COMPAQ
STORAGEWORKS

Installing an HSG80 Fibre Channel Controller GLM

This document contains instructions to install a gigabit link module (GLM) in an HSG80 ACS Version 8.x Array Controller. See the appropriate *HSG80 Array Controller ACS Version 8.x User's Guide* or *HSG80 Array Controller ACS Version 8.3 Maintenance and Service Guide* for instructions on upgrading a single controller configuration to a dual-redundant controller configuration.
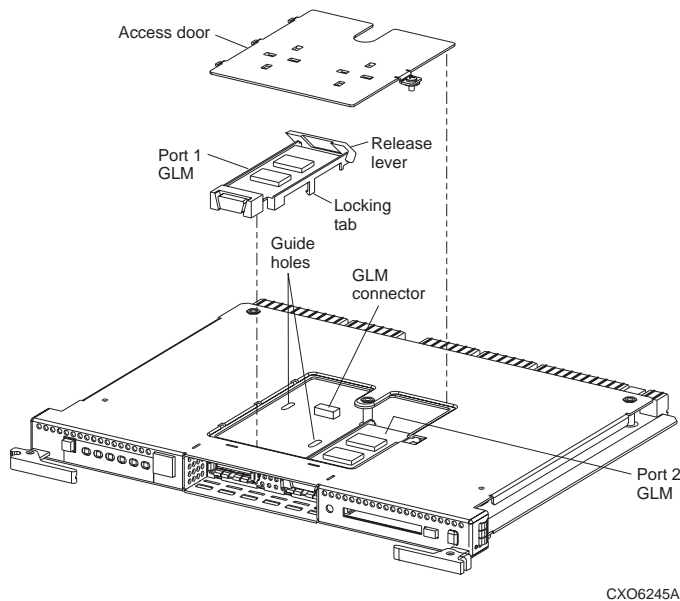

CXO6245A

Figure 1. Location of GLMs in an HSG80 Controller

Replacing a GLM

Use this procedure for the following configurations:

HSG80 ACS Version 8.x Single Controller
HSG80 ACS Version 8.0 Dual-Redundant Controller

Use the following steps in "Removing a GLM" and "Installing a GLM" to replace the GLM.

Removing a GLM

Use the following steps to remove a GLM:

1. From the host console, dismount the logical units in the subsystem.

2. Connect a PC or terminal to the controller's maintenance port. Obtain the last failure codes, if desired.

3. Shut down the controllers. In single-controller configurations, shut down "this controller." In dual-redundant controller configurations, shut down the "other controller" first, then shut down "this controller" with the following commands:

    SHUTDOWN OTHER_CONTROLLER
    SHUTDOWN THIS_CONTROLLER

    When the controllers shut down, their reset buttons and their first three LEDs are lit continuously. this may take several minutes, depending on the amount of data that needs to be flushed from the cache modules.

    CAUTION: Electrostatic discharge (ESD) can easily damage a controller or GLM. Wear a snug-fitting, grounded ESD wrist strap.
    ---

4. Remove the program card's ESD cover and program card. Save them for installation later.

5. Disconnect the host bus cables from the controller using needle nose pliers (see Figure 2).

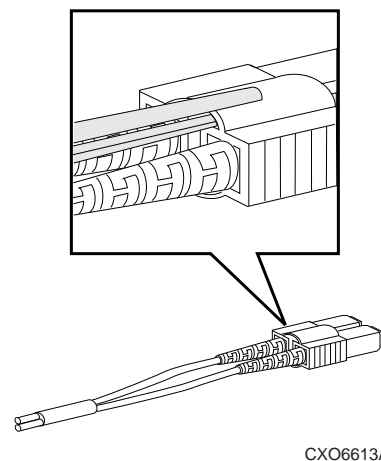   **NOTE:** One or two host bus cables may be attached, depending on the configuration.

CXO6613A

Figure 2. Using Pliers to Remove a Fibre Optic Cable

EK–80GLM–IN. C01/388621-001

6. Disconnect the PC or terminal from the controller's maintenance port.

7. Disengage both retaining levers and remove the controller. Place the controller onto a grounded antistatic mat.

8. Remove the screw that secures the access door on the top of the controller.

9. Remove the access door, and set it aside.

10. Disengage the GLM's locking tabs that protrude through the guide holes on the bottom of the controller.

11. Use your index finger and thumb to operate the release lever on the exposed end of the GLM. Press the lower end of the release lever with your index finger while pulling the raised end of the release lever up with your thumb.

