Deploy virtual grid nodes (Ubuntu or Debian)

StorageGRID

NetApp
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Table of Contents

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Create node configuration files for Ubuntu or Debian deployments

Node configuration files are small text files that provide the information the StorageGRID host service needs to start a node and connect it to the appropriate network and block storage resources. Node configuration files are used for virtual nodes and are not used for appliance nodes.

Where do I put the node configuration files?

You must place the configuration file for each StorageGRID node in the `/etc/storagegrid/nodes` directory on the host where the node will run. For example, if you plan to run one Admin Node, one Gateway Node, and one Storage Node on HostA, you must place three node configuration files in `/etc/storagegrid/nodes` on HostA. You can create the configuration files directly on each host using a text editor, such as vim or nano, or you can create them elsewhere and move them to each host.

What do I name the node configuration files?

The names of the configuration files are significant. The format is `node-name.conf`, where `node-name` is a name you assign to the node. This name appears in the StorageGRID Installer and is used for node maintenance operations, such as node migration.

Node names must follow these rules:

- Must be unique
- Must start with a letter
- Can contain the characters A through Z and a through z
- Can contain the numbers 0 through 9
- Can contain one or more hyphens (-)
- Must be no more than 32 characters, not including the `.conf` extension

Any files in `/etc/storagegrid/nodes` that do not follow these naming conventions will not be parsed by the host service.

If you have a multi-site topology planned for your grid, a typical node naming scheme might be:

```
site-nodetype-nodenumber.conf
```

For example, you might use `dc1-adm1.conf` for the first Admin Node in Data Center 1, and `dc2-sn3.conf` for the third Storage Node in Data Center 2. However, you can use any scheme you like, as long as all node names follow the naming rules.

What is in a node configuration file?

The configuration files contain key/value pairs, with one key and one value per line. For each key/value pair, you must follow these rules:

- The key and the value must be separated by an equal sign (=) and optional whitespace.
- The keys can contain no spaces.
- The values can contain embedded spaces.
- Any leading or trailing whitespace is ignored.

Some keys are required for every node, while others are optional or only required for certain node types.

The table defines the acceptable values for all supported keys. In the middle column:

R: required
BP: best practice
O: optional

Key	R, BP, or O?	Value
ADMIN_IP	BP	Grid Network IPv4 address of the primary Admin Node for the grid to which this node belongs. Use the same value you specified for GRID_NETWORK_IP for the grid node with NODE_TYPE = VM_Admin_Node and ADMIN_ROLE = Primary. If you omit this parameter, the node attempts to discover a primary Admin Node using mDNS. How grid nodes discover the primary Admin Node **Note**: This value is ignored, and might be prohibited, on the primary Admin Node.
ADMIN_NETWORK_CONFIG	O	DHCP, STATIC, or DISABLED
ADMIN_NETWORK_ESL	O	Comma-separated list of subnets in CIDR notation to which this node should communicate via the Admin Network gateway. Example: `172.16.0.0/21,172.17.0.0/21`

Key	R, BP, or O?	Value

ADMIN_NETWORK_GATEWAY	O (**R**)	IPv4 address of the local Admin Network gateway for this node. Must be on the subnet defined by ADMIN_NETWORK_IP and ADMIN_NETWORK_MASK. This value is ignored for DHCP-configured networks.
		
		Note: This parameter is required if ADMIN_NETWORK_ESL is specified.
		
		Examples:
		
		`1.1.1.1`
		
		`10.224.4.81`

ADMIN_NETWORK_IP	O	IPv4 address of this node on the Admin Network. This key is only required when ADMIN_NETWORK_CONFIG = STATIC; do not specify it for other values.
		
		Examples:
		
		`1.1.1.1`
		
		`10.224.4.81`

ADMIN_NETWORK_MAC	O	The MAC address for the Admin Network interface in the container. This field is optional. If omitted, a MAC address will be generated automatically. Must be 6 pairs of hexadecimal digits separated by colons. Example: `b2:9c:02:c2:27:10`

ADMIN_NETWORK_MASK	O	IPv4 netmask for this node, on the Admin Network. This key is only required when ADMIN_NETWORK_CONFIG = STATIC; do not specify it for other values.
		
