



StorNext QS1200 / QS2400

# Replacing a Host Interface Card (HIC)



StorNext QS1200 / QS2400, Replacing a Host Interface Card (HIC), 6-68079-01 Rev B, April 2015, Product of USA.

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# Replacing a Host Interface Card (HIC) in a StorNext QS1200 / QS2400

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

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Use this procedure to replace a host interface card (HIC) that has failed. The replacement HIC can have Fibre Channel, InfiniBand, iSCSI or SAS connections. Both controllers in a duplex base system must have the same arrangement of HICs. Each controller must have the same type of HIC in the same relative position as the other controller.

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**NOTE** IB host ports do not support the Data Assurance (DA) premium feature.

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**ATTENTION Potential loss of connectivity** – If both controllers in a duplex base system are powered up at the same time with different types of HICs, a mismatch results that causes both controllers to lock down (shut down and stop operating). If one controller is already running, and you replace the alternate controller with a different HIC, only the replacement controller locks down, and the running controller remains operational.

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Before you replace an HIC, gather antistatic protection, a new HIC, and the controller air blocker. If you are changing your current configuration, you might need to replace these items in addition to the HIC:

- Small Form-factor Pluggable (SFP) transceivers.
- Host bus adapters or host channel adapters.
- Cables – InfiniBand and SAS use copper cable, iSCSI uses Ethernet cable, and Fibre Channel uses copper cable, optical cable, or fiber-optic cable.
- The correct HIC subplate for the front of the controller.

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**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.

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## HIC in the StorNext QS1200 / QS2400

To replace a failed HIC, you must first remove the controller canister.

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

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## Gathering Support Data

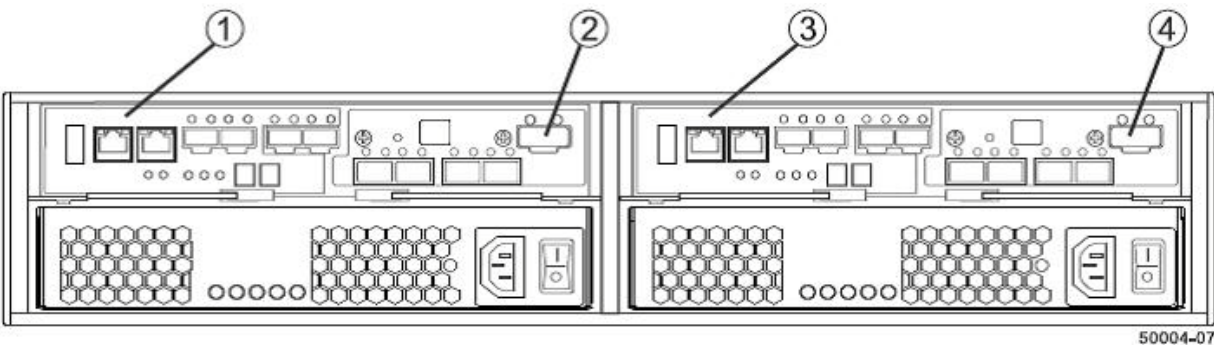
1. Gather support data about your storage array by using one of these methods:

- Use the storage management software to collect and save a support bundle of your storage array. From the **Array Management** Window toolbar, click **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, see the *Command Line Interface and Script Commands* document.
    - Running this command can temporarily impact performance on your storage array.
2. Did the Recovery Guru direct you to replace a failed I/O host interface card?
    - **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. Stop all host I/O operations.
  5. Proceed to [Locating the Failed HIC](#).

