NetApp

Prepare for installation (SG100 and SG1000)

StorageGRID

NetApp
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Prepare for installation (SG100 and SG1000)

Preparing to install a StorageGRID appliance entails preparing the site and obtaining all required hardware, cables, and tools. You should also gather IP addresses and network information.

Related information

Web browser requirements

Prepare site (SG100 and SG1000)

Before installing the appliance, you must make sure that the site and the cabinet or rack you plan to use meet the specifications for a StorageGRID appliance.

Steps

1. Confirm that the site meets the requirements for temperature, humidity, altitude range, airflow, heat dissipation, wiring, power, and grounding. See the NetApp Hardware Universe for more information.

2. Confirm that your location provides the correct voltage of AC power (in the range of 120 to 240 volts AC).

3. Obtain a 19-inch (48.3-cm) cabinet or rack to fit shelves of this size (without cables):

Height	Width	Depth	Maximum weight
1.70 in. (4.32 cm)	17.32 in. (44.0 cm)	32.0 in. (81.3 cm)	39 lb. (17.7 kg)

4. Decide where you are going to install the appliance.

Related information

NetApp Hardware Universe

NetApp Interoperability Matrix Tool

Unpack boxes (SG100 and SG1000)

Before installing the StorageGRID appliance, unpack all boxes and compare the contents to the items on the packing slip.

Appliance hardware

- **SG100 or SG1000**

- **Rail kit with instructions**

Power cords

The shipment for the StorageGRID appliance includes the following power cords:

- **Two power cords for your country**

  Your cabinet might have special power cords that you use instead of the power cords that ship with the appliance.

Obtain additional equipment and tools (SG100 and SG1000)

Before installing the StorageGRID appliance, confirm you have all of the additional equipment and tools that you need.

You need the following additional equipment to install and configure the hardware:

- **Screwdrivers**

  Phillips No. 2 screwdriver

  Medium flat-blade screwdriver

- **ESD wrist strap**

- **Optical cables and transceivers**

- ◦ Cable
    - ▪ TwinAx/Copper (1 to 4)

    or

    - ▪ Fibre/Optical (1 to 4)
- ◦ 1 to 4 of each of these transceivers/adapters based on link speed (mixed speeds are not supported)
    - ▪ SG100:

Link speed (GbE)	Required equipment
10	SFP+ transceiver
25	SFP28 transceiver

    - ▪ SG1000:

Link speed (GbE)	Required equipment
10	QSFP-to-SFP adapter (QSA) and SFP+ transceiver
25	QSFP-to-SFP adapter (QSA) and SFP28 transceiver
40	QSFP+ transceiver
100	QFSP28 transceiver

- **RJ-45 (Cat5/Cat5e/Cat6/Cat6a) Ethernet cables**

- **Service laptop**

Supported web browser

1-GbE (RJ-45) port

> ⓘ Some ports might not support 10/100 Ethernet speeds.

- **Optional tools**

Power drill with Phillips head bit

Flashlight

Review appliance network connections (SG100 and SG1000)

Before installing the StorageGRID appliance, you should understand which networks can be connected to the appliance.

When you deploy a StorageGRID appliance as a node in a StorageGRID system, you can connect it to the following networks:

- **Grid Network for StorageGRID**: The Grid Network is used for all internal StorageGRID traffic. It provides connectivity between all nodes in the grid, across all sites and subnets. The Grid Network is required.

- **Admin Network for StorageGRID**: The Admin Network is a closed network used for system administration and maintenance. The Admin Network is typically a private network and does not need to be routable between sites. The Admin Network is optional.

- **Client Network for StorageGRID:** The Client Network is an open network used to provide access to client applications, including S3 and Swift. The Client Network provides client protocol access to the grid, so the Grid Network can be isolated and secured. You can configure the Client Network so that the appliance can be accessed over this network using only the ports you choose to open. The Client Network is optional.

- **BMC management network for the services appliance** (optional): This network provides access to the

baseboard management controller in the SG100 and SG1000, appliances allowing you to monitor and manage the hardware components in the appliance. This management network can be the same as the Admin Network for StorageGRID, or it can be an independent management network.

If the optional BMC management network is not connected, some support and maintenance procedures will be more difficult to perform. You can leave the BMC management network unconnected except when needed for support purposes.

