



Replacing a Failed Controller Canister in the E5560 Controller-Drive Tray

ATTENTION Possible equipment damage – Only a qualified service technician should perform this procedure, or equipment damage might result.

To access this product, go to the NetApp Support Site at support.netapp.com.

Use this procedure to replace a controller canister in an E5560 controller-drive tray. You can determine whether you have a failed controller canister in two ways:

- The Recovery Guru directs you to replace a controller canister.
- You locate the controller canister by checking the Controller Service Action Required LED.

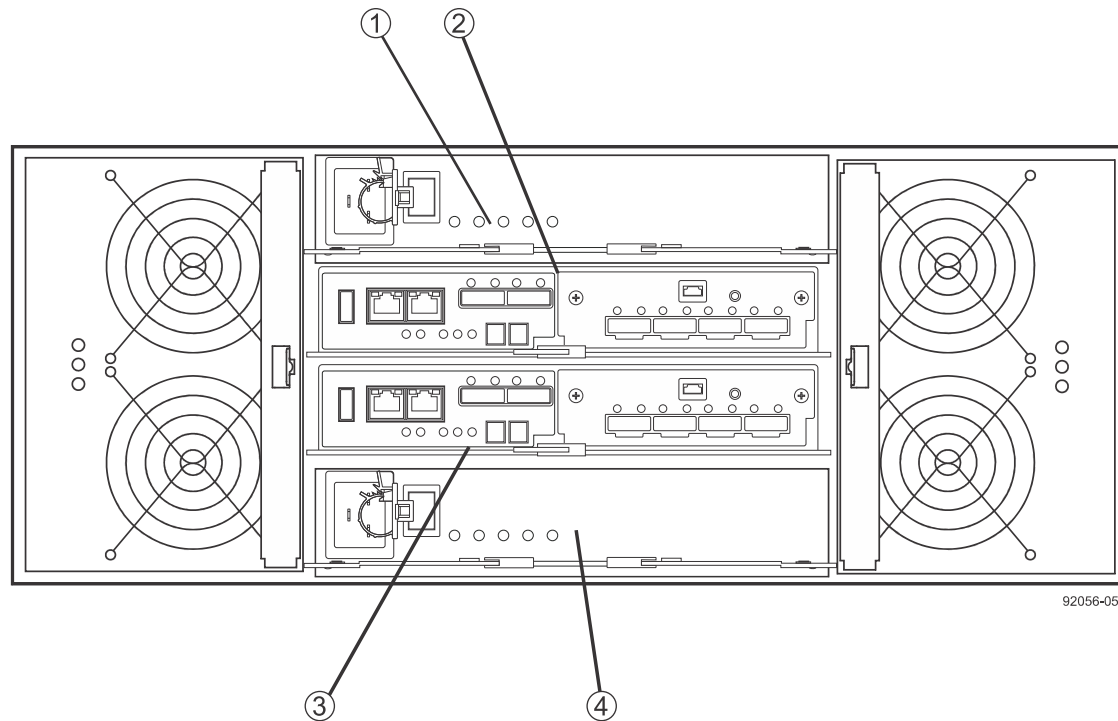
Before you replace the controller canister in the E5560 controller-drive tray, gather antistatic protection, a new controller canister, and a controller air blocker.

When you install a new controller canister, you must remove the battery from the failed controller canister, and install it in the new controller canister. This procedure includes that task.

Your new controller canister should have the same host interface card (HIC) as the controller canister you are replacing. If not, you might need to replace these items:

- Host bus adapters or host channel adapters in attached hosts
- Cables – SAS, iSCSI, Infiniband, Fibre Channel, depending on your configuration
- Small Form-factor Pluggable (SFP) transceivers used to connect to the hosts
- Switches used with host connections
- Host Interface Card (HIC)

Figure 1. E5560 Controller-Drive Tray



1. Power Canister A
2. Controller Canister A
3. Controller Canister B
4. Power Canister B

ATTENTION Possible hardware damage – If you perform this procedure with the power turned on, the equipment might overheat if the controller slot is left open for more than three minutes. To prevent the possibility of overheating, you must insert the controller air blocker into the controller slot when servicing the controller.

