Recover from non-primary Admin Node failures

StorageGRID 11.7

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Recover from non-primary Admin Node failures: Overview

You must complete the following tasks to recover from a non-primary Admin Node failure. One Admin Node hosts the Configuration Management Node (CMN) service and is known as the primary Admin Node. Although you can have multiple Admin Nodes, each StorageGRID system includes only one primary Admin Node. All other Admin Nodes are non-primary Admin Nodes.

Copy audit logs from failed non-primary Admin Node

If you are able to copy audit logs from the failed Admin Node, you should preserve them to maintain the grid's record of system activity and usage. You can restore the preserved audit logs to the recovered non-primary Admin Node after it is up and running.

This procedure copies the audit log files from the failed Admin Node to a temporary location on a separate grid node. These preserved audit logs can then be copied to the replacement Admin Node. Audit logs aren't automatically copied to the new Admin Node.

Depending on the type of failure, you might not be able to copy audit logs from a failed Admin Node. If the deployment has only one Admin Node, the recovered Admin Node starts recording events to the audit log in a new empty file and previously recorded data is lost. If the deployment includes more than one Admin Node, you can recover the audit logs from another Admin Node.

> If the audit logs aren't accessible on the failed Admin Node now, you might be able to access them later, for example, after host recovery.

1. Log in to the failed Admin Node if possible. Otherwise, log in to the primary Admin Node or another Admin Node, if available.
   a. Enter the following command: `ssh admin@grid_node_IP`
   b. Enter the password listed in the `Passwords.txt` file.
   c. Enter the following command to switch to root: `su -`
   d. Enter the password listed in the `Passwords.txt` file.

   When you are logged in as root, the prompt changes from `$` to `#`.
2. Stop the AMS service to prevent it from creating a new log file:`service ams stop`
3. Rename the audit.log file so that it does not overwrite the existing file when you copy it to the recovered Admin Node.

   Rename audit.log to a unique numbered file name. For example, rename the audit.log file to `2023-10-25.txt.1`.

```
cd /var/local/audit/export
ls -l
mv audit.log 2023-10-25.txt.1
```

4. Restart the AMS service: `service ams start`
5. Create the directory to copy all audit log files to a temporary location on a separate grid node: `ssh admin@grid_node_IP mkdir -p /var/local/tmp/saved-audit-logs`

   When prompted, enter the password for admin.
6. Copy all audit log files: `scp -p * admin@grid_node_IP:/var/local/tmp/saved-audit-logs`

   When prompted, enter the password for admin.
7. Log out as root: `exit`

Replace non-primary Admin Node

To recover a non-primary Admin Node, you first must replace the physical or virtual hardware.

You can replace a failed non-primary Admin Node with a non-primary Admin Node running on the same platform, or you can replace a non-primary Admin Node running on VMware or a Linux host with a non-primary Admin Node hosted on a services appliance.

Use the procedure that matches the replacement platform you select for the node. After you complete the node replacement procedure (which is suitable for all node types), that procedure will direct you to the next step for non-primary Admin Node recovery.

Replacement platform	Procedure
VMware	Replace a VMware node
Linux	Replace a Linux node
SG100 and SG1000 services appliances	Replace a services appliance
OpenStack	NetApp-provided virtual machine disk files and scripts for OpenStack are no longer supported for recovery operations. If you need to recover a node running in an OpenStack deployment, download the files for your Linux operating system. Then, follow the procedure for replacing a Linux node.

Select Start Recovery to configure non-primary Admin Node

After replacing a non-primary Admin Node, you must select Start Recovery in the Grid

Manager to configure the new node as a replacement for the failed node.

