
Replacing an E5700 or E2800 Controller (Duplex Configuration)

Each controller canister contains a controller card, a battery, and, optionally, a host interface card (HIC). When you replace a controller canister, you must remove the battery and HIC, if one is installed, from the original controller canister, and install them in the replacement controller canister.

Before you begin

- You have a replacement controller canister with the same part number as the controller canister you are replacing.
- You have an ESD wristband, or you have taken other antistatic precautions.
- You have a #1 Phillips screwdriver.
- You have labels to identify each cable that is connected to the controller canister.
- You have installed SANtricity System Manager on a management station, so you can use the storage array's command line interface (CLI).

Note: If this software has not yet been installed, follow the instructions in the *SANtricity Storage Manager Express Guide* or the *SANtricity Power Guide for Advanced Users* for your operating system to download and install it.

About this procedure

Use this procedure to replace a controller canister in the duplex version (two controllers) of the following controller shelves:

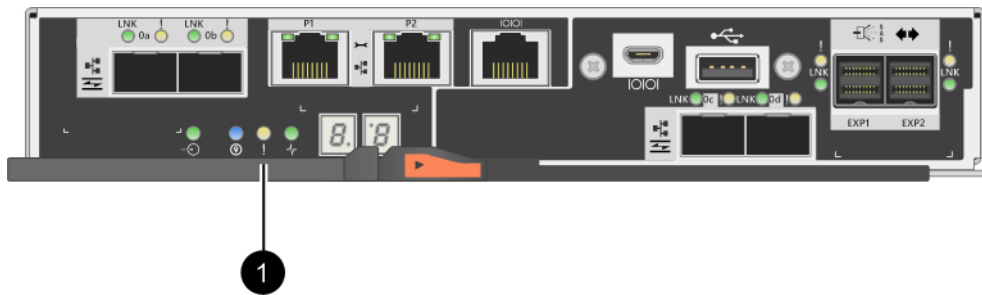
- E5724 controller shelf
- E5760 controller shelf
- E2812 controller shelf
- E2824 controller shelf
- E2860 controller shelf

Attention: Ensure that you complete the procedure within 30 minutes.

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

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

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



Item	Description
1	Attention LED

Note: The figure shows an example controller canister; the host ports on your controller canister might be different.

Because the controller shelf has two controllers, you can replace a controller canister while your storage array is powered on and performing host I/O operations, as long as the following conditions are true:

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

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

Related information

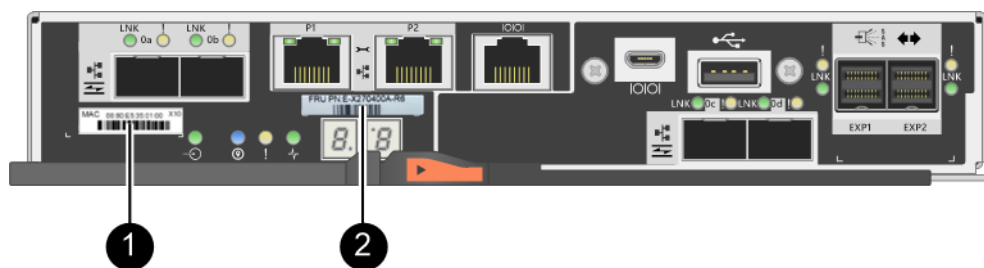
[SANtricity 11.40 Installing and Configuring for Linux Power Guide for Advanced Users](#)
[SANtricity 11.40 Installing and Configuring for VMware Power Guide for Advanced Users](#)
[SANtricity 11.40 Installing and Configuring for Windows Power Guide for Advanced Users](#)
[SANtricity Storage Manager 11.40 Installing and Configuring for Linux Express Guide](#)
[SANtricity Storage Manager 11.40 Installing and Configuring for VMware Express Guide](#)
[SANtricity Storage Manager 11.40 Installing and Configuring for Windows Express Guide](#)

Preparing to replace a controller canister

Before replacing a controller canister, use SANtricity System Manager to verify that the replacement controller canister has the correct FRU part number, back up the configuration, and collect support data. If the controller is still online, you must take it offline.

