Using the Grid Manager for monitoring

StorageGRID

NetApp
October 03, 2025

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Using the Grid Manager for monitoring

The Grid Manager is the most important tool for monitoring your StorageGRID system. This section introduces the Grid Manager Dashboard and provides detailed information about the Nodes pages.

- Web browser requirements
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- Viewing the Nodes page

Web browser requirements

You must use a supported web browser.

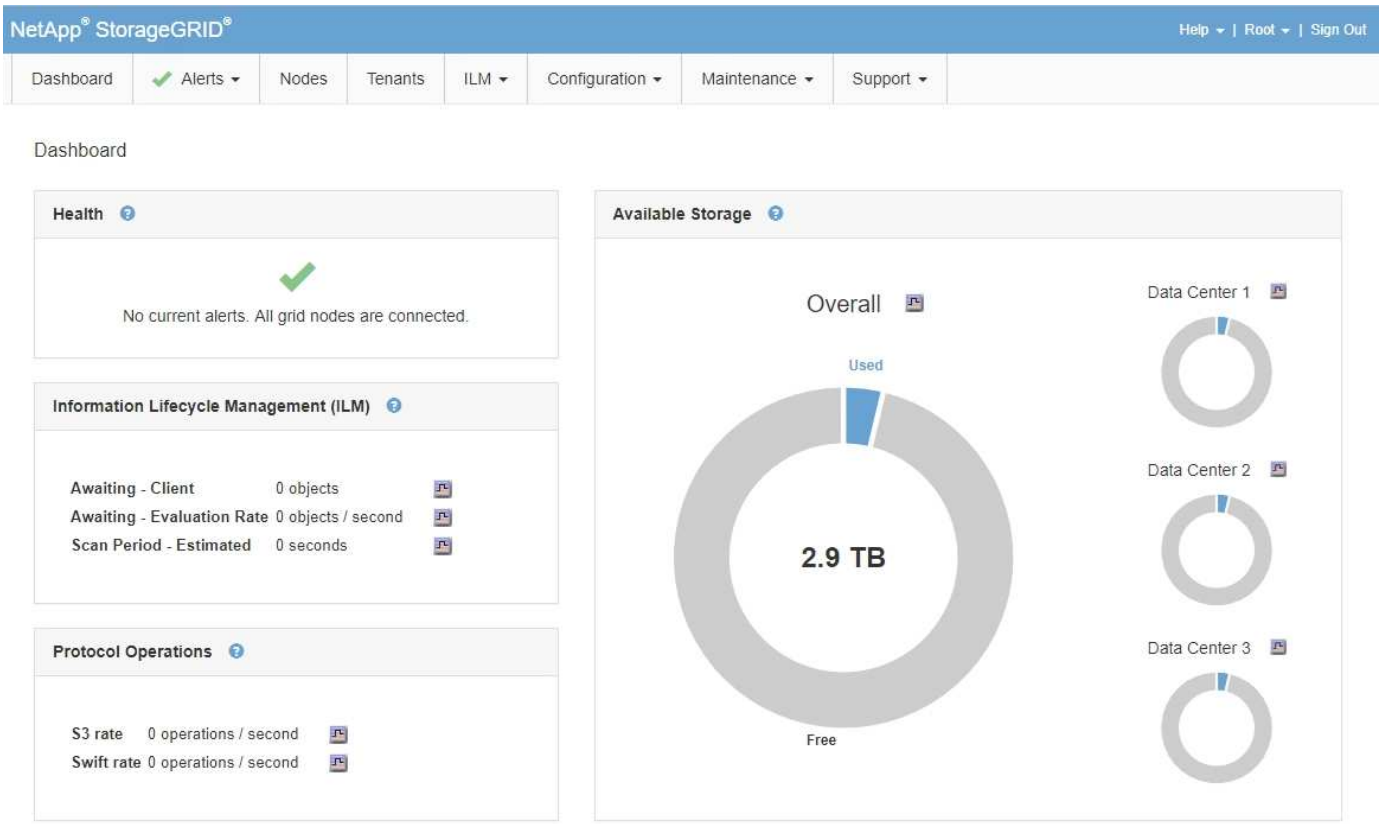
Web browser	Minimum supported version
Google Chrome	87
Microsoft Edge	87
Mozilla Firefox	84

You should set the browser window to a recommended width.

Browser width	Pixels
Minimum	1024
Optimum	1280

Viewing the Dashboard

When you first sign in to the Grid Manager, you can use the Dashboard to monitor system activities at a glance. The Dashboard includes information about system health, usage metrics, and operational trends and charts.



Health panel

Description	View additional details	Learn more
Summarizes the system's health. A green checkmark means that there are no current alerts and all grid nodes are connected. Any other icon means that there is at least one current alert or disconnected node.	You might see one or more of the following links: • **Grid details**: Appears if any nodes are disconnected (connection state Unknown or Administratively Down). Click the link, or click the blue or gray icon to determine which node or nodes are affected. • **Current alerts**: Appears if any alerts are currently active. Click the link, or click **Critical**, **Major**, or **Minor** to see the details on the **Alerts** > **Current** page. • **Recently resolved alerts**: Appears if any alerts triggered in the past week are now resolved. Click the link to see the details on the **Alerts** > **Resolved** page. • **Legacy alarms**: Appears if any alarms (legacy system) are currently active. Click the link to see the details on the **Support** > **Alarms (Legacy)** > **Current Alarms** page. • **License**: Appears if there is an issue with the software license for this StorageGRID system. Click the link to see the details on the **Maintenance** > **System** > **License** page.	• Monitoring node connection states • Viewing current alerts • Viewing resolved alerts • Viewing legacy alarms • Administer StorageGRID

Available Storage panel

Description	View additional details	Learn more
Displays the available and used storage capacity in the entire grid, not including archival media. The Overall chart presents grid-wide totals. If this is a multi-site grid, additional charts appear for each data center site. You can use this information to compare the used storage with the available storage. If you have a multi-site grid, you can determine which site is consuming more storage.	• To view the capacity, place your cursor over the chart's available and used capacity sections. • To view capacity trends over a date range, click the chart icon  for the overall grid, or for a data center site. • To see details, select **Nodes**. Then, view the Storage tab for the entire grid, an entire site, or a single Storage Node.	• Viewing the Storage tab • Monitoring storage capacity

Information Lifecycle Management (ILM) panel

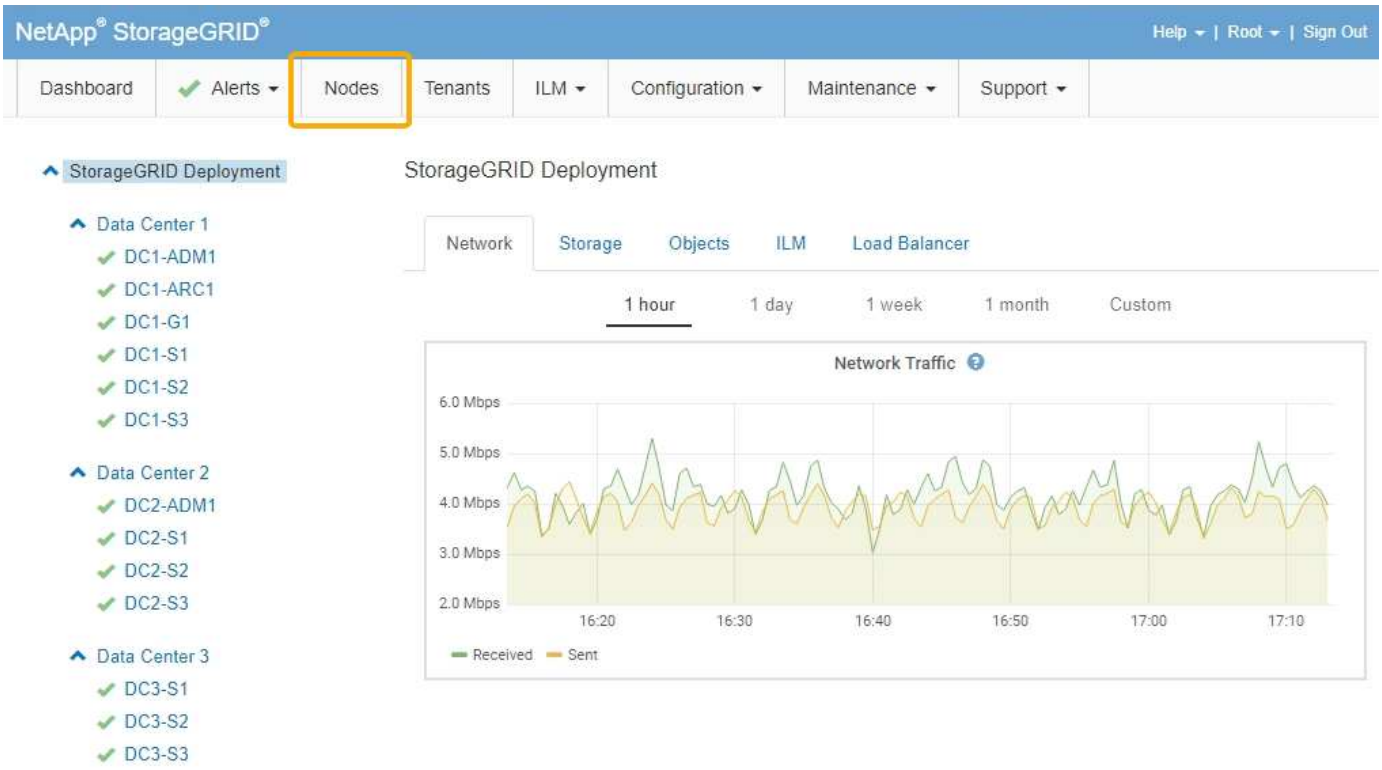
Description	View additional details	Learn more
Displays current ILM operations and ILM queues for your system. You can use this information to monitor your system's workload. • **Awaiting - Client**: The total number of objects awaiting ILM evaluation from client operations (for example, ingest). • **Awaiting - Evaluation Rate**: The current rate at which objects are evaluated against the ILM policy in the grid. • **Scan Period - Estimated**: The estimated time to complete a full ILM scan of all objects. **Note:** A full scan does not guarantee that ILM has been applied to all objects.	• To see details, select **Nodes**. Then, view the ILM tab for the entire grid, an entire site, or a single Storage Node. • To see the existing ILM rules, select **ILM** > **Rules**. • To see the existing ILM policies, select **ILM** > **Policies**.	• Viewing the ILM tab • Administer StorageGRID.

Protocol Operations panel

Description	View additional details	Learn more
Displays the number of protocol-specific operations (S3 and Swift) performed by your system. You can use this information to monitor your system's workloads and efficiencies. Protocol rates are averaged over the last two minutes.	• To see details, select **Nodes**. Then, view the Objects tab for the entire grid, an entire site, or a single Storage Node. • To view trends over a date range, click the chart icon to the right of the S3 or Swift protocol rate.	• Viewing the Objects tab • Use S3 • Use Swift

Viewing the Nodes page

When you need more detailed information about your StorageGRID system than the Dashboard provides, you can use the Nodes page to view metrics for the entire grid, each site in the grid, and each node at a site.



From the tree view on the left, you can see all the sites and all the nodes in your StorageGRID system. The icon for each node indicates if the node is connected or if there are any active alerts.

Connection state icons

If a node is disconnected from the grid, the tree view shows a blue or gray connection state icon, not the icon for any underlying alerts.

- **Not connected - Unknown** : The node is not connected to the grid for an unknown reason. For example, the network connection between nodes has been lost or the power is down. The **Unable to communicate with node** alert might also be triggered. Other alerts might be active as well. This situation

requires immediate attention.

> A node might appear as Unknown during managed shutdown operations. You can ignore the Unknown state in these cases.

- **Not connected - Administratively down**: The node is not connected to the grid for an expected reason. For example, the node, or services on the node, has been gracefully shut down, the node is rebooting, or the software is being upgraded. One or more alerts might also be active.

Alert icons

If a node is connected to the grid, the tree view shows one of the following icons, depending on if there are any current alerts for the node.

- **Critical**: An abnormal condition exists that has stopped the normal operations of a StorageGRID node or service. You must address the underlying issue immediately. Service disruption and loss of data might result if the issue is not resolved.
- **Major**: An abnormal condition exists that is either affecting current operations or approaching the threshold for a critical alert. You should investigate major alerts and address any underlying issues to ensure that the abnormal condition does not stop the normal operation of a StorageGRID node or service.
- **Minor**: The system is operating normally, but an abnormal condition exists that could affect the system's ability to operate if it continues. You should monitor and resolve minor alerts that do not clear on their own to ensure they do not result in a more serious problem.
- **Normal**: No alerts are active, and the node is connected to the grid.

Viewing details for a system, site, or node

To view the available information, click the appropriate links on the left, as follows:

- Select the grid name to see an aggregate summary of the statistics for your entire StorageGRID system. (The screenshot shows a system named StorageGRID Deployment.)
- Select a specific data center site to see an aggregate summary of the statistics for all nodes at that site.
- Select a specific node to view detailed information for that node.

