# Viewing the Nodes page

StorageGRID 11.5

NetApp
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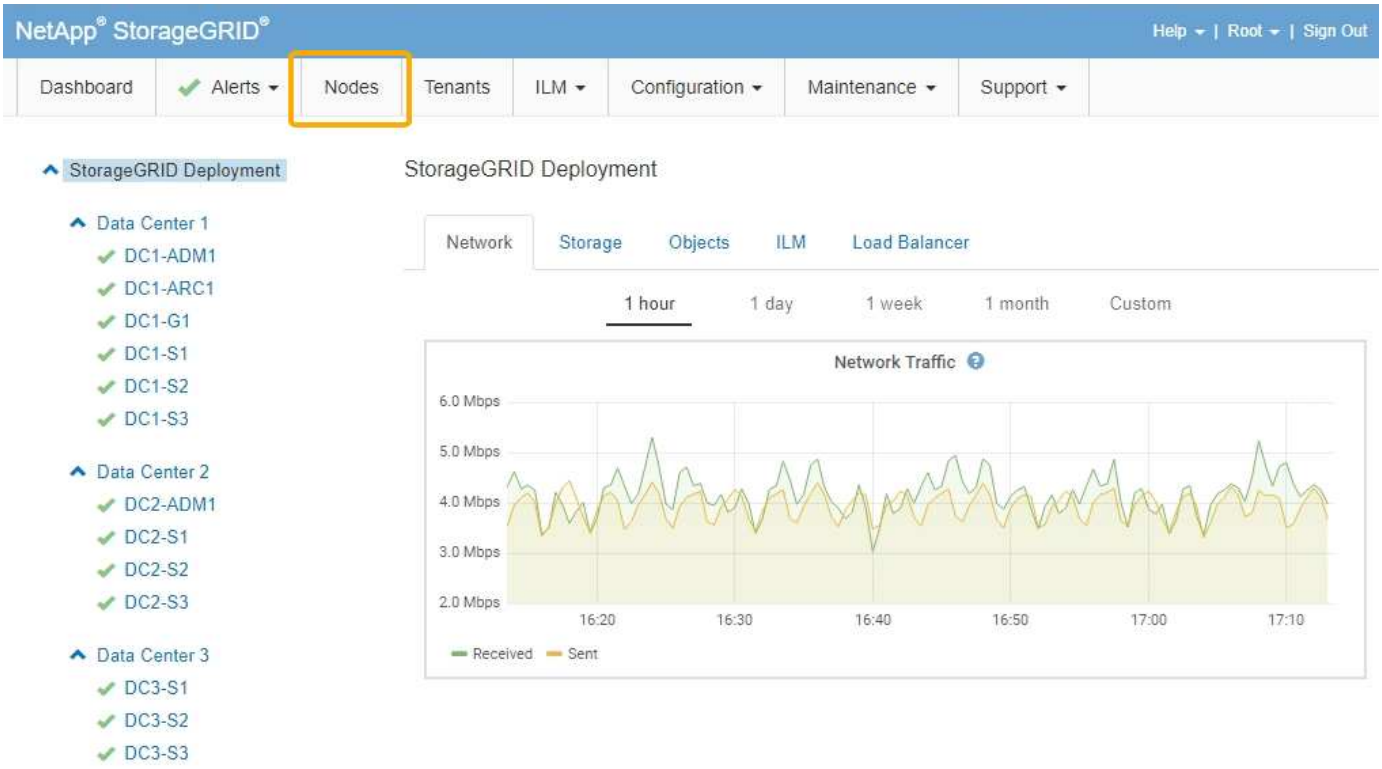
# Viewing the Nodes page

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.

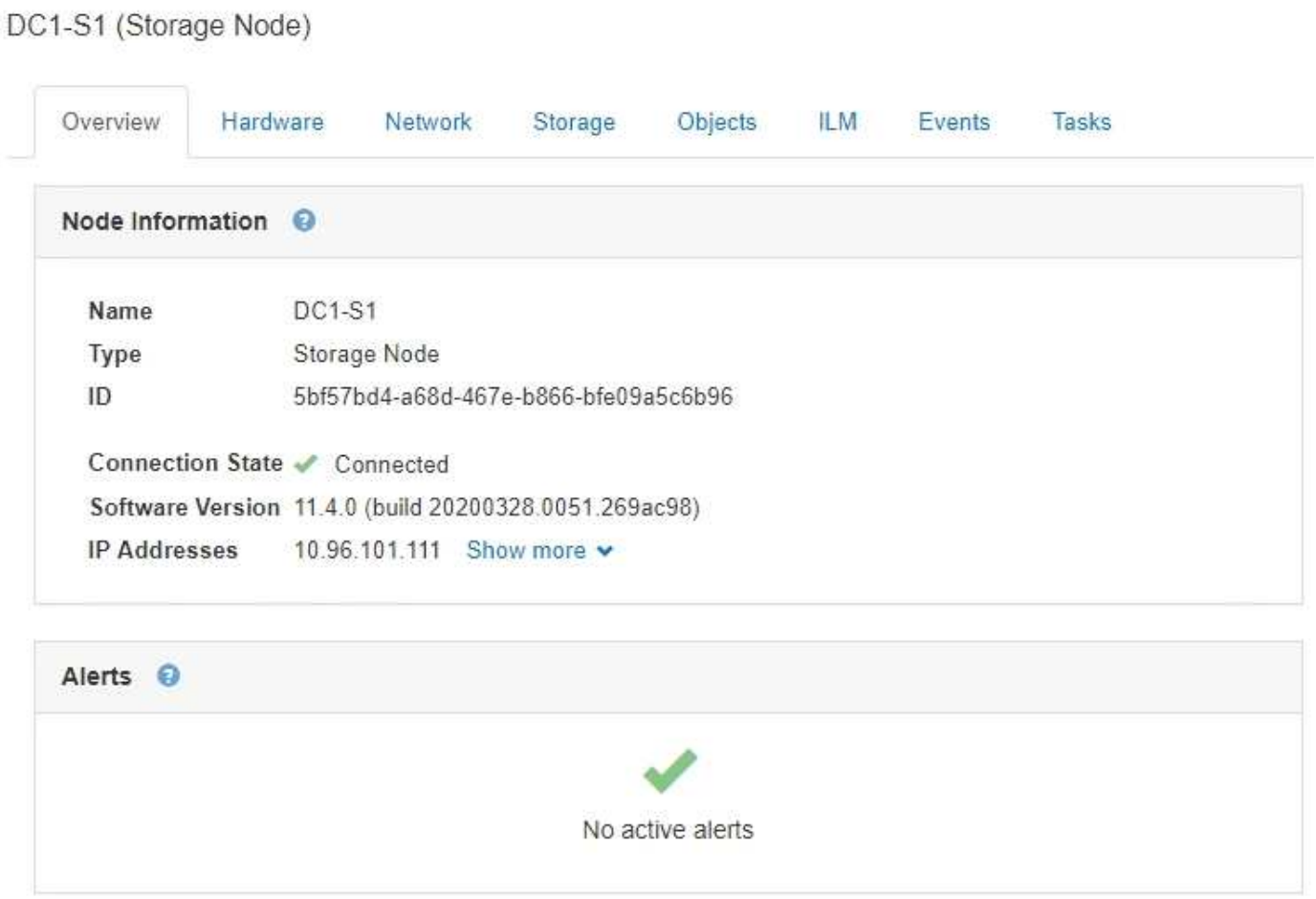
# Viewing the Overview tab

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.

