

Prioris HX MP Server

User's Guide

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Prioris HX MP Server User's Guide

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The FCC wants you to know...

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

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

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

The user may find the following booklet prepared by the Federal Communications Commission helpful: *How to Identify and Resolve Radio-TV Interference Problems*. This booklet is available from the U.S. Government Printing Office, Washington, D.C., 20402. Stock No. 004-00398-5.

All external cables connecting to this basic unit need to be shielded. For cables connecting to option boards, see the option manual or installation instructions.

This digital apparatus does not exceed the Class B limits for radio noise emissions set out in the radio interference regulations of the Canadian Department of Communications.

This equipment is in the 2nd Class category (information equipment to be used in a residential area or an adjacent area thereto) and conforms to the standards set by the Voluntary Control Council For Interference by Data Processing Equipment and Electronic Office Machines aimed at preventing radio interference in such residential area.

When used near a radio or TV receiver, it may become the cause of radio interference.

Read the instructions for correct handling.

This equipment meets or exceeds requirements for safety in the U.S. (UL 1950), Canada (CSA C22.2 No. 950), and Europe (EN 60950/IEC 950) with Nordic requirements.

This equipment meets or exceeds the ergonomic requirements of ZH1/618 and is certified to bear the GS mark by TUV Rheinland of Germany.

This equipment has been tested for radio frequency emissions and has been verified to meet VDE 0871 Class B.

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About This Guide

Introduction

This guide describes how to operate, upgrade, troubleshoot, and configure the Prioris HX MP Server family. This guide, along with the "Getting Started" program on the CD-ROM disk will help to familiarize you with all aspects of the server and provide a reference tool for questions you might have in the future.

Audience

This guide is written specifically for anyone responsible for operating, configuring, and expanding the Prioris HX MP Server family.

Organization

This guide contains the following:

- Chapter 1: *Introduction*—This chapter provides general information about your server. For example: providing a comfortable working environment, supplied diskettes and CD-ROM disk, and learning where to obtain help.
- Chapter 2: *Configuring Your Server*—This chapter explains how to configure your server using the System Configuration Utility (SCU).
- Chapter 3: *CD-ROM Disk and Startup/Utility Diskette* —This chapter describes how to access on-line help, server utilities, video, SCSI, and mouse drivers from the "Getting Started" program contained on the CD-ROM disk.

Also, refer to the README files on the supplied diskettes and the system disks that you made using the "Getting Started" program.

About This Guide

- Chapter 4: *Expanding Your Server*—This chapter explains how to unlock and remove the side panels, install or replace main logic board options, install CPU modules, install memory modules, and mass storage devices.
Also, refer to your SCSI, RAID, and other options documentation as well as an on-line version of the “Prioris HX MP Systems and Options Configuration Guide”.
- Chapter 5: *Problem Solving and Troubleshooting*—This chapter describes initial and advanced troubleshooting solutions.
- Chapter 6: *Server Security Features*—This chapter describes the various security features that are available to prevent server or data theft.
- Appendix A: *Technical Specifications*—This appendix lists vital server operating specifications and main logic board jumper information.
- Appendix B: *Server Messages*—This appendix describes the power-on self test (POST) and run-time error messages, including recommended corrective actions.
- Appendix C: *Device Mapping*—This appendix provides a series of tables listing mapping and address information related to server memory and various main logic board devices (keyboard controller, interrupt controller, Direct Memory Access (DMA) controller, etc.).

"Getting Started" Program

Your server comes with a "Getting Started" program on a CD-ROM disk. This program enables you to access on-line help information on how to use your server and specific information about its features. If you have Microsoft's Windows for Workgroups installed, you can access the "Getting Started" program directly. If you have another operating system installed, or no operating system installed, you must use the supplied Startup/Utility diskette to access the "Getting Started" program on the CD-ROM disk. The "Getting Started" program topics include:

About This Guide

- *Registration/Welcome*— Introduces the Prioris HX MP Server family, and enables you to run the user registration program, if available (USA only).
- *Hardware* —Provides access to your server's help files. These files provide the necessary information to help you operate and expand your server. The Prioris HX MP System and Options Configuration Guide is also available in this section.
- *Server Utilities* — Provides access to on-line help files that contain information to help you configure your server using the SCU and other server utilities.
- *Troubleshooting* — Provides access to troubleshooting information, a Field Replaceable Unit (FRU) list, and error messages.
- *Customer Support* — Provides service information, hotline phone numbers, bulletin board service, and warranty information.
- *System Disks* — Enable you to make master media diskettes for video, mouse, and SCSI drivers.

Conventions

Convention Example	Description
<i>kp</i>	An italicized word or phrase represents text or commands you must enter.
<code>c:\windows></code>	Monospaced text indicates information that your server or software displays. For example, a directory path or error message.
[Enter]	Square brackets surrounding text represents a keyboard key.
[Ctrl]+[Alt]+[Del]	A plus sign indicates that the keys shown should be pressed at the same time.
1 234 567	Spaces are used in large numbers instead of commas.

Abbreviations

Abbreviation	Meaning
BIOS	Basic input/output system
CPU	Central processing unit
DMA	Direct memory access
DRAM	Dynamic random access memory
ECC	Error correction code
ECP	Extended capabilities port
EISA	Extended industry standard architecture
EPP	Enhanced parallel port
FRU	Field replaceable unit
IDE	Integrated drive electronics
h	An h suffix to a numerical value denotes hexadecimal numbers. For example, 0F8h equals 0F8 hexadecimal.
I/O	Input/output
ISA	Industry standard architecture
MS-DOS™	Microsoft Disk Operating System
PCI	Peripheral component interconnect
POST	Power-on self test
RAID	Redundant array of independent devices
RAM	Random access memory
ROM	Read only memory

continued

About This Guide

Abbreviation	Meaning
RTC	Real-time clock
SBB	Storage building block
SCSI	Small computer system interface
SCU	System Configuration Utility
SIMM	Single in-line memory module
SMP	Symmetrical multi-processor
VGA	Video graphics array
Windows	Microsoft Windows application software
ZIF	Zero insertion force

Special Notices

Three kinds of special notices are used in this guide to emphasize specific information.



WARNING: Indicates the presence of a hazard that can cause personal injury if the hazard is not avoided.



CAUTION: Indicates the presence of a hazard that might cause damage to hardware or that might corrupt software.



NOTES: Used to provide additional information.

Related Documentation

A *Quick Setup Guide* is available as a supplement to the information provided in this user's guide. SCSI, diagnostics, and other options manuals are also available.

A *System and Options Configuration Guide* is available from the "Getting Started" program and is a supplement to the information provided in this user's guide. This on-line guide describes what hardware and software is needed to upgrade your server or add options to your server.

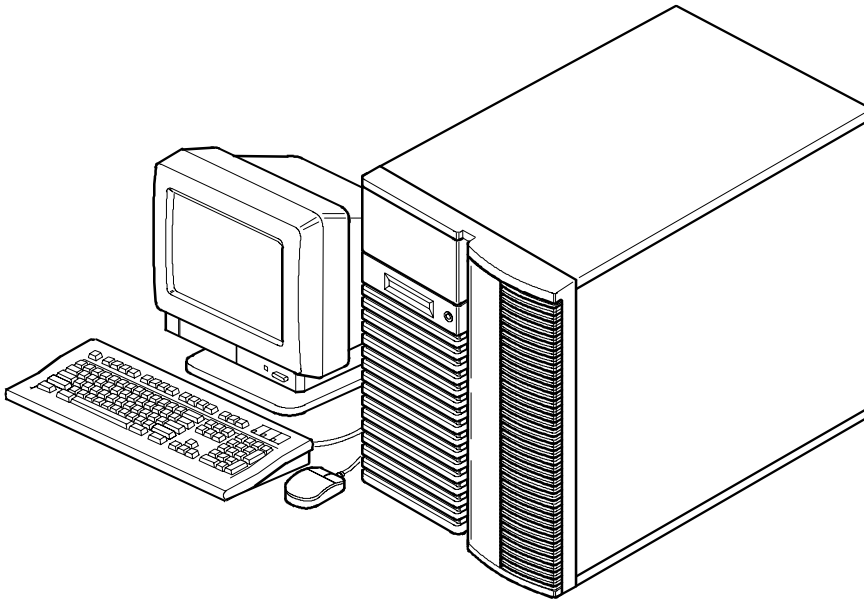
A *Components Reference Label* is affixed to the inside of each server side panel. These labels identify the major internal and external components of your Prioris HX MP server.

README files come with your Startup/Utility diskette, System Configuration Utility (SCU) diskette, and CD-ROM disk. The information contained in these files can help you setup, configure, and operate your server. Digital recommends that you read this information first.

On-line documentation is available in the form of customized help screens. To access these screens, run the "Getting Started" program.

Refer to your Quick Setup Guide and Chapter 3 for information on accessing the "Getting Started" program.

About This Guide



DEC00421

Typical Prioris HX MP Server



NOTE: Your monitor, keyboard, and mouse might look different.

A

Technical Specifications

Introduction

This appendix provides the following technical characteristics for your server:

- Server specifications
- CPU specifications
- EISA expansion slots
- PCI expansion slots
- Power supply and input power requirements
- Current requirements
- Power cord requirements
- Main logic board jumpers
- CPU module jumper settings

Technical Specifications

Server Specifications

The following sections list the server performance, dimensions and environmental specifications.

Performance Specifications

Attributes	Specification
Bus clock	
EISA	8.33 MHz
PCI	25 MHz
Data I/O	
EISA	8-bit and 16-bit
PCI	32-bit
Memory module DRAM	32 MB minimum. Up to 512 MB parity memory on each memory module, using 8, 16, or 32 MB SIMMs.
System flash ROM BIOS	128 KB
VGA flash ROM BIOS	128 KB

Server Dimensions

Dimension	Specification
Width	371.94 mm (14.6 in.)
Length	589.33 mm (23.2 in.)
Height	513.87 mm (20.23 in.)
Weight	24.5 kg (54.02 lbs)

Technical Specifications

Environmental Specifications

Attributes	Specification
Operating temperature	10°C to 40°C (50°F to 104°F)
Storage temperature	-20°C to 65°C (-4°F to 149°F)
Operating humidity (noncondensing)	20% to 80% relative humidity, maximum wet bulb 40°C (104°F)
Storage humidity (noncondensing)	10% to 90% relative humidity, maximum wet bulb 65°C (149°F)
Altitude	
Operating	2,438 m (8,000 ft) maximum
Nonoperating	4,876 m (16,000 ft) maximum
Shipping vibration	IAW Federal Standard 101, method 5019
Nonoperating shock	30 G, 25 ms halfsine

Technical Specifications

CPU Specifications

Your Prioris HX MP server comes with one, two, or four Pentium processor(s) installed on one or two CPU modules. High-performance caching circuitry and voltage regulation for each CPU are also located on the CPU module(s).

EISA Expansion Slots

The main logic board contains six EISA expansion slots (one slot is a shared PCI/EISA slot). These slots support +5 V dc.

PCI Local Bus Expansion Slots

The main logic board contains six PCI local bus expansion slots (one slot is a shared PCI/EISA slot). These slots support:

- 5 V dc only PCI expansion boards
- 5/3.3 V dc universal PCI expansion boards
- Bus mastering

Power Supply and Input Power Requirements

The 450 W auto-sensing power supply provides five dc voltages: +12 V dc, -12 V dc, +5 V dc, -5 V dc, and 3.3 V dc. These voltages are used by the various components within the server. The following lists the input power requirements.

Rated Voltage Range	Maximum Range	Rated Input Current ⁽¹⁾	Operating Frequency Range
100 V ac - 120 V ac	90 V ac - 135 V ac	9.5 A	47 Hz - 63 Hz
220 V ac - 240 V ac	180 V ac - 265 V ac	5 A	47 Hz - 63 Hz

⁽¹⁾ Includes outlet current

Current Requirements

Your server family power supply provides the following output ratings:

- +5 V dc 2.5 A min, 52 A max.
- +3.43 V dc 0 A min, 37.4 A max.
- +12 V dc 0.5 A min, 11 A max.
- -12 V dc 0 A min, 0.5 A max.
- -5 V dc 0 A min, 0.2 A max.

+5 V dc and +3.43 V dc maximum total output: 355 W.

+5 V dc and +3.43 V dc and +12 V dc maximum total output: 420 W.

Power supply total output: 450 W maximum.

Technical Specifications

Power Cord Requirements

The power cord used with this server must meet the following criteria:

- UL and CSA Certified cordage rated for use at 250 V ac with a current rating that is at least 125% of the current rating of the product. In Europe, the cordage must have the <HAR> mark.
- The ac plug is terminated in a grounding-type male plug designed for use in the region. It must also have marks showing certification by an agency acceptable in the region.
- The connector at the server end is an IEC type CEE-22 female connector.
- The maximum length is 4.5 meters (14.5 feet).

Main Logic Board Jumpers

The following table lists the main logic board jumpers and factory-default settings. Figure A-1 shows their locations.



CAUTION: Do not touch any electronic component unless you are safely grounded. Wear a grounded wrist strap or touch an exposed metal part of the server chassis. A static discharge from your fingers can result in permanent damage to electronic components.

Feature	Description	Setting
DSM	Not install ⁽¹⁾	J7, jumpered ⁽¹⁾
	Install	J7, open
Doorlock 1 ⁽²⁾	Enabled ⁽¹⁾	J9, jumpered ⁽¹⁾
	Disabled	J9, open
Doorlock 2 ⁽²⁾	Enabled ⁽¹⁾	J11, jumpered ⁽¹⁾
	Disabled	J11, open
Recovery mode	Recovery mode	J13, jumpered
	Normal ⁽¹⁾	J13, open ⁽¹⁾
Password clear	Password clear (MFG test)	J14, jumpered
	Normal mode ⁽¹⁾	J14, open ⁽¹⁾
Onboard VGA	Enabled ⁽¹⁾	J32, jumpered ⁽¹⁾
	Disabled	J32, open
VGA IRQ 9	Enabled	J33, jumpered
	Disabled ⁽¹⁾	J33, open ⁽¹⁾
Boot block update ⁽³⁾	Enabled	J38, pins 1 and 2 jumpered
	Disabled ⁽¹⁾	J38, pins 2 and 3 jumpered ⁽¹⁾
BIOS upgrade	Enabled	J39, jumpered
	Disabled ⁽¹⁾	J39, open ⁽¹⁾

⁽¹⁾ Factory default setting

⁽²⁾ The power switch interlocks are connected when the doorlock jumpers are enabled.

⁽³⁾ Disabling this jumper prevents corruption of the BIOS boot block when a boot block update is not required.

Technical Specifications

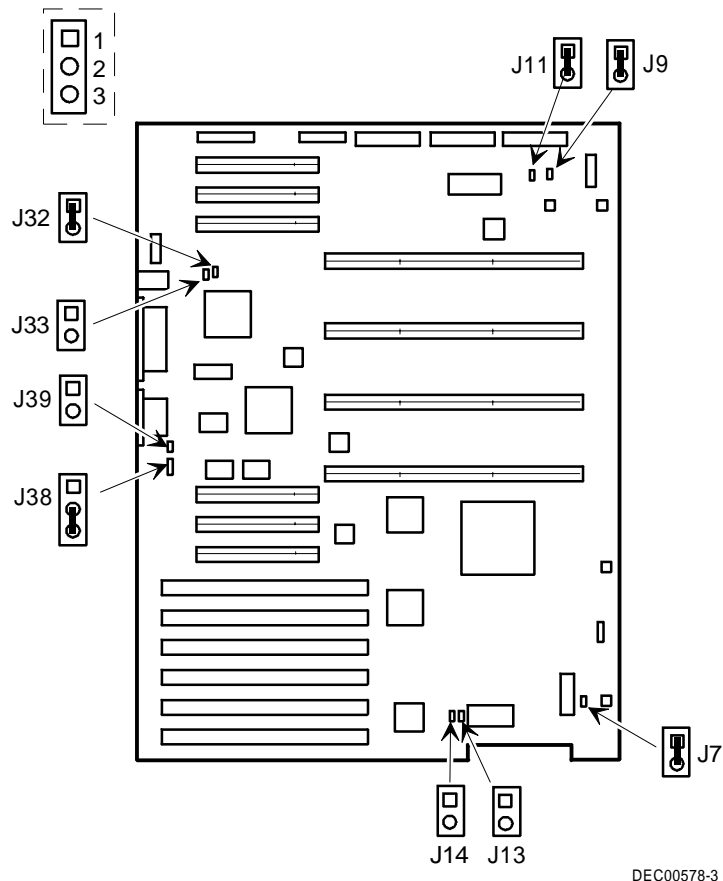


Figure A-1. Main Logic Board Jumper Locations

CPU Module Jumper Settings

The following table lists the main logic board jumpers and factory default settings. Figure A-2 shows its location.



CAUTION: Do not touch any electronic component unless you are safely grounded. Wear a grounded wrist strap or touch an exposed metal part of the server chassis. A static discharge from your fingers can result in permanent damage to electronic components.

Technical Specifications

Feature	Description	Setting
CPU frequency core/bus ratio	3/2	J3, off ⁽¹⁾ J4, off ⁽¹⁾ J7, off ⁽²⁾ J8, off ⁽²⁾
	2/1 ⁽¹⁾	J3, off ⁽¹⁾⁽³⁾ J4, on ⁽¹⁾⁽³⁾ J7, off ⁽²⁾ J8, on ⁽²⁾
	3/1	J3, on ⁽¹⁾ J4, off ⁽²⁾ J7, on ⁽²⁾ J8, off ⁽²⁾
	5/2	J3, on ⁽¹⁾ J4, on ⁽¹⁾ J7, on ⁽²⁾ J8, on ⁽²⁾
APIC	Enable	J10, on
	Disable	J10, off

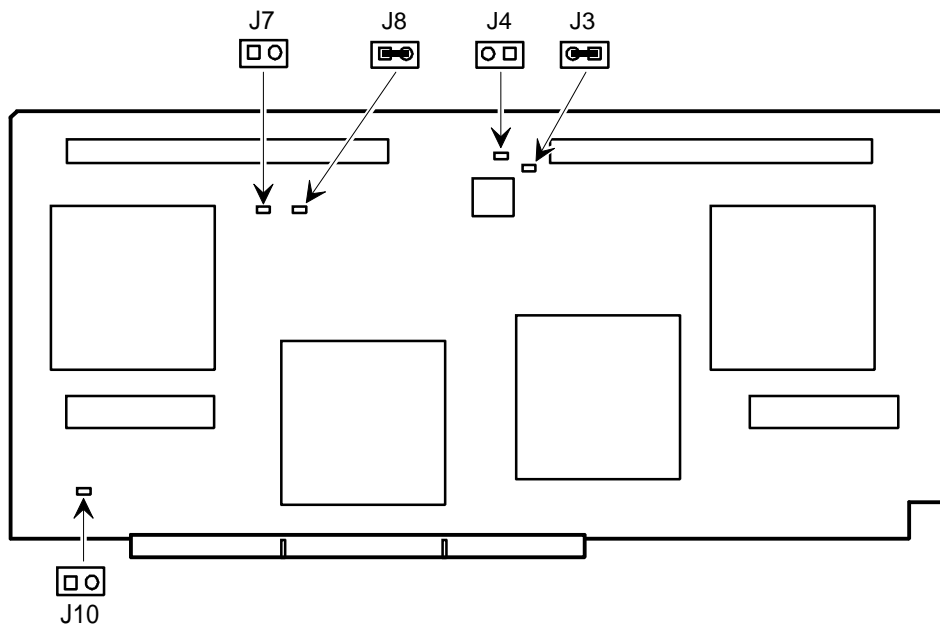
⁽¹⁾ For CPU 1

⁽²⁾ For CPU 2

⁽³⁾ Factory default setting

Digital recommends that you do not change the factory default settings.

Technical Specifications



DEC00583-4

Figure A-2. CPU Module Jumper Settings

B

Server Messages

Introduction

This appendix lists server messages you might see or hear when you turn on power. The server groups messages as follows:

- POST and boot server messages
- POST execution messages
- Beep codes

POST Messages

The POST displays messages to alert you to errors in hardware, software, and firmware or to provide operating information about your server.

The server's speaker beeps twice for each time the POST displays a message on your screen or the server's OCP. If an error occurs before the monitor is initialized, specific beep codes sound to alert you to a problem. The following table lists a general grouping of system messages. Text accompanies each message that describes the message, and in most cases, a recommended solution to the problem.



NOTE: Italics indicate variable parts of a message such as memory addresses and hexadecimal values. These messages can differ at each occurrence.

Server Messages

POST and Boot Messages

Message	Description/Solution
<i>nnnn</i> Cache SRAM Passed	Where <i>nnnn</i> is the amount of server cache (in kilobytes) that tested successfully.
Diskette drive A error	Run the SCU. Check all connections. If the problem persists, contact your Digital service representative.
Diskette drive B error	
Entering SETUP	BIOS Setup utility runs.
Extended RAM Failed at offset: <i>nnnn</i>	Extended memory failed or configured incorrectly. Make sure SIMMs are installed correctly (see Chapter 4). If the problem persists, contact your Digital service representative. Run the SCU and restore all settings to original values.
Extended RAM Passed	Where <i>nnnn</i> is the amount of extended memory (in kilobytes) that tested successfully.
Failing Bits: <i>nnnn</i>	<i>nnnn</i> is a map of the bits at the RAM address that failed the memory test. Run the SCU and restore all settings to original values. If the problem persists, contact your Digital service representative.
Fixed Disk 0 Failure	Run the SCU. Check all connections. If the problem persists, contact your Digital service representative.
Fixed Disk 1 Failure	
Fixed Disk Controller failure	

continued

Server Messages

Message	Description/Solution
Incorrect Drive A type - run SETUP	Diskette drive A and/or B not correctly identified in the SCU.
Incorrect Drive B type - run SETUP	Run the SCU and properly identify diskette drive A and/or B.
Invalid NVRAM media type	NVRAM access failed. Run the SCU and restore all settings to original values. If the problem persists, contact your Digital service representative.
Keyboard controller error Keyboard error Keyboard locked - Unlock key switch	Check the keyboard connection. If the connection is secure, the keyboard or keyboard controller might have failed. If the problem persists, contact your Digital service representative.
Monitor type does not match CMOS - Run SETUP	Run the SCU and set the correct monitor type.
Operating system not found	The operating system cannot be found on drive A or drive C. Run the SCU and correctly identify drive A or drive C. Correctly install the operating system. Refer to the supplied operating system documentation.
Parity check 1 <i>nnnn</i> Parity check 2 <i>nnnn</i>	Parity error found in the server bus. The BIOS attempts to locate the address and display it on your monitor screen. Run the SCU and restore all settings to original values. If the problem persists, contact your Digital service representative.

continued

Server Messages

Message	Description/Solution
Press <F1> to resume, <F2> to Setup	This message appears after any recoverable error message. Press <F1> to reboot or <F2> to enter the BIOS Setup utility to make any necessary changes.
Real time clock error	Real-time clock failed BIOS test. Replace the real-time clock (battery) and then run the SCU to restore previous configuration information.
Shadow RAM Failed at offset: <i>nnnn</i>	Shadow RAM failed. Run the SCU and disable failed shadow memory region.
<i>nnnn</i> Shadow RAM passed	Where <i>nnnn</i> is the amount of shadow RAM (in kilobytes) that tested successfully.
System battery is dead - Replace and run SETUP	Replace the battery and then run the SCU to restore previous configuration information.
System BIOS shadowed	This indicates that your server's BIOS was successfully copied to shadow RAM.
System cache error - Cache disabled	RAM cache failed. Run the SCU and restore all settings to original values. If the problem persists, contact your Digital service representative.
System CMOS checksum bad - run SETUP	Run the SCU and ensure that all settings are correct. Save the configuration even if you have made no changes. If the problem persists, contact your Digital service representative.

continued

Server Messages

Message	Description/Solution
System RAM failed at offset: <i>nnnn</i>	System RAM failed. Run the SCU and restore all settings to original values. If the problem persists, contact your Digital service representative.
<i>nnnn</i> System RAM passed	Where <i>nnnn</i> is the amount of system RAM (in kilobytes) that tested successfully.
System timer error	Your server's timer test failed. Run the SCU and restore all settings to original values. If the problem persists, contact your Digital service representative.
UMB upper limit segment address: <i>nnnn</i>	Displays the address of the upper limit of UMB. This indicates the released segments of the BIOS that can be reclaimed by a virtual memory manager.
Video BIOS shadowed	This indicates that your server's video BIOS was successfully copied to shadow RAM.