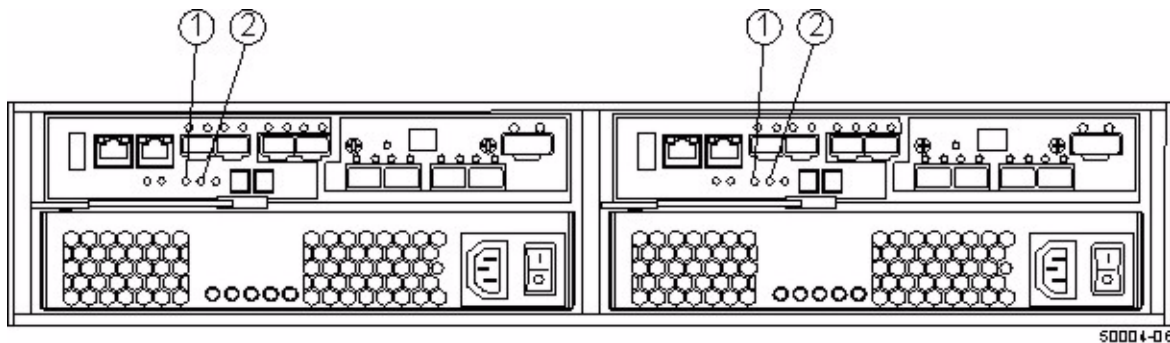
## Locating the Failed HIC

1. Refer to [Figure 1](#) to locate the controllers within the array (representative system).

**Figure 1 Controller Location**



1. Controller A
  2. Expansion SFF-8088 Port Connector
  3. Controller B
  4. Expansion SFF-8088 Port Connector
2. Refer to [Figure 2](#) on page 3 to locate the controller canister with the failed HIC by checking the Controller Service Action Required LEDs.
    - If a fault is detected, the amber Controller Service Action Required LED is on.
    - 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 Serviced Action Allowed LED (Blue)
2. Controller Service Action Required LED (Amber)

