# Install appliance hardware

## StorageGRID appliances

NetApp
December 15, 2025

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# Install appliance hardware

## Register hardware

Registering the appliance hardware provides support benefits.

**Steps**

1. Locate the chassis serial number for the appliance. For SG6000 appliances the chassis serial number is on the storage controller shelf.

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

   There are several serial numbers on the SG6000 storage appliance. The serial number on the storage controller shelf is the one that must be registered and used if you call for service or support on the SG6000 appliance.

2. Go to the NetApp Support Site.
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.<br>b. Select **Products** > **My Products**.<br>c. Confirm that the new serial number is listed.<br>d. If it is not, follow the instructions for new NetApp customers. |
| New NetApp customer | a. Click **Register Now**, and create an account.<br>b. Select **Products** > **Register Products**.<br>c. Enter the product serial number and requested details.<br>After your registration is approved, you can download any required software. The approval process might take up to 24 hours. |

# Install into cabinet or rack

### Install into cabinet or rack (SG100 and SG1000)

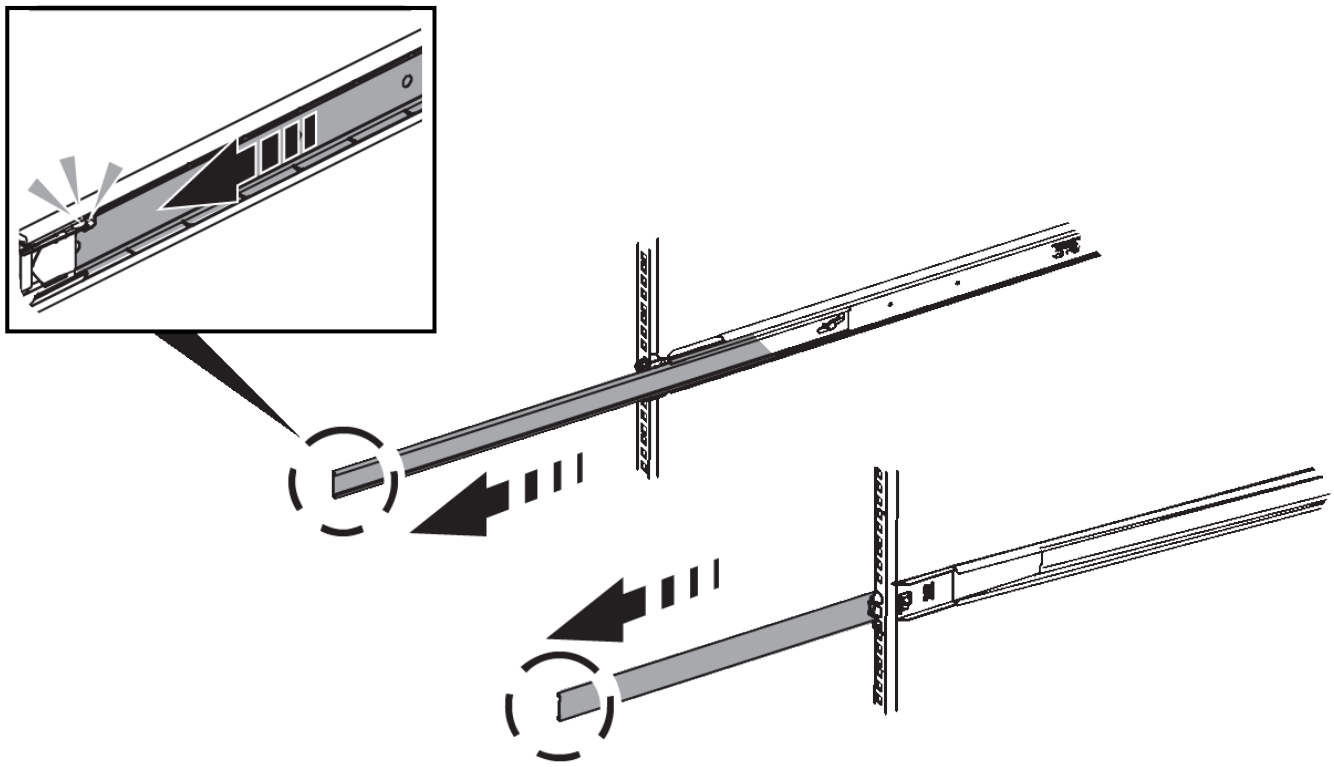
You install a set of rails for the appliance in your cabinet or rack, and then slide the appliance onto the rails.

**Before you begin**

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

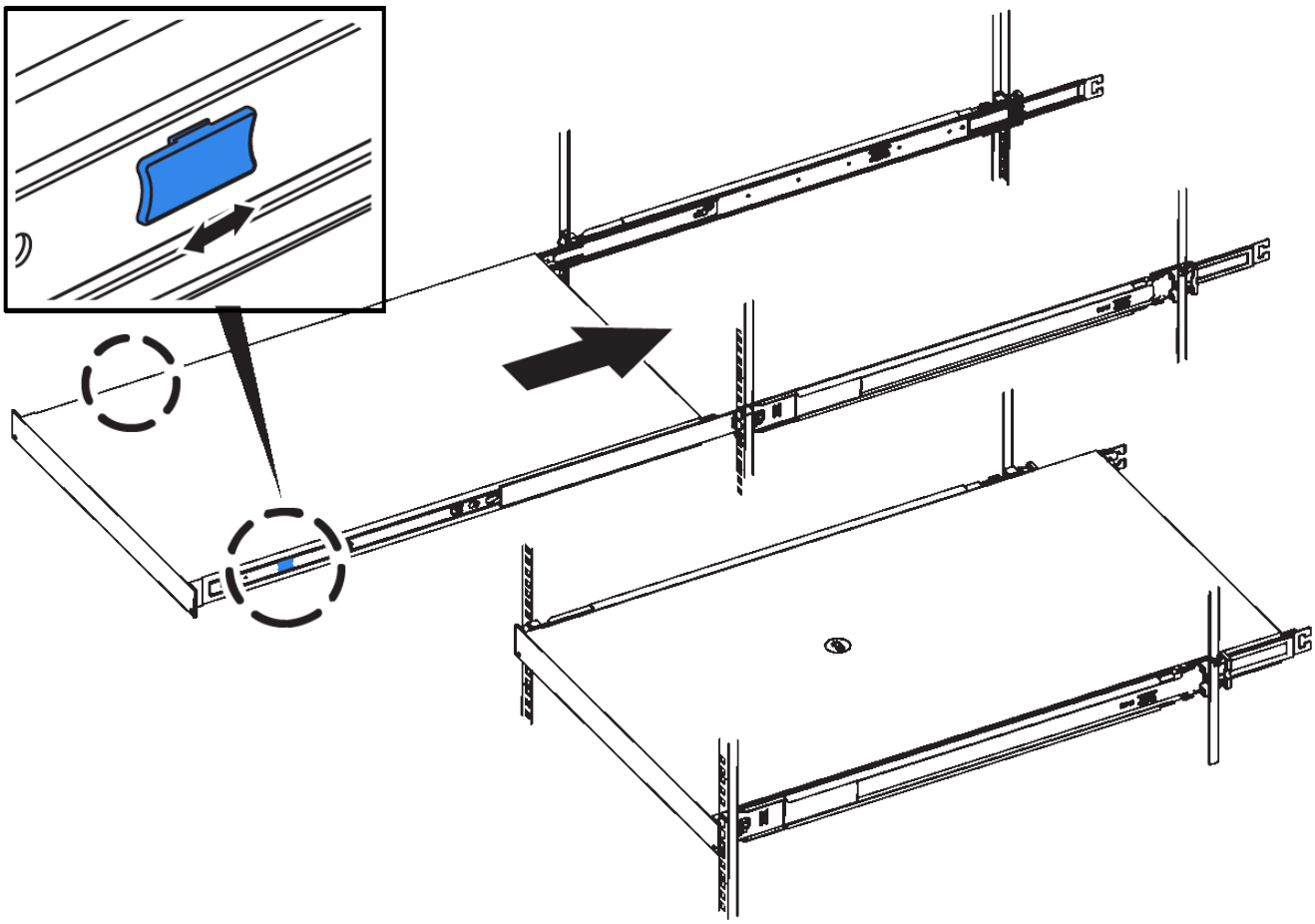
**Steps**

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



3. Insert the appliance into the rails.
4. Slide the appliance into the cabinet or rack.

   When you can't move the appliance any further, pull the blue latches on both sides of the chassis to slide the appliance all the way in.



Don’t attach the front bezel until after you power on the appliance.

## Install into cabinet or rack (SG110 or SG1100)

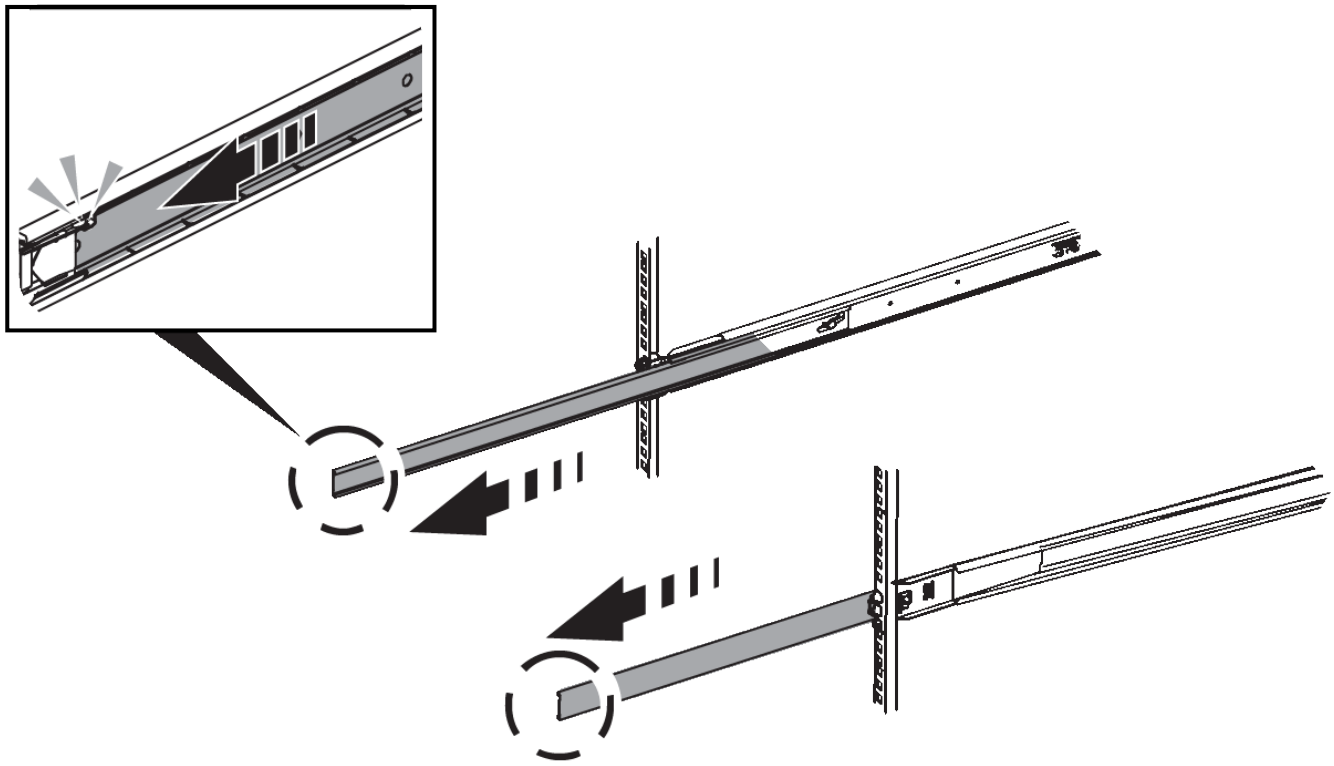
You install a set of rails for the appliance in your cabinet or rack, and then slide the appliance onto the rails.

**Before you begin**

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

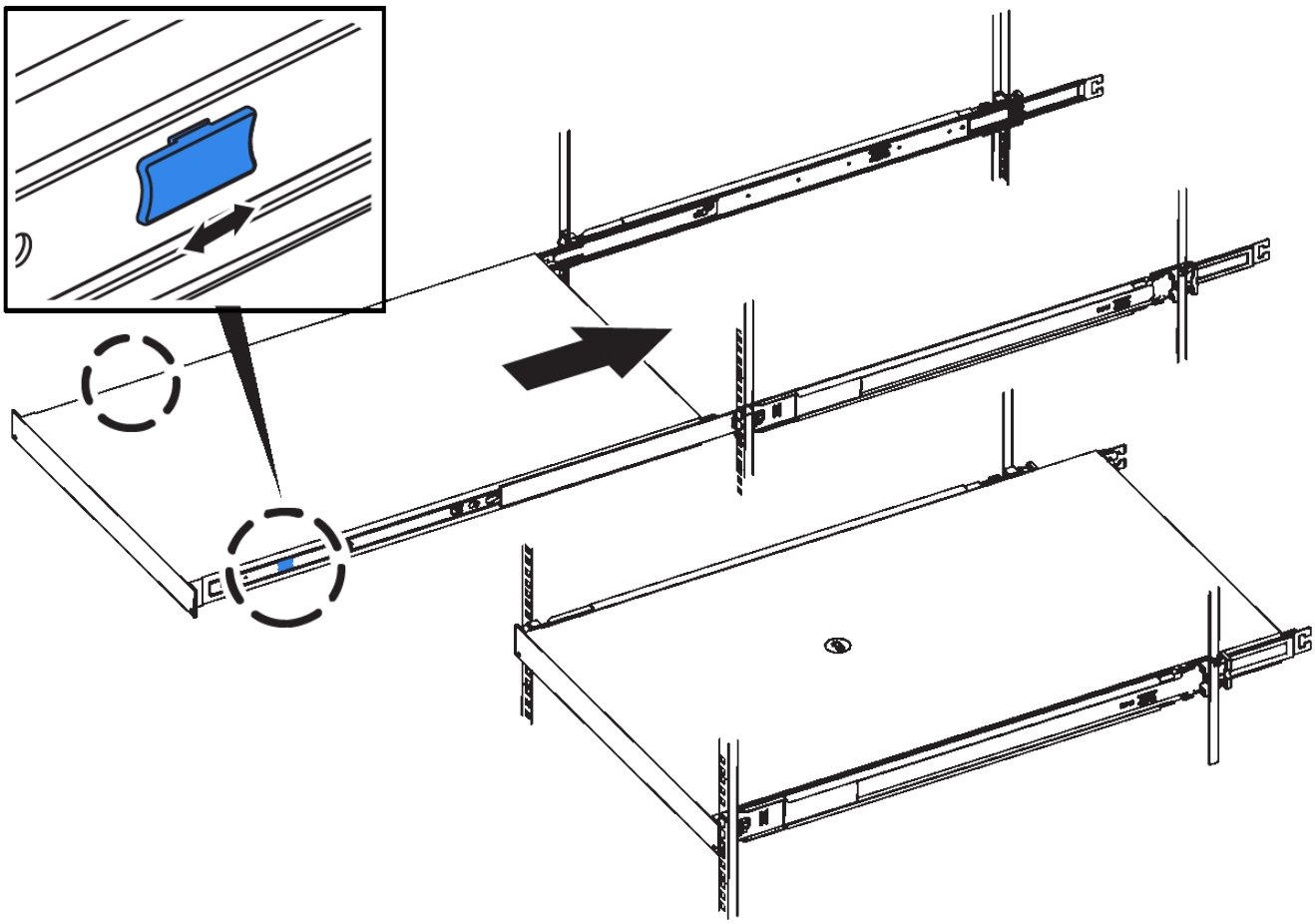
**Steps**

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



3. Insert the appliance into the rails.
4. Slide the appliance into the cabinet or rack.

   When you can’t move the appliance any further, pull the blue latches on both sides of the chassis to slide the appliance all the way in.



5. Tighten the captive screws on the appliance front panel to secure the appliance in the rack.

Don’t attach the front bezel until after you power on the appliance.

## Install into cabinet or rack (SG5700)

You install a set of rails in your cabinet or rack and then slide the appliance onto the rails. If you have an SG5760, 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.

### Install SG5712

Follow these steps to install an SG5712 appliance into a rack or cabinet.

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.

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

**Steps**

1. Follow the instructions for the rail kit to install the rails.
2. Place the back of the appliance (the end with the connectors) on the rails.
3. Carefully slide the appliance all the way back into the cabinet or rack.
4. Secure the appliance to the cabinet or rack as directed in the rail kit instructions.
5. Attach the bezel to the front.

### Install SG5760

Follow these steps to install an SG5760 appliance and any expansion shelves into a rack or cabinet.

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

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.

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

**Steps**

1. Follow the instructions for the rail kit to install the rails in your cabinet or rack.
2. Prepare to move the appliance:
   a. Remove the outer packing box.
   b. Fold down the flaps on the inner box.
   c. 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. If your cabinet has square hole, install the cage nuts so that you can secure the front and rear of the shelf with screws.
4. Place the back of the appliance (the end with the connectors) on the rails.
5. Supporting the appliance from the bottom, slide it into the rack or cabinet.

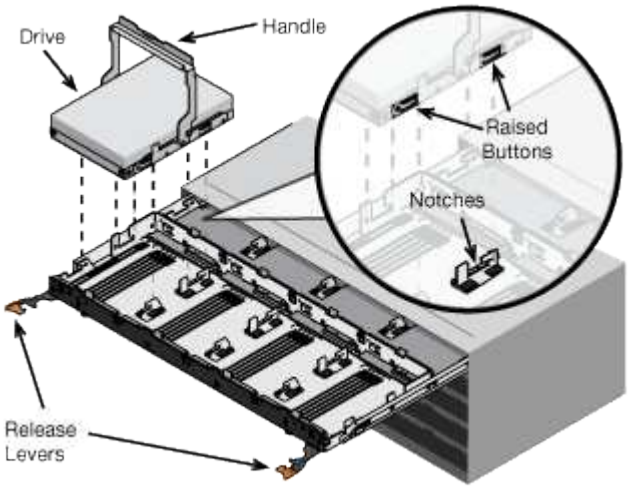
   Use the thumb latches to detach the handles as you slide the appliance in.
6. Secure the appliance to the front of the rack by inserting two screws in the first and third holes (counting down from the top) on each side.
7. Secure the appliance to the rear of the rack or cabinet with the brackets.
8. Install 12 drives in each of the five 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.

9. Attach the front bezel.

## Install into cabinet or rack (SG5800)

You install a set of rails in your cabinet or rack and then slide the appliance onto the rails. If you have an SG5860, 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.

### Install SG5812

Follow these steps to install an SG5812 appliance into a rack or cabinet.

Two people or a mechanized lift are required to safely move the SG5812.

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

**Steps**

1. Follow the instructions for the rail kit to install the rails.
2. Place the back of the appliance (the end with the connectors) on the rails.

3. Carefully slide the appliance all the way back into the cabinet or rack.
4. Secure the appliance to the cabinet or rack as directed in the rail kit instructions.
5. Attach the bezel to the front.

### Install SG5860

Follow these steps to install an SG5860 appliance and any expansion shelves into a rack or cabinet.

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

> Four people or a mechanized lift are required to safely move an empty SG5860.

