# Replacing a Controller CRU and Related Components in the ST2500 M2 Array Module

Version 10.77

May 2011

51351-00, Rev. A

## Revision History

| Version and Date | Description of Changes |
|---|---|
| 51351-00, Rev. A May 2011 | Initial release of the document. |

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# Replacing a Controller CRU and Related Components in the ST2500 M2 Array Module

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In this procedure, you will take the front subplate, the host interface card (HIC), the cache memory DIMM, and the cache memory offload backup SD card out of the failed controller CRU and place them in the new controller CRU before you install the new controller CRU.

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**NOTE**  This procedure refers to memory as cache memory DIMM and cache memory offload backup SD card.

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

- The Recovery Guru directs you to replace a failed controller CRU.

- You locate the failed controller CRU by checking the Controller Service Action Required LED.

Before you start to replace the controller CRU, gather antistatic protection and a replacement controller CRU.

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

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# Removing a Controller CRU from the ST2500 M2 Array Module

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**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.

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1   If possible, use the storage management software to create, save, and print a new storage array profile.

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

-   **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 CRU.

   a   Set the new controller CRU on a flat, static-free surface near the array module with the top cover up.

   b   Save all of the packing materials so that you can ship the failed controller CRU.

   c   Push down the two top cover latch buttons that secure the top cover to the new controller CRU.

   d   Remove the top cover by sliding it off the rear of the new controller CRU.

Figure 1  ST2500 M2 Controller Cover, Internal Parts, and Faceplate
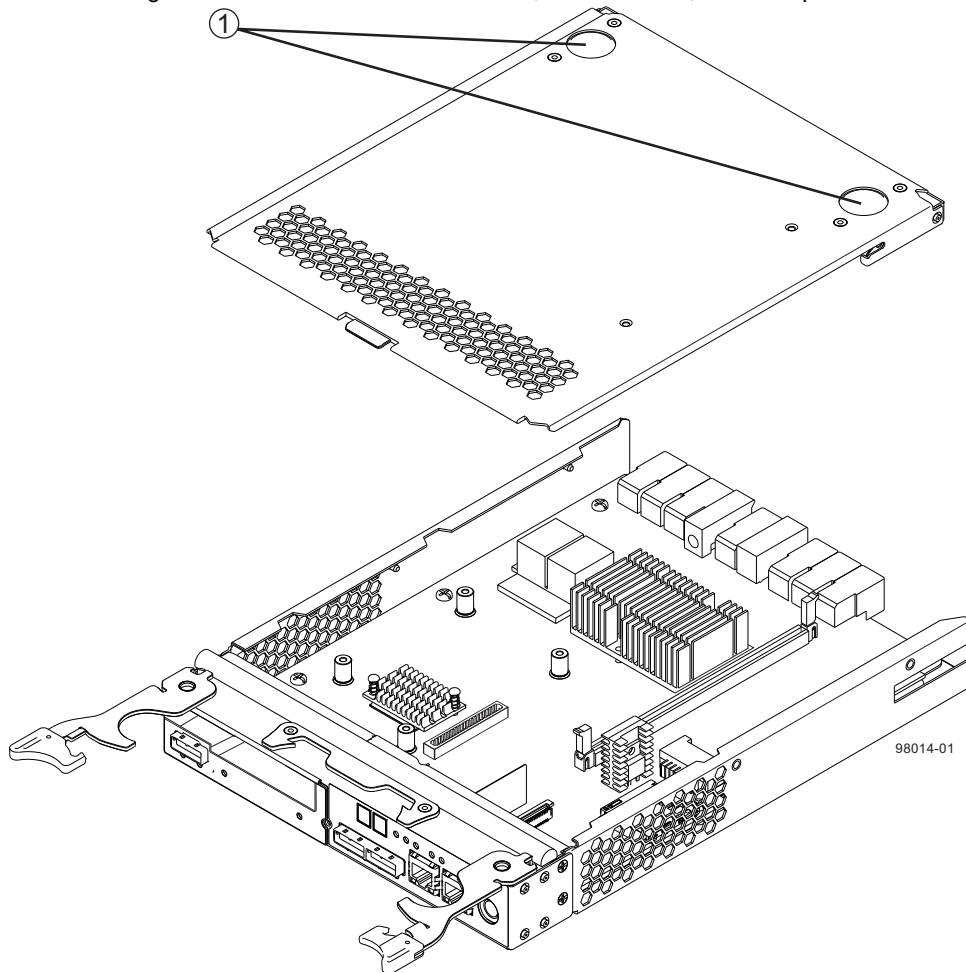