## Removing the Controller from the Array

**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.

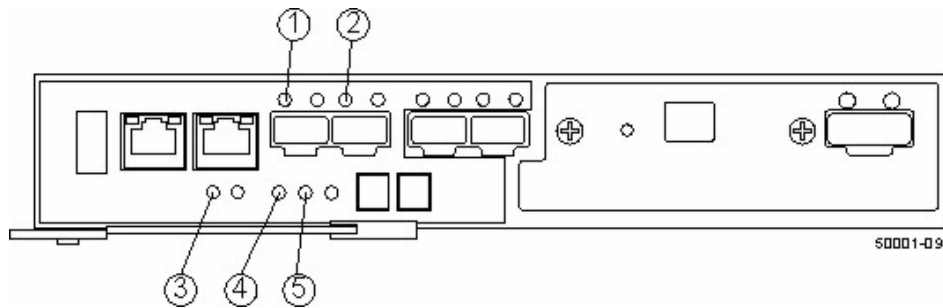
1. Label each copper cable or fiber-optic cable that is attached to the controller canister so that you can reconnect each cable correctly after the controller canister is reinstalled.
2. Record the information from the seven-segment display on the rear of the base system.  
The display flashes a sequence of codes. To find information about the displayed diagnostic codes, refer to the *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 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;"
```

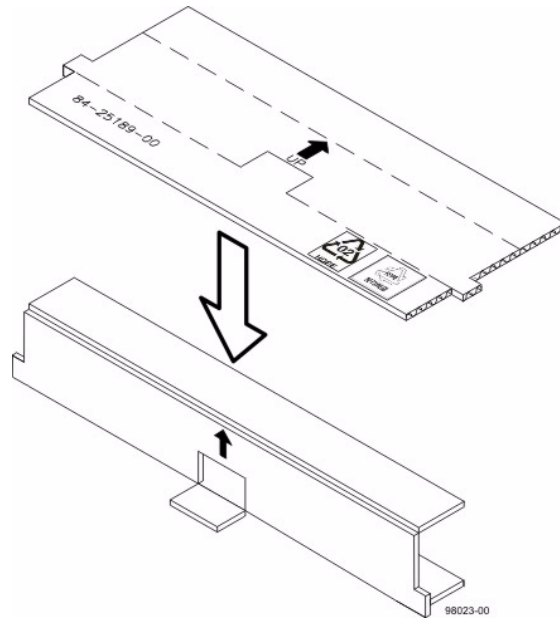
If necessary, wait for the Controller Service Action Allowed LED to come on ([Figure 3](#) on page 4). This indication might take several minutes for a large configuration.

**Figure 3 Controller LEDs**

1. Host Link 1 Service Action Required LED (Green)
  2. Host Link 2 Service Action Required LED (Green)
  3. Battery Service Action Required LED (Amber)
  4. Controller Service Action Allowed LED (Blue)
  5. Controller Service Action Required LED (Amber)
3. Disconnect all cables from the controller canister that contains the HIC.
    - If the storage array is running while you perform this replacement, do not disturb the second controller canister.
    - If fiber-optic cables are present, you can use the two release levers to partially remove the controller canister. Opening these release levers makes it easier to press down the fiber-optic cable release tab.
    - If the storage array is running while you perform this replacement, do not disturb the second controller canister.

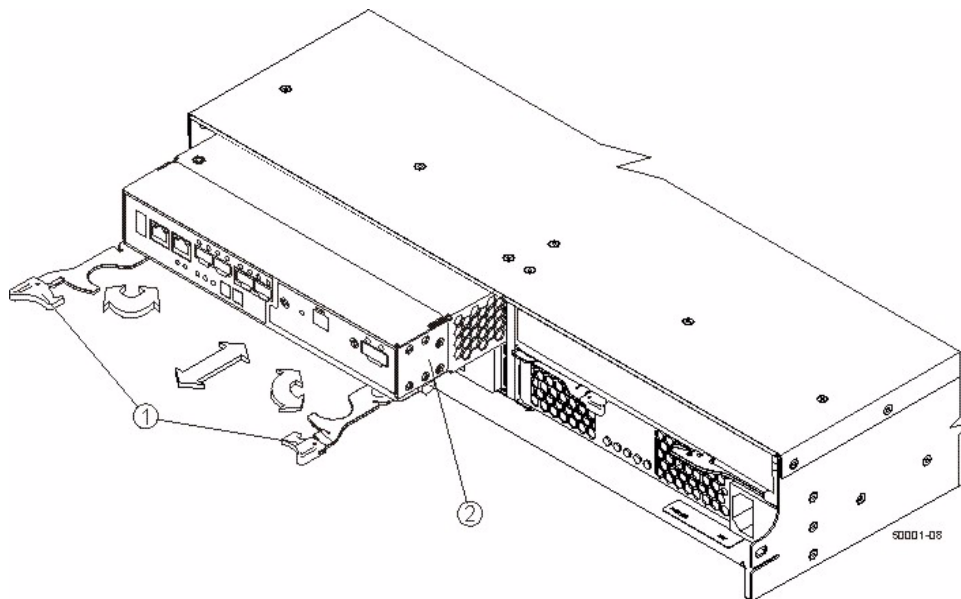
4. Prepare the controller air blocker (Figure 4) by removing it from its packaging and folding it inward at right angles, so it is ready to insert into the open controller slot.

**Figure 4 Controller Air Blocker**



5. Remove the controller canister (Figure 5):
  - 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 base system.

**Figure 5 Removing and Reinstalling a Controller Canister**



1. Release Levers
2. Controller Canister

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

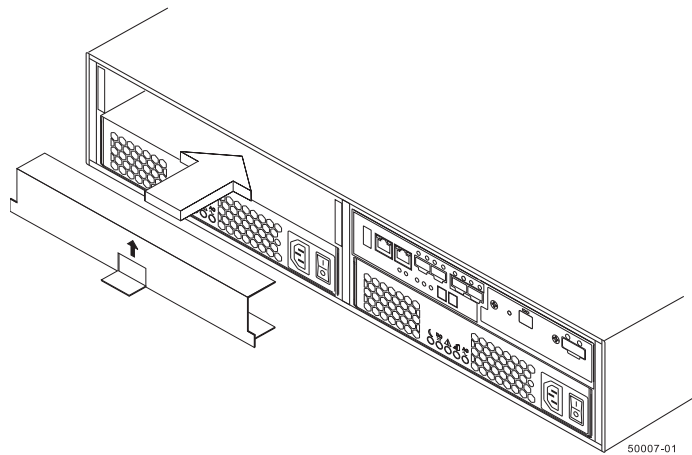
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**ATTENTION Possible equipment damage** – The controller slot cannot remain open for more than three minutes because of the possibility of overheating the equipment. The controller air blocker fills the controller slot so that the equipment will not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

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7. Insert the controller air blocker into the open controller slot ([Figure 6](#) on page 6) to make sure that correct airflow is maintained.

**Figure 6 Inserting the Controller Air Blocker into the Open Controller Slot**



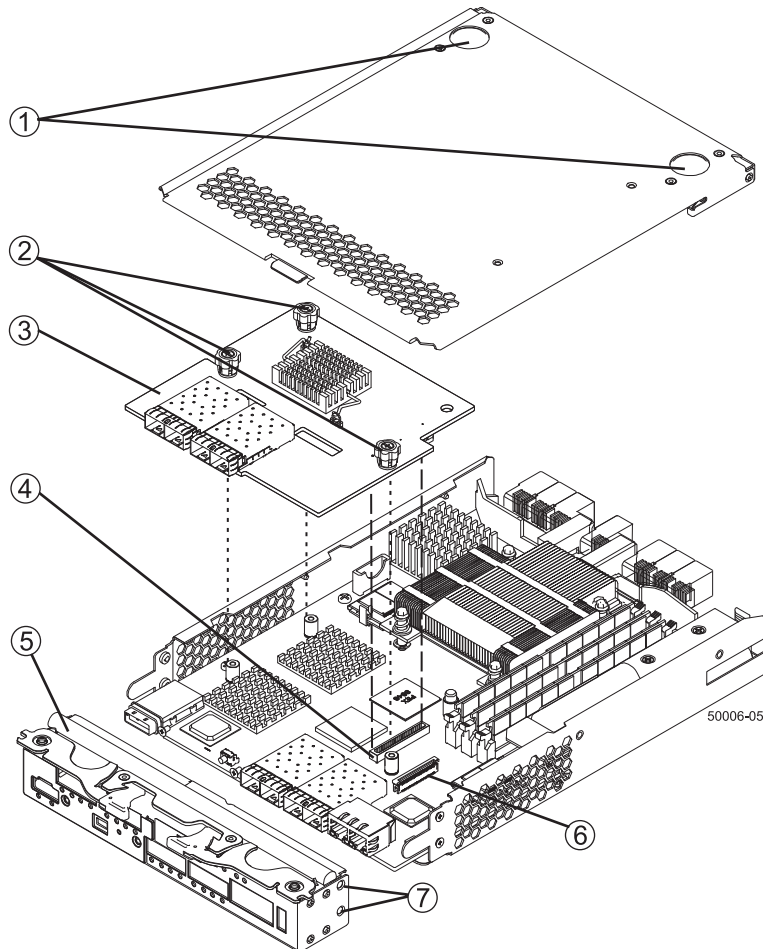
8. If Small Form-factor Pluggable (SFP) transceivers are present, record the ports to which they are attached, and remove them.