> To avoid damaging the hardware, never move an SG5860 if drives are installed. You must remove all drives before moving the shelf.

**Steps**

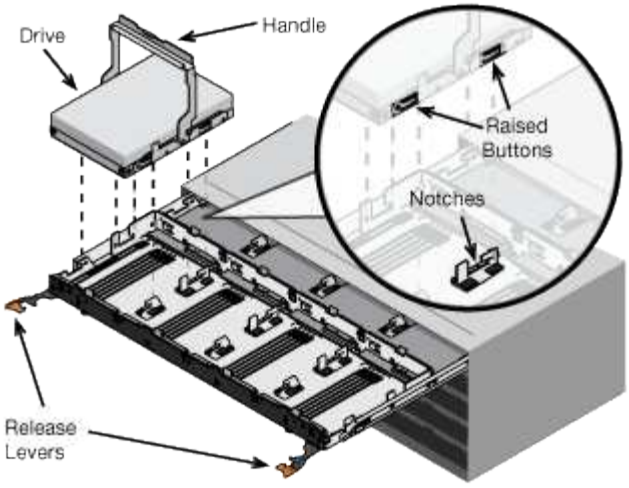
1. Follow the instructions for the rail kit to install the rails in your cabinet or rack.
2. Prepare to move the appliance:
   a. Remove the outer packing box.
   b. Fold down the flaps on the inner box.
   c. If you are lifting the SG5860 by hand, attach the four handles to the sides of the chassis.

      You remove these handles as you slide the appliance onto the rails.
3. If your cabinet has square holes, install the cage nuts so that you can secure the front and rear of the shelf with screws.
4. Place the back of the appliance (the end with the connectors) on the rails.
5. Supporting the appliance from the bottom, slide it into the rack or cabinet.

   Use the thumb latches to detach the handles as you slide the appliance in.
6. Secure the appliance to the front of the rack by inserting two screws in the first and third holes (counting down from the top) on each side.
7. Secure the appliance to the rear of the rack or cabinet with the brackets.
8. Install 12 drives in each of the five 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.

9. Attach the front bezel, if one was provided.

## SG6000

### Install into cabinet or rack (SG6000)

For the SG6060 and SGF6024, you install rails in your cabinet or rack and slide the controller shelf, any expansion shelves, and the compute controller onto the rails. For the SG6060, don't install the drives in each shelf until the shelves are installed.

| Model | Install | For information |
|---|---|---|
| SG6060 | 60-drive controller shelf and any 60-drive expansion shelves | Install 60-drive shelves |
| SG6060 | 60 drives into each shelf | Install drives |
| SGF6024 | 24-drive controller shelf | Install 24-drive shelves |
| SG6060 and SGF6024 | SG6000-CN compute controller | Install SG6000-CN controller |

### Install 60-drive shelves (SG6060)

You install a set of rails for the E2860 controller shelf in your cabinet or rack, and then slide the controller shelf onto the rails. If you are installing 60-drive expansion shelves, the same procedure applies.

#### 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.

Each 60-drive shelf weighs approximately 132 lb (60 kg) without drives installed. Four people or a mechanized lift are required to safely move the shelf.

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

When installing the E2860 controller shelf or optional expansion shelves, install hardware from the bottom to the top of the rack or cabinet to prevent the equipment from tipping over. To ensure that the heaviest equipment is at the bottom of the cabinet or rack, install the SG6000-CN controller above the E2860 controller shelf and expansion shelves.

Before committing to the installation, verify that the 0.5m optic cables shipped with the appliance, or cables that you supply, are long enough for the planned layout.

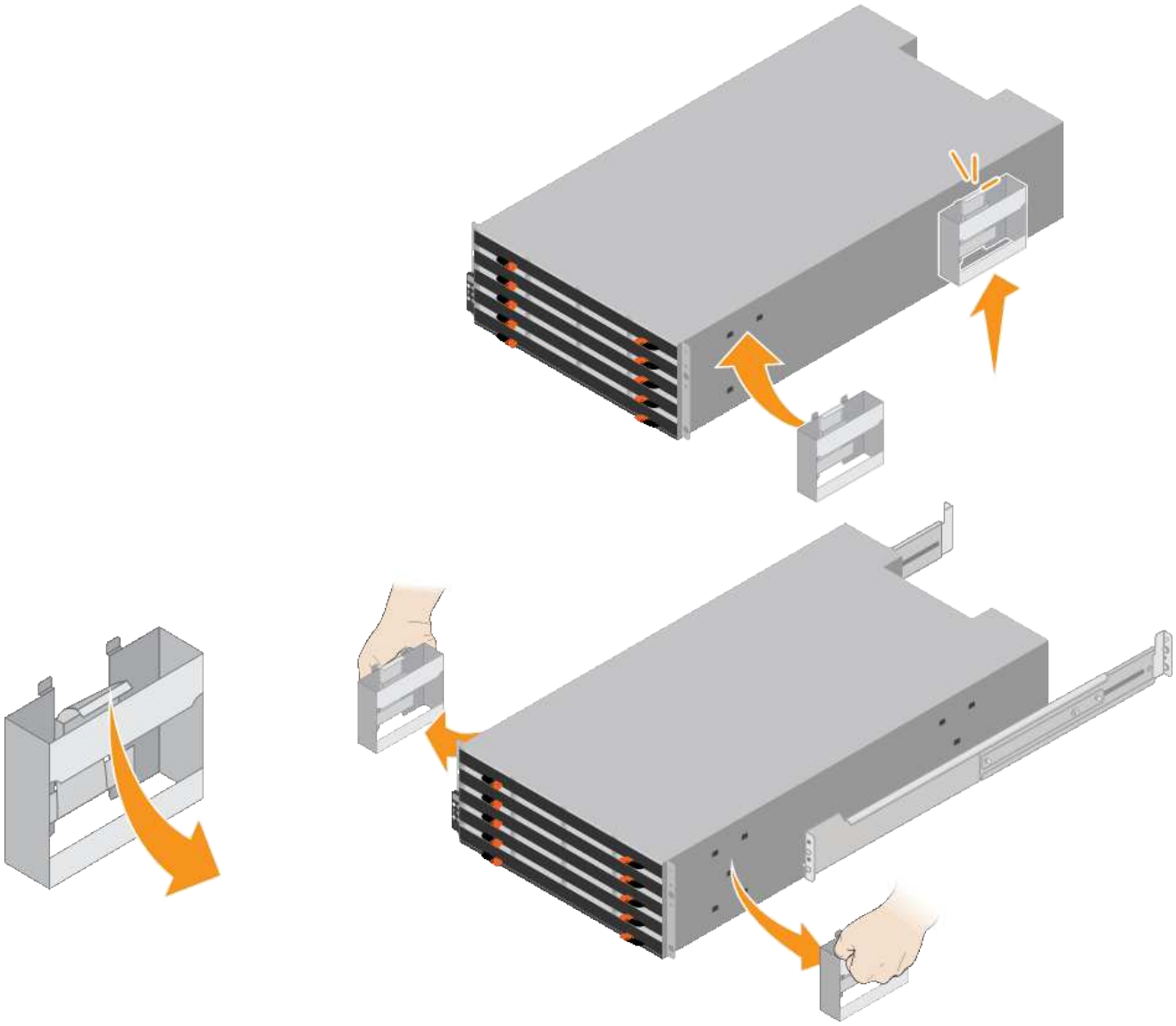
**Steps**

1. Carefully follow the instructions for the rail kit to install the rails in your cabinet or rack.

   For square hole cabinets, first install the provided cage nuts to secure the front and rear of the shelf with screws.

2. Remove the outer packing box for the appliance. Then, fold down the flaps on the inner box.
3. If you are lifting the appliance by hand, attach the four handles to the sides of the chassis.

   Push up on each handle until it clicks into place.



4. Place the back of the shelf (the end with the connectors) on the rails.
5. Supporting the shelf from the bottom, slide it into the cabinet. If you are using the handles, use the thumb latches to detach one handle at a time as you slide the shelf in.

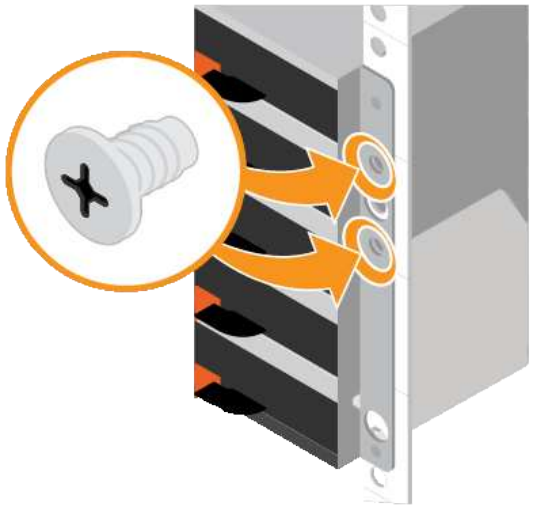
   To remove the handles, pull back on the release latch, push down, then pull away from the shelf.

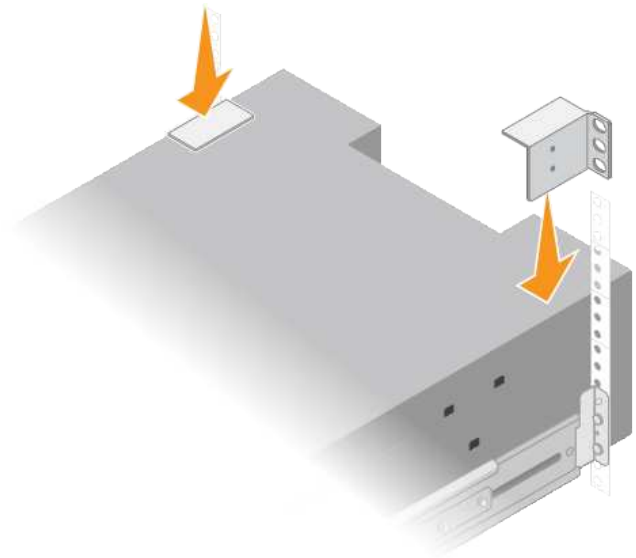
6. Secure the shelf to the front of the cabinet.

   Insert screws into the first and third holes from the top of the shelf on both sides.

7. Secure the shelf to the rear of the cabinet.

   Place two back brackets on each side of the upper rear section of the shelf. Insert screws into the first and third holes of each bracket.





8. Repeat these steps for any expansion shelves.

### Install drives (SG6060)

After installing the 60-drive shelf into a cabinet or rack, install all 60 drives into the shelf. The shipment for the E2860 controller shelf includes two SSD drives, which you should install in the top drawer of the controller shelf. Each optional expansion shelf includes 60 HDD drives and no SSD drives.

#### Before you begin

You have installed the E2860 controller shelf or optional expansion shelves (one or two) in the cabinet or rack.

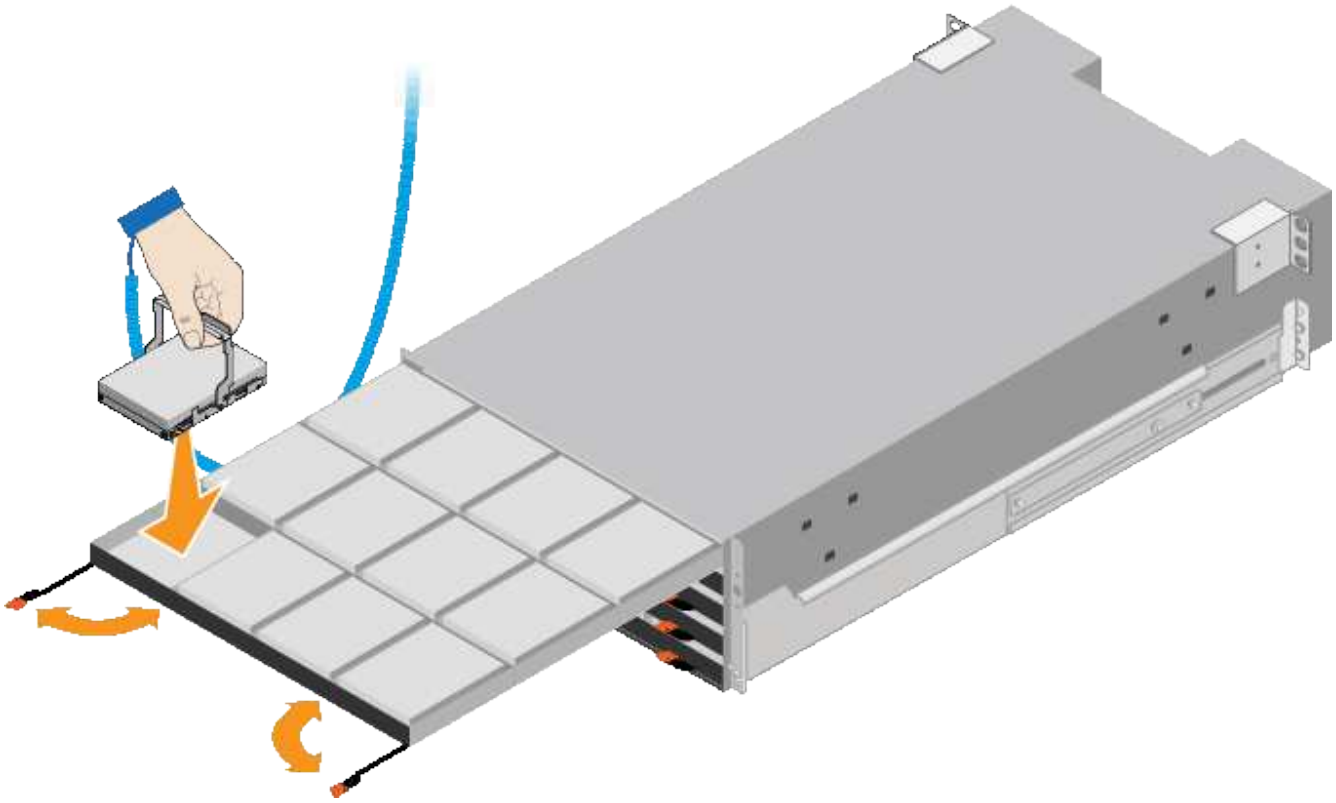
> To avoid damaging the hardware, never move the shelf if drives are installed. You must remove all drives before moving the shelf.

#### Steps

1. Wrap the strap end of the ESD wristband around your wrist, and secure the clip end to a metal ground to prevent static discharge.
2. Remove the drives from their packaging.
3. Release the levers on the top drive drawer, and slide the drawer out using the levers.
4. Locate the two SSD drives.

   > Expansion shelves don’t use SSD drives.

5. Raise each drive handle to a vertical position.
6. Install the two SSD drives in slots 0 and 1 (the first two slots along the lefthand side of the drawer).
7. Gently position each drive into its slot, and lower the raised drive handle until it clicks into place.



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

> Stop pushing the drawer if you feel binding. Use the release levers at the front of the drawer to slide the drawer back out. Then, carefully reinsert the drawer into the slot.

10. Repeat these steps to install HDD drives into the other four drawers.

> You must install all 60 drives to ensure correct operation.

11. Attach the front bezel to the shelf.
12. If you have expansion shelves, repeat these steps to install 12 HDD drives into each drawer of each expansion shelf.
13. Proceed to the instructions for installing the SG6000-CN into a cabinet or rack.

### Install 24-drive shelves (SGF6024)

You install a set of rails for the EF570 controller shelf in your cabinet or rack, and then slide the array onto the rails.

#### Before you begin

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

#### Steps

1. Carefully follow the instructions for the rail kit to install the rails in your cabinet or rack.

   For square hole cabinets, first install the provided cage nuts to secure the front and rear of the shelf with screws.

2. Remove the outer packing box for the appliance. Then, fold down the flaps on the inner box.
3. Place the back of the shelf (the end with the connectors) on the rails.

   A fully loaded shelf weighs approximately 52 lb (24 kg). Two people are required to safely move the enclosure.

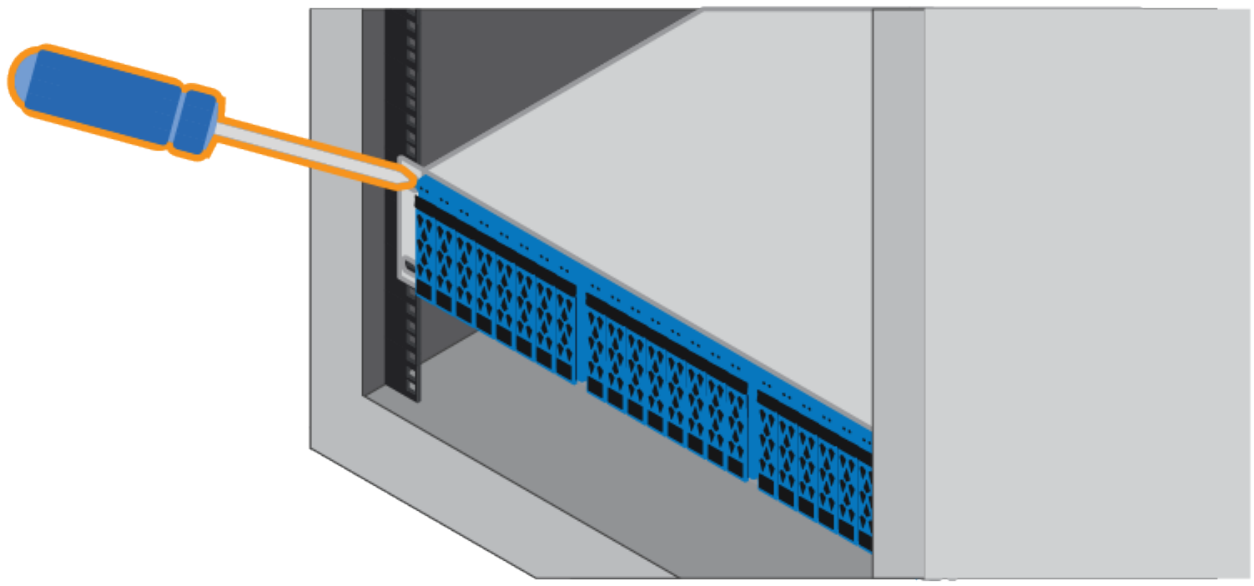
4. Carefully slide the enclosure all the way onto the rails.

   You might need to adjust the rails to ensure that the enclosure slides all the way onto the rails.

