Grid node procedures

StorageGRID

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Grid node procedures

You might need to perform procedures on a specific grid node. While you can perform a few of these procedures from Grid Manager, most of the procedures require you to access Server Manager from the node's command line.

Server Manager runs on every grid node to supervise the starting and stopping of services and to ensure that services gracefully join and leave the StorageGRID system. Server Manager also monitors the services on every grid node and will automatically attempt to restart any services that report faults.

> (i) You should access Server Manager only if technical support has directed you to do so.

> (i) You must close the current command shell session and log out after you are finished with Server Manager. Enter: `exit`

Choices

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- Viewing current status of all services
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Viewing Server Manager status and version

For each grid node, you can view the current status and version of Server Manager running on that grid node. You can also obtain the current status of all services running on that grid node.

What you'll need

You must have the `Passwords.txt` file.

Steps

1. Log in to the grid node:

   a. Enter the following command: `ssh admin@`*`grid_node_IP`*

   b. Enter the password listed in the `Passwords.txt` file.

   c. Enter the following command to switch to root: `su -`

   d. Enter the password listed in the `Passwords.txt` file.

   When you are logged in as root, the prompt changes from `$` to `#`.

2. View the current status of Server Manager running on the grid node: **`service servermanager status`**

   The current status of Server Manager running on the grid node is reported (running or not). If Server Manager's status is `running`, the time it has been running since last it was started is listed. For example:

   ```
   servermanager running for 1d, 13h, 0m, 30s
   ```

   This status is the equivalent of the status shown in the header of the local console display.

3. View the current version of Server Manager running on a grid node: **`service servermanager version`**

   The current version is listed. For example:

   ```
   11.1.0-20180425.1905.39c9493
   ```

4. Log out of the command shell: **`exit`**

Viewing current status of all services

You can view the current status of all services running on a grid node at any time.

What you'll need

You must have the `Passwords.txt` file.

Steps

1. Log in to the grid node:

   a. Enter the following command: `ssh admin@`*`grid_node_IP`*

   b. Enter the password listed in the `Passwords.txt` file.

   c. Enter the following command to switch to root: `su -`

   d. Enter the password listed in the `Passwords.txt` file.

   When you are logged in as root, the prompt changes from `$` to `#`.

2. View the status of all services running on the grid node: `storagegrid-status`

   For example, the output for the primary Admin Node shows the current status of the AMS, CMN, and NMS services as Running. This output is updated immediately if the status of a service changes.

```
Host Name                        190-ADM1
IP Address
Operating System Kernel          4.9.0           Verified
Operating System Environment     Debian 9.4      Verified
StorageGRID Webscale Release     11.1.0          Verified
Networking                                       Verified
Storage Subsystem                                Verified
Database Engine                  5.5.9999+default Running
Network Monitoring               11.1.0          Running
Time Synchronization             1:4.2.8p10+dfsg Running
ams                              11.1.0          Running
cmn                              11.1.0          Running
nms                              11.1.0          Running
ssm                              11.1.0          Running
mi                               11.1.0          Running
dynip                            11.1.0          Running
nginx                            1.10.3          Running
tomcat                           8.5.14          Running
grafana                          4.2.0           Running
mgmt api                         11.1.0          Running
prometheus                       1.5.2+ds        Running
persistence                      11.1.0          Running
ade exporter                     11.1.0          Running
attrDownPurge                    11.1.0          Running
attrDownSamp1                    11.1.0          Running
attrDownSamp2                    11.1.0          Running
node exporter                    0.13.0+ds       Running
```

3. Return to the command line, press **Ctrl+C**.

4. Optionally, view a static report for all services running on the grid node: `/usr/local/servermanager/reader.rb`

   This report includes the same information as the continuously updated report, but it is not updated if the status of a service changes.

5. Log out of the command shell: `exit`

Starting Server Manager and all services

You might need to start Server Manager, which also starts all services on the grid node.

What you'll need

You must have the `Passwords.txt` file.

About this task

Starting Server Manager on a grid node where it is already running results in a restart of Server Manager and all services on the grid node.

Steps

1. Log in to the grid node:

a. Enter the following command: `ssh admin@grid_node_IP`

b. Enter the password listed in the `Passwords.txt` file.

c. Enter the following command to switch to root: `su -`

d. Enter the password listed in the `Passwords.txt` file.

When you are logged in as root, the prompt changes from `$` to `#`.

2. Start Server Manager: `service servermanager start`

3. Log out of the command shell: `exit`

Restarting Server Manager and all services

You might need to restart server manager and all services running on a grid node.

What you'll need

You must have the `Passwords.txt` file.

Steps

1. Log in to the grid node:

    a. Enter the following command: `ssh admin@grid_node_IP`

    b. Enter the password listed in the `Passwords.txt` file.

    c. Enter the following command to switch to root: `su -`

    d. Enter the password listed in the `Passwords.txt` file.

