



StorageGRID® 11.2

Hardware Installation and Maintenance Guide

For StorageGRID SG6000 Series Appliances

August 2019 | 215-13574_2019-08_en-us
doccomments@netapp.com

Contents

StorageGRID appliance overview	5
Controllers in the SG6000 appliance	7
Installation overview	10
Preparing for installation	12
Preparing the site	12
Unpacking the boxes	13
Obtaining additional equipment and tools	14
Web browser requirements	15
Reviewing appliance network connections	16
Port bond modes for the SG6000-CN controller ports	16
Gathering installation information	19
Installing the hardware	24
Registering the hardware	24
Installing the E2860 controller shelf in a cabinet or rack	25
Installing drives in the E2860 controller shelf	27
Installing the SG6000-CN controller in a cabinet or rack	28
Cabling the appliance	29
Connecting power cords and applying power	31
Viewing boot-up status codes for the E2800 controllers	32
Viewing status indicators and buttons on the SG6000-CN controller	33
Configuring the hardware	35
Configuring StorageGRID connections	35
Accessing the StorageGRID Appliance Installer	35
Configuring network links	37
Configuring StorageGRID IP addresses	43
Verifying network connections	45
Verifying port-level network connections	46
Configuring SANtricity System Manager	47
Setting the IP addresses for the E2800 controllers	48
Accessing SANtricity System Manager	49
Setting up SANtricity System Manager	50
Reviewing the hardware status in SANtricity System Manager	51
Configuring the BMC interface	53
Changing the root password for the BMC interface	53
Setting the IP address for the BMC management port	54
Accessing the BMC interface	56
Configuring SNMP settings for the SG6000-CN controller	57
Optional: Changing the RAID mode	58
Optional: Remapping network ports for the appliance	59
Where to go next	60
Troubleshooting the hardware installation	61

Viewing boot-up codes for the SG6000-CN controller	61
Viewing error codes for the SG6000-CN controller	62
Hardware setup appears to hang	64
Troubleshooting connection issues	64
Unable to connect to the appliance	64
Rebooting the SG6000-CN controller while the StorageGRID Appliance Installer is running	65
Maintaining the SG6000 appliance	67
Upgrading SANtricity OS Software on the E2800 controllers	67
Replacing an E2800 controller	70
Replacing hardware components in the E2860 controller shelf	75
Replacing the SG6000-CN controller	75
Replacing a power supply in the SG6000-CN controller	77
Changing the link configuration of the SG6000-CN controller	79
Copyright	82
Trademark	83
How to send comments about documentation and receive update notifications	84

StorageGRID appliance overview

The StorageGRID SG6000 appliance is an integrated storage and computing platform that operates as a Storage Node in a StorageGRID grid. The appliance can be used in a hybrid grid environment that combines appliance Storage Nodes and virtual (software-based) Storage Nodes.

The SG6000 appliance provides the following features:

- Integrates the storage and computing elements for a StorageGRID Storage Node.
- Includes the StorageGRID Appliance Installer to simplify Storage Node deployment and configuration.
- Includes SANtricity System Manager for managing and monitoring the storage controllers and drives.
- Includes a baseboard management controller (BMC) for monitoring and diagnosing the hardware in the compute controller.
- Supports up to four 10-GbE or 25-GbE connections to the StorageGRID Grid Network and Client Network.
- Supports Federal Information Processing Standard (FIPS) drives. When these drives are used with the Drive Security feature in SANtricity System Manager, unauthorized access to data is prevented.

Model SG6060 components

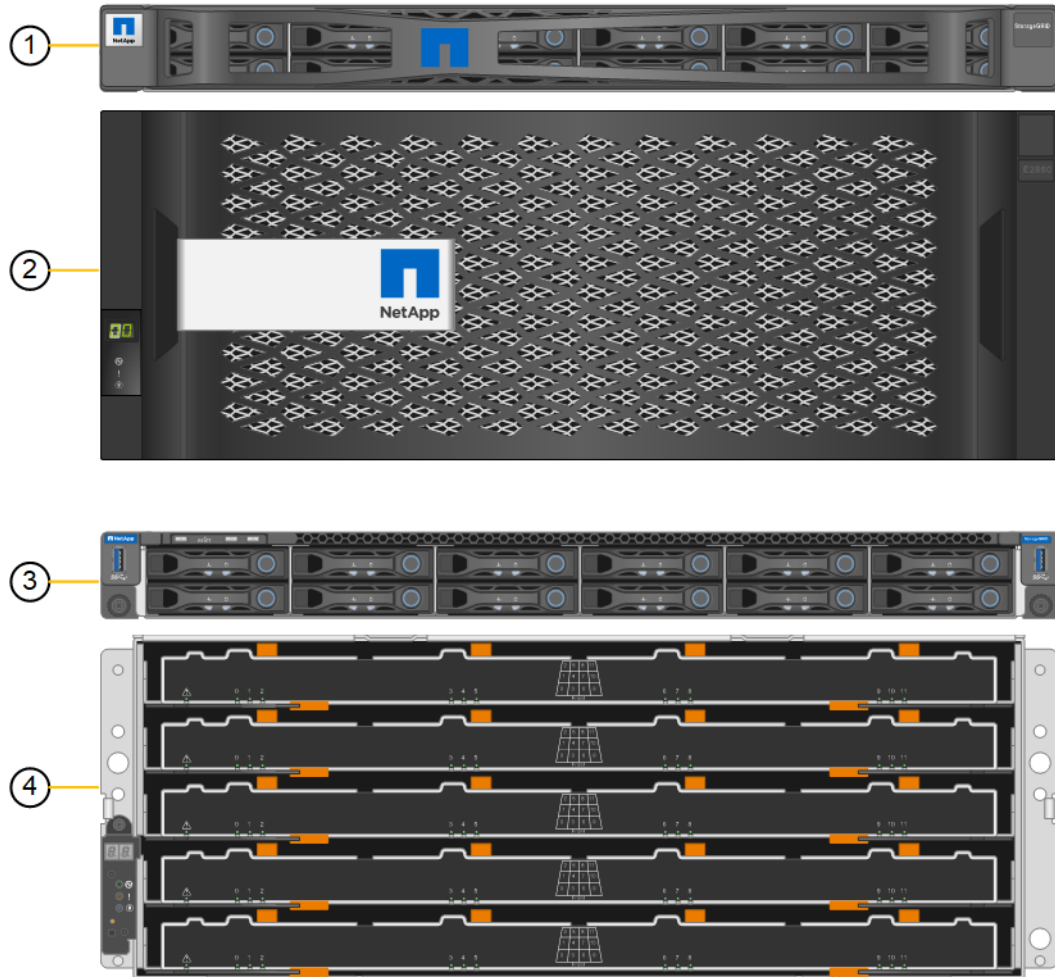
The SG6000 appliance is available in the SG6060 model, which includes the following components:

Component	Description
Compute controller	SG6000-CN controller, a one-rack unit (1U) server, which includes: • 40 cores (80 threads) • 192 GB RAM • Up to 4 x 25 Gbps aggregate Ethernet bandwidth • 4 x 16 Gbps Fibre Channel (FC) interconnect • Baseboard management controller (BMC) that simplifies hardware management • Redundant power supplies
Storage controller shelf	E-Series E2860 controller shelf (storage array), a 4U shelf which includes: • Two E-Series E2800 controllers (duplex configuration) to provide storage controller failover support • Five-drawer drive shelf that holds sixty 3.5-inch drives (2 SSD and 58 NL-SAS) • Redundant power supplies and fans

The maximum raw storage available in the StorageGRID appliance is limited to drives within the single storage controller shelf. You cannot expand the available storage by adding a shelf with additional drives.

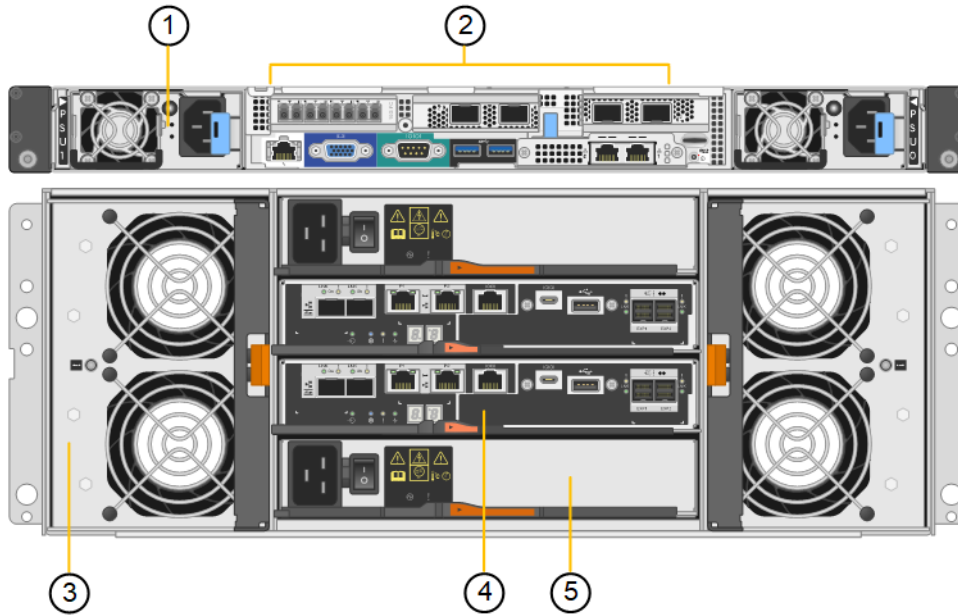
Model SG6060 diagrams

This figure shows the front of the SG6060 model, which includes a 1U compute controller, and a 4U enclosure containing the storage controllers and 60 drives in five drive drawers.



1	SG6000-CN compute controller with front bezel
2	E2860 controller shelf with front bezel
3	SG6000-CN compute controller with front bezel removed
4	E2860 controller shelf with front bezel removed

This figure shows the back of the SG6060 model, including the compute and storage controllers, fans, and power supplies.



1	Power supply (1 of 2) for SG6000-CN compute controller
2	Connectors for SG6000-CN compute controller
3	Fan (1 of 2) for E2860 controller shelf
4	E-Series E2800 storage controller (1 of 2) and connectors
5	Power supply (1 of 2) for E2860 controller shelf

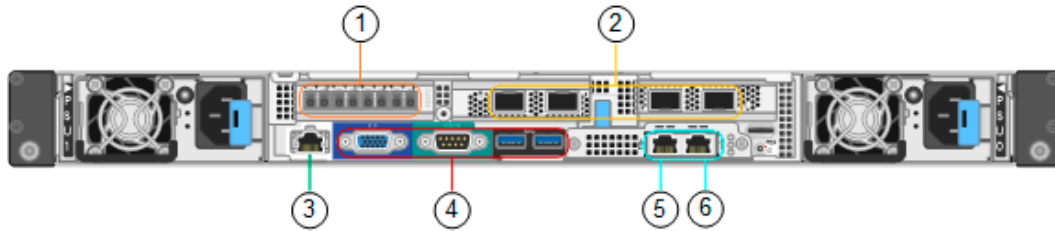
Controllers in the SG6000 appliance

The SG6060 model of the StorageGRID SG6000 appliance includes an SG6000-CN compute controller in a 1U enclosure and two E2800 storage controllers in a 4U, 60-drive controller shelf. Review the diagrams to learn more about each type of controller.

SG6000-CN compute controller

- Provides compute resources for the appliance.
- Includes the StorageGRID Appliance Installer.
 - Note:** StorageGRID software is not preinstalled on the appliance. This software is retrieved from the Admin Node when you deploy the appliance.
- Can connect to all three StorageGRID networks, including the Grid Network, the Admin Network, and the Client Network.
- Connects to the two E2800 controllers and operates as the initiator.

This figure shows the connectors on the back of the SG6000-CN.

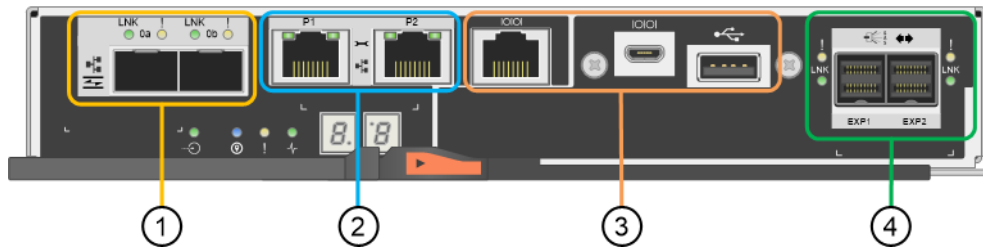


	Port	Type	Use
1	Interconnect ports 1-4	16-Gb/s Fibre Channel (FC), with integrated optics	Connect the SG6000-CN controller to the E2800 controllers (two connections to each E2800).
2	Network ports 1-4	10-GbE or 25-GbE, based on cable or SFP transceiver type, switch speed, and configured link speed	Connect to the Grid Network and the Client Network for StorageGRID.
3	BMC management port	1-GbE (RJ-45)	Connect to the SG6000-CN baseboard management controller.
4	Diagnostic and support ports	- VGA - Serial, 115200 8-N-1 - USB	Reserved for technical support use.
5	Admin Network port 1	1-GbE (RJ-45)	Connect the SG6000-CN to the Admin Network for StorageGRID.
6	Admin Network port 2	1-GbE (RJ-45)	Options: - Bond with management port 1 for a redundant connection to the Admin Network for StorageGRID. - Leave unwired and available for temporary local access (IP 169.254.0.1). - During installation, use port 2 for IP configuration if DHCP-assigned IP addresses are not available.

E2800 storage controllers

- Two controllers for failover support.
- Manage the storage of data on the drives.
- Function as standard E-Series controllers in a duplex configuration.
- Include SANtricity OS Software (controller firmware).
- Include SANtricity System Manager for monitoring storage hardware and for managing alerts, the AutoSupport feature, and the Drive Security feature.
- Connect to the SG6000-CN controller and provide access to the storage.

This figure shows the connectors on the back of each of the E2800 controllers.



	Port	Type	Use
1	Interconnect ports 1 and 2	16-Gb/s FC optical SFP+	Connect each of the E2800 controllers to the SG6000-CN controller. There are four connections to the SG6000-CN controller (two from each E2800).
2	Management ports 1 and 2	1-Gb (RJ-45) Ethernet	- Port 1 connects to the network where you access SANtricity System Manager on a browser. - Port 2 is reserved for technical support use.
3	Diagnostic and support ports	- RJ-45 serial port - Micro USB serial port - USB port	Reserved for technical support use.
4	Drive expansion ports	12Gb/s SAS	Not used. StorageGRID appliances do not support expansion drive shelves.

Installation overview

You can install one or more StorageGRID appliances when you first deploy StorageGRID, or you can add appliance Storage Nodes later as part of an expansion. You might also need to install an appliance Storage Node as part of a recovery operation.

Installing a StorageGRID appliance includes two primary phases.

Attention: Before you can use the SG6000 appliance as a Storage Node, you must install or upgrade to StorageGRID 11.1.1 or later.

1. Installing and configuring appliance hardware

The first phase of installing a StorageGRID appliance includes these steps:

1. Preparing for installation:
 - Preparing the installation site
 - Unpacking the boxes and checking the contents
 - Obtaining additional equipment and tools
 - Gathering IP addresses and network information
2. Installing the hardware:
 - Registering the hardware
 - Installing the appliance into a cabinet or rack
 - Installing the drives
 - Cabling the appliance
 - Connecting the power cords and applying power
 - Viewing boot-up status codes
3. Configuring the hardware:
 - Accessing SANtricity System Manager, setting a static IP address for management port 1 on the E2800 controller, and configuring SANtricity System Manager settings
 - Accessing StorageGRID Appliance Installer and configuring the link and network IP settings required to connect to StorageGRID networks
 - Accessing the baseboard management controller (BMC) interface on the SG6000-CN controller

2. Deploying an appliance Storage Node

After the appliance hardware has been installed and configured using these instructions, you can deploy the appliance as a Storage Node in a StorageGRID grid.

Task	Instructions
Deploying an appliance Storage Node in a new StorageGRID grid	StorageGRID installation instructions for your platform
Adding an appliance Storage Node to an existing StorageGRID grid	Instructions for expanding a StorageGRID grid

Task	Instructions
Deploying an appliance Storage Node as part of a Storage Node recovery operation	Instructions for recovery and maintenance

Related tasks

[Preparing for installation](#) on page 12

[Installing the hardware](#) on page 24

[Configuring the hardware](#) on page 35

Related information

[VMware installation](#)

[Red Hat Enterprise Linux or CentOS installation](#)

[Ubuntu or Debian installation](#)

[Expanding a StorageGRID system](#)

[Recovery and maintenance](#)

Preparing for installation

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.

Steps

1. [Preparing the site](#) on page 12
2. [Unpacking the boxes](#) on page 13
3. [Obtaining additional equipment and tools](#) on page 14
4. [Web browser requirements](#) on page 15
5. [Reviewing appliance network connections](#) on page 16
6. [Gathering installation information](#) on page 19

Preparing the site

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

Controller	Height	Width	Depth	Maximum weight
E2860 controller shelf, including: • Bezel • 60 drives • 2 power canisters • 2 controllers • 2 fan canisters	6.87 in. (17.46 cm)	17.66 in. (44.86 cm)	38.25 in. (97.16 cm)	250 lb. (113 kg)
SG6000-CN controller • Bezel • 2 power supplies	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.

Caution: Install hardware from the bottom to the top of the rack or cabinet to prevent the equipment from tipping over. To ensure that the heaviest equipment is at the bottom of the cabinet or rack, install the SG6000-CN controller above the E2860 controller shelf.

