DIGITAL Server 1200 Series

System Reference

Part Number: ER-HB2WW-UA. A01

Digital Equipment Corporation

FCC ID: H2XXW1

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

All external cables connecting to this basic unit need to be shielded. For cables connecting to option cards, 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.

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Introduction

This System Reference describes how to operate, upgrade, configure, and troubleshoot your DIGITAL Server 1200. This System Reference will also help to familiarize you with all aspects of the server and provide a reference tool for questions you might have in the future.

If you are initially setting up your server, refer to the *DIGITAL Server 1200 Series Installation Guide*.

The *Installation Guide* identifies all the components that were shipped from the factory as well as how to connect the mouse, keyboard, monitor, and ac power.

The *Installation Guide* also shows how to turn your server on for the first time and access the ServerWORKS Quick Launch program. You must run the ServerWORKS Quick Launch program to initially configure your server, create utility and device driver diskettes, and install an operating system.

Audience

This System Reference is written specifically for anyone responsible for operating, configuring, and expanding the DIGITAL Server 1200.

Support Information

A variety of support information is available to help you set up, configure, and operate your DIGITAL Server. This information comes in the form of README information, on-line help, electronic books, or as printed material.

If you want to...	Refer to the...
Set up your server	*Installation Guide* to unpack, install internal components, connect external devices and power, and access the ServerWORKS Quick Launch program.
Load the supplied ServerWORKS Quick Launch software	*ServerWORKS Quick Launch Getting Started* guide.
	README information contained on the ServerWORKS Quick Launch CD-ROM disk.
Locate the major internal components of your server	*Quick Reference* label on your server's side panel.
Upgrade and configure your server after installing optional components (for example, a Pentium II processor module, memory, or SCSI mass storage devices, etc.)	Information supplied in this System Reference.
	Supplied SCSI and other options documentation. These are supplied as either printed manuals or as files on the Quick Launch CD-ROM.
Run diagnostics	*ServerWORKS Quick Launch Getting Started* guide and the Quick Launch program on the supplied CD-ROM disc.
	Supplied diagnostics documentation which is on the Quick Launch CD-ROM.

Organization

This System Reference contains the following:

- Chapter 1: *Introduction*—provides information about your server such as: features, server software and documentation, diagnostic software, server utilities and technical support, and ergonomic information.

- Chapter 2: *Server Software and Utilities*—describes the server software and utilities that are supplied with your server.

- Chapter 3: *Server Components*—provides information about the server's components and associated procedures such as removing the side panel.

- Chapter 4: *Server Management* —describes how to manage your server using a network manager, specifically the DIGITAL ServerWORKS Manager.

- Chapter 5: *Pentium II Processor Upgrades*—describes how to upgrade your server with higher-performance Pentium II processor modules.

- Chapter 6 *Installing Additional Memory*—describes how to install additional memory on the Pentium II processor module.

- Chapter 7 *Installing Disk and Tape Drives*—describes how to install optional disk drives, tape drives, and an external storage box.

- Chapter 8 *Installing Expansion Boards*—describes how to install ISA and PCI expansion boards.

- Chapter 9 *Connecting Disk and Tape Drives*—describes how to connect mass storage devices to the onboard SCSI controller.

- Chapter 10 *Security Features*—describes the various security features that are available to prevent server or data theft.

- Chapter 11 *Troubleshooting*—describes initial and advanced troubleshooting solutions.

- Appendix A: *Technical Specifications*—lists server operating specifications. Also included is switch information on the main logic board and Pentium II processor module. It also provides a list and description of error messages that might display and error codes that might sound if a failure occurs.

- Appendix B: *Device Mapping*—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.).

- Appendix C: *BIOS Setup Utility Features*—lists the available BIOS resource and configuration options.

- Appendix D: *Server Care*—provides suggestions for cleaning and moving your server.

Conventions

Convention Example	Description
Installation Guide	Italics are typically used for titles, comments, and references to other sections of this document or other documents.
`C:\windows>`	Monospaced text indicates information that your server or software displays. For example, a directory path or error message.
	Monospaced text can also indicate a command that you need to enter to run an application or utility.
[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.

Abbreviations

Abbreviation	Meaning
BIOS	Basic input/output system
DIMM	Dual in-line memory module
DMA	Direct memory access
DRAM	Dynamic random access memory
ECC	Error correction code
ECP	Extended capabilities port
EDO	Extended data output
EPP	Enhanced parallel port
FRU	Field replaceable unit
FDD	Floppy disk drive
h	An h suffix to a numerical value denotes hexadecimal numbers. For example, 0F8h equals 0F8 hexadecimal.
I/O	Input/output
IRQ	Interrupt request
ISA	Industry standard architecture
KBC	Keyboard controller
MS-DOS™	Microsoft Disk Operating System
MB	Megabyte
NIC	Network interface card
NOS	Network operating system
PCI	Peripheral component interconnect
POST	Power-on self test
RAM	Random access memory
ROM	Read only memory

continued

Abbreviation	Meaning
RSM	Remote server management
RTC	Real-time clock
SCSI	Small computer system interface
USB	Universal serial bus
VGA	Video graphics array
Windows NT	Microsoft Windows NT operating system software

Special Notices

Three kinds of special notices are used in this *System Reference* 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.
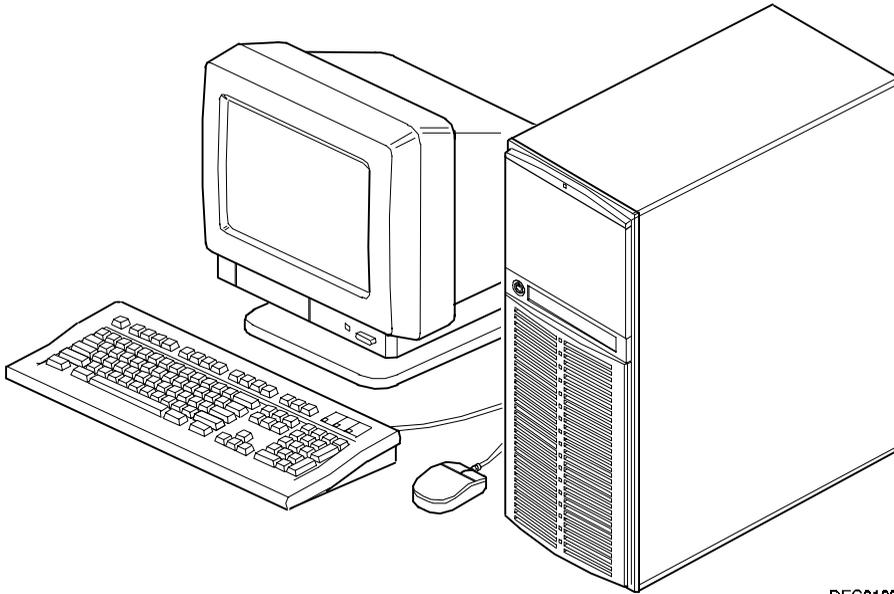
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Typical DIGITAL Server 1200

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

Introduction 1

The DIGITAL Server 1200 is a high-performance, highly-scaleable entry level network server featuring the latest in modular processor and storage technology.

The DIGITAL Server provides support for the following features:

Reliability/Availability

Pentium II Processor Module	Pentium II processor module. Each Pentium II processor operates using 168-pin, 72-bit DIMMs, 60 ns access time EDO memory, ECC protected.
Error Correction Code (ECC) Protected Memory	Recovery from most cache and memory errors.
Power Supply	The DIGITAL Server 1200 ships with a 300 watt power supply for normal operation.
Variable Fan Speed	Automatically adjusts fan speed according to internal chassis ambient temperature.
Internal Sensors	Monitors internal server temperatures, fan operation, and voltages for the main logic board and processor module.

Server Expansion

Flexible Memory Architecture	EDO/ECC memory supported. For Pentium II processor modules, you can upgrade to a maximum of 512 MB using DIMM memory.
Two ISA Expansion Slots, Four PCI Expansion Slots, and One Shared Slot	Accommodates industry-standard expansion boards such as network, Small Computer System Interface (SCSI), and modems.
Integrated SVGA Video Controller	Supports management and configuration applications locally (on the main logic board) without use of an expansion slot.
Single Channel Wide Ultra SCSI Controller	Supports narrow, fast wide, and wide Ultra SCSI external and internal devices.
Capacity for Eight Internal Storage Devices	Accommodates one CD-ROM drive, a 3 1/2 inch diskette drive, and four 3½-inch, 1.5-inch high or six 3½-inch, 1-inch high hard disk drives.
Keyboard and Mouse	Supplied 104-key keyboard and three-button mouse.
External I/O Ports	Two serial ports and one Enhanced Parallel Port (EPP) to support external options such as a printer, modem, or local terminal.
Integrated Network Controller/External Network Port	DIGITAL Ethernet controller on the main logic board.
	One 10/100Base-T (10/100 Mb/s) port to support an external network connection.

Server Management and Security

Server Diagnostics	Allows local and remote diagnosis of server problems.
Hardware Configuration	Allows local and remote server configuration.
Unique Asset Management	Unique server identifier in non-volatile memory provides easy asset management.
Firmware Upgrade Utility	Upgrades the firmware versions.
Key Lock	Limits access to the server's internal components.

Server Software and Documentation

The following software and documentation are supplied with your server:

- ServerWORKS Manageability Suite — contains ServerWORKS Quick Launch, DIGITAL ServerWORKS Manager, and licenses.

    − ServerWORKS Quick Launch consists of a bootable CD-ROM disc and *Getting Started* guide. The Quick Launch program steps you through the initial server setup and operating system installation process.

    Refer to the ServerWORKS Quick Launch Getting Started Guide and the README.TXT file, which is located on the Quick Launch CD-ROM.

    − DIGITAL ServerWORKS Manager consists of two CD-ROMs, an Overview and Installation Guide, and supporting documentation.

    Refer to the DIGITAL ServerWORKS software kit for more information.

- Server documentation box — contains this *System Reference*, an *Installation Guide*, a *Documentation Overview*, Warranty information, and Registration Card.

> **NOTE:** You might have ordered additional options such as hard disk drives, tape back-up systems, CD-ROMs, or modems that have been installed in your server. The documentation and any related diskettes for these options have also been provided. Save this material for future reference.

Diagnostic Software

Diagnostic software is shipped with every DIGITAL Server on the Quick Launch CD-ROM. This software contains an advanced set of diagnostic utilities for identifying and correcting problems with the server.   The diagnostic software is used to verify proper hardware installation and isolate intermittent problems that are not detected by the Power-On Self Test (POST).

The diagnostic program is a stand-alone MS-DOS package that is run from diskettes or from the DOS partition on the server's hard disk drive.

The diagnostic software includes:

- AMIDiag base diagnostic (processors, memory, and main logic board components tests) from American Megatrends, Inc.

- DIGITAL vendor extended tests (SCSI, network, storage, and RAID)

- Extensive on-line help and the *AMIDiag User's Guide*

  Refer to Chapter 2, "Server Software and Utilities" for information on creating diagnostic diskettes from the Quick Launch CD-ROM.

  For additional information on "When to Use the Diagnostics" and "Running the Diagnostics", refer to Chapter 11. Also refer to the AMIDiag User's Guide, located under "Additional Documentation" on the Quick Launch CD-ROM and to the README.TXT file on the diagnostics diskettes.

Server Utilities and Technical Support

Current server utilities and technical support information is available on the Quick Launch CD-ROM disc and the Internet.

For product information, use the address:

```
http://www.windows.digital.com
```

For technical support, use the address:

```
http://www.windows.digital.com/support/support.asp
```

For access directly to the software library for BIOS and driver updates, use the address:

```
http://www.windows.digital/com/~ftp/00-index.stm
```

If you need additional information, access "Service Information" located in the ServerWORKS Quick Launch CD-ROM disc.

Important Ergonomic Information

After the server is installed, it is important to apply the following ergonomic information.

- Be comfortable in your work space.

- Change your posture frequently.

- Proceed according to the recommendations in the following table and figure.

Adjust	So . . .
Chair	Feet are flat on the floor.
	Legs are vertical forming a right angle to the floor.
	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.
	Your upper body is erect and your lower back is supported with a backrest.
Keyboard or mouse	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.
	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.
	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.

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.).

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.
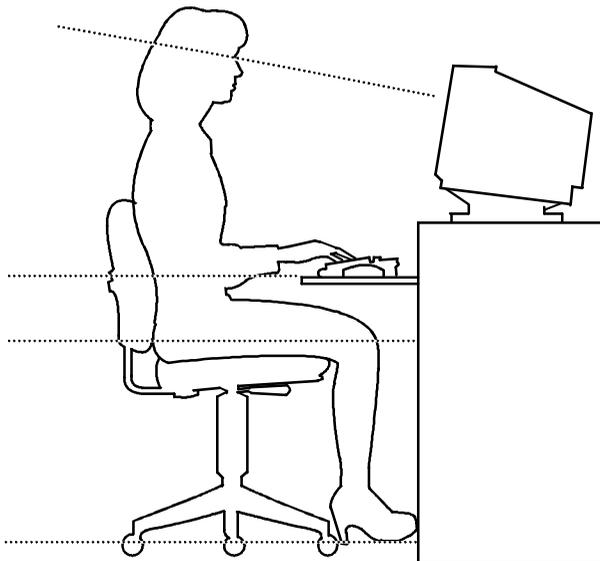
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Figure 1-1. Providing a Comfortable Working Environment

Server Software and Utilities **2**

Introduction

This chapter describes the utilities supplied with your server. Server utilities include:

- ServerWORKS Quick Launch— This software is used to install a network operating system onto the server. The CD-ROM also contains various drivers and on-line documentation.

- BIOS Setup Utility — This utility allows you to configure your server after installing optional ISA/PCI expansion boards and when changing your server's factory-default settings.

- BIOS Upgrade Utility — This utility allows you to update or restore your server's BIOS.

- SCSI*Select* Utility — This utility allows you to configure and view settings of the installed Adaptec SCSI controller and SCSI devices.

- Diagnostics— This utility is used to verify server operation.

ServerWORKS Quick Launch

ServerWORKS Quick Launch is used to install the server's Network Operating System (NOS). In addition to providing quick and seamless NOS installation, Quick Launch also provides drivers, documentation, and the ability to make diskettes of utilities such as diagnostics. For more information, refer to the *Quick Launch Getting Started* guide.

BIOS Setup Utility

The BIOS Setup utility enables you to select and store permanently information about your server's hardware and software in the battery-backed memory of the CMOS RAM. This information takes effect each time the server boots and can be changed any time you run setup.

You should use the BIOS Setup utility each time you need to reconfigure or expand your server.

The following is an example of a BIOS Setup utility screen.

> **CAUTION:** Your server was setup for normal operation at the factory and will operate properly without additional configuring.
>
> It is important for you to read carefully and understand this section before attempting to modify your server's factory settings. Changing some settings might cause your server to operate improperly.

```
 Main              Advanced         Security         Boot            Exit

                                                                 Item Specific Help
    System Time:              [13:11:10]
    System Date:             [10/29/1997]


    Diskette A:              [1.44 MB,3½"]
    Diskette B:              [Disabled]


    Video System:           [EGA/VGA]
    Monitor Type:           [Color]
   >Cache and Shadow
   >Keyboard Features


    System Memory:              640 KB
    Extended Memory:          80896 KB
    At Bus Space:           [Disabled]
    Extended Memory Report: [Compatibility]
```

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Figure 2-1. Typical BIOS Setup Utility Screen

Use the BIOS Setup utility to:

- Change time and date

- Enable and disable diskette drives A and B

- Select the video system

- Select a monitor type

- Select cache and shadow features

- Select keyboard features

- Change server memory

- Change extended memory

- Enable and disable AT bus space

- Select if extended memory report is compatible

NOTE: You will need to change your server's initial setup after reconfiguring your mouse, COM, and LPT ports.

The remainder of this section explains how to run the BIOS Setup utility, maneuver through the options, and perform specific tasks.

Accessing the BIOS Setup Utility

To access the BIOS Setup utility:

1. Turn on your server and allow the Power-On Self Test (POST) to complete.

2. Make a note of any configuration errors listed, and then press [F2] to display the Main menu.

3. Follow the instructions on your monitor screen and any on-line help pop-up screens to configure your server.

Helpful Hints

When using the BIOS Setup utility:

- Several keyboard keys are assigned to help you select menus and sub-menus, options, change option values, and display help information. These keys are displayed at the bottom of all menus as follows:

Key	Function
F1	Help (provides a general help screen)
Esc	Exit (Exits the Setup utility and exits sub menus within the Setup utility)
↑↓ arrow keys	Select Item
← → arrow keys	Select Menu
-/+ or spacebar	Change Values
Enter	Select > Sub-Menu
F9	Setup Defaults (Restore all current Setup screen values to their factory default settings)
F10	Previous Values (Restores all BIOS values from the last session)

- Item-specific help is available anytime during the setup process and appears at the right of the setup screen when an option is highlighted.

- Choosing the "Exit" menu allows you to:

  – Select "Save Changes & Exit" to save all Setup values and exit Setup.

  – Select "Exit Without Saving Changes" to exit Setup without recording any changes.

  – Select "Get Default Values" to set all setup options to their factory default values.

  – Select "Load Previous Values" to restore all setup values from the last session.

  – Select "Save Changes" to save all setup selections without exiting Setup.

Changing Your Server's Configuration

The following sections provide detailed information on changing your server's factory configuration. Before changing any setting, make sure you fully read and understand the information provided and view any on-line help for a selected setting.

Changing Time and Date

To change the time and date:

1. Reboot the server and enter Setup.

2. In the Main menu, using the cursor keys and [Tab], select (highlight) the System Time or System Date field you want to change.

3. Use [+] or [-] to change the field to the desired value.

    You can also enter the desired date and time.

4. Save Changes and Exit Setup and allow your server to reboot.

Setting Up Security

CAUTION: Be careful not to lose your server keys. Losing these keys prevents you from opening the front panel security door and gaining access to the inside of the server. Contact your authorized service representative or authorized dealer for information on replacing lost keys.

The following sections describe the security features available and how to use them.

Refer to Chapter 9, "Server Security Features," for information on clearing passwords.

Setting Supervisor and User Passwords

Your server has password protections that can be set to prevent unauthorized access to server files or to the BIOS Setup utility. If a supervisor password is set, the server prompts you to enter a password before accessing the BIOS Setup utility.

If "Password On Boot" is enabled, and both the supervisor and user passwords are entered, you need to enter either the supervisor or user password to use the server. Password on boot limits who accesses the server and the level of functionality that's available.

