

StorageWorks™ Solutions

StorageWorks FDDI Server HS1AD Device Bus Adapter Installation Guide

Order Number: EK-HS1AD-IG. A01

This guide describes how to install the HS1AD device bus adapter into the server processor of the StorageWorks FDDI Server.

April 1995

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Any changes or modifications made to this equipment may void the user's authority to operate the equipment.

Operation of this equipment in a residential area may cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

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Preface

Intended Audience

This guide is intended for use by Digital™ Multivendor Customer Services personnel or other qualified technicians who install and configure OpenVMS Alpha™ processors and related storage hardware.

This audience must know how to install and configure StorageWorks shelves, devices, and related components.

Structure

This guide is organized as follows:

- | | |
|-----------|--|
| Chapter 1 | Describes preinstallation considerations and tasks. |
| Chapter 2 | Describes how to install the device bus adapter and the different cabling procedures to use depending upon the configuration of the HS1CP device channel processors on your FDDI Server. |

Related Documents

Table 1 lists the StorageWorks-related user documents organized by use, system, or product.

Table 1 StorageWorks Related Documentation

Document Title	Order Number
StorageWorks Primary Publications	
<i>StorageWorks™ Solutions Configuration Guide</i>	EK-BA350-CG
<i>StorageWorks™ Solutions Shelf and SBB User's Guide</i>	EK-BA350-UG
<i>StorageWorks™ Solutions Array Controllers HS Family of Array Controllers User's Guide</i>	EK-HSFAM-UG
Storageworks FDDI Server Publications	
<i>StorageWorks™ Solutions StorageWorks FDDI Server Installation Guide</i>	EK-HS1xx-IG
<i>StorageWorks™ Solutions StorageWorks FDDI Server HS110 Upgrade Installation Guide</i>	EK-HS110-IG
<i>StorageWorks™ Solutions StorageWorks FDDI Server HS1MM/HS2MM Server Processor Memory Installation Guide</i>	EK-HS1MM-IG
<i>StorageWorks™ Solutions StorageWorks FDDI Server HS1CP Device Channel Processor Installation Guide</i>	EK-HS1CP-IG
<i>StorageWorks™ Solutions StorageWorks FDDI Server HS1PW Server Processor Power Supply Installation Guide</i>	EK-HS1PW-IG
<i>StorageWorks™ Solutions StorageWorks FDDI Server, Server Processor Component Manual</i>	EK-HS1CM-IG
StorageWorks Enclosures	
<i>StorageWorks™ Solutions SW500 and SW800 Cabinet Metric Shelf Bracket Kit Installation Guide</i>	EK-35XRD-IG
<i>StorageWorks™ Solutions RETMA Shelf Rail Kit Installation Guide</i>	EK-35XRB-IG
<i>StorageWorks™ Solutions SW800-Series Data CDU Installation Guide</i>	EK-SW8XP-BA
<i>StorageWorks™ Solutions SW800-Series Data Center Cabinet Installation and User's Guide</i>	EK-SW800-IG
Storage Devices	
<i>StorageWorks™ Solutions Building Blocks User's Guide</i>	EK-SBB35-UG
<i>StorageWorks™ Solutions 3½-Inch Storage Device Installation Guide</i>	EK-MC350-IG
<i>StorageWorks™ Solutions Solutions 5¼-Inch Storage Device Installation Guide</i>	EK-MC525-IG
General Reference Publications	
<i>Digital Systems and Options Catalog</i>	†
<i>Small Computer System Interface, An Overview</i>	EK-SCSIS-OV
† Available from your Digital account representative.	

Manufacturer's Declarations

Following are manufacturer's declarations applicable to the StorageWorks FDDI Server:

CAUTION

This is a class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

ACHTUNG !

Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten, in welchen Fällen die Benutzer für entsprechende Gegenmaßnahmen verantwortlich sind.

ATTENTION !

Ceci est un produit de Classe A. Dans un environnement domestique, ce produit risque de créer des interférences radiélectriques, il appartiendra alors à l'utilisateur de prendre les mesures spécifiques appropriées.

Note

The equipment described in this manual is listed by the Underwriters Laboratories Incorporated and bears the UL Listing mark. The StorageWorks FDDI Server cabinets also are certified by the Canadian Standards Association and TUV Product Service GmbH and bear both the CSA certification and TUV GS marks.

Before You Install

This chapter provides a brief overview of the HS1AD device bus adapter. It also describes factors to consider and preliminary tasks to complete before installing the device bus adapter.

1.1 Device Bus Adapter Configurations

Each device bus adapter provides an internal bus for EISA-based systems. Up to two device bus adapters can be installed in a single server processor. The device bus adapter is configured as an end-node with a single host on a bus.

