Upgrade planning and preparation

StorageGRID

NetApp
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Table of Contents

Upgrade planning and preparation

You must plan the upgrade of your StorageGRID system to ensure that the system is ready for the upgrade, and that the upgrade can be completed with minimal disruption.

Steps

Estimating the time to complete an upgrade

When planning an upgrade to StorageGRID 11.5, you must consider when to upgrade, based on how long the upgrade might take. You must also be aware of which operations you can and cannot perform during each stage of the upgrade.

About this task

The time required to complete a StorageGRID upgrade depends on a variety of factors such as client load and hardware performance.

The table summarizes the main upgrade tasks and lists the approximate time required for each task. The steps after the table provide instructions you can use to estimate the upgrade time for your system.

| ⓘ | During the upgrade from StorageGRID 11.4 to 11.5, Cassandra database tables on Storage Nodes will be upgraded. The **Upgrade Database** task occurs in the background, but might require an extensive amount of time to complete. While the database is being upgraded, you can safely use new features, apply hotfixes, and perform node recovery operations. However, you might be prevented from performing other maintenance procedures. |

| ⓘ | If an expansion is urgently required, perform the expansion before upgrading to 11.5. |

Upgrade task	Description	Approximate time required	During this task
Start Upgrade Service	Upgrade prechecks are run, the software file is distributed, and the upgrade service is started.	3 minutes per grid node, unless validation errors are reported	As required, you can run the upgrade prechecks manually before the scheduled upgrade maintenance window.

Upgrade task	Description	Approximate time required	During this task
Upgrade Grid Nodes (primary Admin Node)	The primary Admin Node is stopped, upgraded, and restarted.	Up to 30 minutes	You cannot access the primary Admin Node. Connection errors are reported, which you can ignore.
Upgrade Grid Nodes (all other nodes)	The software on all other grid nodes is upgraded, in the order in which you approve the nodes. Every node in your system will be brought down one at a time for several minutes each.	15 to 45 minutes per node, with appliance Storage Nodes requiring the most time **Note:** For appliance nodes, the StorageGRID Appliance Installer is automatically updated to the latest release.	• Do not change the grid configuration. • Do not change the audit level configuration. • Do not update the ILM configuration. • Do not perform another maintenance procedure, such as hotfix, decommission, or expansion. **Note:** If you need to perform a recovery procedure, contact technical support.
Enable Features	The new features for the new version are enabled.	Less than 5 minutes	• Do not change the grid configuration. • Do not change the audit level configuration. • Do not update the ILM configuration. • Do not perform another maintenance procedure.

Upgrade task	Description	Approximate time required	During this task
Upgrade Database	Cassandra database tables, which exist on all Storage Nodes, are upgraded.	Hours or days, based on the amount of metadata in your system	During the **Upgrade Database** task, the upgraded grid will operate normally; however, the upgrade will still be in progress. During this task, you can: • Use the new features in the new StorageGRID version. • Change the audit level configuration. • Update the ILM configuration. • Apply a hotfix. • Recover a node. **Note:** You cannot perform a decommission or expansion procedure until the **Final Upgrade Steps** complete.
Final Upgrade Steps	Temporary files are removed and the upgrade to the new release completes.	5 minutes	When the **Final Upgrade Steps** task completes, you can perform all maintenance procedures.

Steps

1. Estimate the time required to upgrade all grid nodes (consider all upgrade tasks except for **Upgrade Database**).

    a. Multiply the number of nodes in your StorageGRID system by 30 minutes/node (average).

    b. Add 1 hour to this time to account for the time required to download the `.upgrade` file, run precheck validations, and complete the final upgrade steps.

2. If you have Linux nodes, add 15 minutes for each node to account for the time required to download and install the RPM or DEB package.

3. Estimate the time required to upgrade the database.

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

    b. Select the first entry in the tree (entire grid), and select the **Storage** tab.

    c. Hover your cursor over the **Storage Used - Object Metadata** chart, and locate the **Used** value, which indicates how many bytes of object metadata are on your grid.

    d. Divide the **Used** value by 1.5 TB/day to determine how many days will be needed to upgrade the database.

4. Calculate the total estimated time for the upgrade by adding the results of steps 1, 2, and 3.

Example: Estimating the time to upgrade from StorageGRID 11.4 to 11.5

Suppose your system has 14 grid nodes, of which 8 are Linux nodes. Also, assume that the **Used** value for object metadata is 6 TB.

