



Gather network information

StorageGRID Appliances

NetApp
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Gather network information

StorageGRID network types

Before installing the StorageGRID appliance, you should understand which networks can be connected to the appliance and how the ports on each controller are used.

StorageGRID network requirements are fully explained in the [Networking guidelines](#).

Refer to the instructions for your appliance to determine what information you need:

- [SG100 and SG1000](#)
- [SG5700](#)
- [SG6000](#)
- [SG6100](#)

Alternatively, you can work with your NetApp Professional Services consultant to use the NetApp ConfigBuilder tool to streamline and automate the configuration steps. See [Automate appliance installation and configuration](#).

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.
- **Management network for SANtricity** (optional for storage appliances, not needed for the SG6100): This network provides access to SANtricity System Manager, allowing you to monitor and manage the hardware components in the appliance and storage controller shelf. This management network can be the same as the Admin Network for StorageGRID, or it can be an independent management network.
- **BMC management network** (optional for SG100, SG1000, SG6000, and SG6100): This network provides access to the baseboard management controller in the SG100, SG1000, SG6000, and SG6100 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.



For detailed information about StorageGRID networks, see the [StorageGRID network types](#).

Gather network information (SG100 and SG1000)

Using the tables, record the required information for each network you connect to the appliance. These values are required to install and configure the hardware.



Instead of using the tables, use the workbook provided with ConfigBuilder. Using the ConfigBuilder workbook allows you to upload your system information and generate a JSON file to automatically complete some configuration steps in the StorageGRID Appliance Installer. See [Automate appliance installation and configuration](#).

Check StorageGRID version

Before installing an SG100 or SG1000 services appliance, confirm your StorageGRID system is using a required version of StorageGRID software.

Appliance	Required StorageGRID version
SG1000	11.3 or later (latest hotfix recommended)
SG100	11.4 or later (latest hotfix recommended)

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:



Information needed	Your value
Admin Network enabled	Choose one: <ul style="list-style-type: none">NoYes (default)

Information needed	Your value
Network bond mode	Choose one: <ul style="list-style-type: none"> • 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, 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.	<ul style="list-style-type: none"> • IPv4 address (CIDR): • Gateway:
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.	<ul style="list-style-type: none"> • 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.

Information needed	Your value
Link speed	<p>For the SG100, choose one of the following:</p> <ul style="list-style-type: none"> • Auto (default) • 10 GbE • 25 GbE <p>For the SG1000, choose one of the following:</p> <ul style="list-style-type: none"> • Auto (default) • 10 GbE • 25 GbE • 40 GbE • 100 GbE <p>Note: For the SG1000, 10- and 25-GbE speeds require the use of QSA adapters.</p>
Port bond mode	<p>Choose one:</p> <ul style="list-style-type: none"> • 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)	
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.

Information needed	Your value
Network bond mode	<p>Choose one:</p> <ul style="list-style-type: none"> • Active-Backup (default) • LACP (802.3ad)

Information needed	Your value
VLAN tagging enabled	Choose one: <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • 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.

Information needed	Your value
Client Network enabled	Choose one: <ul style="list-style-type: none"> • No (default) • Yes
Network bond mode	Choose one: <ul style="list-style-type: none"> • Active-Backup (default) • LACP (802.3ad)
VLAN tagging enabled	Choose one: <ul style="list-style-type: none"> • No (default) • Yes
VLAN tag (If VLAN tagging is enabled)	Enter a value between 0 and 4095:

Information needed	Your value
DHCP-assigned IP address for the Client Network, if available after power on	<ul style="list-style-type: none"> • IPv4 address (CIDR): • Gateway:
Static IP address you plan to use for the appliance node on the Client Network	<ul style="list-style-type: none"> • IPv4 address (CIDR): • Gateway:
<p>Note: If the Client Network is enabled, the default route on the appliance will use the gateway specified here.</p>	

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.



You can enable or disable remote IPMI access for all appliances containing a BMC. The remote IPMI interface allows low-level hardware access to your StorageGRID appliances by anyone with a BMC account and password. If you do not need remote IPMI access to the BMC, disable this option using one of the following methods:

In Grid Manager, go to **CONFIGURATION > Security > Security settings > Appliances** and clear the **Enable remote IPMI access** checkbox.

In the Grid management API, use the private endpoint: `PUT /private/bmc`.

SG100 BMC management port:



SG1000 BMC management port:



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	<ul style="list-style-type: none"> • IPv4 address (CIDR): • Gateway:
Static IP address you plan to use for the BMC management port	<ul style="list-style-type: none"> • IPv4 address (CIDR): • Gateway:

Port bond modes

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.

