Monitor cluster performance with System Manager

ONTAP 9

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Monitor cluster performance using ONTAP System Manager

The topics in this section show you how to manage cluster health and performance with System Manager in ONTAP 9.7 and later releases.

About this task

This procedure applies to FAS, AFF, and ASA systems. If you have an ASA r2 system (ASA A1K, ASA A90, ASA A70, ASA A50, ASA A30, ASA A20, or ASA C30), follow these steps to monitor your cluster performance. ASA r2 systems provide a simplified ONTAP experience specific to SAN-only customers.

You can monitor cluster performance by viewing information about your system on the System Manager Dashboard. The Dashboard displays information about important alerts and notifications, the efficiency and capacity of storage tiers and volumes, the nodes that are available in a cluster, the status of the nodes in an HA pair, the most active applications and objects, and the performance metrics of a cluster or a node.

The Dashboard lets you determine the following information:

- **Health**: How healthy is the cluster?
- **Capacity**: What capacity is available on the cluster?
- **Performance**: How well is the cluster performing, based on latency, IOPS, and throughput?
- **Network**: How is the network configured with hosts and storage objects, such as ports, interfaces, and storage VMs?

In the Health and Capacity overviews, you can click → to view additional information and perform tasks.

In the Performance overview, you can view metrics based on the hour, the day, the week, the month, or the year.

In the Network overview, the number of each object in the network is displayed (for example, "8 NVMe/FC ports"). You can click on the numbers to view details about each network object.

Learn about view clusters on ONTAP System Manager dashboards

The System Manager dashboard offers a quick and comprehensive view of your ONTAP cluster from a single location.

Using the System Manager dashboard, you can view at-a-glance information about important alerts and notifications, the efficiency and capacity of storage tiers and volumes, the nodes that are available in a cluster, the status of the nodes in a high-availability (HA) pair, the most active applications and objects, and the performance metrics of a cluster or a node.

The dashboard includes four panels described as follows:

Health

The Health view displays information on the overall health of all discoverable nodes in your cluster.

The Health view also displays the errors and warnings at a cluster level, such as unconfigured node details, indicating the characteristics that can be modified to enhance cluster performance.

Click → to expand the Health view to obtain an overview of the cluster such as the name of the cluster, the version, the date and time of creation of the cluster, and more. You can also monitor the statistics related to the health of the nodes associated with a cluster. You can manage tags that let you group and identify resources in your environment. The Insights section helps you optimize the capacity, security compliance, and configuration of your system.

Capacity

The Capacity view displays the storage space of a cluster. You can view the total logical space used, total physical space used, and the available disk space.

You can choose to register with ActiveIQ to view historical cluster data.
Click → to expand the Capacity view to see an overview of the tiers associated with a cluster. You can view capacity information about each of the tiers: the total space, used space, and available space. Details are displayed for throughput, IOPS, and latency. Learn more about these capacity measurements in System Manager.

You can choose to add a local tier or a cloud tier using the Capacity view. For more information, refer to View the capacity of a cluster.

Network

The Network view displays the physical ports, network interfaces, and storage VMs that are part of the network.

The Network view displays the type of clients connected to the network. Each of these network-connected clients are represented by a number (for example "NVMe/FC 16"). Select the number to view specific details on each of these network elements.

Click → to see an expansive, full-page view of the network that encompasses ports, network interfaces, storage VMs, and hosts on the network.

Performance

The Performance view displays performance statistics to help to monitor the health and efficiency of your ONTAP cluster. The statistics include key cluster performance indicators such as latency, throughput, and IOPS, represented as graphs.

The Performance view displays performance statistics at different time intervals by day, hour, week, or year. You can quickly analyze cluster performance by using the various graphs and identify the characteristics that might require optimization. This quick analysis helps you decide how you might add or move workloads. You can also look at peak usage times to plan for potential changes.

The performance view displays the total performance metrics related to latency, throughput, and IOPS.

Beginning with 9.15.1, the performance view is enhanced to display graphs for read, write, other, and total performance metrics related to latency, throughput, and IOPS. Other metrics include any operations that aren’t

read or write.

The performance values refresh every 3 seconds and the performance graph refreshes every 15 seconds. A graph will not display if information about cluster performance is not available.

Click  to see a full-page view of the performance metrics by hour, day, week, month, and year. You can also download a report of the performance metrics in your local system.

