



StorNext QM1200, QS1200 or QS2400 Base System

Replacing a Controller



StorNext QM1200, QS1200 or QS2400 Base System, Replacing a Controller, 6-68012-01 Rev B, April 2015, Product of USA.

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Replacing a Controller in the StorNext QM1200, QS1200 or QS2400 Base System

Use this procedure to replace a controller in the StorNext QM1200, QS1200 or QS2400 Base System. Read through all of the following steps in this procedure before you start to replace the controller canister.

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

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

Before you start to replace a controller in the base system, gather antistatic protection, a new controller, and a controller air blocker.

When you install a new controller, you must remove the battery from the failed controller, and install it in the new controller. This procedure includes that task. If you are changing your current configuration, you might need to replace these items:

- Small Form-factor Pluggable (SFP) transceivers.
- Host bus adapters or host channel adapters.
- Cables – InfiniBand uses copper cable, and Fibre Channel uses copper cable or fiber-optic cable.

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 empty controller slot when you service the controller.

ATTENTION Loss of data access – If the controller that you are replacing manages any secure volumes, the new controller will need the correct security key to manage those volumes. After you replace the controller and restore power to the base system, you can use the SANtricity® ES Storage Manager to import 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.

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.

Preparing to Remove the Controller

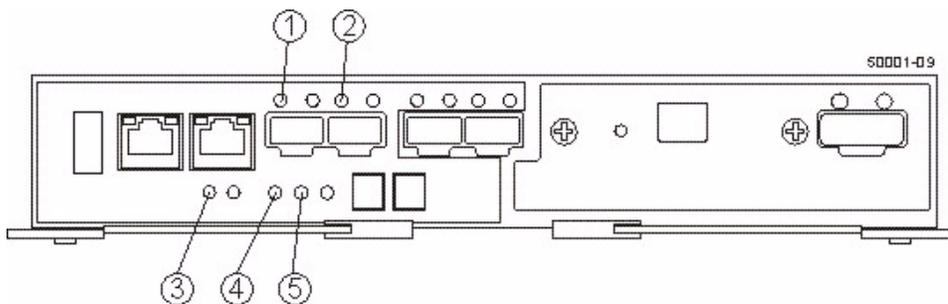
1. Gather support data about your storage array by using one of these methods:
 - Use the storage management software to collect and save a support bundle of your storage array. From the Array Management Window, select **Monitor >> Health >> Collect Support Data**. Then name and specify a location on your system where you want to store the support bundle.

- Use the command line interface (CLI) to run the `save storageArray supportData` command to gather comprehensive support data about the storage array. For more information about this command, refer to *Command Line Interface and Script Commands*. Running this command can temporarily impact performance on your storage array.
2. Did the Recovery Guru direct you to replace a failed controller?
 - **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.
 - a. Set the new controller on a flat, static-free surface near the base system with the top cover up.
 - b. Save all the packing materials in case you need to return the controller.

Locating the Failed Controller

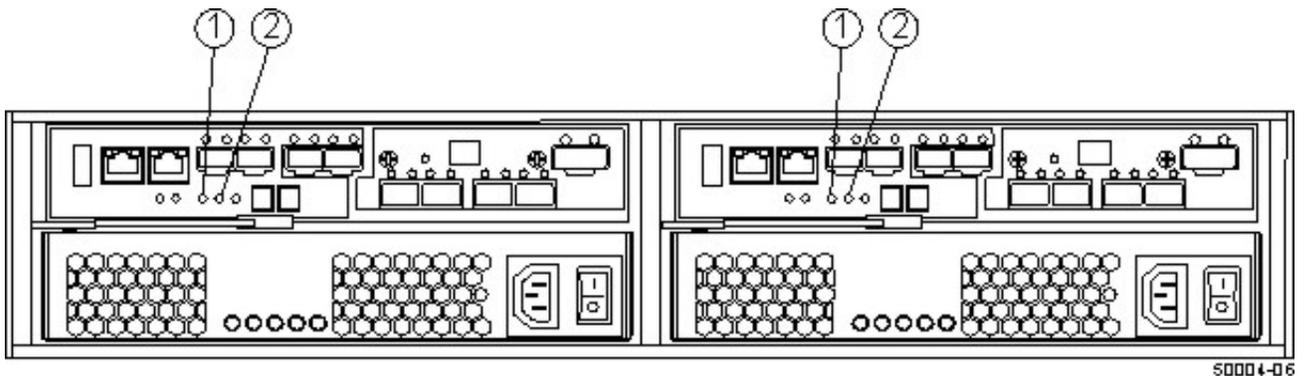
1. Locate the failed controller by checking the Controller Service Action Required LEDs.
2. Refer to [Figure 1](#) for a close-up view of the controller LEDs.

