Upgrading Memory in the 6580/6780 Controller CRU

May 2011

51360-00, Rev. A

Revision History

Version and Date	Description of Changes
51360-00, Rev. A, May 2011	Initial release of the document.

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Upgrading Memory in the 6580/6780 Controller CRU

The 6580/6780 controller CRU has both cache memory DIMMs and cache backup memory devices. Use this procedure to add a cache memory DIMM, if the space is available, or upgrade an existing cache memory DIMM and a cache backup memory device in the 6580/6780 controller CRU.

> ⚠️ **ATTENTION Data loss or corruption might result if the steps in this upgrade procedure are not followed correctly** – You must upgrade the cache memory DIMMs and the cache backup memory devices in both controller CRUs in the 6580/6780 controller module. Otherwise, you will receive event messages indicating that the controllers have mismatched and incompatible configurations.

This procedure describes how to perform the following tasks.

1. Removing the Controller CRUs from the 6580/6780 Controller Module on page 3.
2. Upgrading a Cache Memory DIMM in the 6580/6780 Controller CRU on page 5.
3. Upgrading a Cache Backup Memory Device in the 6580/6780 Controller CRU on page 7.
4. Reinstalling the Controller CRU in the 6580/6780 Controller Module on page 8.

Before you start this procedure, gather antistatic protection, and cache memory DIMMs, cache backup memory devices, or both.

> 📎 **NOTE** Do not perform this update procedure with the power turned on. This procedure requires that you first set controller A to offline to ensure all the data, which is currently in cache on both controller CRUs, is successfully written to disk prior to the upgrade. Secondly, turn off the power to both controller CRUs as described in the steps for Removing the Controller CRUs from the 6580/6780 Controller Module.

Removing the Controller CRUs from the 6580/6780 Controller Module

> 📎 **NOTE** Before you remove the controller CRUs, make sure you set controller A to Offline, as described in the following steps, to ensure that all the data currently in controller A's cache is successfully written to disk prior to the upgrade. This step also ensures that the data currently in controller B's cache is successfully written to disk before you turn off the power to both controller CRUs.

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

1. Use the storage management software to create, save, and print a currentstorage array profile.
2. Use the Locate function in the storage management software to identify the controller CRUs to upgrade.
3. Put on antistatic protection.
4. Label each host interface cable, drive interface cable, and Ethernet cable that is attached to each controller CRU so that you can reconnect the cables correctly after the controller CRUs are reinstalled.

> ⚠️ **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.

5. Stop all host I/O operations.

6. Take controller A offline, and wait for the Controller Service Action Allowed LED to come on.

   Use the following command line interface (CLI) command to take controller A offline.

   ```
   set controller [a] availability=offline;
   ```

   This command ensures that all the data currently in cache on both controller CRUs is successfully written to disk prior to the upgrade and ensures that no data is stored on the cache backup memory devices.

   > ⚠️ **ATTENTION Possible data loss or corruption** — Wait for the blue Controller Service Action Allowed LED on controller A to come on before you turn off the power to either controller; otherwise, possible data loss or corruption might occur.

7. Turn off the Power switch on both of the controller CRUs.

8. Wait until all LED and seven-segment display activity on the rear of the controller module has stopped, and then unplug the power cords from both controller CRUs, and set the power cords aside.

9. Disconnect all of the following cables from both controller CRUs.
   — Host interface cables
   — Drive interface cables
   — Ethernet cables