**1** Top Cover Latch Buttons

**5** Locate the failed controller CRU 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 CRU, the blue Controller Service Action Allowed LED is on.

Figure 2  ST2500 M2 Controller Service Action LEDs
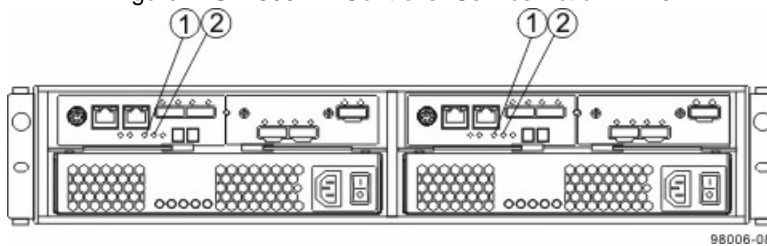


**1** Controller Service Action Allowed LED (Blue)
**2** Controller Service Action Required LED (Amber)

| ATTENTION | **Potential degraded performance** – To prevent degraded performance, do not twist, fold, pinch, or step on the fiber-optic cables. Do not bend the fiber-optic cables tighter than a 5-cm (2-in.) radius. |
| --- | --- |

6  Label each copper cable or fiber-optic cable that is attached to the controller CRU so that you can reconnect the cables correctly after the new controller CRU is reinstalled.

7  Record the information from the seven-segment display on the rear of the array module.

The display flashes a sequence of codes. To find information about the displayed diagnostic codes, refer to the ST2500 M2 array module Installation electronic document topics or to the PDF on the SANtricity® ES Storage Manager Installation DVD.

8  Take the controller offline, if necessary, and wait for the Controller Service Action Allowed LED to come on.

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

If fiber-optic cables are present, you can use the two release levers to partially remove the controller CRU. Opening these release levers makes it easier to press down on the fiber-optic cable release tab. If the storage array is running while you perform this replacement, do not disturb the second controller CRU.

**10** Remove the failed controller CRU.

    **a** Unlock and pull out the release levers to release the controller CRU.

    **b** Using the release levers and your hands, pull the controller CRU out of the array module.

Figure 3  Removing and Replacing a Controller CRU
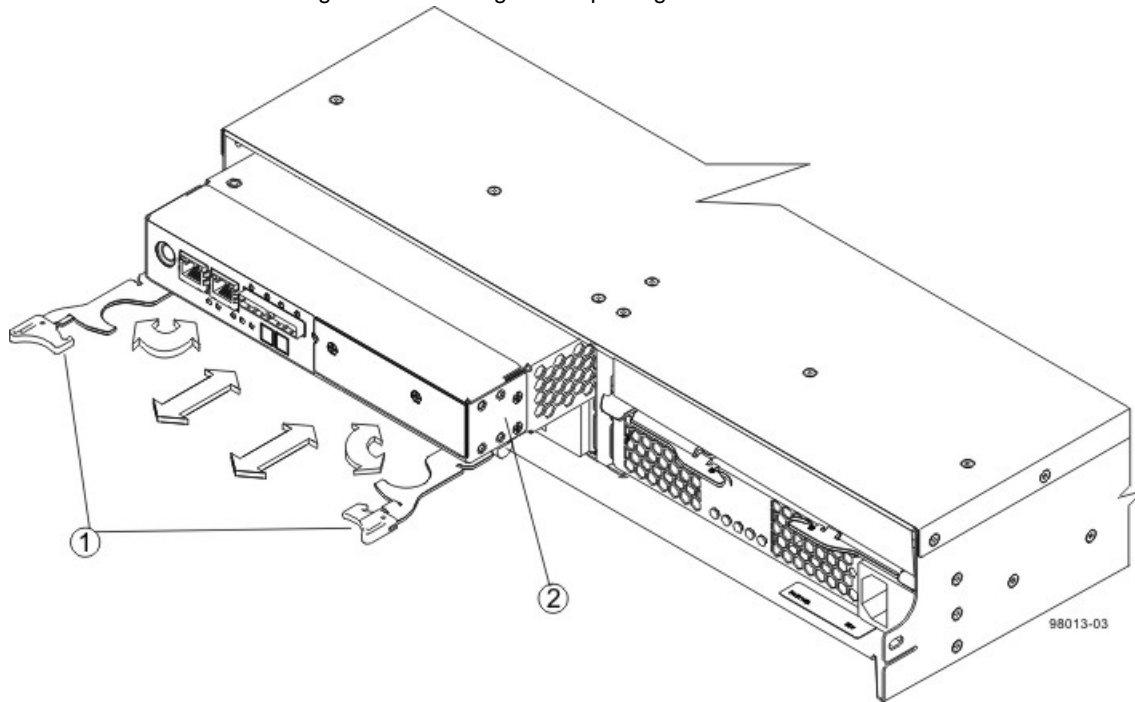


