

Dell EMC PowerStore

Monitoring Your System

Version 2.x

Notes, cautions, and warnings

 **NOTE:** A NOTE indicates important information that helps you make better use of your product.

 **CAUTION:** A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

 **WARNING:** A WARNING indicates a potential for property damage, personal injury, or death.

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As part of an improvement effort, revisions of the software and hardware are periodically released. Some functions that are described in this document are not supported by all versions of the software or hardware currently in use. The product release notes provide the most up-to-date information about product features. Contact your service provider if a product does not function properly or does not function as described in this document.

Where to get help

Support, product, and licensing information can be obtained as follows:

- **Product information**

For product and feature documentation or release notes, go to the PowerStore Documentation page at <https://www.dell.com/powerstoredocs>.

- **Troubleshooting**

For information about products, software updates, licensing, and service, go to <https://www.dell.com/support> and locate the appropriate product support page.

- **Technical support**

For technical support and service requests, go to <https://www.dell.com/support> and locate the **Service Requests** page. To open a service request, you must have a valid support agreement. Contact your Sales Representative for details about obtaining a valid support agreement or to answer any questions about your account.

Monitoring Your System Overview

This chapter includes:

Topics:

- [Overview](#)

Overview

This document describes the functionality available in the PowerStore Manager to monitor, and optimize various PowerStore appliances.

Monitoring features

PowerStore Manager provides the following features and functionality to monitor your system:

- Events to notify when there are changes in the system.
- Alerts to inform you that an event occurred that requires your attention.
- Capacity charts display current capacity usage of a PowerStore cluster and resources.
- Performance charts indicate the system health so you can anticipate problems before they occur.

Optimizing features and functionality

As you monitor the system, alert notifications provide a mechanism to respond to the issue and reduce troubleshooting times.

Understanding how the system capacity is being used can:

- Alert you to the resources that are the top consumers of storage space.
- Help you to balance the load across your available storage.
- Indicate when you may need to add more storage to your cluster.

Finally, should an event occur that requires further troubleshooting, PowerStore has a mechanism for collecting support materials which helps analyze and resolve the issue.

Managing Alerts

This chapter includes:

Topics:

- [Events and alerts](#)
- [Monitor alerts](#)
- [Configure email notification preferences](#)
- [Temporarily disable alert notifications](#)
- [Configure SNMP](#)
- [Critical Information Banner](#)
- [System Checks](#)
- [Remote logging](#)

Events and alerts

Events provide information about changes to the system. Alerts are events that require attention. Most alerts indicate that there is a problem with the system. The system displays ongoing alerts in the dashboard on the **Alerts** card. You can also view and monitor alerts for individual objects in a cluster such as an appliance, storage resource, or virtual machine, from the **Alerts** card on the details page of the object.

To review events that do not rise to the level of an alert, go to **Monitoring > Events**.

The following attributes apply to events and alerts:

Table 1. Events and alerts attributes

Attribute	Applies to	Explanation
Severity	Events and alerts	Indicates the urgency of alert and the recommended user action: <ul style="list-style-type: none"> • Critical: An error has occurred that has a significant impact on the system and must be remedied immediately. For example, a component is missing or has failed and recovery may not be possible. • Major: An error has occurred that may have an impact on the system and should be remedied as soon as possible. For example, the last synchronization time for a resource does not match the time that its protection policy indicates. • Minor: An error has occurred that you should be aware of but does not have a significant impact on the system. For example, a component is working, but its performance may not be optimum. • Info: An event has occurred that does not impact system functions. No action is required. For example, new software is available for download.
Type	Events	Type of object for which the event occurred.
Name	Events and alerts	Name of object for which the event or alert occurred.
Description	Events and alerts	Summary of the event or alert.
Last Updated	Alerts	Date and time when the status of the alert changed.
Active	Alerts	How long the condition has existed.
Timestamp	Events	Date and time when the event occurred.

Clicking the description of an alert reveals additional information about the alert.

Table 2. Additional alert attributes

Attribute	Applies to	Explanation
Error Code	Alerts	Error code associated with the alert. Use this code to find troubleshooting information.
Respond	Alerts	Mark an alert acknowledged or unacknowledged. Acknowledged alerts are not displayed by default.
Repair Flow	Alerts	Recommended steps to resolve the situation. Some actions can be performed directly from the alert window.
Notifications	Alerts	Whether the alert triggered an email notification.
Service and Support	Alerts	Links to support and troubleshooting resources.
Associated Events	Alerts	Events that are related to the alert.

When you view events and alerts, you can filter by date and time of occurrence, object type, and description. You can also export alerts to a `.csv` file, and acknowledge that you have seen an alert.

Cleared alerts

When an alert is no longer relevant or is resolved, the system clears the alert with no user intervention. Cleared alerts are hidden from the default view, but can be viewed by selecting **Include cleared alerts** on the **Alerts** card.

Acknowledged alerts

When a user acknowledges an alert, it is removed from the count of unseen or new alerts. Acknowledging an alert does not indicate that the issue is resolved. Acknowledged alerts are hidden from the default view, but can be viewed by selecting **Include acknowledged alerts** on the **Alerts** card.

