StorageGRID® Webscale 11.1

Hardware Installation and Maintenance Guide

For StorageGRID Webscale SG5700 Series Appliances

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NetApp®

Contents

StorageGRID Webscale appliance overview

The SG5700 StorageGRID Webscale appliance is an integrated storage and computing platform that operates as a Storage Node in a StorageGRID Webscale grid. The appliance can be used in a hybrid grid environment that combines appliance Storage Nodes and virtual (software-based) Storage Nodes.

The StorageGRID Webscale SG5700 appliance provides the following features:

- Integrates the storage and computing elements for a StorageGRID Webscale Storage Node.
- Includes the StorageGRID Appliance Installer to simplify Storage Node deployment and configuration.
- Includes E-Series SANtricity System Manager for hardware management and monitoring.
- Supports up to four 10-GbE or 25-GbE connections to the StorageGRID Webscale Grid Network and Client Network.
- Supports Full Disk Encryption (FDE) drives or 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.

The SG5700 appliance is available in two models: the SG5712 and the SG5760. Both models include the following components:

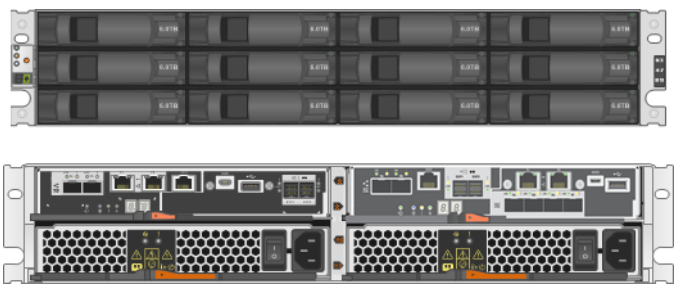
Component	SG5712	SG5760
Compute controller	E5700SG controller	E5700SG controller
Storage controller	E-Series E2800 controller	E-Series E2800 controller
Chassis	E-Series DE212C enclosure, a two rack-unit (2U) enclosure	E-Series DE460C enclosure, a four rack-unit (4U) enclosure
Drives	12 NL-SAS drives (3.5-inch)	60 NL-SAS drives (3.5-inch)
Redundant power supplies and fans	Two power-fan canisters	Two power canisters and two fan canisters

Note: The E5700SG controller is highly customized for use in the StorageGRID Webscale appliance. Do not use E-Series procedures for this controller unless instructed otherwise.

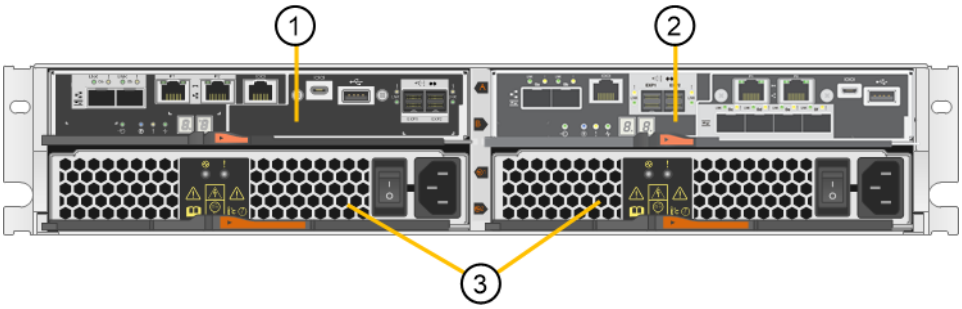
The maximum raw storage available in the StorageGRID Webscale appliance is fixed, based on the number of drives in each enclosure. You cannot expand the available storage by adding a shelf with additional drives.

Model SG5712

This figure shows the front and back of the SG5712 model, a 2U enclosure that holds 12 drives.



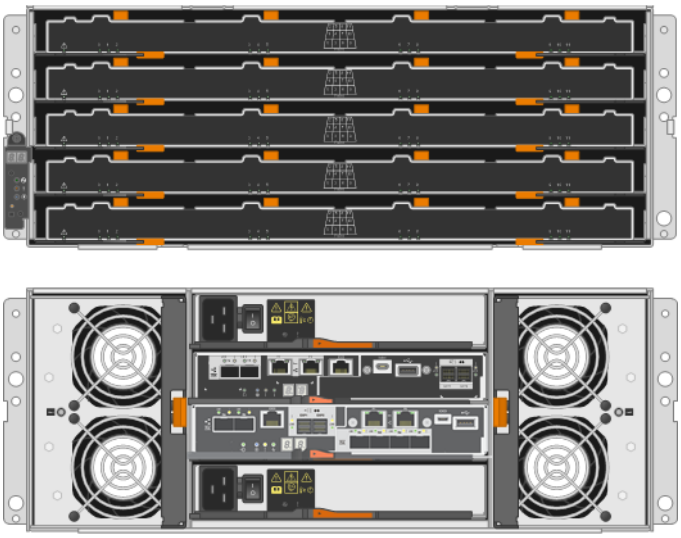
The SG5712 includes two controllers and two power-fan canisters.



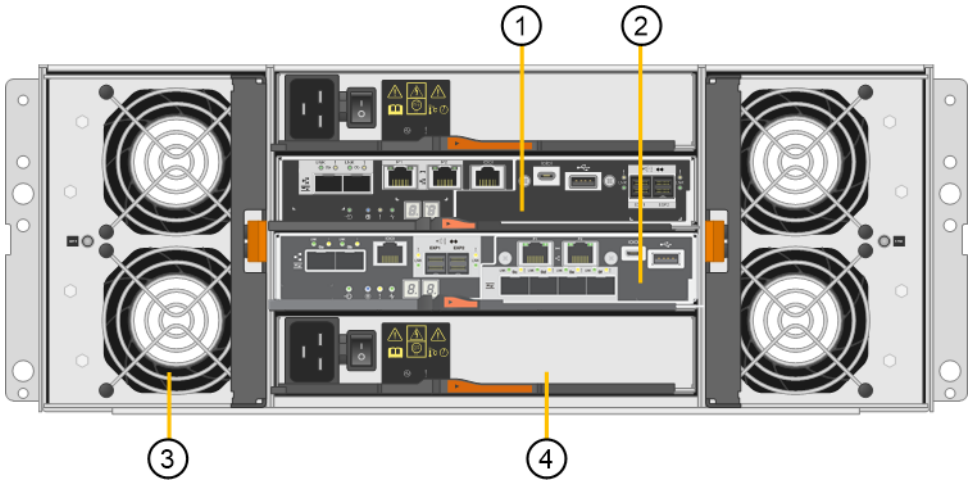
1	E2800 controller (storage controller)
2	E5700SG controller (compute controller)
3	Power-fan canisters

Model SG5760

This figure shows the front and back of the SG5760 model, a 4U enclosure that holds 60 drives in 5 drive drawers.



The SG5760 includes two controllers, two fan canisters, and two power canisters.



1	E2800 controller (storage controller)
2	E5700SG controller (compute controller)
3	Fan canister (1 of 2)
4	Power canister (1 of 2)

Related information

NetApp E-Series Systems Documentation Center

Controllers in the StorageGRID Webscale appliance

Both the SG5712 and SG5760 models of the StorageGRID Webscale appliance include an E5700SG controller and an E2800 controller. You should review the diagrams to learn the differences between the controllers.

E5700SG controller

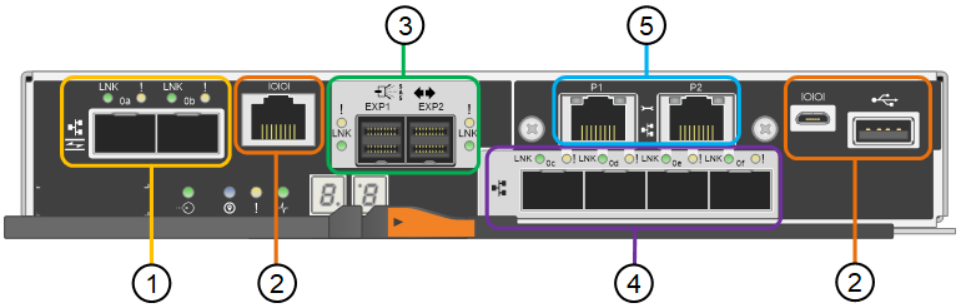
- Operates as the compute server for the appliance.
- Includes the StorageGRID Appliance Installer.

  Note: StorageGRID Webscale software is not preinstalled on the appliance. This software is accessed from the Admin Node when you deploy the appliance.

- Can connect to all three StorageGRID Webscale networks, including the Grid Network, the Admin Network, and the Client Network.
- Connects to the E2800 controller and operates as the initiator.

Note: The E5700SG controller is highly customized for use in the StorageGRID Webscale appliance. Do not use E-Series procedures for this controller unless instructed otherwise. For more information, see “Maintaining the SG5700 appliance.”

This figure shows the connectors on the back of the E5700SG controller.

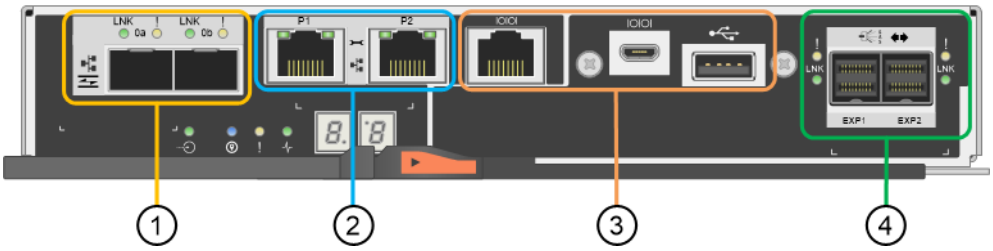


	Port	Type	Use
1	Interconnect ports 1 and 2	16Gb/s Fibre Channel (FC), optical SFP+	Connect the E5700SG controller to the E2800 controller.
2	Diagnostic and support ports	• RJ-45 serial port • Micro USB serial port • USB port	Reserved for technical support use.
3	Drive expansion ports	12Gb/s SAS	Not used. StorageGRID Webscale appliances do not support expansion drive shelves.
4	Network ports 1-4	10-GbE or 25-GbE, based on SFP transceiver type, switch speed, and configured link speed	Connect to the Grid Network and the Client Network for StorageGRID Webscale.
5	Management ports 1 and 2	1-Gb (RJ-45) Ethernet	• Port 1 connects to the Admin Network for StorageGRID Webscale. • Port 2 is used during installation if DHCP-assigned IP addresses are not available.

E2800 controller

- Operates as the storage controller for the appliance.
- Manages the storage of data on the drives.
- Functions as a standard E-Series controller in simplex mode.
- Includes SANtricity OS Software (controller firmware).
- Includes SANtricity System Manager for monitoring appliance hardware and for managing alerts, the AutoSupport feature, and the Drive Security feature.
- Connects to the E5700SG controller and operates as the target.

This figure shows the connectors on the back of the E2800 controller.



	Port	Type	Use
1	Interconnect ports 1 and 2	16Gb/s FC optical SFP+	Connect the E2800 controller to the E5700SG controller.
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 Webscale appliances do not support expansion drive shelves.

Related tasks

Maintaining the SG5700 appliance on page 57

Installation overview

You can install one or more StorageGRID Webscale appliances when you first deploy StorageGRID Webscale, 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 Webscale appliance includes two primary phases.

1. Installing and configuring appliance hardware

The first phase of installing a StorageGRID Webscale 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 (SG5760 only)
   - 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 Webscale networks

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 Webscale grid.