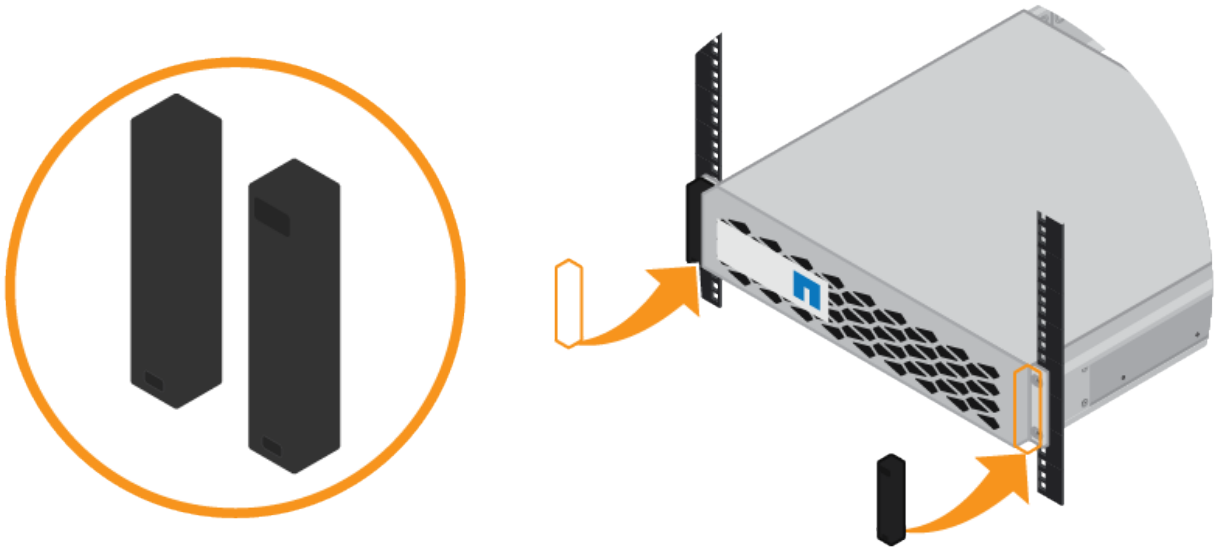
   Don’t place additional equipment on the rails after you finish installing the enclosure. The rails aren’t designed to bear additional weight.

   If applicable, you might need to remove the shelf end caps or the system bezel to secure the enclosure to the rack post; if so, you need to replace the end caps or bezel when you are done.

5. Secure the enclosure to the front of the cabinet or rack and rails by inserting two M5 screws through the mounting brackets (preinstalled on either side of the front of the enclosure), the holes on the rack or system cabinet, and the holes on the front of rails.



6. Secure the enclosure to the back of the rails by inserting two M5 screws through the brackets at the enclosure and the rail kit bracket.
7. If applicable, replace the shelf end caps or the system bezel.



### Install SG6000-CN controller (SG6060 and SG6024)

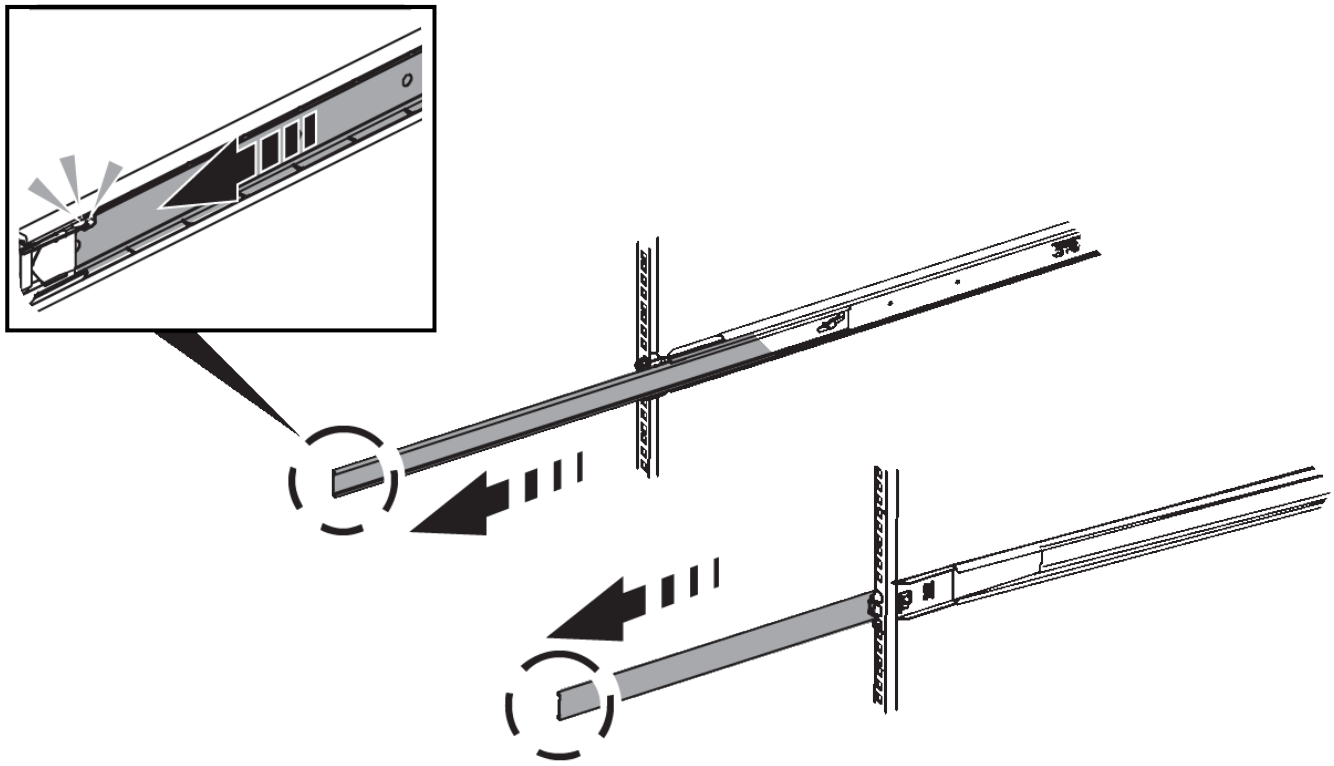
You install a set of rails for the SG6000-CN controller in your cabinet or rack, and then slide the controller onto the rails.

#### Before you begin

- You have reviewed the Safety Notices document included in the box, and understand the precautions for moving and installing hardware.
- You have the instructions packaged with the rail kit.
- You have installed the E2860 controller shelf and drives or the EF570 controller shelf.

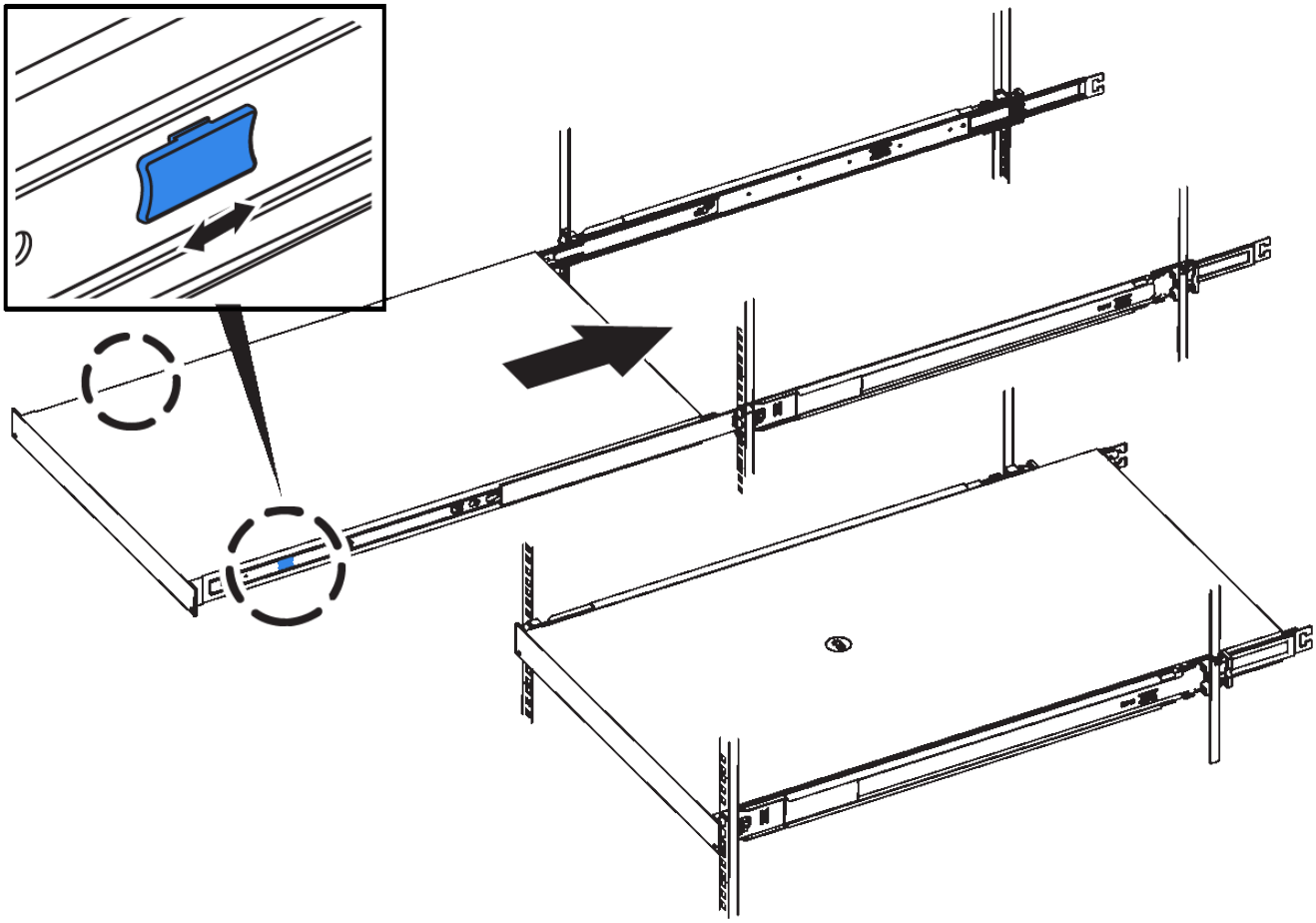
#### Steps

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



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

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



Don’t attach the front bezel until after you power on the controller.

5. Tighten the captive screws on the controller front panel to secure the controller in the rack.

## SG6100

### Install into cabinet or rack (SG6100)

For the SG6160 and SGF6112, you install rails in your cabinet or rack and slide the controller shelf, any expansion shelves, and the compute controller onto the rails.

| Model | Install | For information |
|---|---|---|
| SG6160 | 60-drive controller shelf and any 60-drive expansion shelves | Install 60-drive shelves |
| SG6112 | 12-drive appliance shelf | Install 12-drive shelves |

| Model | Install | For information |
| --- | --- | --- |
| SG6160 | SG6100-CN compute controller | Install SG6100-CN controller |

### Install 60-drive shelves (SG6160)

You install a set of rails for the E4000 controller shelf in your cabinet or rack, and then slide the controller shelf onto the rails. If you are installing 60-drive expansion shelves, the same procedure applies.

**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.

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

> When installing the E4000 controller shelf or optional expansion shelves, install hardware from the bottom to the top of the rack or cabinet to prevent the equipment from tipping over. To ensure that the heaviest equipment is at the bottom of the cabinet or rack, install the SG6100-CN controller above the E4000 controller shelf and expansion shelves.

> Before committing to the installation, verify that the cables shipped with the appliance, or cables that you supply, are long enough for the planned layout.

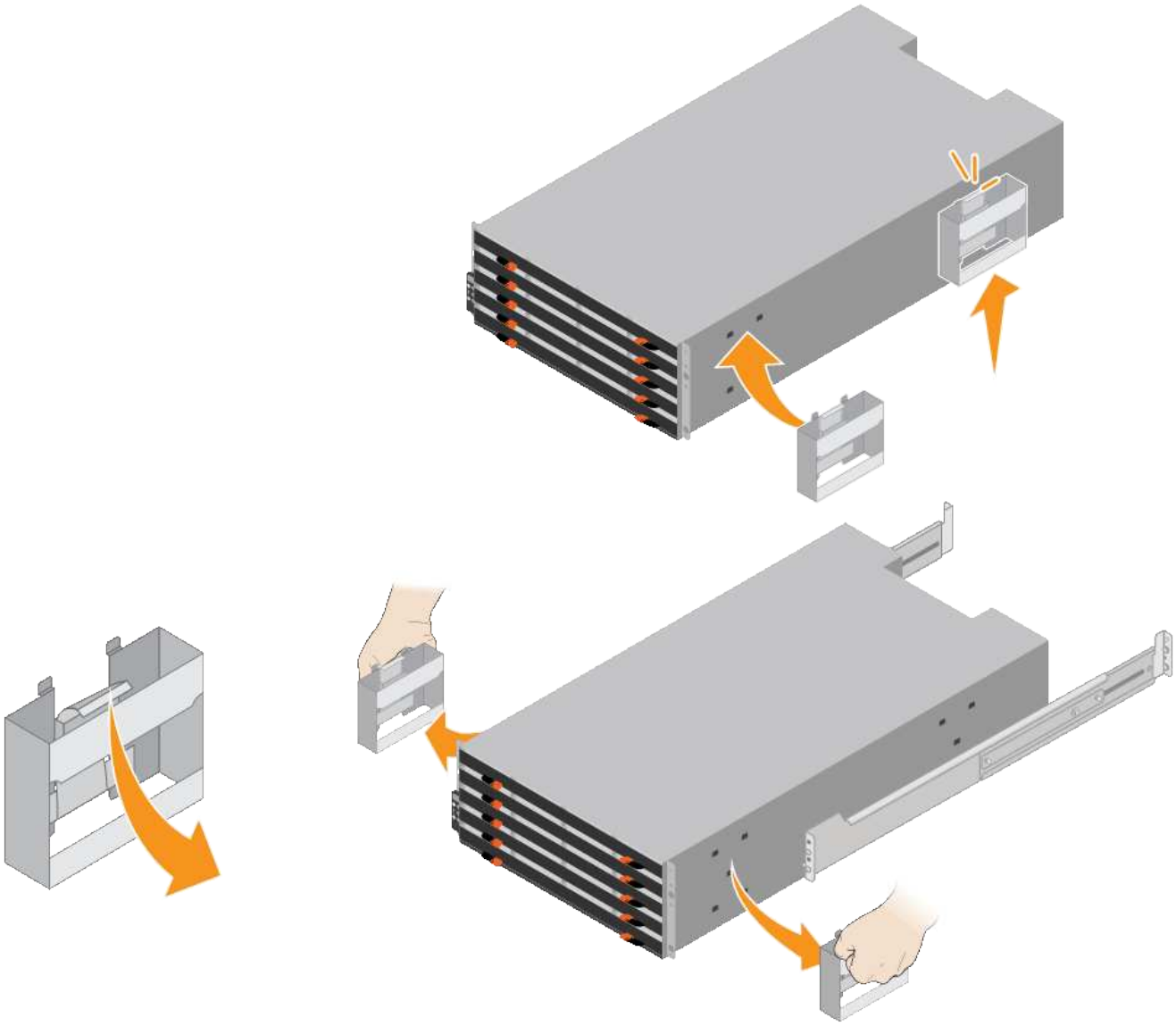
**Steps**

1. Carefully follow the instructions for the rail kit to install the rails in your cabinet or rack.

   For square hole cabinets, first install the provided cage nuts to secure the front and rear of the shelf with screws.

2. Remove the outer packing box for the appliance. Then, fold down the flaps on the inner box.
3. If you are lifting the appliance by hand, attach the four handles to the sides of the chassis.

   Push up on each handle until it clicks into place.



4. Place the back of the shelf (the end with the connectors) on the rails.
5. Supporting the shelf from the bottom, slide it into the cabinet. If you are using the handles, use the thumb latches to detach one handle at a time as you slide the shelf in.

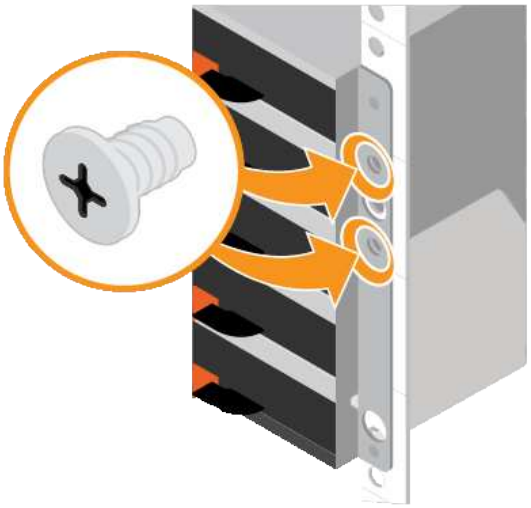
   To remove the handles, pull back on the release latch, push down, then pull away from the shelf.

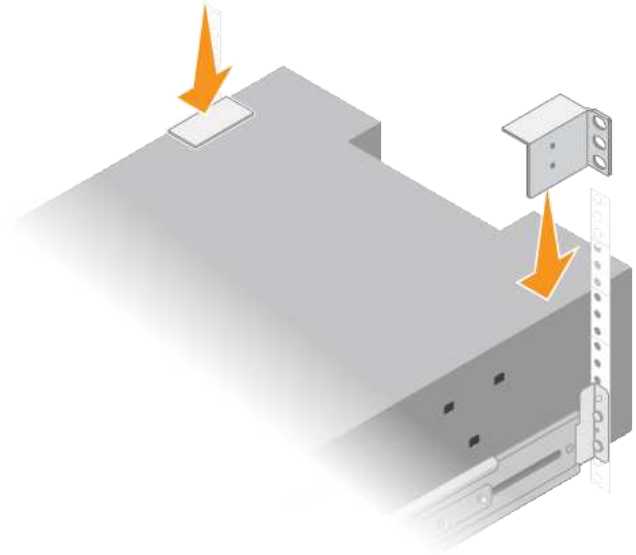
6. Secure the shelf to the front of the cabinet.

   Insert screws into the first and third holes from the top of the shelf on both sides.

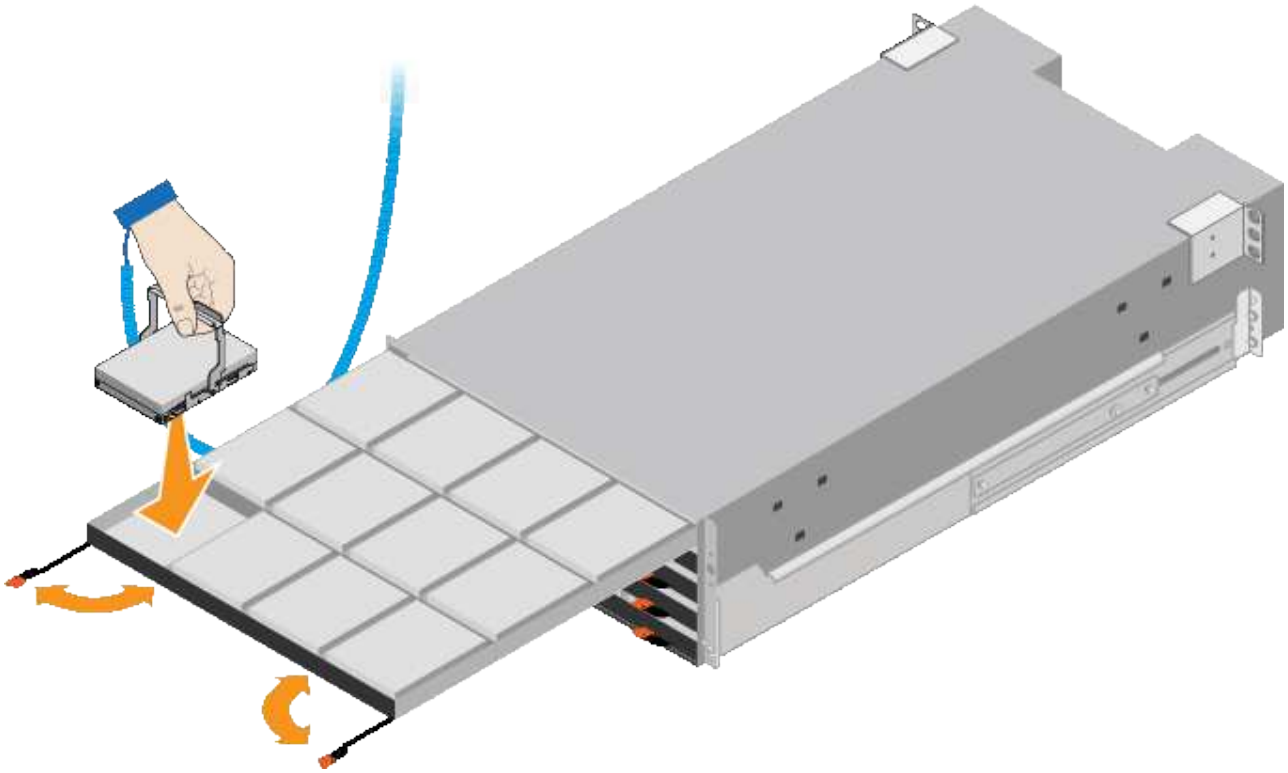
7. Secure the shelf to the rear of the cabinet.