ATTENTION Possible loss of data access – The following procedure applies only if you are replacing both controller canisters in a duplex configuration. If the controller that you are replacing manages any secure volumes, the new controller needs the correct security key to manage those volumes. After you replace the controller and restore power to the controller-drive tray, you can use SANtricity Storage Manager to load the key from the file in which it was saved. Be sure that such a file exists and that you know the pass phrase required to install the security key before you replace the controller.

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Removing a Controller Canister from the E5560 Controller-Drive Tray

Read through all of the steps in this task before you start performing the steps.

ATTENTION Possible hardware damage – To prevent electrostatic discharge damage to the tray, use proper antistatic protection when handling tray components.

ATTENTION Possible extended outage – You must replace the controller with the power turned on to ensure auto-code synchronization of the native controller firmware to the new controller and to prevent the possibility of an extended outage.

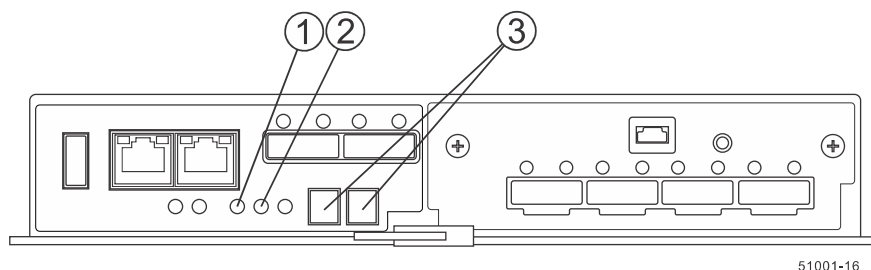
1. Gather support data about your storage array by using one of these methods:
 - Use the storage management software to collect and save a support bundle of your storage array. From the Array Management Window toolbar, select **Monitor > Health > Collect Support Data Manually**. Then browse or name and specify a location on your system where you want to store the support bundle.
 - Use the command line interface (CLI) to run the `save storageArray supportData file=<filename>` command to gather comprehensive support data about the storage array. Gathering support data can temporarily impact performance on your storage array.

For more information about this command, refer to the *Command Line Interface and Script Commands* document.
2. Did the Recovery Guru direct you to replace a failed component?
 - **Yes** – Go to step 3.
 - **No** – Run the Recovery Guru to identify the failed component, and go to step 3.
3. Put on antistatic protection.
4. Unpack the new controller canister.
 - a. Set the new controller canister on a flat, static-free surface near the controller-drive tray with the top cover up.
 - b. Save all of the packing materials so that you can ship the failed controller canister.
5. Locate the failed controller canister by checking the Controller Service Action Required LEDs (Figure 1).

If a fault is detected, the amber Controller Service Action Required LED is on. You can safely remove the controller canister when the blue Controller Service Action Allowed LED is on.

NOTE Figure 1 shows a SAS configuration with four connectors. Your controller canister might have a different number and type of host interface connectors.

Figure 2. SAS E5560 Controller Service Action LEDs



1. Controller Service Action Allowed LEDs (Blue)
2. Controller Service Action Required LEDs (Amber)
3. Seven-Segment Display

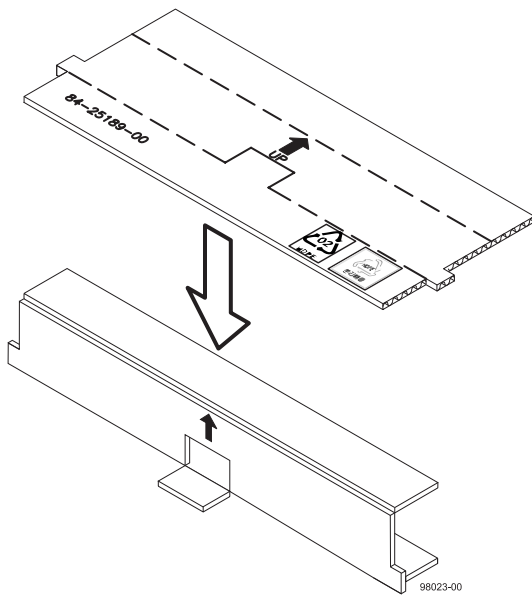
ATTENTION Potential degraded performance – To prevent degraded performance, do not twist, fold, pinch, or step on the cables. Many cables have a minimum bending radius. Check the specifications for your cables, and do not bend any cable more tightly than the minimum specified radius.