    When you are logged in as root, the prompt changes from `$` to `#`.

2. Restart Server Manager and all services on the grid node: `service servermanager restart`

    Server Manager and all services on the grid node are stopped and then restarted.

    > ⓘ   Using the `restart` command is the same as using the `stop` command followed by the `start` command.

3. Log out of the command shell: `exit`

Stopping Server Manager and all services

Server Manager is intended to run at all times, but you might need to stop Server Manager and all services running on a grid node.

What you'll need

You must have the `Passwords.txt` file.

About this task

The only scenario that requires you to stop Server Manager while keeping the operating system running is

when you need to integrate Server Manager to other services. If there is a requirement to stop the Server Manager for servicing of the hardware or reconfiguration of the server, the entire server should be halted.

Steps

1. Log in to the grid node:

   a. Enter the following command: `ssh admin@grid_node_IP`

   b. Enter the password listed in the `Passwords.txt` file.

   c. Enter the following command to switch to root: `su -`

   d. Enter the password listed in the `Passwords.txt` file.

   When you are logged in as root, the prompt changes from `$` to `#`.

2. Stop Server manager and all services running on the grid node: `service servermanager stop`

   Server Manager and all services running on the grid node are gracefully terminated. Services can take up to 15 minutes to shut down.

3. Log out of the command shell: `exit`

Viewing current status of a service

You can view the current status of a services running on a grid node at any time.

What you'll need

You must have the `Passwords.txt` file.

Steps

1. Log in to the grid node:

   a. Enter the following command: `ssh admin@grid_node_IP`

   b. Enter the password listed in the `Passwords.txt` file.

   c. Enter the following command to switch to root: `su -`

   d. Enter the password listed in the `Passwords.txt` file.

   When you are logged in as root, the prompt changes from `$` to `#`.

2. View the current status of a service running on a grid node: `` `service *servicename* **status** `` The current status of the requested service running on the grid node is reported (running or not). For example:

   ```
   cmn running for 1d, 14h, 21m, 2s
   ```

3. Log out of the command shell: **exit**

Stopping a service

Some maintenance procedures require you to stop a single service while keeping other

services on the grid node running. Only stop individual services when directed to do so by a maintenance procedure.

What you'll need

You must have the `Passwords.txt` file.

About this task

When you use these steps to "administratively stop" a service, Server Manager will not automatically restart the service. You must either start the single service manually or restart Server Manager.

If you need to stop the LDR service on a Storage Node, be aware that it might take a while to stop the service if there are active connections.

Steps

1. Log in to the grid node:

   a. Enter the following command: `ssh admin@grid_node_IP`

   b. Enter the password listed in the `Passwords.txt` file.

   c. Enter the following command to switch to root: `su -`

   d. Enter the password listed in the `Passwords.txt` file.

   When you are logged in as root, the prompt changes from `$` to `#`.

2. Stop an individual service: `service servicename stop`

   For example:

   ```
   service ldr stop
   ```

   (i)   Services can take up to 11 minutes to stop.

3. Log out of the command shell: `exit`

Related information

Forcing a service to terminate

Placing an appliance into maintenance mode

You must place the appliance into maintenance mode before performing specific maintenance procedures.

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. For details, see the instructions for administering StorageGRID.

About this task

Placing a StorageGRID appliance into maintenance mode might make the appliance unavailable for remote access.

ⓘ The password and host key for a StorageGRID appliance in maintenance mode remain the same as they were when the appliance was in service.

Steps

1. From the Grid Manager, select **Nodes**.

2. From the tree view of the Nodes page, select the appliance Storage Node.

3. Select **Tasks**.

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

Reboot

Shuts down and restarts the node.   **Reboot**

Maintenance Mode

Places the appliance's compute controller into maintenance mode.   **Maintenance Mode**

4. Select **Maintenance Mode**.

   A confirmation dialog box appears.

⚠ **Enter Maintenance Mode on SGA-106-15**

You must place the appliance's compute controller into maintenance mode to perform certain maintenance procedures on the appliance.

Attention: All StorageGRID services on this node will be shut down. Wait a few minutes for the node to reboot into maintenance mode.

If you are ready to start, enter the provisioning passphrase and click OK.

Provisioning Passphrase [   ]

Cancel   OK

5. Enter the provisioning passphrase, and select **OK**.

   A progress bar and a series of messages, including "Request Sent","Stopping StorageGRID", and "Rebooting", indicate that the appliance is completing the steps for entering maintenance mode.

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

Reboot

Shuts down and restarts the node.

[Reboot]

Maintenance Mode

Attention: Your request has been sent, but the appliance might take 10-15 minutes to enter maintenance mode. **Do not perform maintenance procedures until this tab indicates maintenance mode is ready, or data could become corrupted.**
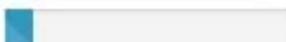
Request Sent

When the appliance is in maintenance mode, a confirmation message lists the URLs you can use to access the StorageGRID Appliance Installer.