   Place two back brackets on each side of the upper rear section of the shelf. Insert screws into the first and third holes of each bracket.





8. Repeat these steps for any expansion shelves.
9. Install 12 NL-SAS drives in each of of the five drive drawers.
    a. Wrap the strap end of the ESD wristband around your wrist, and secure the clip end to a metal ground to prevent static discharge.
    b. Release the levers on the top drive drawer, and slide the drawer out using the levers.
    c. Raise each drive handle to a vertical position.
    d. Gently position each drive into its slot, and lower the raised drive handle until it clicks into place.



    e. Install 12 NL-SAS drives into the top drawer.
    f. Slide the drawer back in by pushing on the center and closing both levers gently.

Stop pushing the drawer if you feel binding. Use the release levers at the front of the drawer to slide the drawer back out. Then, carefully reinsert the drawer into the slot.

g. Repeat these steps to install NL-SAS drives into the other four drawers.

You must install all 60 drives to ensure correct operation.

h. Attach the front bezel to the shelf, if one was provided.

10. If you have expansion shelves, repeat these steps to install 12 NL-SAS drives into each drawer of each expansion shelf.
11. Proceed to the instructions for installing the SG6100-CN into a cabinet or rack.

### Install into cabinet or rack (SGF6112)

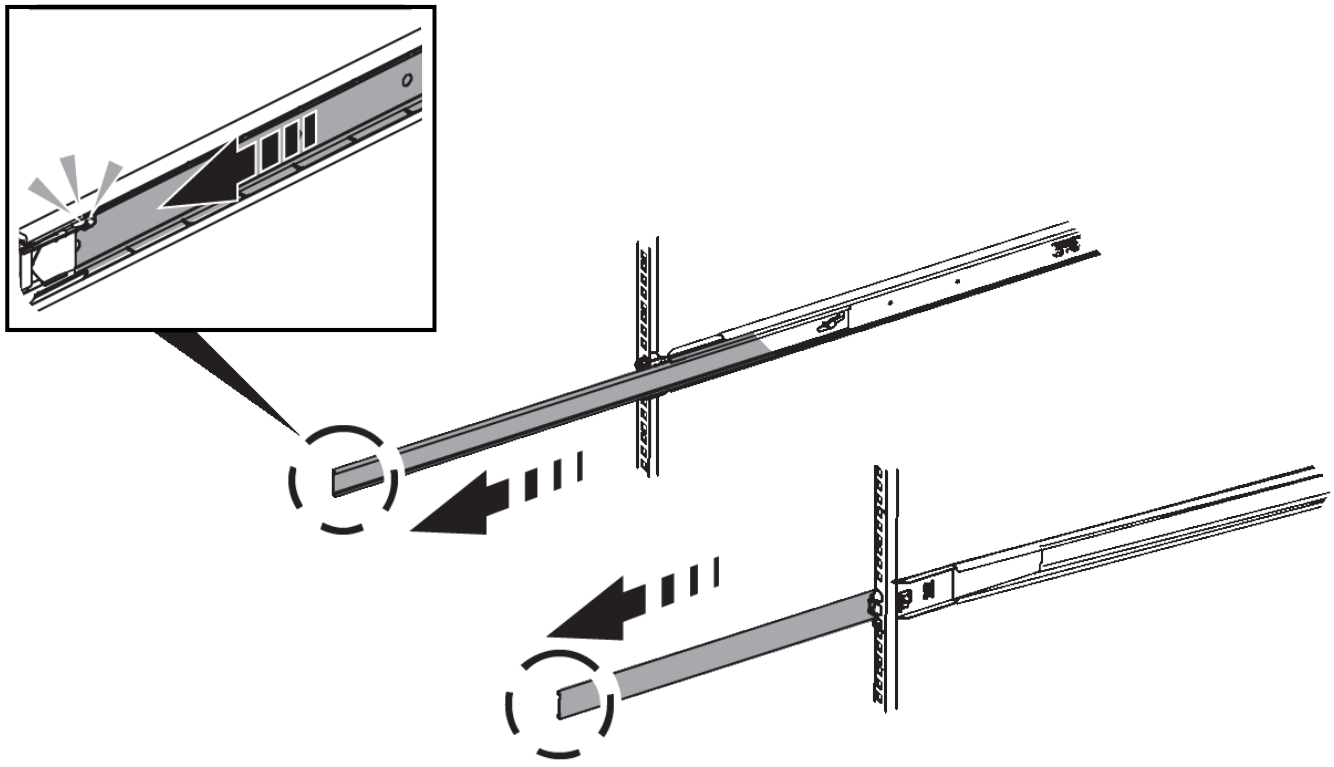
You install a set of rails for the appliance in your cabinet or rack, and then slide the appliance onto the rails.

#### Before you begin

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

#### Steps

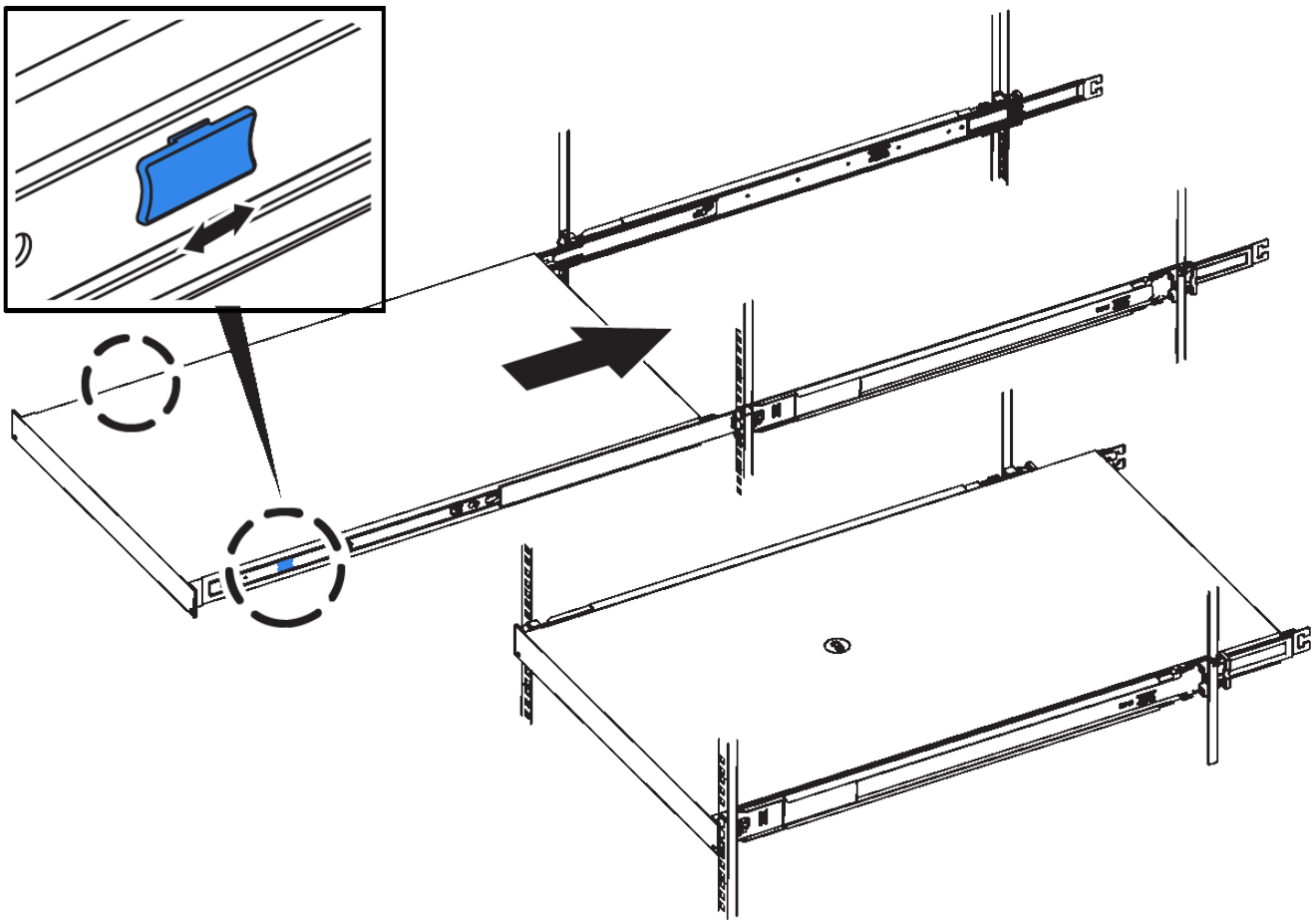
1. Carefully follow the instructions for the rail kit to install the rails in your cabinet or rack.
2. On the two rails installed in the cabinet or rack, extend the movable parts of the rails until you hear a click.



3. Insert the appliance into the rails.

4. Slide the appliance into the cabinet or rack.

   When you can't move the appliance any further, pull the blue latches on both sides of the chassis to slide the appliance all the way in.



5. Tighten the captive screws on the appliance front panel to secure the appliance in the rack.

> Don't attach the front bezel until after you power on the appliance.

### Install SG6100-CN controller (SG6160)

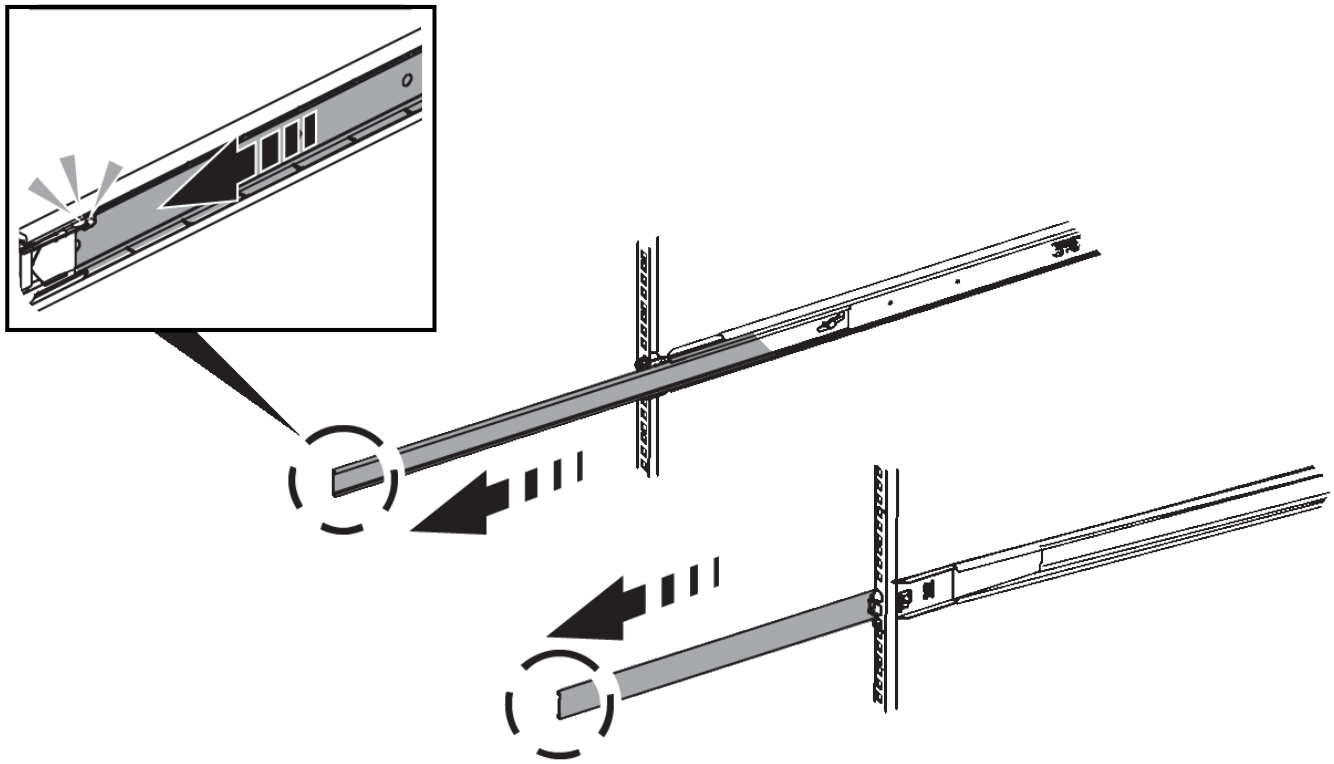
You install a set of rails for the SG6100-CN controller in your cabinet or rack, and then slide the controller onto the rails.

#### Before you begin

- You have reviewed the Safety Notices document included in the box, and understand the precautions for moving and installing hardware.
- You have the instructions packaged with the rail kit.
- You have installed the E4000 controller shelf and drives.

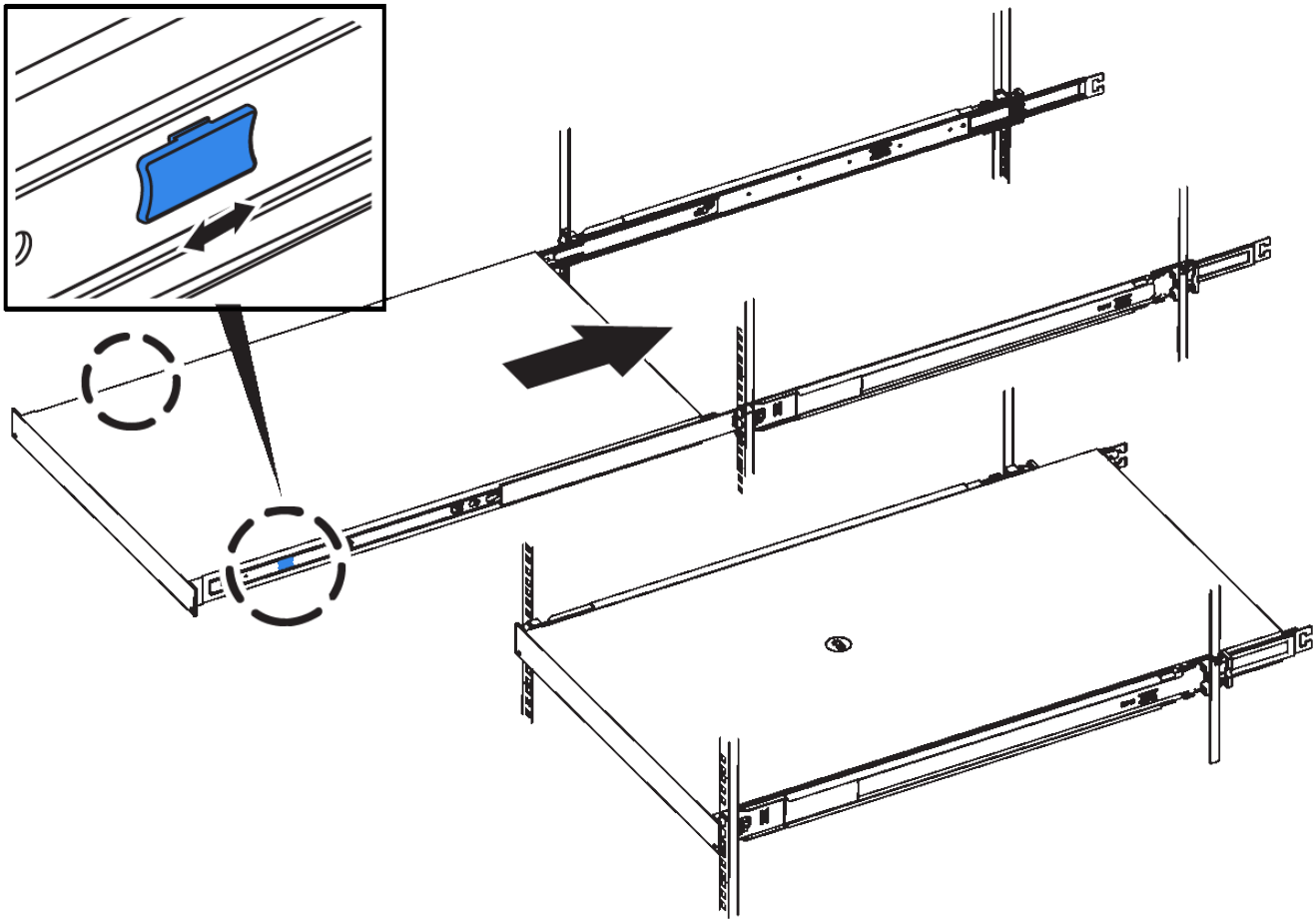
**Steps**

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



3. Insert the SG6100-CN controller into the rails.
4. Slide the controller into the cabinet or rack.

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



Don’t attach the front bezel until after you power on the controller.

5. Tighten the captive screws on the controller front panel to secure the controller in the rack.

## Cable appliance

Connect the network ports on the appliance or controller to the Grid Network and optional Client Network for StorageGRID. For some appliances, you also connect the management port on the appliance to the service laptop or make connections between the controller management ports.

### SG100 and SG1000

You must connect the management port on the appliance to the service laptop and connect the network ports on the appliance to the Grid Network and optional Client Network for StorageGRID.

**Before you begin**

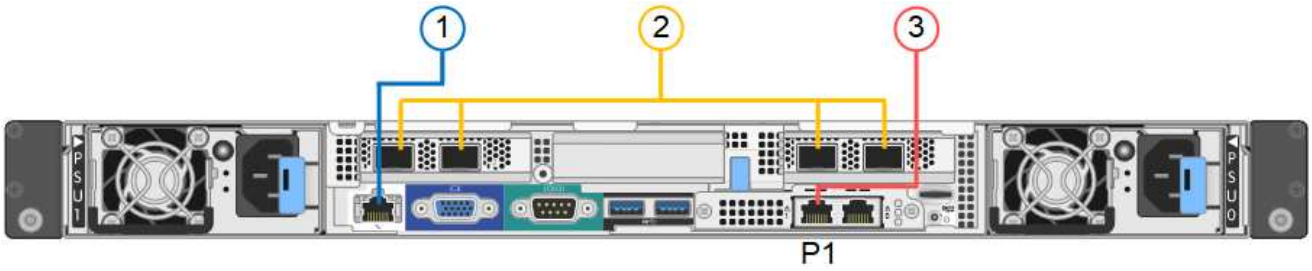
- You have an RJ-45 Ethernet cable for connecting the management port.
- You have one of the following options for the network ports. These items aren't provided with the appliance.
  - One to four TwinAx cables for connecting the four network ports.
  - For the SG100, one to four SFP+ or SFP28 transceivers if you plan to use optical cables for the ports.
  - For the SG1000, one to four QSFP+ or QSFP28 transceivers if you plan to use optical cables for the ports.