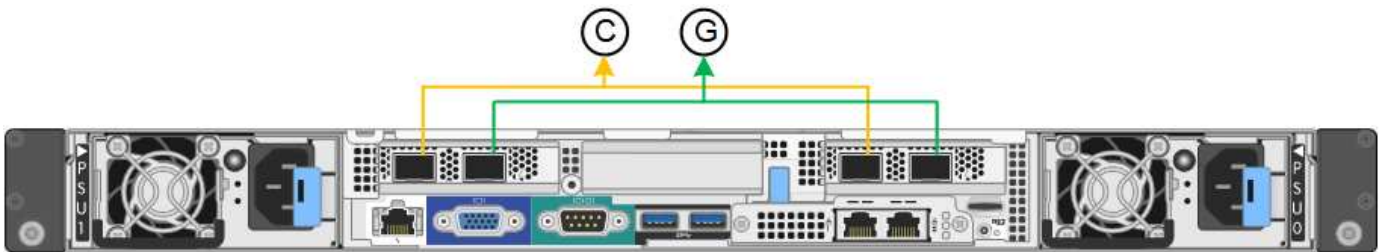
Network bond modes

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.

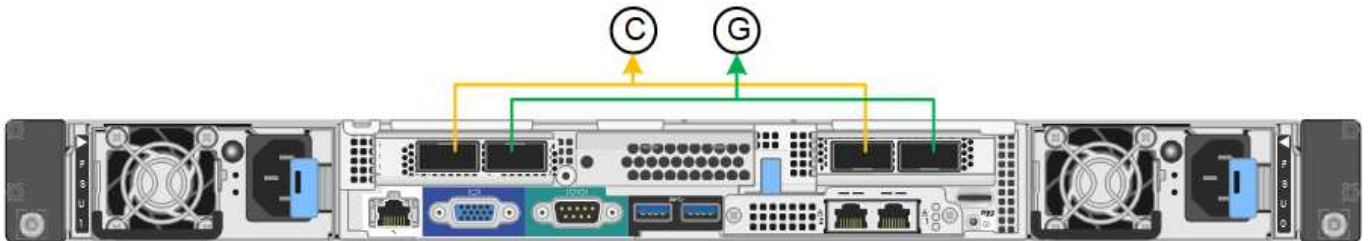
Fixed port bond mode

Fixed port bond mode is the default configuration for the networking ports. The figures show how the network ports on the SG1000 or SG100 are bonded in fixed port bond mode.

SG100:



SG1000:



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.

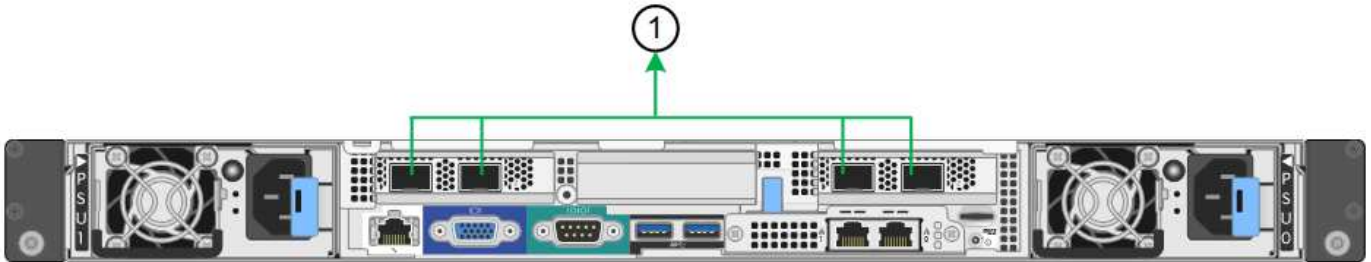


If you don't need redundant connections, you can use only one port for each network. However, be aware that the **Services appliance link down** alert might be triggered in the Grid Manager after StorageGRID is installed, indicating that a cable is unplugged. You can safely disable this alert rule.

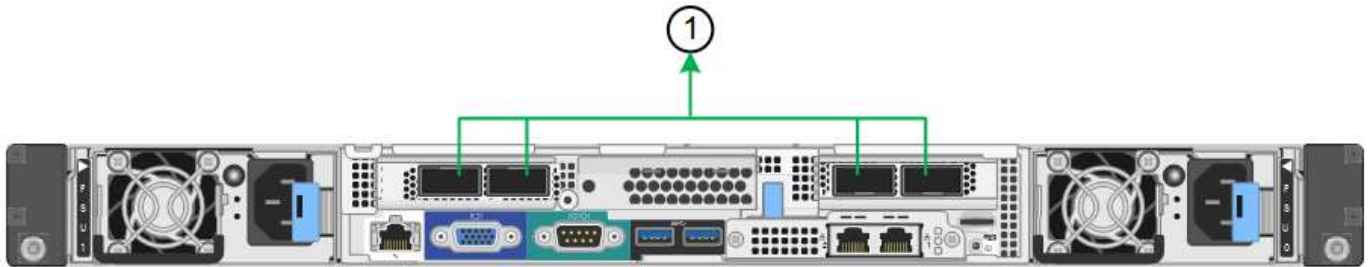
Aggregate port bond mode

Aggregate port bond mode significantly increases the throughput for each StorageGRID network and provides additional failover paths. These figures show how the network ports are bonded in aggregate port bond mode.