Monitor alerts

PowerStore Manager provides alert views at multiple levels, from the overall cluster to individual objects.

About this task

The alerts page is automatically refreshed every 30 seconds.

Steps

1. Find the alert view that you are interested in.
 - To view alerts at the cluster level, select **View All** on the **Alerts** card in the dashboard or select **Notifications > Alerts** from any screen.
 - To view alerts for an individual object, such as a volume, select the alert icon in the table row corresponding to the object in the table view for that object type.
2. From the alerts page, you can:
 - Show or hide acknowledged and cleared alerts.
 - Filter the alert list by any combination of severity, type, name, or description.
 - Choose the columns to be displayed in the table.
 - Export the alerts to a `.csv` file.
 - Refresh the table.
3. Click the description of an alert to see more information, including its impact on the system, timeline, suggested remediation, and other associated events.
4. Click **Acknowledge** to indicate that you have seen the alert. When you acknowledge an alert, the system removes the alert from the alert list unless **Show acknowledged alerts** is selected.

Configure email notification preferences

You can configure your system to send alert notifications through email using an SMTP server.

About this task

Use this procedure to configure an SMTP server and email recipients.


Steps

1. Select the **Settings** icon, and then select **SMTP Server** in the **Networking** section.
2. To access the SMTP server settings, change the status to **Enabled**.
3. Add the SMTP server address and the email address that notifications should be sent from and click **Apply**.
(Optional) Send a test email to verify that the SMTP server is set up correctly.
4. Select the **Settings** icon, and then select **Email Notifications** in the **Users** section.
5. To add email recipients, click **Add** in the **Email Subscribers** area and type the email address that you want to send alert notifications to.
When you add an address, you can select the severity level of the alert notifications that are sent to that address.
(Optional) To verify whether email addresses are entered correctly, select the target email addresses and then click **Send Test Email**.

Temporarily disable alert notifications

You might want to disable alert notifications during specific procedures, for example, during a software upgrade or a support procedure.


Steps

1. On the **Settings** page, select **Disable Support Notifications** in the **Support** section.
2. Select the appliance for which you want to suspend notifications and click **Modify**.
3. In the **Modify Maintenance Mode** slide-out panel, select the **Enable Maintenance Mode** option.
4. Specify how many hours to suspend notifications (up to 48 hours).
 **NOTE:** After the specified suspension period expires, alert notifications are automatically resumed.
5. Click **Apply**.
You can confirm the end time for maintenance mode in the table.


Configure SNMP

About this task

You can configure your system to send alert information to up to 10 designated SNMP Managers (trap destinations).

 **NOTE:** Only notifications are supported.

The authoritative **Local Engine ID** used for SNMPv3 messages is given as a hexadecimal string. It is discovered and added automatically.

 **NOTE:** To verify the **Local Engine ID** select **Settings**, and under **Networking**, select **SNMP**. The **Local Engine ID** appears under **Details**.

Using PowerStore Manager, do the following:

Steps

1. Select **Settings** and, under **Networking**, select **SNMP**.
The **SNMP** card appears.

2. To add an SNMP Manager, click **Add** under **SNMP Managers**. The **Add SNMP Manager** slide out appears.
3. Depending on the version of SNMP, configure the following information for the SNMP Manager:
 - For SNMPv2c:
 - Network Name or IP address
 - Port
 - Minimal Severity Level of Alerts
 - Version
 - Trap Community String
 - For SNMPv3
 - Network Name or IP address
 - Port
 - Minimal Severity Level of Alerts
 - Version
 - Security Level
 - **NOTE:** Depending on the security level selected, additional fields appear.
 - For the level **None**, only **Username** appears.
 - For the level **Authentication only**, **Password** and **Authentication Protocol** appear along with **Username**.
 - For the level **Authentication and privacy**, **Password**, **Authentication Protocol**, and **Privacy Protocol** appear along with **Username**.
 - Username
 - **NOTE:** When the Security Level of **None** is selected, the username must be NULL. When a Security Level of **Authentication only** or **Authentication and privacy** is selected, the username is the Security Name of the SNMPv3 user sending the message. The SNMP username can contain up to 32 characters in length and include any combination of alphanumeric characters (uppercase letters, lowercase letters, and numbers).
 - Password
 - **NOTE:** When a Security Level of either **Authentication only** or **Authentication and privacy** is selected, the system determines the password.
 - Authentication Protocol
 - **NOTE:** When a Security Level of either **Authentication only** or **Authentication and privacy** is selected, select either **MD5** or **SHA256**.
 - Privacy Protocol
 - **NOTE:** When a Security Level of **Authentication and privacy** is selected, select either **AES256** or **TDES**.
4. Click **Add**.
5. (Optional) To verify whether SNMP Manager destinations can be reached and the correct information is received, click **Sent Test SNMP Trap**.

Critical Information Banner

A banner displays critical information for system users.

The information banner, which is displayed at the top of PowerStore Manager, displays information about global alerts to all users logged into the system.

When only a single global alert is issued, the banner displays the alert's description. When there are multiple alerts, the banner indicates the number of active global alerts.