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

Reboot

Shuts down and restarts the node.

[Reboot]

Maintenance Mode

This node is currently in maintenance mode. Navigate to one of the URLs listed below and perform any necessary maintenance procedures.

- https://172.16.2.106:8443
- https://10.224.2.106:8443
- https://47.47.2.106:8443
- https://169.254.0.1:8443

When you are done with any required maintenance procedures, you must exit maintenance mode by clicking Reboot Controller from the StorageGRID Appliance Installer.

6. To access the StorageGRID Appliance Installer, browse to any of the URLs displayed.

   If possible, use the URL containing the IP address of the appliance's Admin Network port.

   (i) | Accessing `https://169.254.0.1:8443` requires a direct connection to the local management port.

7. From the StorageGRID Appliance Installer, confirm that the appliance is in maintenance mode.

8. Perform any required maintenance tasks.

9. After completing maintenance tasks, exit maintenance mode and resume normal node operation. From the StorageGRID Appliance Installer, select **Advanced** > **Reboot Controller**, and then select **Reboot into StorageGRID**.

It can take up to 20 minutes for the appliance to reboot and rejoin the grid. To confirm that the reboot is complete and that the node has rejoined the grid, go back to the Grid Manager. The **Nodes** tab should display a normal status ✔ for the appliance node, indicating that no alerts are active and the node is connected to the grid.
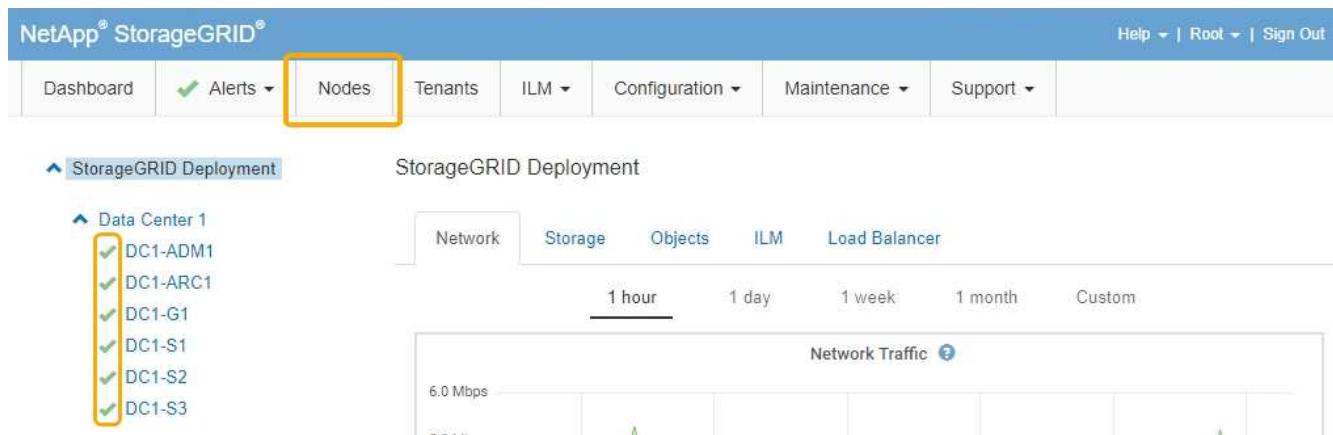
Forcing a service to terminate

If you need to stop a service immediately, you can use the `force-stop` command.

What you'll need

You must have the `Passwords.txt` file.

Steps

1. Log in to the grid node:

   a. Enter the following command: `ssh admin@`*`grid_node_IP`*

   b. Enter the password listed in the `Passwords.txt` file.

   c. Enter the following command to switch to root: `su -`

   d. Enter the password listed in the `Passwords.txt` file.

   When you are logged in as root, the prompt changes from `$` to `#`.

2. Manually force the service to terminate: `service` *`servicename`* `force-stop`

   For example:

   ```
   service ldr force-stop
   ```

   The system waits 30 seconds before terminating the service.

3. Log out of the command shell: `exit`

Starting or restarting a service

You might need to start a service that has been stopped, or you might need to stop and restart a service.

What you'll need

You must have the `Passwords.txt` file.

Steps

1. Log in to the grid node:

   a. Enter the following command: `ssh admin@`*`grid_node_IP`*

   b. Enter the password listed in the `Passwords.txt` file.

   c. Enter the following command to switch to root: `su -`

   d. Enter the password listed in the `Passwords.txt` file.

   When you are logged in as root, the prompt changes from `$` to `#`.