Identify hot volumes and other objects in ONTAP System Manager

Accelerate your cluster performance by identifying the frequently accessed volumes (hot volumes) and data (hot objects).

Beginning with ONTAP 9.10.1, you can use the Activity Tracking feature in File System Analytics to monitor hot objects in a volume.

Steps

1. Click **Storage > Volumes**.
2. Filter the IOPS, latency, and throughput columns to view the frequently accessed volumes and data.

Modify QoS in ONTAP System Manager

Beginning with ONTAP 9.8, when you provision storage, Quality of Service (QoS) is enabled by default. You can disable QoS or choose a custom QoS policy during the provisioning process. You can also modify QoS after your storage has been provisioned.

Steps

1. In System Manager, select **Storage** then **Volumes**.
2. Next to the volume for which you want to modify QoS, select ⋮ then **Edit**.

Monitor risks in ONTAP System Manager

Beginning with ONTAP 9.10.0, you can use System Manager to monitor the risks reported by Active IQ Digital Advisor (also known as Digital Advisor). Beginning with ONTAP 9.10.1, you can use System Manager to also acknowledge the risks.

NetApp Digital Advisor reports opportunities to reduce risk and improve the performance and efficiency of your storage environment. With System Manager, you can learn about risks reported by Digital Advisor and receive actionable intelligence that helps you administer storage and achieve higher availability, improved security, and better storage performance.

Link to your Digital Advisor account

To receive information about risks from Digital Advisor, you should first link to your Digital Advisor account from System Manager.

Steps

1. In System Manager, click **Cluster > Settings**.
2. Under **Active IQ Registration**, click **Register**.
3. Enter your credentials for Digital Advisor.
4. After your credentials are authenticated, click **Confirm to link Active IQ with System Manager**.

View the number of risks

Beginning with ONTAP 9.10.0, you can view from the dashboard in System Manager the number of risks reported by Digital Advisor.

Before you begin

You must establish a connection from System Manager to your Digital Advisor account. Refer to Link to your Digital Advisor account.

Steps

1. In System Manager, click **Dashboard**.
2. In the **Health** section, view the number of reported risks.

> You can view more detailed information about each risk by clicking the message showing the number of risks. See View details of risks.

View details of risks

Beginning with ONTAP 9.10.0, you can view from System Manager how the risks reported by Digital Advisor are categorized by impact areas. You can also view detailed information about each reported risk, its potential impact on your system, and corrective actions you can take.

Before you begin

You must establish a connection from System Manager to your Digital Advisor account. Refer to Link to your Digital Advisor account.

Steps

1. Click **Events > All Events**.
2. In the **Overview** section, under **Active IQ Suggestions**, view the number of risks in each impact area category. The risk categories include:
    - Performance & efficiency
    - Availability & protection
    - Capacity
    - Configuration
    - Security
3. Click on the **Active IQ Suggestions** tab to view information about each risk, including the following:
    - Level of impact to your System
    - Category of the risk
    - Nodes that are affected
    - Type of mitigation needed

- Corrective actions you can take

Acknowledge risks

Beginning with ONTAP 9.10.1, you can use System Manager to acknowledge any of the open risks.

Steps

1. In System Manager, display the list of risks by performing the procedure in View details of risks.
2. Click on the risk name of an open risk that you want to acknowledge.
3. Enter information into the following fields:
   - Reminder (date)
   - Justification
   - Comments
4. Click **Acknowledge**.

> After you acknowledge a risk, it takes a few minutes for the change to be reflected in the list of Digital Advisor suggestions.

Unacknowledge risks

Beginning with ONTAP 9.10.1, you can use System Manager to unacknowledge any risk that was previously acknowledged.

Steps

1. In System Manager, display the list of risks by performing the procedure in View details of risks.
2. Click on the risk name of an acknowledged risk that you want to unacknowledge.
3. Enter information into the following fields:
   - Justification
   - Comments
4. Click **Unacknowledge**.

> After you unacknowledge a risk, it takes a few minutes for the change to be reflected in the list of Digital Advisor suggestions.

Optimize your system with ONTAP System Manager insights

With System Manager, you can view insights that help you optimize your system.

About this task

This procedure applies to FAS, AFF, and ASA systems. If you have an ASA r2 system (ASA A1K, ASA A90, ASA A70, ASA A50, ASA A30, ASA A20, or ASA C30), follow these steps to view insights that help you optimize your system. ASA r2 systems provide a simplified ONTAP experience specific to SAN-only customers.

