Replacing a Failed Controller Canister in the E2712 or the E2724 Controller-Drive Tray

To replace a failed E2700 controller canister in a duplex configuration, you remove the controller canister from the E2712 or E2724 controller-drive tray, remove the battery and the host interface card (if one is installed) from the failed controller canister, install them in the new controller canister, and install the new controller canister into the controller-drive tray.

Before you begin

You have antistatic protection, the new controller canister, and a controller air blocker.

You are using a duplex configuration (two controller canisters in the controller-drive tray).

About this task

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

• The Recovery Guru directs you to replace a failed controller canister.

• The amber Controller Service Action Required LED indicates a failed controller canister.

When you install a new controller, you must remove the battery and the HIC (if one is installed) from the failed controller canister and install them in the new controller canister. This procedure includes instructions for those tasks.

> **Attention: Possible loss of data access** – If the failed controller canister includes a HIC, you must reuse the same HIC or use a replacement HIC that has the same host protocol as the original HIC. Do not use these instructions if you want to upgrade the HIC to a different protocol. The presence of mis-matched controllers causes a storage array to lock down when you bring the new controller online. You lose access to your data until the problem is corrected.

49002-00
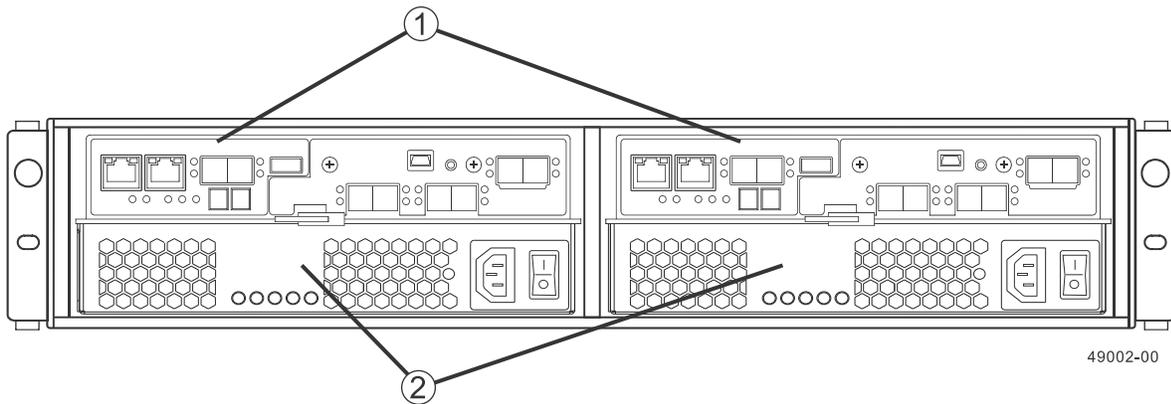
1	Controller canisters
2	Power-fan canisters

Related tasks

Preparing to remove a failed E2700 controller canister

If you are planning to replace a failed controller canister, you must gather support data for your storage array, run the Recovery Guru to confirm that you are replacing the correct component, and ensure that the controller is offline.

Steps

1. Gather support data about your storage array by using one of these methods.

   - **Storage management software** – Collect and save a support bundle of your storage array, as follows:

     a. From the Array Management Window toolbar, select **Monitor > Health > Collect Support Data Manually**.

     b. Name and specify a location on your system where you want to store the support bundle.

   - **Command line interface (CLI)** – Run the `save storageArray supportData` command to gather comprehensive support data about the storage array. For more information about this command, refer to the current version of the *Command Line Interface and Script Commands Programming Guide*.

     Note: Gathering support data can temporarily impact performance on your storage array.

2. Did the Recovery Guru direct you to replace a failed controller canister?

   - **Yes** – Go to step *3*.

   - **No** – Run the Recovery Guru to identify the failed component, and go to step *3*.

3. Determine which controller canister has failed by checking the Controller Service Action Required LEDs, shown in the following figure.

