StorageGRID® 11.2

Upgrade Guide

■ NetApp®

Contents

About StorageGRID 11.2

Before starting an upgrade, review this section to learn about the new features and enhancements in StorageGRID 11.2, to determine which features have been deprecated or removed, and to find out about changes to StorageGRID APIs.

What's new in StorageGRID 11.2

StorageGRID 11.2 introduces support for SAML-based single sign-on, Cloud Storage Pools that allow objects to be stored outside of StorageGRID, enhancements to the Nodes page, improved audit message processing, and other enhancements and new features.

Single sign-on (SSO) support using SAML

You can now require all StorageGRID users to use single sign-on (SSO) to access the Grid Manager, Tenant Manager, Grid Management API, or Tenant Management API. The new implementation uses the Security Assertion Markup Language 2.0 (SAML 2.0) standard to exchange authentication and authorization data between StorageGRID and Active Directory Federated Services (AD FS).

Administering StorageGRID

Cloud Storage Pools

Cloud Storage Pools allow you to use information lifecycle management (ILM) rules to store objects outside of the StorageGRID system. For example, you might want to move infrequently accessed objects to low-cost Amazon Glacier storage, or you might want to free up on-premise storage by storing older versions of objects externally.

From an ILM perspective, a Cloud Storage Pool is similar to a storage pool. However, while storage pools consist of Storage Nodes or Archive Nodes, a Cloud Storage Pool consists of an external S3 bucket.

As part of this enhancement, the user interface for storage pools has been redesigned.

Administering StorageGRID

Implementing S3 client applications

Enhancements to the Nodes page

- When viewing the grid topology on the **Nodes** page, you can now select a site to see site-level metrics and information.

- A new **Tasks** tab makes hardware-related tasks easier to perform. The **Reboot** button shuts down and restarts the selected grid node. For appliance Storage Nodes, the **Maintenance Mode** button places the compute controller into maintenance mode.

Administering StorageGRID

Changes to audit message queuing

Audit message queues can grow over time if the rate at which Storage Nodes generate audit messages is faster than the rate at which the messages can be relayed and processed. In previous releases, if a node's audit message queue consumed the available disk space, the node became unresponsive, requiring manual intervention to resolve.

In this release, the audit message queuing process has been improved, as follows:

- If the audit message volume for an Admin Node is full, the node is flagged as unavailable to new audit messages until the directory is no longer full. S3 and Swift client requests are not affected.

- If the audit message volume for a Storage Node with the ADC service is more than 92% full, the node becomes unavailable to new audit messages. The node becomes available when the disk usage drops below 87%. S3 and Swift client requests to other nodes are not affected.

- If the audit message volume for a Storage Node is more than 85% full, the node starts refusing S3 and Swift client requests.

To help you monitor the size of audit message queues over time, new thresholds control when the Audit Messages Queued (AMQS) alarm is triggered.

Understanding audit messages

Troubleshooting StorageGRID

New audit message categories

The **Protocol** audit message category (**Configuration > Audit**) has been replaced by two new categories: **Client Reads** and **Client Writes**. You can now set a different audit level for client read operations than for client write operations.

Understanding audit messages

Enhancements to Grid Manager

- When configuring Identity Federation, you can now use Oracle Directory Server as an identity provider.

- When creating a new tenant account, you can now specify an existing federated group to have the initial Root Access permission for the tenant (assuming the **Uses Own Identity Source** check box is not selected).

- The HTTP and HTTPS protocols are now available for transport of AutoSupport messages. Select **Support > AutoSupport > Weekly**.

Administering StorageGRID

Enhancements to Tenant Manager

- Improvements to platform service error handling and reporting include a new dashboard message and a **Last Error** column on the Endpoints page.

- The **Recent** field on the Tenant Manager sign-on page displays the tenants you most recently accessed, so you can switch between tenant accounts and the Grid Manager without having to re-enter account numbers.

- A new **Group Policy** drop-down allows you to select a predefined group policy, making it easier to configure S3 groups.

Using tenant accounts

Enhancements to S3 REST API support

- The POST Object restore operation is now supported, allowing you to restore Cloud Storage Pool objects that have been transitioned to Glacier storage.

- Version 2 of GET Bucket (List Objects) is now supported.

- The S3 Initiate Multipart Upload operation now supports the `x-amz-server-side-encryption` request header. Specifying this header for each of the upload parts is no longer supported.

- You can now use AWS syntax for ARN, policy condition keys, and policy variables in S3 group and bucket policies. Existing S3 group and bucket policies that use the StorageGRID syntax will continue to be supported.

