



# **Deploy services appliance node**

## **StorageGRID**

NetApp  
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# Deploy services appliance node

You can deploy a services appliance as a primary Admin Node, a non-primary Admin Node, or a Gateway Node. Both the SG100 and the SG1000 appliances can operate as Gateway Nodes and Admin Nodes (primary or non-primary) at the same time.

## Deploy services appliance as primary Admin Node

When you deploy a services appliance as a primary Admin Node, you use the StorageGRID Appliance Installer included on the appliance to install the StorageGRID software, or you upload the software version you want to install. You must install and configure the primary Admin Node before you install any other appliance node types. A primary Admin Node can connect to the Grid Network, and to the optional Admin Network and Client Network, if one or both are configured.

### What you'll need

- The appliance has been installed in a rack or cabinet, connected to your networks, and powered on.
- Network links, IP addresses, and port remapping (if necessary) have been configured for the appliance using the StorageGRID Appliance Installer.



If you have remapped any ports, you cannot use the same ports to configure load balancer endpoints. You can create endpoints using remapped ports, but those endpoints will be remapped to the original CLB ports and service, not the Load Balancer service. Follow the steps in [Remove port remaps](#).

See [How load balancing works - CLB service \(deprecated\)](#) for more information on the CLB service.



The CLB service is deprecated.

- You have a service laptop with a [supported web browser](#).
- You know one of the IP addresses assigned to the appliance. You can use the IP address for any attached StorageGRID network.

### About this task

To install StorageGRID on an appliance primary Admin Node:

- You use the StorageGRID Appliance Installer to install the StorageGRID software. If you want to install a different version of the software, you first upload it using the StorageGRID Appliance Installer.
- You wait as the software is installed.
- When the software has been installed, the appliance is rebooted automatically.

### Steps

1. Open a browser, and enter the IP address for the appliance.  
**`https://services_appliance_IP:8443`**

The StorageGRID Appliance Installer Home page appears.

2. In the **This Node** section, select **Primary Admin**.
3. In the **Node name** field, enter the name you want to use for this appliance node, and click **Save**.

The node name is assigned to this appliance node in the StorageGRID system. It is shown on the Grid Nodes page in the Grid Manager.

4. Optionally, to install a different version of the StorageGRID software, follow these steps:
  - a. Download the installation archive from the NetApp Downloads page for StorageGRID.

[NetApp Downloads: StorageGRID](#)

- b. Extract the archive.
- c. From the StorageGRID Appliance Installer, select **Advanced > Upload StorageGRID Software**.
- d. Click **Remove** to remove the current software package.

NetApp® StorageGRID® Appliance Installer

Home

Configure Networking ▾

Configure Hardware ▾

Monitor Installation

Advanced ▾

Upload StorageGRID Software

If this node is the primary Admin Node of a new deployment, you must use this page to upload the StorageGRID software installation package, unless the version of the software you want to install has already been uploaded. If you are adding this node to an existing deployment, you can avoid network traffic by uploading the installation package that matches the software version running on the existing grid. If you do not upload the correct package, the node obtains the software from the grid's primary Admin Node during installation.

Current StorageGRID Installation Software

Version

11.3.0

Package Name

storagegrid-webscale-images-11-3-0\_11.3.0-20190806.1731.4064510\_amd64.deb

Remove

- e. Click **Browse** for the software package you downloaded and extracted, and then click **Browse** for the checksum file.

NetApp® StorageGRID® Appliance Installer

Home
Configure Networking
Configure Hardware
Monitor Installation
Advanced

### Upload StorageGRID Software

If this node is the primary Admin Node of a new deployment, you must use this page to upload the StorageGRID software installation package, unless the version of the software you want to install has already been uploaded. If you are adding this node to an existing deployment, you can avoid network traffic by uploading the installation package that matches the software version running on the existing grid. If you do not upload the correct package, the node obtains the software from the grid's primary Admin Node during installation.

### Current StorageGRID Installation Software

Version	None
Package Name	None

### Upload StorageGRID Installation Software

Software Package	<input type="button" value="Browse"/>
Checksum File	<input type="button" value="Browse"/>

- f. Select **Home** to return to the Home page.
5. Confirm that the current state is “Ready to start installation of primary Admin Node name with software version x.y” and that the **Start Installation** button is enabled.