Steps


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



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

3. From SANtricity System Manager, locate the replacement part number for the controller canister you are replacing.

When a controller has a fault and needs to be replaced, the replacement part number is displayed in the Details area of the Recovery Guru. If you need to find this number manually, follow these steps:

- Select **Hardware**.
- Locate the controller shelf, which is marked with the controller icon .
- Click the controller icon.
- Select the controller, and click **Next**.
- On the **Base** tab, make a note of the **Replacement Part Number** for the controller.

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

Attention: Possible loss of data access – If the two part numbers are not the same, do not attempt this procedure. In addition, if the failed controller canister includes a host interface card (HIC), you must install that HIC into the new controller canister. The presence of mismatched controllers or HICs will cause the new controller to lock down when you bring it online.

5. Back up the storage array's configuration database.

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

- Open the Enterprise Management Window (EMW) for SANtricity Storage Manager on your management station.
- Select the storage array.
- Select **Tools > Execute Script**.
- Type the following command in the text box.

```
save storageArray dbmDatabase sourceLocation=onboard contentType=all file="filename";
```

In this command, *filename* is the file path and file name to which you want to save the database. Enclose the file name in double quotation marks (" "). For example:

```
file="C:\Program Files\CLI\logs\dbmdata.zip"
```

This command does not automatically append a file extension to the saved file. You must specify a file extension when entering the file name.

e. Select **Tools > Verify and Execute**.

6. Collect support data for your storage array.

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.

Option	Description
SANtricity System Manager	<ul style="list-style-type: none">a. Select Support > Support Center > Diagnostics.b. Select Collect Support Data.c. Click Collect. The file is saved in the Downloads folder for your browser with the name <i>support-data.7z</i>.
Script editor in the EMW	<ul style="list-style-type: none">a. Open the Enterprise Management Window (EMW) in SANtricity Storage Manager on your local host.b. Select the storage array.c. Select Tools > Execute Script.d. Type the following command in the text box.<div><pre>save storageArray supportData file="filename";</pre></div><p>In this command, <i>filename</i> is the file path and the file name to which you want to save the support data. Enclose the file path and the file name in double quotation marks (" "). For example:</p><div><pre>file="C:\Program Files\CLI\logs\support-data.7z"</pre></div>e. Select Tools > Verify and Execute.

7. If the controller is not already offline, take it offline now using either SANtricity System Manager or the Enterprise Management Window's (EMW) script editor.

Option	Description
SANtricity System Manager	<ul style="list-style-type: none">a. Select Hardware.b. If the graphic shows the drives, select Show back of shelf to show the controllers.c. Select the controller that you want to place offline.d. From the context menu, select Place offline, and confirm that you want to perform operation. Note: If you are accessing SANtricity System Manager using the controller you are attempting to take offline, a System Manager Unavailable message is displayed. Select Connect to an alternate network connection to automatically access SANtricity System Manager using the other controller.

Option	Description
Script Editor	<ol style="list-style-type: none"> Open the Enterprise Management Window (EMW) in SANtricity Storage Manager on your local host. Select the storage array. Select Tools > Execute Script. Type one of the following commands in the text box. <div style="background-color: #f0f0f0; padding: 5px; margin: 5px 0;"> For controller A: set controller [a] availability=offline </div> <div style="background-color: #f0f0f0; padding: 5px; margin: 5px 0;"> For controller B: set controller [b] availability=offline </div> Select Tools > Verify and Execute. The system attempts to take the controller offline.

- Wait for System Manager to update the controller's status to offline.
Attention: Do not begin any other operations until after the status has been updated.
- Select **Recheck** from the Recovery Guru, and confirm that the **OK to remove** field in the Details area displays **Yes**, indicating that it is safe to remove this component.