Before you begin

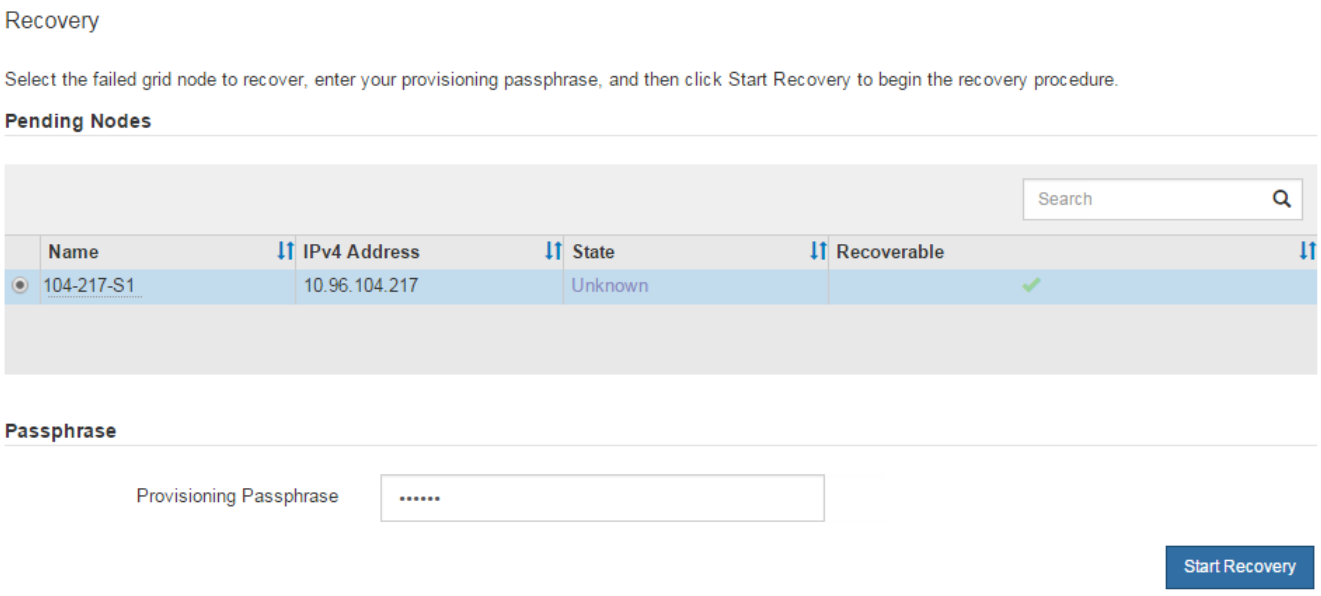
- You are signed in to the Grid Manager using a supported web browser.
- You have the Maintenance or Root access permission.
- You have the provisioning passphrase.
- You have deployed and configured the replacement node.

Steps

1. From the Grid Manager, select **MAINTENANCE** > **Tasks** > **Recovery**.
2. Select the grid node you want to recover in the Pending Nodes list.

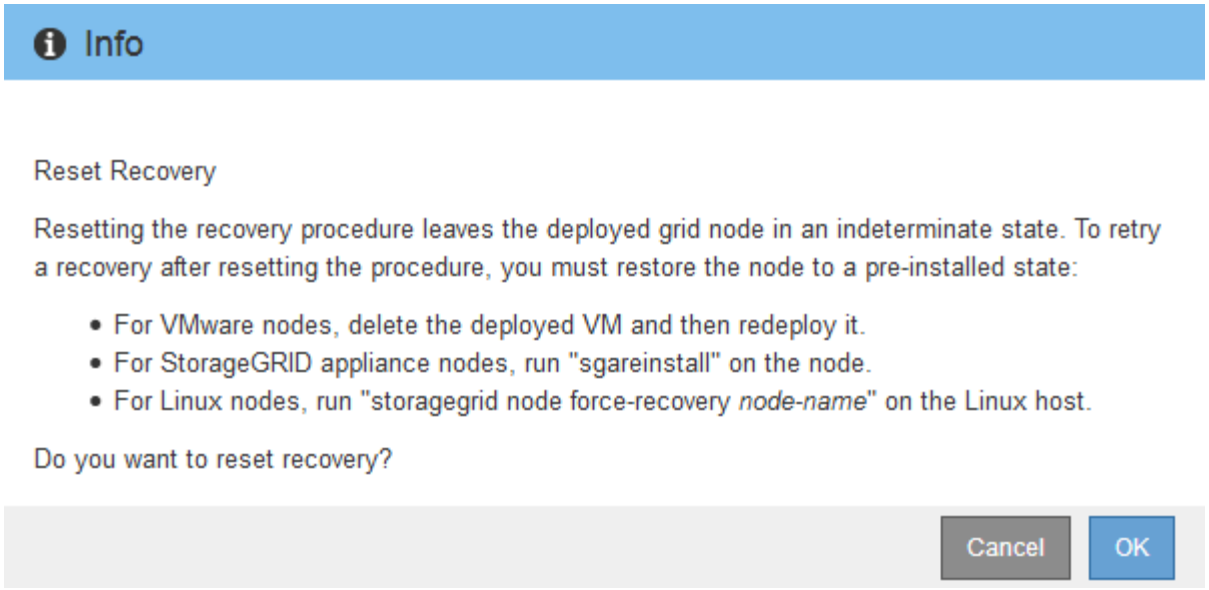
   Nodes appear in the list after they fail, but you can't select a node until it has been reinstalled and is ready for recovery.