Figure 1 Pikes Peak Controller LEDs



1. Host Link 1 Service Action Required LED (Amber)
2. Host Link 2 Service Action Required LED (Amber)
3. Battery Service Action Required LED (Amber)
4. Controller Service Action Allowed LED (Blue)
5. Controller Service Action Required LED (Amber)

NOTE If a fault is detected, the amber Controller Service Action Required LED is on ([Figure 2](#)). If you can safely remove the controller canister, the blue Controller Service Action Allowed LED is on.

Figure 2 Controller Service Action LEDs

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

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. For example, do not bend fiber-optic cables tighter than a 5-cm (2-in.) radius. Check the specifications for your cables, and do not bend any cable tighter than the minimum specified radius.

Pre-Work before Removing the Failed Controller

1. Label each copper cable or fiber-optic cable that is attached to the controller so that you can reconnect each cable correctly after the new controller is installed.
2. Record the information from the seven-segment display on the rear of the base system.

The display flashes a sequence of codes. To find information about the displayed diagnostic codes, refer to *StorNext Q-Series Storage Install Guide*.

Use either the GUI (first bullet) or the CLI (second bullet) to take the appropriate controller offline.

- From the Hardware pane in the Array Management Window, right-click the picture of the controller that you want to take offline, and select **Advanced >> Place >> Offline**.
- 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 (see [Figure 2](#)). This indication might take several minutes for a large configuration.

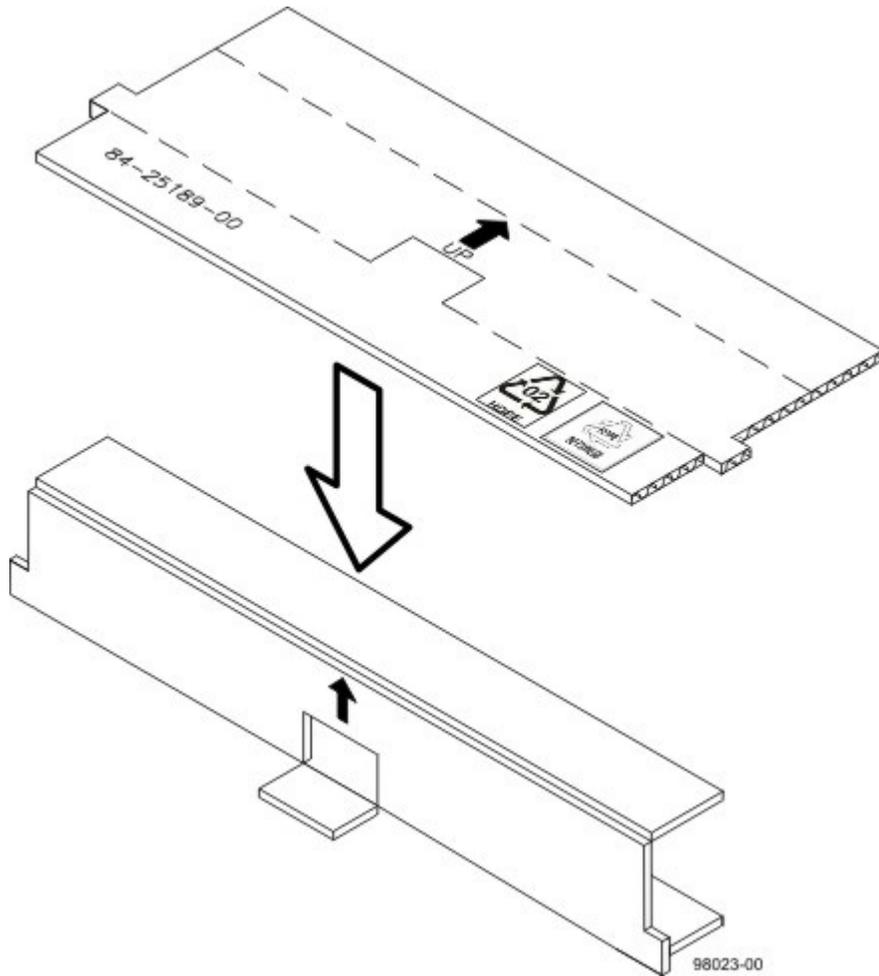
3. Disconnect all of the interface cables and Ethernet cables from the failed controller.