Server Messages

POST Execution Messages

The following messages appear at the bottom of the screen during POST execution.

Message	Description
230	Unexpected interrupts test
220	Shadow ROMs
210	Test RAM between 512K and 640K
200	Extended memory test
190	Set cache registers
180	Cache configuration
170	Real-time clock test
160	Keyboard test
150	Initial hardware interrupt
140	Co-processor test
130	Serial ports test
120	Parallel ports test
110	Initiate onboard SIO
100	Mouse test
90	Testing diskette drives
80	Testing hard disk drives
30	Setup power management
20	Enable IRQs
10	Setting time of day

Beep Codes

When POST finds an error and cannot display a message, the server's speaker emits a series of beeps to indicate the error and places a value in I/O port 80h. During POST, if the video configuration fails or if an external ROM module fails a checksum test, then your server beeps three times (one long beep, and two short beeps).

The following table lists other fatal errors and their associated beep codes. Each code represents the number of short beeps that are grouped together. Fatal errors (errors that lock up your server) are generally the result of a failed main logic board or some other add-on component (SIMM, BIOS, server battery, etc.). If you cannot resolve problems using the troubleshooting procedures in Chapter 5, contact your Digital service representative.

Beep Code	Error
2-2-3	BIOS ROM checksum
3-1-1	Test DRAM refresh
3-1-3	Test keyboard controller
3-4-1	Test 512K base address lines
3-4-3	Test 512K base memory
2-1-2-3	Check ROM copyright notice
2-2-3-1	Test for unexpected interrupts

C

Device Mapping

Introduction

This appendix provides a series of tables listing mapping and address information related to server memory and various main logic board devices (keyboard controller, interrupt controller, DMA controller, etc.).

Your server memory and address locations are allocated at the factory to operate within a standard environment. However, due to the number of optional devices and/or expansion boards that are available, sometimes memory and address locations need to be changed. For example, some expansion boards require a specific memory location. If that location is already allocated, a memory conflict results and the expansion board will not operate as expected. Note that some memory, I/O and interrupt locations can be changed using the SCU.



CAUTION: Before changing any memory or address location, refer to the documentation supplied with the optional device, expansion board, or software application and make sure adequate information is available. If not, contact the option or software manufacturer for further information.

Device Mapping

CPU Memory Address Map

Address Range	Function	Size
00000 to 7FFFF	Main memory	512 KB
80000 to 9FFFF	Main/PCI/EISA/ISA memory	128 KB
A0000 to BFFFF	PCI/EISA/ISA video buffer memory	128 KB
C0000 to C7FFF	Video memory BIOS	32 KB
C8000 to DFFFF	PCI/EISA/ISA expansion board BIOS and buffer memory	96 KB
E0000 to E7FFF	EISA/ISA/PCI adapter RAM after POST completes	32 KB
	Used by BIOS Setup during POST	
E8000 to EFFFF	EISA/ISA and buffer memory	32 KB
F0000 to FFFFF	System BIOS memory	64 KB

CPU I/O Address Map

Range (hexadecimal)	Function
0000 to 0CF7	PCI I/O space
0CF8	Configuration space enable register
0CF9	Turbo and reset control register
0CFA to 6FFF	EISA/PCI I/O space
7000 to BFFF	PCI I/O space
C000 to CFFF	PCI configuration space
D000 to FFFF	PCI I/O space

I/O Address Map

Range (hexadecimal)	Function
060 to 064	Keyboard/mouse controller
0F0 to 0FF	Math co-processor
1F0 to 1F7	IDE controller (if enabled)
278 to 27F	LPT2 (if enabled)
2E8	COM4 (if enabled)
2F8	COM2 (if enabled)
378 to 37F	LPT1 (if enabled)
3BC to 3BE	LPT3 (if enabled)
3EB	COM3 (if enabled)
3F0 to 3F7	Diskette controller (if enabled)
3F8	COM1 (if enabled)

Device Mapping

Server Interrupt Levels

Interrupt Number	Interrupt Source
IRQ1	Keyboard controller
IRQ3	COM2, COM4 (if enabled)
IRQ4	COM1, COM3 (if enabled)
IRQ6	Diskette drive (if enabled)
IRQ7	LPT1, LPT2, LPT3 (if enabled)
IRQ12	Mouse interrupt
IRQ13	Math co-processor
IRQ14	Hard disk drive (if enabled)

DMA Channel Assignment

Channel	Controller	Function
0	1	Refresh
1	1	Not used
2	1	Diskette controller (if enabled)
3	1	Not used
4	2	Cascade DMA
5	2	Not used
6	2	Not used
7	2	Not used

PCI Configuration Space Address Map

PCI Bus No.	Device No.	Device
0	31	Host bridge (CPU bridge)
0	13	EISA bridge
0	9	PCI slot 1
0	8	PCI slot 2
0	7	PCI slot 3
0	14	PCI to PCI bridge (PPB)
1	1	PCI slot 4
1	2	PCI slot 5
1	3	PCI slot 6

1

Introduction

The Prioris HX MP Server family is a family of high-performance, highly-scalable network and application servers featuring the latest in modular CPU and storage technology. Developed using the following state-of-the-art technology, the Prioris HX Servers are the most advanced servers in their class.

The Prioris HX MP family of servers also provide investment protection through CPU upgrade technology. This technology enables you to easily upgrade to a higher-performance CPU by simply installing a new CPU module or modules.

The Prioris HX MP family of servers provide the following features:

CPU Module Symmetrical multi-processing (SMP) Intel Pentium one (1P), two (2P), or four (4P) processor options available.

Operates using a 128-bit memory interface and one external, 512 KB burst write-back cache modules per CPU. All modes support a 32-bit PCI interface.

Memory Module One or two memory modules available. 128-bit (single module) or 256-bit (dual modules) ECC protected-memory data path using standard parity SIMMs. 16 SIMM sockets on a single memory module capable of supporting 32 MB to 512 MB (up to 1 GB with two modules). Two-way (single module) and four-way (dual modules) memory interleaving is provided for faster memory access.

PCI SCSI Adapter A dual-channel PCI Fast Wide SCSI adapter board occupies a single PCI option slot in base servers.

PCI RAID Adapter Single or three-channel PCI RAID adapter board in RAID-ready servers enables you to manage data distribution using multiple disk drives.

Introduction

<i>Integrated Device Array Storage Bay</i>	Supports up to seven 3½-inch, wide or narrow SCSI, hot-swap devices for configuring a mass storage array using Storage Building Blocks (SBBs).
<i>Expansion Slots</i>	Five EISA slots, five PCI slots, and one shared EISA/PCI slot for a total of 11 slots for maximum expandability.
<i>Onboard Video Controller</i>	Onboard Cirrus 5428 video controller. 512 KB video RAM supporting 800 x 600 at 256 colors and 1024 x 768 at 16 colors.
<i>Redundant Fans and Power Supply</i>	For added reliability, your server has redundant fans for cooling and the option to add a second power supply or an additional fan.
<i>Operator Control Panel (OCP)</i>	Back-lit, 16-character LCD display that shows power-on status messages each time your server boots. The operator control panel can be lit by pressing a manual switch on the front bezel.
<i>Server Management Controller Hardware/Software</i>	Optional server management controller hardware/software that enables remote server management over dial-up lines. EISA controller with environmental sensors and serial port for improved network monitoring.
<i>Pedestal Cabinet</i>	Optional floor-mounted pedestal cabinet available. This cabinet is modular with its own power supply blowers and SCSI cable connectors.
<i>Operating System Compatibility</i>	Certified operating systems include: Novell NetWare 3.12 or 4.02, Novell Unixware, SCO UNIX server products and MPX, Windows NT server 3.5, Windows for Workgroups 3.11, OS/2, Banyan Vines (Native), and PATHWORKS 5.x.

Supplied Diskettes and CD-ROM Disk

The diskettes and CD-ROM disk supplied with your server are described in the next sections. Depending on the type of server options that have been factory installed, you might have received additional diskettes. Refer to the accompanying option manuals for more information.



NOTE: If you have Windows for Workgroups installed, you can access the "Getting Started" program directly. If you have an operating system installed other than Windows for Workgroups, or no operating system installed, you must use the supplied Startup/Utility diskette to access the "Getting Started" program on the CD-ROM disk.

Startup and System Configuration Diskettes

The following diskettes are supplied with your server. Read any README files contained on these diskettes for additional information.

- Startup/Utility diskette containing:
 - The root directory contains boot files for accessing the CD-ROM disk, and an EPP3SMC driver file for enhanced parallel port capabilities.
 - A README.TXT file with the latest server information that was not available at the time of printing this guide.

Refer to Chapter 3, "CD-ROM Disk and Startup/Utility diskette," for information about using this diskette.

- System Configuration Utility (SCU) diskettes:
 - Five language-specific SCU diskettes for configuring your server after installing a hardware option (for example, an EISA or PCI expansion board, CPU module, etc.).

Refer to Chapter 2, "Configuring Your Server," for information about using this diskette.

Introduction

CD-ROM Disk

A CD-ROM disk came with your server. The CD-ROM disk contains a "Getting Started" program that enables you to view on-line help information and copy operating system-specific device drivers (SCSI, mouse, and video).

Refer to your Quick Setup Guide for information on accessing the CD-ROM disk.

Diagnostic Software

A QAPLus/FE utilities diskette and support documentation came with your server. This diskette contains an advanced set of diagnostic utilities that can be used to identify and correct problems you might encounter when installing, configuring, or using your server.

Read any README files contained on the diskette and to the supplied QAPLus/FE documentation for additional information.

Server Utilities and Technical Support

The most current server utilities and technical support is available via the Digital Bulletin Board Service (BBS). For access to the Digital BBS in the USA, dial (508) 496-8800.

If you need additional information, access "Customer Support" in the "Getting Started" program that came on your CD-ROM disk.

Important Information

Under circumstances of poor posture or poor setup, certain recent scientific articles suggest that injuries may occur. Other articles suggest that there is no cause and effect. Because the safety of our users is a great concern, it is important to take these precautions:

- Be comfortable in your work space.
- Change your posture frequently.
- Proceed according to the recommendations in the following table and figure.

Adjust	So . . .
Chair	<p>Feet are flat on the floor.</p> <p>Legs are vertical forming a right angle to the floor.</p> <p>Your weight is off your thighs and they are horizontal. Keep the back of your knees away from the seat so you do not compress the area behind them, which could restrict the blood flow.</p> <p>Your upper body is erect and your lower back is supported with a backrest.</p>
Keyboard or mouse	<p>Your wrists are straight and do not bend more than 15 degrees. They may be supported when resting but not on sharp edges. Type comfortably, with no more key pressure than needed to feel the contact point.</p> <p>Upper arms are straight down at your sides, elbows are close to your sides and support your arm weight. Forearms are at a 70 degree to 90 degree angle.</p> <p>If you use a mouse, rest your hand on the mouse so your wrist is not on the work surface. Operate the mouse close to your body's centerline.</p>

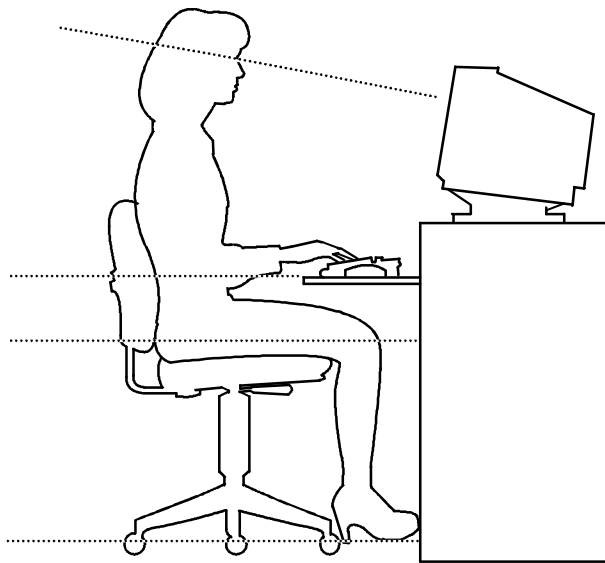
continued

Introduction

Adjust	So . . .
Head	Avoid neck strain. Your head should incline downward, but no more than 15 to 20 degrees.
Monitor	No higher than the level of your eyes and at the correct distance for your vision. Avoid eye fatigue, which can be caused by glare, image quality, uncomfortable furniture, eye height, and uncorrected vision. If you cannot focus to read at different distances, you may need special glasses. Relax your eyes periodically by looking at distant objects.
Work breaks	Take periodic work breaks. Morning, lunch, and afternoon breaks during the 8-hour workday meet most recommendations. Take advantage of work breaks to move around and do other activities.
Lighting	Avoid direct lighting or sunlight on the screen, which causes glare and reflections. Place lighting behind or to the side of your work area, and distribute the lighting evenly on your work area. Your server's monitor screen has an antiglare treatment to reduce glare. Adjust the brightness and contrast controls as needed.
Noise	Keep background noise at a minimum. Background noise above 65 dBA is tiring. Sound-absorbing materials (curtains, carpeting, and acoustic tile) can help reduce background noise.
Temperature	20 to 23 degrees C (68 to 74 degrees F).
Humidity	30% to 70%.
Ventilation	Provide adequate air ventilation to avoid fatigue and to operate the equipment.
Space between set ups	> 70 cm (28 in.) center to center, preferably > 152 cm (60 in.).

Introduction

IMPORTANT: If you experience pain or discomfort during use of the server, take a rest break and review the instructions for proper ergonomic setup and use. If the pain or discomfort continues after resuming use of the server, discontinue use and report the condition to your job supervisor or physician.



DEC00454

Figure 1-1. Providing a Comfortable Working Environment

Getting Help

If you need help regarding...	Refer to the
Installing your server	<i>Quick Setup Guide</i>
Support and ordering information	Warranty and Service information
System and option configurations	On-line help. Run the "Getting Started" program and select Hardware, then select System and Options Configuration Guide.
Specific software application problems or questions	Operating system documentation, application software documentation, or contact the software manufacturer.
Product information and server driver disks	On-line help. Run the "Getting Started" program.

2

Configuring Your Server

Introduction

This chapter provides detailed information on how to configure your server when relocating, adding, or removing EISA/ISA/PCI expansion boards and how to change your server's factory-defined BIOS Setup options.

Your server was pre-configured at the factory using the System Configuration Utility (SCU). This means that your server's hardware (CPU, memory, cache, mass storage devices, expansion boards, etc.) has been identified and configured for optimum performance. If you need to make changes to this configuration, Digital recommends that you use the SCU along with the information provided in this chapter.

Configuring Expansion Boards

Each time you add, remove, or relocate any EISA/ISA/PCI expansion board, you need to run the SCU to identify their operating characteristics, server resource requirements, and slot locations. Based on this information, the SCU will then automatically assign the proper server resources to EISA expansion boards and inform you as to what jumper or switch settings need to be manually set on ISA expansion boards to avoid resource conflicts.

The SCU identifies an expansion board's operating characteristics and resource requirements through Configuration (.CFG) files. These files contain main logic board, EISA, PCI, and ISA expansion board vital characteristics and the server resources they require for proper operation. If you installed additional EISA, PCI, or ISA expansion boards, make sure you copy the CFG files (and overlays, if applicable) supplied with the expansion boards, to the System Configuration Utility diskette before attempting to configure your server.

If a configuration file is not available for a specific ISA expansion board, use the supplied generic ISA expansion board configuration file. Note that this file will only supply basic ISA information and will not identify potential resource conflicts or the correct jumper and switch settings. You must use the documentation that came with your ISA expansion board to properly configure it for use in your server.

For more information, refer to "Adding an Expansion Board" later in this chapter and to any applicable SCU on-line help.

BIOS Setup Options

Digital recommends that you use the SCU (instead of the BIOS Setup utility) if you need to change any of the setup options listed at the end of this chapter. You can access these options using “Step 3: View and Edit Details” from the “Configure your Computer” menu.



NOTE: Although the BIOS Setup utility is separate from the SCU, the SCU will automatically update the BIOS settings. In most cases, your server will operate according to the most recent changes regardless of which utility you use to make changes. However, Digital recommends that you use the SCU to configure your server each time you add hardware, remove hardware, or change server settings to ensure that your server operates properly.

As an added feature, the SCU creates and stores all setup changes in a System Configuration (.SCI) file. Afterwards, this SCI file can be used on any Prioris HX MP Server that is equally configured and can serve as a backup to the EISA configuration stored in NVRAM memory. The SCI file is maintained on the System Configuration Utility diskette and has a default name of SYSTEM.SCI.

SCU Diskette(s)

The SCU comes with your server on five separate language diskettes. These diskettes contain the SCU utility and the necessary files to configure expansion boards.



NOTE: Each time you add an EISA or ISA expansion board, it is important that you copy all associated .CFG files to the appropriate SCU diskette before you attempt to configure your server. The SCU needs this information to properly assign server resources and to maximize overall server performance.

When to Run the SCU

Always run the SCU each time you add, remove, or relocate ISA and EISA expansion cards so no two boards use the same server resources (IRQs, I/O address, memory address, etc.).

For ISA expansion boards, run the SCU *before* adding, removing, or relocating. Running the SCU first can identify and resolve resource conflicts, as well as indicate the proper switch settings to configure ISA expansion boards.

For EISA and PCI expansion boards, run the SCU *after* adding, removing, or relocating. In this case, the SCU will automatically assign the proper server resources to the EISA expansion boards so they will operate correctly.



NOTE: If your server detects an expansion board configuration conflict, a warning message appears directing you to run the SCU to correct the problem.

Before Using the SCU

Perform the following procedures before using the SCU:

1. Read any README files contained on the System Configuration Utility diskette(s) for additional information.
2. Install any optional hardware, for example disk drives, EISA or PCI expansion boards, memory, etc.

Refer to Chapter 4, "Expanding Your Server," or the Quick Setup Guide shipped with the hardware for installation instructions.

3. Make a backup copy of the supplied System Configuration Utility diskette. Store the original in a secure place and only use the backup copy when running the SCU. If you are unable to make a backup copy, use the original diskette cautiously.



NOTE: It is recommended that you do not install the SCU or any of its utilities on a hard disk drive. Running the SCU or any of its utilities from a hard disk drive might cause memory conflicts between the SCU and application software. This specifically applies to memory managers and Windows applications.

In addition, have the following items readily available:

- Configuration (CFG) files supplied with any EISA or ISA expansion boards you have installed.
- Kit installation instructions for any optional hardware you have installed.

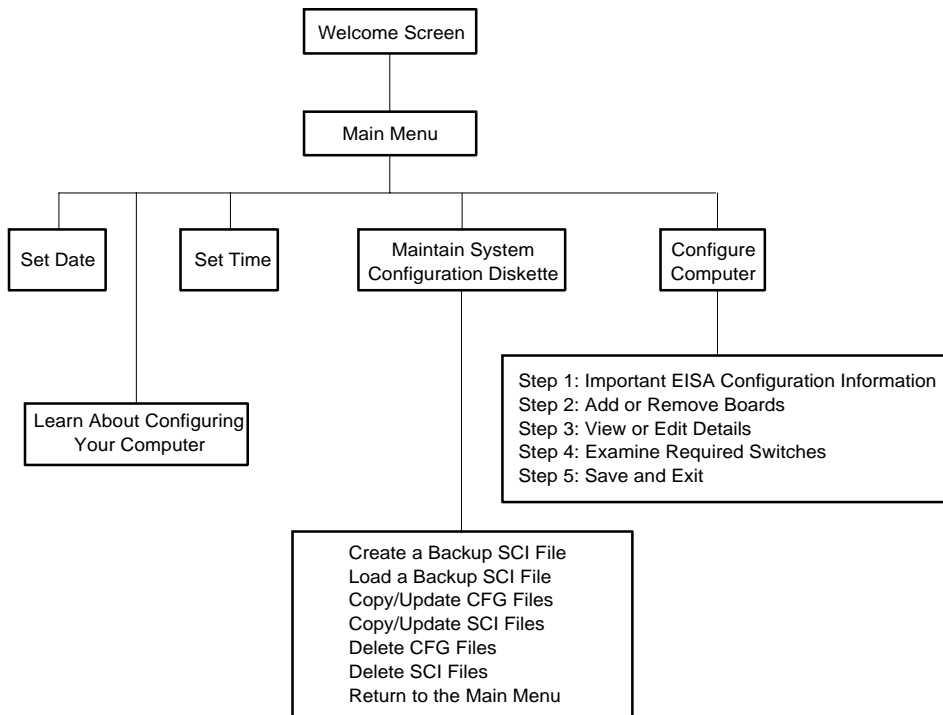
SCU Keyboard Function Keys

The following table lists the keyboard function keys used to scroll through the menu screens, and select specific menu items in the SCU.

Keyboard Key	Function
[↓]	Moves the cursor down one menu item.
[↑]	Moves the cursor up one menu item.
[→]	Moves the cursor one character to the right.
[←]	Moves the cursor one character to the left.
[Enter]	Displays the available user-selectable settings for the highlighted option or selects the highlighted menu item.
[F6]	Displays available resources (IRQs, DMAs, I/O ports, or memory) for the highlighted option.
[F10]	Press [F10] to complete a step.
[F1]	Displays the selected menu item's help screen.
[Esc]	Returns the monitor screen to the previously selected menu item.