Implementing S3 client applications

Changes to StorageGRID appliances

- You can now configure the IP addresses for the storage controller in an appliance using the StorageGRID Appliance Installer. Previously, you had to use SANtricity System Manager or SANtricity Storage Manager to configure these addresses.

- You can now configure the IP address and root password for the Baseboard Management Controller (BMC) in the SG6000-CN controller using the StorageGRID Appliance Installer.

- You can now use active-backup network bond mode for the Admin Network ports on the compute controllers in the SG6000, SG5700, and SG5600 appliances.

- Appliance Storage Nodes now have a self-signed SSL certificate, and logins to these nodes require a secure connection (HTTPS). Port number 8080 has changed to 8443.

SG6000 appliance installation and maintenance

SG5700 appliance installation and maintenance

SG5600 appliance installation and maintenance

VMWare: Grid Network supports DHCP

The Grid Network now supports Dynamic Host Configuration Protocol (DHCP) addresses on VMware deployments.

VMware installation

NAS Bridge no longer FPVR

A variance request (FPVR) is no longer needed to access NAS Bridge installation and upgrade files. You can now download NAS Bridge files from the StorageGRID download site.

The supported workload (files 10 MB and larger) and use case (cold archive) for NAS Bridge remain the same even with the removal of the FPVR.

NAS Bridge installation and setup

Removed or deprecated features

Some features have been removed or deprecated in StorageGRID 11.2. You must review these items to understand whether you need to update client applications or modify your configuration before you upgrade.

Admin Nodes no longer support Transport Layer Security (TLS) 1.1

- You can no longer use Transport Layer Security (TLS) 1.1 when signing in to the Grid Manager, Tenant Manager, Grid Management API, or Tenant Management API.

  Attention: Any clients that use TLS 1.1 for communication with Admin Nodes must switch to TLS 1.2 before upgrading to StorageGRID 11.2.

- All other uses of TLS 1.1 have been deprecated in StorageGRID 11.2. Complete support for TLS 1.1 will be removed in a future release.

Administering StorageGRID

Cloud Tiering - Simple Storage Service (S3) has been replaced by Cloud Storage Pools

If you are currently using the **Cloud Tiering - Simple Storage Service (S3)** feature to tier object data to an S3 bucket, consider migrating your objects to a Cloud Storage Pool instead. While the Cloud Tiering - S3 feature is still supported in StorageGRID 11.2, the new Cloud Storage Pool feature provides a scalable approach that takes advantage of all of the Storage Nodes in your StorageGRID system.

> **Note:** Before migrating object data, contact your NetApp account representative to understand and manage any associated costs.

Administering StorageGRID > "Migrating objects from Cloud Tiering - S3 to a Cloud Storage Pool"

S3 multipart upload no longer supports `x-amz-server-side-encryption` on each part

Previously, if you required server-side encryption for a multipart upload, you needed to specify the `x-amz-server-side-encryption` header for each of the upload parts. This implementation is no longer supported. Starting in StorageGRID 11.2, you must use the `x-amz-server-side-encryption` request header for the Initiate Multipart Upload operation, which is consistent with the AWS implementation.

Implementing S3 client applications

Removed audit messages and audit message elements

The following audit messages are obsolete and are no longer generated:

- ETCA (TCP/IP Connection Establish)
- ETCC (TCP/IP Connection Close)
- ETCF (TCP/IP Connection Fail)
- ETCR (TCP/IP Connection Refused)
- HTCC (HTTP Session Establish)
- HTSE (HTTP Session Close)

The following audit message elements are obsolete and no longer appear in each audit message:

- ASES (Audit Session Identifier)
- ASQN (Sequence Count)

Understanding audit messages

CBC and SHA1 ciphers deprecated

Support for CBC ciphers and SHA1 ciphers is deprecated and will be removed in a future release.

Administering StorageGRID

SNMP configuration instructions no longer valid

The SNMP configuration instructions that applied to previous StorageGRID releases are no longer valid and have been removed. For information about using SNMP with StorageGRID 11.2, contact your NetApp account representative.

Removed features in NAS Bridge 2.2

- Starting in NAS Bridge 2.2, the `pbcli` command line interface is no longer supported.

- NAS Bridge support for file-level access control lists (ACLs) for SMB file systems is deprecated in NAS Bridge 2.2 and will be removed in a future release.

Administering NAS Bridge

Changes to the Grid Management API

StorageGRID 11.2 introduces version 3 of the Grid Management API. Version 3 deprecates version 2; however, version 1 and version 2 are still supported.

