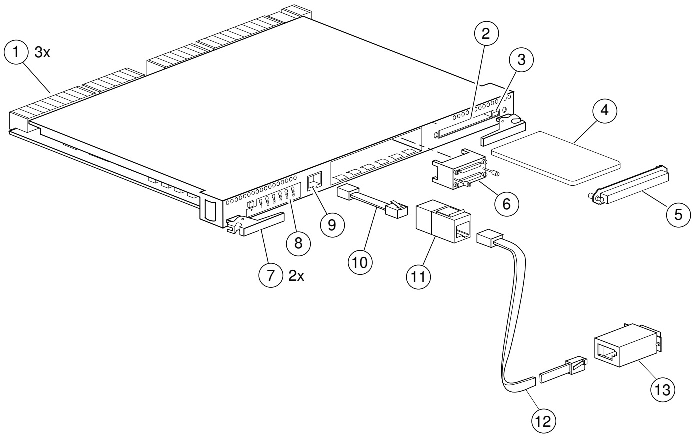
# Installing an HSZ70 Array Controller

Follow these instructions to replace a controller in a single or dual-redundant configuration. See the *HSZ70 Array Controller HSOF Version 7.0 Service Manual* for instructions on upgrading a subsystem to a dual-redundant configuration.

**Figure 1. HSZ70 Array Controller**




| | |
|---|---|
| 1 | Backplane connectors |
| 2 | Program-card slot |
| 3 | Program-card ejection button |
| 4 | Program card |
| 5 | ESD cover |
| 6 | Trilink connector |
| 7 | Lever for removing, installing, and retaining controller. |
| 8 | Operator control panel (OCP) |
| 9 | Local-connection port |
| 10 | DECconnect office cable |
| 11 | RJ-11 adapter |
| 12 | RJ-11 extension cable |
| 13 | PC serial-port adapter |

## VHDCI Cable Precautions

All of the cables to the controller, cache module, and external cache battery (ECB) use very-high density cable interconnect connectors (VHDCI). These connectors have extraordinarily small mating surfaces that can be adversely affected by dust and movement. Follow these precautions when you're connecting VHDCI cables:

- Clean the mating surfaces with a blast of clean air.
- Mate the connectors by hand, then tighten the retaining screws to 1.5 inch-pounds—approximately 1/4 additional turn after the connectors have fully mated.
- Test the assembly by gently pulling on the cable, which should not produce visible separation.

## Dual-Redundant Configurations

### To remove the controller...

1. Connect a local terminal to the operational controller. The controller to which you're connected is "this controller;" the controller that you're removing is the "other controller."
2. Disable failover and take the controllers out of their dual-redundant configuration with the following command:

   **SET NOFAILOVER**
3. Start FRUTIL, the field-replacement utility, with the following command:

   **RUN FRUTIL**
4. Choose option 1 from the FRUTIL Main Menu to go to the Removal Options menu.
5. Choose option 2 from the Removal Options menu to remove the "other controller."
6. Confirm that you want to remove the "other controller."
7. Wait for FRUTIL to quiesce the ports.
8. Remove the trilink connector from the "other controller" but don't disconnect the bus cables from the trilink connector.
9. Disengage the two retaining levers and remove the "other controller."
10. Remove the "other controller's" ESD cover and program card. Save these for the new controller.

### To install the new controller...

1. Indicate to FRUTIL that you're ready to insert the new controller.
2. Ensure that the program card is not in the new controller and insert the new controller into its slot. Engage its retaining levers.
3. Wait for FRUTIL to terminate, then connect the trilink connector to the new controller.
4. Restart the new controller with the following command:

   **RESTART OTHER_CONTROLLER**



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5. Insert the program card into the new controller. The controller restarts automatically.
6. Replace the ESD cover.
7. Enable failover and re-establish the dual-redundant configuration with the following command:

   **SET FAILOVER COPY=THIS_CONTROLLER**

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

## Single Configurations

### To remove the controller...

1. From the host console, dismount the storage units in the subsystem.
2. If the controller is operating, connect a local terminal to the controller to obtain the last failure codes if desired. Otherwise, go to step 8.
3. Start the Fault Management Utility (FMU) with the following command:

   **RUN FMU**
4. Display the instance and last failure codes with the following command:

   **SHOW LAST_FAILURE ALL**
5. Record the codes in the order they appear.
6. Exit FMU with the following command:

   **EXIT**
7. Shut down the controller with the following command:

   **SHUTDOWN THIS_CONTROLLER**

   When the controller shuts down, its reset button and the first three LEDs are lit continuously.
8. Turn off the power to the subsystem.
9. Remove the ESD cover and program card. Save them for the new controller.
10. Remove the trilink connector but don't disconnect the bus cables from the trilink connector.
11. Disengage the two retaining levers and remove the controller.

### To install the new controller...

1. Insert the new controller into its slot and engage its retaining levers.
2. Connect the trilink connector to the new controller.
3. Insert the program card into the new controller and replace the ESD cover.
4. Restore power to the subsystem. If the subsystem contains a device that was initialized with the SAVE_ CONFIGURATION switch, the controller automatically loads the subsystem's configuration from that device. Otherwise, you'll have to reconfigure the controller as described in the *HSZ70 Array Controller HSOF Version 7.0 Configuration Manual*.
5. Install any patches that you had installed on the previous controller.
6. Mount the storage units on the host.