3. Enter the **Provisioning Passphrase**.
4. Click **Start Recovery**.



5. Monitor the progress of the recovery in the Recovering Grid Node table.

> While the recovery procedure is running, you can click **Reset** to start a new recovery. A dialog box appears, indicating that the node will be left in an indeterminate state if you reset the procedure.



If you want to retry the recovery after resetting the procedure, you must restore the node to a pre-installed state, as follows:

- **VMware**: Delete the deployed virtual grid node. Then, when you are ready to restart the recovery, redeploy the node.
- **Linux**: Restart the node by running this command on the Linux host: `storagegrid node force-recovery node-name`
- **Appliance**: If you want to retry the recovery after resetting the procedure, you must restore the appliance node to a pre-installed state by running `sgareinstall` on the node. See Prepare appliance for reinstallation (platform replacement only).

6. If single sign-on (SSO) is enabled for your StorageGRID system and the relying party trust for the Admin Node you recovered was configured to use the default management interface certificate, update (or delete and recreate) the node's relying party trust in Active Directory Federation Services (AD FS). Use the new default server certificate that was generated during the Admin Node recovery process.

> To configure a relying party trust, see Configure single sign-on. To access the default server certificate, log in to the command shell of the Admin Node. Go to the `/var/local/mgmt-api` directory, and select the `server.crt` file.

Restore audit log on recovered non-primary Admin Node

If you were able to preserve the audit log from the failed non-primary Admin Node, so that historical audit log information is retained, you can copy it to the non-primary Admin Node you are recovering.

Before you begin

- The recovered Admin Node is installed and running.
- You have copied the audit logs to another location after the original Admin Node failed.

About this task

If an Admin Node fails, audit logs saved to that Admin Node are potentially lost. It might be possible to preserve data from loss by copying audit logs from the failed Admin Node and then restoring these audit logs

to the recovered Admin Node. Depending on the failure, it might not be possible to copy audit logs from the failed Admin Node. In that case, if the deployment has more than one Admin Node, you can recover audit logs from another Admin Node as audit logs are replicated to all Admin Nodes.

If there is only one Admin Node and the audit log can't be copied from the failed node, the recovered Admin Node starts recording events to the audit log as if the installation is new.

You must recover an Admin Node as soon as possible to restore logging functionality.

By default, audit information is sent to the audit log on Admin Nodes. You can skip these steps if either of the following applies:

- You configured an external syslog server and audit logs are now being sent to the syslog server instead of to Admin Nodes.
- You explicitly specified that audit messages should be saved only on the local nodes that generated them.

See Configure audit messages and log destinations for details.

Steps

1. Log in to the recovered Admin Node:
   a. Enter the following command: + `ssh admin@recovery_Admin_Node_IP`
   b. Enter the password listed in the `Passwords.txt` file.
   c. Enter the following command to switch to root: `su -`
   d. Enter the password listed in the `Passwords.txt` file.

   After you are logged in as root, the prompt changes from `$` to `#`.
2. Check which audit files have been preserved:

   ```
   cd /var/local/audit/export
   ```
3. Copy the preserved audit log files to the recovered Admin Node:

   ```
   scp admin@grid_node_IP:/var/local/tmp/saved-audit-logs/YYYY*
   ```

   When prompted, enter the password for admin.
4. For security, delete the audit logs from the failed grid node after verifying that they have been copied successfully to the recovered Admin Node.
5. Update the user and group settings of the audit log files on the recovered Admin Node:

   ```
   chown ams-user:bycast *
   ```
6. Log out as root: `exit`

You must also restore any pre-existing client access to the audit share. For more information, see Configure audit client access.

Restore Admin Node database when recovering non-primary Admin Node

If you want to retain the historical information about attributes, alarms, and alerts on a non-primary Admin Node that has failed, you can restore the Admin Node database from the primary Admin Node.

Before you begin

- The recovered Admin Node is installed and running.
- The StorageGRID system includes at least two Admin Nodes.
- You have the `Passwords.txt` file.
- You have the provisioning passphrase.

About this task

If an Admin Node fails, the historical information stored in its Admin Node database is lost. This database includes the following information:

- Alert history
- Alarm history
- Historical attribute data, which is used in the charts and text reports available from the **SUPPORT** > **Tools** > **Grid topology** page.

