



# **Navigating performance workflows in the Unified Manager GUI**

Active IQ Unified Manager 9.9

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# Navigating performance workflows in the Unified Manager GUI

The Unified Manager interface provides many pages for the collection and display of performance information. You use the left navigation panel to navigate to pages in the GUI, and you use tabs and links on the pages to view and configure information.

You use all of the following pages to monitor and troubleshoot cluster performance information:

- dashboard page
- storage and network object inventory pages
- storage object details pages (including the performance explorer)
- configuration and setup pages
- events pages

## Logging in to the UI

You can log in to the Unified Manager UI using a supported web browser.

### Before you begin

- The web browser must meet minimum requirements.

See the Interoperability Matrix at [mysupport.netapp.com/matrix](https://mysupport.netapp.com/matrix) for the complete list of supported browser versions.

- You must have the IP address or URL of the Unified Manager server.

### About this task

You are automatically logged out of the session after 1 hour of inactivity. This timeframe can be configured under **General > Feature Settings**.

### Steps

1. Enter the URL in your web browser, where `URL` is the IP address or fully qualified domain name (FQDN) of the Unified Manager server:
  - For IPv4: `https://URL/`
  - For IPv6: `https://[URL]/` If the server uses a self-signed digital certificate, the browser might display a warning indicating that the certificate is not trusted. You can either acknowledge the risk to continue the access or install a Certificate Authority (CA) signed digital certificate for server authentication.
2. At the login screen, enter your user name and password.

If login to the Unified Manager user interface is protected using SAML authentication you will enter your credentials in the identity provider (IdP) login page instead of the Unified Manager login page.

The Dashboard page is displayed.



If the Unified Manager server is not initialized, a new browser window displays the first experience wizard. You must enter an initial email recipient to which email alerts will be sent, the SMTP server that will handle email communications, and whether AutoSupport is enabled to send information about your Unified Manager installation to technical support. The Unified Manager UI appears after you complete this information.

## Graphical interface and navigational paths

Unified Manager has great flexibility and enables you to accomplish multiple tasks in various ways. There are many navigation paths you will discover as you work in Unified Manager. While not all of the possible combinations of navigations can be shown, you should be familiar with a few of the more common scenarios.

### Monitor cluster object navigation

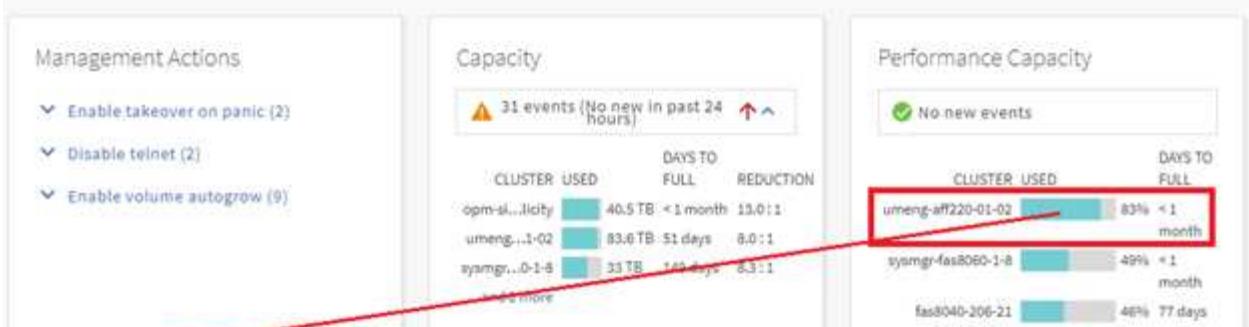
You can monitor the performance of all objects in any cluster managed by Unified Manager. Monitoring your storage objects provides you with an overview of cluster and object performance, and includes performance event monitoring. You can view performance and events at a high level, or you can further investigate any details of object performance and performance events.