6. Label each of the interface cables and Ethernet cables attached to the controller canister so that you can reconnect each cable correctly after you reinstall the controller canister.
7. Record the information from the seven-segment display on the rear of the controller.
8. If not already offline, take the appropriate controller offline by performing one of these actions:
 - **Array Management Window:** In the Hardware pane, right-click the picture of the controller you want to take offline, and select **Advanced > Place > Offline**.
 - **CLI:** Run the following command:

```
smCLI <DNS-network-name-or-IP-address> -c "set controller [(a | b)]  
availability=offline";
```

If necessary, wait for the Controller Service Action Allowed LED to come on. This indication might take several minutes for a large configuration.
9. Disconnect all cables from the appropriate controller canister.
If the storage array is running while you perform this replacement, do not disturb the second controller canister.
10. Prepare the controller air blocker by removing it from its packaging and folding it inward at right angles so it is ready to insert into the open controller slot.

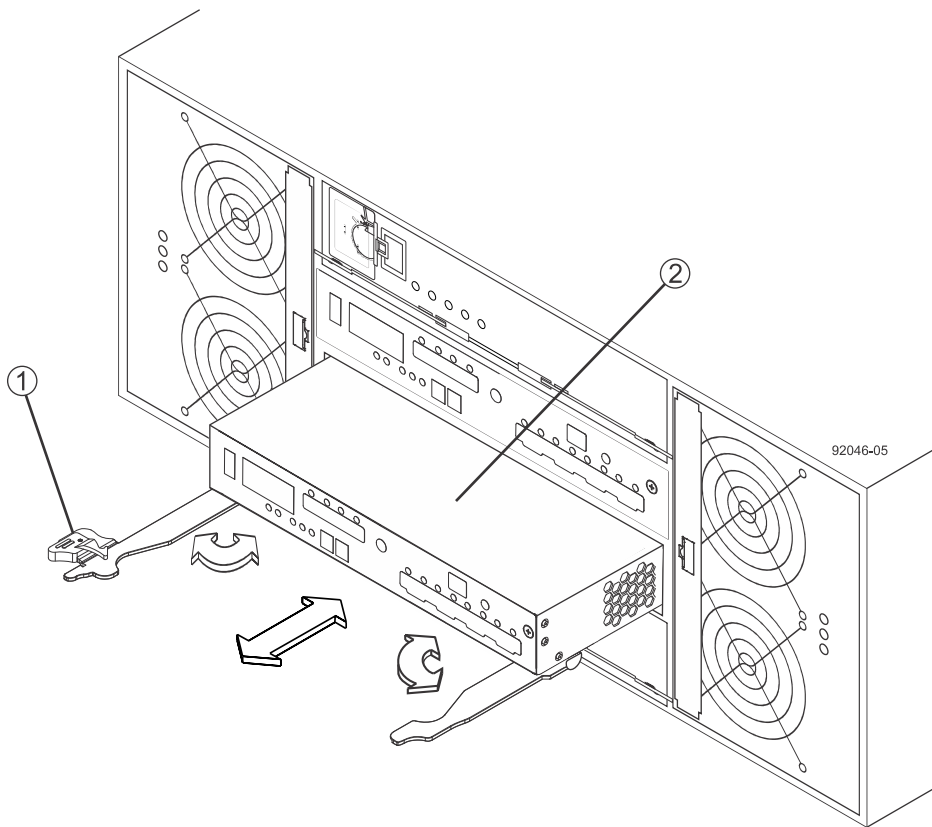
Figure 3. Controller Air Blocker



11. Remove the failed controller canister

Using the release levers, pull the controller canister out of the controller-drive tray.