Attention: If you are installing multiple SG6060 appliances in the same rack, consider installing all the E2860 controller shelves toward the bottom, and the SG6000-CN controllers toward the top. Before committing to the installation, verify that the 0.5m optic cables shipped with the SG6060 appliance, or cables that you supply, are long enough for the planned layout.

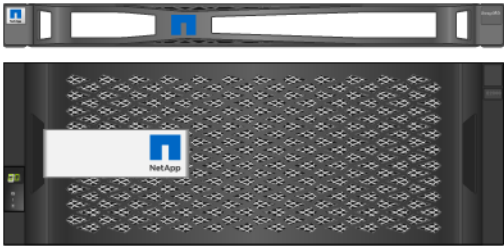
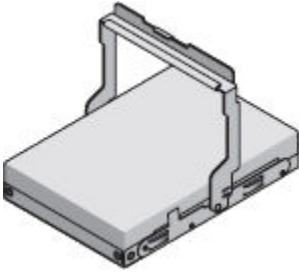
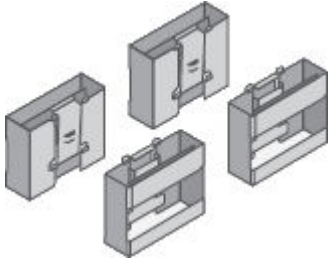
Related information

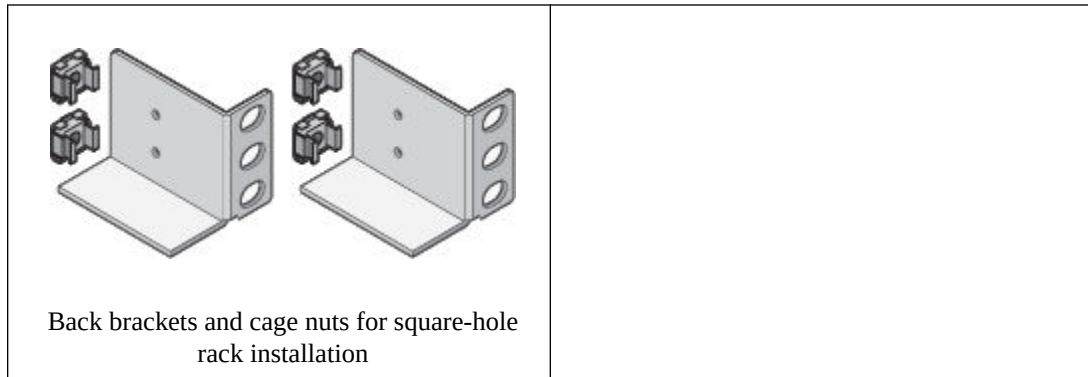
[NetApp Hardware Universe](#)

[NetApp Interoperability Matrix Tool](#)

Unpacking the boxes

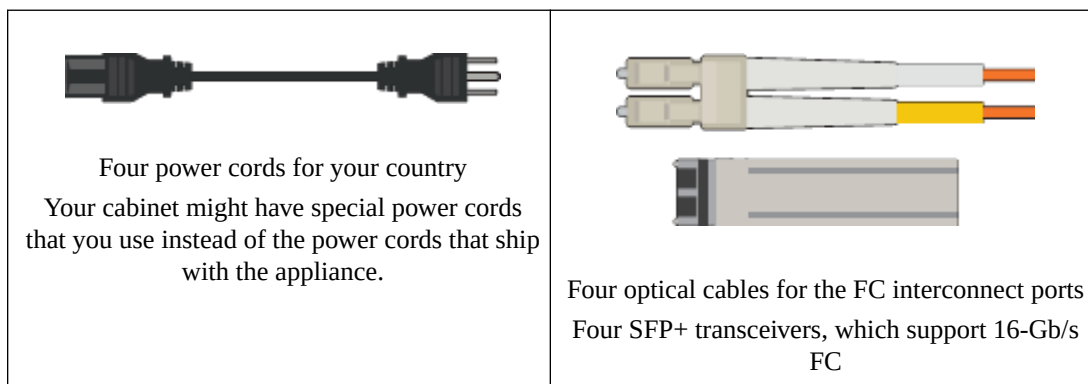
Before installing the StorageGRID appliance, unpack all boxes and compare the contents to the items on the packing slip.

 SG6000-CN controller	 E2860 controller shelf with no drives installed
 Two front bezels	 Two rail kits with instructions
 60 drives (2 SSD and 58 NL-SAS)	 Four handles



Cables and connectors

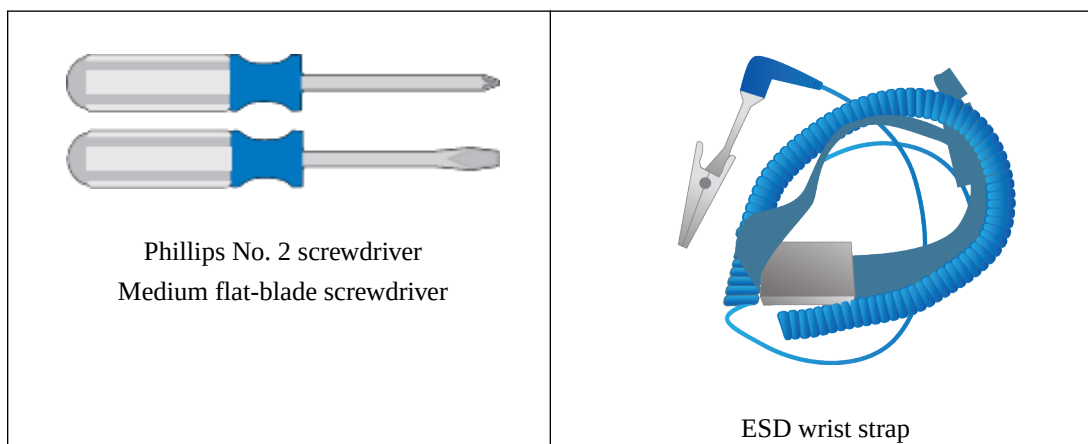
The shipment for the StorageGRID appliance includes the following cables and connectors:

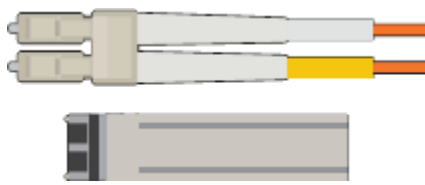


Obtaining additional equipment and tools

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:



 You need one of the following options: • One to four TwinAx cables or optical cables for the 10/25-GbE ports you plan to use on the SG6000-CN controller • One to four SFP+ transceivers for the 10/25-GbE ports if you will use optical cables and 10-GbE link speed • One to four SFP28 transceivers for the 10/25-GbE ports if you will use optical cables and 25-GbE link speed	 RJ-45 (Cat5/Cat5e/Cat6) Ethernet cables (four minimum)
Service laptop  Supported web browser 1-GbE (RJ-45) port	Optional tools  Power drill with Phillips head bit Flashlight Mechanized lift for E2860 controller shelf

Web browser requirements

You must use a supported web browser.

Web browser	Minimum supported version
Google Chrome	70
Microsoft Internet Explorer	11 (Native Mode)
Mozilla Firefox	63

You should set the browser window to a recommended width.

Browser width	Pixels
Minimum	1024
Optimum	1280

Reviewing appliance network connections

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

When you deploy a StorageGRID appliance as a Storage Node in a StorageGRID grid, 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. The Client Network is optional.
- **Management network for SANtricity System Manager:** This network provides access to SANtricity System Manager on the E2800 controller, allowing you to monitor and manage the hardware components in the E2860 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 for the SG6000-CN controller:** This network provides access to the baseboard management controller in the SG6000-CN, allowing you to monitor and manage the hardware components in the SG6000-CN controller. This management network can be the same as the Admin Network for StorageGRID, or it can be an independent management network.

Note: For detailed information about StorageGRID networks, see the installation instructions for your platform.

Related concepts

[Port bond modes for the SG6000-CN controller ports](#) on page 16

Related tasks

[Gathering installation information](#) on page 19

[Cabling the appliance](#) on page 29

Related information

[VMware installation](#)

[Red Hat Enterprise Linux or CentOS installation](#)

[Ubuntu or Debian installation](#)

Port bond modes for the SG6000-CN controller ports

When configuring network links for the SG6000-CN controller controller ports, 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.

Related tasks

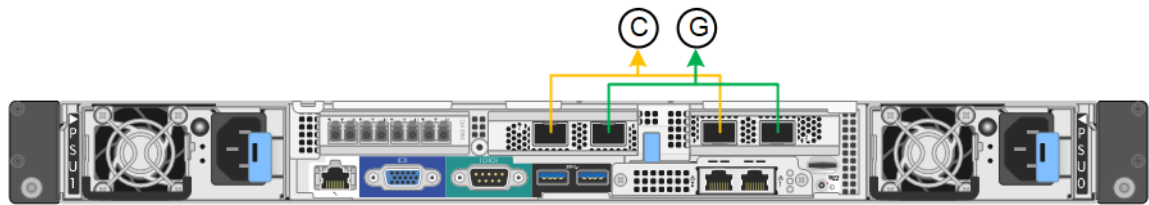
[Configuring network links](#) on page 37

Network bond modes for the 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.

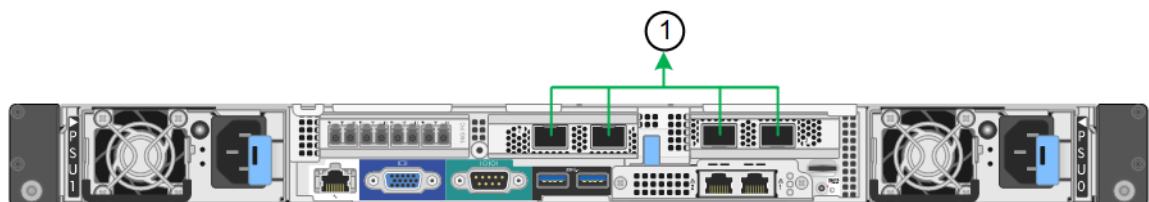
When using Fixed port bond mode, the ports can be bonded using active-backup mode or Link Aggregation Control Protocol mode (LACP 802.3ad).

- 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 provides a failover connection. Throughput is reduced, but connectivity is not impacted.

Note: If you do not 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 must understand how to configure the switches to use VLAN, LACP, and MLAG, or equivalent.

If you do not 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.

Note: 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.

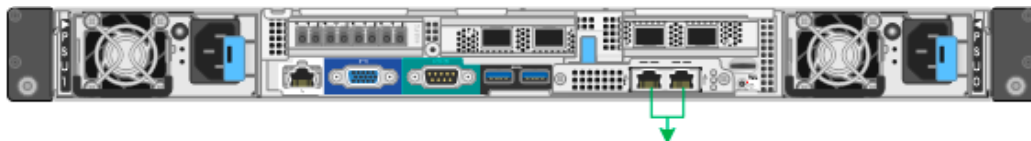
Network bond modes for the 1-GbE management ports

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 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.

Note: 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 management port 2, and access the appliance using IP address 169.254.0.1.



Gathering installation information

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.

About this task

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

Table 1: Information needed to connect to SANtricity System Manager on the E2800 controllers

You must connect both E2800 controllers to the management network you will use for SANtricity System Manager.

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 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.		
Static IP address you plan to use for the appliance on the management network	For IPv4: - IPv4 address: - Subnet mask: - Gateway: For IPv6: - IPv6 address: - Routable IP address: - E2800 controller router IP address:	For IPv4: - IPv4 address: - Subnet mask: - Gateway: For IPv6: - IPv6 address: - Routable IP address: - E2800 controller router IP address:
IP address format	Choose one: - 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: Autonegotiate (default)	

Table 2: Information needed to connect the SG6000-CN controller to the 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: - No - Yes (default)
Network bond mode	Choose one: - Independent - Active-Backup
Switch port for port 1 (the left port circled in the diagram)	
Switch port for port 2 (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 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.	- 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.	- IPv4 address (CIDR): - Gateway:
Admin Network subnets (CIDR)	

Table 3: Information needed to connect and configure the 10/25-GbE ports on the 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: 10 GbE (default) 25 GbE
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)	
Switch port for port 4 (Grid Network for Fixed mode)	

Table 4: Information needed to connect the SG6000-CN controller to the 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: - 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 Storage 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 (CIDR)	

Table 5: Information needed to connect the SG6000-CN controller to the 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: - 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:

Information needed	Your value
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 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.	- IPv4 address (CIDR): - Gateway:

Table 6: Information needed to connect the SG6000-CN controller to the 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.



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 concepts

[Port bond modes for the SG6000-CN controller ports](#) on page 16

Related tasks

[Cabling the appliance](#) on page 29

Related references

[Controllers in the SG6000 appliance](#) on page 7

[Reviewing appliance network connections](#) on page 16

Installing the hardware

Hardware installation entails installing the SG6000-CN controller and the E2860 controller shelf into a cabinet or rack, connecting the cables, and applying power.

Steps

1. [Registering the hardware](#) on page 24
2. [Installing the E2860 controller shelf in a cabinet or rack](#) on page 25
3. [Installing drives in the E2860 controller shelf](#) on page 27
4. [Installing the SG6000-CN controller in a cabinet or rack](#) on page 28
5. [Cabling the appliance](#) on page 29
6. [Connecting power cords and applying power](#) on page 31
7. [Viewing boot-up status codes for the E2800 controllers](#) on page 32
8. [Viewing status indicators and buttons on the SG6000-CN controller](#) on page 33

Registering the hardware

Registering the appliance hardware provides support benefits.

Steps

1. Locate the chassis serial number for the E2860 controller shelf.

You can find the number on the packing slip, in your confirmation email, or on the appliance after you unpack it.



2. Go to the NetApp Support Site at mysupport.netapp.com.
3. Determine whether you need to register the hardware:

If you are a...	Follow these steps...
Existing NetApp customer	a. Sign in with your username and password. b. Select Products > My Products. c. Confirm that the new serial number is listed. d. If it is not, follow the instructions for new NetApp customers.
New NetApp customer	a. Click Register Now, and create an account. b. Select Products > Register Products. c. Enter the product serial number and requested details. After your registration is approved, you can download any required software. The approval process might take up to 24 hours.

Installing the E2860 controller shelf in a cabinet or rack

You must install a set of rails for the E2860 controller shelf in your cabinet or rack, and then slide the controller shelf onto the rails.

Before you begin

- You have reviewed the Safety Notices document included in the box, and understand the precautions for moving and installing hardware.
- You have the instructions packaged with the rail kit.

Caution: The appliance weighs approximately 132 lb (60 kg) without drives installed. Four people or a mechanized lift are required to safely move the appliance.

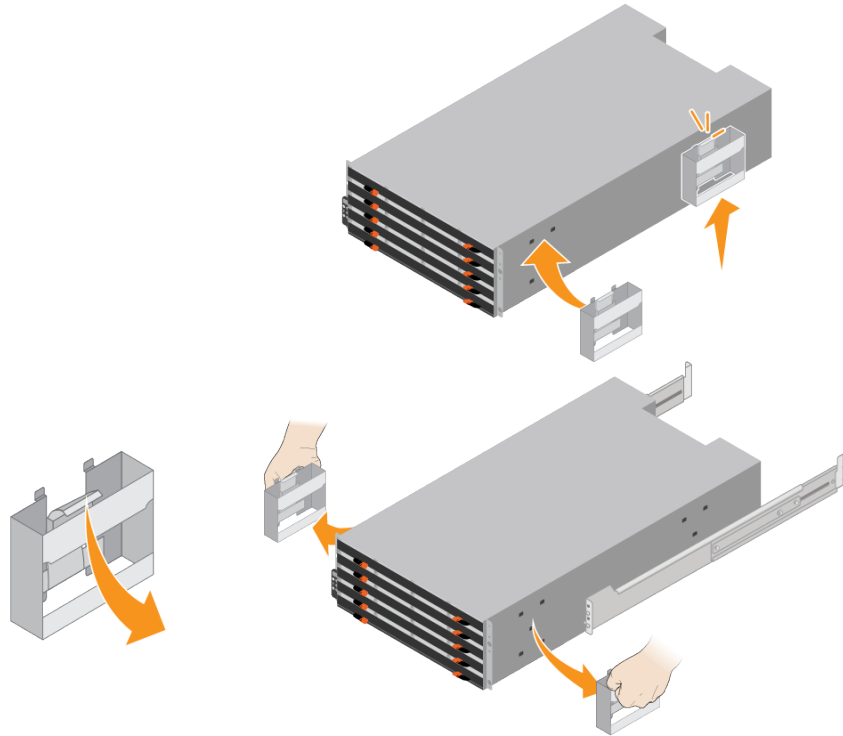
Caution: To avoid damaging the hardware, never move the appliance if drives are installed. You must remove all drives before moving the shelf.

Caution: Install hardware from the bottom to the top of the rack or cabinet to prevent the equipment from tipping over. To ensure that the heaviest equipment is at the bottom of the cabinet or rack, install the SG6000-CN controller above the E2860 controller shelf.

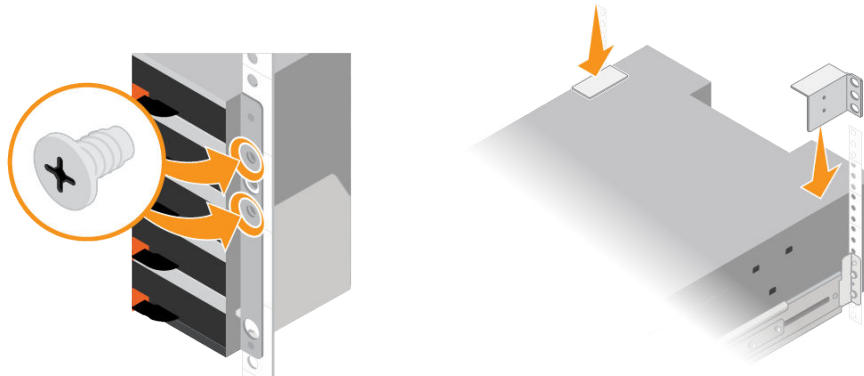
Attention: If you are installing multiple SG6060 appliances in the same rack, consider installing all the E2860 controller shelves toward the bottom, and the SG6000-CN controllers toward the top. Before committing to the installation, verify that the 0.5m optic cables shipped with the SG6060 appliance, or cables that you supply, are long enough for the planned layout.