Starting and Using the SCU

Perform the following procedures to start and use the SCU options shown in Figure 2-1. If this is your first time using the SCU, it is recommended that you follow the procedures in the order given. If this is a subsequent session, refer to the appropriate sections in this chapter to change your server's configuration.



DEC00456

Figure 2-1. SCU Main Menu Options

Configuring Your Server

To start and use the SCU:

1. Turn on your server and allow the POST to complete.

If POST detects an error refer to Appendix B, "Server Messages," and take the appropriate steps to correct the problem. After the problem has been resolved, restart the server.

2. Insert the backup System Configuration Utility diskette into drive A and then soft boot (reset) your server. Press [Enter] and the SCU introductory screen appears.



NOTE: The SCU contains help pop-up screens for any selected menu item. Press [F1] at anytime to display a help screen. Press [Esc] to remove a help screen.

3. Press [Enter] to display the SCU Welcome screen.

If no configuration errors appear, the Welcome screen displays information about the SCU. Press [Enter] to display the Main menu and proceed to Step 5.

If a configuration error appears, the Welcome screen displays information about the error and tells you to reconfigure your server.

Press [Enter] to display the Main menu, select the `Configure Computer` option, then select the `View and Edit Details` option.

Make any changes as indicated by the configuration error message, and then select the `Save and Exit` option to end the SCU session and boot the server so the changes take effect.

Refer to the section, "Configure Your Computer," for additional information on this menu item.

4. If applicable, select the `Learn About Configuring Your Computer` option to familiarize yourself with the SCU.

Configuring Your Server

5. If applicable, set the current server time and date using the `Set Time` and `Set Date` menu options.

6. Using the `Maintain System Configuration Diskette` option, copy the CFG files supplied with any EISA or ISA expansion board.

Refer to the section, "Maintain System Configuration Diskette," for additional information about this menu item.

7. Select the `Configure Computer` option to configure your server.

Refer to the section, "Configure Your Computer," for additional information on this menu item.

8. To end the SCU session select the `Exit From This Utility` option.

9. If applicable, install your operating system and any application software.

Refer to the operating system and application software documentation for installation information.

Configure Your Computer

This option provides step-by-step instructions on how to configure your server when adding, removing, or relocating expansion boards and when changing operating parameters (BIOS Setup options). If you are accessing this menu item for the first time, it is recommended that you follow the menu items listed below in the order given. If this is a subsequent session, refer to the appropriate menu item to update your server's configuration.

Step 1: Important EISA Configuration Information

Selecting this menu item enables you to display information screens describing basic EISA configuration information and how it differs from ISA configurations. These screens are available at any time during the configuration process by pressing [F1] and then by selecting `EISA configuration` from the help menu.

Step 2: Adding or Removing Expansion Boards

Selecting this menu item enables you to view the types of expansion boards you have installed in your server and the slots they occupy. Note that the SCU will only display this information if you copied the appropriate .CFG files onto the SCU diskette.

If this the first time running the SCU, select this option to verify that the server has detected and acknowledged all installed expansion boards. Afterwards, use this menu item each time you add, remove, or relocate any expansion board.

Adding ISA Expansion Boards

Perform the following steps to add ISA expansion boards to your server configuration:

1. Insert the backup System Configuration Utility diskette into drive A and then soft boot (reset) your server.
2. From the `Configure Your Computer` menu, select "Step 2: Adding and Removing Boards," and update the list of expansion boards and options to include any ISA expansion boards you are going to install in your server.
3. Select "Step 4: Examine Required Switches," to check the required switch and jumper settings of the ISA expansion boards.
4. Select "Step 5: Save and Exit," to save your configuration and exit the SCU.
5. Turn off your server and install the ISA expansion boards, manually setting the necessary switches and jumpers.

Refer to Chapter 4, "Expanding Your Server," for detailed instructions on installing expansion boards.

Adding EISA Expansion Boards

Perform the following steps to add EISA expansion boards to your server configuration:

1. Turn off your server and install the EISA expansion boards.

Refer to Chapter 4, "Expanding Your Server," for detailed instructions on installing expansion boards.

2. Insert the backup System Configuration Utility diskette into drive A and then soft boot (reset) your server.

After your server boots, the following message appears:

```
EISA Configuration Error - Run Configuration  
Utility
```

This indicates that the EISA configuration changed since the last time the configuration was saved.

3. Press [Enter] to display the SCU main menu and then [Enter] again to continue.

The SCU requests that you load all appropriate .CFG files for the newly installed EISA expansion boards. Afterwards, the SCU displays the `Configure Your Computer` menu.

Configuring Your Server

4. From the `Configure Your Computer` menu, select "Step 3: View or Edit Details," to verify that all EISA expansion boards were installed and configured correctly.



NOTE: An EISA expansion board might require an IRQ to be set. If so, select that board and choose an IRQ from the list provided. This list displays IRQs that are either not assigned or can be re-assigned. If you select an IRQ that conflicts with another expansion board in your server, a menu appears informing you of the expansion board that is in conflict, its current settings, and the settings that will change if you choose to set that IRQ.

5. Select "Step 5: Save and Exit," to save your configuration and exit the SCU.

Adding PCI Expansion Boards



CAUTION: Before installing a PCI video expansion board, make sure the appropriate PCI slot options group is enabled. Failure to do so might cause your server to operate incorrectly.

Refer to "Step 3: View or Edit Details" for information on accessing the appropriate PCI slot options group selections.

Perform the following steps to add PCI expansion boards to your server configuration:

1. Turn off your server and install the PCI expansion boards. Note which slots the PCI expansion boards were installed into.
Refer to Chapter 4, "Expanding Your Server," for detailed instructions on installing expansion boards.
2. Insert the backup System Configuration Utility diskette into drive A and then soft boot (reset) your server.

Configuring Your Server

3. Press [Enter] to display the SCU welcome screen and then [Enter] again to continue.
4. From the Configure Your Computer menu, select "Step 3: View or Edit Details".
5. Highlight the appropriate PCI slot Options Group for each installed PCI expansion board and then select Enable Device to configure your server.

If an IRQ needs to be assigned for an installed PCI expansion board, select PCI Interrupt and set it to One IRQ Required.

Press [F6] to display the IRQ currently assigned and + or - to scroll through the remaining un-assigned IRQs to select the one you want.



NOTE: At any time you can view IRQ, DMA, and memory assignments while in the SCU by selecting [F7], the "View Additional System Information" menu. From this menu, select either Used Resources or Available Resources.

If you installed a PCI video expansion board, your server will automatically disable the onboard video controller and use the installed PCI video expansion board.

Make sure you switch the video signal cable from the onboard video connector to the connector on the PCI video expansion board.

6. Select "Step 5: Save and Exit," to save your configuration and exit the SCU.

Relocating Expansion Boards

Perform the following steps **before** relocating an ISA expansion board and **after** relocating an EISA or PCI expansion board.

1. Insert the backup System Configuration Utility diskette into drive A and then soft boot (reset) your server.
2. Press [Enter] to display the SCU main menu and then [Enter] again to continue.
3. From the `Configure Your Computer` menu, select "Step 2: Adding and Removing Boards".
4. Highlight the expansion board you want to relocate, press [Enter], and then follow the instructions displayed on your monitor screen.
5. Select "Step 5: Save and Exit," to save your configuration and exit the SCU.

If there are no resource conflicts, the new configuration information is saved to the .SCI file. If there is a conflict, you must resolve it before you can complete your server's configuration.

Deleting Expansion Boards

Perform the following steps **before** deleting an ISA expansion board and **after** deleting an EISA or PCI expansion board.



NOTE: You must also remove the deleted expansion board's .CFG file from the SCU.

Refer to Maintain the SCU Diskette, later in this chapter, for detailed information on deleting .CFG files.

1. Insert the backup System Configuration Utility diskette into drive A and then soft boot (reset) your server.
2. Press [Enter] to display the SCU main menu and then [Enter] again to continue.
3. From the `Configure Your Computer` menu, select "Step 2: Adding and Removing Boards".
4. Highlight the expansion board you want to delete, press [Enter], and then follow the instructions displayed on your monitor screen.
5. Select "Step 5: Save and Exit," to save your configuration and exit the SCU.

If there are no resource conflicts, the new configuration information is saved to the .SCI file. If there is a conflict, you must resolve it before you can complete your server's configuration.

Step 3: View or Edit Details

This menu item enables you to set BIOS Setup options through the .SCI file. Through this file, you can setup and configure your server for new hardware, additional memory, passwords, I/O port allocation, etc. Note that some options cannot be accessed. These options display information that reflect the actual hardware installed in your server and cannot be changed.

Refer to SCU and Setup Options, later in this chapter, for a list the options that are available.

To access this menu item:

1. Insert the backup System Configuration Utility diskette into drive A and then soft boot (reset) your server.
2. Press [Enter] to display the SCU main menu and then [Enter] again to continue.
3. From the `Configure Your Computer` menu, select "Step 3: View and Edit Details".
4. Press [Enter] and change/update the appropriate server parameters following the instructions displayed on your monitor screen.
5. Select "Step 5: Save and Exit," to save your configuration and exit the SCU.

Step 4: Examine Required Switches

This menu item enables you to view settings (switches and jumpers) that need to be manually set and software drivers that need to be installed. These recommendations must be followed exactly, otherwise your server will not work properly.

To access this menu item:

1. Insert the backup System Configuration Utility diskette into drive A and then soft boot (reset) your server.
2. Press [Enter] to display the SCU main menu and then [Enter] again to continue.
3. From the `Configure Your Computer` menu, select "Step 4: Examine Required Switches".
4. Press [Enter] to view how your server is configured following the instructions displayed on your monitor screen.
5. Select "Step 5: Save and Exit," to save the current configuration and exit the SCU.

Step 5: Save and Exit

This menu item allows you to exit the SCU program with or without saving your configuration settings.

If you save your changes, the SCU saves the new configuration in your server's NVRAM and in the .SCI file on the SCU diskette. If you cancel your changes, you continue to use the SCU and make other changes or exit without saving changes.

Configuring Your Server

Setting the Date and Time

Use these two SCU options to reset the date and time maintained by your server's battery. Note that it might be faster to change the date and time using the BIOS Setup options.

To access this menu item:

1. Insert the backup System Configuration Utility diskette into drive A and then soft boot (reset) your server.
2. Press [Enter] to display the SCU main menu.
3. Configure your server for the current date and time by selecting the Set Date and Set Time options.

Maintain the SCU Diskette

Select this option to maintain Configuration (CFG) files and System Configuration Information (SCI) files. The following menu options are available:

- Create a backup SCI file
- Load a backup SCI file
- Copy/update CFG files
- Copy/update SCI files
- Delete CFG files
- Delete SCI files
- Return to the Main Menu

To access this menu item:

1. Insert the backup System Configuration Utility diskette into drive A and then soft boot (reset) your server.
2. Press [Enter] to display the SCU main menu.
3. Highlight the appropriate `Maintain the SCU Diskette` option, Press [Enter], and then follow the instructions displayed on your monitor screen.

SCU and Setup Options

The following tables list the options that are available in the BIOS Setup utility and in the SCU (View or Edit details). Use the keyboard function keys to help you select options, change values, and display help information.



NOTE: Although the BIOS Setup utility is separate from the SCU, the SCU will automatically update the BIOS settings. In most cases, your server will operate according to the most recent changes regardless of which utility you use to make changes. However, Digital recommends that you use the SCU to configure your server each time you add hardware, remove hardware, or change server settings to ensure that your server operates properly.

Also, the following menu fields might not reflect current BIOS or SCU revisions. Refer to the BIOS Setup utility screens, the SCU, and any associated on-line help for more information.

If you need to access the BIOS Setup utility:

1. Reboot your server.
2. After the POST has successfully completed, press [F2] to access Setup.

Main Menu Options

Menu Fields	Settings	Comments
System time	Current time	Displays the current time.
System date	Current date	Displays the current date.
Language	English Duetsch Español Français Italiano	Enables you to select a desired language.
Diskette drive A Diskette drive B	1.44 MB, 3½ 2.88 MB, 3½ Not Installed 360 KB, 5¼ 1.2 MB, 5¼ 720 KB, 3½	Sets the size and density of diskette drives.
IDE adapter 0/1 master/slave	None	Your server does not support IDE devices.
Video system	EGA / VGA CGA 80x25 Monochrome	Sets the video controller type.
System memory	Not user selectable	Displays the amount of base (conventional) memory each time your server boots.
Extended memory	Not user selectable	Displays the amount of extended memory each time your server boots.
Memory and Cache:		
System cache	Enabled Disabled	Enables or disables your server's system cache. Your server's external cache operates in write-back mode if you select <i>Enabled</i> . For optimal server performance, you should keep this setting at <i>Enabled</i> .

continued

Configuring Your Server

Menu Fields	Settings	Comments
System BIOS shadow	Enabled Disabled	The main logic board reserves an area of DRAM for a copy of system BIOS ROM. This DRAM called "shadow memory" is write-protected and has the same addresses as the system BIOS ROM locations. When you shadow system BIOS ROM, the ROM information is copied into an appropriate area in DRAM. This increases your server's performance because the system BIOS instructions are in fast DRAM instead of ROM.
Video BIOS shadow	Enabled Disabled	The main logic board reserves an area of DRAM for a copy of video BIOS ROM. This DRAM called "shadow memory" is write-protected and has the same addresses as the video BIOS ROM locations. When you shadow video BIOS ROM, the ROM information is copied into an appropriate area in DRAM. This increases your server's performance because the video BIOS instructions are in fast DRAM instead of ROM. For PCI VGA cards, video BIOS is always shadowed, regardless of this field's setting.

continued

Configuring Your Server

Menu Fields	Settings	Comments
Shadow 16K at: C8000h CC000h D0000h D4000h D8000h DC000h E0000h E4000h	Enabled Disabled	Allows you to enable or disable shadowing and caching of individual segments of ROM to increase server performance. Caution: Some option ROMs do not operate properly when shadowed.
AT Bus Space	Disabled F00000h, 1 MB E00000h, 2 MB C00000h, 4 MB	Memory hole not available upper memory is contiguous. Sets the memory hole at address F00000 with 1 MB memory available. Sets the memory hole at address E00000 with 2 MB memory available. Sets the memory hole at address C00000 with 4 MB memory available.

continued

Configuring Your Server

Menu Fields	Settings	Comments
Boot Options		
Boot option	A: only A: then C: C: then A: C: only	Each time your server boots, it will load your operating system from the drive sequence selected.
Summary screen	Enabled Disabled	Enabling this option causes your server to display configuration parameters (in the form of a summary screen) during boot.
SETUP prompt	Enabled Disabled	Enables or disables the <F2> setup prompt each time your server boots. Note: You can still enter Setup by pressing <F2> before POST completes.
POST errors	Enabled Disabled	Enabling this options causes your server to pause and display a setup entry or resume the boot prompt if an error occurs at boot. Disabling this option causes your server to always attempt to boot regardless of a setup entry or error.
Floppy check	Enabled Disabled	Enabling this option causes your server to verify the diskette type each time your server boots. Disabling this option speeds up the boot process

continued

Configuring Your Server

Menu Fields	Settings	Comments
Keyboard Features		
NumLock	Auto Off On	Turns NumLock on or off each time your server boots. Note: If you select <code>Auto</code> , your server will turn on NumLock if it detects a numeric keypad.
Key click	Disabled Enabled	Enables or disables the audible key click feature.
Keyboard auto-repeat rate	30/sec 2/sec 6/sec 10/sec 13.3/sec 18.5/sec 21.8/sec 26.7/sec	Sets the number of times a second to repeat a keystroke while you hold the key down.
Keyboard auto-repeat delay	1/2 sec 3/4 sec 1 sec 1/4 sec	Sets the delay time after a key is held down before it begins to repeat a keystroke.

Advanced Options

Menu Fields	Settings	Comments
Integrated peripherals:		
Mouse port	Disabled Enabled	Enables or disables the mouse port.
Parallel port	378, IRQ 7 278, IRQ 5 Auto Disabled 3BC, IRQ 7	Enables or disables the onboard port at the specified address.
Parallel port mode	EPP 1.7 EPP 1.9	Enhanced parallel port mode. Selection based on what EPP version your printer supports. EPP 1.9 is IEEE 1284 compliant. Only choose a mode that your parallel port device (such as a printer) supports. Check your parallel port device documentation for this information. If you are unsure or unable to locate this information, use the default setting.
	ECP	Sets the extended capabilities port mode.
	Compatible mode	Compatible mode - standard printer connection.
	Bi-directional mode	Bi-directional mode - PS/2 compatible mode and able to receive data.

continued

Configuring Your Server

Menu Fields	Settings	Comments
Serial port 1	Auto	Enables or disables onboard serial port 1 at the specified address. Note: If your server is connected to a network, see your System Administrator.
	Disabled	
	3F8, IRQ 4	
	2F8, IRQ 3	
	3E8, IRQ4	
Serial port 2	2E8, IRQ3	
	Auto	Enables or disables onboard serial port 2 at the specified address. Note: If your server is connected to a network, see your System Administrator.
	Disabled	
	3F8, IRQ 4	
	2F8, IRQ 3	
3E8, IRQ4		
Diskette controller	2E8, IRQ3	
	Enabled Disabled	Enables or disables the onboard diskette controller.
OCP saver timer	5 minutes	Selects disabling or a timer value.
	15 minutes	If a keyboard and mouse remains inactive for the specified time, the OCP will be set to an OFF state to increase the life of the OCP.
	30 minutes	
	Disabled	

continued

Configuring Your Server

Menu Fields	Settings	Comments
OCP backlight	On Off	Selects the power-on state of the OCP backlight.
Exchange diskette drives	Disabled Enabled	Enables you to logically exchange physical diskette drive designations.
Diskette write protection	Disabled Enabled	Enables or disables the selected diskette drive's write protect option. Enabling this option means nothing can be written to the diskette drive (however, you can still read data from the diskette). Disabling this option enables you to read and write data to the diskette drive.
IDE controller	Disabled	Your server does not support an onboard IDE controller.
PCI Devices:		
PCI devices, slot 1/2/3/4/5/6 INTA, INTD, INTB, INTC	None IRQ	Selects IRQ routing.
Default latency timer	Enabled Disabled	When enabled, the device's power up latency timer is used.
Latency	0040h	Sets the device latency timer.
Advanced chipset control:		
Master retry timer	32 PCICLKS 16 PCICLKS Disabled 64 PCICLKS	Enables or disables the PCEB master retry timer.
EISA latency timer	80...F0	Holds the initial EISA count value.

continued

Configuring Your Server

Menu Fields	Settings	Comments
PCI master latency timer	F8...10	This register contains the programmable value of the Master Latency Timer for use when the PCEB is a master on the PCI bus.
BCU PCI latency timer	F8...10	BCU PCI latency timer.
SERR generate NMI	Enabled Disabled	Enables or disables the SERR generated NMI option.
PCI SERR driver enable	Enabled Disabled	Setting this bit enables the SERR pin driver.
PCI PERR/SERR reporting	Enabled Disabled	When this bit is set, PERR and SERR errors will generate an I/O fault.
Fault to SERR	Enabled Disabled	This bit determines whether an MPI-Bus fault generates a PCI SERR signal. When set, MFAULT is propagated to SERR. When cleared, MFAULT is not propagated to SERR.
EISA to PCI line buffer	Enabled Disabled	Enables or disables the EISA to PCI line buffer.
PCEB bus park	Enabled Disabled	When enabled (bit set to 1), the PCEB parks CPUREQ on the PCI bus when it detects a PCI bus idle. When disabled (bit set to 0), the PCEB takes responsibility for driving AD.
PCEB bus lock	Enabled Disabled	When enabled (bit set to 1), the PCEB arbiter considers the entire PCI bus locked at initiation of any LOCKed transaction. When disabled (bit set to 0), resource lock is enabled.

continued

Configuring Your Server

Menu Fields	Settings	Comments
MPI parking device	Bus bridge MREQ0/MGNT0 pair MREQ1/MGNT1 pair MREQ2/MGNT2 pair MREQ3/MGNT3 pair MREQ4/MGNT4 pair	This option defines the default parking device.
MCP parking mode	Default device No parking Last-in-use	This option defines the MCP parking mode.

Security Options

Menu Fields	Settings	Comments
Supervisor password is	Not user selectable	Tells you whether or not the supervisor's password is enabled or disabled.
User password is	Not user selectable	Tells you whether or not the user's password is enabled or disabled.
Set supervisor password	Press [Enter]	Enables you to set a supervisor password. You need to set the supervisor password if you intend to allow the user password to be used. When the supervisor later enters his or her password, all user selectable features are accessible. Note: Entering Setup with a supervisor password provides full access to all BIOS Setup utility menus. To delete or disable the Supervisor password, press [Enter] for this field. When prompted for the Supervisor password, leave the field blank and press [Enter].

continued

Configuring Your Server

Menu Fields	Settings	Comments
Set user password	Press [Enter]	<p>Enables you to set a user password.</p> <p>You can only set this password if a supervisor password is entered.</p> <p>When the user has entered his or her name but the supervisor is not logged in, only the following information is accessible:</p> <p>Supervisor password is Enabled.</p> <p>User password is Enabled.</p> <p>Set user password [press enter] to enter a user password.</p> <p>Password on boot Enabled/Disabled (which ever is in effect). This option is not allowed to change.</p> <p>Note: Entering Setup with a user password restricts access to certain BIOS Setup utility menus. To delete or disable the User password, press [Enter] for this field. When prompted for the User password, leave the field blank and press [Enter].</p> <p>Also, this option requires prior setting of the supervisor password.</p>

continued

Configuring Your Server

Menu Fields	Settings	Comments
Password on boot	Enabled Disabled	Enables or disables the enter password on boot option. Note: This option requires prior setting of the supervisor/user password.
Diskette access	Supervisor User	Enables you to control who has access to diskette drives. If you select <code>Supervisor</code> , access to the diskette drive is limited to the supervisor, who must enter his or her password. If you select <code>User</code> , you can access the diskette by entering either the supervisor or the user password. Whatever setting you choose, it only becomes functional if you have set a <code>Supervisor Password</code> and a <code>User Password</code> (if you choose <code>User</code> for the setting).

continued

Configuring Your Server

Menu Fields	Settings	Comments
Fixed disk boot sector	Normal Write protect	Enables you to write protect the boot sector on your hard disk drive.
Network server	Disabled Enabled	This option keeps your server from being accessed during network operation.
System backup reminder	Disabled Daily Weekly Monthly	Enables or disables the system backup reminder message.
Virus check reminder	Disabled Daily Weekly Monthly	Enables or disables the virus check reminder message.

3

CD-ROM Disk and Startup/Utility Diskette

Introduction

This chapter explains how to use the CD-ROM disk and the Startup/Utility diskette to access your server utilities and operating system-specific device drivers.