Figure 4. Removing and Replacing a Controller Canister



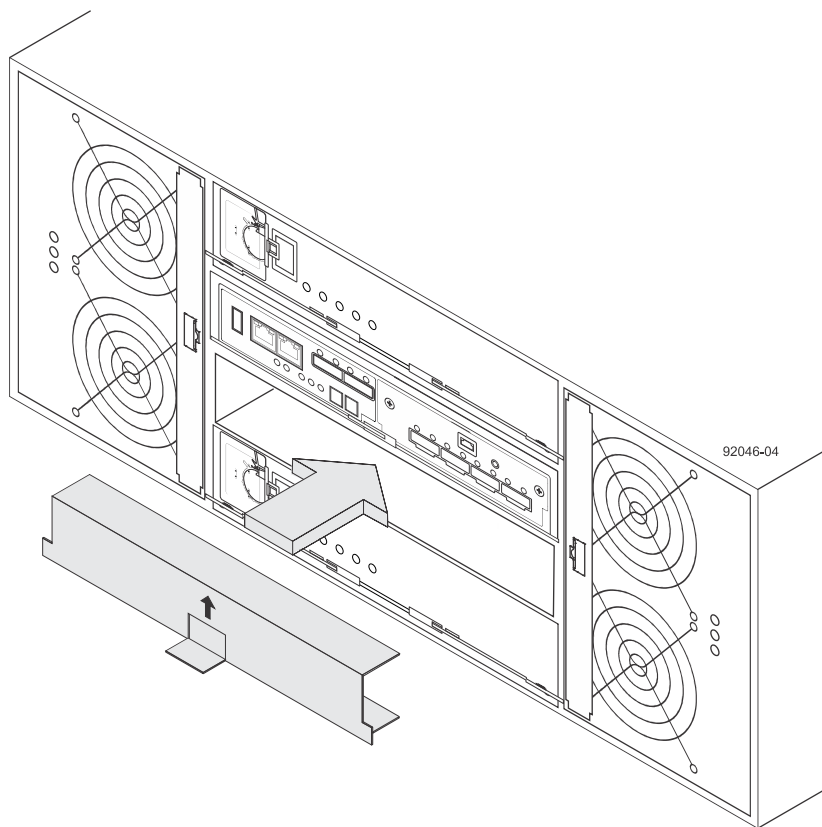
- 1. Release Levers
- 2. Controller Canister

12. Set the failed controller canister on a flat, static-free surface near the controller-drive tray with the release levers facing up so that you can access the top cover.

ATTENTION Possible equipment damage – The controller slot cannot remain open for more than three minutes because of the possibility of overheating the equipment. The controller air blocker fills the controller slot so that the equipment does not overheat.