		Examples:
		
		`255.255.255.0`
		
		`255.255.248.0`

Key	R, BP, or O?	Value

ADMIN_NETWORK_MTU	O	The maximum transmission unit (MTU) for this node on the Admin Network. Do not specify if ADMIN_NETWORK_CONFIG = DHCP. If specified, the value must be between 1280 and 9216. If omitted, 1500 is used.
		
		If you want to use jumbo frames, set the MTU to a value suitable for jumbo frames, such as 9000. Otherwise, keep the default value.
		
		IMPORTANT: The MTU value of the network must match the value configured on the switch port the node is connected to. Otherwise, network performance issues or packet loss might occur.
		
		Examples:
		
		`1500`
		
		`8192`

ADMIN_NETWORK_TARGET	BP	Name of the host device that you will use for Admin Network access by the StorageGRID node. Only network interface names are supported. Typically, you use a different interface name than what was specified for GRID_NETWORK_TARGET or CLIENT_NETWORK_TARGET.
		
		Note: Do not use bond or bridge devices as the network target. Either configure a VLAN (or other virtual interface) on top of the bond device, or use a bridge and virtual Ethernet (veth) pair.
		
		Best practice:Specify a value even if this node will not initially have an Admin Network IP address. Then you can add an Admin Network IP address later, without having to reconfigure the node on the host.
		
		Examples:
		
		`bond0.1002`
		
		`ens256`

ADMIN_NETWORK_TARGET_TYPE	O	Interface (This is the only supported value.)

Key	R, BP, or O?	Value
ADMIN_NETWORK_TARGET_TYPE_INTERFACE_CLONE_MAC	BP	True or False Set the key to "true" to cause the StorageGRID container use the MAC address of the host host target interface on the Admin Network. **Best practice:** In networks where promiscuous mode would be required, use the ADMIN_NETWORK_TARGET_TYPE_INTERFACE_CLONE_MAC key instead. For more details on MAC cloning: Considerations and recommendations for MAC address cloning (Red Hat Enterprise Linux or CentOS) Considerations and recommendations for MAC address cloning (Ubuntu or Debian)
ADMIN_ROLE	**R**	Primary or Non-Primary This key is only required when NODE_TYPE = VM_Admin_Node; do not specify it for other node types.

BLOCK_DEVICE_AUDIT_LOGS	**R**	Path and name of the block device special file this node will use for persistent storage of audit logs. This key is only required for nodes with NODE_TYPE = VM_Admin_Node; do not specify it for other node types.
		
		Examples:
		
		`/dev/disk/by-path/pci-0000:03:00.0-scsi-0:0:0:0`
		
		`/dev/disk/by-id/wwn-0x600a09800059d6df000060d757b475fd`
		
		`/dev/mapper/sgws-adm1-audit-logs`

Key	R, BP, or O?	Value

BLOCK_DEVICE_RANGEDB _000
 	
BLOCK_DEVICE_RANGEDB _001
 	
BLOCK_DEVICE_RANGEDB _002
 	
BLOCK_DEVICE_RANGEDB _003
 	
BLOCK_DEVICE_RANGEDB _004
 	
BLOCK_DEVICE_RANGEDB _005
 	
BLOCK_DEVICE_RANGEDB _006
 	
BLOCK_DEVICE_RANGEDB _007
 	
BLOCK_DEVICE_RANGEDB _008
 	
BLOCK_DEVICE_RANGEDB _009
 	
BLOCK_DEVICE_RANGEDB _010
 	
BLOCK_DEVICE_RANGEDB _011
 	
BLOCK_DEVICE_RANGEDB _012
 	
BLOCK_DEVICE_RANGEDB _013
 	
BLOCK_DEVICE_RANGEDB _014
 	
BLOCK_DEVICE_RANGEDB _015
	R	Path and name of the block device special file this node will use for persistent object storage. This key is only required for nodes with NODE_TYPE = VM_Storage_Node; do not specify it for other node types.
		
		Only BLOCK_DEVICE_RANGEDB_000 is required; the rest are optional. The block device specified for BLOCK_DEVICE_RANGEDB_000 must be at least 4 TB; the others can be smaller.
		
		Do not leave gaps. If you specify BLOCK_DEVICE_RANGEDB_005, you must also specify BLOCK_DEVICE_RANGEDB_004.
		
		Note: For compatibility with existing deployments, two-digit keys are supported for upgraded nodes.
		
