



Replacing a Controller CRU in the ST2500 M2 Array Module

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Revision History

Version and Date	Description of Changes
51347-00, Rev. A May 2011	Initial release of the document.

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Replacing a Controller CRU in the ST2500 M2 Array Module

Use this procedure to add a controller CRU to the ST2500 M2 array module or to replace one that has failed. 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 in the array module, gather antistatic protection and a new controller CRU.

When you install a new controller CRU, you must remove the battery from the failed controller CRU, and install it in the new controller CRU. 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.
- Cables – Both SAS and iSCSI use copper cables, and Fibre Channel supports copper cables and fiber-optic cables.

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 – 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 array module, you can use SANtricity® ES 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.

Removing a Controller CRU from the ST2500 M2 Array Module

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

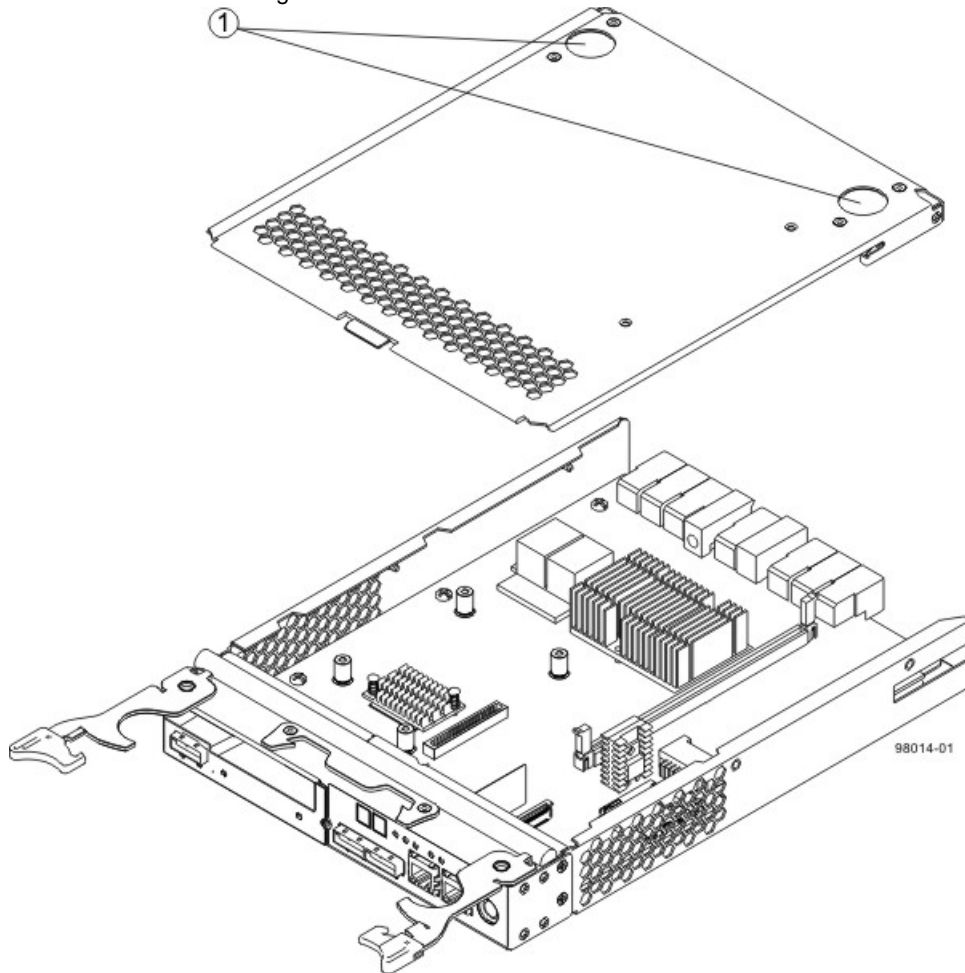
ATTENTION Possible extended outage – You must replace the controller with the power turned on to ensure auto-code synchronization of the native controller firmware to the new controller and to prevent the possibility of an extended outage.

- 1** 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 Controller Cover and Internal Parts

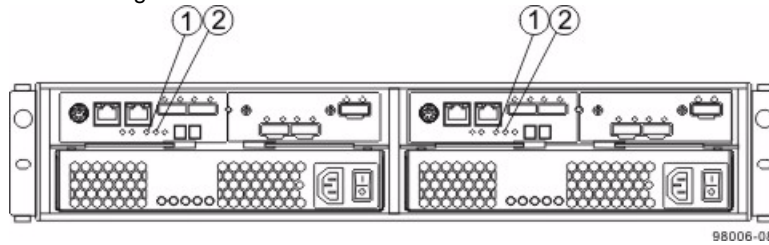


1 Top Cover Latch Buttons

- 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 each cable correctly after the new controller CRU is installed.