1.2 Preparing to Install a Device Bus Adapter

Before you install a device bus adapter, you need to prepare the server processor to receive the device bus adapter. You need to collect the necessary equipment, familiarize yourself with electrostatic discharge precautions, and remove the top panel over the motherboard and other electronic modules inside the server processor.

1.2.1 Collect Required Equipment

You need the following equipment:

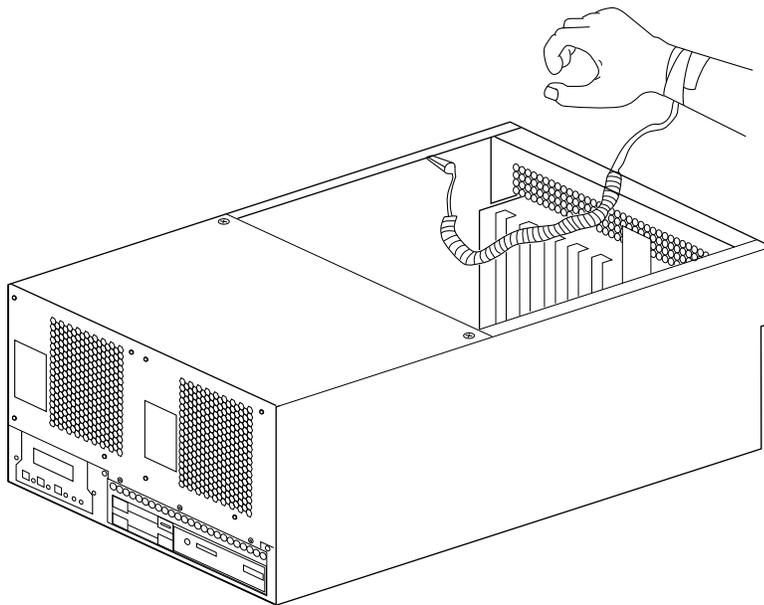
- Flat-blade screwdriver
- Phillips screwdriver
- Antistatic wrist strap

1.2.2 Review Electrostatic Discharge Precautions

Electrostatic discharge (ESD) can damage electronic components. Use proper ESD grounding procedures or damage can result to the subsystem components.

Prior to handling (removing or replacing) a server processor component, obtain and attach an ESD wrist strap to your wrist and to the system as shown in Figure 1-1.

Figure 1-1 ESD Wrist Strap



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Installing the Device Bus Adapter

This chapter describes the procedure for installing a second device bus adapter. It also describes the procedures for cabling the device bus adapter to the HS1CP™ device channel processor for different configurations.

2.1 Connect a Terminal to the Server Processor

Note

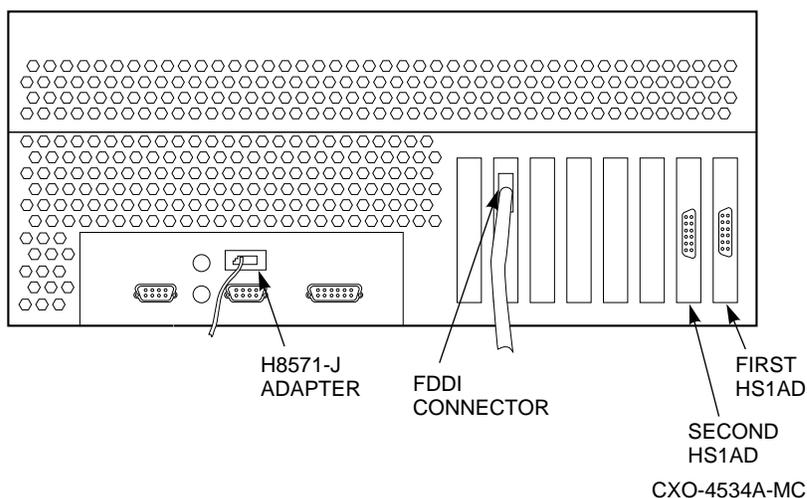
You must have a console terminal connected to the server processor to complete the installation procedures described in this chapter.

If you have a terminal already connected, proceed to Section 2.2.

If you do not have a terminal connected, follow the procedure below.

1. Make sure the power switch on the terminal is OFF (○).
2. Connect one end of the terminal cable to the back of the terminal.
3. Using a 5/32" hex wrench, open the back door of your FDDI Server.

Figure 2-1 Connecting to the Terminal Port of the Server Processor



4. Connect the other end of the terminal cable to the EIA terminal port on the back of the server processor using the female MMJ adapter (part number H8571-J) as shown in Figure 2-1.
5. Turn the terminal power switch to ON (⊙).

6. Set the terminal at 9600 baud, with 8 data bits, 1 stop bit, and no parity. Refer to your terminal documentation for terminal setup instructions.