		Examples:
		
		`/dev/disk/by-path/pci-0000:03:00.0-scsi-0:0:0:0`
		
		`/dev/disk/by-id/wwn-0x600a09800059d6df000060d757b475fd`
		
		`/dev/mapper/sgws-sn1-rangedb-000`

Key	R, BP, or O?	Value

BLOCK_DEVICE_TABLES	**R**	Path and name of the block device special file this node will use for persistent storage of database tables. This key is only required for nodes with NODE_TYPE = VM_Admin_Node; do not specify it for other node types.
		
		Examples:
		
		`/dev/disk/by-path/pci-0000:03:00.0-scsi-0:0:0:0`
		
		`/dev/disk/by-id/wwn-0x600a09800059d6df000060d757b475fd`
		
		`/dev/mapper/sgws-adm1-tables`

BLOCK_DEVICE_VAR_LOCAL	**R**	Path and name of the block device special file this node will use for its /var/local persistent storage.
		
		Examples:
		
		`/dev/disk/by-path/pci-0000:03:00.0-scsi-0:0:0:0`
		
		`/dev/disk/by-id/wwn-0x600a09800059d6df000060d757b475fd`
		
		`/dev/mapper/sgws-sn1-var-local`

CLIENT_NETWORK_CONFIG	O	DHCP, STATIC, or DISABLED

CLIENT_NETWORK_GATEWAY	O	IPv4 address of the local Client Network gateway for this node, which must be on the subnet defined by CLIENT_NETWORK_IP and CLIENT_NETWORK_MASK. This value is ignored for DHCP-configured networks.
		
		Examples:
		
		`1.1.1.1`
		
		`10.224.4.81`

Key	R, BP, or O?	Value

CLIENT_NETWORK_IP	O	IPv4 address of this node on the Client Network. This key is only required when CLIENT_NETWORK_CONFIG = STATIC; do not specify it for other values.
		
		Examples:
		
		`1.1.1.1`
		
		`10.224.4.81`

CLIENT_NETWORK_MAC	O	The MAC address for the Client Network interface in the container. This field is optional. If omitted, a MAC address will be generated automatically. Must be 6 pairs of hexadecimal digits separated by colons. Example: `b2:9c:02:c2:27:20`

CLIENT_NETWORK_MASK	O	IPv4 netmask for this node on the Client Network. This key is only required when CLIENT_NETWORK_CONFIG = STATIC; do not specify it for other values.
		
		Examples:
		
		`255.255.255.0`
		
		`255.255.248.0`

CLIENT_NETWORK_MTU	O	The maximum transmission unit (MTU) for this node on the Client Network. Do not specify if CLIENT_NETWORK_CONFIG = DHCP. If specified, the value must be between 1280 and 9216. If omitted, 1500 is used.
		
		If you want to use jumbo frames, set the MTU to a value suitable for jumbo frames, such as 9000. Otherwise, keep the default value.
		
		IMPORTANT: The MTU value of the network must match the value configured on the switch port the node is connected to. Otherwise, network performance issues or packet loss might occur.
		
		Examples:
		
		`1500`
		
		`8192`

Key	R, BP, or O?	Value

CLIENT_NETWORK_TARGET	BP	Name of the host device that you will use for Client Network access by the StorageGRID node. Only network interface names are supported. Typically, you use a different interface name than what was specified for GRID_NETWORK_TARGET or ADMIN_NETWORK_TARGET.
		
		Note: Do not use bond or bridge devices as the network target. Either configure a VLAN (or other virtual interface) on top of the bond device, or use a bridge and virtual Ethernet (veth) pair.
		
		Best practice: Specify a value even if this node will not initially have a Client Network IP address. Then you can add a Client Network IP address later, without having to reconfigure the node on the host.
		
		Examples:
		
		`bond0.1003`
		
		`ens423`

CLIENT_NETWORK_TARGET_TYPE	O	Interface (This is only supported value.)
CLIENT_NETWORK_TARGET_TYPE_INTERFACE_CLONE_MAC	BP	True or False Set the key to "true" to cause the StorageGRID container to use the MAC address of the host target interface on the Client Network. **Best practice:** In networks where promiscuous mode would be required, use the CLIENT_NETWORK_TARGET_TYPE_INTERFACE_CLONE_MAC key instead. For more details on MAC cloning: Considerations and recommendations for MAC address cloning (Red Hat Enterprise Linux or CentOS) Considerations and recommendations for MAC address cloning (Ubuntu or Debian)
GRID_NETWORK_CONFIG	BP	STATIC or DHCP (Defaults to STATIC if not specified.)