Additionally, if after selecting [F2] during the boot sequence, the user password is entered instead of the supervisor password, the Main, Boot, Advanced, and Power menus in the BIOS Setup utility are rendered inaccessible.

> **NOTE:** A supervisor password must be set before you can set a user password. If the supervisor password is later deleted, the user password is automatically removed.

Perform the following steps to set a supervisor password:

1. Reboot the server and enter Setup.

2. Highlight the "Security" menu.

3. Highlight "Set Supervisor Password" and press [Enter].

4. Type in a seven (7) digit alpha-numeric supervisor password and then press [Enter].

5. Retype your password as instructed and press [Enter]. (Notice that "Supervisor Password Is" field now indicates Enabled.)

If desired, set a user password as follows:

1. Highlight "Set User Password" and press [Enter].

2. Type in a seven (7) digit alpha-numeric user password and then press [Enter].

3. To confirm, retype your user password as instructed and press [Enter]. (Notice that "User Password Is" field now indicates Enabled.)

4. Press [Esc] then [Enter] twice to exit the BIOS Setup utility and to reboot the server so changes immediately take affect.

The server runs the POST and then asks for the password, which has just been set.

If you forget your password, refer to Chapter 9 "Server Security Features" for information on resetting your password.

Enabling Password On Boot

When "Password On Boot" is enabled, a screen appears after POST. The screen asks you to enter your supervisor or user password to allow your server to finish the boot sequence.

Perform the following steps to set "Password On Boot":

1. Reboot the server and enter Setup.

2. Highlight the "Security" menu.

3. Highlight "Password On Boot."

4. Press the [+] key. (Pressing the [+] key again reverses your action.)

5. Press [Esc] then [Enter] twice to exit the BIOS Setup utility and to reboot the server so changes immediately take affect.

Eliminating User and Supervisor Passwords

To eliminate your server's password(s):

1. Reboot the server and enter Setup.

2. Enter the supervisor password and press [Enter].

3. Do you wish to eliminate the User Password or the Supervisor Password?

   If User Password, select "Set User Password."
   If Supervisor Password, select "Set Supervisor Password."

4. Press Enter three times.

    You have cleared the old password and are returned to the "Security" menu.
    Verify that the appropriate password is disabled by checking "User
    Password is" or the "Supervisor Password is" field, whichever is relevant.

5. Press [Esc] then [Enter] twice to exit the BIOS Setup utility and to reboot the
   server so changes immediately take affect.

Other Security Options

These options can provide further security for your server under certain conditions.

> **CAUTION:** Consider your security needs carefully before using
> the following option. While this option is enabled, the contents of
> the hard disk drive cannot be backed up to diskettes and the
> server cannot be booted from a diskette drive.

- If "Password On Boot" is enabled and "Diskette Access" is set to
  "Supervisor," entering the supervisor password at boot allows access to a
  diskette. Entering the user password at boot, however, prevents the server
  from accessing a diskette.

- *Sign On Banner* – When enabled, allows a custom banner to be displayed
  every time you turn your server on.

- *Diskette Access* – While enabled, this option prevents the server from
  accessing a diskette.

- *Network Server* – Locks the keyboard and mouse to prevent tampering
  during network operation. You must enter a supervisor password to unlock
  the keyboard and mouse.

- *System BIOS Flash* – When disabled, prevents the server's BIOS from
  being flashed (rewritten).

Cooling Fan Detection

Your server's BIOS checks to make sure the server's cooling fan is working before booting. This prevents the server from overheating because of the higher operating temperatures associated with the processors.

Changing the Boot Sequence

It is sometimes necessary to change your server's boot sequence. Follow your network manual's instructions to determine the correct boot sequence.

To change the boot sequence, proceed as follows:

1. Reboot the server and enter Setup.

2. Highlight the "Boot" menu.

   Diskette drive, Hard Disk, and CD-ROM Drive are displayed. The number shows the current ordering. For example, if CD-ROM Drive is 1 and Diskette Drive is 2, the server boots first from the CD-ROM drive. If it is empty, the server goes to the diskette drive and then finally to the hard disk drive.

3. Use the [↑] and [↓] arrows to locate the field you want to change. Then use the [+] to raise the order and [-] to lower it.

4. Press [Esc] twice then [Enter] twice to exit the BIOS Setup utility and to reboot the server so changes immediately take affect.

   NOTE: ServerWORKS Quick Launch requires a CD-ROM drive configured as a boot device.

Speeding up the Boot Process

There are four options for speeding up the boot process. They in essence eliminate or replace displays or checks. To make these changes, proceed as follows:

1. Reboot the server and enter Setup.

2. Highlight the Main menu.

3. Highlight "Boot Options" and then press [Enter].

   The following table lists the items displayed and describes them.

Field	Description
Setup prompt	Displays the Setup prompt message during the boot sequence. If disabled, the Setup prompt message will not be displayed. However, you can still access the BIOS Setup utility.
Diskette check	Verifies the diskette boot drive.
POST errors	Pauses and displays the Setup prompt or Resume boot prompt, if an error occurs during the boot sequence. If disabled, the server always attempts to boot.
Sign-on banner	When enabled, displays the DIGITAL logo during POST.

4. Select the item(s) you wish to change and use the [+] or [-] as follows:

Field	Speed Up Boot Selection
Setup prompt	Enable
Diskette check	Disable
POST errors	Disable
Sign-on banner	Disable

5. Press [Esc] twice then [Enter] twice to exit the BIOS Setup utility and to reboot the server so changes immediately take effect.

BIOS Upgrade Utility

All servers have BIOS software in a flash (ROM) chip located on the main logic board. 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.

You can upgrade your server's BIOS to future releases by executing the BIOS upgrade utility (PHLASH.EXE) located in the BIOS update kit. PHLASH.EXE and BIOS updates are available on the Internet.

For technical support, use the address:

```
http://www.windows.digital.com/support/support.asp
```

For access directly to the software library for BIOS and driver updates, use the address:

`http://www.windows.digital/com/~ftp/00-index.stm`

△ **CAUTION:** A crisis recovery diskette should be created before upgrading the server BIOS

Also, when upgrading the BIOS, you must remove any video expansion boards and enable the onboard VGA. In the rare event that you might need to use the crisis recovery diskette, the server will require that the onboard VGA be used in this mode.

Two switches and one BIOS option affect the result of executing the PHLASH.EXE program:

- *BIOS Upgrade Switch (SW1-1)* – This switch, located on the main logic board, must be set to `Enabled` before you can upgrade the server's BIOS.

- *Recovery Mode Switch (SW1-2)* – This switch, located on the main logic board, must be set to `Recovery` so the server BIOS can enter "Recovery Mode."

- *System BIOS Flash (BIOS option)* – This BIOS option must be set to `Enabled` before you can upgrade the server's BIOS.

    If you are having trouble flashing your server's BIOS, refer to Chapter 11, "Troubleshooting."

SCSI*Select* Utility

Your DIGITAL Server comes with an onboard Adaptec 7880 SCSI controller and a SCSI*Select* configuration utility.   This utility, located within the server BIOS, allows you to change SCSI controller settings without opening your server.

Use SCSI*Select* to:

- Check factory default settings for each device on the SCSI bus.

- Change SCSI device settings that might conflict with other SCSI devices.

- Perform low-level formatting on new SCSI disk drives.

To start the SCSI*Select* configuration utility:

Press [Ctrl] + [A] when the Adaptec BIOS banner appears during the boot process and before the end of the device information display.

Diagnostics

Diagnostic software is shipped with every DIGITAL Server on the Quick Launch CD-ROM. This software contains an advanced set of diagnostic utilities for identifying and correcting problems with the server.   The diagnostic software can be used to verify proper hardware installation and isolate intermittent problems that are not detected by the Power-On Self Test (POST).

The diagnostic program is a stand-alone MS-DOS package that can be run from diskettes or from the DOS partition on the server's hard disk drive.

To access the supplied diagnostic software:

- During your server installation process, the diagnostic software will be automatically copied to a subdirectory on the DOS partition (only if you selected the option to create a DOS partition). This allows you to run the diagnostic software from the DOS partition you created.

- Using the Quick Launch CD-ROM, you can create bootable diagnostic software diskettes. This allows you to run the diagnostic software using the diskettes you created.

> **NOTE:** DIGITAL strongly recommends that you copy the diagnostics to diskettes and then use these diskettes to run the diagnostics on your server.

To run the diagnostics from the DOS partition, perform the following:

1. At the MS-DOS prompt, type:

   `C:\diag\diagnose.bat`

2. After the server boots, choose MS-DOS from the boot selection.

3. Once the diagnostics begin, the main screen appears.

Refer to Chapter 11, "Troubleshooting," for more information.

To create the diagnostic diskettes from the Quick Launch CD-ROM, perform the following:

1. Insert the Quick Launch CD-ROM into the drive and boot the server or from a PC or workstation, use Windows File Manager or Explorer and run:

   `<cd-rom>:\QLAUNCH.EXE.`

2. From the Quick Launch main menu, select *Installations & Utilities.*

3. Select the *Utilities* tab and then select the server model.

4. Insert a blank MS-DOS formatted diskette into drive A and select *Diagnostics.*

5. Select *Continue.* Afterwards, remove the diskette for safekeeping.

6. Choose the next diagnostic diskette from the list and then select *Continue.* Create all the diskettes labeled "Diagnostics."

Refer to Chapter 11, "Troubleshooting," for more information.

Server Components **3**

Introduction

This chapter shows the location of the DIGITAL Server's internal components and procedures for unlocking and removing the side panel. A procedure for installing a new server battery/Real-Time Clock (RTC) is also included.

Disconnecting External Devices and Power

Before removing the side panel, perform the following:

1. Shut down any applications that are currently running, then shut down the operating system.

2. Turn off power to all external devices connected to the server.

3. Turn the server off.

4. Unplug the power cord from the wall outlet.

5. Disconnect the monitor's power cord from the external ac outlet and the data cable from the server.

Removing and Installing the Side Panel

To remove the side panel, perform the following:

NOTE: Position 2 of the keylock locks the side panel; position 1 keeps the side panel locked with the server powered up.

1. Insert the key into the keylock at position 2.

2. Push in on the key and then turn it clockwise to the unlock position.

3. Slide the panel to the rear of the server and then away from the chassis.
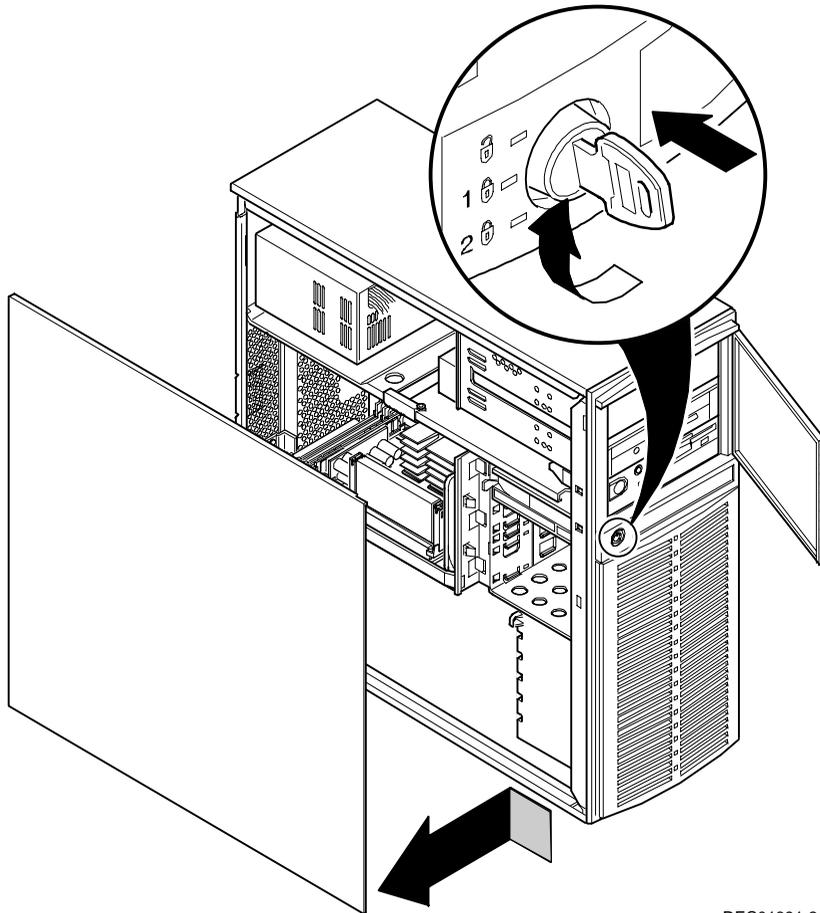
DEC01391-2

Figure 3-1. Unlocking and Removing the Side Panel

To install the side panel.

1. Slide the panel to the front of the server.

2. Lock the side panel.
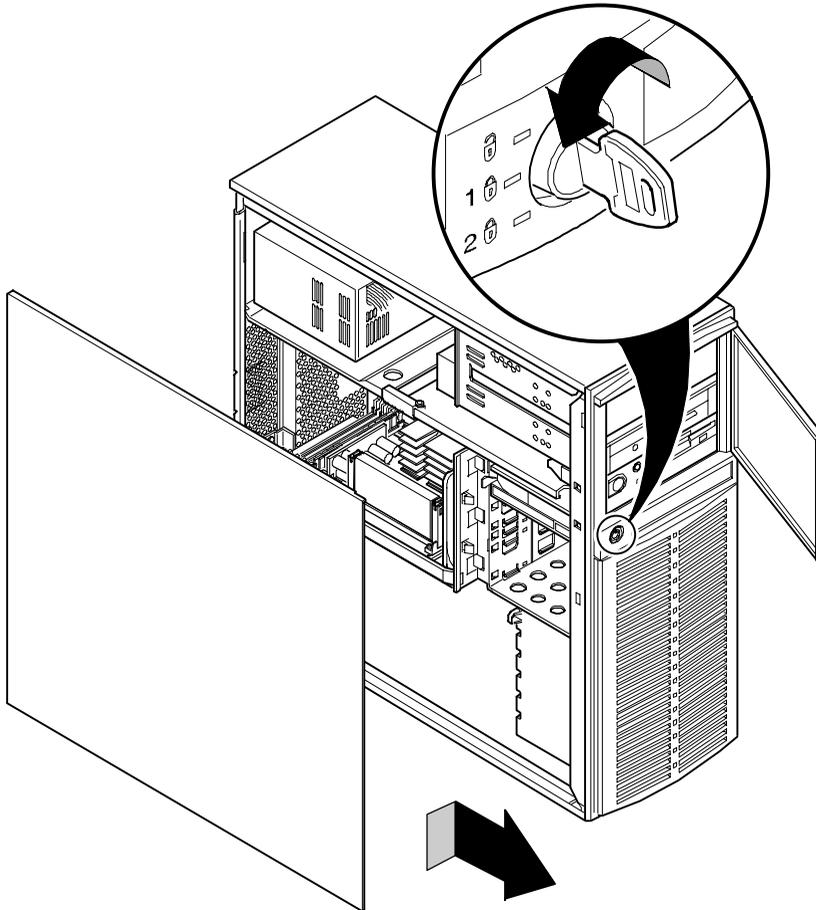
DEC01391-3

Figure 3-2. Installing the Side Panel

Server Front View

Figure Legend	Component
A	Security door lock/chassis lock
B	Hard disk drive indicator
C	Power indicator
D	Reset button
E	Power on/off button
F	CD-ROM drive
G	3½-inch diskette drive
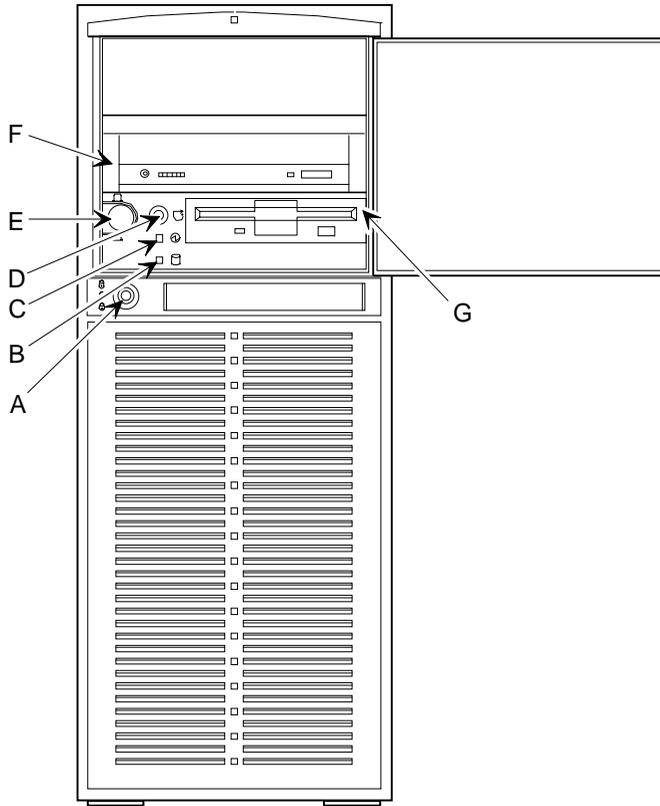
DEC01086-2

Figure 3-3. Server Front View

Server Left Side View

Figure Legend	Component
A	Power supply
B	Location of main logic board
C	Rear panel expansion board slots
D	Two ISA expansion slots Four PCI expansion slots One shared ISA/PCI slot
E	Pentium II processor module
F	Upper fan assembly
G	Internal 3½-inch drive bays
H	Lower fan assembly
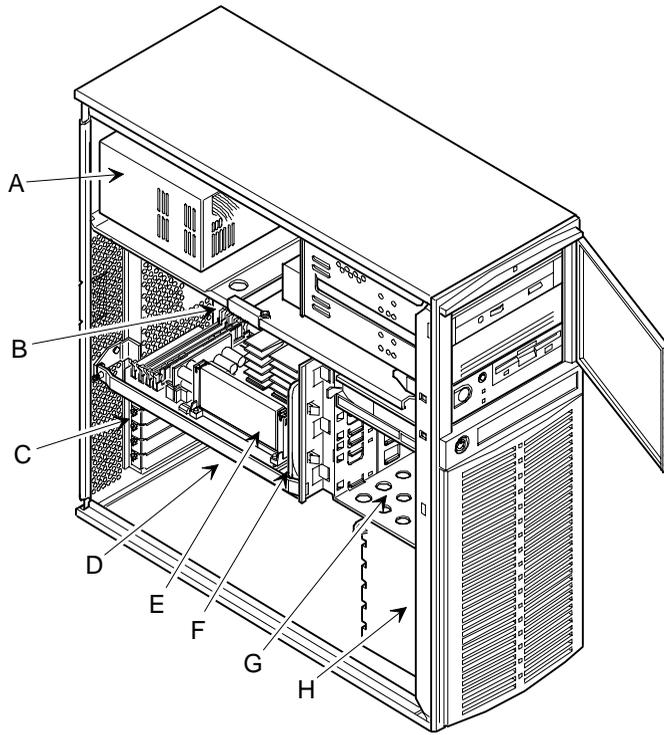
DEC01391-4