Removing a controller canister

When you remove a controller canister, you must disconnect all cables. Then, you can slide the controller canister out of the controller shelf.

Steps

- Put on an ESD wristband or take other antistatic precautions.
- Label each cable that is attached to the controller canister.
- Disconnect all of the cables from the controller canister.
Attention: To prevent degraded performance, do not twist, fold, pinch, or step on the cables.
- If the controller canister has a HIC that uses SFP+ transceivers, remove the SFPs.
Because you must remove the HIC from the failed controller canister, you must remove any SFPs from the HIC ports. However, you can leave any SFPs installed in the baseboard host ports. When you reconnect the cables, you can move those SFPs to the new controller canister.
- Confirm that the Cache Active LED on the back of the controller is off.
- Squeeze the latch on the cam handle until it releases, and then open the cam handle to the right to release the controller canister from the shelf.
- Using two hands and the cam handle, slide the controller canister out of the shelf.
Attention: Always use two hands to support the weight of a controller canister.
If you are removing the controller canister from an E2812 or E2824 controller shelf, a flap swings into place to block the empty bay, helping to maintain air flow and cooling.
- Turn the controller canister over, so that the removable cover faces up.

- Place the controller canister on a flat, static-free surface.

Removing a battery

After removing the controller canister from the controller shelf, you can remove the battery.

Steps

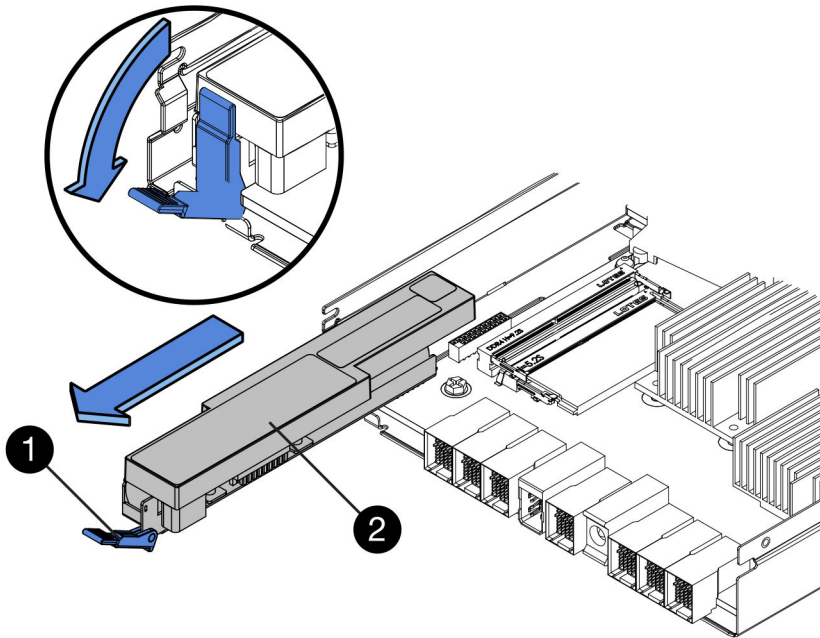
- Remove the controller canister's cover by pressing down on the button and sliding the cover off.
- Confirm that the green LED inside the controller (between the battery and the DIMMs) is off.