If you are deploying the Admin Node appliance as a node cloning target, stop the deployment process here and continue the node cloning procedure by following the [Recover and maintain](#) instructions.

6. From the StorageGRID Appliance Installer home page, click **Start Installation**.

Home

*The installation is ready to be started. Review the settings below, and then click Start Installation.*

### This Node

Node type	Primary Admin (with Load Balancer)
Node name	xlr8r-8
<input type="button" value="Cancel"/> <input type="button" value="Save"/>	

### Installation

Current state	Ready to start installation of xlr8r-8 as primary Admin Node of a new grid running StorageGRID 11.6.0.
<input type="button" value="Start Installation"/>	

The Current state changes to “Installation is in progress,” and the Monitor Installation page is displayed.



If you need to access the Monitor Installation page manually, click **Monitor Installation** from the menu bar.

## Deploy services appliance as Gateway or non-primary Admin Node

When you deploy a services appliance as a Gateway Node or non-primary Admin Node, you use the StorageGRID Appliance Installer included on the appliance.

### What you'll need

- The appliance has been installed in a rack or cabinet, connected to your networks, and powered on.
- Network links, IP addresses, and port remapping (if necessary) have been configured for the appliance using the StorageGRID Appliance Installer.



If you have remapped any ports, you cannot use the same ports to configure load balancer endpoints. You can create endpoints using remapped ports, but those endpoints will be remapped to the original CLB ports and service, not the Load Balancer service. Follow the steps in [Remove port remaps](#).



The CLB service is deprecated.

- The primary Admin Node for the StorageGRID system has been deployed.
- All Grid Network subnets listed on the IP Configuration page of the StorageGRID Appliance Installer have been defined in the Grid Network Subnet List on the primary Admin Node.
- You have a service laptop with a [supported web browser](#).
- You know the IP address assigned to the appliance. You can use the IP address for any attached StorageGRID network.

### About this task

To install StorageGRID on a services appliance node:

- You specify or confirm the IP address of the primary Admin Node and the name of the appliance node.
- You start the installation and wait as the software is installed.

Partway through the appliance Gateway Node installation tasks, the installation pauses. To resume the installation, you sign into the Grid Manager, approve all grid nodes, and complete the StorageGRID installation process. The installation of a non-primary Admin Node does not require your approval.



Do not deploy the SG100 and SG1000 service appliances in the same site. Unpredictable performance might result.



If you need to deploy multiple appliance nodes at one time, you can automate the installation process by using the `configure-sga.py` Appliance Installation script. You can also use the Appliance Installer to upload a JSON file that contains configuration information. See [Automate appliance installation and configuration \(SG100 and SG1000\)](#) for more information on automating the installation.

## Steps

1. Open a browser, and enter the IP address for the appliance.

**`https://Controller_IP:8443`**

The StorageGRID Appliance Installer Home page appears.

2. In the Primary Admin Node connection section, determine whether you need to specify the IP address for the primary Admin Node.

If you have previously installed other nodes in this data center, the StorageGRID Appliance Installer can discover this IP address automatically, assuming the primary Admin Node, or at least one other grid node with ADMIN\_IP configured, is present on the same subnet.

3. If this IP address is not shown or you need to change it, specify the address:

Option	Description
Manual IP entry	<ol style="list-style-type: none"><li>a. Unselect the <b>Enable Admin Node discovery</b> check box.</li><li>b. Enter the IP address manually.</li><li>c. Click <b>Save</b>.</li><li>d. Wait for the connection state for the new IP address to become ready.</li></ol>
Automatic discovery of all connected primary Admin Nodes	<ol style="list-style-type: none"><li>a. Select the <b>Enable Admin Node discovery</b> check box.</li><li>b. Wait for the list of discovered IP addresses to be displayed.</li><li>c. Select the primary Admin Node for the grid where this appliance Storage Node will be deployed.</li><li>d. Click <b>Save</b>.</li><li>e. Wait for the connection state for the new IP address to become ready.</li></ol>

4. In the **Node name** field, enter the name you want to use for this appliance node, and click **Save**.

The node name is assigned to this appliance node in the StorageGRID system. It is shown on the Nodes page (Overview tab) in the Grid Manager. If required, you can change the name when you approve the node.