This is one example of many possible cluster object navigations:

1. From the Dashboard page, review the details in the Performance Capacity panel to identify the cluster that is using the most performance capacity and click the bar chart to navigate to the list of nodes for that cluster.
2. Identify the node with the highest performance capacity used value and click that node.
3. From the Node / Performance Explorer page, click **Aggregates on this Node** from the View and Compare menu.
4. Identify the aggregate that is using the most performance capacity and click that aggregate.
5. From the Aggregate / Performance Explorer page, click **Volumes on this Aggregate** from the View and Compare menu.
6. Identify the volumes that are using the most IOPS.

You should investigate these volumes to see if you should apply a QoS policy or Performance Service Level policy, or change the policy settings, so that those volumes do not use such a large percentage of IOPS on the cluster.

## Dashboard



## Nodes

Last updated: Nov 15, 2019, 10:48 AM

VIEW: Nodes on umeng-aff220-01-02 | Search Nodes:  Filter

Assign Performance Threshold Policy | Clear Performance Threshold Policy | Scheduled Reports | Show / Hide

| <input type="checkbox"/> | Status                             | Node            | Latency    | IOPS        | MB/s     | Performance Capacity Used | Utilization | Fr  |
|--------------------------|------------------------------------|-----------------|------------|-------------|----------|---------------------------|-------------|-----|
| <input type="checkbox"/> | <span style="color: red;">×</span> | umeng-aff220-01 | 21.7 ms/op | 27,335 IOPS | 221 MB/s | 73%                       | 50%         | 3.1 |
| <input type="checkbox"/> | <span style="color: red;">×</span> | umeng-aff220-02 | 8.33 ms/op | 83.4 IOPS   | 102 MB/s | 53%                       | 42%         | 6.1 |

### Node / Performance : umeng-aff220-01

Summary    Explorer    Failover Planning    Information

Compare the performance of associated objects and display detailed charts (i)

VIEW AND COMPARE: Aggregates on this Node  Filter

Comparing 0 Additional Objects

umeng-aff220-01

| Aggregate  | Latency  | IOPS      | MB/s      | Perf... | Add > |
|------------|----------|-----------|-----------|---------|-------|
| NSLM12_002 | 12.4 ... | 47.51 ... | 5.6 M ... | 81%     | Add > |
| NSLM12_001 | 11.4 ... | 236 L ... | 4.33 ...  | 5%      | Add > |

### Aggregate / Performance : NSLM12\_002

Summary    Explorer    Information

Compare the performance of associated objects and display detailed charts (i)

VIEW AND COMPARE: Volumes on this Aggregate  Filter

Comparing 0 Additional Objects

NSLM12\_002

| Volume                  | Latency    | IOPS       | MB/s      | Add > |
|-------------------------|------------|------------|-----------|-------|
| suchita_vmware_d...     | 6.38 ms... | 76.8 IOPS  | 2.55 MB/s | Add > |
| suchita_vmware_d...     | 3.82 ms... | 4,775 IOPS | 18.7 MB/s | Add > |
| aiqum_scale_d..._nol... | 0.114 m... | < 1 IOPS   | < 1 MB/s  | Add > |

## Monitor cluster performance navigation

You can monitor the performance of all clusters managed by Unified Manager. Monitoring your clusters provides you with an overview of cluster and object performance and includes performance event monitoring. You can view performance and events at a high level, or you can further investigate any details of cluster and object performance and performance events.

This is one example of many possible cluster performance navigational paths:

1. In the left navigation pane, click **Storage > Aggregates**.
2. To view information about the performance in those aggregates, select the Performance: All Aggregates view.
3. Identify the aggregate you want to investigate and click that aggregate name to navigate to the Aggregate / Performance Explorer page.
4. Optionally, select other objects to compare with this aggregate in the View and Compare menu, and then add one of the objects to the comparing pane.

Statistics for both objects will appear in the counter charts for comparison.

5. In the Comparing pane at the right on the Explorer page, click **Zoom View** in one of the counter charts to view details about the performance history for that aggregate.