## Removing the HIC from the Controller

1. On the controller canister ([Figure 7](#)), press down on both of the top cover latch buttons, and slide the top cover to the rear. Remove the top cover.

**Figure 7 Host Interface Card Replacement**



1. Top Cover Latch Buttons
2. HIC Thumbscrews
3. Host Interface Card
4. HIC Interface Connector
5. Front Bezel
6. Zero Insertion Force (ZIF) Socket
7. Front Bezel Screws

2. Disconnect the front bezel flex harness by gently opening the zero insertion force (ZIF) socket.

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**NOTE** The ZIF socket is very fragile and is easily broken. Either use your fingers or a screwdriver to gently pull the ZIF socket open.

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3. Remove the screws holding the front bezel to the controller canister with a Phillips screwdriver.

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**NOTE** The front bezel can suddenly pop loose and cause damage to either the front bezel flex harness or the ZIF socket that is attached to the controller card. Make sure that you gently move the front bezel away from the controller canister to allow access to the HIC.

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4. Remove the front bezel from the controller canister, carefully working it from side to side until you can slide it off and gain access to the HIC.
5. Loosen the HIC thumbscrews that secure the HIC to the controller card.

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**NOTE** If the thumbscrews were overtightened, you can use a Phillips screwdriver to help loosen them.

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6. Gently disengage the HIC from the controller card, and remove the HIC.

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**NOTE** The connector is located on the edge of the HIC next to the thumbscrews.

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**NOTE** You must place the HIC in the same location in the new controller canister, being careful not to scratch or bump any of the components on the bottom of the HIC or the top of the controller card.

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7. Place the HIC that you removed on a static-free surface.

## Installing the HIC in the Controller

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**NOTE** Make sure that you have the correct host interface card (HIC).

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1. Install the new HIC by gently connecting the HIC to the HIC interface connector. Do not scratch or bump any of the components on the bottom of the HIC or the top of the controller card.

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**ATTENTION Potential loss of connectivity** – If both controllers in a duplex base system are powered up at the same time with different types of HICs, a mismatch results that causes both controllers to lock down (shut down and stop operating). If one controller is already running, and you replace the alternate controller with a different HIC, only the replacement controller locks down, and the running controller remains operational.