13. Insert the controller air blocker into the open controller slot to make sure that proper airflow is maintained.

Figure 5. Inserting the Controller Air Blocker into the Open Controller Slot

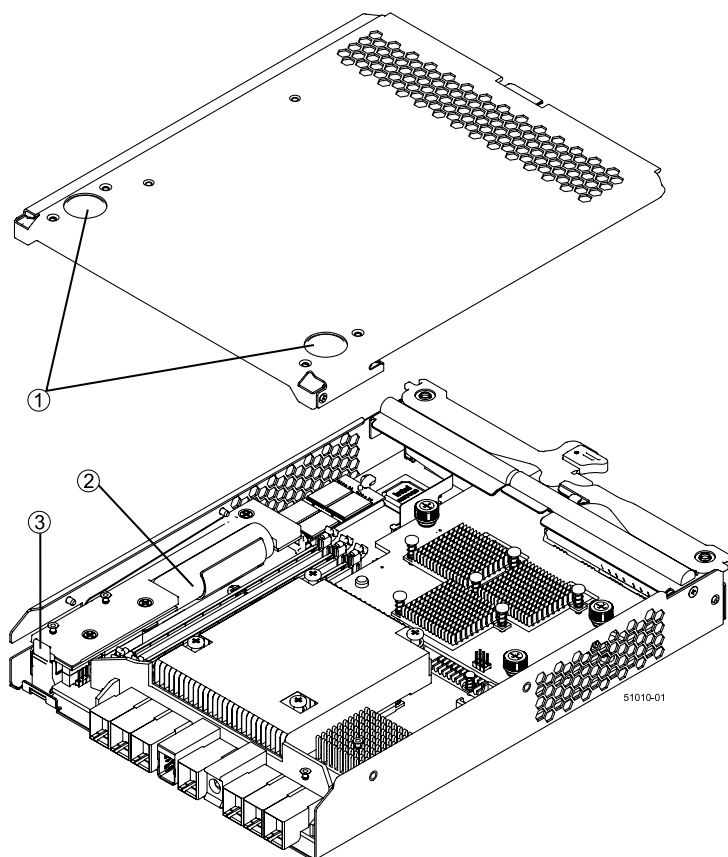


14. On the failed controller canister, remove the top cover so that you can remove the battery. Remove the top cover of the failed controller canister by performing these steps:

- a. Press down on both of the top cover latch buttons as you slide the top cover off the controller canister.

- b. Release the tab that secures the battery to the controller canister.

Figure 6. Controller Cover and Internal Parts



1. Top Cover Latch Buttons
2. Battery Circuit Board
3. Battery Locking Tab

- c. Remove the controller battery by sliding it towards the rear of the failed controller canister. Lift the battery slightly upward as you slide it to the rear of the failed controller canister.

You will insert this battery into the new controller canister.

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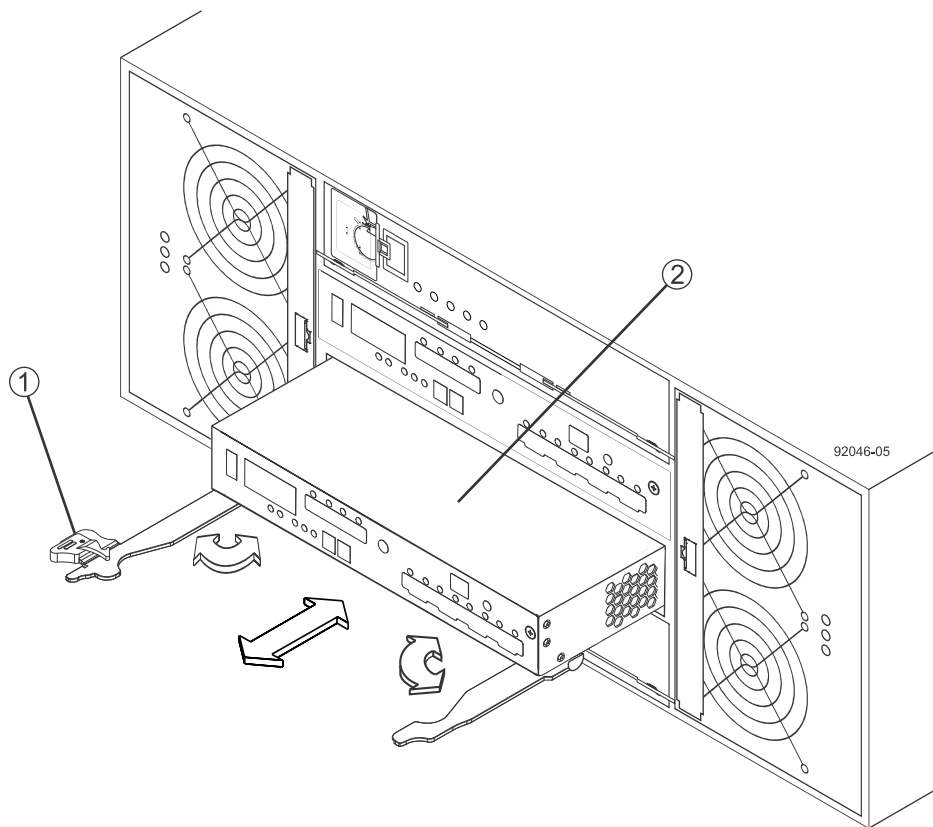
1. Insert the battery that you removed from the failed controller canister at a slight downward angle into the controller canister and slide the battery towards the front of the controller canister. Make sure that the battery slides under the side guide pins as you continue to slide the battery and correctly seat it against the back surface.