Figure 3-4. Server Left Side View

Server Rear View

Figure Legend	Component
A	10Base-T/100Base-T connector (RJ45)
B	Parallel port
C	Video port
D	Serial port (COM1)
E	Serial port (COM2)
F	Keyboard port
G	Mouse port
H	USB ports
I	Voltage select switch
J	ac line connector
K	SCSI knockouts
L	Expansion board slots
M	Padlock ring
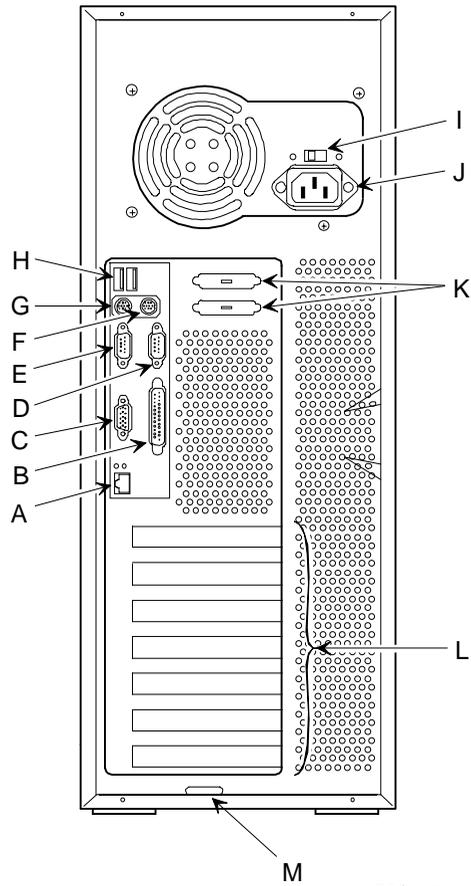
Figure 3-5. Server Rear View

DEC01394-2

Main Logic Board Components and Connectors

Figure Legend	Component/Connector
A	ISA expansion slots (1 through 3)
B	PCI expansion slots (1 through 5)
C	DIGITAL 21143 network controller
D	10Base-T/100Base-T network connector
E	Video memory
F	Parallel port
G	Video port
H	S3 Trio64V2/GX video controller
I	Serial ports
J	Keyboard and mouse ports
K	USB ports
L	Front panel connector
M	Power connector
N	Flash ROM
O	Server battery
P	Diskette drive connector
Q	Wide SCSI connector
R	Adaptec 7880 SCSI controller
S	Pentium II processor module
T	Fan 1 connector
U	External hard disk drive display connector
V	Dip switch for main logic board settings
W	Speaker connector
X	Fan 2 connector
Y	Remote Server Monitor (RSM) connector
Z	Yellow fault LEDs
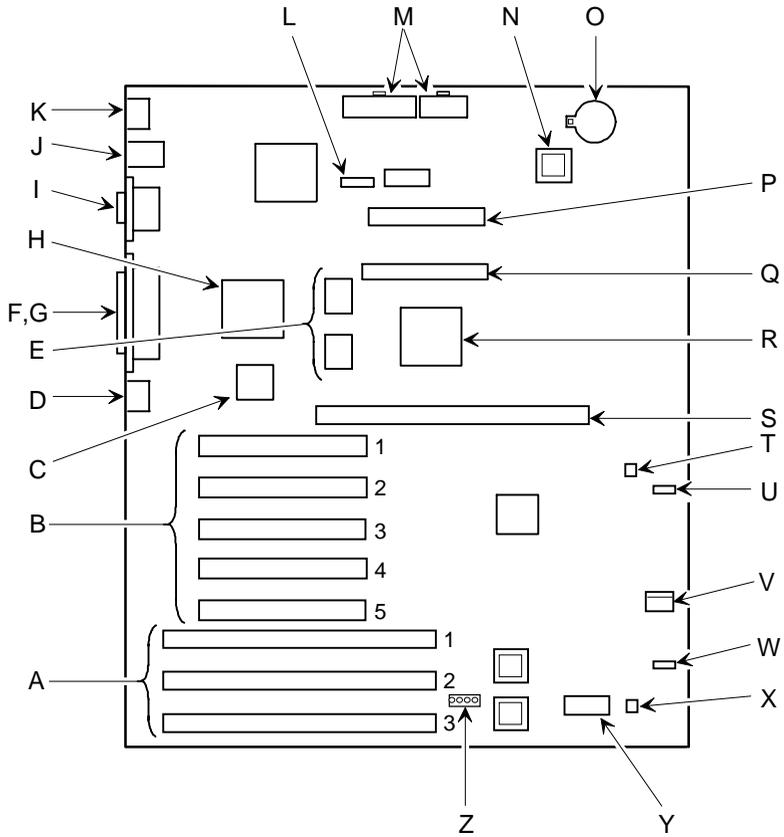
DEC01395-2

Figure 3-6. Main Logic Board Components and Connectors

Processor Module Components/Conectors

Figure Legend	Component/Connector
A	Dip switch for processor settings
B	Voltgage Regulator Module (VRM) slot (VRM used only when a second processor is installed)
C	DIMM sockets
D	Processor 1
E	Processor 2 (or terminator)

DEC01405-6
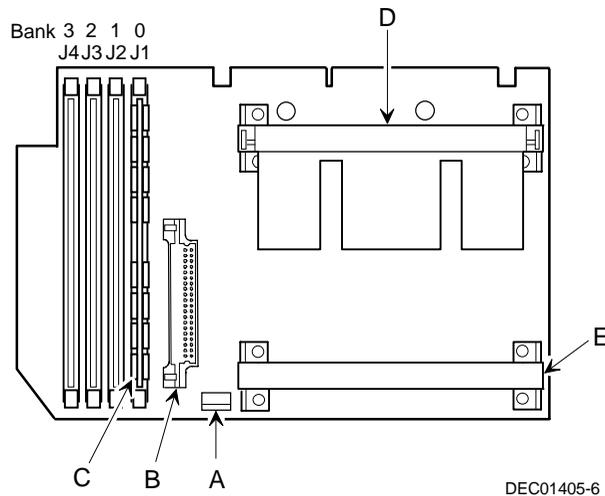
Figure 3-7. Processor Module Component Locations

Tools Needed

Prior to installing an option, have the following available:

- A Phillips screwdriver

- An antistatic wrist strap

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, put on a properly-grounded, anti-static wrist strap.

- Keep circuit boards and components away from non-conductors.

- Keep clothing away from circuit boards and components.

- Keep circuit boards in anti-static bags.

Replacing the Lithium Battery

Your server comes with a Lithium 3 V dc wafer-style battery. If your server ever fails to retain the correct date, time, or configuration settings when it is turned on, you need to replace the battery.

To replace the Lithium battery, perform the following:

1. If you have not already done so, record server configuration settings using the BIOS Setup utility.

2. Turn off your server.

3. Disconnect external devices, ac power, and monitor power.

4. Unlock and remove the side panel.

5. Lift the retaining clip slightly and push on the battery from the side to slide it out.

   WARNING: There is a danger of battery explosion if a lithium battery is incorrectly replaced. To prevent damage to your computer, be sure the + side faces up when installing a new battery. Also, be sure you replace the battery with either a DIGITAL (P/N 12-41474-05), Toshiba (P/N CR2032), or equivalent 3 V dc lithium battery.

   Depending on your locality, your computer'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 the new battery.

   When installing the new battery, make sure the "+" side faces up.

7. Replace and lock the side panel.

8. Connect external devices and restore power.

9. Run the BIOS Setup utility to reconfigure your server using the recorded configuration settings from step 1.

   Refer to Chapter 2, "Server Software and Utilities."
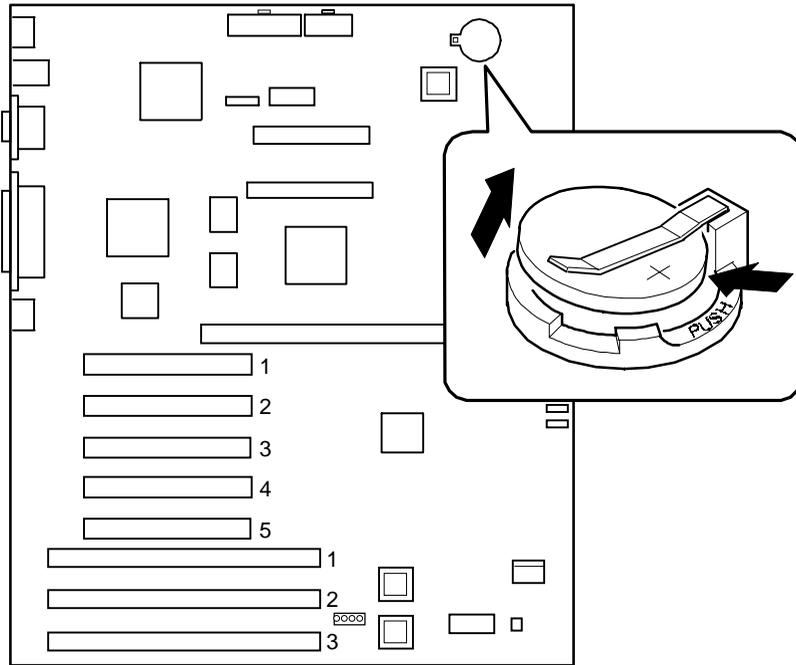
DEC01395-3

Figure 3-8. Replacing the Battery

Server Management 4

Introduction

The DIGITAL Server is configured with hardware that supports server management, including an 8031 processor with multiple I^{2}C busses for server status reporting.

Managing Your Server

The DIGITAL Server allows you to perform the following server management functions:

- Monitor main logic board voltage and cooling fan status

- Monitor processor module voltage, temperature and status

- Detect and automatically correct single-bit ECC errors

The DIGITAL Server allows you to manage your server and its main components by:

1. Obtaining information about the main logic board and the processor module.

2. Notifying you of any changes to the main logic board or processor module in your server.

Information can be obtained either through the BIOS Setup utility or through server management software such as the DIGITAL ServerWORKS Manager.

Obtaining Information about Your Server

The DIGITAL Server provides the following system information for the main logic board and the processor module configured in your server:

- Asset number — User definable field for tracking these components

- Part number — DIGITAL part number

- Revision number — Board assembly revision number

- Serial number — Serial number of the board assembly

- Artwork number — Revision of the printed circuit board

The System ID is also located on the main logic board and processor module. The System ID contains the following information:

- Model number — Server model number

- Serial number — Server serial number

- System asset number — User definable field for tracking the system

The main logic board and processor module each contain memory where specific information and System ID information is stored. The main logic board also stores the server's System Asset number (see Figure 4-1).

Information is available for the server's main logic board and processor module (such as part numbers, revisions, serial numbers, etc.). You can also assign Asset numbers to these components. In addition, the software detects when you change your server configuration by adding or removing either component.

You can obtain information about your server's configuration by running the BIOS Setup utility or by using ServerWORKS management software.

```
┌─────────────────┐          ┌─────────────────┐
│ Asset#          │          │                 │
│ Part#           │          │    DIGITAL      │
│ Revision#       │ ◄─────── │  Server 1200    │
│ Serial#         │          │  (System ID)    │
│ Artwork#        │          │                 │
│ System ID       │          │                 │
└─────────────────┘          └─────────────────┘
   Pentium II                         │
   Module                             ▼
                             ┌─────────────────┐
                             │ Asset#          │
                             │ Part#           │
                             │ Revision#       │
                             │ Serial#         │
                             │ Artwork#        │
                             │ System ID       │
                             │ System          │
                             └─────────────────┘
                                  Main Logic
```
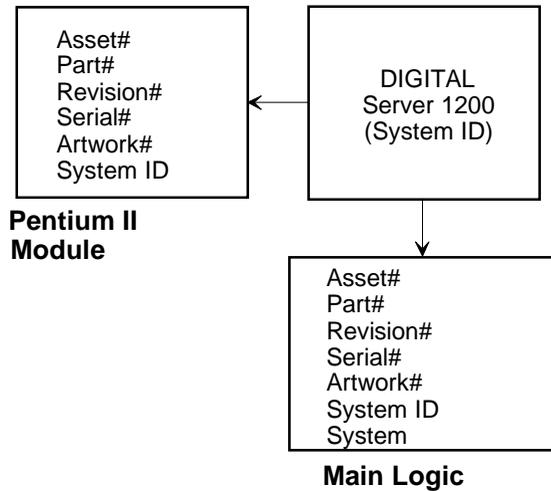
DEC0139

Figure 4-1. DIGITAL Server Component Information

Obtaining Information Using the BIOS Setup Utility

You can use the BIOS Setup utility to check the Serial number, Revision number, and Asset number for the main logic board and processor module configured in the server. For example, if you change the main logic board or processor module in your server, you must run the BIOS Setup utility to re-synchronize the System ID (server model number and serial number) in the main logic board or processor module's memory. The BIOS Setup utility will check the new main logic board or processor module and will then detect the System ID mismatch.

You can view the details for the main logic board or processor module by pressing <F3> and then selecting the SYS option. Once selected, the Serial number, Revision number and Asset number displays. The BIOS Setup utility then lists the server model number and server serial number information stored on the main logic board or processor module. You can then confirm the correct model number and serial number. This data is available on the label located on the server's back panel.

Refer to Appendix C, "BIOS Setup Utility Features," for more detailed information about the BIOS Setup utility.

Obtaining Information Using Server Management Software

Your DIGITAL Server is shipped with the DIGITAL ServerWORKS Manager software. ServerWORKS Manager is a workgroup and server management product for DIGITAL's family of servers. ServerWORKS Manager uses the Simple Network Management Protocol (SNMP) environment to assist the Network or Server administrator by constantly monitoring the network for problems.

DIGITAL ServerWORKS Manager is based on an open architecture that enables seamless integration and interoperability with popular enterprise management software packages such as Computer Associates' POLYCENTER Manager/NetView, Hewlett-Packard's OpenView UX for Windows, and IBM's Netview/6000 AIX. Also included with ServerWORKS Manager are Network Operating System (NOS) Agents for Windows NT V3.51 and 4.0, Novell NetWare V3.12 and V4.x, and SCO UNIX V5.0. The OS/2 NOS includes its own agent and is also managed from ServerWORKS Manager.

DIGITAL ServerWORKS Manager allows the Network or Server Administrator to perform the following functions on your server:

- Manage Digital PC print, file, and application servers supported by DIGITAL Servers using a Windows-based graphical user interface (GUI) for point and click simplicity.

- Display server component information that provides critical information such as processor and file system utilization and information about the network interface.

- Automatically builds a database of the network by Autodiscovering all SNMP network resources and displays the nodes discovered during Autodiscovery on a color-coded topological map.

- Poll all network devices at intervals defined by the administrator.

- Perform an in-depth network analysis to continuously monitor the status of the network.

- Set alarms and alerts for specified events on all network devices, as well as the network itself, to spot problems early and avoid costly downtime.

  Refer to the DIGITAL ServerWORKS Manager Overview and Installation Guide for more information on how to use ServerWORKS Manager for viewing and notification of server events.

You can also manage the DIGITAL Server with other SNMP-based managers.

  Refer to the DIGITAL ServerWORKS Manager Overview and Installation Guide for more information.

Displaying Server Status Using the Hardware

There are two types of information displayed when your DIGITAL Server is operating:

- Normal status messages

- Error messages (displayed by the yellow fault LEDs located on the main logic board and/or on your monitor screen)

During normal operation, Power On Self Test (POST) and boot messages are displayed on the monitor. Some error messages are also displayed by the server fault status LEDs.

These messages can also be seen by using the DIGITAL ServerWORKS Manager software to monitor the server.

Refer to Appendix A for server fault status LED indications and POST messages.

Pentium II Processor Upgrades 5

Introduction

The Pentium II processor module comes with a single Pentium II processor installed. Installing a second Pentium II processor increases the capabilities of your server. This chapter describes the configuration guidelines that must be followed prior to upgrading as well as detailed procedures on removing and installing the Pentium II processor module.

Processor Module Configuration Guidelines

You can upgrade your server to a dual Pentium II processor configuration.   To upgrade, you must purchase and install the items supplied in the Pentium II processor upgrade kit. Contact your authorized DIGITAL sales representative for more information.

- Single processor configurations must be installed in the primary Slot 1 socket (Processor 1) and have a termination card installed in the second Slot 1 socket (Processor 2). The termination card must be removed prior to installing a second processor.

- A VRM must be installed when a second Pentium II processor is installed.

- DIGITAL recommends that dual processor configurations use Pentium II processors with identical stepping (manufacturing revision). Processors with different stepping might not function properly. Stepping information appears during the Power On Self Test (POST) for each processor. The processors IDs are also displayed with both IDs being identical.

- Use only DIGITAL-supplied processor modules.

- Use an antistatic wrist strap when servicing any part of the server.

    Refer to Appendix A, "Technical Specifications" for specific POST messages.

    Please refer to the README file on the ServerWORKS Quick Launch CD-ROM to view the latest processor compatibility information. Also, contact your DIGITAL sales representative or reseller for future processor upgrades and BIOS revisions.

Processor Configurations

- One Pentium II processor with 512 KB cache

- Two Pentium II processors with 512 KB cache (each processor)

Processor Upgrade Procedures

To upgrade from a single Pentium II processor configuration to a dual Pentium II processor configuration:

1. Shut down the operating system software.

2. Power down the server.

3. Disconnect all external devices, ac power, and monitor power.

4. Remove the side panel.

5. Place the antistatic wrist strap on your wrist and connect the grounding clip to a non-painted metal surface of the server's chassis.