2.2 Shut Down the System

1. Stop all work on the server processor in which the device bus adapter is to be installed.
2. Perform an orderly shutdown of the operating system in the server processor by typing the following command at the DCL \$ prompt on the terminal connected to the server processor:

```
$ @SYS$SYSTEM:SHUTDOWN
```

When system shutdown is complete, the following message displays on your terminal:

```
SYSTEM SHUTDOWN COMPLETE
```

3. When shutdown is complete, open the front door on the FDDI Server cabinet and depress the power button on the server processor Operator Control Panel (OCP) to turn off power.

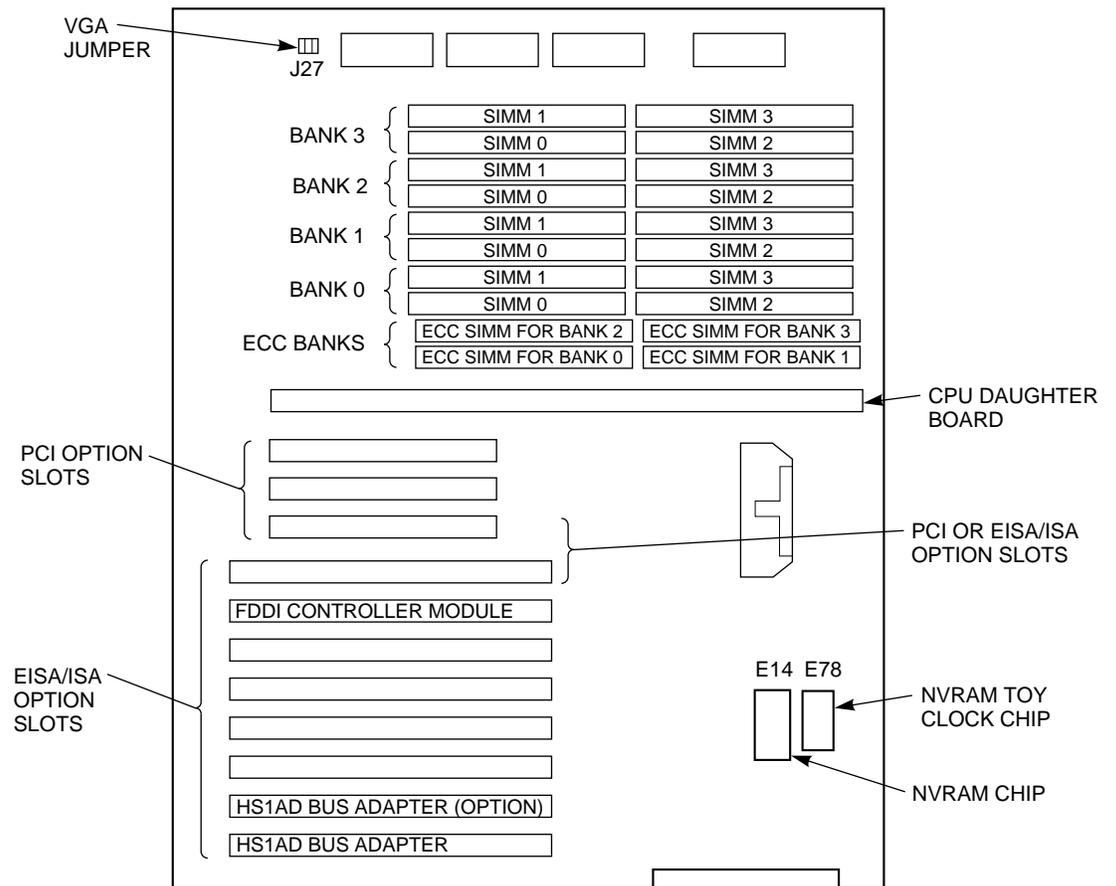
2.3 Slide the Server Processor out of the FDDI Server Cabinet

1. Remove the red shipping brackets holding the server processor in place.
2. Slide the processor out of the back of the cabinet on its slides to easily access the rear top cover.
3. Loosen all the quarter-turn fasteners on the rear top cover using a Phillips screwdriver.
4. Lift off the rear top cover.

2.4 Install the Device Bus Adapter

Follow the procedure described next to install the device bus adapter. Figure 2–2 shows the slot position for the second device bus adapter.

Figure 2–2 Slot Position for Device Bus Adapter



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Note

Though it is possible to use any EISA slot from 2 through 4 when you add a second device bus adapter, it is recommended that you install the second one in slot 2 next to the first device bus adapter. In Figure 2–2, the slot position of the second device bus adapter is named "HS1AD Bus Adapter (option)."