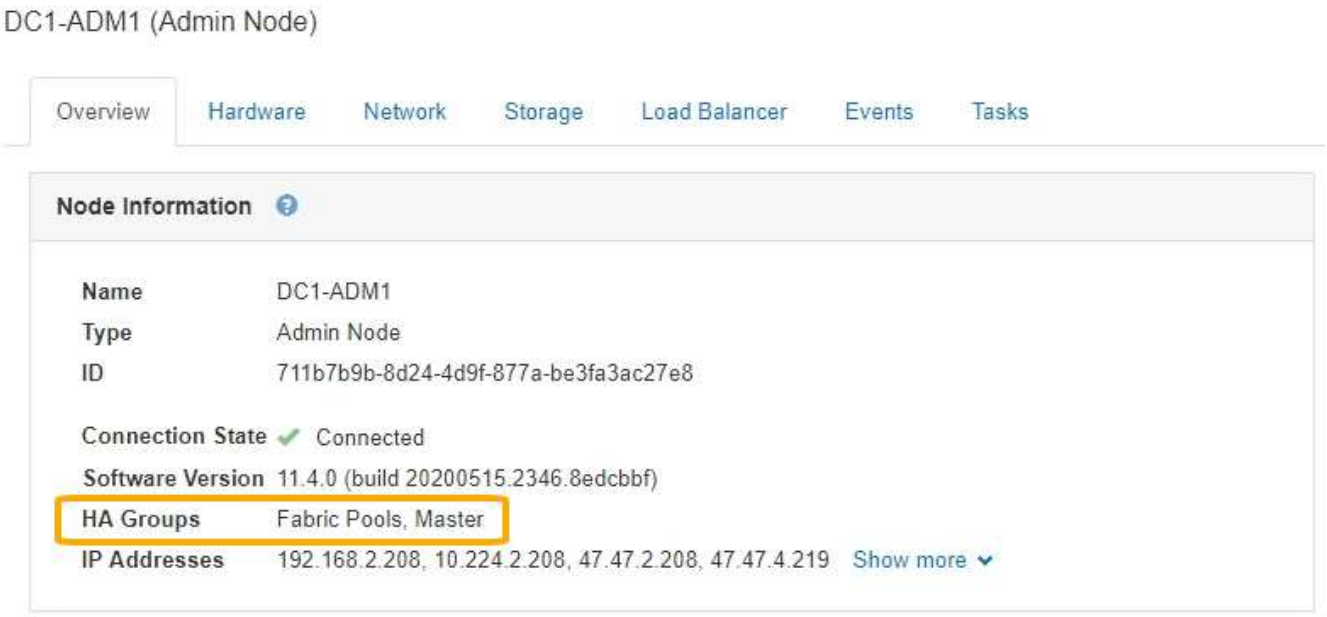



The overview information for a node includes the following:

- **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

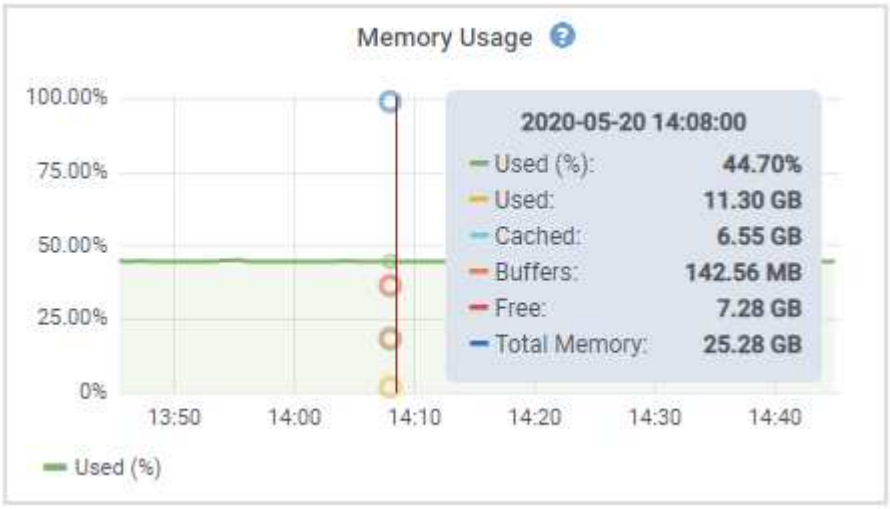
# Viewing the Hardware tab

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.

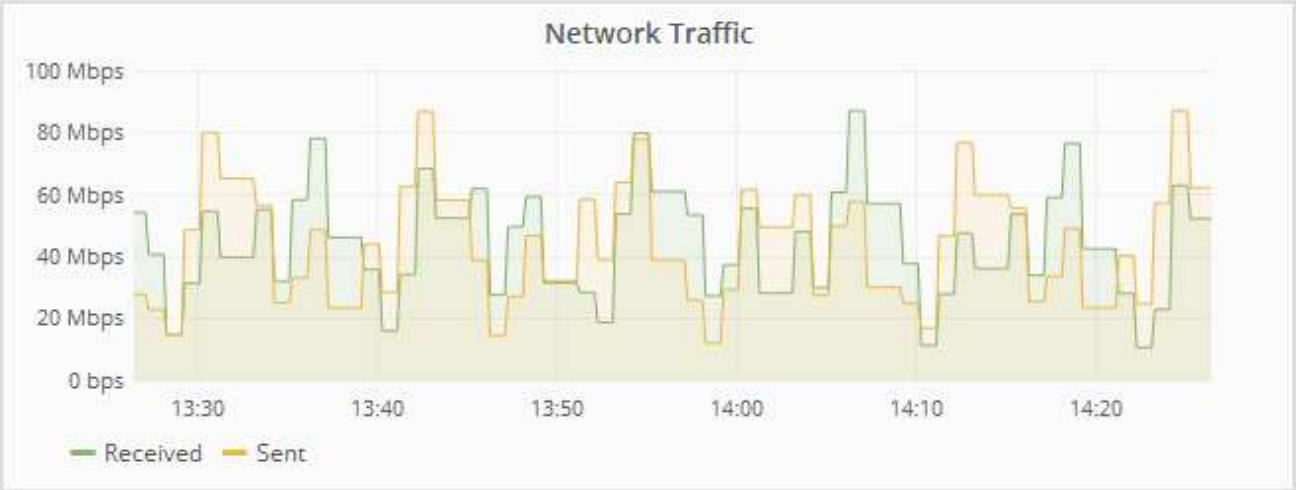
To display a different time interval, select one of the controls above the chart or graph. You can display the information available for intervals of 1 hour, 1 day, 1 week, or 1 month. You can also set a custom interval, which allows you to specify date and time ranges.

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

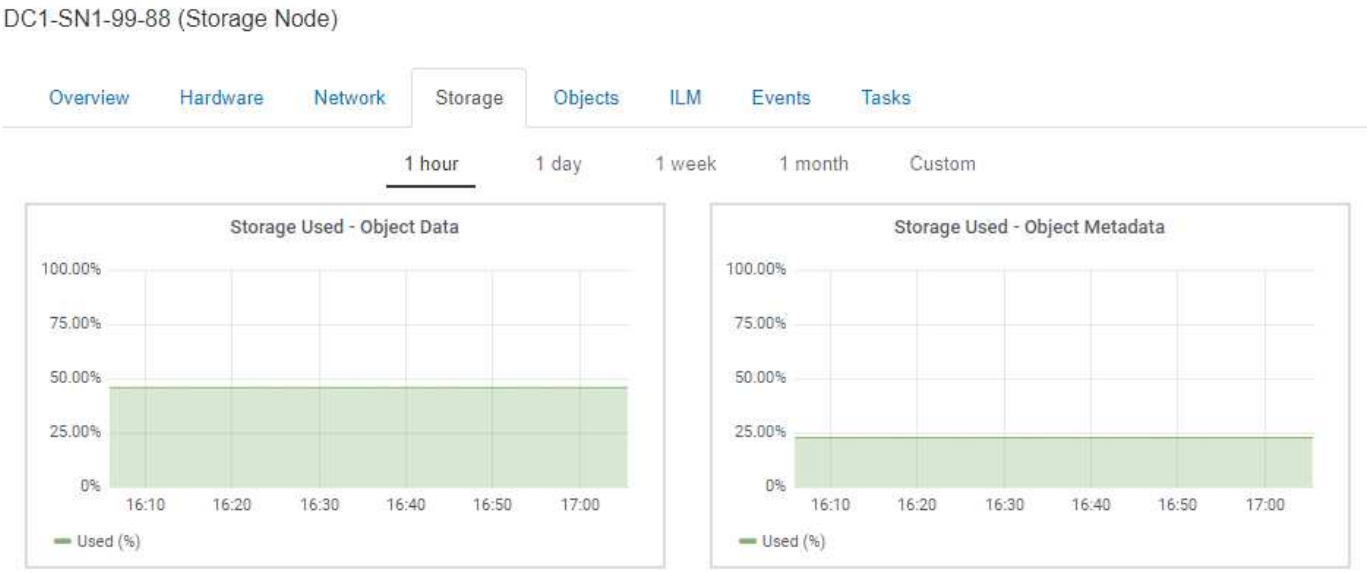
The Storage tab summarizes storage availability and other storage metrics.