12. Remove the GLM.

Installing a GLM

Use the following steps to install a GLM:

NOTE: Before inserting the new GLM, notice the holes in the board where the GLM will reside.

1. Insert the new GLM by first placing the cable connection end of the GLM through the opening on the front of the controller.

2. Line up the guide pins on the bottom of the replacement GLM with the holes in the board. Press firmly to seat the GLM.

3. Press the release lever firmly into place to secure the GLM.

CAUTION: ESD can easily damage a controller or GLM. Wear a snug-fitting, grounded ESD wrist strap.

Make sure you align the controller in the appropriate guide rails. If you do not align the controller correctly, damage to the backplane can occur.

4. Insert the new controller into its slot, and engage its retaining levers.

5. Connect the host bus cables to the new controller.

NOTE: One or two host bus cables may be attached, depending on the configuration.

6. Connect a PC or terminal to the controller's maintenance port.

7. Hold the reset button while inserting the program card into the new controller. Release and replace the ESD cover. Repeat for the other controller in a dual-redundant controller configuration.

8. When the CLI prompt reappears, display details about the controller you installed. In single-controller configurations, show "this controller." In dual-redundant controller configurations, show "this controller" and the "other controller" with the following commands:

   SHOW THIS_CONTROLLER FULL
   SHOW OTHER_CONTROLLER FULL

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

10. Set the subsystem date and time. In single controller configurations, set "this controller." In dual-redundant controller configurations, set "this controller" and the "other controller" with the following commands:

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

11. Disconnect the PC or terminal from the controller's maintenance port.

Replacing a GLM

Use this procedure for the following configurations:

HSG80 ACS Version 8.2 Dual-Redundant Controller

Use the following steps in "Removing a GLM" and "Installing a GLM" to replace a GLM.

Removing a GLM

Use the following steps to remove a GLM:

1. Connect a PC or terminal to the operational controller. The controller to which you're connected is "this controller"; the controller whose GLM you are replacing is the "other controller."

2. Disable failover with the following command:

   SET NOFAILOVER

3. Start FRUTIL with the following command:

   RUN FRUTIL

   FRUTIL displays the following:
   ```
   Do you intend to replace this controller's cache
   battery? Y/N
   ```

4. Enter N(o). FRUTIL displays the FRUTIL Main menu:
   ```
   FRUTIL Main Menu:
    1. Replace or remove a controller or cache module
    2. Install a controller or cache module
    3. Replace a PVA module
    4. Replace an I/O module
    5. Exit
   Enter choice: 1, 2, 3, 4, or 5 ->
   ```

5. Enter option 1, *Replace or remove a controller or cache module*, from the FRUTIL Main menu. FRUTIL displays the Replace or Remove Options menu:
   ```
   Replace or remove Options:
    1. Other controller and cache module
    2. Other controller module
    3. Other cache module
    4. Exit
   Enter choice: 1, 2, 3, or 4 ->
   ```

6. Enter option 2, *Other controller module*, from the Replace or Remove Options menu. FRUTIL displays the following:
   ```
                 Slot Designations
                   (front view)
    [ ---  EMU  --- ][ ---   PVA  ---  ]
    [ --------   Controller A  -------   ]
    [ --------   Controller B  -------   ]
    [ Cache Module A ][ Cache Module B  ]

   Remove the slot A [or B] controller? Y/N
   ```

7. Enter Y(es) and press return. FRUTIL displays the following:
   ```
   Quiescing all device ports.  Please wait...
     Device Port 1 quiesced.
     Device Port 2 quiesced.
     Device Port 3 quiesced.
     Device Port 4 quiesced.
     Device Port 5 quiesced.
     Device Port 6 quiesced.
   All device ports quiesced.
   Remove the slot A [or B] controller (the one without
   a blinking green LED)
   ```
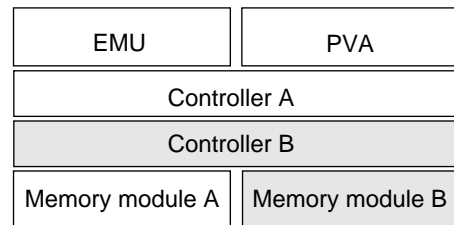
   See Figure 3 for location of the controller.