Task	Instructions
Deploying an appliance Storage Node in a new StorageGRID Webscale grid	StorageGRID Webscale installation instructions for your platform
Adding an appliance Storage Node to an existing StorageGRID Webscale grid	Instructions for expanding a StorageGRID Webscale grid
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 33

Related information

VMware installation
Red Hat Enterprise Linux or CentOS installation
Ubuntu or Debian installation
Expanding a StorageGRID Webscale grid
Recovery and maintenance

Preparing for installation

Preparing to install a StorageGRID Webscale 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 15
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 Webscale 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. If you are installing the SG5760 model, 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):

Appliance model	Height	Width	Depth	Maximum weight
SG5712 (12 drives)	3.41 in. (8.68 cm)	17.6 in. (44.7 cm)	21.1 in. (53.6 cm)	63.9 lb (29.0 kg)
SG5760 (60 drives)	6.87 in. (17.46 cm)	17.66 in. (44.86 cm)	38.25 in. (97.16 cm)	250 lb. (113 kg)

4. Install any required network switches. See the NetApp Interoperability Matrix Tool for compatibility information.

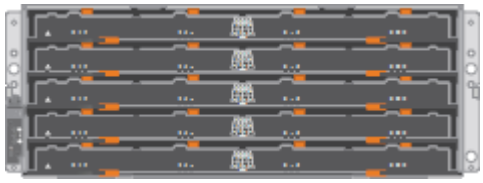
Related information

NetApp Hardware Universe
NetApp Interoperability Matrix Tool

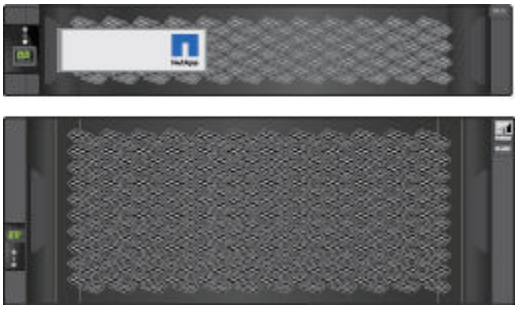
Unpacking the boxes

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

SG5712 appliance with 12 drives installed

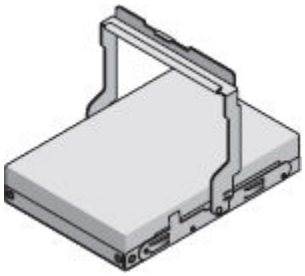


SG5760 appliance with no drives installed

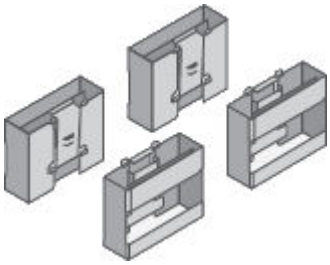


Front bezel for the appliance

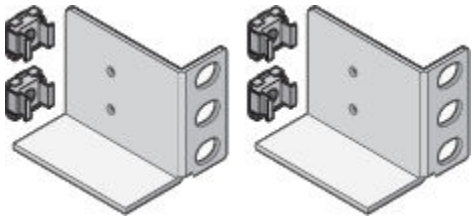
Rail kit with instructions



SG5760: Sixty drives



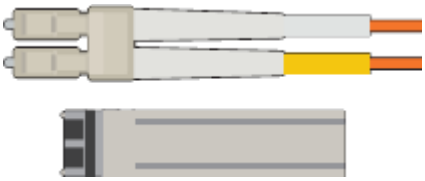
SG5760: Handles



SG5760: Back brackets and cage nuts for square-hole rack installation

Cables and connectors

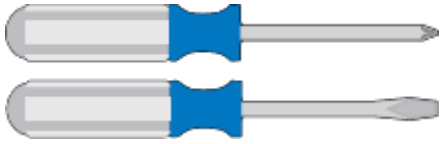
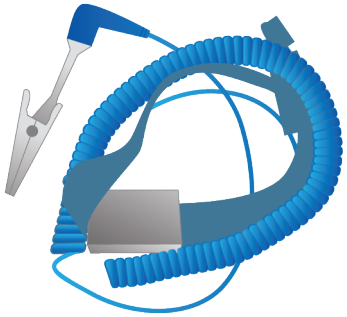
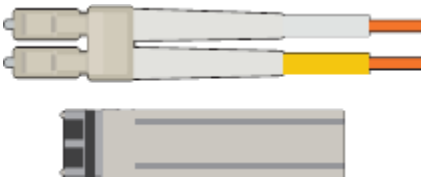
The shipment for the StorageGRID Webscale appliance includes the following cables and connectors:

 Two power cords for your country. Your cabinet might have special power cords that you use instead of the power cords that ship with the appliance.	 Two optical cables for the FC interconnect ports Eight SFP+ transceivers, compatible with both the four 16Gb/s FC interconnect ports and the four 10-GbE network ports

Obtaining additional equipment and tools

Before installing the StorageGRID Webscale 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:

 Phillips No. 2 screwdriver Medium flat-blade screwdriver	 ESD wrist strap
 Optical cables for the 10/25-GbE ports you plan to use Optional: SFP28 transceivers if you want to use 25-GbE link speed	 Ethernet cables

Service laptop	**Optional tools**
	
Supported web browser SSH client, such as PuTTY 1-Gb (RJ-45) Ethernet port	Power drill with Phillips head bit Flashlight Mechanized lift for SG5760

Web browser requirements

You must use a supported web browser.

Web browser	**Minimum supported version**
Google Chrome	54
Microsoft Internet Explorer	11 (Native Mode)
Mozilla Firefox	50

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

StorageGRID Webscale appliance networks

When you deploy a StorageGRID Webscale appliance as a Storage Node in a StorageGRID Webscale grid, you can connect it to the following networks:

- **Grid Network for StorageGRID Webscale**: The Grid Network is used for all internal StorageGRID Webscale traffic. It provides connectivity between all nodes in the grid, across all sites and subnets. The Grid Network is required.
- **Admin Network for StorageGRID Webscale**: 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 Webscale:** The Client Network is an open network used to provide access to client applications, including S3 and Swift. The Client Network provides client

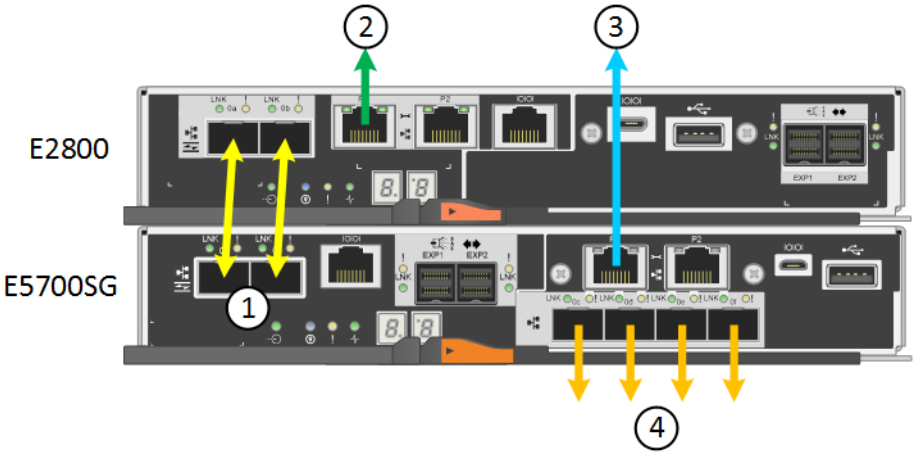
protocol access to the grid, so the Grid Network can be isolated and secured. The Client Network is optional.

- **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 appliance. This management network can be the same as the Admin Network for StorageGRID Webscale, or it can be an independent management network.

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

StorageGRID Webscale appliance connections

When you install a StorageGRID Webscale appliance, you must connect the two controllers to each other and to the required networks. The figure shows the two controllers in the SG5760, with the E2800 controller on the top and the E5700SG controller on the bottom. In the SG5712, the E2800 controller is to the left of the E5700SG controller.



	Port	Type of port	Function
1	Two interconnect ports on each controller	16Gb/s FC optical SFP+	Connect the two controllers to each other.
2	Management port 1 on the E2800 controller	1-Gb (RJ-45) Ethernet	Connects to the network where you access SANtricity System Manager. You can use the Admin Network for StorageGRID Webscale or an independent management network.
	Management port 2 on the E2800 controller	1-Gb (RJ-45) Ethernet	Reserved for technical support.
3	Management port 1 on the E5700SG controller	1-Gb (RJ-45) Ethernet	Connects the E5700SG controller to the Admin Network for StorageGRID Webscale.
	Management port 2 on the E5700SG controller	1-Gb (RJ-45) Ethernet	Can be used to connect the E5700SG controller to a service laptop during installation, if a DHCP-assigned IP address is not available.

	Port	Type of port	Function
4	10/25-GbE ports 1-4 on the E5700SG controller	10-GbE or 25-GbE **Note:** The SFP+ transceivers included with the appliance support 10-GbE link speeds. If you want to use 25-GbE link speeds for the four network ports, you must provide SFP28 transceivers.	Connect to the Grid Network and the Client Network for StorageGRID Webscale. See "10/25-GbE port connections for the E5700SG controller."

Related concepts

10/25-GbE port connections for the E5700SG controller on page 17

Related tasks

Gathering installation information on page 19
Cabling the appliance on page 26

Related information

VMware installation
Red Hat Enterprise Linux or CentOS installation
Ubuntu or Debian installation

10/25-GbE port connections for the E5700SG controller

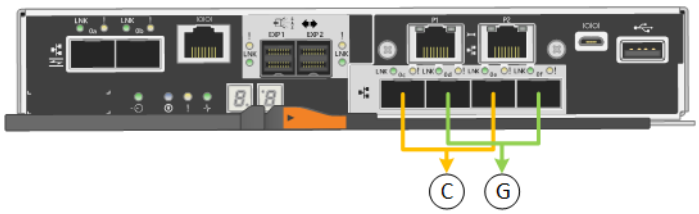
When connecting the 10/25-GbE ports on the E5700SG controller to the StorageGRID Webscale Grid Network and Client Network, you can use fixed port bond mode or aggregate port bond mode. The port bond modes help protect your data by providing redundant paths between StorageGRID Webscale networks and the appliance.

Related tasks

Configuring network links on page 43

Fixed port bond mode

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



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

Callout	Which ports are bonded
G	Ports 2 and 4 are bonded together for the Grid Network.

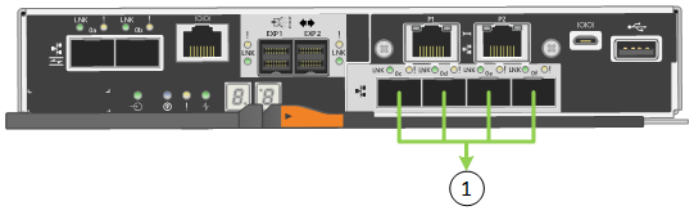
When using Fixed port bond mode, the ports can be bonded using active-backup mode or Link Aggregation Control Protocol mode (LACP 802.3ad).

- 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 Webscale 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 throughout for each StorageGRID Webscale 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 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 Webscale is installed, indicating that cables are unplugged. You can safely acknowledge the alarms to clear them.

Gathering installation information

As you install and configure the StorageGRID Webscale 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 controller

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

Information needed	Your value
Ethernet switch port you will connect to management port 1	
MAC address for management port 1 (printed on a label near port P1)	
DHCP-assigned IP address for management port 1, if available after power on **Note:** If the network you will connect to the E2800 controller includes a DHCP server, the network administrator can use the MAC address to determine the IP address that was assigned by the DHCP server.	
Speed and duplex mode **Note:** You must make sure the Ethernet switch for the SANtricity System Manager management network is set to autonegotiate.	Must be: • Autonegotiate (default)
IP address format	Choose one: • IPv4 • IPv6
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:

Table 2: Information needed to connect the E5700SG controller to the Admin Network

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

Information needed	Your value
Admin Network enabled	Choose one: • No • Yes (default)
Ethernet switch port you will connect to management port 1 (P1)	
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 Admin Network includes a DHCP server, the E5700SG controller displays the DHCP-assigned IP address on its seven-segment display after it boots up. You can also determine the DHCP-assigned IP address by using the MAC address to look up the assigned IP.	• 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 E5700SG controller

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

Note: See “10/25-GbE port connections for the E5700SG controller” for more information about the options for these ports.

Information needed	Your value
Link speed **Note:** If you select 25 GbE, you must install SPF28 transceivers. Auto-negotiation is not supported, so you must also configure the ports and the connected switches for 25GbE.	Choose one: • 10 GbE (default) • 25 GbE

Information needed	Your value
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 E5700SG controller to the Grid Network

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

Note: See "10/25-GbE port connections for the E5700SG controller" for more information about the options for these ports.

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 **Note:** If the Grid Network includes a DHCP server, the E5700SG controller displays the DHCP-assigned IP address for the Grid Network on its seven-segment display after it boots up.	• 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:

Information needed	Your value
Grid Network subnets (CIDR) **Note:** If the Client Network is not enabled, the default route on the controller will use the gateway specified here.	

Table 5: Information needed to connect the E5700SG controller to the Client Network

The Client Network for StorageGRID Webscale is an optional network, typically used to provide client protocol access to the grid. The appliance connects to the Client Network using the 10/25-GbE ports on the E5700SG controller.

Note: See "10/25-GbE port connections for the E5700SG controller" for more information about the options for these ports.

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

Related concepts

10/25-GbE port connections for the E5700SG controller on page 17

Related tasks

Configuring the hardware on page 33

Related references

Reviewing appliance network connections on page 15

Installing the hardware

Hardware installation entails installing the appliance into a cabinet or rack, connecting the cables, and applying power.

Steps

1. Registering the hardware on page 24
2. Installing the appliance in a cabinet or rack on page 25
3. Cabling the appliance on page 26
4. Connecting power cords and applying power on page 28
5. Viewing boot-up status codes on page 29

Registering the hardware

Registering the appliance hardware provides support benefits.

Steps

1. Locate the chassis serial number.

   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 appliance in a cabinet or rack

You must install rails in your cabinet or rack and then slide the appliance onto the rails. If you have an SG5760, you must also install the drives after installing the appliance.

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 the *Installation and Setup Instructions* for the appliance.

Caution: Install hardware from the bottom of the rack or cabinet or rack up to prevent the equipment from tipping over.

Caution: The SG5712 weighs approximately 64 lb (29 kg) when fully loaded with drives. Two people or a mechanized lift are required to safely move the SG5712.

Caution: The SG5760 weighs approximately 132 lb (60 kg) with no drives installed. Four people or a mechanized lift are required to safely move an empty SG5760.

Caution: To avoid damaging the hardware, never move an SG5760 if drives are installed. You must remove all drives before moving the shelf.

