Compaq StorageWorks™

INSTALLING AN HSG80, HSJ80, OR HSZ80 CACHE MODULE

Open Card Completely Before Beginning Installation Procedures

European Union Notice

Products with the CE Marking comply with both the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23 EEC) issued by the Commission of the European Community. Compliance with these directives implies conformity to the following European Norms (in brackets are the equivalent international standards):

- EN 55022 (CISPR 22) *Electromagnetic Interference*
- EN 50082-1 (IEC 801-2, IEC 801-3, IEC 801-4) *Electromagnetic Immunity*
- EN 60950 (IEC 950) *Product Safety*

NOTICE

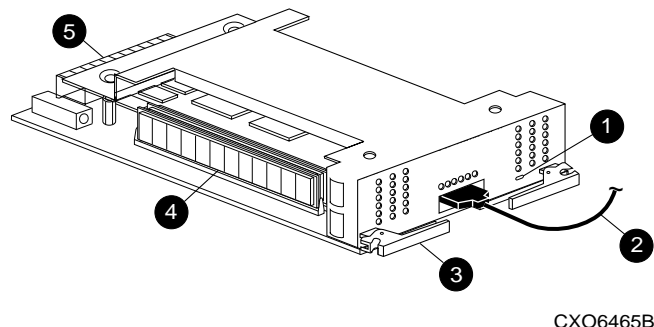INSTALLING AN HSG80, HSJ80, OR HSZ80 CACHE MODULE

About This Card

This card contains instructions to replace a cache module in an HSG80 ACS Version 8.*x* Array Controller, an HSJ80 ACS Version 8.5J Array Controller, or an HSZ80 ACS Version 8.*x* Array Controller.

> **NOTE:** For instructions on upgrading a single-controller configuration to a dual-redundant controller configuration, see the appropriate *DIGITAL StorageWorks*™ *HSG80 Array Controller ACS Version 8.2 User Guide*, *Compaq*™ *StorageWorks HSG80 Array Controller Version 8.x Maintenance and Service Guide*, *Compaq StorageWorks HSJ80 Array Controller ACS V8.5J Maintenance and Service Guide*, or *Compaq StorageWorks HSZ80 Array Controller ACS Version 8.3 Maintenance and Service Guide*.

General Information

Figure 1 and Figure 2 provide general information about the cache module. For some *Compaq StorageWorks* enclosure installations, the EMU and PVA shown in Figure 2 do not exist.

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❶ Cache memory power LED
❷ External cache battery (ECB) cable
❸ Retaining lever
❹ Dual inline memory module (DIMM)
❺ Backplane connector

Figure 1. Cache module

❶ EMU (BA370 only)
❷ PVA (BA370 only)
❸ Controller A
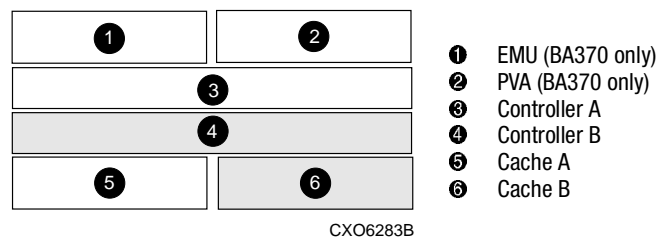❹ Controller B
❺ Cache A
❻ Cache B

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Figure 2. Cache module locations

> **NOTE:** Regardless of the ACS version, in dual-redundant configurations, both cache modules *must* contain the same memory configuration.

Single Controller Configurations

Use this procedure for the following configurations:

- **HSG80 ACS Version 8.2 Single Controller**
- **HSG80 ACS Version 8.3 Single Controller**
- **HSG80 ACS Version 8.4 Single Controller**
- **HSG80 ACS Version 8.5 Single Controller**
- **HSJ80 ACS Version 8.5J Single Controller**
- **HSZ80 ACS Version 8.3 Single Controller**

Use the steps in "Removing a Cache Module" and "Installing a Cache Module" to replace a cache module. Replacing a cache module also involves transferring the cache memory from the failed cache module to the replacement cache module.

⚠ **CAUTION:** Electrostatic discharge (ESD) can easily damage a cache module or a DIMM. Wear a snug-fitting, grounded ESD wrist strap.
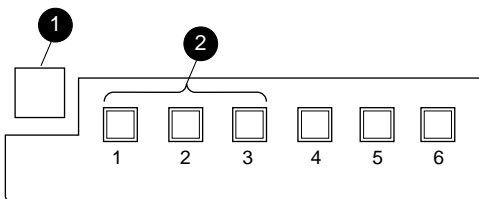
Removing a Cache Module

Use the following steps to remove a cache module:

1. From the host console, dismount the logical units in the subsystem. If using a Microsoft Windows NT platform, shut down the server.