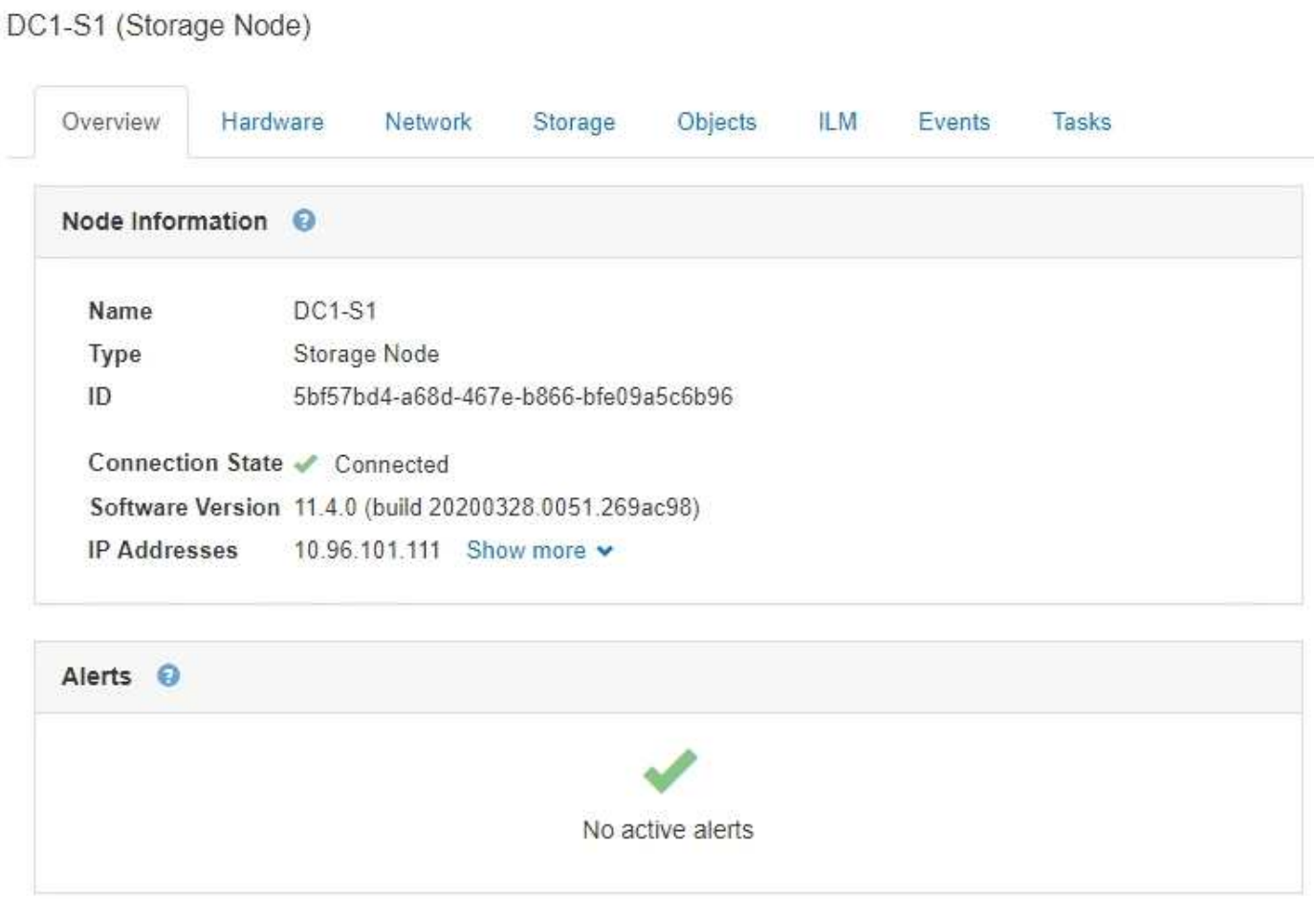
Viewing the Overview tab

The Overview tab provides basic information about each node. It also shows any alerts currently affecting the node.

The Overview tab is shown for all nodes.

Node Information

The Node Information section of the Overview tab lists basic information about the grid node.

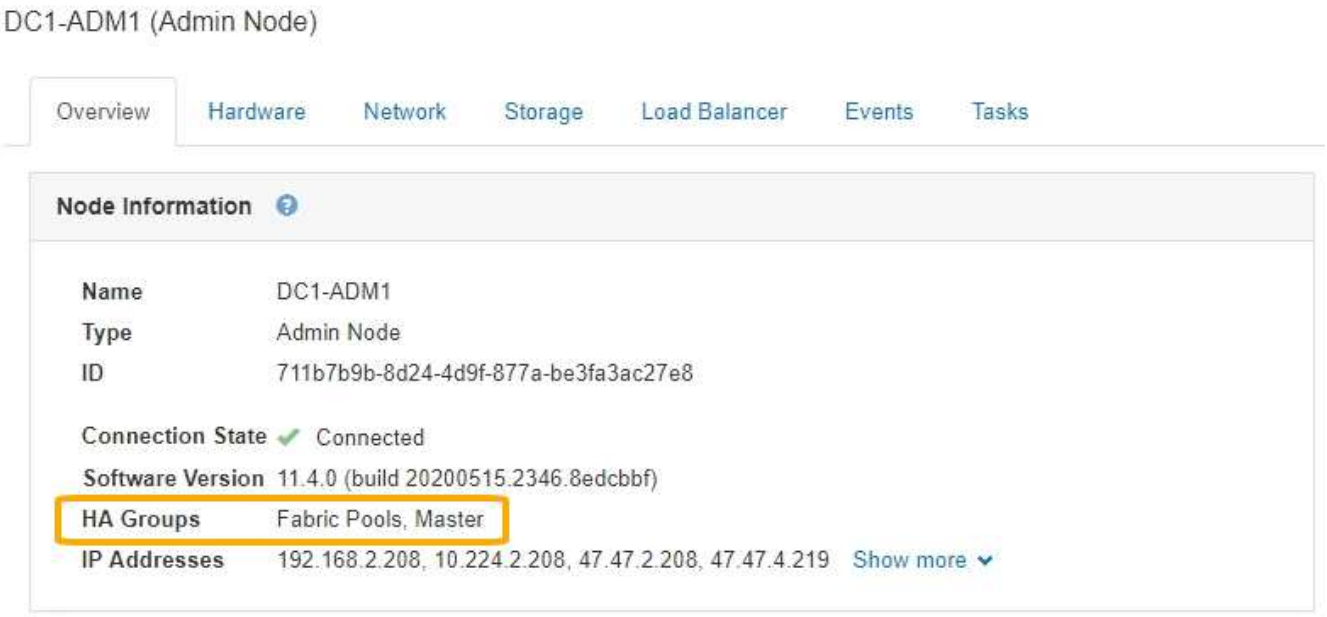


The overview information for a node includes the following:

- **Name**: The hostname assigned to the node and displayed in the Grid Manager.
- **Type**: The type of node — Admin Node, Storage Node, Gateway Node, or Archive Node.
- **ID**: The unique identifier for the node, which is also referred to as the UUID.
- **Connection State**: One of three states. The icon for the most severe state is shown.
  - **Not connected - Unknown** : The node is not connected to the grid for an unknown reason. For example, the network connection between nodes has been lost or the power is down. The **Unable to communicate with node** alert might also be triggered. Other alerts might be active as well. This situation requires immediate attention.

    A node might appear as Unknown during managed shutdown operations. You can ignore the Unknown state in these cases.

  - **Not connected - Administratively down** : The node is not connected to the grid for an expected reason. For example, the node, or services on the node, has been gracefully shut down, the node is rebooting, or the software is being upgraded. One or more alerts might also be active.
  - **Connected** : The node is connected to the grid.
- **Software Version**: The version of StorageGRID that is installed on the node.
- **HA Groups**: For Admin Node and Gateway Nodes only. Shown if a network interface on the node is included in a high availability group and whether that interface is the Master or the Backup.



- **IP Addresses**: The node's IP addresses. Click **Show more** to view the node's IPv4 and IPv6 addresses and interface mappings:
  - eth0: Grid Network
  - eth1: Admin Network
  - eth2: Client Network

Alerts

The Alerts section of the Overview tab lists any alerts currently affecting this node that have not been silenced. Click the alert name to view additional details and recommended actions.

Related information

Monitoring node connection states

Viewing current alerts

Viewing a specific alert

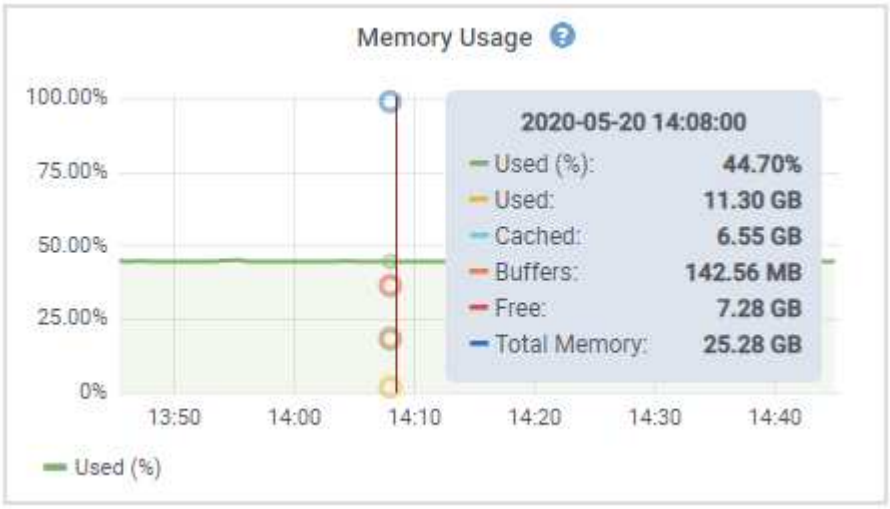
Viewing the Hardware tab

The Hardware tab displays CPU utilization and memory usage for each node, and additional hardware information about appliances.

The Hardware tab is shown for all nodes.

To display a different time interval, select one of the controls above the chart or graph. You can display the information available for intervals of 1 hour, 1 day, 1 week, or 1 month. You can also set a custom interval, which allows you to specify date and time ranges.

To see details for CPU utilization and memory usage, hover your cursor over each graph.



If the node is an appliance node, this tab also includes a section with more information about the appliance hardware.

Related information

Viewing information about appliance Storage Nodes

Viewing information about appliance Admin Nodes and Gateway Nodes

Viewing the Network tab

The Network tab displays a graph showing the network traffic received and sent across all of the network interfaces on the node, site, or grid.

The Network tab is shown for all nodes, each site, and the entire grid.

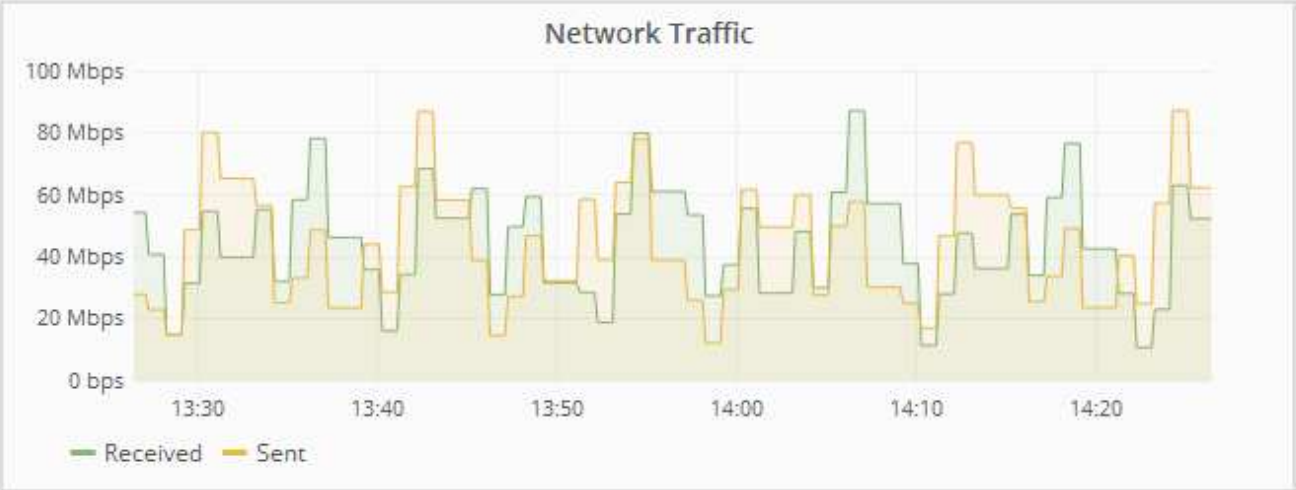
To display a different time interval, select one of the controls above the chart or graph. You can display the information available for intervals of 1 hour, 1 day, 1 week, or 1 month. You can also set a custom interval, which allows you to specify date and time ranges.

For nodes, the Network Interfaces table provides information about each node's physical network ports. The Network Communications table provides details about each node's receive and transmit operations and any driver reported fault counters.

