Automate appliance installation and configuration (SG5700)

StorageGRID

NetApp
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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 StorageGRID `configure-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 information about downloading and extracting the StorageGRID installation files in the Recovery and Maintenance instructions.

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

Steps

1. Generate the JSON file using one of the following methods:
   - The ConfigBuilder application

     ConfigBuilder.netapp.com

   - The `configure-sga.py` appliance configuration script. You can download the script from StorageGRID Appliance Installer (**Help** > **Appliance Configuration Script**). See the instructions on automating the configuration using the configure-sga.py script.

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

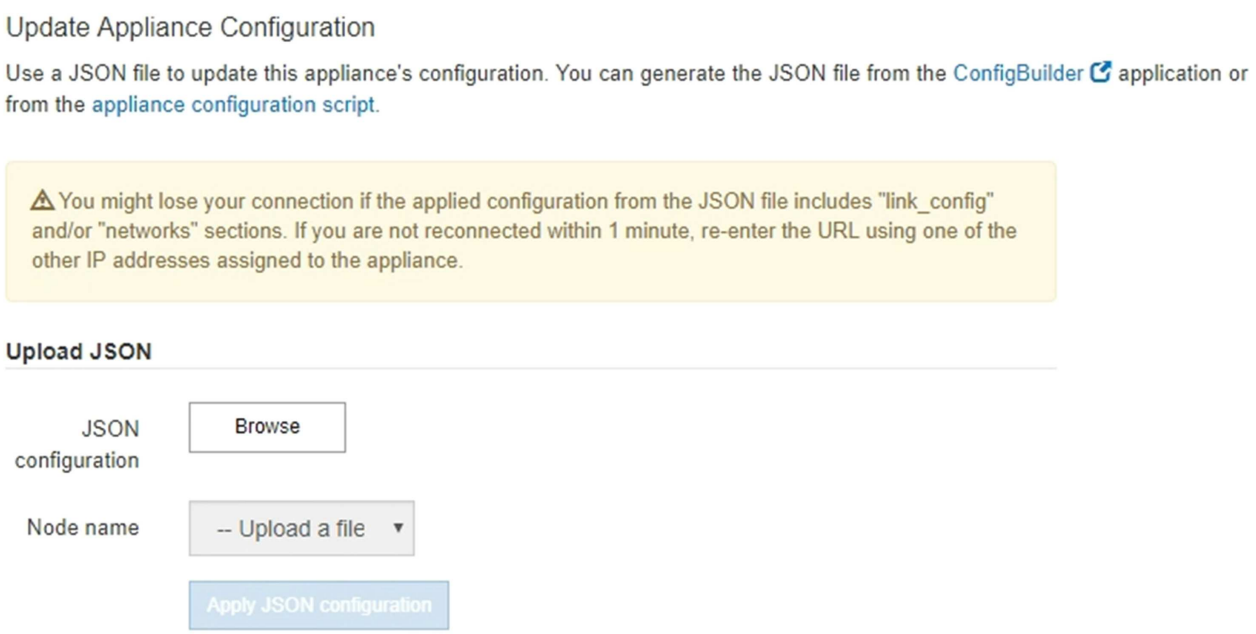
     The node names in the JSON file must follow these requirements:

     - 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 or 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**.

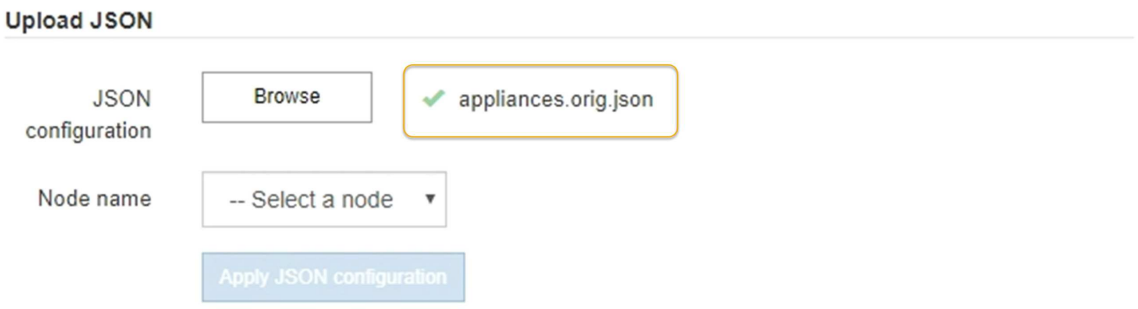
   The Update Appliance Configuration page appears.



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.

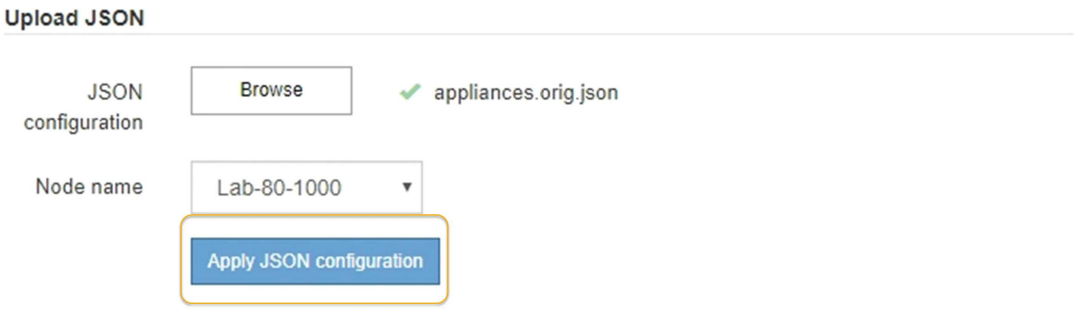


   The **Node name** drop down is populated with the top-level node names defined in the JSON file.

   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.



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.

About this task

- 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 also use the StorageGRID Appliance Installer to automate the configuration.
> Automate appliance configuration using StorageGRID Appliance Installer

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
`configure-storagegrid.py`	Python script used to automate the configuration
`configure-storagegrid.sample.json`	Sample configuration file for use with the script
`configure-storagegrid.blank.json`	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.
```