2. Decide which command to issue, based on whether the service is currently running or stopped.

   ◦ If the service is currently stopped, use the `start` command to start the service manually: `service` *`servicename`* `start`

   For example:

   ```
   service ldr start
   ```

- If the service is currently running, use the `restart` command to stop the service and then restart it:
  `service servicename restart`

  For example:

  ```
  service ldr restart
  ```

  > (i) Using the `restart` command is the same as using the `stop` command followed by the `start` command. You can issue `restart` even if the service is currently stopped.

3. Log out of the command shell: `exit`

Removing port remaps

If you want to configure an endpoint for the Load Balancer service, and you want to use a port that has already been configured as the Mapped-To Port of a port remap, you must first remove the existing port remap, or the endpoint will not be effective. You must run a script on each Admin Node and Gateway Node that has conflicting remapped ports to remove all of the node's port remaps.

> (!) This procedure removes all port remaps. If you need to keep some of the remaps, contact technical support.

For information about configuring load balancer endpoints, see the instructions for administering StorageGRID.

> (i) If the port remap provides client access, the client should be reconfigured to use a different port configured as an load balancer endpoint if possible, to avoid loss of service, Otherwise, removing the port mapping will result in loss of client access and should be scheduled appropriately.

> (i) This procedure does not work for a StorageGRID system deployed as a container on bare metal hosts. See the instructions for removing port remaps on bare metal hosts.

Steps

1. Log in to the node.

   a. Enter the following command: `ssh -p 8022 admin@node_IP`

      Port 8022 is the SSH port of the base OS, while port 22 is the SSH port of the Docker container running StorageGRID.

   b. Enter the password listed in the `Passwords.txt` file.

   c. Enter the following command to switch to root: `su -`

   d. Enter the password listed in the `Passwords.txt` file.

      When you are logged in as root, the prompt changes from `$` to `#`.

2. Run the following script: `remove-port-remap.sh`

3. Reboot the node.

   Follow the instructions for rebooting a grid node.

4. Repeat these steps on each Admin Node and Gateway Node that has conflicting remapped ports.

Related information

[Administer StorageGRID](#)

[Rebooting a grid node](#)

[Removing port remaps on bare metal hosts](#)

Removing port remaps on bare metal hosts

If you want to configure an endpoint for the Load Balancer service, and you want to use a port that has already been configured as the Mapped-To Port of a port remap, you must first remove the existing port remap, or the endpoint will not be effective. If you are running StorageGRID on bare metal hosts, follow this procedure instead of the general procedure for removing port remaps. You must edit the node configuration file for each Admin Node and Gateway Node that has conflicting remapped ports to remove all of the node's port remaps and restart the node.

> **!** This procedure removes all port remaps. If you need to keep some of the remaps, contact technical support.

For information about configuring load balancer endpoints, see the instructions for administering StorageGRID.

> **(i)** This procedure can result in temporary loss of service as nodes are restarted.

Steps

1. Log in to the host supporting the node. Log in as root or with an account that has sudo permission.

2. Run the following command to temporarily disable the node: `sudo storagegrid node stop node-name`

3. Using a text editor such as vim or pico, edit the node configuration file for the node.

   The node configuration file can be found at `/etc/storagegrid/nodes/node-name.conf`.

4. Locate the section of the node configuration file that contains the port remaps.

   See the last two lines in the following example.

```
ADMIN_NETWORK_CONFIG = STATIC
ADMIN_NETWORK_ESL = 10.0.0.0/8, 172.19.0.0/16, 172.21.0.0/16
ADMIN_NETWORK_GATEWAY = 10.224.0.1
ADMIN_NETWORK_IP = 10.224.5.140
ADMIN_NETWORK_MASK = 255.255.248.0
ADMIN_NETWORK_MTU = 1400
ADMIN_NETWORK_TARGET = eth1
ADMIN_NETWORK_TARGET_TYPE = Interface
BLOCK_DEVICE_VAR_LOCAL = /dev/sda2
CLIENT_NETWORK_CONFIG = STATIC
CLIENT_NETWORK_GATEWAY = 47.47.0.1
CLIENT_NETWORK_IP = 47.47.5.140
CLIENT_NETWORK_MASK = 255.255.248.0
CLIENT_NETWORK_MTU = 1400
CLIENT_NETWORK_TARGET = eth2
CLIENT_NETWORK_TARGET_TYPE = Interface
GRID_NETWORK_CONFIG = STATIC
GRID_NETWORK_GATEWAY = 192.168.0.1
GRID_NETWORK_IP = 192.168.5.140
GRID_NETWORK_MASK = 255.255.248.0
GRID_NETWORK_MTU = 1400
GRID_NETWORK_TARGET = eth0
GRID_NETWORK_TARGET_TYPE = Interface
NODE_TYPE = VM_API_Gateway
<strong>PORT_REMAP = client/tcp/8082/443</strong>
<strong>PORT_REMAP_INBOUND = client/tcp/8082/443</strong>
```

5. Edit the PORT_REMAP and PORT_REMAP_INBOUND entries to remove port remaps.

```
PORT_REMAP =
PORT_REMAP_INBOUND =
```

6. Run the following command to validate your changes to the node configuration file for the node: `sudo storagegrid node validate node-name`

   Address any errors or warnings before proceeding to the next step.

