DECsystem 5900

Dual CPU Drawer Installation Manual

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Preface

Product Description

The DECsystem 5900 is a computer system designed for server applications, including file servers, compute-servers, and network servers. It is a midrange system that uses a modular approach, based on industry standard, 47.5 cm (19 inch) rack mount components.

DECsystem 5900 server CPU drawers use a high-performance sing'e-board computer based on the MIPS R3000A 40-MHz processor. The DECsystem 5900 comes in a single-cabinet configuration that contains a power controller, one or two CPU drawers, and up to four additional mass storage drawers.

Document Description

This manual describes the installation of a second CPU drawer (an "upgrade") in the DECsystem 5900 to make a dual CPU configuration. The manual will be packaged with an upgrade kit to provide step by step instructions for Digital Services engineers.

This manual is to be used in conjunction with the *DECsystem 5900 Service Guide*, EK-D590A-PS.

Any service or upgrades needed inside the DECsystem 5900 cabinet must be done by a Digital Services engineer or an authorized self-maintenance customer.

Audience

The *DECsystem 5900 Dual CPU Drawer Installation Manual* is for use only by Digital Services engineers or self-maintenance customers who are receiving a dual CPU drawer upgrade for installation.

Document Structure

The *DECsystem 5900 Dual CPU Drawer Installation Manual* contains four chapters, as follows:

Chapter 1	Overview This chapter is an introduction providing important background information.
Chapter 2	CPU Drawer Installation This chapter contains step by step procedures for the installation and testing of the CPU drawer upgrade.
Chapter 3	CPU Drawer Cables and Busses This chapter contains information needed to connect cables and busses to the CPU drawer upgrade.
Chapter 4	Mass Storage Drawer Configuration/Setting SCSI IDs This chapter contains information on altering mass storage drawer configurations and/or SCSI device IDs if requested by the customer.

Conventions Used in This Document

The *DECsystem 5900 CPU Drawer Installation Manual* uses the following conventions:

Convention	Indicates
boldface type	User input.
italic type	Important information, variables, and complete titles of manuals.
Note	General information about the current topic.
Caution	Information to prevent damage to equipment or software. Read these carefully.
WARNING	Information to prevent personal injury. Read these carefully.
Return	Press that key.

1

Overview

This manual describes how to install an entire dual CPU drawer upgrade in the DECsystem 5900; it is meant to be used in conjunction with the *DECsystem 5900 Service Guide*, EK-D590A-PS.

In many instances, a dual CPU upgrade will be installed in conjunction with a new mass storage drawer. For details on connections to mass storage drawers, see the *DECsystem 5900 Mass Storage Drawer Installation Manual*, EK-DECMS-IN, which will be included when a mass storage drawer is to be installed.

WARNING

- **Only qualified service personnel should remove or install a CPU drawer.**
- **Static electricity can damage integrated circuits. Always use a grounded wrist strap and a grounded work surface (29–26246) when working with the internal parts of a computer system.**
- **Shut down ULTRIX in an orderly fashion before you install a CPU drawer (or any FRU) in the DECsystem 5900; procedures in this document assume that ULTRIX has been shut down.**
- **Turn off the system power switch and the main circuit breaker before installing a CPU Drawer.**
- **Extend the stabilizer bar to balance the system whenever one or more drawers are pulled out from the cabinet.**
- **At least two people are required for installing a CPU drawer.**

2

CPU Drawer Installation

WARNING

Before installing or pulling out either the CPU or a mass storage drawer, the stabilizer bar located at the bottom front of the enclosure must be extended to balance the DECsystem 5900.

2.1 Installing the CPU Drawer

WARNING

At least two people are required to remove or replace a drawer in the DECsystem 5900.

The general steps for installing a CPU drawer are listed below. Each is covered in detail in the referenced section of this chapter.

1. Unpack the upgrade shipment (Section 2.1.1)
2. Consult customer to determine location and configuration of the drawer (Section 2.1.2)
3. Power down the system (Section 2.1.3)
4. Remove filler panel(s) (Section 2.1.4)
5. Move the original cable arm (Section 2.1.5)
6. Assemble and attach CPU drawer slides to the cabinet (Section 2.1.6)
7. Install the new cable arm (Section 2.1.7)
8. Extend the stabilizer bar to balance the system (Section 2.1.8)
9. Install the drawer on the slides in the cabinet (Section 2.1.9)
10. Push in the drawer (Section 2.1.10)

11. Retract the stabilizer bar (Section 2.1.8)
12. Connect the power cables and busses (Section 3.1)
13. Connect the new system console (Section 3.1.2)
14. Power up the system (Section 3.2)
15. Run acceptance tests (Section 3.3)
16. Modify ULTRIX (Section 3.4)

2.1.1 Unpacking the Upgrade Shipment

To begin the installation, unpack the CPU drawer shipment and check to see that it has arrived with all accessories. Section 2.1.1.1 lists the accessory kit contents for a CPU drawer upgrade shipment with no additional options or accessories.

The shipment may also contain a system console and/or mass storage drawers, new storage options, and associated accessories. The SCSI and power cables for all mass storage drawers are present in the DECsystem 5900 when it is originally shipped from the factory (whether or not drawer slots were filled at that time), so all cabling for mass storage drawer(s) should be already installed in the cabinet.

2.1.1.1 Accessory Kit Contents

CPU drawer assembly
Drawer slides and accessories
Cable arm extension bracket
Cable arm
SCSI cable, external
Power cord
Tie-wraps
Screws
Product conversion label
DECsystem 5900 Dual CPU Installation Manual (this manual)

2.1.2 Consult Customer to Determine Configuration and Location

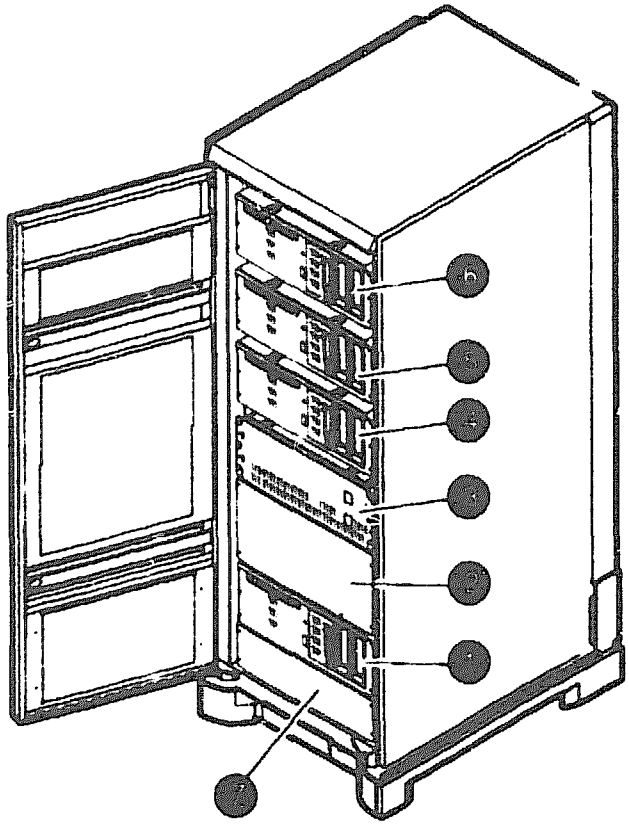
Before proceeding with the CPU drawer installation, consult the customer or system manager to determine the drawer(s) locations in the DECsystem 5900 cabinet. The slots in the DECsystem 5900 cabinet are labeled consecutively, starting with slot 0 on the bottom. The power controller is located in the rear of slot 0.