DC1-S1-226 (Storage Node)

Overview | Hardware | Network | Storage | Objects | ILM | Events

1 hour | 1 day | 1 week | 1 month | 1 year | Custom



Network Interfaces

Name	Hardware Address	Speed	Duplex	Auto Negotiate	Link Status
eth0	00:50:56:A8:2A:75	10 Gigabit	Full	Off	Up

Network Communication

Receive

Interface	Data	Packets	Errors	Dropped	Frame Overruns	Frames
eth0	738.858 GB	904,587,345	0	14,340	0	0

Transmit

Interface	Data	Packets	Errors	Dropped	Collisions	Carrier
eth0	677.555 GB	465,715,998	0	0	0	0

Related information

Monitoring network connections and performance

Viewing the Storage tab

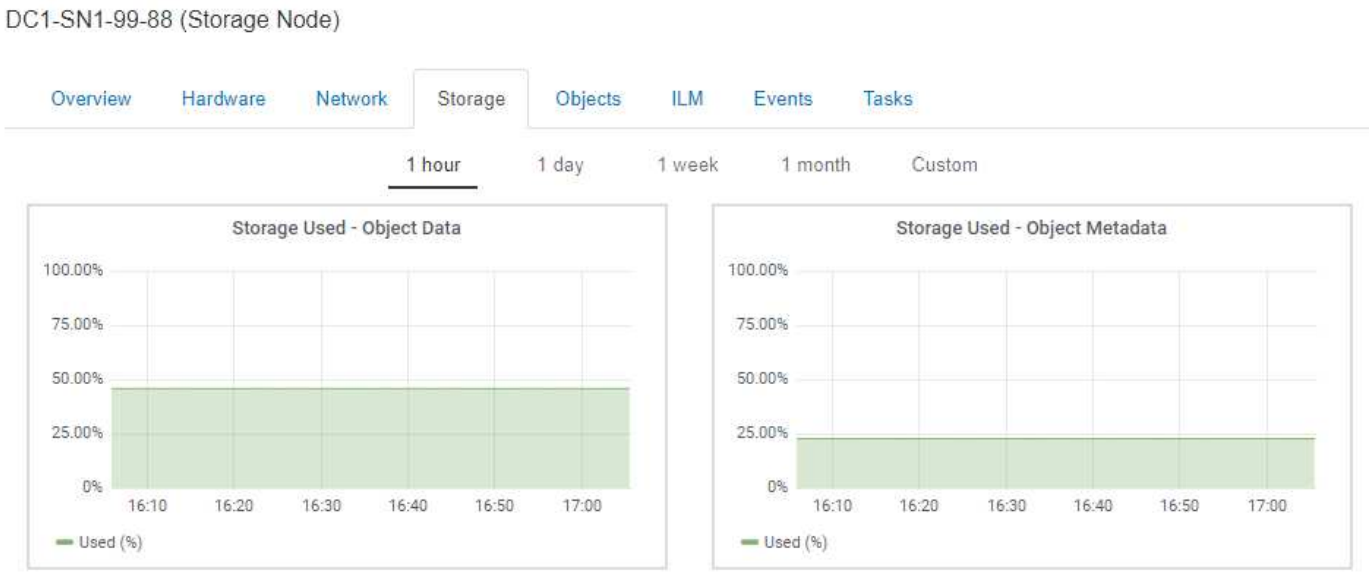
The Storage tab summarizes storage availability and other storage metrics.

The Storage tab is shown for all nodes, each site, and the entire grid.

Storage Used graphs

For Storage Nodes, each site, and the entire grid, the Storage tab includes graphs showing how much storage has been used by object data and object metadata over time.

> The total values for a site or the grid do not include nodes that not have reported metrics for at least five minutes, such as offline nodes.



Disk Devices, Volumes, and Object Store tables

For all nodes, the Storage tab contains details for the disk devices and volumes on the node. For Storage Nodes, the Object Stores table provides information about each storage volume.

Disk Devices

Name	World Wide Name	I/O Load	Read Rate	Write Rate
croot(8:1,sda1)	N/A	0.03%	0 bytes/s	3 KB/s
cvloc(8:2,sda2)	N/A	0.85%	0 bytes/s	58 KB/s
sdc(8:16,sdb)	N/A	0.00%	0 bytes/s	81 bytes/s
sdd(8:32,sdc)	N/A	0.00%	0 bytes/s	82 bytes/s
sde(8:48,sdd)	N/A	0.00%	0 bytes/s	82 bytes/s

Volumes

Mount Point	Device	Status	Size	Available	Write Cache Status
/	croot	Online	21.00 GB	14.90 GB	Unknown
/var/local	cvloc	Online	85.86 GB	84.10 GB	Unknown
/var/local/rangedb/0	sdc	Online	107.32 GB	107.18 GB	Enabled
/var/local/rangedb/1	sdd	Online	107.32 GB	107.18 GB	Enabled
/var/local/rangedb/2	sde	Online	107.32 GB	107.18 GB	Enabled

Object Stores

ID	Size	Available	Replicated Data	EC Data	Object Data (%)	Health
0000	107.32 GB	96.45 GB	250.90 KB	0 bytes	0.00%	No Errors
0001	107.32 GB	107.18 GB	0 bytes	0 bytes	0.00%	No Errors
0002	107.32 GB	107.18 GB	0 bytes	0 bytes	0.00%	No Errors

Related information

Monitoring storage capacity for the entire grid

Monitoring storage capacity for each Storage Node

Monitoring object metadata capacity for each Storage Node

Viewing the Events tab

The Events tab displays a count of any system error or fault events for a node, including errors such as network errors.

The Events tab is shown for all nodes.

If you experience issues with a particular node, you can use the Events tab to learn more about the issue. Technical support can also use the information on the Events tab to help with troubleshooting.

You can perform these tasks from the Events tab:

- Use the information shown for the **Last Event** field at the top of the table to determine which event occurred most recently.
- Click the chart icon for a specific event to see when that event occurred over time.

- Reset event counts to zero after resolving any issues.

Related information

Monitoring events

Displaying charts and graphs

Resetting event counts

Using the Task tab to reboot a grid node

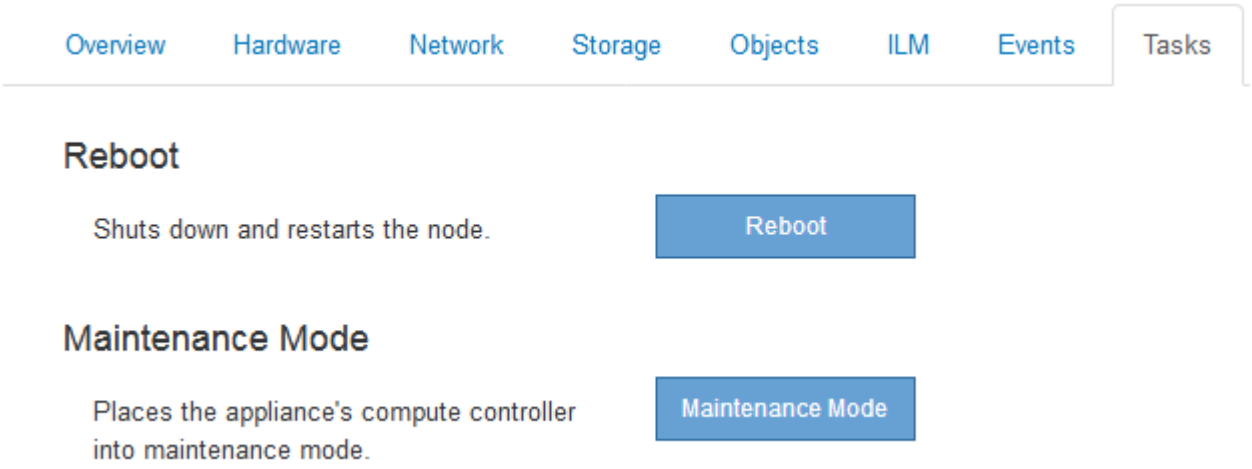
The Task tab allows you to reboot the selected node. The Task tab is shown for all nodes.

What you'll need

- You must be signed in to the Grid Manager using a supported browser.
- You must have the Maintenance or Root Access permission.
- You must have the provisioning passphrase.

About this task

You can use the Task tab to reboot a node. For appliance nodes, you can also use the Task tab to place the appliance into maintenance mode.



- Rebooting a grid node from the Task tab issues the reboot command on the target node. When you reboot a node, the node shuts down and restarts. All services are restarted automatically.

  If you plan to reboot a Storage Node, note the following:

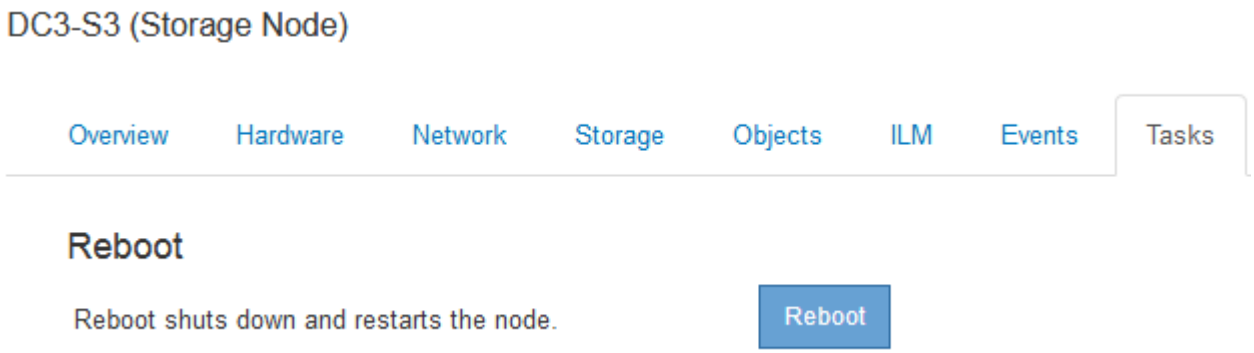
  - If an ILM rule specifies an ingest behavior of Dual commit or the rule specifies Balanced and it is not possible to immediately create all required copies, StorageGRID immediately commits any newly ingested objects to two Storage Nodes on the same site and evaluates ILM later. If you want to reboot two or more Storage Nodes on a given site, you might not be able to access these objects for the duration of the reboot.
  - To ensure you can access all objects while a Storage Node is rebooting, stop ingesting objects at a site for approximately one hour before rebooting the node.
- You might need to put a StorageGRID appliance into maintenance mode to perform certain procedures, such as changing the link configuration or replacing a storage controller. For instructions, see the hardware

installation and maintenance instructions for the appliance.

> Putting an appliance into maintenance mode might make the appliance unavailable for remote access.

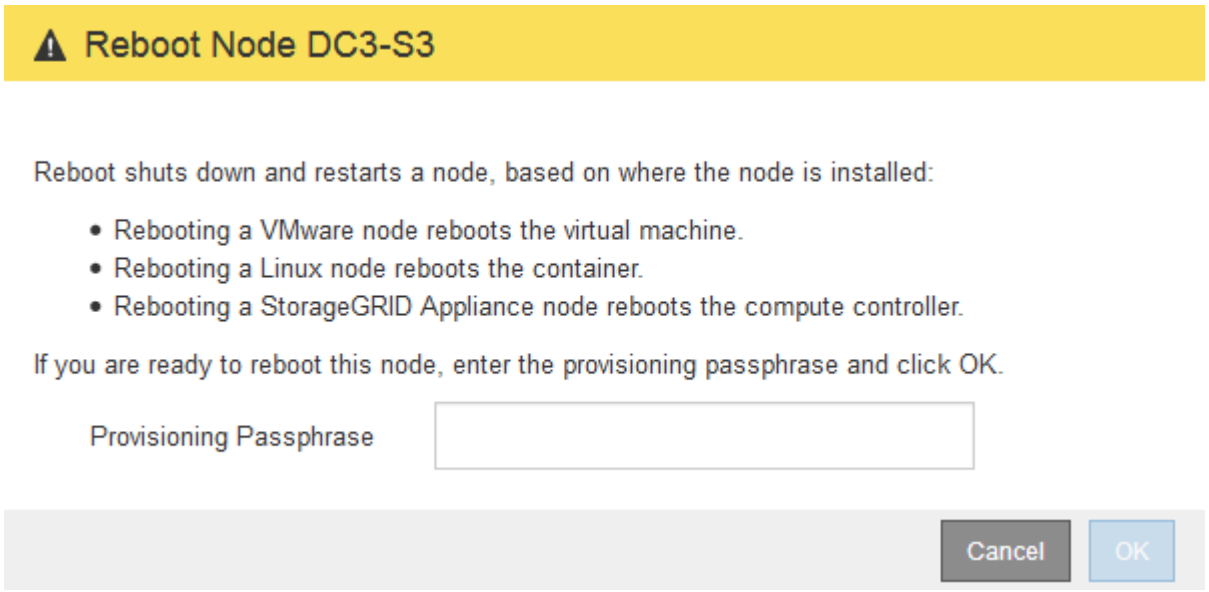
Steps

1. Select **Nodes**.
2. Select the grid node you want to reboot.
3. Select the **Tasks** tab.



4. Click **Reboot**.

   A confirmation dialog box appears.