Related information

Gather installation information (SG100 and SG1000)

Cable appliance SG100 and SG1000

Networking guidelines

Grid primer

Port bond modes for the SG100 and SG1000 appliances

When configuring network links for the SG100 and SG1000 appliances, you can use port bonding for the ports that connect to the Grid Network and optional Client Network, and the 1-GbE management ports that connect to the optional Admin Network. Port bonding helps protect your data by providing redundant paths between StorageGRID networks and the appliance.
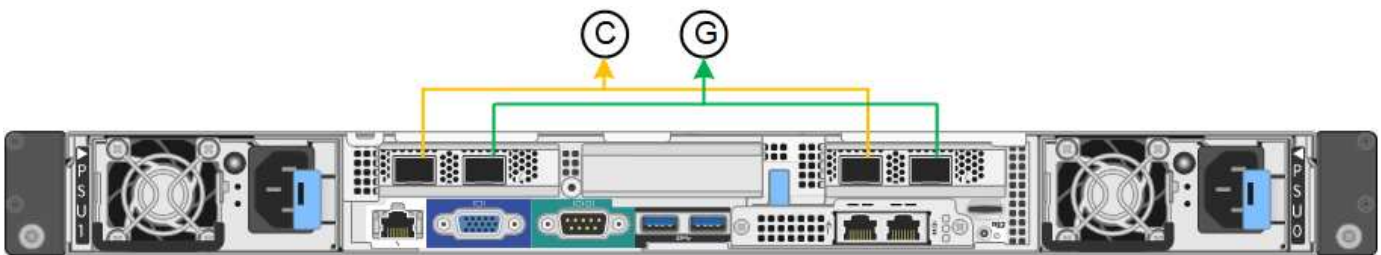
Network bond modes

The networking ports on the services appliance support Fixed port bond mode or Aggregate port bond mode for the Grid Network and Client Network connections.
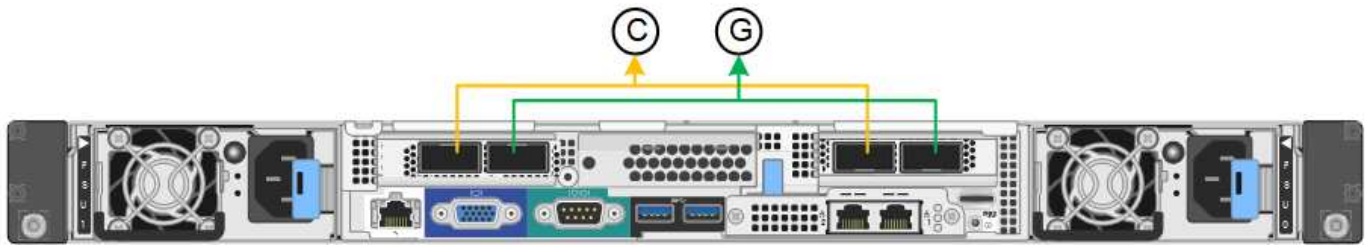
Fixed port bond mode

Fixed port bond mode is the default configuration for the networking ports.

SG100 fixed port bond mode

SG1000 fixed port bond mode

Callout	Which ports are bonded
C	Ports 1 and 3 are bonded together for the Client Network, if this network is used.
G	Ports 2 and 4 are bonded together for the Grid Network.

When using Fixed port bond mode, the ports can be bonded using active-backup mode or Link Aggregation Control Protocol mode (LACP 802.3ad).

- In active-backup mode (default), only one port is active at a time. If the active port fails, its backup port automatically provides a failover connection. Port 4 provides a backup path for port 2 (Grid Network), and port 3 provides a backup path for port 1 (Client Network).
- In LACP mode, each pair of ports forms a logical channel between the services appliance and the network, allowing for higher throughput. If one port fails, the other port continues to provide the channel. Throughput is reduced, but connectivity is not impacted.

ⓘ If you do not need redundant connections, you can use only one port for each network. However, be aware that the **Services appliance link down** alert might be triggered in the Grid Manager after StorageGRID is installed, indicating that a cable is unplugged. You can safely disable this alert rule.
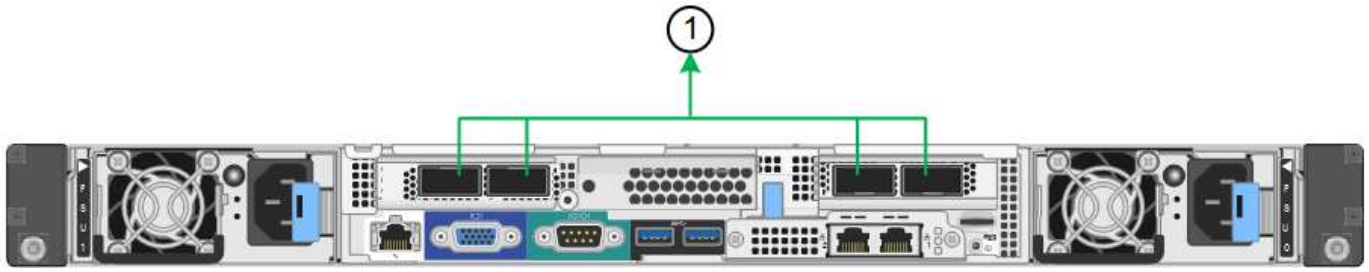
Aggregate port bond mode

Aggregate port bond mode significantly increases the throughput for each StorageGRID network and provides additional failover paths.