1. Multiply 14 by 30 minutes/node and add 1 hour. The estimated time to upgrade all nodes is 8 hours.

2. Multiple 8 by 15 minutes/node to account for the time to install the RPM or DEB package on the Linux nodes. The estimated time for this step is 2 hours.

3. Divide 6 by 1.5 TB/day. The estimated number of days for the **Upgrade Database** task is 4 days.

   > (i) While the **Upgrade Database** task is running, you can safely use new features, apply hotfixes, and perform node recovery operations.

4. Add the values together. You should allow 5 days to complete the upgrade of your system to StorageGRID 11.5.0.

How your system is affected during the upgrade

You must understand how your StorageGRID system will be affected during the upgrade.

StorageGRID upgrades are non-disruptive

The StorageGRID system can ingest and retrieve data from client applications throughout the upgrade process. Grid nodes are brought down one at a time during the upgrade, so there is not a time when all grid nodes are unavailable.

To allow for continued availability, you must ensure that objects are stored redundantly using the appropriate ILM policies. You must also ensure that all external S3 or Swift clients are configured to send requests to one of the following:

- A StorageGRID endpoint configured as a high availability (HA) group
- A high availability third-party load balancer
- Multiple Gateway Nodes for each client
- Multiple Storage Nodes for each client

Appliance firmware is upgraded

During the StorageGRID 11.5 upgrade:

- All StorageGRID appliance nodes are automatically upgraded to StorageGRID Appliance Installer firmware version 3.5.
- SG6060 and SGF6024 appliances are automatically upgraded to BIOS firmware version 3B03.EX and BMC firmware version BMC 3.90.07.
- SG100 and SG1000 appliances are automatically upgraded to BIOS firmware version 3B08.EC and BMC firmware version 4.64.07.

Alerts might be triggered

Alerts might be triggered when services start and stop and when the StorageGRID system is operating as a mixed-version environment (some grid nodes running an earlier version, while others have been upgraded to a later version). For example, you might see the **Unable to communicate with node** alert when services are stopped, or you might see the **Cassandra communication error** alert when some nodes have been upgraded to StorageGRID 11.5 but other nodes are still running StorageGRID 11.4.

In general, these alerts will clear when the upgrade completes.

After the upgrade completes, you can review any upgrade-related alerts by selecting **Recently resolved alerts** from the Grid Manager Dashboard.

> ⓘ During the upgrade to StorageGRID 11.5, the **ILM placement unachievable** alert might be triggered when Storage Nodes are stopped. This alert might persist for 1 day after the upgrade is completed successfully.

Many SNMP notifications are generated

Be aware that a large number of SNMP notifications might be generated when grid nodes are stopped and restarted during the upgrade. To avoid excessive notifications, unselect the **Enable SNMP Agent Notifications** check box (**Configuration** > **Monitoring** > **SNMP Agent**) to disable SNMP notifications before you start the upgrade. Then, re-enable notifications after the upgrade is complete.

Configuration changes are restricted

Until the **Enable New Feature** task completes:

- Do not make any grid configuration changes.
- Do not change the audit level configuration.
- Do not enable or disable any new features.
- Do not update the ILM configuration. Otherwise, you might experience inconsistent and unexpected ILM behavior.
- Do not apply a hotfix or recover a grid node.

Until the **Final Upgrade Steps** task completes:

- Do not perform an expansion procedure.
- Do not perform a decommission procedure.

Impact of an upgrade on groups and user accounts

You must understand the impact of the StorageGRID upgrade, so that you can update groups and user accounts appropriately after the upgrade is complete.

Changes to group permissions and options

After upgrading to StorageGRID 11.5, optionally select the following new permissions and options (**Configuration** > **Access Control** > **Admin Groups**).

Permission or option	Description
Storage Appliance Administrator	Required to access the SANtricity System Manager user interface from Grid Manager.
Access Mode	When managing groups, you can select **Read-only** for this new option to prevent users from changing the settings and features that are selected for the group. Users in groups with read-only access mode can view settings, but they cannot change them.

Related information

[Administer StorageGRID](#)

Verifying the installed version of StorageGRID

Before starting the upgrade, you must verify that the previous version of StorageGRID is currently installed with the latest available hotfix applied.