1. With a Phillips screwdriver, remove the screw that holds the metal slot cover on EISA slot 2. Retain the screws to secure the second device bus adapter in place later.
2. Pull off the metal slot cover.
3. Install the device bus adapter card into EISA slot 2.
4. Secure the device bus adapter by inserting and tightening the screw you retained from the first step in this portion of this procedure.
5. Attach the internal bus cable to the connector of the device bus adapter at the back of the server processor. Figure 2-1 shows the location of the second device bus adapter connector.
6. Now go to Section 2.5, Table 2-1 of this chapter to determine which cabling procedure is appropriate for the configuration of the existing devices on your server processor.

2.5 Connect the Internal Bus Cable to the HS1CP Device Channel Processor

The cabling of an additional device bus adapter is determined by the configuration of the existing devices. Use the following table to determine installation and cabling procedures.

Table 2-1 Internal Bus Cabling Procedures

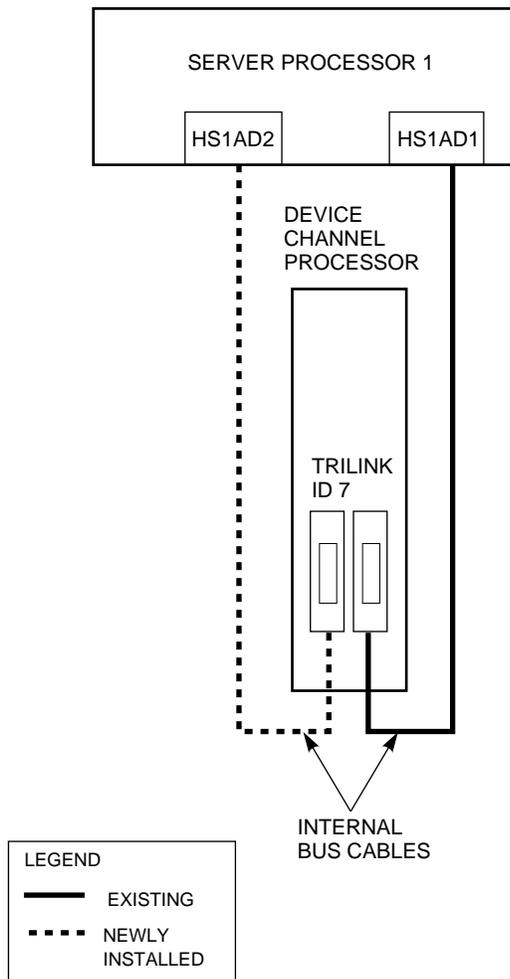
If you have . . .	And you . . .	Then go to . . .
An HS111	Installed a second device bus adapter for internal bus redundancy	Procedure 1 Installation (Section 2.5.1)
An HS111	Installed a second device channel processor and a second device bus adapter for full redundancy	Procedure 2 Installation (Section 2.5.2)
An HS111	Installed a second device channel processor and second device bus adapter for more storage connectivity	Procedure 3 Installation (Section 2.5.3)
An HS111	Upgrade to an HS121	<i>StorageWorks™ Solutions FDDI Server HS110 Upgrade Installation Guide</i>

2.5.1 Device Bus Adapter Cabling Procedure 1

Use the following cabling procedure if you add a second device bus adapter and internal bus cable to an HS111 FDDI Server for internal bus redundancy.

Figure 2-3 shows a logical diagram of the cabling for this configuration.