EMU	PVA
Controller A	
Controller B	
Memory module A	Memory module B

   CXO6283A

   Figure 3. Location of Controllers and Cache Module

   > **CAUTION:** The device ports must quiesce before removing the cache module. Failure to allow the ports to quiesce may result in data loss. Quiescing may take several minutes.
   >
   > ESD can easily damage a controller or GLM. Wear a snug-fitting, grounded ESD wrist strap.

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

8. Remove the program card's ESD cover and program card. Save them for reinstallation later.

9. Disconnect the host bus cables from the "other controller" using needle nose pliers (see Figure 2).

   > **NOTE:** One or two host bus cables may be attached, depending on the configuration.

10. Disengage both retaining levers, and remove the "other controller." Place the controller onto a grounded antistatic mat.

11. Once the controller is removed, FRUTIL displays the following:
    ```
    Restarting all device ports. Please wait...
      Device Port 1 restarted.
      Device Port 2 restarted.
      Device Port 3 restarted.
      Device Port 4 restarted.
      Device Port 5 restarted.
      Device Port 6 restarted.
    Do you have a replacement controller? Y/N
    ```

12. Enter N(o).

13. Remove the screw that secures the access door on the top of the controller.

14. Remove the access door, and set it aside.

15. Disengage the GLM's locking tabs that protrude through the guide holes on the bottom of the controller.

16. Use your index finger and thumb to operate the release lever on the exposed end of the GLM. Press the lower end of the release lever with your index finger while pulling the raised end of the release lever up with your thumb.

17. Remove the GLM.

Installing a GLM
Use the following steps to install a GLM:

> **NOTE:** Before inserting the new GLM, locate the holes in the board where the GLM will reside.

1. Insert the new GLM by first placing the cable connection end of the GLM through the opening on the front of the controller.

2. Line up the guide pins on the bottom of the replacement GLM with the holes in the board, and press firmly to seat the GLM.

3. Press the release lever firmly into place to secure the GLM.

4. If not already connected, connect a PC or terminal to the operational controller's maintenance port. The controller to which you're connected is "this controller"; the controller that you're installing is the "other controller."

5. Start FRUTIL with the following command:

   RUN FRUTIL

   FRUTIL displays the following:
   ```
   Do you intend to replace this controller's cache
   battery? Y/N
   ```

6. Enter N(o). FRUTIL displays the FRUTIL Main menu:
   ```
   FRUTIL Main Menu:
    1. Replace or remove a controller or cache module
    2. Install a controller or cache module
    3. Replace a PVA module
    4. Replace an I/O module
    5. Exit
   Enter choice: 1, 2, 3, 4, or 5 ->
   ```

7. Enter option 2, *Install a controller or cache module*, from the FRUTIL Main menu. FRUTIL displays the Install Options menu:
   ```
   Install Options:
    1. Other controller and cache module
    2. Other controller module
    3. Other cache module
    4. Exit
   Enter choice: 1, 2, 3, or 4 ->
   ```

8. Enter option 2, *Other controller module*, from the Install Options menu. FRUTIL displays the following:
   ```
   Insert the slot A [or B] controller? Y/N
   ```

9. Enter Y(es) and press return. FRUTIL displays the following:
   ```
   Quiescing all device ports.  Please wait...
     Device Port 1 quiesced.
     Device Port 2 quiesced.
     Device Port 3 quiesced.
     Device Port 4 quiesced.
     Device Port 5 quiesced.
     Device Port 6 quiesced.
   All device ports quiesced.
   .
   .
   .
   Insert the controller module, without its program
   card, in slot A [or B] within x minutes, xx seconds.
   ```

   > **NOTE:** A countdown timer allows a total of two minutes to install the controller. If you exceed two minutes, "this controller" will exit FRUTIL and resume operations. If this happens, go back to step 5.