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

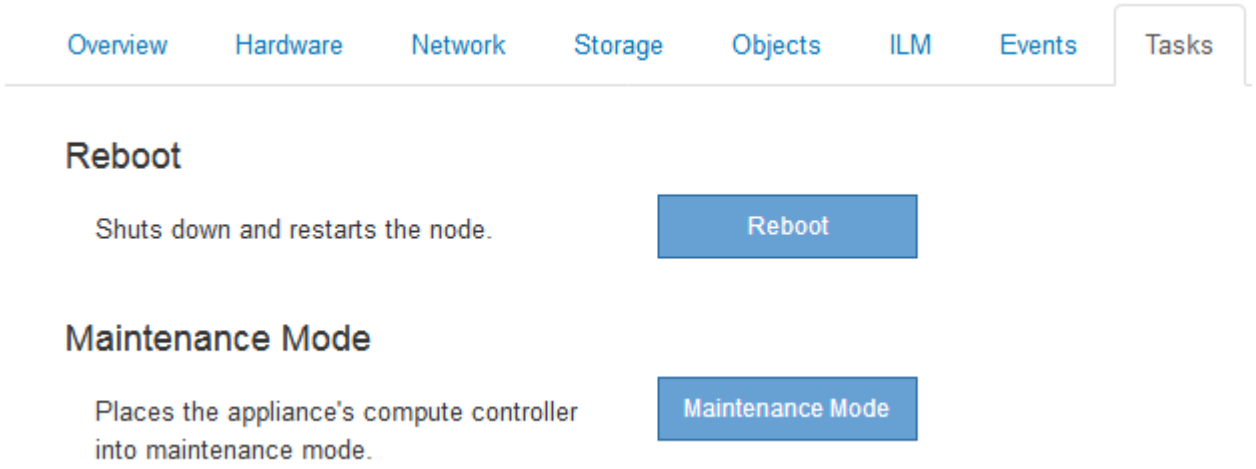
The Task tab allows you to reboot the selected node. The Task tab is shown for all nodes.

**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:

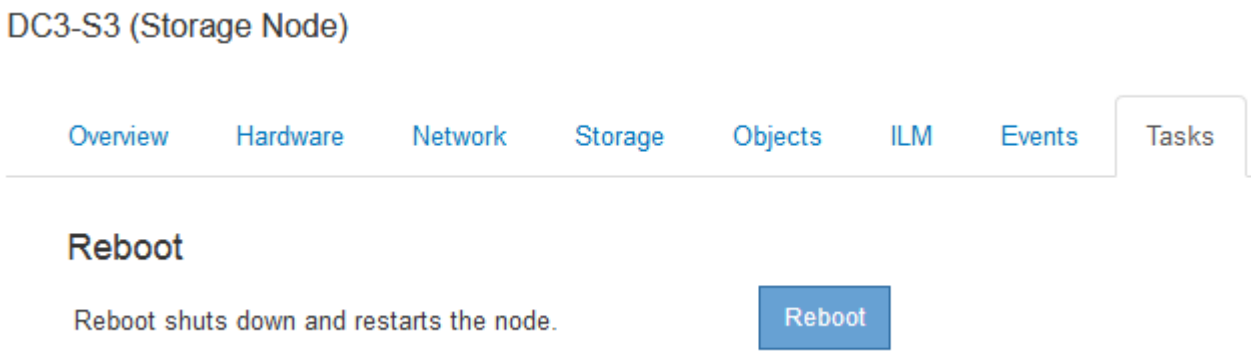
  - If an ILM rule specifies an ingest behavior of Dual commit or the rule specifies Balanced and it is not possible to immediately create all required copies, StorageGRID immediately commits any newly ingested objects to two Storage Nodes on the same site and evaluates ILM later. If you want to reboot 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.

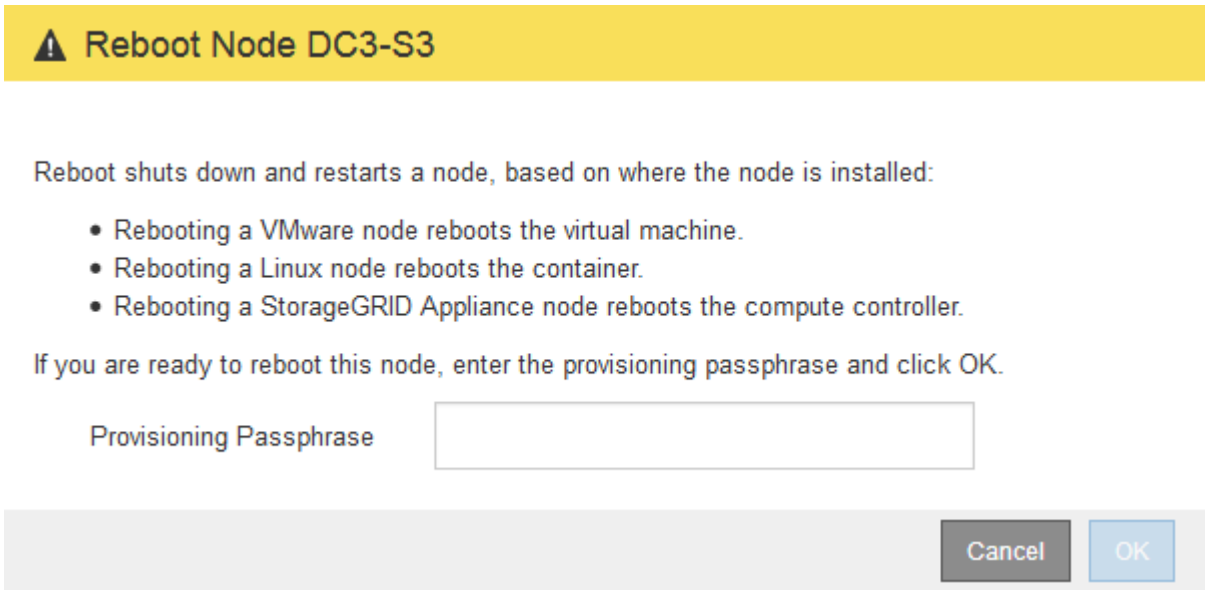
**Steps**

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

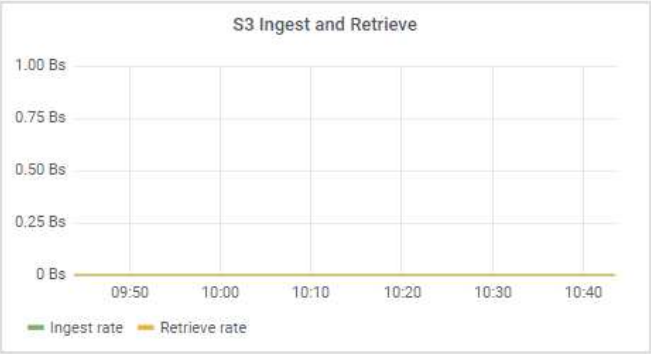
The Objects tab provides information about S3 and Swift ingest and retrieve rates.

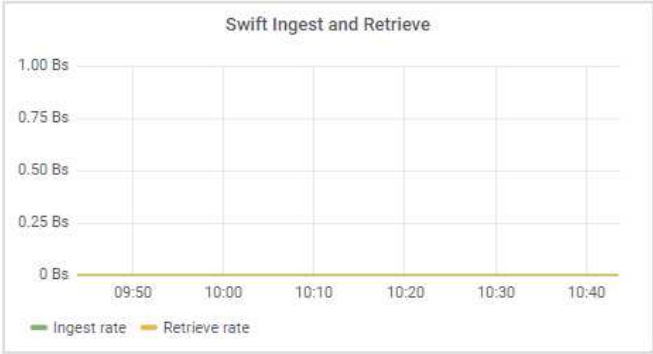
The Objects tab is shown for each Storage Node, each site, and the entire grid. For Storage Nodes, the Objects tab also provides object counts and information about metadata queries and background verification.