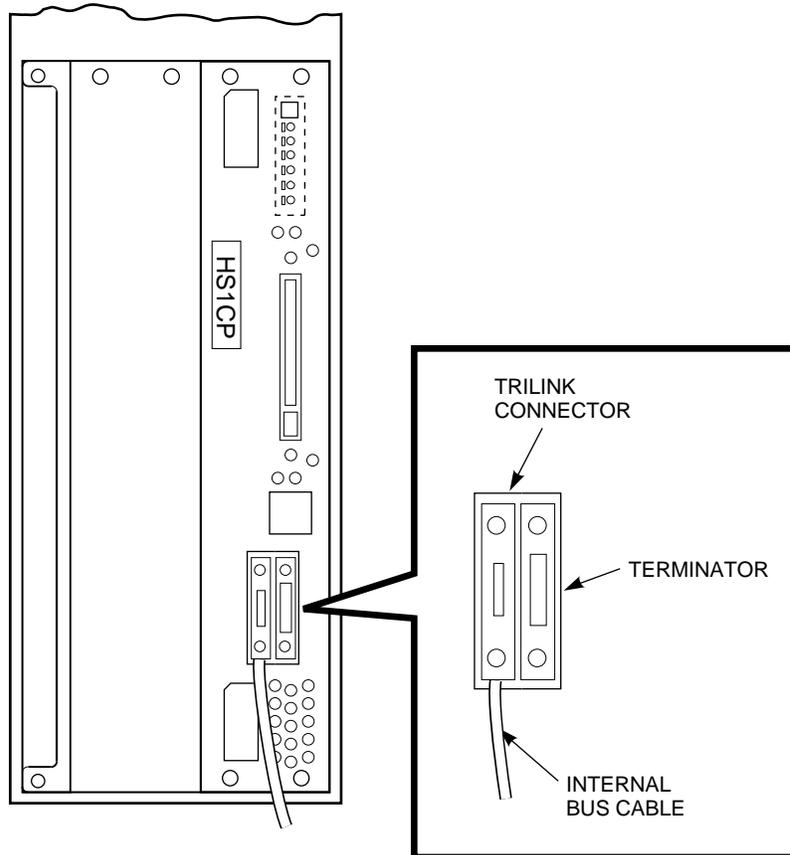
Figure 2-3 Procedure 1 Cabling Diagram



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1. Remove the terminator from the tralink connector on the HS1CP device channel processor. Refer to Figure 2-4.

Figure 2-4 Trilink Connector



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2. Carefully attach the internal bus cable to the trilink connector. Make sure the trilink connector pins are not bent or damaged.

CAUTION

Currently, component damage may result if internal bus cables are connected or disconnected with power applied, *unless* the mating guide (Digital part number 74-49066-01) is installed around the outside edge of your HS1CP port connector. HS1CP modules are shipped from the factory with the mating guide and the trilink connector block premounted on the HS1CP port connector.

Be aware that the trilink connector block is the interface between the HS1CP device channel processor and other internal bus cable connections. It is the *trilink* that you may safely disconnect and connect when you have a mating guide installed. In a power-on situation, you must work around any internal bus cable or terminator connections to the trilink *without* disconnecting them.

Some internal bus cable and terminator connectors will not provide enough access to the trilink screws for you to disconnect the trilink (without first disconnecting the cable and/or terminator). In these cases,

you will have to disconnect power from all bus members and disconnect cables and terminators before disconnecting the tralink connector block.

3. You have completed the cabling procedure. Now proceed to Section 2.6 to replace the server processor in the SW800 cabinet.

2.5.2 Device Bus Adapter Cabling Procedure 2

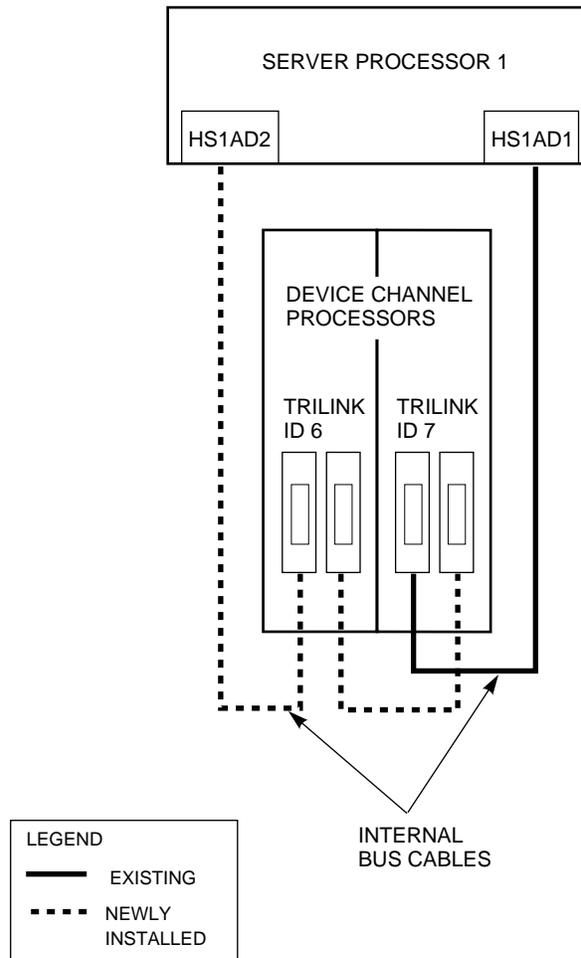
Use the following cabling procedure if you add a second device channel processor in an existing BA350-M shelf and a second HS1AD device bus adapter for full redundancy.

Note

This procedure assumes you have already installed a second HS1CP device channel processor. Refer to the *StorageWorks™ Solutions StorageWorks FDDI Server HS1CP Device Channel Processor Installation Guide* for this procedure.

Figure 2-5 shows a logical diagram of the cabling for this configuration.

Figure 2–5 Procedure 2 Cabling Diagram



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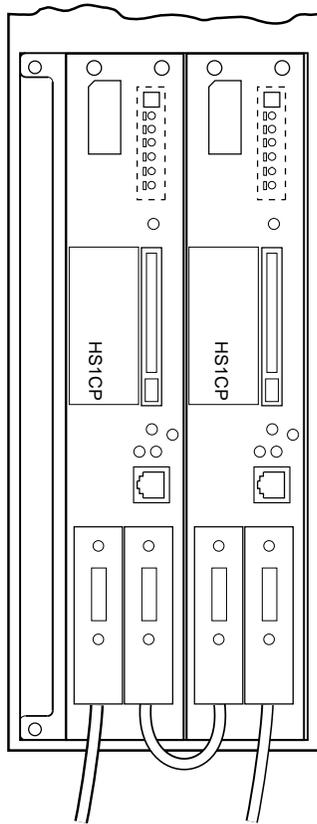
1. Attach one end of the internal bus cable to the trilink connector on the newly installed HS1CP device channel processor located in SCSI ID slot 6. Refer to Figure 2–6.