When you recover an Admin Node, the software installation process creates an empty Admin Node database on the recovered node. However, the new database only includes information for servers and services that are currently part of the system or added later.

If you restored a non-primary Admin Node, you can restore the historical information by copying the Admin Node database from the primary Admin Node (the *source Admin Node*) to the recovered node.

> Copying the Admin Node database might take several hours. Some Grid Manager features will be unavailable while services are stopped on the source node.

Steps

1. Log in to the source Admin Node:
   a. Enter the following command: `ssh admin@grid_node_IP`
   b. Enter the password listed in the `Passwords.txt` file.
   c. Enter the following command to switch to root: `su -`
   d. Enter the password listed in the `Passwords.txt` file.
2. Run the following command from the source Admin Node. Then, enter the provisioning passphrase if prompted. `recover-access-points`
3. From the source Admin Node, stop the MI service: `service mi stop`
4. From the source Admin Node, stop the Management Application Program Interface (mgmt-api) service: `service mgmt-api stop`
5. Complete the following steps on the recovered Admin Node:

a. Log in to the recovered Admin Node:

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

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

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

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

b. Stop the MI service: `service mi stop`

c. Stop the mgmt-api service: `service mgmt-api stop`

d. Add the SSH private key to the SSH agent. Enter:`ssh-add`

e. Enter the SSH Access Password listed in the `Passwords.txt` file.

f. Copy the database from the source Admin Node to the recovered Admin Node: `/usr/local/mi/bin/mi-clone-db.sh Source_Admin_Node_IP`

g. When prompted, confirm that you want to overwrite the MI database on the recovered Admin Node.

   The database and its historical data are copied to the recovered Admin Node. When the copy operation is done, the script starts the recovered Admin Node.

h. When you no longer require passwordless access to other servers, remove the private key from the SSH agent. Enter:`ssh-add -D`

6. Restart the services on the source Admin Node: `service servermanager start`

Restore Prometheus metrics when recovering non-primary Admin Node

Optionally, you can retain the historical metrics maintained by Prometheus on a non-primary Admin Node that has failed.

Before you begin

- The recovered Admin Node is installed and running.
- The StorageGRID system includes at least two Admin Nodes.
- You have the `Passwords.txt` file.
- You have the provisioning passphrase.

About this task

If an Admin Node fails, the metrics maintained in the Prometheus database on the Admin Node are lost. When you recover the Admin Node, the software installation process creates a new Prometheus database. After the recovered Admin Node is started, it records metrics as if you had performed a new installation of the StorageGRID system.

If you restored a non-primary Admin Node, you can restore the historical metrics by copying the Prometheus database from the primary Admin Node (the *source Admin Node*) to the recovered Admin Node.

Copying the Prometheus database might take an hour or more. Some Grid Manager features will be unavailable while services are stopped on the source Admin Node.

Steps

1. Log in to the source Admin Node:
   a. Enter the following command: `ssh admin@grid_node_IP`
   b. Enter the password listed in the `Passwords.txt` file.
   c. Enter the following command to switch to root: `su -`
   d. Enter the password listed in the `Passwords.txt` file.
2. From the source Admin Node, stop the Prometheus service: `service prometheus stop`
3. Complete the following steps on the recovered Admin Node:
   a. Log in to the recovered Admin Node:
      i. Enter the following command: `ssh admin@grid_node_IP`
      ii. Enter the password listed in the `Passwords.txt` file.
      iii. Enter the following command to switch to root: `su -`
      iv. Enter the password listed in the `Passwords.txt` file.
   b. Stop the Prometheus service: `service prometheus stop`
   c. Add the SSH private key to the SSH agent. Enter:`ssh-add`
   d. Enter the SSH Access Password listed in the `Passwords.txt` file.
   e. Copy the Prometheus database from the source Admin Node to the recovered Admin Node: `/usr/local/prometheus/bin/prometheus-clone-db.sh Source_Admin_Node_IP`
   f. When prompted, press **Enter** to confirm that you want to destroy the new Prometheus database on the recovered Admin Node.

      The original Prometheus database and its historical data are copied to the recovered Admin Node. When the copy operation is done, the script starts the recovered Admin Node. The following status appears:

      Database cloned, starting services

   g. When you no longer require passwordless access to other servers, remove the private key from the SSH agent. Enter:`ssh-add -D`
4. Restart the Prometheus service on the source Admin Node.`service prometheus start`

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