Steps

1. Sign in to the Grid Manager using a supported browser.

2. Select **Help** > **About**.

3. Verify that the **Version** is 11.4.*x.y*.

   In the StorageGRID 11.4.*x.y* version number:

   - The major release has an *x* value of 0 (11.4.0).

   - A minor release, if available, has an *x* value other than 0 (for example, 11.4.1).

   - A hotfix, if available, has a *y* value (for example, 11.4.0.1).

   > ⓘ If you have an earlier version of StorageGRID, you must upgrade to any 11.4 version before upgrading to StorageGRID 11.5. You do not need to be at the highest 11.4 minor-version release to upgrade to StorageGRID 11.5.

4. If you are not at a StorageGRID 11.4 version you must upgrade to version 11.4, one release at a time, using the instructions for each release.

   You must also apply the latest hotfix for each StorageGRID version before upgrading to the next level.

   One possible upgrade path is shown in the example.

5. Once you are at StorageGRID 11.4, go to the NetApp Downloads page for StorageGRID and see if any hotfixes are available for your StorageGRID 11.4.*x* version.

   [NetApp Downloads: StorageGRID](#)

6. Verify that your StorageGRID 11.4.*x* version has the latest hotfix applied.

7. If necessary, download and apply the latest StorageGRID 11.4.*x.y* hotfix for your StorageGRID 11.4.*x* version.

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

Example: Preparing to upgrade to StorageGRID 11.5 from version 11.3.0.8

The following example shows the upgrade steps to prepare for an upgrade from StorageGRID version 11.3.0.8 to version 11.5. Before you can upgrade to StorageGRID 11.5, your system must have a StorageGRID 11.4 version installed with the latest hotfix.

Download and install software in the following sequence to prepare your system for upgrade:

1. Apply the latest StorageGRID 11.3.0.*y* hotfix.

2. Upgrade to the StorageGRID 11.4.0 major release. (You do not need to install any 11.4.*x* minor releases.)

3. Apply the latest StorageGRID 11.4.0.*y* hotfix.

Related information

Administer StorageGRID

Maintain & recover

Obtaining the required materials for a software upgrade

Before you begin the software upgrade, you must obtain all required materials so you can complete the upgrade successfully.

Item	Notes
StorageGRID upgrade files	You must download the required files to your service laptop: • **All platforms**: `.upgrade` file • **Any node on Red Hat Enterprise Linux or CentOS**: `.upgrade` file and RPM file (`.zip` or `.tgz`) • **Any node on Ubuntu or Debian**: `.upgrade` file and DEB file (`.zip` or `.tgz`)
Service laptop	The service laptop must have: • Network port • SSH client (for example, PuTTY)
Supported web browser	You must confirm that the web browser on the service laptop is supported for use with StorageGRID 11.5. Web browser requirements **Note:** Browser support has changed for StorageGRID 11.5. Confirm you are using a supported version.

Item	Notes
Recovery Package (`.zip`) file	Before upgrading, you should download the most recent Recovery Package file in case any problems occur during the upgrade. After you upgrade the primary Admin Node, you must download a new copy of the Recovery Package file and save it in a safe location. The updated Recovery Package file allows you to restore the system if a failure occurs. Downloading the Recovery Package
`Passwords.txt` file	This file is included in the SAID package, which is part of the Recovery Package `.zip` file. You must obtain the latest version of the Recovery Package.
Provisioning passphrase	The passphrase is created and documented when the StorageGRID system is first installed. The provisioning passphrase is not listed in the `Passwords.txt` file.
Related documentation	• Release notes for StorageGRID 11.5. Be sure to read these carefully before starting the upgrade. • Instructions for administering StorageGRID • If you are upgrading a Linux deployment, the StorageGRID installation instructions for your Linux platform. • Other StorageGRID documentation, as required.

Related information

Web browser requirements

Administer StorageGRID

Install Red Hat Enterprise Linux or CentOS

Install Ubuntu or Debian

Install VMware

Downloading the StorageGRID upgrade files

Downloading the Recovery Package

Release notes

Web browser requirements

You must use a supported web browser.

Web browser	Minimum supported version
Google Chrome	87

Web browser	Minimum supported version
Microsoft Edge	87
Mozilla Firefox	84

You should set the browser window to a recommended width.

Browser width	Pixels
Minimum	1024
Optimum	1280

Downloading the StorageGRID upgrade files

You must download the required files to a service laptop before you upgrade your StorageGRID system.