> If you are rebooting the primary Admin Node, the confirmation dialog box reminds you that your browser's connection to the Grid Manager will be lost temporarily when services are stopped.

5. Enter the provisioning passphrase, and click **OK**.
6. Wait for the node to reboot.

   It might take some time for services to shut down.

When the node is rebooting, the gray icon (Administratively Down) appears on the left side of the Nodes page. When all services have started again, the icon changes back to its original color.

Related information

SG6000 storage appliances

SG5700 storage appliances

SG5600 storage appliances

SG100 & SG1000 services appliances

Viewing the Objects tab

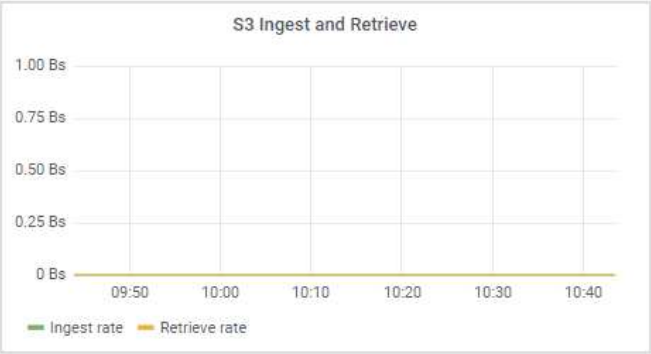
The Objects tab provides information about S3 and Swift ingest and retrieve rates.

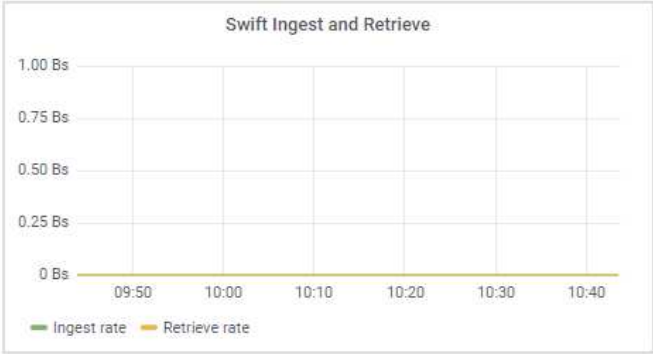
The Objects tab is shown for each Storage Node, each site, and the entire grid. For Storage Nodes, the Objects tab also provides object counts and information about metadata queries and background verification.

DC1-S1 (Storage Node)

Overview | Hardware | Network | Storage | Objects | ILM | Events | Tasks

1 hour | 1 day | 1 week | 1 month | Custom





Object Counts

Total Objects	0	
Lost Objects	0	
S3 Buckets and Swift Containers	0	

Queries

Average Latency	5.74 milliseconds	
Queries - Successful	12,403	
Queries - Failed (timed-out)	0	
Queries - Failed (consistency level unmet)	0	

Verification

Status	No Errors	
Rate Setting	Adaptive	
Percent Complete	0.00%	
Average Stat Time	0.00 microseconds	
Objects Verified	0	
Object Verification Rate	0.00 objects / second	
Data Verified	0 bytes	
Data Verification Rate	0.00 bytes / second	
Missing Objects	0	
Corrupt Objects	0	
Corrupt Objects Unidentified	0	
Quarantined Objects	0	

Related information

Use S3

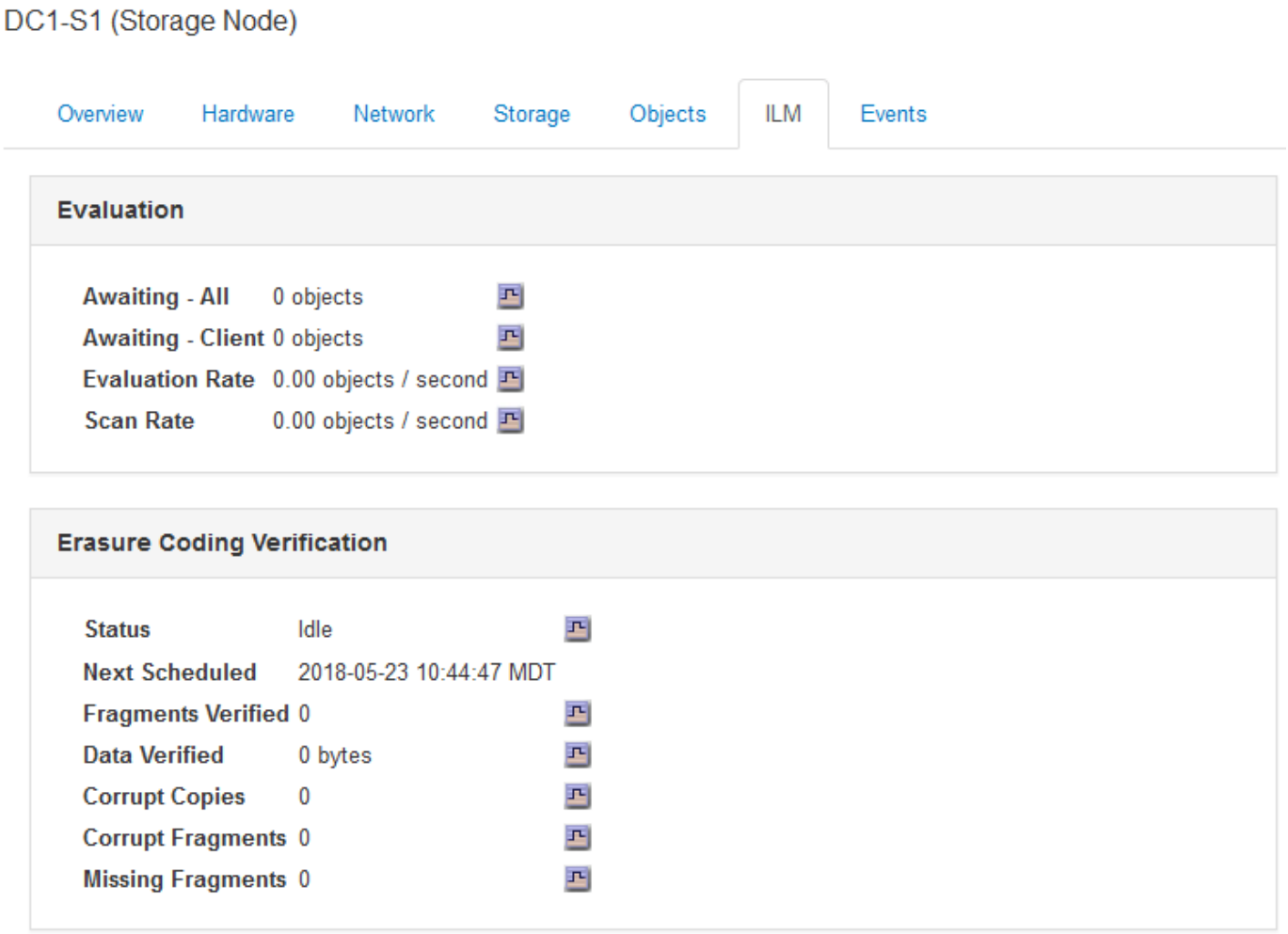
Use Swift

Viewing the ILM tab

The ILM tab provides information about Information Lifecycle Management (ILM) operations.

The ILM tab is shown for each Storage Node, each site, and the entire grid. For each site and the grid, the ILM tab shows a graph of the ILM queue over time. For the grid, this tab also provides the estimated time to complete a full ILM scan of all objects.

For Storage Nodes, the ILM tab provides details about ILM evaluation and background verification for erasure coded objects.



Related information

Monitoring information lifecycle management

Administer StorageGRID

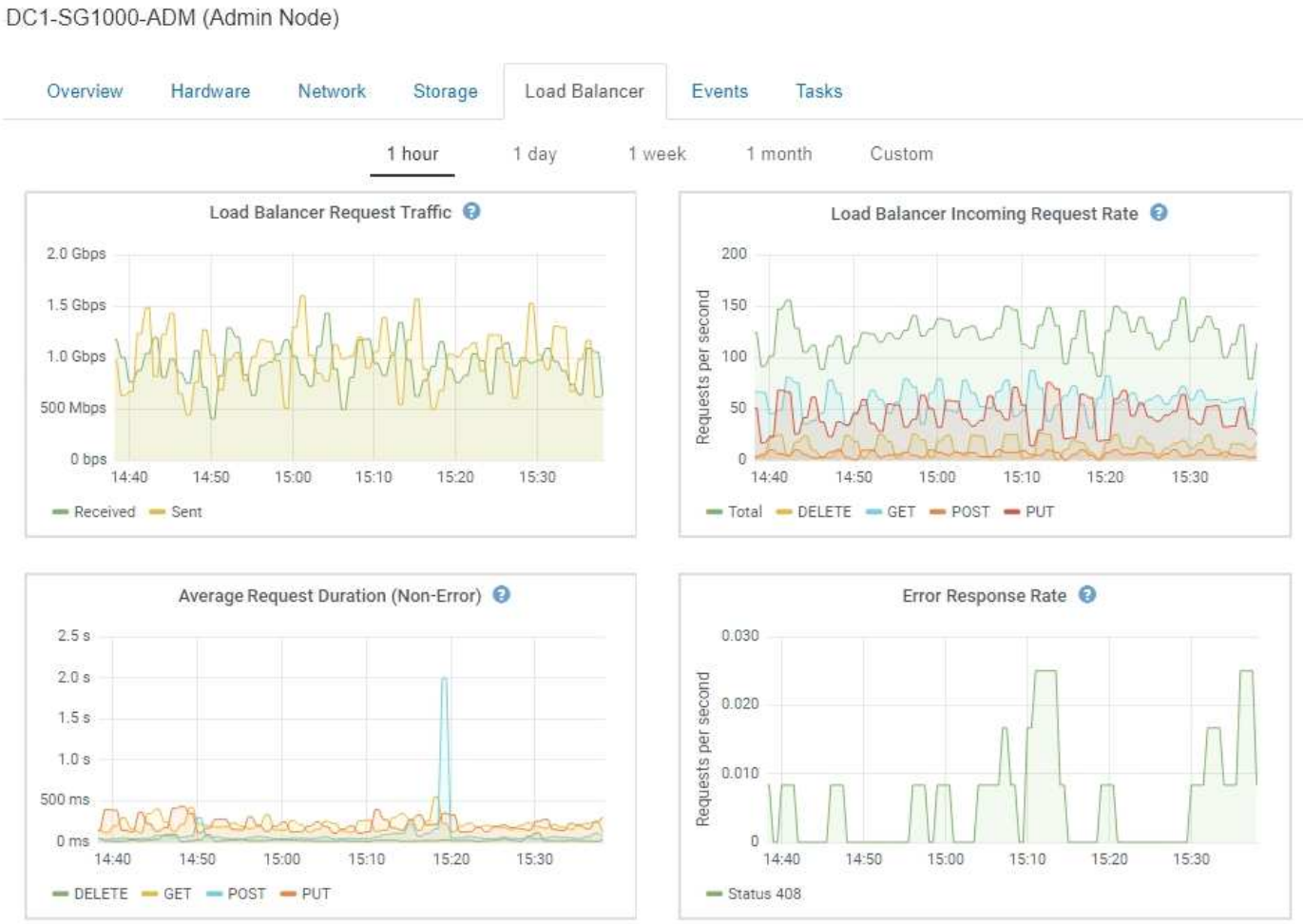
Viewing the Load Balancer tab

The Load Balancer tab includes performance and diagnostic graphs related to the operation of the Load Balancer service.

The Load Balancer tab is shown for Admin Nodes and Gateway Nodes, each site, and the entire grid. For each

site, the Load Balancer tab provides an aggregate summary of the statistics for all nodes at that site. For the entire grid, the Load Balancer tab provides an aggregate summary of the statistics for all sites.

If there is no I/O being run through the Load Balancer service, or there is no load balancer configured, the graphs display “No data.”



Load Balancer Request Traffic

This graph provides a 3-minute moving average of the throughput of data transmitted between load balancer endpoints and the clients making the requests, in bits per second.

> This value is updated at the completion of each request. As a result, this value might differ from the real-time throughput at low request rates or for very long-lived requests. You can look at the Network tab to get a more realistic view of the current network behavior.

Load Balancer Incoming Request Rate

This graph provides a 3-minute moving average of the number of new requests per second, broken down by request type (GET, PUT, HEAD, and DELETE). This value is updated when the headers of a new request have been validated.

Average Request Duration (Non-Error)

This graph provides a 3-minute moving average of request durations, broken down by request type (GET, PUT, HEAD, and DELETE). Each request duration starts when a request header is parsed by the Load Balancer

service and ends when the complete response body is returned to the client.

Error Response Rate

This graph provides a 3-minute moving average of the number of error responses returned to clients per second, broken down by the error response code.