> **Attention:** You can continue to use version 1 and version 2 of the management API with StorageGRID 11.2; however, support for these versions of the API will be removed in a future release of StorageGRID. After upgrading to StorageGRID 11.2, the deprecated v1 and v2 APIs can be deactivated using the `PUT /grid/config/management` API.

503 error now returned for requests that can be retried

In previous StorageGRID releases, a 500 error code (Internal Server Error) was returned for some communication errors between nodes, including Connection Failed, Host Unreachable, and Connection Refused. In this release, a 503 error code (Service Unavailable) is returned when you can safely retry a request. As required, you should update client applications to reflect this change.

DELETE /authorize request can now return 200 response code

In previous StorageGRID releases, a 204 response code was returned for successful requests to delete an authorization token. In this release, a 200 response code and a response body can also be returned if single sign-on (SSO) is enabled.

New clientReads and clientWrites audit levels

Version 3 of the Grid Management API replaces the **protocol** audit message level with two new audit message levels: **clientReads** and **clientWrites**.

New networks section for install and expansion endpoints

The `hardware` section of the following endpoints now includes a networks section:

- StorageGRID Installation API:

  ◦ `/install/nodes`

  ◦ `/install/nodes/{id}`

- Grid Management API:

  ◦ `/grid/expansion/nodes`

  ◦ `/grid/expansion/nodes/{id}`

The response describes the original network configuration that was provided when the node registered with the primary Admin Node.

`uniquename` included in topology health data for grid and site

The data returned by the `health/topology` endpoint in the alarms section now includes the `uniqueName` property for the grid level and for each site. Previously, the `uniquename` property was only included for nodes.

`responseTime` marked optional

The responseTime parameter was incorrectly marked as required in the API Docs of the Grid Management API. This parameter has always been optional, and now it is correctly marked as optional.

Some metrics noted as _private_

Some metrics now include _private_ in their names, indicating that they are intended for internal use only. These metrics are subject to change between StorageGRID releases without notice.

Related information

   Administering StorageGRID

Changes to the Tenant Management API

StorageGRID 11.2 introduces version 3 of the Tenant Management API. Version 3 deprecates version 2; however, version 1 and version 2 are still supported.

> **Attention:** You can continue to use version 1 and version 2 of the management API with StorageGRID 11.2; however, support for these versions of the API will be removed in a future release of StorageGRID. After upgrading to StorageGRID 11.2, the deprecated v1 and v2 APIs can be deactivated using the PUT /grid/config/management API.

Consistency level "default" is deprecated in version 3 of Tenant Management API

Version 3 of the Tenant Management API deprecates the consistency level that was called "default" for S3 buckets or Swift containers. The new default consistency is called "read-after-new-write."

As shown in the table, you can continue to specify "default" in a PUT request; however, "read-after-new-write" will now be returned in the response to a GET request.

Type of request	Behavior in v2 of the Tenant Management API	Behavior in v3 of the Tenant Management API
PUT /org/containers/ {containerName}/ consistency	You can specify "default" or you can specify "read-after-new-write" to achieve the same consistency behavior.	You can specify "default" or you can specify "read-after-new-write" to achieve the same consistency behavior.
GET /org/containers/ {containerName}/ consistency	If the bucket used the "default" or "read-after-new-write" level, the API returned "default."	The API returns "read-after-new-write" instead of "default."

`responseTime` marked optional

The responseTime parameter was incorrectly marked as required in the API Docs of the Tenant Management API. This parameter has always been optional, and now it is correctly marked as optional.

Related concepts

   Removed or deprecated features on page 6

Related information

   Using tenant accounts

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 11.2, 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 stages and lists the approximate time required for each stage. The steps after the table provide instructions you can use to estimate the upgrade time for your system.

Note: The upgrade from StorageGRID 11.1.x to 11.2 (or from 11.2.x to 11.2.y) does not require a Cassandra upgrade. For other StorageGRID feature releases, the Cassandra database update step might take several days or weeks, based on the amount of metadata in your system.

Upgrade stage	Description	Approximate time required	During this stage
Pre-upgrade validation	The grid's condition is validated.	3 minutes per grid node, unless validation errors are reported	• Do not change the grid configuration.
Primary Admin Node upgrade	The primary Admin Node is stopped, upgraded, and restarted.	30 minutes	• Do not change the audit level configuration.
Upgrade of all 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 for several minutes each during the upgrade.	15 to 45 minutes per node, with appliance Storage Nodes requiring the most time **Note:** For upgrades to 11.2, Storage Nodes wait up to 10 minutes for active HTTP operations to be completed. For upgrades from 11.2, Storage Nodes wait only 2 minutes.	• Do not update the ILM configuration. • Do not perform other maintenance procedures such as decommissioning, expansion, or recovery. • You cannot access the primary Admin Node while that node is being upgraded.
Cassandra database update	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	
Restart services	Some grid node services are restarted.	15 minutes per node	Affected grid nodes might be shown as Administratively Down.