SG100:



SG1000:



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 understand how to configure the switches to use VLAN, LACP, and MLAG, or equivalent.

If you don't 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 network 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.

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. These figures show how the management ports on the appliances are bonded in network bond mode for the Admin Network.

SG100:



SG1000:



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).

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.

Related information

- [Cable appliance](#)
- [Configure StorageGRID IP addresses](#)

Gather network information (SG5700)

Using the tables, record the required information for each network you connect to the appliance. These values are required to install and configure the hardware.



Instead of using the tables, use the workbook provided with ConfigBuilder. Using the ConfigBuilder workbook allows you to upload your system information and generate a JSON file to automatically complete some configuration steps in the StorageGRID Appliance Installer. See [Automate appliance installation and configuration](#).

Information needed to connect to SANtricity System Manager on E2800 controller

You connect the E2800 series controller to the management network you will use for SANtricity System Manager.

Information needed	Your value
Ethernet switch port you will connect to management port 1	
MAC address for management port 1 (printed on a label near port P1)	
DHCP-assigned IP address for management port 1, if available after power on Note: If the network you will connect to the E2800 controller includes a DHCP server, the network administrator can use the MAC address to determine the IP address that was assigned by the DHCP server.	
Speed and duplex mode Note: You must make sure the Ethernet switch for the SANtricity System Manager management network is set to autonegotiate.	Must be: <ul style="list-style-type: none"> • Autonegotiate (default)
IP address format	Choose one: <ul style="list-style-type: none"> • IPv4 • IPv6

Information needed	Your value
Static IP address you plan to use for the appliance on the management network	For IPv4: <ul style="list-style-type: none"> • IPv4 address: • Subnet mask: • Gateway: For IPv6: <ul style="list-style-type: none"> • IPv6 address: • Routable IP address: • E2800 controller router IP address:

Information needed to connect E5700SG controller to Admin Network

The Admin Network for StorageGRID is an optional network, used for system administration and maintenance. The appliance connects to the Admin Network using the 1-GbE management ports on the E5700SG controller.

Information needed	Your value
Admin Network enabled	Choose one: <ul style="list-style-type: none"> • No • Yes (default)
Network bond mode	Choose one: <ul style="list-style-type: none"> • Independent • Active-Backup
Switch port for port 1	
Switch port for port 2 (Active-Backup network bond mode only)	
DHCP-assigned IP address for management port 1, if available after power on Note: If the Admin Network includes a DHCP server, the E5700SG controller displays the DHCP-assigned IP address on its seven-segment display after it boots up. You can also determine the DHCP-assigned IP address by using the MAC address to look up the assigned IP.	<ul style="list-style-type: none"> • IPv4 address (CIDR): • Gateway:

Information needed	Your value
Static IP address you plan to use for the appliance Storage Node on the Admin Network Note: If your network does not have a gateway, specify the same static IPv4 address for the gateway.	<ul style="list-style-type: none"> • IPv4 address (CIDR): • Gateway:
Admin Network subnets (CIDR)	

Information needed to connect and configure 10/25-GbE ports on E5700SG controller

The four 10/25-GbE ports on the E5700SG controller connect to the StorageGRID Grid Network and Client Network.



See [Port bond modes \(E5700SG controller\)](#).

Information needed	Your value
Link speed Note: If you select 25 GbE, install SPF28 transceivers. Autonegotiation is not supported, so you must also configure the ports and the connected switches for 25GbE.	Choose one: <ul style="list-style-type: none"> • 10 GbE (default) • 25 GbE
Port bond mode	Choose one: <ul style="list-style-type: none"> • Fixed (default) • Aggregate
Switch port for port 1 (Client Network)	
Switch port for port 2 (Grid Network)	
Switch port for port 3 (Client Network)	
Switch port for port 4 (Grid Network)	

Information needed to connect E5700SG controller to Grid Network

The Grid Network for StorageGRID is a required network, used for all internal StorageGRID traffic. The appliance connects to the Grid Network using the 10/25-GbE ports on the E5700SG controller.



See [Port bond modes \(E5700SG controller\)](#).

Information needed	Your value
Network bond mode	Choose one: <ul style="list-style-type: none"> • Active-Backup (default) • LACP (802.3ad)
VLAN tagging enabled	Choose one: <ul style="list-style-type: none"> • 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 Note: If the Grid Network includes a DHCP server, the E5700SG controller displays the DHCP-assigned IP address for the Grid Network on its seven-segment display after it boots up.	<ul style="list-style-type: none"> • IPv4 address (CIDR): • Gateway:
Static IP address you plan to use for the appliance Storage Node on the Grid Network Note: If your network does not have a gateway, specify the same static IPv4 address for the gateway.	<ul style="list-style-type: none"> • IPv4 address (CIDR): • Gateway:
Grid Network subnets (CIDR) Note: If the Client Network is not enabled, the default route on the controller will use the gateway specified here.	