The color of the banner matches the alert with the highest severity level as follows:

- Information alerts - blue (information) banner
- Minor/Major alerts - yellow (warning) banner
- Critical alerts - Red (error) banner

The banner disappears when the alerts are cleared by the system.

System Checks

The **System Checks** page enables you to initiate health checks on the overall system, independent of the system-issued alerts.

About this task

You can launch a system check prior to actions such as upgrade, to be able to intercept and resolve any issues prior to upgrading the system.

The System Check table displays the following information:

Table 3. System check information

Name	Description
Item	The health check item
Description	The description of the health check result
Status	The health check result (Passed/failed)
Category	The health check category (Configured Resource/Hardware/Software Services)
Appliance	The appliance for which the health check item was performed
Node	The node for which the health check item was performed

You can add and remove filters to narrow the displayed results according to your needs.

Steps

1. Select the **System Checks** tab.
2. Click **Run System Check**.

Results

The system check results are listed in the table. Clicking a failed item reveals additional information about the check results.

Remote logging

The storage system supports sending audit log messages to a maximum of two hosts. The hosts must be accessible from the storage system. Audit log message transfers can use a one-way authentication (Server CA Certificates) or an optional two-way authentication (Mutual Authentication Certificate). An imported certificate applies to each remote syslog server that is configured to use TLS Encryption.

To review or updated remote logging settings, log into PowerStore and click **Settings**. In the **Setting** side bar, under **Security**, select **Remote Logging**.

For more information on remote logging, refer to *PowerStore Security Configuration Guide*.

Monitoring Capacity

This chapter includes:

Topics:

- [About monitoring system capacity](#)
- [Capacity data collection and retention periods](#)
- [Capacity forecasting and recommendations](#)
- [Capacity data locations in PowerStore Manager](#)
- [Start monitoring capacity usage](#)
- [Data Savings features](#)


About monitoring system capacity

PowerStore provides various current usage, and historical metrics. The metrics can help you monitor the amount of space that is used by your system resources, and determine your future storage needs.

Capacity data can be viewed from the PowerStore CLI, REST API, and PowerStore Manager. This document describes how to view this information from PowerStore Manager. Refer to the PowerStore Online Help for specific capacity metric definitions and calculations.

Monitoring current usage capacity

You can use the PowerStore Manager, REST API, or CLI to monitor the current capacity usage for a cluster, and for individual storage resources such as storage containers, volumes, file systems, and appliances. Also, with a PowerStore X model implementation, you can view the capacity usage of a virtual machine and a virtual volume.

 **NOTE:** Monitoring capacity metrics is enabled when an appliance is in Out Of Space (OOS) mode. This way it is possible to monitor the amount of space freed as a result of deleting unused snapshots and storage resources.

Monitoring historical usage and forecasting

PowerStore capacity trending and predictive metrics are also collected for forecasting future storage needs of a cluster or appliance. Also, the trending and predictive metrics can be shared with the Dell EMC Support Center when PowerStore is configured with Support Assist. These metrics provide intelligent insight on how capacity is being used and help to predict future capacity needs.

Capacity data collection and retention periods

Collection of capacity metrics is always enabled.

Current capacity data collection and retention periods

Capacity data for system resources is collected at 5 minute intervals and rolled up to 1 hour and 1-day aggregates.

The capacity charts refresh interval is set according to the selected granularity level as follows:

Table 4. Capacity charts refresh intervals

Granularity Level	Refresh Interval
Last 24 hours	5 minutes
Last month	1 hour
Last 2 years	1 day

The following table displays the retention periods for each timescale and the resources to which they apply:

Table 5. Real-time capacity data retention periods

Timescale	Retention period	Resources
5 minutes	1 day	Cluster, appliances, volume groups, volumes, VVols, and virtual machines
1 hour	30 days	Cluster, appliances, volume groups, volumes, VVols, and virtual machines
1 day	2 years	Cluster, appliances, volume groups, volumes, VVols, and virtual machines

Historical capacity data collection and retention periods

Historical capacity is displayed once data collection begins. One year of capacity usage data is displayed in the charts, and the data is retained for up to 2 years. Historical charts scroll automatically to the left when new data is available.

Capacity forecasting and recommendations

PowerStore uses historical capacity metrics to forecast when your appliance or cluster may run out of storage space, and to provide recommendations on how to free up the system resources.

Capacity forecasting

There are three threshold levels used to forecast system capacity alerts. Thresholds are set by default and cannot be changed.

Table 6. Capacity alert thresholds

Priority	Threshold
Major	1 to 14 days until the appliance or cluster is full.
Minor	15 to 28 days until the appliance or cluster is full.
Okay	4+ weeks until the appliance or cluster is full.

Alerts appear in the appliance or cluster charts, and also in the **Notifications > Alerts** page.

Forecasting starts after 15 days of data has been collected for the cluster or appliance. Prior to 15 days an "Insufficient data to predict time to full," message appears in the Physical Capacity area next to the chart. Forecasting includes data for up to one year, with a two year retention period.

You can look at the capacity chart to get a graphic visualization of capacity forecast for the cluster. To open the capacity chart, go to the **Dashboard** window and select the **Capacity** tab.