5. Optionally, to install a different version of the StorageGRID software, follow these steps:
  - a. Download the installation archive from the NetApp Downloads page for StorageGRID.

[NetApp Downloads: StorageGRID](#)

- b. Extract the archive.
- c. From the StorageGRID Appliance Installer, select **Advanced > Upload StorageGRID Software**.

- d. Click **Remove** to remove the current software package.

NetApp® StorageGRID® Appliance Installer

Home

Configure Networking ▾

Configure Hardware ▾

Monitor Installation

Advanced ▾

Upload StorageGRID Software

If this node is the primary Admin Node of a new deployment, you must use this page to upload the StorageGRID software installation package, unless the version of the software you want to install has already been uploaded. If you are adding this node to an existing deployment, you can avoid network traffic by uploading the installation package that matches the software version running on the existing grid. If you do not upload the correct package, the node obtains the software from the grid's primary Admin Node during installation.

Current StorageGRID Installation Software

Version

11.3.0

Package Name

storagegrid-webscale-images-11-3-0\_11.3.0-20190806.1731.4064510\_amd64.deb

Remove

- e. Click **Browse** for the software package you downloaded and extracted, and then click **Browse** for the checksum file.

NetApp® StorageGRID® Appliance Installer

Home

Configure Networking ▾

Configure Hardware ▾

Monitor Installation

Advanced ▾

Upload StorageGRID Software

If this node is the primary Admin Node of a new deployment, you must use this page to upload the StorageGRID software installation package, unless the version of the software you want to install has already been uploaded. If you are adding this node to an existing deployment, you can avoid network traffic by uploading the installation package that matches the software version running on the existing grid. If you do not upload the correct package, the node obtains the software from the grid's primary Admin Node during installation.

Current StorageGRID Installation Software

Version

None

Package Name

None

Upload StorageGRID Installation Software

Software Package

Browse

Checksum File

Browse

- f. Select **Home** to return to the Home page.

6. In the Installation section, confirm that the current state is "Ready to start installation of *node name* into grid with primary Admin Node *admin\_ip* " and that the **Start Installation** button is enabled.

If the **Start Installation** button is not enabled, you might need to change the network configuration or port settings. For instructions, see the installation and maintenance instructions for your appliance.

7. From the StorageGRID Appliance Installer home page, click **Start Installation**.




## Home

 The installation is ready to be started. Review the settings below, and then click Start Installation.

### This Node

Node type

Non-primary Admin (with Load Balancer) 

Node name

GW-SG1000-003-074

Cancel

Save

### Primary Admin Node connection

Enable Admin Node discovery

☐

Primary Admin Node IP

172.16.6.32

Connection state

Connection to 172.16.6.32 ready

Cancel

Save

### Installation

Current state

Ready to start installation of GW-SG1000-003-074 into grid with Admin Node 172.16.6.32 running StorageGRID 11.6.0, using StorageGRID software downloaded from the Admin Node.

Start Installation

The Current state changes to “Installation is in progress,” and the Monitor Installation page is displayed.



If you need to access the Monitor Installation page manually, click **Monitor Installation** from the menu bar.

