Monitoring performance, networking, and system resources

StorageGRID

NetApp
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Monitoring performance, networking, and system resources

You should monitor performance, networking, and system resources to determine whether StorageGRID can handle its current load and to ensure that client performance does not degrade over time.

Monitoring query latency

Client actions such as storing, retrieving, or deleting objects create queries to the grid's distributed database of object metadata. You should monitor trends in query latency to ensure that grid resources are adequate for the current load.

What you'll need

You must be signed in to the Grid Manager using a supported browser.

About this task

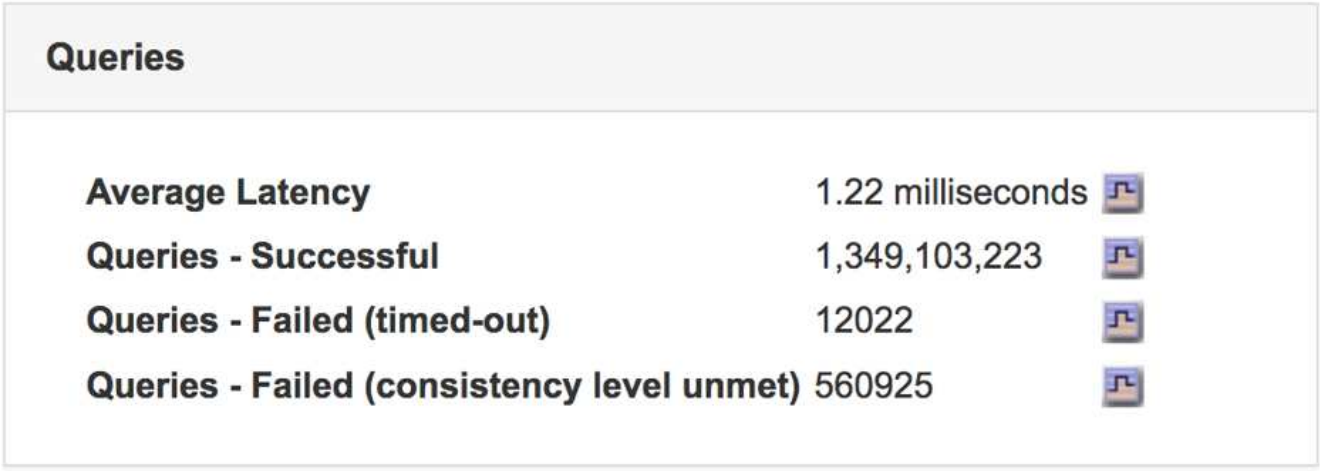
Temporary increases in query latency are normal and can be caused by a sudden increase in ingest requests. Failed queries are also normal and can result from transient network issues or nodes that are temporarily unavailable. However, if the average time to perform a query increases, overall grid performance declines.

If you notice that query latency is increasing over time, you should consider adding additional Storage Nodes in an expansion procedure to satisfy future workloads.

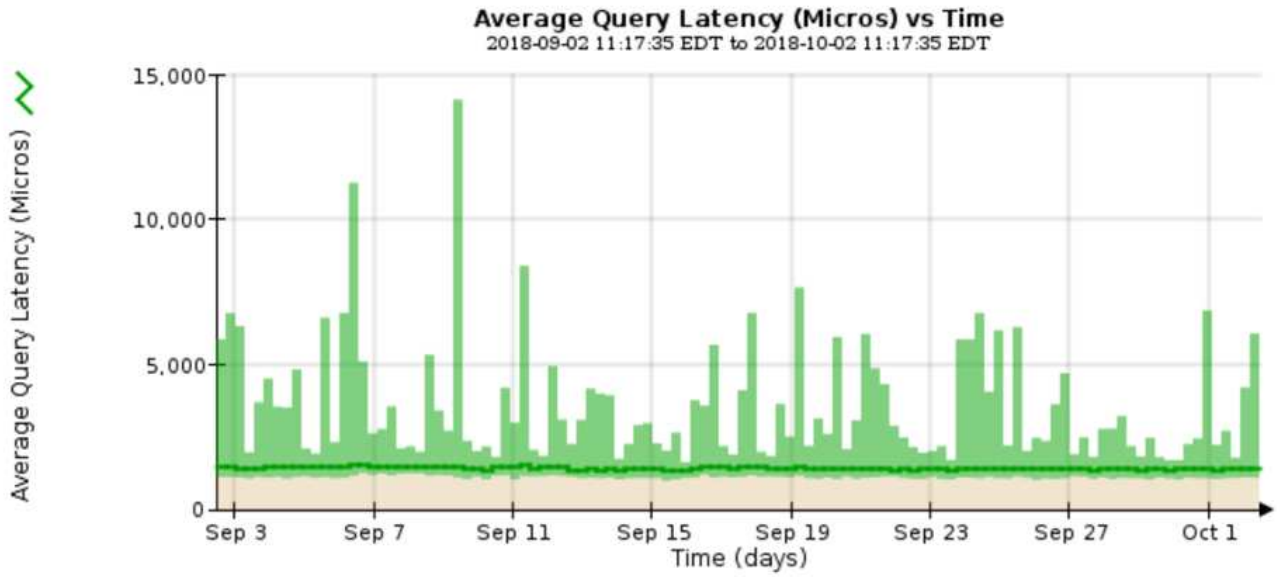
The **High latency for metadata queries** alert is triggered if the average time for queries is too long.