Note

In the previous step, the other end of the internal bus cable is already attached to the connector of the newly installed HS1AD device bus adapter.

2. Remove the terminator from the trilink connector on the existing HS1CP device channel processor located in SCSI ID slot 7. Refer to Figure 2–6.
3. Attach one end of a second internal bus cable to the open trilink connector of the HS1CP device channel processor in SCSI ID slot 7 and the other end to the open trilink connector of the HS1CP device channel processor in SCSI ID slot 6. Refer to Figure 2–6.

Figure 2–6 Cabling Two HS1CP Device Channel Processors



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4. You have completed the cabling procedure. Now proceed to Section 2.6 to replace the server processor in the SW800 cabinet.

2.5.3 Device Bus Adapter Cabling Procedure 3

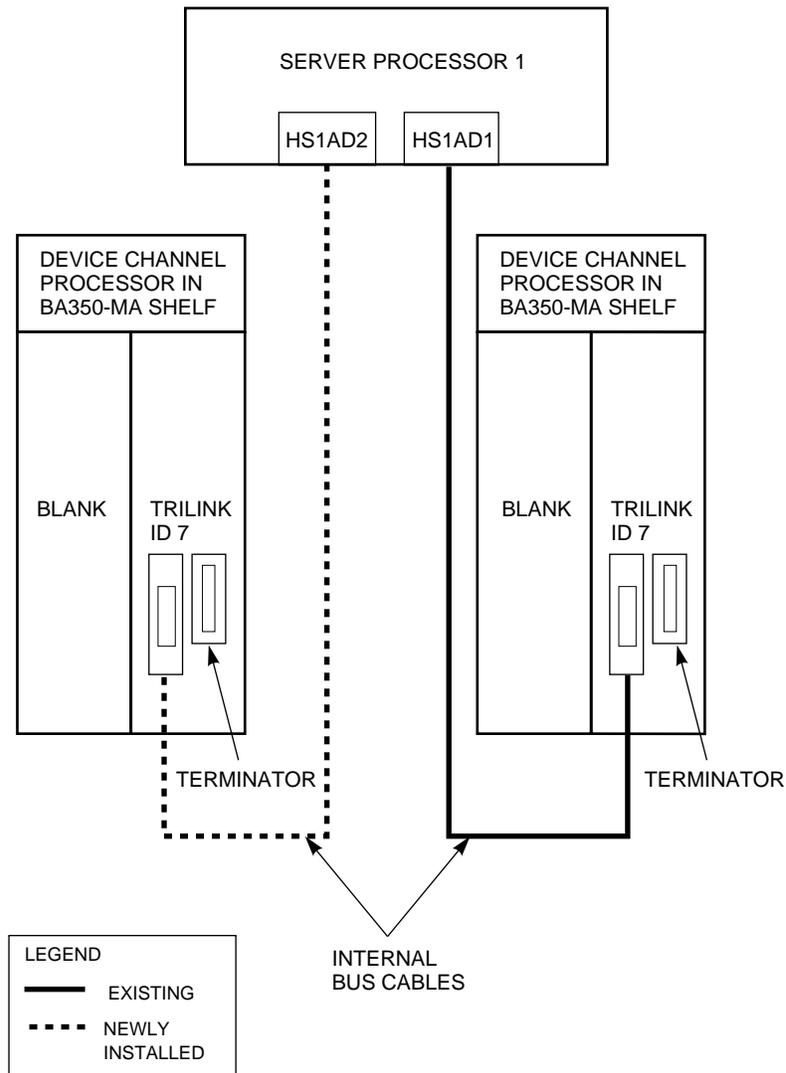
Use the following cabling procedure if you add a second HS1CP device channel processor into a second BA350–M shelf and a second HS1AD device bus adapter to increase storage connectivity on your FDDI Server.

Figure 2–7 is a logical diagram showing the cabling for this configuration.

Note

This procedure assumes you have installed a second HS1CP device channel processor and a second BA350–M shelf. Refer to the *StorageWorks™ Solutions StorageWorks FDDI Server HS110 Upgrade Installation Guide* for these installation procedures.