8. If your grid includes multiple appliance nodes, repeat the previous steps for each appliance.

# Monitor services appliance installation

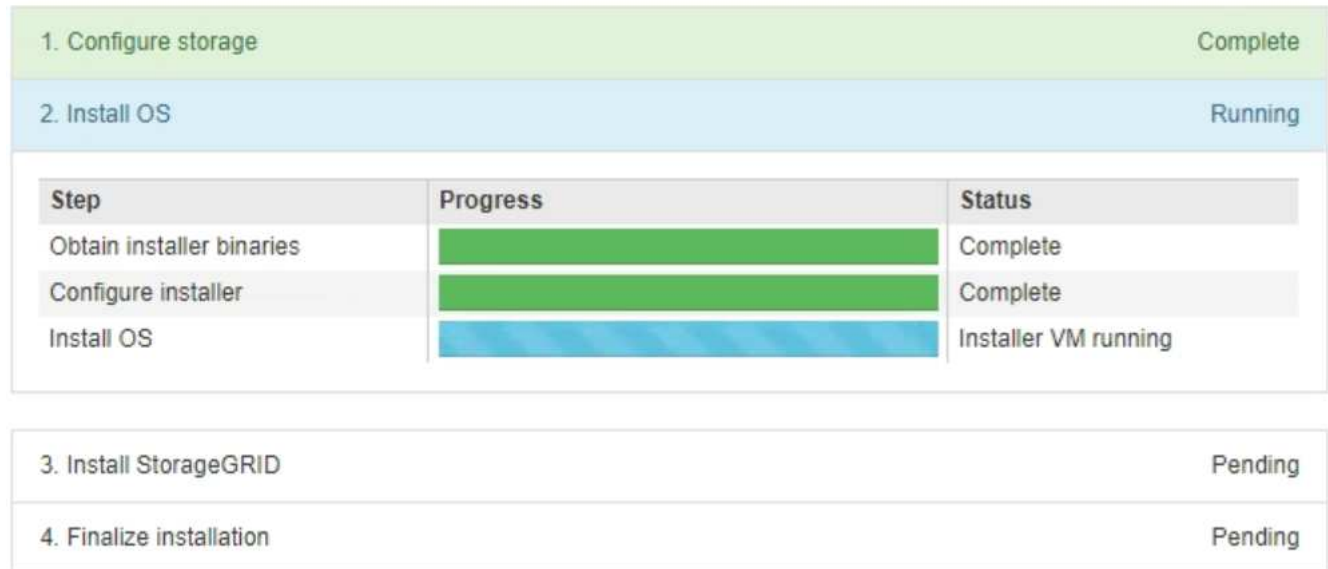
The StorageGRID Appliance Installer provides status until installation is complete. When the software installation is complete, the appliance is rebooted.

## Steps

1. To monitor the installation progress, click **Monitor Installation** from the menu bar.

The Monitor Installation page shows the installation progress.

### Monitor Installation



The blue status bar indicates which task is currently in progress. Green status bars indicate tasks that have completed successfully.



The installer ensures that tasks completed in a previous install are not re-run. If you are re-running an installation, any tasks that do not need to be re-run are shown with a green status bar and a status of “Skipped.”

2. Review the progress of first two installation stages.

- **1. Configure storage**

During this stage, the installer clears any existing configuration from the drives in the appliance, and configures host settings.

- **2. Install OS**

During this stage, the installer copies the base operating system image for StorageGRID to the appliance.

3. Continue monitoring the installation progress until one of the following processes occurs:

- For all appliance nodes except the primary Admin Node, the Install StorageGRID stage pauses and a message appears on the embedded console, prompting you to approve this node on the Admin Node using the Grid Manager. Go to the next step.

- For appliance primary Admin Node installation, you do not need to approve the node. The appliance is rebooted. You can skip the next step.



During installation of an appliance primary Admin Node, a fifth phase appears (see the example screen shot showing four phases). If the fifth phase is in progress for more than 10 minutes, refresh the web page manually.

NetApp® StorageGRID® Appliance Installer					Help ▾
Home	Configure Networking ▾	Configure Hardware ▾	Monitor Installation	Advanced ▾	