Note

The DECsystem 5900 should be configured with CPU drawers toward the bottom of the cabinet for balance (normally the second or third slots).

The suggested location for the second CPU drawer is slot 2 in the cabinet. (See Figure 2–1).

Figure 2–1 Slots and Suggested Location of Drawers



MLO-008349

1. slot 1 (may contain a mass storage drawer or other options; if empty, it will be covered by a filler panel)
2. slot 2 (left empty for dual CPU upgrade; covered by filler panel)
3. slot 3 (original CPU drawer)
4. slot 4 (original mass storage drawer)
5. slot 5 (may contain a mass storage drawer or other options; if empty, it will be covered by a filler panel)
6. slot 6 (may contain a mass storage drawer or other options; if empty, it will be covered by a filler panel)
7. slot 0 (covered by a filler panel in front, contains power controller in rear)

2.1.3 Powering Down the System

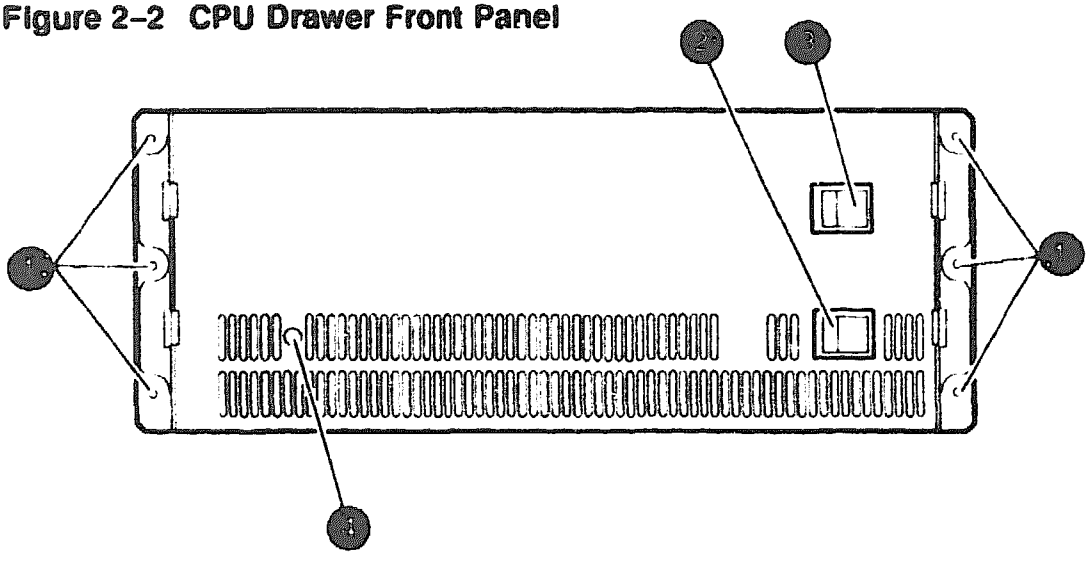
Note

Prior to powering down the DECsystem 5900, ULTRIX must be shut down in an orderly fashion by the customer/system manager.

1. Turn off the system power switch (Enable Power On Switch) on the front of the operational CPU Drawer. (See Figure 2–2.)
2. Turn off the circuit breaker on the power controller. (See Figure 2–3.)

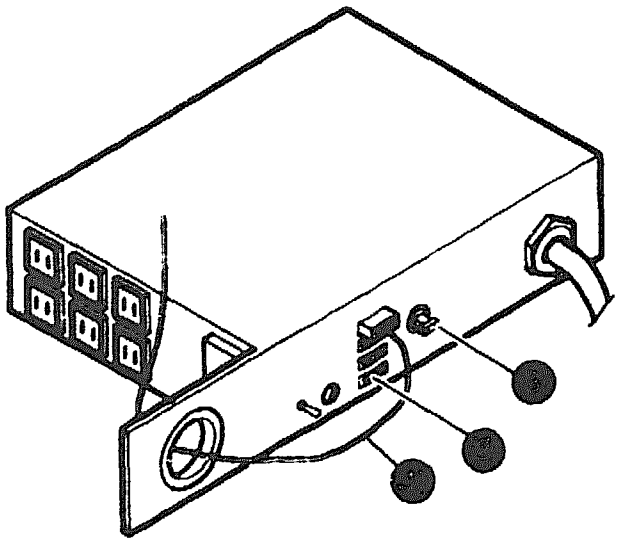
   The power controller is accessed through the rear door on the bottom of the enclosure.

Figure 2–2 CPU Drawer Front Panel



- 5/16 hex screws that secure the drawer to the shipping restraint brackets
- CPU drawer power switch (should normally be left on)
- system power switch (Enable Power On Switch)
- LED power indicator

Figure 2–3 Power Controller



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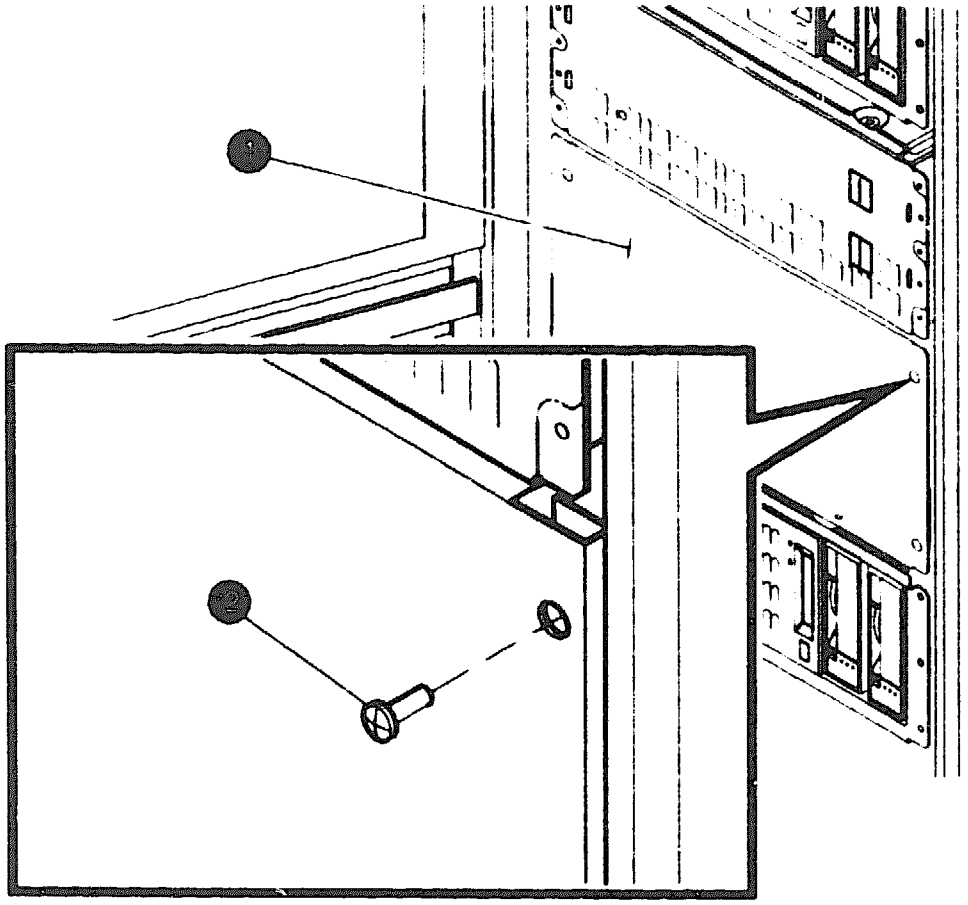
1. remote power sequence cable (to CPU drawer)
2. remote sequence connectors
3. circuit breaker

2.1.4 Removing Filler Panel(s)

Slots in the DECsystem 5900 enclosure front that contain no drawers will be covered with a filler panel. Slot 0, which contains the power controller (accessed through the rear of the enclosure), has a filler panel as well.