> **Risk of exposure to laser radiation** — Don't disassemble or remove any part of an SFP or QSFP transceiver. You might be exposed to laser radiation.

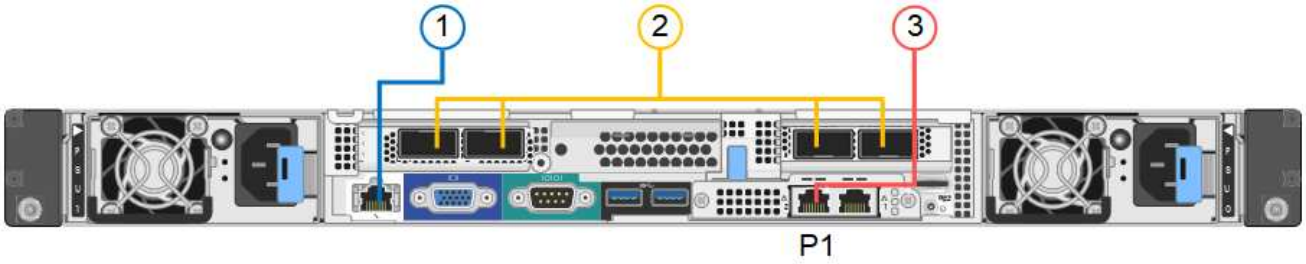
**About this task**

The following figures show the ports on the back of the appliance.

SG100 port connections:




SG1000 port connections:




| Callout | Port | Type of port | Use |
|---|---|---|---|
| 1 | BMC management port on the appliance | 1-GbE (RJ-45) | Connects to the network where you access the BMC interface. |

| Callout | Port | Type of port | Use |
|---|---|---|---|
| 2 | Four network ports on the appliance | • For the SG100: 10/25-GbE<br>• For the SG1000: 10/25/40/100-GbE | Connect to the Grid Network and the Client Network for StorageGRID. See Port bond modes (Port bond modes (SG100 and SG1000). |
| 3 | Admin Network port on the appliance (labeled P1 in the figures) | 1-GbE (RJ-45)<br>**Caution:** This port operates only at 1000 baseT/full and does not support 10- or 100-megabit speeds. | Connects the appliance to the Admin Network for StorageGRID. |
| | Rightmost RJ-45 port on the appliance | 1-GbE (RJ-45)<br>**Caution:** This port operates only at 1000 baseT/full and does not support 10- or 100-megabit speeds. | • Can be bonded with management port 1 if you want a redundant connection to the Admin Network.<br>• Can be left disconnected and available for temporary local access (IP 169.254.0.1).<br>• During installation, can be used to connect the appliance to a service laptop if DHCP-assigned IP addresses aren't available. |

**Steps**

1. Connect the BMC management port on the appliance to the management network, using an Ethernet cable.

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

2. Connect the network ports on the appliance to the appropriate network switches, using TwinAx cables or optical cables and transceivers.

   See the following table for the equipment required for your hardware and link speed.

| SG100 link speed (GbE) | Required equipment |
|---|---|
| 10 | SFP+ transceiver |
| 25 | SFP28 transceiver |
| **SG1000 link speed (GbE)** | **Required equipment** |
| 10 | QSA and SFP+ transceiver |
| 25 | QSA and SFP28 transceiver |

| SG100 link speed (GbE) | Required equipment |
| --- | --- |
| 40 | QSFP+ transceiver |
| 100 | QFSP28 transceiver |

- On models that support Autonegotiate as a port speed option, if Fixed port bonding mode is selected you can run the ports dedicated to the StorageGRID Grid network at a different speed than the ports dedicated to the Client network.
- On models that do not support Autonegotiate as a port speed option, all four network ports must use the same link speed.
- If you plan to use Fixed port bond mode (default), connect the ports to the StorageGRID Grid and Client Networks, as shown in the table.

| Port | Connects to… |
| --- | --- |
| Port 1 | Client Network (optional) |
| Port 2 | Grid Network |
| Port 3 | Client Network (optional) |
| Port 4 | Grid Network |

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

3. If you plan to use the Admin Network for StorageGRID, connect the Admin Network port on the appliance to the Admin Network, using an Ethernet cable.

#### SG110 and SG1100

You connect the management port on the appliance to the service laptop and connect the network ports on the appliance to the Grid Network and optional Client Network for StorageGRID.

#### Before you begin

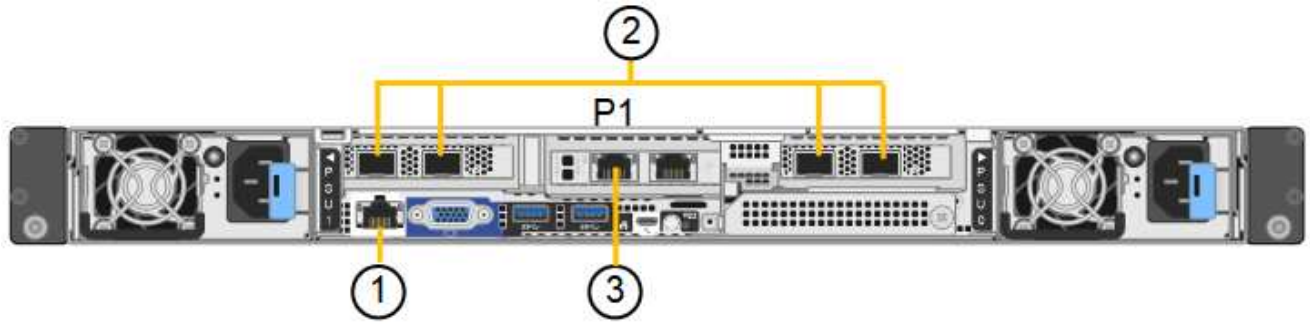
- You have an RJ-45 Ethernet cable for connecting the management port.
- You have one of the following options for the network ports. These items aren’t provided with the appliance.
  - One to four TwinAx cables for connecting the four network ports.
  - For the SG110, one to four SFP+ or SFP28 transceivers if you plan to use optical cables for the ports.
  - For the SG1100, one to four QSFP+ or QSFP28 transceivers if you plan to use optical cables for the ports.

**Risk of exposure to laser radiation** — Don’t disassemble or remove any part of an SFP or QSFP transceiver. You might be exposed to laser radiation.

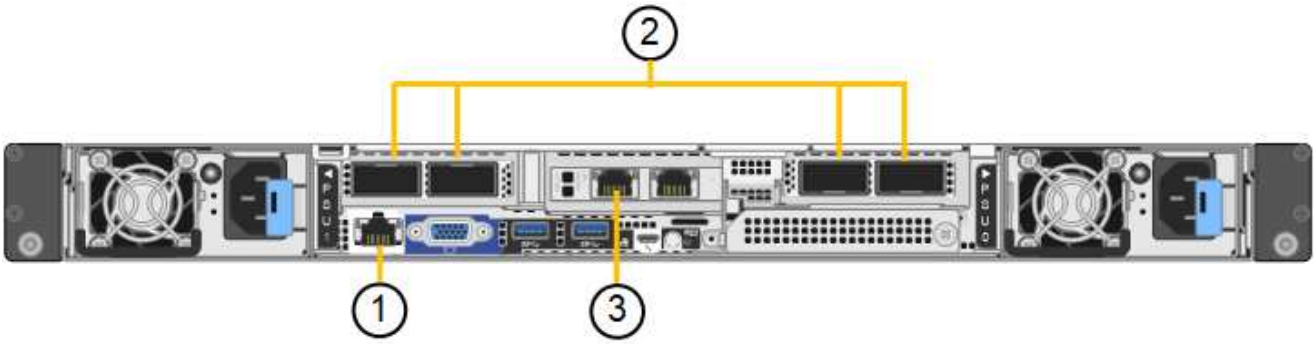
**About this task**

The following figures show the ports on the back of the appliance.

SG110 port connections:




SG1100 port connections:




| Callout | Port | Type of port | Use |
|---|---|---|---|
| 1 | BMC management port on the appliance | 1-GbE (RJ-45) | Connects to the network where you access the BMC interface. |
| 2 | Four network ports on the appliance | • For the SG110: 10/25-GbE<br>• For the SG1100: 10/25/40/100-GbE | Connect to the Grid Network and the Client Network for StorageGRID. See Port bond modes (SG110 and SG1100) |
| 3 | Admin Network port on the appliance | 1-GbE (RJ-45)<br>**Important:** This port operates only at 1/10-GbE (RJ-45) and does not support 100-megabit speeds. | Connects the appliance to the Admin Network for StorageGRID. |

| Callout | Port | Type of port | Use |
| --- | --- | --- | --- |
| | Rightmost RJ-45 port on the appliance | 1-GbE (RJ-45)<br><br>**Important:** This port operates only at 1/10-GbE (RJ-45) and does not support 100-megabit speeds. | • Can be bonded with management port 1 if you want a redundant connection to the Admin Network.<br>• Can be left disconnected and available for temporary local access (IP 169.254.0.1).<br>• During installation, can be used to connect the appliance to a service laptop if DHCP-assigned IP addresses aren't available. |

**Steps**

1. Connect the BMC management port on the appliance to the management network, using an Ethernet cable.

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

2. Connect the network ports on the appliance to the appropriate network switches, using TwinAx cables or optical cables and transceivers.

   See the following table for the equipment required for your hardware and link speed.

| **SG110 link speed (GbE)** | **Required equipment** |
| --- | --- |
| 10 | SFP+ transceiver |
| 25 | SFP28 transceiver |
| **SG1100 link speed (GbE)** | **Required equipment** |
| 10 | QSA and SFP+ transceiver |
| 25 | QSA and SFP28 transceiver |
| 40 | QSFP+ transceiver |
| 100 | QFSP28 transceiver |

   - On models that support Autonegotiate as a port speed option, if Fixed port bonding mode is selected you can run the ports dedicated to the StorageGRID Grid network at a different speed than the ports dedicated to the Client network.
   - On models that do not support Autonegotiate as a port speed option, all four network ports must use the same link speed.
   - If you plan to use Fixed port bond mode (default), connect the ports to the StorageGRID Grid and Client Networks, as shown in the table.

| Port | Connects to… |
| --- | --- |
| Port 1 | Client Network (optional) |
| Port 2 | Grid Network |
| Port 3 | Client Network (optional) |
| Port 4 | Grid Network |

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

3. If you plan to use the Admin Network for StorageGRID, connect the Admin Network port on the appliance to the Admin Network, using an Ethernet cable.

**SG5700**

You 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.

**Before you begin**

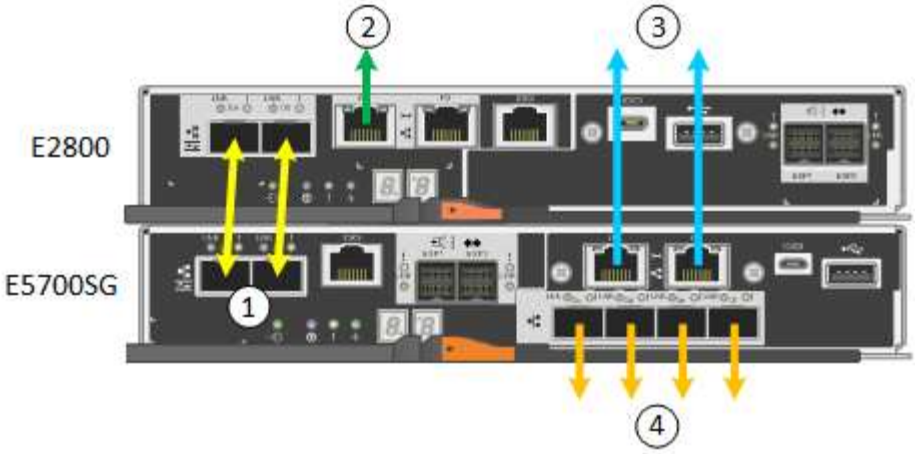
- You have unpacked the following items, which are included with the appliance:
    - Two power cords.
    - Two optical cables for the FC interconnect ports on the controllers.
    - Eight SFP+ transceivers, which support either 10-GbE or 16-Gbps FC. The transceivers can be used with the two interconnect ports on both controllers and with the four 10/25-GbE network ports on the E5700SG controller, assuming you want the network ports to use a 10-GbE link speed.
- You have obtained the following items, which aren't included with the appliance:
    - One to four optical cables for the 10/25-GbE ports you plan to use.
    - One to four SFP28 transceivers, if you plan to use 25-GbE link speed.
    - Ethernet cables for connecting the management ports.

**Risk of exposure to laser radiation** — Don't disassemble or remove any part of an SFP transceiver. You might be exposed to laser radiation.

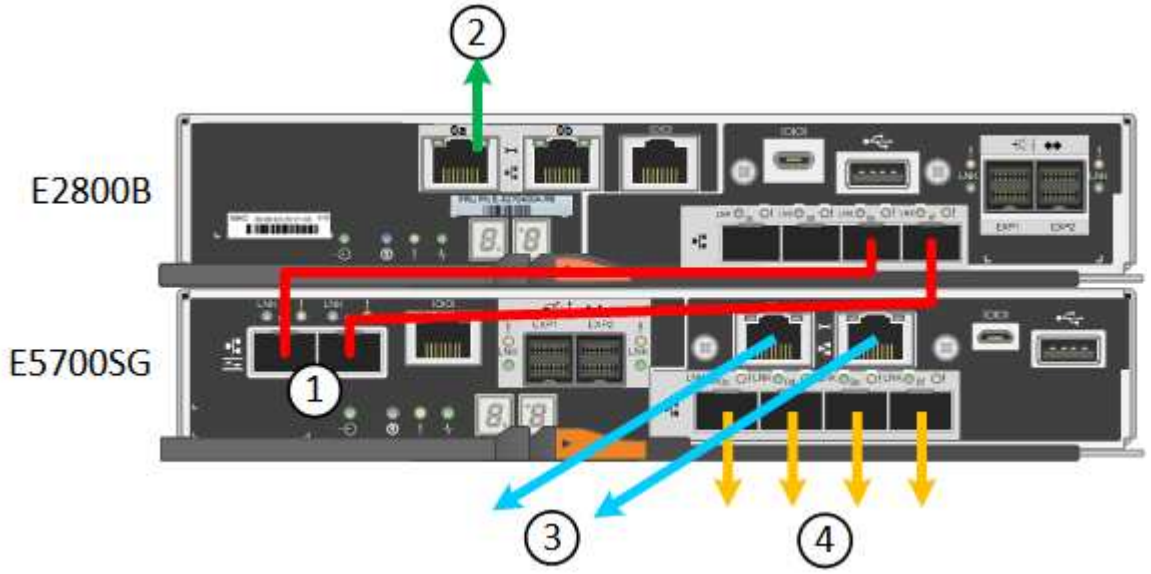
**About this task**

The figures show the two controllers in the SG5760 and SG5760X, with the E2800 series storage controller on the top and the E5700SG controller on the bottom. In the SG5712 and SG5712X, the E2800 series storage controller is to the left of the E5700SG controller when viewed from the back.

SG5760 connections:




SG5760X connections:




| Callout | Port | Type of port | Use |
|---|---|---|---|
| 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 series controller | 1-GbE (RJ-45) | Connects to the network where you access SANtricity System Manager. You can use the Admin Network for StorageGRID or an independent management network. |
| 2 | Management port 2 on the E2800 series controller | 1-GbE (RJ-45) | Reserved for technical support. |

| Callout | Port | Type of port | Use |
|---|---|---|---|
| 3 | Management port 1 on the E5700SG controller | 1-GbE (RJ-45) | Connects the E5700SG controller to the Admin Network for StorageGRID. |
| 3 | Management port 2 on the E5700SG controller | 1-GbE (RJ-45) | • Can be bonded with management port 1 if you want a redundant connection to the Admin Network.<br>• Can be left unwired and available for temporary local access (IP 169.254.0.1).<br>• During installation, can be used to connect the E5700SG controller to a service laptop if DHCP-assigned IP addresses aren't available. |
| 4 | 10/25-GbE ports 1-4 on the E5700SG controller | 10-GbE or 25-GbE<br><br>**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. See Port bond modes (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. If you plan to use SANtricity System Manager, 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.

   Don't 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, connect management port 1 on the E5700SG controller (the RJ-45 port on the left) to the Admin Network, using an Ethernet cable.

   If you plan to use active-backup network bond mode for the Admin Network, connect management port 2 on the E5700SG controller (the RJ-45 port on the right) 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.

   Install SFP+ transceivers if you plan to use 10-GbE link speeds. Install SFP28 transceivers if you plan to use 25-GbE link speeds.

   - On models that support Autonegotiate as a port speed option, if Fixed port bonding mode is selected you can run the ports dedicated to the StorageGRID Grid network at a different speed than the ports dedicated to the Client network.
   - On models that do not support Autonegotiate as a port speed option, all four network ports must use the same link speed.
   - If you plan to use Fixed port bond mode (default), connect the ports to the StorageGRID Grid and Client Networks, as shown in the table.

| Port | Connects to… |
|---|---|
| Port 1 | Client Network (optional) |
| Port 2 | Grid Network |
| Port 3 | Client Network (optional) |
| Port 4 | Grid Network |

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

**SG5800**

You connect the two controllers to each other, connect the management ports on each controller, and connect the 10/25-GbE ports on the SG5800 controller to the Grid Network and optional Client Network for StorageGRID.

**Before you begin**

- You have unpacked the following items, which are included with the appliance:
  - Two power cords.
  - Two cables for the iSCSI interconnect ports on the controllers.
- You have obtained the following items, which aren’t included with the appliance:
  - One to four optical or copper cables for the 10/25-GbE ports you plan to use.
  - One to eight SFP+ transceivers, if you plan to use optical cables and 10-GbE link speed.

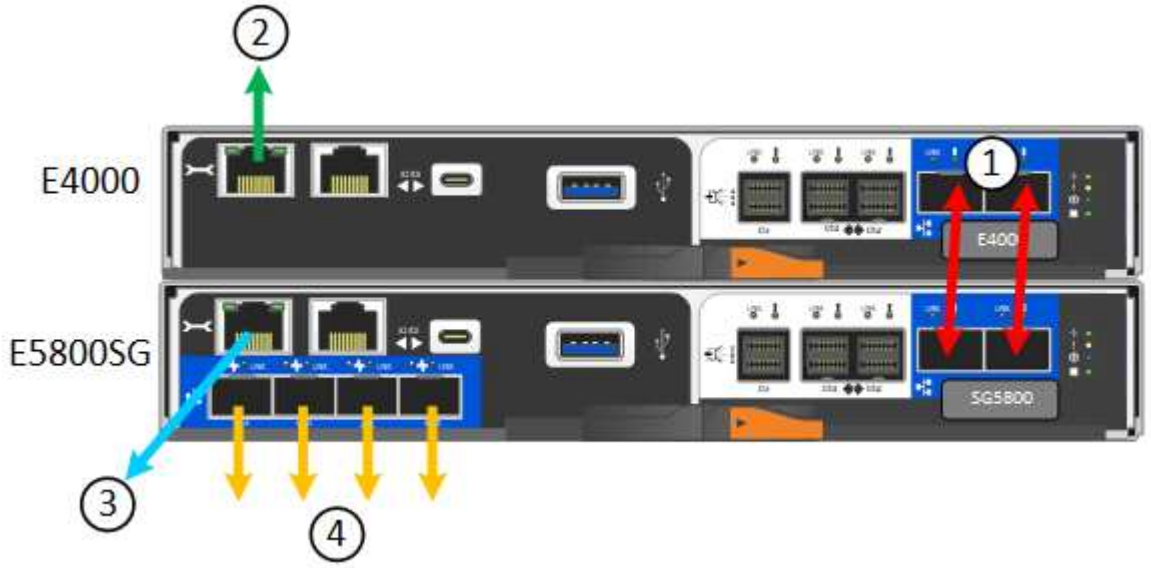
- One to eight SFP28 transceivers, if you plan to use optical cables and 25-GbE link speed.
- Ethernet cables for connecting the management ports.