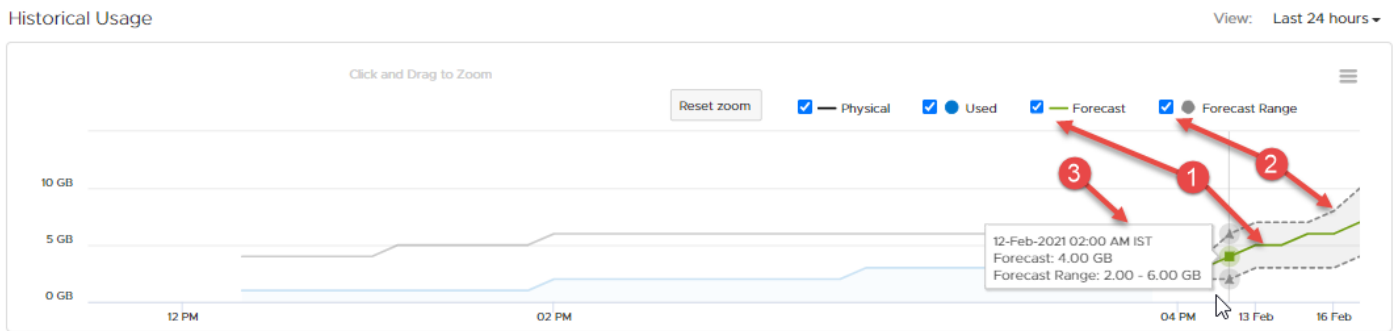


Figure 1. Cluster capacity chart - forecasting

1. Selecting the **Forecast** option, you can see the mean predicted physical usage (for the next 7days).
2. Selecting the **Forecast Range** option, you can see the range of low-to-high predicted physical usage (for the next 7days).
3. Hovering the mouse over the forecast section of the capacity chart, you can see the values for mean predicted usage and range of predicted usage.

Capacity recommendations

PowerStore also provides a recommended repair flow. The repair flow provides options to free up space on the cluster or appliance. The **Repair Flow** options are provided in the **Alerts** panel and include the following:

Table 7. Capacity recommendations

Option	Description
Assisted Migration	<p>Provides recommendations of volumes, or volume groups to migrate from one appliance to another. Migration recommendations are generated based on factors such as appliance capacity, and health. You can also choose to manually migrate volumes, or volume groups, based on your own calculations, when your cluster or appliance is approaching capacity.</p> <p>Migration is not supported for Virtual Volumes (vVols), or file systems.</p> <p>Migration is supported within a single cluster with multiple appliances.</p> <p>Migration recommendations are provided in the PowerStore Manager after a Major threshold is met. However, you can use the PowerStore Management REST API to review migration recommendations at anytime.</p>
Clean Up System	Delete system resources that are no longer being used.
Add More Devices	Purchase additional storage for your appliance.

Recommendations expire in 24 hours to ensure that the recommendation is always current.

Capacity data locations in PowerStore Manager

You can view capacity charts for PowerStore systems, and system resources from the PowerStore Manager **Capacity** cards and views in the following locations:

Table 8. Capacity data locations

For	Access path
Cluster	Dashboard > Capacity
Virtual Machine	<p>Compute > Virtual Machine > [virtual machine] opens with capacity for the virtual machine displayed.</p> <p>NOTE: Only available with PowerStore X model appliances.</p>

Table 8. Capacity data locations (continued)

For	Access path
Virtual Volume (VVol)	Compute > Virtual Machine > [virtual machine] > VVols > [VVol] opens with capacity for the virtual volume displayed. <i>i</i> NOTE: Only available with PowerStore X model appliances.
Volume	Storage > Volumes > [volume] opens with the Capacity card displayed.
Storage Container	Storage > Storage Containers > [storage container] opens with capacity for the storage container displayed.
Volume Group	Storage > Volume Groups > [volume group] opens with the Capacity card displayed.
Volume Group member (volume)	Storage > Volume Groups > [volume group] > Members > [member] opens the details page for the volume, with the Capacity card displayed.
File System	Storage > File Systems > [file system] opens with the Capacity card displayed. <i>i</i> NOTE: Only available with PowerStore T model appliances.
Appliance	Hardware > [appliance] opens with the Capacity card displayed.

Start monitoring capacity usage

You can start to evaluate your capacity usage and needs from the PowerStore Manager **Dashboard > Capacity** card.

Current capacity usage

The cluster capacity dashboard presents the current amount of storage being used, and the amount of available storage in the cluster. When there is a risk to the capacity usage of a cluster, alerts are also in the **Capacity** area of the capacity dashboard.

Historical capacity usage and recommendations

You can use the historical chart to evaluate space utilization trends for the cluster, and review recommendations for your future capacity storage requirements. You can view the historical data for the last 24 hours, month, or year. Also, print charts for presentation, or export the data into a .CSV format for further analysis using your tool of choice.

Top consumers

The cluster capacity dashboard also presents which of the cluster resources are the top capacity consumers in the cluster. The **Top Consumer** area provides a high-level summary of the capacity statistics for each resource. Once you have identified the top consumers, you can further analyze to the resource level to review the capacity of a specific Volume, Volume group, Virtual Machine, or File system.