Use the CD-ROM disk to access the “Getting Started” program. This program enables you to view on-line help files and copy the following driver disk images onto diskettes for use when installing your operating system or configuring your server:

- **SCSI**—enables your server to operate using an Adaptec 2940 or 3940 SCSI controller.
- **Mouse**—enables your server to operate using a Logitech mouse.
- **Video**—enables your server to operate using the onboard Cirrus 5428 video controller.

Use the Startup/Utility diskette to:

- Run EPP3SMC.EXE for enhanced printer port capabilities.
- Access the “Getting Started” program on the CD-ROM disk if your server does not have an operating system installed or an operating system other than Windows for Workgroups.
- Access the README.TXT file for the most current information on your server.

Before Using the Startup/Utility Diskette and CD-ROM Disk

If you are unfamiliar with utility programs and their uses, carefully read and understand this chapter before attempting to use the CD-ROM disk and/or the Startup/Utility diskette.

Accessing “Getting Started”

If you have Windows for Workgroups installed on a server or workstation from which you want to access the “Getting Started” program on the CD-ROM disk, you can access the program directly by:

1. Inserting the CD-ROM disk into the CD-ROM drive.
2. Selecting the Windows Program Manager, File, and then Run.
3. Entering the following:
[CD-ROM drive letter]:\gstarted.exe
4. Following the instructions on the screen to complete the setup process.



NOTE: If you want to install “Getting Started” as an icon in Windows, select the Setup button in the country selection box.

If you do not have Windows for Workgroups installed, you can access the CD-ROM disk by:

1. Inserting the CD-ROM disk into the CD-ROM drive.
2. Inserting the Startup/Utility diskette into drive A and booting your server.
3. Following the instructions on the monitor screen to setup and display the “Getting Started” program.

PHLASH.EXE

All servers have BIOS software in a read-only, non-volatile memory (ROM) chip. This BIOS initializes hardware and boots the operating system when the server is turned on. The BIOS also provides access to other services such as keyboard and disk drives.

Your server comes equipped with flash memory. This means that you can restore your server's BIOS simply by running the PHLASH.EXE utility. You can also upgrade your server's BIOS to future releases by running PHLASH.EXE along with any flash BIOS update diskette if necessary.

Only use PHLASH.EXE to upgrade your server's BIOS if you are instructed to do so by an authorized Digital support representative. PHLASH.EXE and BIOS updates are available on the Digital Bulletin Board (BBS).

Using EPP3SMC.EXE

EPP3SMC.EXE is a device driver for configuring your parallel port as an enhanced parallel port (EPP). Before loading this device driver, check the documentation for the device you want to connect to the parallel port and make sure it supports EPP mode. If it does not, you do not need to load this device driver. If the device does support EPP mode, you should:

1. Copy EPP3SMC.EXE from the Startup/Utility diskette to your hard disk drive.

Note the path where your driver is located.

2. Edit your CONFIG.SYS file to enter the path for EPP3SMC.EXE.

Refer to your DOS documentation for information on editing your CONFIG.SYS file. For example a line in your CONFIG.SYS might be:

```
device=C:\epp3smc.exe
```

3. Save the new version of your CONFIG.SYS file.
4. Press [Ctrl] + [Alt] + [Del] to reboot your server.
5. Before POST completes, press [F2] to enter Setup.
6. Choose the Advanced Menu in Setup and select Parallel Port Mode.

CD-ROM Disk and Startup/Utility Diskette

7. Choose EPP mode.
8. Select `Save Changes` and `Exit` to save the new setting.

Your server will then automatically reboot.

Your parallel port is now configured as an EPP port.

Loading Drivers

You can copy operating system-specific device driver disk images from the “System Disks” section in “Getting Started”.

SCSI, mouse, and video drivers are available for the following operating systems:

- MS-DOS/Windows
- Windows NT
- NetWare
- OS/2
- SCO UNIX

Refer to the device documentation, on-line help, or any README files contained on the diskettes you create for additional information on loading device drivers.

4

Expanding Your Server

Introduction

This chapter lists the tools required to expand your server, explains how to prevent component damage from static electricity, provides preliminary setup procedures for server expansion, and describes how to unlock and remove the server's side panels. Also included in this chapter are instructions for replacing or modifying the following hardware:

- CPU module and cache
- Memory
- Terminator card
- Server battery/real-time clock (RTC)
- Optional EISA and PCI local bus expansion boards
- Mass storage devices
- Redundant power supply
- Optional cooling fan

Expanding Your Server

Tools Needed

- A Phillips screwdriver
- An antistatic wrist strap (recommended, but not required)

Static Electricity

Static electricity collects on non-conductors such as paper, cloth, or plastic. A static discharge can be damaging even though you often cannot see or feel it. To prevent damage to circuit boards and/or components:

- Before touching any circuit board or component, touch the metal frame of your server to discharge any static electricity.
- Keep circuit boards and components away from non-conductors.
- Keep clothing away from circuit boards and components.
- Keep circuit boards in anti-static bags.

Disconnect External Devices and Power

Before removing the side panels, perform the following:

1. Turn off power to all external devices connected to server.
2. Turn server off.
3. Disconnect power from wall outlet.
4. Disconnect power cord and monitor cord from server.

Expanding Your Server

Removing the Side Panels

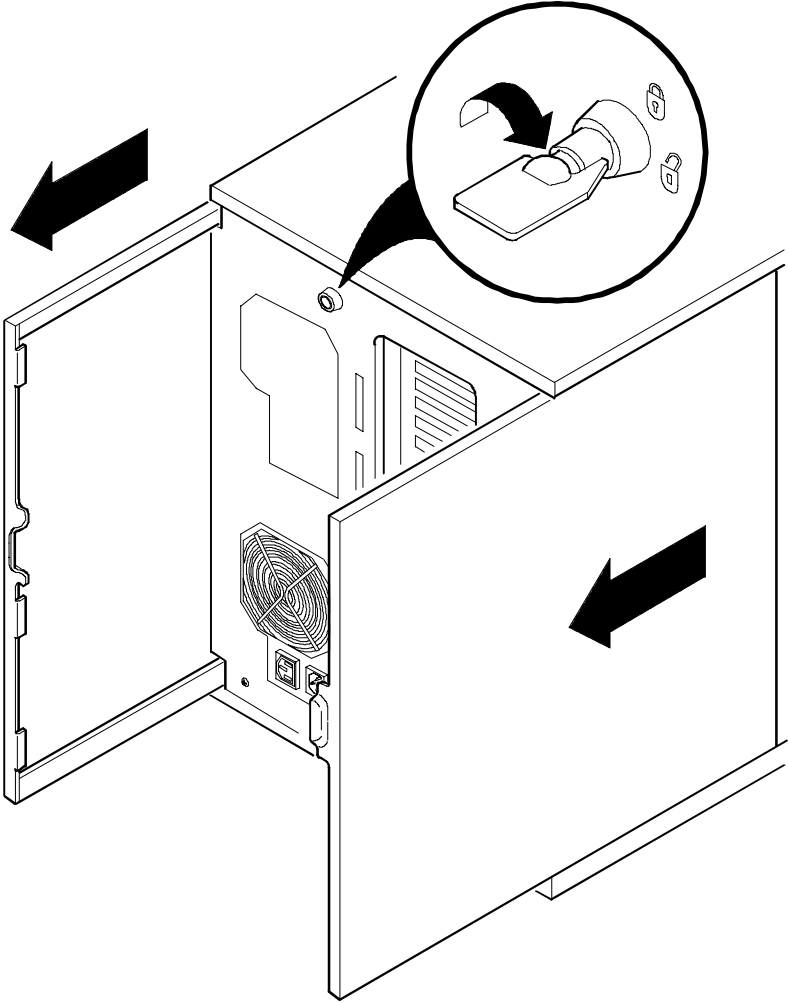
To remove the side panels, perform the following:



WARNING: Removing the side panels activates the power interlock switches located at the top-left and top-right of your server. These switches turn off power to your server. You might injure yourself or damage your server if you attempt to bypass these switches

1. Unlock side panels.
2. To remove the side panels, push them towards the rear of the server and then slide them off.

Expanding Your Server



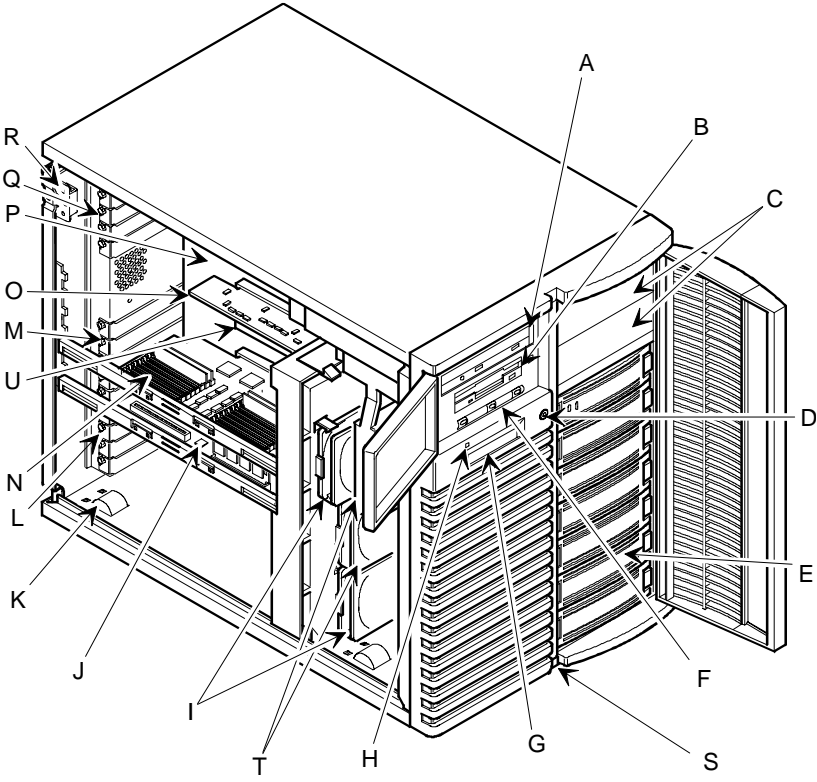
DEC00405-2

Figure 4-1. Unlocking and Removing the Side Panels

Server Components (Left Side)

Figure	Legend	Component
A		CD-ROM drive
B		3½-inch diskette drive
C		Front access 5¼-inch half-height drive bays
D		3-way security lock
E		Integral hot-swap device bay for storage building blocks (SBBs)
F		Power, OCP, and reset buttons
G		Operator control panel (OCP)
H		Power indicator
I		Cooling fans
J		CPU module 1 and cache memory
K		Casters
L		Five EISA expansion slots
M		Two primary PCI slots, one shared PCI/EISA slot
N		Memory module 1
O		Terminator card or CPU module 2
P		Main logic board
Q		Three secondary PCI slots
R		Power switch interlock
S		Brake
T		Redundant fans
U		Memory module 2 connector

Expanding Your Server



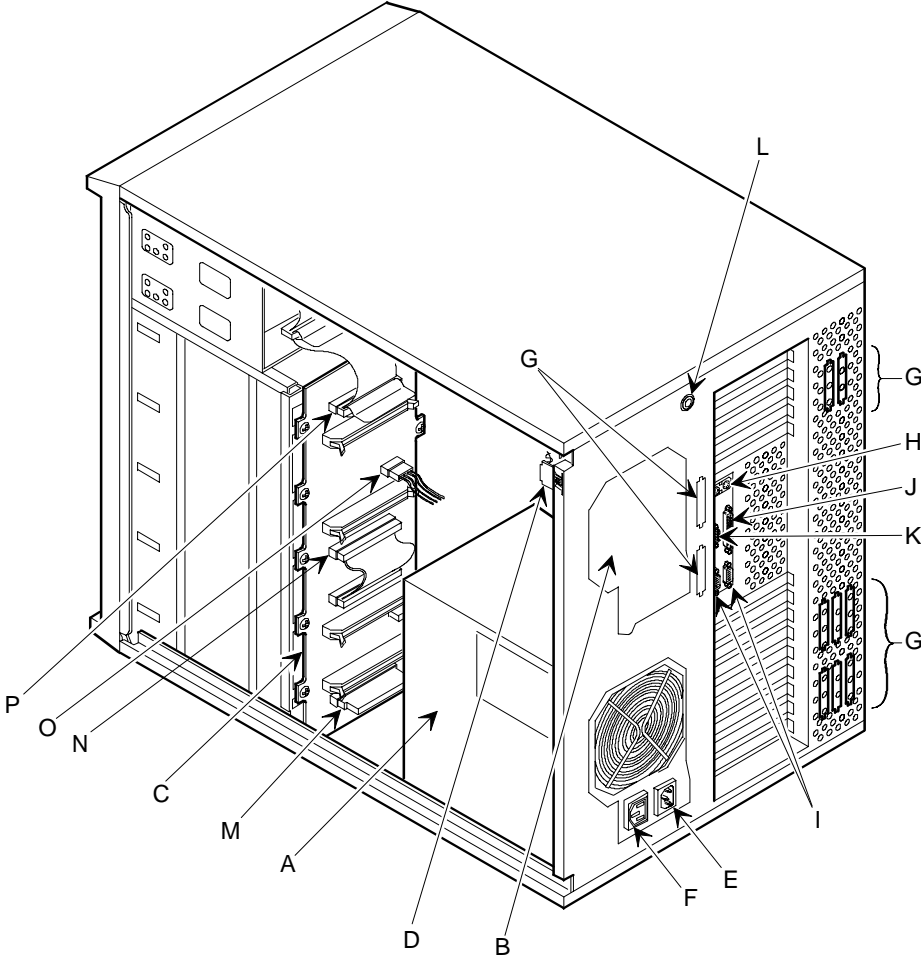
DEC00577-2

Figure 4-2. Server Components (Left Side, Single or Dual Configuration Shown)

Server Components (Right Side)

Figure	Legend	Component
A		Power supply
B		Redundant power supply area
C		Storage backplane
D		Power interlock switch
E		AC power plug
F		Monitor plug
G		SCSI knockouts (back panel)
H		Keyboard and mouse ports
I		Serial ports
J		Parallel port
K		Video port
L		Keylock
M		Storage backplane SCSI terminator
N		Jumper cable
O		Power plug
P		68-pin connector

Expanding Your Server



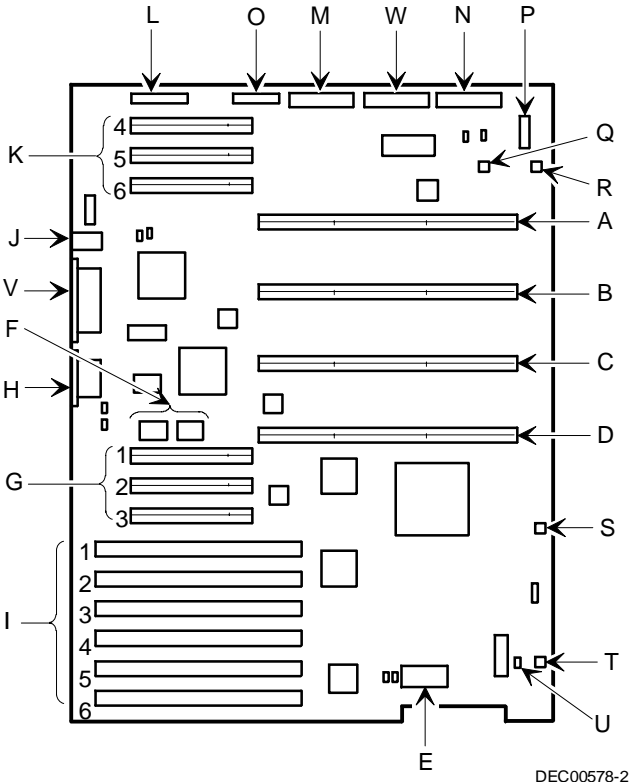
DEC00438 -2

Figure 4-3. Server Components (Right Side)

Main Logic Board Components/Connectors

Figure Legend	Components
A	CPU module 2 or terminator card connector
B	Memory module 2 connector
C	Memory module 1 connector
D	CPU module 1 connector
E	Real-time clock/server battery
F	Flash ROM BIOS
G	Primary PCI expansion slots (1, 2, and 3)
H	Serial port connections
I	EISA expansion slots (1 through 6)
J	Mouse and keyboard connections
K	Secondary PCI expansion slots (4, 5, and 6)
L	Diskette drive connector
M	3.3 V dc power connector
N	Power control signal connector
O	SBB connector
P	OCP connector
Q	Fan 1 connector
R	Fan 2 connector
S	Fan 3 connector
T	Fan 4 connector
U	DSM connector
V	Parallel port and video connectors
W	5 V dc power supply connector

Expanding Your Server



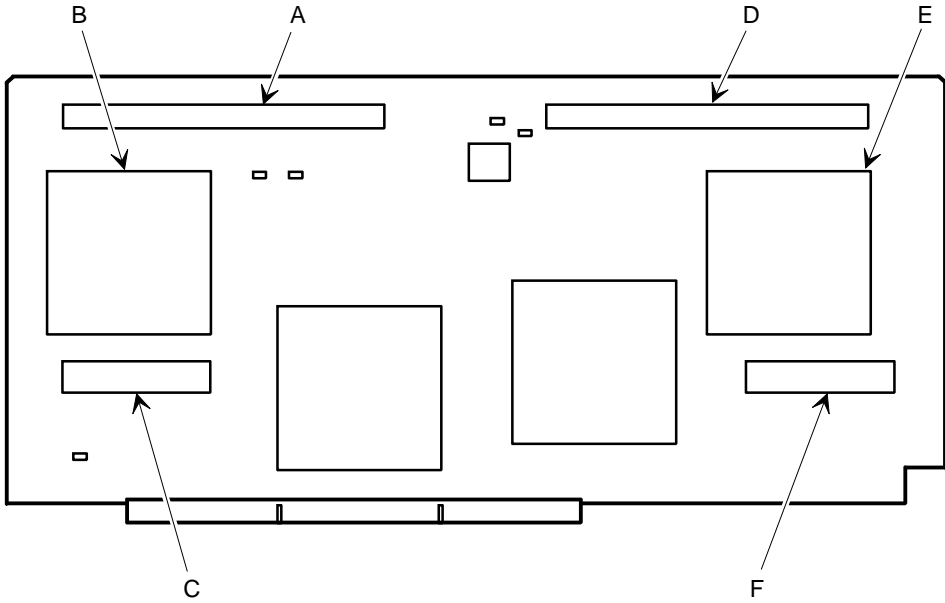
DEC00578-2

Figure 4-4. Main Logic Board Components/Connectors

CPU Module Components/Connectors

Figure Legend	Component
A	CPU 2 secondary cache
B	CPU 2
C	CPU 2 voltage regulator
D	CPU 1 secondary cache
E	CPU 1 socket
F	CPU 1 voltage regulator

Expanding Your Server



DEC-00583-2

Figure 4-5. CPU Module Components/Connectors

Upgrading your CPU Module

The Prioris HX MP one or two (1P, 2P) processor configurations include a single CPU module. The Prioris HX MP four (4P) processor configuration includes two CPU modules. The following procedure can be used to upgrade or remove the CPU module(s).

1. Turn off your server.
2. Disconnect external devices, ac power, and monitor power.
3. Unlock and remove left side panel.
4. Remove CPU module retaining bracket.
5. Carefully remove the original CPU module from main logic board and place on an antistatic surface.
6. Install cache modules (one per CPU) on the CPU module(s).

Refer to “Installing a Secondary Cache Module” later in this chapter.

7. Install the new CPU module(s) and secure with retaining bracket(s).

1P/2P CPU module must be installed in CPU Module 1 slot and a terminator card in CPU Module 2 slot.

For 4P servers, the terminator card must be removed and a second CPU module must be installed in the CPU Module 2 slot.

Refer to “Removing the Terminator Card” later in this chapter.

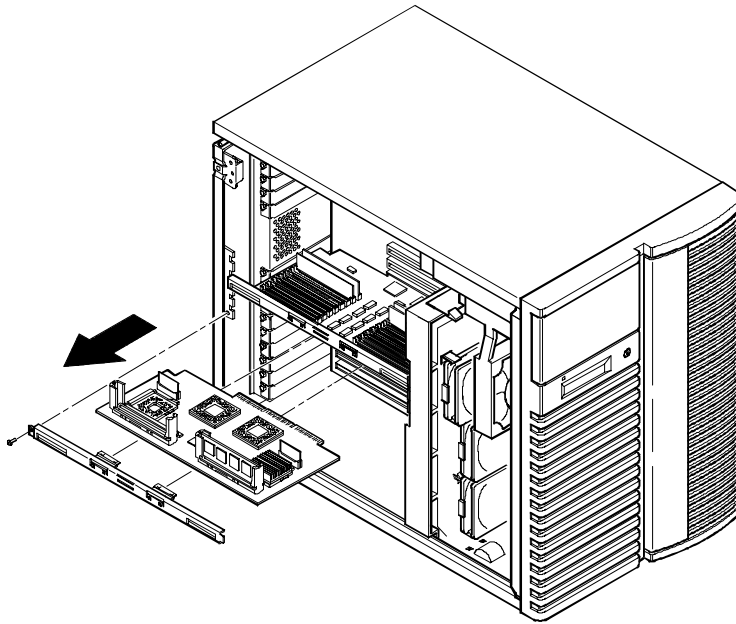


NOTE: 1P servers are not chip-upgradeable. All CPU upgrades require a new CPU module. Contact your Digital sales representative for ordering information..

8. If necessary, install a new memory module.

Refer to “Removing and Replacing a Memory Module” for more information on installing memory modules.

Expanding Your Server



DEC00579-2

Figure 4-6. CPU Module Removal

9. Replace and lock left side panel.



NOTE: Your server will not power up with the side panel removed.

10. Connect external devices and restore power.
11. Run the SCU, select `Configure Computer`, select `View` and `Edit Details`, and then select `Save` and `Exit`.

Installing a Secondary Cache Module

Your server's Pentium CPU module comes with a 512 KB write-back burst secondary cache module per CPU. To install additional cache modules for CPU upgrades, perform the following:

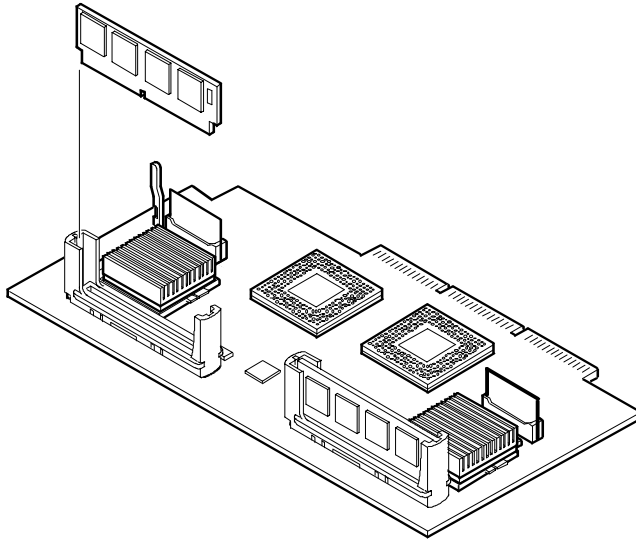
1. Turn off your server.
2. Disconnect external devices, ac power, and monitor power.
3. Unlock and remove left side panel.
4. Remove CPU module and place it on an antistatic surface.
5. Carefully remove cache module and place it on an antistatic surface.
6. Install cache module. Make sure it seats firmly into the socket.
7. Install the CPU module.
8. Replace and lock left side panel.