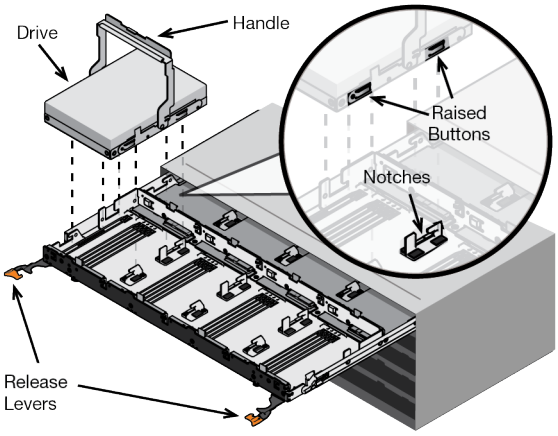
Steps

1. Carefully follow the instructions for the rail kit to install the rails in your cabinet or rack.
2. If you have an SG5760, follow these steps to prepare for moving the appliance.
   a. Remove the outer packing box. Then, fold down the flaps on the inner box.
   b. If you are lifting the SG5760 by hand, attach the four handles to the sides of the chassis.

      You remove these handles as you slide the appliance onto the rails.
3. See the *Installation and Setup Instructions*, and slide the appliance in the cabinet or rack.
4. See the *Installation and Setup Instructions*, and secure the appliance to the cabinet or rack.

   If you have an SG5760, use the back brackets to secure the appliance to the rear of the rack or cabinet. Use the cage nuts if your rack or cabinet has square holes.
5. If you have an SG5760, install 12 drives in each of the 5 drive drawers.

   You must install all 60 drives to ensure correct operation.
   a. Put on the ESD wristband, and remove the drives from their packaging.
   b. Release the levers on the top drive drawer, and slide the drawer out using the levers.
   c. Raise the drive handle to vertical, and align the buttons on the drive with the notches on the drawer.



d. Pressing gently on the top of the drive, rotate the drive handle down until the drive snaps into place.

e. After installing the first 12 drives, slide the drawer back in by pushing on the center and closing both levers gently.

f. Repeat these steps for the other four drawers.

6. Attach the front bezel.

Cabling the appliance

You must connect the two controllers to each other, connect the management ports on each controller, and connect the 10/25-GbE ports on the E5700SG controller to the Grid Network and optional Client Network for StorageGRID Webscale.

Before you begin

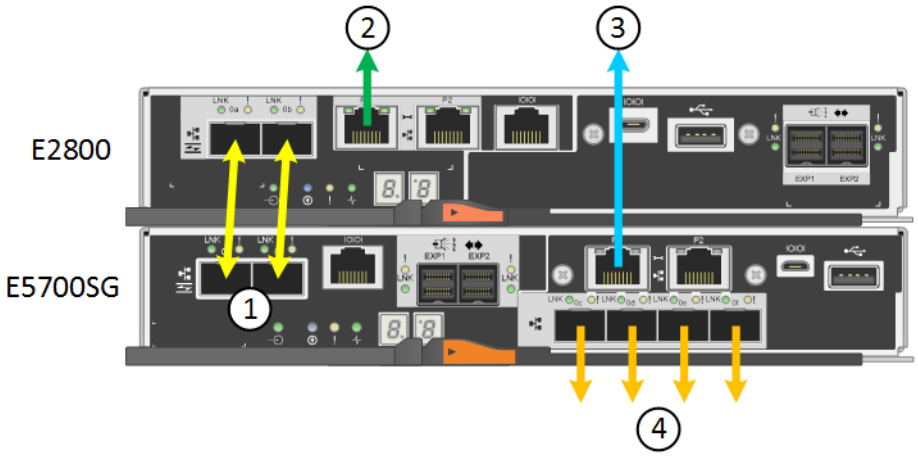
- You have Ethernet cables for connecting the management ports.
- You have optical cables for connecting the four 10/25-GbE ports (these are not provided with the appliance).
- If you plan to use the 25-GbE link speed for these ports, you have SFP28 transceivers.

Note: Eight SFP+ transceivers are included with the appliance shipment. These transceivers support either 10GbE or 16Gbps FC and can be used with the two interconnect ports on both controllers and with the four 10GbE/25GbE network ports on the E5700SG controller (assuming you want the network ports to use a 10-GbE link speed).

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 two controllers in the SG5760, with the E2800 controller on the top and the E5700SG controller on the bottom. In the SG5712, the E2800 controller is to the left of the E5700SG controller when viewed from the back.



	Port	Type of port	Function
1	Two interconnect ports on each controller	16Gb/s FC optical SFP+	Connect the two controllers to each other.
2	Management port 1 on the E2800 controller	1-Gb (RJ-45) Ethernet	Connects to the network where you access SANtricity System Manager. You can use the Admin Network for StorageGRID Webscale or an independent management network.
	Management port 2 on the E2800 controller	1-Gb (RJ-45) Ethernet	Reserved for technical support.
3	Management port 1 on the E5700SG controller	1-Gb (RJ-45) Ethernet	Connects the E5700SG controller to the Admin Network for StorageGRID Webscale.
	Management port 2 on the E5700SG controller	1-Gb (RJ-45) Ethernet	Can be used to connect the E5700SG controller to a service laptop during installation, if a DHCP-assigned IP address is not available.
4	10/25-GbE ports 1-4 on the E5700SG controller	10-GbE or 25-GbE **Note:** The SFP+ transceivers included with the appliance support 10-GbE link speeds. If you want to use 25-GbE link speeds for the four network ports, you must provide SFP28 transceivers.	Connect to the Grid Network and the Client Network for StorageGRID Webscale. See “10/25-GbE port connections for the E5700SG controller.”

Steps

1. Connect the E2800 controller to the E5700SG controller, using two optical cables and four of the eight SFP+ transceivers.

Connect this port...	To this port...
Interconnect port 1 on the E2800 controller	Interconnect port 1 on the E5700SG controller
Interconnect port 2 on the E2800 controller	Interconnect port 2 on the E5700SG controller

2. Connect management port 1 (P1) on the 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 controller (the RJ-45 port on the right). This port is reserved for technical support.

3. If you plan to use the Admin Network for StorageGRID Webscale, connect management port 1 on the E5700SG controller (the RJ-45 port on the left) to the Admin Network, using an Ethernet cable.

4. Connect the 10/25-GbE ports on the E5700SG controller to the appropriate network switches, using optical cables and SFP+ or SFP28 transceivers.

   Note: All 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 Webscale 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

10/25-GbE port connections for the E5700SG controller on page 17

Related tasks

Accessing the StorageGRID Webscale Appliance Installer on page 41

Connecting power cords and applying power

When you apply power to the appliance, both controllers boot up.

Before you begin

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

Steps

1. Confirm that the two power switches on the appliance are off.

2. Connect the two power cords to the appliance.
3. Connect the two power cords to different power distribution units (PDUs) in the cabinet or rack.
4. Turn on the two power switches on the appliance.
   - Do not turn off the power switches during the power-on process.
   - The fans are very loud when they first start up. The loud noise during start-up is normal.
5. After the controllers have booted up, check their seven-segment displays.

Viewing boot-up status codes

The seven-segment displays on each controller show status and error codes as the appliance powers up.

About this task

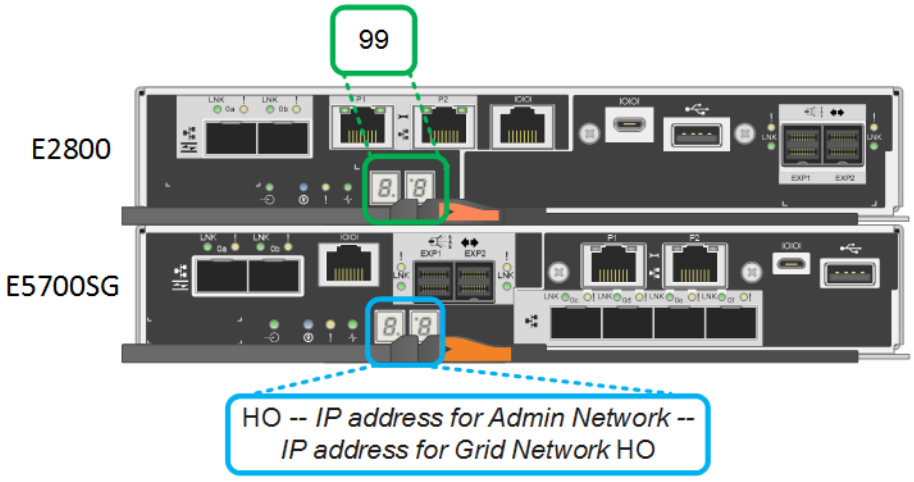
The E2800 controller and the E5700SG controller display different statuses and error codes.

To understand what these codes mean, see the following resources:

Controller	Reference
E2800 controller	*E5700 and E2800 System Monitoring Guide* **Note:** The codes listed for the E-Series E5700 controller do not apply to the E5700SG controller in the appliance.
E5700SG controller	"Status indicators on the E5700SG controller"

Steps

1. During boot-up, monitor progress by viewing the codes shown on the seven-segment displays.
   - The seven-segment display on the E2800 controller shows the repeating sequence **OS, Sd, *blank*** to indicate that it is performing start-of-day processing.
   - The seven-segment display on the E5700SG controller shows a sequence of codes, ending with **AA** and **FF**.
2. After the controllers have booted up, confirm the seven-segment displays show the following:



Controller	Seven-segment display
E2800 controller	Shows 99, which is the default ID for an E-Series controller shelf.
E5700SG controller	Shows **HO**, followed by a repeating sequence of two numbers. `HO -- IP address for Admin Network -- IP address for Grid Network HO` In the sequence, the first set of numbers is the DHCP-assigned IP address for the controller's management port 1. This address is used to connect the controller to the Admin Network for StorageGRID Webscale. The second set of numbers is the DHCP-assigned IP address used to connect the appliance to the Grid Network for StorageGRID Webscale. **Note:** If an IP address could not be assigned using DHCP, 0.0.0.0 is displayed.

3. If the seven-segment displays show other values, see "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

Status indicators on the E5700SG controller on page 30
Troubleshooting the hardware installation on page 54

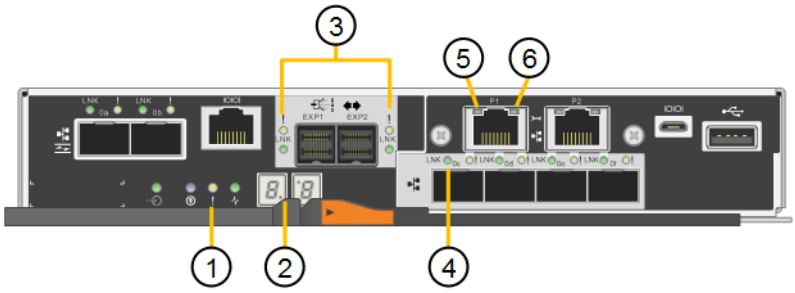
Related information

E5700 and E2800 System Monitoring Guide

Status indicators on the E5700SG controller

The seven-segment display and the LEDs on the E5700SG controller show status and error codes while the appliance powers up and while the hardware is initializing. You can use these displays to determine status and troubleshoot errors.

After the StorageGRID Webscale Appliance Installer has started, you should periodically review the status indicators on the E5700SG controller.



	Display	State	Description
1	Attention LED	Amber	The controller is faulty and requires operator attention, or the installation script was not found.
		Off	The controller is operating normally.

	Display	State	Description
2	Seven-segment display	Shows a diagnostic code	Seven-segment display sequences enable you to understand errors and the operational state of the appliance.
3	Expansion Port Attention LEDs	Amber	These LEDs are always amber (no link established) because the appliance does not use the expansion ports.
4	Host Port Link Status LEDs	Green	The link is up.
		Off	The link is down.
5	Ethernet Link State LEDs	Green	A link is established.
		Off	No link is established.
6	Ethernet Activity LEDs	Green	The link between the management port and the device to which it is connected (such as an Ethernet switch) is up.
		Off	There is no link between the controller and the connected device.
		Blinking Green	There is Ethernet activity.

General boot-up codes

During boot-up or after a hard reset of the appliance, the following occurs:

1. The seven-segment display on the E5700SG controller shows a general sequence of codes that is not specific to the controller. The general sequence ends with the codes AA and FF.
2. Boot-up codes that are specific to the E5700SG controller appear.

E5700SG controller boot-up codes

During a normal boot-up of the appliance, the seven-segment display on the E5700SG controller shows the following codes in the order listed:

Code	Indicates
HI	The master boot script has started.
PP	The system is checking to see if the FPGA needs to be updated.
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 controller and synchronizing with the SANtricity operating system. **Note:** If this boot procedure does not progress past this stage, check the connections between the two controllers.
HC	The system is checking for existing StorageGRID Webscale installation data.
HO	The StorageGRID Appliance Installer is running.

Code	Indicates
HA	StorageGRID Webscale is running.

E5700SG controller error codes

These codes represent error conditions that might be shown on the E5700SG controller as the appliance boots up. Additional two-digit hexadecimal codes are displayed if specific low-level hardware errors occur. If any of these codes persists for more than a second or two, or if you are unable to resolve the error by following one of the prescribed troubleshooting procedures, contact technical support.

Code	Indicates
22	No master boot record found on any boot device.
23	The internal flash disk is not connected.
2A, 2B	Stuck bus, unable to read DIMM SPD data.
40	Invalid DIMMs.
41	Invalid DIMMs.
42	Memory test failed.
51	SPD reading failure.
92 to 96	PCI bus initialization.
A0 to A3	SATA drive initialization.
AB	Alternate boot code.
AE	Booting OS.
EA	DDR4 training failed.
E8	No memory installed.
EU	The installation script was not found.
EP	Installation or communication with the E2800 controller has failed.