Filler panels are attached to the front cabinet rails by means of four hex screws, two on each side. Remove these hex screws by inserting a screwdriver through the access holes (see Figure 2–4). Save the panel for future use by storing it in the accessory kit.

Figure 2–4 Removing Filler Panel(s)



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1. filler panel
2. hex screw

2.1.5 Moving the Original Cable Arm

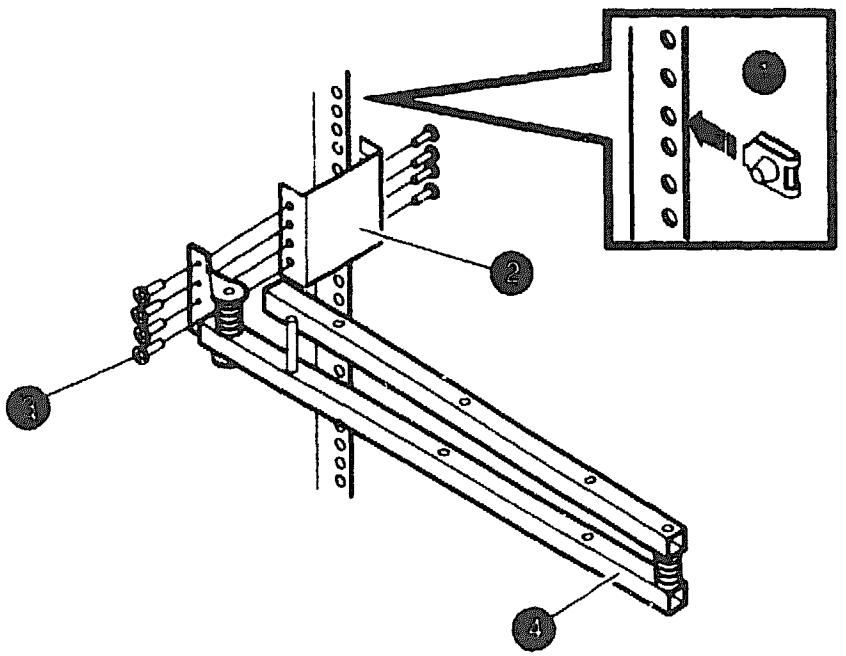
2.1.5.1 Removing the Cable Arm

On earlier versions of the DECsystem 5900 the original cable arm uses the same cabinet rail holes that the dual CPU drawer slides will occupy. The original cable arm must be moved prior to installation of the new drawer slides.

Use the following procedures to remove the original cable arm (accessed through the rear door of the DECsystem 5900). Leave the cables tie-wrapped to the arm for remounting. See Figure 2–5. (The illustration shows the cable arm without the tie-wrapped cables for clarity.)

1. Leaving the cable arm attached to the bracket, remove the bracket from the rail (the bracket and cables are still attached to the arm).
2. Remove the U-nuts from the rail to use in remounting the cable arm bracket.

Figure 2–5 Removing Original Cable Arm



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1. U-nuts
2. bracket
3. hex screws
4. original cable arm

2.1.5.2 Remounting the Original Cable Arm

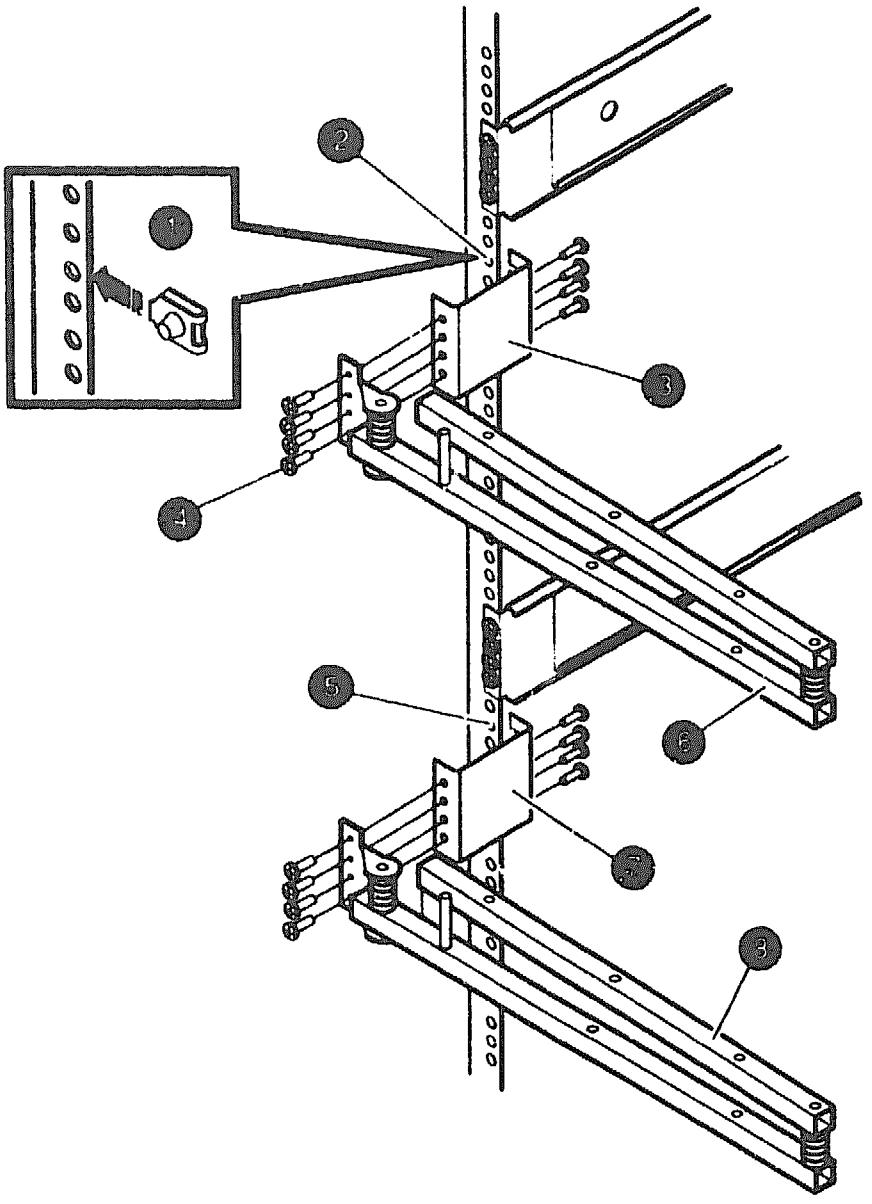
Remount the original cable arm bracket (with the cable arm and cables tie-wraped to it) to holes 56-59 using the same screws and U-nuts it was originally mounted with. The top screw should occupy hole 56, two holes down from the original CPU drawer slides. See Figure 2–6. (To count hole numbers on the cabinet rails, see Section 2.1.6.1.)