## Aggregates

Last updated: Nov 15, 2019, 1:18 PM

| view                                | Performance: All Aggregates | Search Aggregates | Filter                             | Actions    |           |                   |                           |             |
|-------------------------------------|-----------------------------|-------------------|------------------------------------|------------|-----------|-------------------|---------------------------|-------------|
| Assign Performance Threshold Policy |                             |                   | Clear Performance Threshold Policy |            |           | Scheduled Reports |                           | Show / Hide |
|                                     | Status                      | Aggregate         | Type                               | Latency    | IOPS      | MB/s              | Performance Capacity Used | Utilization |
|                                     | OK                          | aggr_evt          | SSD                                | 0.29 ms/op | 3.79 IOPS | <1 MB/s           | <1%                       | <1%         |
|                                     | OK                          | aggr4             | HDD                                | 5.74 ms/op | 14.4 IOPS | 1.31 MB/s         | 6%                        | 5%          |
|                                     | OK                          | aggr3             | HDD                                | 5.06 ms/op | 3.06 IOPS | <1 MB/s           | 6%                        | 5%          |
|                                     | OK                          | meg_aggr2         | HDD                                | 10.4 ms/op | 52.9 IOPS | 7.18 MB/s         | 3%                        | 2%          |

Aggregate / Performance : aggr4

Switch to Health View    Last updated: Nov 15, 2019, 1:20 PM

Summary      Explorer      Information

Compare the performance of associated objects and display detailed charts

TIME RANGE  Last 72 Hours

The screenshot shows the 'VIEW AND COMPARE' interface with the following details:

- VIEW AND COMPARE:** Aggregates on same Node
- Filter:** (dropdown menu)
- Aggregate Table:**

| Aggregate       | Late... | IOP...  | MB/s...  | Perf... |
|-----------------|---------|---------|----------|---------|
| aggr3           | 5.06... | 3.06... | < 1 M... | 6 %     |
| aggr_evt        | 0.29... | 3.79... | < 1 M... | < 1 %   |
| aggr_automation | 0.27... | 0.35... | < 1 M... | < 1 %   |

- Comparing:** 1 Additional Object
- Events for Aggregate: aggr4:** (No data to display)
- Latency - Total view (ms/op):** (Zoom View button highlighted with a red box)

Latency for Aggregate: aggr4

Last updated: Nov 15, 2019, 1:23 PM

### Event Timeline: aggregate

TIME RANGE  Last 72 Hours



## Event investigation navigation

The Unified Manager event detail pages provide you with an in-depth look at any performance event. This is beneficial when investigating performance events, when troubleshooting, and when fine-tuning system performance.

Depending on the type of performance event, you might see one of two types of event detail pages:

- Event details page for user-defined and system-defined threshold policy events
- Event details page for dynamic threshold policy events

This is one example of an event investigation navigation.

1. In the left navigation pane, click **Event Management**.
2. From the View menu, click **Active performance events**.
3. Click the name of the event that you want to investigate and the Event details page is displayed.
4. View the Description of the event and review the Suggested Actions (where available) to view more details about the event that may help you resolve the issue. You can click the **Analyze Workload** button to display detailed performance charts to help further analyze the issue.

## Event Management

Last updated: Nov 15, 2019, 11:23 AM

| Active performance events |          |             |            |                  |   |                               | Search Events: | Filter |
|---------------------------|----------|-------------|------------|------------------|---|-------------------------------|----------------|--------|
| Assign To:                |          | Acknowledge |            | Mark as Resolved |   | Add Alert                     | Show / Hide    |        |
| Triggered Time            | Severity | State       | Impact Lev | Impact Area      | Name  | Source                        | Source Ty      |        |
| Nov 14, 2019, 11:39 AM    | ⚠        | New         | Risk       | Performance      | QoS Volume Peak IOP... Threshold Breached     | vs7/julia_feb12_vols          | Volume         |        |
| Nov 14, 2019, 11:39 AM    | ⚠        | New         | Risk       | Performance      | QoS Volume Peak IOP... Threshold Breached     | vs7/julia_non_shared_3        | Volume         |        |
| Nov 15, 2019, 5:04 AM     | ⚠        | New         | Risk       | Performance      | QoS Volume Peak IOP... Threshold Breached     | suchita_vnwar...nt_delete_01  | Volume         |        |
| Nov 15, 2019, 10:39 AM    | ⚠        | New         | Risk       | Performance      | Workload LUN Latency ... Service Level Policy | iscsi_boot/is.../ocum-c220-01 | LUN            |        |
| Nov 15, 2019, 10:39 AM    | ⚠        | New         | Risk       | Performance      | Workload LUN Latency ... Service Level Policy | iscsi_boot/is.../ocum-c220-07 | LUN            |        |