NOTE: Your server will not power up with the side panel removed.

9. Connect external devices and restore power.
10. If necessary, reboot and run the SCU. From the main menu, select `Configure Computer` and then select `View and Edit Details` to enable the system cache option. Select `Save` and `Exit` to configure your server for the external cache.

Expanding Your Server



DEC00584-2

Figure 4-7. Installing Cache Modules

Removing and Replacing the Terminator Card

The terminator card terminates the memory and CPU bus for the Prioris HX MP one and two processor (1P, 2P) configurations. When upgrading to the four processor (4P) configuration, replace the terminator card with a second CPU module. To remove the terminator card:

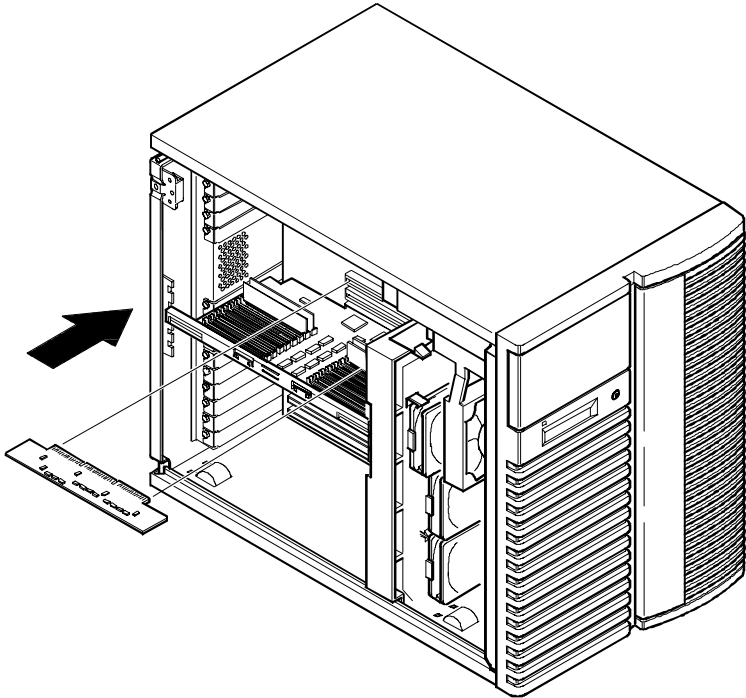
1. Turn off your server.
2. Disconnect external devices, ac power, and monitor power.
3. Unlock and remove left side panel.
4. Remove terminator card.
5. Install CPU module and secure with retaining bracket.
6. Replace and lock left side panel.



NOTE: Your server will not power up with the side panel removed.

7. Connect external devices and restore power.

Expanding Your Server



DEC00579-4

Figure 4-8. Removing a Terminator Card

Removing and Replacing a Memory Module

Your server comes with a single memory module that supports a 128-bit memory interface and 2-way memory interleaving. You can increase your server's overall performance by adding an additional memory module. Adding a second memory module enables your server to utilize a 256-bit memory interface and 4-way memory interleaving.



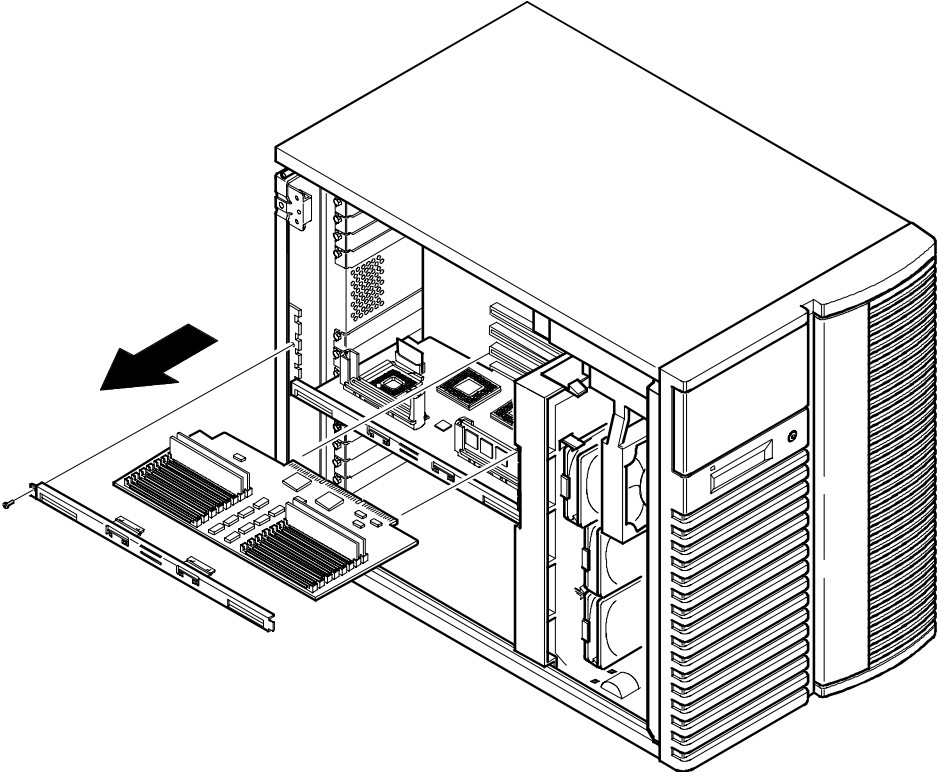
NOTE: Due to height limitations, 64 MB SIMMs cannot be used on the Prioris HX MP memory modules.

Refer to the on-line version of the HX MP System and Options Configuration Guide and "Installing Additional Server Memory," for more information.

The following procedure can be used to remove and replace any memory module.

1. Turn off your server.
2. Disconnect external devices, ac power, and monitor power.
3. Unlock and remove left side panel.
4. Remove memory module retaining bracket.
5. Carefully remove memory module from main logic board.
6. Install an additional memory module or add additional server memory on existing memory module.
7. Replace memory module and secure with retaining bracket.
8. Replace and lock left side panel.
9. Connect external devices and restore power.
10. Run the SCU, select `Configure Computer`, select `View and Edit Details`, and then select `Save and Exit`.

Expanding Your Server



DEC00579-3

Figure 4-9. Memory Module Removal

Installing Additional Server Memory

Adding more memory allows your server to run larger, more complicated software and run it quicker. Your Prioris HX MP server will support up to 1 GB of standard parity memory. This memory can either be installed entirely on one memory module or can be split between two memory modules.



NOTE: If you plan on operating your server using two or four CPUs, we recommend that you install memory on two memory modules. Two memory modules enables your server to utilize 4-way memory interleaving.

Each memory module contains two sets of memory banks (banks 0 through 3). Each bank consists of four SIMM sockets. Your server comes with at least 32 MB of memory installed in bank 0. When adding additional memory make sure you:

- Install 36-bit SIMMs having an access time of 70 ns or less.
- For single memory module configurations, fill one bank (four sockets) at a time using the same SIMM size, type, and speed (8 MB, 16 MB, and 32 MB densities are available).
- Fill bank 0 (0H and 0L) before bank 1 (1H and 1L), bank 1 before bank 2 (2H and 2L), bank 2 before bank 3 (3H and 3L).

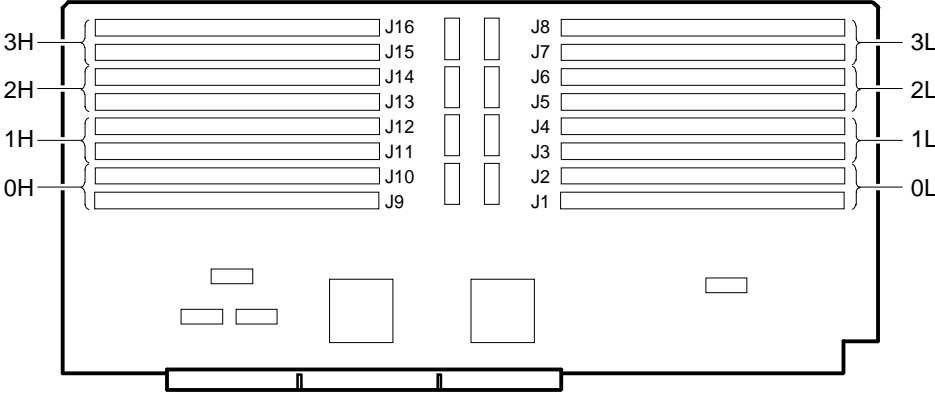


NOTE: Due to height limitations, 64 MB SIMMs cannot be used on the Prioris HX MP memory modules.

Expanding Your Server

- For dual memory module configurations, fill one bank (four sockets) at a time on each module using the same SIMM size, type, and speed (8 MB, 16 MB, and 32 MB). For optimal memory performance, use the same SIMM number, size, type, and speed on each memory module.

Refer to “Memory Configurations” for a list of SIMM combinations supported by your Prioris HX MP Server family computer and to “Installing a SIMM” for detailed instructions on installing SIMMs.



DEC-00580

Figure 4-10. SIMM Socket Locations and Bank Designations

Expanding Your Server

Memory Configurations

The following tables list the SIMM combinations supported by the Prioris HX MP server.

For Single Memory Module Configurations

Bank 0L/0H	Bank 1L/1H	Bank 2L/2H	Bank 3L/3H	Total	Comments
32 MB				32 MB	Quantity 4, 8 MB SIMMs
32 MB	32 MB			64 MB	Quantity 8, 8 MB SIMMs
64 MB				64 MB	Quantity 4, 16 MB SIMMs
32 MB	32 MB	32 MB		96 MB	Quantity 12, 8 MB SIMMs
32 MB	32 MB	32 MB	32 MB	128 MB	Quantity 16, 8 MB SIMMs
64 MB	64 MB			128 MB	Quantity 8, 16 MB SIMMs
128 MB				128 MB	Quantity 4, 32 MB SIMMs
64 MB	64 MB	64 MB		192 MB	Quantity 12, 16 MB SIMMs
64 MB	64 MB	64 MB	64 MB	256 MB	Quantity 16, 16 MB SIMMs
128 MB	128 MB			256 MB	Quantity 8, 32 MB SIMMs
128 MB	128 MB	128 MB	128 MB	512 MB	Quantity 16, 32 MB SIMMs

For Dual Memory Module Configurations

Memory Module 1				Memory Module 2				Total
Bank 0L/0H	Bank 1L/1H	Bank 2L/2H	Bank 3L/3H	Bank 0L/0H	Bank 1L/1H	Bank 2L/2H	Bank 3L/3H	
32 MB				32 MB				64 MB
32 MB	32 MB			32 MB	32 MB			128 MB
64 MB				64 MB				128 MB
32 MB	32 MB	32 MB		32 MB	32 MB	32 MB		192 MB
32 MB	32 MB	32 MB	32 MB	32 MB	32 MB	32 MB	32 MB	256 MB
64 MB	64 MB			64 MB	64 MB			256 MB
128 MB				128 MB				256 MB
64 MB	64 MB	64 MB		64 MB	64 MB	64 MB		384 MB
64 MB	64 MB	64 MB	64 MB	64 MB	64 MB	64 MB	64 MB	512 MB
128 MB	128 MB			128 MB	128 MB			512 MB
128 MB	128 MB	128 MB		128 MB	128 MB	128 MB		768 MB
128 MB	128 MB	128 MB	128 MB	128 MB	128 MB	128 MB	128 MB	1024 MB

Installing a SIMM

To install a SIMM, perform the following:

1. Turn off your server.
2. Disconnect external devices, ac power, and monitor power.
3. Unlock and remove left side panel.

Expanding Your Server

4. Remove memory module retaining bracket and memory module.

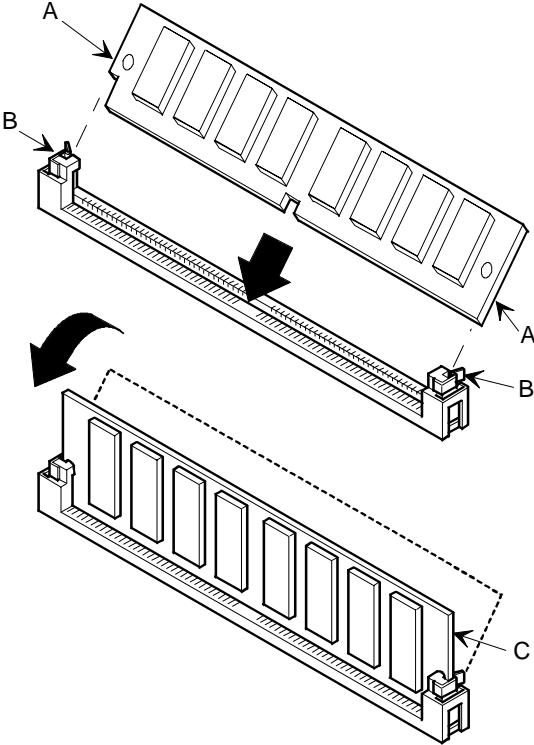
Install SIMM into socket on memory module at a 45 degree angle away from edge connector.

Make sure notch is oriented as shown (A, Figure 4-11). Rock SIMM gently until it completely engages bottom of socket. Tip SIMM upright until both retaining clips engage (B, C, Figure 4-11).

5. Replace memory module and secure with retaining bracket.
6. Replace and lock left side panel.
7. Connect external devices and restore power.
8. Reboot and run the SCU. From the main menu, select `Configure Computer` and then select `Save and Exit` to configure your server for the additional memory.

Refer to Chapter 2, "Configuring Your Server."

Expanding Your Server



DEC00089-2

Figure 4-11. Installing a SIMM

Replacing the Battery/Real Time Clock (RTC)

Your server's battery runs the server clock and retains any setup information when it is turned off. If your server ever fails to retain the correct date, time, or configuration settings when it is turned on, you need to replace your server's battery.

To replace the battery, perform the following:

1. Record server configuration settings using the SCU.
2. Turn off your server.
3. Disconnect external devices, ac power, and monitor power.
4. Unlock and remove left side panel.
5. Remove old battery.

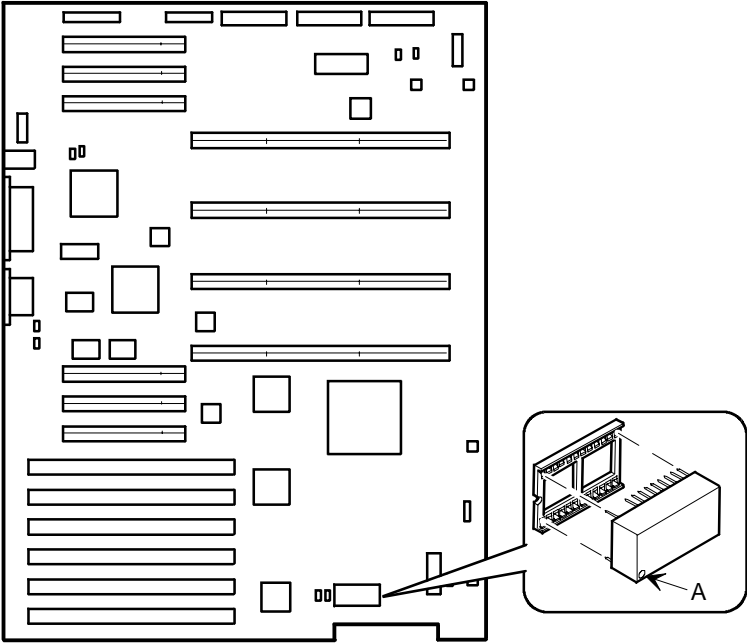


WARNING: Depending on your locality, your server's battery might be considered hazardous waste. Make sure you follow any state or local statute to properly dispose of the old battery.

6. Install new battery. Make sure pin 1 of the battery is aligned with pin one on the socket (A, Figure 4-12).
7. Replace and lock left side panel.
8. Connect external devices and restore power.
9. Run SCU to reconfigure computer using recorded configuration settings from step 1.

Refer to Chapter 2, "Configuring Your Server."

Expanding Your Server



DEC00578-4

Figure 4-12. Replacing the Battery

Installing Expansion Boards

Your Prioris HX MP server's main logic board contains 12 expansion board slots for installing up to eleven EISA or PCI expansion boards. Six of the slots support industry-standard 32-bit EISA expansion boards. The remaining six expansion slots support 32-bit PCI local bus expansion boards. This enables your server to deliver improved performance by using a higher speed data path.



NOTE: Some PCI expansion boards might need to be installed in a primary PCI slot. Refer to the documentation that came with your PCI expansion board.

Expansion Slot Designation	Description
EISA slots 1 through 6	Supports extended industry-standard 32-bit EISA expansion boards
EISA slot 1	Designated as a shared slot with PCI slot 3 ⁽¹⁾
PCI slots 1 through 6	Supports bus mastering 32-bit PCI expansion boards
PCI slot 3	Designated as a shared slot with EISA slot 1 ⁽¹⁾

⁽¹⁾ Only one expansion board can reside in EISA slot 1 or PCI slot 3 at any one time. These slots have to share the expansion slot opening at the rear panel.

Expanding Your Server

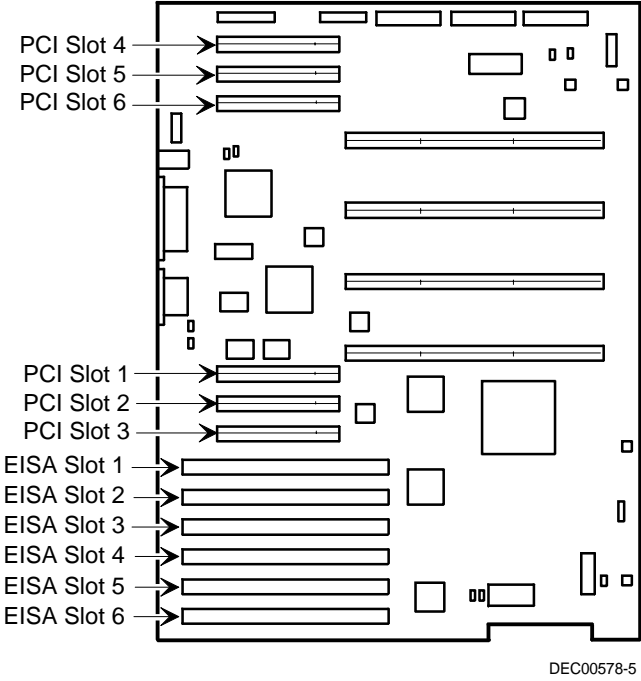


Figure 4-13. Prioris HX MP Server Expansion Board Slots

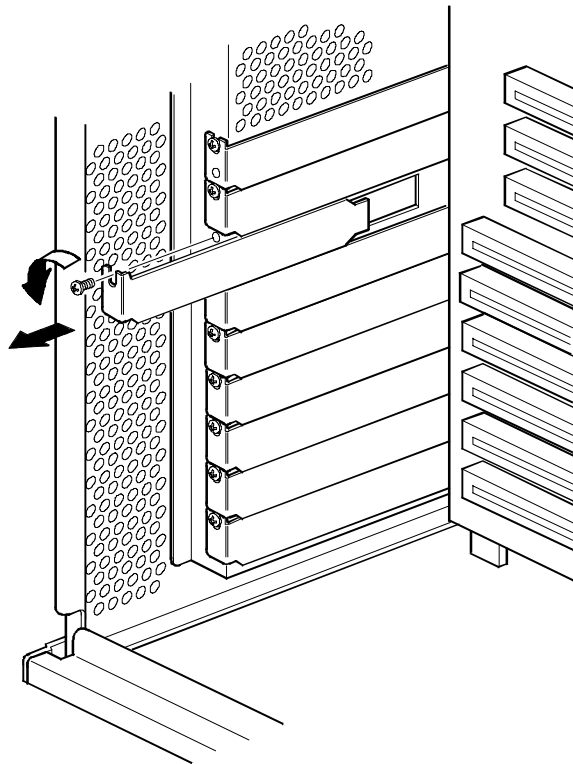
Expanding Your Server

To install an EISA, ISA, or PCI local bus expansion board:



NOTE: Read and fully understand your optional expansion board's documentation before installing it.

1. Turn off your server.
2. Disconnect external devices, ac power, and monitor power.
3. Unlock and remove left side panel.
4. Unscrew and remove metal filler plate from selected expansion slot.

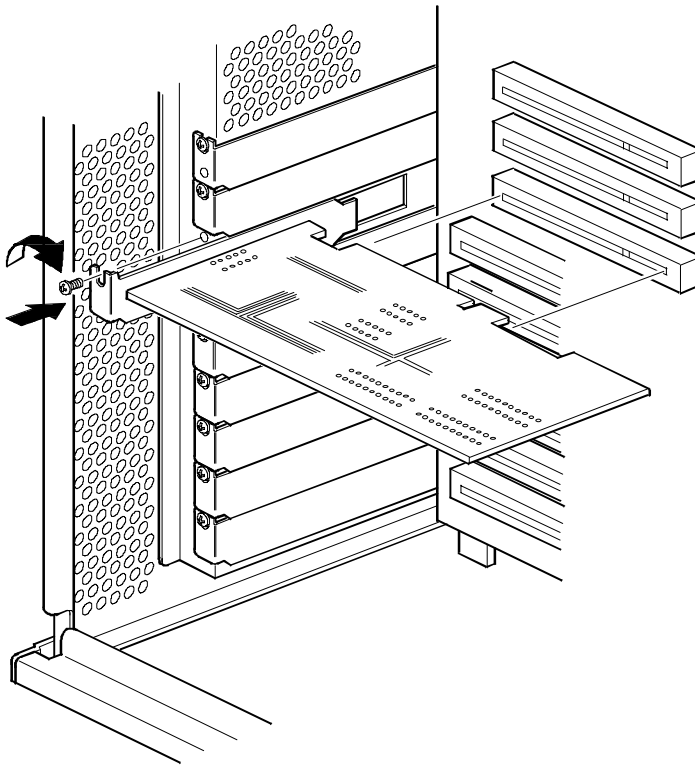


DEC00408-2

Figure 4-14. Removing a Metal Filler Plate

Expanding Your Server

5. Insert new expansion board into socket and push expansion board firmly into place.



DEC00408-3

Figure 4-15. Installing an Expansion Board

6. Secure expansion board to slot with screw removed in step 4.
7. Replace and lock left side panel.
8. Connect external devices and restore power.
9. Run the SCU to configure any EISA or PCI expansion boards that you installed.

