# Performing the upgrade

StorageGRID

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# Performing the upgrade

The Software Upgrade page guides you through the process of uploading the required file and upgrading all of the grid nodes in your StorageGRID system.

**What you'll need**

You are aware of the following:

- You must upgrade all grid nodes for all data center sites from the primary Admin Node, using the Grid Manager.
- To detect and resolve issues, you can manually run the upgrade prechecks before starting the actual upgrade. The same prechecks are performed when you start the upgrade. Precheck failures will stop the upgrade process and might require technical support involvement to resolve.
- When you start the upgrade, the primary Admin Node is upgraded automatically.
- After the primary Admin Node has been upgraded, you can select which grid nodes to upgrade next.
- You must upgrade all grid nodes in your StorageGRID system to complete the upgrade, but you can upgrade individual grid nodes in any order. You can select individual grid nodes, groups of grid nodes, or all grid nodes. You can repeat the process of selecting grid nodes as many times as necessary, until all grid nodes at all sites are upgraded.
- When the upgrade starts on a grid node, the services on that node are stopped. Later, the grid node is rebooted. Do not approve the upgrade for a grid node unless you are sure that node is ready to be stopped and rebooted.
- When all grid nodes have been upgraded, new features are enabled and you can resume operations; however, you must wait to perform a decommission or expansion procedure until the background **Upgrade Database** task and the **Final Upgrade Steps** task have completed.
- You must complete the upgrade on the same hypervisor platform you started with.

**Steps**

1. Linux: Installing the RPM or DEB package on all hosts
2. Starting the upgrade
3. Upgrading grid nodes and completing the upgrade
4. Increasing the Metadata Reserved Space setting

**Related information**

Administer StorageGRID

Estimating the time to complete an upgrade

# Linux: Installing the RPM or DEB package on all hosts

If any StorageGRID nodes are deployed on Linux hosts, you must install an additional RPM or DEB package on each of these hosts before you start the upgrade.

**What you'll need**

You must have downloaded one of the following `.tgz` or `.zip` files from the NetApp Downloads page for StorageGRID.

Use the `.zip` file if you are running Windows on the service laptop.

| Linux platform | Additional file (choose one) |
|---|---|
| Red Hat Enterprise Linux or CentOS | • `StorageGRID-Webscale-version-RPM-uniqueID.zip`<br>• `StorageGRID-Webscale-version-RPM-uniqueID.tgz` |
| Ubuntu or Debian | • `StorageGRID-Webscale-version-DEB-uniqueID.zip`<br>• `StorageGRID-Webscale-version-DEB-uniqueID.tgz` |

**Steps**

1. Extract the RPM or DEB packages from the installation file.
2. Install the RPM or DEB packages on all Linux hosts.

   See the steps for installing StorageGRID host services in the installation instructions for your Linux platform.

   Install Red Hat Enterprise Linux or CentOS

   Install Ubuntu or Debian

   The new packages are installed as additional packages. Do not remove the existing packages.

# Starting the upgrade

When you are ready to perform the upgrade, you select the downloaded file and enter the provisioning passphrase. As an option, you can run the upgrade prechecks before performing the actual upgrade.

**What you'll need**

You have reviewed all of the considerations and completed all steps in Upgrade planning and preparation.

**Steps**

1. Sign in to the Grid Manager using a supported browser.
2. Select **Maintenance** > **System** > **Software Update**.

   The Software Update page appears.

3. Select **StorageGRID Upgrade**.

   The StorageGRID Upgrade page appears and shows the date and time of the most recently completed upgrade, unless the primary Admin Node has been rebooted or the management API restarted since that upgrade was performed.

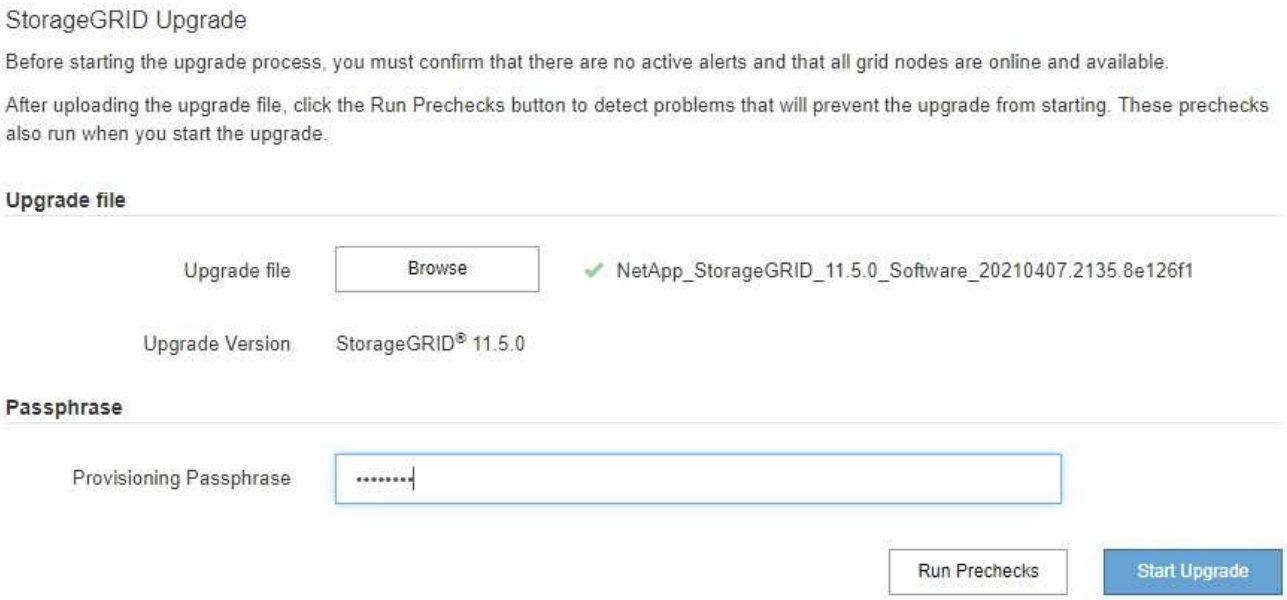
4. Select the `.upgrade` file you downloaded.
   a. Select **Browse**.
   b. Locate and select the file: `NetApp_StorageGRID_version_Software_uniqueID.upgrade`