    **1** Release Levers
    **2** Controller CRU

**11** Set the failed controller CRU on a flat, static-free surface near the array module with the release levers up. Position the controller CRU so 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 will not overheat.

**12** 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 4  Controller Air Blocker
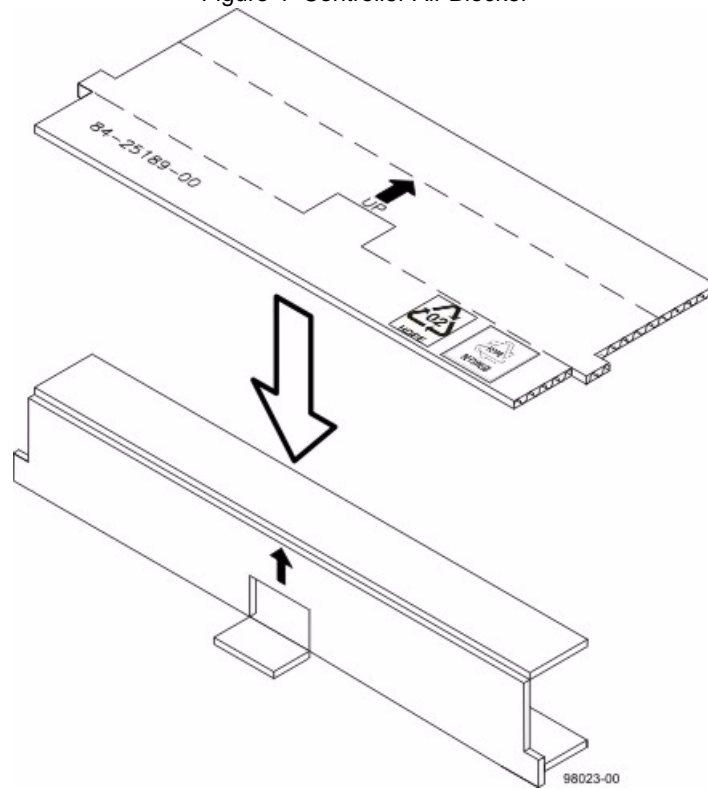