Figure 2–7 Procedure 3 Cabling Diagram



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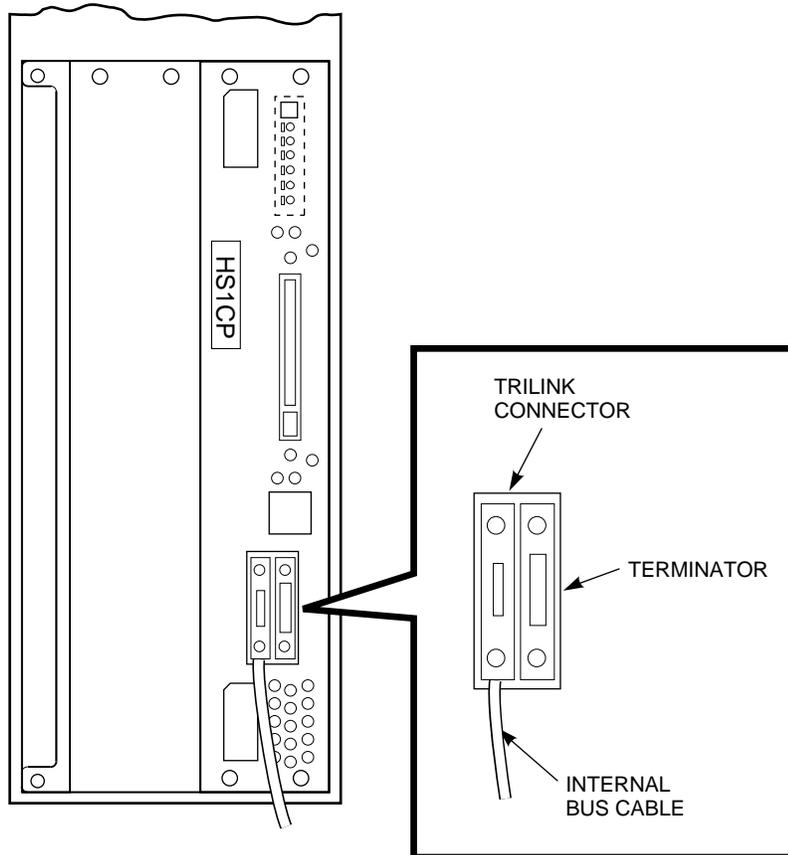
1. Attach one end of the internal bus cable to the trilink connector on the newly installed HS1CP device channel processor. Refer to Figure 2–8.

Note

In the previous step, the other end of the internal bus cable is already attached to the connector of the newly installed HS1AD device bus adapter.

2. Plug the supplied bus terminator into the other trilink connector on the newly installed HS1CP device channel processor. Refer to Figure 2–8.

Figure 2-8 Trilink Connector with Cable and Terminator



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3. You have completed the cabling procedure. Now go to Section 2.6 to replace the server processor in the SW800 cabinet.

2.6 Slide the Server Processor Back into the FDDI Server Cabinet

1. Reinstall the rear top cover on the server processor.
2. Slide the server processor back into your FDDI Server cabinet.
3. Reinstall the red shipping brackets.
4. Close the rear door and secure it shut with a hex wrench.

2.7 Run the EISA Configuration Utility (ECU)

Whenever you add, remove, or move an EISA option, you need to run a utility called the EISA Configuration Utility (ECU). The ECU and a configuration file (CFG) for the device bus adapter are located on the diskette included with the FDDI Server's software kit. The ECU uses the CFG file to allocate system resources and create a conflict-free configuration. This configuration information is saved to your Server's nonvolatile memory.

Note

As previously indicated, in most cases, the CFG file for the device bus adapter is located on the ECU diskette that is shipped with your server. If the file is not found, the ECU program prompts you to insert the CFG diskette (AK-Q767A-CA) shipped with the device bus adapter option.

The ECU allows you to set device bus adapter parameters, as described in *How to Run the ECU*.

How to Run the ECU

Note

If you do not set your terminal as described below, the keyboard does not function correctly with the ECU. Your terminal mode setup must be set to 7 bit mode.

Check the communication setup and make sure it is set to 9600 baud, 8 bit, one stop bit, and no parity.

1. Depress the power button on the server processor OCP to power it up. When the >>> prompt appears on the terminal screen, the self test is complete.
2. Insert the ECU diskette into the floppy diskette drive.
3. Type ECU and press RETURN at the >>> prompt. The system loads the ECU software.
4. During loading, press RETURN to respond to system questions until the software displays the menu shown in the example below.

```
EISA Configuration Utility
Steps in configuring your computer

STEP 1: Important EISA configuration Information
STEP 2: Add or remove boards
STEP 3: View or edit details
STEP 4: Examine required details
STEP 5: Save and exit

>Select=ENTER< <Cancel=ESC>
```