Information needed to connect E5700SG controller to Client Network

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 10/25-GbE ports on the E5700SG controller.



See [Port bond modes \(E5700SG controller\)](#).

Information needed	Your value
Client Network enabled	Choose one: <ul style="list-style-type: none"> • No (default) • Yes

Information needed	Your value
Network bond mode	Choose one: <ul style="list-style-type: none"> • Active-Backup (default) • LACP (802.3ad)
VLAN tagging enabled	Choose one: <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • IPv4 address (CIDR): • Gateway:
Static IP address you plan to use for the appliance Storage Node on the Client Network Note: If the Client Network is enabled, the default route on the controller will use the gateway specified here.	<ul style="list-style-type: none"> • IPv4 address (CIDR): • Gateway:

Port bond modes

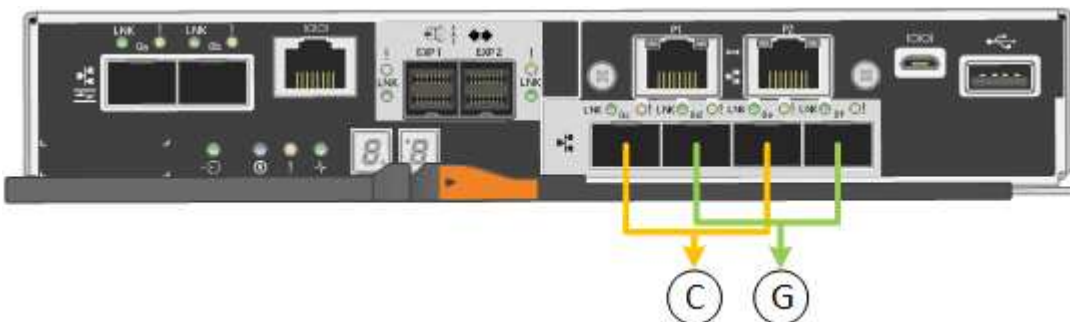
When [configuring network links](#) for the E5700SG controller, you can use port bonding for the 10/25-GbE ports that connect to the Grid Network and optional Client Network, and the 1-GbE management ports that connect to the optional Admin Network. Port bonding helps protect your data by providing redundant paths between StorageGRID networks and the appliance.

Network bond modes for 10/25-GbE ports

The 10/25-GbE networking ports on the E5700SG controller support Fixed port bond mode or Aggregate port bond mode for the Grid Network and Client Network connections.

Fixed port bond mode

Fixed mode is the default configuration for the 10/25-GbE networking ports.



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, you can use one of two network bond modes: Active-Backup or Link Aggregation Control Protocol (LACP).

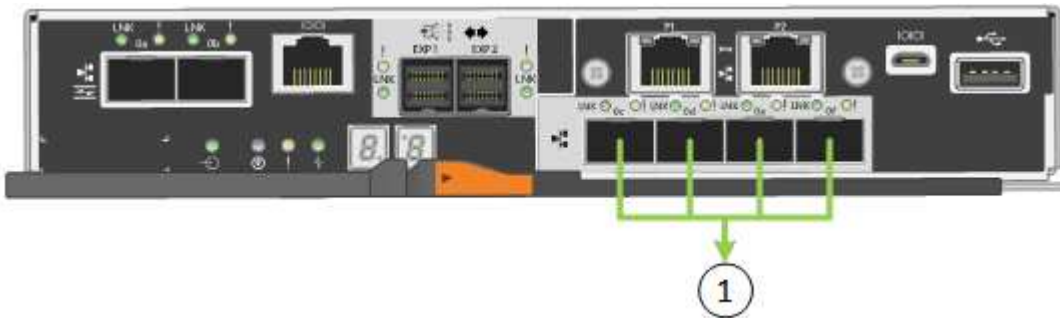
- In Active-Backup mode (default), only one port is active at a time. If the active port fails, its backup port automatically provides a failover connection. Port 4 provides a backup path for port 2 (Grid Network), and port 3 provides a backup path for port 1 (Client Network).
- In LACP mode, each pair of ports forms a logical channel between the controller 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 don't need redundant connections, you can use only one port for each network. However, be aware that an alarm will be raised in the Grid Manager after StorageGRID is installed, indicating that a cable is unplugged. You can safely acknowledge this alarm to clear it.

Aggregate port bond mode

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



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 understand how to configure the switches to use VLAN, LACP, and MLAG, or equivalent.

If you don't want to use all four 10/25-GbE 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 10/25-GbE ports fails.



If you choose to use fewer than four ports, be aware that one or more alarms will be raised in the Grid Manager after StorageGRID is installed, indicating that cables are unplugged. You can safely acknowledge the alarms to clear them.

Network bond modes for 1-GbE management ports

For the two 1-GbE management ports on the E5700SG controller, you can choose Independent network bond mode or Active-Backup network bond mode to connect to the optional Admin Network.