2. If the controller is operating, connect a PC or terminal to the controller maintenance port for the failed cache module.

   If the controller is not operating, go to step 5.

3. Run the fault management utility (FMU) to obtain the last failure codes, if desired.

4. Shut down "this controller" with the following command:

   SHUTDOWN THIS_CONTROLLER

   When the controller shuts down, the reset button ❶ and the first LEDs ❷ turn ON (see Figure 3). It might take several minutes for this indication to appear, depending on the amount of data that needs to be flushed from the cache module.

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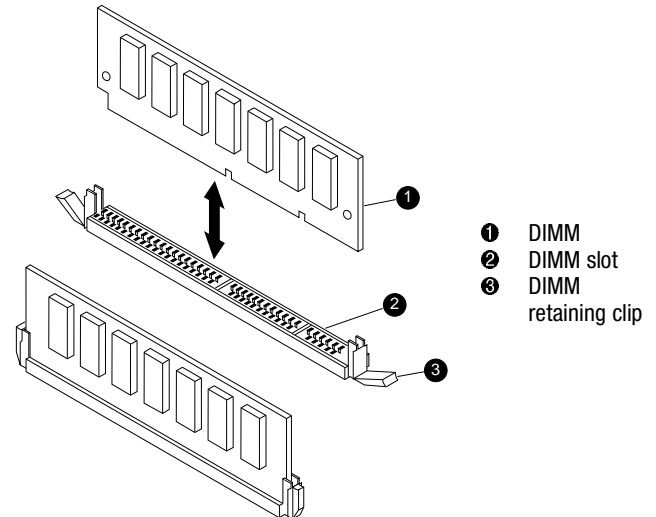Figure 3. Controller reset button and first three LEDs

IMPORTANT: For Model 2200 enclosures, omit step 5 and step 6. The ECB does not contain switches or use ECB Y-cables.

⚠ **CAUTION:** The ECB must be disabled—the status LED is OFF—before disconnecting the ECB Y-cable from the cache module. Failure to disable the ECB might damage the cache module.

5. Disable the ECB by pressing the battery disable switch until the status LED stops FLASHING—approximately five seconds.

6. Disconnect the ECB Y-cable from the cache module.

7. Disengage both retaining levers, remove the cache module, and place the cache module on an antistatic bag or a grounded antistatic mat.

   NOTE: Remove all DIMMs for installation in the replacement cache module.

8. Note the location for each DIMM in the old cache module and use these locations when installing the DIMMs in the replacement cache module.

9. Press down on the DIMM retaining clips (see Figure 4, ❸) at both ends of the DIMM ❶ being removed.

❶ DIMM
❷ DIMM slot
❸ DIMM retaining clip

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Figure 4. Inserting a DIMM into its slot

10. Gently remove the DIMM from the DIMM slot ❷ and place it on an antistatic bag or a grounded antistatic mat.

11. Repeat step 9 and step 10 for each DIMM.

Installing a Cache Module

Use the following steps to install a cache module:

1. Insert each DIMM (see Figure 4, ❶) straight into the appropriate slot ❷ of the cache module, ensuring that the notches in the DIMM align with the tabs in the slot.

2. Press the DIMM gently into the slot until seated at both ends.

3. Engage two retaining clips ❸ for the DIMM.

4. Double-check to make sure both ends of the DIMM are firmly seated in the slot and both retaining levers engage the DIMM.

5. Repeat step 1 through step 4 for each DIMM.

6. Insert the cache module into its bay and engage its retaining levers.

IMPORTANT: For Model 2200 enclosures, omit step 7 and step 8. The ECB does not contain switches or use ECB Y-cables.

⚠ **CAUTION:** The ECB must be disabled—the status LED is OFF—before disconnecting the ECB cable from the cache module. Failure to disable the ECB might damage the cache module.

7. If not already done, disable the ECB by pressing the battery disable switch until the status LED stops FLASHING—approximately five seconds.

8. Connect the ECB cable to the cache module.

9. If not already connected, connect a PC or terminal to the controller maintenance port for the replacement cache module.

10. Restart the controller by pressing its reset button.

11. When the CLI prompt reappears, display details about the configured controller using the following command:

    SHOW THIS_CONTROLLER FULL

12. Mount the logical units on the host. If using a Windows NT platform, restart the server.

13. Set the subsystem date and time using the following command in its entirety:

    SET THIS_CONTROLLER TIME=*dd-mmm-yyyy:hh:mm:ss*

14. Disconnect the PC or terminal from the controller maintenance port.

Dual Controller Configurations

Use this procedure for the following configurations:

- **HSG80 ACS Version 8.2 Dual-Redundant Controller**
- **HSG80 ACS Version 8.3 Dual-Redundant Controller**
- **HSG80 ACS Version 8.4 Dual-Redundant Controller**
- **HSG80 ACS Version 8.5 Dual-Redundant Controller**
- **HSJ80 ACS Version 8.5J Dual-Redundant Controller**
- **HSZ80 ACS Version 8.3 Dual-Redundant Controller**

Use the steps in "Removing a Cache Module" and "Installing a Cache Module" to replace a cache module. Replacing a cache module also involves transferring the cache memory from the failed cache module to the replacement cache module.