Key	R, BP, or O?	Value
GRID_NETWORK_GATEWAY	R	IPv4 address of the local Grid Network gateway for this node, which must be on the subnet defined by GRID_NETWORK_IP and GRID_NETWORK_MASK. This value is ignored for DHCP-configured networks. If the Grid Network is a single subnet with no gateway, use either the standard gateway address for the subnet (X.Y.Z.1) or this node's GRID_NETWORK_IP value; either value will simplify potential future Grid Network expansions.

GRID_NETWORK_IP	R	IPv4 address of this node on the Grid Network. This key is only required when GRID_NETWORK_CONFIG = STATIC; do not specify it for other values.
		
		Examples:
		
		`1.1.1.1`
		
		`10.224.4.81`

GRID_NETWORK_MAC	O	The MAC address for the Grid Network interface in the container. This field is optional. If omitted, a MAC address will be generated automatically. Must be 6 pairs of hexadecimal digits separated by colons. Example: `b2:9c:02:c2:27:30`

GRID_NETWORK_MASK	O	IPv4 netmask for this node on the Grid Network. This key is only required when GRID_NETWORK_CONFIG = STATIC; do not specify it for other values.
		
		Examples:
		
		`255.255.255.0`
		
		`255.255.248.0`

Key	R, BP, or O?	Value
GRID_NETWORK_MTU	O	The maximum transmission unit (MTU) for this node on the Grid Network. Do not specify if GRID_NETWORK_CONFIG = DHCP. If specified, the value must be between 1280 and 9216. If omitted, 1500 is used. If you want to use jumbo frames, set the MTU to a value suitable for jumbo frames, such as 9000. Otherwise, keep the default value. **IMPORTANT**: The MTU value of the network must match the value configured on the switch port the node is connected to. Otherwise, network performance issues or packet loss might occur. **IMPORTANT**: For the best network performance, all nodes should be configured with similar MTU values on their Grid Network interfaces. The **Grid Network MTU mismatch** alert is triggered if there is a significant difference in MTU settings for the Grid Network on individual nodes. The MTU values do not have to be the same for all network types. Examples: 1500 8192

GRID_NETWORK_TARGET	**R**	Name of the host device that you will use for Grid Network access by the StorageGRID node. Only network interface names are supported. Typically, you use a different interface name than what was specified for ADMIN_NETWORK_TARGET or CLIENT_NETWORK_TARGET.
		
		Note: Do not use bond or bridge devices as the network target. Either configure a VLAN (or other virtual interface) on top of the bond device, or use a bridge and virtual Ethernet (veth) pair.
		
		Examples:
		
		`bond0.1001`
		
		`ens192`

GRID_NETWORK_TARGET_TYPE	O	Interface (This is the only supported value.)

Key	R, BP, or O?	Value
GRID_NETWORK_TARGET_TYPE_INTERFACE_CLONE_MAC	**BP**	True or False Set the value of the key to "true" to cause the StorageGRID container to use the MAC address of the host target interface on the Grid Network. **Best practice:** In networks where promiscuous mode would be required, use the GRID_NETWORK_TARGET_TYPE_INTERFACE_CLONE_MAC key instead. For more details on MAC cloning: Considerations and recommendations for MAC address cloning (Red Hat Enterprise Linux or CentOS) Considerations and recommendations for MAC address cloning (Ubuntu or Debian)
INTERFACES_TARGET_nnnn	O	Name and optional description for an extra interface you want to add to this node. You can add multiple extra interfaces to each node. For *nnnn*, specify a unique number for each INTERFACES_TARGET entry you are adding. For the value, specify the name of the physical interface on the bare-metal host. Then, optionally, add a comma and provide a description of the interface, which is displayed on the VLAN interfaces page and the HA groups page. For example: `INTERFACES_TARGET_01=ens256, Trunk` If you add a trunk interface, you must configure a VLAN interface in StorageGRID. If you add an access interface, you can add the interface directly to an HA group; you do not need to configure a VLAN interface.