Refer to Chapter 2, "Configuring Your Server."

Adding Mass Storage Devices

Your server has three drive bay areas. Mass storage devices such as SCSI hard disk drives, floppy diskette drives, SCSI CD-ROM drives, and SCSI tape backup systems are installed in these drive bay areas. The three drive bay areas are:

- Left-front access drive bay area—This area has one 5¼-inch SCSI CD-ROM drive and one 3½-inch diskette drive (standard on all Prioris HX MP Servers).
- Top-right front access drive bay area—This area has room for two wide (68-pin) or narrow (50-pin) 5¼-inch or 3½-inch half-height SCSI devices or one full-height, 5¼-inch device .
- Lower-right front access drive bay area—This area has room for seven 3½-inch, wide or narrow Fast SCSI-2, hot-swap devices.

SCSI Configuration Guidelines

Your server configuration, SCSI adapter(s), and all SCSI devices must work together for optimum performance. When installing SCSI devices, use the following guidelines:

- The last physical SCSI device on each end of the SCSI bus must be terminated. Only use SCSI devices without terminators. If your SCSI device came with a built-in terminator installed, you must remove or disable the terminator from the device before you complete the installation.



NOTE: Your server is supplied with the necessary cable and storage backplane terminators. Use only the SCSI terminators supplied with your server.

Refer to your SCSI device's manufacturer documentation for the terminator location.

Expanding Your Server

- Each SCSI device (including the SCSI host adapter) must be configured with a unique ID number. SCSI host adapters usually default to ID 7. The SCSI CD-ROM drive defaults to ID 6. Use the remaining IDs 0 through 5 (narrow and wide adapters) and 8 through 15 (wide adapters only) to configure hard disk drives and other SCSI devices. Hard disk drives should be configured to start with SCSI ID 0 and the lower ID numbers.

Refer to "SCSI Drive IDs" later in this chapter.

Your server is supplied with the following cables:

- One wide (68-pin) five connector cable assembly. This cable assembly includes:
 - One wide 68-pin connector to connect to the SCSI host adapter.
 - Three wide-to-narrow adapters to connect the narrow (50-pin) CD-ROM drive and the two 5.25" bay devices for SCSI operation.
 - One wide (68-pin) connector to connect the SCSI host adapter to Channel A of the hot-swap backplane (if required). A cable terminator is supplied if this connector is not used to connect to Channel A.
- One 68-pin-to-68-pin jumper cable to connect the two hot-swap backplane segments together to make a single SCSI channel.
- Two 68-pin internal terminators (one for channel A and one for channel B).
- Two additional wide cables with two 68-pin unshielded connectors are supplied to connect to Channel A and Channel B on the hot-swap backplane.

Refer to the System and Options Configuration Guide for ordering and configuration information on additional SCSI cables and devices.

Expanding Your Server

- SCSI device drivers are required to operate your SCSI devices. Your SCSI device drivers are located on the CD-ROM disk. You can copy the SCSI device drivers to diskettes from the “System Disks” section of “Getting Started”. Also, refer to the Adaptec 7800 Family Manager’s Set or the EZ-SCSI documentation.

SCSI Configuration Utility

The Adaptec 2940W or 3940W controller includes a SCSI configuration utility that lets you change host controller settings and perform low-level formatting on new SCSI devices.

To start the SCSI configuration utility:

Press `Ctrl + A` when the BIOS banner appears during the boot process.

Installing a Half-Height 5¼-Inch Device into the Top-Right Drive Bay

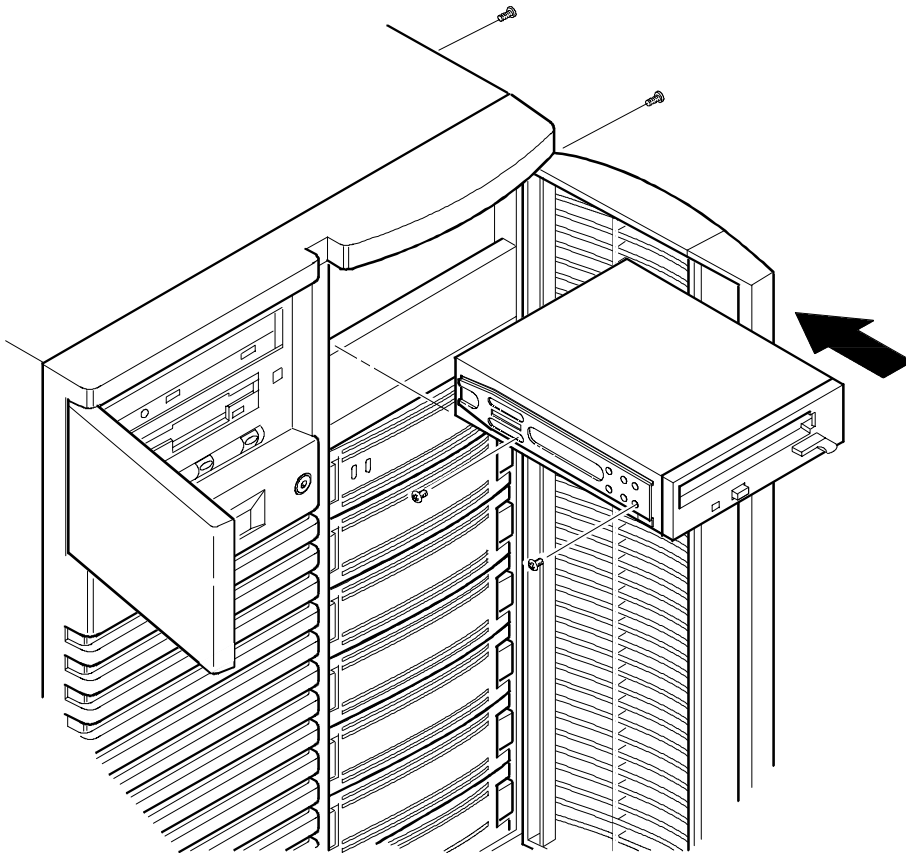
To install a half-height 5¼-inch device into one of the top-right drive bay slots, perform the following:

1. Turn off your server.
2. Disconnect external devices, ac power, and monitor power.
3. Unlock and remove side panels.
4. Unlock and open door.
5. Remove plastic filler panel by pushing it out from inside server.

Expanding Your Server

6. Remove bracket from left side of drive bay and attach it to device.
7. Insert device into drive bay slot from front.
8. Secure device to slot using supplied mounting screws.

Refer to "Connecting SCSI Devices."



DEC00409-2

Figure 4-16. Installing a Half-Height 5¹/₄-Inch Device Into Top-Right Drive Bay

Expanding Your Server

Installing a Full-Height 5¼-Inch Device into the Top-Right Drive Bay

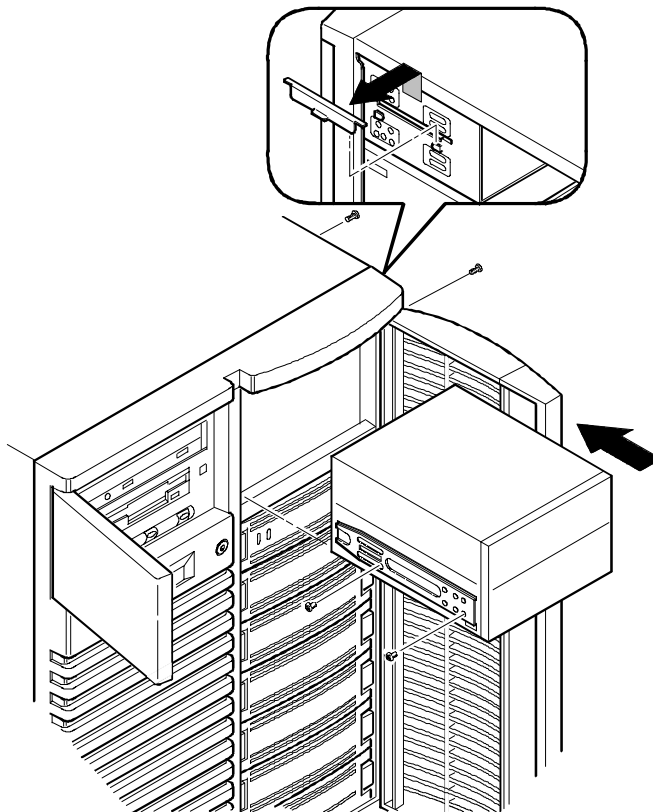
To install a full-height 5¼-inch device into the top-right drive bay slots, perform the following:

1. Turn off your server.
2. Disconnect external devices, ac power, and monitor power.
3. Unlock and remove side panels.
4. Unlock and open door.
5. Remove both plastic filler panels by pushing them out from inside server.

Expanding Your Server

6. Remove bottom brackets from inside of drive bay and attach them to device.
7. Remove divider bracket from right side of drive bay.
8. Insert device into drive bay from front.
9. Secure device using the four supplied mounting screws.

Refer to "Connecting SCSI Devices."



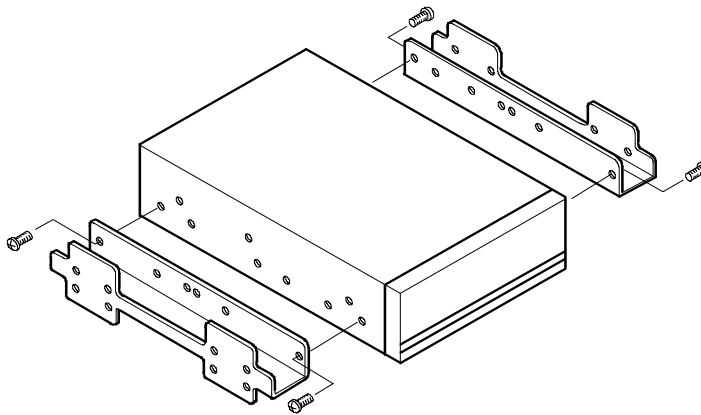
DEC00634-2

Figure 4-17. Installing a Full-Height 5 $\frac{1}{4}$ -Inch Device Into Top-Right Drive Bay

Expanding Your Server

Expansion Brackets

You can install 3½-inch half-height devices in the top-right drive bay. If you plan to install a 3½-inch device in a 5¼-inch drive bay slot, you must first install expansion brackets onto the device. Expansion brackets are either supplied with the device or can be purchased from Digital. Contact your local Digital sales representative for additional information.



DEC00473

Figure 4-18. Installing Expansion Brackets

Installing or Replacing a Device Into the Hot-Swap Drive Bay

Hot-swapping allows you to remove or install an SBB while the server remains on-line and active eliminating interference with the server's operation. For SBBs, you can use the hot-swap method to replace a device providing that the device is not active (green activity LED is off).



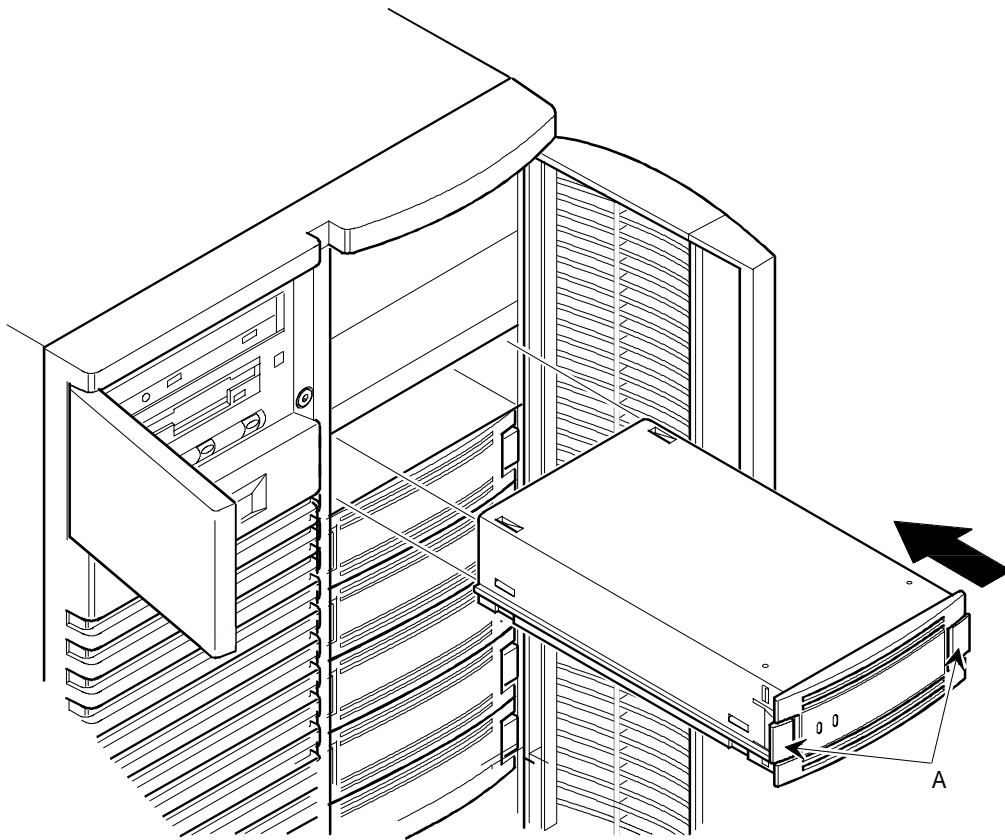
NOTE: Not all SCSI host adapters support the hot-swap method. Refer to your SCSI host adapter documentation to determine if the hot-swap method is supported.

Also, you might need to reconfigure your server to recognize the devices you installed.

Use the following procedure to install or replace an SBB:

1. Unlock and open right side door.
2. Remove filler panel or SBB by pressing the two tabs together to pull filler panel or SBB out (A, Figure 4-19).
3. Insert new SBB into the guide slots and push it in until it is fully seated and the mounting tabs engage the shelf.
4. Close and lock door.

Expanding Your Server



DEC00443-2

Figure 4-19. Installing a Device Into the Hot-Swap Drive Bay

SBB LED Status Indicators

The hot-swap backplane monitors shelf status to identify error conditions or failures. This status is displayed on the SBB LEDs. The left LED displays the device activity status and the right LED displays the fault status.

- The left LED (green) is the activity status LED and is on or flashing when the SBB is active.



CAUTION: For non-RAID servers, removing a SBB when the left LED is on or flashing can cause the loss or corruption of data.

- For RAID servers, the right LED (amber) is the SBB fault LED and indicates an error condition when it is either on or flashing.

SBB Status LEDs

Activity Status LED	Fault Status LED	Indication
On	Off	Device is operating properly
Flashing	Off	Device is operating properly
Off	Off	Device is inactive and operating normally. There is no fault.
On	On	Fault status, device is hung. Replace SBB.
Off	On	Fault status, device is inactive and spun down. Replace SBB.
On	Flashing	Fault status, device is active and spinning down due to a fault.

Expanding Your Server

Connecting SCSI Devices

Your server supports up to 10 internal SCSI devices. Additional SCSI devices can be added to your server by using an EISA- or PCI-based SCSI host adapter installed in an available expansion slot in conjunction with an external SCSI expansion box. The Prioris HX MP supports the following configurations.

Configuration	Base Server Host Adapter	RAID Server Host Adapter
Prioris HX MP (one processor)	2-channel wide SCSI-2	1-channel wide PCI RAID and 1-channel wide SCSI-2
Prioris HX MP/2 (two processors)	2-channel wide SCSI-2	3-channel wide PCI RAID
Prioris HX MP/4 (four processors)	2-channel wide SCSI-2	3-channel wide PCI RAID

Storage Backplane

Your storage backplane supports seven hot-swap devices split between two SCSI bus sections (see Figure 4-20). SCSI bus A and SCSI bus B. SCSI bus A is the upper section and consists of four SCSI device connections. SCSI bus B is the lower bus section and consists of three SCSI device connections. These buses can be configured as two independent SCSI channels or as one channel by installing a wide SCSI jumper cable. Figures 4-21 through 4-25 show the available cable configurations.

Your server has been supplied with three SCSI cables and three SCSI bus terminators to configure your server for up to three internal SCSI channels. Additional cables are available to support external SCSI devices or as replacement cables.

Refer to the on-line version of the Prioris HX MP System and Options Configuration Guide or contact your Digital sales representative for ordering information about SCSI cables and devices.

Expanding Your Server

Figure Legend	Description
A	Wide SCSI connectors
B	Narrow SCSI connectors
C	Power connectors
J101 (W1, W2, and W3)	SCSI ID jumper block

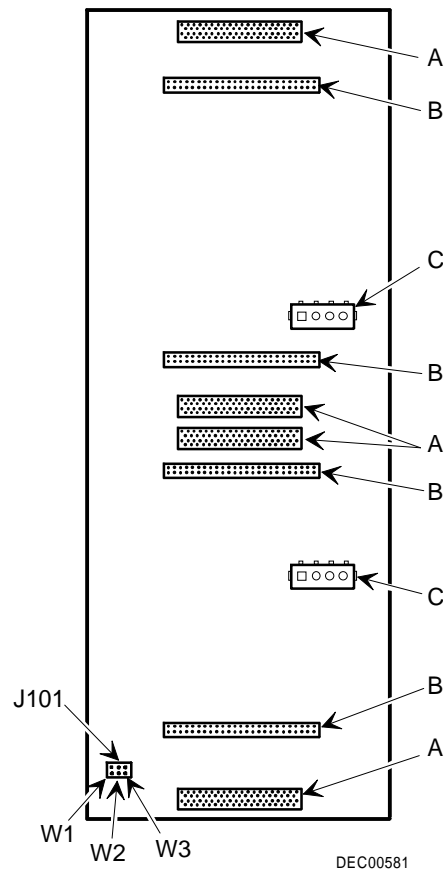


Figure 4-20. Storage Backplane

SCSI Drive IDs

SCSI bus device addresses are automatically assigned in the hot-swap drive bay depending on the slot number in which there are installed. The address jumper on the storage backplane is used to override the default addresses. The default settings are listed in the following table and can be set manually to different addresses at your option. The storage backplane can be configured as two separate SCSI buses or as a single SCSI bus using a jumper cable. Note that:

- The SCSI ID addressing is independent of the single or dual SCSI bus arrangement. Make sure you select unique SCSI IDs for all SCSI devices on the SCSI bus.
- You must use a wide SCSI host adapter to set SCSI IDs greater than seven.
- Your CD-ROM drive and tape IDs must be set manually. Refer to your manufacturer's documentation for information on setting drive IDs.

SCSI ID Settings

Jumpers	None	W1	W2	W3	W1+W2	W1+W3	W2+W3	W1+W2+W3
SBB slot0 ID	0	0	0	8	0	8	8	8
SBB slot1 ID	1	1	1	9	1	9	9	9
SBB slot2 ID	2	2	2	10	2	10	10	10
SBB slot3 ID	3	3	3	11	3	11	11	11
SBB slot4 ID	0	4	8	0	12	4	8	12
SBB slot5 ID	1	5	9	1	13	5	9	13
SBB slot6 ID	2	6	10	2	14	6	10	14

Single Channel SCSI and RAID Configuration

To connect SCSI devices to a single channel SCSI and RAID host adapter, perform the following:

1. Connect the cables as shown in Figure 4-21.
2. If necessary, connect appropriate power cable to device.
3. Replace and lock side panels.
4. Connect external devices and restore power.
5. Run SCU and the SCSI configuration utility to configure your server.

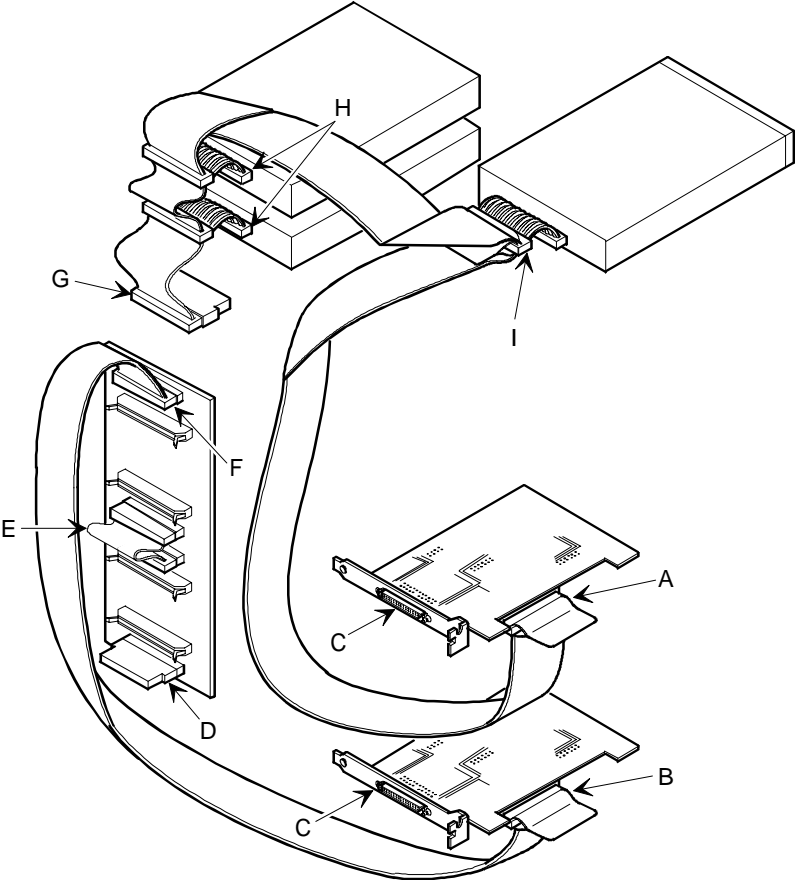
Refer to Chapter 2, "Configuring Your Server," and to your SCSI and RAID documentation for additional configuration information.



NOTE: Server's with this configuration are shipped with an additional terminator and a two connector cable to enable you to split the storage backplane.

Figure 4-21 Legend	Component
A	SCSI host adapter (SCSI bus, host termination)
B	RAID host adapter (channel A, host termination)
C	External SCSI connector
D	Backplane terminator
E	Jumper cable
F	Backplane, 68-pin connector
G	Cable terminator
H	68-pin-to-50-pin adapter cable to top-right drive bay
I	68-pin-to-50-pin adapter cable to CD-ROM drive

Expanding Your Server



DEC00576

Figure 4-21. Single Channel SCSI and RAID Bus

Dual Channel SCSI Bus Configuration (One Internal Channel and One External Channel)

To connect SCSI devices to a non-RAID dual channel host adapter, perform the following:

1. Connect the SCSI cables as shown in Figure 4-22.
2. If necessary, connect appropriate power cable to device.
3. Replace and lock side panels.
4. Connect external devices and restore power.
5. Run SCU and the SCSI configuration utility to configure your server.