c. Select **Open**.

   The file is uploaded and validated. When the validation process is done, a green checkmark appears next to the upgrade file name.

5. Enter the provisioning passphrase in the text box.

   The **Run Prechecks** and **Start Upgrade** buttons become enabled.



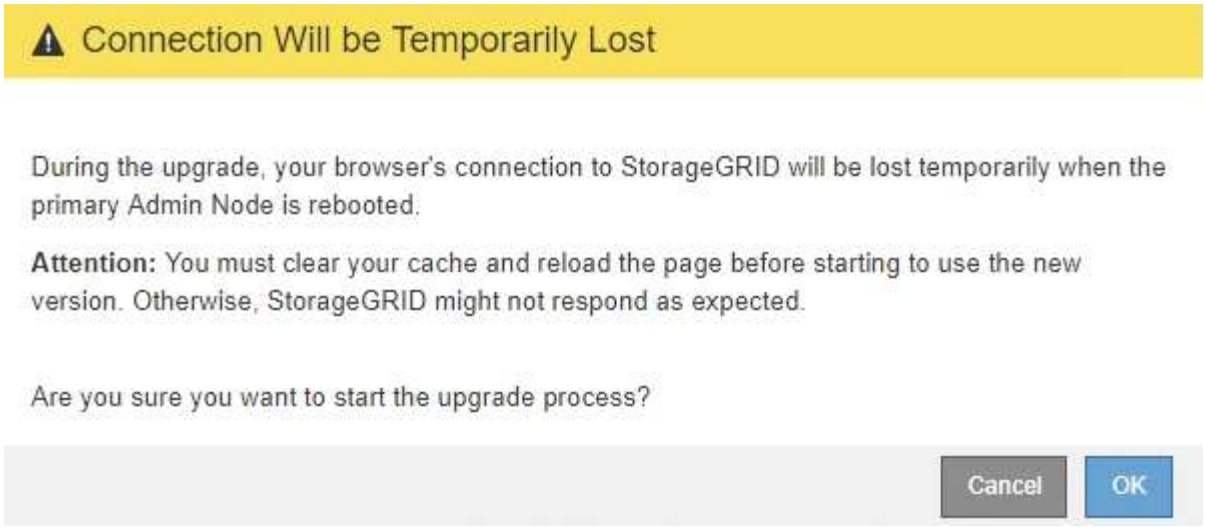

6. If you want to validate the condition of your system before you start the actual upgrade, select **Run Prechecks**. Then, resolve any precheck errors that are reported.

   If you have opened any custom firewall ports, you are notified during the precheck validation. You must contact technical support before proceeding with the upgrade.

   The same prechecks are performed when you select **Start Upgrade**. Selecting **Run Prechecks** allows you to detect and resolve issues before starting the upgrade.

7. When you are ready to perform the upgrade, select **Start Upgrade**.

   A warning appears to remind you that your browser's connection will be lost when the primary Admin Node is rebooted. When the primary Admin Node is available again, you need to clear your web browser's cache and reload the Software Upgrade page.




8. Select **OK** to acknowledge the warning and start the upgrade process.

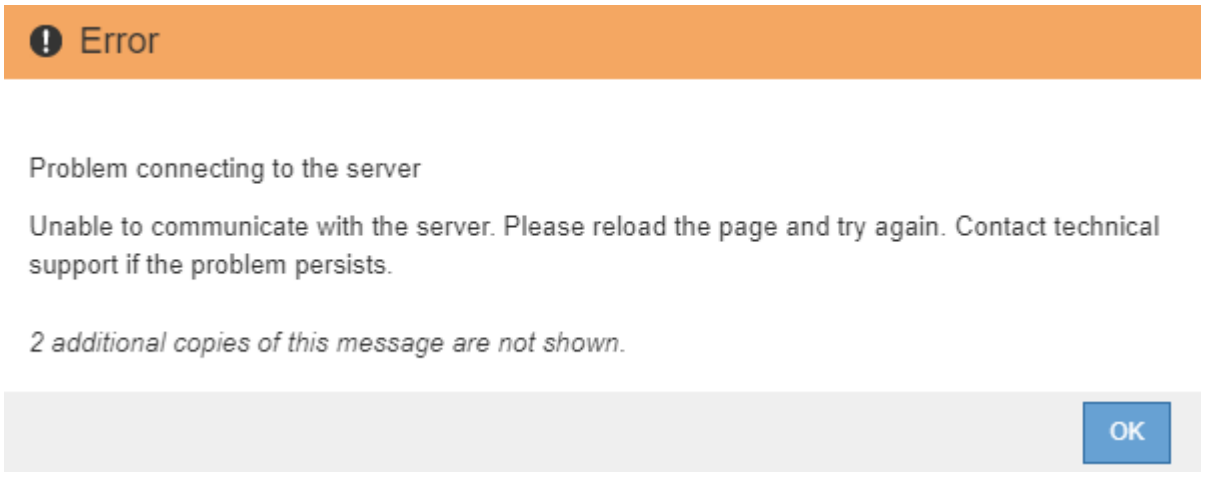
   When the upgrade starts:

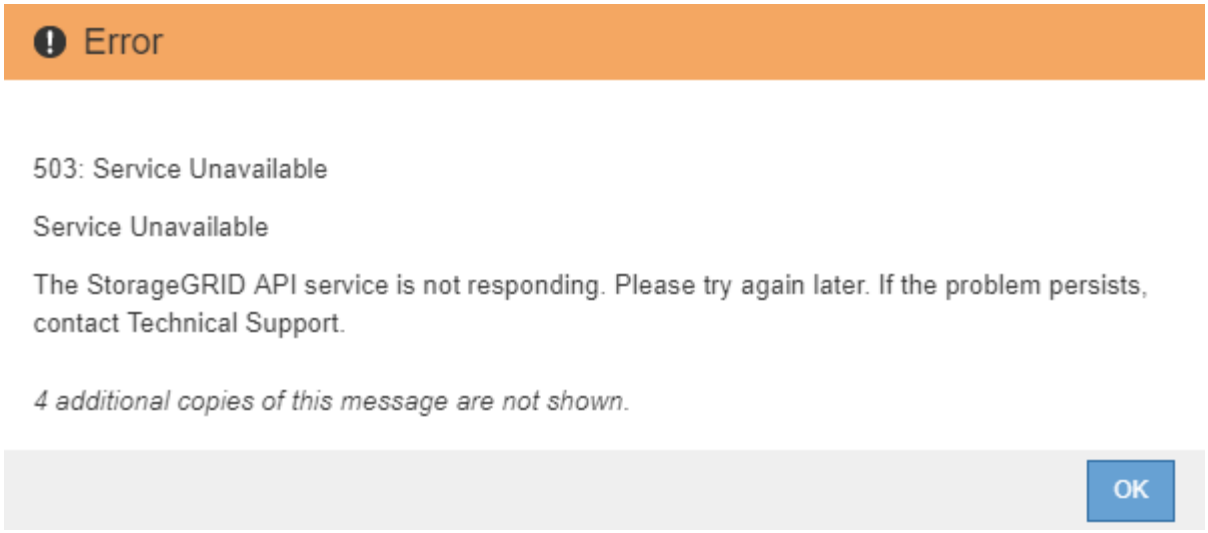
   a. The upgrade prechecks are run.

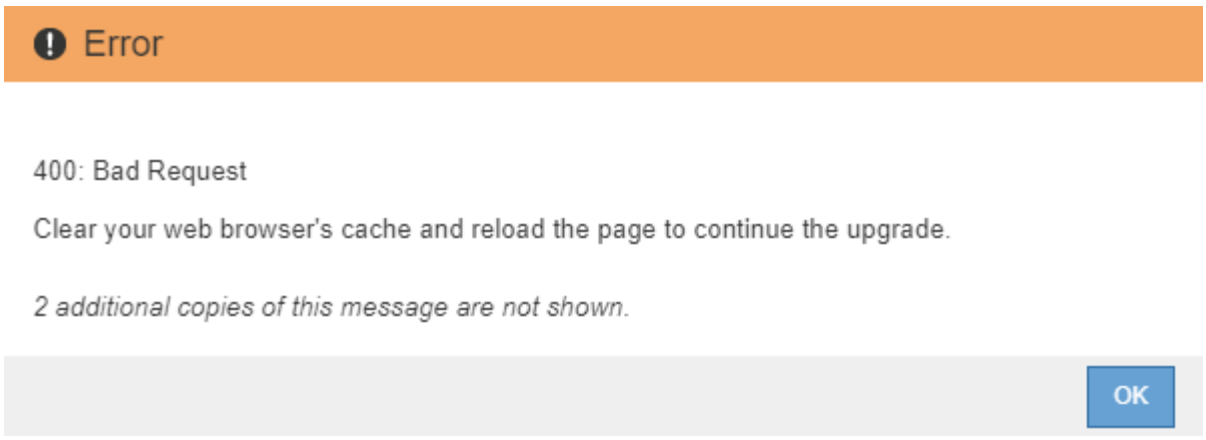
      If any precheck errors are reported, resolve them and select **Start Upgrade** again.

   b. The primary Admin Node is upgraded, which includes stopping services, upgrading the software, and restarting services. You will not be able to access the Grid Manager while the primary Admin Node is being upgraded. Audit logs will also be unavailable. This upgrade can take up to 30 minutes.

      While the primary Admin Node is being upgraded, multiple copies of the following error messages appear, which you can ignore.






9. After the primary Admin Node has been upgraded, clear your web browser's cache, sign back in, and reload the Software Upgrade page.

   For instructions, see the documentation for your web browser.

   > You must clear the web browser's cache to remove outdated resources used by the previous version of the software.

**Related information**

Upgrade planning and preparation

# Upgrading grid nodes and completing the upgrade

After the primary Admin Node has been upgraded, you must upgrade all other grid nodes in your StorageGRID system. You can customize the upgrade sequence by selecting to upgrade individual grid nodes, groups of grid nodes, or all grid nodes.