Data savings

Finally, the capacity dashboard shows you the Data Savings as a result of automated data efficiency features such as deduplication, compression, and thin provisioning. Refer to [Data Savings features](#) for details.

Data Savings features

Data savings metrics are based on the automated inline data services that are provided with the PowerStore.

The automated inline data services occur in the system before the data is written to the storage drives. The automated inline data services include:

- [Data reduction](#), which consists of deduplication and compression.
- [Thin provisioning](#), which enables multiple storage resources to subscribe to a common storage capacity.

The drive usage that is saved by these data services results in cost savings and consistent, predictable high performance, regardless of workload.

Data reduction

The system achieves data reduction by using the following techniques:

- Data deduplication
- Data compression

There is no performance impact from the use of data deduplication or compression.

Data deduplication

Deduplication is the process of consolidating redundancies that are contained within data to reduce storage overhead. With deduplication, only one copy of data is stored on drives. Duplicates are replaced with a reference that points back to the original copy. Deduplication is always enabled and cannot be disabled. Deduplication occurs before the data is written to storage drives.

Deduplication provides the following benefits:

- Enables high capacity growth without requiring a drastic increase in space, power, or cooling.
- Improves drive endurance, because there are fewer writes to the drives.
- Improves performance, because the system reads the deduplicated data from the cache instead of from the drives.

Compression

Compression is the process of reducing the number of bits needed to store and transmit data. Compression is always enabled, and cannot be disabled. Compression occurs before data it is written to storage drives.

Inline compression provides the following benefits:

- Saves storage capacity by storing data blocks efficiently.
- Improves drive endurance, because there are fewer writes to the drives.

There is no performance impact from compression.

Reporting the capacity savings

The system reports the capacity savings that is gained from data reduction using the Unique Data metric. The Unique Data metric is calculated for a volume and its associated clones and snapshots.

Thin provisioning

Storage provisioning is the process of allocating available drive capacity to meet the capacity, performance, and availability requirements of hosts and applications. In PowerStore, volumes and file systems are thin provisioned to optimize the use of available storage.

Thin provisioning works as follows:

- When you create a volume or file system, the system allocates an initial quantity of storage to the storage resource. This provisioned size represents the maximum capacity to which the storage resource can grow without being increased. The system reserves only a portion of the requested size, called the initial allocation. The requested size of the storage resource is called the subscribed quantity.
- The system will only allocate physical space when data is written. A storage resource appears full when data written to the storage resource reaches the provisioned size of the storage resource. Since provisioned space is not physically allocated multiple storage resources could subscribe to the common storage capacity.

Thin provisioning allows multiple storage resources to subscribe to a common storage capacity. Therefore, it allows organizations to purchase less storage capacity up front, and increase available drive capacity on an on-demand basis, according

to actual storage usage. While the system allocates only a portion of the physical capacity requested by each storage resource, it leaves the remaining storage available for other storage resources to use.

The system reports the capacity savings gained from thin provisioning using the Thin Savings metric, which is calculated for volume families and file systems. A volume family consists of a volume and its associated thin clones and snapshots.

Thin provisioning is always enabled.

Monitoring Performance

This chapter includes:

Topics:

- [About monitoring system performance](#)
- [Performance data collection and retention periods](#)
- [Performance data locations in PowerStore Manager](#)
- [Performance policies](#)
- [Working with performance charts](#)

About monitoring system performance

PowerStore provides you with various metrics that can help you monitor the health of your system, anticipate problems before they occur, and reduce troubleshooting times.

You can use the PowerStore Manager, REST API, or CLI to monitor the performance of a cluster, and for individual storage resources such as volumes, file systems, volume groups, appliances, and ports. Also, with a PowerStore X model implementation, you can view compute performance of a virtual machine, and the storage performance for a virtual machine, and virtual volume.

You can print performance charts and download metrics data as a PNG, PDF, JPEG, or .csv file for further analysis. For example, you can graph downloaded CSV data using Microsoft Excel, and then view the data from an offline location or pass the data through a script.

Performance data collection and retention periods

Collection of performance data is always enabled in the PowerStore.

All system performance data is collected every 20 seconds and then rolled up to 5 minute, 1 hour, and 1 day aggregates. The data is retained as follows:

- 20 second data is retained for 1 hour.
- 5 minute data is retained for 1 day.
- 1-hour data is retained for 30 days.
- 1 day data is retained for 2 years.

The performance charts refresh interval is set according to the selected granularity level as follows:

Table 9. Performance charts refresh intervals

Granularity Level	Refresh Interval
Last 24 hours	5 minutes
Last month	1 hour
Last 2 years	1 day



Performance data locations in PowerStore Manager

You can view performance charts for PowerStore systems, and system resources from the PowerStore Manager **Performance** card, views, and details as follows:

Performance data is available from the PowerStore CLI, REST API, and PowerStore Manager user interface. This document describes how to access performance data and charts from PowerStore Manager.

Refer to the PowerStore Online Help for specific performance metric definitions and calculations.