If the storage array is running while you perform this replacement, do not disturb the second controller.

Removing the Failed Controller

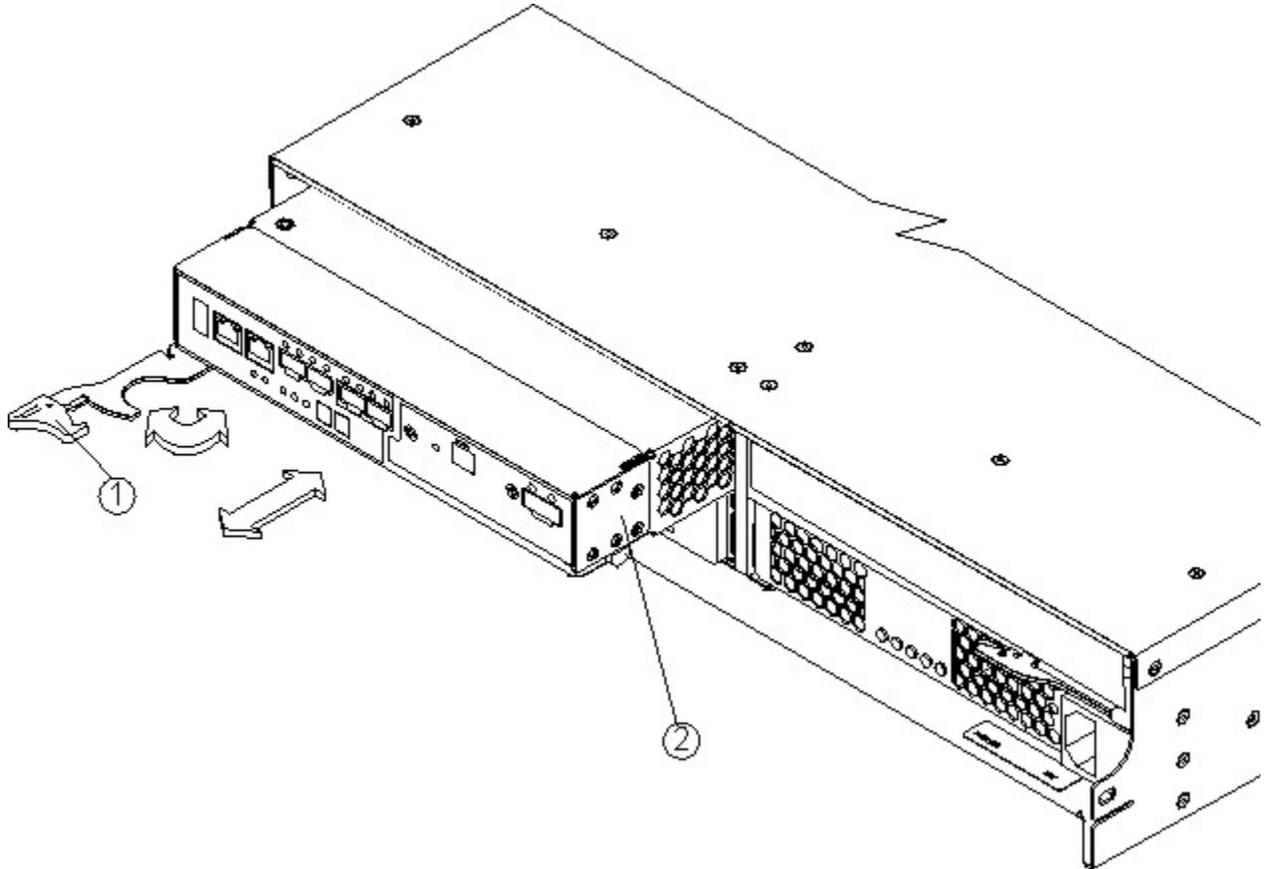
1. Prepare the controller air blocker (Figure 3) by removing it from its packaging and folding it inward at right angles so it is ready to insert into the open controller slot.