**Risk of exposure to laser radiation** — Don't disassemble or remove any part of an SFP transceiver. You might be exposed to laser radiation.

**About this task**

The figures show the two controllers in the SG5860, with the E4000 series storage controller on the top and the SG5800 controller on the bottom. In the SG5812, the E4000 series storage controller is to the left of the SG5800 controller when viewed from the back.

SG5860 connections:




| Callout | Port | Type of port | Use |
|---|---|---|---|
| 1 | Two interconnect ports on each controller | 25GbE iSCSI (SFP28) | Connect the two controllers to each other. |
| 2 | Management port 1 on the E4000 series controller | 1-GbE (RJ-45) | Connects to the network where you access SANtricity System Manager. You can use the Admin Network for StorageGRID or an independent management network. |
| 3 | Management port 1 on the SG5800 controller | 1-GbE (RJ-45) | Connects the SG5800 controller to the Admin Network for StorageGRID. |

| Callout | Port | Type of port | Use |
|---|---|---|---|
| 4 | 10/25-GbE ports 1-4 on the SG5800 controller | 10-GbE or 25-GbE | Connect to the Grid Network and the Client Network for StorageGRID. See Port bond modes (SG5800 controller). |

**Steps**

1. Connect the E4000 controller to the SG5800 controller, using the two provided cables.

| Connect this port… | To this port… |
|---|---|
| Interconnect port 1 on the E4000 controller | Interconnect port 1 on the SG5800 controller |
| Interconnect port 2 on the E4000 controller | Interconnect port 2 on the SG5800 controller |

2. Optionally, connect management port 1 (P1) on the E4000 controller (the RJ-45 port on the left) to the management network for SANtricity System Manager using an Ethernet cable.
3. If you plan to use the Admin Network for StorageGRID, connect management port 1 on the SG5800 controller (the RJ-45 port on the left) to the Admin Network, using an Ethernet cable.

   The physical link state for port 1 is unavailable in software and must be verified at this time using the status LED on the SG5800 controller.

4. Connect the 10/25-GbE ports on the SG5800 controller to the appropriate network switches, using copper cables or optical cables and SFP+ or SFP28 transceivers.

   Install SFP+ transceivers if you plan to use 10-GbE link speeds. Install SFP28 transceivers if you plan to use 25-GbE link speeds.

   - On models that support Autonegotiate as a port speed option, if Fixed port bonding mode is selected you can run the ports dedicated to the StorageGRID Grid network at a different speed than the ports dedicated to the Client network.
   - On models that do not support Autonegotiate as a port speed option, all four network ports must use the same link speed.
   - If you plan to use Fixed port bond mode (default), connect the ports to the StorageGRID Grid and Client Networks, as shown in the table.

| Port | Connects to… |
|---|---|
| Port 1 | Client Network (optional) |
| Port 2 | Grid Network |
| Port 3 | Client Network (optional) |

| Port | Connects to… |
| --- | --- |
| 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.

**SG6000**

You connect the storage controllers to the SG6000-CN controller, connect the management ports on all three controllers, and connect the network ports on the SG6000-CN controller to the Grid Network and optional Client Network for StorageGRID.

**Before you begin**

- You have the four optical cables provided with the appliance for connecting the two storage controllers to the SG6000-CN controller.
- You have RJ-45 Ethernet cables (four minimum) for connecting the management ports.
- You have one of the following options for the network ports. These items aren't provided with the appliance.
  - One to four TwinAx cables for connecting the four network ports.
  - One to four SFP+ or SFP28 transceivers if you plan to use optical cables for the ports.

**Risk of exposure to laser radiation** — Don't disassemble or remove any part of an SFP transceiver. You might be exposed to laser radiation.

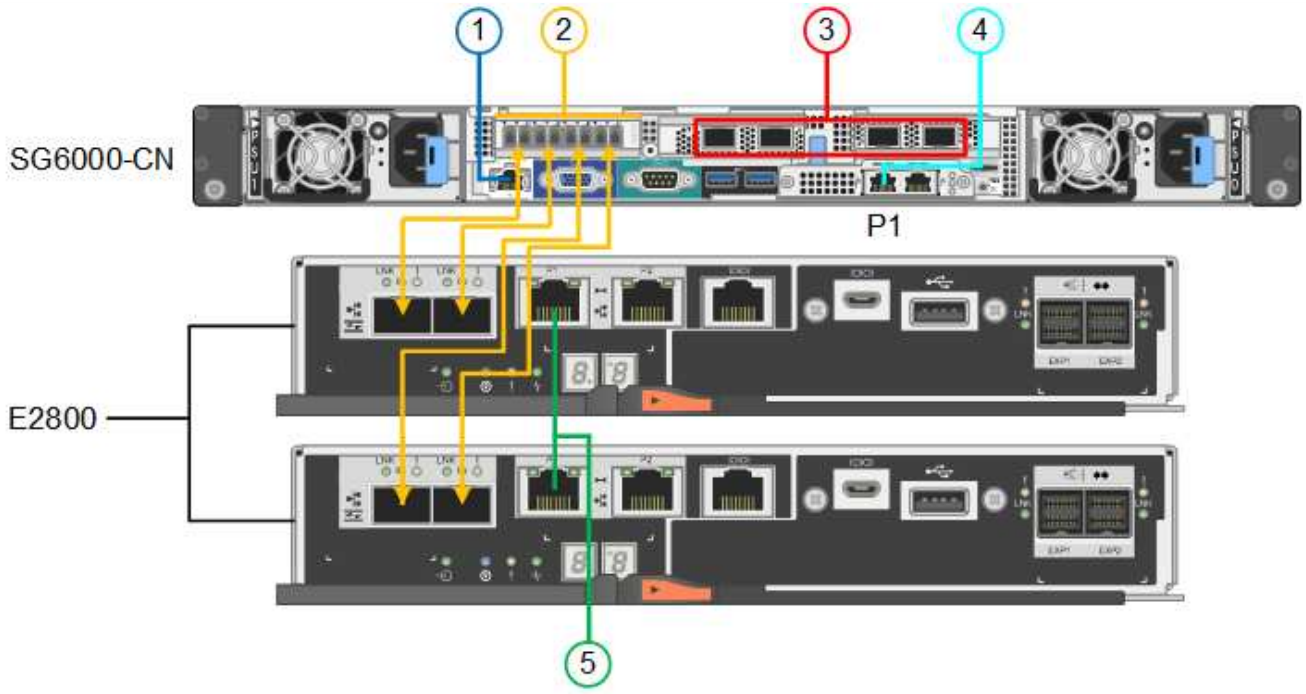
**About this task**

The following figures show the three controllers in the SG6060 and SG6060X appliances, with the SG6000-CN compute controller on the top and the two E2800 storage controllers on the bottom. The SG6060 uses E2800A controllers, and the SG6060X uses one of two E2800B controller versions.

Both versions of the E2800 controller have identical specifications and function except for the location of the interconnect ports.

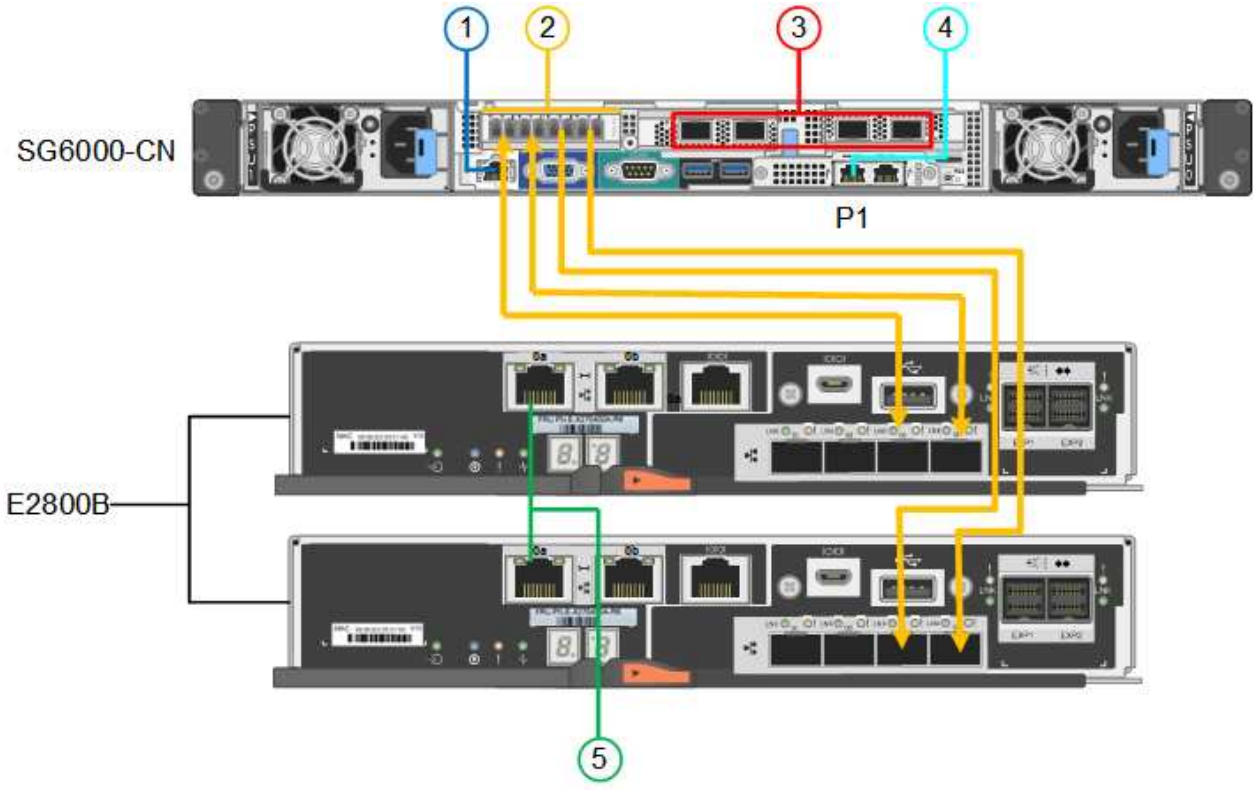
Don't use an E2800A and E2800B controller in the same appliance.

SG6060 connections:



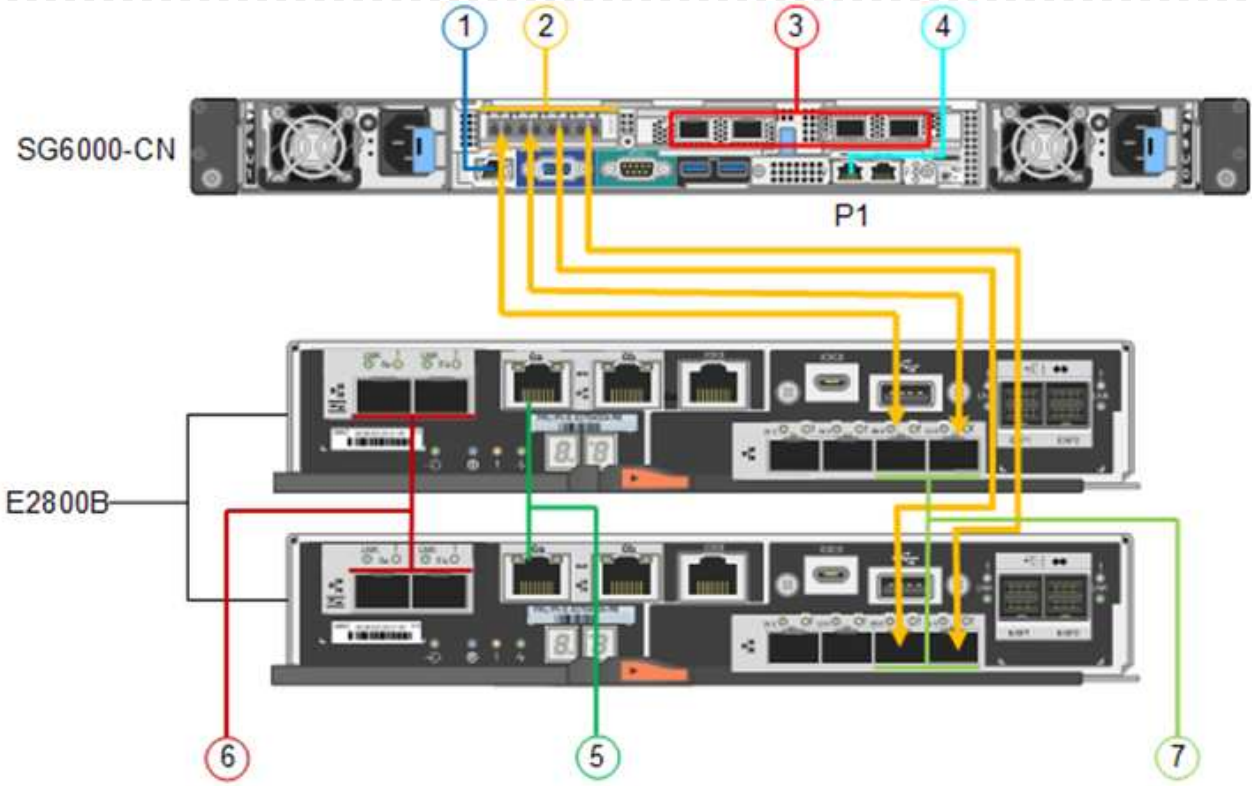

SG6060X connections:

- Version 1



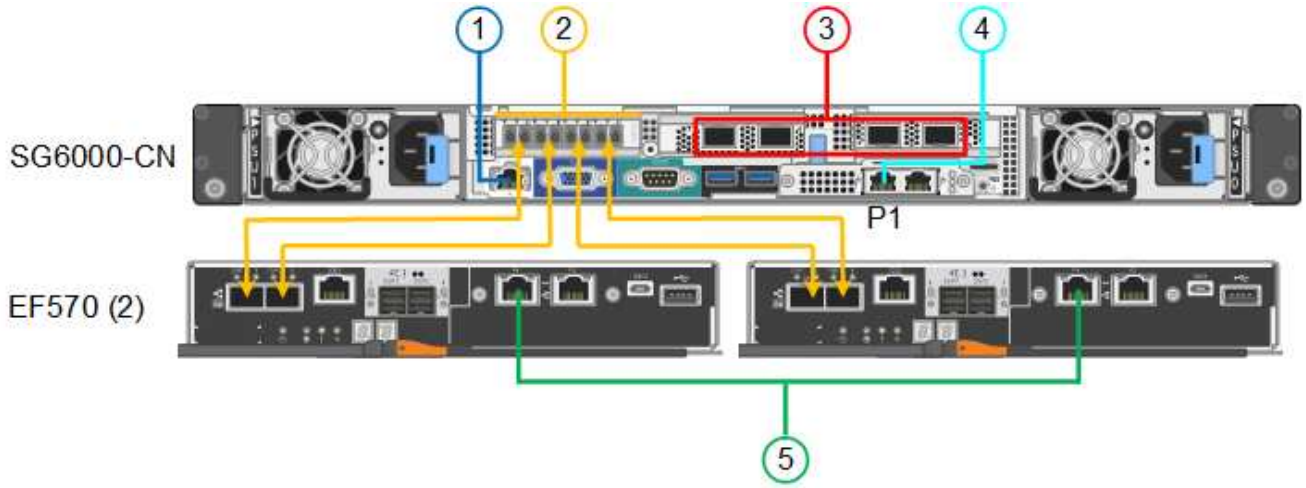

- Version 2

If the FC transceivers in the E2800B controller are installed in the upper FC connection ports (6), move them to the lower-right FC connection ports (7).




The following figure shows the three controllers in the SGF6024 appliance, with the SG6000-CN compute controller on the top and the two EF570 storage controllers side by side below the compute controller.

SGF6024 connections:




| Callout | Port | Type of port | Use |
|---|---|---|---|
| 1 | BMC management port on the SG6000-CN controller | 1-GbE (RJ-45) | Connects to the network where you access the BMC interface. |

| Callout | Port | Type of port | Use |
|---|---|---|---|
| 2 | FC connection ports:<br>• 4 on the SG6000-CN controller<br>• 2 on each storage controller | 16-Gb/s FC optical SFP+ | Connect each storage controller to the SG6000-CN controller. |
| 3 | Four network ports on the SG6000-CN controller | 10/25-GbE | Connect to the Grid Network and the Client Network for StorageGRID. See Port bond modes (SG6000-CN controller). |
| 4 | Admin Network port on the SG6000-CN controller (labeled P1 in the figure) | 1-GbE (RJ-45)<br>**Caution:** This port operates only at 1000 baseT/full and does not support 10- or 100-megabit speeds. | Connects the SG6000-CN controller to the Admin Network for StorageGRID. |
| | Rightmost RJ-45 port on the SG6000-CN controller | 1-GbE (RJ-45)<br>**Caution:** This port operates only at 1000 baseT/full and does not support 10- or 100-megabit speeds. | • Can be bonded with management port 1 if you want a redundant connection to the Admin Network.<br>• Can be left unwired and available for temporary local access (IP 169.254.0.1).<br>• During installation, can be used to connect the SG6000-CN controller to a service laptop if DHCP-assigned IP addresses aren’t available. |
| 5 | Management port 1 on each storage controller | 1-GbE (RJ-45) | Connects to the network where you access SANtricity System Manager. |
| | Management port 2 on each storage controller | 1-GbE (RJ-45) | Reserved for technical support. |

**Steps**

1. Connect the BMC management port on the SG6000-CN controller to the management network, using an Ethernet cable.

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

2. Connect the two FC ports on each storage controller to the FC ports on the SG6000-CN controller, using four optical cables and four SFP+ transceivers for the storage controllers.
3. Connect the network ports on the SG6000-CN controller to the appropriate network switches, using TwinAx cables or optical cables and SFP+ or SFP28 transceivers.

Install SFP+ transceivers if you plan to use 10-GbE link speeds. Install SFP28 transceivers if you plan to use 25-GbE link speeds.