10. Remove both controller CRUs from the controller module (Figure 1).
    a. Unlock and rotate the release handles out to release the controller CRU.
    b. Using the release handles and your hands, pull the controller CRU out of the controller module.
    c. Set the controller CRU on a flat, static-free surface with the thumbscrews that secure the top cover to the CRU facing up.
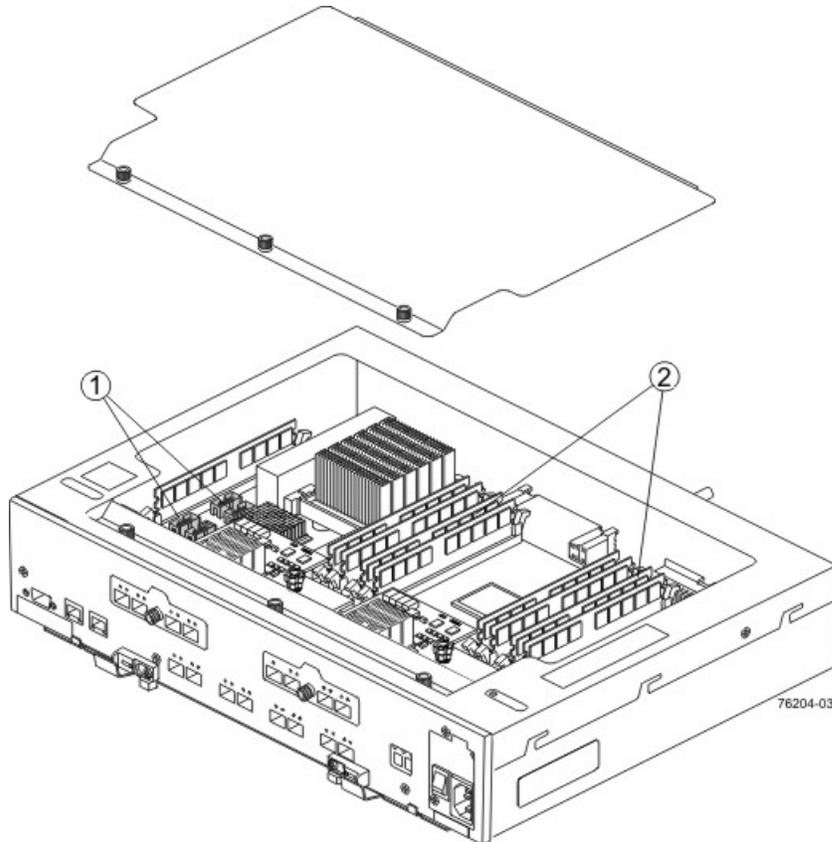
Figure 1 Removing a Controller CRU
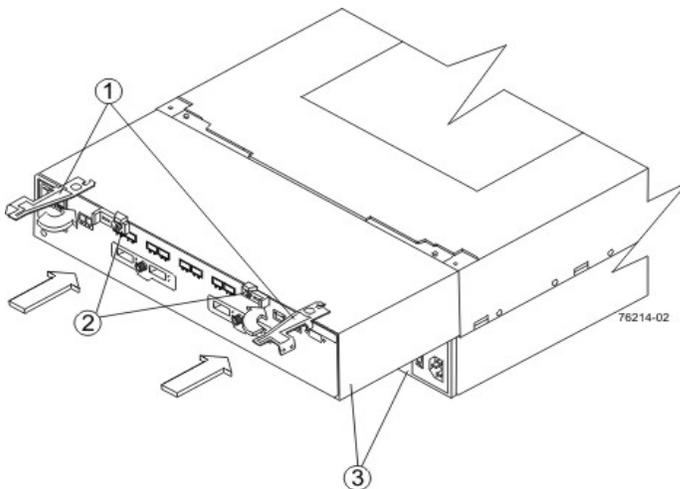
1. Release Handles
2. Locking Mechanisms
3. Controller CRU

11. Remove the cover on both controller CRUs.

    a. Loosen the thumbscrews that secure the cover to the controller CRU.

    b. Lift the cover off of the controller CRU (Figure 2).

Figure 2 Controller Top Cover, Internal Parts, and Faceplate

1. Cache Backup Memory Device Slot Locations

2. Cache Memory DIMM Slot Locations

12. Go to Upgrading a Cache Memory DIMM in the 6580/6780 Controller CRU.

## Upgrading a Cache Memory DIMM in the 6580/6780 Controller CRU

If you are upgrading the cache memory DIMM in one controller CRU, you must increase the capacity of the cache memory DIMM in the other controller CRU in the 6580/6780 controller module. You must also increase the capacity of the cache backup memory devices in both controller CRUs.

Make sure that the size of the cache memory DIMMs that you are upgrading in both controller CRUs are of equal capacity. The following table lists the cache memory DIMM configurations.

Total Cache Memory per Controller (GB)	Number of Cache Memory DIMMs per Controller	Capacity of Each Cache Memory DIMM (GB)	Cache DIMM Slots Populated
4	4	1	2, 4, 5, 7
8	8	1	All
16	8	2	All
32	8	4	All

1. Locate the cache memory DIMM that you want to upgrade, or identify the location to add the new cache memory DIMM (Figure 3).