Table 10. Performance data locations

For	Access path
Cluster	Dashboard > Performance
Virtual Machine	<ul style="list-style-type: none"> • Compute > Virtual Machine > [virtual machine] opens with the Compute Performance card that is displayed for the virtual machine. • Compute > Virtual Machine > [virtual machine] > Storage Performance <p> NOTE: Only available with PowerStore X model appliances.</p>
Virtual Volume (vVol)	Storage > Virtual Volumes > [virtual volume] > Performance
Volume	Storage > Volumes > [volume] > Performance
Volume Group	Storage > Volume Groups > [volume group] > Performance
Volume Group member (volume)	Storage > Volume Groups > [volume group] > Members > [member] > Performance
File System	<p>Storage > File Systems > [file system] > Performance</p> <p> NOTE: Only available with PowerStore T model appliances.</p>
Appliance	Hardware > [appliance] > Performance
Node	Hardware > [appliance] > Performance
Ports	<ul style="list-style-type: none"> • Hardware > [appliance] > Ports > [port] > IO Performance • Hardware > [appliance] > Ports > [port] > Network Performance opens the Network Performance card that is displayed for the port

Performance policies

You can choose to change the performance policy set on a volume, or a virtual volume (vVol).

The performance policies are provided with PowerStore. You cannot create or customize performance policies.

By default volumes, and vVols are created with a medium performance policy. The performance policies are relative to the performance of the volumes. For example, if you set a High-performance policy on a volume, the usage of the volume will take priority over volumes set with a medium, or low policy.

You can change the performance policy from medium to low or high, when a volume is created or after the volume has been created.

Members of a volume group can be assigned different performance policies. You can set the same performance policy for multiple volumes in a volume group simultaneously.

To change a performance policy set on a volume:

1. Go to the details view of the volume.
 - For a volume, select **Storage > Volumes > [volume] > Performance**.
 - For a vVol, select **Compute > Virtual Machines > [virtual machine] > Virtual Volumes > [virtual volume] > Performance**.
2. Select **Performance Policy**.
3. Select a performance policy, and select **Apply**.

To change the performance policy set on multiple members of a volume group:

1. Select **Storage > Volume Groups > [volume group] > Members**.

2. Select the volumes on which you are changing the policy.
- NOTE:** You can only set the same policy on the selected volumes.
3. Select **More Actions > Change Performance Policy**.
 4. Select a performance policy, and select **Apply**.

Working with performance charts

You can work with the performance charts to customize the display. Print performance charts, or export the performance data to display in an alternative application.

A performance summary for the current time period is always displayed at the top of the Performance card.

Performance charts are displayed differently for the cluster and the cluster resources.

Working with the performance chart for a cluster

After you have selected the Performance card, you can:

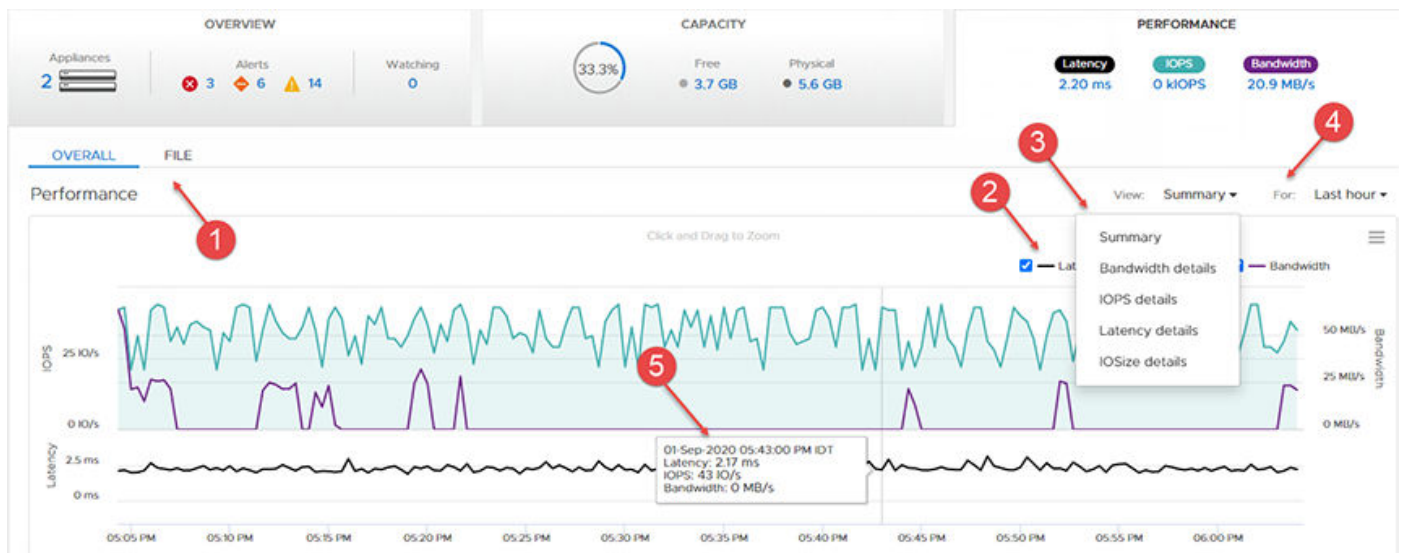


Figure 2. Cluster performance chart

1. Pick whether to view the Overall or File level performance of a cluster.
2. Select or clear the metrics to display in the chart.
3. Pick which type of chart to display from the **View** menu. You can choose whether to present the performance summary in the chart, or select to display the details of a specific metric in the chart.
4. Select the time range to display by changing the retention period selected in the **For:** menu.
5. View the performance alerts that were experienced during the selected time period. If displayed, you can hover over an alert icon to see further details about the alert.