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

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



Item	Description
1	Battery release latch
2	Battery

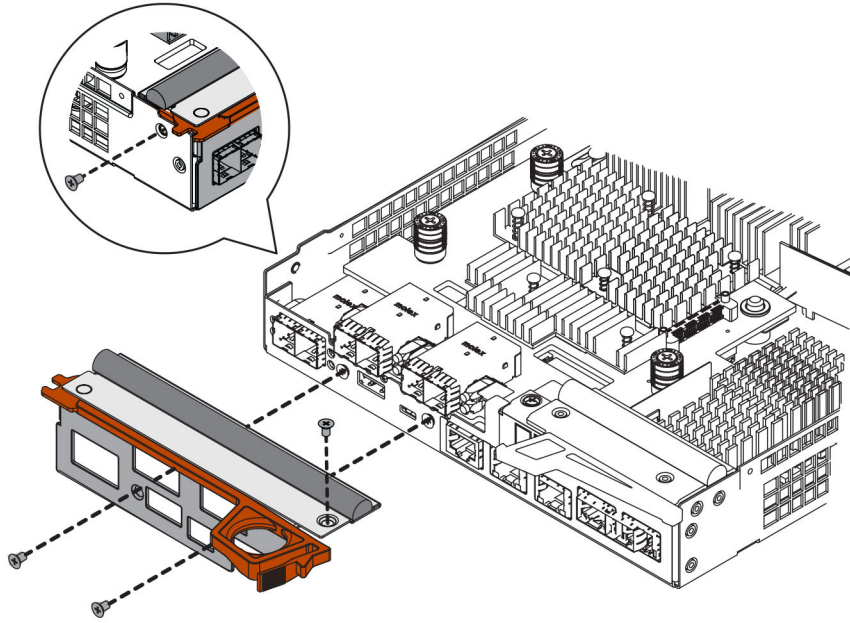
5. Lift up on the battery, and slide it out of the controller canister.

Removing a host interface card

If the controller canister includes a host interface card (HIC), you must remove the HIC from the original controller canister, so you can reuse it in the new controller canister.

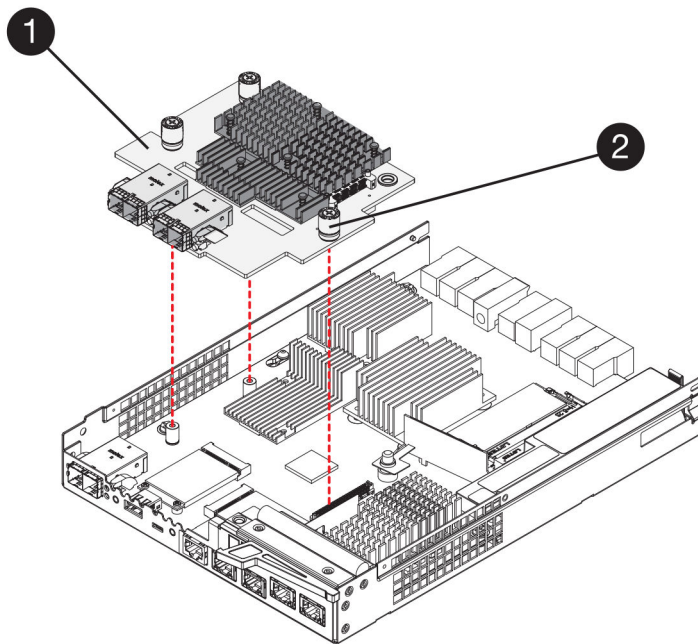
Steps

1. Using a #1 Phillips screwdriver, remove the screws that attach the HIC faceplate to the controller canister.
There are four screws: one on the top, one on the side, and two on the front.



2. Remove the HIC faceplate.
3. Using your fingers or a Phillips screwdriver, loosen the three thumbscrews that secure the HIC to the controller card.
4. Carefully detach the HIC from the controller card by lifting the card up and sliding it back.

Attention: Possible damage to hardware --Be careful not to scratch or bump the components on the bottom of the HIC or on the top of the controller card.



Item	Description
1	Host interface card (HIC)
2	Thumbscrews

- Place the HIC on a static-free surface.

Installing a battery

You must install a battery into the replacement controller canister. You can install the battery that you removed from the original controller canister or a new battery that you ordered.

Before you begin

- You have the battery from the original controller canister.
- You have the replacement controller canister.