SG100 aggregate port bond mode
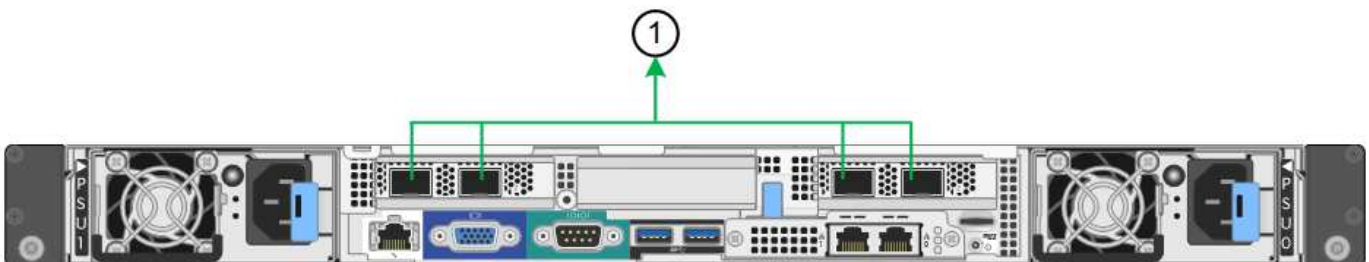
SG1000 aggregate port bond mode

Callout	Which ports are bonded
1	All connected ports are grouped in a single LACP bond, allowing all ports to be used for Grid Network and Client Network traffic.

If you plan to use aggregate port bond mode:

- You must use LACP network bond mode.
- You must specify a unique VLAN tag for each network. This VLAN tag will be added to each network packet to ensure that network traffic is routed to the correct network.
- The ports must be connected to switches that can support VLAN and LACP. If multiple switches are participating in the LACP bond, the switches must support multi-chassis link aggregation groups (MLAG), or equivalent.
- You must understand how to configure the switches to use VLAN, LACP, and MLAG, or equivalent.

If you do not want to use all four ports, you can use one, two, or three ports. Using more than one port maximizes the chance that some network connectivity will remain available if one of the ports fails.

> ⓘ If you choose to use fewer than four ports, be aware that a **Services appliance link down** alert might be triggered in the Grid Manager after the appliance node is installed, indicating that a cable is unplugged. You can safely disable this alert rule for the triggered alert. From the Grid Manager, select **ALERTS** > **Rules**, select the rule, and click **Edit rule**. Then, uncheck the **Enabled** check box.

Network bond modes for management ports

For the two 1-GbE management ports on the services appliance, you can choose Independent network bond mode or Active-Backup network bond mode to connect to the optional Admin Network.

SG100 network management ports

SG1000 network management ports

In Independent mode, only the management port on the left is connected to the Admin Network. This mode does not provide a redundant path. The management port on the right is unconnected and available for temporary local connections (uses IP address 169.254.0.1)

In Active-Backup mode, both management ports are connected to the Admin Network. Only one port is active at a time. If the active port fails, its backup port automatically provides a failover connection. Bonding these two physical ports into one logical management port provides a redundant path to the Admin Network.

> ⓘ If you need to make a temporary local connection to the services appliance when the 1-GbE management ports are configured for Active-Backup mode, remove the cables from both management ports, plug your temporary cable into the management port on the right, and access the appliance using IP address 169.254.0.1.

Callout	Network bond mode
A	Active-Backup mode. Both management ports are bonded into one logical management port connected to the Admin Network.
I	Independent mode. The port on the left is connected to the Admin Network. The port on the right is available for temporary local connections (IP address 169.254.0.1).

Gather installation information (SG100 and SG1000)

As you install and configure the StorageGRID appliance, you must make decisions and gather information about Ethernet switch ports, IP addresses, and port and network bond modes. Record the required information for each network you connect to the appliance. These values are required to install and configure the hardware.

Administration and maintenance ports

The Admin Network for StorageGRID is an optional network, used for system administration and maintenance. The appliance connects to the Admin Network using the following 1-GbE management ports on the appliance.