Figure 3 Controller Air Blocker



2. Remove the failed controller (Figure 4).
 - a. Unlock and pull out the release lever to release the controller.
 - b. Using the release lever and your hands, pull the controller out of the base system.

Figure 4 Removing and Replacing a Controller



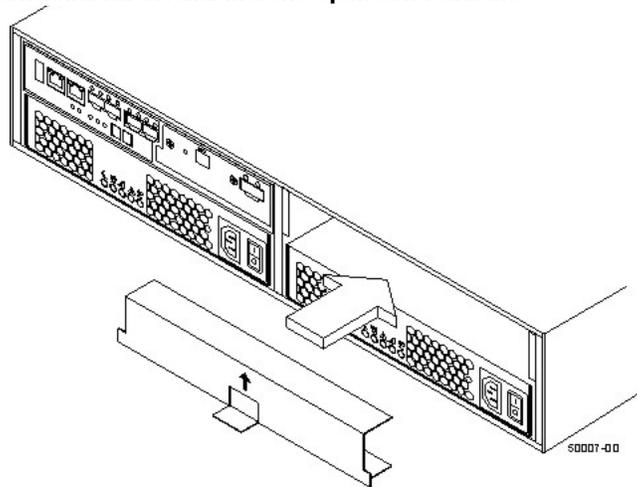
1. Release Lever
2. Controller

3. Set the failed controller on a flat, static-free surface with the release levers up.

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 will not overheat.

4. Insert the controller air blocker (Figure 5) into the open controller slot to make sure that correct airflow is maintained.

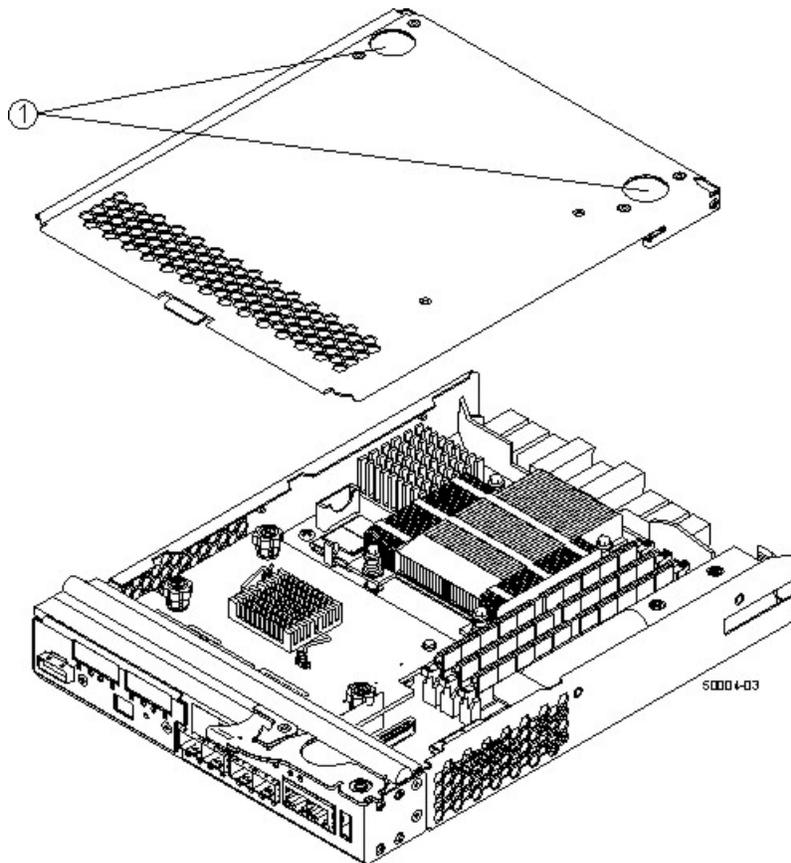
Figure 5 Inserting the Controller Air Blocker into the Open Controller Slot