5. Use the down arrow key to select the "STEP 3: View or edit details" option (shown in the previous example) and press the Enter key.
6. Use the down arrow key to scroll through the file until you find the device bus adapter option and its slot number. The display lists the current settings. A sample file is shown below:

```
Step 3: View or edit details

Slot 7 -- Digital device bus adapter internal bus EISA Host Adapter   Added
Host Adapter Interface.....Trigger EDGE
Host Adapter IRQ.....IRQ 15
Host Adapter internal bus ID.....Device ID 7

Slot 8 -- Digital device bus adapter internal bus EISA Host Adapter   Added
```

```

Host Adapter Interface.....Trigger EDGE
Host Adapter IRQ.....IRQ 14
Host Adapter internal bus ID.....Device ID 7

```

Note

The IRQ and device ID of the device bus adapter are automatically set to the default values by the ECU. The previous display shows that the server processor contains one device bus adapter with a device ID of 7 and an IRQ of 15, and another device bus adapter with a device ID of 7 and an IRQ of 14.

Table 2-2 shows the ID to set for HS1AD device bus adapters depending upon your configuration.

Table 2-2 HS1AD Device Bus Adapter ID

If you have ...	And you used ...	Then ...
an HS111	Cabling Procedure 1, Section 2.5.1	Set HS1AD1 to ID 7 and HS1AD2 to ID 6 †
an HS111	Cabling Procedure 2, Section 2.5.2	Set HS1AD1 and HS1AD2 to ID 7
an HS111	Cabling Procedure 3, Section 2.5.3	Set HS1AD1 and HS1AD2 to ID 7

† If you have installed a second HS1AD in an HS111 FDDI Server and you later upgrade that server to an HS121 FDDI Server, you must reset the HS1AD at ID 6 to ID 7 at the time of the upgrade.

7. To change the settings (Step 3, "edit details"), use the down arrow key to select the options you want to change and press the RETURN key.
8. When you have finished with the option settings, press CTRL [(control left bracket). A main menu similar to the following displays:


```

EISA Configuration Utility
  Steps in configuring your computer

STEP 1: Important EISA configuration Information
STEP 2: Add or remove boards
STEP 3: View or edit details
STEP 4: Examine required details
STEP 5: Save and exit

>Select=ENTER< <Cancel=ESC>

```
9. Use the arrow key to select "Step 5: Save and exit" (see the previous example) and press the Enter key. The display shows that your configuration is saved.
10. Press Enter again, and the >>> prompt displays.
11. Remove the ECU diskette from the floppy diskette drive.
12. Power cycle the server processor (depress power button on the server processor twice: once to turn it off and again to restart the system). After the system performs the self test, the >>> prompt displays.

2.8 Verifying Your Installation

Use the following procedure to verify your installation of the HS1AD device bus adapter:

1. At the >>> prompt, type SHOW CONFIG, and press RETURN. A screen display similar to the one below appears:

```
Firmware
SRM Console:  V3.0-1
ARC Console:  4.6
PALcode:      VMS PALcode X5.48-49, OSF PALcode X1.35-59
Serial Rom:   V1.1

Processor
DECchip (tm) 21064-2

MEMORY
  64 Meg of System Memory
  Bank 0 = 32 Mbytes (8 MB Per Simm) Starting at 0x00000000
  Bank 1 = 32 Mbytes (8 MB Per Simm) Starting at 0x02000000
  Bank 2 = No Memory Detected
  Bank 3 = No Memory Detected

PCI Bus
  Bus 00 Slot 06: NCR      810 Scsi Controller
                                pka0.7.6.0          SCSI Bus ID 7
                                dka100.1.0.6.0       RZ28B
                                dka400.4.0.6.0       RRD43

  Bus 00 Slot 07: Intel  8275EB PCI to Eisa Bridge

EISA Bus Modules (installed)
  Slot 3  DEC3002          fra0.0.0.3.1      08-00-2B-A5-CC-93
  Slot 7  DEC2E00
  Slot 8  DEC2E00
```

2. If your newly installed HS1AD appears in Slot 07, your installation is successful.

If Slot 07 does not display on your terminal screen, the second HS1AD device bus adapter is not being recognized by the server processor. Consult the *StorageWorks™ Solutions StorageWorks FDDI Server HS1xx Service Manual*.

3. Type BOOT at the >>> prompt to boot the server processor.
4. After the system completes its boot operations, log in. The DCL \$ prompt appears after login.
5. At the DCL \$ prompt, type SHOW ERRORS and press RETURN. If errors are displayed, refer to the *StorageWorks™ Solutions StorageWorks FDDI Server HS1xx Service Manual* and resolve the errors before proceeding with the installation.

If no errors are displayed, your HS1AD installation is complete. If you performed this installation as a subset of the HS1CP device channel processor installation, return to the *StorageWorks™ Solutions StorageWorks FDDI Server HS1CP Device Channel Processor Installation Guide* to continue.

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