What you'll need

You must have installed all required hotfixes for the StorageGRID software version you are upgrading. See the hotfix procedure in the recovery and maintenance instructions.

About this task

You must download the `.upgrade` archive for any platform. If any nodes are deployed on Linux hosts, you must also download an RPM or DEB archive, which you will install before you start the upgrade.

Steps

1. Go to the NetApp Downloads page for StorageGRID.

   NetApp Downloads: StorageGRID

2. Select the button for downloading the latest release, or select another version from the drop-down menu and select **Go**.

   StorageGRID software versions have this format: 11.*x.y*. StorageGRID hotfixes have this format: 11.*x.y.z*.

3. Sign in with the username and password for your NetApp account.

4. If a Caution/MustRead statement appears, read it and select the check box.

   This statement appears if there is a required hotfix for the release.

5. Read the End User License Agreement, select the check box, and then select **Accept & Continue**.

   The downloads page for the version you selected appears. The page contains three columns:

   ◦ Install StorageGRID
   ◦ Upgrade StorageGRID
   ◦ Support files for StorageGRID Appliances

6. In the **Upgrade StorageGRID** column, select and download the `.upgrade` archive.

   Every platform requires the `.upgrade` archive.

7. If any nodes are deployed on Linux hosts, also download the RPM or DEB archive in either `.tgz` or `.zip` format.

   You must install the RPM or DEB archive on all Linux nodes before you start the upgrade.

   > ℹ️ No additional files are required for the SG100 or SG1000.

   > ℹ️ Select the `.zip` file if you are running Windows on the service laptop.

   ◦ Red Hat Enterprise Linux or CentOS
   ```
   StorageGRID-Webscale-version-RPM-uniqueID.zip
   StorageGRID-Webscale-version-RPM-uniqueID.tgz
   ```

   ◦ Ubuntu or Debian
   ```
   StorageGRID-Webscale-version-DEB-uniqueID.zip
   StorageGRID-Webscale-version-DEB-uniqueID.tgz
   ```

Related information

Linux: Installing the RPM or DEB package on all hosts

Maintain & recover

Downloading the Recovery Package

The Recovery Package file allows you to restore the StorageGRID system if a failure occurs.

What you'll need
- You must be signed in to the Grid Manager using a supported browser.
- You must have the provisioning passphrase.
- You must have specific access permissions.

About this task

Download the current Recovery Package file before making grid topology changes to the StorageGRID system or before upgrading software. Then, download a new copy of the Recovery Package after making grid topology changes or after upgrading software.

Steps

1. Select **Maintenance** > **System** > **Recovery Package**.

2. Enter the provisioning passphrase, and select **Start Download**.

   The download starts immediately.

3. When the download completes:

   a. Open the `.zip` file.

b. Confirm it includes a `gpt-backup` directory and an inner `.zip` file.

c. Extract the inner `.zip` file.

d. Confirm you can open the `Passwords.txt` file.

4. Copy the downloaded Recovery Package file (`.zip`) to two safe, secure, and separate locations.

> ⓘ The Recovery Package file must be secured because it contains encryption keys and passwords that can be used to obtain data from the StorageGRID system.

Related information

Administer StorageGRID

Checking the system's condition before upgrading software

Before upgrading a StorageGRID system, you must verify the system is ready to accommodate the upgrade. You must ensure that the system is running normally and that all grid nodes are operational.

Steps

1. Sign in to the Grid Manager using a supported browser.

2. Check for and resolve any active alerts.

   For information about specific alerts, see the monitoring and troubleshooting instructions.

3. Confirm that no conflicting grid tasks are active or pending.

   a. Select **Support** > **Tools** > **Grid Topology**.

   b. Select *site* > *primary Admin Node* > **CMN** > **Grid Tasks** > **Configuration**.

   Information lifecycle management evaluation (ILME) tasks are the only grid tasks that can run concurrently with the software upgrade.

   c. If any other grid tasks are active or pending, wait for them to finish or release their lock.

   > ⓘ Contact technical support if a task does not finish or release its lock.

4. Refer to the lists of internal and external ports in the 11.5 version of the networking guidelines, and ensure that all required ports are opened before you upgrade.

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

Related information

Monitor & troubleshoot

Administer StorageGRID

Maintain & recover

Network guidelines