Removing Battery (Move from Failed to Serviceable Controller)

1. On the failed controller ([Figure 6](#)), press down on both of the top cover latch buttons, and slide the top cover to the rear. Remove the top cover.

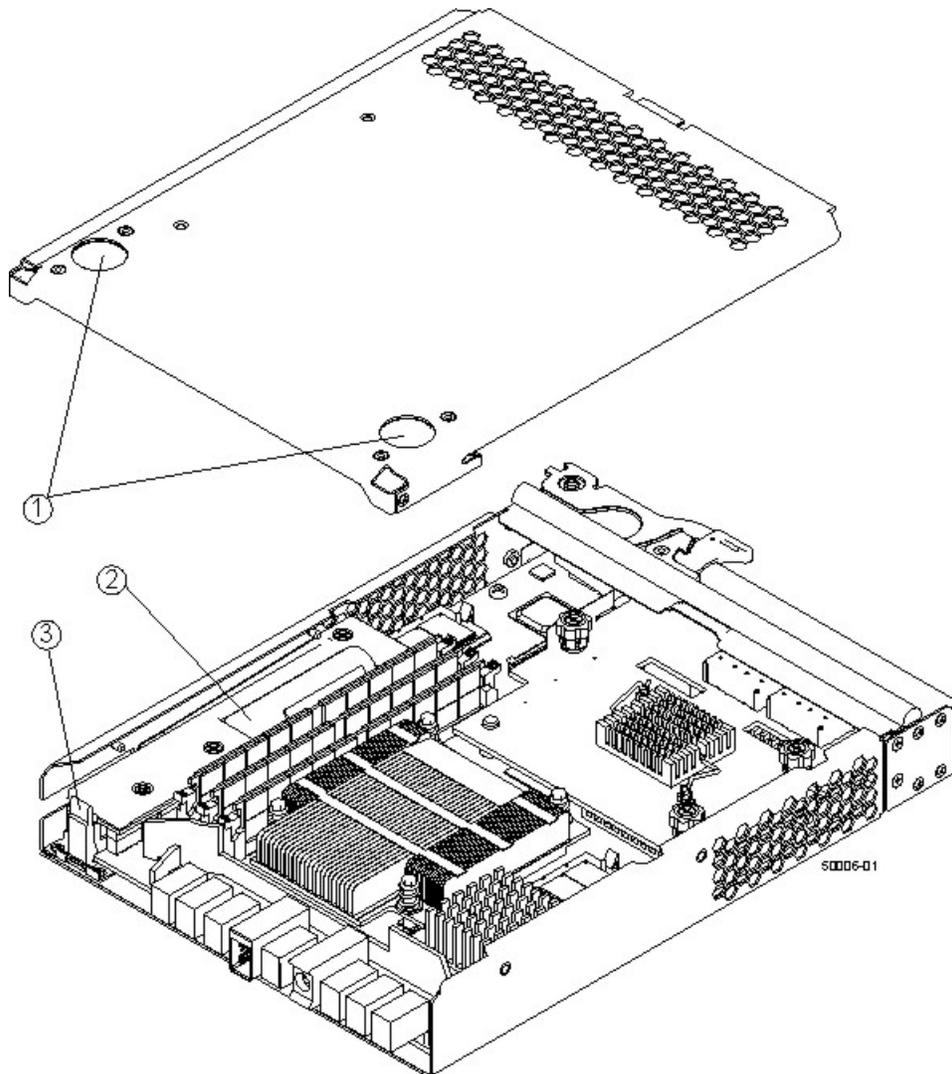
Figure 6 Controller Top Cover Latch Buttons



1. Top Cover Latch Buttons

2. Locate the battery within the controller (Figure 7).

Figure 7 Battery and Locking Handle in the Controller



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

3. On the failed controller with the battery, perform these steps:
 - a. Release the latch that secures the battery to the controller.
 - b. Remove the battery by sliding it towards the rear of the failed controller.
 - c. Lift the battery slightly upward as you slide it to the rear of the failed controller.

