Introduction to Active IQ Unified Manager performance monitoring

Active IQ Unified Manager

NetApp
October 07, 2026

This PDF was generated from https://docs.netapp.com/us-en/active-iq-unified-manager/performance-checker/concept_introduction_to_unified_manager_performance_monitoring.html on October 07, 2026. Always check docs.netapp.com for the latest.

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Introduction to Active IQ Unified Manager performance monitoring

Learn about performance monitoring in Active IQ Unified Manager

Active IQ Unified Manager (formerly OnCommand Unified Manager) provides performance monitoring capabilities and event root-cause analysis for systems that are running NetApp ONTAP software.

Unified Manager helps you to identify workloads that are overusing cluster components and decreasing the performance of other workloads on the cluster. By defining performance threshold policies you can also specify maximum values for certain performance counters so that events are generated when the threshold is breached. Unified Manager alerts you about these performance events so that you can take corrective action, and bring performance back to normal levels of operation. You can view and analyze events in the Unified Manager UI.

Unified Manager monitors the performance of two types of workloads:

- User-defined workloads

  These workloads consist of FlexVol volumes and FlexGroup volumes that you have created in your cluster.

- System-defined workloads

  These workloads consist of internal system activity.

Explore Active IQ Unified Manager performance monitoring features

Unified Manager collects and analyzes performance statistics from systems running ONTAP software. It uses dynamic performance thresholds and user-defined performance thresholds to monitor a variety of performance counters over many cluster components.

A high response time (latency) indicates that the storage object, for example, a volume, is performing slower than normal. This issue also indicates that the performance has decreased for client applications that are using the volume. Unified Manager identifies the storage component where the performance issue lies and provides a list of suggested actions you can take to address the performance issue.

Unified Manager includes the following features:

- Monitors and analyzes workload performance statistics from a system running ONTAP software.
- Tracks performance counters for clusters, nodes, aggregates, ports, SVMs, volumes, LUNs, NVMe namespaces, and network interfaces (LIFs).
- Displays detailed graphs that plot workload activity over time; including IOPS (operations), MB/s (throughput), latency (response time), utilization, performance capacity, and cache ratio.
- Enables you to create user-defined performance threshold policies that trigger events and send email alerts when the thresholds are breached.

- Uses system-defined thresholds and dynamic performance thresholds that learn about your workload activity to identify and alert you to performance issues.
- Identifies the quality of service (QoS) policies and Performance Service Level policies (PSLs) that are applied to your volumes and LUNs.
- Clearly identifies the cluster component that is in contention.
- Identifies workloads that are overusing cluster components and the workloads whose performance is impacted by the increased activity.

Use Active IQ Unified Manager interfaces to manage storage system performance

These sections contain information about the two user interfaces that Active IQ Unified Manager provides for troubleshooting data storage capacity, availability, and protection issues. The two UIs are the Unified Manager web UI and the maintenance console.

If you want to use the protection features in Unified Manager, you must also install and configure OnCommand Workflow Automation (WFA).

Unified Manager web UI

The Unified Manager web UI enables an administrator to monitor and troubleshoot cluster issues relating to data storage capacity, availability, and protection.

These sections describe some common workflows that an administrator can follow to troubleshoot storage capacity, data availability, or protection issues displayed in the Unified Manager web UI.

Maintenance console

The Unified Manager maintenance console enables an administrator to monitor, diagnose, and address operating system issues, version upgrade issues, user access issues, and network issues related to the Unified Manager server itself. If the Unified Manager web UI is unavailable, the maintenance console is the only form of access to Unified Manager.

You can use this information for accessing the maintenance console and using it to resolve issues related to the functioning of the Unified Manager server.

View cluster configuration and performance data in Active IQ Unified Manager

The collection interval for *cluster configuration data* is 15 minutes. For example, after you have added a cluster, it takes 15 minutes to display the cluster details in the Unified Manager UI. This interval applies when making changes to a cluster too.

For example, if you add two new volumes to an SVM in a cluster, you see those new objects in the UI after the next polling interval, which could be up to 15 minutes.

Unified Manager collects current *performance statistics* from all monitored clusters every five minutes. It analyzes this data to identify performance events and potential issues. It retains 30 days of five-minute historical performance data and 180 days of one-hour historical performance data. This enables you to view

very granular performance details for the current month, and general performance trends for up to a year.

The collection polls are offset by a few minutes so that data from every cluster is not sent at the same time, which could affect performance.

The following table describes the collection activities that Unified Manager performs:

Activity	Time interval	Description
Performance statistics poll	Every 5 minutes	Collects real-time performance data from each cluster.
Statistical analysis	Every 5 minutes	After every statistics poll, Unified Manager compares the collected data against user-defined, system-defined, and dynamic thresholds. If any performance thresholds have been breached, Unified Manager generates events and sends email to specified users, if configured to do so.
Configuration poll	Every 15 minutes	Collects detailed inventory information from each cluster to identify all the storage objects (nodes, SVMs, volumes, and so on).
Summarization	Every hour	Summarizes the latest 12 five-minute performance data collections into hourly averages. The hourly average values are used in some of the UI pages, and they are retained for 180 days.
Forecast analysis and data pruning	Every day after midnight	Analyzes cluster data to establish dynamic thresholds for volume latency and IOPS for the next 24 hours. Deletes from the database any five-minute performance data older than 30 days.
Data pruning	Every day after 2 a.m.	Deletes from the database any events older than 180 days and dynamic thresholds older than 180 days.
Data pruning	Every day after 3:30 a.m.	Deletes from the database any one-hour performance data older than 180 days.

Understand data continuity collection cycles in Active IQ Unified Manager

A data continuity collection cycle retrieves performance data outside of the real-time cluster performance collection cycle that runs, by default, every five minutes. Data continuity collections enable Unified Manager to fill in gaps of statistical data that occur when it was unable to collect real-time data.

Unified Manager performs data continuity collection polls of historical performance data when the following events occur:

- A cluster is initially added to Unified Manager.

  Unified Manager gathers historical performance data for the previous 15 days. This enables you to view two weeks of historical performance information for a cluster a few hours after it is added.

  Additionally, system-defined threshold events are reported for the previous period, if any exist.

- The current performance data collection cycle does not finish on time.

  If the real-time performance poll goes beyond the five-minute collection period, a data continuity collection cycle is initiated to gather that missing information. Without the data continuity collection, the next collection period is skipped.

- Unified Manager has been inaccessible for a period of time and then it comes back online, as in the following situations:
  - It was restarted.
  - It was shut down during a software upgrade or when creating a backup file.
  - A network outage is repaired.
- A cluster has been inaccessible for a period of time and then it comes back online, as in the following situations:
  - A network outage is repaired.
  - A slow wide area network connection delayed the normal collection of performance data.

A data continuity collection cycle can collect a maximum of 24 hours of historical data. If Unified Manager is down for longer than 24 hours, a gap in performance data appears in the UI pages.

A data continuity collection cycle and a real-time data collection cycle cannot run at the same time. The data continuity collection cycle must finish before the real-time performance data collection is initiated. When the data continuity collection is required to collect more than one hour of historical data, then you see a banner message for that cluster at the top of the Notifications pane.

Learn about timestamps in collected data and events in Active IQ Unified Manager

The timestamp that appears in collected health and performance data, or that appears as the detection time for an event, is based on the ONTAP cluster time, adjusted to the time zone set on the web browser.

It is highly recommended that you use a Network Time Protocol (NTP) server to synchronize the time on your Unified Manager servers, ONTAP clusters, and web browsers.

If you see timestamps that look incorrect for a particular cluster, you might want to check that the cluster time has been set correctly.

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