### ⚠ Event: QoS Volume Peak IOPS/TB Warning Threshold Breached

(Last Seen: Nov 15, 2019, 11:19 AM)

IOPS value of 570 IOPS on policy group NSLM\_vs7\_Performance\_2\_0 has triggered a WARNING event to identify performance problems for the workloads in this policy group.



#### Suggested Actions to Fix The Issue

##### Troubleshoot

Analyze Workload

##### Take Action

This is an Adaptive QoS Policy that might be used by other workloads in the system.

If it is acceptable that changes you make to the QoS setting will be applied to other workloads that are using this policy,

- Increase the threshold to 4950 IOPS/TB for this Adaptive QoS Policy.

If you are satisfied with the current limitation on workload throughput,

- Leave the QoS configuration setting as it is.

#### Event Information

|                        |              |                            |
|------------------------|--------------|----------------------------|
| EVENT TRIGGER TIME     | SEVERITY     | SOURCE                     |
| Nov 14, 2019, 11:39 AM | Warning      | vs7/julia_non_shared_3     |
| STATE                  | IMPACT LEVEL | SOURCE TYPE                |
| New                    | Risk         | Volume                     |
| EVENT DURATION         | IMPACT AREA  | ON CLUSTER                 |
| 1 day 40 minutes       | Performance  | ocum-mobility-01-02        |
| LAST SEEN              |              | AFFECTED OBJECTS COUNT     |
| Nov 15, 2019, 11:19 AM |              | 1                          |
|                        |              | TRIGGERED POLICY           |
|                        |              | QoS Peak IOPS/TB threshold |

## Searching for storage objects

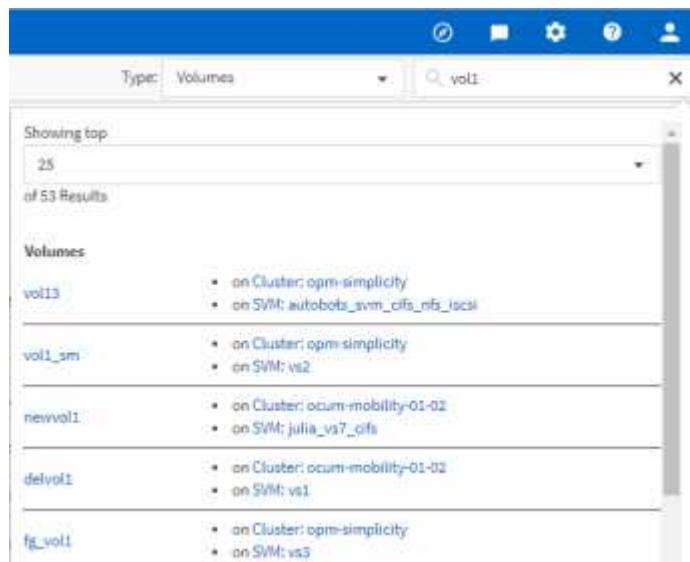
To quickly access a specific object, you can use the **Search all Storage Objects** field at the top of the menu bar. This method of global search across all objects enables you to quickly locate specific objects by type. Search results are sorted by storage object type and you can filter them using the drop-down menu. A valid search must contain at least three characters.

The global search displays the total number of results, but only the top 25 search results are accessible.

Because of this, the global search functionality can be thought of as a shortcut tool for finding specific items if you know the items you want to quickly locate. For complete search results, you can use the search in the object inventory pages and its associated filtering functionality.