   If the amber Controller Service Action Required LED is on, a fault has been detected.

   Note: Your controller canister might have a different number and type of host interface connectors than what is shown in the following figure.
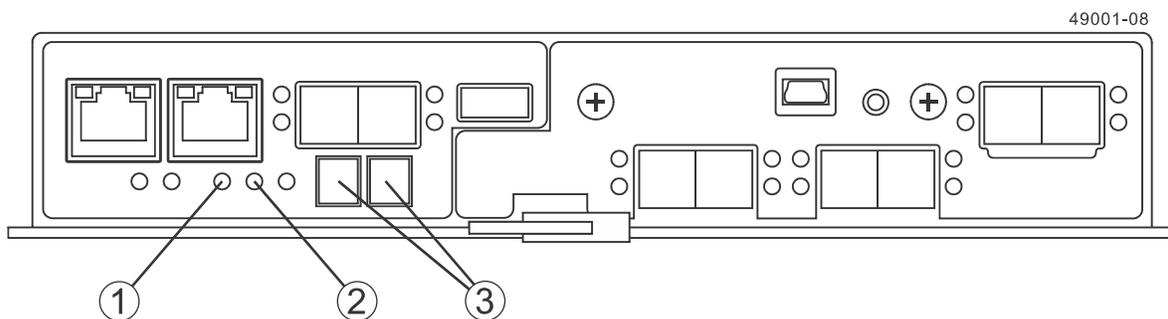
1	Controller Service Action Allowed LED (blue)
2	Controller Service Action Required LED (amber)
3	Seven-segment display

4. Record the information from the seven-segment display on the rear of the controller-drive tray.

The display flashes a sequence of codes. To find information about the displayed diagnostic codes, refer to the *E2700 Controller-Drive Tray and Related Drive Trays Installation Guide*.

5. Is the Controller Service Action Allowed LED on?

   • **Yes –** Go to the next section to remove the controller canister from the controller-drive tray.

   • **No –** Go to step *6.*

6. Take the controller offline by using one of these methods:

   • **Storage management software –** From the **Hardware** pane in the Array Management Window, right-click the picture of the controller that you want to take offline, and then select **Advanced > Place > Offline**.

   • **Command line interface (CLI) –** Run the following command:

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

7. Wait for the Controller Service Action Allowed LED to come on.

   This indication might take several minutes for a large configuration.

Removing a failed controller canister from an E2712 or E2724 controller-drive tray

To remove a failed controller canister from an E2712 or E2724 controller-drive tray, confirm that the controller is offline, label all cables and disconnect them, remove any transceivers, prepare the air blocker, remove the controller canister, and insert the air blocker into the open slot.

Before you begin

You have antistatic protection, the new controller canister, and the controller air blocker.

> **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.

> **Attention: Possible hardware damage** – You must insert the controller air blocker into the controller slot after removing the controller. Because 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.

Steps

1. Confirm that the Controller Service Action Allowed LED is on.

2. Put on antistatic protection.

3. Label each cable that is attached to the controller canister so that you can reconnect each cable correctly after the new controller canister is installed.

4. Disconnect all of the interface cables and Ethernet cables from the failed controller canister without disturbing the other controller canister.

5. If the failed controller canister contains a Fibre Channel HIC or an InfiniBand HIC, remove the transceivers from the HIC and save them for reuse.

6. 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.