Steps

1. Select **Nodes** > ***Storage Node*** > **Objects**.
2. Scroll down to the Queries table and view the value for Average Latency.



3. Click the chart icon to chart the value over time.



The example chart shows spikes in query latency during normal grid operation.

Related information

Expand your grid

Monitoring network connections and performance

Grid nodes must be able to communicate with one another to permit the grid to operate. The integrity of the network between nodes and sites, and the network bandwidth between sites, are critical to efficient operations.

What you'll need

- You must be signed in to the Grid Manager using a supported browser.
- You must have specific access permissions.

Network connectivity and bandwidth are especially important if your information lifecycle management (ILM) policy copies replicated objects between sites or stores erasure-coded objects using a scheme that provides site-loss protection. If the network between sites is not available, network latency is too high, or network bandwidth is insufficient, some ILM rules might not be able to place objects where expected. This can lead to ingest failures (when the Strict ingest option is selected for ILM rules), or simply to poor ingest performance and ILM backlogs.

You can use the Grid Manager to monitor connectivity and network performance, so you can address any issues promptly.

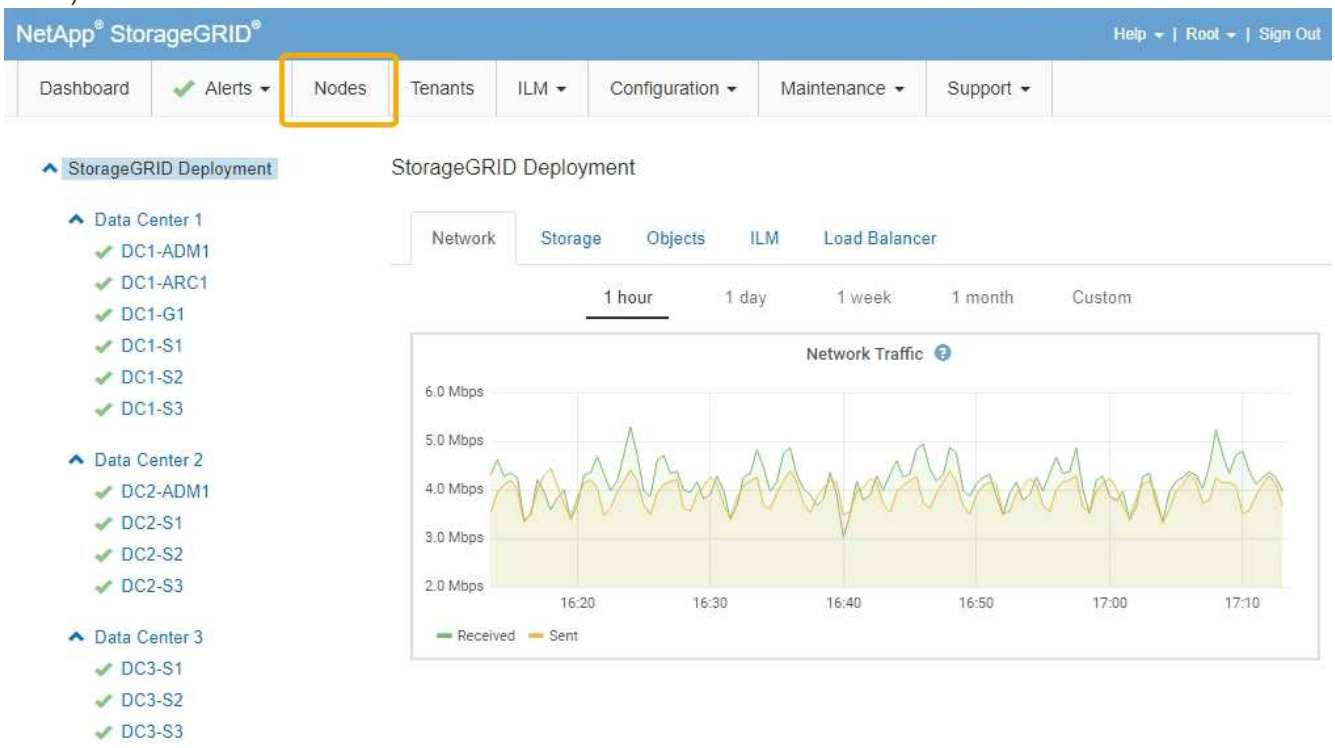
Additionally, consider creating network traffic classification policies to provide monitoring and limiting for traffic related to specific tenants, buckets, subnets, or load balancer endpoints. See the instructions for administering StorageGRID.