6. Loosen the retaining bracket, remove the processor module, and then place it on an antistatic surface.
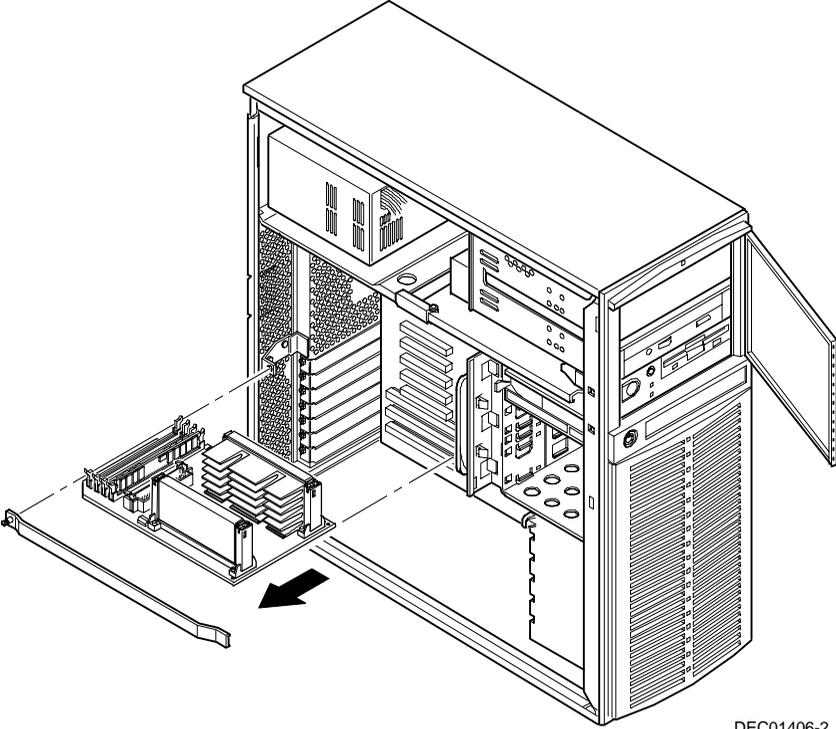
DEC01406-2

Figure 5-1. Removing a Processor Module

7. Remove the terminator card from the processor module (see Figure 5-2). Grasp the terminator by each end and pull up.
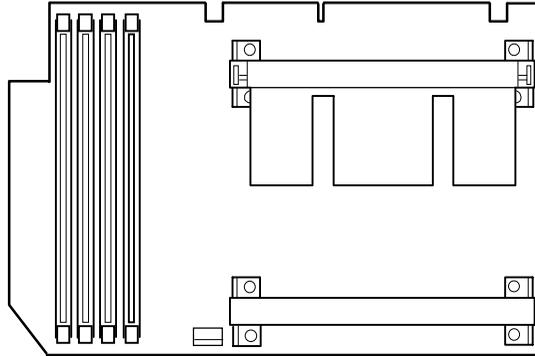
8. Remove the new processor from its shipping container.

9. Insert the new processor into this slot (see Figure 5-3).

10. Secure the new processor to its socket by pushing out on the two plastic tabs at each side.
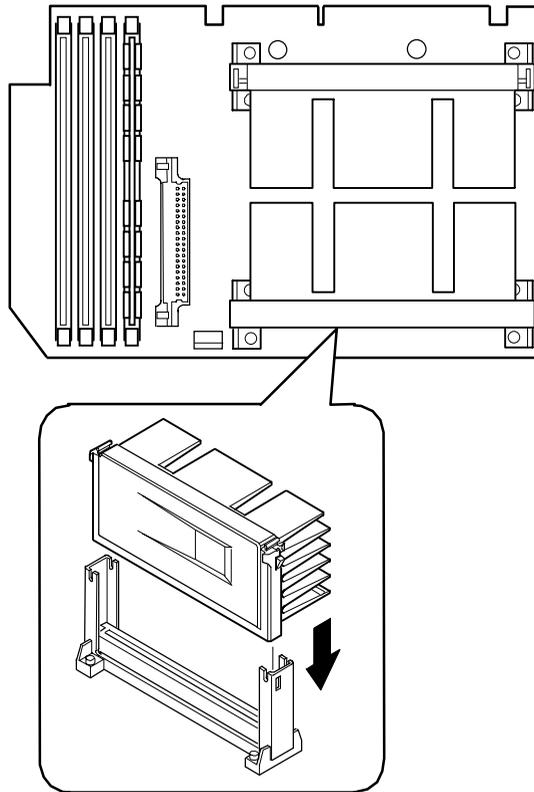
DEC01405-2

Figure 5-3. Installing the Second Processor

11. Insert the VRM into the dedicated slot on the processor module.
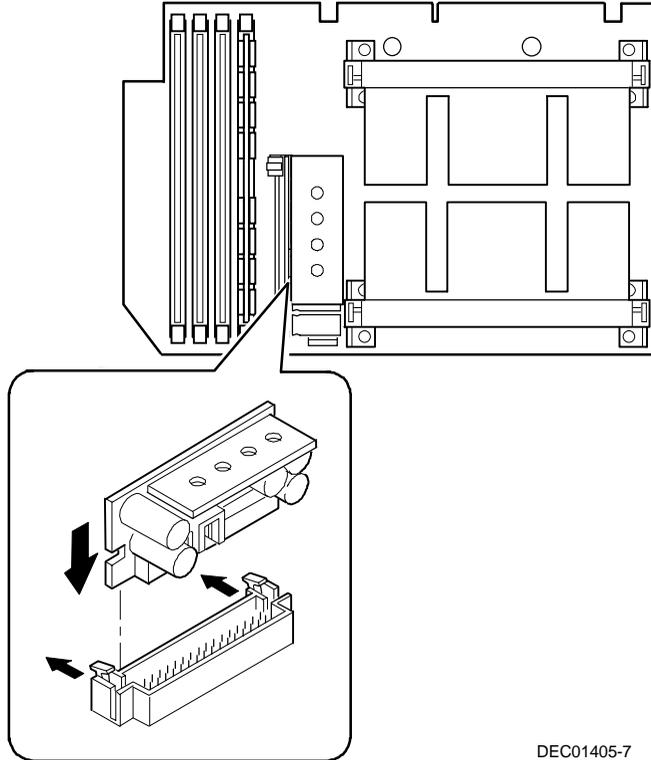
DEC01405-7

Figure 5-4. Installing the VRM

12. Set all appropriate switch settings on the processor module.

    Refer to Appendix A, "Technical Specifications," for switch locations.

13. Install the processor module and then secure it to the chassis using the previously removed retaining bracket.
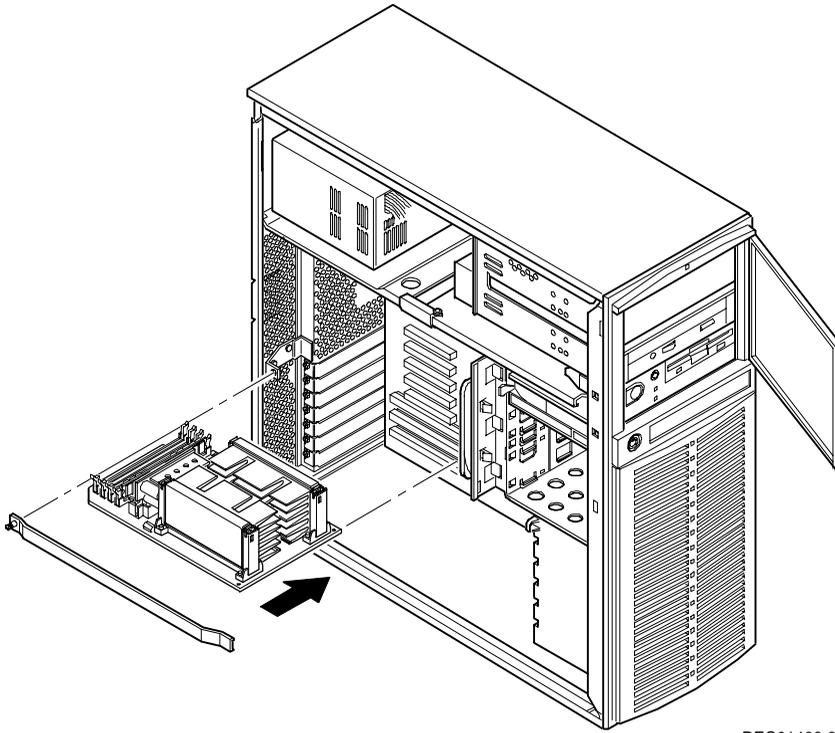
DEC01406-3

Figure 5-5. Installing the Processor Module

14. Replace the side panel.

15. Connect all external devices and restore power.

Installing Additional Memory **6**

Introduction

This chapter provides memory configuration guidelines that must be followed prior to installing additional DIMMs on an installed Pentium II processor module.

Your DIGITAL Server provides an EDO/ECC memory system. The minimum supported memory is 32 MB. The maximum supported memory is 512 MB. When configuring total server memory (DIMM combinations) make sure that you reference the DIMM configuration table and follow all DIMM memory configuration guidelines.

△ **CAUTION:** DIMMs must be ordered separately. Only install DIMMs supported by Digital Equipment Corporation. DIGITAL does not support server performance, product warranty, or service calls resulting from installing non-qualified DIMMs.

Server DIMMs Requirements

- Supported DIMMs: 72-bit DIMMs, single-banked, ECC/EDO protected memory

- Supported densities: 16, 32, 64, and 128 MB of ECC/EDO protected memory

- Minimum server memory supported: 32 MB

- Maximum server memory supported: 512 MB (ECC protected memory

Memory Configuration Guidelines

The memory configuration guidelines for the DIGITAL Server 1200 are as follows:

- Each memory bank on the processor module accommodates one DIMM.

- Install DIMMs starting with Bank 0 (J1). See Figure 6-1 for DIMM socket locations.

- You can mix different DIMM capacities.
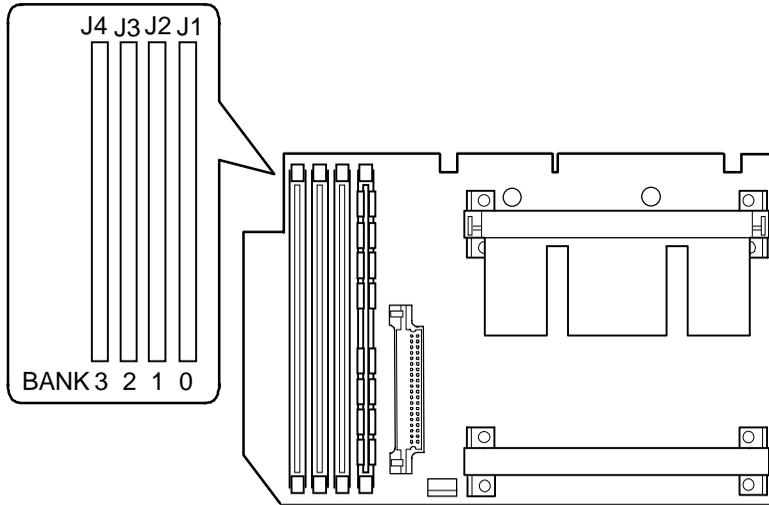
DEC01405-5

Figure 6-1. DIMM Bank Locations

Memory Configurations

Bank 0 (J1)	Bank 1 (J2)	Bank 2 (J3)	Bank 3 (J4)	Total Memory
32 MB				32 MB
64 MB				64 MB
64 MB	32 MB			96 MB
64 MB	64 MB			128 MB
64 MB	32 MB	32 MB		128 MB
64 MB	64 MB	64 MB		192 MB
64 MB	32 MB	32MB	32MB	160 MB
64 MB	64 MB	32 MB	32 MB	192 MB
64 MB	64 MB	64 MB	32 MB	224 MB
64 MB	64 MB	64 MB	64 MB	256 MB
128 MB				128 MB
128 MB	64 MB	32 MB		224 MB
128 MB	128 MB			256 MB
128 MB	128 MB	64 MB	32 MB	352 MB
128 MB	128 MB	128 MB		384 MB
128 MB	128 MB	128 MB	64MB	448 MB
128 MB	128 MB	128 MB	128 MB	512 MB

Table does not list all possible configurations

Installing DIMMs

NOTE: Prior to installing additional memory in your DIGITAL Server, refer to the previous section to verify the memory configuration you have planned conforms to all memory configuration guidelines.

CAUTION: To avoid possible damage to the components, place the antistatic wrist strap on your wrist and connect the grounding clip to a non-painted metal surface of the server's chassis.

To install DIMMs, perform the following:

1. Power down your server.

2. Disconnect all external devices, ac power, and monitor power.

3. Unlock and remove the side panel.

4. Remove the processor module from your server and place it on an antistatic surface.

⚠ **CAUTION**: Never install DIMMs on a processor module without first removing it from the server.
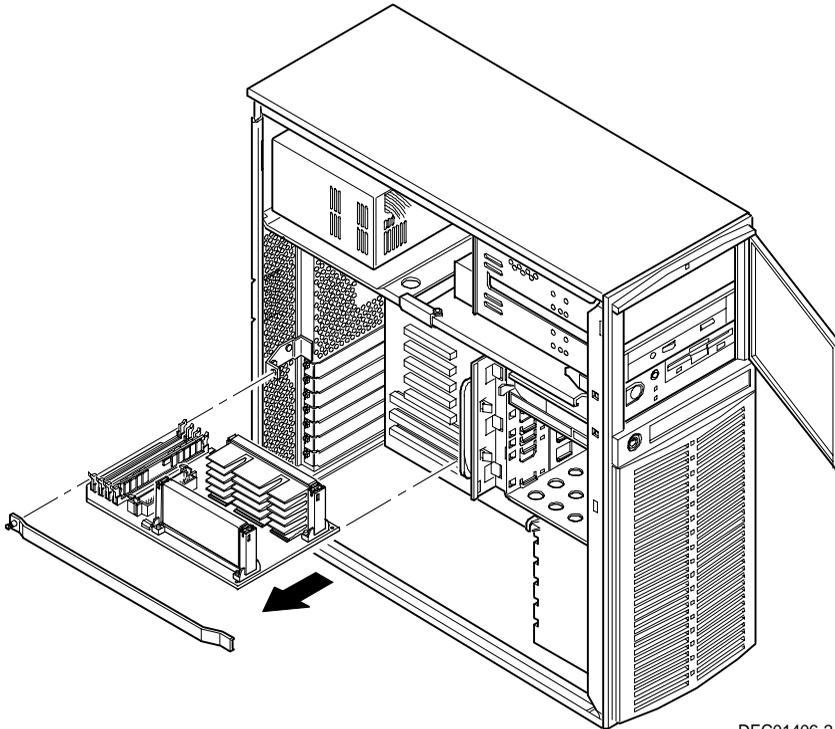
DEC01406-2

Figure 6-2. Removing a Processor Module

5. Unpack the DIMMs. Refer to "Memory Configurations" described in earlier in this chapter for information on the supported memory configurations.

6. Install DIMMs starting with Bank 0 (J1) on processor module, orient the DIMM so that the two notches at the bottom edge of the DIMM are aligned with the keyed socket (Figure 6-3).
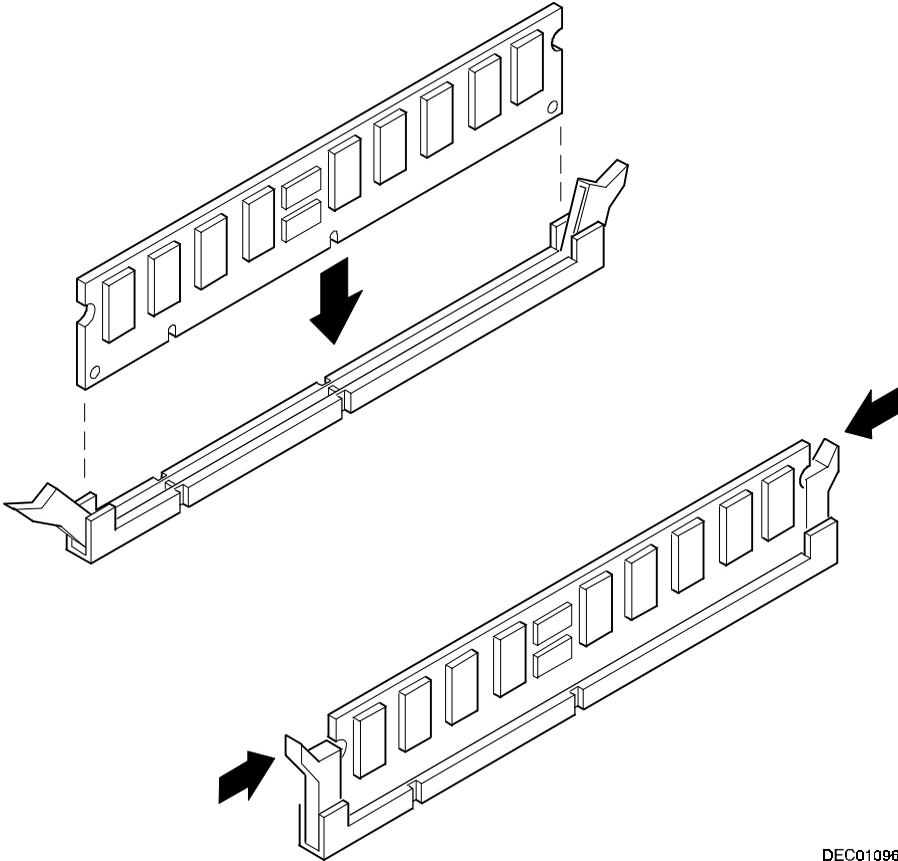
DEC01096

Figure 6-3. Installing a DIMM

7. Insert the DIMM straight down into its socket. Apply equal pressure to both ends of the DIMM until it fully seats in the socket.

   The plastic hold-down/ejector tabs snap into place when the DIMM is inserted correctly.

