-shaded lines to indicate the historic events for the component in contention. For obsolete events, the chart displays events that occurred before the selected event was detected and after it was resolved.

## Configuration changes detected by Unified Manager

Unified Manager monitors your clusters for configuration changes to help you determine whether a change might have caused or contributed to a performance event. The Performance Explorer pages display a change event icon (●) to indicate the date and time when the change was detected.

You can review the performance charts in the Performance Explorer pages and in the Workload Analysis page to see whether the change event impacted the performance of the selected cluster object. If the change was detected at or around the same time as a performance event, the change might have contributed to the issue, which caused the event alert to trigger.

Unified Manager can detect the following change events, which are categorized as Informational events:

- A volume moves between aggregates.

Unified Manager can detect when the move is in progress, completed, or failed. If Unified Manager is down during a volume move, when it is back up it detects the volume move and displays a change event for it.

- The throughput (MB/s or IOPS) limit of a QoS policy group that contains one or more monitored workloads changes.

Changing a policy group limit can cause intermittent spikes in the latency (response time), which might also trigger events for the policy group. The latency gradually returns to normal and any events caused by the spikes become obsolete.

- A node in an HA pair takes over or gives back the storage of its partner node.

Unified Manager can detect when the takeover, partial takeover, or giveback operation has been completed. If the takeover is caused by a panicked node, Unified Manager does not detect the event.

- An ONTAP upgrade or revert operation is completed successfully.

The previous version and new version are displayed.

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