



Monitoring cluster health and performance from the dashboards

OnCommand Unified Manager 9.5

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Table of Contents

- Monitoring cluster health and performance from the dashboards 1
 - Understanding the Health overview dashboard 1
 - Understanding the Performance dashboard 2
 - Understanding the Cluster View dashboard 4
 - Description of dashboard windows 5

Monitoring cluster health and performance from the dashboards

The dashboards provide cumulative at-a-glance information about the health your system. The dashboards enable you to assess the overall availability, capacity, performance, and protection health of the managed clusters, and quickly note, locate, diagnose, or assign for resolution, any specific issues that might occur.

Three dashboards provide unique views into the health and performance of your clusters:

- The Dashboards/Overview page provides information about the health and performance of your storage objects.
- The Dashboards/Performance page provides high-level performance status of all the clusters that are being monitored.
- The Dashboards/Cluster View page provides information about individual clusters.

Understanding the Health overview dashboard

The Unified Manager Health overview dashboard provides cumulative at-a-glance information about the health of your storage and virtualized environment. The Dashboards/Overview page provides health information about your storage objects separated into four health categories; availability, capacity, performance, and protection of the storage objects.

The following image illustrates the panes that are displayed on Dashboards/Overview page:



Health Overview area

Displays, as a graph, information about the health of your storage objects such as clusters, aggregates, and storage virtual machines (SVMs), and the health of your protection relationships. The Dashboards/Overview page displays events generated for the following categories:

Clicking on the number above any of the yellow or red bar charts displays the Events inventory page including only those events. Clicking on the number below any of the charts displays the object inventory page including only those objects.

- **Availability**

Displays information about the availability of clusters, SVMs, and aggregates that are monitored by Unified Manager. Based on the availability-related events that are generated, the storage objects are categorized as Healthy, At Risk, or Have Incidents.

- **Capacity**

Displays information about the capacity of SVMs and aggregates that are monitored by Unified Manager. Based on the capacity-related events that are generated, the storage objects are categorized as Healthy, At Risk, or Have Incidents.

- **Performance**

Displays information about the performance of clusters, SVMs, and volumes that are monitored by Unified Manager. Based on the performance-related incidents that are generated, the storage objects are categorized as Healthy, At Risk, or Have Incidents.