**13** Insert the controller air blocker into the open controller slot to make sure the correct airflow is maintained.

Figure 5  Inserting the Controller Air Blocker into the Open Controller Slot
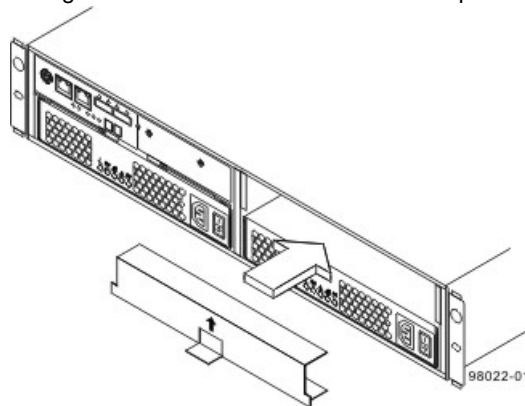
**14** Press down on both of the top cover latch buttons, and slide the top cover to the rear of the controller CRU. Remove the cover.
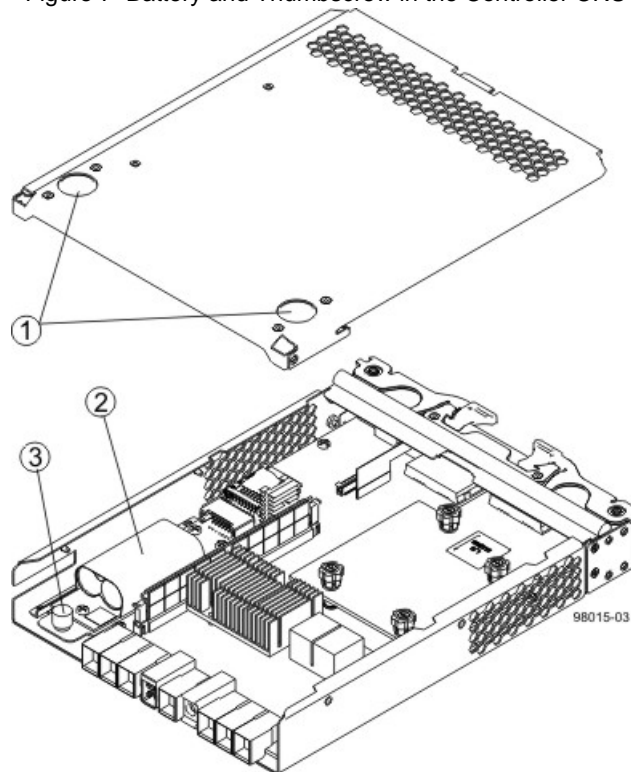
Figure 6  Top Cover Latch Buttons on the ST2500 M2 Controller CRU
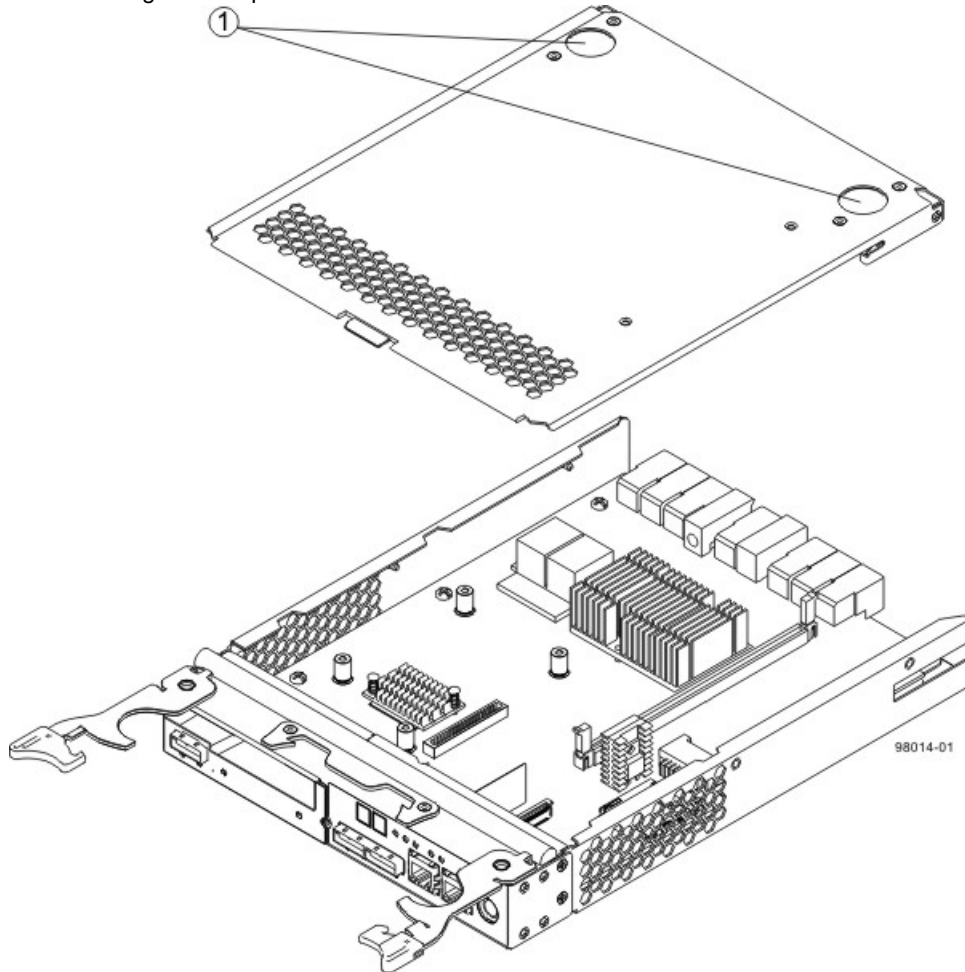