- On models that support Autonegotiate as a port speed option, if Fixed port bonding mode is selected you can run the ports dedicated to the StorageGRID Grid network at a different speed than the ports dedicated to the Client network.
- On models that do not support Autonegotiate as a port speed option, all four network ports must use the same link speed.
- If you plan to use Fixed port bond mode (default), connect the ports to the StorageGRID Grid and Client Networks, as shown in the table.

| Port | Connects to… |
|---|---|
| Port 1 | Client Network (optional) |
| Port 2 | Grid Network |
| Port 3 | Client Network (optional) |
| Port 4 | Grid Network |

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

4. If you plan to use the Admin Network for StorageGRID, connect the Admin Network port on the SG6000-CN controller to the Admin Network, using an Ethernet cable.
5. If you plan to use the management network for SANtricity System Manager, connect management port 1 (P1) on each storage controller (the RJ-45 port on the left) to the management network for SANtricity System Manager, using an Ethernet cable.

   Don’t use management port 2 (P2) on the storage controllers (the RJ-45 port on the right). This port is reserved for technical support.

**SG6100**

You connect the management port on the appliance to the service laptop and connect the network ports on the appliance to the Grid Network and optional Client Network for StorageGRID.

**Before you begin**

- SG6160 only: You have the 100GbE to 4x25GbE breakout cable provided with the appliance for connecting the two storage controllers to the SG6100-CN controller.
- You have RJ-45 Ethernet cables:
  - One RJ-45 cable for connecting the management port.
  - SG6160 only: Up to four additional RJ-45 Ethernet cables for the optional ports you plan to use, including the second Admin port and the BMC port on the SG6100-CN, and the maintenance ports on each of the two E4000 controllers.
- You have one of the following options for the network ports. These items aren’t provided with the

appliance.

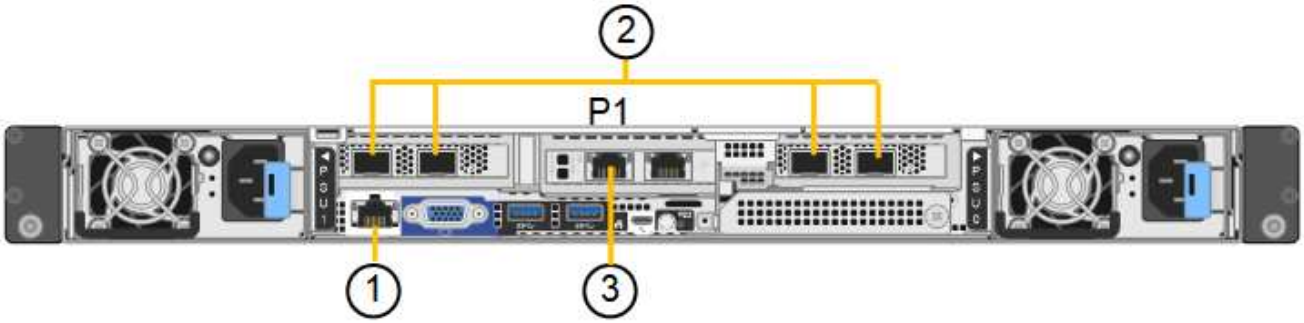
- One to four TwinAx cables for connecting the four network ports.
- One to eight SFP+ or SFP28 transceivers if you plan to use optical cables for the ports.

**Risk of exposure to laser radiation** — Don't disassemble or remove any part of an SFP transceiver. You might be exposed to laser radiation.

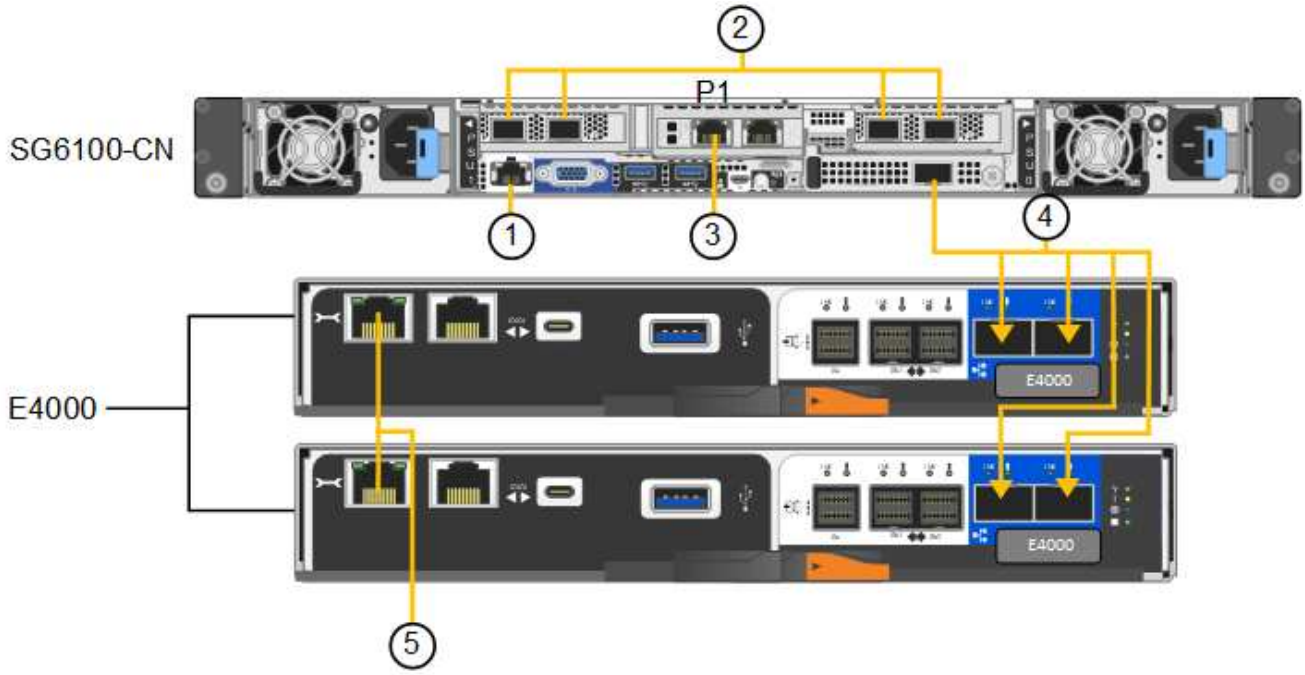
**About this task**

The following figures show the ports on the back of the SGF6112 and the three controllers in the SG6160 appliance. The SG6160 appliance includes a SG6100-CN compute controller on top and two E4000 storage controllers on the bottom.

SGF6112 connections:




SG6160 connections:




| Callout | Port | Type of port | Use |
|---|---|---|---|
| 1 | BMC management port on the appliance | 1-GbE (RJ-45) | Connects to the network where you access the BMC interface. |

| Callout | Port | Type of port | Use |
|---|---|---|---|
| 2 | Four network ports on the SG6100-CN controller | • Four 10/25-GbE network ports on the appliance<br>• Four 10/25/40/100-GbE network ports with optional 100G NIC SKU (SG6160 only) | Connect to the Grid Network and the Client Network for StorageGRID. See Port bond modes (SG6100) |
| 3 | Admin Network port on the appliance (labeled P1 in the figure) | 1/10-GbE (RJ-45)<br>**Important:** This port operates only at 1/10-GbE (RJ-45) and does not support 100-megabit speeds. | Connects the appliance to the Admin Network for StorageGRID. |
| | Rightmost RJ-45 port on the appliance | 1/10-GbE (RJ-45)<br>**Caution:** This port operates only at 1/10-GbE (RJ-45) and does not support 100-megabit speeds. | • Can be bonded with management port 1 if you want a redundant connection to the Admin Network.<br>• Can be left disconnected and available for temporary local access (IP 169.254.0.1).<br>• During installation, can be used to connect the appliance to a service laptop if DHCP-assigned IP addresses aren't available. |
| 4 (SG6160 only) | Five total connection ports | • One 100GbE port on the SG6100-CN<br>• Two 10/25GbE ports on each of the storage controllers | Connect each storage controller to the SG6100-CN controller. |
| 5 (SG6160 only) | Management port 1 on each storage controller | 1-GbE (RJ-45) | Connects to the network where you access SANtricity System Manager. |
| | Management port 2 on each storage controller | 1-GbE (RJ-45) | Connects to the network where you access SANtricity System Manager. |

**Steps**

1. Connect the BMC management port on the appliance to the management network, using an Ethernet cable.

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

2. Connect the two interconnect ports on each storage controller to the 100GbE port on the SG6100-CN controller, using one 100-GbE QSFP28 to 4x25-GbE SFP28 cable.

3. Connect the network ports on the appliance to the appropriate network switches, using TwinAx cables or optical cables and transceivers.

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

   - Grid and Client network ports can be run at different speeds only if Autonegotiate is selected as the link speed, and Fixed is selected as the port bond mode. Otherwise, all four ports will run at the same speed.
   - If you plan to use Fixed port bond mode (default), connect the ports to the StorageGRID Grid and Client Networks, as shown in the table.

| Port | Connects to… |
|---|---|
| Port 1 | Client Network (optional) |
| Port 2 | Grid Network |
| Port 3 | Client Network (optional) |
| Port 4 | Grid Network |

   - If you plan to use the Aggregate port bond mode, connect one or more of the network ports to one or more switches. You should connect at least two of the four ports to avoid having a single point of failure. If you use more than one switch for a single LACP bond, the switches must support MLAG or equivalent.
4. If you plan to use the Admin Network for StorageGRID, connect the Admin Network port on the appliance to the Admin Network, using an Ethernet cable.
5. If your appliance includes an expansion shelf, see the instructions for adding an expansion shelf to a deployed SG6160 for cabling information.

# Connect power cords and apply power

After connecting the network cables, you are ready to apply power to an appliance, controller, or expansion shelf.

### SG100 and SG1000

**Steps**

1. Connect a power cord to each of the two power supply units in the appliance.
2. Connect these two power cords to two different power distribution units (PDUs) in the cabinet or rack.
3. If the power button on the front of the appliance is not currently illuminated blue, press the button to turn on power to the appliance.

   Don’t press the power button again during the power-on process.

4. If errors occur, correct any issues.
5. Attach the front bezel to the appliance if removed.

### SG110 and SG1100

**Steps**

1. Connect a power cord to each of the two power supply units in the appliance.
2. Connect these two power cords to two different power distribution units (PDUs) in the cabinet or rack.
3. If the power button on the front of the appliance is not currently illuminated blue, press the button to turn on power to the appliance.

   Don’t press the power button again during the power-on process.

   The LED on the power supply should be illuminated green without blinking.

4. If errors occur, correct any issues.
5. Attach the front bezel to the appliance if removed.

### SG5700

**Before you begin**

Both appliance power switches must be off before connecting power.

> **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.
   - Don’t 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.

### SG5800

**Before you begin**

Both appliance power switches must be off before connecting power.

**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.
   - Don’t 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.

**SG6000**

**Steps**

1. Confirm that both controllers in the storage controller shelf are off.

   **Risk of electrical shock** — Before connecting the power cords, make sure that the power switches for each of the two storage controllers are off.

2. If you have expansion shelves, confirm that both of the IOM power switches are off.

   **Risk of electrical shock** — Before connecting the power cords, make sure that the two power switches for each of the expansion shelves are off.

3. Connect a power cord to each of the two power supply units in the SG6000-CN controller.
4. Connect these two power cords to two different power distribution units (PDUs) in the cabinet or rack.
5. Connect a power cord to each of the two power supply units in the storage controller shelf.
6. If you have expansion shelves, connect a power cord to each of the two power supply units in each expansion shelf.
7. Connect the two power cords in each storage shelf (including the optional expansion shelves) to two different PDUs in the cabinet or rack.
8. If the power button on the front of the SG6000-CN controller is not currently illuminated blue, press the button to turn on power to the controller.

   Don’t press the power button again during the power-on process.

9. Turn on the two power switches on the back of the storage controller shelf. If you have expansion shelves, turn on the two power switches for each shelf.
   - Don’t turn off the power switches during the power-on process.
   - The fans in the storage controller shelf and optional expansion shelves might be very loud when they first start up. The loud noise during start-up is normal.
10. After the components have booted up, check their status.
    - Check the seven-segment display on the back of each storage controller. Refer to the article about viewing boot-up status codes for more information.
    - Verify that the power button on the front of the SG6000-CN controller is lit.
11. If errors occur, correct any issues.

12. Attach the front bezel to the SG6000-CN controller if removed.

**SG6100**

**SGF6112**:

**Steps**

1. Connect a power cord to each of the two power supply units in the appliance.
2. Connect these two power cords to two different power distribution units (PDUs) in the cabinet or rack.
3. If the power button on the front of the appliance is not currently illuminated blue, press the button to turn on power to the appliance.
4. Don’t press the power button again during the power-on process.
5. The LED on the power supply should be illuminated green without blinking.
6. If errors occur, correct any issues.
7. Attach the front bezel to the appliance if removed.

**SG6160**:

**Steps**

1. Confirm that both controllers in the storage controller shelf are off.

   **Risk of electrical shock** — Before connecting the power cords, make sure that the power switches for each of the two storage controllers are off.

2. If you have expansion shelves, confirm that both of the IOM power switches are off.

   **Risk of electrical shock** — Before connecting the power cords, make sure that the two power switches for each of the expansion shelves are off.

3. Connect a power cord to each of the two power supply units in the SG6100-CN controller.
4. Connect these two power cords to two different power distribution units (PDUs) in the cabinet or rack.
5. Connect a power cord to each of the two power supply units in the storage controller shelf.
6. If you have expansion shelves, connect a power cord to each of the two power supply units in each expansion shelf.
7. Connect the two power cords in each storage shelf (including the optional expansion shelves) to two different PDUs in the cabinet or rack.
8. If the power button on the front of the SG6100-CN controller is not currently illuminated blue, press the button to turn on power to the controller.

   Don’t press the power button again during the power-on process.

9. Turn on the two power switches on the back of the storage controller shelf. If you have expansion shelves, turn on the two power switches for each shelf.
   - Don’t turn off the power switches during the power-on process.
   - The fans in the storage controller shelf and optional expansion shelves might be very loud when they first start up. The loud noise during start-up is normal.
10. After the components have booted up, verify that the power button on the front of the SG6100-CN controller is lit.

11. If errors occur, correct any issues.
12. Attach the front bezel to the SG6100-CN controller if removed.

**Related information**

View status indicators

# View status indicators and codes

The appliances and controllers include indicators that help you determine the status of the appliance components.

### SG100 and SG1000

The appliance includes indicators that help you determine the status of the appliance controller and the two SSDs:

- Appliance indicators and buttons
- General boot-up codes
- SSD indicators

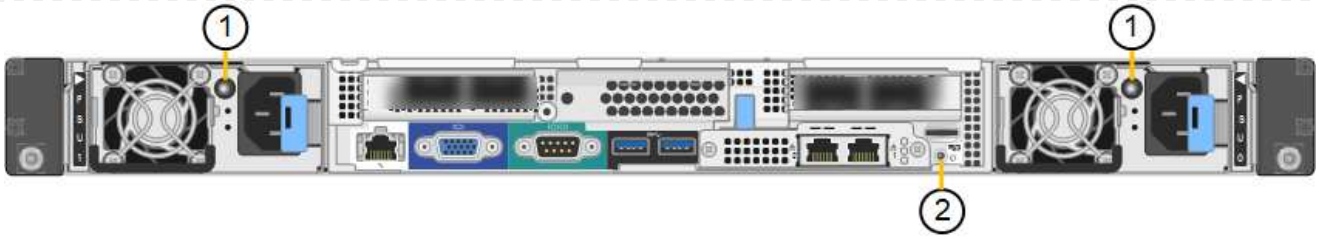
Use this information to help troubleshoot SG100 and SG1000 hardware installation.

### Appliance indicators and buttons

The following figure shows status indicators and buttons on the front of the SG100 and SG1000.


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

The following figure shows the location of the power supply and identify LEDs on the rear of the SG100 and the SG1000. Additional status and activity LEDs are on the appliance ports. These LEDs might vary by appliance model.




| Callout | LED | State |
|---|---|---|
| 1 | Power supply LED | • Green, solid: power applied to appliance, power button is on.<br>• Green, blinking: power applied to appliance, power button is off.<br>• Off: no power applied to appliance.<br>• Amber: power supply fault. |
| 2 | Identify LED | • Blue, blinking: Identifies the appliance in the cabinet or rack.<br>• Blue, solid: Identifies the appliance in the cabinet or rack.<br>• Off: The appliance is not visually identifiable in the cabinet or rack. |

### General boot-up codes

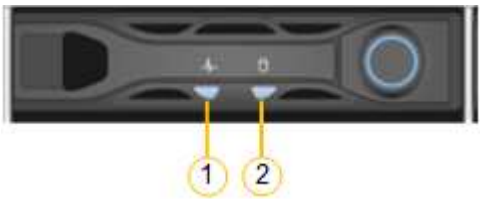
During boot-up or after a hard reset of the appliance, the following occurs:

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

   To view the boot-up and error codes, access the BMC interface.

### SSD indicators

The following figure shows SSD indicators on the SG100 and SG1000.



| LED | Display | State |
|---|---|---|
| 1 | Drive status/fault | • Blue (solid): drive is online<br>• Amber (solid): drive failure<br>• Amber (blinking): drive locator light on<br>• Off: slot is empty |
| 2 | Drive active | Blue (blinking): drive is being accessed |

### SG110 and SG1100

The appliance includes indicators that help you determine the status of the appliance controller and the SSDs:

- Appliance indicators and buttons
- General boot-up codes
- SSD indicators

Use this information to help troubleshoot SG110 and SG1100 hardware installation.

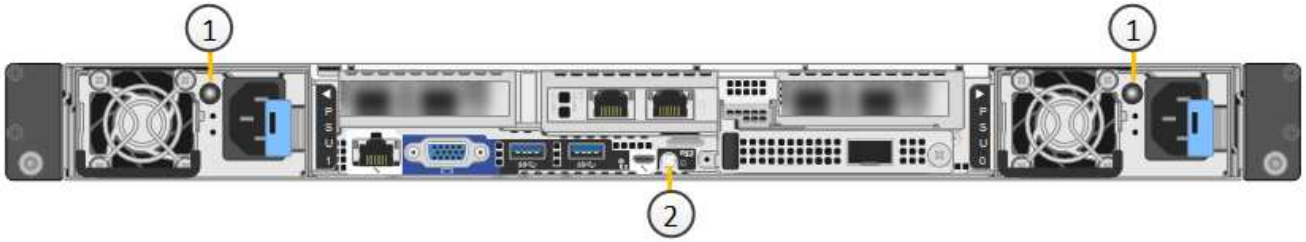
### Appliance indicators and buttons

The following figure shows indicators and buttons on the front of the SG110 and SG1100 appliances.


| Callout | Display | State |
|---|---|---|
| 1 | Power button | • Blue: the appliance is powered on.<br>• Off: the appliance is powered off. |
| 2 | Reset button | Use this button to perform a hard reset of the controller. |
| 3 | Identify button | Using the BMC, this button can be set to blink, On (Solid), or Off.<br>• Blue, blinking: Identifies the appliance in the cabinet or rack.<br>• Blue, solid: Identifies the appliance in the cabinet or rack.<br>• Off: The appliance is not visually identifiable in the cabinet or rack. |

| Callout | Display | State |
|---|---|---|
| 4 | Status LED | • Amber, solid: An error has occurred.<br><br>**Note:** To view the boot-up and error codes, access the BMC interface.<br><br>• Off: No errors are present. |
| 5 | PFR | This light is not used by the SG110 and SG1100 appliances and remains off. |

The following figure shows the location of the power supply and identify LEDs on the rear of the SG110 and the SG1100. Additional status and activity LEDs are on the appliance ports. These LEDs might vary by appliance model.




| Callout | LED | State |
|---|---|---|
| 1 | Power supply LED | • Green, solid: power applied to appliance, power button is on.<br>• Green, blinking: power applied to appliance, power button is off.<br>• Off: no power applied to appliance.<br>• Amber: power supply fault. |
| 2 | Identify LED | • Blue, blinking: Identifies the appliance in the cabinet or rack.<br>• Blue, solid: Identifies the appliance in the cabinet or rack.<br>• Off: The appliance is not visually identifiable in the cabinet or rack. |

### General boot-up codes

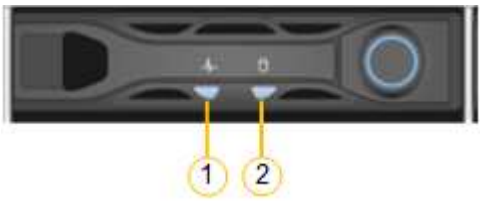
During boot-up or after a hard reset of the appliance, the following occurs:

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

To view the boot-up and error codes, access the BMC interface.