   > **CAUTION:** ESD can easily damage a controller or GLM. Wear a snug-fitting, grounded ESD wrist strap.
   >
   > Make sure you align the controller in the appropriate guide rails. If you do not align the controller correctly, damage to the backplane can occur.

10. Ensure that the program card is not in the controller and insert the controller into its slot. Engage its retaining levers.

    FRUTIL displays the following:
    ```
    The configuration has two controllers.
    To restart the other controller:
     1. Type 'restart other_controller'.
     2. Press and hold the reset button while inserting
        the program card on the slot A [or B] controller,
        then release the reset button.
        The controller will restart.

    Field Replacement Utility terminated.
    ```

11. Wait for FRUTIL to terminate and connect the host bus cables to the new controller.

    > **NOTE:** One or two host bus cables may be attached, depending on the configuration.

12. To allow the "other controller" to restart, enter the following:

    RESTART OTHER _CONTROLLER

13. Hold the reset button while inserting the program card into the controller. Release the reset button and replace the ESD cover. The controller will restart.

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

   SET FAILOVER COPY=THIS_CONTROLLER

   This command copies the subsystem's configuration from "this controller" to the new controller.

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

Replacing a GLM

Use this procedure for the following configurations:

HSG80 ACS Version 8.3 Dual-Redundant Controller

Use the following steps in "Removing a GLM" and "Installing a GLM" to replace a GLM.

Removing a GLM

Use the following steps to remove a GLM:

1. Connect a PC or terminal to the operational controller. The controller to which you're connected is "this controller"; the controller whose GLM you are replacing is the "other controller."

2. Disable failover with the following command:

    SET NOFAILOVER

3. Remove the program card's ESD cover and program card. Save them for reinstallation later.

4. Start FRUTIL with the following command:

    RUN FRUTIL

    FRUTIL displays the following:
    ```
    Do you intend to replace this controller's cache
    battery? Y/N
    ```

5. Enter N(o). FRUTIL displays the FRUTIL Main menu:
    ```
    FRUTIL Main Menu:
     1. Replace or remove a controller or cache module
     2. Install a controller or cache module
     3. Replace a PVA module
     4. Replace an I/O module
     5. Exit
    Enter choice: 1, 2, 3, 4, or 5 ->
    ```

6. Enter option 1, *Replace or remove a controller or cache module*, from the FRUTIL Main menu. FRUTIL displays the Replace or Remove Options menu:
    ```
    Replace or remove Options:
     1. Other controller and cache module
     2. Other controller module
     3. Other cache module
     4. Exit
    Enter choice: 1, 2, 3, or 4 ->
    ```

7. Enter option 2, *Other controller module*, from the Replace or Remove Options menu. FRUTIL displays the following:
    ```
                   Slot Designations
                     (front view)
    [  ---   EMU   --- ][  ---    PVA   ---  ]
    [ --------    Controller A  -------   ]
    [ --------    Controller B  -------   ]
    [ Cache Module A  ][ Cache Module B  ]

    Remove the slot A [or B] controller? Y/N
    ```

8. Enter Y(es) and press return. FRUTIL displays the following:
    ```
    Quiescing all device ports.  Please wait...
      Device Port 1 quiesced.
      Device Port 2 quiesced.
      Device Port 3 quiesced.
      Device Port 4 quiesced.
      Device Port 5 quiesced.
      Device Port 6 quiesced.
    All device ports quiesced.
    Remove the slot A [or B] controller (the one without
    a blinking green LED)
    ```

    See Figure 3 for location of the controller.

    CAUTION: The device ports must quiesce before removing the cache module. Failure to allow the ports to quiesce may result in data loss. Quiescing may take several minutes.

    ESD can easily damage a controller or GLM. Wear a snug-fitting, grounded ESD wrist strap.

    NOTE: A countdown timer allows a total of two minutes to remove the cache module. If you exceed two minutes, "this controller" will exit FRUTIL and resume operations. If this happens, go back to step 4.

9. Disconnect the host bus cables from the "other controller" using needle nose pliers (see Figure 2).

    NOTE: One or two host bus cables may be attached, depending on the configuration.

10. Disengage both retaining levers, and remove the "other controller." Place the controller onto a grounded antistatic mat.