**1** Top Cover Latch Buttons

**15** If the failed controller CRU contains a battery, unscrew the thumbscrew that secures the battery to the controller CRU.

Figure 7  Battery and Thumbscrew in the Controller CRU



**1** Top Cover Latch Buttons
**2** Battery Circuit Board
**3** Thumbscrew

**16** Remove the battery by sliding it towards the rear of the failed controller CRU. You will insert this battery into the new controller CRU.

**17** If Small Form-factor Pluggable (SFP) transceivers are present, record the ports in which they are installed, and remove them.

## Replacing the Host Interface Card in the ST2500 M2 Array Module

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

**2** Remove the screws holding the front bezel to the controller CRU.

**IMPORTANT** The front bezel can suddenly pop loose and cause damage to either the front bezel flex harness or the zero insertion force (ZIF) socket that is attached to the controller card. Make sure that you gently angle the front bezel away from the controller CRU to allow access to the HIC.

Figure 8  ST2500 M2 Controller Cover and Internal Parts
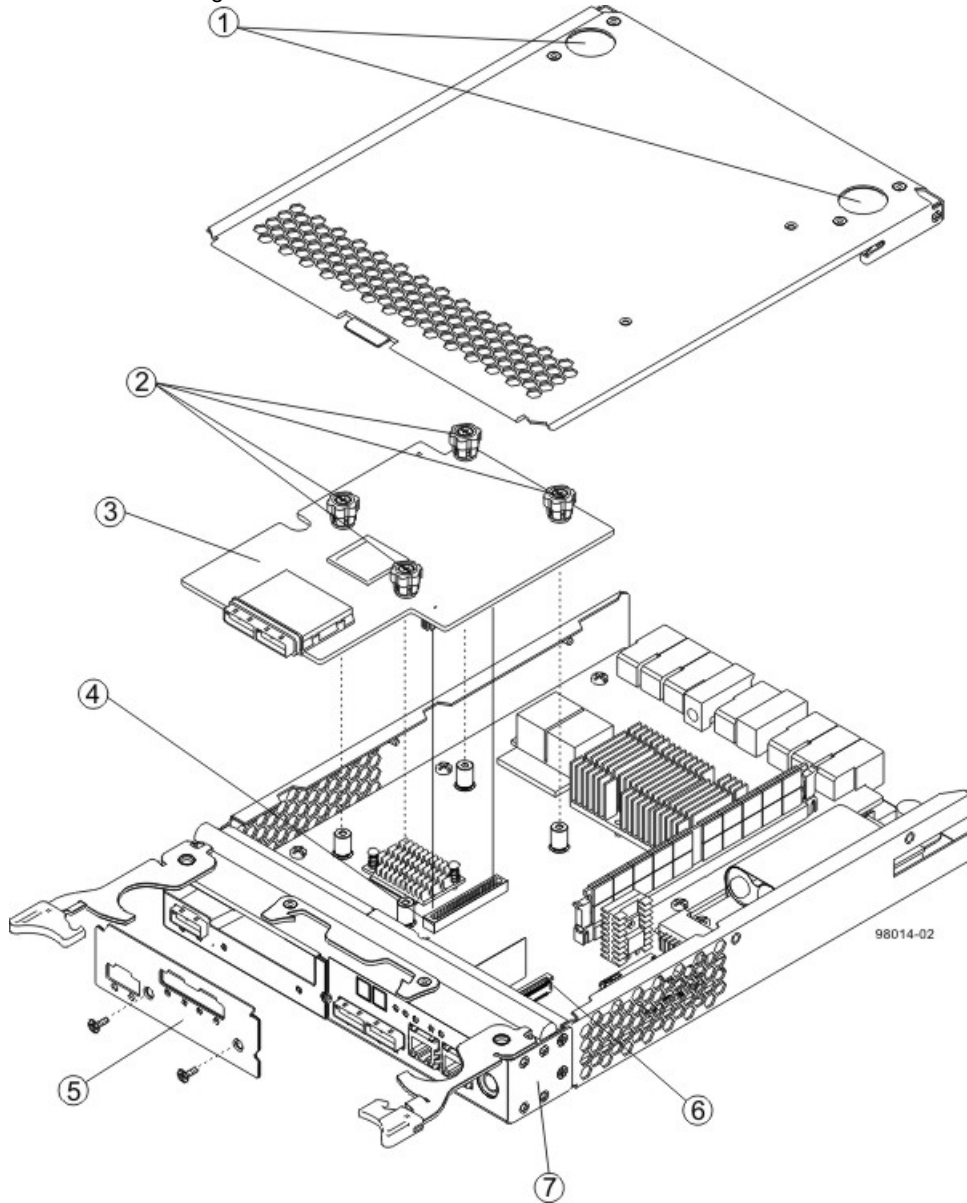