98023-00
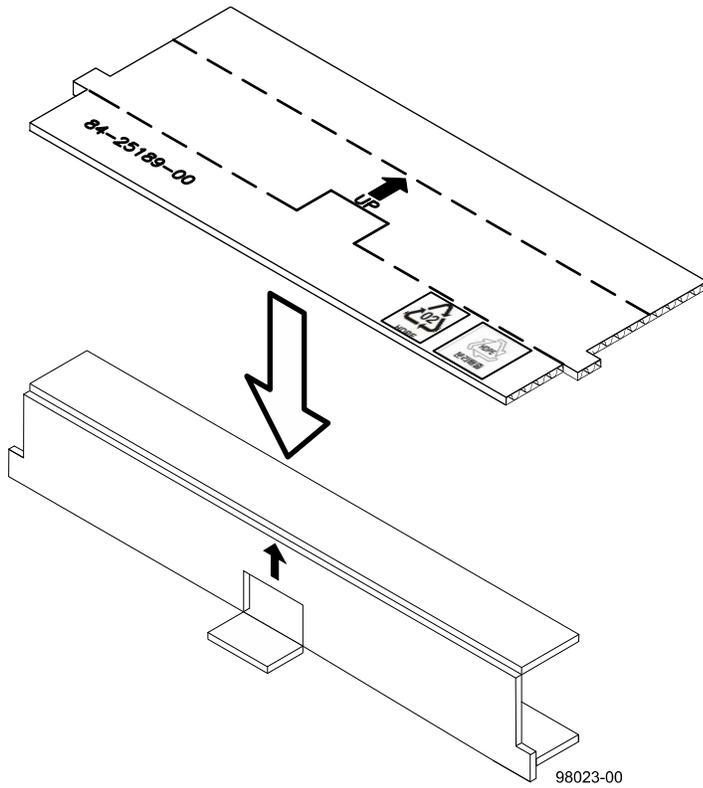
7. Remove the failed controller canister.

> **Note:** The following figures show the controller in the left-hand position within the controller-drive tray. However, you might be removing the controller and inserting the controller air blocker in the right-hand position. The required actions are similar.

a. Unlock and pull out the release levers to release the controller canister.

b. Using the release levers and your hands, pull the controller canister out of the controller-drive tray.

49005-00
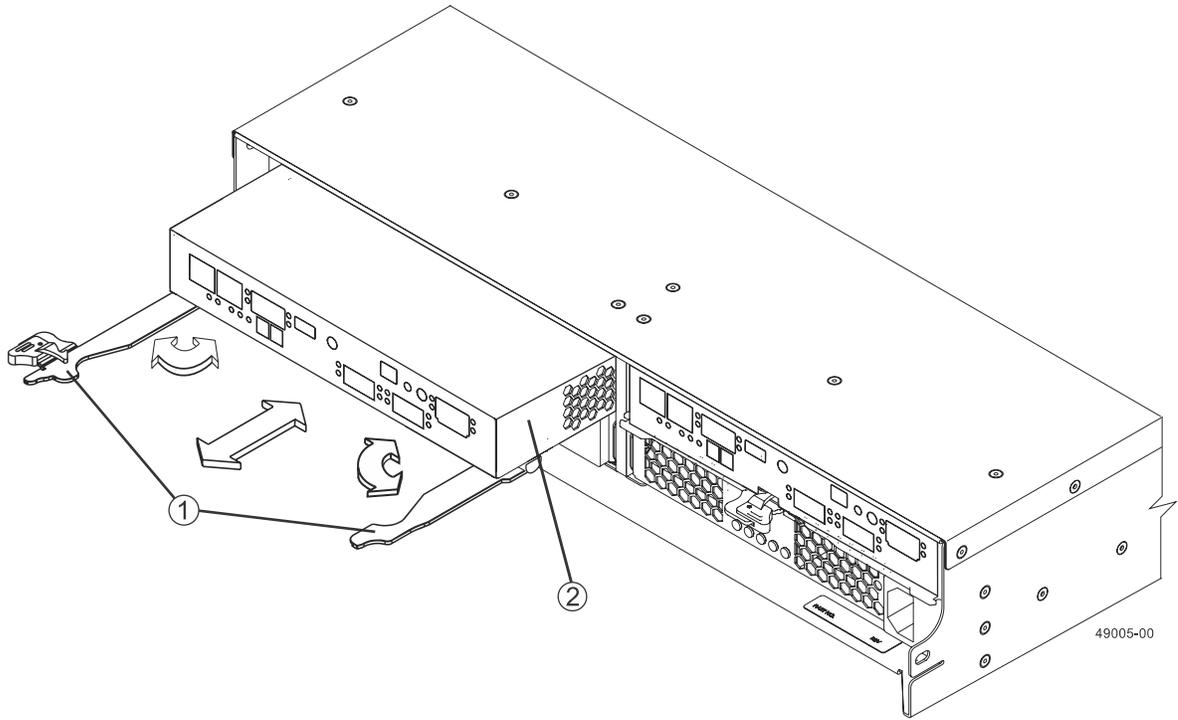
1	Release levers
2	Controller canister