Related information

Monitoring load balancing operations

Administer StorageGRID

Viewing the Platform Services tab

The Platform Services tab provides information about any S3 platform service operations at a site.

The Platform Services tab is shown for each site. This tab provides information about S3 platform services, such as CloudMirror replication and the search integration service. Graphs on this tab display metrics such as the number of pending requests, request completion rate, and request failure rate.

For more information about S3 platform services, including troubleshooting details, see the instructions for administering StorageGRID.

Related information

Administer StorageGRID

Viewing information about appliance Storage Nodes

The Nodes page lists information about service health and all computational, disk device, and network resources for each appliance Storage Node. You can also see memory, storage hardware, controller firmware version, network resources, network interfaces,

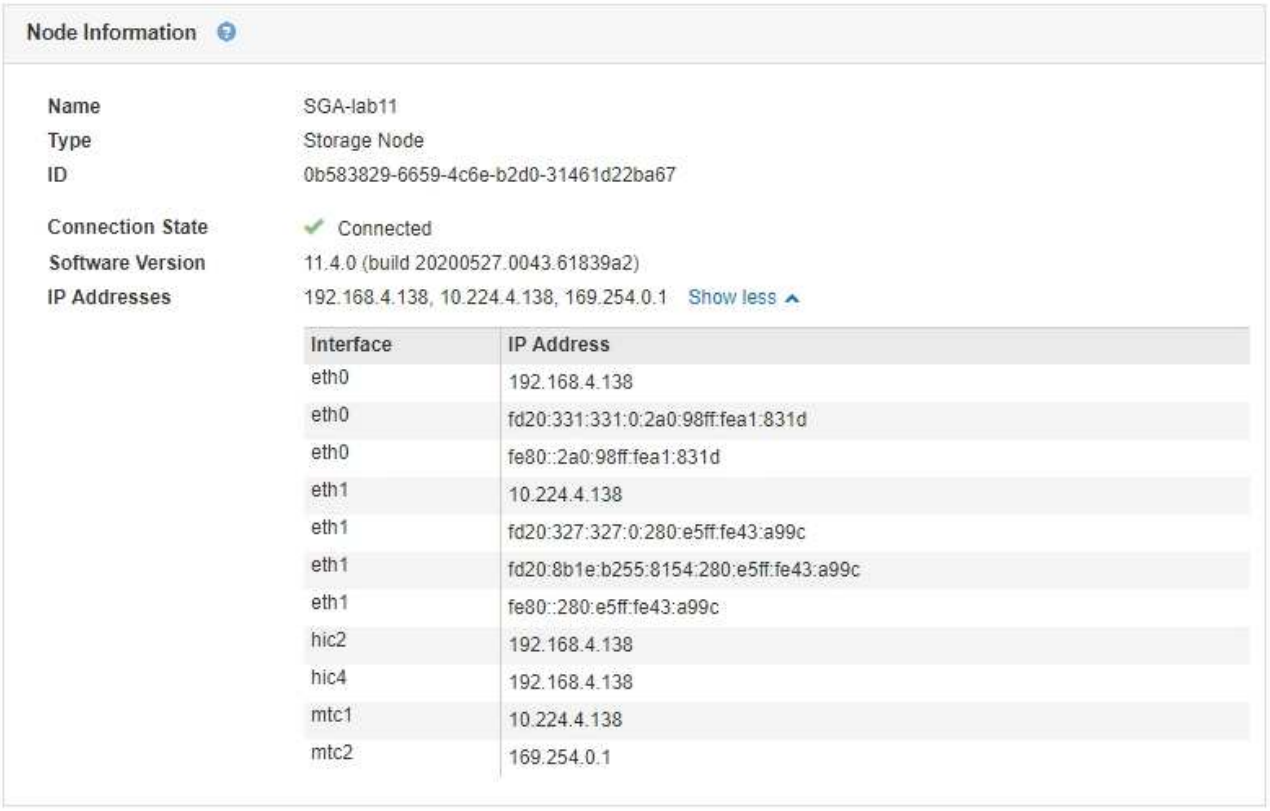
network addresses, and receive and transmit data.

Steps

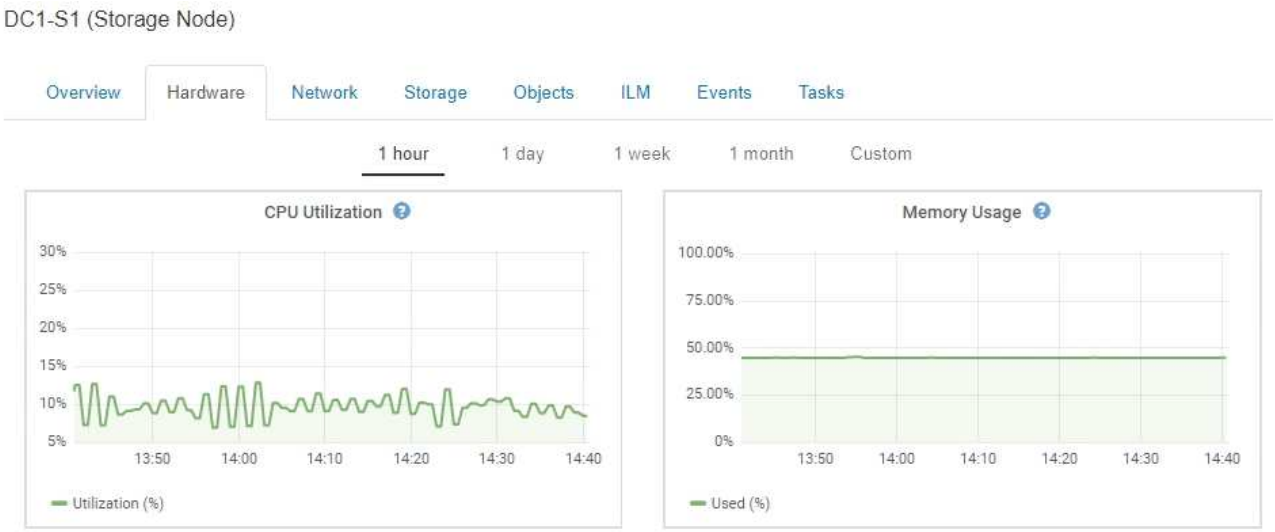
1. From the Nodes page, select an appliance Storage Node.
2. Select **Overview**.

   The Node Information table on the Overview tab displays the node's ID and name, the node type, the software version installed, and the IP addresses associated with the node. The Interface column contains the name of the interface, as follows:

   - **eth**: The Grid Network, Admin Network, or Client Network.
   - **hic**: One of the physical 10, 25, or 100 GbE ports on the appliance. These ports can be bonded together and connected to the StorageGRID Grid Network (eth0) and Client Network (eth2).
   - **mtc**: One of the physical 1 GbE ports on the appliance, which can be bonded or aliased and connected to the StorageGRID Admin Network (eth1).



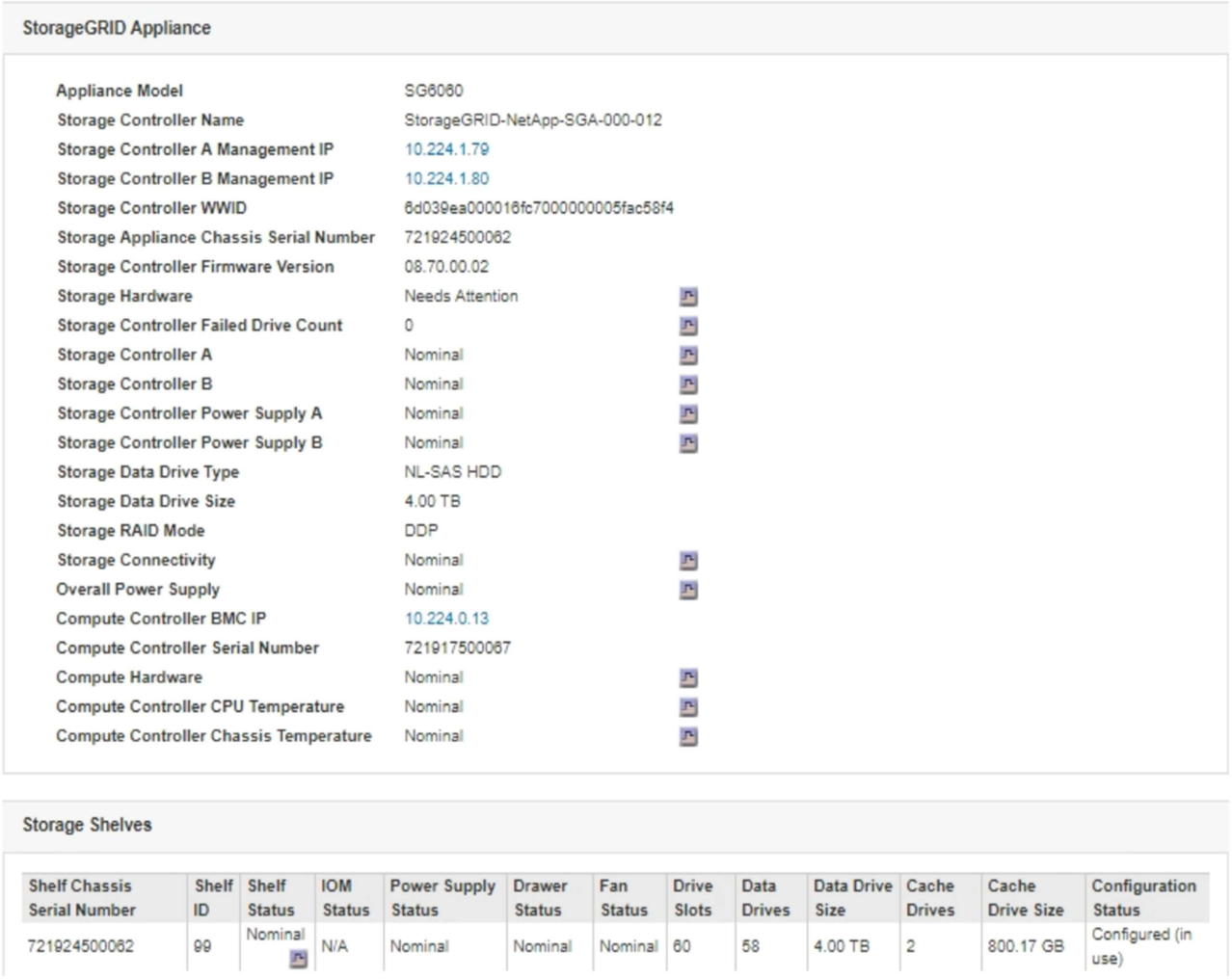
3. Select **Hardware** to see more information about the appliance.
   a. View the CPU Utilization and Memory graphs to determine the percentages of CPU and memory usage over time. To display a different time interval, select one of the controls above the chart or graph. You can display the information available for intervals of 1 hour, 1 day, 1 week, or 1 month. You can also set a custom interval, which allows you to specify date and time ranges.



b. Scroll down to view the table of components for the appliance. This table contains information such as the model name of the appliance; controller names, serial numbers, and IP addresses; and the status of each component.

> Some fields, such as Compute Controller BMC IP and Compute Hardware, appear only for appliances with that feature.

Components for the storage shelves, and expansion shelves if they are part of the installation, appear in a separate table below the appliance table.



Field in the Appliance table	Description
Appliance Model	The model number for this StorageGRID appliance shown in SANtricity software.
Storage Controller Name	The name for this StorageGRID appliance shown in SANtricity software.
Storage Controller A Management IP	IP address for management port 1 on storage controller A. You use this IP to access SANtricity software to troubleshoot storage issues.
Storage Controller B Management IP	IP address for management port 1 on storage controller B. You use this IP to access SANtricity software to troubleshoot storage issues. Some appliance models do not have a storage controller B.
Storage Controller WWID	The worldwide identifier of the storage controller shown in SANtricity software.

Field in the Appliance table	Description
Storage Appliance Chassis Serial Number	The chassis serial number of the appliance.
Storage Controller Firmware Version	The version of the firmware on the storage controller for this appliance.
Storage Hardware	The overall status of the storage controller hardware. If SANtricity System Manager reports a status of Needs Attention for the storage hardware, the StorageGRID system also reports this value. If the status is “needs attention,” first check the storage controller using SANtricity software. Then, ensure that no other alarms exist that apply to the compute controller.
Storage Controller Failed Drive Count	The number of drives that are not optimal.
Storage Controller A	The status of storage controller A.
Storage Controller B	The status of storage controller B. Some appliance models do not have a storage controller B.
Storage Controller Power Supply A	The status of power supply A for the storage controller.
Storage Controller Power Supply B	The status of power supply B for the storage controller.
Storage Data Drive Type	The type of drives in the appliance, such as HDD (hard disk drive) or SSD (solid state drive).
Storage Data Drive Size	The total capacity including all data drives in the appliance.
Storage RAID Mode	The RAID mode configured for the appliance.
Storage Connectivity	The storage connectivity state.
Overall Power Supply	The status of all power supplies for the appliance.