In Independent mode, only management port 1 is connected to the Admin Network. This mode does not provide a redundant path. Management port 2 is left unwired and available for temporary local connections (use IP address 169.254.0.1)

In Active-Backup mode, both management ports 1 and 2 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 E5700SG controller when the 1-GbE management ports are configured for Active-Backup mode, remove the cables from both management ports, plug your temporary cable into management port 2, and access the appliance using IP address 169.254.0.1.



Related information

- [Cable appliance \(SG5700\)](#)
- [Port bond modes \(E5700SG controller\)](#)
- [Configure hardware \(SG5700\)](#)

Gather network information (SG6000)

Using the tables, record the required information for each network you connect to the appliance. These values are required to install and configure the hardware.



Instead of using the tables, use the workbook provided with ConfigBuilder. Using the ConfigBuilder workbook allows you to upload your system information and generate a JSON file to automatically complete some configuration steps in the StorageGRID Appliance Installer. See [Automate appliance installation and configuration](#).

Information needed to connect to SANtricity System Manager on storage controllers

You connect both of the storage controllers in the appliance (either the E2800 series controllers or the EF570 controllers) to the management network you will use for SANtricity System Manager. The controllers are located in each appliance as follows:

- SG6060 and SG6060X: Controller A is on the top, and controller B is on the bottom.
- SGF6024: Controller A is on the left, and controller B is on the right.

Information needed	Your value for controller A	Your value for controller B
Ethernet switch port you will connect to management port 1 (labeled as P1 on the controller)		
MAC address for management port 1 (printed on a label near port P1)		
DHCP-assigned IP address for management port 1, if available after power on Note: If the network you will connect to the storage controller includes a DHCP server, the network administrator can use the MAC address to determine the IP address that was assigned by the DHCP server.		
Static IP address you plan to use for the appliance on the management network	For IPv4: <ul style="list-style-type: none"> • IPv4 address: • Subnet mask: • Gateway: For IPv6: <ul style="list-style-type: none"> • IPv6 address: • Ratable IP address: • storage controller router IP address: 	For IPv4: <ul style="list-style-type: none"> • IPv4 address: • Subnet mask: • Gateway: For IPv6: <ul style="list-style-type: none"> • IPv6 address: • Ratable IP address: • storage controller router IP address:
IP address format	Choose one: <ul style="list-style-type: none"> • IPv4 • IPv6 	Choose one: <ul style="list-style-type: none"> • IPv4 • IPv6

Information needed	Your value for controller A	Your value for controller B
Speed and duplex mode Note: You must make sure the Ethernet switch for the SANtricity System Manager management network is set to autonegotiate.	Must be: <ul style="list-style-type: none"> • Autonegotiate (default) 	Must be: <ul style="list-style-type: none"> • Autonegotiate (default)

Information needed to connect SG6000-CN controller to Admin Network

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 SG6000-CN controller.



Information needed	Your value
Admin Network enabled	Choose one: <ul style="list-style-type: none"> • No • Yes (default)
Network bond mode	Choose one: <ul style="list-style-type: none"> • Independent (default) • Active-Backup
Switch port for the left port in the red circle in the diagram (default active port for Independent network bond mode)	
Switch port for the right port in the red circle 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 SG6000-CN controller 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 = .	

Information needed	Your value
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.	<ul style="list-style-type: none"> • IPv4 address (CIDR): • Gateway:
Static IP address you plan to use for the appliance Storage Node on the Admin Network Note: If your network does not have a gateway, specify the same static IPv4 address for the gateway.	<ul style="list-style-type: none"> • IPv4 address (CIDR): • Gateway:
Admin Network subnets (CIDR)	

Information needed to connect and configure 10/25-GbE ports on SG6000-CN controller

The four 10/25-GbE ports on the SG6000-CN controller connect to the StorageGRID Grid Network and the optional Client Network.

Information needed	Your value
Link speed	Choose one: <ul style="list-style-type: none"> • Auto (default) • 10 GbE • 25 GbE
Port bond mode	Choose one: <ul style="list-style-type: none"> • 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)	
Switch port for port 4 (Grid Network for Fixed mode)	

Information needed to connect SG6000-CN controller to Grid Network

The Grid Network for StorageGRID is a required network, used for all internal StorageGRID traffic. The appliance connects to the Grid Network using the 10/25-GbE ports on the SG6000-CN controller.

Information needed	Your value
Network bond mode	Choose one: <ul style="list-style-type: none"> • Active-Backup (default) • LACP (802.3ad)
VLAN tagging enabled	Choose one: <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • IPv4 address (CIDR): • Gateway:
Static IP address you plan to use for the appliance Storage Node on the Grid Network Note: If your network does not have a gateway, specify the same static IPv4 address for the gateway.	<ul style="list-style-type: none"> • IPv4 address (CIDR): • Gateway:
Grid Network subnets (CIDRs)	

Information needed to connect SG6000-CN controller to Client Network

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 10/25-GbE ports on the SG6000-CN controller.