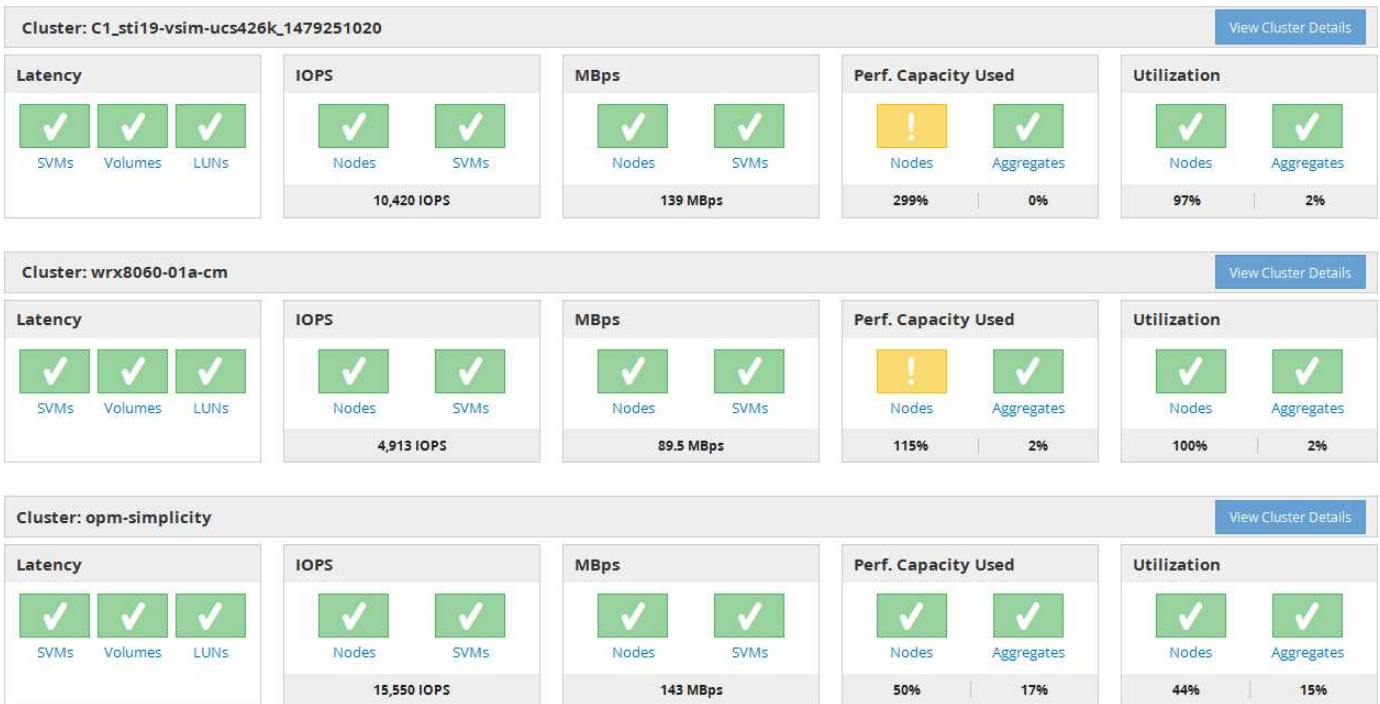
- **Protection**

Displays information about the protection relationships that are monitored by Unified Manager. Based on the protection-related events that are generated, the protection relationships are categorized as Healthy, Warning, or Error.

Understanding the Performance dashboard

The Unified Manager Performance dashboard provides a high-level overview of the performance status for all the clusters that are being monitored in your environment. Clusters that have performance issues are ordered at the top of the page by severity. The information on the dashboard is updated automatically at each five-minute performance collection period.

The following image shows an example of a Unified Manager Performance dashboard that is monitoring two clusters:



The status icons that represent the storage objects can be in the following states, sorted from highest severity to lowest severity:

- Critical (✖): One or more new critical performance events have been reported for the object.
- Warning (⚠): One or more new warning performance events have been reported for the object.
- Normal (✓): No new performance events have been reported for the object.



The color indicates whether new events exist for the object. Events that are no longer active, called obsolete events, do not affect the color of the icon.

Cluster performance counters

The following performance categories are displayed for each cluster:

- Latency
 - Shows how quickly the cluster is responding to client application requests, in milliseconds per operation.
- IOPS
 - Shows the operating speed of the cluster, in number of input/output operations per second.
- MBps
 - Shows how much data is being transferred to and from the cluster, in megabytes per second.
- Performance Capacity Used
 - Shows whether any nodes or aggregates are overusing their available performance capacity.
- Utilization

Shows whether the resources on any nodes or aggregates are being overused.

To analyze the performance of your cluster and storage objects, you can perform one of the following actions:

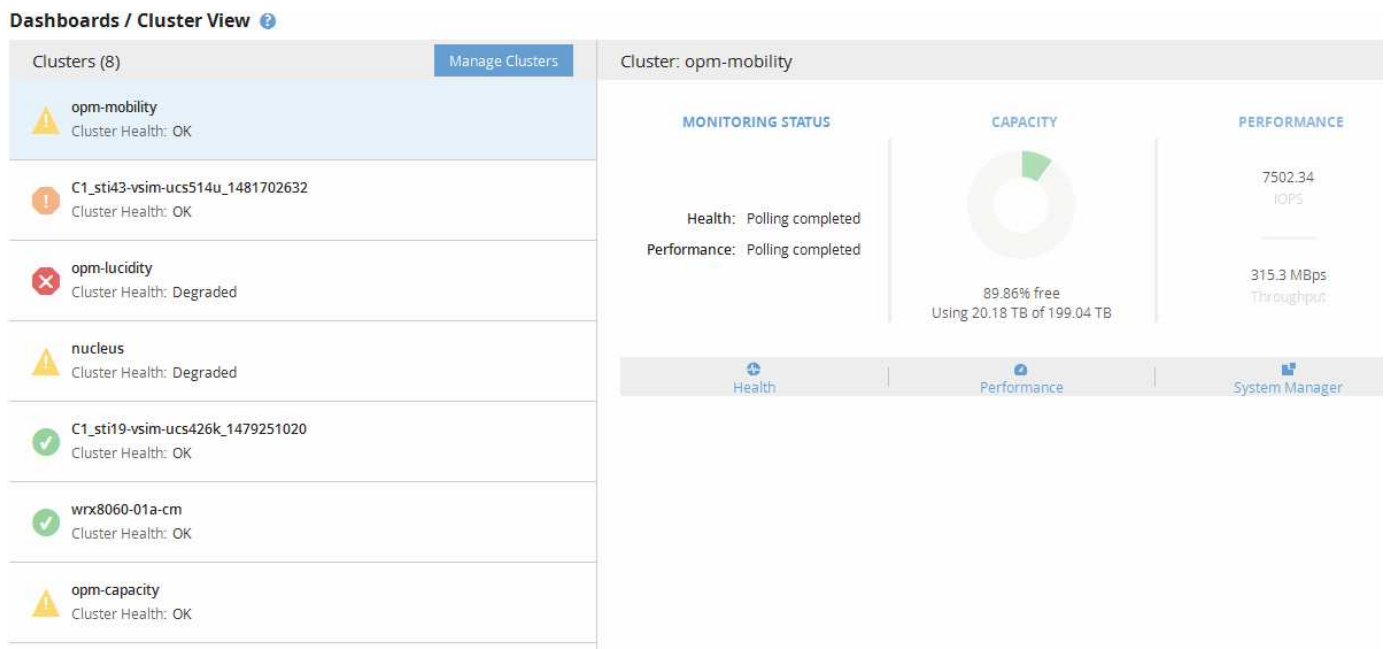
- You can click **View Cluster Details** to display the Cluster Landing page, where you can view detailed performance and event information for the selected cluster and storage objects.
- You can click one of the red or yellow status icons of an object to display the Inventory page for that object, where you can view details about the storage object.

For example, clicking a volume icon displays the Performance/Volume inventory page with a list of all the volumes in the selected cluster, sorted from worst performance to best performance.

Understanding the Cluster View dashboard

The Unified Manager Cluster View overview dashboard provides high-level information about the health of the clusters you are managing. The Cluster View dashboard consists of two major sections: Managed Clusters (on the left) and Cluster Details (on the right).

The following image shows an example of a Unified Manager Cluster View dashboard that is monitoring eight clusters:



The status icon next to each cluster name can be in the following states:

- Critical (❌): One or more active critical events have been reported for the cluster.
- Error (⚠️): One or more active error events have been reported for the cluster.
- Warning (⚠️): One or more active warning events have been reported for the cluster.
- Normal (✅): No active events have been reported for the cluster.



The color indicates whether active (new or acknowledged) events exist for the object. Events that are no longer active, called obsolete events, do not affect the color of the icon.

To display additional information about a cluster, you can perform one of the following actions:

- You can click a cluster name to display overview information on the monitoring status, capacity status, and performance status of the cluster.
- You can click **Manage Clusters** to display the Configuration/Cluster Data Sources page, where you can view detailed status information for all the clusters being managed by this instance of Unified Manager.

Description of dashboard windows

You can use the dashboard pages to get a quick glance of the objects that are being monitored.

Dashboards/Overview page

The Dashboards/Overview page displays, as a graph, the health of storage objects such as clusters, aggregates, and storage virtual machines (SVMs). Based on the availability, capacity, performance, and protection-related events that are generated, these storage objects are categorized as Healthy, At Risk, or Have Incidents, or as Healthy, Warning or Error for protection-related events.

Cluster not reachable bar

When a cluster is not reachable, Unified Manager displays the details in a bar at the top of every page. If all clusters are reachable, this pane is hidden.

You can refresh the information displayed in the pane by pressing F5. This action ensures that the pane displays the latest information about clusters that are currently not reachable. For example, if a cluster with a Cluster Not Reachable event is removed or if the state of an event is Obsolete, information about the event is removed when you refresh the pane.