### SSD indicators

The following figure shows SSD indicators on the SG110 and SG1100 appliances.




| LED | Display | State |
|---|---|---|
| 1 | Drive status/fault | • Blue (solid): drive is online<br>• Amber (solid): drive failure<br>• Off: slot is empty |
| 2 | Drive active | Blue (blinking): drive is being accessed |

### SG5700

The appliance controllers include indicators that help you determine the status of the appliance controller:

- SG5700 boot-up status codes
- Status indicators on E5700SG controller
- General boot-up codes
- E5700SG controller boot-up codes
- E5700SG controller error codes

Use this information to help troubleshoot SG5700 hardware installation.

### SG5700 boot-up status codes

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

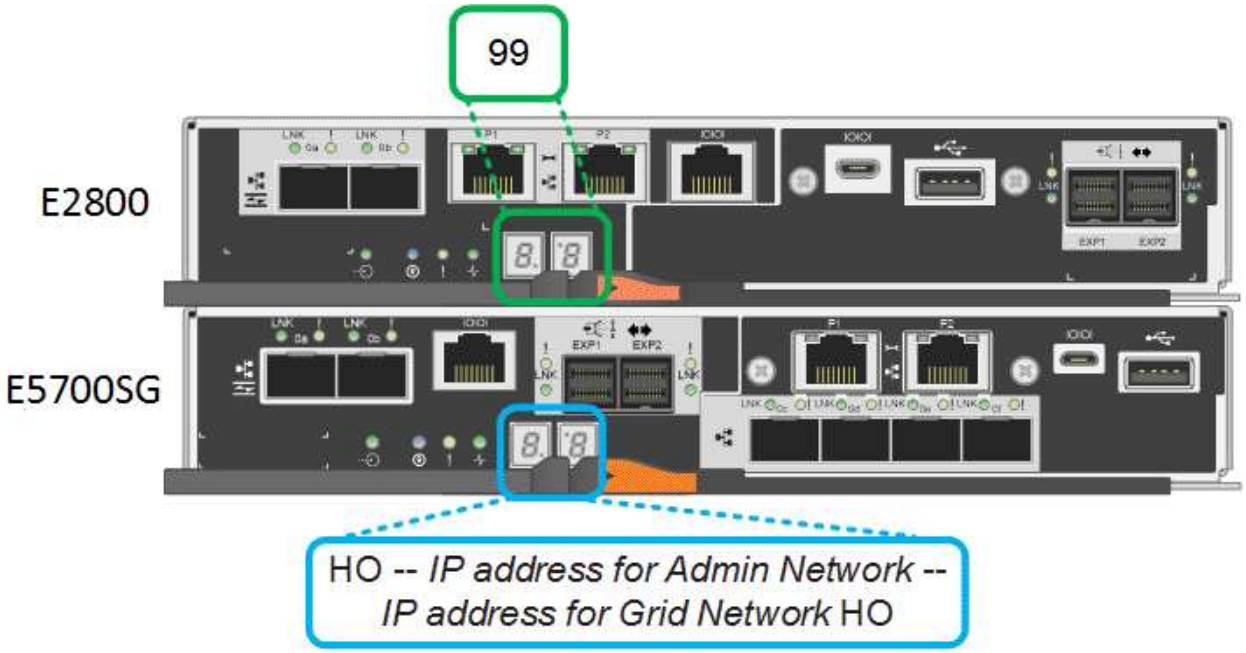
The E2800 controller and the E5700SG controller display different statuses and error codes.

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

| Controller | Reference |
|---|---|
| E2800 controller | *E5700 and E2800 System Monitoring Guide*<br><br>**Note:** The codes listed for the E-Series E5700 controller don't 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.<br>`HO -- IP address for Admin Network -- IP address for Grid Network HO`<br>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. The second set of numbers is the DHCP-assigned IP address used to connect the appliance to the Grid Network for StorageGRID.<br>**Note:** If an IP address could not be assigned using DHCP, 0.0.0.0 is displayed. |

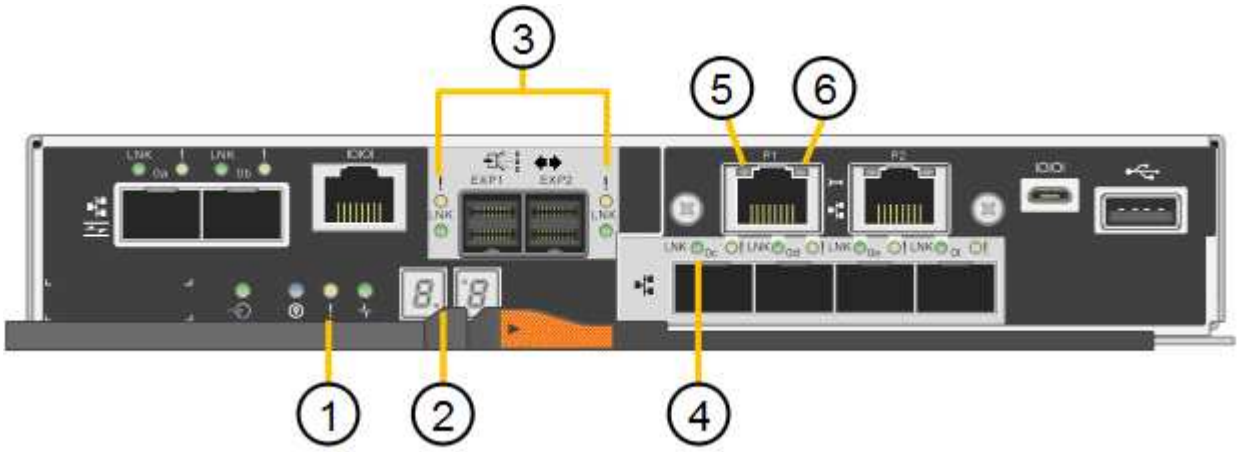
3. If the seven-segment displays show other values, see Troubleshoot hardware installation (SG6000 or SG5700) and confirm you completed the installation steps correctly. If you are unable to resolve the problem, contact technical support.

### Status indicators on 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 Appliance Installer has started, you should periodically review the status indicators on the E5700SG controller.

The following figure shows status indicators on the E5700SG controller.




| Callout | Display | Description |
|---|---|---|
| 1 | Attention LED | Amber: The controller is faulty and requires operator attention, or the installation script was not found.<br><br>Off: The controller is operating normally. |
| 2 | Seven-segment display | Shows a diagnostic code<br><br>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.<br><br>Off: The link is down. |
| 5 | Ethernet Link State LEDs | Green: A link is established.<br><br>Off: No link is established. |

| Callout | Display | Description |
|---|---|---|
| 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.<br><br>Off: There is no link between the controller and the connected device.<br><br>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 |
|---|---|
| HT | The master boot script is waiting for OS boot to complete. |
| 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.<br><br>**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 installation data. |
| HO | The StorageGRID Appliance Installer is running. |

| Code | Indicates |
| --- | --- |
| HA | StorageGRID 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 information

- NetApp Support
- E5700 and E2800 System Monitoring Guide

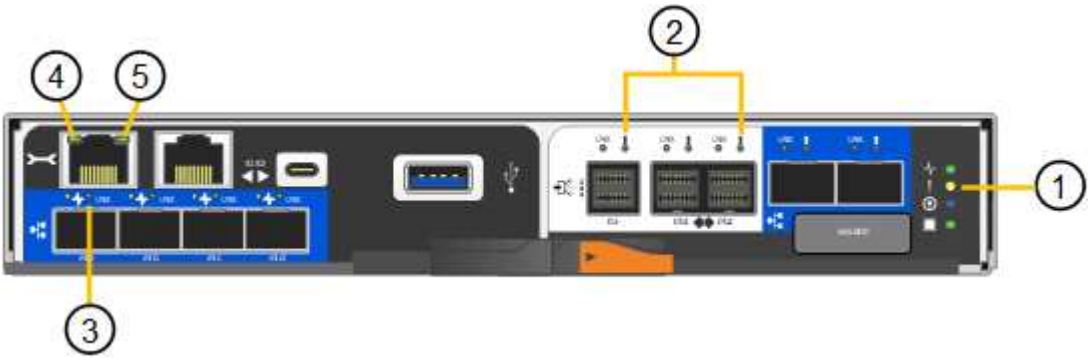
### SG5800

The appliance controllers include indicators that help you determine the status of the appliance controller. Use this information to help troubleshoot SG5800 hardware installation.

#### Status indicators on SG5800 controller

After the StorageGRID Appliance Installer has started, you should periodically review the status indicators on the SG5800 controller.

The following figure shows status indicators on the SG5800 controller.




| Callout | Display | Description |
|---|---|---|
| 1 | Attention LED | Amber: The controller is faulty and requires operator attention, or the installation script was not found.<br><br>Off: The controller is operating normally. |
| 2 | Expansion Port Attention LEDs | Amber: These LEDs are always amber (no link established) because the appliance does not use the expansion ports. |
| 3 | Host Port Link Status LEDs | Green: The link is up.<br><br>Off: The link is down. |
| 4 | Ethernet Link State LEDs | Green: A link is established.<br><br>Off: No link is established. |

| Callout | Display | Description |
|---|---|---|
| 5 | 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.<br><br>Off: There is no link between the controller and the connected device.<br><br>Blinking Green: There is Ethernet activity. |

**Related information**

NetApp Support

### SG6000

The SG6000 appliance controllers include indicators that help you determine the status of the appliance controller:

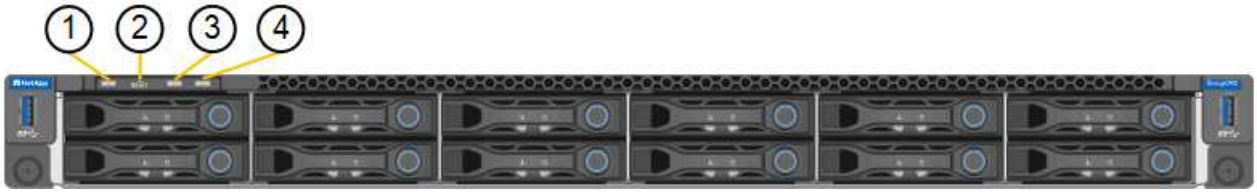
- Status indicators and buttons on SG6000-CN controller
- General boot-up codes
- Boot-up status codes for SG6000 storage controllers

Use this information to help troubleshoot SG6000 installation.

#### Status indicators and buttons on SG6000-CN controller

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

The following figure shows status indicators and buttons on the front of the SG6000-CN controller.




| Callout | Display | Description |
|---|---|---|
| 1 | Power button | • Blue: The controller is powered on.<br>• Off: The controller is powered off. |
| 2 | Reset button | *No indicator*<br><br>Use this button to perform a hard reset of the controller. |

| Callout | Display | Description |
|---|---|---|
| 3 | Identify button | • Blinking or solid blue: Identifies the controller in the cabinet or rack.<br>• Off: The controller is not visually identifiable in the cabinet or rack.<br><br>This button can be set to Blink, On (Solid), or Off. |
| 4 | Alarm LED | • Amber: An error has occurred.<br><br>**Note:** To view the boot-up and error codes, access the BMC interface.<br><br>• Off: No errors are present. |

The following figure shows the location of the power supply and identify LEDs on the rear of the SG6000-CN controller. Additional status and activity LEDs are on the appliance ports. These LEDs might vary by appliance model.


| Callout | LED | State |
|---|---|---|
| 1 | Power supply LED | • Green, solid: power applied to appliance, power button is on.<br>• Green, blinking: power applied to appliance, power button is off.<br>• Off: no power applied to appliance.<br>• Amber: power supply fault. |
| 2 | Identify LED | • Blue, blinking: Identifies the appliance in the cabinet or rack.<br>• Blue, solid: Identifies the appliance in the cabinet or rack.<br>• Off: The appliance is not visually identifiable in the cabinet or rack. |

### General boot-up codes

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

1. The baseboard management controller (BMC) logs codes for the boot-up sequence, including any errors that occur.

2. The power button lights up.
3. If any errors occur during boot-up, the alarm LED lights up.

   To view the boot-up and error codes, access the BMC interface.

### Boot-up status codes for SG6000 storage controllers

Each storage controller has a seven-segment display that provides status codes as the controller powers up. The status codes are the same for both the E2800 controller and the EF570 controller.

For descriptions of these codes, see the E-Series system monitoring information for you storage controller type.

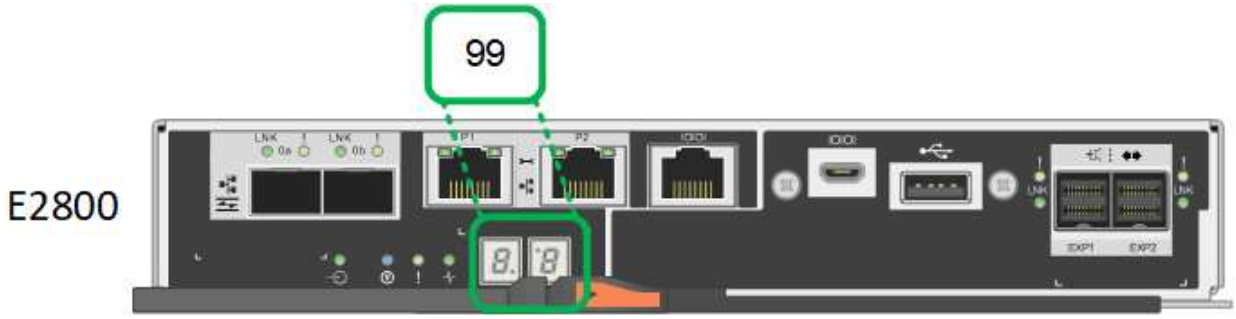
#### Steps

1. During boot-up, monitor progress by viewing the codes shown on the seven-segment display for each storage controller.

   The seven-segment display on each storage controller shows the repeating sequence **OS**, **Sd**, ***blank*** to indicate that the controller is performing start-of-day processing.

2. After the controllers have booted up, confirm that each storage controller shows 99, which is the default ID for an E-Series controller shelf.

   Make sure this value is displayed on both storage controllers, as shown in this example E2800 controller.




3. If one or both controllers show other values, see Troubleshoot hardware installation (SG6000 or SG5700) and confirm you completed the installation steps correctly. If you are unable to resolve the problem, contact technical support.

#### Related information

- NetApp Support
- Power on SG6000-CN controller and verify operation

### SG6100

The appliance includes indicators that help you determine the status of the appliance controller and the SSDs:

- Appliance indicators and buttons
- General boot-up codes
- SSD indicators

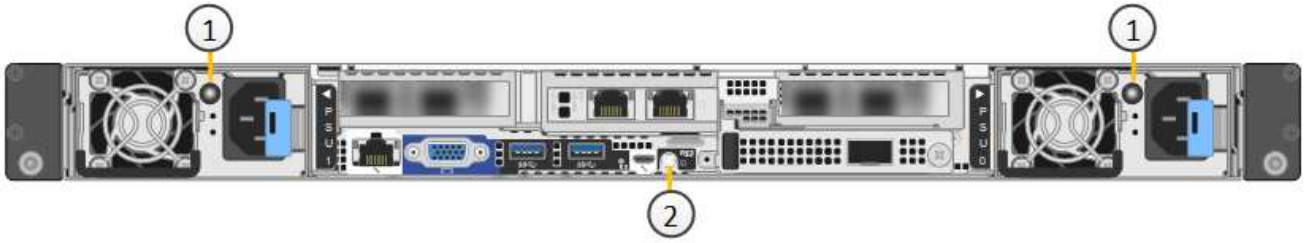
Use this information to help troubleshoot SG6100 hardware installation.

### Appliance indicators and buttons

The following figure shows indicators and buttons on the front of the SG6100 appliances.


| Callout | Display | State |
|---|---|---|
| 1 | Power button | • Blue: the appliance is powered on.<br>• Off: the appliance is powered off. |
| 2 | Reset button | Use this button to perform a hard reset of the controller. |
| 3 | Identify button | Using the BMC, this button can be set to blink, On (Solid), or Off.<br>• Blue, blinking: Identifies the appliance in the cabinet or rack.<br>• Blue, solid: Identifies the appliance in the cabinet or rack.<br>• Off: The appliance is not visually identifiable in the cabinet or rack. |
| 4 | Status LED | • Amber, solid: An error has occurred.<br>**Note:** To view the boot-up and error codes, access the BMC interface.<br>• Off: No errors are present. |
| 5 | PFR | This light is not used by SG6100 appliances and remains off. |

The following figure shows the location of the power supply and identify LEDs on the rear of the SGF6112 and SG6100-CN. Additional status and activity LEDs are on the appliance ports. These LEDs might vary by appliance model.



| Callout | LED | State |
| --- | --- | --- |
| 1 | Power supply LED | • Green, solid: power applied to appliance, power button is on.<br>• Green, blinking: power applied to appliance, power button is off.<br>• Off: no power applied to appliance.<br>• Amber: power supply fault. |
| 2 | Identify LED | • Blue, blinking: Identifies the appliance in the cabinet or rack.<br>• Blue, solid: Identifies the appliance in the cabinet or rack.<br>• Off: The appliance is not visually identifiable in the cabinet or rack. |

### General boot-up codes

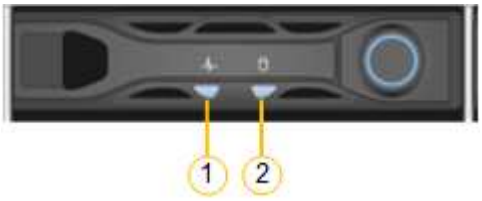
During boot-up or after a hard reset of the appliance, the following occurs:

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

   To view the boot-up and error codes, access the BMC interface.

### SSD indicators

The following figure shows SSD indicators on the SGF6112 or SG6160 appliance.



| LED | Display | State |
| --- | --- | --- |
| 1 | Drive status/fault | • Blue (solid): drive is online<br>• Amber (solid): drive failure<br>• Off: slot is empty<br><br>**Note:** If a new working SSD is inserted into a working SGF6112 or SG6160 StorageGRID node, the LEDs on the SSD should blink initially, but stop blinking as soon as the system determines that the drive has enough capacity and is functional. |
| 2 | Drive active | Blue (blinking): drive is being accessed |

**Related information**

NetApp Support

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