   c. Invert the controller canister, and set it on a flat, static-free surface with the release levers up.

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

51011-03
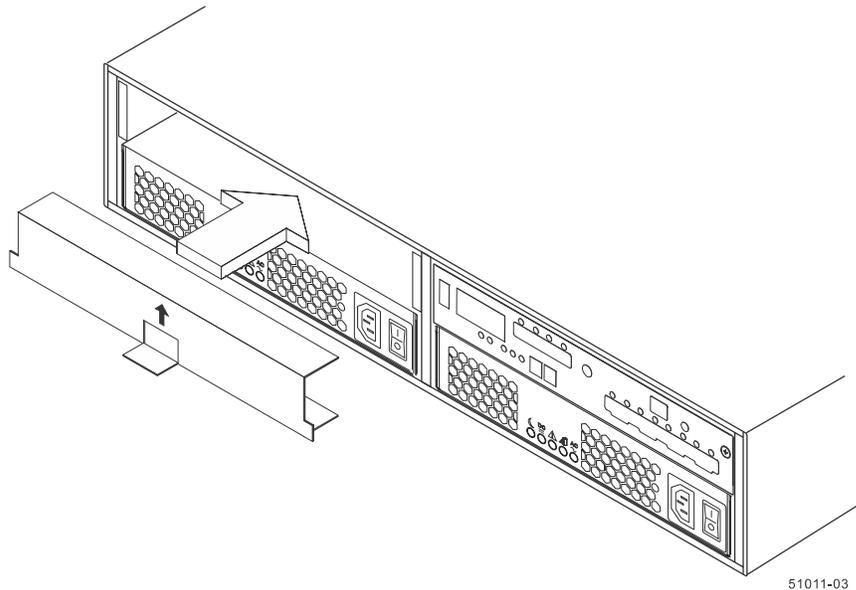
Removing the battery and HIC from an E2700 controller canister

Replacement E2700 controller canisters do not include a battery or a host interface card (HIC). If you are replacing a controller canister in the E2712, E2724, or E2760 controller-drive tray, you must remove the battery from the original controller. If the original controller canister includes a HIC (optional), you also must remove the HIC from the controller.

Before you begin

You have removed the controller canister from the controller-drive tray, and you have installed the air blocker into the empty slot.

You have a Phillips screwdriver.

Steps

1. On the controller canister, press down on both of the top cover latch buttons, and slide the top cover to the rear. Remove the top cover.