NOTE: Select a section of the chart using your mouse to zoom in on the chart.

Working with performance charts for cluster resources

Performance charts are displayed for virtual volumes (vVols), volumes, volume groups, file systems, appliances, and nodes.

The following options are available for viewing the performance metrics for appliances and nodes:

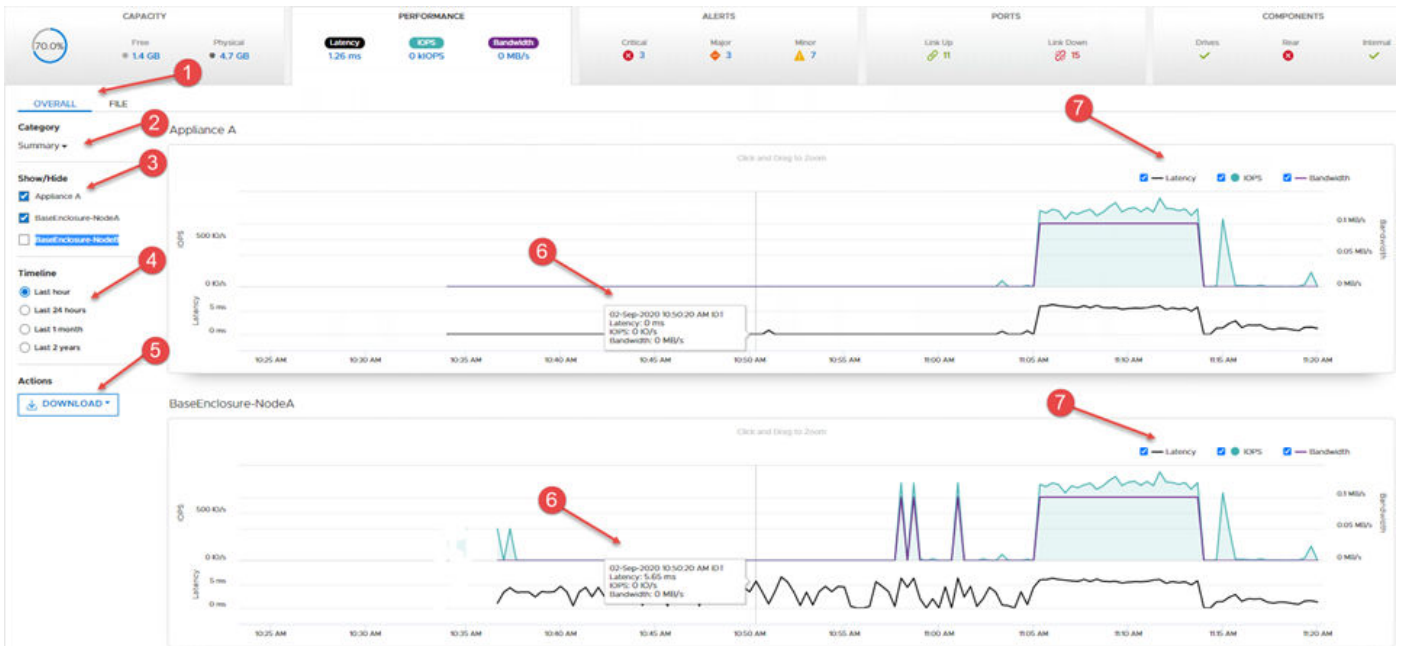


Figure 3. Appliance/node performance chart

1. Select whether to view the **Overall** or **File** level performance of a cluster.
2. Select the metric category to display from the **Category** list. Charts are displayed for the appliance and nodes that are selected in the **Show/Hide** list.
3. Select or clear the appliance and nodes to display or hide from the **Show/Hide** list.
4. Select the amount of historical performance data to display from the **Timeline** list.
5. Download the charts as a .png, .jpg, .pdf file or export the data to a .csv file.
6. View the historical performance data in the chart or hover over a point in the line graph to display the metric values at that point-in-time.
7. Select or clear the types of metric values to show or hide in the chart.

NOTE: Select a section of the chart using your mouse to zoom in on the chart.