Related references

Troubleshooting the hardware installation on page 54

Related information

NetApp Support

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 hardware. You must also configure the network connections that will be used by StorageGRID Webscale.

Configuring SANtricity System Manager

You can use SANtricity System Manager to monitor the status of the storage disks and hardware components in your StorageGRID Webscale appliance. You can access this software by browsing to the IP address of management port 1 on the E2800 controller (the storage controller in the appliance).

Steps

1. Accessing SANtricity System Manager on page 33
2. Setting the IP address for the E2800 management port on page 35
3. Setting up SANtricity System Manager on page 38
4. Reviewing the hardware status in SANtricity System Manager on page 39

Accessing SANtricity System Manager

You can monitor and manage the appliance hardware by browsing to SANtricity System Manager, which is included on the E2800 controller (the storage controller in the appliance).

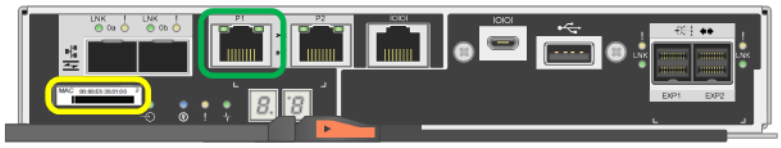
Before you begin

- You are using a supported web browser.

Steps

1. If management port 1 on the E2800 controller is connected to a network that has a DHCP server:

   a. Use the MAC address on the label to look up the DHCP-assigned IP address for management port 1 (P1).

   b. 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.

   c. Go to step *3*.

2. If the network does not use a DHCP server (or if an IP address was not acquired from the DHCP server):

   a. Connect the service laptop directly to management port 2 on the E2800 controller, using an Ethernet cable.

b. Configure the IP address for the Ethernet port on the service laptop:

- **IP address**: `192.168.129.100`
- **Subnet mask**: `255.255.255.0`

c. Open a web browser on the service laptop, and enter this URL:

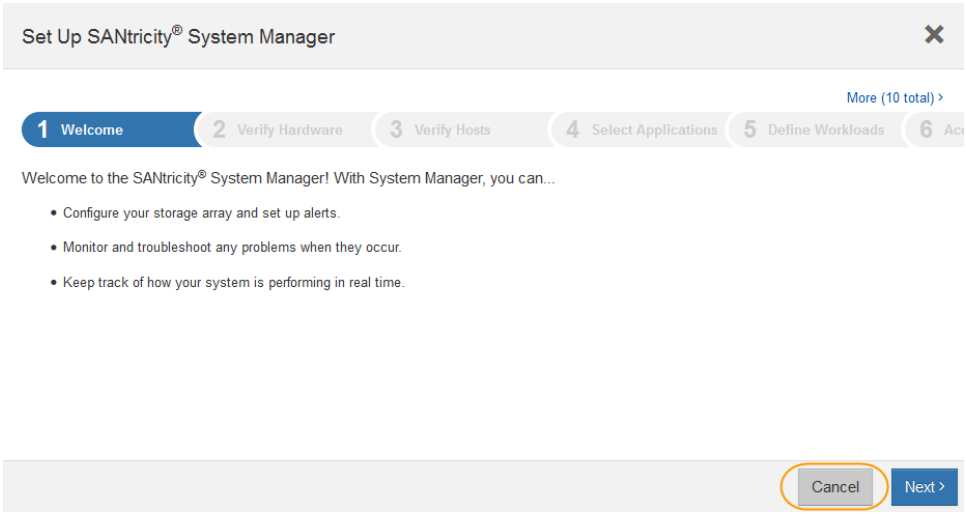
`https://192.168.129.101`

The login page for SANtricity System Manager appears.

3. Set or enter the administrator password.

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

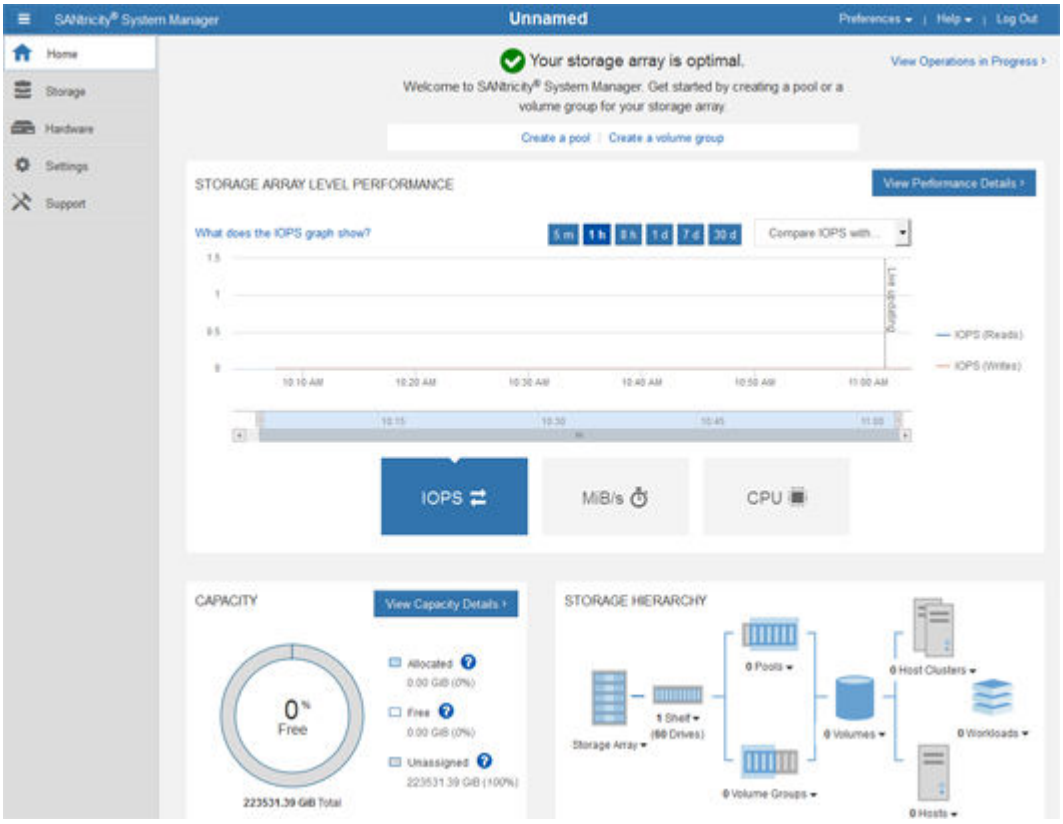
The Set Up wizard appears.



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

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

The SANtricity System Manager home page appears.



Related tasks

Setting the IP address for the E2800 management port on page 35

Related references

Web browser requirements on page 15

Setting the IP address for the E2800 management port

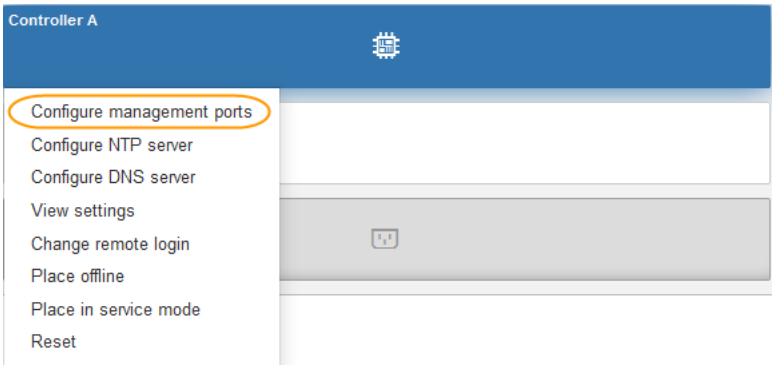
Management port 1 on the E2800 controller connects the appliance to the management network for SANtricity System Manager. You must set a static IP address for the E2800 controller to ensure that you do not lose your management connection to the hardware and the controller firmware in the StorageGRID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

About this task

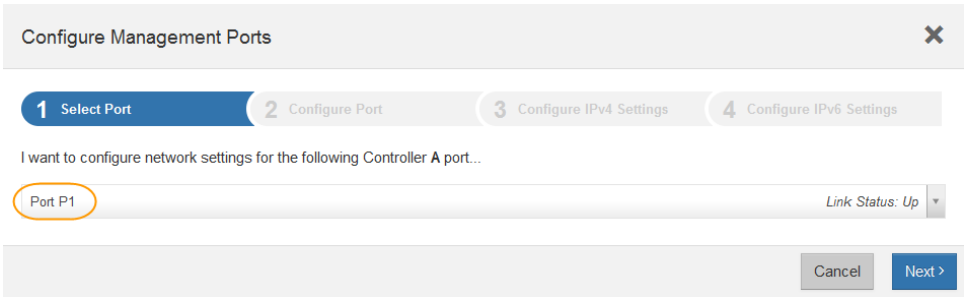
The DHCP server assigns a new IP address whenever you disconnect and reconnect the Ethernet cable or power cycle the appliance. This process occurs until you configure a static IP address for the controller.

Steps

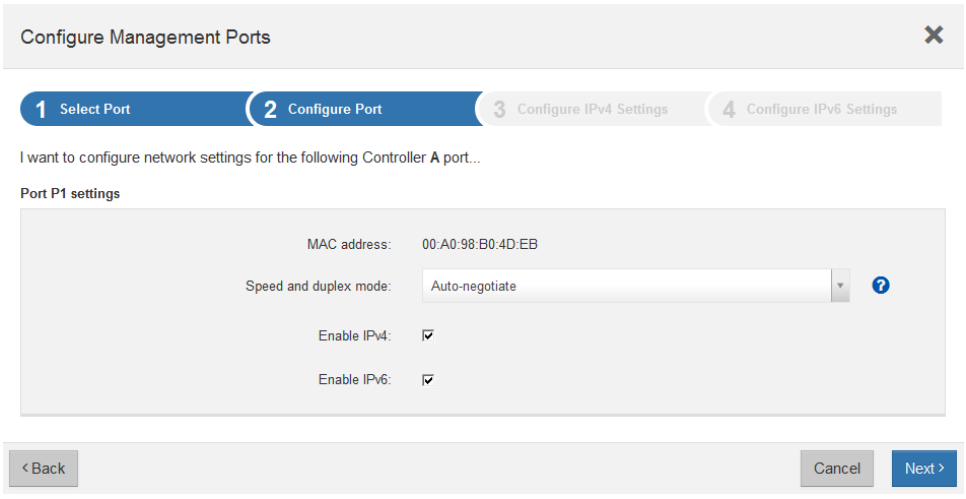
1. From SANtricity System Manager, click the **Hardware** tab.
2. If the graphic shows the drives, click **Show back of shelf**.
3. From the image of the appliance, click **Controller A**.
4. From the controller's context menu, select **Configure management ports**.



5. For step 1 of the **Configure Management Ports** wizard, make sure **Port P1** is selected, and click **Next**.



6. For step 2 of the **Configure Management Ports** wizard, configure the network settings for port 1.



   a. From the **Speed and duplex mode** drop-down list, make sure **Auto-negotiate** is selected.

      You must also make sure the Ethernet switch for the management network is set to autonegotiate. Connectivity issues might occur if automatic negotiation is selected in SANtricity System Manager but not set for the Ethernet switch.

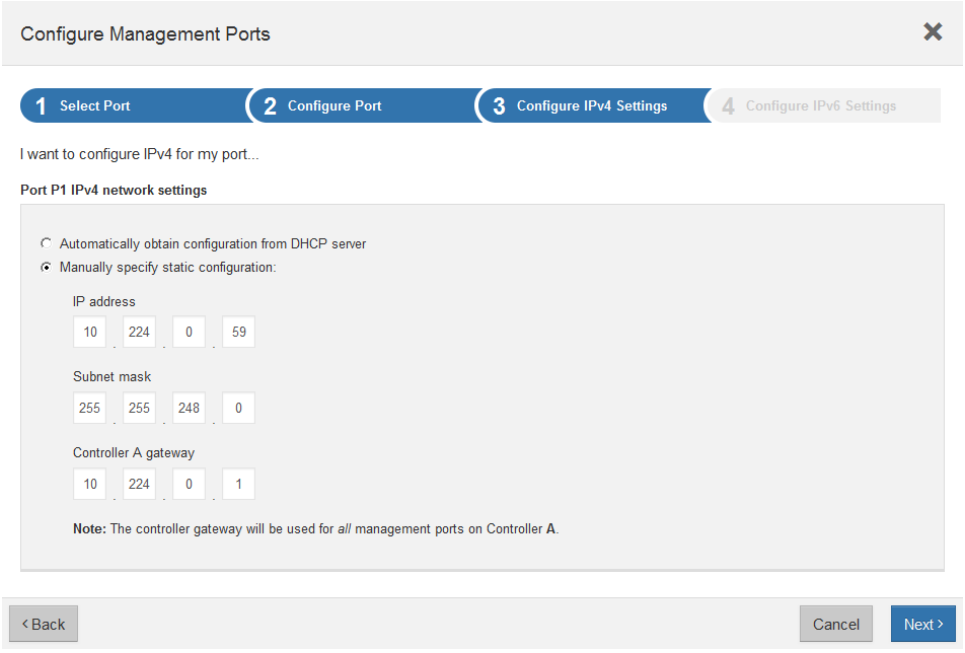
   b. Depending on your network configuration, select **Enable IPv4**, **Enable IPv6**, or both.

