Plan and prepare for upgrade

StorageGRID

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Table of Contents

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Estimate the time to complete an upgrade

When planning an upgrade to StorageGRID 11.7, 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 can't 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.

Upgrade task	Description	Approximate time required	During this task
Run prechecks and upgrade primary Admin Node	The upgrade prechecks are run, and the primary Admin Node is stopped, upgraded, and restarted.	30 minutes to 1 hour, with SG100 and SG1000 appliance nodes requiring the most time. Unresolved precheck errors will increase this time.	You can't access the primary Admin Node. Connection errors might be reported, which you can ignore. Running the upgrade prechecks before starting the upgrade lets you resolve any errors before the scheduled upgrade maintenance window.
Start upgrade service	The software file is distributed, and the upgrade service is started.	3 minutes per grid node	
Upgrade other grid 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.	15 minutes to 1 hour per node, with appliance nodes requiring the most time **Note**: For appliance nodes, the StorageGRID Appliance Installer is automatically updated to the latest release.	• Don't change the grid configuration. • Don't change the audit level configuration. • Don't update the ILM configuration. • You are prevented from performing other maintenance procedures, such as hotfix, decommission, or expansion. **Note**: If you need to perform a recovery, contact technical support.

Upgrade task	Description	Approximate time required	During this task
Enable features	The new features for the new version are enabled.	Less than 5 minutes	• Don't change the grid configuration. • Don't change the audit level configuration. • Don't update the ILM configuration. • You can't perform another maintenance procedure.
Upgrade database	The upgrade process checks each node to verify that the Cassandra database does not need to be updated.	10 seconds per node or a few minutes for the entire grid	The upgrade from StorageGRID 11.6 to 11.7 does not require a Cassandra database upgrade; however, the Cassandra service will be stopped and restarted on each Storage Node. For future StorageGRID feature releases, the Cassandra database update step might take several days to 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.

    a. Multiply the number of nodes in your StorageGRID system by 1 hour/node.

    As a general rule, appliance nodes take longer to upgrade than software-based nodes.

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

Example: Estimated time to upgrade to StorageGRID 11.7

Suppose your system has 14 grid nodes, of which 8 are Linux nodes.

1. Multiply 14 by 1 hour/node.

2. Add 1 hour to account for the download, precheck, and final steps.

    The estimated time to upgrade all nodes is 15 hours.

3. Multiply 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.

4. Add the values together.

You should allow up to 17 hours to complete the upgrade of your system to StorageGRID 11.7.0.

> ℹ️ As required, you can split the maintenance window into smaller windows by approving subsets of grid nodes to upgrade in multiple sessions. For example, you might prefer to upgrade the nodes at site A in one session and then upgrade the nodes at site B in a later session. If you choose to perform the upgrade in more than one session, be aware that you can't start using the new features until all nodes have been upgraded.

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. If you approve all nodes of the same type to upgrade (for example, Storage Nodes), the nodes are brought down one at a time, so there is no time when all grid nodes or all grid nodes of a certain type are unavailable.

To allow for continued availability, ensure that your ILM policy contains rules that specify storing multiple copies of each object. You must also ensure that all external S3 or Swift clients are configured to send requests to one of the following:

- A high availability (HA) group virtual IP address
- 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 11.7 upgrade:

- All StorageGRID appliance nodes are automatically upgraded to StorageGRID Appliance Installer firmware version 3.7.
- SG6060 and SGF6024 appliances are automatically upgraded to BIOS firmware version 3B07.EX and BMC firmware version 3.97.07.
- SG100 and SG1000 appliances are automatically upgraded to BIOS firmware version 3B12.EC and BMC firmware version 4.71.07.

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). Other alerts might be triggered after the upgrade completes.

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 11.7 but other nodes are still running StorageGRID 11.6. In general, these alerts will clear when

the upgrade completes.

The **ILM placement unachievable** alert might be triggered when Storage Nodes are stopped during the upgrade to StorageGRID 11.7. This alert might persist for 1 day after the upgrade completes.

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

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, clear the **Enable SNMP Agent Notifications** checkbox (**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

ⓘ This list applies specifically to upgrades from StorageGRID 11.6 to StorageGRID 11.7. If you're upgrading to another StorageGRID release, refer to the list of restricted changes in the upgrade instructions for that release.

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

- Don't make any grid configuration changes.
- Don't enable or disable any new features. For example, don't attempt to create a grid federation connection until both StorageGRID systems have been updated to StorageGRID 11.7.
- Don't update the ILM configuration. Otherwise, you might experience inconsistent and unexpected ILM behavior.
- Don't apply a hotfix or recover a grid node.

    ⓘ Contact technical support if you need to recover a node during upgrade.

- You should not manage HA groups, VLAN interfaces, or load balancer endpoints while you're upgrading to StorageGRID 11.7.
- Don't delete any HA groups until the upgrade to StorageGRID 11.7 is complete. Virtual IP addresses in other HA groups might become inaccessible.

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

- Don't perform an expansion procedure.
- Don't perform a decommission procedure.

You can't view bucket details or manage buckets from the Tenant Manager

During the upgrade to StorageGRID 11.7 (that is, while the system is operating as a mixed-version environment), you can't view bucket details or manage buckets using the Tenant Manager. One of the following errors appears on the Buckets page in Tenant Manager:

- You can't use this API while you're upgrading to 11.7.
- You can't view bucket versioning details in the Tenant Manager while you're upgrading to 11.7.

This error will resolve after the upgrade to 11.7 is complete.

Workaround

While the 11.7 upgrade is in progress, use the following tools to view bucket details or manage buckets, instead of using the Tenant Manager:

* To perform standard S3 operations on a bucket, use either the S3 REST API or the Tenant Management API.