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

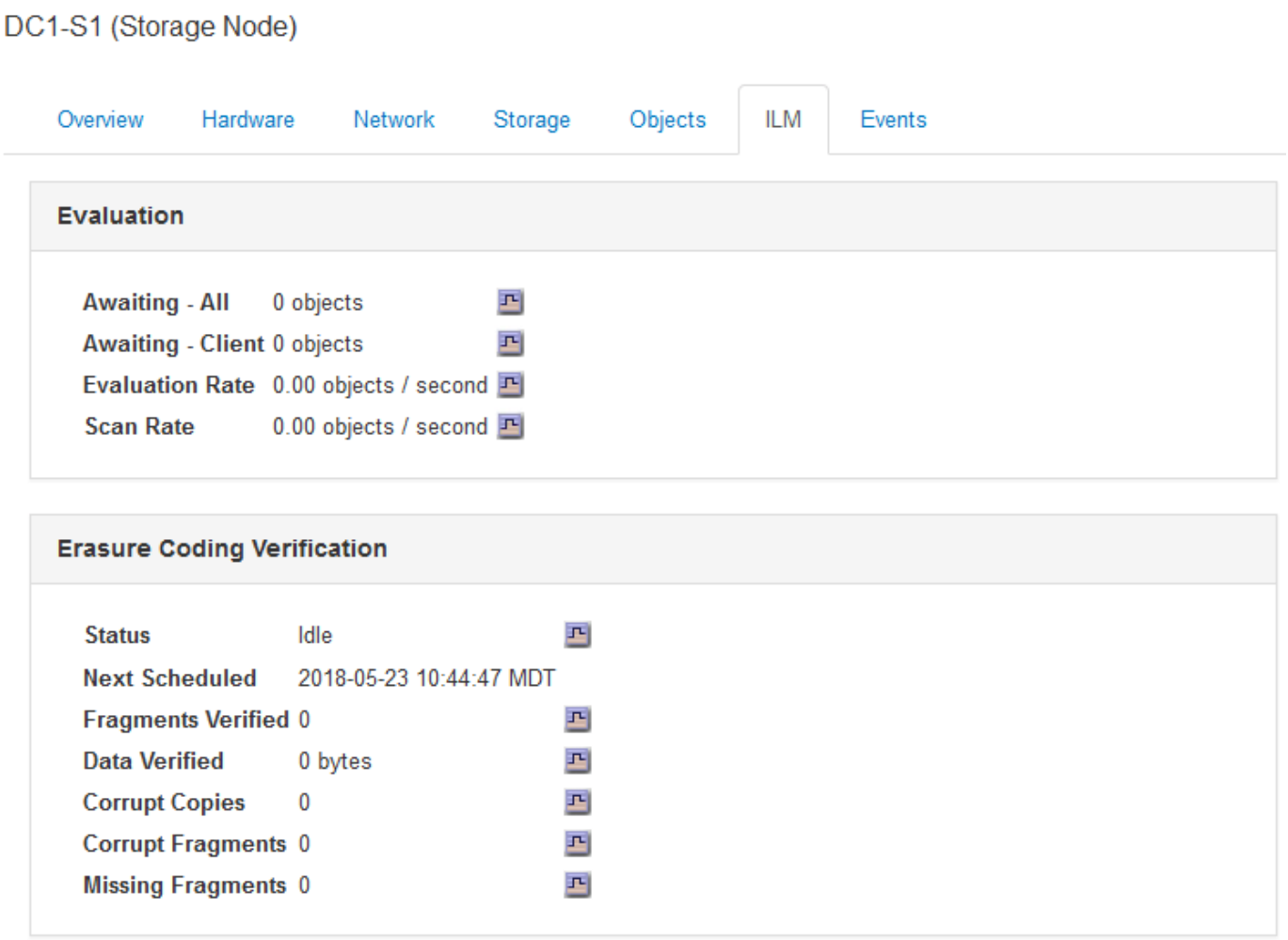
Use Swift

# 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

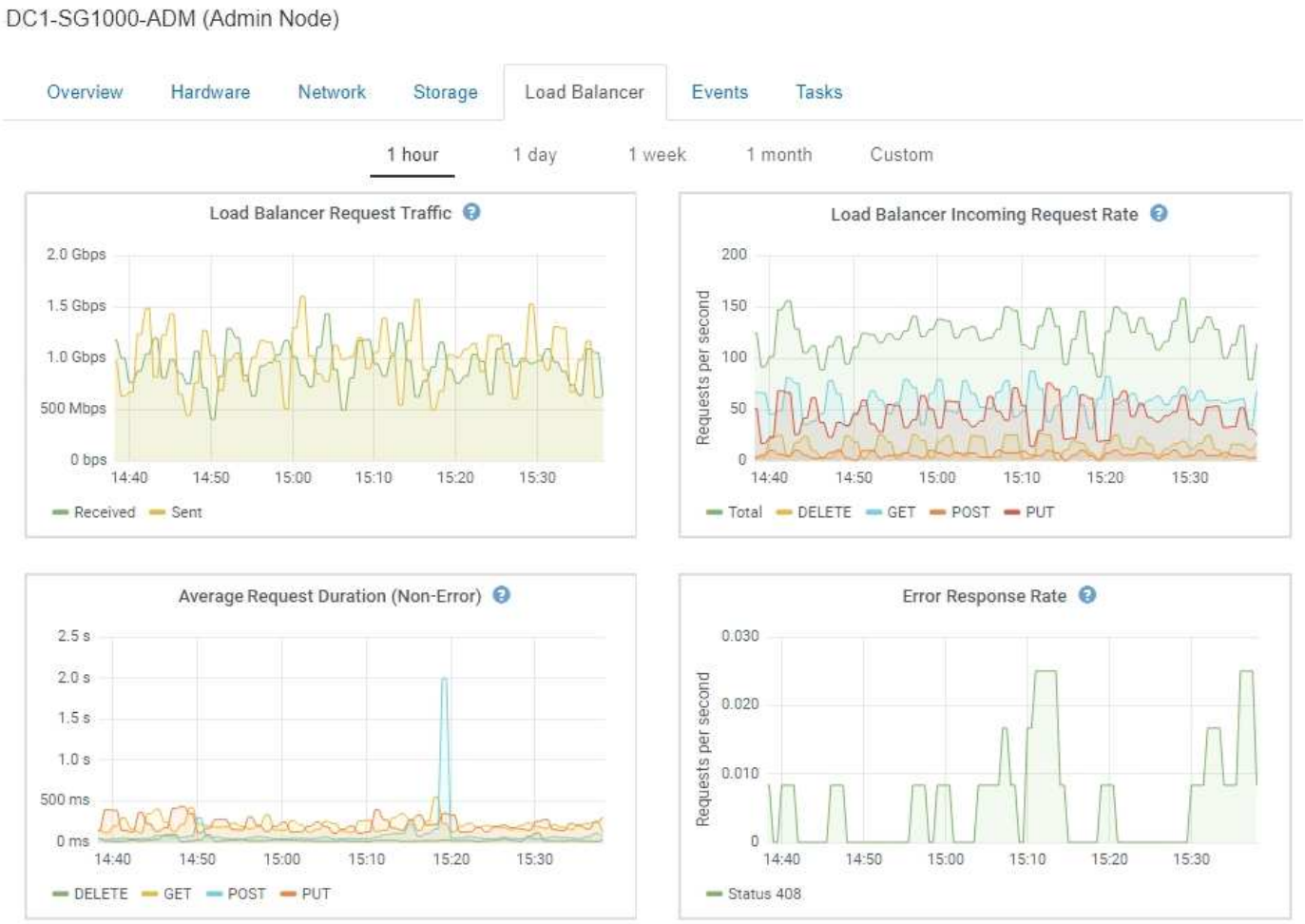
Administer StorageGRID

# 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,

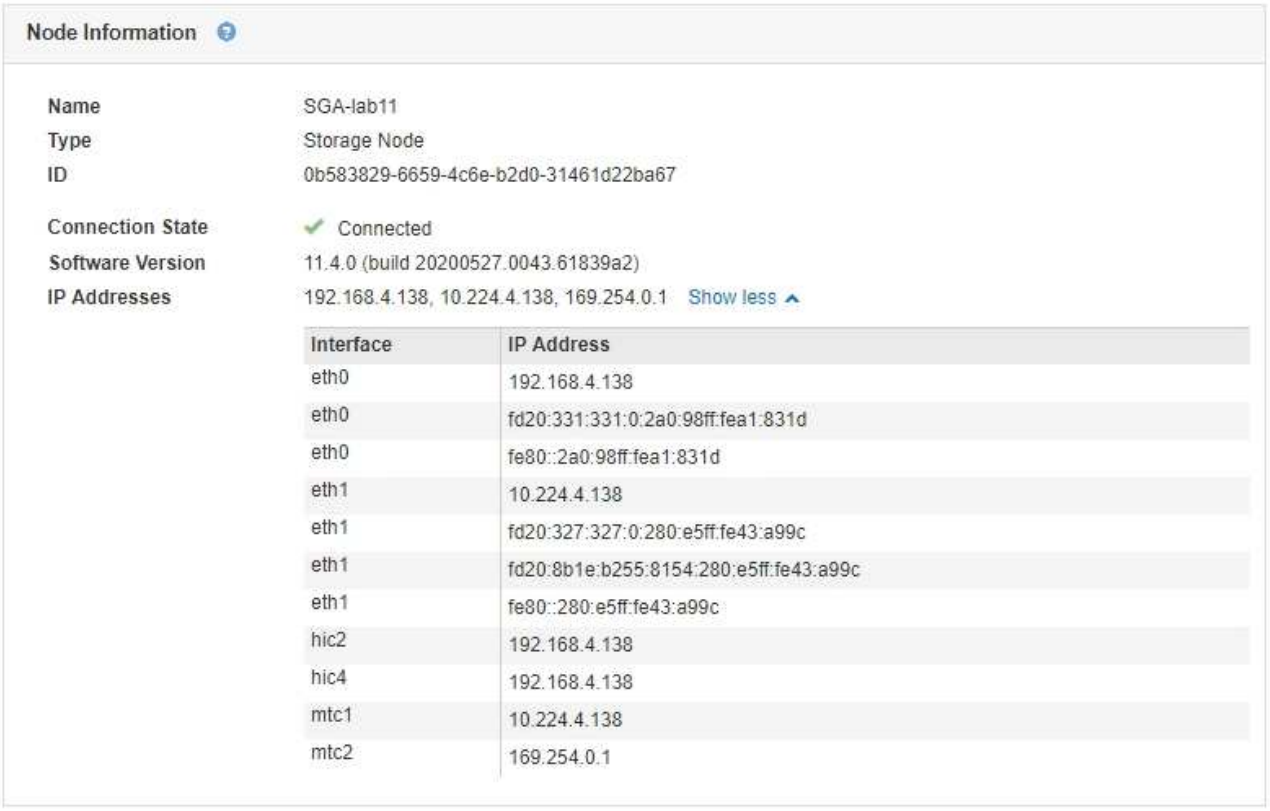
network addresses, and receive and transmit data.

**Steps**

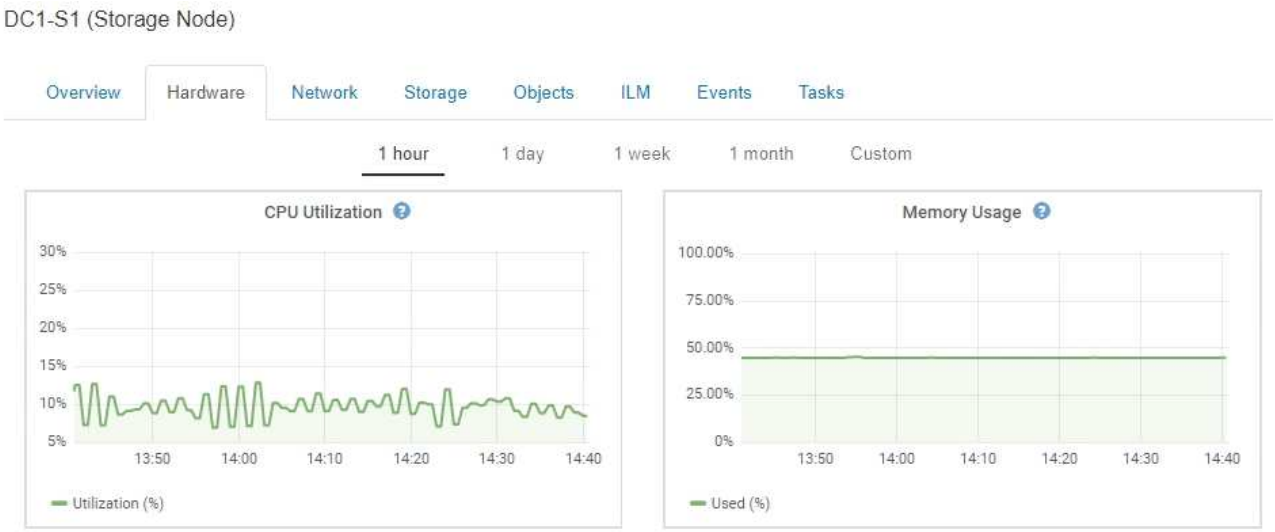
1. From the Nodes page, select an appliance Storage Node.
2. Select **Overview**.

   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).



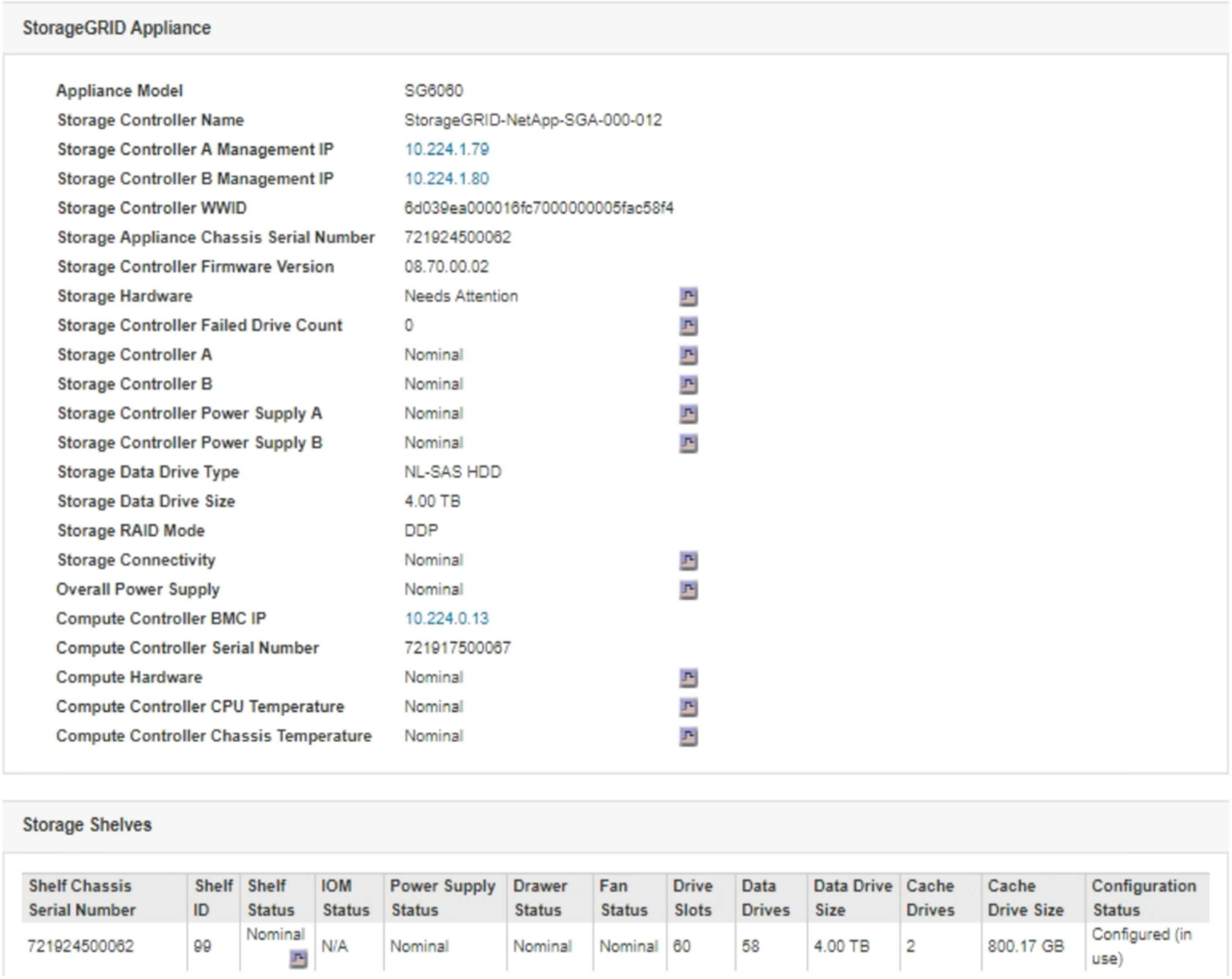

3. Select **Hardware** to see more information about the appliance.
   a. View the CPU Utilization and Memory graphs to determine the percentages of CPU and memory usage over time. To display a different time interval, select one of the controls above the chart or graph. You can display the information 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.<br><br>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.<br><br>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.<br><br>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.<br><br>• 99: Storage controller shelf<br>• 0: First expansion shelf<br>• 1: Second expansion shelf<br><br>**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. |