If the battery is not correctly seated, you will not be able to reinstall the top cover on the controller canister as directed later. If you suspect that the battery is not correctly seated, you might need to slide the battery out and insert it again.

2. Move the locking tab up to secure the battery circuit board to the controller canister.

3. Reinstall the top cover on the new controller canister by sliding it forward until the top cover latch buttons click.

Figure 7. Removing and Replacing a Controller Canister

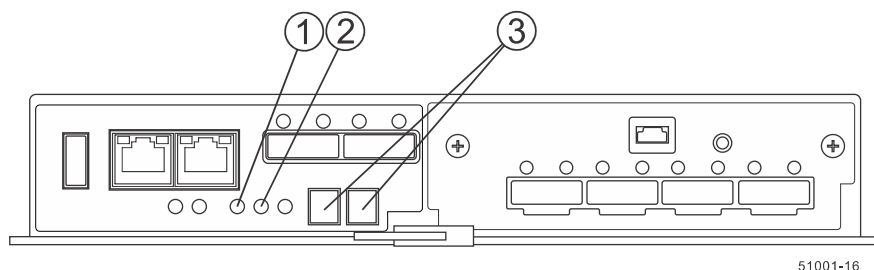


1. Release Levers
 2. Controller Canister
4. Remove the controller air blocker.
 5. Slide the new controller canister all the way into the controller-drive tray. Rotate the release levers towards the center of the controller canister to lock it into place.
 6. Reconnect all of the cables that you disconnected when you removed the controller canister.
 7. Place the controller online by performing one of these actions:
 - **Array Management Window:** In the Hardware pane, right click the picture of the controller you want to take offline, and select **Advanced > Place > Online**.
 - **CLI:** Run the following command:

```
smCLI <DNS-network-name-or-IP-address> -c "set controller [(a | b)] availability=online";
```
 8. Look at the LEDs on the new controller canister to make sure that the new controller is booting correctly. The Host Link Service Action Required LEDs will turn green during the reboot.
The seven-segment display shows the sequence OS+ Sd+ blank- to indicate that the controller is performing Start-of-day (SOD) processing. After the controller successfully completes rebooting, the seven-segment display

shows the tray ID matching the seven-segment display on the second controller. After this time, you can discover the new controller canister by using the storage management software.

Figure 8. Controller LEDs and Service Action Required LEDs



1. Battery Service Action Required LED (Amber)
2. Controller Service Action Allowed LED (Blue)
3. Controller Service Action Required LED (Amber)

9. Look at the Controller Service Action Required LEDs, and look at all of the controller-drive tray's Service Action Required LEDs. Based on the LED status, perform one of these actions:

- All of the Service Action Required LEDs are off, and the Array Management Window indicates an Optimal status – Go to step 11.
- **Any of the controller-drive tray's Service Action Required LEDs are on, or the Controller Service Action Required LED is on** – Check that the controller canister has been installed correctly and that all of the cables are correctly seated. Reinstall the controller canister, if necessary. Go to step 10.

10. Did this action correct the problem?

- **Yes** – Go to step 11.
- **No** – If the problem is not resolved, contact your Technical Support Representative.

11. Using the LEDs and the storage management software, check the status of all of the trays in the storage array.

12. Does any component have a Needs Attention status?

- **Yes** – Click the Recovery Guru toolbar button in the Array Management Window, and complete the recovery procedure. If the problem is not resolved, contact your Technical Support Representative.
- **No** – Go to step 13.

13. Remove the antistatic protection.

14. Gather support data about your updated storage array by using one of these methods:

- Use the storage management software to collect and save a support bundle of your storage array. From the Array Management Window toolbar, select **Monitor > Health > Collect Support Data Manually**. Then name and specify a location on your system where you want to store the support bundle.
- Use the CLI to run the `save storageArray supportData file="<FileName>"` command to gather comprehensive support data about the storage array. Gathering support data can temporarily impact performance on your storage array.

For more information about this command, refer to *Command Line Interface and Script Commands*.

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