NOTE You will insert this battery into the new controller.

4. If Small Form-factor Pluggable (SFP) transceivers are present, record the ports in which they are installed, and remove them.
5. Insert the battery that you removed from the failed controller into the serviceable controller.
 - a. Slide the battery from the back of the controller toward the front.
 - b. Insert the battery at a slight downward angle into the controller canister.

- c. Slide the battery towards the front of the controller canister, making sure that the battery slides under the side guide pins to correctly seat it against the back surface of the controller.

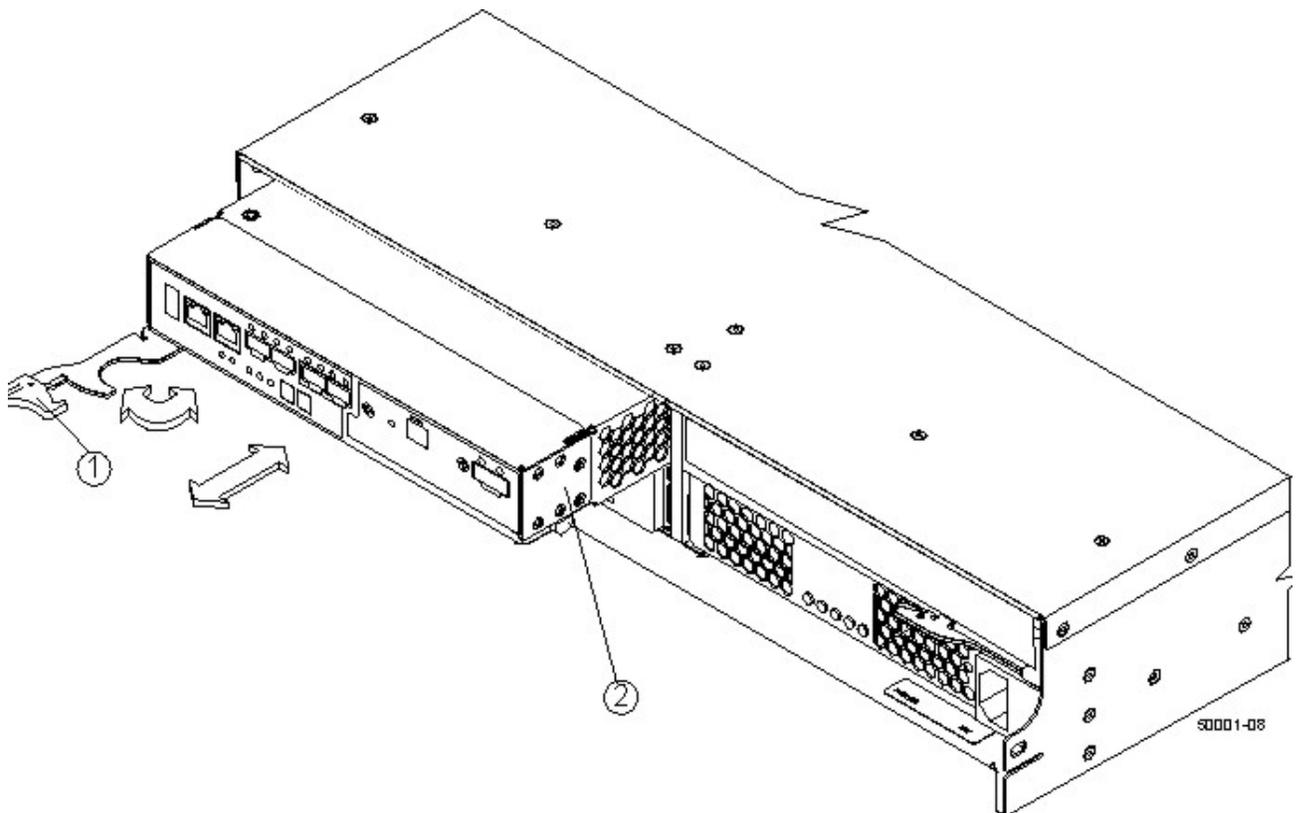
ATTENTION Make sure that the battery is fully seated and that the connectors are fully seated. If the battery is not correctly seated, you cannot reinstall the top cover on the controller canister as directed later. To make sure that the controller battery is seated correctly, you might need to slide it out and insert it again. You know it is secure when you hear it click into place, and the locking handle does not move out of its upright position when you wiggle it.