8. Continue installing DIMMs to complete your memory upgrade.

9. Install the processor module.

10. Replace and lock the side panel.

11. Connect all external devices and restore power.

12. Run the BIOS Setup utility to configure your server for the additional memory.

    For more information, refer to Chapter 2, "Server Software and Utilities."
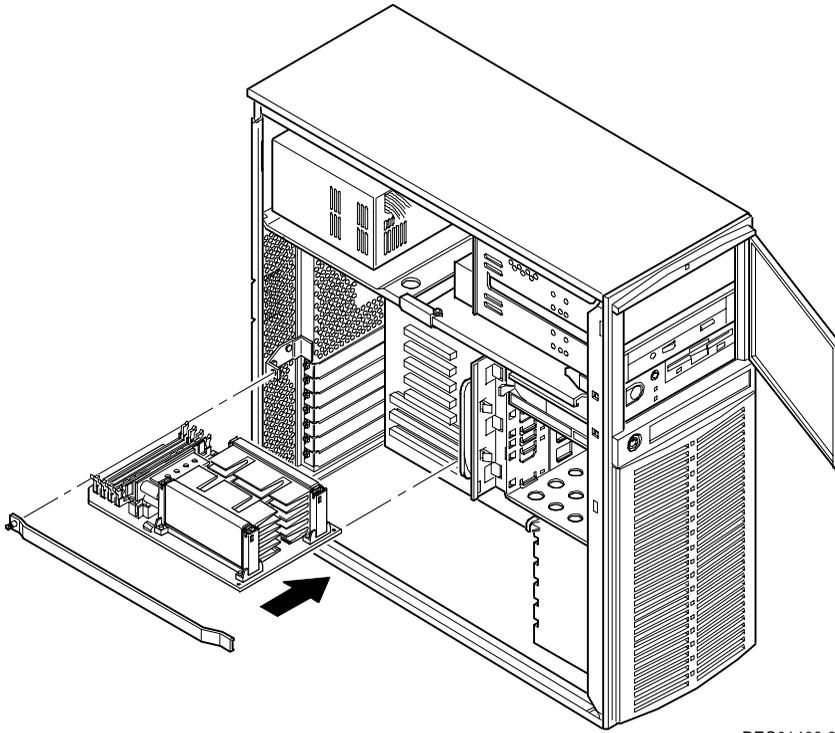
DEC01406-3

Figure 6-4. Installing a Processor Module

Memory Troubleshooting

Your DIGITAL Server's Power-On Self Test (POST) can detect memory errors when it boots. The error can be isolated to a single DIMM on the processor module.

The memory error message format is:

```
<Type of error>: <Location>
```

Where:

```
<Correctable Error>:   <Jxx xxMB EDO DIMM>
```

If the error is correctable when the server boots, the BIOS displays the following:

```
 Press <F1> to resume
```

```
<Uncorrectable Error>: <Jxx xxMB EDO DIMM>
```

If the error is uncorrectable, the server halts after the memory test.

```
<Configuration Error>: <Jxx xxMB EDO DIMM>
```

This indicates that an error occurred while reading the memory configuration. The problem is either the DIMM, the processor module, or the main logic board, which, in all cases halts the server. To correct the problem, contact DIGITAL Multivendor Services (MCS).

Installing Disk and Tape Drives 7

Introduction

Your DIGITAL Server supports narrow and wide SCSI devices. The following sections describe the SCSI configuration guidelines that must be adhered to so your server operates correctly after installing and connecting SCSI devices.

Disk and Tape Drive Configuration Guidelines

- A half-height tape drive should be installed in the front access 5¼-inch drive bay.

- A maximum of four 3½-inch, 1.5-inch, or six 1-inch high hard disk drives can be installed in the internal drive bay.

CD-ROM Drive Configuration Guidelines

- The factory installed SCSI CD-ROM drive has its SCSI ID set to 5.

- The CD-ROM drive should always be connected to the onboard Adaptec SCSI controller to support the bootable ServerWORKS Quick Launch CD-ROM.

SCSI Configuration Guidelines

The following sections describe the SCSI configuration guidelines that must be adhered to so your server operates correctly after installing and connecting SCSI devices.

Connecting SCSI Devices

- Your server supports up to nine SCSI devices.

- These devices can be connected on either wide or narrow busses, single or multiple channels.

  Limitations on connecting these devices might also be based on the manufacturer's design.

Setting IDs and Termination

- Each device on the channel must be assigned to a unique SCSI ID number. The narrow SCSI bus supports eight devices in the range of 0-7.

- The wide SCSI bus supports 16 devices in the range of 0-15. In either bus, the SCSI ID "7" usually is assigned to the SCSI controller. This can be changed in the configuration utility.

- Both ends of the SCSI bus must be terminated. In most cases, one side of the termination will be a soft switch setting on the main logic board, set in the configuration utility. The other termination can be found at the other end of the SCSI bus in the form of an in-line SCSI terminator.

- If a device such as a CD-ROM drive has a terminator jumper installed and the CD-ROM drive is plugged into the second connector on the cable from the SCSI controller, no other devices will be seen beyond the second connector. Determine that all devices have the terminator removed and that the in-line bus terminator is in place.

External Channel

- Determine that the SCSI IDs you select for the external SCSI devices do not conflict with other devices installed in the server on the same bus.

- Determine that the external SCSI bus is terminated properly.

- For proper operation, the length of the SCSI cable for each channel must not exceed a total of 1.5 meters (4.92 ft) when eight devices are connected and 3 meters (9.84 ft) when four or less devices are connected. This includes the length of the internal cable plus the length of the external cable to the bulkhead.

- You will need to disable termination on the controller if it is in the middle of the daisy chained SCSI cable. If you remove the controller termination, make sure both ends of the SCSI cable are properly terminated (in-line terminator).

Drive ID

- Determine that you select unique SCSI IDs for all SCSI devices on the SCSI bus.

- All SCSI device IDs must be set manually via jumpers on the device. Refer to your manufacturer's documentation for information on setting drive IDs. If a factory installed CD-ROM drive has been installed in your server, the SCSI ID factory setting for that device is 5.

  Use the SCSISelect utility to view the device IDs that are available. Refer to Chapter 2, "Server Software and Utilities," for more information.

- Narrow (8-bit) devices on a wide cable count as two SCSI IDs. For example, the narrow CD-ROM drive SCSI ID is 5 so SCSI ID 13 is no longer available. The 8-bit CD-ROM device counts as two devices on a 16-bit wide data path. Determine that a unique SCSI ID is selected for each SCSI device located on each SCSI bus.

Cables

The server is shipped with a wide SCSI cable with ten connectors connected to the wide Adaptec 7880 SCSI controller on the main logic board, the CD-ROM, the 5¼-inch drive bays, the internal drive bays, and then the in-line terminator.

Installing Optional Drives

Your server has two drive bay areas. Optional drives such as a SCSI disk drive, a SCSI CD-ROM, and a SCSI tape are installed in these drive bay areas. The two drive bay areas are:

- Front access drive bay area — This area has one 5¼-inch SCSI CD-ROM drive and one diskette drive, and room for one 50-pin 5¼-inch half-height SCSI device.

- Internal drive bay area — This area has room for four 3½-inch, 1.5-inch high or six 3½-inch, 1-inch high wide SCSI devices.

Installing a 5¼-Inch Device into the Front Access Drive Bay

To install a 5¼-inch device into the front access drive bay slot, perform the following:

1. Turn off your server.

2. Disconnect all external devices, ac power, and monitor power.

3. Unlock and remove the side panel.

4. Open the door.

5. Remove the plastic filler panel by pushing it out from inside the server.

6. Remove the bracket from the drive bay (inside, right) and attach it to the device.

7. Insert the device into the drive bay slot from the front.

8. Secure the device to the slot using the supplied mounting screws.
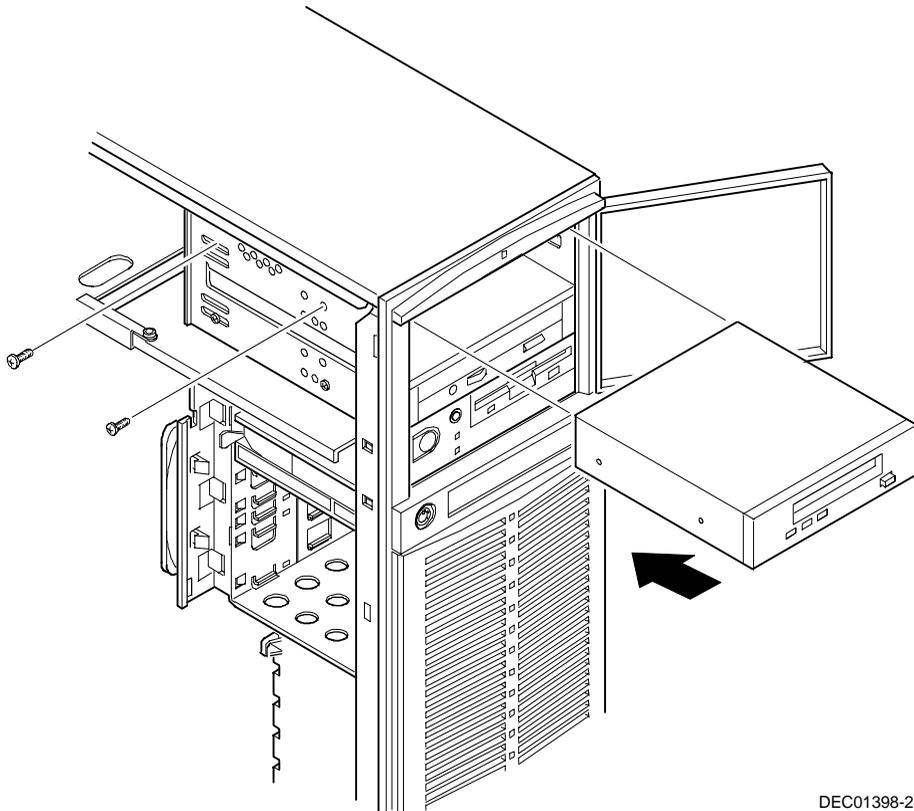
DEC01398-2

Figure 7-1. Installing a 5¼-Inch Device into the Front Access Drive Bay

Expansion Brackets

You can install a 3½-inch half-height device in the front access drive bay (hard disk drive or tape drive). If you plan to install a 3½-inch device in a 5¼-inch drive bay slot, you must first install the 3½-inch expansion brackets onto the device and then install the 5¼-inch bracket as shown in Figure 7-2. Expansion brackets are either supplied with the device or can be purchased from DIGITAL. Contact your local DIGITAL sales representative for additional information. Afterwards, install the 3½-inch device following the procedures described in "Installing a 5¼-Inch Device into the Front Access Drive Bay."
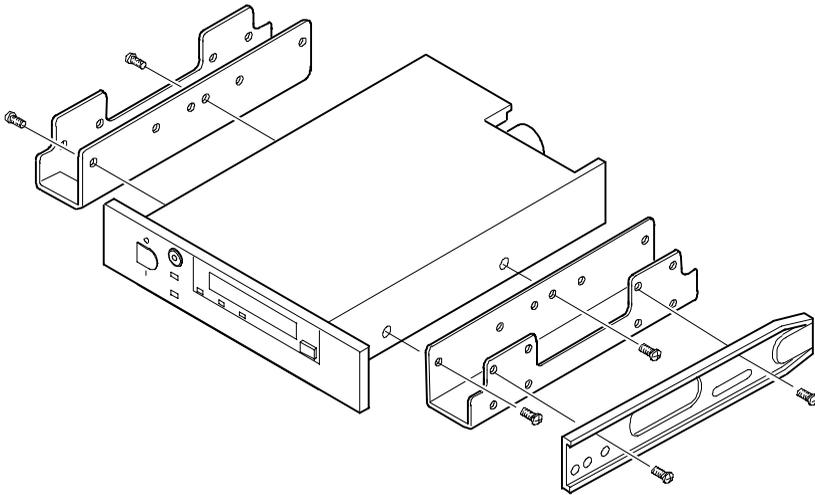
DEC01447

Figure 7-2. Installing Expansion Brackets

Installing a 3½-Inch Device into the Internal Drive Bay

To install a 3½-inch device into one of the internal drive bay slots, perform the following:

1. Turn off your server.

2. Disconnect all external devices, ac power, and monitor power.

3. Unlock and remove the side panel.

4. Install the supplied expansion brackets.
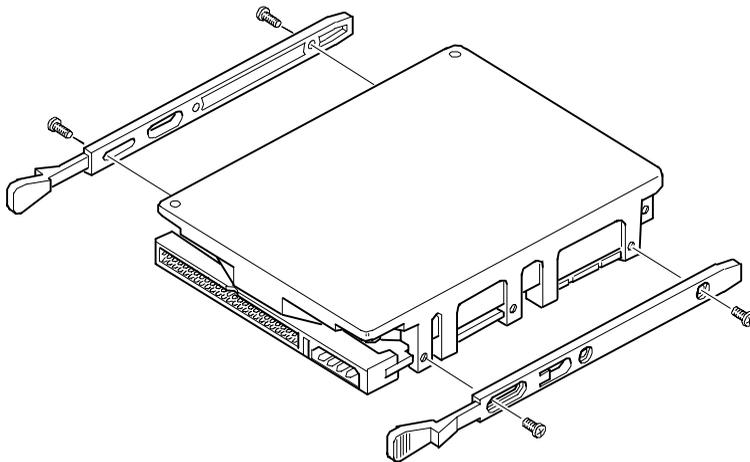
DEC00245

Figure 7-3. Installing Expansion Brackets (Internal Drive Bay)

5. Insert the device into the drive bay slot using the guide rails for proper alignment.
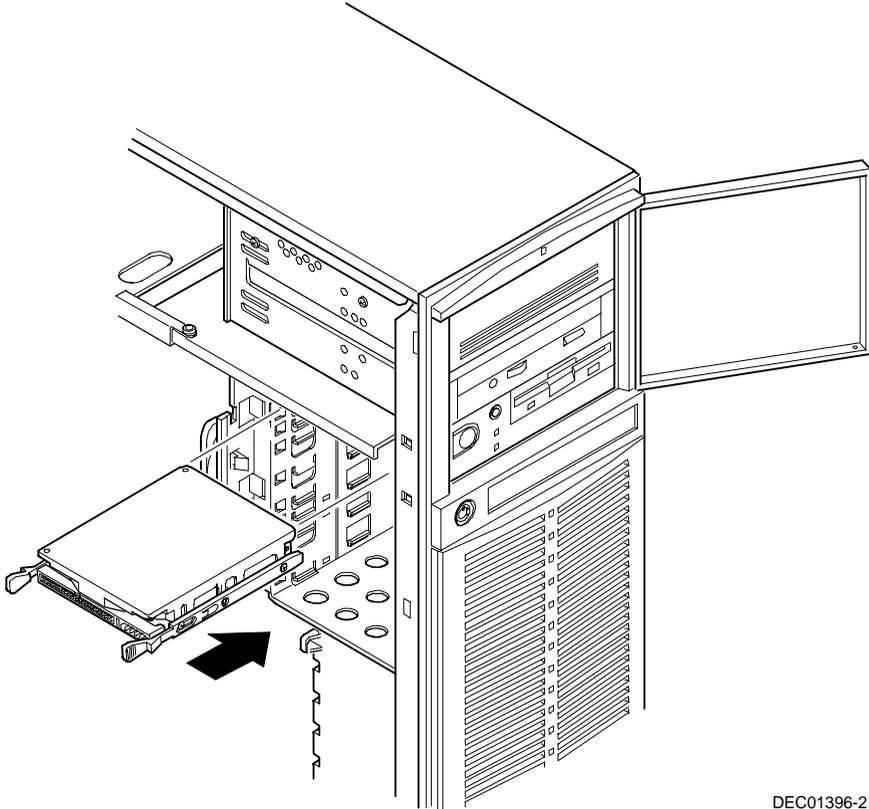
DEC01396-2

Figure 7-4. Installing a 3½-Inch Device Into the Internal Drive Bay

Connecting an External SCSI Storage Box

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

To connect an external SCSI storage box:

1. Turn off your server.

2. Unlock and remove the side panel.

3. Using a screwdriver, gently pry away one of the SCSI knockouts located at the rear panel.

4. Remove the terminator from the internal SCSI cable.

5. Screw the internal wide SCSI 68-pin unshielded cable connector to the knock-out panel.

6. Screw the wide SCSI 68-pin external shielded connector to the selected connector on the outside of the knock-out panel.

7. Connect the external SCSI device making sure the external device is properly terminated (see Figure 7-5).
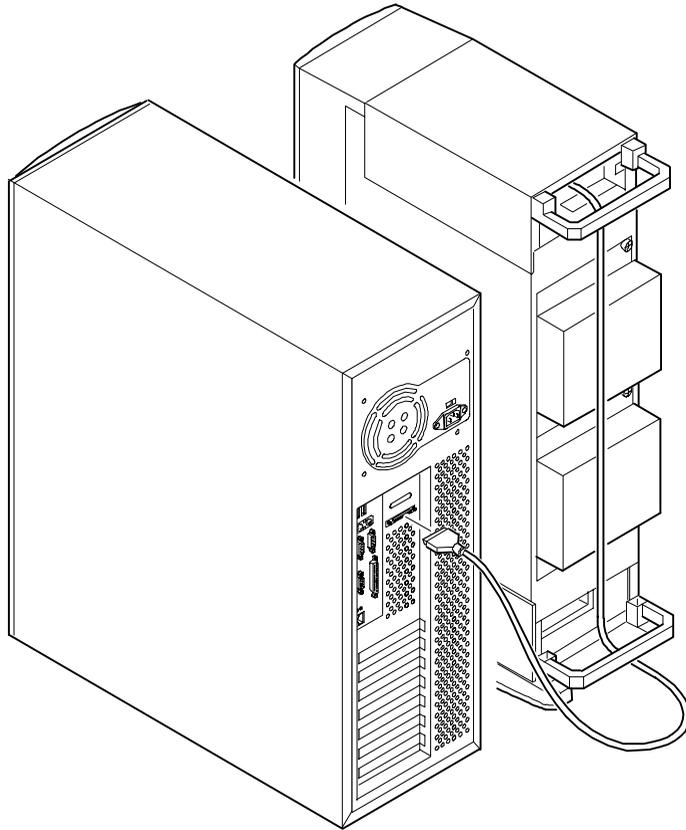
DEC01399

Figure 7-5. Connecting an External SCSI Storage Box

Installing Expansion Boards **8**

Introduction

This chapter contains the configuration guidelines that must be followed prior to installing ISA or PCI expansion boards as well as detailed installation procedures.

ISA Expansion Board Configuration Guidelines

- ISA slots one and two support industry-standard 16-bit ISA boards.

- ISA boards should be installed starting in ISA slot one.

- Read and fully understand your optional ISA expansion board's documentation before installing the expansion board.