Upgrade stage	Description	Approximate time required	During this stage
Complete final steps	The upgrade to the new release completes.	5 minutes	When the final upgrade steps complete, you can: • Enable or disable new features. • Change the grid configuration. • Change the audit level configuration. • Update the ILM configuration. • Perform decommissioning, expansion, and recovery procedures.

Steps

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

2. Add 1 hour to this time to account for the time required to download the `.upgrade` file, run precheck validations, validate that no Cassandra update is required, and complete the final steps.

> **Example: Estimating the time to upgrade from 11.1 to 11.2**
>
> Suppose your system has 14 grid nodes. You would multiply 14 by 30 minutes/node and add 1 hour. The estimated time to upgrade all nodes is 8 hours.

How your system is affected during the upgrade

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

Client applications might experience short-term disruptions

The StorageGRID system can ingest and retrieve data from client applications throughout the upgrade process except for a short period of time when services are restarting and the client connections to individual API Gateway Nodes or Storage Nodes are disrupted. Connectivity will be restored after the upgrade finishes and services resume on the individual nodes.

Every node in your StorageGRID system will be brought down one at a time for several minutes each during the upgrade. You might need to schedule downtime for the upgrade if loss of connectivity for a short period is not acceptable.

You must decide when to upgrade API Gateway Nodes based on your grid's configuration. If your StorageGRID system has multiple API Gateway Nodes, you must sequence the upgrade so that client applications are always directed to an available API Gateway Node. If your StorageGRID system has only one API Gateway Node, you must plan a downtime for the upgrade because client applications will not be able to access the system while the API Gateway Node is being upgraded.

Alarms might be triggered

Alarms 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). In general, these alarms will clear when the upgrade completes.

Many emails are generated

When you upgrade grid nodes, email notifications are generated when the node is stopped and restarted. To avoid excessive emails, you can disable email notifications before upgrading the first node and re-enable notifications after the upgrade is completed.

Configuration changes are restricted

While you are upgrading StorageGRID:

- Do not make any grid configuration changes until the upgrade is complete.

- Do not change the audit level configuration until the upgrade is complete.

- Do not enable or disable any new features until the upgrade is complete.

- Do not update the ILM configuration until the upgrade is complete. Otherwise, you might experience inconsistent and unexpected ILM behavior.

Prometheus will be updated, existing metrics will be deleted

During the upgrade to StorageGRID 11.2, the Prometheus monitoring system will be upgraded to Prometheus 2.x. All of the historic metrics in your Prometheus database will be removed.

SNMP configurations will be deleted

When you upgrade to StorageGRID 11.2, any existing node SNMP configurations will be deleted. If you have an SNMP configuration, copy it before the upgrade, so you can more easily reconfigure SNMP in StorageGRID 11.2.

Related information

   Expanding a StorageGRID system

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 permissions for the Grid Manager and the Grid Management API

The following management permissions have been changed in StorageGRID 11.2.

Permission	Description
Root Access	Required to see the **Single Sign-On** option in the **Configuration** menu.
Maintenance	Required to use the **Reboot** and **Maintenance Mode** buttons on the **Nodes > Tasks** tab.

Related information

   Administering StorageGRID

Verifying the installed version of StorageGRID

Before starting the upgrade, you must verify which version of the StorageGRID is currently installed.

Steps

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

2. Select **Help > About**.

3. Verify that the **Version** is 11.1.x.

   Attention: If you have an earlier version of the software, you must upgrade to version 11.1.x before proceeding with these steps.

Related information

[Administering StorageGRID](#)

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 file	You must download the StorageGRID upgrade file to your service laptop. See "Downloading the StorageGRID upgrade file" for instructions.
StorageGRID installation package for Linux	If your StorageGRID deployment is running on Linux hosts, you must download the StorageGRID installation archive for your Linux platform. Then, you must install the RPM or DEB packages on all Linux hosts before you start the upgrade. See "Downloading the StorageGRID upgrade file" for instructions.
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 11.2. See "Web browser requirements." **Note:** Browser support has changed for StorageGRID 11.2. Confirm you are using a supported version.
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. See "Downloading the Recovery Package" for instructions.

Item	Notes
`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*. 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 tasks

Related references

Related information

Administering StorageGRID
Red Hat Enterprise Linux or CentOS installation
Ubuntu or Debian installation

Web browser requirements

You must use a supported web browser.