Steps

1. Carefully follow the instructions for the rail kit to install the rails in your cabinet or rack.
For square hole cabinets, you must first install the provided cage nuts to secure the front and rear of the shelf with screws.
2. Remove the outer packing box for the appliance. Then, fold down the flaps on the inner box.
3. If you are lifting the appliance by hand, attach the four handles to the sides of the chassis.
Push up on each handle until it clicks into place.



4. Place the back of the shelf (the end with the connectors) on the rails.
5. Supporting the shelf from the bottom, slide it into the cabinet. If you are using the handles, use the thumb latches to detach one handle at a time as you slide the shelf in.
To remove the handles, pull back on the release latch, push down, then pull away from the shelf.
6. Secure the shelf to the front of the cabinet.
Insert screws into the first and third holes from the top of the shelf on both sides.
7. Secure the shelf to the rear of the cabinet.
Place two back brackets on each side of the upper rear section of the shelf. Insert screws into the first and third holes of each bracket.



Installing drives in the E2860 controller shelf

After installing the E2860 controller shelf into a cabinet or rack, you must install all 60 drives into the shelf. The shipment includes two SSD drives, which you should install in the top drawer.

Before you begin

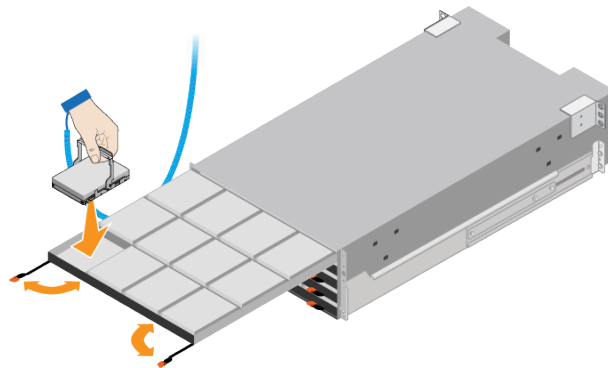
You have installed the E2860 controller shelf in the cabinet or rack.

Caution: To avoid damaging the hardware, never move the appliance if drives are installed. You must remove all drives before moving the shelf.

Steps

1. Wrap the strap end of the ESD wristband around your wrist, and secure the clip end to a metal ground to prevent static discharge.
2. Remove the drives from their packaging.
3. Locate the two SSD drives.
4. Release the levers on the top drive drawer, and slide the drawer out using the levers.
5. Install the two SSD drives in slots 0 and 1 (the first two slots along the lefthand side of the drawer).

Gently position each drive into its slot, and lower the raised drive handle until it clicks into place.



6. Install 10 HDD drives into the top drawer.
7. Slide the drawer back in by pushing on the center and closing both levers gently.

Attention: Stop pushing the drawer if you feel binding. Use the release levers at the front of the drawer to slide the drawer back out. Then, carefully reinsert the drawer into the slot.
8. Repeat these steps to install HDD drives into the other four drawers.

Attention: You must install all 60 drives to ensure correct operation.
9. Attach the front bezel to the shelf.

Installing the SG6000-CN controller in a cabinet or rack

You must install a set of rails for the SG6000-CN controller in your cabinet or rack, and then slide the controller onto the rails.

Before you begin

- You have reviewed the Safety Notices document included in the box, and understand the precautions for moving and installing hardware.
- You have the instructions packaged with the rail kit.
- You have installed the E2860 controller shelf and drives.

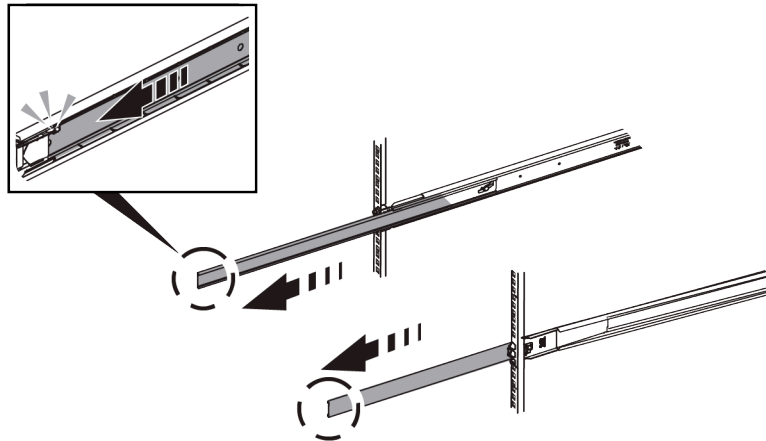
About this task

Caution: Install hardware from the bottom to the top of the rack or cabinet to prevent the equipment from tipping over. To ensure that the heaviest equipment is at the bottom of the cabinet or rack, install the SG6000-CN controller above the E2860 controller shelf.

Attention: If you are installing multiple SG6060 appliances in the same rack, consider installing all the E2860 controller shelves toward the bottom, and the SG6000-CN controllers toward the top. Before committing to the installation, verify that the 0.5m optic cables shipped with the SG6060 appliance, or cables that you supply, are long enough for the planned layout.

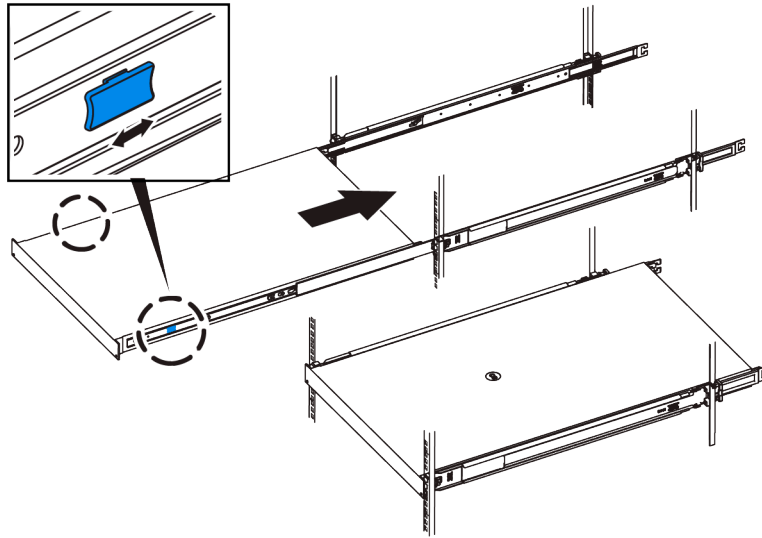
Steps

1. Carefully follow the instructions for the rail kit to install the rails in your cabinet or rack.
2. On the two rails installed in the cabinet or rack, extend the movable parts of the rails until you hear a click.



3. Insert the SG6000-CN controller into the rails.
4. Slide the controller into the cabinet or rack.

When you cannot move the controller any further, pull the blue latches on both sides of the chassis to slide the controller all the way in.



Note: Do not attach the front bezel until after you power on the controller.

Cabling the appliance

You must connect the two E2800 controllers to the SG6000-CN controller, connect the management ports on all three controllers, and connect the 10/25-GbE ports on the SG6000-CN controller to the Grid Network and optional Client Network for StorageGRID.

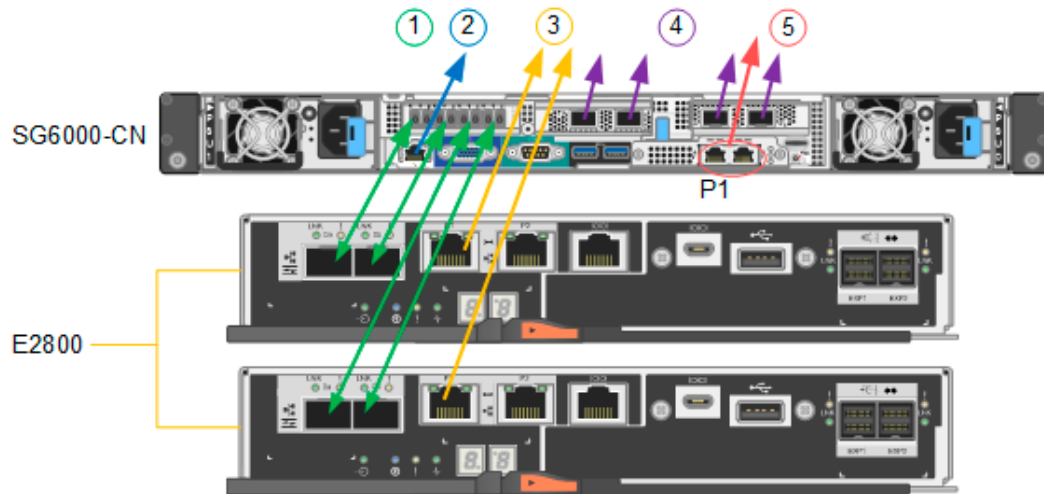
Before you begin

- You have the four optical cables provided with the appliance for connecting the two E2800 controllers to the SG6000-CN controller.
- You have Ethernet cables (four minimum) for connecting the management ports.
- You have one of the following options for the network ports. These items are not provided with the appliance.
 - One to four TwinAx cables for connecting the four 10/25-GbE ports.
 - One to four SFP+ or SFP28 transceivers if you plan to use optical cables for the ports.

Caution: Risk of exposure to laser radiation – Do not disassemble or remove any part of an SFP transceiver. You might be exposed to laser radiation.

About this task

The figure shows the three controllers in the SG6060 appliance model, with the SG6000-CN controller on the top and the two E2800 controllers on the bottom.



	Port	Type of port	Function
1	FC connection ports: 4 on the SG6000-CN controller 2 on each E2800 controller	16-Gb/s FC optical SFP+	Connect each E2800 controller to the SG6000-CN controller.
2	BMC management port on the SG6000-CN controller	1-GbE (RJ-45)	Connects to the network where you access the BMC interface.
3	Management port 1 on each E2800 controller	1-GbE (RJ-45)	Connects to the network where you access SANtricity System Manager.
	Management port 2 on each E2800 controller	1-GbE (RJ-45)	Reserved for technical support.
4	Four network ports on the SG6000-CN controller	10/25-GbE	Connect to the Grid Network and the Client Network for StorageGRID.
5	Admin Network port on the SG6000-CN controller (labelled P1 in the figure)	1-GbE (RJ-45)	Connects the SG6000-CN controller to the Admin Network for StorageGRID.
	Rightmost RJ-45 port on the SG6000-CN controller	1-GbE (RJ-45)	- Can be bonded with management port 1 if you want a redundant connection to the Admin Network. - Can be left unwired and available for temporary local access (IP 169.254.0.1). - During installation, can be used to connect the SG6000-CN controller to a service laptop if DHCP-assigned IP addresses are not available.

Steps

1. Connect the two FC ports on each E2800 controller to the FC ports on the SG6000-CN controller, using four optical cables and four SFP+ transceivers for the E2800 controllers.
2. Connect the BMC management port on the SG6000-CN controller to the management network, using an Ethernet cable.

Although this connection is optional, it is recommended to facilitate support.

3. Connect management port 1 (P1) on each E2800 controller (the RJ-45 port on the left) to the management network for SANtricity System Manager, using an Ethernet cable.

Do not use management port 2 (P2) on the E2800 controllers (the RJ-45 port on the right). This port is reserved for technical support.

4. If you plan to use the Admin Network for StorageGRID, connect the Admin Network port on the SG6000-CN controller to the Admin Network, using an Ethernet cable.
5. Connect the 10/25-GbE ports on the SG6000-CN controller to the appropriate network switches, using TwinAx cables or optical cables and SFP+ or SFP28 transceivers.

Note: The four network ports must use the same link speed. Install SFP+ transceivers if you plan to use 10-GbE link speeds. Install SFP28 transceivers if you plan to use 25-GbE link speeds.

- If you plan to use Fixed port bond mode (default), connect the ports to the StorageGRID Grid and Client Networks, as shown in the table.

Port	Connects to...
Port 1	Client Network (optional)
Port 2	Grid Network
Port 3	Client Network (optional)
Port 4	Grid Network

- If you plan to use the Aggregate port bond mode, connect one or more of the network ports to one or more switches. You should connect at least two of the four ports to avoid having a single point of failure. If you use more than one switch for a single LACP bond, the switches must support MLAG or equivalent.

Related concepts

[Port bond modes for the SG6000-CN controller ports](#) on page 16

Connecting power cords and applying power

After connecting the network cables, you are ready to apply power to the SG6000-CN controller and to the E2860 controller shelf.

Steps

1. Confirm that the two power switches on back of the E2860 controller shelf are off.

Caution: Risk of electrical shock – Before connecting the power cords, make sure that the two power switches on the E2860 controller shelf are off.

2. Connect a power cord to each of the two power supply units in the SG6000-CN controller.

3. Connect these two power cords to two different power distribution units (PDUs) in the cabinet or rack.
4. Connect a power cord to each of the two power supply units in the E2860 controller shelf.
5. Connect these two power cords to two different PDUs in the cabinet or rack.
6. If the power button on the front of the SG6000-CN controller is not currently illuminated blue, press the button to turn on power to the controller.
Do not press the power button again during the power-on process.
7. Turn on the two power switches on the back of the E2860 controller shelf.
 - Do not turn off the power switches during the power-on process.
 - The fans in the E2860 controller shelf are very loud when they first start up. The loud noise during start-up is normal.
8. After the components have booted up, check their status.
 - Check the seven-segment display on the back of each E2800 controller. Refer to the topic about viewing boot-up status codes for more information.
 - Verify that the power button on the front of the SG6000-CN controller is lit.
9. If errors occur, correct any issues.
10. Attach the front bezel to the SG6000-CN controller.

Related tasks

[Viewing boot-up status codes for the E2800 controllers](#) on page 32

Related references

[Viewing status indicators and buttons on the SG6000-CN controller](#) on page 33

Viewing boot-up status codes for the E2800 controllers

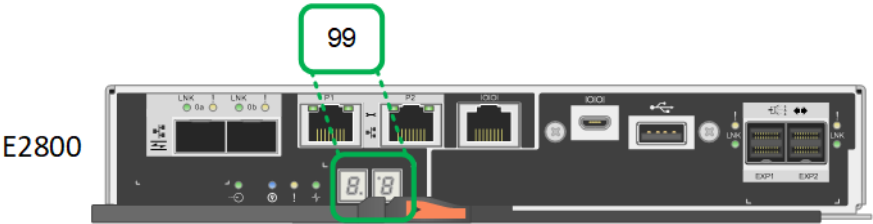
Each E2800 controller has a seven-segment display that provides status codes as the controller powers up.

About this task

For descriptions of these codes, see the *E5700 and E2800 System Monitoring Guide*.

Steps

1. During boot-up, monitor progress by viewing the codes shown on the seven-segment display for each E2800 controller.
The seven-segment display on each E2800 controller shows the repeating sequence **OS**, **Sd**, **b1ank** to indicate that the controller is performing start-of-day processing.
2. After the controllers have booted up, confirm that each E2800 controller shows 99, which is the default ID for an E-Series controller shelf.
Make sure this value is displayed on both E2800 controllers.



3. If one or both controllers show other values, see the information about troubleshooting the hardware installation, and confirm you completed the installation steps correctly. If you are unable to resolve the problem, contact technical support.

Related references

[Troubleshooting the hardware installation](#) on page 61

Related information

[E5700 and E2800 System Monitoring Guide](#)

[NetApp Support](#)

Viewing status indicators and buttons on the SG6000-CN controller

The SG6000-CN controller includes indicators that help you determine the status of the controller, including the following indicators and buttons.



	Display	State	Description
1	Power button	Blue	The controller is powered on.
		Off	The controller is powered off.
2	Reset button	<i>Not applicable</i>	Use this button to perform a hard reset of the controller.
3	Identify button	Blinking blue	Identifies the controller in the cabinet or rack. This button can be set to Blink, On (Solid), or Off.
		Solid blue	
		Off	The controller is not visually identifiable in the cabinet or rack.
4	Alarm LED	Amber	An error has occurred. Note: To view the boot-up and error codes, you must access the BMC interface.
		Off	No errors are present.

General boot-up codes

During boot-up or after a hard reset of the SG6000-CN controller, the following occurs:

1. The baseboard management controller (BMC) logs codes for the boot-up sequence, including any errors that occur.
2. The power button lights up.
3. If any errors occur during boot-up, the alarm LED lights up.
To view the boot-up and error codes, you must access the BMC interface.

Related tasks

[Configuring the BMC interface](#) on page 53

Related references

[Troubleshooting the hardware installation](#) on page 61

Configuring the hardware

After applying power to the appliance, you must configure SANtricity System Manager, which is the software you will use to monitor the E2800 controllers and other hardware in the E2860 controller shelf. You must also configure the network connections that will be used by StorageGRID and ensure that you can access the BMC interface for the SG6000-CN controller.

Steps

1. [Configuring StorageGRID connections](#) on page 35
2. [Configuring SANtricity System Manager](#) on page 47
3. [Configuring the BMC interface](#) on page 53
4. [Optional: Changing the RAID mode](#) on page 58
5. [Optional: Remapping network ports for the appliance](#) on page 59

Configuring StorageGRID connections

Before you can deploy a StorageGRID appliance as a Storage Node in a StorageGRID grid, you must configure the connections between the appliance and the networks you plan to use. You can configure networking by browsing to the StorageGRID Appliance Installer, which is included on the SG6000-CN controller (the compute controller).