You can view detailed information about a cluster that is unreachable by clicking the **Details** button. This action opens the Events inventory page. After the bar is closed, it is displayed again only when you log back in to Unified Manager.

Overview area

- **Availability pane**

Displays information about the availability of clusters, aggregates, and SVMs that are monitored by Unified Manager. The storage objects are categorized as Healthy, At Risk, or Have Incidents. For example, the status of a cluster that lacks spare disks is displayed as At Risk.

This pane also displays the number of storage objects in each of the categories. Clicking on any of the object totals takes you to the page for that object. For example, clicking the cluster total takes you to the Health/Clusters inventory page. Clicking on the numbers at the top of a column takes you to the Events inventory page.

- **Capacity pane**

Displays information about the capacity of aggregates and SVMs that are monitored by Unified Manager. The storage objects are categorized as Healthy, At Risk, or Have Incidents. For example, the status of an aggregate whose used capacity has reached the full threshold value is displayed as At Risk.

This pane also displays the number of storage objects in each of the categories.

- **Performance pane**

Displays information about the performance of clusters, SVMs, and volumes that are monitored by Unified Manager. Based on the performance-related incidents that are generated, the storage objects are categorized as Healthy, At Risk, or Have Incidents. For example, the status of a volume whose I/O response time to its workload has reached the maximum threshold value is displayed as Have Incidents.

This pane also displays the total number of clusters, SVMs, and volumes that are monitored by Unified Manager. Clicking on any of the object totals takes you to the page for that object. For example, clicking the cluster total takes you to the Performance/Cluster inventory page.

- **Protection pane**

Displays information about protection relationships that are monitored by Unified Manager. The protection relationships are categorized as Healthy, Warning, or Error. For example, a relationship that has a lag duration that exceeds the lag warning threshold is displayed as Warning.

This pane also displays the total number of storage objects in each of the protection categories. Clicking the links for the Lag Status, Asynchronous Vault, Asynchronous Mirror, or Synchronous categories takes you to a filtered list of those objects in the Protection/Volume Relationships page.

Dashboards/Performance page

You can use the Unified Manager Performance Dashboard to view the high-level performance status of all the clusters that are being monitored. The Dashboards/Performance page also displays a banner message when Unified Manager is unable to communicate with a cluster that it is monitoring.

Overview

The clusters are ordered based on severity using the following criteria:

1. If a cluster is unreachable.
2. If a cluster has one or more active critical performance events (red object icon).
3. If a cluster has one or more active warning performance events (yellow object icon).
4. If clusters have no active performance events (green object icon): the clusters are sorted by highest IOPS.

Critical events are generated when a critical limit in a user-defined performance threshold policy is exceeded. Warning events are sent when a warning limit in a user-defined performance threshold policy is exceeded, or when a system-defined threshold policy or dynamic threshold is exceeded.



The sort order is determined by the total number of active (new or acknowledged) events, not by the number of objects that have events. For example, if Cluster A has seven critical volume latency events, and Cluster B has two critical volume latency events and two critical node IOPS events (for a total of four critical events), Cluster A (with one red object icon) would appear higher on the list, even though Cluster B has two red object icons.

The following commonly monitored event types are displayed for each cluster:

- Latency events for storage virtual machines (SVMs), volumes, and LUNs
- IOPS events for nodes and SVMs
- MBps events for nodes and SVMs
- Performance capacity used events for nodes and aggregates
- Utilization events for nodes and aggregates


Unified Manager can receive performance events for other storage objects and counters—for example, MBps events for aggregates, and IOPS events for volumes. If a cluster has these types of events, the icon next to the cluster name indicates a warning (yellow) or critical (red) event. This icon might indicate that events exist when none of the five counter panel icons are yellow or red because these event types do not fit into the existing counter panel categories.

You can click the object icon to display the Performance Inventory page for that object, where you can view all objects of that type in this cluster. For example, clicking a volume icon displays the Performance/Volume Inventory page, showing a list of all the volumes in the selected cluster, sorted from worst to best performance.