7. Run the following command to restart the node without port remaps: `sudo storagegrid node start node-name`

8. Log in to the node as admin using the password listed in the `Passwords.txt` file.

9. Verify that the services start correctly.

   a. View a listing of the statuses of all services on the server: `sudo storagegrid-status`

      The status is updated automatically.

b. Wait until all services have a status of either Running or Verified.

c. Exit the status screen:`Ctrl+C`

10. Repeat these steps on each Admin Node and Gateway Node that has conflicting remapped ports.

Rebooting a grid node

You can reboot a grid node from the Grid Manager or from the node's command shell.

About this task

When you reboot a grid node, the node shuts down and restarts. All services are restarted automatically.

If you plan to reboot Storage Nodes, 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.

Related information

Administer StorageGRID

Choices

- Rebooting a grid node from the Grid Manager
- Rebooting a grid node from the command shell

Rebooting a grid node from the Grid Manager

Rebooting a grid node from the Grid Manager issues the `reboot` command on the target node.

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.

Steps

1. Select **Nodes**.

2. Select the grid node you want to reboot.

3. Select the **Tasks** tab.

DC3-S3 (Storage Node)

Overview	Hardware	Network	Storage	Objects	ILM	Events	Tasks

Reboot

Reboot shuts down and restarts the node.   **Reboot**

4. Click **Reboot**.

A confirmation dialog box appears.

⚠ **Reboot Node DC3-S3**

Reboot shuts down and restarts a node, based on where the node is installed:

- Rebooting a VMware node reboots the virtual machine.
- Rebooting a Linux node reboots the container.
- Rebooting a StorageGRID Appliance node reboots the compute controller.

If you are ready to reboot this node, enter the provisioning passphrase and click OK.

Provisioning Passphrase [   ]

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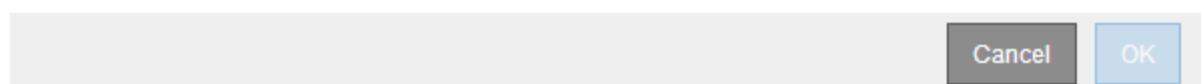
> ⓘ If you are rebooting the primary Admin Node, the confirmation dialog box reminds you that your browser's connection to the Grid Manager will be lost temporarily when services are stopped.

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.

Rebooting a grid node from the command shell

If you need to monitor the reboot operation more closely or if you are unable to access the Grid Manager, you can log into the grid node and run the Server Manager reboot command from the command shell.

What you'll need

- You must have the `Passwords.txt` file.

Steps

1. Log in to the grid node:

   a. Enter the following command: `ssh admin@`*`grid_node_IP`*

   b. Enter the password listed in the `Passwords.txt` file.

   c. Enter the following command to switch to root: `su -`

   d. Enter the password listed in the `Passwords.txt` file.

   When you are logged in as root, the prompt changes from `$` to `#`.

2. Optionally, stop services: `service servermanager stop`

   Stopping services is an optional, but recommended step. Services can take up to 15 minutes to shut down, and you might want to log in to the system remotely to monitor the shutdown process before you reboot the node in the next step.

3. Reboot the grid node: `reboot`

4. Log out of the command shell: `exit`

Shutting down a grid node

You can shut down a grid node from the node's command shell.

What you'll need

- You must have the `Passwords.txt` file.

About this task

Before performing this procedure, review these considerations:

- In general, you should not shut down more than one node at a time to avoid disruptions.

- Do not shut down a node during a maintenance procedure unless explicitly instructed to do so by the documentation or by technical support.

- The shutdown process is based on where the node is installed, as follows:

  - Shutting down a VMware node shuts down the virtual machine.

  - Shutting down a Linux node shuts down the container.

  - Shutting down a StorageGRID appliance node shuts down the compute controller.

- If you plan to shut down Storage Nodes, 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 shut down two or more Storage Nodes on a given site, you might not be able to access these objects for the duration of the shutdown.

  - To ensure you can access all objects when a Storage Node is shut down, stop ingesting objects at a site for approximately one hour before shutting down the node.

Steps

1. Log in to the grid node:

    a. Enter the following command: `ssh admin@grid_node_IP`

    b. Enter the password listed in the `Passwords.txt` file.

    c. Enter the following command to switch to root: `su -`

    d. Enter the password listed in the `Passwords.txt` file.

    When you are logged in as root, the prompt changes from `$` to `#`.