## Monitor Installation

1. Configure storage	Complete
2. Install OS	Complete
3. Install StorageGRID	Running
4. Finalize installation	Pending

```

Connected (unencrypted) to: QEMU
/platform.type#: Device or resource busy
[2017-07-31T22:09:12.362566] INFO -- [INSG] NOTICE: seeding /var/local with c
ontainer data
[2017-07-31T22:09:12.366205] INFO -- [INSG] Fixing permissions
[2017-07-31T22:09:12.369633] INFO -- [INSG] Enabling syslog
[2017-07-31T22:09:12.511533] INFO -- [INSG] Stopping system logging: syslog-n
g.
[2017-07-31T22:09:12.570096] INFO -- [INSG] Starting system logging: syslog-n
g.
[2017-07-31T22:09:12.576360] INFO -- [INSG] Beginning negotiation for downloa
d of node configuration
[2017-07-31T22:09:12.581363] INFO -- [INSG]
[2017-07-31T22:09:12.585066] INFO -- [INSG]
[2017-07-31T22:09:12.588314] INFO -- [INSG]
[2017-07-31T22:09:12.591851] INFO -- [INSG]
[2017-07-31T22:09:12.594886] INFO -- [INSG]
[2017-07-31T22:09:12.598360] INFO -- [INSG]
[2017-07-31T22:09:12.601324] INFO -- [INSG]
[2017-07-31T22:09:12.604759] INFO -- [INSG]
[2017-07-31T22:09:12.607800] INFO -- [INSG]
[2017-07-31T22:09:12.610985] INFO -- [INSG]
[2017-07-31T22:09:12.614597] INFO -- [INSG]
[2017-07-31T22:09:12.618282] INFO -- [INSG] Please approve this node on the A
dmin Node GMI to proceed...

```

4. Go to the Grid Manager of the Primary Admin node, approve the pending grid node, and complete the StorageGRID installation process.

When you click **Install** from the Grid Manager, Stage 3 completes and stage 4, **Finalize Installation**, begins. When stage 4 completes, the appliance is rebooted.

# Automate appliance installation and configuration (SG100 and SG1000)

You can automate the installation and configuration of your appliances and configuration of the whole StorageGRID system.

## About this task

Automating installation and configuration can be useful for deploying multiple StorageGRID instances or one large, complex StorageGRID instance.

To automate installation and configuration, use one or more of the following options:

- Create a JSON file that specifies the configuration settings for your appliances. Upload the JSON file using the StorageGRID Appliance Installer.



You can use the same file to configure more than one appliance.

- Use the `StorageGRIDconfigure-sga.py` Python script to automate the configuration of your appliances.
- Use additional Python scripts to configure other components of the whole StorageGRID system (the "grid").



You can use StorageGRID automation Python scripts directly, or you can use them as examples of how to use the StorageGRID Installation REST API in grid deployment and configuration tools you develop yourself. See the instructions for [downloading and extracting the StorageGRID installation files](#).

## Automate appliance configuration using StorageGRID Appliance Installer

You can automate the configuration of an appliance by using a JSON file that contains the configuration information. You upload the file using the StorageGRID Appliance Installer.

### What you'll need

- Your appliance must be on the latest firmware compatible with StorageGRID 11.5 or higher.
- You must be connected to the StorageGRID Appliance Installer on the appliance you are configuring using a [supported web browser](#).

## About this task

You can automate appliance configuration tasks such as configuring the following:

- Grid Network, Admin Network, and Client Network IP addresses
- BMC interface
- Network links
  - Port bond mode
  - Network bond mode
  - Link speed

Configuring your appliance using an uploaded JSON file is often more efficient than performing the

configuration manually using multiple pages in the StorageGRID Appliance Installer, especially if you have to configure many nodes. You must apply the configuration file for each node one at a time.



Experienced users who want to automate both the installation and configuration of their appliances can [use the configure-sga.py script](#).

## Steps

1. Generate the JSON file using one of the following:
  - The [ConfigBuilder application](#).
  - The `configure-sga.py` [appliance configuration script](#). You can download the script from the StorageGRID Appliance Installer (**Help > Appliance Configuration Script**).

The node names in the JSON file must follow these requirements:

- Must be a valid hostname containing at least 1 and no more than 32 characters
- Can use letters, numbers, and hyphens
- Cannot start or end with a hyphen
- Cannot contain only numbers



Ensure that the node names (the top-level names) in the JSON file are unique, or you will not be able to configure more than one node using the JSON file.

2. Select **Advanced > Update Appliance Configuration**.

The Update Appliance Configuration page appears.

### Update Appliance Configuration

Use a JSON file to update this appliance's configuration. You can generate the JSON file from the [ConfigBuilder](#) application or from the [appliance configuration script](#).

You might lose your connection if the applied configuration from the JSON file includes "link\_config" and/or "networks" sections. If you are not reconnected within 1 minute, re-enter the URL using one of the other IP addresses assigned to the appliance.