Figure 3   Cache Memory DIMM Locations in the 6580/6780 Controller Module
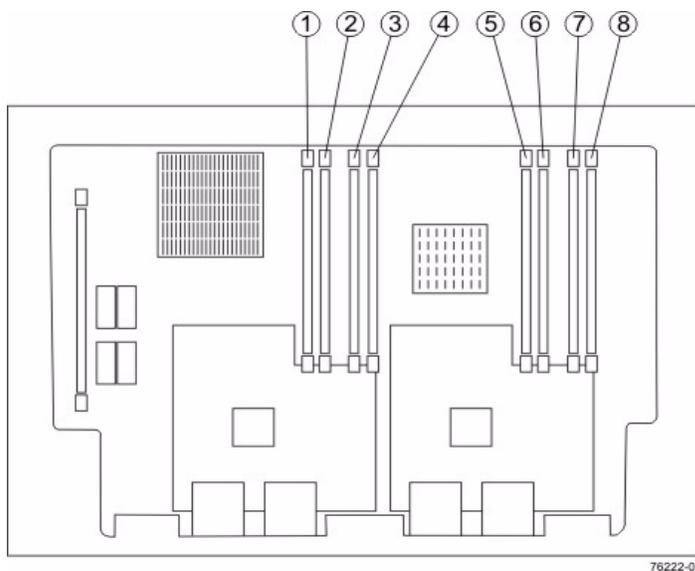
1. Cache Memory DIMM Slot 1
2. Cache Memory DIMM Slot 2
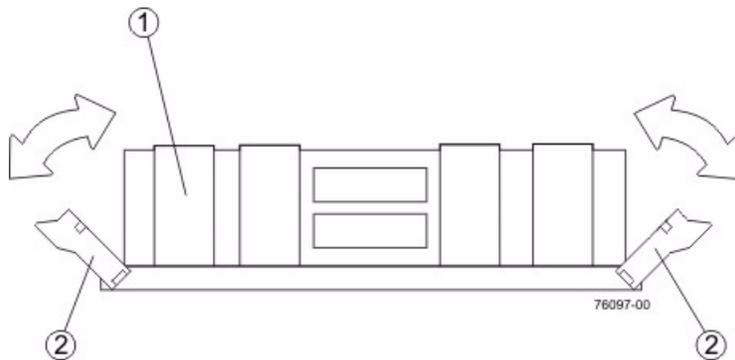3. Cache Memory DIMM Slot 3
4. Cache Memory DIMM Slot 4
5. Cache Memory DIMM Slot 5
6. Cache Memory DIMM Slot 6
7. Cache Memory DIMM Slot 7
8. Cache Memory DIMM Slot 8

2. Are you upgrading an existing cache memory DIMM or adding an additional cache memory DIMM?

   — **You are upgrading a cache memory DIMM** – Go to step 3.

   — **You are adding an additional cache memory DIMM** – Go to step 4.

3. Remove the cache memory DIMM from the slot on the controller card (Figure 4).

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

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

    c. Place the cache memory DIMM that you removed on an a flat, static-free surface.

Figure 4 Removing a Cache Memory DIMM

1. Cache Memory DIMM

2. Ejector Handles

4. Install the new cache memory DIMM.

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

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

    The ejector handles 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.

5. Repeat this procedure for the other controller CRU.

6. Go to Upgrading a Cache Backup Memory Device in the 6580/6780 Controller CRU.

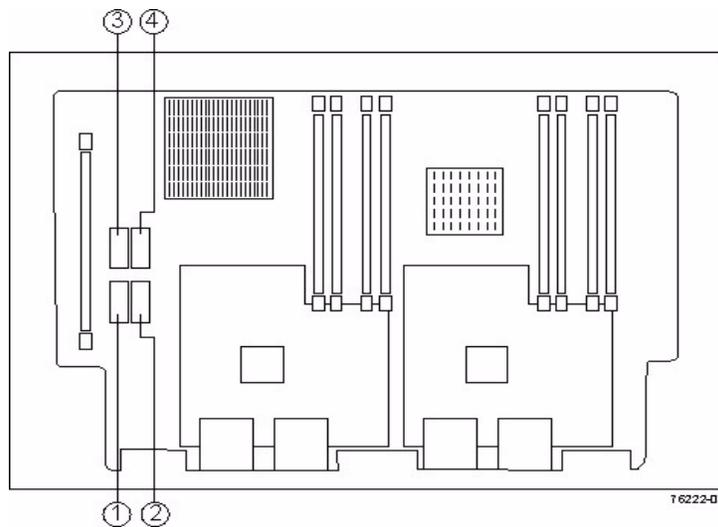## Upgrading a Cache Backup Memory Device in the 6580/6780 Controller CRU

The cache backup memory device provides a backup for the cache memory DIMM. The size of the cache backup memory device must equal the capacity of the cache memory DIMM.