Steps

1. [Accessing the StorageGRID Appliance Installer](#) on page 35
2. [Configuring network links](#) on page 37
3. [Configuring StorageGRID IP addresses](#) on page 43
4. [Verifying network connections](#) on page 45
5. [Verifying port-level network connections](#) on page 46

Accessing the StorageGRID Appliance Installer

You must access the StorageGRID Appliance Installer to configure the connections between the appliance and the three StorageGRID networks: the Grid Network, the Admin Network (optional), and the Client Network (optional).

Before you begin

- You are using any management client that can connect to the StorageGRID Admin Network, or you have a service laptop.
- The client or service laptop has a supported web browser.
- The SG6000-CN controller is connected to all of the StorageGRID networks you plan to use.
- You know the IP address, gateway, and subnet for the SG6000-CN controller on these networks.
- You have configured the network switches you plan to use.

About this task

To initially access the StorageGRID Appliance Installer, you can use the DHCP-assigned IP address for the Admin Network port on the SG6000-CN controller (assuming the controller is connected to the Admin Network), or you can connect a service laptop directly to the SG6000-CN controller.

Steps

1. If possible, use the DHCP address for the Admin Network port on the SG6000-CN controller to access the StorageGRID Appliance Installer.



- a. Locate the MAC address label on the front of the SG6000-CN controller, and determine the MAC address for the Admin Network port.

The MAC address label 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 =**.

- b. Provide the MAC address to your network administrator, so they can look up the DHCP address for the appliance on the Admin Network.
- c. From the client, enter this URL for the StorageGRID Appliance Installer:

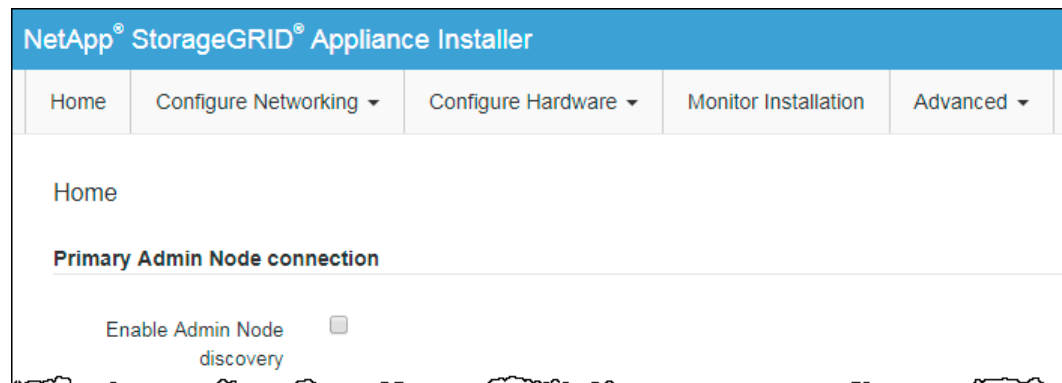
`https://SG6000-CN_Controller_IP:8443`

For *SG6000-CN_Controller_IP*, use the DHCP address.

- d. If you are prompted with a security alert, view and install the certificate using the browser's installation wizard.

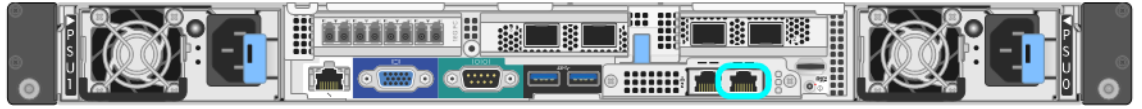
The alert will not appear the next time you access this URL.

The StorageGRID Appliance Installer Home page appears. The information and messages shown when you first access this page depend on how your appliance is currently connected to StorageGRID networks. Error messages might appear that will be resolved in later steps.



2. If you cannot obtain an IP address using DHCP, you can use a link-local connection.

- a. Connect a service laptop directly to the rightmost RJ-45 port on the SG6000-CN controller, using an Ethernet cable.



- b. Open a web browser on the service laptop.
- c. Enter this URL for the StorageGRID Appliance Installer:

https://169.254.0.1:8443

The StorageGRID Appliance Installer Home page appears. The information and messages shown when you first access this page depend on how your appliance is currently connected.

Note: If you cannot access the Home page over a link-local connection, configure the service laptop IP address as 169.254.0.2, and try again.

3. Review any messages displayed on the Home page and configure the link configuration and the IP configuration, as required.

Related references

[Web browser requirements](#) on page 15

Configuring network links

You can configure network links for the ports used to connect the appliance to the Grid Network, the Client Network, and the Admin Network. You can set the link speed as well as the port and network bond modes.

Before you begin

If you plan to use the 25-GbE link speed:

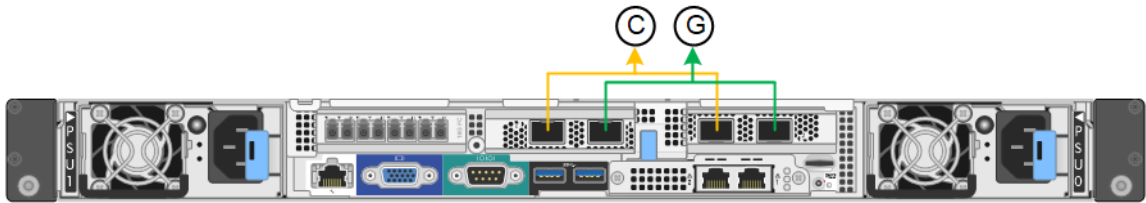
- You are using SFP28 TwinAx cables, or you have installed SFP28 transceivers in the 10/25-GbE ports you plan to use.
- You have connected the 10/25-GbE ports to switches that can support these features.
- You understand how to configure the switches to use this higher speed.

If you plan to use Aggregate port bond mode, LACP network bond mode, or VLAN tagging:

- You have connected the 10/25-GbE ports on the appliance to switches that can support VLAN and LACP.
- If multiple switches are participating in the LACP bond, the switches support multi-chassis link aggregation groups (MLAG), or equivalent.
- You understand how to configure the switches to use VLAN, LACP, and MLAG or equivalent.
- You know the unique VLAN tag to use for each network. This VLAN tag will be added to each network packet to ensure that network traffic is routed to the correct network.

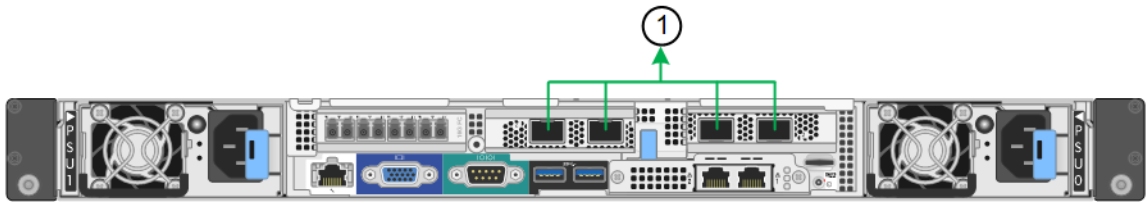
About this task

This figure shows how the four 10/25-GbE ports are bonded in fixed port bond mode (default configuration).



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.

This figure shows how the four 10/25-GbE ports are bonded in aggregate port bond mode.



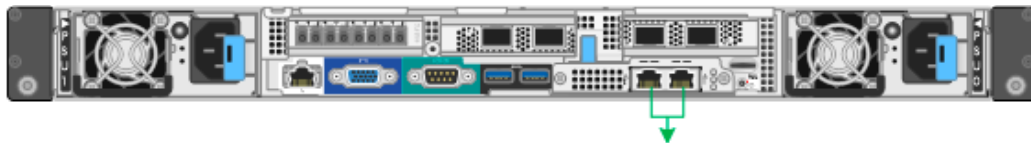
Callout	Which ports are bonded
1	All four ports are grouped in a single LACP bond, allowing all ports to be used for Grid Network and Client Network traffic.

The table summarizes the options for configuring the four 10/25-GbE ports. The default settings are shown in bold. You only need to configure the settings on the Link Configuration page if you want to use a non-default setting.

Port bond mode	Network bond mode	Client Network disabled (default)	Client Network enabled
Fixed (default)	Active-Backup (default)	• Ports 2 and 4 use an active-backup bond for the Grid Network. • Ports 1 and 3 are not used. • A VLAN tag is optional.	• Ports 2 and 4 use an active-backup bond for the Grid Network. • Ports 1 and 3 use an active-backup bond for the Client Network. • VLAN tags can be specified for both networks for the convenience of the network administrator.
	LACP (802.3ad)	• Ports 2 and 4 use an LACP bond for the Grid Network. • Ports 1 and 3 are not used. • A VLAN tag is optional.	• Ports 2 and 4 use an LACP bond for the Grid Network. • Ports 1 and 3 use an LACP bond for the Client Network. • VLAN tags can be specified for both networks for the convenience of the network administrator.
Aggregate	LACP (802.3ad) only	• Ports 1-4 use a single LACP bond for the Grid Network. • A single VLAN tag identifies Grid Network packets.	• Ports 1-4 use a single LACP bond for the Grid Network and the Client Network. • Two VLAN tags allow Grid Network packets to be segregated from Client Network packets.

See “10/25-GbE port connections for the SG6000-CN controller” for more information about port bond and network bond modes.

This figure shows how the two 1-GbE management ports on the SG6000-CN controller are bonded in Active-Backup network bond mode for the Admin Network.



Steps

1. From the menu bar of the StorageGRID Appliance Installer, click **Configure Networking > Link Configuration**.

The Network Link Configuration page appears. The first time you access this page:

- **Link Speed** is set to **10GbE**.
- **Port bond mode** is set to **Fixed**.

- **Network bond mode** is set to **Active-Backup** for the Grid Network.
- The **Admin Network** is enabled, and the network bond mode is set to **Independent**.
- The **Client Network** is disabled.

Link Settings

Link speed

Port bond mode ☒ Fixed ☐ Aggregate

Choose Fixed port bond mode if you want to use ports 2 and 4 for the Grid Network and ports 1 and 3 for the Client Network (if enabled). Choose Aggregate port bond mode if you want all connected ports to share a single LACP bond for both the Grid and Client Networks.

Grid Network

Enable network ☒

Network bond mode ☒ Active-Backup ☐ LACP (802.3ad)

Enable VLAN (802.1q) tagging ☐

Admin Network

Enable network ☒

Network bond mode ☒ Independent ☐ Active-Backup

Connect the Admin Network to port 5. Leave port 6 unconnected. If necessary, you can make a temporary direct Ethernet connection to port 6 and use link-local IP address 169.254.0.1 for access.

Client Network

Enable network ☐

Enabling the Client Network causes the default gateway for this node to move to the Client Network. Before enabling the Client Network, ensure that you've added all necessary subnets to the Grid Network Subnet List. Otherwise, the connection to the node might be lost.

2. If you plan to use the 25-GbE link speed for the 10/25 GbE ports, select **25GbE** from the Link speed drop-down list.

The network switches you are using for the Grid Network and the Client Network must also support and be configured for this speed. You must use SFP28 TwinAx cables or optical cables and SFP28 transceivers.

3. Enable or disable the StorageGRID networks you plan to use.

The Grid Network is required. You cannot disable this network.

- a. If the appliance is not connected to the Admin Network, unselect the **Enable network** check box for the Admin Network.

Admin Network

Enable network



- b. If the appliance is connected to the Client Network, select the **Enable network** check box for the Client Network.

The Client Network settings for the 10/25-GbE ports are now shown.

4. Refer to the table, and configure the port bond mode and the network bond mode.

This example shows:

- **Aggregate** and **LACP** selected for the Grid and the Client networks. You must specify a unique VLAN tag for each network. You can select values between 0 and 4095.
- **Active-Backup** selected for the Admin Network.

Link Settings

Link speed: 10GbE

Port bond mode: ☐ Fixed ☒ **Aggregate**

Choose Fixed port bond mode if you want to use ports 2 and 4 for the Grid Network and ports 1 and 3 for the Client Network (if enabled). Choose Aggregate port bond mode if you want all connected ports to share a single LACP bond for both the Grid and Client Networks.

Grid Network

Enable network: ☒

Network bond mode: ☐ Active-Backup ☒ **LACP (802.3ad)**

If the port bond mode is Aggregate, all bonds must be in LACP (802.3ad) mode.

Enable VLAN (802.1q) tagging: ☒

VLAN (802.1q) tag: 328

Admin Network

Enable network: ☒

Network bond mode: ☐ Independent ☒ **Active-Backup**

Connect the Admin Network to ports 5 and 6. If necessary, you can make a temporary direct Ethernet connection by disconnecting ports 5 and 6, then connecting to port 6 and using link-local IP address 169.254.0.1 for access.

Client Network

Enable network: ☒

Network bond mode: ☐ Active-Backup ☒ **LACP (802.3ad)**

If the port bond mode is Aggregate, all bonds must be in LACP (802.3ad) mode.

Enable VLAN (802.1q) tagging: ☒

VLAN (802.1q) tag: 332

- When you are satisfied with your selections, click **Save**.

Note: You might lose your connection if you made changes to the network or link you are connected through. If you are not reconnected within 1 minute, re-enter the URL for the StorageGRID Appliance Installer using one of the other IP addresses assigned to the appliance:

`https://SG6000-CN_Controller_IP:8443`

Related concepts

[Port bond modes for the SG6000-CN controller ports](#) on page 16

Configuring StorageGRID IP addresses

You use the StorageGRID Appliance Installer to configure the IP addresses and routing information used for the appliance Storage Node on the StorageGRID Grid, Admin, and Client Networks.

About this task

You must either assign a static IP for the appliance on each connected network or assign a permanent lease for the address on the DHCP server.

Additionally, if you want to change the link configuration of a StorageGRID appliance, see the instructions for changing the link configuration of the SG6000-CN controller.

Steps

1. From the menu bar of the StorageGRID Appliance Installer, click **Configure Networking > IP Configuration**.

The IP Configuration page appears. This example shows the Grid Network section of the page with **IP Assignment** set to DHCP.

Grid Network

The Grid Network is used for all internal StorageGRID traffic. The Grid Network provides connectivity between all nodes in the grid, across all sites and subnets. All hosts on the Grid Network must be able to talk to all other hosts. The Grid Network can consist of multiple subnets. Networks containing critical grid services, such as NTP, can also be added as Grid subnets.

IP Assignment

☐ Static

☒ DHCP

IPv4 Address (CIDR)

172.16.7.237/21

Gateway

172.16.0.1

All required Grid Network subnets must also be defined in the Grid Network Subnet List on the Primary Admin Node before starting installation.

Subnets (CIDR)

172.20.0.0/24

×

172.17.0.0/21

×

172.18.0.0/21

×

192.168.0.0/21

×

47.0.0.0/8

+ ×

Cancel

Save

2. Configure the Grid Network.
 - a. If you plan to use a static IP address for the appliance on the Grid Network, select **Static**.
 - b. Enter the static IPv4 address, using CIDR notation.
 - c. Enter the gateway.

If your network does not have a gateway, re-enter the same static IPv4 address.

d. Click **Save**.

When the IP address changes, the gateway and list of subnets might also change.

If you are using the DHCP address for the Grid Network to access the StorageGRID Appliance Installer, your web browser should be automatically redirected to the new IP address. If you lose your connection, re-enter the URL but use the new static IP address:

https://SG6000-CN_Controller_IP:8443

e. Confirm that the list of Grid Network subnets is correct.

If you have multiple grid subnets, the Grid Network gateway is required. All grid subnets specified must be reachable through this gateway. These Grid Network subnets must also be defined in the Grid Network Subnet List on the primary Admin Node when you start StorageGRID installation.

Note: The default route is not listed. If the Client Network is not enabled, the default route will use the Grid Network gateway.

- To add a subnet, click the insert icon  to the right of the last entry.
- To remove an unused subnet, click the delete icon .

f. Click **Save**.

3. Configure the Admin Network.

This section of the page appears if the Admin Network is enabled on the Link Configuration page.

Admin Network

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.

IP Assignment ☒ Static ☐ DHCP

IPv4 Address (CIDR)

Gateway

Subnets (CIDR) 

When you configure the Admin Network, you specify the IP address, gateway, and subnets used for Management Port 1 on the controller. Management Port 1 is the left of the two 1-GbE RJ45 ports on the right end of the controller.

- If you plan to use a static IP address for the appliance on the Admin Network, select **Static**.
- Enter the static IPv4 address, using CIDR notation.
- Enter the gateway.

If your network does not have a gateway, re-enter the same static IPv4 address.

d. Click **Save**.

If you are using the DHCP address for the Admin Network to access the StorageGRID Appliance Installer, your web browser should be automatically redirected to the new IP address. If you lose your connection, re-enter the URL but use the new static IP address:

`https://SG6000-CN_Controller_IP:8443`

- e. Confirm that the list of Admin Network subnets is correct.

You must verify that all subnets can be reached using the gateway provided above.

Note: The default route cannot be made to use the Admin Network gateway.

- To add a subnet, click the insert icon  to the right of the last entry.
- To remove an unused subnet, click the delete icon .

- f. Click **Save**.

4. Configure the Client Network.

This section of the page appears if the Client Network is enabled on the Link Configuration page.

Client Network

The Client Network is an open network used to provide access to client applications, including S3 and Swift. The Client Network enables grid nodes to communicate with any subnet reachable through the Client Network gateway. The Client Network does not become operational until you complete the StorageGRID configuration steps.

IP Assignment ☐ Static ☒ DHCP

IPv4 Address (CIDR)

Gateway

- a. If you plan to use a static IP address for the appliance on the Client Network, select **Static**.

- b. Enter the static IPv4 address, using CIDR notation.

- c. Click **Save**.

- d. Confirm that the IP address for the Client Network gateway is correct.