**Steps**

1. Review the Upgrade Progress section on the Software Upgrade page, which provides information about each major upgrade task.
   a. **Start Upgrade Service** is the first upgrade task. During this task, the software file is distributed to the grid nodes, and the upgrade service is started.

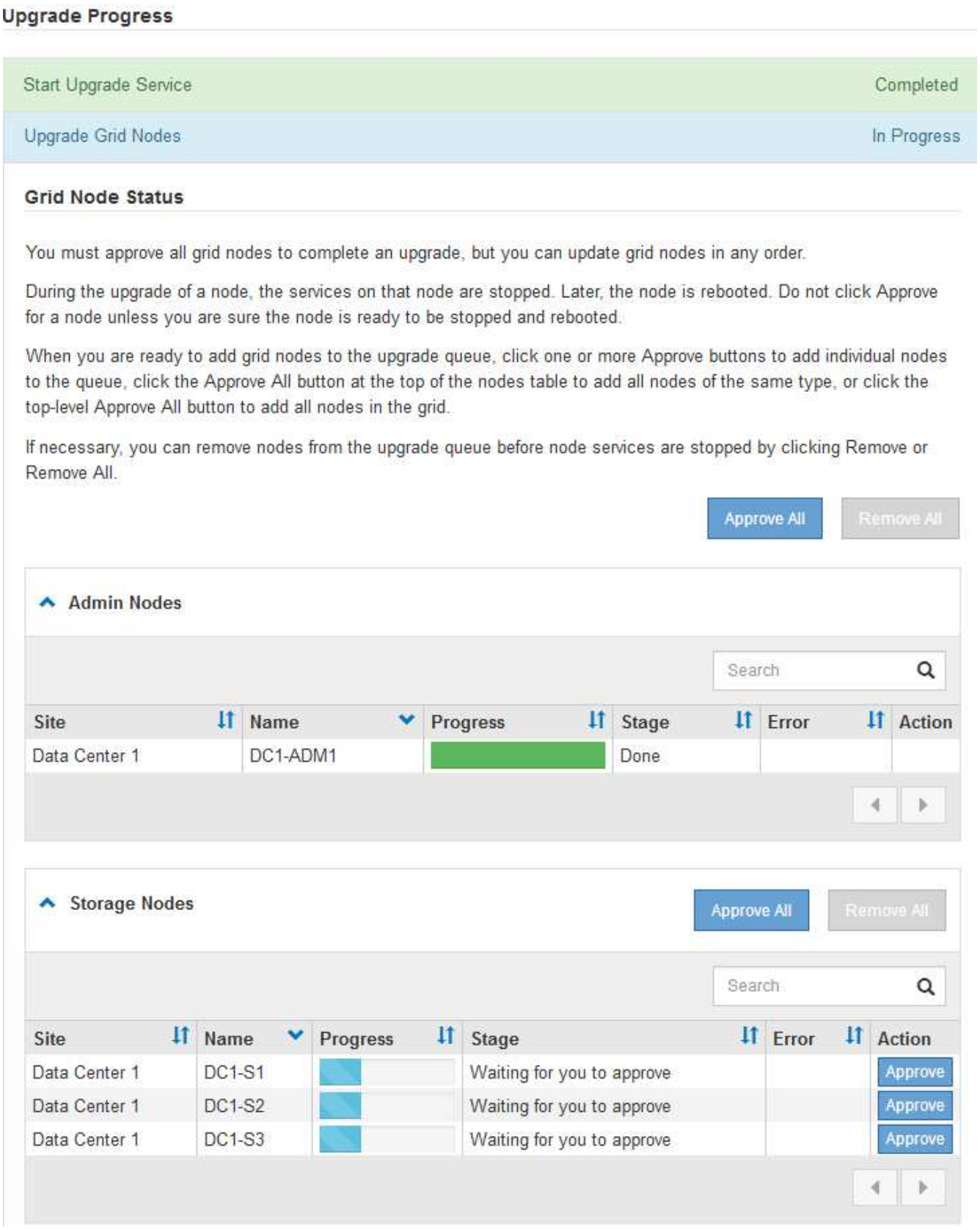
b. When the **Start Upgrade Service** task is complete, the **Upgrade Grid Nodes** task starts.

c. While the **Upgrade Grid Nodes** task is in progress, the Grid Node Status table appears and shows the upgrade stage for each grid node in your system.

2. After the grid nodes appear in the Grid Node Status table, but before approving any grid nodes, download a new copy of the Recovery Package.

> ⓘ You must download a new copy of the Recovery Package file after you upgrade the software version on the primary Admin Node. The Recovery Package file allows you to restore the system if a failure occurs.

3. Review the information in the Grid Node Status table. Grid nodes are arranged in sections by type: Admin Nodes, API Gateway Nodes, Storage Nodes, and Archive Nodes.




A grid node can be in one of these stages when this page first appears:

- Done (primary Admin Node only)
- Preparing upgrade

- Software download queued
- Downloading
- Waiting for you to approve

4. Approve the grid nodes you are ready to add to the upgrade queue. Approved nodes of the same type are upgraded one at a time.