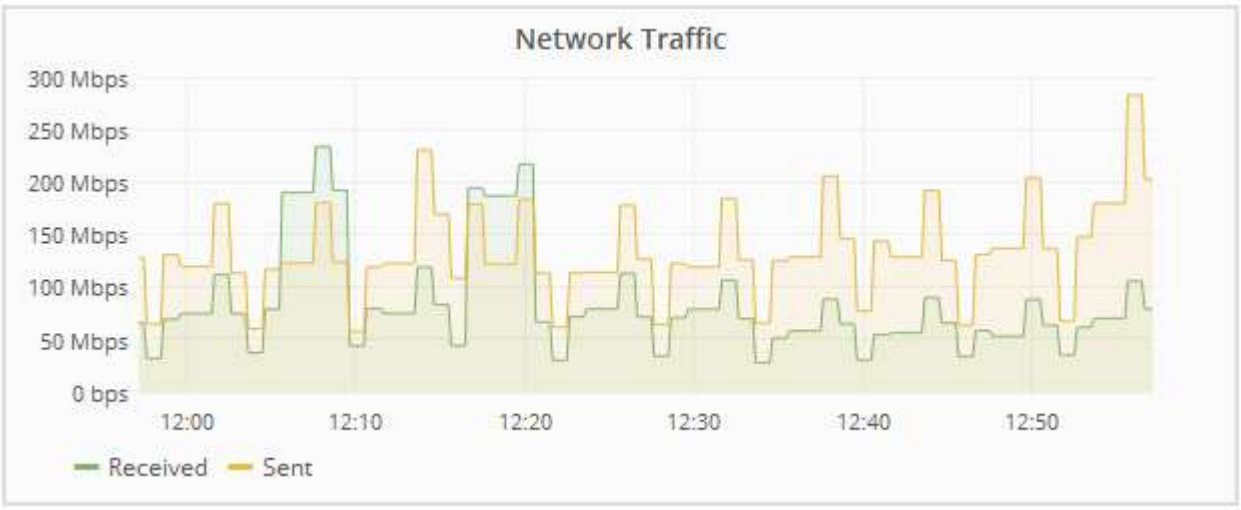
| Column in the Storage Shelves table | Description |
| --- | --- |
| Fan Status | The overall status of the cooling fans in the storage shelf. |
| Drive Slots | The total number of drive slots in the storage shelf. |
| Data Drives | The number of drives in the storage shelf that are used for data storage. |
| 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**

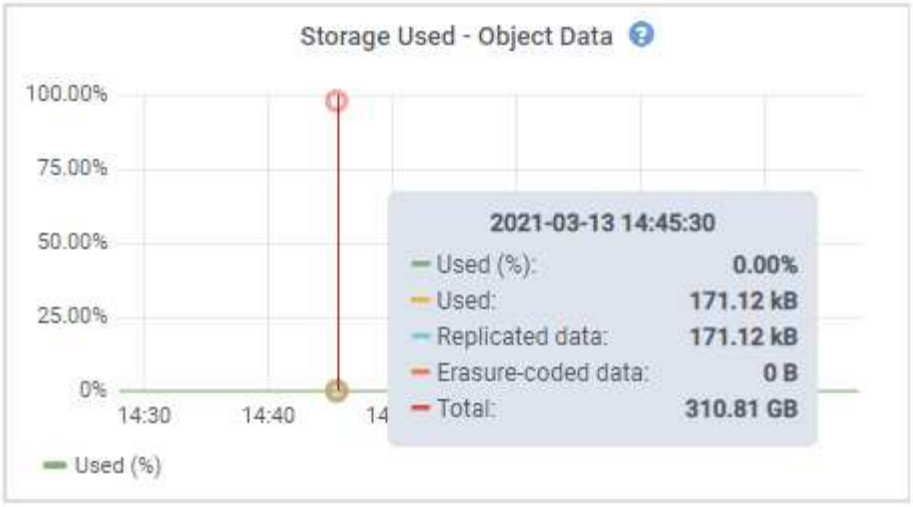
Receive

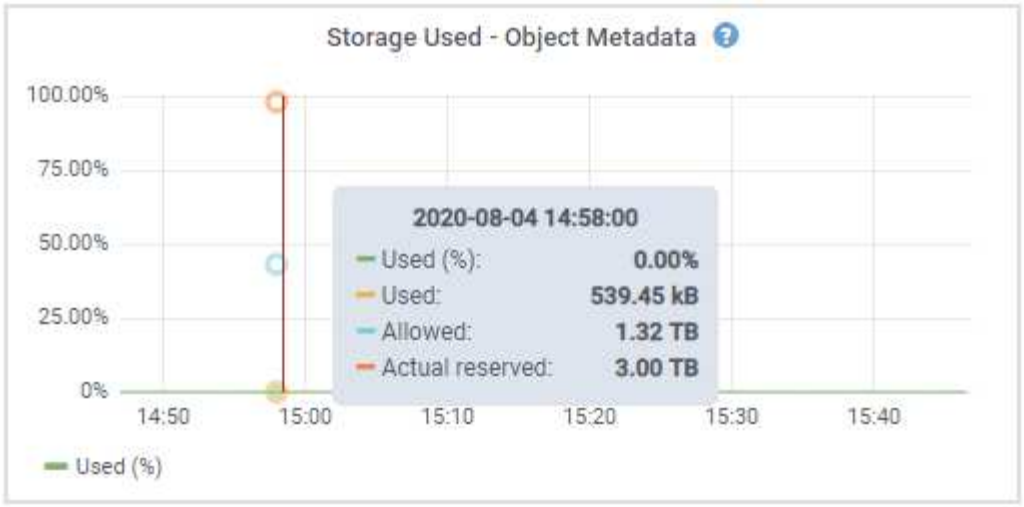
| Interface | Data | Packets | Errors | Dropped | Frame Overruns | Frames |
|---|---|---|---|---|---|---|
| eth0 | 3.250 TB | 5,610,578,144 | 0 | 8,327 | 0 | 0 |
| eth1 | 1.205 GB | 9,828,095 | 0 | 32,049 | 0 | 0 |
| eth2 | 849.829 GB | 186,349,407 | 0 | 10,269 | 0 | 0 |
| hic1 | 114.864 GB | 303,443,393 | 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.