7. If you selected **Enable IPv4**:

   a. Click **Next**.

b. Make sure **Manually specify static configuration** is selected.

c. Change the IP address of port 1 to a routable management IP address, subnet mask, and gateway.

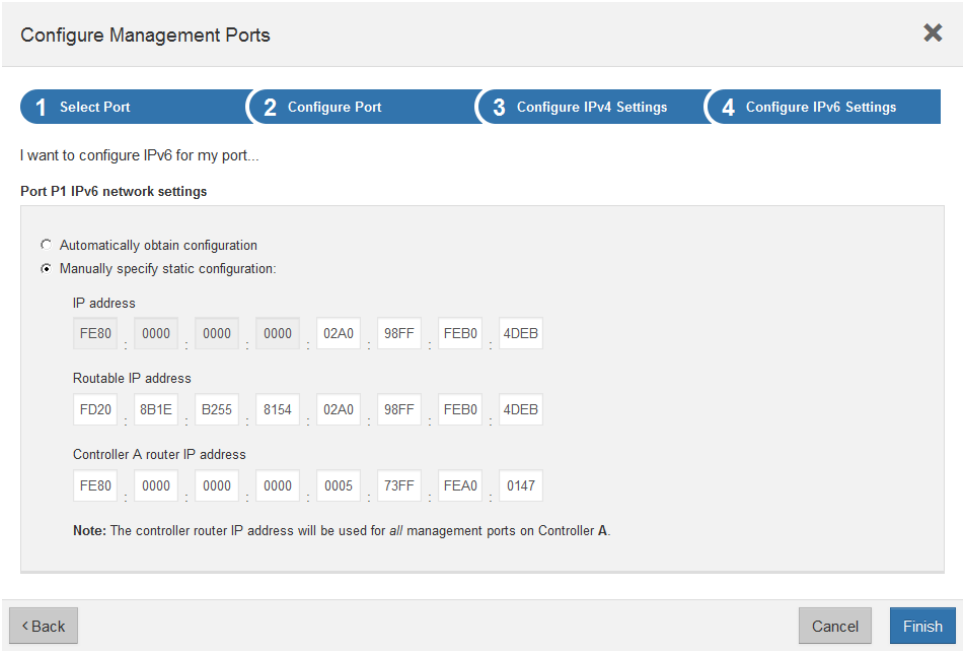


8. If you selected **Enable IPv6**:

a. Click **Next**.

b. Make sure **Manually specify static configuration** is selected.

c. Enter an IP address, routable IP address, and Controller A router IP address.



9. Click **Finish**.

   When the new IP address becomes active, your web browser loses its connection to SANtricity System Manager.

10. If you connected the service laptop directly to management port 1:

    a. Disconnect the Ethernet cable from management port 1.

    b. Connect the network Ethernet cable to management port 1.

11. Reconnect to SANtricity System Manager, but use the new static IP address as the URL:

    `https://E2800_Controller_IP`

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 Webscale grid.

About this task

You use SANtricity System Manager to configure the following settings:

- Email alerts, SNMP alerts, or syslog alerts for the appliance hardware
- AutoSupport settings for the appliance hardware
- Drive Security keys, which are needed to unlock secured drives (this step is required if you are using FDE or FIPS drives and 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 appliance hardware.

   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 for the appliance hardware.

6. If the Drive Security feature is enabled for the appliance and FDE or FIPS drives are installed, 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.

Attention: The E2800 controller acts as a simplex controller. The security key needed to unlock the drives is saved to the E2800 controller but not to the E5700SG controller. You must be able to locate your key identifier, pass phrase, and the downloaded key file in case the E2800 controller fails and needs to be replaced.

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 appliance 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:

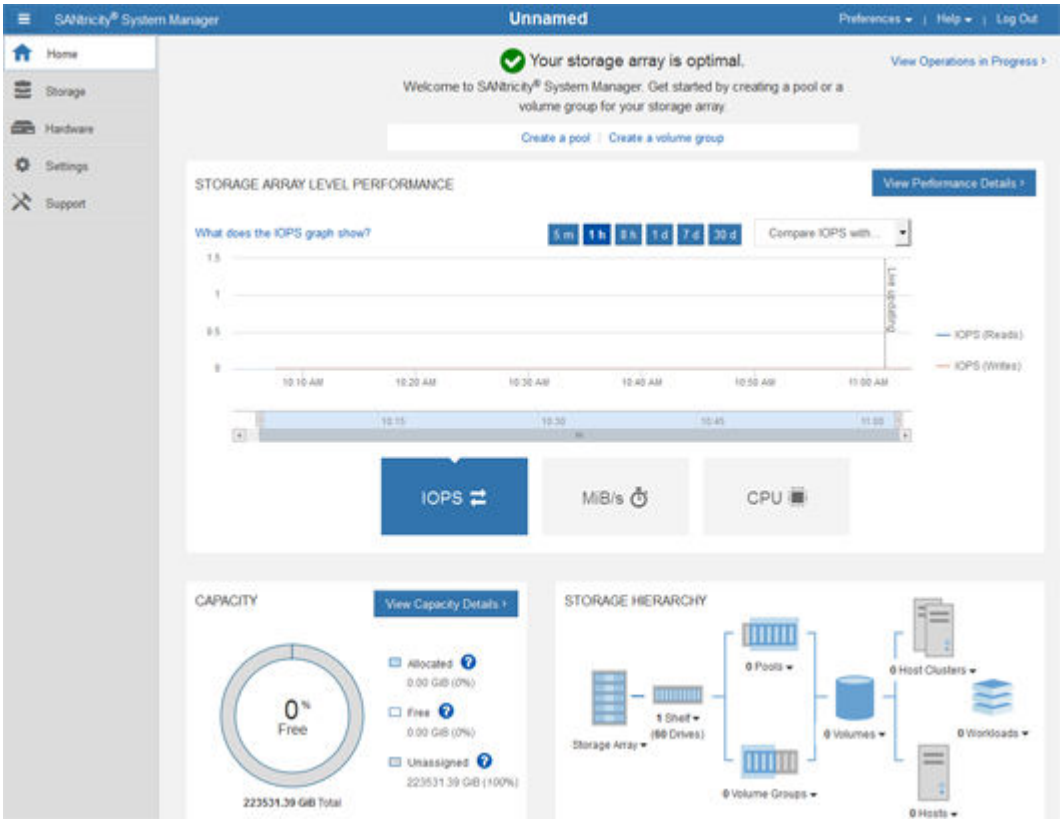
   `https://E2800_Controller_IP`

   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.

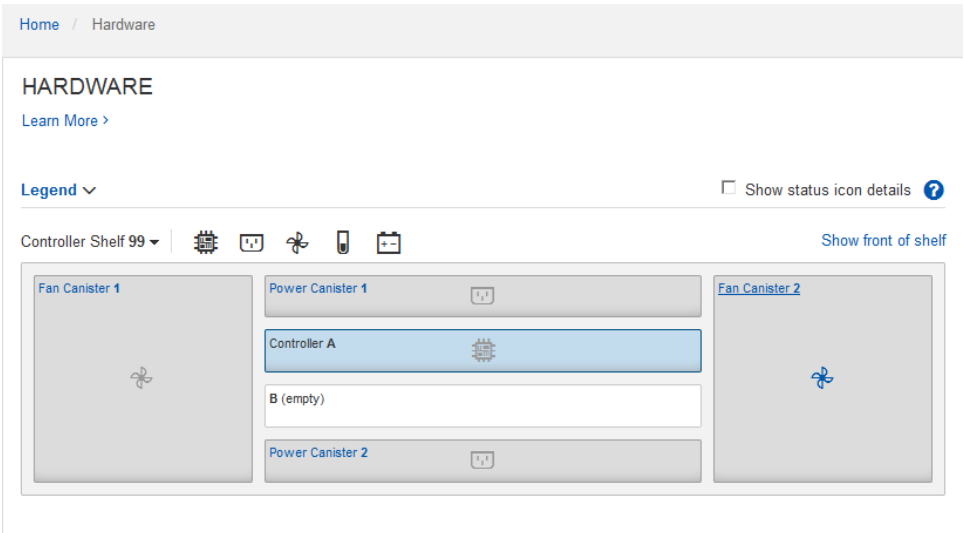
   The SANtricity System Manager home page appears. In SANtricity System Manager, the appliance is referred to as a *storage array*.



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 the E2800 controller, the power and fan canisters in the appliance, the battery in the E2800 controller, and component temperatures.

Note: SANtricity System Manager does not show information about the E5700SG controller. The slot for this controller appears as **B (empty)** in the graphic.

c. To see the settings for the E2800 controller, select **Controller A** and select **View settings** from the context menu.

d. To see the setting 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 SG5760.

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 StorageGRID Webscale connections

Before you can deploy a StorageGRID Webscale appliance as a Storage Node in a StorageGRID Webscale 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 E5700SG controller (the compute controller in the appliance).

Steps

1. Accessing the StorageGRID Webscale Appliance Installer on page 41
2. Configuring network links on page 43
3. Setting the IP configuration on page 47
4. Verifying network connections on page 50

Accessing the StorageGRID Webscale Appliance Installer

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

Before you begin

- You are using a supported web browser.
- The appliance is connected to all of the StorageGRID Webscale networks you plan to use.
- You know the IP address, gateway, and subnet for the appliance on these networks.
- You have configured the network switches you plan to use.

About this task

When you first access the StorageGRID Appliance Installer, you can use the DHCP-assigned IP address for the Admin Network (assuming the appliance is connected to the Admin Network) or the DHCP-assigned IP address for the Grid Network. Using the IP address for the Admin Network is preferred. Otherwise, if you access the StorageGRID Appliance Installer using the DHCP address for the Grid Network, you might lose connection with the StorageGRID Appliance Installer when you change link settings and when you enter a static IP.

Steps

1. Obtain the DHCP address for the appliance on the Admin Network (if it is connected) or the Grid Network (if the Admin Network is not connected).

   You can do either of the following:

- Look at the seven-segment display on the E5700SG controller. If management port 1 and 10/25-GbE ports 2 and 4 on the E5700SG controller are connected to networks with DHCP servers, the controller attempts to obtain dynamically assigned IP addresses when you power on the enclosure. After the controller has completed the power-on process, its seven-segment display shows **HO**, followed by a repeating sequence of two numbers.

  ```
  HO -- IP address for Admin Network -- IP address for Grid Network
  HO
  ```

  In the sequence:

  - The first set of numbers is the DHCP address for the appliance Storage Node on the Admin Network, if it is connected. This IP address is assigned to management port 1 on the E5700SG controller.
  - The second set of numbers is the DHCP address for the appliance Storage Node on the Grid Network. This IP address is assigned to 10/25-GbE ports 2 and 4 when you first apply power to the appliance.

  Note: If an IP address could not be assigned using DHCP, 0.0.0.0 is displayed.

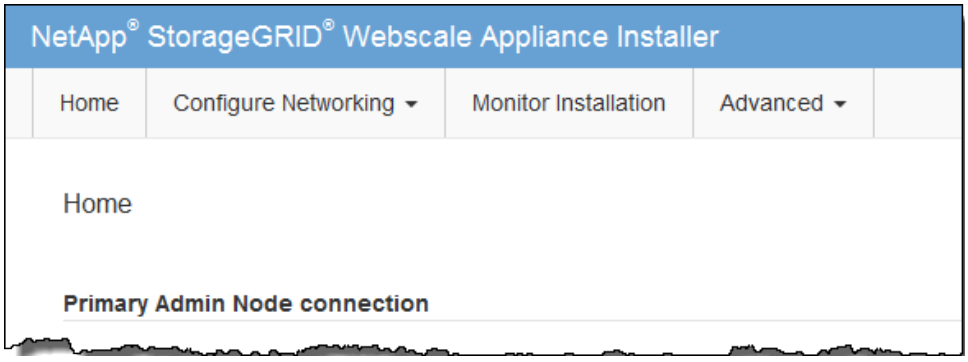
- Provide the MAC address for management port 1 to your network administrator, so they can look up the DHCP address for this port on the Admin Network. The MAC address is printed on a label on the E5700SG controller, next to the port.

2. If you were able to obtain either of the DHCP addresses:
   a. Open a web browser on the service laptop.
   b. Enter this URL for the StorageGRID Appliance Installer:

      `http://E5700SG_Controller_IP:8080`

      For *`E5700SG_Controller_IP`*, use the DHCP address for the controller (use the IP address for the Admin Network if you have it).

      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 Webscale networks. Error messages might appear that will be resolved in later steps.



3. If the E5700SG controller could not acquire an IP address using DHCP:
   a. Connect the service laptop to management port 2 on the E5700SG controller, using an Ethernet cable.

b. Open a web browser on the service laptop.

c. Enter this URL for the StorageGRID Appliance Installer:

`http://169.254.0.1:8080`

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.