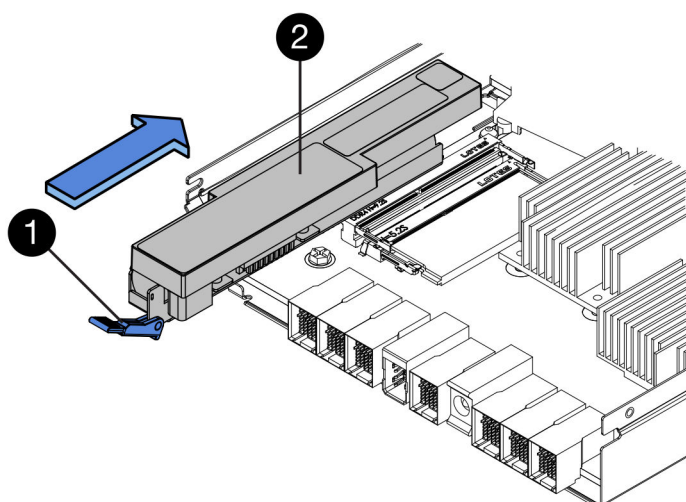
Steps

- Press down on the cover button, and slide the cover off.
- Orient the controller canister so that the slot for the battery faces toward you.
- Insert the battery into the controller canister 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 canister, and slide the top of the battery beneath the small alignment pin on the left side of the canister.

- 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.



Item	Description
1	Battery release latch
2	Battery

- Turn the controller canister 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 canister (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 to the controller when you apply power.

- 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:



Installing a host interface card

If you removed a HIC from the original controller canister, you must install that HIC in the new controller canister.

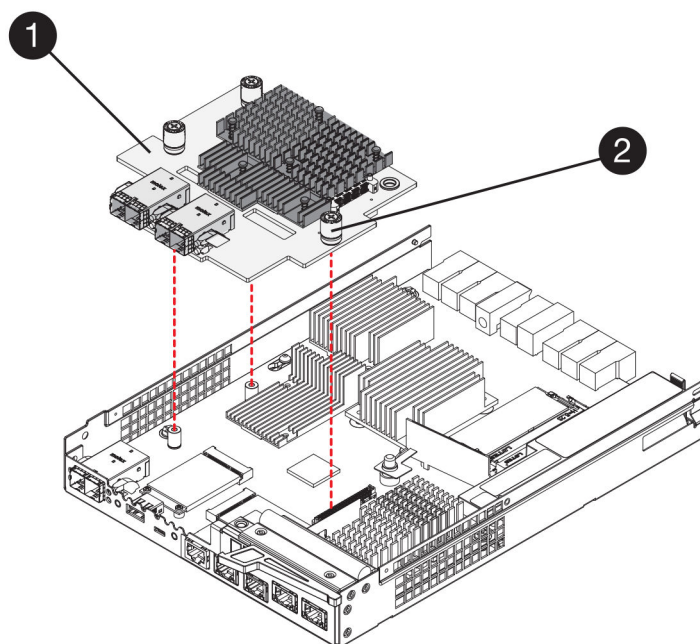
Steps

- Align the three thumbscrews on the HIC with the corresponding holes on the controller, and align the connector on the bottom of the HIC with the HIC interface connector on the controller card.

Attention: Be careful not to scratch or bump the components on the bottom of the HIC or on the top of the controller card.

- Carefully lower the HIC into place, and seat the HIC connector by pressing gently on the HIC.

Attention: Possible equipment damage – Be very careful not to pinch the gold ribbon connector for the controller LEDs between the HIC and the thumbscrews.