### Upload JSON

JSON  
configuration

Browse

Node name

-- Upload a file ▼

Apply JSON configuration

3. Select the JSON file with the configuration you want to upload.
  - a. Select **Browse**.

- b. Locate and select the file.
- c. Select **Open**.

The file is uploaded and validated. When the validation process is complete, the file name is shown next to a green check mark.



You might lose connection to the appliance if the configuration from the JSON file includes sections for "link\_config", "networks", or both. If you are not reconnected within 1 minute, re-enter the appliance URL using one of the other IP addresses assigned to the appliance.

#### Upload JSON

JSON configuration	<input type="button" value="Browse"/>	✓ appliances.orig.json
Node name	<input type="text" value="-- Select a node"/>	
<input type="button" value="Apply JSON configuration"/>		

The **Node name** drop down is populated with the top-level node names defined in the JSON file.



If the file is not valid, the file name is shown in red and an error message is displayed in a yellow banner. The invalid file is not applied to the appliance. You can use ConfigBuilder to ensure you have a valid JSON file.

- 4. Select a node from the list in the **Node name** drop down.

The **Apply JSON configuration** button is enabled.

#### Upload JSON

JSON configuration	<input type="button" value="Browse"/>	✓ appliances.orig.json
Node name	<input type="text" value="Lab-80-1000"/>	
<input type="button" value="Apply JSON configuration"/>		

- 5. Select **Apply JSON configuration**.

The configuration is applied to the selected node.

## Automate installation and configuration of appliance nodes using `configure-sga.py` script

You can use the `configure-sga.py` script to automate many of the installation and configuration tasks for StorageGRID appliance nodes, including installing and configuring a primary Admin Node. This script can be useful if you have a large number of appliances to configure. You can also use the script to generate a JSON file that contains appliance configuration information.

### What you'll need

- The appliance has been installed in a rack, connected to your networks, and powered on.
- Network links and IP addresses have been configured for the primary Admin Node using the StorageGRID Appliance Installer.
- If you are installing the primary Admin Node, you know its IP address.
- If you are installing and configuring other nodes, the primary Admin Node has been deployed, and you know its IP address.
- For all nodes other than the primary Admin Node, all Grid Network subnets listed on the IP Configuration page of the StorageGRID Appliance Installer have been defined in the Grid Network Subnet List on the primary Admin Node.
- You have downloaded the `configure-sga.py` file. The file is included in the installation archive, or you can access it by clicking **Help > Appliance Installation Script** in the StorageGRID Appliance Installer.



This procedure is for advanced users with some experience using command-line interfaces. Alternatively, you can [use the StorageGRID Appliance Installer to automate the configuration](#).

### Steps

1. Log in to the Linux machine you are using to run the Python script.
2. For general help with the script syntax and to see a list of the available parameters, enter the following:

```
configure-sga.py --help
```

The `configure-sga.py` script uses five subcommands:

- `advanced` for advanced StorageGRID appliance interactions, including BMC configuration and creating a JSON file containing the current configuration of the appliance
- `configure` for configuring the RAID mode, node name, and networking parameters
- `install` for starting a StorageGRID installation
- `monitor` for monitoring a StorageGRID installation
- `reboot` for rebooting the appliance

If you enter a subcommand (`advanced`, `configure`, `install`, `monitor`, or `reboot`) argument followed by the `--help` option you will get a different help text providing more detail on the options available within that subcommand:

```
configure-sga.py subcommand --help
```

3. To confirm the current configuration of the appliance node, enter the following where *SGA-install-ip* is any one of the IP addresses for the appliance node:

```
configure-sga.py configure SGA-INSTALL-IP
```

The results show current IP information for the appliance, including the IP address of the primary Admin Node and information about the Admin, Grid, and Client Networks.

```
Connecting to +https://10.224.2.30:8443+ (Checking version and
connectivity.)
2021/02/25 16:25:11: Performing GET on /api/versions... Received 200
2021/02/25 16:25:11: Performing GET on /api/v2/system-info... Received
200
2021/02/25 16:25:11: Performing GET on /api/v2/admin-connection...
Received 200
2021/02/25 16:25:11: Performing GET on /api/v2/link-config... Received
200
2021/02/25 16:25:11: Performing GET on /api/v2/networks... Received 200
2021/02/25 16:25:11: Performing GET on /api/v2/system-config... Received
200
```