Note

Cable arm brackets are attached on the *inside* of the rail; the U-nuts are therefore *reversed* in the rail holes.

Figure 2–6 depicts both the remounted original cable arm and new cable arm locations. (The illustration shows the cable arm without the tie-wrapped cables for clarity. If you are following these procedures step by step, the lower (new) cable arm and lower drawer slide will be installed later.)

Figure 2–6 Cable Arm Installation



1. U-nuts
2. hole 56
3. bracket for original cable arm
4. hex screws
5. hole 70
6. cable arm for original CPU drawer
7. bracket for new cable arm
8. cable arm for new CPU drawer

2.1.6 Assembling and Attaching Slides to Cabinet

2.1.6.1 CPU Drawer Location

The placement of drawers may be determined by counting the holes in the cabinet rails, beginning on the top and counting down. The placement of drawers is described in Table 2–1:

Table 2–1 Drawer Locations on the Cabinet Rails

Cabinet Slot	Typical Application	Hole Numbers (From the Top)
6	mass storage	5-8
5	mass storage	20-23
4	mass storage	35-38
3	CPU	50-53
2	CPU	65-68
1	mass storage	80-83
0	power controller	N.A.

To install slides for a dual CPU installation, place the slides at holes 65–68 (cabinet slot 2).

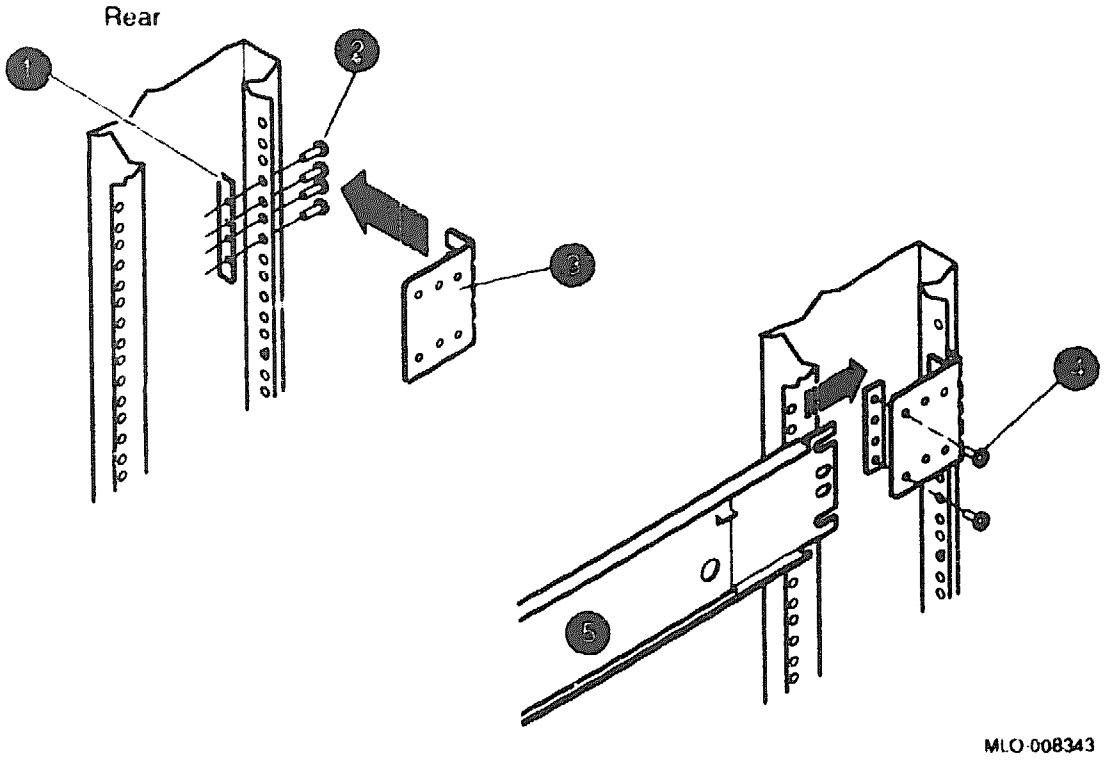
2.1.6.2 Slide Assembly

Assemble and attach the slides to the cabinet in holes 65–68 using the following procedures. (See Figure 2–7 and Figure 2–8.) For the numbering of cabinet rail holes, see Table 2–1.

1. Place the screws and four-holed fasteners loosely on both the front and rear cabinet rails (see Figure 2–7 and Figure 2–8). Do not tighten the screws until the slide is mounted in the following steps.
2. Place the rear bracket on the rear cabinet rail using the screws and four-holed threaded fastener (Figure 2–7). Do not tighten the screws until completing following steps.
3. Loosely attach the front flange of the slide to the screws and four-holed threaded fastener (Figure 2–8).
4. Place the rear of the slide in the rear bracket, adjust to the exact length of the cabinet, and loosely attach using screws and a four-holed threaded fastener (Figure 2–7).

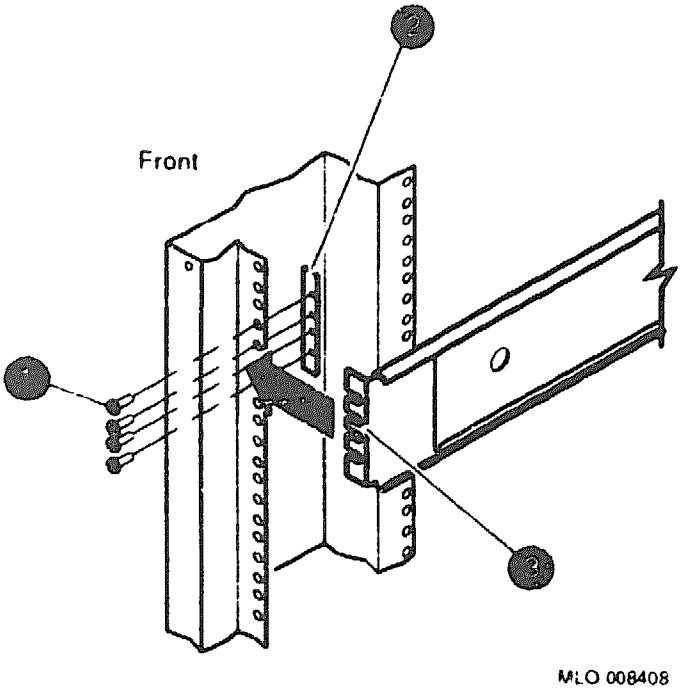
5. Seat the front flange of the slide and the rear bracket (now attached to the slide) firmly and squarely against the cabinet rails and tighten them to the cabinet with the screws and fasteners already in place.
6. Tighten the rear of the slide to the bracket.
7. Repeat these steps for the other slide.

Figure 2–7 Attaching Rear Bracket and Slides to Cabinet



1. four-holed threaded fastener
2. hex screws
3. rear slide bracket
4. hex screws
5. slide

Figure 2–8 Attaching Front of CPU Slides to Cabinet



1. hex screws
2. four-holed threaded fastener
3. front flange of slide

2.1.7 Installing the New Cable Arm

The new cable arm is attached in the same manner as the original cable arm. See Figure 2–6. (To count hole numbers on the cabinet rails, see Section 2.1.6.1.)