Steps

1. Select **Nodes**.

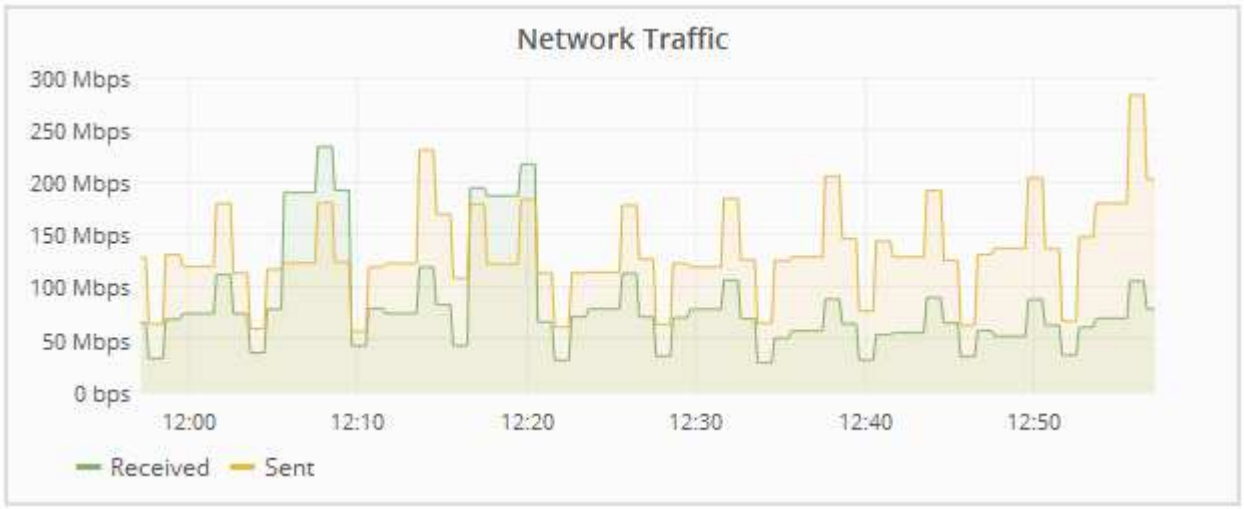
   The Nodes page appears. The node icons indicate at a glance which nodes are connected (green

checkmark icon) and which nodes are disconnected (blue or gray icons).



2. Select the grid name, a specific data center site, or a grid node, and then select the **Network** tab.

   The Network Traffic graph provides a summary of overall network traffic for the grid as a whole, the data center site, or for the node.



   a. If you selected a grid node, scroll down to review the **Network Interfaces** section of the page.

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

b. For grid nodes, scroll down to review the **Network Communication** section of the page.

   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

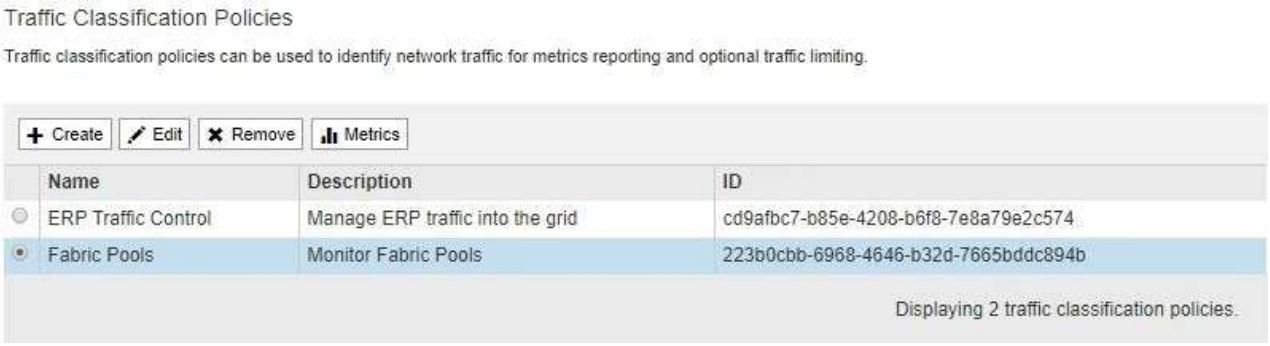
Interface	Data	Packets	Errors	Dropped	Frame Overruns	Frames
eth0	3.250 TB	5,610,578,144	0	8,327	0	0
eth1	1.205 GB	9,828,095	0	32,049	0	0
eth2	849.829 GB	186,349,407	0	10,269	0	0
hic1	114.864 GB	303,443,393	0	0	0	0
hic2	2.315 TB	5,351,180,956	0	305	0	0
hic3	1.690 TB	1,793,580,230	0	0	0	0
hic4	194.283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