#### StorageGRID Appliance

```
Name:          LAB-SGA-2-30
Node type:     storage
```

#### StorageGRID primary Admin Node

```
IP:           172.16.1.170
State:        unknown
Message:      Initializing...
Version:      Unknown
```

#### Network Link Configuration

##### Link Status

Link	State	Speed (Gbps)
----	-----	-----
1	Up	10
2	Up	10
3	Up	10
4	Up	10
5	Up	1
6	Down	N/A

##### Link Settings

```
Port bond mode:  FIXED
Link speed:      10GBE
```

```
Grid Network:    ENABLED
Bonding mode:    active-backup
```



```

VLAN:                novlan
MAC Addresses:       00:a0:98:59:8e:8a  00:a0:98:59:8e:82

Admin Network:       ENABLED
Bonding mode:        no-bond
MAC Addresses:       00:80:e5:29:70:f4

Client Network:      ENABLED
Bonding mode:        active-backup
VLAN:                novlan
MAC Addresses:       00:a0:98:59:8e:89  00:a0:98:59:8e:81

```

#### Grid Network

```

CIDR:                172.16.2.30/21 (Static)
MAC:                 00:A0:98:59:8E:8A
Gateway:             172.16.0.1
Subnets:            172.17.0.0/21
                    172.18.0.0/21
                    192.168.0.0/21
MTU:                 1500

```

#### Admin Network

```

CIDR:                10.224.2.30/21 (Static)
MAC:                 00:80:E5:29:70:F4
Gateway:             10.224.0.1
Subnets:            10.0.0.0/8
                    172.19.0.0/16
                    172.21.0.0/16
MTU:                 1500

```

#### Client Network

```

CIDR:                47.47.2.30/21 (Static)
MAC:                 00:A0:98:59:8E:89
Gateway:             47.47.0.1
MTU:                 2000

```

```

#####
#####   If you are satisfied with this configuration,   #####
##### execute the script with the "install" sub-command. #####
#####

```

4. If you need to change any of the values in the current configuration, use the `configure` subcommand to update them. For example, if you want to change the IP address that the appliance uses for connection to the primary Admin Node to `172.16.2.99`, enter the following:  
`configure-sga.py configure --admin-ip 172.16.2.99 SGA-INSTALL-IP`
5. If you want to back up the appliance configuration to a JSON file, use the `advanced` and `backup-file`

subcommands. For example, if you want to back up the configuration of an appliance with IP address *SGA-INSTALL-IP* to a file named *appliance-SG1000.json*, enter the following:

```
configure-sga.py advanced --backup-file appliance-SG1000.json SGA-INSTALL-IP
```

The JSON file containing the configuration information is written to the same directory you executed the script from.



Check that the top-level node name in the generated JSON file matches the appliance name. Do not make any changes to this file unless you are an experienced user and have a thorough understanding of StorageGRID APIs.

6. When you are satisfied with the appliance configuration, use the `install` and `monitor` subcommands to install the appliance:

```
configure-sga.py install --monitor SGA-INSTALL-IP
```

7. If you want to reboot the appliance, enter the following:

```
configure-sga.py reboot SGA-INSTALL-IP
```

## Automate configuration of StorageGRID

After deploying the grid nodes, you can automate the configuration of the StorageGRID system.

### What you'll need

- You know the location of the following files from the installation archive.

Filename	Description
<code>configure-storagegrid.py</code>	Python script used to automate the configuration
<code>configure-storagegrid.sample.json</code>	Sample configuration file for use with the script
<code>configure-storagegrid.blank.json</code>	Blank configuration file for use with the script

- You have created a `configure-storagegrid.json` configuration file. To create this file, you can modify the sample configuration file (`configure-storagegrid.sample.json`) or the blank configuration file (`configure-storagegrid.blank.json`).

### About this task

You can use the `configure-storagegrid.py` Python script and the `configure-storagegrid.json` configuration file to automate the configuration of your StorageGRID system.