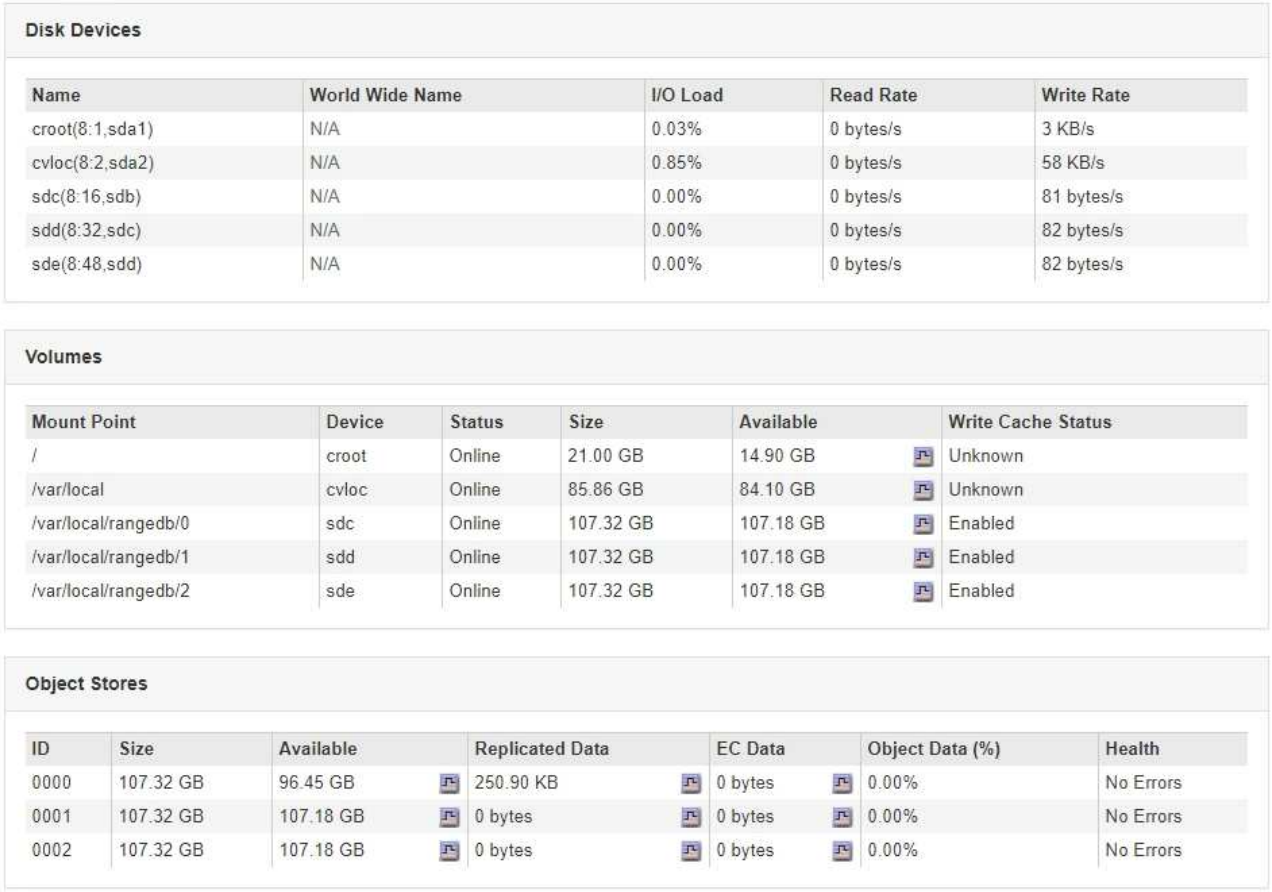



a. Scroll down to view the amounts of available storage for each volume and object store.

   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.

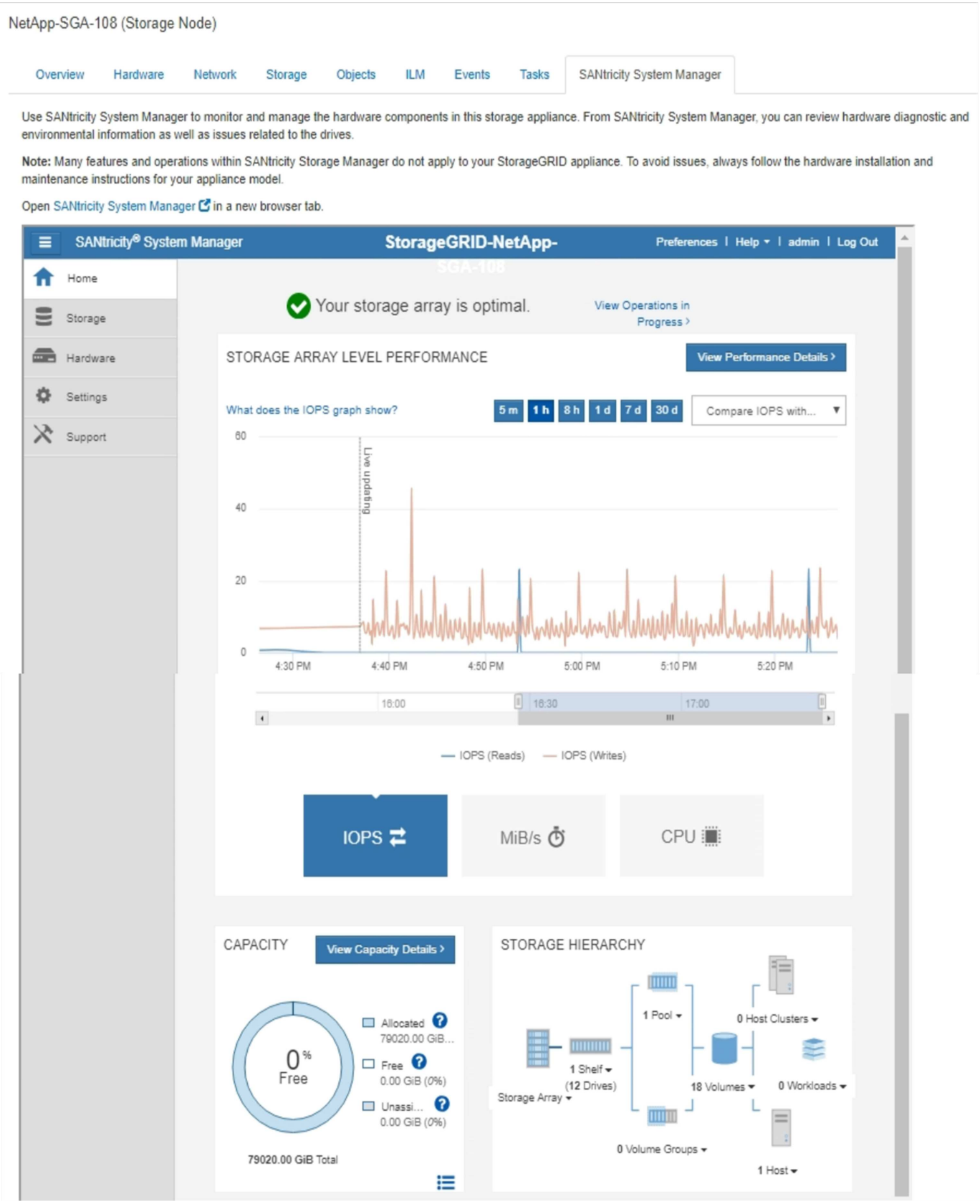
### Administer StorageGRID

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:

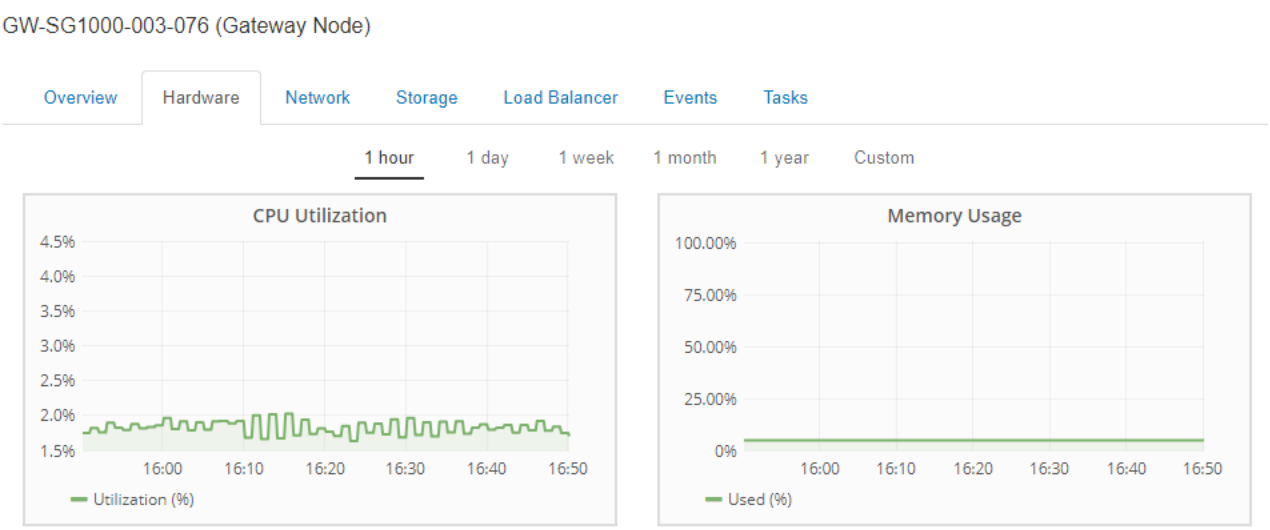
   - **adllb** and **adlli**: Shown if active/backup bonding is used for the Admin Network interface
   - **eth**: The Grid Network, Admin Network, or Client Network.
   - **hic**: One of the physical 10, 25, or 100 GbE ports on the appliance. These ports can be bonded together and connected to the StorageGRID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