You can click the drop-down box and select **All** to simultaneously search across all objects and events. Alternatively, you can click the drop-down box to specify the object type. Type a minimum of three characters of the object or event name into the **Search all Storage Objects** field, and then press **Enter** to display the search results, such as:

- Clusters: cluster names
- Nodes: node names
- Aggregates: aggregate names
- SVMs: SVM names
- Volumes: volume names
- LUNs: LUN paths



The screenshot shows the Unisphere interface with the search bar set to 'Type: Volumes' and the search term 'vol'. The results list shows 25 items out of 53 total, all labeled 'Volumes'. The results are as follows:

| Volume  | Location  |
|---------|---|
| vol13   | on Cluster: opm-simplicity<br>on SVM: autobobs_svm_cifs_nfs_local |
| vol1_sm | on Cluster: opm-simplicity<br>on SVM: vs2                         |
| newvol1 | on Cluster: ocam-mobility-01-02<br>on SVM: julia_vs7_cifs         |
| delvolt | on Cluster: ocam-mobility-01-02<br>on SVM: vs1                    |
| fg_volt | on Cluster: opm-simplicity<br>on SVM: vs3                         |



LIFs and ports are not searchable in the global search bar.

In this example, the drop-down box has the Volume object type selected. Typing “vol” into the **Search all Storage Objects** field displays a list of all volumes whose names contain these characters. For object searches, you can click any search result to navigate to that object’s Performance Explorer page. For event searches, clicking an item in the search result navigates to the Event Details page.

## Filtering inventory page content

You can filter inventory page data in Unified Manager to quickly locate data based on specific criteria. You can use filtering to narrow the contents of the Unified Manager pages to show only the results in which you are interested. This provides a very efficient method of displaying only the data in which you are interested.

## About this task

Use **Filtering** to customize the grid view based on your preferences. Available filter options are based on the object type being viewed in the grid. If filters are currently applied, the number of applied filters displays at the right of the Filter button.

Three types of filter parameters are supported.

| Parameter     | Validation  |
|---------------|---|
| String (text) | The operators are <b>contains</b> , <b>starts with</b> , <b>ends with</b> , and <b>does not contain</b> . |
| Number        | The operators are <b>greater than</b> , <b>less than</b> , <b>in the last</b> , and <b>between</b> .      |
| Enum (text)   | The operators are <b>is</b> and <b>is not</b> .   |

The Column, Operator, and Value fields are required for each filter; the available filters reflect the filterable columns on the current page. The maximum number of filters you can apply is four. Filtered results are based on combined filter parameters. Filtered results apply to all pages in your filtered search, not just the page currently displayed.

You can add filters using the Filtering panel.

1. At the top of the page, click the **Filter** button. The Filtering panel displays.
2. Click the left drop-down list and select an object; for example, *Cluster*, or a performance counter.
3. Click the center drop-down list, and select the operator you want to use.
4. In the last list, select or enter a value to complete the filter for that object.
5. To add another filter, click **+Add Filter**. An additional filter field displays. Complete this filter using the process described in the preceding steps. Note that upon adding your fourth filter, the **+Add Filter** button no longer displays.
6. Click **Apply Filter**. The filter options are applied to the grid and the number of filters is displayed to the right of the Filter button.
7. Use the Filtering panel to remove individual filters by clicking the trash icon at the right of the filter to be removed.
8. To remove all filters, click **Reset** at the bottom of the filtering panel.

## Filtering example

The illustration shows the Filtering panel with three filters. The **+Add Filter** button displays when you have fewer than the maximum of four filters.

|                     |                  |          |        |                     |
|---------------------|------------------|----------|--------|---------------------|
| MBps                | greater than     | 5        | MBps   |                     |
| Node                | name starts with | test     |        |                     |
| Type                | is               | FCP Port |        |                     |
| <b>+ Add Filter</b> |                  |          |        |                     |
|                     |                  |          | Cancel | <b>Apply Filter</b> |

After clicking **Apply Filter**, the Filtering panel closes, applies your filters, and shows the number of filters applied ( 3 ).

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