Field in the Appliance table	Description
Compute Controller BMC IP	The IP address of the baseboard management controller (BMC) port in the compute controller. You use this IP to connect to the BMC interface to monitor and diagnose the appliance hardware. This field is not displayed for appliance models that do not contain a BMC.
Compute Controller Serial Number	The serial number of the compute controller.
Compute Hardware	The status of the compute controller hardware. This field is not displayed for appliance models that do not have separate compute hardware and storage hardware.
Compute Controller CPU Temperature	The temperature status of the compute controller's CPU.
Compute Controller Chassis Temperature	The temperature status of the compute controller.

Column in the Storage Shelves table	Description
Shelf Chassis Serial Number	The serial number for the storage shelf chassis.
Shelf ID	The numeric identifier for the storage shelf. • 99: Storage controller shelf • 0: First expansion shelf • 1: Second expansion shelf **Note:** Expansion shelves apply to the SG6060 only.
Shelf Status	The overall status of the storage shelf.
IOM Status	The status of the input/output modules (IOMs) in any expansion shelves. N/A if this is not an expansion shelf.
Power Supply Status	The overall status of the power supplies for the storage shelf.
Drawer Status	The status of the drawers in the storage shelf. N/A if the shelf does not contain drawers.

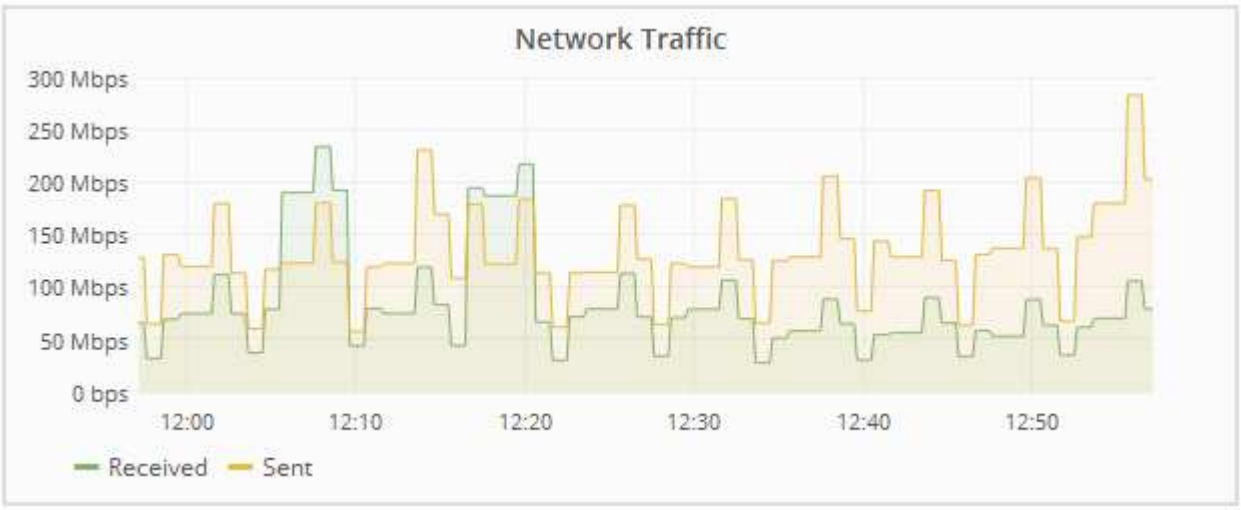
Column in the Storage Shelves table	Description
Fan Status	The overall status of the cooling fans in the storage shelf.
Drive Slots	The total number of drive slots in the storage shelf.
Data Drives	The number of drives in the storage shelf that are used for data storage.
Data Drive Size	The effective size of one data drive in the storage shelf.
Cache Drives	The number of drives in the storage shelf that are used as cache.
Cache Drive Size	The size of the smallest cache drive in the storage shelf. Normally, cache drives are all the same size.
Configuration Status	The configuration status of the storage shelf.

c. Confirm that all statuses are “Nominal.”

If a status is not “Nominal,” review any current alerts. You can also use SANtricity System Manager to learn more about some of these hardware values. See the instructions for installing and maintaining your appliance.

4. Select **Network** to view information for each network.

The Network Traffic graph provides a summary of overall network traffic.



a. Review the Network Interfaces section.

Network Interfaces

Name	Hardware Address	Speed	Duplex	Auto Negotiate	Link Status
eth0	50:6B:4B:42:D7:11	100 Gigabit	Full	Off	Up
eth1	D8:C4:97:2A:E4:9E	Gigabit	Full	Off	Up
eth2	50:6B:4B:42:D7:11	100 Gigabit	Full	Off	Up
hic1	50:6B:4B:42:D7:11	25 Gigabit	Full	Off	Up
hic2	50:6B:4B:42:D7:11	25 Gigabit	Full	Off	Up
hic3	50:6B:4B:42:D7:11	25 Gigabit	Full	Off	Up
hic4	50:6B:4B:42:D7:11	25 Gigabit	Full	Off	Up
mtc1	D8:C4:97:2A:E4:9E	Gigabit	Full	On	Up
mtc2	D8:C4:97:2A:E4:9F	Gigabit	Full	On	Up

Use the following table with the values in the **Speed** column in the Network Interfaces table to determine whether the 10/25-GbE network ports on the appliance were configured to use active/backup mode or LACP mode.

The values shown in the table assume all four links are used.

Link mode	Bond mode	Individual HIC link speed (hic1, hic2, hic3, hic4)	Expected Grid/Client Network speed (eth0,eth2)
Aggregate	LACP	25	100
Fixed	LACP	25	50
Fixed	Active/Backup	25	25
Aggregate	LACP	10	40
Fixed	LACP	10	20
Fixed	Active/Backup	10	10

See the installation and maintenance instructions for your appliance for more information about configuring the 10/25-GbE ports.

b. Review the Network Communication section.

The Receive and Transmit tables show how many bytes and packets have been received and sent across each network as well as other receive and transmit metrics.

Network Communication

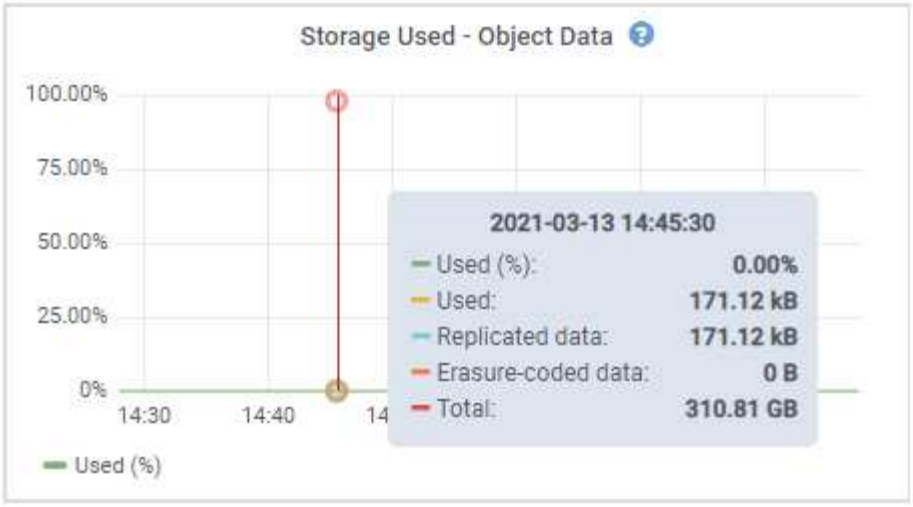
Receive

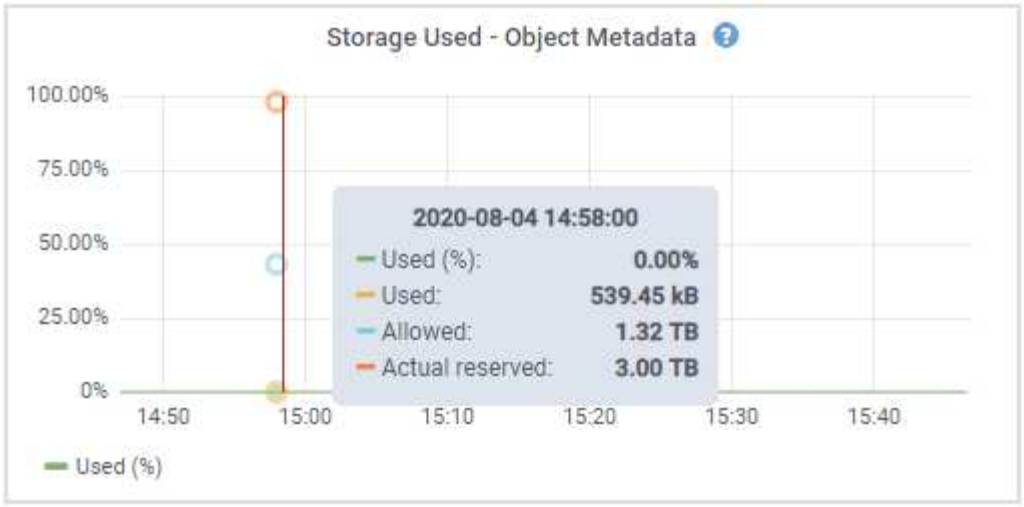
Interface	Data	Packets	Errors	Dropped	Frame Overruns	Frames
eth0	3.250 TB	5,610,578,144	0	8,327	0	0
eth1	1.205 GB	9,828,095	0	32,049	0	0
eth2	849.829 GB	186,349,407	0	10,269	0	0
hic1	114.864 GB	303,443,393	0	0	0	0
hic2	2.315 TB	5,351,180,956	0	305	0	0
hic3	1.690 TB	1,793,580,230	0	0	0	0
hic4	194.283 GB	331,640,075	0	0	0	0
mtc1	1.205 GB	9,828,096	0	0	0	0
mtc2	1.168 GB	9,564,173	0	32,050	0	0

Transmit

Interface	Data	Packets	Errors	Dropped	Collisions	Carrier
eth0	5.759 TB	5,789,638,626	0	0	0	0
eth1	4.563 MB	41,520	0	0	0	0
eth2	855.404 GB	139,975,194	0	0	0	0
hic1	289.248 GB	326,321,151	5	0	0	5
hic2	1.636 TB	2,640,416,419	18	0	0	18
hic3	3.219 TB	4,571,516,003	33	0	0	33
hic4	1.687 TB	1,658,180,262	22	0	0	22
mtc1	4.563 MB	41,520	0	0	0	0
mtc2	49.678 KB	609	0	0	0	0

5. Select **Storage** to view graphs that show the percentages of storage used over time for object data and object metadata, as well as information about disk devices, volumes, and object stores.

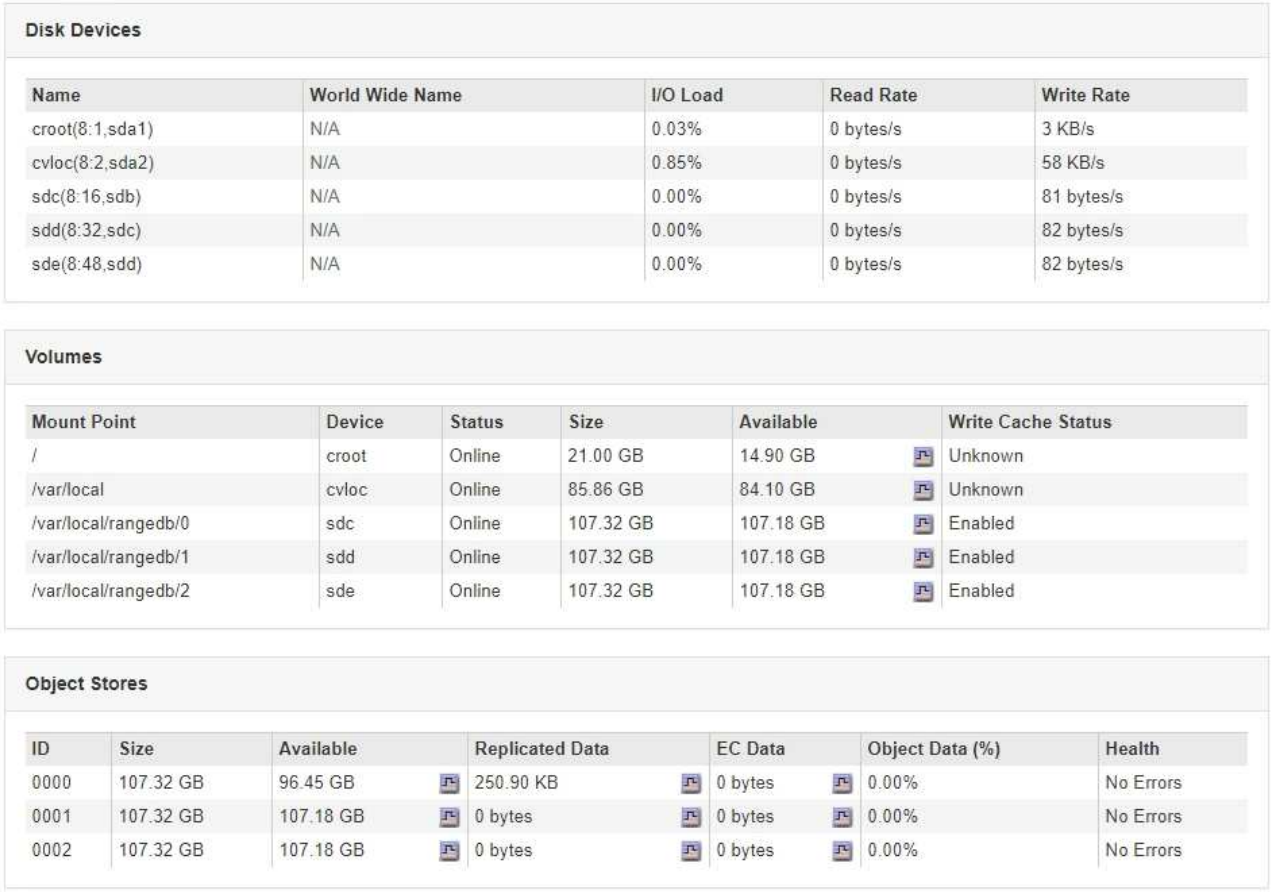




a. Scroll down to view the amounts of available storage for each volume and object store.