2. Stop all services: `service servermanager stop`

    Services can take up to 15 minutes to shut down, and you might want to log in to the system remotely to monitor the shutdown process.

3. Log out of the command shell: `exit`

After being shut down you can power off the grid node.

Powering down a host

Related information

Administer StorageGRID

Powering down a host

Before you power down a host, you must stop services on all grid nodes on that host.

Steps

1. Log in to the grid node:

    a. Enter the following command: `ssh admin@grid_node_IP`

    b. Enter the password listed in the `Passwords.txt` file.

    c. Enter the following command to switch to root: `su -`

    d. Enter the password listed in the `Passwords.txt` file.

    When you are logged in as root, the prompt changes from `$` to `#`.

2. Stop all services running on the node: `service servermanager stop`

    Services can take up to 15 minutes to shut down, and you might want to log in to the system remotely to monitor the shutdown process.

3. Repeat steps 1 and 2 for each node on the host.

4. If you have a Linux host:

    a. Log in to the host operating system.

    b. Stop the node: `storagegrid node stop`

    c. Shut down the host operating system.

5. If the node is running on a VMware virtual machine or it is an appliance node, issue the shutdown command: `shutdown -h now`

   Perform this step regardless of the outcome of the `service servermanager stop` command.

   > ⓘ After you issue the `shutdown -h now` command on an appliance node, you must power cycle the appliance to restart the node.

   For the appliance, this command shuts down the controller, but the appliance is still powered on. You must complete the next step.

6. If you are powering down an appliance node:

   ◦ For the SG100 or SG1000 services appliance

       i. Turn off the power to the appliance.

       ii. Wait for the blue power LED to turn off.

   ◦ For the SG6000 appliance

       i. Wait for the green Cache Active LED on the back of the storage controller to turn off.

       This LED is on when cached data needs to be written to the drives. You must wait for this LED to turn off before you turn off power.

       ii. Turn off the power to the appliance, and wait for the blue power LED to turn off.

   ◦ For the SG5700 appliance

       i. Wait for the green Cache Active LED on the back of the storage controller to turn off.

       This LED is on when cached data needs to be written to the drives. You must wait for this LED to turn off before you turn off power.

       ii. Turn off the power to the appliance, and wait for all LED and seven-segment display activity to stop.

7. Log out of the command shell: `exit`

Related information

[SG100 & SG1000 services appliances](#)

[SG6000 storage appliances](#)

[SG5700 storage appliances](#)

Powering off and on all nodes in the grid

You might need to shut down your entire StorageGRID system, for example, if you are moving a data center. These steps provide a high-level overview of the recommended sequence for performing a controlled shutdown and startup.

When you power off all nodes in a site or grid, you will not be able to access ingested objects while the Storage Nodes are offline.

Stopping services and shutting down grid nodes

Before you can power off a StorageGRID system, you must stop all services running on each grid node, and then shut down all VMware virtual machines, Docker containers, and StorageGRID appliances.

About this task

If possible, you should stop services on the grid nodes in this order:

- Stop services on Gateway Nodes first.
- Stop services on the primary Admin Node last.

This approach allows you to use the primary Admin Node to monitor the status of the other grid nodes for as long as possible.

> (i) If a single host includes more than one grid node, do not shut down the host until you have stopped all of the nodes on that host. If the host includes the primary Admin Node, shut down that host last.

> (i) If required, you can migrate nodes from one Linux host to another to perform host maintenance without impacting the functionality or availability of your grid.

Linux: Migrating a grid node to a new host

Steps

1. Stop all client applications from accessing the grid.

2. Log in to each Gateway Node:

   a. Enter the following command: `ssh admin@`*`grid_node_IP`*

   b. Enter the password listed in the `Passwords.txt` file.

   c. Enter the following command to switch to root: `su -`

   d. Enter the password listed in the `Passwords.txt` file.

   When you are logged in as root, the prompt changes from `$` to `#`.

3. Stop all services running on the node: `service servermanager stop`

   Services can take up to 15 minutes to shut down, and you might want to log in to the system remotely to monitor the shutdown process.

4. Repeat the previous two steps to stop the services on all Storage Nodes, Archive Nodes, and non-primary Admin Nodes.

   You can stop the services on these nodes in any order.

   > (i) If you issue the `service servermanager stop` command to stop the services on an appliance Storage Node, you must power cycle the appliance to restart the node.

5. For the primary Admin Node, repeat the steps for logging into the node and stopping all services on the

node.

6. For nodes that are running on Linux hosts:

   a. Log in to the host operating system.

   b. Stop the node: `storagegrid node stop`

   c. Shut down the host operating system.

7. For nodes that are running on VMware virtual machines and for appliance Storage Nodes, issue the shutdown command: `shutdown -h now`

   Perform this step regardless of the outcome of the `service servermanager stop` command.

   For the appliance, this command shuts down the compute controller, but the appliance is still powered on. You must complete the next step.