1. Attach the new cable arm bracket to the cabinet using screws and U-nuts. The top screw should occupy hole 70, one hole down from the newly installed drawer slides for the CPU drawer upgrade.
2. Use hex screws to attach the cable arm to the newly installed bracket.
3. Cable connections and routing (Chapter 3) are accomplished after installing the drawer (Section 2.1.9).

2.1.8 Balancing the System

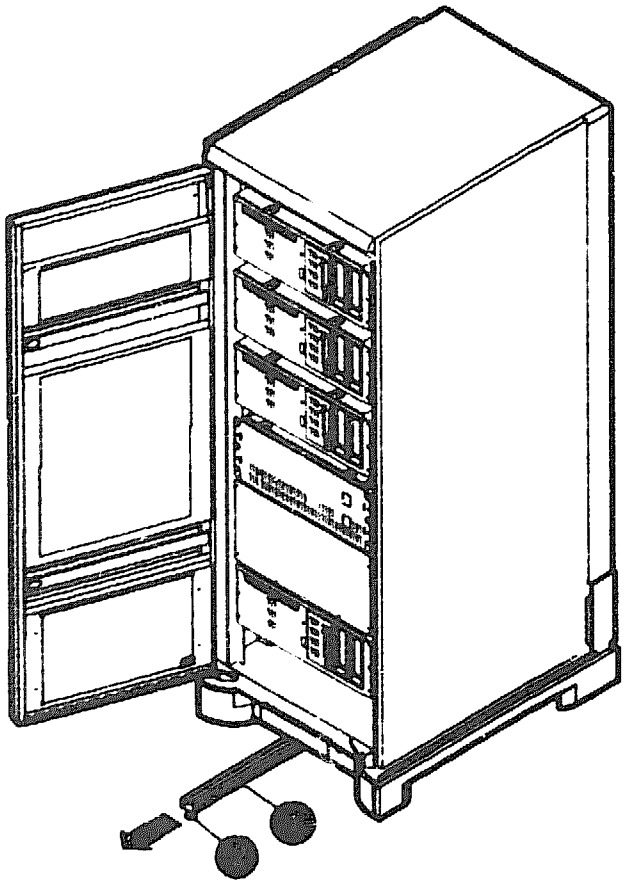
WARNING

Before installing or pulling out either the CPU or a mass storage drawer, the stabilizer bar located at the bottom front of the enclosure must be extended to balance the DECsystem 5900.

The system is balanced by extending the stabilizer bar located at the bottom front, as depicted in Figure 2–9.

- If the leveler foot is tightened down to the floor, raise it.
- Pull the stabilizer bar out until it stops.
- Screw the leveler foot down firmly by hand.
- To retract the arm, reverse these procedures.

Figure 2–9 Stabilizing the Enclosure



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❻ stabilizer bar

❼ leveler foot

2.1.9 Installing Drawer in Cabinet

To install the drawer in the cabinet, use the following procedures.

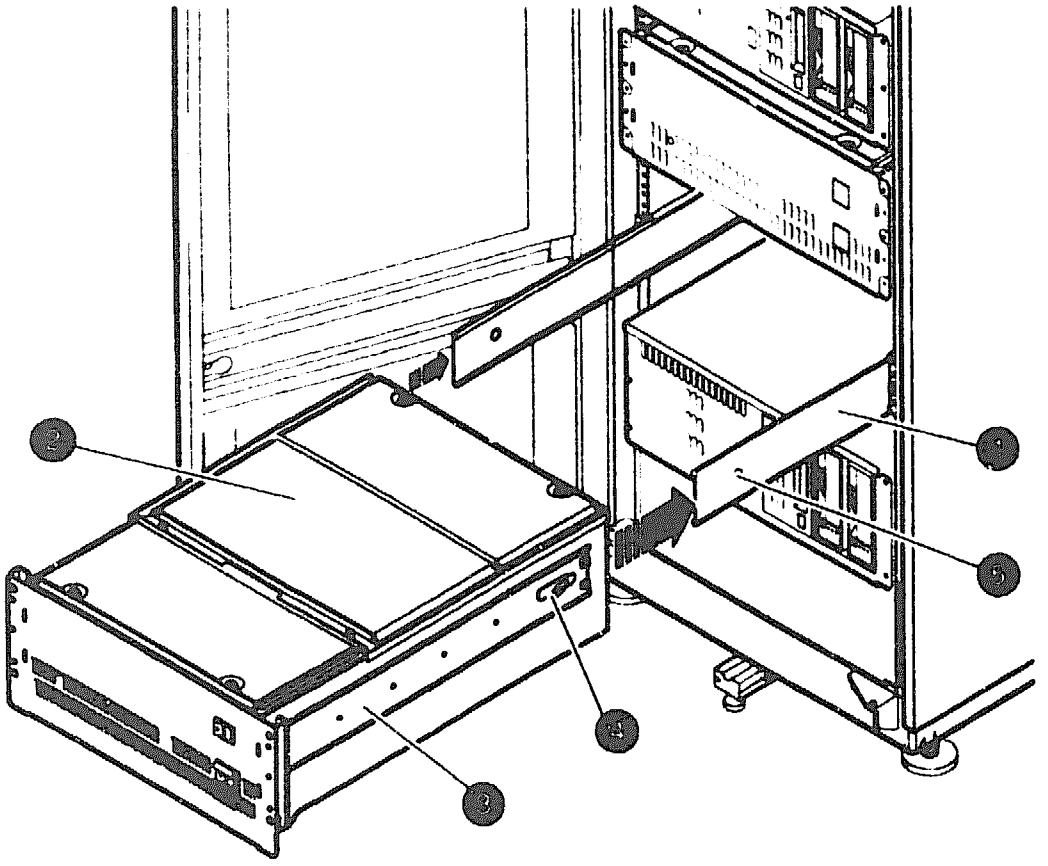
1. Pull the slides (now installed in the cabinet) out until they are fully extended. (A "click" will be heard when outer slide button tabs have latched.) (See Figure 2–10.)

2. Using two people, lift the CPU drawer up and insert the inner slides (attached to the drawer) into the extended slides. Push in until firm pressure is felt, indicating that the button tab on the inner slide (attached to the CPU drawer) is tight against the end of the middle slide.

3. Push in on each of the inner slide button tabs, and continue to push in on the drawer until the button tabs on the inner drawer "click" outward through the holes in the middle drawer slide, indicating that the drawer is securely fastened in its extended position.