* To perform StorageGRID custom operations on a bucket (for example, viewing and modifying the bucket consistency level, enabling or disabling last access time updates, or configuring search integration), use the Tenant Management API.

TLS ciphers or SSH configurations might change

If TLS ciphers or SSH configurations have been manually changed or are inconsistent across nodes, all nodes will be overwritten to be either Legacy Compatibility or Modern Compatibility after upgrade. If you used `fips-ciphers.sh` in StorageGRID 11.6, the Common Criteria policy is applied to all nodes. Otherwise, the Legacy Compatibility policy is applied. If you require Common Criteria validated configurations, you must use the Common Criteria policy or the FIPS strict policy. If you did not use `fips-ciphers.sh`, you should use the new Modern Compatibility setting after upgrade completes. To configure ciphers, go to **CONFIGURATION** > **Security** > **Security settings** and select **TLS and SSH policies**.

CLB ports might be converted to load balancer endpoints

The legacy Connection Load Balancer (CLB) service has been removed in StorageGRID 11.7. If CLB configuration is detected during upgrade prechecks, the **Legacy CLB load balancer activity detected** alert will be triggered. If custom certificates were set up for the S3 or Swift API in the existing StorageGRID version, the CLB ports 8082, 8083, 8084, and 8085 will be converted to load balancer endpoints during upgrade to StorageGRID 11.7.

See also Considerations for load balancing.

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 11.7, optionally assign the following new permission to tenant user groups.

Permission	Description
Tenant Manager > Manage objects with S3 Console	When combined with the Manage all buckets permission, this permission allows users to access the Experimental S3 Console from the Buckets page. Users who have this permission but who don't have the Manage all buckets permission can still navigate directly to the Experimental S3 Console.

See Tenant management permissions.

Verify 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.

About this task

Before you upgrade to StorageGRID 11.7, your grid must have StorageGRID 11.6 installed. If you are currently using a previous version of StorageGRID, you must install all previous upgrade files along with their latest hotfixes (strongly recommended) until your grid's current version is StorageGRID 11.6.*x.y*.

One possible upgrade path is shown in the example.

> (i) NetApp strongly recommends that you apply the latest hotfix for each StorageGRID version before upgrading to the next version and that you also apply the latest hotfix for each new version you install. In some cases, you must apply a hotfix to avoid the risk of data loss. See NetApp Downloads: StorageGRID and the release notes for each hotfix to learn more.

Note that you can run a script to update from 11.3.0.13+ to 11.4.0.*y* in one step and from 11.4.0.7+ to 11.5.0.*y* in one step. See NetApp Knowledge Base: How to run combined major upgrade and hotfix script for StorageGRID.

Steps

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

2. From the top of the Grid Manager, select **Help** > **About**.

3. Verify that **Version** is 11.6.*x.y*.

   In the StorageGRID 11.6.*x.y* version number:

   - The **major release** has an *x* value of 0 (11.6.0).
   - A **hotfix**, if one has been applied, has a *y* value (for example, 11.6.0.1).

4. If **Version** is not 11.6.*x.y*, go to NetApp Downloads: StorageGRID to download the files for each previous release, including the latest hotfix for each release.

5. Obtain the the upgrade instructions for each release you downloaded. Then, perform the software upgrade procedure for that release, and apply the latest hotfix for that release (strongly recommended).

   See the StorageGRID hotfix procedure.

Example: Upgrade to StorageGRID 11.6 from version 11.3.0.8

The following example shows the steps to upgrade from StorageGRID version 11.3.0.8 to version 11.6 in preparation for a StorageGRID 11.7 upgrade.

> (i) Optionally, you can run a script to combine steps 2 and 3 (update from 11.3.0.13+ to 11.4.0.*y*) and to combine steps 4 and 5 (update from 11.4.0.7+ to 11.5.0.*y*). See NetApp Knowledge Base: How to run combined major upgrade and hotfix script for StorageGRID.

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.
3. Apply the latest StorageGRID 11.4.0.*y* hotfix.
4. Upgrade to the StorageGRID 11.5.0 major release.
5. Apply the latest StorageGRID 11.5.0.*y* hotfix.
6. Upgrade to the StorageGRID 11.6.0 major release.
7. Apply the latest StorageGRID 11.6.0.*y* hotfix.

Obtain 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
Service laptop	The service laptop must have: • Network port • SSH client (for example, PuTTY)
Supported web browser	Browser support typically changes for each StorageGRID release. Make sure your browser is compatible with the new StorageGRID version.
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.
Linux RPM or DEB archive	If any nodes are deployed on Linux hosts, you must download and install the RPM or DEB package on all hosts before you start the upgrade. **Important**: Ensure that your operating system is upgraded to Linux kernel 4.15 or higher.
StorageGRID documentation	• Release notes for StorageGRID 11.7 (sign in required). Be sure to read these carefully before starting the upgrade. • StorageGRID software upgrade resolution guide for the major version you are upgrading to (sign in required) • Other StorageGRID 11.7 documentation, as required.

Check the system's condition

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 web browser.

2. Check for and resolve any active alerts.

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.

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

4. Refer to Internal grid node communications and External communications to ensure that all required ports for StorageGRID 11.7 are opened before you upgrade.

    The following internal ports must be open before you upgrade to StorageGRID 11.7:

Port	Description
1055 8011 10342	Used for firewall controls knocking protocol. Before upgrading, confirm this port is open between all grid nodes on the Grid Network.
18086	TCP port used for new LDR service. Before upgrading, confirm this port is open from all grid nodes to all Storage Nodes.

> (i) 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.