PCI Slot 1 — 1
PCI Slot 2 — 2
PCI Slot 3 — 3
PCI Slot 4 — 4
PCI Slot 5[1)] — 5
ISA Slot 1[1)] — 1
ISA Slot 2 — 2
ISA Slot 3 — 3
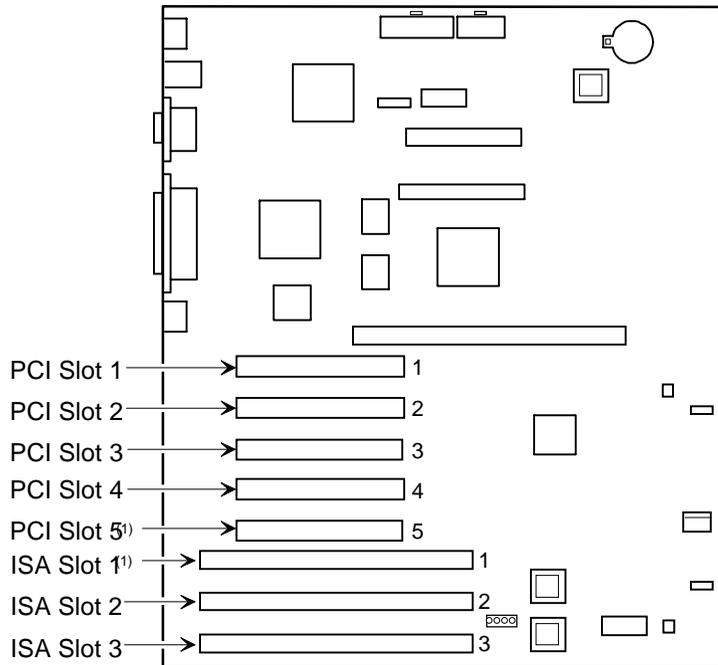
DEC01395-

PCI slot 5 and ISA slot 1 share an expansion slot at the rear of the server.

Figure 8-1. Expansion Board Slot Locations

PCI Expansion Board Configuration Guidelines

- PCI slots one through five support bus mastering 32-bit PCI expansion boards (slot one is 3/4 length). Note that PCI slot 5 and ISA slot 1 share the same ID number.

- PCI boards should be installed starting in PCI slot one.

> **NOTE:** Your server's BIOS will automatically disable the onboard video controller when a video expansion board is installed. Connect the video cable to the video expansion board and the server will boot normally.

Configuring Your PCI Expansion Boards Using the BIOS Setup Utility

When installing PCI expansion boards in your server, the BIOS Setup utility must be run to configure these boards. The BIOS Setup utility will autodetect PCI expansion boards and assign IRQs to the PCI expansion boards. The ROM addresses for these PCI expansion boards will be assigned based on the PCI scan order and address availability.

Boot Devices

The BIOS Setup utility allows you to define the boot device location as:

- Embedded SCSI controller
- PCI expansion slot

For the embedded SCSI controller, the boot device will be the first bootable device found starting at SCSI ID 0. The boot device on a PCI expansion board will be determined by the server boot sequence and PCI scan order. These are discussed in the next sections.

Server Boot Sequence

The server boot sequence is as follows:

1. If a bootable CD-ROM drive is enabled and contains a bootable CD-ROM, the server ignores all other settings and boots from the CD-ROM.

2. If a CD-ROM is not present, the operating system can boot from either drive A or C using the BIOS Setup utility as follows:

    a. If A is selected first and then C, the server searches drive A first to boot the operating system. If the diskette is drive A is not inserted, the server attempts to boot from drive C.

    b. If C is selected first and then A, the server searches drive C first to boot the operating system. If drive C does not contain the boot information, the server attempts to boot from drive A.

Drive C can be attached to the embedded SCSI controller, an ISA expansion board, or a PCI expansion board.

The location of drive C is determined by the server scan sequence described next.

Server Scan Sequence

If the boot device is neither the CD-ROM drive or the diskette drive, then the operating system will be found on drive C. The location of drive C can be determined as follows:

1. The search for a bootable device begins from a low ROM address to a high ROM address (starting at C8000h through EFFFFh). The boot device with the lower address is assigned higher priority and drive C.

2. When the server BIOS detects PCI expansion boards with ROMs installed in PCI slots, it copies all the ROMs of the expansion boards to C8000 - DFFFF areas in ascending order. The first scanned PCI expansion board occupies the address area starting from the first available area. This could be C8000 if C8000 is available. The second scanned PCI expansion board occupies the second available address area behind C8000, and so forth.

3. If a bootable ISA expansion board is configured to occupy the C8000 region, the server BIOS puts the existing PCI devices behind that region. When the ISA expansion board is configured to occupy the C8000 address, PCI bootable devices are not the first bootable device drive C.

PCI Scan Sequence

The server PCI slot sequence is listed in the following table:

Priority	Slot Number
1	1 Bus 0, device 0Dh
2	2 Bus 0, device 0Eh
3	3 Bus N + 1, device 08h
4	4 Bus N + 1, device 09h
5	5 Bus N + 1, device 0Ah

The PCI scanning sequence is based on the following:

1. The bus scanning sequence is in ascending order starting from bus 0.

2. For each bus, the scanning sequence is also in ascending order starting from device 0 to device 1Fh.

3. Bus 0 is fixed on the main logic board. The main logic board contains PCI slots 1 through 5.

4. The bus scanning process is in a recursive loop. The following explains this loop:

   – If the server BIOS detects a PCI-to-PCI bridge chip (PPB) on the current Bus N, the bus number of the PPB is assigned as N + 1. The server BIOS does not scan the next device or slot on the current bus (Bus N), instead it scans the first device of Bus N + 1 and, if the first device is not PPB, it then scans the second device of Bus N + 1.

   – If the first device of Bus N + 1 is PPB, the bus number of the PPB on Bus N + 1 is assigned as Bus N + 2. Once a PPB is found, the scan path goes to that PPB until no PPB is ground again. Afterwards, it moves to the next device.

   – The bus scanning process is recursive until no additional PPB devices are found. The server BIOS then scans the other devices on the last found PPB, and then goes back to the upper level bus and continues to scan other devices. Being recursive, the server BIOS returns to Bus N.

Installing ISA Expansion Boards

To install an ISA expansion board:

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

1. Turn off your server.

2. Disconnect the external devices, ac power, and monitor power.

3. Unlock and remove the side panel.

4. Unscrew and remove the metal filler plate from the selected ISA expansion slot.
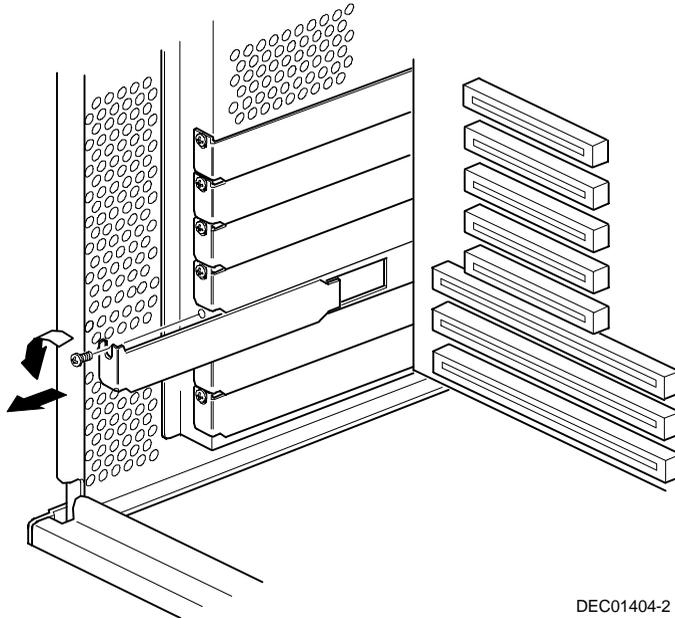
DEC01404-2

Figure 8-2. Removing a Metal Filler Plate

5. Insert the new ISA expansion board into the socket and push it firmly into place.
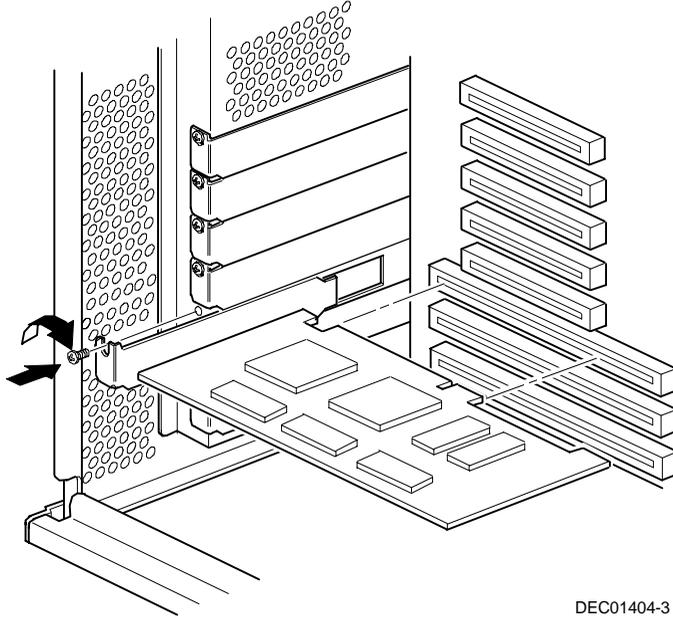
DEC01404-3

Figure 8-3. Installing an ISA Expansion Board

6. Secure the ISA expansion board to the slot with the screw removed in step 5.

7. Replace and lock the side panel.

8. Connect all external devices and restore power.

Installing PCI Expansion Boards

To install a PCI expansion board:

> **NOTE:** Read and fully understand your optional PCI expansion board's documentation before installing the expansion board.

1. Turn off your server.

2. Disconnect all external devices, ac power, and monitor power.

3. Unlock and remove the side panel.

4. Unscrew and remove the metal filler plate from the selected PCI expansion slot.

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

6. Secure the PCI expansion board to slot with the screw removed in step 4.

7. Replace and lock the side panel.

8. Connect all external devices and restore power.

   Refer to Chapter 2, "Server Software and Utilities."
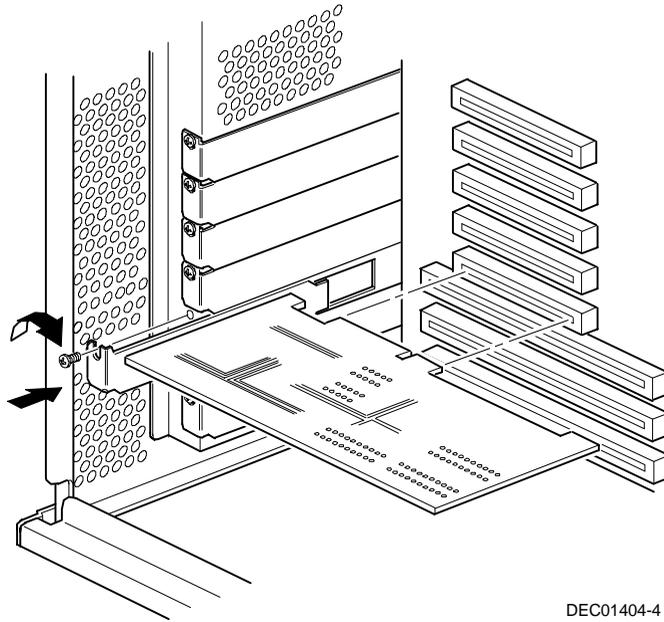
DEC01404-4

Figure 8-4. Installing a PCI Expansion Board

Connecting SCSI Adapters 9

Introduction

This chapter contains the configuration guidelines that must be followed when connecting the SCSI controller to optional disk and tape drives.

SCSI Configuration Guidelines

- Fast and wide SCSI supports up to 16 devices in the range of 0-15.

- Each device must be assigned to a unique ID number.

- Both ends of the SCSI bus must be terminated.

- If a device such as a CD-ROM drive has a terminator jumper installed, remove it; otherwise, no other devices will be seen beyond the CD-ROM drive.

- The factory installed CD-ROM drive has its SCSI set to 5.

- When a narrow SCSI controller is used, the narrow SCSI bus only supports up to eight SCSI devices.

- The onboard SCSI controller (7880B) supports wide Ultra SCSI devices.

- Run the SCSI configuration utility to change controller settings to fit your specific configuration.

  Refer to Chapter 7 for additional SCSI configuration guidelines.

SCSI Controller Cable Configuration

The following section describes the SCSI controller cable configuration for your DIGITAL Server.

To connect SCSI devices, perform the following:

1. Power down the server.

2. Disconnect all peripheral devices from the server.

3. Unlock and remove the side panel.

4. Connect the cables as shown in Figure 9-1.

5. Replace and lock the side panel.

6. Connect all external devices and then power on your server.

7. Run the SCSI*Select* utility to configure your server.

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

Figure 9-1 Legend	Component
A	In-line external wide SCSI 68-pin terminator[1]
B	In-line external wide SCSI 68-pin connector
C	Adaptec 7880 wide SCSI 68-pin connector to main logic board
D	Wide SCSI 68-pin connector to tape drive or CD-ROM drive
E	68-pin to 50-pin SCSI adapter
F	Wide SCSI 68-pin connector to CD-ROM drive
G	Power cable
H	Wide SCSI 68-pin connector to SCSI hard disk drive
I	Wide SCSI 68-pin connectors (for internal SCSI devices)

[1] The external wide SCSI terminator is located inside the server
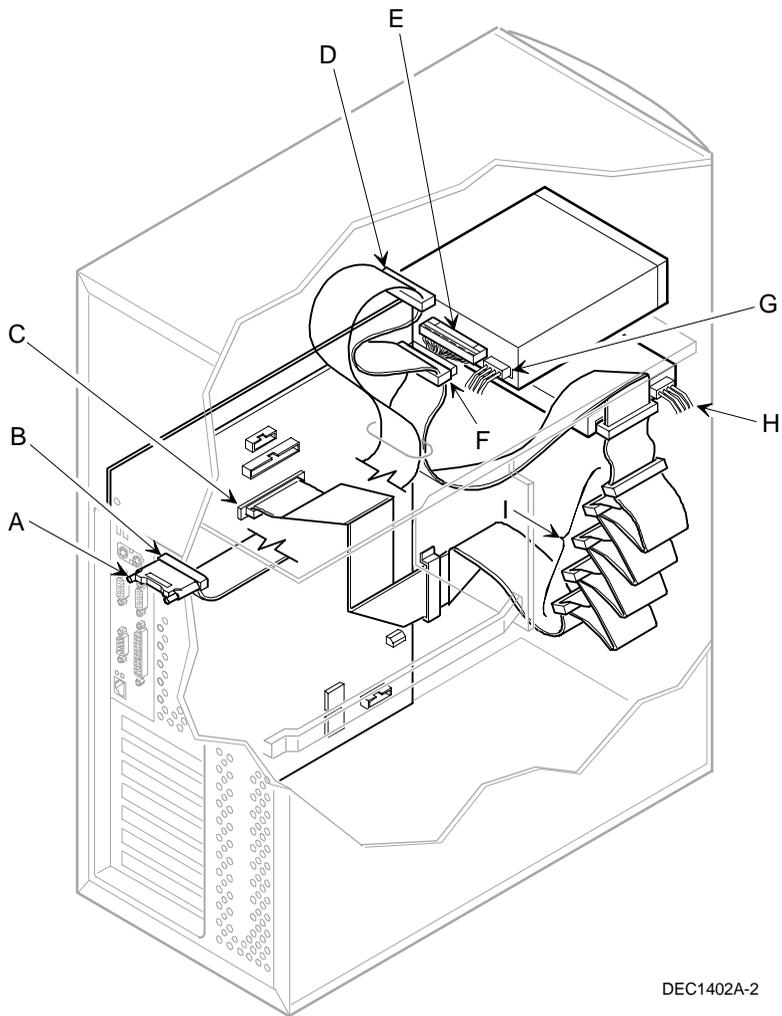
DEC1402A-2

Figure 9-1. Single Channel SCSI Configuration

Server Security Features *10*

Introduction

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

- Security door and side panel chassis lock—located at the front of your server.

- Padlock ring—located at the rear of your server

- Supervisor password

- Additional security features

Security Door and Side Panel Chassis Lock

Your server has a three-way keylock used to prevent unauthorized access to the front panel security door and left side panel. To open the security door:

1. Insert the key into the keylock at lock position number 2, push in on the key, and then turn the key clockwise to lock position number 1.

2. To open the side panel, continue to turn the key clockwise to the unlock position.

> **CAUTION:** Be careful not to lose your server keys. Losing these keys prevents you from opening the front panel security door and gaining access to the inside of the server. Contact your authorized service representative or authorized dealer for information on replacing lost keys.
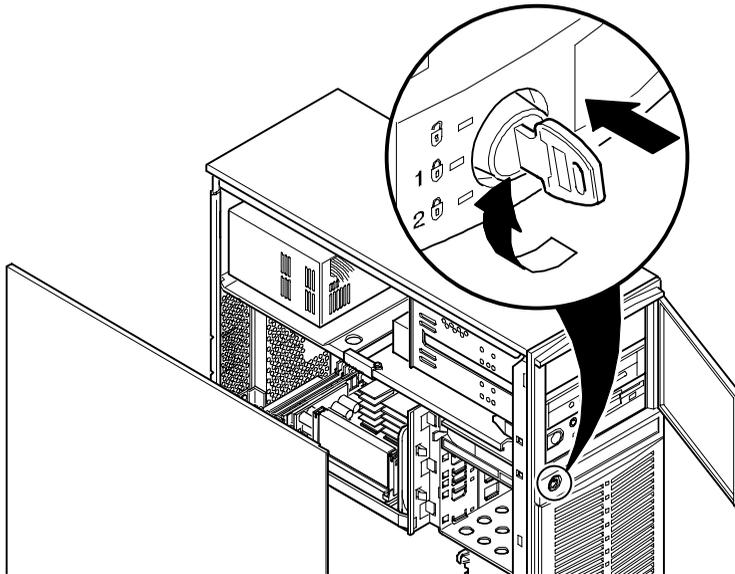
Figure 10-1. Security Door and Side Panel Chassis Lock

Padlock Ring

Your server has a padlock ring located at the bottom of the rear panel. This ring allows you to secure the server with your own padlock to prevent theft.

Supervisor Password

Your server has a password level that you can set to prevent unauthorized access to your server files. If you set a supervisor password, you will be prompted to enter it prior to accessing the BIOS Setup utility. If "Password On Boot" is enabled, you will be prompted to enter a password before your operating system boots.

Refer to Chapter 2, "Server Software and Utilities," for more information.

If You Forget Your Password

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

1. Turn off your server and remove the side panel.

2. Change switch SW1-3 to `Enabled` (switch up).

   Refer to Appendix A, "Technical Specifications," for additional information.

3. Reconnect your server and turn it on.

   Booting your server with this switch in the `ON` position erases the existing password(s).

4. Turn off your server and remove the side panel.

5. Change switch SW1-3 (clear password) to `Disabled` (switch down).

6. Reconnect your server and turn it on.

7. Using the BIOS Setup utility, assign a new password.

   Refer to Appendix C, "BIOS Setup Utility Features," for more information.

Additional Security Features

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

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

- Diskette Access —— Setting this option to either `Supervisor` or `User` controls who has access to any installed diskette drive.

- Network Server —— Setting this option to `Enabled` will allow the server to boot without a keyboard connected to the server.