Refer to Chapter 2, "Configuring Your Server" and to your SCSI documentation for additional configuration information.

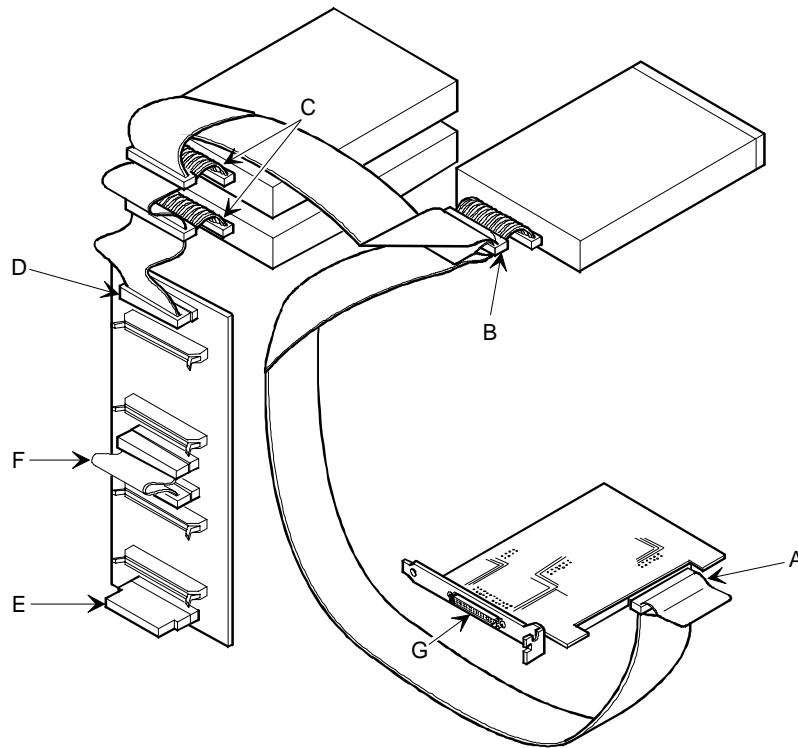


NOTE: Server's with this configuration are shipped with a SCSI cable terminator, a storage backplane terminator, and two additional internal cables to enable you to reconfigure the storage backplane.

Figure 4-22 Legend	Component
A	SCSI host adapter (ID 7, channel A, host termination)
B	68-pin-to-50-pin adapter cable to CD-ROM drive
C	68-pin-to-50-pin adapter cable to top-right drive bay
D	Backplane, 68-pin connector
E	Terminator ⁽¹⁾
F	Jumper cable
G	External channel

⁽¹⁾ This terminator can be removed and replaced with a 68-pin wide cable to connect to an external SCSI device.

Expanding Your Server



DEC00571

Figure 4-22. Dual Channel SCSI Bus Configuration (One Internal Channel and One External Channel)

Dual Channel SCSI Bus Configuration (Two Internal Channels)

To connect SCSI devices to a dual channel SCSI host adapter, perform the following:

1. Connect the SCSI cables as shown in Figure 4-23.
2. If necessary, connect appropriate power cable to device.
3. Replace and lock side panels.
4. Connect external devices and restore power.
5. Run SCU and the SCSI configuration utility to configure your server.

Refer to Chapter 2, "Configuring Your Server" and to your RAID documentation for additional configuration information.



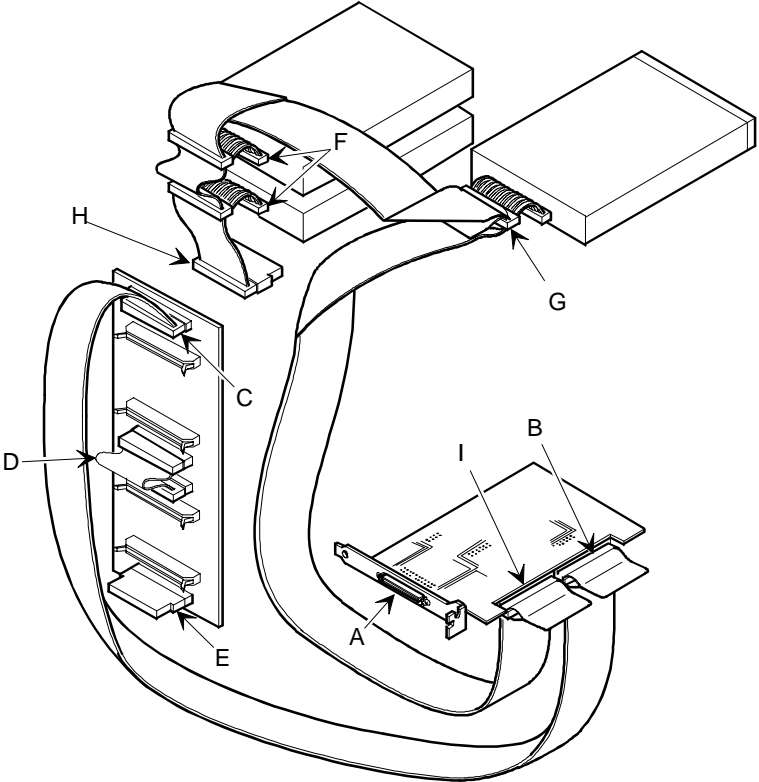
NOTE: Server's with this configuration are shipped with an additional backplane terminator and a two connector cable to enable you to split the storage backplane.

Expanding Your Server

Figure 4-23 Legend	Component
A	External channel ⁽¹⁾
B	SCSI host adapter (channel B, host termination)
C	Backplane, 68-pin connector
D	Jumper cable
E	Terminator
F	68-pin-to-50-pin adapter cable to top-right drive bay
G	68-pin-to-50-pin adapter cable to CD-ROM drive
H	Cable terminator
I	SCSI host adapter (channel A, host termination)

⁽¹⁾ The external SCSI connector supports the same SCSI bus as channel A in this configuration.

Expanding Your Server



DEC00573-2

Figure 4-23. Dual Channel SCSI Bus Configuration (Two Internal Channels)

3-Channel RAID Configuration (Two Internal Channels and One External Channel)

To connect SCSI devices to a 3-channel RAID host adapter, perform the following:

1. Connect the SCSI cables as shown in Figure 4-24.
2. If necessary, connect appropriate power cable to device.
3. Replace and lock side panels.
4. Connect external devices and restore power.
5. Run SCU and RAID configuration utility to configure your server.

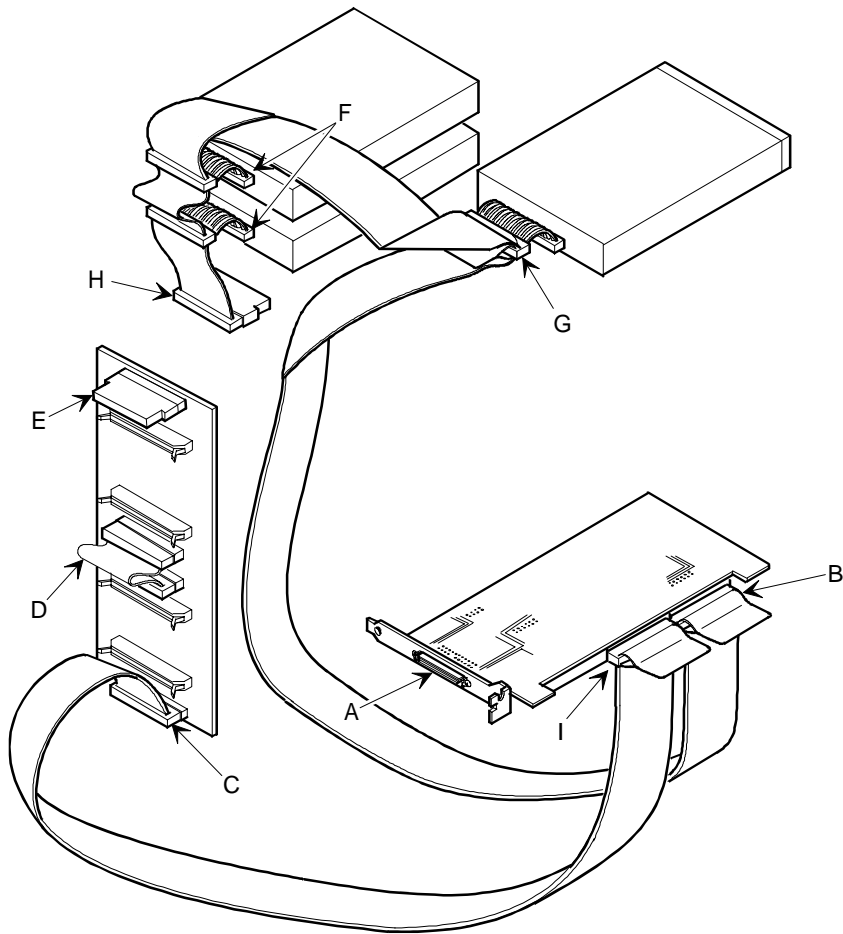
Refer to Chapter 2, "Configuring Your Server" and to your RAID documentation for additional configuration information.



NOTE: Server's with this configuration are shipped with an additional terminator and two connector cable to enable you to split the storage backplane.

Figure 4-24 Legend	Component
A	External channel (channel C, host termination)
B	RAID host adapter (channel A, host termination)
C	Backplane, 68-pin connector
D	Jumper cable
E	Terminator
F	68-pin-to-50-pin adapter cable to top-right drive bay
G	68-pin-to-50-pin adapter cable to CD-ROM drive
H	Cable terminator
I	RAID host adapter (channel B, host termination)

Expanding Your Server



DEC00629

Figure 4-24. 3-Channel RAID Bus (Two Internal Channels and One External Channel)

3-Channel RAID Configuration (All Internal Channels)

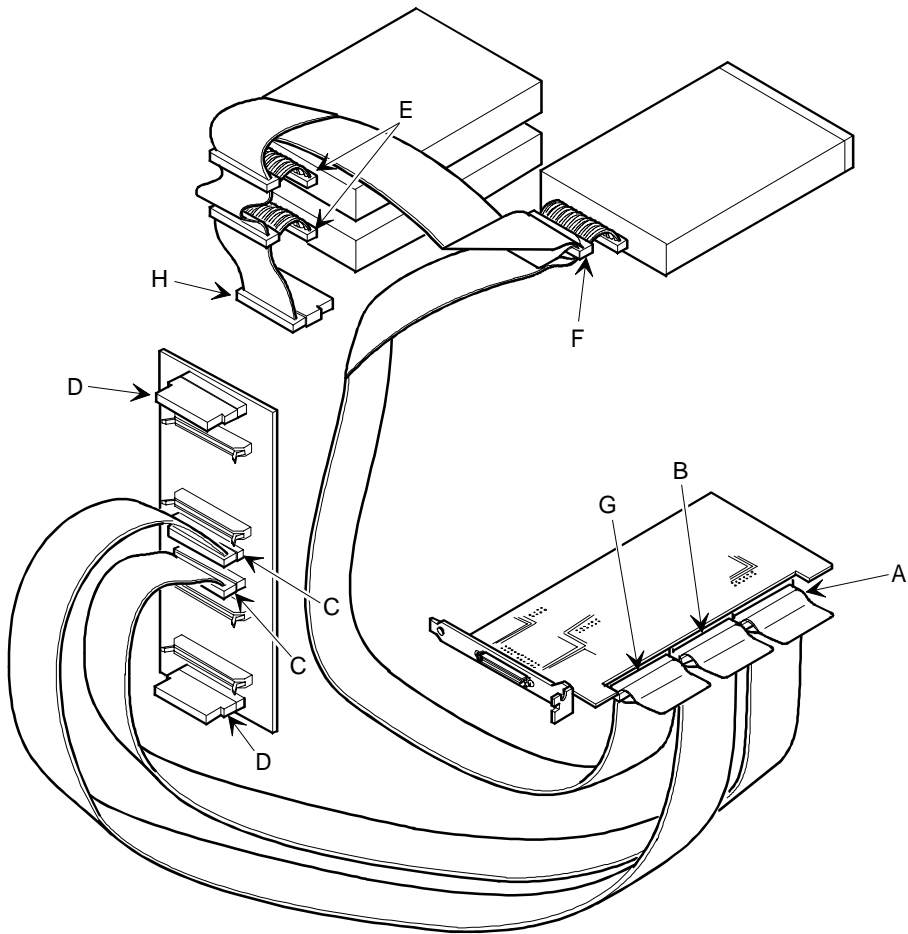
To connect SCSI devices to a 3-channel RAID host adapter, perform the following:

1. Connect the SCSI cables as shown in Figure 4-25.
2. If necessary, connect appropriate power cable to device.
3. Replace and lock side panels.
4. Connect external devices and restore power.
5. Run SCU and RAID configuration utility to configure your server.

Refer to Chapter 2, "Configuring Your Server" and to your RAID documentation for additional configuration information.

Figure 4-24 Legend	Component
A	RAID host adapter (channel C, host termination)
B	RAID host adapter (channel B, host termination)
C	Backplane, 68-pin connector
D	Terminator
E	68-pin-to-50-pin adapter cable to top-right drive bay
F	68-pin-to-50-pin adapter cable to CD-ROM drive
G	RAID host adapter (channel A, host termination)
H	Cable terminator

Expanding Your Server



DEC00574

Figure 4-25. 3-Channel RAID Bus (All Internal Channels)

Using Multiple or Multi-Channel SCSI Host Adapters

The following guidelines apply if you configure your server using multiple or multi-channel SCSI host adapters.

- The SCSI host adapter with the lowest BIOS address is identified by the server as the “primary” SCSI host adapter. If you are loading the operating system from a SCSI hard disk drive, this primary or boot drive must be connected to the primary SCSI host adapter. The SCSI address of the primary SCSI hard disk drive must be set to the lowest SCSI address connected to the SCSI host adapter.
- To improve server performance, you might want to distribute the SCSI devices across the SCSI host adapters. When arranging SCSI devices, make sure each device connected to a SCSI host adapter is assigned a unique SCSI address.
- Each operating system has different limitations regarding the number of SCSI host adapters that are supported. Refer to your operating system documentation for additional information.
- SCSI IDs on one channel do not interfere with the IDs on another channel. This applies when installing two SCSI host adapters that implement a different bus as well as dual channels on a single SCSI host adapter.

Expanding Your Server

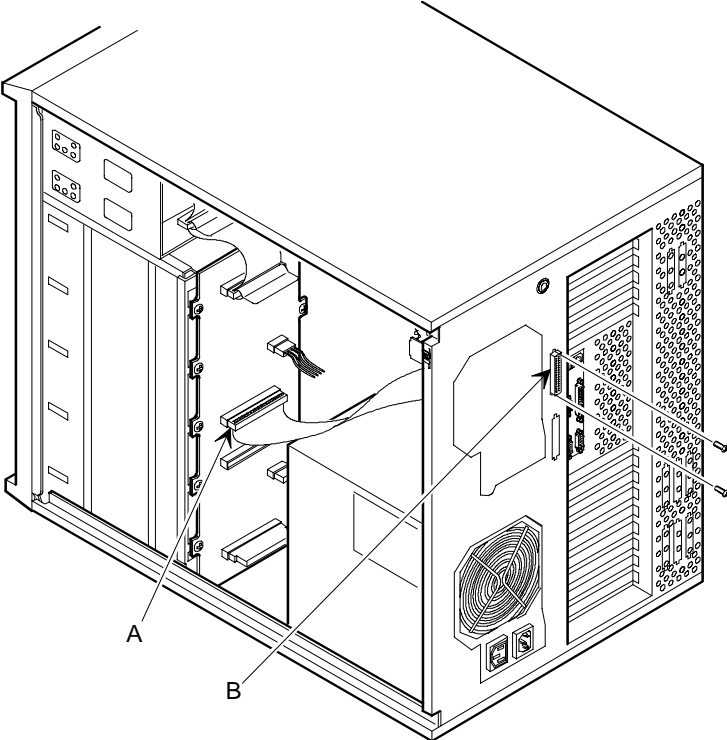
External SCSI Bus

You can use additional SCSI cables and/or host adapters to connect external SCSI devices to your server. Consult your Digital sales representative for information on SCSI options and cables.

To connect the storage backplane to an external SCSI bus:

1. Remove the terminator from the storage backplane for the bus you want to connect.
2. Connect the 68-pin unshielded cable connector to the storage backplane (A, Figure 4-26).
3. Using a screwdriver, gently pry away one of the SCSI knockouts at the rear panel (see Figure 4-26).
4. Screw the 68-pin or 50-pin external shielded connector to the rear panel (B, Figure 4-26).
5. Connect the external SCSI device making sure the external device is properly terminated.

Expanding Your Server



DEC00444

Figure 4-26. External SCSI Bus Connections

Connecting an External SCSI Storage Box

To connect an external SCSI storage box, follow these instructions:



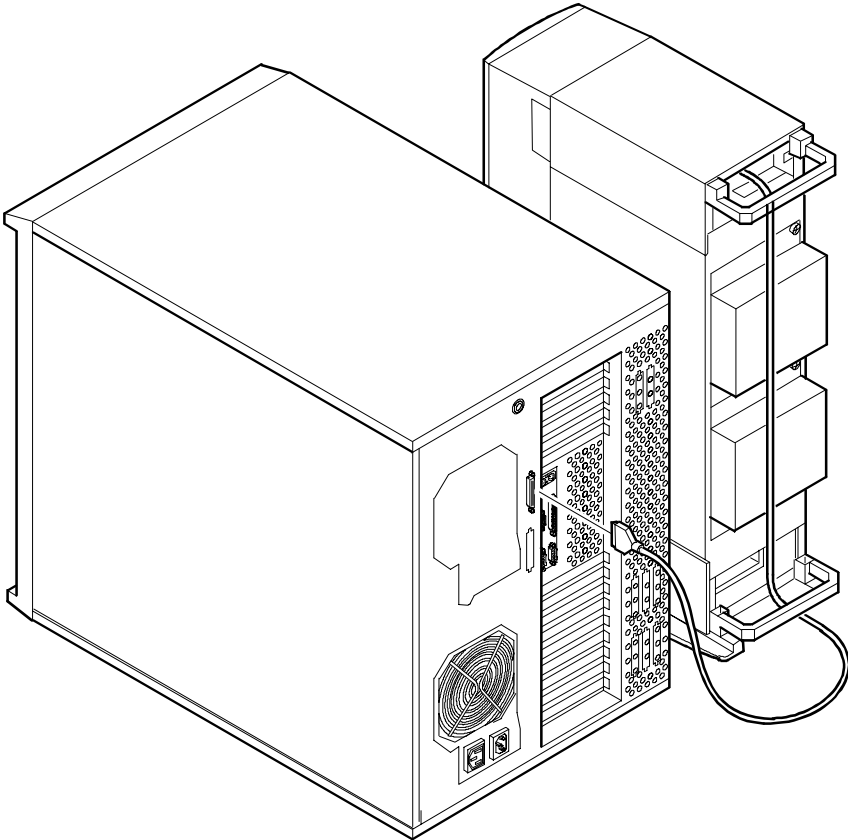
NOTE: The *External Onboard SCSI* field in the SCU must be set to *Enabled*.

1. Connect the storage backplane to an external SCSI bus.
Refer to “External SCSI Bus” described earlier in this chapter.
2. Connect the external device making sure the SCSI bus is properly terminated.
3. Run the SCU and any other SCSI utilities to configure your server.

External SCSI Bus Guidelines

- Make sure that the SCSI addresses you select for the external SCSI devices do not conflict with other devices in the server.
- Make sure that the external SCSI bus is terminated properly.
- For proper operation, the length of the SCSI cable must not exceed 1 meter (3.28 ft).
- Use only a high-density external connector.

Expanding Your Server



DEC0062f

Figure 4-27. Connecting an External SCSI Storage Box

Installing an Optional Power Supply

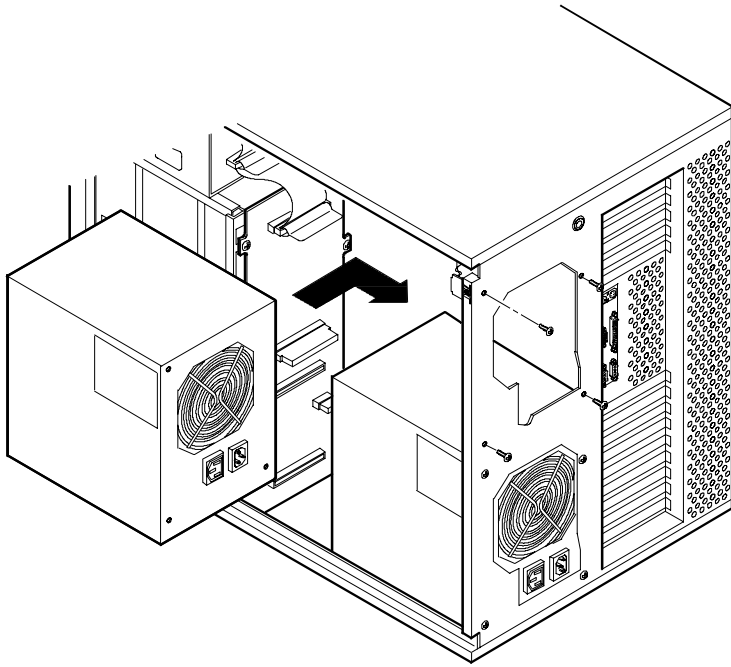
To increase your server's reliability, you can add a second power supply. Each power supply provides uninterrupted backup should one power supply fail.

To install an optional power supply, perform the following:

1. Turn off your server.
2. Disconnect external devices, ac power, and monitor power.
3. Unlock and remove right side panel.
4. Remove metal shield from redundant power supply area.
5. Install optional power supply making sure it fully engages two locking tabs at side of chassis.
6. Secure power supply to rear of chassis using supplied screws.

Expanding Your Server

7. Connect all power cables in same manner as lower power supply.
8. Replace and lock right side panel.
9. Connect external devices and restore power.