- 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 located on the SANtricity® ES Storage Manager Installation DVD.

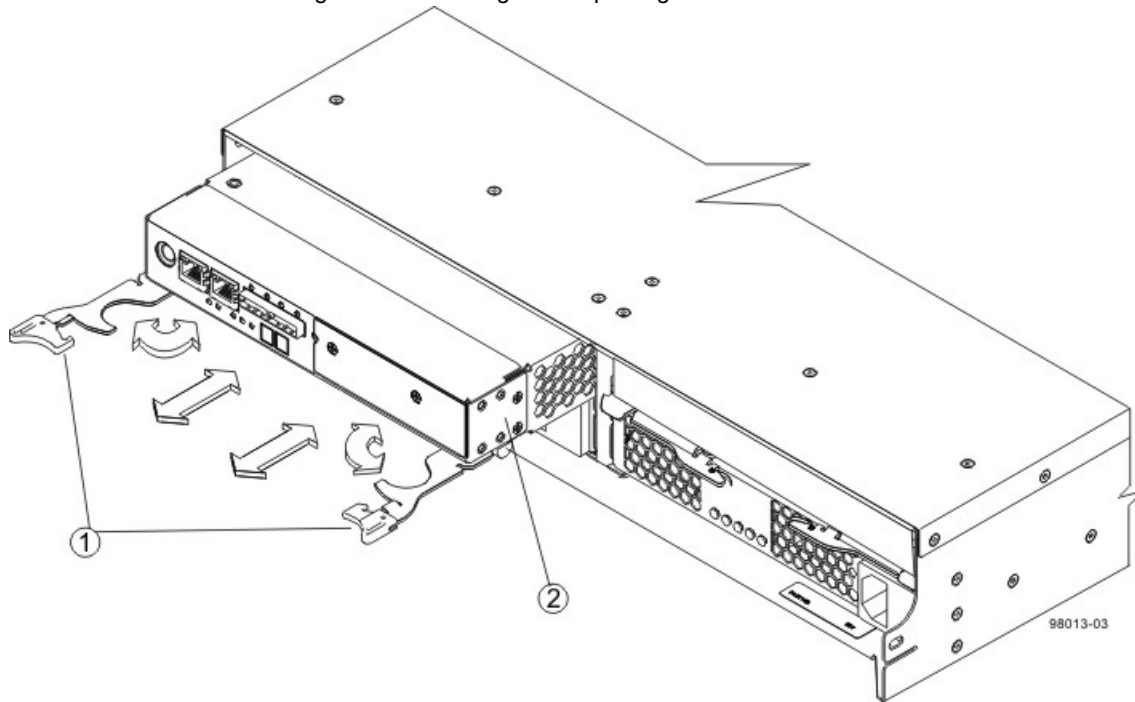
- 8 Take the controller offline, and, if necessary, wait for the Controller Service Action Allowed LED to come on.

- 9 Disconnect all of the interface 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 the fiber-optic cable release tab. If the storage array is running while you perform the 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



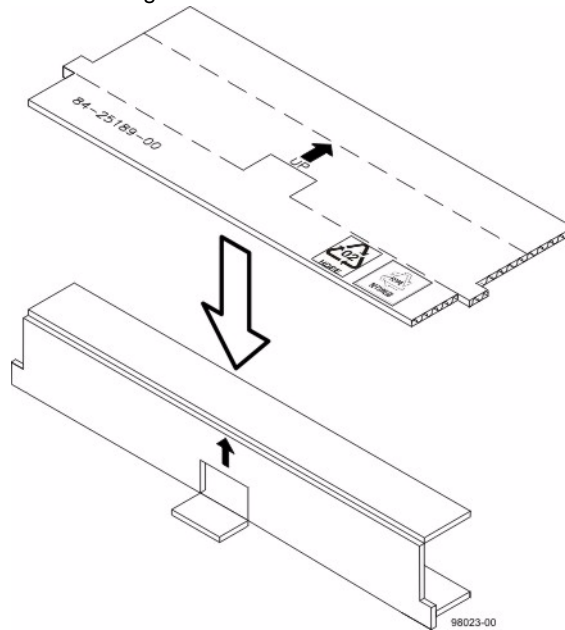
- 1 Release Levers
- 2 Controller CRU

- 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 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 blockers fills the controller slot so that the equipment will not overheat.