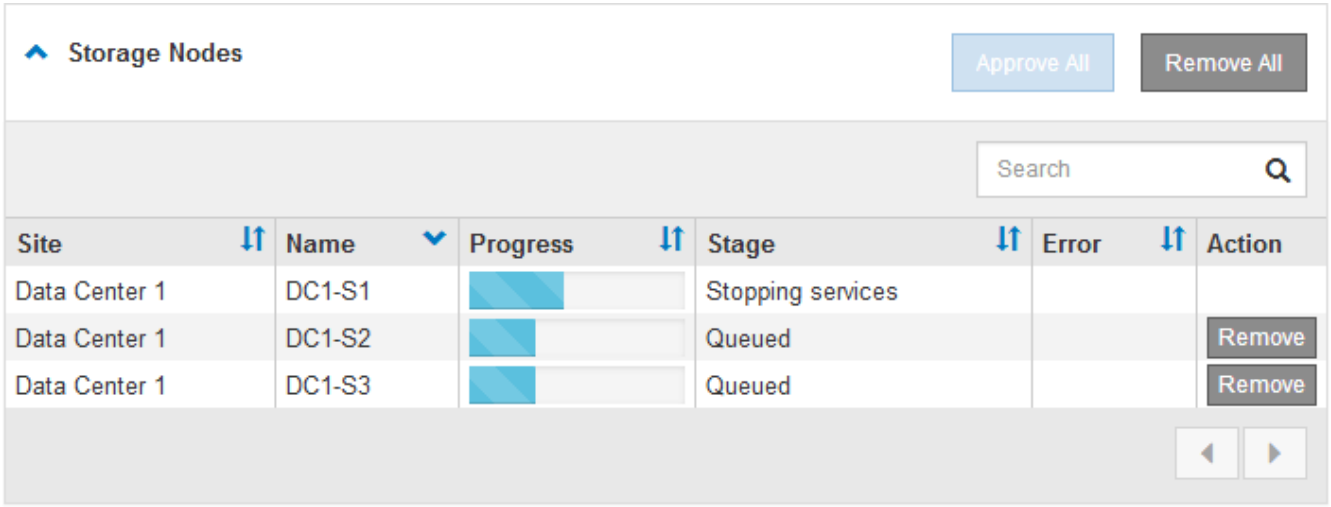
   If the order in which nodes are upgraded is important, approve nodes or groups of nodes one at a time and wait until the upgrade is complete on each node before approving the next node or group of nodes.

   > When the upgrade starts on a grid node, the services on that node are stopped. Later, the grid node is rebooted. These operations might cause service interruptions for clients that are communicating with the node. Do not approve the upgrade for a node unless you are sure that node is ready to be stopped and rebooted.

   - Select one or more **Approve** buttons to add one or more individual nodes to the upgrade queue.
   - Select the **Approve All** button within each section to add all nodes of the same type to the upgrade queue.
   - Select the top-level **Approve All** button to add all nodes in the grid to the upgrade queue.

5. If you need to remove a node or all nodes from the upgrade queue, select **Remove** or **Remove All**.

   As shown in the example, when the Stage reaches **Stopping services**, the **Remove** button is hidden and you can no longer remove the node.




6. Wait for each node to proceed through the upgrade stages, which include Queued, Stopping services, Stopping container, Cleaning up Docker images, Upgrading base OS packages, Rebooting, and Starting services.

   > When an appliance node reaches the Upgrading base OS packages stage, the StorageGRID Appliance Installer software on the appliance is updated. This automated process ensures that the StorageGRID Appliance Installer version remains in sync with the StorageGRID software version.

   When all grid nodes have been upgraded, the **Upgrade Grid Nodes** task is shown as Completed. The remaining upgrade tasks are performed automatically and in the background.

7. As soon as the **Enable Features** task is complete (which occurs quickly), you can start using the new features in the upgraded StorageGRID version.

   For example, if you are upgrading to StorageGRID 11.5, you can now enable S3 Object Lock, configure a key management server, or increase the Metadata Reserved Space setting.