   The Worldwide Name for each disk matches the volume world-wide identifier (WWID) that appears when you view standard volume properties in SANtricity software (the management software connected to the appliance's storage controller).

   To help you interpret disk read and write statistics related to volume mount points, the first portion of the name shown in the **Name** column of the Disk Devices table (that is, *sdc*, *sdd*, *sde*, and so on) matches the value shown in the **Device** column of the Volumes table.



Disk Devices

Name	World Wide Name	I/O Load	Read Rate	Write Rate
croot(8:1,sda1)	N/A	0.03%	0 bytes/s	3 KB/s
cvloc(8:2,sda2)	N/A	0.85%	0 bytes/s	58 KB/s
sdc(8:16,sdb)	N/A	0.00%	0 bytes/s	81 bytes/s
sdd(8:32,sdc)	N/A	0.00%	0 bytes/s	82 bytes/s
sde(8:48,sdd)	N/A	0.00%	0 bytes/s	82 bytes/s

Volumes

Mount Point	Device	Status	Size	Available	Write Cache Status
/	croot	Online	21.00 GB	14.90 GB	Unknown
/var/local	cvloc	Online	85.86 GB	84.10 GB	Unknown
/var/local/rangedb/0	sdc	Online	107.32 GB	107.18 GB	Enabled
/var/local/rangedb/1	sdd	Online	107.32 GB	107.18 GB	Enabled
/var/local/rangedb/2	sde	Online	107.32 GB	107.18 GB	Enabled

Object Stores

ID	Size	Available	Replicated Data	EC Data	Object Data (%)	Health
0000	107.32 GB	96.45 GB	250.90 KB	0 bytes	0.00%	No Errors
0001	107.32 GB	107.18 GB	0 bytes	0 bytes	0.00%	No Errors
0002	107.32 GB	107.18 GB	0 bytes	0 bytes	0.00%	No Errors

Related information

SG6000 storage appliances

SG5700 storage appliances

SG5600 storage appliances

Viewing the SANtricity System Manager tab

The SANtricity System Manager tab enables you to access SANtricity System Manager without having to configure or connect the management port of the storage appliance. You can use this tab to review hardware diagnostic and environmental information as well as issues related to the drives.

The SANtricity System Manager tab is shown for storage appliance nodes.

Using SANtricity System Manager, you can do the following:

- View performance data such as storage array level performance, I/O latency, storage controller CPU utilization, and throughput
- Check hardware component status
- Perform support functions including viewing diagnostic data, and configuring E-Series AutoSupport

To use SANtricity System Manager to configure a proxy for E-Series AutoSupport, see the instructions in administeringStorageGRID.

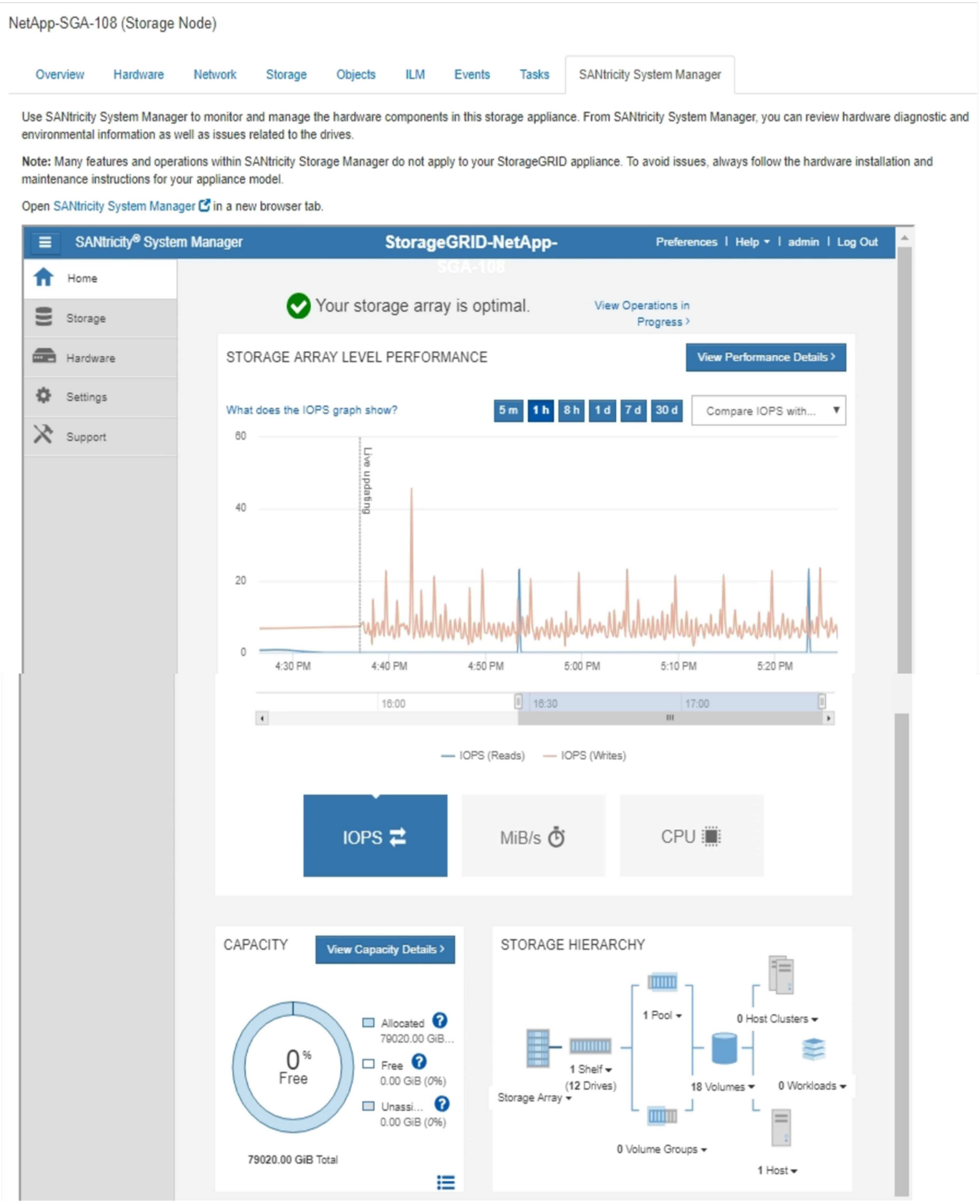
Administer StorageGRID

To access SANtricity System Manager through Grid Manager, you must have the Storage Appliance Administrator permission or Root Access permission.

You must have SANtricity firmware 8.70 or higher to access SANtricity System Manager using the Grid Manager.

Accessing SANtricity System Manager from the Grid Manager is generally meant only to monitor appliance hardware and configure E-Series AutoSupport. Many features and operations within SANtricity System Manager such as upgrading firmware do not apply to monitoring your StorageGRID appliance. To avoid issues, always follow the hardware installation and maintenance instructions for your appliance.

The tab displays the home page of SANtricity System Manager



You can use the SANtricity System Manager link to open the SANtricity System Manager in a new browser window for easier viewing.

To see details for storage array level performance and capacity usage, hover your cursor over each graph.

For more details on viewing the information accessible from the SANtricity System Manager tab, see the information in the NetApp E-Series Systems Documentation Center

Viewing information about appliance Admin Nodes and Gateway Nodes

The Nodes page lists information about service health and all computational, disk device, and network resources for each services appliance that is used for an Admin Node or a Gateway Node. You can also see memory, storage hardware, network resources, network interfaces, network addresses, and receive and transmit data.

Steps

1. From the Nodes page, select an appliance Admin Node or an appliance Gateway Node.
2. Select **Overview**.

   The Node Information table on the Overview tab displays the node's ID and name, the node type, the software version installed, and the IP addresses associated with the node. The Interface column contains the name of the interface, as follows:

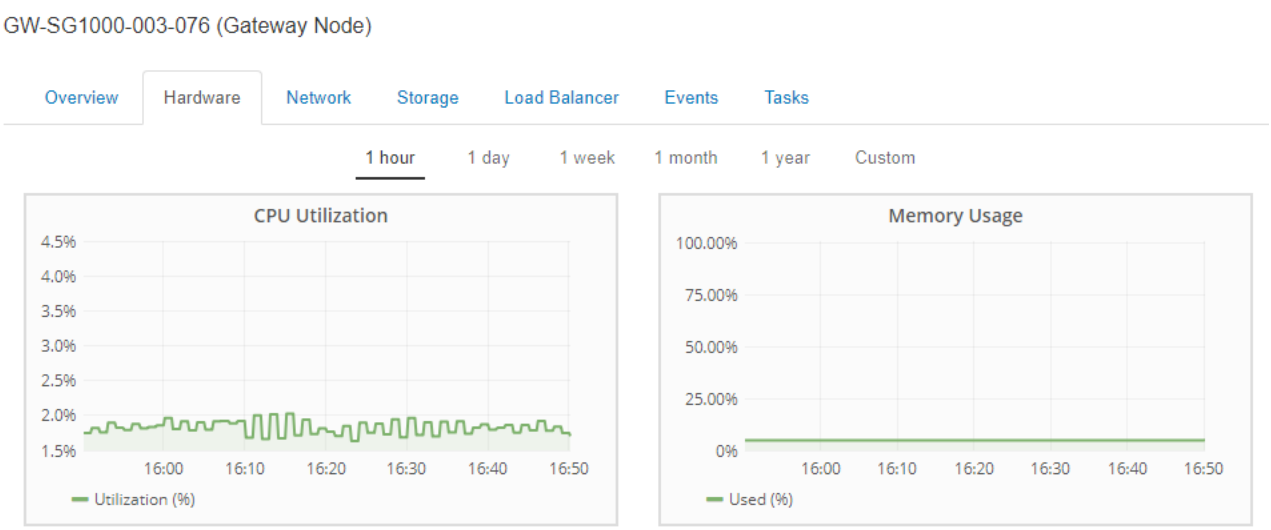
   - **adllb** and **adlli**: Shown if active/backup bonding is used for the Admin Network interface
   - **eth**: The Grid Network, Admin Network, or Client Network.
   - **hic**: One of the physical 10, 25, or 100 GbE ports on the appliance. These ports can be bonded together and connected to the StorageGRID Grid Network (eth0) and Client Network (eth2).
   - **mtc**: One of the physical 1 GbE ports on the appliance, which can be bonded or aliased and connected to the StorageGRID Admin Network (eth1).