Key	R, BP, or O?	Value

MAXIMUM_RAM	O	The maximum amount of RAM that this node is allowed to consume. If this key is omitted, the node has no memory restrictions. When setting this field for a production-level node, specify a value that is at least 24 GB and 16 to 32 GB less than the total system RAM.
		
		Note: The RAM value affects a node's actual metadata reserved space. See the instructions for administering StorageGRID for a description of what Metadata Reserved Space is.
		
		The format for this field is `<number><unit>`, where `<unit>` can be `b`, `k`, `m`, or `g`.
		
		Examples:
		
		`24g`
		
		`38654705664b`
		
		Note: If you want to use this option, you must enable kernel support for memory cgroups.

NODE_TYPE	**R**	Type of node: VM_Admin_Node VM_Storage_Node VM_Archive_Node VM_API_Gateway

Key	R, BP, or O?	Value

Key	R, BP, or O?	Value
PORT_REMAP	O	Remaps any port used by a node for internal grid node communications or external communications. Remapping ports is necessary if enterprise networking policies restrict one or more ports used by StorageGRID, as described in "Internal grid node communications" or "External communications." **IMPORTANT**: Do not remap the ports you are planning to use to configure load balancer endpoints. **Note**: If only PORT_REMAP is set, the mapping that you specify is used for both inbound and outbound communications. If PORT_REMAP_INBOUND is also specified, PORT_REMAP applies only to outbound communications. The format used is: `<network type>/<protocol>/<default port used by grid node>/<new port>`, where `<network type>` is grid, admin, or client, and protocol is tcp or udp. For example: `PORT_REMAP = client/tcp/18082/443`
PORT_REMAP_INBOUND	O	Remaps inbound communications to the specified port. If you specify PORT_REMAP_INBOUND but do not specify a value for PORT_REMAP, outbound communications for the port are unchanged. **IMPORTANT**: Do not remap the ports you are planning to use to configure load balancer endpoints. The format used is: `<network type>/<protocol:>/<remapped port >/<default port used by grid node>`, where `<network type>` is grid, admin, or client, and protocol is tcp or udp. For example: `PORT_REMAP_INBOUND = grid/tcp/3022/22`

Related information

Networking guidelines

How grid nodes discover the primary Admin Node

Grid nodes communicate with the primary Admin Node for configuration and management. Each grid node must know the IP address of the primary Admin Node on

the Grid Network.

To ensure that a grid node can access the primary Admin Node, you can do either of the following when deploying the node:

- You can use the ADMIN_IP parameter to enter the primary Admin Node's IP address manually.
- You can omit the ADMIN_IP parameter to have the grid node discover the value automatically. Automatic discovery is especially useful when the Grid Network uses DHCP to assign the IP address to the primary Admin Node.

Automatic discovery of the primary Admin Node is accomplished using a multicast Domain Name System (mDNS). When the primary Admin Node first starts up, it publishes its IP address using mDNS. Other nodes on the same subnet can then query for the IP address and acquire it automatically. However, because multicast IP traffic is not normally routable across subnets, nodes on other subnets cannot acquire the primary Admin Node's IP address directly.

> ⓘ If you use automatic discovery:
>
> - You must include the ADMIN_IP setting for at least one grid node on any subnets that the primary Admin Node is not directly attached to. This grid node will then publish the primary Admin Node's IP address for other nodes on the subnet to discover with mDNS.
> - Ensure that your network infrastructure supports passing multi-cast IP traffic within a subnet.

Example node configuration files

You can use the example node configuration files to help set up the node configuration files for your StorageGRID system. The examples show node configuration files for all types of grid nodes.

For most nodes, you can add Admin and Client Network addressing information (IP, mask, gateway, and so on) when you configure the grid using the Grid Manager or the Installation API. The exception is the primary Admin Node. If you want to browse to the Admin Network IP of the primary Admin Node to complete grid configuration (because the Grid Network is not routed, for example), you must configure the Admin Network connection for the primary Admin Node in its node configuration file. This is shown in the example.

> ⓘ In the examples, the Client Network target has been configured as a best practice, even though the Client Network is disabled by default.