4. 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

If you do not want to use the default configuration for the four 10/25-GbE ports on the E5700SG controller, you must configure the link settings. These ports are used to connect the appliance to the Grid Network and the optional Client 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:

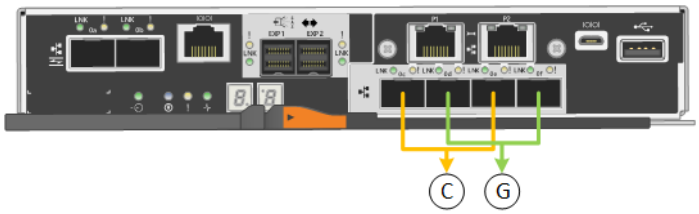
- You have installed SFP28 transceivers in the 10/25-GbE ports you plan to use.
- You have connected the 10/25-GbE ports to switches that can support these features.
- You understand how to configure the switches to use this higher speed.

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.

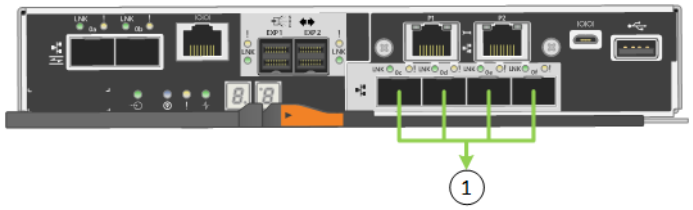
About this task

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.

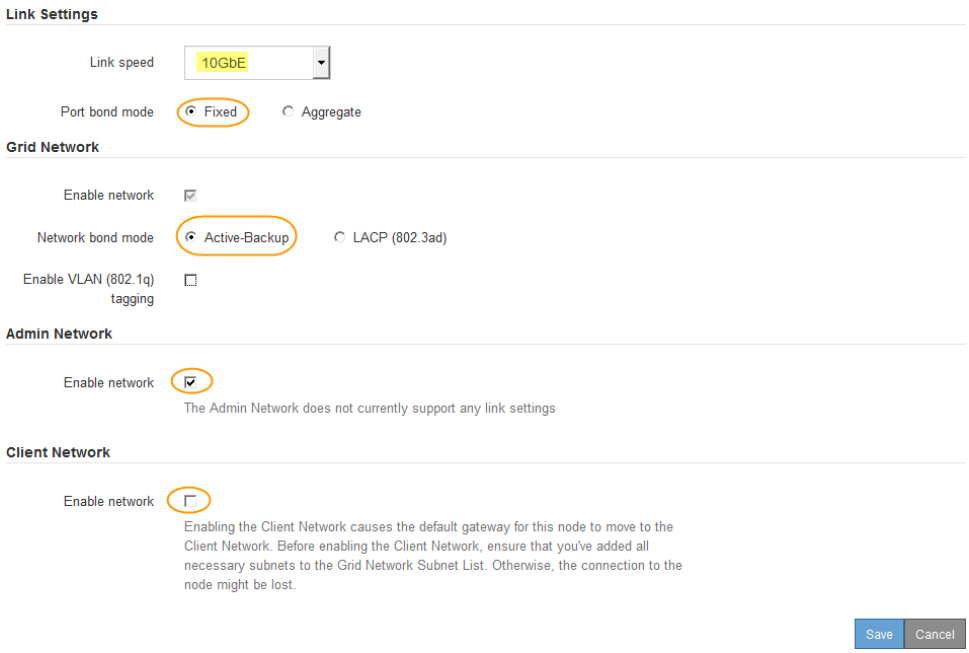
See “10/25-GbE port connections for the E5700SG controller” for more information about port bond and network bond modes.

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**.
   - The **Admin Network** is enabled.
   - The **Client Network** is disabled.



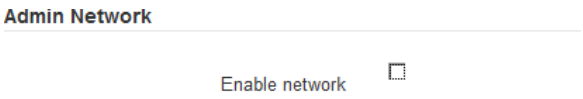
2. If you plan to use the 25-GbE link speed for the 10/25 GbE ports, select **25GbE** from the Link speed drop-down list.

   The network switches you are using for the Grid Network and the Client Network must also support and be configured for this speed. SFP28 transceivers must be installed in the ports.

3. Enable or disable the StorageGRID Webscale 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.

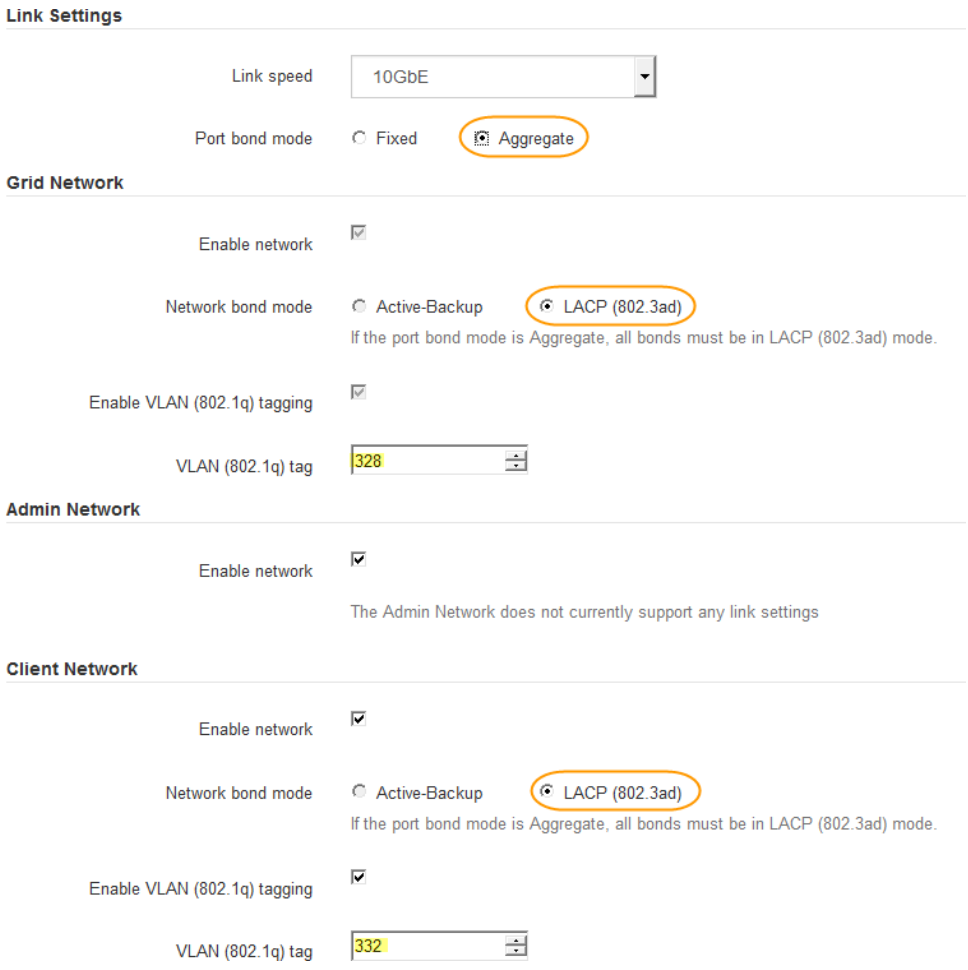
   

   b. If the appliance is connected to the Client Network, select the **Enable network** check box for the Client Network.

      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 screen shot 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.



5. 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:

   `http://E5700SG_Controller_IP:8080`

Related concepts

10/25-GbE port connections for the E5700SG controller on page 17

Setting the IP configuration

You use the StorageGRID Appliance Installer to configure the IP addresses and routing information used for the appliance Storage Node on the StorageGRID Webscale 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.

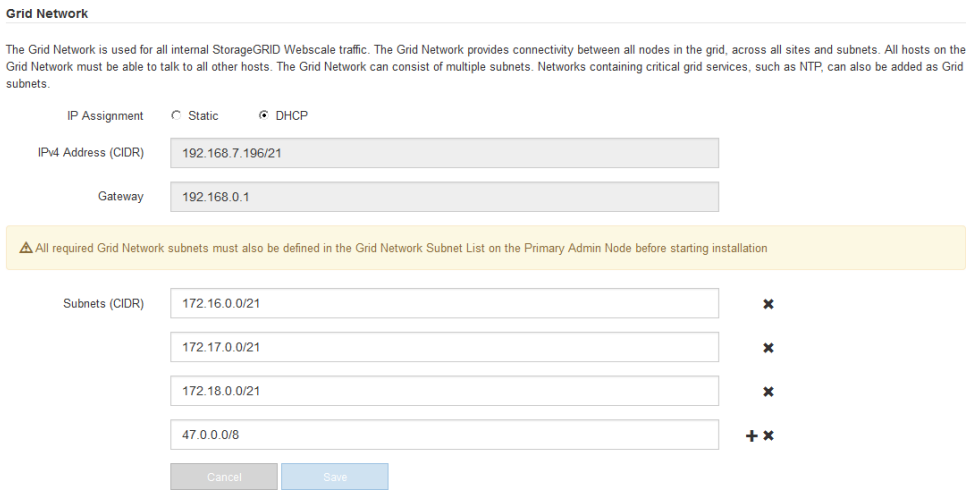
Note: If the virtual nodes in your grid are deployed on VMware, you must use a static IP address for the appliance on the Grid Network.

Additionally, if you want to change the link configuration of a StorageGRID Webscale appliance, see "Changing the link configuration of the E5700SG 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.



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://E5700SG_Controller_IP:8080`

   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 Webscale installation.

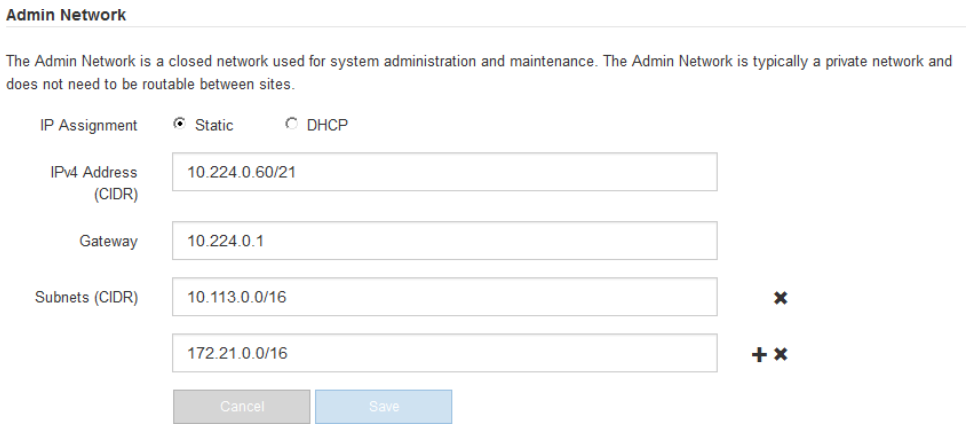
      Note: The default route is not listed. If the Client Network is not enabled, the default route will use the Grid Network gateway.

      - 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.



   When you configure the Admin Network, you specify the IP address, gateway, and subnets used for Management Port 1 on the controller (the leftmost 1-GbE RJ45 port).

   a. If you plan to use a static IP address for the appliance on the Admin 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**.

      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://E5700SG_Controller_IP:8080`

   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.

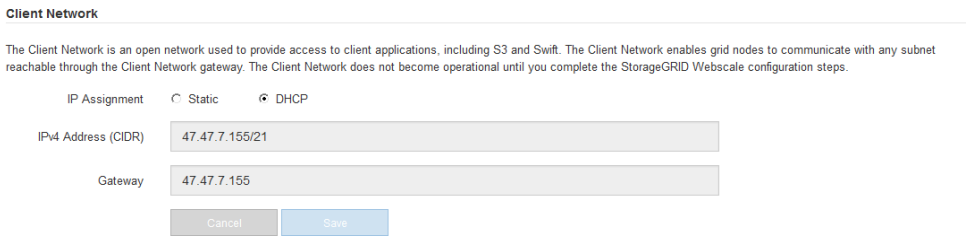
      Note: The default route cannot be made to use the Admin Network gateway.

      - 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.



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 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 E5700SG controller on page 68

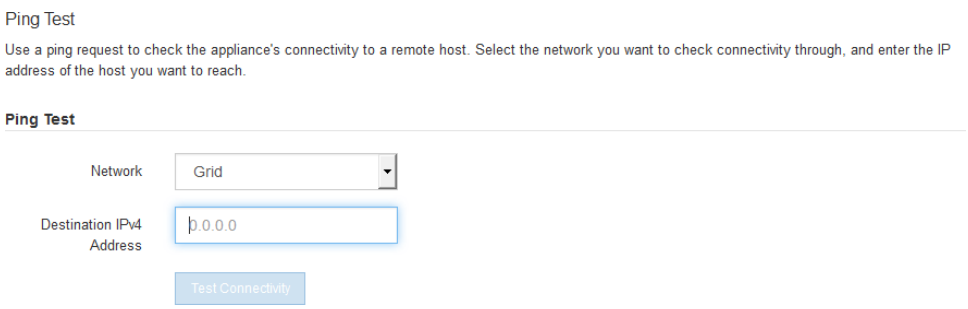
Verifying network connections

You should confirm you can access the StorageGRID Webscale 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.