The following options are available for viewing the performance metrics for other cluster resources, such as volume groups:

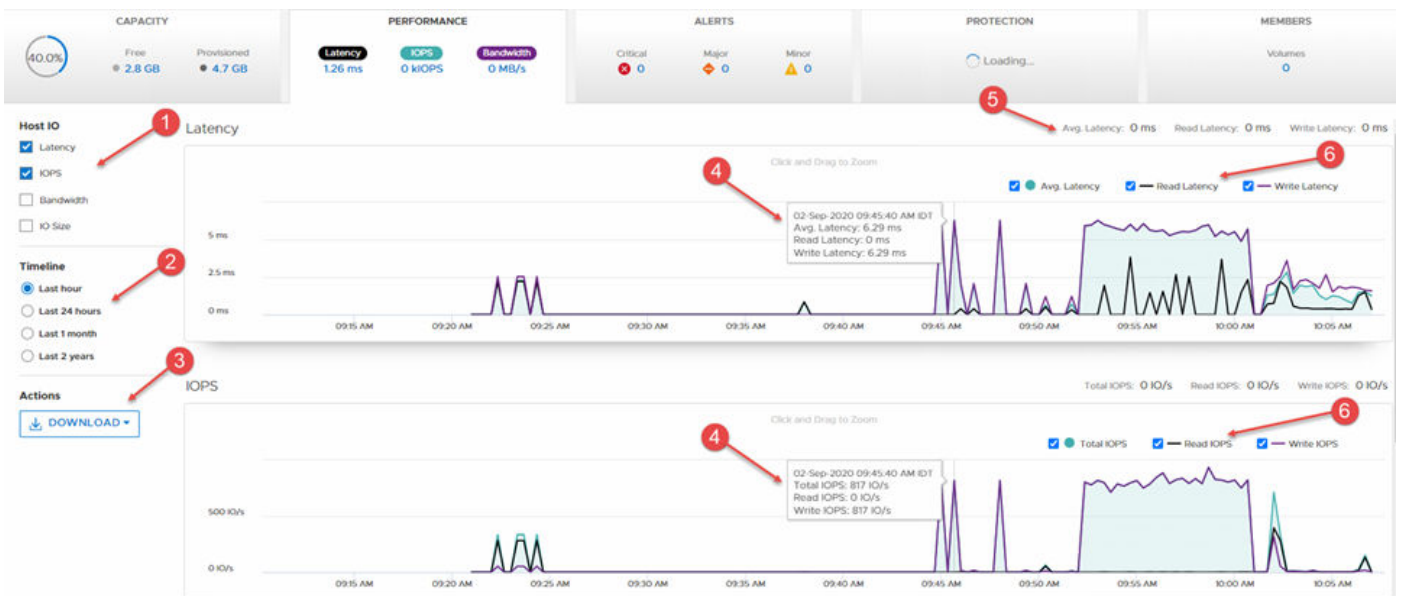



Figure 4. Volume group performance chart

1. Select the metric categories for which you want to display performance metrics. A chart is displayed for each metric category that is selected.

2. Select the amount of historical performance data to display from the **Timeline** list.
3. Download the charts as a .png, .jpg, .pdf file or export the data to a .csv file.
4. View the historical performance data in the chart or hover over a point on the line graph to display the metric values at that point-in-time.
5. View the current metric values.
6. Select or clear the types of metric values to show or hide in the chart.

 **NOTE:** Select a section of the chart using your mouse to zoom in on the chart.

Collecting System Data

This chapter includes:

Topics:

- [Support materials collection](#)
- [Collect support materials](#)


Support materials collection

You can collect support materials to help troubleshoot the appliances in your system.

Depending on the option you choose, support materials can include system logs, configuration details, and other diagnostic information. Use this information to analyze performance issues, or send it to your service provider so they can diagnose and help you resolve the issues. This process does not collect user data.


You can collect support materials for one or more appliances. When you start a collection, data is always collected at the appliance level. For example, if you request a collection for a volume, the system collects support materials for the appliance that contains the volume. If you request a collection for multiple volumes, the system collects support materials for all appliances that contain the volumes.

You can also include additional information in the support materials collection from **Advanced collection options**. Collecting additional information can take longer than the default support materials collection and the size of the data collection will be much larger. Select this option if your service provider requests it. By default the support materials collection uses the *essentials* profile. Use the `svc_dc` service script to collect support materials for other profiles. See the PowerStore Service Scripts Guide for more information about the `svc_dc` service script and the available profiles.

 **NOTE:** The system can run only one collection job at a time.

You can perform the following actions on a collection of support materials:

- View information about existing collections.
- Upload a collection to support, if remote support through Secure Remote Services is enabled.
- Download a collection to a local client.
- Delete a collection.

 **NOTE:** Some of these operations might not be available if the cluster is operating in a degraded state.

Collect support materials

Steps

1. Select the **Settings** icon, and then select **Gather Support Materials** in the **Support** section.
2. Click **Start Collection**.
3. Select the type of support data needed and the appliances for which to collect support information.
4. Write a description of the collection. This description is displayed in the list of support materials on the **Support Materials** page and can help you recognize the collection.
5. Optional: Select **Send to Support** if you want the system to automatically send the collection to Dell EMC Support when the job completes. This option is only enabled when remote support through Secure Remote Services is enabled on the system. You can also send the collection to Dell EMC Support at a later time.
6. Select **Recent Jobs** to monitor the support collection job.

Results

When the job completes, the system posts the job information, including its status, on the **Support Materials** page.

Next steps

After the job is finished, you can download the support materials collection to a client, send the collection to support, or delete the collection. Select the support materials collection, then select **Download**, **Send to Support**, or **Delete**.