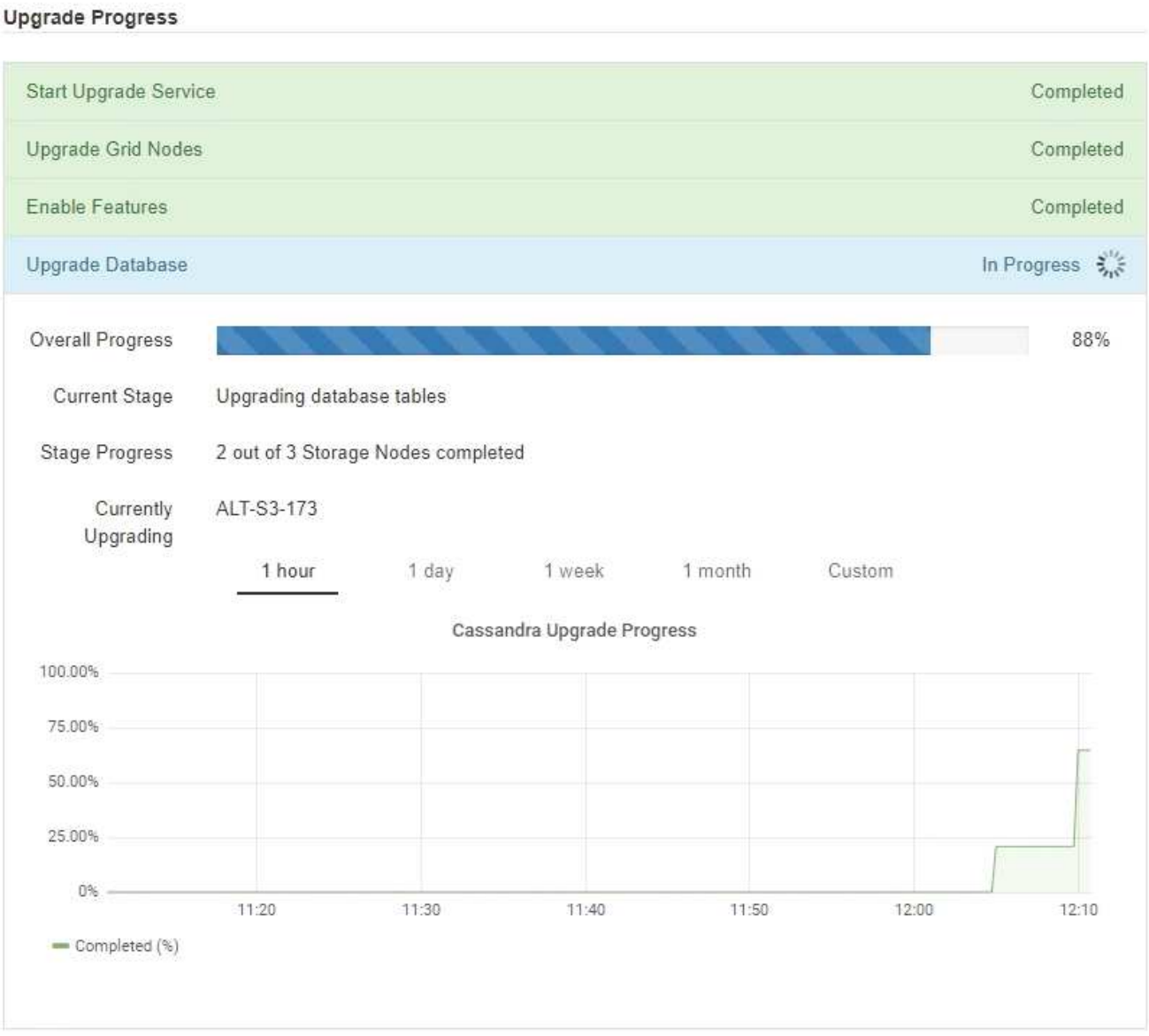
   Increasing the Metadata Reserved Space setting

8. Periodically monitor the progress of the **Upgrade Database** task.

   During this task, the Cassandra database is upgraded on each Storage Node.

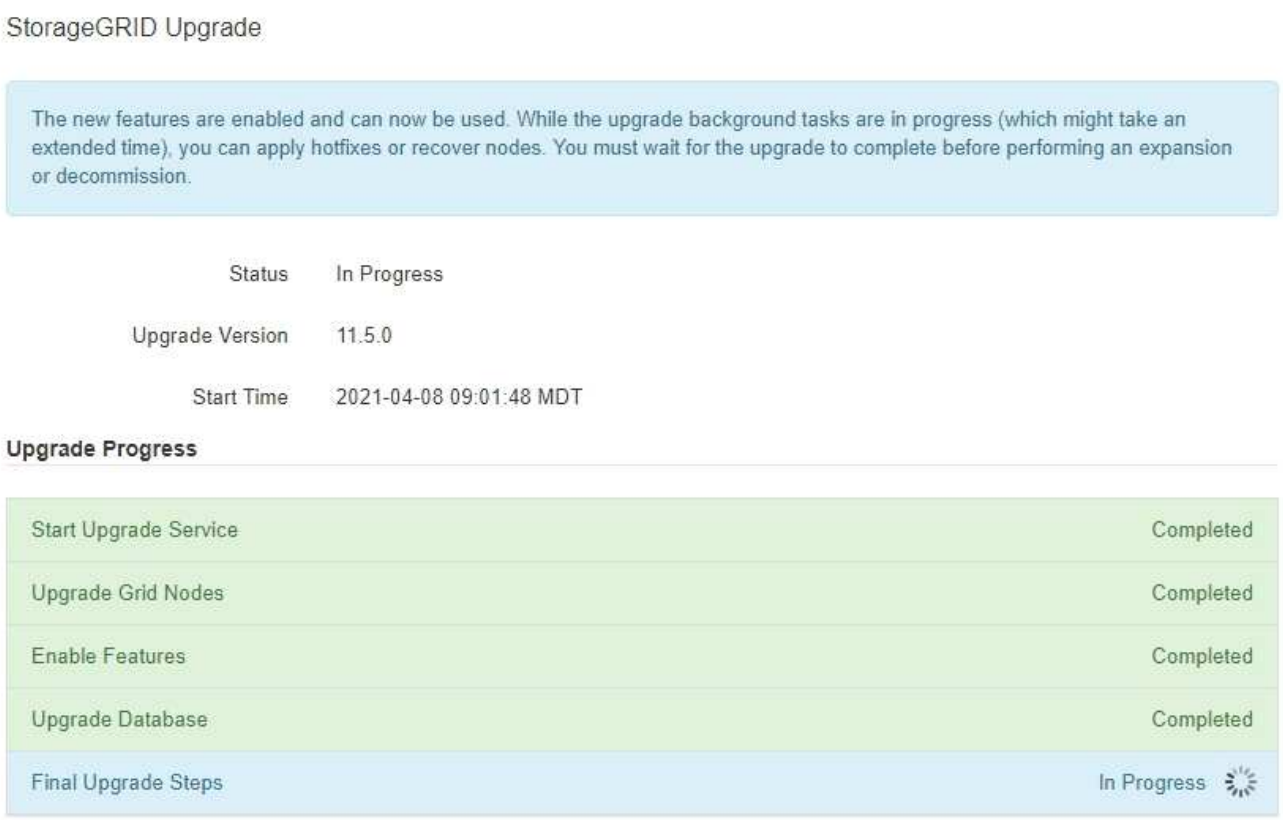
   > The **Upgrade Database** task might take days to complete. As this background task runs, you can apply hotfixes or recover nodes. However, you must wait for the **Final Upgrade Steps** task to complete before performing an expansion or decommission procedure.