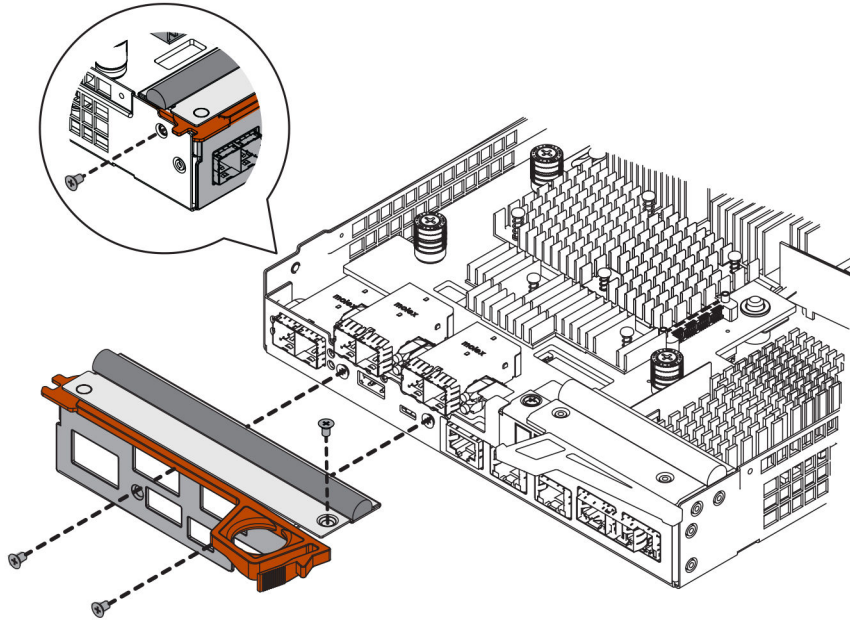


Item	Description
1	Host interface card (HIC)
2	Thumbscrews

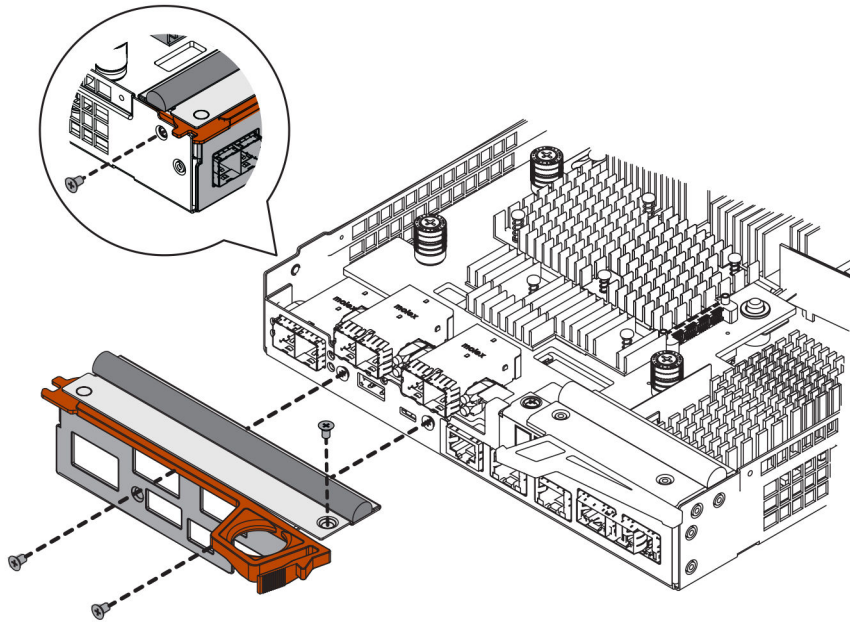
3. Hand-tighten the HIC thumbscrews.

Do not use a screwdriver, or you might over tighten the screws.

4. Using a #1 Phillips screwdriver, attach the HIC faceplate you removed from the original controller canister to the new controller canister with four screws.



5. Using a #1 Phillips screwdriver, attach the HIC faceplate you removed from the original controller canister to the new controller canister with four screws.