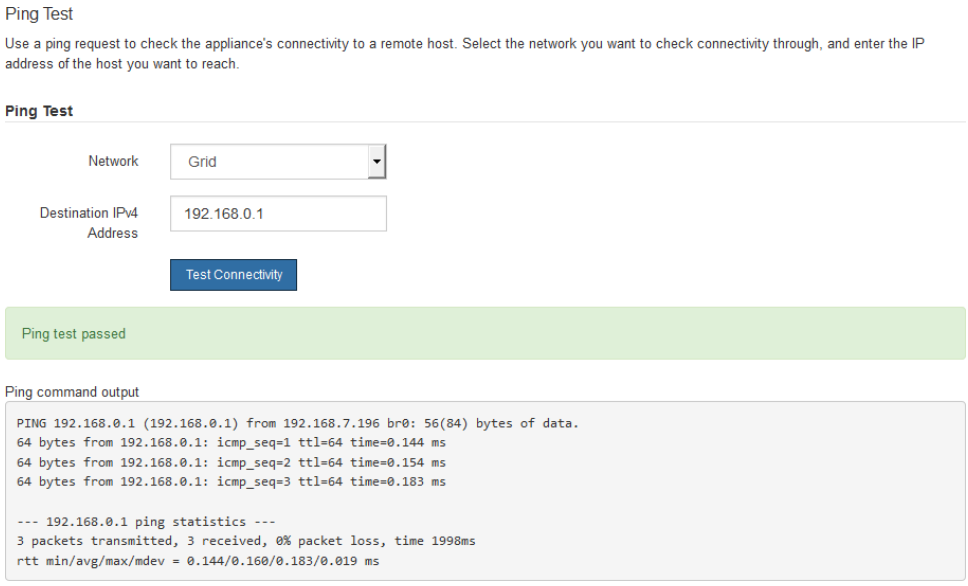


2. From the **Network** drop-down box, select the network you want to test: Grid, Admin, or Client.
3. Enter the IPv4 address for a host on that network.

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

4. Click **Test Connectivity**.

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



Optional: Changing to RAID6 mode (SG5760 only)

If you have an SG5760 with 60 drives, you can change the volume configuration from its default and recommended setting, Dynamic Disk Pools (DDP), to RAID6. You can only change the mode before deploying the StorageGRID Webscale appliance Storage Node.

Before you begin

- You have an SG5760. The SG5712 does not support RAID6. If you have an SG5712, you must use DDP mode.

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

About this task

Before deploying a StorageGRID Webscale appliance Storage Node, you can choose from two volume configuration options:

- **Dynamic Disk Pools (DDP)** – This is the default and recommended setting. DDP is an enhanced hardware data protection scheme that delivers better system performance, reduced rebuild times after drive failures, and ease of management.
- **RAID6** – This is a hardware protection scheme that uses parity stripes on each disk, and allows for two disk failures within the RAID set before any data is lost.

  Attention: Using RAID6 is not recommended for most StorageGRID Webscale environments. Although RAID6 can increase storage efficiency to 88% (compared to 80% for DDP), DDP mode provides more efficient recovery from drive failures.

Steps

1. Using the service laptop, open a web browser and access the StorageGRID Appliance Installer:

   `http://E5700SG_Controller_IP:8080`

E5700SG_Controller_IP is any of the IP addresses for the E5700SG controller.

2. From the menu bar, select **Advanced > RAID Mode**.
3. On the **Configure RAID Mode** page, select **RAID6** from the Mode drop-down list.
4. Click **Save**.

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.

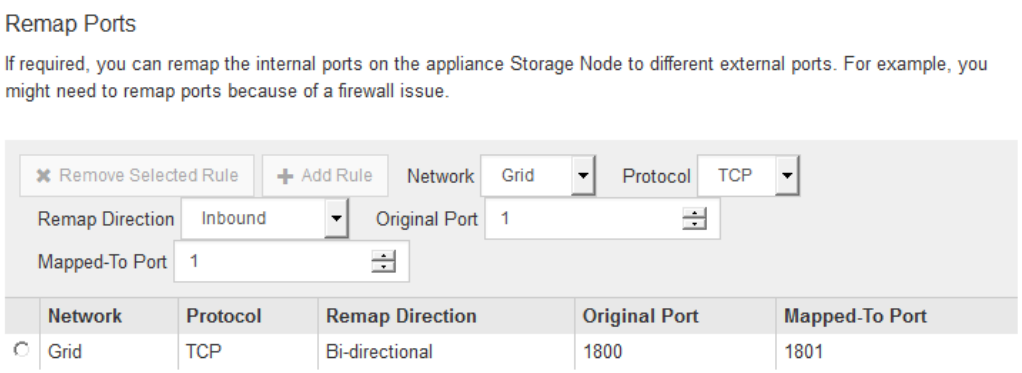
Steps

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.



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 Webscale appliance, you are ready to deploy the appliance as a Storage Node in a StorageGRID Webscale grid.

- To deploy an appliance Storage Node in a new StorageGRID Webscale grid, see the installation instructions for your platform.
- To add an appliance Storage Node to an existing StorageGRID Webscale grid, see information about expanding a StorageGRID Webscale 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 Webscale grid
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 54

Related references

Troubleshooting connection issues on page 55

Hardware setup appears to hang

The StorageGRID Appliance Installer might not be available if hardware faults or cabling errors prevent the E5700SG controller from completing its boot-up processing.

Steps

1. 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, the seven-segment displays show different codes for each controller.

2. Review the codes on the seven-segment display for the E5700SG controller.

   Note: The installation and provisioning take time. Some installation phases do not report updates to the StorageGRID Appliance Installer for several minutes.

   If an error occurs, the seven-segment display flashes a sequence, such as HE.

3. To understand what these codes mean, see the following resources:

Controller	Reference
E5700SG controller	• "Status indicators on the E5700SG controller" • "HE error: Error synchronizing with SANtricity OS Software"
E2800 controller	*E5700 and E2800 System Monitoring Guide* **Note:** The codes described for the E-Series E5700 controller do not apply to the E5700SG controller in the appliance.

4. If this does not resolve the issue, contact technical support.

Related tasks

HE error: Error synchronizing with SANtricity OS Software on page 55

Related references

Status indicators on the E5700SG controller on page 30

Related information

E-Series and SANtricity 11.5 Documentation Center
NetApp Documentation: Product Library A-Z

HE error: Error synchronizing with SANtricity OS Software

The seven-segment display on the compute controller shows an HE error code if the StorageGRID Appliance Installer cannot synchronize with SANtricity OS Software.

About this task

If an HE error code is displayed, perform this corrective action.

Steps

1. Check the two interconnect cables between the two controllers, and confirm that the cables and SFP+ transceivers are securely connected.
2. As required, replace one or both of the cables or SFP+ transceivers, and try again.
3. If this does not resolve the issue, contact technical support.

Troubleshooting connection issues

If you encounter connection issues during the StorageGRID Webscale 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 the 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 the 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 E5700SG controller:
   a. Try to ping the appliance using the IP address for the E5700SG controller :

      ping *E5700SG_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:

   `http://E5700SG_Controller_IP:8080`

   The Home page appears.

Rebooting the controller while the StorageGRID Appliance Installer is running

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

About this task

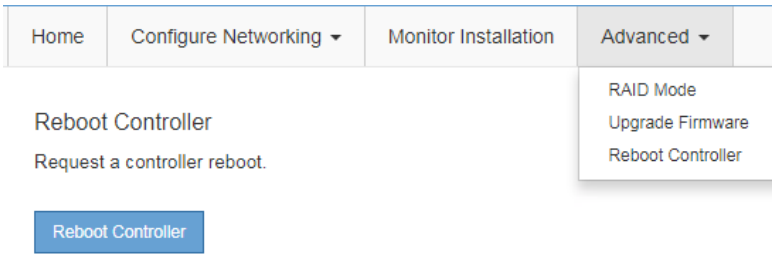
This procedure only applies when the compute controller is running the StorageGRID Appliance Installer. Once the installation is completed, this step no longer works because the StorageGRID Appliance Installer is no longer available.

Steps

1. From the menu bar of the StorageGRID Appliance Installer, click **Advance > 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 controller is rebooted.

Maintaining the SG5700 appliance

You might need to upgrade the SANtricity OS Software on the E2800 controller, change the Ethernet link configuration of the E5700SG controller, replace the E2800 controller or the E5700SG controller, or replace specific components. The procedures in this section assume that the appliance has already been deployed as a Storage Node in a StorageGRID Webscale grid.

Steps

1. Upgrading SANtricity OS Software on the E2800 controller on page 57
2. Replacing the E2800 controller on page 59
3. Replacing the E5700SG controller on page 65
4. Replacing other hardware components on page 67
5. Changing the link configuration of the E5700SG controller on page 68

Upgrading SANtricity OS Software on the E2800 controller

You might need to upgrade the E-Series SANtricity OS Software on the E2800 controller if the controller is not functioning optimally.

Before you begin

You have contacted technical support and have obtained SANtricity OS Software and NVSRAM files that are compatible with your StorageGRID Webscale appliance.

Attention: Do not upgrade the SANtricity OS Software or NVSRAM in the E2800 controller unless directed to do so by technical support. Without the guidance of technical support, your StorageGRID Webscale appliance could become inoperable. Contact technical support with any upgrade-related questions.

Attention: Do not upgrade the SANtricity OS Software or NVSRAM in the E2800 controller on more than one StorageGRID Webscale appliance at a time. Doing so may cause data unavailability, depending on your deployment model and ILM policies.

About this task

Before upgrading the SANtricity OS Software and NVSRAM on the E2800 controller, you will place the E5700SG controller into maintenance mode.

Steps

1. If the StorageGRID Webscale appliance is running in a StorageGRID Webscale system, place the E5700SG controller into maintenance mode.
   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 Webscale services:

`service servermanager stop`

c. Place the E5700SG controller into maintenance mode:

`sgamaintenance`

The following messages are displayed on the service laptop:

```
WARNING: All StorageGRID Webscale services on this node will be
shut down.

WARNING: You will have to manually exit maintenance mode before
this node will resume normal operation.

After running this command and waiting a few minutes for the node
to reboot, browse to one of the following URLs to perform any
maintenance actions, then exit maintenance mode:

http://192.168.4.138:8080
http://10.224.4.138:8080
http://47.47.4.138:8080
http://169.254.0.1:8080

Are you sure you want to continue (y/n)?
```

d. Enter `y` to continue, or `n` to cancel maintenance mode.

Placing the E5700SG controller into maintenance mode interrupts the connection to the E2800 controller, so you can apply the SANtricity OS Software upgrade.

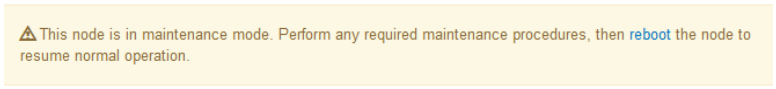
When you press `y`, the appliance reboots, which takes two or three minutes to complete.

e. Browse to any of the URLs displayed in the output of the `sgamaintenance` command to access the StorageGRID Webscale Appliance Installer.

Note: Accessing `http://169.254.0.1:8080` requires a direct connection from the service laptop to management port 2 on the E5700SG controller (the RJ-45 port on the right).

Note: When you complete this maintenance procedure, you must use the StorageGRID Webscale Appliance Installer to return the appliance to its normal operating mode. Make sure that access to the installer is not prevented by your network firewall or other network issues. If necessary, contact your system administrator for assistance.

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



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 Webscale appliance. Do not use the standard NVSRAM download.

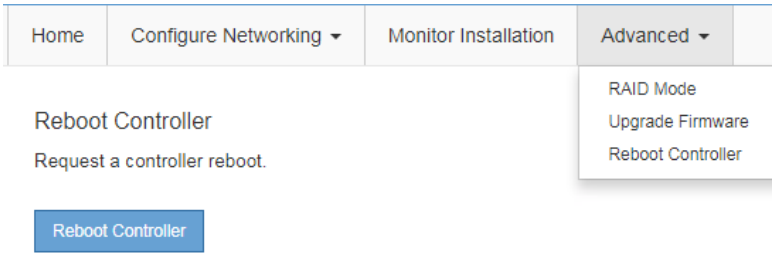
4. Follow the instructions in the *E2800 and E5700 SANtricity Software and Firmware Upgrade Guide* or the SANtricity System Manager online help to upgrade the E2800 controller's firmware and NVSRAM.

Note: Make sure you choose to activate the upgrade files immediately. There is no reason to defer activation.

5. Once the upgrade operation has completed, return the StorageGRID Webscale appliance to normal operating mode:

   a. Browse to the same URL you accessed in step *1.e*.

   b. From the StorageGRID Webscale Appliance Installer, select **Advanced** > **Reboot Controller**. Then click **Reboot Controller**.



   The appliance reboots and rejoins the grid. This process can take up to 15 minutes.

6. Monitor the status of the upgraded appliance Storage Node in the Grid Manager.

   Verify that the Storage Node returns to the expected status.

Related tasks

Accessing SANtricity System Manager on page 33

Related information

E-Series and SANtricity 11.5 Documentation Center
E2800 and E5700 SANtricity Software and Firmware Upgrade Guide

Replacing the E2800 controller

You might need to replace the 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 downloaded the E-Series instructions for replacing the simplex configuration of a failed E2800 controller.

  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 Webscale appliance, because the procedures are not the same.

- You have labels to identify each cable that is connected to the controller.
- If all drives are secured, you have reviewed the steps in the simplex E2800 controller replacement procedure, which include downloading and installing E-Series SANtricity Storage Manager from the NetApp Support Site and then using the Enterprise Management Window (EMW) to unlock the secured drives after you have replaced the controller.

Attention: You will not be able to use the appliance until you unlock the drives with the saved key.

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.