Information needed	Your value
Client Network enabled	Choose one: <ul style="list-style-type: none"> • No (default) • Yes
Network bond mode	Choose one: <ul style="list-style-type: none"> • Active-Backup (default) • LACP (802.3ad)
VLAN tagging enabled	Choose one: <ul style="list-style-type: none"> • No (default) • Yes

Information needed	Your value
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	<ul style="list-style-type: none"> • IPv4 address (CIDR): • Gateway:
Static IP address you plan to use for the appliance Storage Node on the Client Network	<ul style="list-style-type: none"> • IPv4 address (CIDR): • Gateway:
<p>Note: If the Client Network is enabled, the default route on the controller will use the gateway specified here.</p>	

Information needed to connect SG6000-CN controller to BMC management network

You can access the BMC interface on the SG6000-CN controller using the following 1-GbE management port. This port supports remote management of the controller hardware over Ethernet using the Intelligent Platform Management Interface (IPMI) standard.



You can enable or disable remote IPMI access for all appliances containing a BMC. The remote IPMI interface allows low-level hardware access to your StorageGRID appliances by anyone with a BMC account and password. If you do not need remote IPMI access to the BMC, disable this option using one of the following methods:

In Grid Manager, go to **CONFIGURATION > Security > Security settings > Appliances** and clear the **Enable remote IPMI access** checkbox.

In the Grid management API, use the private endpoint: `PUT /private/bmc`.

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	<ul style="list-style-type: none"> • IPv4 address (CIDR): • Gateway:
Static IP address you plan to use for the BMC management port	<ul style="list-style-type: none"> • IPv4 address (CIDR): • Gateway:

Port bond modes

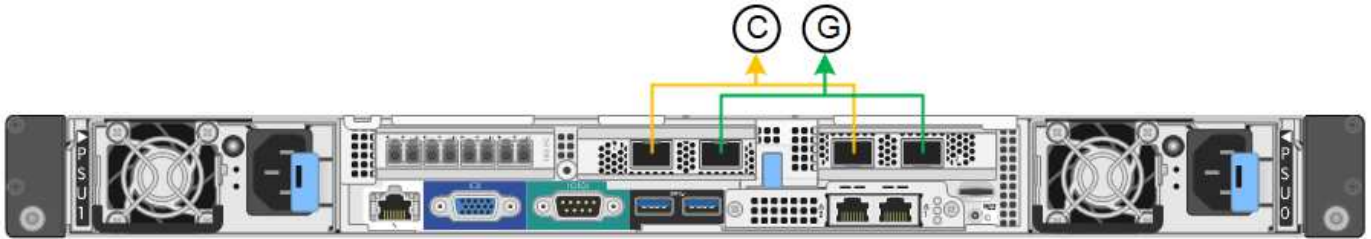
When [configuring network links](#) for the SG6000-CN controller, you can use port bonding for the 10/25-GbE ports that connect to the Grid Network and optional Client Network, and the 1-GbE management ports that connect to the optional Admin Network. Port bonding helps protect your data by providing redundant paths between StorageGRID networks and the appliance.

Network bond modes for 10/25-GbE ports

The 10/25-GbE networking ports on the SG6000-CN controller support Fixed port bond mode or Aggregate port bond mode for the Grid Network and Client Network connections.

Fixed port bond mode

Fixed mode is the default configuration for the 10/25-GbE networking ports.



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 controller 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.

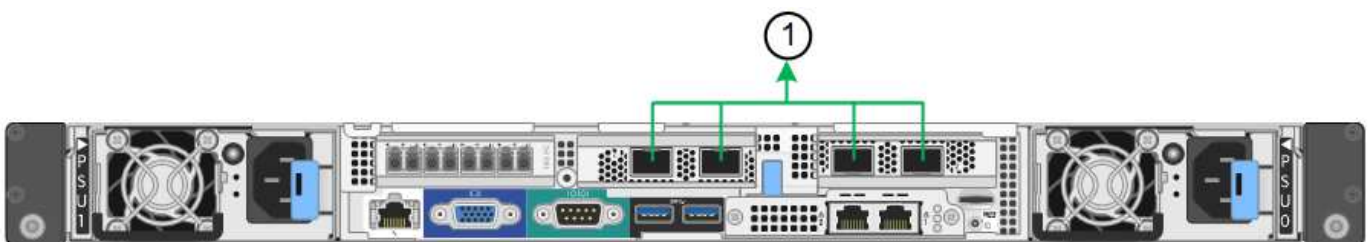


If you don't need redundant connections, you can use only one port for each network. However, be aware that an alert will be triggered in the Grid Manager after StorageGRID is installed, indicating that the link is down. Because this port is disconnected on purpose, you can safely disable this alert.

From the Grid Manager, select **Alert > Rules**, select the rule, and click **Edit rule**. Then, uncheck the **Enabled** checkbox.

Aggregate port bond mode

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



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 understand how to configure the switches to use VLAN, LACP, and MLAG, or equivalent.