1  Top Cover Latch Buttons
2  HIC Thumbscrews
3  Host Interface Card
4  HIC Interface Connector
5  HIC Subplate
6  Zero Insertion Force (ZIF) Socket
7  Front Bezel

**3** Remove the front bezel from the controller CRU, carefully working it from side-to-side until you can slide it off and gain access to the HIC.

**4** Loosen the HIC thumbscrews that secure the HIC to the controller card.

**5** 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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**IMPORTANT** You must place the HIC in the same location in the new controller CRU, 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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**6** Install the HIC in the new controller CRU by gently pushing down on the HIC to seat the pins correctly into the HIC interface connector.

**7** Install and tighten the four HIC thumbscrews that secure the HIC to the controller card.

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**IMPORTANT** 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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**8** Reattach the front bezel to the controller CRU by reinserting the four screws.

**9** 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.

## Removing the Cache Memory DIMM from and Reinstalling It into the ST2500 M2 Array Module

**1** Locate the cache memory DIMM to be removed from the failed controller CRU.

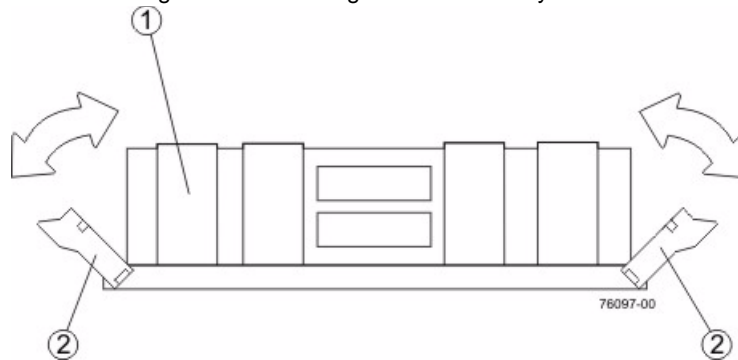Figure 9  Cache Memory DIMM Slot Location – Top View
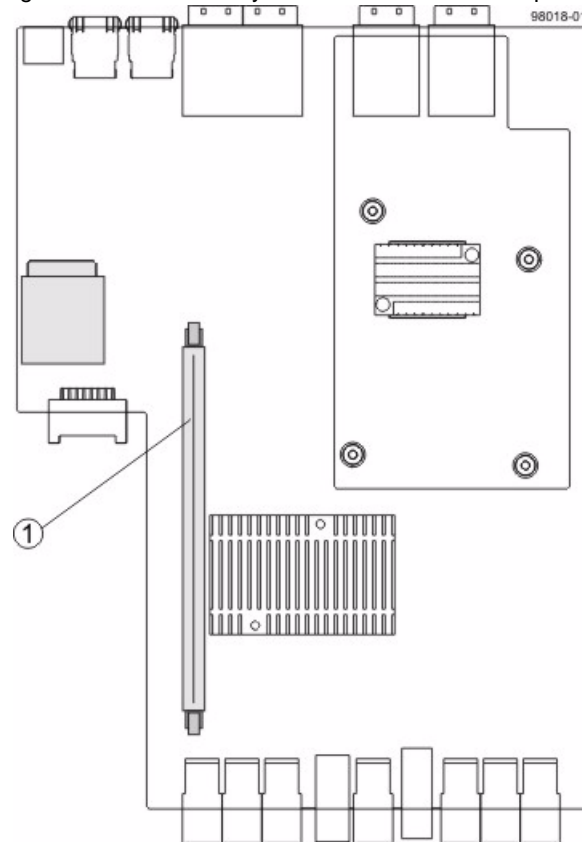