The appliance Storage Node will not be accessible when you replace the controller. If the E2800 controller is functioning sufficiently, you can place the E5700SG controller into maintenance mode.

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

Note: The E2800 controller in the appliance does not include a host interface card (HIC).

Steps

1. 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. Make a note of which version of SANtricity OS software is currently installed on the controller.

   b. Make a note of which version of NVSRAM is currently installed.

   c. If the Drive Security feature is enabled, be sure a saved key exists and that you know the pass phrase required to install it.

      Attention: Possible loss of data access – If all drives in the appliance are security enabled, the new controller will not be able to access the appliance until you unlock the secured drives using the Enterprise Management Window in SANtricity Storage Manager.

   d. Back up the configuration database.

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

   e. 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.

2. If the StorageGRID Webscale appliance is running in a StorageGRID Webscale system, place the E5700SG controller into maintenance mode.

   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 Webscale services:

```
service servermanager stop
```

c. Place the E5700SG controller into maintenance mode:

```
sgamaintenance
```

The following messages are displayed on the service laptop:

```
WARNING: All StorageGRID Webscale services on this node will be
shut down.

WARNING: You will have to manually exit maintenance mode before
this node will resume normal operation.

After running this command and waiting a few minutes for the node
to reboot, browse to one of the following URLs to perform any
maintenance actions, then exit maintenance mode:

http://192.168.4.138:8080
http://10.224.4.138:8080
http://47.47.4.138:8080
http://169.254.0.1:8080

Are you sure you want to continue (y/n)?
```

d. Enter `y` to continue, or `n` to cancel maintenance mode.

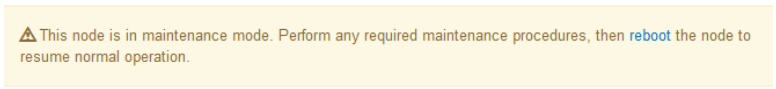
Placing the E5700SG controller into maintenance mode interrupts the connectivity to the E2800 controller, so you can replace the E2800 controller.

When you press `y`, the appliance reboots, which takes two or three minutes to complete.

e. Browse to any of the URLs displayed in the output of the `sgamaintenance` command to access the StorageGRID Webscale Appliance Installer.

Note: Accessing `http://169.254.0.1:8080` requires a direct connection from the service laptop to management port 2 on the E5700SG controller (the RJ-45 port on the right).

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



3. If the E2800 controller is functioning sufficiently to allow for a controlled shutdown, confirm that all operations have completed.

a. From the home page of SANtricity System Manager, select **View Operations in Progress**.

b. Confirm that all operations have completed.

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:

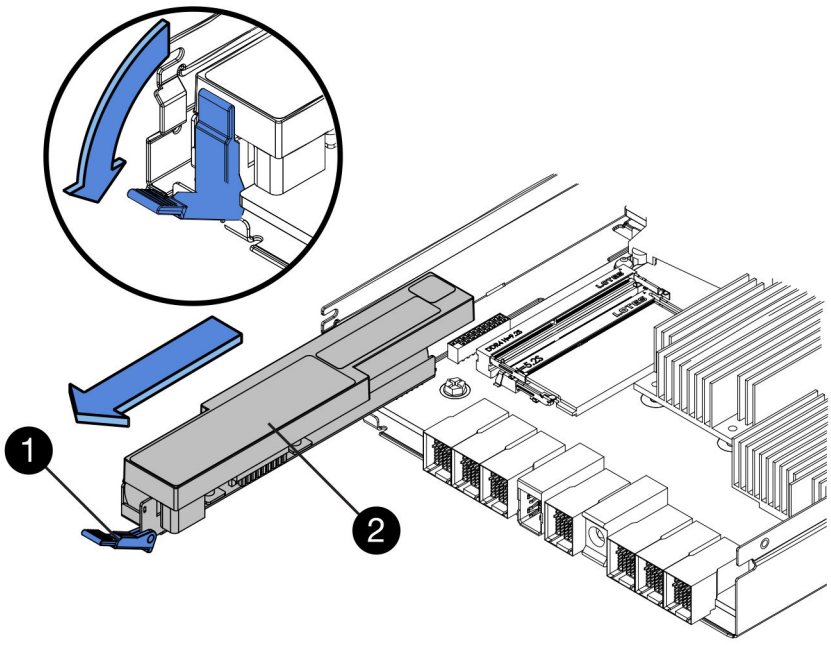
a. Confirm that the green LED inside the controller (between the battery and the DIMMs) is off.

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.

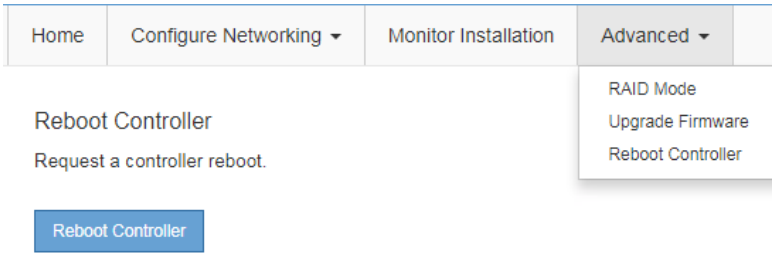
e. Wait for the E2800 controller to reboot. Verify that the seven-segment display shows a state of `99`.

f. Determine how you will assign an IP address to the replacement controller.

Note: The steps for assigning an IP address to the replacement controller depend on whether you connected management port 1 to a network with a DHCP server and on whether all drives are secured.

- If management port 1 is connected to a network with a DHCP server, the new controller will obtain its IP address from the DHCP server. This value might be different than the original controller's IP address.
- If all drives are secured, you must use the Enterprise Management Window (EMW) in SANtricity Storage Manager to unlock the secured drives. You cannot access the new controller until you unlock the drives with the saved key. See the E-Series instructions for replacing a simplex E2800 controller.

7. If the appliance uses secured drives, follow the instructions in the E2800 controller replacement procedure to import the drive security key.
8. Return the StorageGRID Webscale appliance to normal operating mode:
   a. Browse to the same URL you accessed in step *2*.
   b. From the StorageGRID Webscale Appliance Installer, select **Advanced > Reboot Controller**, then click **Reboot Controller**.



   The appliance reboots and rejoins the grid. This process can take up to 15 minutes.
   c. Wait for the seven-segment display on the E5700SG controller to show a state of HA.
9. Monitor the status of the upgraded appliance Storage Node in the Grid Manager.

   Verify that the Storage Node returns to the expected status.
10. From SANtricity System Manager, confirm that the new controller is Optimal, and collect support data.

Related information

E-Series and SANtricity 11.5 Documentation Center

Replacing the E5700SG controller

You might need to replace the E5700SG 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 downloaded the E-Series instructions for replacing a failed E5700 controller.

  Attention: Use the E-Series instructions for reference only 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 Webscale appliance, because the procedures are not the same. For example, the E-Series instructions for the E5700 controller describe how to remove the battery and the host interface card (HIC) from a failed controller and install them in a replacement controller. These steps do not apply to the E5700SG controller.
- 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 controller. If the E5700SG 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 Webscale 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 E5700SG controller is functioning sufficiently to allow for a controlled shutdown, shut down the E5700SG 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 Webscale services:

      ```
      service servermanager stop
      ```
   c. Shut down the E5700SG 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.
   a. From the home page of SANtricity System Manager, select **View Operations in Progress**.
   b. Confirm that all operations have completed.
   c. Turn off both power switches on the appliance.
   d. Wait for all LEDs to turn off.
3. If the StorageGRID Webscale networks attached to the controller use DHCP servers:
   a. Note the MAC addresses for the ports on the replacement controller (located on labels on the controller).
   b. Ask your network administrator to update the IP address settings for the original controller to reflect the MAC addresses for the replacement controller.

      Attention: You must ensure that the 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 Webscale. This step applies to all StorageGRID Webscale networks that are attached to the controller.
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.

5. 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.

6. Power on the appliance, and monitor the controller LEDs and seven-segment displays.

After the controllers have successfully booted up, the seven-segment displays should show the following:

- E2800 controller:
  The final state is `99`.
- E5700SG controller:
  The final state is `HA`.

7. Confirm that the appliance Storage Node appears in the Grid Manager and that no alarms appear.

Related information

E-Series and SANtricity 11.5 Documentation Center

Replacing other hardware components

You might need to replace a controller battery, drive, fan, or power supply, in the StorageGRID Webscale appliance.

About this task

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

To replace a drive, power-fan canister, fan canister, power canister, or drive drawer in the appliance, access the E-Series procedures for maintaining E2800 hardware.

Model	FRU	See E-Series instructions for
SG5712	Drive	Replacing a drive in E2800 12-drive or 24-drive shelves
	Power-fan canister	Replacing a power-fan canister in E2800 shelves

Model	FRU	See E-Series instructions for
SG5760	Drive	Replacing a drive in E2860 shelves
	Power canister	Replacing a power canister in E2860 shelves
	Fan canister	Replacing a fan canister in E2860 shelves
	Drive drawer	Replacing a drive drawer in E2860 shelves

Related tasks

Replacing the E2800 controller on page 59

Related information

E-Series and SANtricity 11.5 Documentation Center
NetApp Documentation: Product Library A-Z

Changing the link configuration of the E5700SG controller

You can change the Ethernet link configuration of the E5700SG controller. To change any configuration option, you must place the E5700SG controller into maintenance mode.

About this task

Options for changing the Ethernet link configuration of the E5700SG 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 of the E5700SG controller, you will place it into maintenance mode.

Steps

1. If the StorageGRID Webscale appliance is running in a StorageGRID Webscale system, place the E5700SG controller into maintenance mode.
   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 Webscale services:

      ```
      service servermanager stop
      ```

c. Place the E5700SG controller into maintenance mode:

`sgamaintenance`

The following messages are displayed on the service laptop:

```
WARNING: All StorageGRID Webscale services on this node will be
shut down.

WARNING: You will have to manually exit maintenance mode before
this node will resume normal operation.

After running this command and waiting a few minutes for the node
to reboot, browse to one of the following URLs to perform any
maintenance actions, then exit maintenance mode:

http://192.168.4.138:8080
http://10.224.4.138:8080
http://47.47.4.138:8080
http://169.254.0.1:8080

Are you sure you want to continue (y/n)?
```

d. Enter `y` to continue, or `n` to cancel maintenance mode.

When you press `y`, the appliance reboots, which takes two or three minutes to complete.

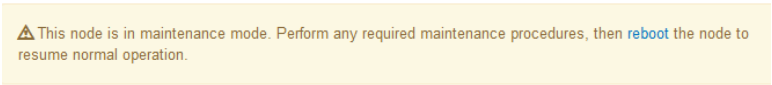
e. Browse to any of the URLs displayed in the output of the `sgamaintenance` command to access the StorageGRID Webscale Appliance Installer.

Note: If possible, use the URL containing the IP address of this StorageGRID Webscale appliance's Admin Network port. Connectivity through the grid or Client Network IP addresses might be interrupted by steps you complete later in this procedure.

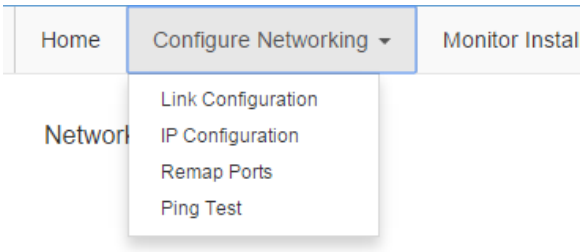
Note: Accessing `http://169.254.0.1:8080` requires a direct connection to management port 2 on the E5700SG controller (the RJ-45 port on the right).

Note: When you complete this maintenance procedure, you must use the StorageGRID Webscale Appliance Installer to return the appliance to its normal operating mode. Make sure that access to the installer is not prevented by your network firewall or other network issues. If necessary, contact your system administrator for assistance.

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



2. Select **Configure Networking > Link Configuration** from the menu bar at the top of the page.



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 theStorageGRID Webscale Appliance Installer using one of the other IP addresses assigned to the appliance: `http://E5700SG_Controller_IP:8080`

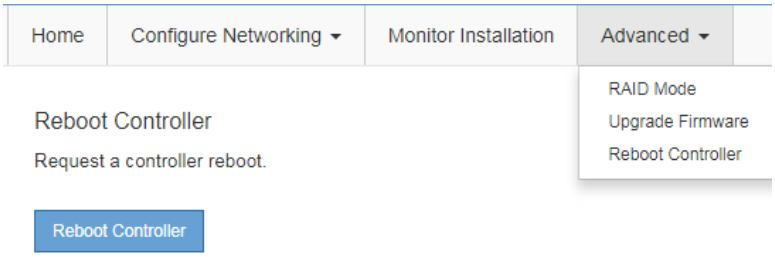
5. Select **Configure Networking** > **Ping test** from the menu bar at the top of the page.

6. Use the Ping Test tool to check connectivity to IP addresses on any networks that may 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 IP address of the primary Admin Node, and the grid 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 StorageGRID Webscale appliance to normal operating mode:

   a. Select **Advanced** > **Reboot Controller**.



   b. Click **Reboot Controller**.

      The appliance reboots and rejoins the grid. This process can take up to 15 minutes.

8. Monitor the status of the upgraded appliance Storage Node in the Grid Manager.

   Verify that the Storage Node returns to the expected status.

Related tasks

Configuring network links on page 43

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