Note: If the Client Network is enabled, the default route is displayed. The default route uses the Client Network gateway and cannot be moved to another interface while the Client Network is enabled.

- e. Click **Save**.

Related tasks

[Changing the link configuration of the SG6000-CN controller](#) on page 79

Verifying network connections

You should confirm you can access the StorageGRID networks you are using from the appliance. To validate routing through network gateways, you should test connectivity between the StorageGRID Appliance Installer and IP addresses on different subnets.

Steps

1. From the menu bar of the StorageGRID Appliance Installer, click **Configure Networking > Ping Test**.

The Ping Test page appears.

Ping Test

Use a ping request to check the appliance's connectivity to a remote host. Select the network you want to check connectivity through, and enter the IP address of the host you want to reach.

Ping Test

Network

Destination IPv4 Address

- From the **Network** drop-down box, select the network you want to test: Grid, Admin, or Client.
- Enter the IPv4 address for a host on that network.
For example, you might want to ping the gateway on the network or the primary Admin Node.
- Click **Test Connectivity**.

If the network connection is valid, the “Ping test passed” message appears, with the ping command output listed.

Ping Test

Use a ping request to check the appliance's connectivity to a remote host. Select the network you want to check connectivity through, and enter the IP address of the host you want to reach.

Ping Test

Network

Destination IPv4 Address

Ping test passed

Ping command output

```
PING 192.168.0.1 (192.168.0.1) from 192.168.7.196 br0: 56(84) bytes of data.
64 bytes from 192.168.0.1: icmp_seq=1 ttl=64 time=0.144 ms
64 bytes from 192.168.0.1: icmp_seq=2 ttl=64 time=0.154 ms
64 bytes from 192.168.0.1: icmp_seq=3 ttl=64 time=0.183 ms

--- 192.168.0.1 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 1998ms
rtt min/avg/max/mdev = 0.144/0.160/0.183/0.019 ms
```

Verifying port-level network connections

To ensure that access between the StorageGRID Appliance Installer and other nodes is not obstructed by firewalls, confirm that the StorageGRID Appliance Installer can connect to a specific TCP port or set of ports at the specified IP address or range of addresses.

Steps

- From the menu bar of the StorageGRID Appliance Installer, click **Configure Networking > Port Connectivity Test (nmap)**.

The Port Connectivity Test page appears.

- From the **Network** drop-down box, select the network you want to test: Grid, Admin, or Client.
- Specify a range of IPv4 addresses for the hosts on that network.

For example, you might want to ping the gateway on the network or the primary Admin Node.

Specify a range using a hyphen, as shown in the example.

4. Enter a TCP port number, a list of ports separated by commas, or a range of ports.

Port Connectivity Test

The port connectivity test uses the nmap command to check connectivity to remote hosts and ports. Select the network you want to check connectivity through, one or more IPv4 addresses or address ranges, and one or more ports or port ranges you want to connect to.

Port Connectivity Test

Network	Grid
IPv4 Address Ranges	10.0.0.0-24
TCP Port Ranges	80,443
Test Connectivity	

5. Click **Test Connectivity**.

If the port-level network connection is valid, the “Port connectivity test passed” message appears, with the nmap command output listed.

Port Connectivity Test

Network	Grid
IPv4 Address Ranges	172.16.5.220
TCP Port Ranges	9999
Test Connectivity	

Port connectivity test passed

Nmap command output. Note: Unreachable hosts will not appear in the output.

```
# Nmap 7.40 scan initiated Wed Oct 24 18:18:15 2018 as: /usr/bin/nmap -n -oN - -e br0 -p 9999 172.16.5.220
Nmap scan report for 172.16.5.220
Host is up (0.00024s latency).
PORT      STATE SERVICE
9999/tcp  open  abyss
MAC Address: 00:50:56:87:BD:1D (VMware)

# Nmap done at Wed Oct 24 18:18:16 2018 -- 1 IP address (1 host up) scanned in 0.63 seconds
```

Configuring SANtricity System Manager

You can use SANtricity System Manager to monitor the status of the storage controllers, storage disks, and other hardware components in the E2860 controller shelf.

Steps

1. [Setting the IP addresses for the E2800 controllers](#) on page 48
2. [Accessing SANtricity System Manager](#) on page 49
3. [Setting up SANtricity System Manager](#) on page 50

4. [Reviewing the hardware status in SANtricity System Manager](#) on page 51

Setting the IP addresses for the E2800 controllers

Management port 1 on each E2800 controller connects the appliance to the management network for SANtricity System Manager. You must set a static IP address for each E2800 controller to ensure that you do not lose your management connection to the hardware and the controller firmware in the E2860 controller shelf.

About this task

DHCP-assigned addresses could change at any time. Assign static IP addresses to the controllers to ensure consistent accessibility.

Steps

1. From the client, enter the URL for the StorageGRID Appliance Installer:

`https://SG6000-CN_Controller_IP:8443`

For *SG6000-CN_Controller_IP*, use the IP address for the appliance on any StorageGRID network.

The StorageGRID Appliance Installer Home page appears.

2. Select **Configure Hardware > Storage Controller Network Configuration**.

The Storage Controller Network Configuration page appears.

3. Depending on your network configuration, select **Enabled** for IPv4, IPv6, or both.
4. Make a note of the IPv4 address that is automatically displayed.

DHCP is the default method for assigning an IP address to this port.

Note: It might take a few minutes for the DHCP values to appear.

IPv4 Address Assignment ☐ Static ☒ DHCP

IPv4 Address (CIDR) 10.224.5.166/21

Default Gateway 10.224.0.1

5. Optionally, set a static IP address for the E2800 controller management port.

Note: You should either assign a static IP for the management port or assign a permanent lease for the address on the DHCP server.

- a. Select **Static**.
- b. Enter the IPv4 address, using CIDR notation.
- c. Enter the default gateway.

IPv4 Address Assignment ☒ Static ☐ DHCP

IPv4 Address (CIDR)	10.224.2.200/21
Default Gateway	10.224.0.1

d. Click **Save**.

It might take a few minutes for your changes to be applied.

When you connect to SANtricity System Manager, you will use the new static IP address as the URL:

`https://E2800_Controller_IP`

Accessing SANtricity System Manager

You can monitor and manage the hardware in the E2860 controller shelf by browsing to SANtricity System Manager, which is included on the E2800 controllers.

Before you begin

- You are using a supported web browser.

Steps

1. Open a web browser, and enter the IP address as the URL for SANtricity System Manager:

`https://E2800_Controller_IP`

The login page for SANtricity System Manager appears.

2. Set or enter the administrator password.

Note: SANtricity System Manager uses a single administrator password that is shared among all users.

The Set Up wizard appears.

Set Up SANtricity® System Manager

1 Welcome

2 Verify Hardware

3 Verify Hosts

4 Select Applications

5 Define Workloads

6 Act

More (10 total) >

Welcome to the SANtricity® System Manager! With System Manager, you can...

- Configure your storage array and set up alerts.
- Monitor and troubleshoot any problems when they occur.
- Keep track of how your system is performing in real time.

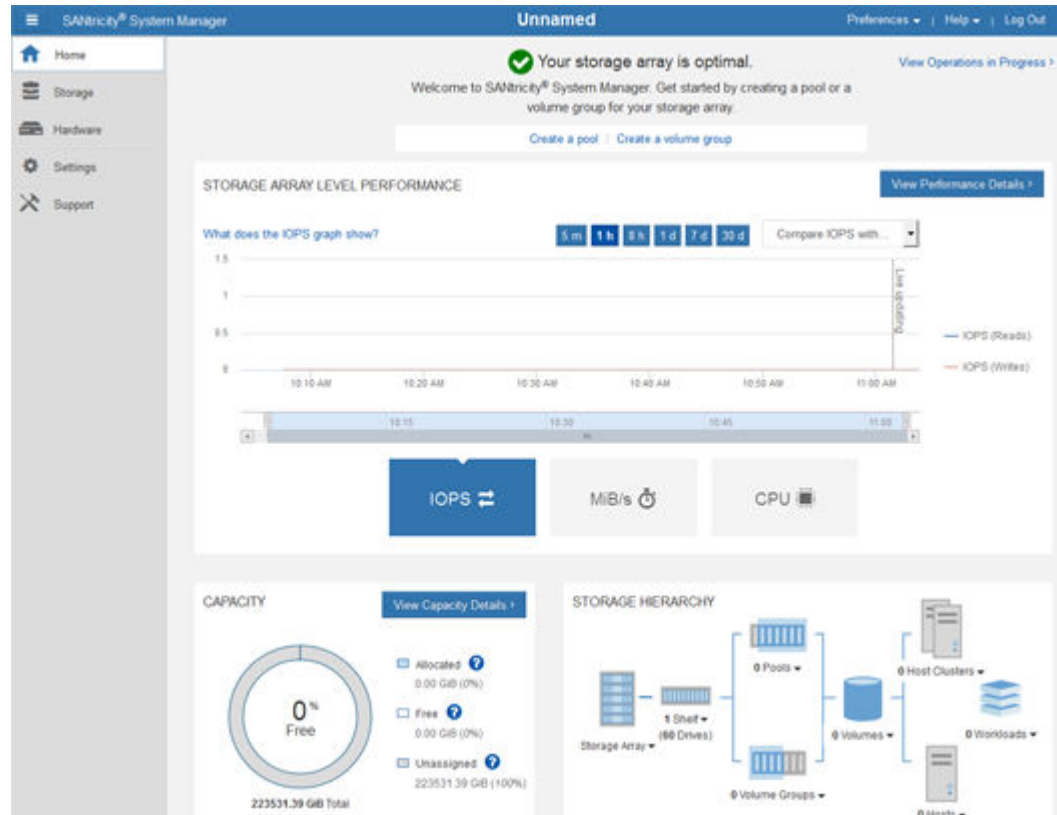
Cancel

Next >

3. Click **Cancel** to close the wizard.

Do not complete the Set Up wizard for a StorageGRID appliance.

The SANtricity System Manager home page appears.



Related tasks

[Setting the IP addresses for the E2800 controllers](#) on page 48

Related references

[Web browser requirements](#) on page 15

Setting up SANtricity System Manager

After accessing SANtricity System Manager, you can use it to configure hardware settings. Typically, you configure these settings before deploying the appliance as a Storage Node in a StorageGRID grid.

About this task

You use SANtricity System Manager to configure the following settings:

- Email alerts, SNMP alerts, or syslog alerts for the components in the E2860 controller shelf
- AutoSupport settings for the components in the E2860 controller shelf
- Drive Security keys, which are needed to unlock secured drives (this step is required if the Drive Security feature is enabled)

- Administrator password for accessing SANtricity System Manager

Steps

1. Open a web browser on a management client, and enter the URL for SANtricity System Manager:
https://E2800_Controller_IP
The log in page for SANtricity System Manager appears.
2. Enter the administrator password.
3. Click **Cancel** to close the Set Up wizard and to display the SANtricity System Manager home page.
4. Configure hardware alerts.
 - a. Select **Help** to access the online help for SANtricity System Manager.
 - b. Use the **Settings > Alerts** section of the online help to learn about alerts.
 - c. Follow the “How To” instructions to set up email alerts, SNMP alerts, or syslog alerts.
5. Manage AutoSupport for the components in the E2860 controller shelf.
 - a. Select **Help** to access the online help for SANtricity System Manager.
 - b. Use the **Support > Support Center** section of the online help to learn about the AutoSupport feature.
 - c. Follow the “How To” instructions to manage AutoSupport.
6. If the Drive Security feature is enabled for the appliance, create and manage the security key.
 - a. Select **Help** to access the online help for SANtricity System Manager.
 - b. Use the **Settings > System > Security key management** section of the online help to learn about Drive Security.
 - c. Follow the “How To” instructions to create and manage the security key.
7. Optionally, change the administrator password.
 - a. Select **Help** to access the online help for SANtricity System Manager.
 - b. Use the **Home > Storage array administration** section of the online help to learn about the administrator password.
 - c. Follow the “How To” instructions to change the password.

Reviewing the hardware status in SANtricity System Manager

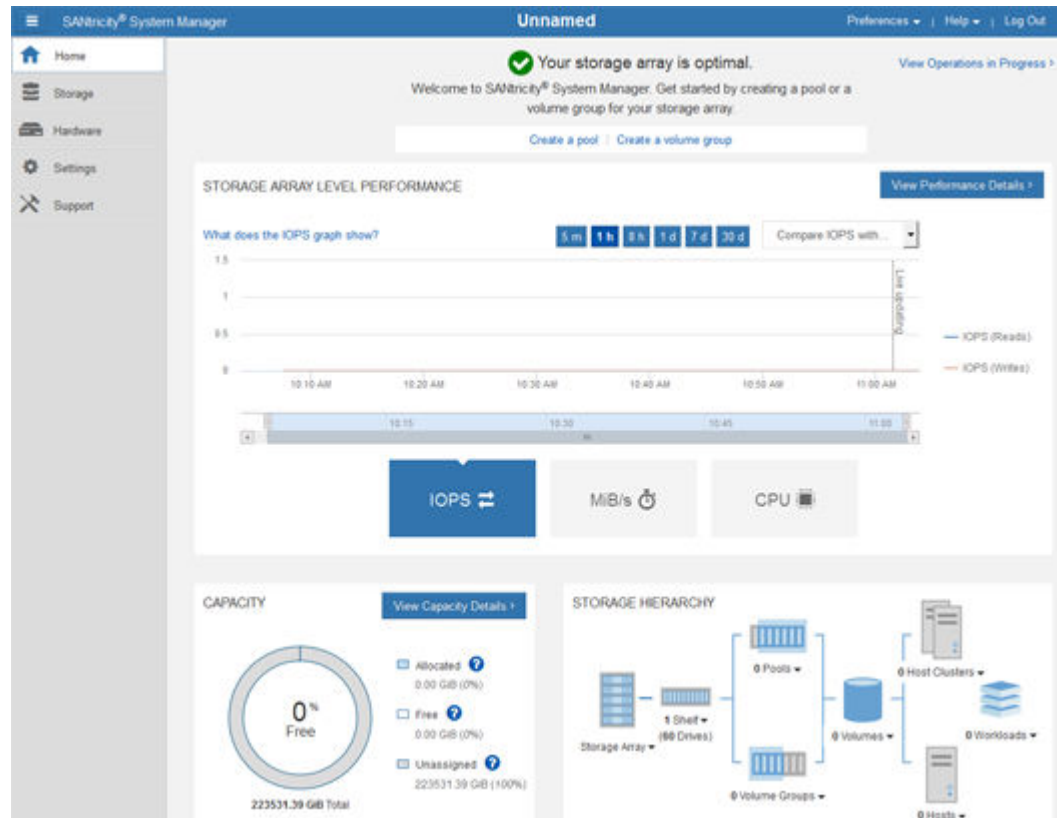
You can use SANtricity System Manager to monitor and manage the individual hardware components in the E2860 controller shelf and to review hardware diagnostic and environmental information, such as component temperatures, as well as issues related to the drives.

Steps

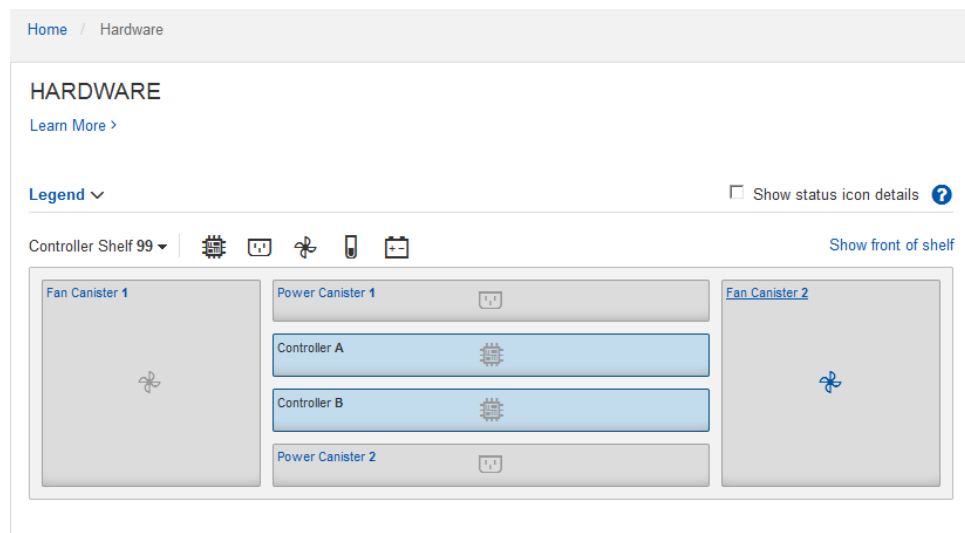
1. Open a web browser on a management client, and enter the URL for SANtricity System Manager:
https://E2800_Controller_IP
The log in page for SANtricity System Manager appears.
2. Enter the administrator password.

3. Click **Cancel** to close the Set Up wizard and to display the SANtricity System Manager home page.

The SANtricity System Manager home page appears. In SANtricity System Manager, the controller shelf is referred to as a *storage array*.



4. Review the information displayed for appliance hardware and confirm that all hardware components have a status of Optimal.
 - a. Click the **Hardware** tab.
 - b. Click **Show back of shelf**.



From the back of the shelf, you can view both E2800 controllers, the battery in each E2800 controller, the two power canisters, and the two fan canisters. You can also view component temperatures.

- c. To see the settings for each E2800 controller, select the controller, and select **View settings** from the context menu.
- d. To see the settings for other components in the back of the shelf, select the component you want to view.
- e. Click **Show front of shelf**, and select the component you want to view.

From the front of the shelf, you can view the drives and the five drive drawers for the E2860 controller shelf.

If the status of any component is Needs Attention, follow the steps in the Recovery Guru to resolve the issue or contact technical support.