If you don't want to use all four 10/25-GbE 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 10/25-GbE ports fails.



If you choose to use fewer than four ports, be aware that one or more alarms will be raised in the Grid Manager after StorageGRID is installed, indicating that cables are unplugged. You can safely acknowledge the alarms to clear them.

Network bond modes for 1-GbE management ports

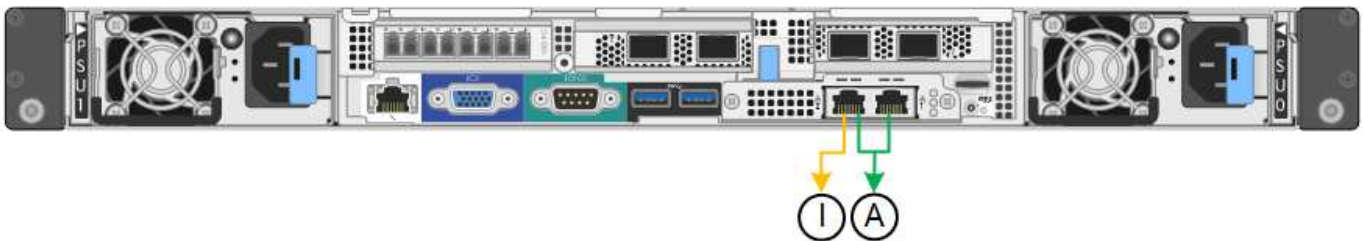
For the two 1-GbE management ports on the SG6000-CN controller, you can choose Independent network bond mode or Active-Backup network bond mode to connect to the optional Admin Network.

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 SG6000-CN controller 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	Both management ports are bonded into one logical management port connected to the Admin Network.
I	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).

Related information

- [SG6000 controllers](#)
- [Determine appliance network connections](#)
- [Port bond modes \(SG6000-CN controller\)](#)
- [Cable appliance](#)
- [Configure StorageGRID IP addresses](#)

Gather network information (SG6100)

Using the following tables, record the required information for each network you connect to the appliance. These values are required to install and configure the hardware.



Instead of using the tables, use the workbook provided with ConfigBuilder. Using the ConfigBuilder workbook allows you to upload your system information and generate a JSON file to automatically complete some configuration steps in the StorageGRID Appliance Installer. See [Automate appliance installation and configuration](#).

Check StorageGRID version

Before installing an SGF6112 appliance, confirm your StorageGRID system is using a required version of StorageGRID software.

Appliance	Required StorageGRID version
SGF6112	11.7 or later (latest hotfix recommended)

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 1/10-GbE ports on the appliance.

The following figure shows the RJ-45 ports on the SGF6112 appliance.



Information needed	Your value
Admin Network enabled	Choose one: <ul style="list-style-type: none"> • No • Yes (default)
Network bond mode	Choose one: <ul style="list-style-type: none"> • 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)	
DHCP-assigned IP address for the Admin Network port, if available after power on Note: Contact your network administrator for the Admin Network port DHCP-assigned IP address.	<ul style="list-style-type: none"> • IPv4 address (CIDR): • Gateway:
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.	<ul style="list-style-type: none"> • 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.

Information needed	Your value
Link speed	For the SGF6112, choose one of the following: <ul style="list-style-type: none"> • Auto (default) • 10 GbE • 25 GbE

Information needed	Your value
Port bond mode	Choose one: <ul style="list-style-type: none"> • 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)	
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.

Information needed	Your value
Network bond mode	Choose one: <ul style="list-style-type: none"> • Active-Backup (default) • LACP (802.3ad)
VLAN tagging enabled	Choose one: <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • IPv4 address (CIDR): • Gateway:
Grid Network subnets (CIDRs)	

Information needed	Your value
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.

Information needed	Your value
Client Network enabled	Choose one: <ul style="list-style-type: none"> • No (default) • Yes
Network bond mode	Choose one: <ul style="list-style-type: none"> • Active-Backup (default) • LACP (802.3ad)
VLAN tagging enabled	Choose one: <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • IPv4 address (CIDR): • Gateway:

BMC management network ports

You can access the BMC interface on the 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.



You can enable or disable remote IPMI access for all appliances containing a BMC. The remote IPMI interface allows low-level hardware access to your StorageGRID appliances by anyone with a BMC account and password. If you do not need remote IPMI access to the BMC, disable this option using one of the following methods:

In Grid Manager, go to **CONFIGURATION > Security > Security settings > Appliances** and clear the **Enable remote IPMI access** checkbox.

In the Grid management API, use the private endpoint: `PUT /private/bmc`.

The following figure shows the BMC management port on the SGF6112 appliance.