2. Unscrew the battery thumbscrew.

49004-00
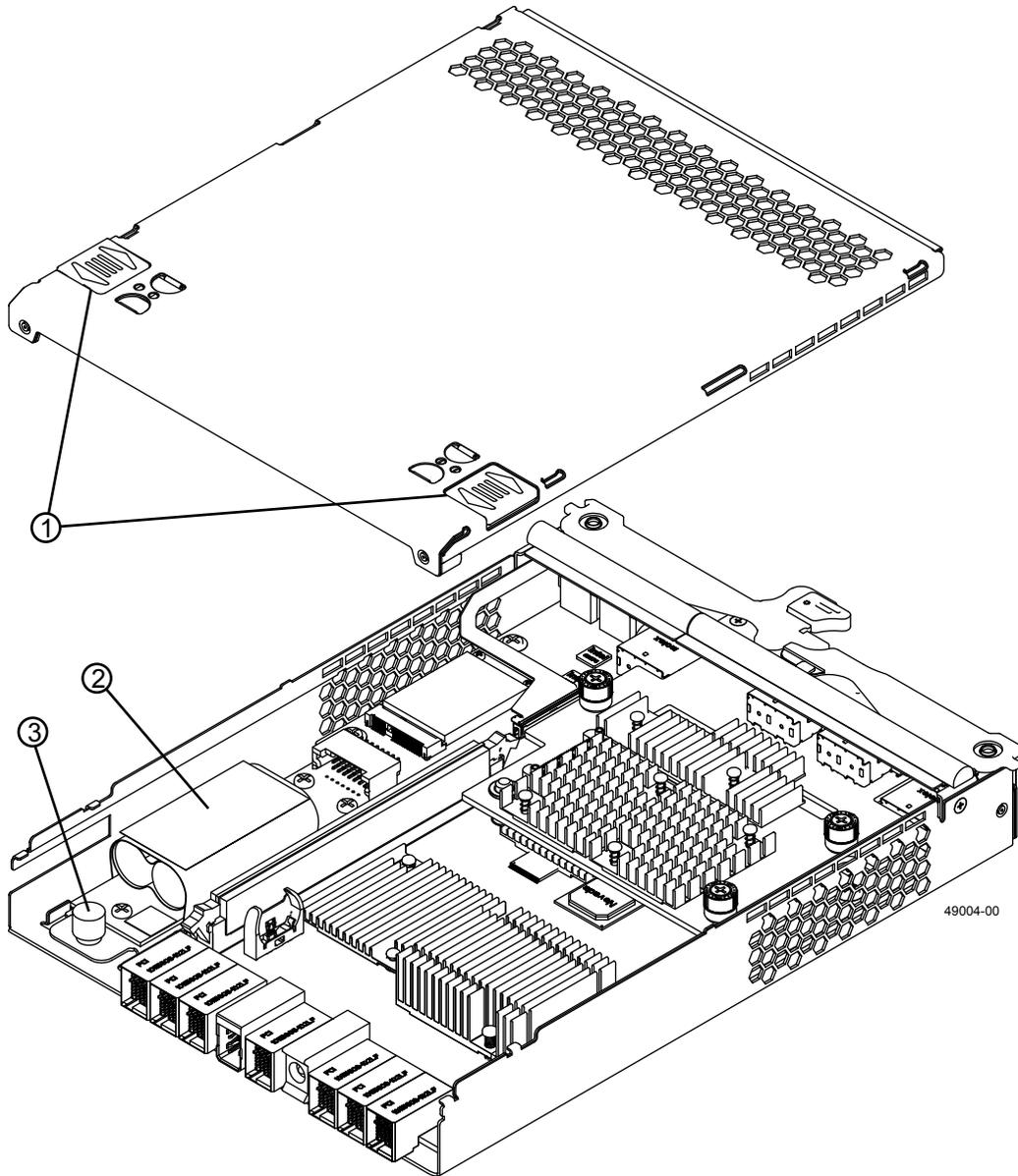
1	Top cover latch buttons
2	Battery circuit board
3	Battery thumbscrew

3. Remove the battery by sliding it towards the rear of the controller canister.

4. If the controller canister does not include a HIC, go to *Reinstalling the battery and HIC in an E2700 controller canister* on page 8. Otherwise, if the controller canister includes a HIC (optional), remove the HIC, as follows:

a. Using a Phillips screwdriver, remove the four screws that hold the front subplate to the controller canister. The screws are located on the top, front, and side of the canister.