Configuring the BMC interface

The user interface for the baseboard management controller (BMC) on the SG6000-CN controller provides status information about the hardware and allows you to configure SNMP settings and other options for the SG6000-CN controller.

Steps

1. [Changing the root password for the BMC interface](#) on page 53
2. [Setting the IP address for the BMC management port](#) on page 54
3. [Accessing the BMC interface](#) on page 56
4. [Configuring SNMP settings for the SG6000-CN controller](#) on page 57

Changing the root password for the BMC interface

For security, you must change the password for the BMC's root user.

Before you begin

- The management client is using a supported web browser.

Steps

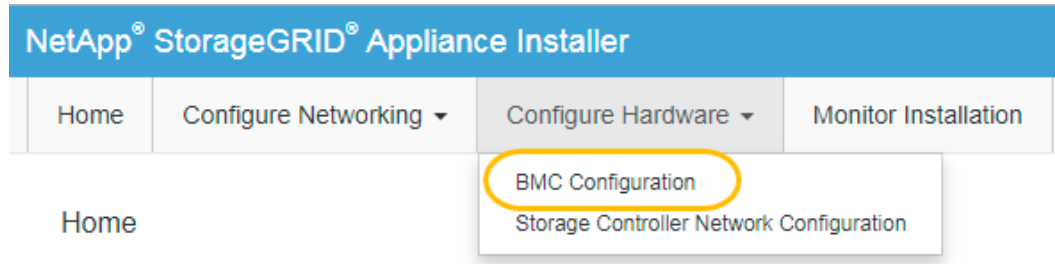
1. From the client, enter the URL for the StorageGRID Appliance Installer:

`https://SG6000-CN_Controller_IP:8443`

For *SG6000-CN_Controller_IP*, use the IP address for the appliance on any StorageGRID network.

The StorageGRID Appliance Installer Home page appears.

2. Select **Configure Hardware > BMC Configuration**.



The Baseboard Management Controller Configuration page appears.

3. Enter a new password for the root account in the two fields provided.

Baseboard Management Controller Configuration

User Settings

Root Password

.....

Confirm Root Password

.....

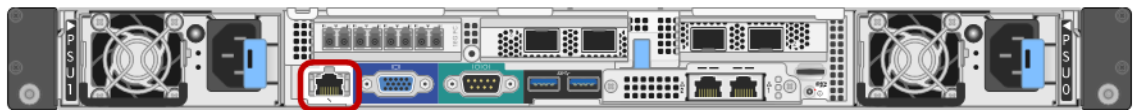
4. Click **Save**.

Setting the IP address for the BMC management port

Before you can access the BMC interface, you must configure the IP address for the BMC management port on the SG6000-CN controller.

Before you begin

- The management client is using a supported web browser.
- You are using any management client that can connect to a StorageGRID network.
- The BMC management port is connected to the management network you plan to use.



Steps

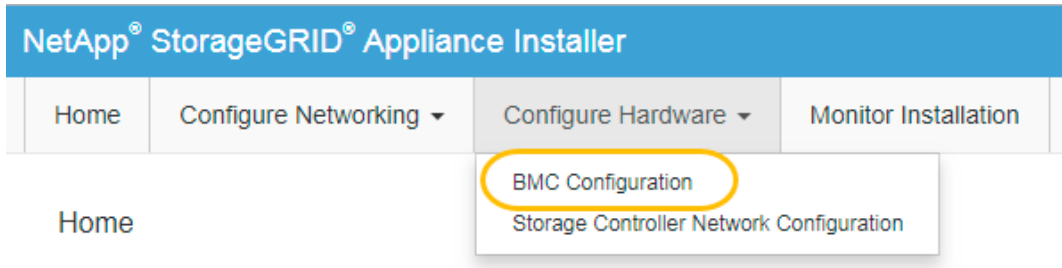
1. From the client, enter the URL for the StorageGRID Appliance Installer:

`https://SG6000-CN_Controller_IP:8443`

For *SG6000-CN_Controller_IP*, use the IP address for the appliance on any StorageGRID network.

The StorageGRID Appliance Installer Home page appears.

2. Select **Configure Hardware > BMC Configuration**.



The Baseboard Management Controller Configuration page appears.

3. Make a note of the IPv4 address that is automatically displayed.
DHCP is the default method for assigning an IP address to this port.

Note: It might take a few minutes for the DHCP values to appear.

Baseboard Management Controller Configuration

LAN IP Settings

IP Assignment ☐ Static ☒ DHCP

MAC Address d8:c4:97:28:50:62

IPv4 Address (CIDR) 10.224.3.225/21

Default gateway 10.224.0.1

Cancel Save

4. Optionally, set a static IP address for the BMC management port.

Note: You should either assign a static IP for the BMC management port or assign a permanent lease for the address on the DHCP server.

- a. Select **Static**.
- b. Enter the IPv4 address, using CIDR notation.
- c. Enter the default gateway.

Baseboard Management Controller Configuration

LAN IP Settings

IP Assignment ☒ Static ☐ DHCP

MAC Address d8:c4:97:28:50:62

IPv4 Address (CIDR) 10.224.3.225/21

Default gateway 10.224.0.1

Cancel Save

- d. Click **Save**.

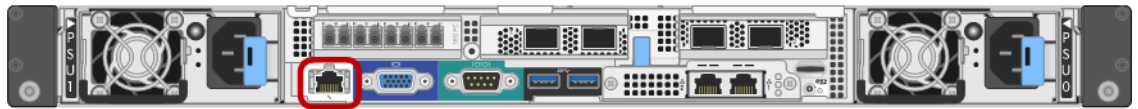
It might take a few minutes for your changes to be applied.

Accessing the BMC interface

You can access the BMC interface on the SG6000-CN controller using the DHCP or static IP address for the BMC management port.

Before you begin

- The BMC management port on the SG6000-CN controller is connected to the management network you plan to use.



- The management client is using a supported web browser.

Steps

- Enter the URL for the BMC interface:

`https://BMC_Port_IP`

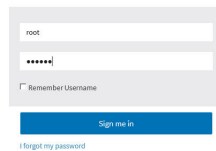
For *BMC_Port_IP*, use the DHCP or static IP address for the BMC management port.

The BMC sign-in page appears.

- Enter the root username and password, using the password you set when you changed the default root password:

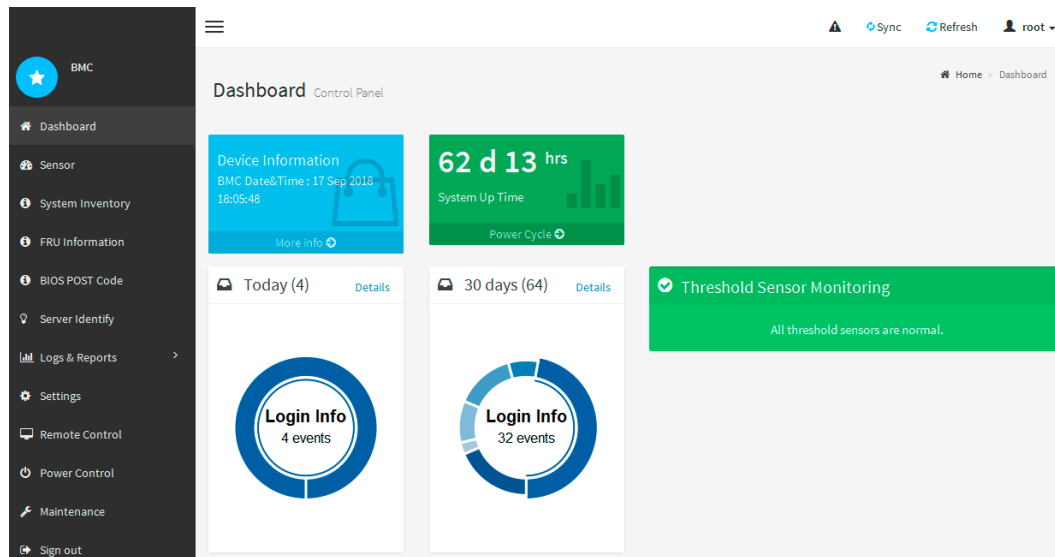
`root`

`<password>`



- Click **Sign me in**

The BMC dashboard appears.



- Optionally, create additional users by selecting **Settings > User Management** and clicking on any “disabled” user.

Related tasks

[Changing the root password for the BMC interface](#) on page 53

Configuring SNMP settings for the SG6000-CN controller

If you are familiar with configuring SNMP for hardware, you can use the BMC interface to configure the SNMP settings for the SG6000-CN controller. You can provide secure community strings, enable SNMP Trap, and specify up to five SNMP destinations.

Before you begin

- You know how to access the BMC dashboard.
- You have experience in configuring SNMP settings for SNMPv1-v2c equipment.

Steps

- From the BMC dashboard, select **Settings > SNMP Settings**.
- On the SNMP Settings page, select the **Enable SNMP V1/V2** checkbox, and provide a Read-Only Community String and a Read-Write Community String.
The Read-Only Community String is like a user ID or password. You should change this value to prevent intruders from getting information about your network setup. The Read-Write Community String protects the device against unauthorized changes.
- Optionally, select **Enable Trap**, and enter the required information.
Enable traps if you want the SG6000-CN controller to send immediate notifications to an SNMP console when it is in an unusual state. Traps might indicate link up/down conditions, temperatures exceeding certain thresholds, or high traffic.
- Optionally, click **Send Test Trap** to test your settings.
- If the settings are correct, click **Save**.

Optional: Changing the RAID mode

On the SG6060 appliance, you can change to a different RAID mode to accommodate your storage and recovery requirements. You can only change the mode before deploying the appliance Storage Node.

Before you begin

- You are using any client that can connect to StorageGRID.
- The client has a supported web browser.

About this task

Before deploying the SG6060 appliance as a Storage Node, you can choose one of the following volume configuration options:

- **DDP:** This is the default and recommended mode for all appliances. When compared to RAID6, DDP delivers better system performance, reduced rebuild times after drive failures, and ease of management. This mode uses two parity drives for every eight data drives. DDP also provides drawer loss protection in a 60-drive appliance that contains a newer version of E-Series software.
- **DDP16:** This mode uses two parity drives for every 16 data drives, which results in higher storage efficiency compared to DDP. When compared to RAID6, DDP16 delivers better system performance, reduced rebuild times after drive failures, ease of management, and comparable storage efficiency. DDP16 is available only for 60-drive appliances. DDP16 does not provide drawer loss protection.
- **RAID6:** This mode uses two parity drives for every 16 or more data drives. RAID6 is only available in 60-drive appliances. Although RAID6 can increase storage efficiency of the appliance when compared to DDP, it is not recommended for most StorageGRID environments.

Attention: If any volumes have already been configured or if StorageGRID was previously installed, changing the RAID mode causes the volumes to be removed and replaced. Any data on those volumes will be lost.

Steps

1. Access the StorageGRID Appliance Installer:
`https://SG6000-CN_Controller_IP:8443`
SG6000-CN_Controller_IP is the IP address of the SG6000-CN controller on any of the three StorageGRID networks.
2. From the menu bar, select **Advanced > RAID Mode**.
3. On the **Configure RAID Mode** page, select the desired RAID mode from the Mode drop-down list.
4. Click **Save**.

Related information

[E-Series and SANtricity 11.5 Documentation Center](#)

Optional: Remapping network ports for the appliance

You might need to remap the internal ports on the appliance Storage Node to different external ports. For example, you might need to remap ports because of a firewall issue.

Before you begin

You have previously accessed the StorageGRID Appliance Installer.

Steps

1. From the menu bar of the StorageGRID Appliance Installer, click **Configure Networking > Remap Ports**.
The Remap Port page appears.
2. From the **Network** drop-down box, select the network for the port you want to remap: Grid, Admin, or Client.
3. From the **Protocol** drop-down box, select the IP protocol: TCP or UDP.
4. From the **Remap Direction** drop-down box, select which traffic direction you want to remap for this port: Inbound, Outbound, or Bi-directional.
5. For **Original Port**, enter the number of the port you want to remap.
6. For **Mapped-To Port**, enter the number of the port you want to use instead.
7. Click **Add Rule**.

The new port mapping is added to the table, and the remapping takes effect immediately.

Remap Ports

If required, you can remap the internal ports on the appliance Storage Node to different external ports. For example, you might need to remap ports because of a firewall issue.

✕ Remove Selected Rule

+ Add Rule

Network

Grid

Protocol

TCP

Remap Direction

Inbound

Original Port

1

Mapped-To Port

1

	Network	Protocol	Remap Direction	Original Port	Mapped-To Port
☐	Grid	TCP	Bi-directional	1800	1801

8. To remove a port mapping, select the radio button for the rule you want to remove, and click **Remove Selected Rule**.

Where to go next

After installing and configuring the StorageGRID appliance, you can deploy it as a Storage Node in a StorageGRID grid.

- To deploy an appliance Storage Node in a new StorageGRID grid, see the installation instructions for your platform.
- To add an appliance Storage Node to an existing StorageGRID grid, see information about expanding a StorageGRID grid.
- To deploy an appliance Storage Node as part of a recovery operation, see information about recovery and maintenance.

Related information

[VMware installation](#)

[Red Hat Enterprise Linux or CentOS installation](#)

[Ubuntu or Debian installation](#)

[Expanding a StorageGRID system](#)

[Recovery and maintenance](#)

Troubleshooting the hardware installation

If you encounter issues during the installation, you might find it helpful to review troubleshooting information related to hardware setup and connectivity issues.

Related tasks

[Hardware setup appears to hang](#) on page 64

Related references

[Troubleshooting connection issues](#) on page 64

Viewing boot-up codes for the SG6000-CN controller

When you apply power to the appliance, the BMC logs a series of boot-up codes for the SG6000-CN controller. If you have experience deploying and using KVM applications, you can view these codes on a graphical console by launching a KVM (Java) application from the BMC interface.

Before you begin

- You know how to access the BMC dashboard.
- You have experience deploying and using KVM applications.

Steps

1. From the BMC dashboard, select **Remote Control**.
2. Launch the KVM Java application, which you can use to access the graphical console for the controller.
3. Review the boot-up codes, which are displayed in the order listed.

Code	Indicates
HI	The master boot script has started.
HP	The system is checking to see if the 10/25-GbE controller firmware needs to be updated.
RB	The system is rebooting after applying firmware updates.
FP	The hardware subsystem firmware update checks have been completed. Inter-controller communication services are starting.
HE	The system is awaiting connectivity with the E2800 controllers and synchronizing with the SANtricity operating system. Note: If the boot-up procedure does not progress past this stage: a. Confirm that the four interconnect cables between the SG6000-CN controller and the two E2800 controllers are securely connected. b. As required, replace one or more of the cables, and try again. c. If this does not resolve the issue, contact technical support.

Code	Indicates
HC	The system is checking for existing StorageGRID installation data.
HO	The StorageGRID Appliance Installer is running.
HA	StorageGRID is running.

Viewing error codes for the SG6000-CN controller

If a hardware error occurs when the SG6000-CN controller is booting up, the BMC logs an error code. As required, you can view these error codes using the BMC interface, and then work with technical support to resolve the issue.

Before you begin

- You know how to access the BMC dashboard.

Steps

- From the BMC dashboard, select **BIOS POST Code**.
- Review the information displayed for Current Code and the Previous Code.

If any of the following error codes are shown, work with technical support to resolve the issue.

Code	Indicates
0x0E	Microcode not found
0x0F	Microcode not loaded
0x50	Memory initialization error. Invalid memory type or incompatible memory speed.
0x51	Memory initialization error. SPD reading has failed.
0x52	Memory initialization error. Invalid memory size or memory modules do not match.
0x53	Memory initialization error. No usable memory detected.
0x54	Unspecified memory initialization error
0x55	Memory not installed
0x56	Invalid CPU type or speed
0x57	CPU mismatch
0x58	CPU self-test failed, or possible CPU cache error
0x59	CPU micro-code is not found, or micro-code update failed
0x5A	Internal CPU error
0x5B	Reset PPI is not available
0x5C	PEI phase BMC self-test failure
0xD0	CPU initialization error
0xD1	North bridge initialization error
0xD2	South bridge initialization error

Code	Indicates
0xD3	Some architectural protocols are not available
0xD4	PCI resource allocation error. Out of resources.
0xD5	No space for legacy option ROM
0xD6	No console output devices are found
0xD7	No console input devices are found
0xD8	Invalid password
0xD9	Error loading boot option (LoadImage returned error)
0xDA	Boot option failed (StartImage returned error)
0xDB	Flash update failed
0xDC	Reset protocol is not available
0xDD	DXE phase BMC self-test failure
0xE8	MRC: ERR_NO_MEMORY
0xE9	MRC: ERR_LT_LOCK
0xEA	MRC: ERR_DDR_INIT
0xEB	MRC: ERR_MEM_TEST
0xEC	MRC: ERR_VENDOR_SPECIFIC
0xED	MRC: ERR_DIMM_COMPAT
0xEE	MRC: ERR_MRC_COMPATIBILITY
0xEF	MRC: ERR_MRC_STRUCT
0xF0	MRC: ERR_SET_VDD
0xF1	MRC: ERR_IOT_MEM_BUFFER
0xF2	MRC: ERR_RC_INTERNAL
0xF3	MRC: ERR_INVALID_REG_ACCESS
0xF4	MRC: ERR_SET_MC_FREQ
0xF5	MRC: ERR_READ_MC_FREQ
0x70	MRC: ERR_DIMM_CHANNEL
0x74	MRC: ERR_BIST_CHECK
0xF6	MRC: ERR_SMBUS
0xF7	MRC: ERR_PCU
0xF8	MRC: ERR_NGN
0xF9	MRC: ERR_INTERLEAVE_FAILURE

Hardware setup appears to hang

The StorageGRID Appliance Installer might not be available if hardware faults or cabling errors prevent the E2800 controllers or the SG6000-CN controller from completing their boot-up processing.