Web browser	Minimum supported version
Google Chrome	70
Microsoft Internet Explorer	11 (Native Mode)
Mozilla Firefox	63

You should set the browser window to a recommended width.

Browser width	Pixels
Minimum	1024
Optimum	1280

Downloading the StorageGRID upgrade file

You must download the upgrade file to a service laptop before you upgrade your StorageGRID system. If your StorageGRID system is deployed on Linux hosts, you must also download the StorageGRID installation files.

Steps

1. Go to the Software Download page on the NetApp Support Site.

    NetApp Downloads: Software

2. Sign in using the username and password for your NetApp account.

3. Scroll to **StorageGRID (formerly StorageGRID Webscale)**, select **All Platforms**, and click **Go**.

4. Select the StorageGRID release, and click **View & Download**.

5. From the Software Download section of the page, click **CONTINUE**, and accept the End User License Agreement.

6. Download the appropriate archive.

7. If your StorageGRID system is deployed on Linux hosts, complete these steps before you start the upgrade.

    a. Download either the `.tgz` file or the `.zip` file for your Linux platform.

        Note: Select 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`*`.tgz` • `StorageGRID-Webscale-`*`version`*`-RPM-`*`uniqueID`*`.zip`
Ubuntu or Debian	• `StorageGRID-Webscale-`*`version`*`-DEB-`*`uniqueID`*`.tgz` • `StorageGRID-Webscale-`*`version`*`-DEB-`*`uniqueID`*`.zip`

    b. Extract the RPM or DEB packages from the installation file.

    c. Install the RPM or DEB packages on all Linux hosts as described in "Installing StorageGRID host services" in the installation instructions for your Linux platform.

    d. For each containerized StorageGRID node on each Linux host, run the following commands in this order:

        `storagegrid node stop <node-name>`

        `storagegrid node start <node-name>`

        Make sure each node boots correctly before taking the next node down.

Related information

Red Hat Enterprise Linux or CentOS installation
Ubuntu or Debian installation

Downloading the Recovery Package

You must download an updated copy of the Recovery Package file before and after making grid topology changes to the StorageGRID system and before and after upgrading the software. The Recovery Package file allows you to restore the system if a failure occurs.

Before you begin

- 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. For details, see information about controlling system access with administration user accounts and groups.

Steps

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

2. Enter the provisioning passphrase, and click **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.

    Attention: 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

[Administering 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 alarms.

    For information on specific alarms, see troubleshooting instructions.

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

    a. Select **Grid**.

    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.

Note: 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 11.2 version of the installation instructions for your platform, and ensure that all required ports are opened before you upgrade.

Specifically, you must ensure that these ports are not blocked between sites or nodes:

- 9999: Used for internal traffic for multiple services, including maintenance procedures, metrics, and networking updates.

Attention: The upgrade prechecks for StorageGRID 11.2 will fail if StorageGRID cannot communicate on port 9999.

- 18017: Used for internal HTTPS communications among Storage Nodes and between Storage Nodes and Admin Nodes.

5. Confirm that any clients that use Transport Layer Security (TLS) to communicate with Admin Nodes are using TLS 1.2.

Attention: After you upgrade to StorageGRID 11.2, you can no longer use TLS 1.1 when signing in to the Grid Manager, Tenant Manager, Grid Management API, or Tenant Management API.

Related information

Troubleshooting StorageGRID
Administering StorageGRID
Recovery and maintenance
Red Hat Enterprise Linux or CentOS installation
Ubuntu or Debian installation
VMware installation

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.

Before you begin

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.

- When you start the upgrade, the primary Admin Node is upgraded automatically.

- Shortly 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, the Cassandra database is upgraded, and the upgrade process completes.

  Note: The upgrade from StorageGRID 11.1.x to 11.2 (or from 11.2.x to 11.2.y) does not require a Cassandra upgrade, so this verification check should only take a few minutes for the entire grid. For other StorageGRID feature releases, the Cassandra database update step might take several days or weeks, based on the amount of metadata in your system.

  Estimating the time to complete an upgrade on page 10

- You must complete the upgrade on the same hypervisor platform you started with.

Steps

1. Starting the upgrade on page 20
2. Upgrading grid nodes and completing the upgrade on page 23
3. Verifying the completion of your upgrade on page 26

Related information

Administering StorageGRID
NAS Bridge installation and setup

Starting the upgrade

When you are ready to perform the upgrade, you disable email notifications, select the downloaded file, and enter the provisioning passphrase. As an option, you can run the pre-upgrade validations before performing the actual upgrade.