Performance counters

There are five performance counters, each displayed in a separate panel, for every cluster. This information is updated automatically after each five-minute collection period:

Counter	Description
Latency	Shows how quickly the cluster is responding to client application requests, in milliseconds per operation (ms/op). The icon area indicates whether any SVMs, volumes, or LUNs have any active events based on the latency value crossing a threshold setting.
IOPS	Shows the operating speed of the storage system, in number of input/output operations per second (IOPS). <ul style="list-style-type: none"> • The icon area indicates whether any nodes or SVMs have any active events based on the number of IOPS crossing a threshold setting. • The bottom area displays the total cluster IOPS for the last five-minute collection period.
MBps	Shows how much data is being transferred to and from the cluster, in megabytes per second (MBps). <ul style="list-style-type: none"> • The icon area indicates whether any nodes or SVMs have any active events based on the MBps value crossing a threshold setting. • The bottom area displays the total cluster throughput for the last five-minute collection period.

Counter	Description
Performance Capacity Used	<p>Shows whether any nodes or aggregates are overusing their available performance capacity.</p> <ul style="list-style-type: none"> • The icon area indicates whether any nodes or aggregates have any active events based on the performance capacity used value crossing a threshold setting. • The bottom area displays the highest performance capacity used value from the busiest node and busiest aggregate. <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;">  <p>Performance capacity data is available only when the nodes in a cluster are installed with ONTAP 9.0 or later software.</p> </div>
Utilization	<p>Shows whether the resources on any nodes or aggregates are being overused.</p> <ul style="list-style-type: none"> • The icon area indicates whether any nodes or aggregates have any active events based on the utilization value crossing a threshold setting. • The bottom area displays the highest utilization value from the busiest node and busiest aggregate.

An ellipsis (...) in the header area indicates that performance data is currently being collected.

You can click **View Cluster Details** for a cluster that has performance events to display the Performance Cluster Landing page, where you can view detailed performance information about the cluster and other storage objects.

Cluster status messages

If a cluster that is managed by Unified Manager becomes unavailable, a status message banner is displayed above the performance counters. A **Details** button is displayed at the right of the status message banner if the cluster is unreachable. By clicking the **Details** button in the status message, you can navigate to the Cluster Data Sources page, which shows complete information about the issue. On the Cluster Data Sources page, you can find the data that is required to troubleshoot the issue that made the cluster become unavailable.

Dashboards/Cluster View page

The Dashboards/Cluster View page displays overview information about the clusters you are managing.

Clicking **Manage Clusters** takes you to the Configuration/Cluster Data Sources page.

Clicking on a cluster displays overview information on the monitoring status, capacity status, and performance status of the cluster.

The Cluster View dashboard consists of two major sections: Managed Clusters (on the left) and Cluster Details (on the right).

Managed Clusters section

Lists all the clusters the Unified Manager is monitoring. The following details are provided for each cluster in the list:

- Cluster status icon: The status can be Critical (❌), Error (⚠️), Warning (⚠️), or Normal (✅).
- IP address or host name: Provides the host name of the cluster, and the IP address or FQDN.
- Cluster Health: Provides information about the health of the cluster as monitored by Unified Manager.

The health status can have one of the following values: OK, OK with suppressed, Degraded, and Components not reachable.

Cluster Details section

Provides information about the monitoring status, capacity, and performance of the selected cluster.

- Monitoring Status: Displays the ongoing health and performance monitoring status.

The monitoring status can have the following values: Discovering, Poll completed, Poll failed, or Not available. The monitoring status displays an error message when the corresponding monitoring job (health or performance) fails.

- Capacity: Displays the total, used, and free storage capacity of the selected cluster.
- Performance: Displays the average operating speed of the cluster in number of IOPS (input/output operations per second), and the average throughput of the selected cluster in MBps (megabytes per second).

The Details section also provides navigation links to the individual cluster details pages of the OnCommand Unified Manager applications:

- The Health link navigates to the Health/Cluster details page of the selected cluster.
- The Performance link navigates to the Performance/Cluster details page of the selected cluster.
- The System Manager link navigates to the login page for OnCommand System Manager so that you can manage cluster settings.

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