Steps

1. For the E2800 controllers, watch the codes on the seven-segment displays.
While the hardware is initializing during power up, the two seven-segment displays show a sequence of codes. When the hardware boots successfully, both seven-segment displays show 99.
2. Review the LEDs on the SG6000-CN controller and the boot-up and error codes displayed in the BMC.
3. If you need help resolving an issue, contact technical support.

Related tasks

[Viewing boot-up status codes for the E2800 controllers](#) on page 32

[Viewing boot-up codes for the SG6000-CN controller](#) on page 61

[Viewing error codes for the SG6000-CN controller](#) on page 62

Related references

[Viewing status indicators and buttons on the SG6000-CN controller](#) on page 33

Related information

[E5700 and E2800 System Monitoring Guide](#)

Troubleshooting connection issues

If you encounter connection issues during the StorageGRID appliance installation, you should perform the corrective action steps listed.

Unable to connect to the appliance

If you cannot connect to the appliance, there might be a network issue, or the hardware installation might not have been completed successfully.

Steps

1. If you are unable to connect to SANtricity System Manager:
 - a. Try to ping the appliance using the IP address for either E2800 controller on the management network for SANtricity System Manager:
ping E2800_Controller_IP
 - b. If you receive no response from the ping, confirm you are using the correct IP address.
Use the IP address for management port 1 on either E2800 controller.
 - c. If the IP address is correct, check appliance cabling and the network setup.
If that does not resolve the issue, contact technical support.

- d. If the ping was successful, open a web browser.
 - e. Enter the URL for SANtricity System Manager:
https://E2800_Controller_IP
 The log in page for SANtricity System Manager appears.
2. If you are unable to connect to the SG6000-CN controller:
- a. Try to ping the appliance using the IP address for the SG6000-CN controller :
ping SG6000-CN_Controller_IP
 - b. If you receive no response from the ping, confirm you are using the correct IP address.
 You can use the IP address of the appliance on the Grid Network, the Admin Network, or the Client Network.
 - c. If the IP address is correct, check appliance cabling, SFP transceivers, and the network setup.
 If that does not resolve the issue, contact technical support.
 - d. If the ping was successful, open a web browser.
 - e. Enter the URL for the StorageGRID Appliance Installer:
https://SG6000-CN_Controller_IP:8443
 The Home page appears.

Rebooting the SG6000-CN controller while the StorageGRID Appliance Installer is running

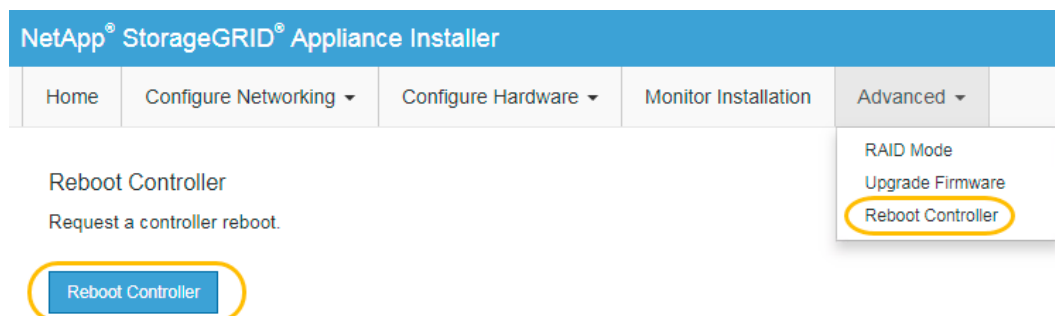
You might need to reboot the SG6000-CN controller while the StorageGRID Appliance Installer is running. For example, you might need to reboot the controller if the installation fails.

About this task

This procedure only applies when the SG6000-CN controller is running the StorageGRID Appliance Installer. Once the installation is completed, this step no longer works because the StorageGRID Appliance Installer is no longer available.

Steps

1. From the menu bar of the StorageGRID Appliance Installer, click **Advanced > Reboot Controller**.
 The Reboot Controller page appears.
2. Click **Reboot Controller**.



A confirm dialog box appears.

- 3.** Confirm you want to reboot the controller.

The SG6000-CN controller is rebooted.

Maintaining the SG6000 appliance

You might need to perform maintenance procedures on the SG6000 appliance. The procedures in this section assume that the appliance has already been deployed as a Storage Node in a StorageGRID grid.

Steps

1. [Upgrading SANtricity OS Software on the E2800 controllers](#) on page 67
2. [Replacing an E2800 controller](#) on page 70
3. [Replacing hardware components in the E2860 controller shelf](#) on page 75
4. [Replacing the SG6000-CN controller](#) on page 75
5. [Replacing a power supply in the SG6000-CN controller](#) on page 77
6. [Changing the link configuration of the SG6000-CN controller](#) on page 79

Upgrading SANtricity OS Software on the E2800 controllers

You might need to upgrade the SANtricity OS Software on the E2800 controllers, if the controllers are not functioning optimally.

Before you begin

Attention: Do not upgrade the SANtricity OS Software or NVSRAM in the E-Series controller unless directed to do so by technical support. Without the guidance of technical support, your StorageGRID appliance could become inoperable. Technical support will help you consult the NetApp Interoperability Matrix Tool (IMT) to determine which versions of SANtricity are compatible with your appliance.

- You have contacted technical support to confirm that you need to upgrade the SANtricity OS Software or NVSRAM and to obtain the compatible files.
- You must have specific access permissions. For details, see the instructions for administering StorageGRID.
- You must be signed in to the Grid Manager using a supported browser.

About this task

Before you can apply a SANtricityOS Software upgrade, you must place the SG6000-CN controller into maintenance mode, which interrupts the connection to the E2800 controller. Putting a StorageGRID appliance into maintenance mode might make the appliance unavailable for remote access.

Attention: Do not upgrade the SANtricity OS Software or NVSRAM in the E-Series controller on more than one StorageGRID appliance at a time. Doing so may cause data unavailability, depending on your deployment model and ILM policies.

Steps

1. If the StorageGRID appliance is running in a StorageGRID system, place the SG6000-CN controller into maintenance mode.
 - a. From the Grid Manager, select **Nodes**.
 - b. Select the appliance Storage Node.

- c. Select the **Tasks** tab.

SGA-106-15 (Storage Node)

Overview Hardware Network Storage Objects ILM Events **Tasks**

Reboot

Shuts down and restarts the node.

Reboot

Maintenance Mode

Places the appliance's compute controller into maintenance mode.

Maintenance Mode

- d. Click **Maintenance Mode**.

A confirmation dialog appears.

⚠ Enter Maintenance Mode on SGA-106-15

You must place the appliance's compute controller into maintenance mode to perform certain maintenance procedures on the appliance.

Attention: All StorageGRID services on this node will be shut down. Wait a few minutes for the node to reboot into maintenance mode.

If you are ready to start, enter the provisioning passphrase and click OK.

Provisioning Passphrase

Cancel OK

- e. Enter the provisioning passphrase, and click **OK**.

A confirmation message lists the URLs you can use to access the StorageGRID Appliance Installer while the controller is in maintenance mode.

Maintenance mode request sent. In a few minutes, browse to one of the following URLs to access the StorageGRID Appliance Installer: ✕

- <https://192.168.4.138:8443>
- <https://10.224.4.138:8443>
- <https://47.47.4.138:8443>
- <https://169.254.0.1:8443>

When you are done with any required maintenance procedures, you must exit maintenance mode by clicking Reboot Controller from the StorageGRID Appliance Installer.

- f. Wait a few minutes for the controller to reboot into maintenance mode. Then, browse to any of the URLs displayed.

Note: If possible, use the URL containing the IP address of the appliance's Admin Network port.

Note: Accessing `https://169.254.0.1:8443` requires a direct connection to the local management port.

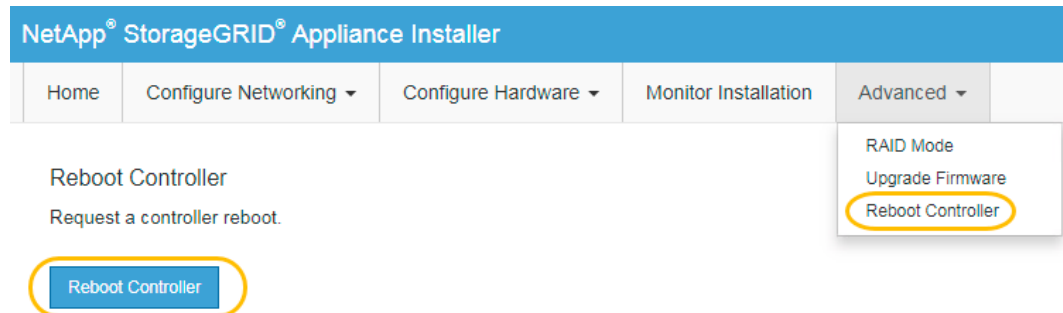
- g. Confirm that the appliance is in maintenance mode by noting the maintenance mode message on the StorageGRID Appliance Installer home page.

⚠ This node is in maintenance mode. Perform any required maintenance procedures, then [reboot](#) the node to resume normal operation.

2. From a service laptop or management client, access SANtricity System Manager and sign in.
3. Download the new SANtricity OS Software file and NVSRAM file to the management client.

Attention: The NVSRAM is specific to the StorageGRID appliance. Do not use the standard NVSRAM download.
4. Follow the instructions in the *E2800 and E5700 SANtricity Software and Firmware Upgrade Guide* or the SANtricity System Manager online help to upgrade the firmware and NVSRAM.

Note: Activate the upgrade files immediately. Do not defer activation.
5. Once the upgrade operation has completed, return the appliance to normal operating mode:
 - a. From the StorageGRID Appliance Installer, select **Advanced > Reboot Controller**.



- b. Click **Reboot Controller**.

The appliance reboots and rejoins the grid. This process can take up to 20 minutes.
- c. From the Grid Manager, monitor the status of the upgraded appliance Storage Node.

Verify that the Storage Node returns to the expected status.

Related tasks

[Accessing SANtricity System Manager](#) on page 49

Related information

[E2800 and E5700 SANtricity Software and Firmware Upgrade Guide](#)
[E-Series and SANtricity 11.5 Documentation Center](#)

[NetApp Downloads: Software](#)

Replacing an E2800 controller

You might need to replace an E2800 controller if it is not functioning optimally or if it has failed.

Before you begin

- You have a replacement controller with the same part number as the controller you are replacing.
- You have labels to identify each cable that is connected to the controller.
- You have an ESD wristband, or you have taken other antistatic precautions.
- You have a #1 Phillips screwdriver.
- You have the E-Series instructions for replacing a controller in duplex configuration.

Attention: Refer to the E-Series instructions only when directed or if you need more details to perform a specific step. Do not rely on the E-Series instructions to replace a controller in the StorageGRID appliance, because the procedures are not the same.

About this task

You can determine if you have a failed controller in two ways:

- The Recovery Guru in SANtricity System Manager directs you to replace the controller.
- The amber Attention LED on the controller is on, indicating that the controller has a fault.

Attention: If both controllers in the shelf have their Attention LEDs on, contact technical support for assistance.

Because the E2860 controller shelf has two E2800 controllers, you can replace one of the controllers while your appliance is powered on and performing read/write operations, as long as the following conditions are true:

- The second controller in the shelf has Optimal status.
- The “OK to remove” field in the Details area of the Recovery Guru in SANtricity System Manager displays Yes, indicating that it is safe to remove this component.

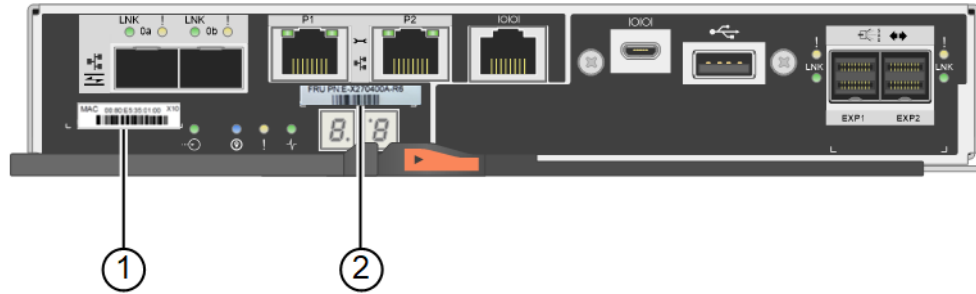
Attention: If the second controller canister in the shelf does not have Optimal status or if the Recovery Guru indicates that it is not OK to remove the controller canister, contact technical support.

When you replace a controller, you must remove the battery from the original controller and install it in the replacement controller.

Note: The E2800 controllers in the appliance do not include host interface cards (HIC).

Steps

1. Unpack the new controller, and set it on a flat, static-free surface.
Save the packing materials to use when shipping the failed controller.
2. Locate the MAC address and FRU part number labels on the back of the replacement controller.



Label	Label	Description
1	MAC address	The MAC address for management port 1 (“P1”). If you used DHCP to obtain the original controller's IP address, you will need this address to connect to the new controller.
2	FRU part number	The FRU part number. This number must match the replacement part number for the currently installed controller.

3. Prepare to remove the controller.

You use SANtricity System Manager to perform these steps. As needed for additional details, reference the E-Series instructions for replacing the E2800 controller.

- a. Confirm that the replacement part number for the failed controller is the same as the FRU part number for the replacement controller.

When a controller has a fault and needs to be replaced, the replacement part number is displayed in the Details area of the Recovery Guru. If you need to find this number manually, you can look on the **Base** tab for the controller.

Attention: Possible loss of data access – If the two part numbers are not the same, do not attempt this procedure.

- b. Back up the configuration database.

If a problem occurs when you remove a controller, you can use the saved file to restore your configuration.

- c. Collect support data for the appliance.

Note: Collecting support data before and after replacing a component ensures you can send a full set of logs to technical support in case the replacement does not resolve the problem.

- d. Take the controller you plan to replace offline.

4. Remove the controller from the appliance:

- a. Put on an ESD wristband or take other antistatic precautions.
- b. Label the cables and then disconnect the cables and SFPs.

Attention: To prevent degraded performance, do not twist, fold, pinch, or step on the cables.

- c. Release the controller from the appliance by squeezing the latch on the cam handle until it releases, and then open the cam handle to the right.
- d. Using two hands and the cam handle, slide the controller out of the appliance.

Attention: Always use two hands to support the weight of the controller.

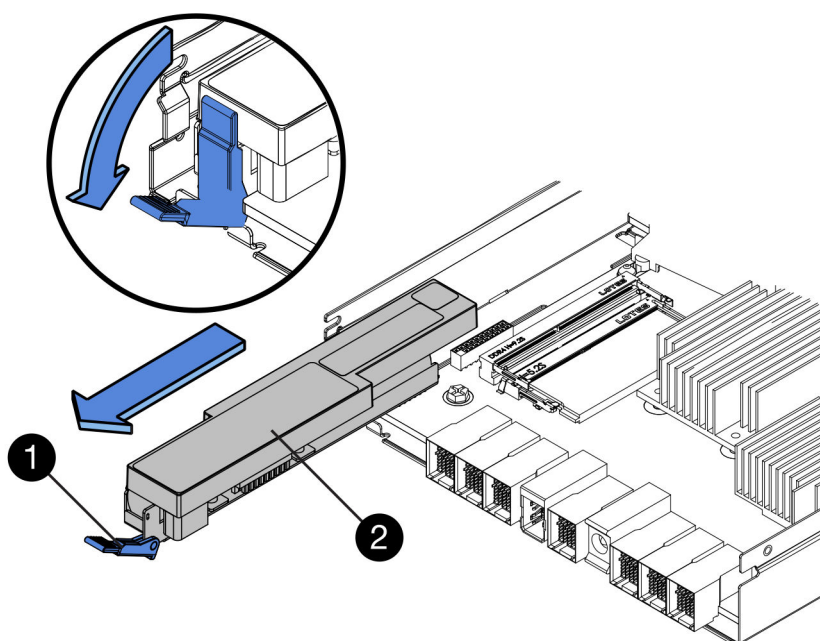
- e. Place the controller on a flat, static-free surface with the removable cover facing up.
 - f. Remove the cover by pressing down on the button and sliding the cover off.
5. Remove the battery from the failed controller, and install it into the replacement controller:
- a. Confirm that the green LED inside the controller (between the battery and the DIMMs) is off.

If this green LED is on, the controller is still using battery power. You must wait for this LED to go off before removing any components.



Item	Description
1	Internal Cache Active LED
2	Battery

- b. Locate the blue release latch for the battery.
- c. Unlatch the battery by pushing the release latch down and away from the controller.



Item	Description
1	Battery release latch
2	Battery

- d. Lift up on the battery, and slide it out of the controller.
- e. Remove the cover from the replacement controller.
- f. Orient the replacement controller so that the slot for the battery faces toward you.
- g. Insert the battery into the controller at a slight downward angle.

You must insert the metal flange at the front of the battery into the slot on the bottom of the controller, and slide the top of the battery beneath the small alignment pin on the left side of the controller.

- h. Move the battery latch up to secure the battery.

When the latch clicks into place, the bottom of the latch hooks into a metal slot on the chassis.

- i. Turn the controller over to confirm that the battery is installed correctly.

Attention: Possible hardware damage – The metal flange at the front of the battery must be completely inserted into the slot on the controller (as shown in the first figure). If the battery is not installed correctly (as shown in the second figure), the metal flange might contact the controller board, causing damage.