Example for primary Admin Node

Example file name: `/etc/storagegrid/nodes/dc1-adm1.conf`

Example file contents:

```
NODE_TYPE = VM_Admin_Node
ADMIN_ROLE = Primary
BLOCK_DEVICE_VAR_LOCAL = /dev/mapper/dc1-adm1-var-local
BLOCK_DEVICE_AUDIT_LOGS = /dev/mapper/dc1-adm1-audit-logs
BLOCK_DEVICE_TABLES = /dev/mapper/dc1-adm1-tables
GRID_NETWORK_TARGET = bond0.1001
ADMIN_NETWORK_TARGET = bond0.1002
CLIENT_NETWORK_TARGET = bond0.1003

GRID_NETWORK_IP = 10.1.0.2
GRID_NETWORK_MASK = 255.255.255.0
GRID_NETWORK_GATEWAY = 10.1.0.1

ADMIN_NETWORK_CONFIG = STATIC
ADMIN_NETWORK_IP = 192.168.100.2
ADMIN_NETWORK_MASK = 255.255.248.0
ADMIN_NETWORK_GATEWAY = 192.168.100.1
ADMIN_NETWORK_ESL = 192.168.100.0/21,172.16.0.0/21,172.17.0.0/21
```

Example for Storage Node

Example file name: `/etc/storagegrid/nodes/dc1-sn1.conf`

Example file contents:

```
NODE_TYPE = VM_Storage_Node
ADMIN_IP = 10.1.0.2
BLOCK_DEVICE_VAR_LOCAL = /dev/mapper/dc1-sn1-var-local
BLOCK_DEVICE_RANGEDB_00 = /dev/mapper/dc1-sn1-rangedb-0
BLOCK_DEVICE_RANGEDB_01 = /dev/mapper/dc1-sn1-rangedb-1
BLOCK_DEVICE_RANGEDB_02 = /dev/mapper/dc1-sn1-rangedb-2
BLOCK_DEVICE_RANGEDB_03 = /dev/mapper/dc1-sn1-rangedb-3
GRID_NETWORK_TARGET = bond0.1001
ADMIN_NETWORK_TARGET = bond0.1002
CLIENT_NETWORK_TARGET = bond0.1003

GRID_NETWORK_IP = 10.1.0.3
GRID_NETWORK_MASK = 255.255.255.0
GRID_NETWORK_GATEWAY = 10.1.0.1
```

Example for Archive Node

Example file name: `/etc/storagegrid/nodes/dc1-arc1.conf`

Example file contents:

```
NODE_TYPE = VM_Archive_Node
ADMIN_IP = 10.1.0.2
BLOCK_DEVICE_VAR_LOCAL = /dev/mapper/dc1-arc1-var-local
GRID_NETWORK_TARGET = bond0.1001
ADMIN_NETWORK_TARGET = bond0.1002
CLIENT_NETWORK_TARGET = bond0.1003

GRID_NETWORK_IP = 10.1.0.4
GRID_NETWORK_MASK = 255.255.255.0
GRID_NETWORK_GATEWAY = 10.1.0.1
```

Example for Gateway Node

Example file name: `/etc/storagegrid/nodes/dc1-gw1.conf`

Example file contents:

```
NODE_TYPE = VM_API_Gateway
ADMIN_IP = 10.1.0.2
BLOCK_DEVICE_VAR_LOCAL = /dev/mapper/dc1-gw1-var-local
GRID_NETWORK_TARGET = bond0.1001
ADMIN_NETWORK_TARGET = bond0.1002
CLIENT_NETWORK_TARGET = bond0.1003
GRID_NETWORK_IP = 10.1.0.5
GRID_NETWORK_MASK = 255.255.255.0
GRID_NETWORK_GATEWAY = 10.1.0.1
```

Example for a non-primary Admin Node

Example file name: `/etc/storagegrid/nodes/dc1-adm2.conf`

Example file contents:

```
NODE_TYPE = VM_Admin_Node
ADMIN_ROLE = Non-Primary
ADMIN_IP = 10.1.0.2
BLOCK_DEVICE_VAR_LOCAL = /dev/mapper/dc1-adm2-var-local
BLOCK_DEVICE_AUDIT_LOGS = /dev/mapper/dc1-adm2-audit-logs
BLOCK_DEVICE_TABLES = /dev/mapper/dc1-adm2-tables
GRID_NETWORK_TARGET = bond0.1001
ADMIN_NETWORK_TARGET = bond0.1002
CLIENT_NETWORK_TARGET = bond0.1003

GRID_NETWORK_IP = 10.1.0.6
GRID_NETWORK_MASK = 255.255.255.0
GRID_NETWORK_GATEWAY = 10.1.0.1
```

Validate the StorageGRID configuration

After creating configuration files in `/etc/storagegrid/nodes` for each of your StorageGRID nodes, you must validate the contents of those files.