You can also configure the system using the [Grid Manager](#) or the [Installation API](#).

### Steps

1. Log in to the Linux machine you are using to run the Python script.
2. Change to the directory where you extracted the installation archive.

For example:

```
cd StorageGRID-Webscale-version/platform
```

where *platform* is *debs*, *rpms*, or *vsphere*.

3. Run the Python script and use the configuration file you created.

For example:

```
./configure-storagegrid.py ./configure-storagegrid.json --start-install
```

### After you finish

A Recovery Package .zip file is generated during the configuration process, and it is downloaded to the directory where you are running the installation and configuration process. You must back up the Recovery Package file so that you can recover the StorageGRID system if one or more grid nodes fails. For example, copy it to a secure, backed up network location and to a secure cloud storage location.



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.

If you specified that random passwords should be generated, you need to extract the `Passwords.txt` file and look for the passwords required to access your StorageGRID system.

```
#####
##### The StorageGRID "recovery package" has been downloaded as: #####
#####      ./sgws-recovery-package-994078-rev1.zip      #####
#####   Safeguard this file as it will be needed in case of a   #####
#####           StorageGRID node recovery.           #####
#####
```

Your StorageGRID system is installed and configured when a confirmation message is displayed.

```
StorageGRID has been configured and installed.
```

## Overview of installation REST APIs

StorageGRID provides two REST APIs for performing installation tasks: the StorageGRID Installation API and the StorageGRID Appliance Installer API.

Both APIs use the Swagger open source API platform to provide the API documentation. Swagger allows both developers and non-developers to interact with the API in a user interface that illustrates how the API responds to parameters and options. This documentation assumes that you are familiar with standard web technologies and the JSON (JavaScript Object Notation) data format.



Any API operations you perform using the API Docs webpage are live operations. Be careful not to create, update, or delete configuration data or other data by mistake.

Each REST API command includes the API's URL, an HTTP action, any required or optional URL parameters,

and an expected API response.

## StorageGRID Installation API

The StorageGRID Installation API is only available when you are initially configuring your StorageGRID system, and in the event that you need to perform a primary Admin Node recovery. The Installation API can be accessed over HTTPS from the Grid Manager.

To access the API documentation, go to the installation web page on the primary Admin Node and select **Help > API Documentation** from the menu bar.

The StorageGRID Installation API includes the following sections:

- **config** — Operations related to the product release and versions of the API. You can list the product release version and the major versions of the API supported by that release.
- **grid** — Grid-level configuration operations. You can get and update grid settings, including grid details, Grid Network subnets, grid passwords, and NTP and DNS server IP addresses.
- **NODES** — Node-level configuration operations. You can retrieve a list of grid nodes, delete a grid node, configure a grid node, view a grid node, and reset a grid node's configuration.
- **provision** — Provisioning operations. You can start the provisioning operation and view the status of the provisioning operation.
- **recovery** — Primary Admin Node recovery operations. You can reset information, upload the Recover Package, start the recovery, and view the status of the recovery operation.
- **recovery-package** — Operations to download the Recovery Package.
- **sites** — Site-level configuration operations. You can create, view, delete, and modify a site.

## StorageGRID Appliance Installer API

The StorageGRID Appliance Installer API can be accessed over HTTPS from *Controller\_IP:8443*.

To access the API documentation, go to the StorageGRID Appliance Installer on the appliance and select **Help > API Docs** from the menu bar.

The StorageGRID Appliance Installer API includes the following sections:

- **clone** — Operations to configure and control node cloning.
- **encryption** — Operations to manage encryption and view encryption status.
- **hardware configuration** — Operations to configure system settings on attached hardware.
- **installation** — Operations for starting the appliance installation and for monitoring installation status.
- **networking** — Operations related to the Grid, Admin, and Client Network configuration for a StorageGRID appliance and appliance port settings.
- **setup** — Operations to help with initial appliance installation setup including requests to get information about the system and update the primary Admin Node IP.
- **SUPPORT** — Operations for rebooting the controller and getting logs.
- **upgrade** — Operations related to upgrading appliance firmware.
- **uploadsg** — Operations for uploading StorageGRID installation files.

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