**1** Cache Memory DIMM Slot

**2** Remove the cache memory DIMM.

    **a** Pull back on each ejector handle to disengage the cache memory DIMM pins from the slot on the controller.

    **b** Lift the cache memory DIMM out of the slot.

Figure 10  Removing a Cache Memory DIMM



    **1** Cache Memory DIMM
    **2** Ejector Handles

**3** Install the cache memory DIMM device in the new controller CRU.

    **a** Align the cache memory DIMM in the slot.

    **b** Gently push down on the cache memory DIMM to seat the pins into the slot.

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**NOTE**    The ejector handles will rise up as the cache memory DIMM is inserted into the slot. When these handles are in the vertical position, the cache memory DIMM is fully engaged and is locked in place.

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## Removing the Cache Memory Offload Backup SD Card from and Installing It into the ST2500 M2 Array Module

If your configuration does not contain a cache memory offload backup SD card, skip this procedure.

**1** Locate the cache memory offload backup SD card to be removed from the failed controller CRU.

Figure 11  Cache Memory Offload Backup SD Card Location – Top View
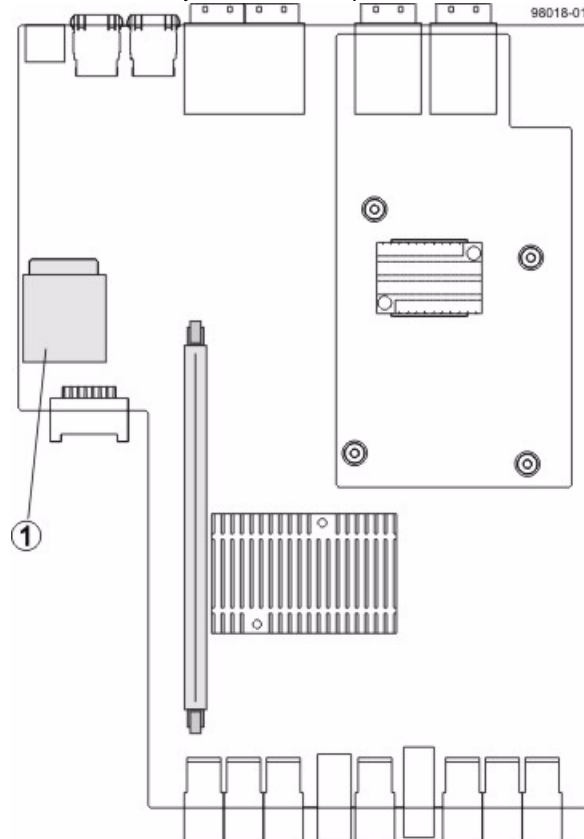


1  Cache Memory Offload Backup SD Card

**2** Push the cache memory offload backup SD card into its slot until you hear a click.

**3** Release the cache memory offload backup SD card so that it partially ejects from the slot, and remove the card.

**4** Install the cache memory offload backup SD card into the empty slot location on the new controller, making sure that the label is facing up, and press the cache memory offload backup SD card into the slot until you hear a click.