To validate the contents of the configuration files, run the following command on each host:

```
sudo storagegrid node validate all
```

If the files are correct, the output shows **PASSED** for each configuration file, as shown in the example.

```
Checking for misnamed node configuration files… PASSED
Checking configuration file for node dc1-adm1… PASSED
Checking configuration file for node dc1-gw1… PASSED
Checking configuration file for node dc1-sn1… PASSED
Checking configuration file for node dc1-sn2… PASSED
Checking configuration file for node dc1-sn3… PASSED
Checking for duplication of unique values between nodes… PASSED
```

> 💡 For an automated installation, you can suppress this output by using the `-q` or `--quiet` options in the `storagegrid` command (for example, `storagegrid --quiet…`). If you suppress the output, the command will have a non-zero exit value if any configuration warnings or errors were detected.

If the configuration files are incorrect, the issues are shown as **WARNING** and **ERROR**, as shown in the example. If any configuration errors are found, you must correct them before you continue with the installation.

```
Checking for misnamed node configuration files…
   WARNING: ignoring /etc/storagegrid/nodes/dc1-adm1
   WARNING: ignoring /etc/storagegrid/nodes/dc1-sn2.conf.keep
   WARNING: ignoring /etc/storagegrid/nodes/my-file.txt
Checking configuration file for node dc1-adm1…
   ERROR: NODE_TYPE = VM_Foo_Node
          VM_Foo_Node is not a valid node type.  See *.conf.sample
   ERROR: ADMIN_ROLE = Foo
          Foo is not a valid admin role.  See *.conf.sample
   ERROR: BLOCK_DEVICE_VAR_LOCAL = /dev/mapper/sgws-gw1-var-local
          /dev/mapper/sgws-gw1-var-local is not a valid block device
Checking configuration file for node dc1-gw1…
   ERROR: GRID_NETWORK_TARGET = bond0.1001
          bond0.1001 is not a valid interface.  See `ip link show`
   ERROR: GRID_NETWORK_IP = 10.1.3
          10.1.3 is not a valid IPv4 address
   ERROR: GRID_NETWORK_MASK = 255.248.255.0
          255.248.255.0 is not a valid IPv4 subnet mask
Checking configuration file for node dc1-sn1…
   ERROR: GRID_NETWORK_GATEWAY = 10.2.0.1
          10.2.0.1 is not on the local subnet
   ERROR: ADMIN_NETWORK_ESL = 192.168.100.0/21,172.16.0foo
          Could not parse subnet list
Checking configuration file for node dc1-sn2… PASSED
Checking configuration file for node dc1-sn3… PASSED
Checking for duplication of unique values between nodes…
   ERROR: GRID_NETWORK_IP = 10.1.0.4
          dc1-sn2 and dc1-sn3 have the same GRID_NETWORK_IP
   ERROR: BLOCK_DEVICE_VAR_LOCAL = /dev/mapper/sgws-sn2-var-local
          dc1-sn2 and dc1-sn3 have the same BLOCK_DEVICE_VAR_LOCAL
   ERROR: BLOCK_DEVICE_RANGEDB_00 = /dev/mapper/sgws-sn2-rangedb-0
          dc1-sn2 and dc1-sn3 have the same BLOCK_DEVICE_RANGEDB_00
```

Start the StorageGRID host service

To start your StorageGRID nodes, and ensure they restart after a host reboot, you must enable and start the StorageGRID host service.

Steps

1. Run the following commands on each host:

   ```
   sudo systemctl enable storagegrid
   sudo systemctl start storagegrid
   ```

2. Run the following command to ensure the deployment is proceeding:

```
sudo storagegrid node status node-name
```

For any node that returns a status of "Not Running" or "Stopped", run the following command:

```
sudo storagegrid node start node-name
```

3. If you have previously enabled and started the StorageGRID host service (or if you are unsure if the service has been enabled and started), also run the following command:

```
sudo systemctl reload-or-restart storagegrid
```