8. If you have appliance nodes:

   ○ For the SG100 or SG1000 services appliance

      i. Turn off the power to the appliance.

      ii. Wait for the blue power LED to turn off.

   ○ For the SG6000 appliance

      i. Wait for the green Cache Active LED on the back of the storage controller to turn off.

         This LED is on when cached data needs to be written to the drives. You must wait for this LED to turn off before you turn off power.

      ii. Turn off the power to the appliance, and wait for the blue power LED to turn off.

   ○ For the SG5700 appliance

      i. Wait for the green Cache Active LED on the back of the storage controller to turn off.

         This LED is on when cached data needs to be written to the drives. You must wait for this LED to turn off before you turn off power.

      ii. Turn off the power to the appliance, and wait for all LED and seven-segment display activity to stop.

9. If required, log out of the command shell: `exit`

   The StorageGRID grid has now been shut down.

Related information

SG100 & SG1000 services appliances

SG6000 storage appliances

SG5700 storage appliances

Starting up the grid nodes

Follow this sequence to start up the grid nodes after a complete shutdown.

> ⚠️ If the entire grid has been shut down for more than 15 days, you must contact technical support before starting up any grid nodes. Do not attempt the recovery procedures that rebuild Cassandra data. Doing so might result in data loss.

About this task

If possible, you should power on the grid nodes in this order:

- Apply power to Admin Nodes first.
- Apply power to Gateway Nodes last.

> ℹ️ If a host includes multiple grid nodes, the nodes will come back online automatically when you power on the host.

Steps

1. Power on the hosts for the primary Admin Node and any non-primary Admin Nodes.

   > ℹ️ You will not be able to log in to the Admin Nodes until the Storage Nodes have been restarted.

2. Power on the hosts for all Archive Nodes and Storage Nodes.

   You can power on these nodes in any order.

3. Power on the hosts for all Gateway Nodes.

4. Sign into the Grid Manager.

5. Click **Nodes**, and monitor the status of the grid nodes. Verify that all nodes return to "green" status.
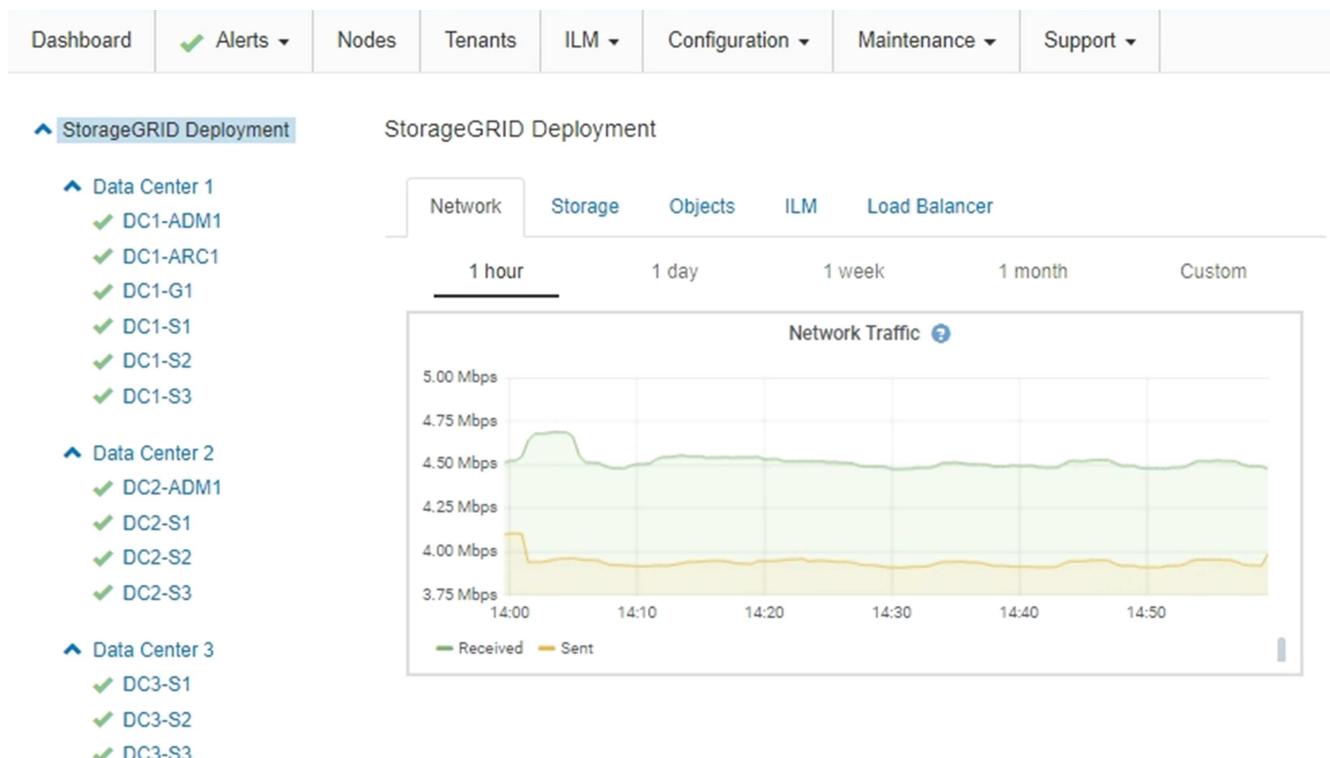
Using a DoNotStart file