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2. Align the connectors in the controller canister with the corresponding openings in the front bezel, and reattach the front bezel to the controller canister by reinserting the screws.

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**NOTE** Tighten the thumbscrews by hand only. Using a screwdriver can overtighten the screws.

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**NOTE** Make sure that the seven-segment display ribbon cable is still connected to the motherboard connector. If the ribbon cable is not connected, you must lift the center piece of the motherboard connector and insert the ribbon cable into the motherboard connector.

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3. Reattach the bezel flex harness by gently lifting the latch on the ZIF socket, and inserting the ribbon cable into the ZIF socket. Then push the ZIF socket closed.
4. Reinstall the top cover on the controller canister.
5. If the SFP transceivers were present, reinstall them.

## Installing the Controller into the Array

1. Remove the controller air blocker.
2. Slide the controller canister all the way into the base system. Rotate the release levers toward the center of the controller canister to lock it into place.
3. Reconnect all of the cables that were disconnected when you removed the controller canister.

**NOTE** Because an HIC was added where none existed previously, or if a different type of HIC was installed, additional system cabling and configuration might be necessary. Refer to the Hardware Cabling Guide.

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**.

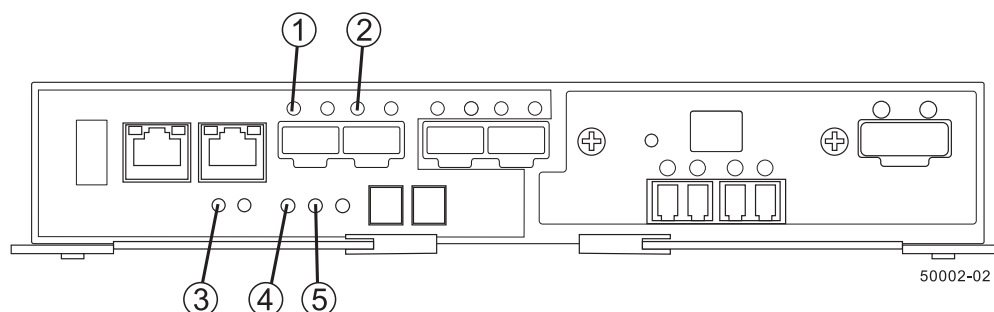
— Run the following command:

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

4. Look at the LEDs on the controller canister ([Figure 8](#)) to make sure that the controller is rebooting correctly.
  - 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 controller by using the storage management software.

Depending on your type of HIC, you might receive an error message about a failed host I/O card. If this problem occurs, follow the instructions in the Recovery Guru.

**Figure 8 Controller LEDs**



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

5. Look at 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 7.
  - **Any of the base system'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. Reinstall the controller canister, if necessary. Go to step 6.
6. Did this action correct the problem?
  - **Yes** – Go to step 7.
  - **No** – If the problem is not resolved, contact your Technical Support representative.
7. Using the LEDs and the storage management software, check the status of all of the base systems in the storage array.
8. 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 9.
9. Remove the antistatic protection.
10. 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, click **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, see the *Command Line Interface and Script Commands* document. Running this command can temporarily impact performance on your storage array.