49003-03
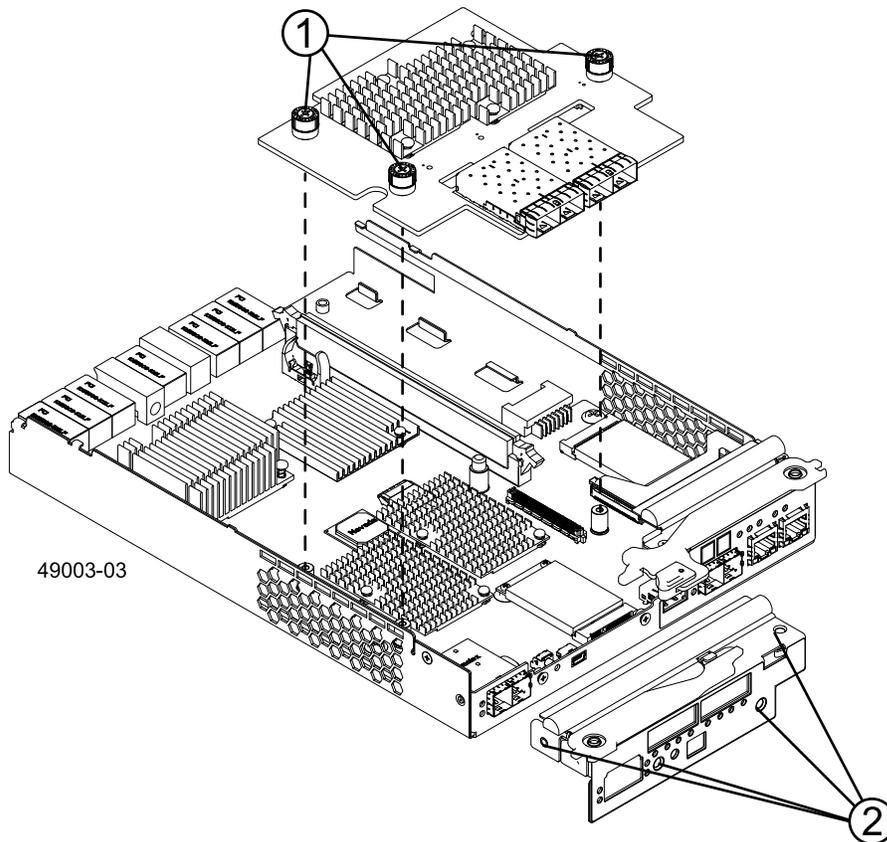
1	HIC thumbscrews
2	Subplate screws

b. Remove the subplate from the controller canister, carefully working it from side-to-side until you can slide it off and gain access to the HIC.

c. Loosen the thumbscrews that secure the HIC to the controller card.

   Note: If the thumbscrews are tight, use a Phillips screwdriver to loosen them.

d. Disconnect the HIC from the controller card, and remove the HIC by lifting it up and gently sliding it back, making sure to clear the other components in the canister.

   Note: The connector is located on the right edge of the HIC next to the thumbscrews.

e. Place the HIC on a static-free surface.

Reinstalling the battery and HIC in an E2700 controller canister

Replacement E2700 controller canisters do not include a battery or a host interface card (HIC). If you are replacing a controller canister in the E2712, E2724, or E2760 controller-drive tray, you must install the battery into the new controller canister. If the failed controller canister included an optional HIC, you also must install that HIC into the new controller canister.

Before you begin

You have removed the battery and HIC, if applicable, from the original controller canister.

Steps

1. Unpack the new controller canister and set it on a flat, static-free surface.

    Note: Save the packing materials; you can use them to ship the failed controller canister.

2. Press down on both of the top cover latch buttons, and slide the top cover to the rear. Remove the top cover.

3. Insert the controller battery by sliding it toward the front of the controller canister.

    Attention: To ensure that the new battery is seated correctly, you might need to back it out of the connector and confirm that it is aligned with the thumbscrew.