   You can review the graph to monitor the progress for each Storage Node.



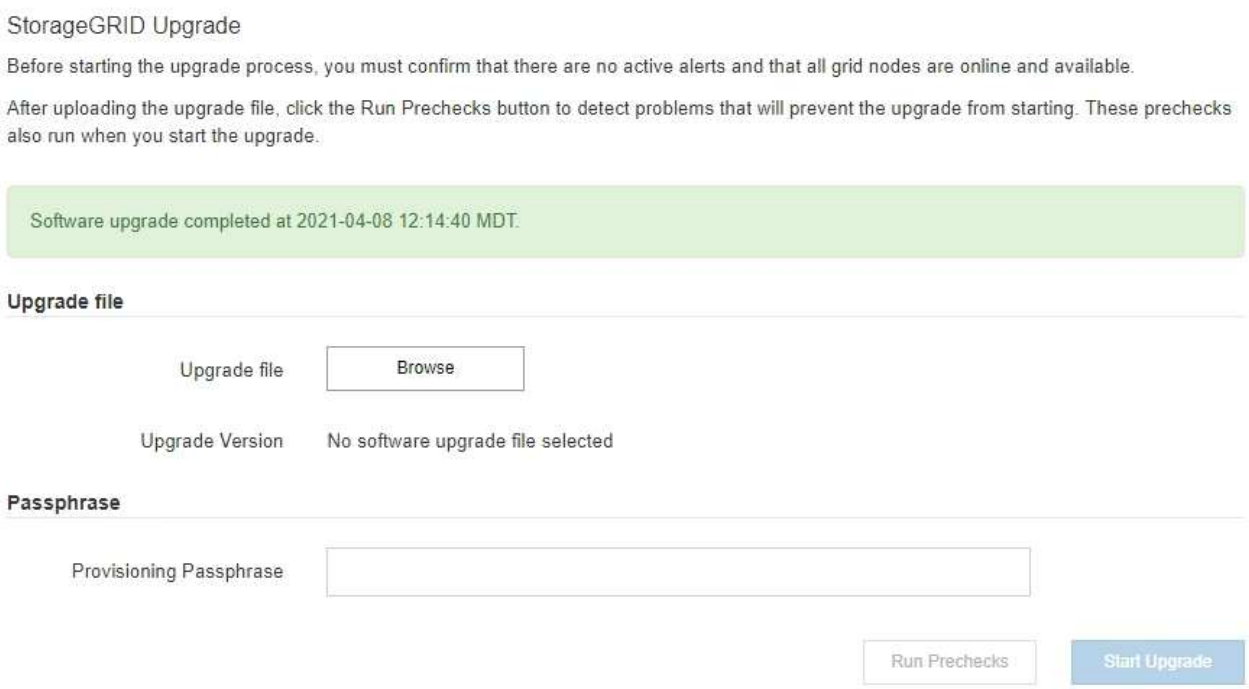

9. When the **Upgrade Database** task has completed, wait a few minutes for the **Final Upgrade Steps** task to

complete.




When the Final Upgrade Steps task has completed, the upgrade is done.

10. Confirm that the upgrade completed successfully.
    a. Sign in to the Grid Manager using a supported browser.
    b. Select **Help** > **About**.
    c. Confirm that the displayed version is what you would expect.
    d. Select **Maintenance** > **System** > **Software Update**. Then, select **StorageGRID Upgrade**.
    e. Confirm that the green banner shows that the software upgrade was completed on the date and time you expected.




11. Verify that grid operations have returned to normal:
    a. Check that the services are operating normally and that there are no unexpected alerts.
    b. Confirm that client connections to the StorageGRID system are operating as expected.
12. Check the NetApp Downloads page for StorageGRID to see if any hotfixes are available for the StorageGRID version that you just installed.

    NetApp Downloads: StorageGRID

    In the StorageGRID 11.5.*x.y* version number:

    - The major release has an *x* value of 0 (11.5.0).
    - A minor release, if available, has an *x* value other than 0 (for example, 11.5.1).
    - A hotfix, if available, has a *y* value (for example, 11.5.0.1).
13. If available, download and apply the latest hotfix for your StorageGRID version.

    See the recovery and maintenance instructions for information about applying hotfixes.

**Related information**

Downloading the Recovery Package

Maintain & recover

# Increasing the Metadata Reserved Space setting

After you upgrade to StorageGRID 11.5, you might be able to increase the Metadata Reserved Space system setting if your Storage Nodes meet specific requirements for RAM and available space.

**What you'll need**

- You must be signed in to the Grid Manager using a supported browser.
- You must have the Root Access permission or the Grid Topology Page Configuration and Other Grid Configuration permissions.
- You have started the StorageGRID 11.5 upgrade and the **Enable New Features** upgrade task has completed.