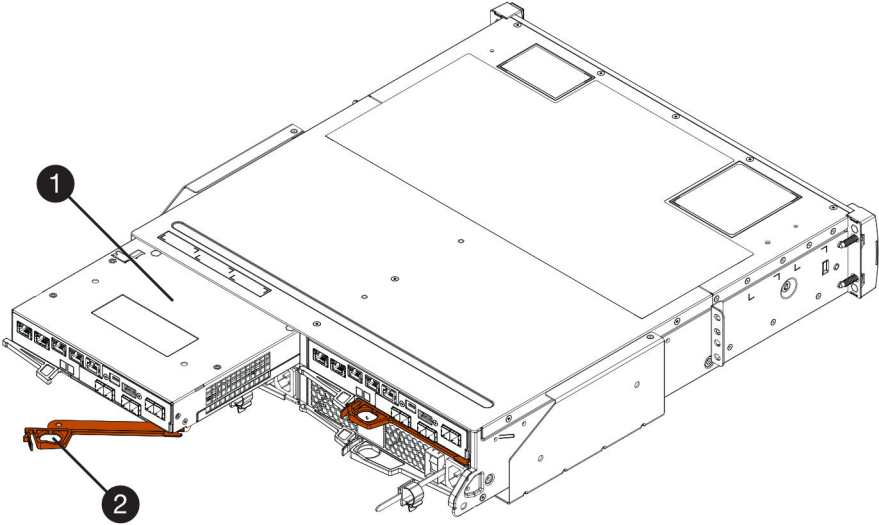
Installing a controller canister

After installing the battery and the HIC, if one was initially installed, you can install the new controller canister into the controller shelf.

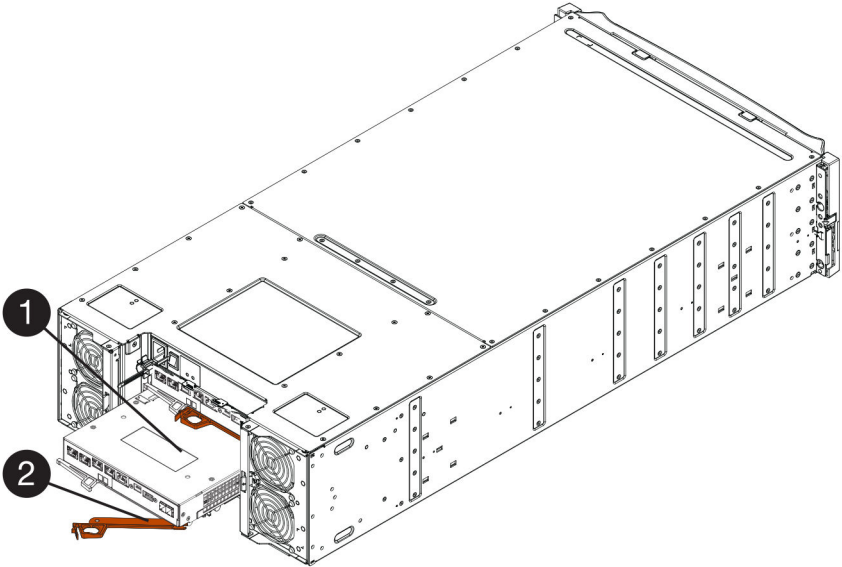
Steps

1. Reinstall the cover on the controller canister by sliding the cover from back to front until the button clicks.

- 2. Turn the controller canister over, so that the removable cover faces down.
- 3. With the cam handle in the open position, slide the controller canister all the way into the controller shelf.



Item	Description
1	Controller canister
2	Cam handle



Item	Description
1	Controller canister

Item	Description
2	Cam handle

- Move the cam handle to the left to lock the controller canister in place.
- Install the SFPs from the original controller in the host ports on the new controller, and reconnect all of the cables.
If you are using more than one host protocol, be sure to install the SFPs in the correct host ports.
- If the original controller used DHCP for the IP address, locate the MAC address on the label on the back of the replacement controller. Ask your network administrator to associate the DNS/network and IP address for the controller you removed with the MAC address for the replacement controller.

Note: If the original controller did not use DHCP for the IP address, the new controller will adopt the IP address of the controller you removed.