Before you begin

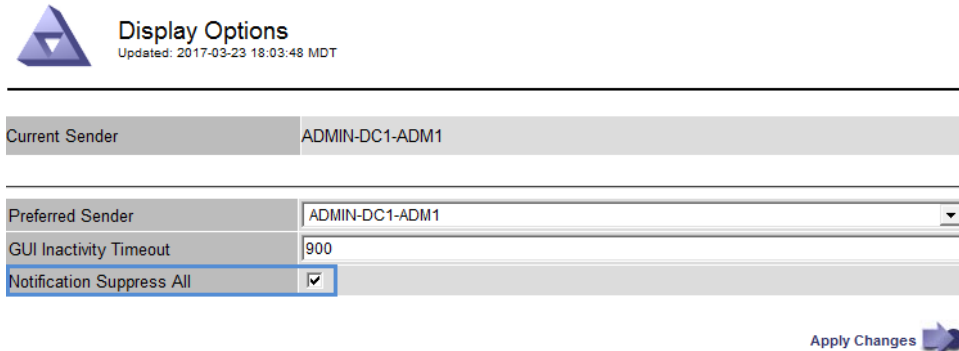You have reviewed all of the considerations and completed all of the steps in "Upgrade planning and preparation."

Steps

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

2. Optionally, disable email notifications.

   You can disable email notifications during the upgrade to avoid receiving excessive email notifications about node outages and upgrade processes.

   a. Select **Configuration > Display Options**.

   b. Select the **Notification Suppress All** check box.

      All email notifications are suppressed when this check box is selected, including those unrelated to the upgrade, such as event-triggered AutoSupport email notifications.

   c. Click **Apply Changes**.

3. Select **Maintenance > Software Upgrade**.

   The Software Upgrade page appears. The date and time that the most recent upgrade completed are displayed, unless the primary Admin Node has been rebooted or the management API restarted since that upgrade was performed.

Software Upgrade

Before starting the upgrade process, you must confirm that there are no active alerts and that all grid nodes are online and available. Temporarily disable email notifications during the upgrade to avoid node outage warnings (Configuration > Display Options > Notification Suppress All).

After uploading the upgrade file, click the Run Prechecks button to detect problems that will prevent upgrade from starting. These prechecks also run when you start the upgrade.

Software upgrade completed at 2018-02-26 18:05:25 MST.

Upgrade file

Upgrade file   [Browse]

Upgrade Version   No software upgrade file selected

Passphrase

Provisioning Passphrase   [   ]

[Run Prechecks]   [Start Upgrade]

4. Select the `.upgrade` file you downloaded.

    a. Click **Browse**.

    b. Locate and select the file:
        `NetApp_StorageGRID_version_Software_uniqueID.upgrade`

    c. Click **Open**.

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

        Upgrade file

        Upgrade file   [Browse]   ✔ NetApp_StorageGRID_11.2.0_Software_20181211.1725.171355f

        Upgrade Version   StorageGRID® Webscale 11.2.0

        Passphrase

        Provisioning Passphrase   [   ]

        [Run Prechecks]   [Start Upgrade]

5. Enter the provisioning passphrase in the text box.

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

Upgrade file

Upgrade file	Browse	✓ NetApp_StorageGRID_11.2.0_Software_20181211.1725.171355f
Upgrade Version	StorageGRID® Webscale 11.2.0	

Passphrase

Provisioning Passphrase	●●●●●●●●

Run Prechecks   Start Upgrade

6. If you want to perform the pre-upgrade validations before you start the actual upgrade, click **Run Prechecks**. Then, resolve any errors are reported.

   Note: The same prechecks will be performed when you click **Start Upgrade**. Clicking **Run Prechecks** allows you to detect and resolve issues before starting the upgrade.

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

   A warning box 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 will need to clear your web browser's cache and reload the Software Upgrade page.

   ⚠ Connection Will Be Temporarily Lost

   During the upgrade, your browser's connection to StorageGRID Webscale will be lost temporarily when the primary Admin Node is rebooted.

   Attention: You must clear your cache and reload the page before starting to use the new version. Otherwise, StorageGRID Webscale might not respond as expected.

   Are you sure you want to start the upgrade process?

   Cancel   OK

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

   When the upgrade starts:

   a. The pre-upgrade validations are run.

      Note: If any errors are reported, resolve them and click **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.