Node Information

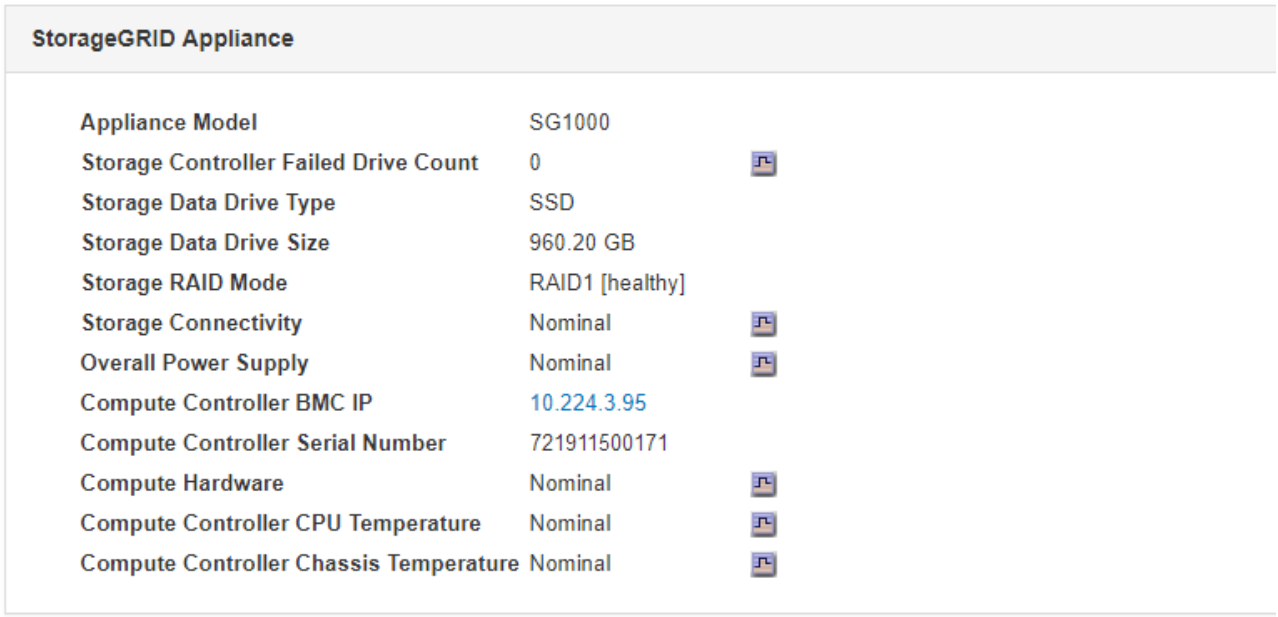
ID	46702fe0-2bca-4097-8f61-f3fe6b22ed75
Name	GW-SG1000-003-076
Type	Gateway Node
Software Version	11.3.0 (build 20190708.2304.71ba19a)
IP Addresses	169.254.0.1, 172.16.3.76, 10.224.3.76, 47.47.3.76 Show less

Interface	IP Address
adllb	fe80::c020:17ff:fe59:1cf3
adlli	169.254.0.1
adlli	fd20:327:327:0:408f:84ff:fe80:a9
adlli	fd20:8b1e:b255:8154:408f:84ff:fe80:a9
adlli	fe80::408f:84ff:fe80:a9
eth0	172.16.3.76
eth0	fd20:328:328:0:9a03:9bff:fe98:a272
eth0	fe80::9a03:9bff:fe98:a272
eth1	10.224.3.76
eth1	fd20:327:327:0:b6a9:fcff:fe08:4e49
eth1	fd20:8b1e:b255:8154:b6a9:fcff:fe08:4e49
eth1	fe80::b6a9:fcff:fe08:4e49
eth2	47.47.3.76
eth2	fd20:332:332:0:9a03:9bff:fe98:a272
eth2	fe80::9a03:9bff:fe98:a272
hic1	47.47.3.76
hic2	47.47.3.76
hic3	47.47.3.76
hic4	47.47.3.76
mtc1	10.224.3.76
mtc2	10.224.3.76

3. Select **Hardware** to see more information about the appliance.
   a. View the CPU Utilization and Memory graphs to determine the percentages of CPU and memory usage over time. To display a different time interval, select one of the controls above the chart or graph. You can display the information available for intervals of 1 hour, 1 day, 1 week, or 1 month. You can also set a custom interval, which allows you to specify date and time ranges.



b. Scroll down to view the table of components for the appliance. This table contains information such as the model name, serial number, controller firmware version, and the status of each component.



Field in the Appliance table	Description
Appliance Model	The model number for this StorageGRID appliance.
Storage Controller Failed Drive Count	The number of drives that are not optimal.
Storage Data Drive Type	The type of drives in the appliance, such as HDD (hard disk drive) or SSD (solid state drive).
Storage Data Drive Size	The total capacity including all data drives in the appliance.

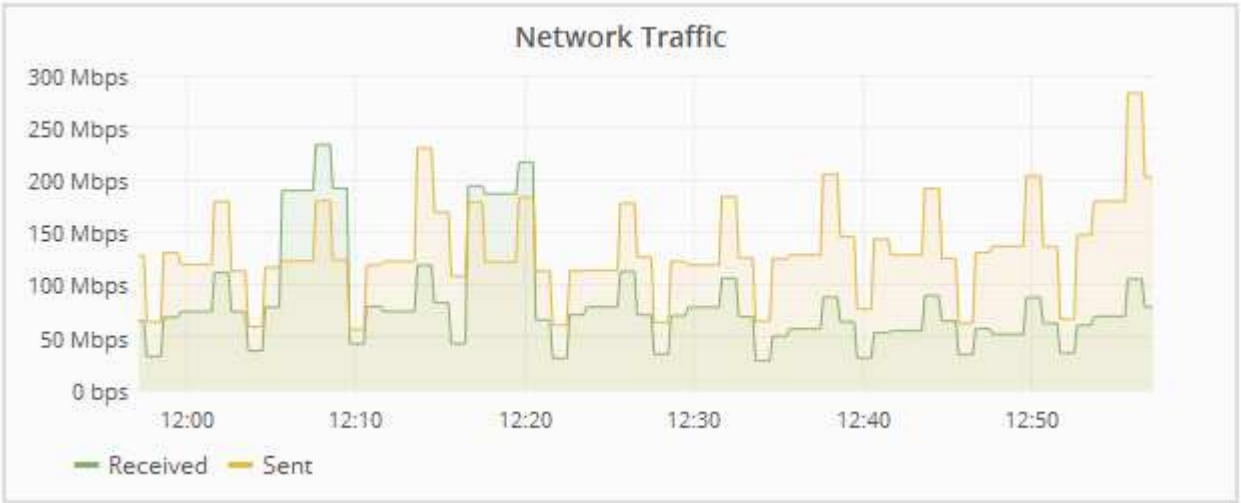
Field in the Appliance table	Description
Storage RAID Mode	The RAID mode for the appliance.
Overall Power Supply	The status of all power supplies in the appliance.
Compute Controller BMC IP	The IP address of the baseboard management controller (BMC) port in the compute controller. You can use this IP to connect to the BMC interface to monitor and diagnose the appliance hardware. This field is not displayed for appliance models that do not contain a BMC.
Compute Controller Serial Number	The serial number of the compute controller.
Compute Hardware	The status of the compute controller hardware.
Compute Controller CPU Temperature	The temperature status of the compute controller's CPU.
Compute Controller Chassis Temperature	The temperature status of the compute controller.

c. Confirm that all statuses are "Nominal."

   If a status is not "Nominal," review any current alerts.

4. Select **Network** to view information for each network.

   The Network Traffic graph provides a summary of overall network traffic.



a. Review the Network Interfaces section.

Network Interfaces

Name	Hardware Address	Speed	Duplex	Auto Negotiate	Link Status
adllb	C2:20:17:59:1C:F3	10 Gigabit	Full	Off	Up
adlli	42:8F:84:80:00:A9	10 Gigabit	Full	Off	Up
eth0	98:03:9B:98:A2:72	400 Gigabit	Full	Off	Up
eth1	B4:A9:FC:08:4E:49	10 Gigabit	Full	Off	Up
eth2	98:03:9B:98:A2:72	400 Gigabit	Full	Off	Up
hic1	98:03:9B:98:A2:72	100 Gigabit	Full	On	Up
hic2	98:03:9B:98:A2:72	100 Gigabit	Full	On	Up
hic3	98:03:9B:98:A2:72	100 Gigabit	Full	On	Up
hic4	98:03:9B:98:A2:72	100 Gigabit	Full	On	Up
mtc1	B4:A9:FC:08:4E:49	Gigabit	Full	On	Up
mtc2	B4:A9:FC:08:4E:49	Gigabit	Full	On	Up

Use the following table with the values in the **Speed** column in the Network Interfaces table to determine whether the four 40/100-GbE network ports on the appliance were configured to use active/backup mode or LACP mode.

The values shown in the table assume all four links are used.

Link mode	Bond mode	Individual HIC link speed (hic1, hic2, hic3, hic4)	Expected Grid/Client Network speed (eth0, eth2)
Aggregate	LACP	100	400
Fixed	LACP	100	200
Fixed	Active/Backup	100	100
Aggregate	LACP	40	160
Fixed	LACP	40	80
Fixed	Active/Backup	40	40

b. Review the Network Communication section.

The Receive and Transmit tables show how many bytes and packets have been received and sent across each network as well as other receive and transmission metrics.

Network Communication

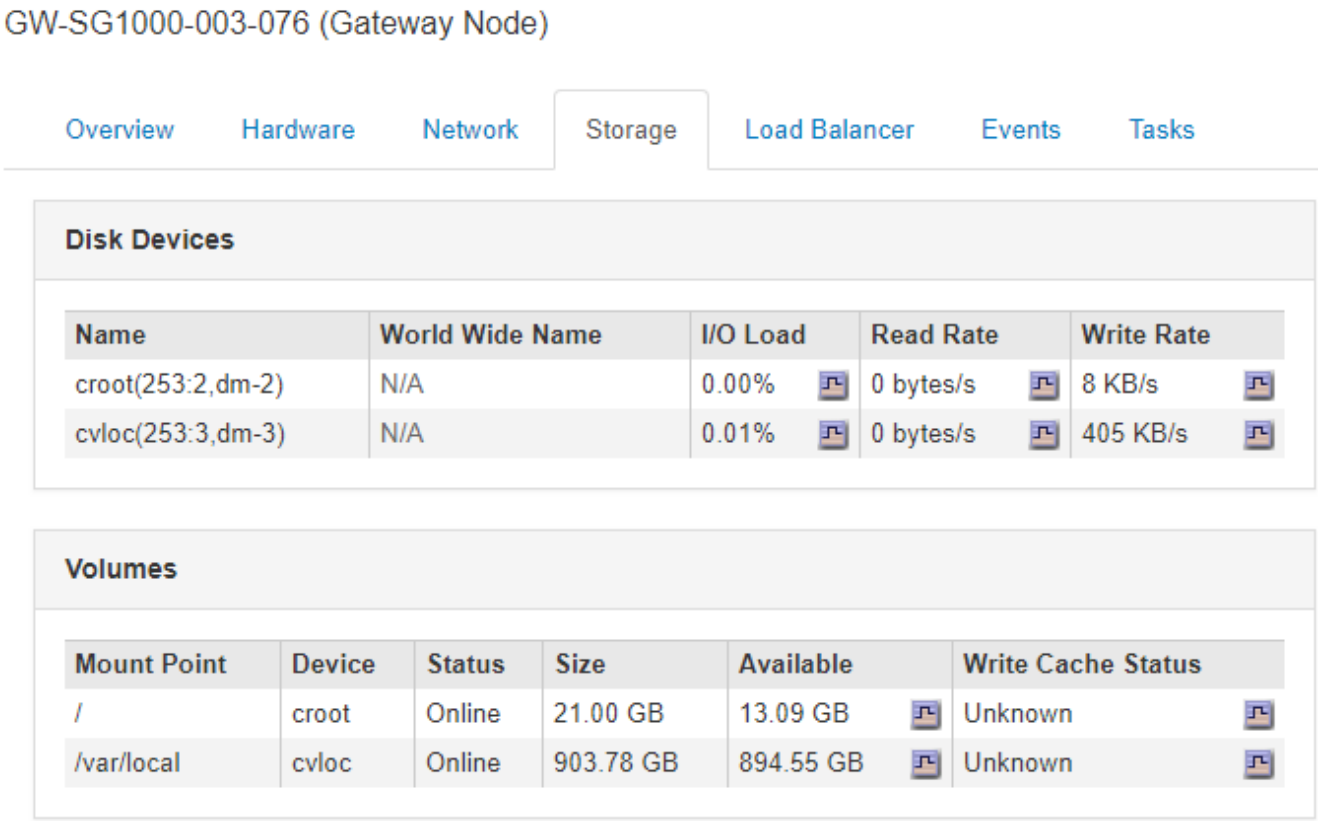
Receive

Interface	Data	Packets	Errors	Dropped	Frame Overruns	Frames
eth0	3.250 TB	5,610,578,144	0	8,327	0	0
eth1	1.205 GB	9,828,095	0	32,049	0	0
eth2	849.829 GB	186,349,407	0	10,269	0	0
hic1	114.864 GB	303,443,393	0	0	0	0
hic2	2.315 TB	5,351,180,956	0	305	0	0
hic3	1.690 TB	1,793,580,230	0	0	0	0
hic4	194.283 GB	331,640,075	0	0	0	0
mtc1	1.205 GB	9,828,096	0	0	0	0
mtc2	1.168 GB	9,564,173	0	32,050	0	0

Transmit

Interface	Data	Packets	Errors	Dropped	Collisions	Carrier
eth0	5.759 TB	5,789,638,626	0	0	0	0
eth1	4.563 MB	41,520	0	0	0	0
eth2	855.404 GB	139,975,194	0	0	0	0
hic1	289.248 GB	326,321,151	5	0	0	5
hic2	1.636 TB	2,640,416,419	18	0	0	18
hic3	3.219 TB	4,571,516,003	33	0	0	33
hic4	1.687 TB	1,658,180,262	22	0	0	22
mtc1	4.563 MB	41,520	0	0	0	0
mtc2	49.678 KB	609	0	0	0	0

5. Select **Storage** to view information about the disk devices and volumes on the services appliance.



Related information

SG100 & SG1000 services appliances

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