6. Engage the latch to secure the battery circuit board in the new controller card.
7. Reinstall the top cover on the new controller by sliding it forward until the top cover latch buttons click.

Installing a Controller in the StorNext QM1200, QS1200 or QS2400 Base System

1. Remove the controller air blocker from the controller slot.
2. Slide the new controller (Figure 8) all the way into the base system.
Push the release lever towards the center of the controller to lock it into place.

Figure 8 Installing the Controller



1. Release Lever
2. Controller

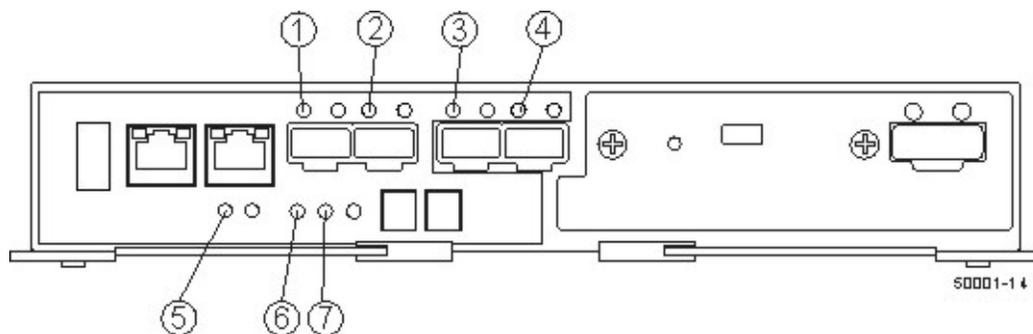
3. Use either the GUI (first bullet) or the CLI (second bullet) to bring the controller online.
 - From the Hardware pane in the Array Management Window, right-click the picture of the controller, and select **Advanced >> Place >> Online**.
 - Run the following command:


```
SMcli <DNS-network-name-or-IP-address> -c "set controller [(a | b)]
availability=online";
```
4. Reconnect all cables that were disconnected when you removed the failed controller.

Checking Controller LEDs

1. Look at the LEDs on the new controller to make sure that the controller is rebooting correctly.

Figure 9 Controller LEDs



1. Host Link 1 Service Action Required LED (Green)
2. Host Link 2 Service Action Required LED (Green)
3. Host Link 3 Service Action Required LED (Green)
4. Host Link 4 Service Action Required LED (Green)
5. Battery Service Action Required LED (Amber)
6. Controller Service Action Allowed LED (Blue)
7. Controller Service Action Required LED (Amber)

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 by using the storage management software.

2. Check the Controller Service Action Required LED, and look at all of the base system'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 4.
 - **Any of the base system's Service Action Required LEDs is on** – Check that the new controller canister has been installed correctly. Reinstall the controller canister, if necessary. Go to step 3.
3. Did this action correct the problem?
 - **Yes** – Go to step 4.
 - **No** – If the problem is not resolved, contact your Customer and Technical Support representative.
4. Using the LEDs and the storage management software, check the status of all of the trays in the storage array.

5. 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 Customer and Technical Support representative.
 - **No** – Go to step 6.
6. Remove the antistatic protection.
7. 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, select **Monitor >> Health >> Collect Support Data**. 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 this command, refer to *Command Line Interface and Script Commands*.

NOTE Running this command can temporarily impact performance on your storage array.