You must increase the size of the cache backup memory device in both controller CRUs. The following table lists the cache backup memory device configurations.

Total Cache Backup Memory Device per Controller (GB)	Number of Cache Backup Memory Devices per Controller	Capacity of Each Cache Backup Memory Device (GB)	Cache Backup Memory Device Slots Populated
4	1	4	USB 3
8	2	4	USB 3, USB 4
16	4	4	All
32	4	8	All

1. Locate the cache backup memory device that you want to upgrade, or identify the location to add the new cache backup memory device.

Figure 5 Cache Backup Memory Device Locations in the 6580/6780 Controller Module

1. Cache Backup Memory Device Slot 1
2. Cache Backup Memory Device Slot 2
3. Cache Backup Memory Device Slot 3
4. Cache Backup Memory Device Slot 4

2. Are you upgrading an existing cache backup memory device or installing an additional cache backup memory device?
   — **You are upgrading a cache backup memory device** – Go to step 3.
   — **You are installing an additional cache backup memory device** – Go to step 4.

3. Remove the cache backup memory device from the connector on the controller card.
   a. Gently pull back on the latch that secures one edge of the cache backup memory device to the connector on the controller card.
   b. Lift the cache backup memory device from the connector.

4. Install the new cache backup memory device.
   a. Carefully align the cache backup memory device with the connector on the controller card so that the pins will not bend when you install the cache backup memory device.
   b. Install the cache backup memory device into an empty socket location by gently pressing down on the cache backup memory device until it snaps into place.

5. Repeat this procedure for the other controller CRU.

6. Go to Reinstalling the Controller CRU in the 6580/6780 Controller Module.

Reinstalling the Controller CRU in the 6580/6780 Controller Module

1. Reinstall the top covers on both controller CRUs, and tighten all of the thumbscrews that secure the top cover.

2. Slide both controller CRUs all of the way into the controller module. Rotate the release handles in to lock each controller CRU into place.

3. Reconnect all of the following cables to the appropriate ports on both controller CRUs.
   — Ethernet cables
   — Host interface cables
   — Drive interface cables

4. Plug in the power cords to both of the controller CRUs.

5. Turn on the Power switches on both of the controller CRUs.

   Controller B comes up in Write-Through mode. Controller A comes up in an Offline state.

6. Bring controller A online by using the following CLI command.

   ```
   set controller [a] availability=online;
   ```

7. Look at the LEDs on the controller CRU to make sure that the controllers are rebooting correctly (Figure 6).

Figure 6 Controller Service Action LEDs
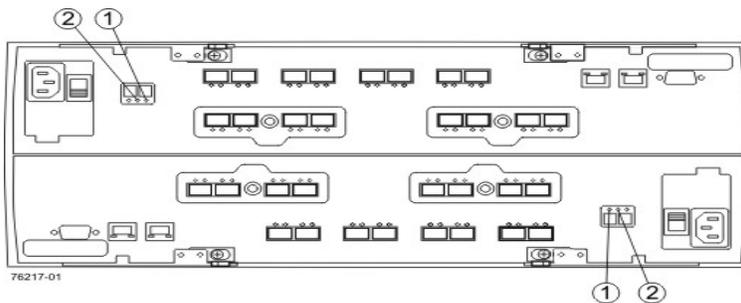
   1. Controller Service Action Allowed LED (Blue)
   2. Controller Service Action Required LED (Amber)

The LEDs come on and go off intermittently for approximately 60 seconds (possibly longer).

8. 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 11.
   — **Any of the Service Action Required LEDs are on, or the Array Management Window indicates a Needs Attention status** – Go to step 9.

9. Perform one of the following actions (based on the Recovery Guru display):
   — **The Recovery Guru displays the following message:**
     `REC_CACHE_BACKUP_DEVICE_INSUFFICIENT_CAPACITY` – The controllers might require an additional power cycle to initialize the new cache backup memory devices. Turn off the Power switches on both controller CRUs. Wait until all LED and seven-segment display activity has stopped, and then turn on the Power switches to both controller CRUs. Go to step 10.
   — **The Recovery Guru does not display an insufficient capacity message** – Check that the controller CRU has been installed correctly. Reinstall the controller CRU if necessary. Go to step 10.

10. Did this action correct the problem?
    — **Yes** – Go to step 11.
    — **No** – If the problem is not resolved, contact your Sun Customer Care Center representative.

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

12. 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 Sun Customer Care Center representative.
    — **No** – Go to step 13.

13. Remove the antistatic protection.

14. Create, save, and print a new storage array profile.

Please
Recycle

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