- System BIOS Flash —— Setting this option to `Disabled` prevents flashing of the BIOS.

Troubleshooting **11**

Introduction

This chapter provides initial troubleshooting procedures. The tables that follow list specific problems, probable causes, and recommended actions to take if your server fails. Tables include:

- Server Troubleshooting

- Disk Drive Troubleshooting

- Tape Drive Troubleshooting

- Monitor Troubleshooting

- CD-ROM Troubleshooting

- Diskette Drive Troubleshooting

- Flash BIOS Troubleshooting

  Refer to Appendix A, "Technical Specifications," for a list of messages that might display.

  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 DIGITAL Server.

- Record all configuration information and have it readily available.

- Turn off your server, wait until all hard disk drives completely spin down, and then turn it back on.

- Refer to Appendix A, "Technical Specifications," if the POST detects an error.

- Ensure that all cables and connections are secure.

- Make sure all necessary video, printer, and application device drivers are properly installed.

- Try not to troubleshoot more than one problem at a time.

- Try to duplicate the problem.

- Run the diagnostic software. Refer to the next section "When to use the Diagnostics."

- Run the SCSI configuration utility if you have problems after connecting devices.

    Refer to Chapter 2, "Server Software and Utilities," for additional information.

- Contact DIGITAL Services for software or hardware related problems.

> **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 authorized DIGITAL service representative for assistance and recommendations. Refer to the "Service Information" area on the Quick Launch CD-ROM for phone numbers in your area or to the Warranty and Service Information booklet supplied with your DIGITAL Server documentation.

When to Use the Diagnostics

The diagnostic software is a versatile diagnostic tool that can be used to verify proper hardware installation and isolate intermittent problems that are not detected by the Power-On Self Test (POST). You should run the diagnostic software in the following situations:

- The server fails to boot or load the operating system software.

- The server fails to boot or load the operating system software after you add additional hardware such as more memory, additional processors, additional SCSI devices, or expansion boards.

- The operating system hangs repeatedly and no changes have been recently added to the software such as service packs or a new application.

- You suspect a server hardware failure.

- You want to validate server operation.

- An intermittent hardware problem exists.

Running the Diagnostics

To run the AMIDiag base package (Emergency Mode diskette) from a diskette, follow this procedure:

1. Insert the diskette labeled "For Emergency Use" in drive A and then boot the server.

2. Use the arrow keys to highlight the desired test.

3. Press [Enter].

For additional troubleshooting information refer to the AMIDiag User's Guide, located under "Additional Documentation" on the Quick Launch CD-ROM.

Running Quick Tests or Groups of Tests

Function keys can be used to select and run groups of tests. A list of function keys is available by pressing the F9 key. The following list includes examples of how to run Quick Tests or Groups of Tests.

- To run Quick Test, press F8 to select tests, then F10 to run all the selected tests.

- To run all Memory tests, press F6 to select tests listed on the menu, then press F10 to run all the selected tests.

- To run all tests from all menus, press F7 to select all tests, then press F10 to run all the selected tests.

Running DIGITAL Vendor Extended Tests

To run DIGITAL Vendor Extended Tests from a diskette:

1. Insert the DIGITAL Vendor Extended Tests diskette for the selected device and then boot the server or type

    A:\DMENU.

2. Select the desired test.

    Each diskette has a README.TXT file with a list of devices that can be tested and additional information about each diagnostic.

Running the Diagnostics Tests from the Server's Hard Disk Drive

To run diagnostic tests from the server's hard disk drive, perform the following:

1. Boot the system and select Programs, then the MS-DOS Prompt from the Start menu.

2. At the C:\> prompt, type:

    \DIAG\DIAGNOSE.BAT

    This will setup the CONFIG.SYS and AUTOEXEC.BAT files to run the diagnostics and then reboot the server to load the AMIDiag program. Note that the original CONFIG.SYS and AUTOEXEC.BAT are restored before the diagnostics load.

3. Select the test or group of tests using the arrow keys and function keys previously defined. DIGITAL Vendor Extended Tests can also be run from the *User* menu.

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 authorized service representative.
	Main logic board switch settings incorrectly set.	Set all appropriate switches.
	Processor module has failed.	Contact your authorized service representative.
	Power supply failed.	Contact your authorized service representative.

Problem	Possible Cause	Action
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 video drivers installed.	Install the correct video drivers.
	Video controller has failed.	Contact your authorized service representative.
	Monitor has failed.	Replace monitor or contact your DIGITAL service representative.
Server does not boot from CD-ROM drive.	CD-ROM drive is not connected to the Adaptec controller.	Connect the CD-ROM to the Adaptec controller. Refer to Chapter 10.
	CD-ROM drive not configured as a bootable device.	Change the CD-ROM setting to "bootable" using SCSI*Select*.
Server operates incorrectly after installing a new processor.	Processor and/or processor module installed incorrectly.	Reinstall processor and/or processor module.

continued

Problem	Possible Cause	Action
Server operates incorrectly after installing optional expansion board.	Expansion board installed incorrectly.	Remove expansion board and reinstall.
	Expansion board has failed.	Remove expansion board and reboot. If server boots without errors, replace expansion board.
Server operates incorrectly after installing optional memory (DIMMs).	Memory configured incorrectly.	Reboot the server and check for any boot message to identify faulty DIMM(s).
		Check that the memory configuration is according to the memory guidelines explained Chapter 6, "Installing Additional Memory."
	DIMMs installed incorrectly.	Remove DIMMs and reinstall.
	DIMMs have failed.	Replace DIMMs.

continued

Problem	Possible Cause	Action
No response to keyboard commands.	Keyboard might be password protected by a local or remote control program.	Enter the keyboard password.
	Keyboard is not connected.	Power down the server and connect the keyboard.
	Keyboard failed.	Replace keyboard or contact your authorized service representative.
	Keyboard connected to the mouse port.	Connect the keyboard to the proper port.
No response to mouse commands.	Mouse might be password protected by a local or remote control program.	Enter the keyboard and mouse password.
	Mouse is not connected.	Power down the server and connect the mouse.
	Mouse connected to the keyboard port.	Connect the mouse to the proper port.
	Mouse driver not installed.	Install the appropriate mouse driver.
	Mouse trackball dirty.	Clean trackball.
	Mouse failed.	Replace mouse or contact your authorized service representative.
Server operates correctly but application software does not.	Application software installed incorrectly.	Refer to your application software documentation.
	Having external cache enabled causes conflict with application software.	Run the BIOS Setup utility and disable external cache.

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 hot adapter has failed.	Contact your authorized service representative.
	Loose SCSI cable.	Secure all cable connections.
	SCSI cable incorrectly installed between SCSI host adapter and SCSI device.	Refer to Chapter 10 for cabling information.
	In-line SCSI terminator not installed.	Install the in-line SCSI terminator at the rear of the server. Refer to Chapter 10.
	SCSI device has failed.	Replace SCSI device.

Problem	Possible Cause	Action
Server does not recognize an external 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 controller has failed.	Contact your authorized service representative.
	Loose SCSI cable.	Secure all cable connections.
	SCSI cable incorrectly installed between SCSI controller and rear panel connector or external SCSI device and rear panel connector.	Refer to Chapter 10 for cabling information.
	In-line SCSI terminator not installed.	Install the in-line SCSI terminator.
	SCSI device has failed.	Replace SCSI device.

continued

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.
	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.
	SCSI device has failed.	Replace SCSI device.
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.
	SCSI hard disk drive failed.	Replace SCSI hard disk drive.

Tape Drive Troubleshooting

Problem	Possible Cause	Action
Tape will not load.	Tape inserted incorrectly.	Insert the tape with the arrow on the cassette pointing towards the drive.
Cannot write data to a tape.	Tape write-protected.	Slide the write-protect tab on the cassette to the closed position.
Tape will not eject.	Tape jammed in drive.	Using a small screwdriver, rotate the motor shaft clockwise to bring threading mechanism to the initial loading position.
		If necessary, press the ratchet mechanism to tighten the tape before ejecting.
		Continue to turn the motor shaft clockwise until the tape can be lifted out of the drive mechanism and ejected from the drive.

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 authorized service representative.
No screen display.	Configuration error.	Run the BIOS Setup utility to configure the server for video operation.
	Monitor brightness and contrast controls are incorrectly set.	Adjust the monitor brightness and contrast controls.
	Monitor has failed.	Replace monitor, or contact your authorized service representative.
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.
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.
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 the documentation supplied with your monitor.

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.
	Incorrect SCSI ID assigned.	Make sure correct SCSI ID is assigned. Refer to Chapter 8.
	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.

Diskette Drive 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 BIOS Setup utility and set the Diskette Write Protection option to "Disabled."
	Disabled in BIOS Setup utility.	Run the BIOS Setup utility and enable the diskette drive.
Server does not boot from a target diskette drive.	Drive ID incorrectly set.	Make sure the drive ID is correctly set. Refer to the documentation that came with the diskette drive.
	Diskette drive not enabled.	Run the BIOS Setup utility and enable the diskette drive.
	Diskette boot option disabled.	Run the BIOS Setup utility and set boot option to 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.
Cannot write to target diskette drive.	Diskette drive write protected.	Run the BIOS Setup utility and disable the diskette write protection option.

Flash BIOS Troubleshooting

Problem	Possible Cause	Action
Cannot flash the server's BIOS	Main logic board switch settings incorrectly set.	Make sure main logic board switch SW1-2 "Recovery Mode" is set to `Recovery` and SW1-1 "BIOS Upgrade" is set to `Enabled`. Refer to Appendix A for switch locations.
	BIOS Setup utility switch setting incorrectly set.	Make sure the "System BIOS Flash" option in the BIOS Setup utility is set to `Enabled`. Refer to Chapter 2 for more information.

Technical Specifications A

Introduction

This appendix provides the following technical characteristics for your server:

- Server specifications
- ISA expansion slots
- PCI expansion slots
- Power supply input power requirements
- Power supply output specifications
- Power cord requirements
- Main logic board switch settings
- Pentium II processor module switch settings
- Server fault status
- POST messages
- Processor module voltage and temperature ranges

Server Specifications

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

Performance Specifications

Attributes	Specification

Bus clock
    ISA
    PCI
	7.5/8.33 MHz
	30/33 MHz

Data I/O
    ISA
    PCI
	8-bit and 16-bit
	32-bit

Memory	72-bit DIMMs, single-banked, ECC memory 72-bit DIMMs, double-banked, EDO memory 32 MB minimum 512 MB (ECC protected memory) maximum
System flash ROM BIOS	128 KB
VGA flash ROM BIOS	128 KB

Server Dimensions

Dimension	Specification
Width	190.5 mm (7.5 in.)
Length	469.9 mm (18.5 in.)
Height	487.6 mm (19.2 in.)
Weight	18 kg (39.6 lb.)

Environmental Specifications

Attributes	Specification
Operating temperature	10°C to 35°C (50°F to 95°F)
Storage temperature	−20°C to 65°C (−4°F to 149°F)
Operating humidity (noncondensing)	20% to 80% relative humidity, maximum wet bulb 35°C (95°F)
Storage humidity (noncondensing)	10% to 90% relative humidity, maximum wet bulb 65°C (149°F)
Altitude Operating Nonoperating	2,438 m (8,000 ft) maximum 4,876 m (16,000 ft) maximum
Shipping vibration	IAW Federal Standard 101, method 5019
Nonoperating shock	30 G, 25 ms halfsine

ISA Expansion Slots

The main logic board contains three ISA expansion slots. These slots support +5 V dc.

PCI Local Bus Expansion Slots

The main logic board contains five PCI local bus expansion slots. These slots support:

- 5 V dc only PCI expansion boards

- Bus mastering

Power Supply Input Power Requirements

The 300 W 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 table lists the input power requirements.

Rated Voltage Range	Maximum Range	Rated Input Current[1]	Operating Frequency Range
100 V ac - 120 V ac	88 V ac - 132 V ac	7 A	47 Hz - 63 Hz
220 V ac - 240 V ac	176 V ac - 264 V ac	3.5 A	47 Hz - 63 Hz

[1] Includes outlet current

Power Supply Output Specifications

Your server's power supply provides the following output ratings:

- +5 V dc   0 A min, 38 A max.
- +3.3 V dc   0 A min, 35 A max.
- +12 V dc   0 A min, 7 A max.
- −12 V dc   0 A min, 0.5 A max.
- −5 V dc   0 A min, 0.5 A max.

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).

- One power cord is required.

Environmental Features

This product has been designed with several features intended to reduce environmental impact in manufacturing, use, and end-of-life disposition.

Ozone Depleting Substances (ODS)
This product and its shipping package do not contain nor are they manufactured with Class I ODS, as defined in Title VI, section 611 of the clean air act amendments of 1990.

Use of asbestos
Digital Equipment Corporation does not use asbestos in any form in the manufacturing of its products.

Recycled paper in documentation
User documentation is printed on paper with a post-consumer recycled content of between 10 and 60%.

Use of PVC in enclosure pieces
Polyvinylchloride (PVC) is not used in plastic enclosure pieces.

Design for disassembly/re-cycling
This product has been designed for ease of disassembly so that materials can be easily separated for recycling at the end of the product's useful life. One type of fastener is generally used to minimize tools required to disassemble. Plastic components have been marked with standard identification symbols to facilitate separation for recycling. Snap fit fastening techniques have been used, where possible, to reduce disassembly effort. Fastening of dissimilar materials can be disconnected, allowing materials to be separated for recycling.

Environmental packaging features
The outer container on this product is made from unbleached, natural Kraft corrugated fiberboard which can be readily recycled in most areas. Protective cushioning pieces are made from expandable polypropylene which is more efficient than other foams and requires less material to provide equivalent protection, thereby reducing packaging waste. The cushioning pieces are marked with the Society of the Plastics Industry (SPI) material identification symbol for polypropylene to facilitate recycling.

Main Logic Board Switch Settings

The following table lists the main logic board switch and factory-default settings. Figure A-1 shows the switch 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	Function	Setting	Description
BIOS upgrade	Disabled Enabled[1]	SW1-1, up SW1-1, down[1]	Your main logic board's flash BIOS upgrade switch must be set to the disabled (UP) position 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.
Recovery mode	Normal mode[1] Recovery	SW1-2, up[1] SW1-2, down	If your BIOS upgrade failed, refer to the README.TXT file that came with the BIOS upgrade.
Clear password	Disabled[1] Enabled	SW1-3, up[1] SW1-3, down	If you forget your password, set this switch to the password clear (DOWN) position and then restart your server. Refer to Chapter 10 for more information.
Clear CMOS	Disabled[1] Enabled	SW1-4, up[1] SW1-4, down	Clears CMOS of all BIOS setup information. Use the Enabled setting when your server will not boot, and BIOS setup cannot be accessed due to configuration data corruption. This switch must be set back to Disabled before rebooting your server.

(1) Factory default setting
UP = switch closed; DOWN = switch open

DEC01395-
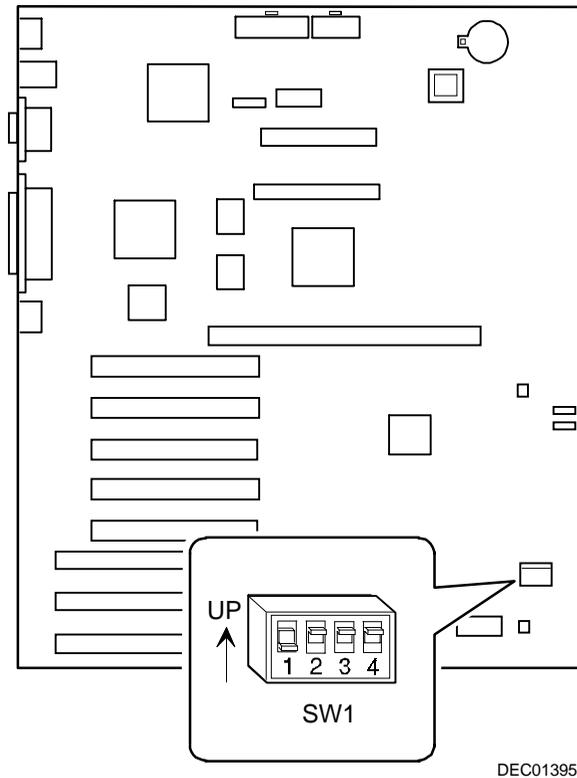
Figure A-1. Main Logic Board Switch Locations

Pentium II Processor Clock Speed Switch Settings

The following table provides the switch settings for a number of available Pentium II processors. The switches are set correctly for the Pentium II processor that came with the server you purchased. You only need to change the Pentium II processor switch settings, that is SW1, should you upgrade to another Pentium II processor.

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.

Processor Speed	SW1-1	SW1-2	SW1-3	SW1-4
233 MHz	UP	UP	DOWN	DOWN
266 MHz[1]	DOWN	DOWN	UP	DOWN
300 MHz[1]	UP	DOWN	UP	DOWN
333 MHz[1]	DOWN	UP	UP	DOWN
366 MHz[1]	UP	UP	UP	DOWN
400 MHz[1]	DOWN	DOWN	DOWN	UP
433 MHz[1]	UP	DOWN	DOWN	UP
466 MHz[1]	DOWN	UP	DOWN	UP
500 MHz[1]	UP	UP	DOWN	UP
533 MHz[1]	DOWN	DOWN	UP	UP

(1) The processor speed indicated above are anticipated future processor products. This does not constitute a promise of such a processor, but should it be made available some time in the future, these are the needed switch settings to support such a processor.

UP = switch open; DOWN = switch closed
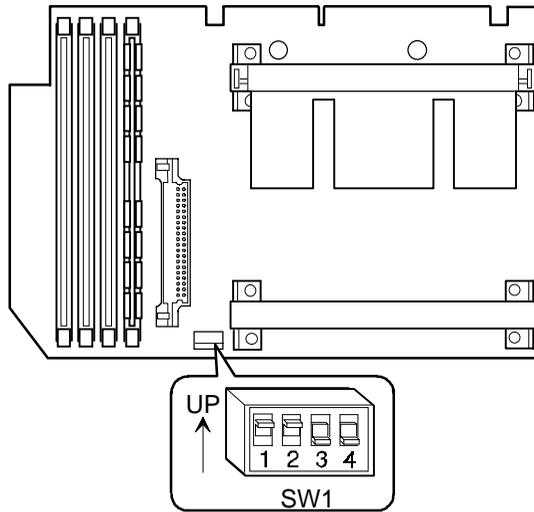
DEC01405-4

Figure A-2. Pentium II Processor Module Locations

Server Fault Status

Description	Server Fault LED Indicators				Beep Code
	LED4	LED3	LED2	LED1	
No power, system OK, power on default	Off	Off	Off	Off	
Shutdown, fan fault	Off	Off	Off	On	1-1-1-2
Shutdown, over temperature	Off	Off	On	Off	1-1-1-3
Shutdown, voltage fault	Off	Off	On	On	1-1-1-4
Processor slot 1 terminator not installed	Off	On	Off	Off	1-1-2-1
Wait for system boot	Off	On	Off	On	1-1-2-2
Wait for processor active	Off	On	On	Off	1-1-2-3
Processor slot 2 terminator not installed	Off	On	On	On	1-1-2-4
DIMM bank 0 fault (J1)	On	Off	Off	Off	
DIMM bank 1 fault (J2)	On	Off	Off	On	
DIMM bank 2 fault (J3)	On	Off	On	Off	
DIMM bank 3 fault (J4)	On	Off	On	On	
Reserved	On	On	Off	Off	
Reserved	On	On	Off	On	
Reserved	On	On	On	Off	
Processor module failed	On	On	On	On	1-1-4-4

POST Messages

The following table lists the messages, both normal and error, that will display on the server's monitor during POST and any beeps that might sound when an error occurs.