- **Correct – The battery's metal flange is completely inserted in the slot on the controller:**



- **Incorrect – The battery's metal flange is not inserted into the slot on the controller:**



- j. Replace the controller cover.
6. Install the replacement controller into the appliance.
 - a. Turn the controller over, so that the removable cover faces down.
 - b. With the cam handle in the open position, slide the controller all the way into the appliance.
 - c. Move the cam handle to the left to lock the controller in place.
 - d. Replace the cables and SFPs.
 - e. If the original controller used DHCP for the IP address, locate the MAC address on the label on the back of the replacement controller. Ask your network administrator to associate the DNS/network and IP address for the controller you removed with the MAC address for the replacement controller.

Note: If the original controller did not use DHCP for the IP address, the new controller will adopt the IP address of the controller you removed.
7. Bring the controller online using SANtricity System Manager:
 - a. Select **Hardware**.
 - b. If the graphic shows the drives, select **Show back of shelf**.
 - c. Select the controller you want to place online.
 - d. Select **Place Online** from the context menu, and confirm that you want to perform the operation.
 - e. Verify that the seven-segment display shows a state of 99.

8. Confirm that the new controller is Optimal, and collect support data.

Related information

[E-Series and SANtricity 11.5 Documentation Center](#)

Replacing hardware components in the E2860 controller shelf

You might need to replace a controller battery, drive, fan, or power supply in the E2860 controller shelf.

Before you begin

You have the E-Series hardware replacement procedure.

About this task

To replace the battery in the E2800 controller, see the instructions in this guide for replacing an E2800 controller. Those instructions describe how to remove a controller from the appliance, remove the battery from the controller, install the battery, and replace the controller.

To replace a drive, power supply, fan, or drive drawer in the E2860 controller shelf, access the E-Series procedures for maintaining E2800 hardware.

FRU	See E-Series instructions for
Drive	Replacing a drive in 60-drive shelves
Power canister	Replacing a power canister in 60-drive shelves
Fan canister	Replacing a fan canister in 60-drive shelves
Drive drawer	Replacing a drive drawer in 60-drive shelves

Related tasks

[Replacing an E2800 controller](#) on page 70

Related information

[E-Series and SANtricity 11.5 Documentation Center](#)

[NetApp Documentation: Product Library A-Z](#)

Replacing the SG6000-CN controller

You might need to replace the SG6000-CN controller if it is not functioning optimally or if it has failed.

Before you begin

- You have a replacement controller with the same part number as the controller you are replacing.
- You have labels to identify each cable that is connected to the controller.

About this task

The appliance Storage Node will not be accessible when you replace the SG6000-CN controller. If the SG6000-CN controller is functioning sufficiently, you can perform a controlled shutdown at the start of this procedure.

Note: If you are replacing the controller before installing StorageGRID software, you might not be able to access the StorageGRID Appliance Installer immediately after completing this procedure. While you can access the StorageGRID Appliance Installer from other hosts on the same subnet as the appliance, you cannot access it from hosts on other subnets. This condition should resolve itself within 15 minutes (when any ARP cache entries for the original controller time out), or you can clear the condition immediately by purging any old ARP cache entries manually from the local router or gateway.

Steps

1. If the SG6000-CN controller is functioning sufficiently to allow for a controlled shutdown, shut down the SG6000-CN controller.
 - a. From the service laptop, log in to the grid node:
 - i. Enter the following command: `ssh admin@grid_node_IP`
 - ii. Enter the password listed in the `Passwords.txt` file.
 - iii. Enter the following command to switch to root: `su -`
 - iv. Enter the password listed in the `Passwords.txt` file.

When you are logged in as root, the prompt changes from `$` to `#`.
 - b. Stop all StorageGRID services:


```
service servermanager stop
```
 - c. Shut down the SG6000-CN controller:


```
shutdown -h now
```
 - d. Wait for any data in cache memory to be written to the drives.

The green Cache Active LED on the back of the E2800 controller is on when cached data needs to be written to the drives. You must wait for this LED to turn off.
2. Turn off the power switch on the front of the SG6000-CN controller.
3. If the StorageGRID networks attached to the controller use DHCP servers, update DNS/network and IP address settings.
 - a. Locate the MAC address label on the front of the SG6000-CN controller, and determine the MAC address for the Admin Network port.

Note: The MAC address label 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 =`.

- b. Ask your network administrator to associate the DNS/network and IP address for the controller you removed with the MAC address for the replacement controller.

Attention: You must ensure that all IP addresses for the original controller have been updated before you apply power to the replacement controller. Otherwise, the controller will obtain new DHCP IP addresses when it boots up and might not be able to reconnect to StorageGRID. This step applies to all StorageGRID networks that are attached to the controller.

Note: If the original controller used static IP address, the new controller will automatically adopt the IP addresses of the controller you removed.

4. Remove and replace the SG6000-CN controller:
 - a. Label the cables and then disconnect the cables and any SFP+ or SFP28 transceivers.

Attention: To prevent degraded performance, do not twist, fold, pinch, or step on the cables.
 - b. Remove the failed controller from the cabinet or rack.
 - c. Install the replacement controller into the cabinet or rack.
 - d. Replace the cables and any SFP+ or SFP28 transceivers.
 - e. Power on the controller and monitor the controller LEDs and boot-up codes.
5. Confirm that the appliance Storage Node appears in the Grid Manager and that no alarms appear.

Related tasks

[Installing the SG6000-CN controller in a cabinet or rack](#) on page 28

[Viewing boot-up codes for the SG6000-CN controller](#) on page 61

Related references

[Viewing status indicators and buttons on the SG6000-CN controller](#) on page 33

Replacing a power supply in the SG6000-CN controller

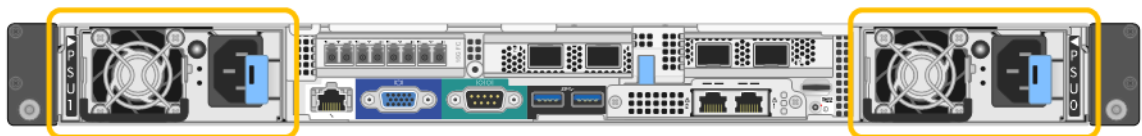
The SG6000-CN controller has two power supplies for redundancy. If one of the power supplies fails, you must replace it as soon as possible to ensure that the compute controller has redundant power.

Before you begin

- You have unpacked the replacement power supply unit.
- You can confirmed that the other power supply is installed and running.

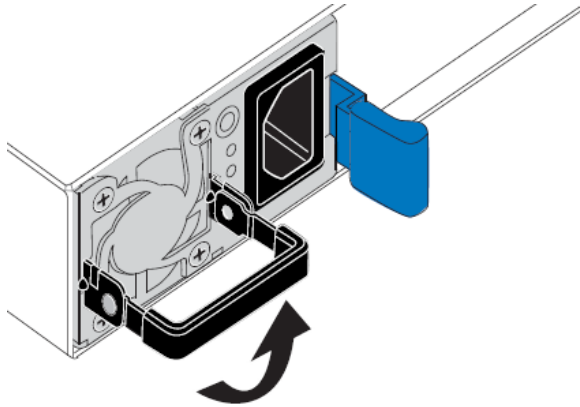
About this task

The figure shows the two power supply units for the SG6000-CN controller, which are accessible from the back of the controller.

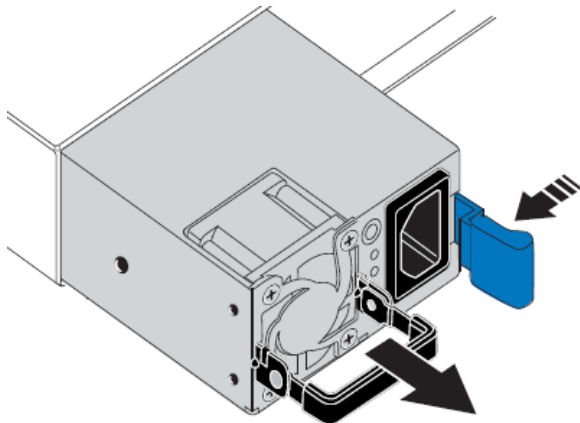


Steps

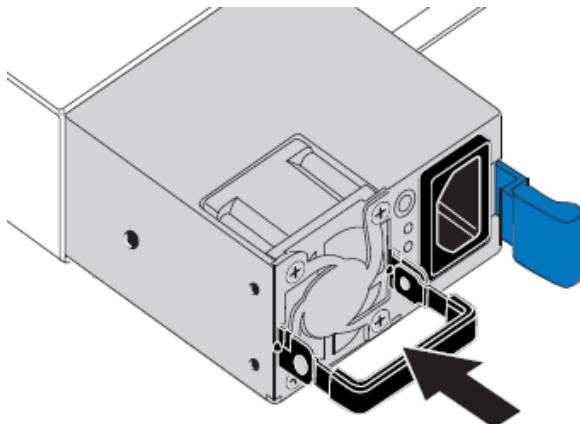
1. Unplug the power cord from the power supply.
2. Lift the cam handle.



3. Press the blue latch and pull the power supply out.



4. Slide the replacement power supply into the chassis.
Ensure that the blue latch is on the right side when you slide the unit in.



5. Push the cam handle down to secure the power supply.
6. Attach the power cord to the power supply, and ensure that the green LED comes on.

Changing the link configuration of the SG6000-CN controller

You can change the Ethernet link configuration of the SG6000-CN controller. You can change the port bond mode, the network bond mode, and the link speed.

Before you begin

- You must have specific access permissions. For details, see the instructions for administering StorageGRID.
- You must be signed in to the Grid Manager using a supported browser.

About this task

Options for changing the Ethernet link configuration of the SG6000-CN controller include:

- Changing **Port bond mode** from Fixed to Aggregate, or from Aggregate to Fixed
- Changing **Network bond mode** from Active-Backup to LACP, or from LACP to Active-Backup
- Enabling or disabling VLAN tagging, or changing the value of a VLAN tag
- Changing the link speed from 10-GbE to 25-GbE, or from 25-GbE to 10-GbE

Before changing the link configuration, you must place the SG6000-CN controller into maintenance mode. Putting a StorageGRID appliance into maintenance mode might make the appliance unavailable for remote access.

Steps

1. Follow these steps to place the SG6000-CN controller into maintenance mode:
 - a. From the Grid Manager, select **Nodes**.
 - b. Select the appliance Storage Node.
 - c. Select the **Tasks** tab.

SGA-106-15 (Storage Node)

Overview Hardware Network Storage Objects ILM Events **Tasks**

Reboot

Shuts down and restarts the node.

Reboot

Maintenance Mode

Places the appliance's compute controller into maintenance mode.

Maintenance Mode

- d. Click **Maintenance Mode**.

A confirmation dialog appears.

⚠ Enter Maintenance Mode on SGA-106-15

You must place the appliance's compute controller into maintenance mode to perform certain maintenance procedures on the appliance.

Attention: All StorageGRID services on this node will be shut down. Wait a few minutes for the node to reboot into maintenance mode.

If you are ready to start, enter the provisioning passphrase and click OK.

Provisioning Passphrase

Cancel
OK

- e. Enter the provisioning passphrase, and click **OK**.

A confirmation message lists the URLs you can use to access the StorageGRID Appliance Installer while the controller is in maintenance mode.

Maintenance mode request sent. In a few minutes, browse to one of the following URLs to access the StorageGRID Appliance Installer. ✕

- <https://192.168.4.138:8443>
- <https://10.224.4.138:8443>
- <https://47.47.4.138:8443>
- <https://169.254.0.1:8443>

When you are done with any required maintenance procedures, you must exit maintenance mode by clicking Reboot Controller from the StorageGRID Appliance Installer.

- f. Wait a few minutes for the controller to reboot into maintenance mode. Then, browse to any of the URLs displayed.

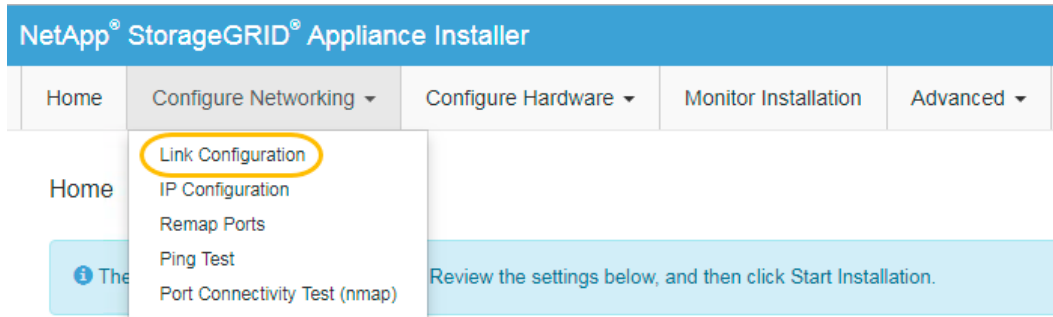
Note: If possible, use the URL containing the IP address of the appliance's Admin Network port.

Note: Accessing `https://169.254.0.1:8443` requires a direct connection to the local management port.

- g. Confirm that the appliance is in maintenance mode by noting the maintenance mode message on the StorageGRID Appliance Installer home page.

⚠ This node is in maintenance mode. Perform any required maintenance procedures, then **reboot** the node to resume normal operation.

2. From the StorageGRID Appliance Installer, select **Configure Networking > Link Configuration**.



3. Make the desired changes to the link configuration.

For more information on the options, see “Configuring network links.”

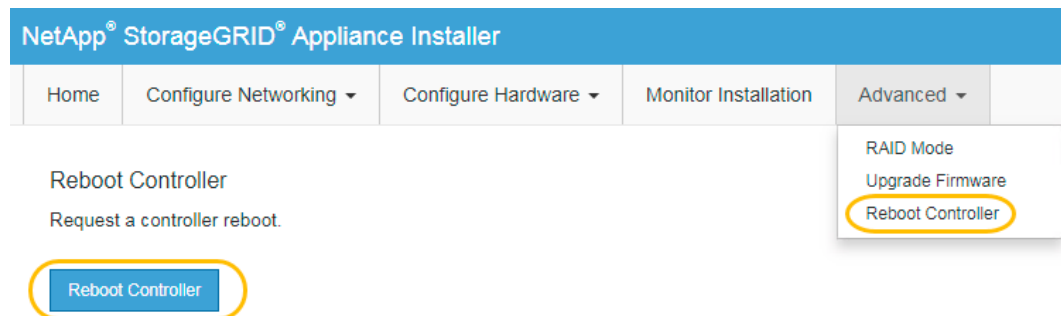
4. When you are satisfied with your selections, click **Save**.

Note: You might lose your connection if you made changes to the network or link you are connected through. If you are not reconnected within 1 minute, re-enter the URL for the StorageGRID Appliance Installer using one of the other IP addresses assigned to the appliance:
https://SG6000-CN_Controller_IP:8443

5. Select **Configure Networking > Ping Test** from the menu.
6. Use the Ping Test tool to check connectivity to IP addresses on any networks that might have been affected by the link configuration changes you made in step 3.

In addition to any other tests you choose to perform, confirm that you can ping the Grid Network IP address of the primary Admin Node, and the Grid Network IP address of at least one other Storage Node. If necessary, return to step 3, and correct any link configuration issues.

7. Once you are satisfied that your link configuration changes are working, return the appliance to normal operating mode:
 - a. From the StorageGRID Appliance Installer, select **Advanced > Reboot Controller**.



- b. Click **Reboot Controller**.

The appliance reboots and rejoins the grid. This process can take up to 20 minutes.

- c. From the Grid Manager, monitor the status of the upgraded appliance Storage Node.
 Verify that the Storage Node returns to the expected status.

Related tasks

[Configuring network links](#) on page 37

Copyright

Copyright © 2019 NetApp, Inc. All rights reserved. Printed in the U.S.

No part of this document covered by copyright may be reproduced in any form or by any means—graphic, electronic, or mechanical, including photocopying, recording, taping, or storage in an electronic retrieval system—without prior written permission of the copyright owner.

Software derived from copyrighted NetApp material is subject to the following license and disclaimer:

THIS SOFTWARE IS PROVIDED BY NETAPP "AS IS" AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL NETAPP BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

NetApp reserves the right to change any products described herein at any time, and without notice. NetApp assumes no responsibility or liability arising from the use of products described herein, except as expressly agreed to in writing by NetApp. The use or purchase of this product does not convey a license under any patent rights, trademark rights, or any other intellectual property rights of NetApp.

The product described in this manual may be protected by one or more U.S. patents, foreign patents, or pending applications.

Data contained herein pertains to a commercial item (as defined in FAR 2.101) and is proprietary to NetApp, Inc. The U.S. Government has a non-exclusive, non-transferrable, non-sublicensable, worldwide, limited irrevocable license to use the Data only in connection with and in support of the U.S. Government contract under which the Data was delivered. Except as provided herein, the Data may not be used, disclosed, reproduced, modified, performed, or displayed without the prior written approval of NetApp, Inc. United States Government license rights for the Department of Defense are limited to those rights identified in DFARS clause 252.227-7015(b).

Trademark

NETAPP, the NETAPP logo, and the marks listed on the NetApp Trademarks page are trademarks of NetApp, Inc. Other company and product names may be trademarks of their respective owners.

<http://www.netapp.com/us/legal/netapptmlist.aspx>

How to send comments about documentation and receive update notifications

You can help us to improve the quality of our documentation by sending us your feedback. You can receive automatic notification when production-level (GA/FCS) documentation is initially released or important changes are made to existing production-level documents.

If you have suggestions for improving this document, send us your comments by email.

doccomments@netapp.com

To help us direct your comments to the correct division, include in the subject line the product name, version, and operating system.

If you want to be notified automatically when production-level documentation is released or important changes are made to existing production-level documents, follow Twitter account @NetAppDoc.

You can also contact us in the following ways:

- NetApp, Inc., 1395 Crossman Ave., Sunnyvale, CA 94089 U.S.
- Telephone: +1 (408) 822-6000
- Fax: +1 (408) 822-4501
- Support telephone: +1 (888) 463-8277