> ⚠ **CAUTION:** ESD can easily damage a cache module or a DIMM. Wear a snug-fitting, grounded ESD wrist strap.

Removing a Cache Module

Use the following steps to remove a cache module:

1. Connect a PC or terminal to the maintenance port of the operational controller.

    The controller connected to becomes "this controller;" the controller for the cache module being removed becomes the "other controller."

2. Disable failover and take the controllers out of their dual-redundant configuration with the following command:

    SET NOFAILOVER

3. From the operational controller, start FRUTIL with the following command:

    RUN FRUTIL

4. If a replace the cache battery question appears, enter **N**(o).

5. Enter option **1**, *Replace or remove a controller or cache module*, from the FRUTIL Main menu.

6. Enter option **3**, *Other cache module*, from the Replace or Remove Options menu to remove the other cache module.

7. Enter **Y**(es) to confirm the intent to remove the other cache module.

> ⚠ **CAUTION:** Wait for FRUTIL to quiesce the device ports before removing the cache module—indicated by an "All device ports quiesced" message. Failure to allow the ports to quiesce might result in data loss. Quiescing might take several minutes.
>
> The ECB must be disabled—the status LED is OFF—before disconnecting the ECB cable from the cache module. Failure to disable the ECB might result in cache module damage.

> **NOTE:** A countdown timer allows a total of two minutes to remove the cache module. After two minutes, "this controller" will exit FRUTIL and resume operations. If this happens, return to step 3 and proceed.

8. Follow on-screen instructions to remove the cache module.

9. Place the cache module on an antistatic bag or a grounded antistatic mat.

10. Enter **N**(o) to the question for a replacement cache module.

    FRUTIL will exit.

11. Press down on the DIMM retaining clips (see Figure 4, ❸) at both ends of the DIMM ❶ being removed.

12. Gently remove the DIMM from the DIMM slot ❷ and place it on an antistatic bag or a grounded antistatic mat.

13. Repeat step 11 and step 12 for each DIMM.

Installing a Cache Module

Use the following steps to install a cache module.

> **NOTE:** Both cache modules *must* contain the same memory configuration. Install the DIMMs in the same slots in the replacement cache module as removed from the failed cache module.

1. Insert each DIMM (see Figure 4, ❶) straight into the appropriate slot ❷ of the cache module, ensuring that the notches in the DIMM align with the tabs in the slot.

2. Press the DIMM gently into the slot until seated at both ends.

3. Engage two retaining clips ❸ for the DIMM.

4. Double-check to make sure both ends of the DIMM are firmly seated in the slot and both retaining levers engage the DIMM.

5. Repeat step 1 through step 4 for each DIMM.

6. If not already connected, connect a PC or terminal to the operational controller.

    The controller connected to becomes "this controller;" the controller for the cache module being installed becomes the "other controller."

7. Start FRUTIL with the following command:

    RUN FRUTIL

8. If a replace the cache battery question appears, enter **N**(o).

9. Enter option **2**, *Install a controller or cache module*, from the FRUTIL Main menu.

10. Enter option **3**, *Other cache module*, from the Install Options menu to install the other cache module.

11. Enter **Y**(es) to confirm the intent to install the other cache module.

> **IMPORTANT:** Wait for FRUTIL to quiesce the ports—indicated by an "All device ports quiesced" message. This might take several minutes.

> ⚠ **CAUTION:** The ECB must be disabled—the status LED is OFF—before disconnecting the ECB cable from the cache module. Failure to disable the ECB might damage the cache module.
>
> Carefully align the cache module in the appropriate guide rails. Misalignment might damage the backplane.

> **NOTE:** A countdown timer allows a total of two minutes to install the cache module. After two minutes, "this controller" will exit FRUTIL and resume operations. If this happens, return to step 7 and proceed.

12. Follow on-screen instructions to install the cache module and to restart the "other controller."

13. Enable failover, and re-establish the dual-redundant configuration with the following command:

    SET FAILOVER COPY=THIS_CONTROLLER

    This command copies the subsystem configuration from "this controller" to the "other controller."

14. If desired, verify the failover configuration with the following command:

    SHOW THIS_CONTROLLER FULL

15. Disconnect the PC or terminal from the controller maintenance port.

This completes the hardware installation.