DEC00419-2

Figure 4-28. Installing an Optional Power Supply

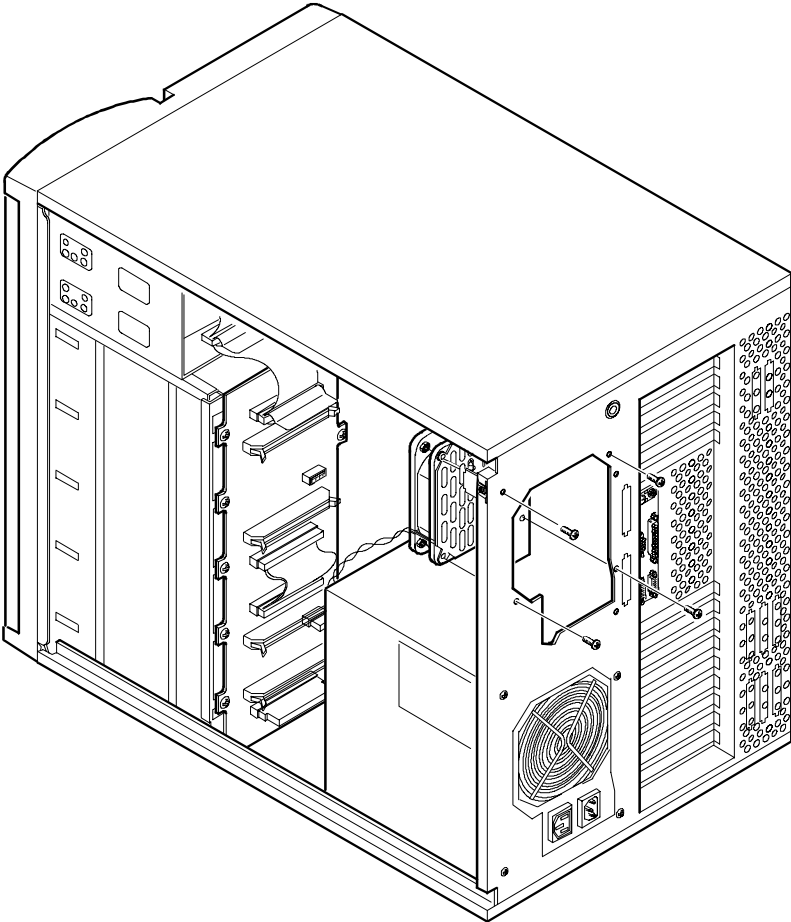
Expanding Your Server

Installing an Optional Cooling Fan

To increase your server's reliability, you can add an optional cooling fan as follows:

1. Turn off your server, disconnect external devices, ac power, and monitor power.
2. Unlock and remove the right side panel.
3. Remove the metal shield from the redundant power supply area.
4. Secure the cooling fan and metal brace to the rear of the server using the screws that secured the metal shield.
5. Connect the fan's power cable to the 15-pin mating connector on the power harness.
6. Replace and lock right side panel.
7. Connect external devices and restore power.

Expanding Your Server



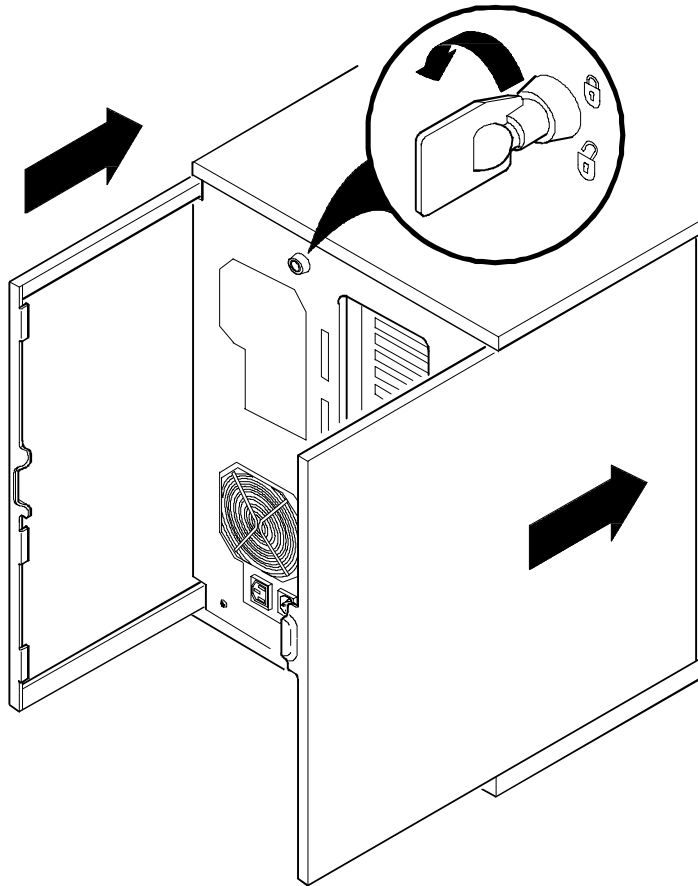
DEC00609

Figure 4-29. Installing an Optional Fan

Expanding Your Server

Installing the Side Covers

1. Slide panels to front of server.
2. Lock side panels.



DEC00405-3

Figure 4-30. Installing Side Covers

5

Problem Solving and Troubleshooting

Introduction

This chapter provides initial troubleshooting procedures and the following troubleshooting sections:

- Server Troubleshooting
- Disk Drive Troubleshooting
- Monitor Troubleshooting
- CD-ROM Troubleshooting

Each section lists specific problems, probable causes, and recommended actions to take if your server fails after you configure it or after you install optional hardware or software.

Refer to Appendix B, "Server Messages," for a list of error messages that might appear during normal operation.

Refer to the documentation supplied with additional options if you are experiencing problems with specific options that you have installed.

Initial Troubleshooting

Follow these general procedures to troubleshoot your Prioris HX MP Server.

- Turn off your server, wait until all hard disk drives completely spin down, and then turn it back on.
- Ensure that all cables and connections are secure.
- If the POST detects an error refer to Appendix B, "Server Messages," and take the appropriate steps to correct the problem. After the problem has been resolved, restart the server.
- Make sure all necessary video, printer, and application device drivers are properly installed.
- Run the QAPlus/FE diagnostic software supplied with your server.

Refer to the QAPlus/FE documentation for information on using the diagnostic software.

- Run the SCU.

Refer to Chapter 2, "Configuring Your Server," to ensure the server is correctly configured for all installed hardware and software.

- Run the diagnostic software and have the information available before you contact Digital Services.



NOTE: If you need to return a failed component, pack it in its original container and return it to Digital for service.

If you are a self-maintenance customer, call your Digital service representative for assistance and recommendations.

Server Troubleshooting

Problem	Possible Cause	Action
No response when the server is turned on.	Server is not plugged in.	Turn off the server, plug it in, and then turn it back on again.
	No power at the wall outlet.	Use another wall outlet.
	Main logic board failed.	Contact your Digital service representative.
	Main logic board jumpers incorrectly set.	Set all appropriate jumpers.
	CPU module has failed.	Reseat the CPU module.
	CPU module jumpers incorrectly set.	Make sure all jumpers are correctly set.
	Terminator card not seated properly (1P and 2P configurations only).	Reseat terminator card.
	Terminator card not installed.	Install terminator card.
	No memory module or SIMMs installed.	Install SIMMs and memory module.
	Side panels removed.	Install side panels.
Power is on, but there is no screen display.	Brightness and contrast controls are not correctly set.	Adjust the brightness and contrast controls.
	Monitor is off.	Turn on the monitor.
	Monitor cable is incorrectly installed.	Check all monitor connections.
	Incorrect VGA drivers installed.	Install the correct VGA drivers.
	Video controller has failed.	Contact your Digital service representative.
	Power management features enabled.	Press any key on the keyboard to wake-up the monitor.

continued

Problem Solving and Troubleshooting

Problem	Possible Cause	Action
Power is on but no OCP display.	OCP not backlit.	Press any keyboard key or manual LCD switch. Refer to your online help for information on how to operate your server's OCP. Make sure OCP backlight is set to ON in the BIOS Setup utility.
Server operates incorrectly after installing a CPU or second CPU module.	CPU installed incorrectly.	Reinstall CPU.
	CPU module installed incorrectly.	Reinstall CPU module.
	CPU module has failed.	Remove CPU module and reboot. If server boots without errors, replace CPU module.
Server operates incorrectly after installing optional expansion board.	Expansion board installed incorrectly.	Remove expansion board and reinstall.
	Did not run SCU to configure expansion board after installation.	Run the SCU to properly configure expansion board. Refer to Chapter 2.
	Did not install CFG file for expansion board.	Run SCU and add CFG file (if necessary).
	Expansion board has failed.	Remove expansion board and reboot. If server boots without errors, replace expansion board.

continued

Problem Solving and Troubleshooting

Problem	Possible Cause	Action
Server operates incorrectly after installing optional memory (SIMMs).	SIMMs installed incorrectly.	Remove SIMMs and reinstall.
	SIMMs have failed.	Replace SIMMs.
	Memory module installed incorrectly.	Reinstall memory module.
	Memory module failed.	Replace memory module.
No response to keyboard commands.	Keyboard is password protected.	Enter the keyboard password.
	Keyboard is not connected.	Power down the server and connect the keyboard.
	Keyboard is connected to the mouse port.	Power down the server and connect the keyboard to the keyboard port.
No response to mouse commands.	Mouse is not connected.	Power down the server and connect the mouse.
	Mouse is connected to the keyboard port.	Power down the server and connect the mouse to the mouse port.
	Mouse driver not installed.	Install the appropriate mouse driver. Refer to Chapter 3.
Server operates correctly but application software does not.	Application software installed incorrectly.	Refer to your application software documentation.
	CPU speed setting causes conflict with application software.	Run the SCU and reduce CPU speed setting. Refer to Chapter 2.
	Having system cache enabled causes conflict with application software.	Run the SCU and disable system cache. Refer to Chapter 2.

continued

Problem Solving and Troubleshooting

Problem	Possible Cause	Action
Target diskette drive cannot read or write information.	Diskette is not formatted.	Format the diskette.
	Diskette is worn or damaged.	Try another diskette.
	Diskette is write-protected.	Slide the write-protect switch so the hole is not visible.
	Diskette drive is empty.	Insert a diskette.
	Diskette write protection enabled.	Run the SCU and set the Diskette Write Protection option to "Disabled."

Disk Drive Troubleshooting

Problem	Possible Cause	Action
Server does not recognize an internal SCSI device.	SCSI device jumpers incorrectly set.	Refer to the supplied kit installation instructions.
	SCSI ID conflicts.	Refer to the supplied kit installation instructions.
	Terminating resistors not removed from the SCSI device.	Remove terminating resistors. Refer to the supplied kit installation instructions.
	SCSI host adapter has failed.	Contact your Digital service representative.
	Loose SCSI cable.	Secure all cable connections.
Server does not recognize an external SCSI device.	SCSI cable incorrectly installed between SCSI host adapter, SCSI device or backplane.	Refer to "SCSI Guidelines" in Chapter 4 for cabling information.
	SCSI device jumpers incorrectly set.	Refer to the supplied kit installation instructions.
	SCSI ID conflicts.	Refer to the supplied kit installation instructions.
	Terminating resistors not removed from the SCSI device.	Remove terminating resistors. Refer to the supplied kit installation instructions.
	SCSI host adapter has failed.	Contact your Digital service representative.
	Loose SCSI cable.	Secure all cable connections.
	SCSI cable incorrectly installed between SCSI host adapter and rear panel connector or external SCSI device and rear panel connector.	Refer to "SCSI Guidelines" in Chapter 4 for cabling information.

continued

Problem Solving and Troubleshooting

Problem	Possible Cause	Action
Server does not boot from an internal SCSI hard disk drive.	SCSI boot hard disk drive not formatted.	Format the SCSI hard disk drive. CAUTION: Formatting the SCSI hard disk drive will destroy all the data on the drive.
	SCSI device drivers not installed or incorrectly installed on SCSI boot hard disk drive.	Properly install all required SCSI device drivers. Refer to Chapter 3.
	Operating system software is not installed on the SCSI boot hard disk drive.	Install the appropriate operating system.
	Requested partition does not exist.	Partition the SCSI hard disk drive and then reload the operating software.
	SCSI boot hard disk drive at wrong SCSI address.	Set SCSI boot hard disk drive to lowest "primary" SCSI address.
Server does not boot from a target diskette drive.	Drive ID incorrectly set.	Make sure the drive ID is correctly set (refer to Chapter 4).
	Diskette drive not enabled.	Run the BIOS Setup utility to enable the diskette drive.
	Diskette boot option disabled.	Run the SCU and set boot option A then C.
	Diskette does not contain start-up files.	Insert a diskette with the correct start-up files.
	Diskette drive is empty.	Insert a diskette that contains an operating system.
	Diskette is worn or damaged.	Try another diskette.
	Loose cables.	Secure all cable connections.
	Diskette drive write protected.	Run the SCU and disable the diskette write protect option.

continued

Problem Solving and Troubleshooting

Problem	Possible Cause	Action
SCSI hard disk drive cannot read or write information.	Incorrect disk drive jumper settings.	Refer to the supplied kit installation instructions.
	Loose or incorrectly installed cables.	Make sure all cables are correctly installed.
	SCSI hard disk drive is not correctly formatted or partitioned.	Format and partition as required using the supplied operating system.
SBB failure.	Check SBB status LEDs for a drive failure indication.	Refer to Chapter 4 for additional information.

Monitor Troubleshooting

Problem	Possible Cause	Action
Monitor power indicator is not on.	Monitor is turned off.	Turn on the monitor.
	Power cord is not connected.	Connect the power cord to the server.
	No power at wall outlet.	Use another outlet.
	Power indicator is defective.	Contact your Digital service representative
No screen display.	Configuration error.	Run the SCU to configure the server for VGA operation. Set the jumper for VGA operation. Refer to Appendix B.
	Monitor brightness and contrast controls are incorrectly set.	Adjust the monitor brightness and contrast controls.
No monitor display while loading Windows video drivers.	Monitor type incorrectly set.	Set the correct monitor type. Refer to Chapter 3.
Distorted, rolling, or flickering screen display, or wrong/uneven color.	Monitor incorrectly adjusted.	Adjust accordingly.
	Monitor signal cable incorrectly installed.	Straighten any bent connector pins and then reconnect.

continued

Problem Solving and Troubleshooting

Problem	Possible Cause	Action
Color monitor displaying monochrome.	Server was turned on before the monitor was turned on.	Turn off the server, turn on the monitor, then turn the server back on.
	Video jumper incorrectly set.	Set the jumper for VGA operation. Refer to Appendix B.
Monitor fails to switch to high-resolution mode.	Appropriate high-resolution video drivers are not installed or incorrectly installed.	Correctly install all appropriate high-resolution video drivers. Refer to Chapter 3 and the documentation supplied with your monitor.
Monitor display not centered while loading Windows video drivers.	Monitor type incorrectly set.	Set the correct monitor type. Refer to Chapter 3.

CD-ROM Troubleshooting

Problem	Possible Cause	Action
Cannot access the CD-ROM drive. Error message reading drive x.	Device drivers not installed.	Install correct device drivers.
	No disc in the CD-ROM drive.	Insert a disc.
	Accessing wrong drive.	Make sure correct SCSI ID is assigned. Refer to Chapter 4.
	Tray open.	Close the tray.
Power is on but indicator shows no activity.	No disc or tray is open.	Insert a disc and close the tray.
	Check cable connections.	Make sure cables are correctly connected.
Disc is spinning but drive is idle.	Application software not running.	Run application software.

6

Server Security Features

Introduction

Server security is important to prevent theft or accidental loss of software and hardware. The Prioris HX MP Server provides the following levels of protection:

- Left and right security door lock—located at the front of your server.
- Left and right side panel lock—located at the rear of your server
- Supervisor and user password
- Additional security features

Server Security Features

Left and Right Door Security Lock

Your server has a three-way keylock used to prevent unauthorized access to the left- and right-front security doors.

1. Insert key into keylock at bottom position.
2. Turn key clockwise to first unlock position to open left-front security door,
3. Turn key clockwise to second unlock position to open right-front security door.



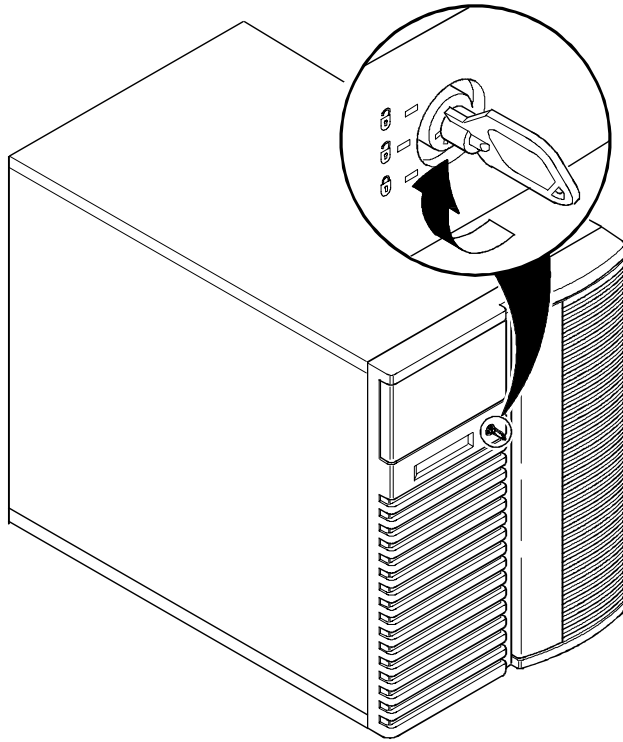
NOTE: The server keys fit both the front keylock and rear chassis lock.



CAUTION: Be careful not to lose your server keys. Losing these keys prevents you from opening the left and right front panel security doors. Contact your Digital service representative or authorized dealer for information on replacing lost keys.

Also, write down your key ID number for future use in case your server keys are ever lost.

Server Security Features



DEC00406

Figure 6-1. Front Panel Security Doors Lock

Server Security Features

Left and Right Side Panel Lock

Your server has a chassis keylock used to prevent unauthorized removal of the left and right side panels.

1. Insert key as shown and turn clockwise to release left and right side panels.
2. Insert key as shown and turn counter clockwise to lock left and right side panels.



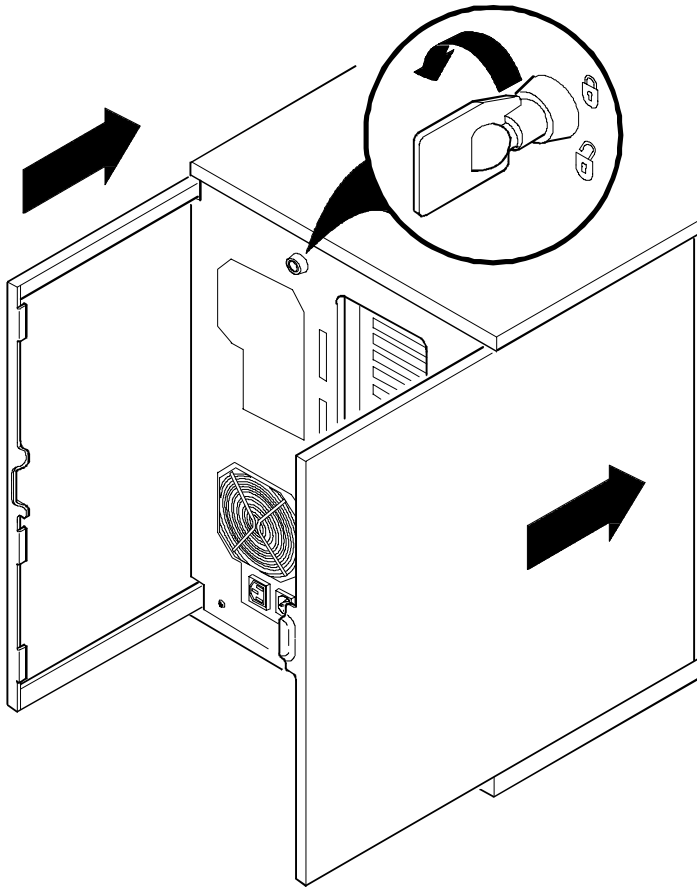
NOTE: The server keys fit both the front keylock and rear chassis lock.



CAUTION: Be careful not to lose your server keys. Losing these keys prevents you from removing the left and right side panel. Contact your Digital service representative or authorized dealer for information on replacing lost keys.

Also, write down your key ID number for future use in case your server keys are ever lost.

Server Security Features



DEC00405-3

Figure 6-2. Left and Right Side Panel Lock

Supervisor and User Password

Your server has two password levels that you can set to prevent unauthorized access to your server files or BIOS Setup utility. If you set a supervisor password, you will be prompted to enter a password before accessing the SCU or BIOS Setup utility. If “Password On Boot” is enabled, you will be prompted to enter a password before your operating system boots.



NOTE: You can only set a supervisor password using the SCU. To set a supervisor password using the SCU, select View and Edit details from the Configure Your Computer menu option.

Refer to Chapter 2 for detailed information on running the SCU.

Perform the following steps to set a supervisor and user password using the BIOS Setup utility:

1. Reboot your computer.
2. After the POST has successfully completed, press [F2] to access Setup.
The Setup main menu appears on the screen.
3. Highlight the Security menu and then press [Enter].
4. Highlight the Set Supervisor Password field and then press [Enter].
5. Type in a supervisor password and then press [Enter].
To confirm, type in your supervisor password a second time and then press [Enter].
6. If desired, set a user password.
Highlight the Set User Password field and then follow the method described in steps 4 and 5.
7. Highlight the Password On Boot field and select `enabled` if desired.

Server Security Features

8. Select either the Supervisor or User option and then press [Enter].
9. Press [Esc] twice then [Enter] twice to exit the BIOS Setup utility and to reboot your computer so changes immediately take effect.

Your computer runs the POST and then prompts you for the password you set.

If You Forget Your Password

Use the following procedure to erase a password from your server.

1. Turn off your server and remove the left side panel.
2. Change jumper J14 to password clear (jumper installed).
Refer to Appendix A, "Technical Specifications," for jumper location and setting.
3. Reconnect your server and turn it on.
Booting your server with this jumper installed erases the existing password(s).
4. Turn off your server and remove the left side panel.
5. Change jumper J14 to normal mode (jumper removed).
Refer to Appendix A, "Technical Specifications," for jumper location and setting.
6. Reconnect your server and turn it on.
7. Using the SCU, assign a new password.
Refer to Chapter 2, "Configuring Your Server," for more information.

Additional Security Features

Additional server security features are available as options in the BIOS Setup utility and through main logic board jumpers.

The BIOS Setup utility includes the following setup options to improve server security:

- **Setup Prompt** — Setting this option to disabled prevents unauthorized personnel from entering the BIOS Setup utility each time your server is turned on or reset. Setup Prompt appears as an F2 Setup prompt on your monitor screen each time your server boots.

If you select `Disable`, the server does not inform you when to press <F2> to enter Setup. You can still enter Setup by pressing <F2> before POST completes.

- **Diskette Write Protection** — Setting this option to enabled prevents unauthorized personnel from writing data to a diskette.
- **Diskette Access** — Setting this option to Supervisor or User controls who has access to any installed diskette drive.
- **Network Server** — Setting this option to disabled prevents unauthorized personnel from accessing your server during network operation.

Your main logic board's BIOS upgrade jumper (J39) should also be set to disable (jumper removed) to prevent unauthorized personnel from loading a new server BIOS. Loading a new server BIOS might allow someone to override other server security features or introduce a virus into your server.