**About this task**

You might be able to manually increase the system-wide Metadata Reserved Space setting up to 8 TB after upgrading to StorageGRID 11.5. Reserving additional metadata space after the 11.5 upgrade will simplify future hardware and software upgrades.

You can only increase the value of the system-wide Metadata Reserved Space setting if both of these statements are true:

- The Storage Nodes at any site in your system each have 128 GB or more RAM.
- The Storage Nodes at any site in your system each have sufficient available space on storage volume 0.

Be aware that if you increase this setting, you will simultaneously reduce the space available for object storage on storage volume 0 of all Storage Nodes. For this reason, you might prefer to set the Metadata Reserved Space to a value smaller than 8 TB, based on your expected object metadata requirements.

In general, it is better to use a higher value instead of a lower value. If the Metadata Reserved Space setting is too large, you can decrease it later. In contrast, if you increase the value later, the system might need to move object data to free up space.

For a detailed explanation of how the Metadata Reserved Space setting affects the allowed space for object metadata storage on a particular Storage Node, go to the instructions for administering StorageGRID and search for "managing object metadata storage."

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**Steps**

1. Sign in to the Grid Manager using a supported browser.
2. Determine the current Metadata Reserved Space setting.
   a. Select **Configuration** > **System Settings** > **Storage Options**.
   b. In the Storage Watermarks section, note the value of **Metadata Reserved Space**.
3. Ensure you have enough available space on storage volume 0 of each Storage Node to increase this value.
   a. Select **Nodes**.
   b. Select the first Storage Node in the grid.
   c. Select the Storage tab.
   d. In the Volumes section, locate the **/var/local/rangedb/0** entry.
   e. Confirm that the Available value is equal to or greater than difference between the new value you want to use and the current Metadata Reserved Space value.

      For example, if the Metadata Reserved Space setting is currently 4 TB and you want to increase it to 6 TB, the Available value must be 2 TB or greater.

f. Repeat these steps for all Storage Nodes.

- If one or more Storage Nodes do not have enough available space, the Metadata Reserved Space value cannot be increased. Do not continue with this procedure.
- If each Storage Node has enough available space on volume 0, go to the next step.

4. Ensure you have at least 128 GB of RAM on each Storage Node.

a. Select **Nodes**.

b. Select the first Storage Node in the grid.

c. Select the **Hardware** tab.

d. Hover your cursor over the Memory Usage chart. Ensure that **Total Memory** is at least 128 GB.

e. Repeat these steps for all Storage Nodes.

- If one or more Storage Nodes do not have enough available total memory, the Metadata Reserved Space value cannot be increased. Do not continue with this procedure.
- If each Storage Node has at least 128 GB of total memory, go to the next step.

5. Update the Metadata Reserved Space setting.

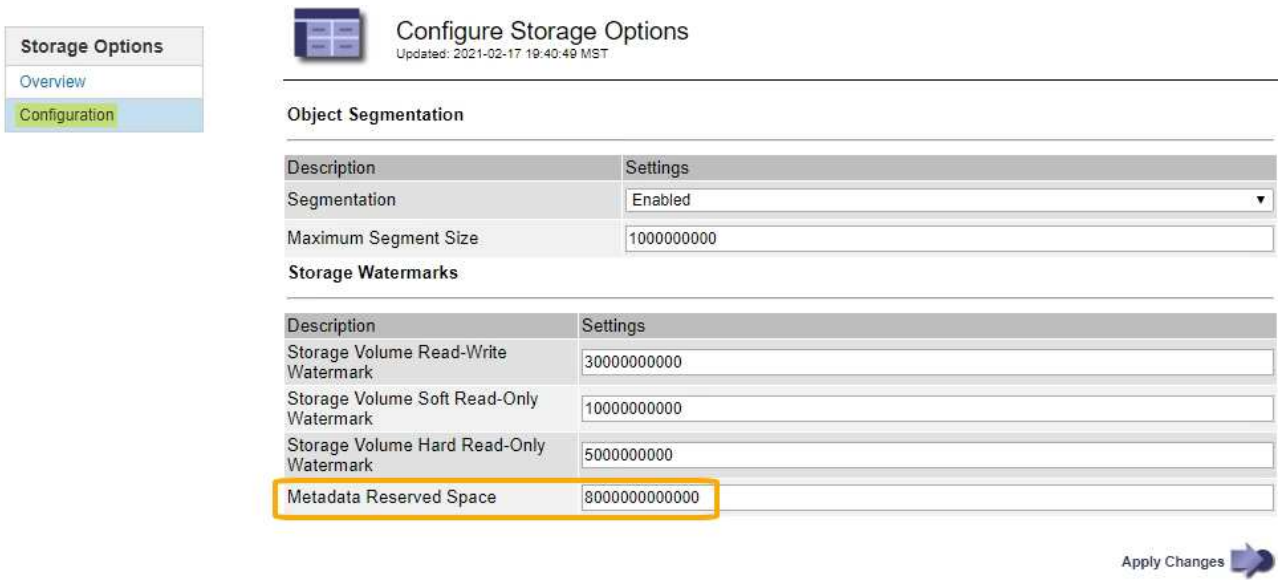
a. Select **Configuration** > **System Settings** > **Storage Options**.

b. Select the Configuration tab.

c. In the Storage Watermarks section, select **Metadata Reserved Space**.

d. Enter the new value.

For example, to enter 8 TB, which is the maximum supported value, enter **8000000000000** (8, followed by 12 zeros)




e. Select **Apply Changes**.

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