      Note: While the primary Admin Node is being upgraded, multiple copies of the following error messages appear:

      ```
      Problem connecting to the server
      Unable to communicate with the server. Please reload the page and
      try again.
      ```

```
503 Service Unavailable
The StorageGRID API Service is not responding. Please try again
later.
```

```
400 Bad Request
Clear your web browser's cache and reload the page to continue
the upgrade.
```

9. When 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.

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

Related concepts

Upgrade planning and preparation on page 10

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 Completed, the Upgrade Grid Nodes task starts. The Grid Node Status table appears when Upgrade Grid Nodes is in progress, and it lists the upgrade stage for all grid nodes in your system.

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

> **Attention:** 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 by type.

Upgrade Progress

Start Upgrade Service	Completed
Upgrade Grid Nodes	In Progress

Grid Node Status

You must approve all grid nodes to complete an upgrade, but you can update grid nodes in any order.

During the upgrade of a node, the services on that node are stopped. Later, the node is rebooted. Do not click Approve for a node unless you are sure the node is ready to be stopped and rebooted.

When you are ready to add grid nodes to the upgrade queue, click one or more Approve buttons to add individual nodes to the queue, click the Approve All button at the top of the nodes table to add all nodes of the same type, or click the top-level Approve All button to add all nodes in the grid.

If necessary, you can remove nodes from the upgrade queue before node services are stopped by clicking Remove or Remove All.

[Approve All]   [Remove All]

▲ Admin Nodes

Search [🔍]

Site ⇅	Name ⌄	Progress ⇅	Stage ⇅	Error ⇅	Action
Data Center 1	DC1-ADM1	[green bar]	Done		

◄ ►

▲ Storage Nodes

[Approve All]   [Remove All]

Search [🔍]

Site ⇅	Name ⌄	Progress ⇅	Stage ⇅	Error ⇅	Action
Data Center 1	DC1-S1	[bar]	Waiting for you to approve		[Approve]
Data Center 1	DC1-S2	[bar]	Waiting for you to approve		[Approve]
Data Center 1	DC1-S3	[bar]	Waiting for you to approve		[Approve]

◄ ►

A grid node can have 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. Optionally, sort the lists of nodes in ascending or descending order by **Site**, **Name**, **Progress**, **Stage**, or **Error**. Or, enter a term in the **Search** box to search for specific nodes.

5. Approve the grid nodes you are ready to add to the upgrade queue.

    Attention: 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 node unless you are sure that node is ready to be stopped and rebooted.

- Click one or more **Approve** buttons to add one or more individual nodes to the upgrade queue.

- Click the **Approve All** button within each section to add all nodes of the same type to the upgrade queue.

    Note: Nodes of the same type are upgraded one at a time.

- Click the top-level **Approve All** button to add all nodes in the grid to the upgrade queue.

6. If you need to remove a node or all nodes from the upgrade queue, click **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.

^ Storage Nodes					Approve All	Remove All
					Search	Q
Site ⇅	Name ⌄	Progress ⇅	Stage	⇅ Error	⇅ Action	
Data Center 1	DC1-S1	▨	Stopping services			
Data Center 1	DC1-S2	▨	Queued			Remove
Data Center 1	DC1-S3	▨	Queued			Remove
					◀ ▶	

7. Wait for each node to proceed through the upgrade stages, which include applying the upgrade, stopping services, upgrading the base operating system, rebooting, and starting services.

   When all grid nodes have been upgraded, the Upgrade Grid Nodes task is shown as Completed, and the Upgrade Cassandra task starts. During this stage, the upgrade process checks each node to verify that the Cassandra database does not need to be updated.

   Note: The upgrade from StorageGRID 11.1.x to 11.2 (or from 11.2.x to 11.2.y) does not require a Cassandra upgrade, so this verification check should only take a few minutes for the entire grid. For otherStorageGRID feature releases, the Cassandra database update step might take several days or weeks, based on the amount of metadata in your system.

8. When the Upgrade Cassandra upgrade task has completed, wait a few minutes for the Final Upgrade Steps task to complete.

Upgrade Progress

Start Upgrade Service	Completed
Upgrade Grid Nodes	Completed
Upgrade Cassandra	Completed
Final Upgrade Steps	In Progress

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

9. Verify that grid operations have returned to normal:

   a. Check that the services are operating normally and that there are no new alarms.

   b. Review all custom alarms to verify that they are still required and usable.

    c. Confirm that client connections to the StorageGRID system are operating as expected.

10.   Re-enable email notifications if you suppressed them for the upgrade.

    a. Select **Configuration > Display Options**.

    b. Unselect the **Notification Suppress All** check box.

    c. Click **Apply Changes**.

Related tasks

Verifying the completion of your upgrade

You must verify that the upgrade completed successfully and make any required configuration changes to ensure that your grid is operating optimally.