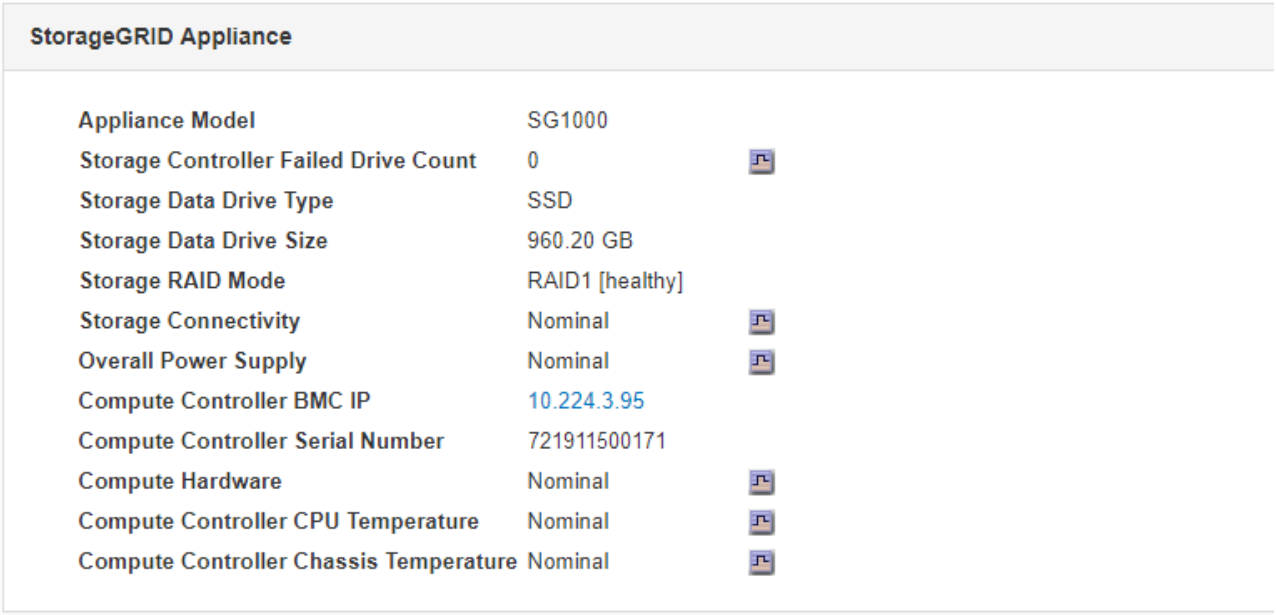
| | |
|---|---|
| **ID** | 46702fe0-2bca-4097-8f61-f3fe6b22ed75 |
| **Name** | GW-SG1000-003-076 |
| **Type** | Gateway Node |
| **Software Version** | 11.3.0 (build 20190708.2304.71ba19a) |
| **IP Addresses** | 169.254.0.1, 172.16.3.76, 10.224.3.76, 47.47.3.76 Show less |

| 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. |

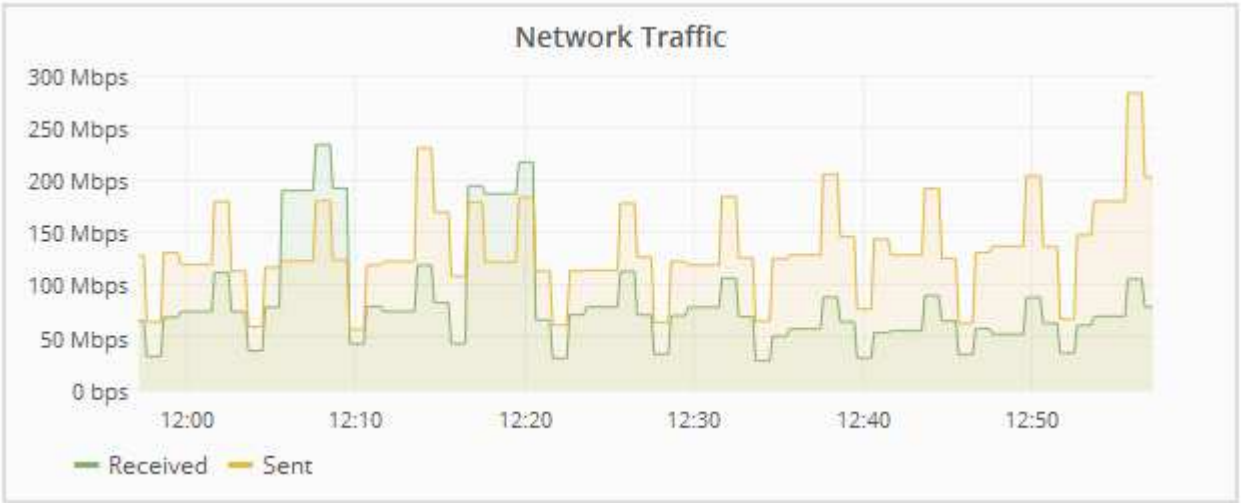
| Field in the Appliance table | Description |
|---|---|
| Storage RAID Mode | The RAID mode for the appliance. |
| Overall Power Supply | The status of all power supplies in the appliance. |
| Compute Controller BMC IP | The IP address of the baseboard management controller (BMC) port in the compute controller. You can use this IP to connect to the BMC interface to monitor and diagnose the appliance hardware.<br><br>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**

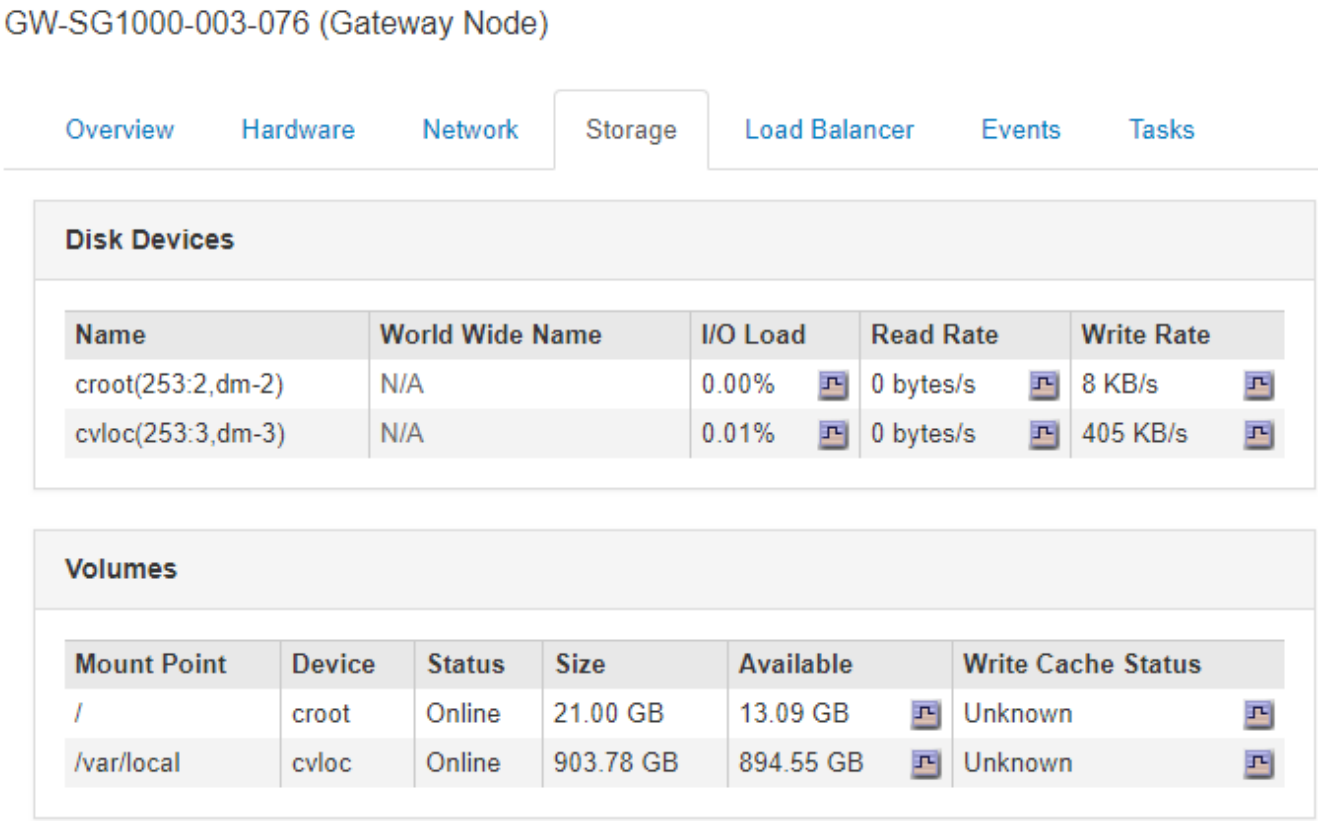
Receive

| 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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