4. Tighten the thumbscrew to secure the battery to the controller canister.

5. If the failed controller canister did not include a HIC, go to step *6*. Otherwise, install the HIC you removed from the original controller canister in the new controller canister, as follows:

    a. Carefully connect the HIC to the controller. Do not scratch or bump any of the components on the bottom of the HIC or the top of the controller card.

    b. Tighten the thumbscrews that secure the HIC to the controller card.

        Note: Tighten the thumbscrews by hand only. Do not use a screwdriver, which can overtighten the screws.

6. Reinstall the top cover by sliding it forward until the latch buttons click.

Installing an E2700 controller canister in the controller-drive tray

To install an E2700 controller canister in the controller-drive tray, remove the air blocker, slide the controller into the slot and lock it in place, replace all cables and transceivers, and bring the controller back online.

Before you begin

You have installed the battery and the host interface card (HIC), if applicable, from the original controller canister into the new controller canister.

Steps

1. Remove the controller air blocker from the controller slot.

2. 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.

3. If you removed SFP transceivers (for Fibre Channel) or the QSFP transceivers (for InfiniBand) from the original controller canister, install them in the new controller canister.

4. Reconnect all of the cables that you disconnected.

5. Bring the controller online using one of these methods:

    *   **Storage Management software** – From the **Hardware** pane in the Array Management Window, right-click the picture of the controller, and select **Advanced > Place > Online**.

    *   **Command line interface (CLI)** –Run the following command:

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

Checking the new E2700 controller canister

After installing a new E2700 controller canister, confirm it is working correctly by looking at the LEDs. Then, gather support data about your updated storage array.

Steps

1. 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 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.
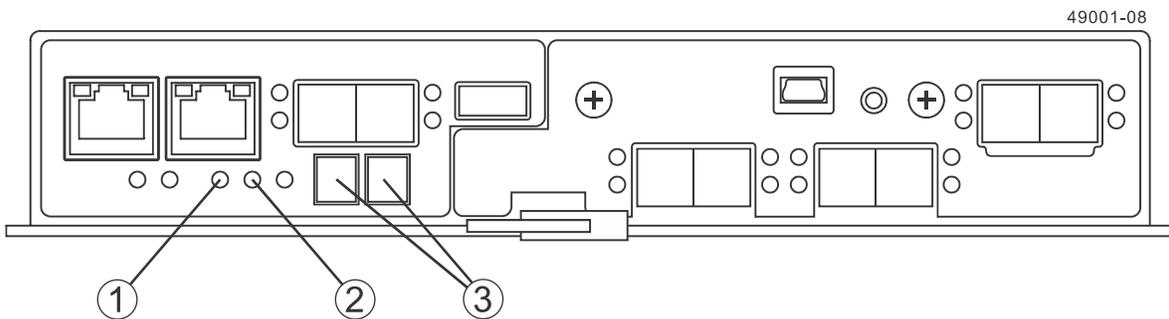
1	Controller Service Action Allowed LED (blue)
2	Controller Service Action Required LED (amber)
3	Seven-segment display

2. Use the storage management software to discover the new controller canister.

3. Look at the Service Action Required LEDs on both controllers and on the controller-drive tray itself. Then, perform one of these actions:

   • If all of the amber Service Action Required LEDs are off *and* the Array Management Window indicates an Optimal status, go to step *5*.

   • If any of the Service Action Required LEDs are 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 *4*.

4. Did this action correct the problem?

   • **Yes** – Go to step *5*.

   • **No** – If the problem is not resolved, contact technical support.

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

6. 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 technical support.

   • **No** – Go to step *7*.

7. Remove the antistatic protection.

8. 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` command to gather comprehensive support data about the storage array.

   For more information about the CLI command, refer to the current version of the *Command Line Interface and Script Commands Programming Guide*.

   > **Note:** Gathering support data can temporarily impact performance on your storage array.

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