About this task

This procedure asks you to re-verify some items that you checked while the database upgrade was still in progress. You must ensure that the last stages of the upgrade completed successfully.

Steps

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

2.   Confirm that the upgrade completed successfully.

    a. Click **Help > About**, and confirm that the displayed version is what you would expect.

    b. Select **Maintenance > Software Upgrade**.

    c. Confirm that the green banner shows that the software upgrade was completed on the date and time you expected.

Software Upgrade

Before starting the upgrade process, you must confirm that there are no active alerts and that all grid nodes are online and available. Temporarily disable email notifications during the upgrade to avoid node outage warnings (Configuration > Display Options > Notification Suppress All).

After uploading the upgrade file, click the Run Prechecks button to detect problems that will prevent upgrade from starting. These prechecks also run when you start the upgrade.

Software upgrade completed at 2018-02-26 18:05:25 MST.

Upgrade file

Upgrade file   Browse

Upgrade Version   No software upgrade file selected

Passphrase

Provisioning Passphrase

Run Prechecks   Start Upgrade

3. Check that the services are operating normally and that there are no alarms.

4. Review all custom alarms to verify that they are still required and usable.

5. Confirm that client connections to the StorageGRID system are operating as expected.

Troubleshooting upgrade issues

If the upgrade does not complete successfully, you might able to resolve the issue yourself. If you cannot resolve an issue, you should gather the required information before contacting technical support.

The following sections describe how to recover from situations where the upgrade has partially failed. Contact technical support if you cannot resolve an upgrade issue.

Provisioning failures

If the automatic provisioning process fails, contact technical support.

Grid node crashes or fails to start

If a grid node crashes during the upgrade process or fails to start successfully after the upgrade finishes, contact technical support to investigate and to correct any underlying issues.

Ingest or data retrieval is interrupted

If data ingest or retrieval is unexpectedly interrupted when you are not upgrading a grid node, contact technical support.

Database upgrade errors

If the database upgrade fails with an error, retry the upgrade. If it fails again, contact technical support.

Related tasks

Checking the system's condition before upgrading software on page 17

User interface issues

You might see issues with the Grid Manager or Tenant Manager after upgrade.

Web interface does not respond as expected

The Grid Manager or Tenant Manager might not respond as expected after StorageGRID software is upgraded. For example, after you use the Grid Manager to acknowledge an alarm and click **Apply Changes**, the change might not be saved.

If you experience issues with the web interface:

*   Make sure you are using a supported browser.

    Note: Browser support has changed for StorageGRID 11.2. Confirm you are using a supported version.

*   Clear your web browser cache.
    Clearing the cache removes outdated resources used by the previous version of StorageGRID software, and permits the user interface to operate correctly again. For instructions, see the documentation for your web browser.

Related references

Web browser requirements on page 15

"Docker image availability check" error messages

When attempting to start the upgrade process, you might receive an error message that states "The following issues were identified by the Docker image availability check validation suite." All issues must be resolved before you can complete the upgrade.

Contact technical support if you are unsure of the changes required to resolve the identified issues.

Message	Cause	Solution
Unable to determine upgrade version. Upgrade version info file {`file_path`} did not match the expected format.	The upgrade package is corrupt.	Re-upload the upgrade package, and try again. If the problem persists, contact technical support.
Upgrade version info file {`file_path`} was not found. Unable to determine upgrade version.	The upgrade package is corrupt.	Re-upload the upgrade package, and try again. If the problem persists, contact technical support.
Unable to determine currently installed release version on {`node_name`}.	A critical file on the node is corrupt.	Contact technical support.
Connection error while attempting to list versions on {`node_name`}	The node is offline or the connection was interrupted.	Check to make sure that all nodes are online and reachable from the primary Admin Node, and try again.
The host for node {`node_name`} does not have StorageGRID {`upgrade_version`} image loaded. Images and services must be installed on the host before the upgrade can proceed.	The RPM or DEB packages for the upgrade have not been installed on the host where the node is running, or the images are still in the process of being imported. **Note:** This error only applies to nodes that are running as containers on Linux.	Check to make sure that the RPM or DEB packages have been installed on all Linux hosts where nodes are running. Make sure the version is correct for both the service and the images file. Wait a few minutes, and try again. For more information, see the installation instructions for your Linux platform.
Error while checking node {`node_name`}	An unexpected error occurred.	Wait a few minutes, and try again.
Uncaught error while running prechecks. {`error_string`}	An unexpected error occurred.	Wait a few minutes, and try again.

Related information

Red Hat Enterprise Linux or CentOS installation

Ubuntu or Debian installation

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