3. Use the metrics associated with your traffic classification policies to monitor network traffic.
   a. Select **Configuration** > **Network Settings** > **Traffic Classification**.

      The Traffic Classification Policies page appears, and the existing policies are listed in the table.



b. To view graphs that show the networking metrics associated with a policy, select the radio button to the left of the policy, and then click **Metrics**.

c. Review the graphs to understand the network traffic associated with the policy.

   If a traffic classification policy is designed to limit network traffic, analyze how often traffic is limited and decide if the policy continues to meet your needs. From time to time, adjust each traffic classification policy as needed.

   To create, edit, or delete traffic classification policies, see the instructions for administering StorageGRID.

Related information

Viewing the Network tab

Monitoring node connection states

Administer StorageGRID

Monitoring node-level resources

You should monitor individual grid nodes to check their resource utilization levels.

What you'll need

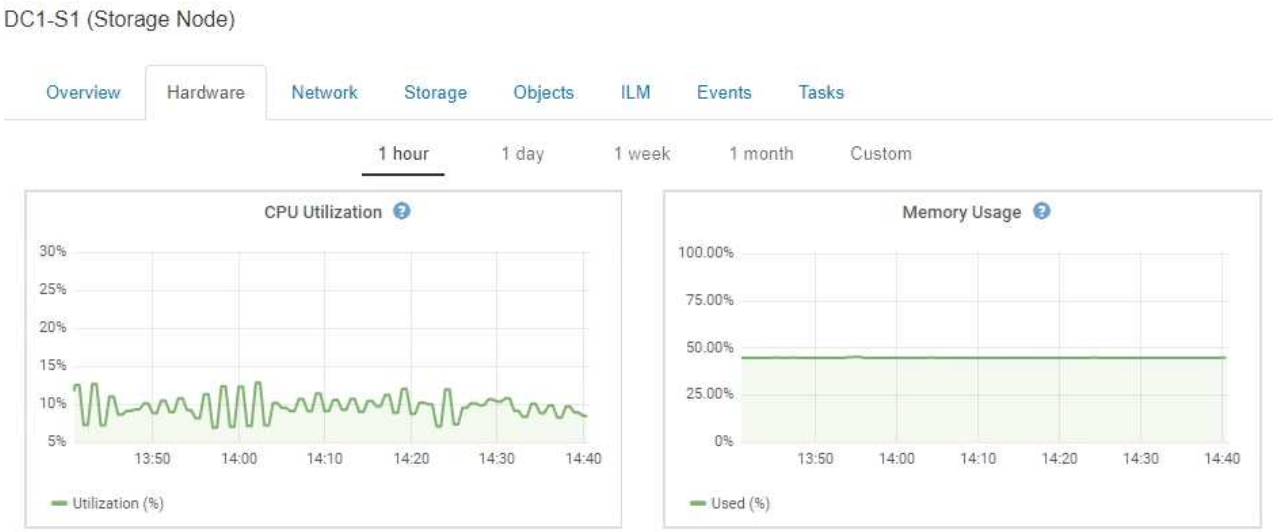
- You must be signed in to the Grid Manager using a supported browser.

About this task

If nodes are consistently overloaded, more nodes might be required for efficient operations.

Steps

1. To view information about hardware utilization of a grid node:
   a. From the **Nodes** page, select the node.
   b. Select the **Hardware** tab to display graphs of CPU Utilization and Memory Usage.



c. 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.

d. If the node is hosted on a storage appliance or a services appliance, scroll down to view the tables of components. The status of all components should be “Nominal.” Investigate components that have any other status.

Related information

Viewing information about appliance Storage Nodes

Viewing information about appliance Admin Nodes and Gateway Nodes

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