## Removing a Controller Battery from and Reinstalling It into the ST2500 M2 Array Module

If a configuration does not have a controller battery, or if you are moving the existing battery into a new controller CRU, skip this procedure.

**1** Unscrew the thumbscrew that secures the battery to the controller CRU.

Figure 12  Battery and Thumbscrew in the Controller
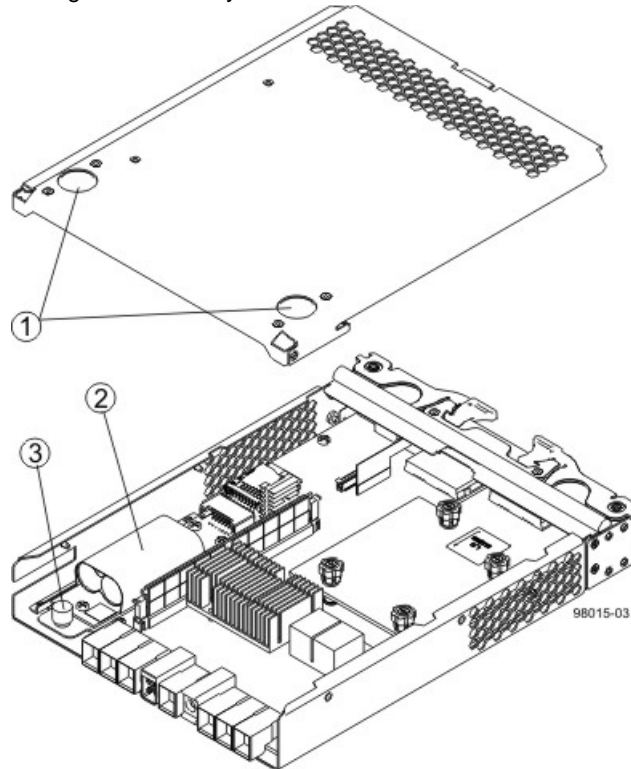


**1** Top Cover Latch Buttons
**2** Battery Circuit Board
**3** Thumbscrew

**2** Remove the battery by sliding it towards the rear of the controller CRU.

**3** Insert the battery into the new controller by sliding it towards the front of the controller CRU.

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**NOTE**   To ensure that the battery is seated correctly, you might need to back it out of the connector to make sure that it is correctly aligned with the thumbscrew.

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**4** Tighten the thumbscrew that secures the battery to the controller CRU.

# Reinstalling a Controller CRU in the ST2500 M2 Array Module

1 Reinstall the top cover on the controller CRU by sliding it forward until the top cover latch buttons click.

2 If Small Form-factor Pluggable (SFP) transceivers were present, reinstall them.

3 Remove the controller air blocker.

4 Slide the controller CRU all the way into the array module. Rotate the release levers towards the center of the controller CRU to lock that component into place.

5 Reconnect all of the cables that were disconnected when you removed the controller CRU.

6 Look at the LEDs on the controller CRU to make sure that the controller is booting correctly.

The LEDs come on and go off intermittently for approximately 60 seconds (possibly longer). After this time, you are able to discover the controller CRU by using the storage management software.

7 Look at all of the array module'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 9.

- **Any of the array module's Service Action Required LEDs is on** – Check that the controller CRU has been installed correctly. Reinstall the controller CRU if necessary. Go to step 8.

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**NOTE** If your storage array does not have an Optimal status, click the **Recovery Guru** toolbar button in the Array Management Window to determine if any other actions are required.

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8 Did this action correct the problem?

- **Yes** – Go to step 9.

- **No** – If the problem is not resolved, contact your Customer and Technical Support representative.

9 Complete any remaining Recovery Guru procedures, if needed.

10 Using the LEDs and the storage management software, check the status of all of the modules in the storage array.

**11** 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 12.

**12** Remove the antistatic protection.

**13** Create, save, and print a new storage array profile.

Please
Recycle

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