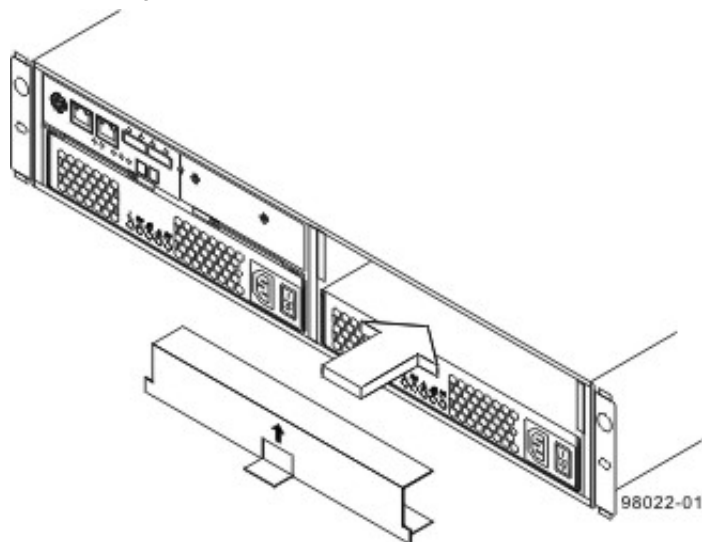
- 12 Prepare the controller air blocker by removing it from its packaging and folding it inward at right angles so it is ready to insert into the open controller slot.

Figure 4 Controller Air Blocker



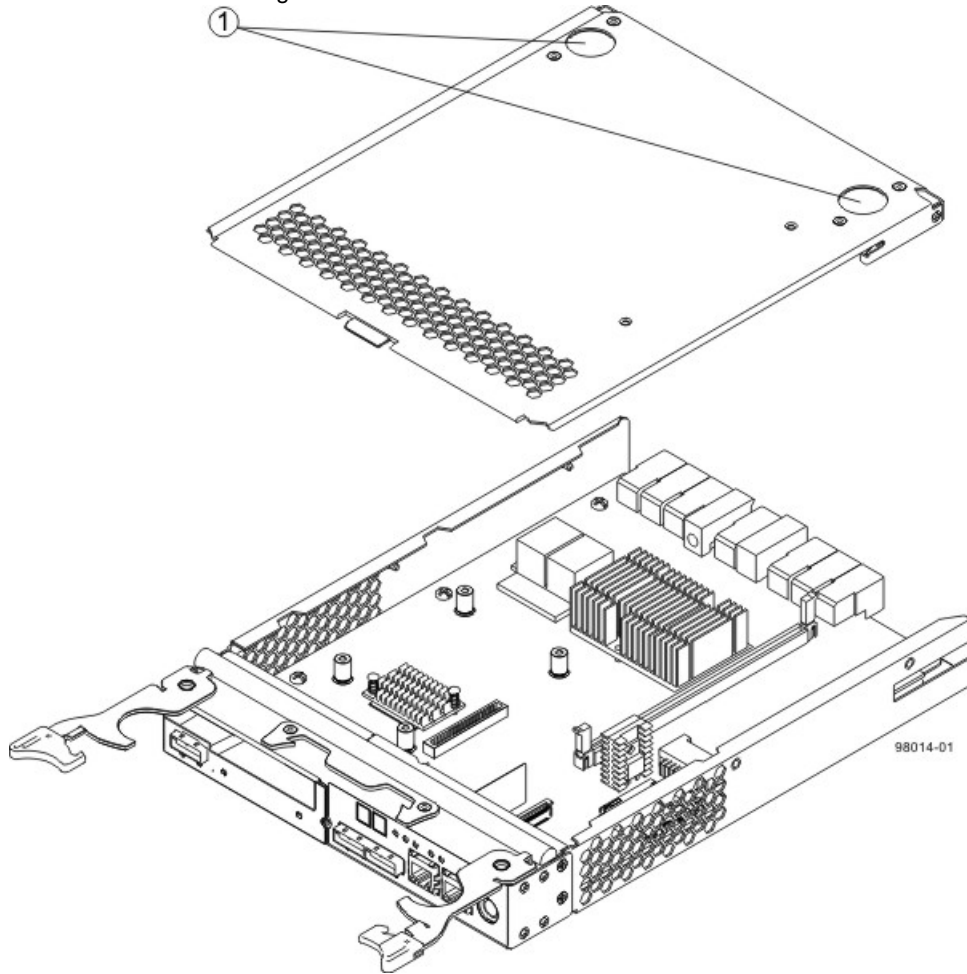
- 13 Insert the controller air blocker into the open controller slot to make sure the correct airflow is maintained.