To push the drawer shut, see Section 2.1.10

Figure 2–10 Installing the CPU Drawer



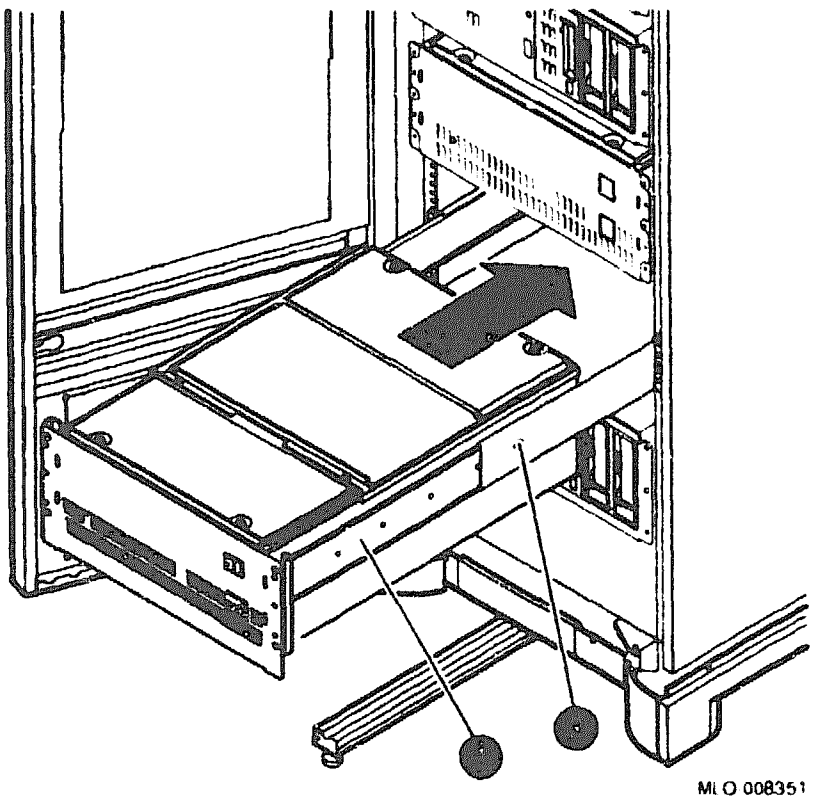
1. middle slide section
2. CPU drawer
3. inner slide
4. inner slide button tab
5. middle slide holes

2.1.10 Pushing in the Drawer

To push in the CPU drawer, use the following procedures. See Figure 2–11.

1. Simultaneously push in and hold both the spring tab buttons on the slides (one on the outside of each inner slide).
2. Push in on the front of the drawer until it is flush with the front cabinet rails.
3. There is no need for hex screws on the front of the drawer; the six holes are for use in the future to secure the drawer to shipping restraint brackets if the system is to be shipped.
4. After pushing in the drawer, the stabilizer bar may be retracted (see Section 2.1.8).

Figure 2–11 Pushing In CPU Drawer



- inner drawer slide
- inner drawer slide tab buttons (protruding through middle slide holes)

3

Connections, Power Up, and Testing

3.1 Connecting Cables

Note

Before proceeding, consult the customer or system manager to determine how the installation of the dual CPU drawer will affect the configuration of the DECsystem 5900.

Connections to the newly installed CPU drawer depend upon the specific configuration requested by the customer. In some instances, cabling to the original CPU drawer and the mass storage drawers may be altered as well.

The rear panel of a CPU drawer is illustrated in (Figure 3–1).

Note

Cables are to be routed through the cable arm and dressed in the same manner as on the original CPU drawer.

3.1.1 Power

3.1.1.1 Power Cord

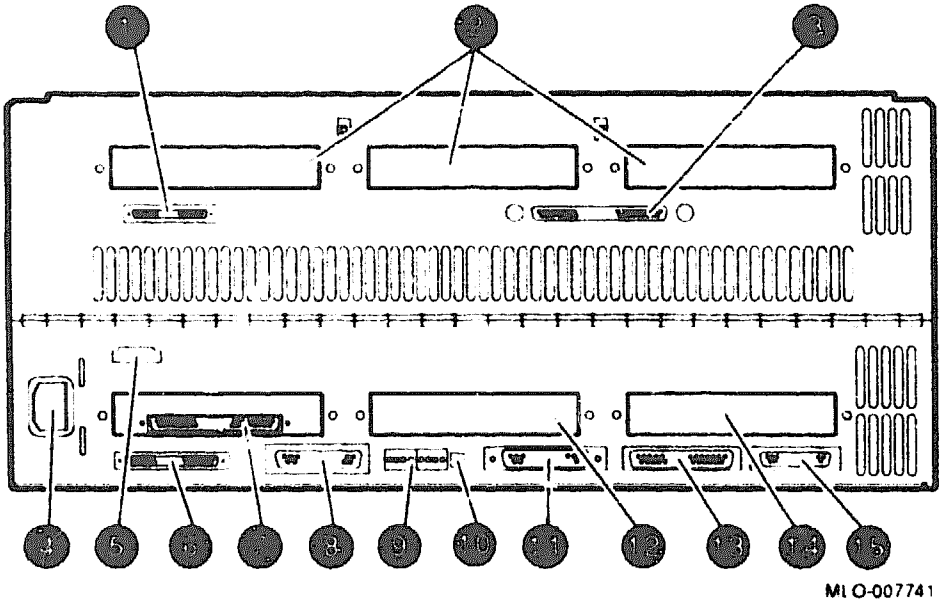
Plug one end of the new drawer power cord into one of the ac outlets on the side of the power controller (Figure 2–3). Route and tie-wrap the cord with the other power cords along the cabinet rail, and connect it to the ac power receptacle on the back of the drawer. Do not run the power cord along the cable arm.

3.1.1.2 Remote Power Sequence Cable

Using remote power sequence cables, both of the CPU drawers will be powered so that the *Enable Power On Switch* (system switch) on the front of *either* CPU drawer (see Figure 2–2) controls power to the whole system.

Connect the remote power sequence cable to one of the remote sequence connectors on the power controller (see Figure 2–3) and the other to the remote power sequence connector on the new CPU drawer ❺ (see Figure 3–1).

Figure 3–1 CPU Drawer Rear Panel



- ❶ not used
- ❷ TURBOchannel Extender Module slots
- ❸ TURBOchannel Extender I/O (connected to ❼)
- ❹ ac power receptacle
- ❺ remote power sequence connector
- ❻ system module SCSI port
- ❼ TURBOchannel Extender Adapter module (in option slot 0, connected to ❸)
- ❽ standard Ethernet
- ❾ diagnostic LEDs
- ❿ halt switch

- system console port
- TURBOchannel option slot 1
- communications port
- TURBOchannel option slot 2
- not used

3.1.2 Connecting the System Console

In consultation with the customer, determine which terminal device will serve as the console for the newly installed CPU drawer. Connect the cable to the system console port on the rear of the CPU drawer (depicted in Figure 3–1).

Set the console device to 9600 baud, no parity, one stop bit.

3.1.3 TURBOchannel Connections

In consultation with the customer, determine which PMAZ SCSI controllers are to be connected to which mass storage devices or enclosures.

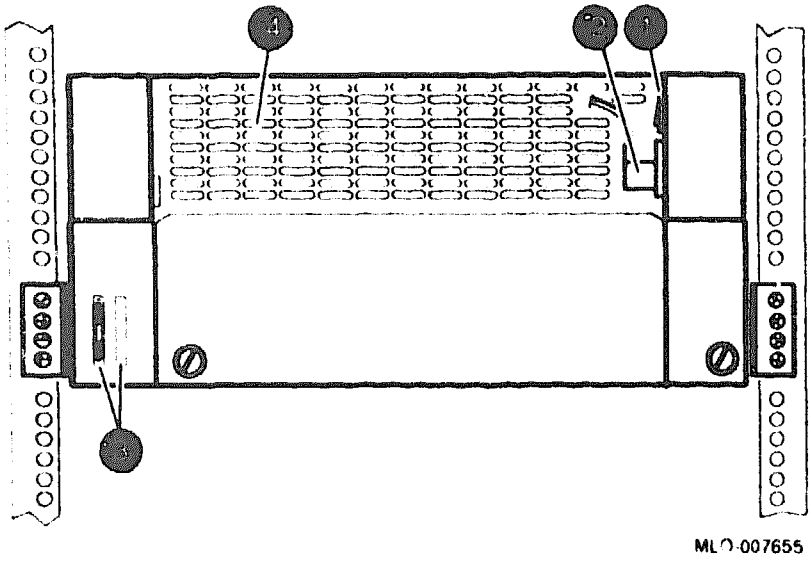
Cable devices to the appropriate mass storage drawers or devices.