SG100 RJ-45 ports

SG1000 RJ-45 ports

Administration and maintenance connections

Information needed	Your value
Admin Network enabled	Choose one: • No • Yes (default)
Network bond mode	Choose one: • Independent (default) • Active-Backup
Switch port for the left port circled in the diagram (default active port for Independent network bond mode)	
Switch port for the right port circled in the diagram (Active-Backup network bond mode only)	
MAC address for the Admin Network port **Note:** The MAC address label on the front of the appliance lists the MAC address for the BMC management port. To determine the MAC address for the Admin Network port, you must add **2** to the hexadecimal number on the label. For example, if the MAC address on the label ends in **09**, the MAC address for the Admin Port would end in **0B**. If the MAC address on the label ends in **(*y*)FF**, the MAC address for the Admin Port would end in **(*y*+1)01**. You can easily make this calculation by opening Calculator in Windows, setting it to Programmer mode, selecting Hex, typing the MAC address, then typing **+ 2 =**.	
DHCP-assigned IP address for the Admin Network port, if available after power on **Note:** You can determine the DHCP-assigned IP address by using the MAC address to look up the assigned IP.	• IPv4 address (CIDR): • Gateway:

Information needed	Your value
Static IP address you plan to use for the appliance node on the Admin Network **Note:** If your network does not have a gateway, specify the same static IPv4 address for the gateway.	• IPv4 address (CIDR): • Gateway:
Admin Network subnets (CIDR)	

Networking ports

The four networking ports on the appliance connect to the StorageGRID Grid Network and the optional Client Network.

Networking connections

Information needed	Your value
Link speed	For the SG100, choose one of the following: • Auto (default) • 10 GbE • 25 GbE For the SG1000, choose one of the following: • Auto (default) • 10 GbE • 25 GbE • 40 GbE • 100 GbE **Note:** For the SG1000, 10- and 25-GbE speeds require the use of QSA adapters.
Port bond mode	Choose one: • Fixed (default) • Aggregate
Switch port for port 1 (Client Network for Fixed mode)	
Switch port for port 2 (Grid Network for Fixed mode)	
Switch port for port 3 (Client Network for Fixed mode)	

Information needed	Your value
Switch port for port 4 (Grid Network for Fixed mode)	

Grid Network ports

The Grid Network for StorageGRID is a required network, used for all internal StorageGRID traffic. The appliance connects to the Grid Network using the four network ports.

Grid Network connections

Information needed	Your value
Network bond mode	Choose one: • Active-Backup (default) • LACP (802.3ad)
VLAN tagging enabled	Choose one: • No (default) • Yes
VLAN tag(if VLAN tagging is enabled)	Enter a value between 0 and 4095:
DHCP-assigned IP address for the Grid Network, if available after power on	• IPv4 address (CIDR): • Gateway:
Static IP address you plan to use for the appliance node on the Grid Network **Note:** If your network does not have a gateway, specify the same static IPv4 address for the gateway.	• IPv4 address (CIDR): • Gateway:
Grid Network subnets (CIDRs)	
Maximum transmission unit (MTU) setting (optional)You can use the default value of 1500, or set the MTU to a value suitable for jumbo frames, such as 9000.	

Client Network ports

The Client Network for StorageGRID is an optional network, typically used to provide client protocol access to the grid. The appliance connects to the Client Network using the four network ports.

Client Network connections

Information needed	Your value
Client Network enabled	Choose one: • No (default) • Yes
Network bond mode	Choose one: • Active-Backup (default) • LACP (802.3ad)
VLAN tagging enabled	Choose one: • No (default) • Yes
VLAN tag(If VLAN tagging is enabled)	Enter a value between 0 and 4095:
DHCP-assigned IP address for the Client Network, if available after power on	• IPv4 address (CIDR): • Gateway:
Static IP address you plan to use for the appliance node on the Client Network **Note:** If the Client Network is enabled, the default route on the appliance will use the gateway specified here.	• IPv4 address (CIDR): • Gateway:

BMC management network ports

You can access the BMC interface on the services appliance using the 1-GbE management port circled in the diagram. This port supports remote management of the controller hardware over Ethernet using the Intelligent Platform Management Interface (IPMI) standard.

SG100 BMC management port

SG1000 BMC management port

BMC management network connections

Information needed	Your value
Ethernet switch port you will connect to the BMC management port (circled in the diagram)	
DHCP-assigned IP address for the BMC management network, if available after power on	• IPv4 address (CIDR): • Gateway:
Static IP address you plan to use for the BMC management port	• IPv4 address (CIDR): • Gateway:

Related information

SG100 and SG1000 appliances overview

Cable appliance SG100 and SG1000

Configure StorageGRID IP addresses