If you are performing various maintenance or configuration procedures under the direction of technical support, you might be asked to use a DoNotStart file to prevent services from starting when Server Manager is started or restarted.

> ⓘ You should add or remove a DoNotStart file only if technical support has directed you to do so.

To prevent a service from starting, place a DoNotStart file in the directory of the service you want to prevent from starting. At start-up, Server Manager looks for the DoNotStart file. If the file is present, the service (and any services dependent on it) is prevented from starting. When the DoNotStart file is removed, the previously stopped service will start on the next start or restart of Server Manager. Services are not automatically started when the DoNotStart file is removed.

The most efficient way to prevent all services from restarting is to prevent the NTP service from starting. All services are dependent on the NTP service and cannot run if the NTP service is not running.

Adding a DoNotStart file for a service

You can prevent an individual service from starting by adding a DoNotStart file to that service's directory on a grid node.

What you'll need

You must have the `Passwords.txt` file.

Steps

1. Log in to the grid node:

   a. Enter the following command: `ssh admin@`*`grid_node_IP`*

   b. Enter the password listed in the `Passwords.txt` file.

   c. Enter the following command to switch to root: `su -`

   d. Enter the password listed in the `Passwords.txt` file.

   When you are logged in as root, the prompt changes from `$` to `#`.

2. Add a DoNotStart file: `touch /etc/sv/`*`service`*`/DoNotStart`

   where `service` is the name of the service to be prevented from starting. For example,

   ```
   touch /etc/sv/ldr/DoNotStart
   ```

   A DoNotStart file is created. No file content is needed.

   When Server Manager or the grid node is restarted, Server Manager restarts, but the service does not.

3. Log out of the command shell: `exit`

Removing a DoNotStart file for a service

When you remove a DoNotStart file that is preventing a service from starting, you must start that service.

What you'll need

You must have the `Passwords.txt` file.

Steps

1. Log in to the grid node:

   a. Enter the following command: `ssh admin@`*`grid_node_IP`*

   b. Enter the password listed in the `Passwords.txt` file.

   c. Enter the following command to switch to root: `su -`

   d. Enter the password listed in the `Passwords.txt` file.

   When you are logged in as root, the prompt changes from `$` to `#`.

2. Remove the DoNotStart file from the service directory: `rm /etc/sv/`*`service`*`/DoNotStart`

   where `service` is the name of the service. For example,

   ```
   rm /etc/sv/ldr/DoNotStart
   ```

3. Start the service: `service `*`servicename`*` start`

4. Log out of the command shell: `exit`

Troubleshooting Server Manager

Technical support might direct you to troubleshooting tasks to determine the source of Server Manager-related problems.

Accessing the Server Manager log file

If a problem arises when using Server Manager, check its log file.

Error messages related to Server Manager are captured in the Server Manager log file, which is located at: `/var/local/log/servermanager.log`

Check this file for error messages regarding failures. Escalate the issue to technical support if required. You might be asked to forward log files to technical support.

Service with an error state

If you detect that a service has entered an error state, attempt to restart the service.

What you'll need

You must have the `Passwords.txt` file.

About this task

Server Manager monitors services and restarts any that have stopped unexpectedly. If a service fails, Server Manager attempts to restart it. If there are three failed attempts to start a service within five minutes, the service enters an error state. Server Manager does not attempt another restart.

Steps

1. Log in to the grid node:

   a. Enter the following command: `ssh admin@grid_node_IP`

   b. Enter the password listed in the `Passwords.txt` file.

   c. Enter the following command to switch to root: `su -`

   d. Enter the password listed in the `Passwords.txt` file.

   When you are logged in as root, the prompt changes from `$` to `#`.

2. Confirm the error state of the service: `service servicename status`

   For example:

   ```
   service ldr status
   ```

   If the service is in an error state, the following message is returned: `servicename in error state.` For example:

   ```
   ldr in error state
   ```

   > (i) If the service status is `disabled`, see the instructions for removing a DoNotStart file for a service.

3. Attempt to remove the error state by restarting the service: `service servicename restart`

   If the service fails to restart, contact technical support.

4. Log out of the command shell: `exit`

Related information

Removing a DoNotStart file for a service