- Connect the CPU drawer end of the SCSI cable to one of the SCSI ports on the back of the CPU drawer (see Figure 3–1); either the system module SCSI port or a PMAZ SCSI adapter. (The appropriate port will vary according to the particular configuration of the DECsystem 5900; if in doubt, check with the customer or system manager.)
- Connect the other end of the SCSI cable to the mass storage drawer or external device(s). The exact location of the SCSI connector will be determined by the particular version of mass storage drawer. (See Figure 3–2 for an illustration of a typical connection.)

For information on particular devices, see the appropriate device user's manual.

For more information on configuring mass storage drawers, see Chapter 4.

Figure 3–2 Mass Storage Drawer Version 1 Rear Panel



- power switch (should normally be left on)
- power cable that connects to main power controller
- SCSI bus connectors to CPU drawer
- vent for outflow of air

3.2 Powering Up the System

3.2.1 Power Controller

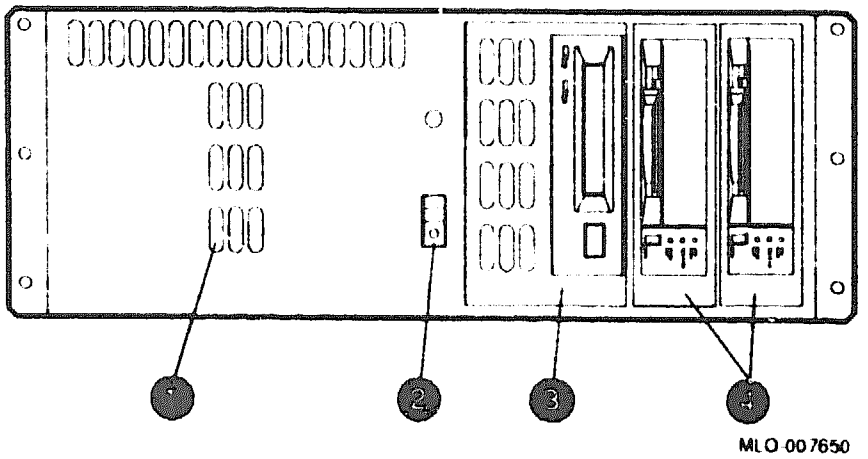
Turn on the circuit breaker on the power controller (located in the rear of the cabinet, on the bottom). See Figure 2–3

3.2.2 Mass Storage Drawer

Switch the mass storage drawer power switch on the rear of the mass storage drawer "On". Depending upon the particular version of mass storage drawer, there may also be a power switch on the front of the drawer. In this case, make sure both are switched "On".

See Figure 3–2 and Figure 3–3 which depict one version of a mass storage drawer (with a switch on the front *and* back).

Figure 3–3 Mass Storage Drawer Front Panel



1. air inlet
2. power switch–some versions have a green LED to indicate "Power on"
3. optional full-height removable media device (TLZ04 shown)
4. optional half-height removable media devices (TZ30s shown)

3.2.3 CPU Drawer/System

There are two power switches on the front of a CPU drawer (see Figure 2–2), a system power switch (Enable Power On Switch) for the entire DECsystem 5900, and a CPU drawer power switch for the CPU drawer only. Both must be switched "On" to power up the system. Turn on the system power switches first, then the drawer switch on both CPU drawers.

Note

If the power controller is in the remote (normal) mode, the system switches on *both* CPU drawers must be switched on to enable power.

3.3 Acceptance Testing

The following steps will ensure that the CPU drawer that you just installed is in proper operating condition. In addition, problems such as cabling or configuration will be found before the operating system is loaded/booted.

Note

These procedures are an overview of the acceptance testing steps. Detailed information can be found in the *DECsystem 5900 Service Guide*, EK-D590A-PS.

Note

Make sure a console is connected to the console port on the rear of the upgrade CPU drawer.

3.3.1 Power-Up Self-Test (POST)

1. Turn on the upgrade CPU drawer (depending upon the system/power controller configuration, the original CPU drawer may have to be turned on also).
2. Watch the console terminal for a running display of the POST tests. Most will overwrite the display from previous tests as they are run.

   There should be no errors in this 2 minute (approx) test.

   Note

   Disregard the Pntr and Kbd messages; they are not errors.

3. If there is no display, look for a green power LED on the front, and see if the red LEDs on the rear of the CPU drawer are changing state as the tests run. If the LEDSs are not on, check for a power or cabling problem. Make sure that the drawer is receiving ac power.

3.3.2 Checking the System Configuration

Use the cnfg utility to assure that the system can "see" all the memory modules, NVRAM, TURBOchannel options and SCSI devices. There can only be *one* SCSI device 0,1,2,3,4,5,or 6 on *each* SCSI bus.

Pay particular attention to SCSI IDs on configurations that use split SCSI or have two CPUs sharing a single mass storage drawer. If the system cannot see all the devices on each SCSI bus or on the system module, check the cable/module connections or the SCSI ID's.

Run config by entering **cnfg x** where x = the TURBOchannel bus ID: 0,1,2, or 3; use 3 for the system module.

3.3.3 Extended ROM Tests

Run the extended tests on memory, cache, floating point, Ethernet, prcache and TLB. The -l command will cause the tests to loop until a **^c** is typed. Table 3–1 is provided as a guideline.

Table 3–1 Individual Module/Device Tests and Utilities

Individual Test	Test Command
System Module	
Halt button	**t 3/misc/halt n[0]**[1]
Nonvolatile RAM	**t 3/rtc/nvr [pattern]**[2]
Overheat detect	**t 3/overtemp**
Real-time clock period	**t 3/rtc/period**
Real-time clock register	**t 3/rtc/regs**
Real-time	**t 3/rtc/time**
SCC[3] access	**t 3/scc/access**
SCC DMA	**t 3/scc/dma line[2] int/ext[I] bd[38400] pa[none] bits[8]**[4]
SCC interrupt	**t 3/scc/int line[0]**[4]
SCC I/O	**t 3/scc/io line[0] int/ext[I]** [4]
SCC pins	**t 3/scc/pins line[2] loopback[29-24795-00]**[4]
SCC xmit and receive	**t 3/scc/tx-rx line[2] int/ext[I] bd[9600] pa[none] bits[8]**[4]
NVRAM	**t 3/prcache**
NVRAM clear	**t 3/prcache/clear**
NVRAM battery enable	**t 3/prcache/unarm**
NVRAM battery disable	**3/prcache/arm**
System Module Ethernet Controller	

[1] [0] = [1-9] = press halt same number of times (1-9)

[2] [pattern] 55 is default pattern

[3] Serial communications chip

[4] Conventions used in SCC tests. line, serial line to test, 2 is rightmost from back 3 is leftmost. int/ext is internal or external loopback. bd is baud rate. pa is parity. bits is data bits. loopback specifies the type of loopback used in the pins test. The value in [ ] specifies the default.