11. Once the controller is removed, FRUTIL displays the following:
    ```
    Restarting all device ports. Please wait...
      Device Port 1 restarted.
      Device Port 2 restarted.
      Device Port 3 restarted.
      Device Port 4 restarted.
      Device Port 5 restarted.
      Device Port 6 restarted.
    Do you have a replacement controller? Y/N
    ```

12. Enter N(o) and FRUTIL will exit.

13. Remove the screw that secures the access door on the top of the controller.

14. Remove the access door, and set it aside.

15. Disengage the GLM's locking tabs that protrude through the guide holes on the bottom of the controller.

16. Use your index finger and thumb to operate the release lever on the exposed end of the GLM. Press the lower end of the release lever with your index finger while pulling the raised end of the release lever up with your thumb.

17. Remove the GLM.

Installing a GLM

Use the following steps to install a GLM:

> **NOTE:** Before inserting the new GLM, locate the holes in the board where the GLM will reside.

1. Insert the new GLM by first placing the cable connection end of the GLM through the opening on the front of the controller.

2. Line up the guide pins on the bottom of the replacement GLM with the holes in the board, and press firmly to seat the GLM.

3. Press the release lever firmly into place to secure the GLM.

4. If not already connected, connect a PC or terminal to the operational controller's maintenance port. The controller to which you're connected is "this controller"; the controller that you're installing is the "other controller."

5. Start FRUTIL with the following command:

   RUN FRUTIL

   FRUTIL displays the following:
   ```
   Do you intend to replace this controller's cache
   battery? Y/N
   ```

6. Enter N(o). FRUTIL displays the FRUTIL Main menu:
   ```
   FRUTIL Main Menu:
    1. Replace or remove a controller or cache module
    2. Install a controller or cache module
    3. Replace a PVA module
    4. Replace an I/O module
    5. Exit
   Enter choice: 1, 2, 3, 4, or 5 ->
   ```

7. Enter option 2, *Install a controller or cache module*, from the FRUTIL Main menu. FRUTIL displays the Install Options menu:
   ```
   Install Options:
    1. Other controller and cache module
    2. Other controller module
    3. Other cache module
    4. Exit
   Enter choice: 1, 2, 3, or 4 ->
   ```

8. Enter option 2, *Other controller module*, from the Install Options menu. FRUTIL displays the following:
   ```
   Insert the slot A [or B] controller? Y/N
   ```

9. Enter Y(es) and press return. FRUTIL displays the following:
   ```
   Quiescing all device ports.  Please wait...
     Device Port 1 quiesced.
     Device Port 2 quiesced.
     Device Port 3 quiesced.
     Device Port 4 quiesced.
     Device Port 5 quiesced.
     Device Port 6 quiesced.
   All device ports quiesced.
   .
   .
   .
   Insert the controller module, without its program
   card, in slot A [or B] within x minutes, xx seconds.
   ```

> **NOTE:** A countdown timer allows a total of two minutes to install the controller. If you exceed two minutes, "this controller" will exit FRUTIL and resume operations. If this happens, go back to step 5.

> **CAUTION:** ESD can easily damage a controller or GLM. Wear a snug-fitting, grounded ESD wrist strap.

> Make sure you align the controller in the appropriate guide rails. If you do not align the controller correctly, damage to the backplane can occur.

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10. Ensure that the program card is in the replacement controller and insert the new controller into its slot. Engage its retaining levers. When fully seated, the newly installed controller will boot.

    FRUTIL displays the following:
    ```
    If the other controller did not restart, follow
    these steps:
      1. Press and hold the other controller's reset
         button.
      2. Insert the other controller's program card.
      3. Release the reset button.
    Press return to continue.
    ```

11. Connect the host bus cables to the new controller.

    > **NOTE:** One or two host bus cables may be attached, depending on the configuration.

12. Press return to continue. FRUTIL will exit. If the other controller did not restart, follow these steps:

    a. Press and hold the other controller's reset button.

    b. Insert the other controller's program card.

    c. Release the reset button.

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

    SET FAILOVER COPY=THIS_CONTROLLER

    This command copies the subsystem's configuration from "this controller" to the new controller.

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