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.

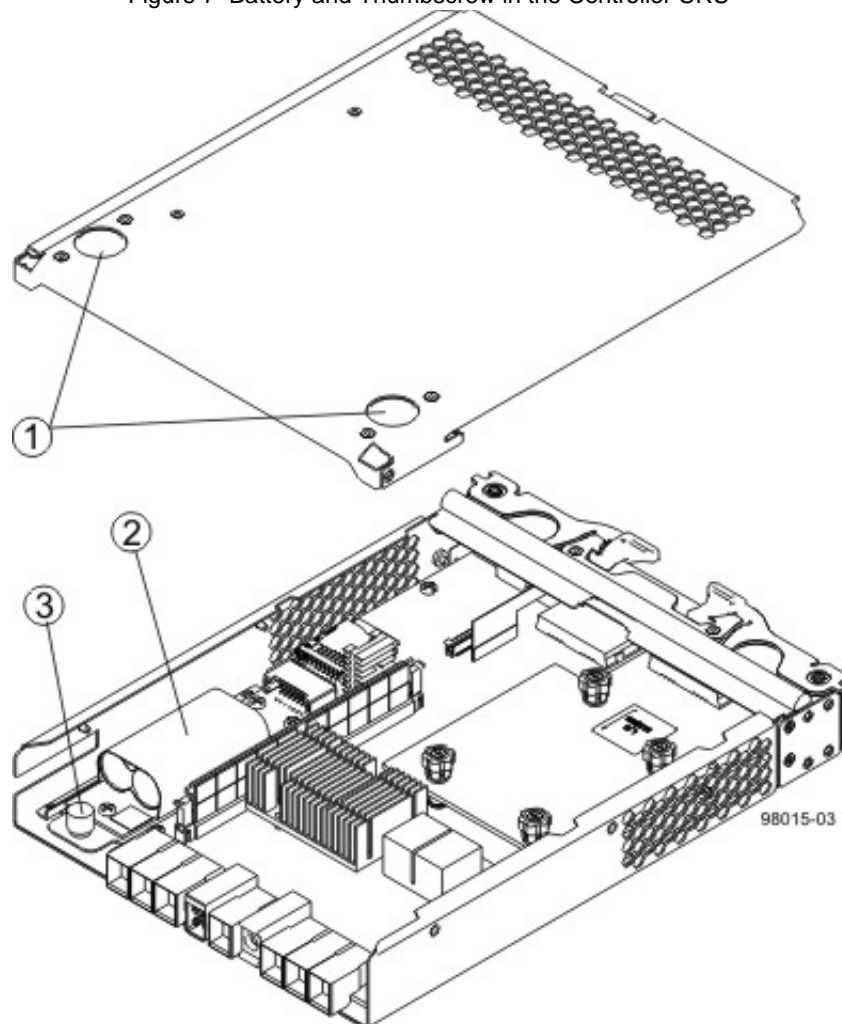
Figure 6 Controller Cover and Internal Parts



- 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.

Installing a Controller CRU in the ST2500 M2 Array Module

- 1 If SFP transceivers were present, reinstall them in the correct ports in the new controller.
- 2 Did the failed controller CRU contain a battery?
 - **Yes** – Remove the top cover by sliding it off the rear of the new controller CRU, and go to step 3.
 - **No** – Go to step 6.

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.

- 3 Insert the battery circuit board that you removed from the failed controller CRU by sliding it towards the front of the new controller CRU.
- 4 Tighten the thumbscrew to secure the battery circuit board in the new controller CRU card.
- 5 Reinstall the top cover on the new controller CRU by sliding it forward until the top latch covers click.
- 6 Remove the controller air blocker.
- 7 Slide the new controller CRU all the way into the array module. Rotate the release levers towards the center of the controller CRU to lock it into place.
- 8 Reconnect all of the cables that were disconnected earlier.
- 9 Look at the LEDs on the new controller CRU to make sure that the new 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 new controller by using the storage management software.

- 10** Look at the Controller Service Action Required LEDs, and 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 [12](#).
 - **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 [11](#).

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.

- 11** Did this action correct the problem?
- **Yes** – Go to step [12](#).
 - **No** – If the problem is not resolved, contact your Customer and Technical Support representative.
- 12** Complete any remaining Recovery Guru procedures, if needed.
- 13** Using the LEDs and the storage management software, check the status of all of the modules in the storage array.
- 14** 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 [15](#).
- 15** Remove the antistatic protection.
- 16** Create, save, and print a new storage array profile.

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