(continued on next page)

Table 3–1 (Cont.) Individual Module/Device Tests and Utilities

Individual Test	Test Command
Collision	**t 3/ni/cllsn**
Cyclic redundancy code	**t 3/ni/crc**
Display MOP counter	**t 3/ni/ctrs**
DMA registers	**t 3/ni/dma1**
DMA transfer	**t 3/ni/dma2**
ESAR[5]	**t 3/ni/esar**
External loopback	**t 3/ni/ext-lb**
Internal loopback	**t 3/ni/int-lb**
Interrupt request (IRQ)	**t 3/ni/int**
Multicast	**t 3/ni/m-cst**
Promiscuous mode	**t 3/ni/promisc**
Registers	**t 3/ni/regs**
SCSI Controller and Drives	
SCSI controller	**t 3/scsi/cntl**
SCSI send diagn	**t 3/scsi/sdiag [scsi_id] [d] [u] [s]**[6]
SCSI target	**t 3/scsi/target [scsi_id] [w] [l #]**[6]
CPU Card	
Cache data test	**t 3/cache/data [cache] [address]**[7]
Cache fill	**t 3/cache/fill [cache] [offset]**[7]
Cache isolate	**t 3/cache/isol [cache]**[7]
Cache reload	**t 3/cache/reload [cache] [offset]**[7]
Cache segment	**t 3/cache/seg [cache] [address]**[7]
CPU-type	**t 3/misc/cpu-type**

[5]Ethernet station address ROM

[6]Replace scsi_id with device id # that you want to test. 0 is the default. [d] and [u] are device-specific parameters. Reference the device manuals for more details. Leave to default if unsure. [s] suppresses error messages (not normally set). [w] if specified will perform a write test to the device called out in SCSI target test. *Caution: This can cause data loss. Run this command only on hard disks that have no data or on tapes with scratch media installed.*

[7]Replace [cache] with I (instruction) or D (data) to specify which cache to test. Data cache is default. Default [offset] is 80500000. You can replace with address you wish test to start at. [address] is not normally entered.

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Table 3–1 (Cont.) Individual Module/Device Tests and Utilities

Individual Test	Test Command
Floating-point unit	**t 3/fpu**
Translation lookaside buffer probe	**t 3/tlb/prb**
TLB reg	**t 3/tlb/reg [pattern] [pattern]**[8]
Memory Modules	
Floating I/O	**t 3/mem/float10 [address]**[9]
Memory module	**t 3/mem [module] [threshold] [pattern]**[9]
RAM address select lines	**t 3/mem/select**
Partial write	**t 3/misc/wbpart**
Initialize memory	**t 3/mem/init**

[8][pattern] default is 55555555. Pattern can be entered if needed.

[9]You can enter starting [address]. A0100000 is default. Module # default is 0. You can specify module [module]. A data pattern can be specified [pattern].

3.3.4 SCSI Test Commands

Note

For more detailed information consult the *DECsystem 5900 Service Guide*. EK-D590A-PS.

To test SCSI controllers, configurations, and new devices that were added, run the scsi/cntl (SCSI controller), scsi/sdiag (send diagnostic) and the scsi/target tests (test SCSI devices) on the SCSI controller(s) and newly added SCSI devices.

Caution

The [w] parameter on the scsi/target test may cause data loss; use it only on newly installed disk devices which have no data on them, or use a scratch tape in tape devices.

3.4 Modifying ULTRIX

These steps will vary with the scope of the changes to the system configuration that have been made during the CPU drawer upgrade. Depending on the site, you and/or the customer/system manager should consult the *Guide to Installing ULTRIX, AA-PBLODTE* and other ULTRIX documentation for more details on adding devices.

4

Mass Storage Drawer Configuration/Setting SCSI IDs

Note

This chapter is included in the *DECsystem 5900 Dual CPU Drawer Installation Manual* for your convenience if the customer requests that you reconfigure a mass storage drawer or change SCSI device IDs as a result of the CPU drawer installation.

4.1 Mass Storage Drawer Configuration

Note

The information contained in this section is needed *only* if the factory configuration of the mass storage drawer must be altered. A synopsis of this information is on the label located on the bottom of the mass storage drawer cover.

A mass storage drawer has the capability to split SCSI devices between two SCSI controllers. Devices in the mass storage drawer must be configured and connected before turning on the system.

All mass storage drawers in the DECsystem 5900 are ordered in a specific factory-installed configuration as specified by the customer/system manager (this includes mass storage upgrades ordered at a later date).

Two cabling configuration choices are available:

1. single bus configuration
2. split bus configuration

4.1.1 Altering the Factory-Set Configuration

The customer/system manager may wish to alter the configuration of a mass storage drawer; the options and tradeoffs are listed in Table 4–1.

Table 4–1 Configuration Option Choices/Advantages

Configuration Option	Advantages
Single bus	Maximizes devices per SCSI controller.
Split bus	Improves processing speed and efficiency for increased I/O loads.

4.1.1.1 Single Bus Configuration

For a single bus configuration, you must install a jumper between the internal SCSI cables in the mass storage drawer. The jumper connects the two busses in a mass storage drawer; the resulting single bus configuration is terminated on the rear of the drawer on the connection next to the SCSI signal input.

4.1.1.2 Split Bus Configuration

The split bus configuration uses both SCSI signal cables without a jumper. In this configuration both SCSI busses must be terminated with a cable terminator at the end of each internal SCSI cable.

4.2 SCSI IDs

Note

The information contained in this section is needed *only* if the factory-set device SCSI IDs must be altered. A synopsis of this information is on the label located on the bottom of the mass storage drawer cover.

4.2.1 Default SCSI Device IDs

SCSI default settings for the DECsystem 5900 are listed in Table 4–2. The settings listed give optimal performance on most systems.

Table 4–2 DECsystem 5900 SCSI Device ID Default Settings

Device	ID
CPU SCSI adapter	7
First removable device	5
Boot device or first device	0
Remaining devices, in order	1,2,3,4,6
Remaining removable devices	6,4,3,2,1

Note

No devices should ever use SCSI ID 7, as this is reserved for the CPU or PMAZ SCSI controller.

4.2.2 Setting SCSI IDs

Digital sets each SCSI device to a default SCSI ID setting before the equipment leaves the factory. These default settings should be changed *only* when there is a conflict with other SCSI IDs on the same SCSI bus.

When adding a SCSI device to the DECsystem 5900 (or reconfiguring a mass storage drawer), it is necessary to change the ID number of effected SCSI devices. The Digital Services engineer is responsible for changing the SCSI ID settings as part of the reconfiguration process.

Discuss the SCSI device ID options with the customer/system manager, and note the original configuration before altering the original device IDs.

When each SCSI device is added or reconfigured, a label should be placed on the device or bracket indicating the SCSI ID. This will help diagnose ID conflicts which may occur.

4.2.2.1 SCSI Jumpers and Switches

Varying means are employed (sets of switches, jumpers, incremental switch, programmed via front panel, and so on) to set the SCSI ID, and parity, depending on the particular device. For the method employed, and the location of switches /jumpers on a particular device, see the appropriate device documentation, and the label located on the underside of the mass storage drawer cover.

On devices with jumpers, the SCSI ID is set by inserting ("In") or removing ("Out") any of three jumpers in a specific combination. On devices with sets of switches, the SCSI ID is set by moving any or all of the switches to "On" or "Off". Incremental switches show a number which increments up or down when the switch is pushed.

Caution

To change SCSI ID switches, use a pen or small pointed object to move the jumper; do not use a pencil point. Graphite particles can damage the device.