POST/Boot Codes

POST Code Descriptions	Count Down Code[1]	Beep Codes
BIOS ROM checksum		1-2-2-3
Test DRAM refresh		1-3-1-1
Test 8742 keyboard controller		1-3-1-3
Auto size DRAM		1-3-3-1
RAM failure on address line(s)		1-3-4-1
RAM failure on data line(s)		1-3-4-3
Shadow system BIOS ROM		1-4-3-1
Check ROM copyright notice		2-1-2-3
One short beep before boot		1
Initialize VGA		1
Option ROM checksum error		1-2
POST error found		1-1
Ready to boot the flash program		3-1-1
RAM test failed, beep and then halt system		3-3-3-3-3
Unexpected interrupts test	230	2-2-3-1
Shadow option ROMs	220	
Test refresh 512K to 640K DRAM	210	
Extended memory test	200	
Configure advanced cache registers	190	
Enable external and processor caches	180	
Real-time clock test	170	2-4-2-1

[1] Count down codes are displayed on your server's monitor.

POST Code Descriptions	Count Down Code[1]	Beep Codes
Check for keyboard errors	160	
Setup hardware interrupt vectors	150	
Test co-processor if present	140	
Disable onboard I/O ports	130	
Detect and install external parallel ports	120	
Re-initialize onboard I/O ports	110	
Initialize mouse	100	
Initialize floppy controller	90	
Initialize hard disk controller	80	
Searching other processors	50	
Enable hardware interrupts	20	
Set time of day	10	

[1] Count down codes are displayed on your server's monitor.

Processor Module Voltage and Temperature Ranges

The following tables list the processor module and Voltage Regulator Module (VRM) operating voltage and temperature ranges.

Processor Module Voltage Range

Nominal	Nominal Tolerance Percentage	Normal Voltage Range	Server Error Occurs	Server Shutdown Occurs
+12	-10 to + 10	+10.8 to +13.2 V	<+9.0 V	>+13.8 V
+5	-5 to + 5	+4.75 to +5.25 V	<+4.3 V	>+5.80 V
+3. 3	-1 to + 1	+3.0 to +3.6 V	<+3.0 V	>+3.81 V
-12	-10 to + 10	-13.2 to -10.8 V	>-9.0 V	<-13.8 V
VGTL	-10 to + 10	+1.35 to +1.65 V	<+1.26 V	>+1.72 V

VRM Voltage Range

VRM Voltage	Power Good Range	Lower Limit	Upper Limit
2.1 V	+1.95 to 2.25 V	<+1.89 V	>+2.31 V
2.2 V	+2.04 to 2.35 V	<+1.98 V	>+2.42 V
2.3 V	+2.14 to 2.46 V	<+2.07 V	>+2.53 V
2.4 V	+2.23 to 2.46 V	<+2.16 V	>+2.64 V
2.5 V	+2.32 to 2.68 V	<+2.25 V	>+2.75 V
2.6 V	+2.42 to 2.78 V	<+2.34 V	>+2.86 V
2.7 V	+2.51 to 2.89 V	<+2.43 V	>+2.97 V
2.8 V	+2.60 to 3.00 V	<+2.52 V	>+3.08 V
2.9 V	+2.70 to 3.10 V	<+2.61 V	>+3.19 V
3.0 V	+2.79 to 3.21 V	<+2.70 V	>+3.30 V
3.1 V	+2.88 to 3.32 V	<+2.79 V	>+3.41 V
3.2 V	+2.97 to 3.42 V	<+2.88 V	>+3.52 V
3.3 V	+3.07 to 3.53 V	<+2.97 V	>+3.63 V
3.4 V	+3.16 to 3.64 V	<+3.06 V	>+3.74 V
3.5 V	+3.25 to 3.75 V	<+3.15 V	>+3.84 V

Device Mapping B

Introduction

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

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 BIOS Setup utility.

> **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.

Processor Memory Address Map

Address Range	Function	Size
00000 to 9FFFF	Main memory	640 KB
A0000 to BFFFF	PCI/ISA video or SMM buffer memory	128 KB
C0000 to DFFFF	PCI/ISA expansion board BIOS and buffer memory	128 KB
E0000 to EFFFF	ISA adapter RAM (non-shadow)	64 KB
F0000 to FFFFF	ISA adapter RAM (non-shadow) system BIOS	64 KB

I/O Address Map

Range (hexadecimal)	Function
060 to 064	Keyboard/mouse controller
0F8 to 0FF	Math co-processor
1F0 to 1F7	IDE controller (if enabled)
378 to 37F	LPT2 (if enabled)
2E8	COM4 (if enabled)
2F8	COM2 (if enabled)
3BC to 3BF	LPT1 (if enabled)
278 to 27F	LPT3 (if enabled)
3E8	COM3 (if enabled)
3F0 to 3F5	Diskette controller (if enabled)
3F8	COM1 (if enabled)

Server Interrupt Levels

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

PCI Configuration Space Address Map

PCI Bus No.	Device No.	Device
0	00h	Host bridge
0	07h	ISA bridge
0	08h	PCI slot 1
0	09h	PCI slot 2
0	0Ah	PCI slot 3
0	0Ch	AIC7880 Ultra SCSI controller
0	0Dh	Ethernet controller
0	12h	Video controller

BIOS Setup Utility Features **C**
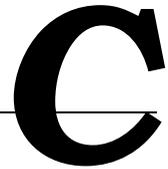
Introduction

After entering the BIOS Setup utility, you can edit a variety of resources and configure your server for the most optimized condition. The menu items in the BIOS Setup utility, listed as menu pages below, provide the necessary options to configure your server.

Main

Menu Fields	Settings	Comments
System time	Current time	Displays the current time.
System date	Current date	Displays the current date.
Diskette drive A/ Diskette drive B	1.44 MB, 3½[1] 2.88 MB, 3½ Not Installed[1] 360 KB, 5¼ 1.2 MB, 5¼ 720 KB, 3½	Sets the size and density of diskette drives.
Video system	EGA / VGA[1] CGA 80x25 Monochrome	Sets the video controller type.
Monitor type	Color[1] Monochrome	Sets the monitor type.
System memory	Not user selectable	Displays the amount of base (conventional) memory each time the server boots.
Extended memory	Not user selectable	Displays the amount of extended memory each time the server boots.
AT bus space	Disabled[1]	Memory hole not available; upper memory is contiguous.
	F00000h, 1 MB	Sets the memory hole at address F00000 with 1 MB memory available.
Extended memory report	Compatibility[1] Non-compatibility	Select the BIOS report mechanism for the amount of external memory.
		Select Compatibility when using a conventional operating system.
		Select Non-compatibility for extended memory above 64 MB under Windows NT.
Cache and Shadow:		
L1 cache	Enabled[1]	Enables the processor's internal L1 cache.
L2 cache	Enabled[1] Disabled	Enables or disables the processor's internal L2 cache.

[1] Factory default

Menu Fields	Settings	Comments
System BIOS shadow	Enabled[1]	Always set to Enabled.
System BIOS cache	Enabled[1] Disabled	This option enables the server BIOS to be cached in the internal cache. This increases server performance because BIOS instructions are executed in cache instead of RAM.
Video BIOS shadow	Enabled[1] 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 video BIOS ROM is shadowed, the ROM information is copied into an appropriate area in DRAM. This increases the server's performance because the video BIOS instructions are in fast DRAM instead of ROM. Enabled is the recommended setting.
Video BIOS cache	Enabled[1] Disabled	This option enables the video BIOS to be cached in the internal cache. This increases server performance because video BIOS instructions are executed in cache instead of RAM.

Shadow 16 KB
  C800 - CBFF:
  CC00 - CFFF:
  D000 - D3FF:
  D400 - D7FF:
  D800 - DBFF:
  DC00 - DFFF:
	Enabled
	Disabled[1]
		Enables or disables shadowing of individual segments of ROM to increase server performance.
		
		CAUTION: Some option ROMs do not operate properly when shadowed.

[1] Factory default

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

[1] Factory default

Advanced

Menu Fields	Settings	Comments
Integrated Peripherals		
PS/2 mouse	Disabled Enabled[1]	Enables or disables the mouse port.
Parallel port	Disabled Enabled Auto OS controlled	Enables or disables the onboard port at the specified address.
		NOTE: Two devices cannot share the same IRQ. Also, choosing Disabled makes the parallel port unusable.
		Auto is the recommended setting.
Serial port 1	Disabled Enabled Auto OS controlled	Enables or disables onboard serial port 1 at the specified address.
		Select Auto unless interrupts IRQ4 and/or IRQ3 are allocated as a server resource.
		Two devices cannot share the same IRQ. Choosing Disabled makes serial port 1 unusable. If selecting Auto, Setup configures COM1 to address = 3F8h and IRQ = 4 if they are available.
		Auto is the recommended setting.

	If Enabled is selected, the information at the right will appear.	Base I/O address
		  3F8[1]
		  2F8
		  3E8
		  2E8
		
		Interrupt
		  IRQ3[1]
		  IRQ4
		  IRQ10
		  IRQ11

[1] Factory default

continued

Menu Fields	Settings	Comments
Serial port 2	Disabled Enabled Auto OS controlled	Enables or disables onboard serial port 2 at the specified address.
		Select Auto unless interrupts IRQ4 and/or IRQ3 are allocated as a server resource.
		Two devices cannot share the same IRQ. Choosing Disabled makes serial port 1 unusable. If selecting Auto, Setup configures COM1 to address = 3F8h and IRQ = 4 if they are available.
		Auto is the recommended setting.
	If Enabled is selected, the information at the right will appear.	Base I/O address 3F8 2F8[1] 3E8 2E8

[1] Factory default

continued

Menu Fields	Settings	Comments
Parallel port mode		Sets the onboard parallel port mode.
	Compatible mode (output only)	Standard printer connection.
	Bi-directional mode[1]	PS/2 compatible mode and able to receive data.
	EPP 1.7 EPP 1.9	Enhanced parallel port mode.
		Selection based on what EPP version the printer supports.
		Only choose a mode that the parallel port device (such as a printer) supports. Check the parallel port device documentation for this information. If this information cannot be located, use the default setting.
	ECP	Extended capabilities port mode.
	If Enabled is selected, the information at the right will appear.	Base I/O address 378[1] 278 3BC
		Interrupt IRQ5 IRQ7[1]

[1] Factory default

continued

Menu Fields	Settings	Comments

Serial port 2		Interrupt
		  IRQ3[1]
		  IRQ4
		  IRQ10
		  IRQ11

Floppy disk controller	Enabled[1] Disabled	Enables or disables the onboard diskette controller.

	If Enabled is selected, the information at the right will appear.	Base I/O address
		  Primary[1]
		  Secondary

Exchange diskette drives	Disabled[1] Enabled	Logically exchanges physical diskette drive designations.
Diskette write protection	Disabled[1] Enabled	Enables or disables the selected diskette drive's write protect option.
Integrated PCI Ethernet	Enabled[1] Disabled	Enables or disables the onboard Ethernet controller.
Integrated PCI SCSI	Enabled[1] Disabled	Enables or disables the onboard SCSI controller.
Plug and play OS	No[1] Yes	Select Yes if using a Plug & Play operating system such as Windows NT 4.0. Otherwise, select No.
Reset configuration data	No[1] Yes	Select Yes to clear the server configuration data if you suspect it is corrupted, which sometimes occurs after a power outage. This option also clears the Plug & Play databases. After you input the correct settings (or accept the default settings), the server switches this setting back to No. If you do not need to clear server configuration data, leave the setting at No.
System monitoring warning beep	Enabled[1] Disabled	

[1] Factory default

continued

Menu Fields	Settings	Comments
Advanced Chipset Control		
APIC & MP table	Disabled MPS 1.1 MPS 1.4[1]	Applicable to single processor configurations only, always enabled for Multi-Processing (MP) operating system configurations. When set to MPS 1.1 or MPS 1.4, the processor's Advanced Programmable Interrupt Controller (APIC) is enabled, and the MP table used by MP operating systems are created. **NOTE**: This parameter must be disabled for NetWare 3.12 single processor systems.
Error correction code	Enabled[1] Disabled	Enables or disables the Error Correction Code (ECC).
PCI parity checking	Enabled[1] Disabled	Enables or disables the PCI parity checking.

[1] Factory default

Security Options

Menu Fields	Settings	Comments
Supervisor password is	Not user selectable (Disabled) [1]	Indicates whether or not the supervisor's password is enabled or disabled.
User password is	Not user selectable (Disabled) [1]	Indicates whether or not the user's password is enabled or disabled.
Set supervisor password	Press [Enter]	Allows a supervisor password to be set.
		The supervisor password must be set if a user password is to be used.
		NOTE: Entering Setup with a supervisor password provides full access to all BIOS Setup utility menus.
Set user password	Press [Enter]	Allows a user password to be set.
		This password can be set only if a supervisor password is entered.
		When the user has entered his or her name but the supervisor is not logged in, only the following information is accessible:
		Supervisor password is Enabled.
		User password is Enabled.
		Set user password [press enter] to enter a user password.
		Password on boot Enabled/Disabled (which ever is in effect). This option is not allowed to change.

[1] Factory default

continued

Menu Fields	Settings	Comments
Password on boot	Enabled Disabled[(1)]	Enables or disables the enter password on boot option.
		If you enable this option, a user or supervisor password must be entered in order for the boot process to complete. If a user or supervisor password is not entered, the operating system cannot be accessed.
Diskette access	Supervisor User[(1)]	Controls who might have access to diskette drives.
		If Supervisor is selected, access to the diskette drive is limited to the supervisor, who must enter a password. If User is selected, the diskette drive is accessed by entering either the supervisor or the user password.
		Whatever setting is chosen, it only becomes functional if both a Supervisor Password and a User Password have been set (if the User setting is chosen).
Network server	Enabled Disabled[(1)]	When enabled, the system is secured at boot to prevent tampering during network operation
System backup reminder	Enabled Disabled[(1)]	When enabled, displays a backup reminder message at boot.
Virus check reminder	Enabled Disabled[(1)]	When enabled, displays a reminder message to check for virses at boot.
System BIOS flash	Enabled Disabled[(1)]	When enabled, allows the server BIOS in the flash ROM to update.

[(1)] Factory default

Boot

Menu Fields	Settings	Comments
Boot sequence	1. A: then C: 2. C: then A: 3. C: only 4. A: only	The numbers refer to the order in which the devices are addressed for the system files needed to boot the system. To change the order, use the Up and Down cursor keys to select the device you want to move. Then use the **+** and **–** keys, on the numeric keypad, to move the device to the desired boot order.
Boot sequence preference	PCI bus	
Setup prompt	Enabled[1] Disabled	Enables or disables the <F2> setup prompt each time the server boots. If Disable is selected, only disable the prompt when informed to press <F2> to enter Setup. Setup can still be entered by pressing <F2> before POST completes.
POST errors	Enabled[1] Disabled	Enabling this option causes the server to pause and display a setup entry or resume the boot prompt if an error occurs at boot. Disabling this option causes the server to always attempt to boot regardless of a setup entry or error.
Floppy check	Enabled Disabled[1]	Enabled permits verification of FDD type at boot. Disabled prevents FDD verification and speeds up the boot process.
Sign-on banner	Enabled[1] Disabled	Enabling this option causes the DIGITAL logo to appear during POST.

[1] Factory default

Caring For Your Server *D*

Introduction

This appendix describes how to:

- Clean the outside of the server

- Clean the monitor screen

- Clean the mouse

- Pack and move the server

> △ **CAUTION:** Make sure you turn off the server and disconnect any external devices before doing any cleaning. When using a moistened cloth for cleaning, do not allow any excess fluid to leak into the server, keyboard, or monitor. Wait until the server is completely dry before applying power.

Cleaning the Server

Clean the outside of the server periodically with a soft cloth. Use a cloth lightly moistened with a mild detergent solution. Do not use solvents or abrasive cleaners.

Cleaning the Screen

If the monitor screen gets dirty, clean it with a sponge or chamois cloth lightly dampened with a glass cleaning solution. Do not use solvents or abrasive cleaners.

Cleaning the Mouse

If your mouse cursor moves erratically across the screen, the ball on the bottom of the mouse is probably dirty.

Perform the following steps to clean a mouse ball:

1. Turn the mouse over and release the ball cover.

2. Place the mouse cover and ball on a clean surface.

3. Lightly dampen a cotton swab with a mild detergent, and clean the ball and the inside of the mouse.

4. Replace the ball and mouse ball cover.

Moving the Server

Perform the following steps before shipping or moving the server:

1. Back up all files stored on all hard disk drives.

2. Turn off the server (the monitor automatically shuts off).

3. Disconnect the power cord from the wall outlet, then from the back of the server.

4. Disconnect the monitor cable from the back of the server.

5. Disconnect the keyboard cable from the back of the server.

6. Disconnect the mouse cable from the back of the server.

7. Disconnect any other external peripheral devices, such as printers and modems.

8. Insert a drive protection card in the 3½-inch diskette drive. If you do not have a drive protection card, use a blank diskette.

9. Package the server as described in the following section, "Packing the Server."

Packing the Server

If you are moving the server a short distance (from one room to another in the same building), you do not have to pack the server. If you are shipping the server or moving it by vehicle, pack the server to avoid damage.

Pack the server in the original packing material and containers. If you did not save the boxes and packing material, use a sturdy carton and cushion the server well to avoid damage.

Installing the Server at a New Location

After moving the server to a new location, follow the instructions in the *Installation Guide* to unpack and install it.

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