After replacing a controller canister

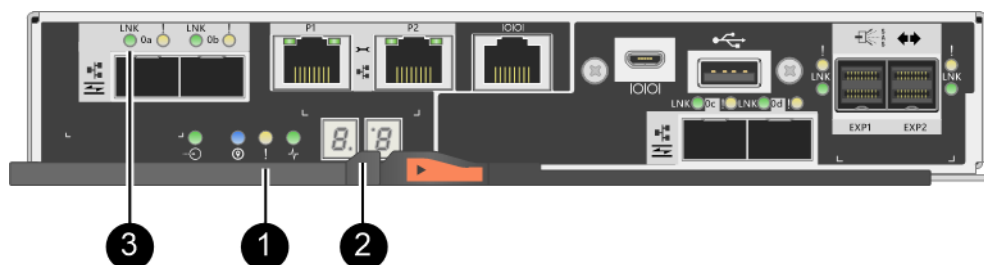
After replacing a controller canister, you must bring the controller online and confirm the storage array is working correctly. Then, you can collect support data and resume operations.

Steps

- As the controller boots, check the controller LEDs and the seven-segment display.

When communication with the other controller is reestablished:

- The seven-segment display shows the repeating sequence **OS**, **OL**, **blank** to indicate that the controller is offline.
- The amber Attention LED remains on.
- The Host Link LEDs might be on, blinking, or off, depending on the host interface.



Item	Description
1	Attention LED (amber)
2	Seven-segment display
3	Host Link LEDs

- Bring the controller online using either SANtricity System Manager or the Enterprise Management Window's (EMW) script editor:

Option	Description
SANtricity System Manager	<ol style="list-style-type: none"> Select Hardware. If the graphic shows the drives, select Show back of shelf. Select the controller you want to place online. Select Place Online from the context menu, and confirm that you want to perform the operation.
Script editor in the EMW	<ol style="list-style-type: none"> Open the Enterprise Management Window (EMW) in SANtricity Storage Manager on your local host. Select the storage array. Select Tools > Execute Script. Type one of the following commands in the text box. <div style="background-color: #f0f0f0; padding: 5px; margin: 5px 0;"> For controller A: set controller [a] availability=online; </div> <div style="background-color: #f0f0f0; padding: 5px; margin: 5px 0;"> For controller B: set controller [b] availability=online; </div> Select Tools > Verify and Execute.

The system places the controller online.

- Check the codes on the controller's seven-segment display as it comes back online. If the display shows one of the following repeating sequences, immediately remove the controller.
 - OE, L0, blank** (mismatched controllers)
 - OE, L6, blank** (unsupported HIC)

Attention: Possible loss of data access – If the controller you just installed shows one these codes, and the other controller is reset for any reason, the second controller could also lock down.

- When the controller is back online, confirm that its status is Optimal and check the controller shelf's Attention LEDs. If the status is not Optimal or if any of the Attention LEDs are on, confirm that all cables are correctly seated and the controller canister is installed correctly. If necessary, remove and reinstall the controller canister.

Note: If you cannot resolve the problem, contact technical support.

- If required, redistribute all volumes back to their preferred owner.
 - Select **Storage > Volumes**.
 - Select **More > Redistribute volumes**.
- Click **Hardware > Support > Upgrade Center** to ensure that the latest version of SANtricity OS software (controller firmware) is installed.

As needed, install the latest version.

- Collect support data for your storage array.

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.

Option	Description
SANtricity System Manager	<ol style="list-style-type: none"> Select Support > Support Center > Diagnostics. Select Collect Support Data. Click Collect. The file is saved in the Downloads folder for your browser with the name <i>support-data.7z</i>.
Script editor in the EMW	<ol style="list-style-type: none"> Open the Enterprise Management Window (EMW) in SANtricity Storage Manager on your local host. Select the storage array. Select Tools > Execute Script. Type the following command in the text box. <div data-bbox="660 714 1325 743" data-label="Text"> <pre>save storageArray supportData file="filename";</pre> </div> <p>In this command, <i>filename</i> is the file path and the file name to which you want to save the support data. Enclose the file path and the file name in double quotation marks (" "). For example:</p> <div data-bbox="660 907 1352 936" data-label="Text"> <pre>file="C:\Program Files\CLI\logs\support-data.7z"</pre> </div> Select Tools > Verify and Execute.

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