Beginning with ONTAP 9.11.1, you can view insights in System Manager that help you optimize the capacity,

security compliance, and configuration of your system.

Blocking extensions might lead to unexpected results. Beginning with ONTAP 9.11.1, you can enable native FPolicy for storage VMs using System Manager. You might receive a System Manager Insight message recommending that you configure native FPolicy for a storage VM.

With FPolicy Native Mode, you can allow or disallow specific file extensions. System Manager recommends over 3000 disallowed file extensions that have been used in past ransomware attacks. Some of these extensions might be used by legitimate files in your environment and blocking them might lead to unexpected issues.

Therefore, it is strongly advised that you modify the list of extensions to meet the needs of your environment. Refer to How to remove a file extension from a native FPolicy configuration created by System Manager using System Manager to recreate the policy.

To learn more about native FPolicy, see Fpolicy configuration types.

Based on best practices, these insights are displayed on one page from which you can initiate immediate actions to optimize your system. For more information, see System Manager insights.

View optimization insights

Steps

1. In System Manager, click **Insights** in the left-hand navigation column.

   The **Insights** page shows groups of insights. Each group of insights might contain one or more insights. The following groups are displayed:

   - Needs your attention
   - Remediate risks
   - Optimize your storage

2. (Optional) Filter the insights that are displayed by clicking these buttons in the upper-right corner of the page:

   -  Displays the security-related insights.
   -  Displays the capacity-related insights.
   -  Displays the configuration-related insights.
   -  Displays all of the insights.

Respond to insights to optimize your system

In System Manager, you can respond to insights by either dismissing them, exploring different ways to remediate the problems, or initiating the process to fix the problems.

Steps

1. In System Manager, click **Insights** in the left-hand navigation column.

2. Hover over an insight to reveal the buttons to perform the following actions:
   - **Dismiss**: Remove the insight from the view. To undismiss the insight, refer to Customize the settings for insights.
   - **Explore**: Find out various ways to remediate the problem mentioned in the insight. This button appears only if there is more than one method of remediation.
   - **Fix**: Initiate the process of remediating the problem mentioned in the insight. You will be asked to confirm whether you want to take the action needed to apply the fix.

> Some of these actions can be initiated from other pages in System Manager, but the **Insights** page helps you streamline your day-to-day tasks by allowing you to initiate these action from this one page.

Customize the settings for insights

You can customize which insights you will be notified about in System Manager.

Steps

1. In System Manager, click **Insights** in the left-hand navigation column.
2. In the upper-right corner of the page, click ⋮, then select **Settings**.
3. On the **Settings** page, ensure there is a check in the check boxes next to the insights you want to be notified about. If you previously dismissed an insight, you can undismiss it by ensuring a check is in its check box.
4. Click **Save**.

Export the insights as a PDF file

You can export all applicable insights as a PDF file.

Steps

1. In System Manager, click **Insights** in the left-hand navigation column.
2. In the upper-right corner of the page, click ⋮, then select **Export**.

Configure native FPolicies in ONTAP System Manager

Beginning with ONTAP 9.11.1, when you receive a System Manager Insight that suggests implementing native FPolicy, you can configure it on your storage VMs and volumes.

Before you begin

When you access System Manager Insights, under **Apply best practices**, you might receive a message saying that native FPolicy is not configured.

To learn more about FPolicy configuration types, refer to FPolicy configuration types.

Steps

1. In System Manager, click **Insights** in the left-hand navigation column.
2. Under **Apply best practices**, locate **Native FPolicy is not configured**.
3. Read the following message before taking action:

Blocking extensions might lead to unexpected results. Beginning with ONTAP 9.11.1, you can enable native FPolicy for storage VMs using System Manager.
With FPolicy Native Mode, you can allow or disallow specific file extensions. System Manager recommends over 3000 disallowed file extensions that have been used in past ransomware attacks. Some of these extensions might be used by legitimate files in your environment and blocking them might lead to unexpected issues.

Therefore, it is strongly advised that you modify the list of extensions to meet the needs of your environment. Refer to How to remove a file extension from a native FPolicy configuration created by System Manager using System Manager to recreate the policy.

4. Click **Fix**.
5. Select the storage VMs to which you want to apply the native FPolicy.
6. For each storage VM, select the volumes that will receive the native FPolicy.
7. Click **Configure**.

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