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	<ul style="list-style-type: none"> • IPv4 address (CIDR): • Gateway:
Static IP address you plan to use for the BMC management port	<ul style="list-style-type: none"> • IPv4 address (CIDR): • Gateway:

Port bond modes

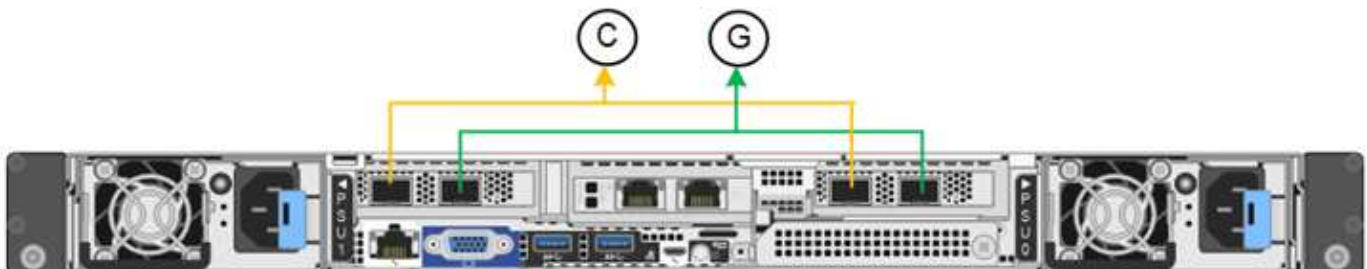
When [configuring network links](#) for the SGF6112 appliance, you can use port bonding for the ports that connect to the Grid Network and optional Client Network, and the 1/10-GbE management ports that connect to the optional Admin Network. Port bonding helps protect your data by providing redundant paths between StorageGRID networks and the appliance.

Network bond modes

The networking ports on the 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.



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).

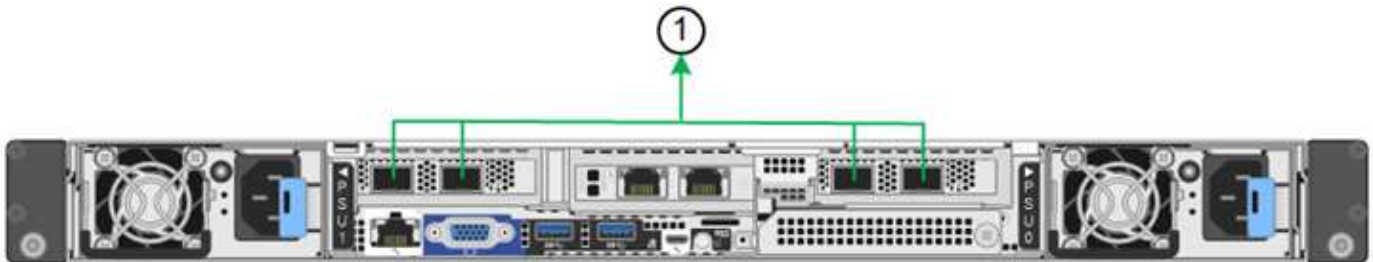
- In active-backup mode (default), only one port is active at a time. If the active port fails, its backup port automatically provides a failover connection. Port 4 provides a backup path for port 2 (Grid Network), and port 3 provides a backup path for port 1 (Client Network).
- In LACP mode, each pair of ports forms a logical channel between the 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 don't need redundant connections, you can use only one port for each network. However, be aware that the **Storage 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.



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 understand how to configure the switches to use VLAN, LACP, and MLAG, or equivalent.

If you don't want to use all four ports, you can use one, two, or three ports. Using more than one port

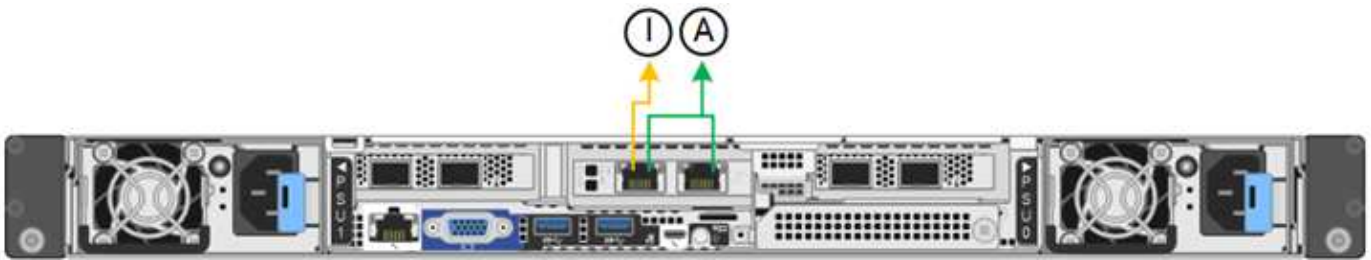
maximizes the chance that some network connectivity will remain available if one of the ports fails.



If you choose to use fewer than four network 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.

Network bond modes for management ports

For the two 1/10-GbE management ports, you can choose Independent network bond mode or Active-Backup network bond mode to connect to the optional Admin Network.



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).

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 appliance when the 1/10-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.

Related information

- [Cable appliance](#)
- [Configure StorageGRID IP addresses](#)

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